EMPIRE telecom

April 30, 2020

TO: Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
1030 New Britain Avenue, West Hartford, CT 06110
Lat: 41 -43 -52.69 (41.73130278)
Long: 72 -43 -25.82 (-72.72383889)

Dear Ms. Bachman:

AT&T Wireless currently maintains equipment at the 180-foot level of an existing 185-foot lattice tower located at 1030 New Britain Avenue, in West Hartford, CT. The tower is owned by the Ten Thirty Tower Company, LLC. The property is owned by the Ten Thirty Tower Company, LLC.

AT&T desires to modify its existing telecommunications facility by adding: (3) CB-C23SR-43 Combiners, (3) SDARS Remote Radios, (1) Main Unit, (3) RR-FA3 Mounts, and ancillary equipment and cables. The centerline height of the existing antennas and ancillary tower-mounted equipment is and will remain at 180 feet.

The facility was approved by the Connecticut Siting Council in EM-CING-155-160503 on May 23, 2016. Six conditions were enumerated in the Council's decision: 1) Any deviation from the modification as specified in the Notice and supporting documentation shall render the acknowledgement invalid; 2) Any material changes to the modification as proposed shall require the filing of a new Notice with the Council; 3) Within 45 days after the completion of construction the Council shall be notified in writing that the construction has been completed; 4) Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T shall be removed within 60 days of the date the antenna ceased to function; 5) the validity of the action shall expire one year from the date of the letter; and 6) the applicant may file a request an extension of time beyond the one-year deadline provided that such a request is submitted to the Council not less than 60 days prior to the expiration.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with RCSA section 16-SOj-73, a copy of this letter and attachments is being sent to the Honorable Shari Cantor, Mayor of West Hartford; Todd Dumais, the Town Planner; as well as to the Ten Thirty Tower Company; LLC, the tower owner, and to the Ten Thirty Tower Company, LLC, the property owner.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure.

2. The proposed modifications will not involve any changes to AT&T's ground-space footprint, and therefore and therefore will not require an extension of the site boundary.

3. The proposed modification will not increase the noise level at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (enclosed) for AT&T's modified facility is herein provided.

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 AT&T's proposed modifications. Please see enclosed structural analysis completed by completed by Paul J. Ford & Company dated April 27th, 2020; stamped April 28th, 2020

For the foregoing reasons, AT&T respectfully requests that the proposed installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Moriah king

Moriah King
Site Acquisition Specialist
Empire Telecom USA LLC
16 Esquire Road | Billerica, MA 01862
Mobile: 339-234-8975
moking@empiretelecomm.com

Enclosures: Exhibit 1 – Field Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Analysis
Exhibit 4 – RF Emissions Analysis Report Evaluation

cc:

Shari Cantor, Mayor
West Hartford Town Hall
50 South Main St, Room 214
West Hartford, CT 06107
Attn: Shari Cantor - Mayor

Todd Dumais- Town Planner
West Hartford Town Hall
50 South Main Street, Rm 214
West Hartford, CT 06107
Attn: Planning & Zoning
Division – Todd Dumais

Ten Thirty Tower Company
LLC by Hirschfield
Management, Inc.
1030 New Britain Avenue, West
Hartford, CT 06110-2268
Attn: Jeffrey A. Hirschfeld

Account # 161958927

Label Details

Label Number:
9405503699300355689539

Terms
Acceptance Cutoff: 04/30/2020 4:30 PM
Acceptance Time: 05/05/2020 11:57 AM
Expected Date: 05/04/2020 11:59 PM
Delivery Status: Delivered, In/At Mailbox 2020-05-09 08:35:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
MORIAH KING
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
moking@empiretelecomm.com

Delivery Address:
SHARI CANTOR
WEST HARTFORD TOWN HALL
50 S MAIN ST
WEST HARTFORD, CT 06107-2485

Package:
Ship Date: 04/30/20
Value: $50.00
Weight: 1 lbs 0 oz
From: 01862

Service:
Priority Mail® 2-Day
USPS Tracking®

Transaction Number: 491977882
Transaction Type: Label
Payment Method: VISA-4325
Payment Status: Account Charged

Postage Cost	$7.50
USPS Tracking®	Free
Label Total:	**$7.50**
Order Total:	**$15.00**

Account # 161553927

Label Details

Label Number:
9405503699300355689508

Terms
Acceptance Cutoff: 04/30/2020 4:30 PM
Acceptance Time: 05/05/2020 11:54 AM
Expected Date: 05/04/2020 11:59 PM
Delivery Status: Delivered, In/At Mailbox 2020-05-08 08:35:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
MORIAH KING
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
moking@empiretelecomm.com

Delivery Address:
TODD DUMAS
WEST HARTFORD TOWN HALL
50 S MAIN ST
WEST HARTFORD, CT 06107-2485

Package:
Ship Date: 04/30/20
Value: $50.00
Weight: 1 lbs 0 oz
From: 01862

Service:
Priority Mail® 2-Day
USPS Tracking®

Transaction Number:	491977882
Transaction Type:	Label
Payment Method:	VISA-4325
Payment Status:	Account Charged

Postage Cost	$7.50
USPS Tracking®	Free
Label Total:	**$7.50**
Order Total:	**$15.00**

Timestamp	Message

Did you know you can request a refund online for unused Click-N-Ship® labels in your shipping history? Click here to learn more.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300355626183

Terms
Acceptance Cutoff: 04/30/2020 4:30 PM
Acceptance Time: 05/05/2020 11:54 AM
Expected Date: 05/04/2020 11:59 PM
Delivery Status: Delivered, In/At Mailbox 2020-05-11 10:26:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
MORIAH KING
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
moking@empiretelecomm.com

Delivery Address:
TEN THIRTY TOWER COMPANY LLC BY
HIRSCHFIELD MANAGE
1030 NEW BRITAIN AVE
ATTN: JEFFREY A HIRSCHFELD
WEST HARTFORD, CT 06110-2261

Package:
Ship Date: 04/30/20
Value: $50.00
From: 01862

Service:
Priority Mail® 2-Day
Flat Rate Envelope
USPS Tracking®

Transaction Number:	491972570
Transaction Type:	Label
Payment Method:	VISA-7463
Payment Status:	Account Charged

Postage Cost	$7.75
USPS Tracking®	Free
Label Total:	**$7.75**
Order Total:	**$7.75**

1030 NEW BRITAIN AVENUE

Location	1030 NEW BRITAIN AVENUE	**Mblu**	H15/ 3771/ 1030/ /
Parcel ID	3771 2 1030 0001	**Owner**	TEN THIRTY BUILDING COMPANY LLC
Assessment	$1,122,800	**Appraisal**	$1,604,000
Vision Id #	18633	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$797,000	$807,000	$1,604,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$557,900	$564,900	$1,122,800

Owner of Record

Owner	TEN THIRTY BUILDING COMPANY LLC	**Sale Price**	$1
Co-Owner		**Certificate**	1
Address	C/O HIRSCHFELD MGMT INC #106 1030 NEW BRITAIN AVENUE W HARTFORD, CT 06110	**Book & Page**	2004/0148
		Sale Date	04/21/1995
		Instrument	U

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
TEN THIRTY BUILDING COMPANY LLC	$1	1	2004/0148	U	04/21/1995
HIRSCHFELD HELENE FERN TR	$0	1	0911/0085	U	04/18/1984
RUBIN LUCILLE AND	$650,000	1	0685/0183	U	05/17/1979
LINCOLN ICE CREAM CO INC	$0	1	0627/0047	U	10/09/1978
	$0	1	0534/0067	U	

Building Information

Building 1 : Section 1

Building Photo

Year Built: 1957
Living Area: 11,520
Replacement Cost: $476,225
Building Percent Good: 25
Replacement Cost Less Depreciation: $119,100

Building Attributes	
Field	**Description**
STYLE	Distribution Whse
MODEL	Comm/Ind
Grade	D 0.65
Stories:	1
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	Curved Roof
Roof Cover	Metal Ribbed
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	Carpet
Heating Fuel	Typical
Heating Type	Forced Hot Air
AC Type	Central - Zone
As Built Use	TSGR
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	01
Wet Sprinkler	100
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Rigid Steel
Plumbing	LIGHT
Ceiling	Acoustic Panel
Group	IND
Wall Height	15.00
Adjustment	

Building 2 : Section 1

Year Built: 1960
Living Area: 24,386

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//\00\01\23\28.JPG)

Building Layout

(ParcelSketch.ashx?pid=18633&bid=18633)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
DST	DISTRIBUTION WHSE	11,520	11,520
COM	COMMERCIAL - NV	11,520	0
		23,040	11,520

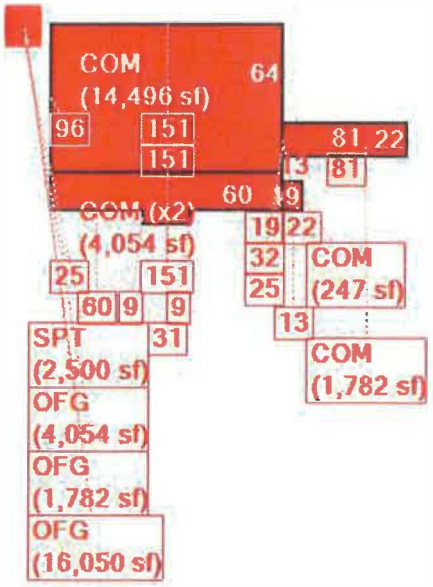
Replacement Cost:	$2,193,034
Building Percent Good:	26
Replacement Cost Less Depreciation:	$570,200

Building Attributes : Bldg 2 of 2	
Field	**Description**
STYLE	Office Gen Lowrise
MODEL	Comm/Ind
Grade	D 0.65
Stories:	2
Occupancy	
Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	None
Heating Fuel	Typical
Heating Type	None
AC Type	None
As Built Use	LNDP
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	01
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Rigid Steel
Plumbing	LIGHT
Ceiling	Not Applicable
Group	OFF
Wall Height	8.00
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default.jpg)

Building Layout



(ParcelSketch.ashx?pid=18633&bid=30624)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
OFG	OFFICE GENERAL LOWRISE	21,886	21,886
SPT	MISC SPORT FACILITY	2,500	2,500
COM	COMMERCIAL - NV	24,633	0
		49, 019	24,386

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	201
Description	Commercial
Zone	BG
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	2.82
Frontage	
Depth	
Assessed Value	$564,900
Appraised Value	$807,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CLP4	Paving, Asphalt			5700.00 SF	$12,500	1
COH1	Overhead Door Commercial			100.00 SF	$400	1
COH3	Overhead Metal Door			330.00 UNIT	$2,000	1
CLP4	Paving, Asphalt			39375.00 SF	$86,600	1
CLD2	Loading Dock - Stl/Conc			330.00 SF	$1,900	1
CCP5	Canopy-roof only			594.00 SF	$3,400	1
CFC5	Shed - Concrete Block			169.00 SF	$900	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$797,000	$807,000	$1,604,000
2018	$797,000	$807,000	$1,604,000
2017	$797,000	$807,000	$1,604,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$557,900	$564,900	$1,122,800
2018	$557,900	$564,900	$1,122,800
2017	$557,900	$564,900	$1,122,800

PROJECT INFORMATION

SCOPE OF WORK	UNMANNED COMMUNICATIONS FACILITY MODIFICATIONS INCLUDING: –(P) SIRIUS-XM NEW COMMSCOPE RDN-M23 SDARS REMOTE RADIO ON NEW RR-FA3 MOUNT (1/SECT., 3 TOT.) –(P) SIRIUS-XM NEW COMMSCOPE CBC23SR-43 COMBINER ON NEW RR-FA3 MOUNT (1/SECT., 3 TOT.) –(P) AT&T ALPHA/BETA/GAMMA LTE/WCS RRUS-32 TxRx4 PORT TO BE CONNECTED TO NEW COMMSCOPE SXM/WCS DIPLEXER CBC23SR43 (1/SECT., 3 TOT.) IN SHELTER: –SIRIUS-XM EQUIPMENT IN NEW PURCELL FLX21-2520 EXTERIOR ENCLOSURE RACK –AT&T POWER PLANT WITH BATTERIES ADD 12A BREAKER FOR FLEX21 HEATER, 15A BREAKER FOR FLEX 21 HEX IN BP FOR SIRIUS-XM FLX21-2520 CABINET
SITE NUMBER:	CT5259
SITE NAME:	WEST HARTFORD-ELMWOOD
SITE ADDRESS:	1030 NEW BRITAIN AVENUE WEST HARTFORD, CT 06110-22681
TOWER OWNER:	HIRSCHFELD COMMUNICATIONS LLC 1030 NEW BRITAIN AVENUE WEST HARTFORD, CT 06110-22681
APPLICANT:	AT&T 550 COCHITUATE RD SUITES 13 & 14 FRAMINGHAM, MA 01701
NOC CONTACT:	TEL 866-915-5600
COORDINATES	LAT. N41° 44' 9.9" LONG. W72° 43' 13.7"
GROUND LEVEL:	±42'
DEED REFERENCE:	N/A
SITE PARCEL NO.:	N/A
CURRENT ZONING:	N/A
HORIZONTAL DATUM:	(NAD) 1983

at&t

SITE NUMBER: CT5259 FA: 10071358
SITE NAME: WEST HARTFORD-ELMWOOD
PROJECT: RF MOD // IP REPEATER MRTCB037960

DRAWING INDEX

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06	GROUNDING DETAILS	1

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

CONTACT & UTILITY INFORMATION

CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	MIGUEL NOBRE	VRG	(508) 981-9590
SITE ACQUISITION:	DAVID COOPER	EMPIRE	(617) 639-4908
CONSTRUCTION:	GREG DORMAN	EMPIRE	(484) 683-1750
UTILITIES			
POWER:	WORK REQUEST GROUP	NATIONAL GRID	(800) 375-7405
TELCO:		VERIZON	(800) 941-9900

LOCATION MAP

DIRECTIONS: FROM ROCKY HILL, PROCEED NORTH ON I-91 TOWARD HARTFORD. TAKE I-91 NORTH EXIT #27. AT END OF OFF RAMP TURN LEFT ONTO BRAINARD RD. TURN LEFT ONTO AIRPORT RD. TURN RIGHT ONTO MAPLE AVE. TURN LEFT ONTO WHITE ST. TURNS INTO NEW BRITAIN AVE. SITE WILL BE ON RIGHT AT ADDRESS 1030 BEHIND BUILDING.

SITE ACCESS: LOCKED GATE

APPLICABLE BUILDING CODES AND STANDARDS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH PROJECT STANDARDS AND SPECIFICATIONS. SUBCONTRACTOR WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE:
CONNECTICUT STATE BUILDING CODE

ELECTRICAL CODE:
NATIONAL ELECTRICAL CODE LATEST EDITION
SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS.
AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION. ASD, NINTH EDITION
AMERICAN NATIONAL STANDARDS INSTITUTE/TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA) 222-F OR G AS APPLICABLE, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM – DC POWER SYSTEMS – TELECOM. ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

VRG
VERTICAL RESOURCES GRP.
489 Washington Street
Auburn, MA 01501
Tel. (508) 981- 9590
Fax (508) 519 – 8939
mnobre@verticalresourcesgrp.com

EMPIRE telecom
EMPIRE TELECOM USA, LLC
16 ESQUIRE ROAD
BILLERICA, MA 01821

at&t
550 COCHITUATE RD
SUITES 13 & 14
FRAMINGHAM, MA 01701

SITE NUMBER: CT5259
SITE NAME: WEST HARTFORD ELMWOOD
PROJECT: RF MOD // IP
1030 NEW BRITAIN AVE.
WEST HARTFORD, CT 06110
HARTFORD COUNTY

NO.	DATE	REVISION	BY	CHK APP'D
1	09/24/19	GENERAL REVISIONS	E.L.P.	C.A.M.
0	08/28/19	FOR CONSTRUCTION	E.L.P.	C.A.M.

SCALE: NOT TO SCALE DESIGNED BY: M.N. DRAWN BY: C.A.M.

AT&T

TITLE SHEET

SITE NUMBER	DRAWING NUMBER	REV
CT5259 Phoenix	01	1

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – PRIME CONTRACTOR
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T WIRELESS
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND TI CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. ROUTING OF CONDUIT FOR POWER AND TELCO SHALL BE APPROVED BY OWNER OF SITE.

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

SITE WORK GENERAL NOTES

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.

3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.

6. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.

7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ABCORDANCE WITH THE OWNER SPECIFICATION FOR SITE SIGNAGE.

8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.

9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE DETAIL 3/03.

11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.

12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

13. ALL EARTH WORK SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 (HOT-DIP) UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND ROLLING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".

2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.

3. BOLTED CONNECTIONS SHALL BE A STM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. STEEL FASTENER HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (HOT-DIP)

4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.

5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAWLSET/REDHEAD, HILTI OR APPROVED EQUAL.

6. ALL STRUCTURAL STEEL SHALL BE SUPPLIED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED.

3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:

   #6 AND LARGER .....2 INCH
   #5 AND SMALLER & WWF.....1 1/2 INCH

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:

   SLAB AND WALL .....3/4 INCH
   BEAMS AND COLUMNS.....1 1/2 INCH

5. A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAWLSET/REDHEAD, HILTI OR APPROVED EQUAL.

7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER:
   (A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT.

   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.

   FOR GREATER THAN 50 CUBIC YARDS THE QC SHALL PERFORM THE CONCRETE CYLINDER TEST.

8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.

9. EQUIPMENT SHALL NOT BE PLACED ON MEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

10. ALL CONCRETE SHALL BE SUPPLIED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL. EXPOSE UNDISTURBED NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.

2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.

3. AS AN ALTERNATIVE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", USED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.

4. COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING 1" SIEVE.

5. AS AN ALTERNATIVE TO ITEMS 2 AND 3 PROOF ROLL THE SUBGRADE SOILS WITH 5 PASSES OF A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). ANY SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL AND COMPACTED AS STATED ABOVE.

6. COMPACTION CRITERIA FOR OTHER FILL AREAS ON SITE SHALL MEET THE SAME REQUIREMENTS AS NOTED ABOVE.

7. SOIL COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

COMPACTION EQUIPMENT:

HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

ELECTRICAL INSTALLATION NOTES

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.

5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.

6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA.

7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PERMANENT LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S). NO HAND WRITTEN LABELS ALLOWED.

8. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED. NO HAND WRITTEN LABELS ALLOWED.

9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL. TO REMOVE SHARP EDGES.

10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

ELECTRICAL INSTALLATION NOTES (cont.)

15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

18. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

19. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

20. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.

21. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/NEEE, AND NEC.

22. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

23. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

24. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

25. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 3 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

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EMPIRE TELECOM USA, LLC
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5259
SITE NAME: WEST HARTFORD ELMWOOD
PROJECT: RF MOD // IP
1030 NEW BRITAIN AVE.
WEST HARTFORD, CT 06110
HARTFORD COUNTY

at&t
550 COCHITUATE RD
SUITES 13 & 14
FRAMINGHAM, MA 01701

NO.	DATE	REVISION	BY	CHK	APP'D
A	09/24/19	GENERAL REVISIONS	E.L.P.	G.A.M.	
A	08/25/19	FOR CONSTRUCTION	E.L.P.	G.A.M.	

SCALE: | DESIGNED: BMSM | DRAWN BY: E.L.P. | CHK'D: G.A.M.

AT&T

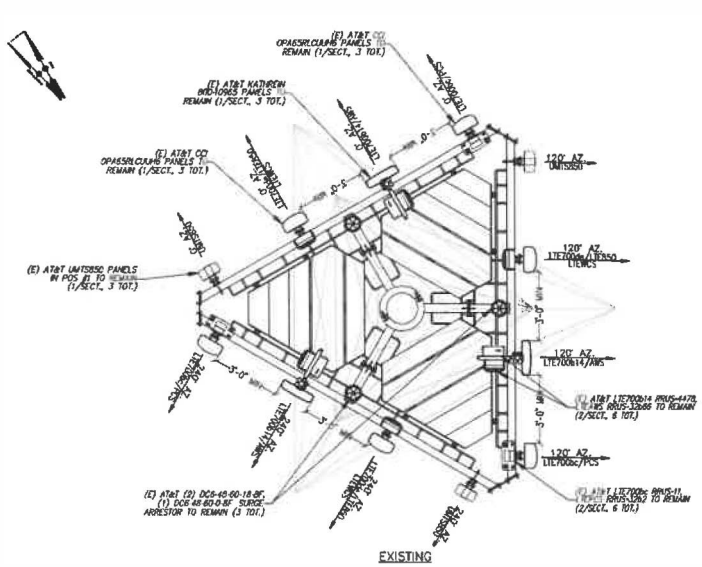
NOTES

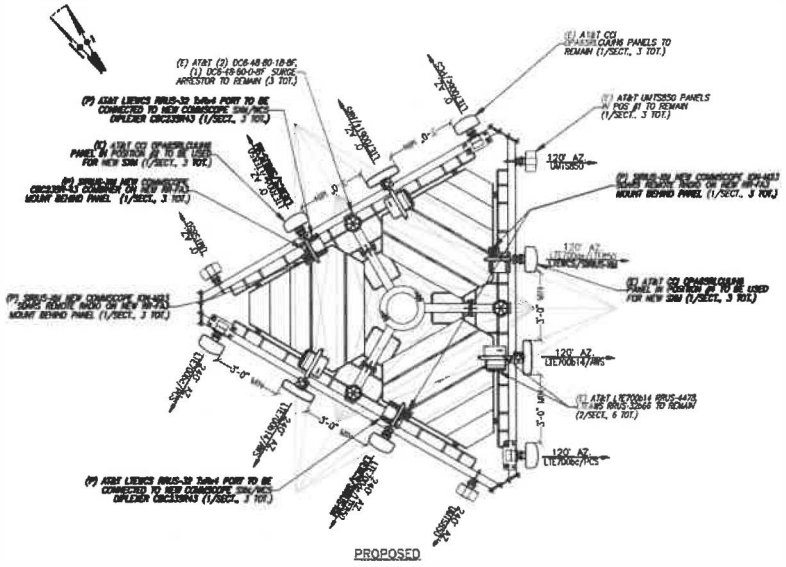
JOB NUMBER	DRAWING NUMBER	REV
CT5259 Flagpole	02	1

AT&T RF SYSTEM SCHEDULE

POSITION	SECTOR	STATUS	BAND	ANTENNA MAKE	ANTENNA MODEL	SIZE(INCHES) (LxWxH)	RAD CTR. FT. AGL	AZIMUTH	TMA/DIPLEXER /COMBINER	REMOTE RADIOS	RADIO LOCATION	SIZE(INCHES) (LxWxH)	FEEDER TYPE	FEEDER LENGTH	RAYCAP
1	Alpha	EXISTING	UMTS850	POWERWAVE	7770	55.0x11.0x5.0	±180.0'	0°		--		--		(E) 230'	
2	Alpha	EXISTING	LTE700b/850/PCS/SBRS/SDN	CCI	OPA65R-LCUUH6	72.0x14.8x7.4	±180.0'	0°					(12) 1-5/8" COAX	(NEW) 230'	
3	Alpha	EXISTING	LTE700b14/AWS	KATHREIN	800-10965	78.7x20.0x6.9	±180.0'	0°					(1) FIBER (1) DC LINE		
4	Alpha	EXISTING	LTE700c/PCS	CCI	OPA65R-LCUUH6	72.0x14.8x7.4	±180.0'	0°							
1	Beta	EXISTING	UMTS850	POWERWAVE	7770	55.0x11.0x5.0	±180.0'	120°		--		--	(2) 1-5/8" COAX	(E) 230'	
2	Beta	EXISTING	LTE700b/850/PCS/SBRS/SDN	CCI	OPA65R-LCUUH6	72.0x14.8x7.4	±180.0'	120°					(12) 1-5/8" COAX	(E) 230'	(NEW) DC6-48-60-18-8F (E) DC6-48-60-0-8F
3	Beta	EXISTING	LTE700b14/AWS	KATHREIN	800-10965	78.7x20.0x6.9	±180.0'	120°					(1) FIBER (1) DC LINE		
4	Beta	EXISTING	LTE700c/PCS	CCI	OPA65R-LCUUH6	72.0x14.8x7.4	±180.0'	120°							
1	Gamma	EXISTING	UMTS850	POWERWAVE	7770	55.0x11.0x5.0	±180.0'	240°		--		--	(2) 1-5/8" COAX	(E) 230'	
2	Gamma	EXISTING	LTE700b/850/PCS/SBRS/SDN	CCI	OPA65R-LCUUH6	72.0x14.8x7.4	±180.0'	240°					(12) 1-5/8" COAX	(E) 230'	
3	Gamma	EXISTING	LTE700b14/AWS	KATHREIN	800-10965	78.7x20.0x6.9	±180.0'	240°					(1) DC LINES		
4	Gamma	EXISTING	LTE700c/PCS	CCI	OPA65R-LCUUH6	72.0x14.8x7.4	±180.0'	240°							

NOTES:
REFER TO FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS AND CONFIGURATIONS





ANTENNA MOUNTING PLAN VIEW (2/A4)
SCALE: N.T.S.

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16 SQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5259
SITE NAME: WEST HARTFORD ELMWOOD
PROJECT: RF MOD // IP
1030 NEW BRITAIN AVE.
WEST HARTFORD, CT 06110
HARTFORD COUNTY

at&t
550 COCHITUATE RD
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FRAMINGHAM, MA 01701

NO.	DATE	REVISION	BY	CHK	APP'D
A	09/24/19	GENERAL REVISIONS	E.L.P.	G.A.M.	
B	10/28/19	FOR CONSTRUCTION	E.L.P.	G.A.M.	

SCALE: | DESIGNED BY: M.N. | DRAWN BY: G.A.M.

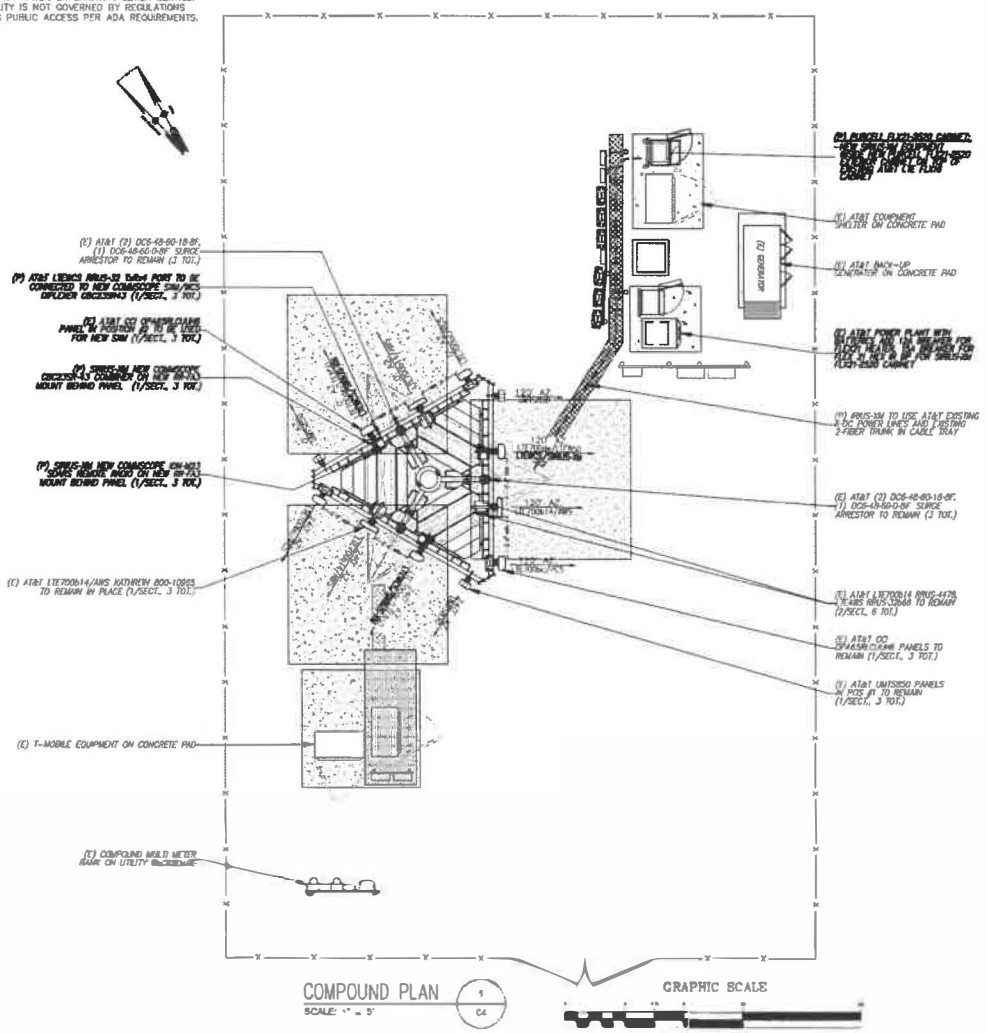
AT&T

RF SCHEDULE/ANTENNA PLAN

JOB NUMBER	DRAWING NUMBER	REV.
CT5259-1Hayester	03	1

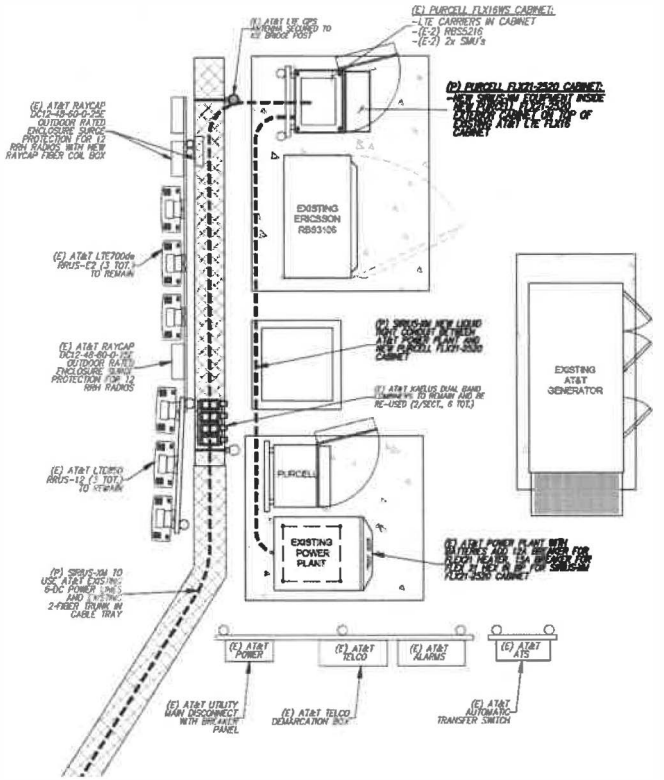
GENERAL NOTES

1. THE CELLULAR INSTALLATION IS AN UNMANNED PRIVATE AND SECURED COMPOUND. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
2. CONSTRUCTION, MAINTENANCE & OPERATION OF PROPOSED TOWER FACILITY WILL BE HELD IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE & FEDERAL REGULATIONS AND GUIDELINES.



COMPOUND PLAN (1/C4) SCALE: 1" = 5'

GRAPHIC SCALE



EQUIPMENT PLAN (2/C4) SCALE: 1" = 2'

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SITE NUMBER: CT5259
SITE NAME: WEST HARTFORD ELMWOOD
PROJECT: RF MOD // IP
1930 NEW BRITAIN AVE.
WEST HARTFORD, CT 06110
HARTFORD COUNTY

at&t
550 COCHITUATE RD
SUITES 13 & 14
FRAMINGHAM, MA 01701

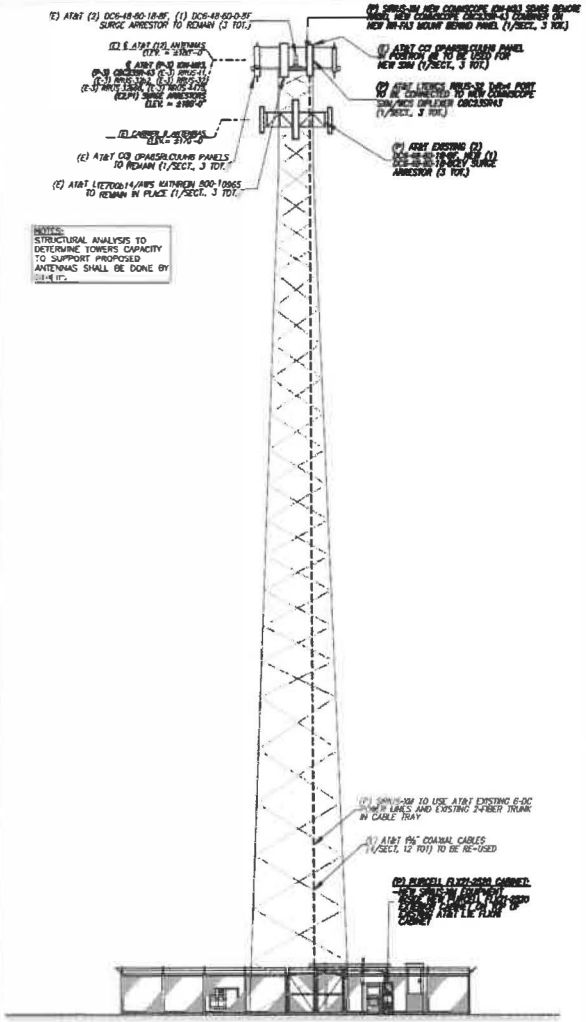
NO	DATE	REVISION	BY	CHK	APP'D
2	09/24/19	GENERAL REVISIONS	E.L.P.	G.A.M.	
1	09/26/19	FOR CONSTRUCTION	E.L.P.	G.A.M.	

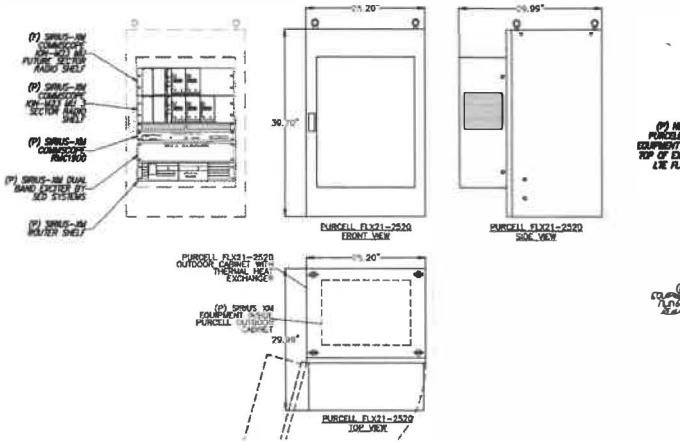
SCALE: | DESIGNED BY: M.N. | DRAWN BY: G.A.M.

AT&T

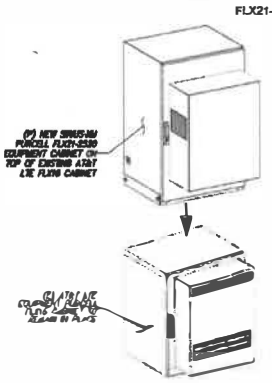
SITE PLAN & EQUIPMENT PLAN

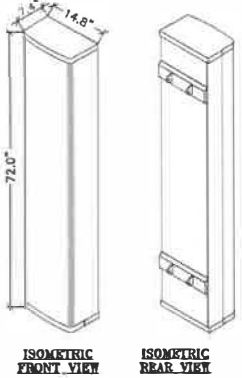
JOB NUMBER	DRAWING NUMBER	REV
CT5259-1Rapsolar	04	1





(P) SIRIUS-XM EQUIPMENT RACK
SCALE: N.T.S.





(E) LTE700de/850/WCS ANTENNA DETAIL
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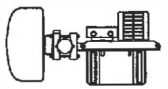
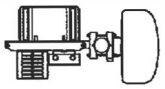
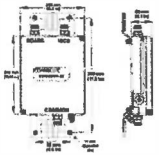
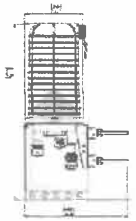

PLAN VIEW


PLAN VIEW



(P) LTEWCS/SDARS Commscope COMBINER
SCALE: N.T.S.



(E) RAYCAP SURGE SUPPRESSOR DC64860188CEV
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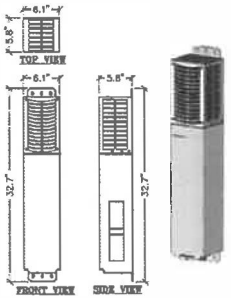
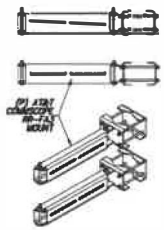
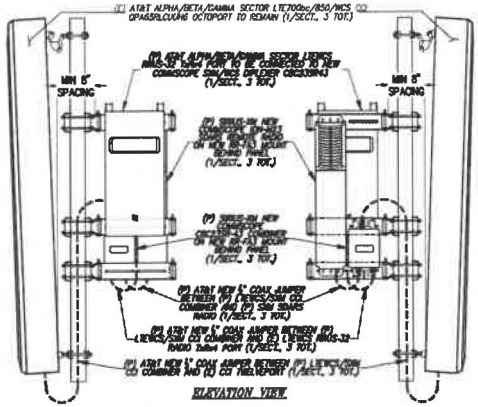


(P) SIRIUS-XM IONM23 SDARS RADIO
SCALE: N.T.S.



(P) AT&T SIRIUS-XM TRI-BRACKET MOUNT
SCALE: N.T.S.



(P) POS #2 LTEWCS SIRIUS-XM MOUNTING DETAIL
SCALE: N.T.S.

VRG VERTICAL RESOURCES GRP.
489 Washington Street
Auburn, MA 01501
Tel. (508) 981- 9590
Fax (508) 519 - 8939
rmacbre@verticalresourcesgrp.com

EMPIRE telecom
EMPIRE TELECOM USA, LLC
16 CSQUARE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5259
SITE NAME: WEST HARTFORD ELMWOOD
PROJECT: RF MOD // IP
1030 NEW BRITAIN AVE.
WEST HARTFORD, CT 06110
HARTFORD COUNTY

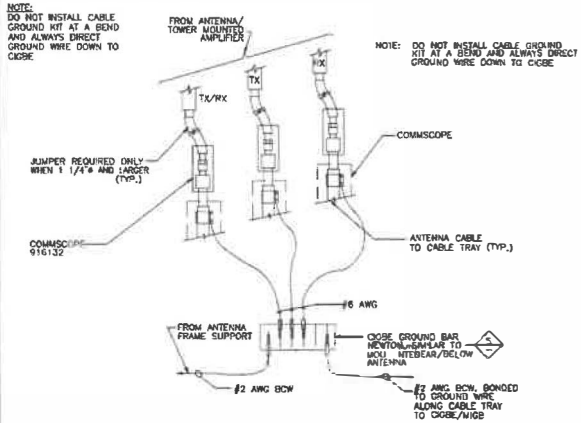
at&t
550 COCHITUATE RD
SUITES 13 & 14
FRAMINGHAM, MA 01701

REV	DATE	REVISION	BY	CHK	APP'D
1	09/24/19	GENERAL REVISIONS	E.L.P.	G.A.M.	
0	08/28/19	FOR CONSTRUCTION	E.L.P.	G.A.M.	

SCALE | DESIGNED BY: M.N. | DRAWN BY: G.A.M.

AT&T
ELEVATION VIEW & DETAILS

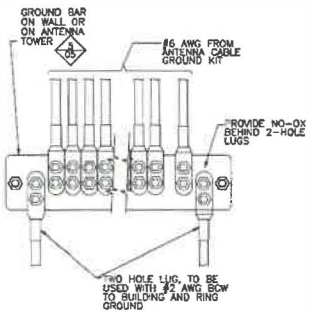
JOB NUMBER	DRAWING NUMBER	REV
CT5259	05	1



CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) 1/06

SCALE: N.T.S.

NOTE: DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

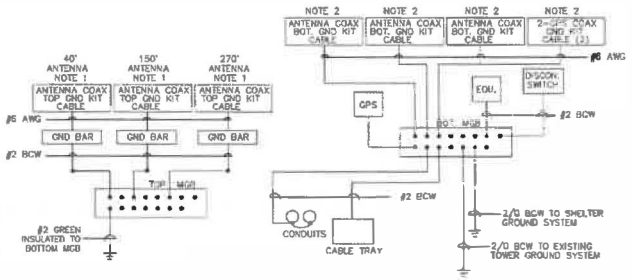


INSTALLATION OF GROUND WIRE TO GROUND BAR 2/06

SCALE: N.T.S.

GROUNDING CONNECTION DETAIL 5/06

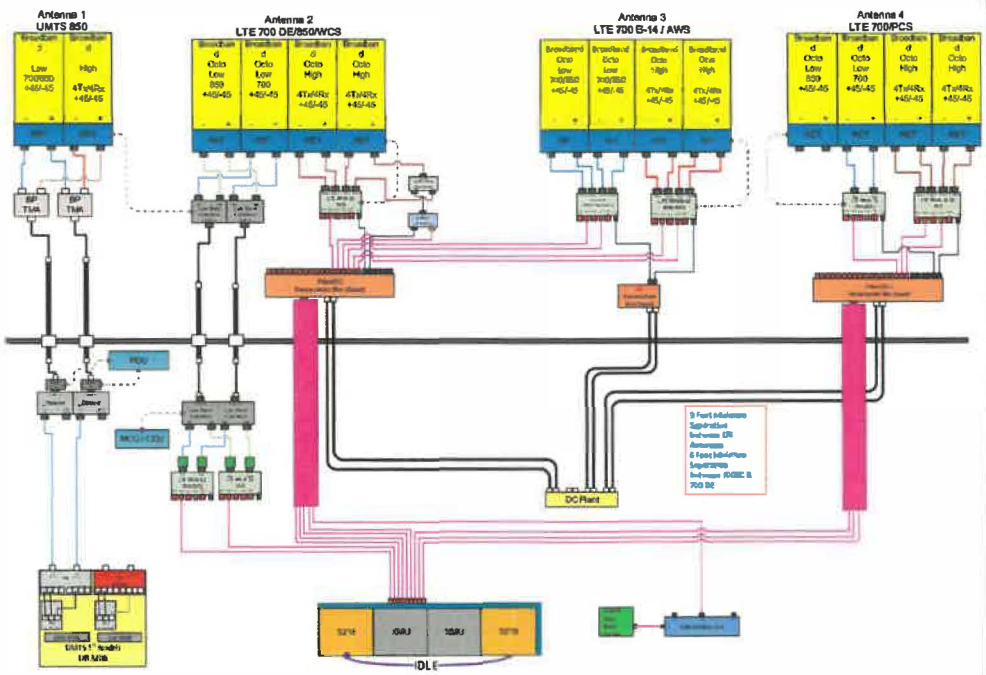
SCALE: N.T.S.



NOTE:
1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE

SCHEMATIC GROUNDING DIAGRAM 4/06

SCALE: N.T.S.

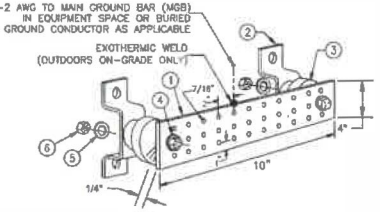


ALPHA/BETA/GAMMA SIRIUS-XM PLUMBING DIAGRAM 3/06

SCALE: N.T.S.

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS
2. INSTALL ALL EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS

NEWTON INSTRUMENT COMPANY, INC. BUTNER, N.C. OR APPROVED EQUAL			
ITEM	REQ.	PART NO.	DESCRIPTION
1	1	1/4"x4"x12"	PRE DRILLED GND. BAR
2	2	A-6056	WALL MTG. BRKT.
3	2	3061-4	INSULATORS
4	2	3012-13	5/8"-11x4" H.H.C.S.
5	4	3015-8	5/8 LOCKWASHER
6	2	3014-8	5/8"-11 HEX NUT



GROUND BAR DETAIL 6/06

SCALE: N.T.S.

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SITE NUMBER: CT5259
SITE NAME: WEST HARTFORD ELMWOOD
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1030 NEW BRITAIN AVE.
WEST HARTFORD, CT 06110
HARTFORD COUNTY

at&t
550 COCHITUATE RD
SUITES 13 & 14
FRAMINGHAM, MA 01701

NO.	DATE	REVISION	BY	CHK	APP'D
1	09/24/19	GENERAL REVISIONS	E.L.P.	G.A.M.	
2	09/26/19	FOR CONSTRUCTION	E.L.P.	G.A.M.	

SCALE: DESIGNED BY: M.N. DRAWN BY: G.A.M.

AT&T

GROUNDING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
CT5259-Filipowicz	06	1

PAUL J. FORD & COMPANY

Report Date:	April 27, 2020
Client:	Hirschfeld Communications LLC 1030 New Britain Avenue West Hartford, CT 06110 Attn: Ian Ormesher (703) 447-1350 iormesher@hirschfeldcos.com
Structure:	Existing 185-ft Self Support Tower
Site Name:	West Hartford
Site Reference #:	CT001
Site Address:	1030 New Britain Ave
City, County, State:	West Hartford, Hartford County, CT
Latitude, Longitude:	41.736092, -72.720499
PJF Project:	A64120-0001.001.8700

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the tower stress level.

Analysis Criteria:

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Proposed Appurtenance Loads:
The structure was analyzed with the proposed loading configuration shown in Table 1 combined with the other considered equipment shown in Table 2 of this report.

Summary of Analysis Results:

Existing Structure:	Pass – 99.8%
Existing Foundation:	Pass – 34.3%

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and Hirschfeld Communications LLC. If you have any questions or need further assistance on this or any other projects, please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Michael T Bange

Michael Bange, EI
Structural Designer
mbange@pauljford.com

JTJ

04.28.2020

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1) INTRODUCTION

This tower is a 180 ft Self Support tower designed by PiRod in June of 1998.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	II
Nominal Wind Speed:	97 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180.0	180.0	3	ericsson	RRUS 4478 B14	12 2 4	1-5/8 1/2 3/4
		6	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe		
		3	commscope	CBC23SR-43		
		3	commscope	ION-M23 SDARS		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 12		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS A2 MODULE		
		3	kathrein	80010965 w/ Mount Pipe		
		1	miscl	GPS		
		3	powerwave technologies	7770 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
165.0	165.0	3	ericsson	RRUS 4415 B25	1 5	1-5/8 1-1/4
		3	ericsson	AIR 3246 B66		
		3	ericsson	AIR 6488 B41		
		3	ericsson	AIR32 KRD901146-1_B66_B2A w/ Mount Pipe		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Sitepro1	SFR-K-L Reinforcement Kit		
		3	tower mounts	Sector Mount		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks
Manufacturer Drawings	PiROD Inc., 203949-B, 6/10/1998
Geotechnical Report	PiROD Inc., 6/5/1998
Pile Driving Report	Simeon Beer, 7/13/1998
Site Application	Hirschfeld Communications, 4/24/2020

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically, and must be replaced if damaged or cracked.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 170	Leg	1 1/2" solid	2	-18.88	54.43	34.7	Pass
T2	170 - 150	Leg	2" solid	38	76.12	106.69	71.3	Pass
T3	150 - 130	Leg	2 1/4" solid	102	-140.88	148.69	94.7	Pass
T4	130 - 120	Leg	Pirod 105244 (12x1.25)	166	-142.27	142.49	99.8	Pass
T5	120 - 100	Leg	Pirod 105217 (12x1.5)	175	-170.22	214.86	79.2	Pass
T6	100 - 80	Leg	Pirod 105217 (12x1.5)	190	-192.89	214.86	89.8	Pass
T7	80 - 60	Leg	Pirod 105218 (12x1.75)	205	-216.09	300.68	71.9	Pass
T8	60 - 40	Leg	Pirod 105218 (12x1.75)	220	-239.34	300.68	79.6	Pass
T9	40 - 20	Leg	Pirod 105219 (12x2)	235	-263.48	399.87	65.9	Pass
T10	20 - 0	Leg	Pirod 105219 (12x2)	250	-286.35	399.87	71.6	Pass
T1	180 - 170	Diagonal	3/4" solid	12	-3.41	6.09	56.0	Pass
T2	170 - 150	Diagonal	7/8" solid	48	-5.89	9.34	63.1	Pass
T3	150 - 130	Diagonal	1" solid	161	-6.48	15.16	42.8	Pass
T4	130 - 120	Diagonal	L 2.5 x 2.5 x 3/16	173	-8.24	13.56	60.8 71.6 (b)	Pass
T5	120 - 100	Diagonal	L 2.5 x 2.5 x 3/16	186	-5.63	11.92	47.2 55.3 (b)	Pass
T6	100 - 80	Diagonal	L 2.5 x 2.5 x 3/16	194	-5.19	8.66	60.0	Pass
T7	80 - 60	Diagonal	L 3 x 3 x 3/16	209	-5.61	12.12	46.3	Pass
T8	60 - 40	Diagonal	L 3 x 3 x 3/16	224	-6.05	9.79	61.8	Pass
T9	40 - 20	Diagonal	L 3 x 3 x 5/16	239	-6.76	12.87	52.5	Pass
T10	20 - 0	Diagonal	L 3 x 3 x 5/16	254	-8.56	10.64	80.5	Pass
T1	180 - 170	Horizontal	3/4" solid	30	-0.49	3.31	14.9	Pass
T2	170 - 150	Horizontal	3/4" solid	59	-0.92	2.82	32.7	Pass
T3	150 - 130	Horizontal	7/8" solid	158	-1.92	4.79	40.0	Pass
T1	180 - 170	Top Girt	7/8" solid	5	-1.72	6.14	28.1	Pass
T2	170 - 150	Top Girt	7/8" solid	42	-1.97	6.22	31.7	Pass
T3	150 - 130	Top Girt	1" solid	106	-2.35	8.40	28.0	Pass
T1	180 - 170	Bottom Girt	7/8" solid	7	-1.40	6.14	22.9	Pass
T2	170 - 150	Bottom Girt	7/8" solid	45	-2.65	4.94	53.6	Pass
T3	150 - 130	Bottom Girt	1" solid	107	-2.83	6.83	41.5	Pass
							Summary	
						Leg (T4)	99.8	Pass
						Diagonal (T10)	80.5	Pass
						Horizontal (T3)	40.0	Pass
						Top Girt (T2)	31.7	Pass
						Bottom Girt (T2)	53.6	Pass
						Bolt Checks	71.6	Pass
						Rating =	99.8	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	52.2	Pass
1	Base Foundation Structural	0	9.1	Pass
1	Base Foundation Soil Interaction	0	34.3	Pass

Structure Rating (max from all components) =	99.8%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

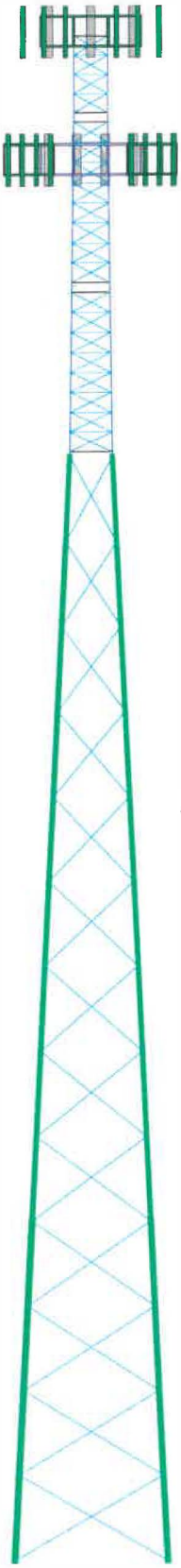
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirod 105216 (12x2)		Pirod 105218 (12x1.75)		Pirod 105217 (12x1.5)		B	SR 2 1/4" solid	SR 2" solid	A
Leg Grade	A572-50									
Diagonals	L 3 x 3 x 5/16		L 3 x 3 x 3/16		L 2.5 x 2.5 x 3/16			SR 1" solid	SR 7/8" solid	SR 3/4" solid
Diagonal Grade	A572-50									
Top Girts			A36					SR 1" solid	SR 7/8" solid	
Bottom Girts			N.A.					SR 1" solid	SR 7/8" solid	
Horizontals			N.A.					SR 7/8" solid	SR 3/4" solid	
Face Width (ft)	18	16	14	12	10	8	6	4.5	4 @ 2.25	
# Panels @ (ft)				13 @ 10				16 @ 2.35833		
Weight (K)	26.4	5.2	5.0	3.3	3.2	2.8	2.7	1.7	1.3	0.4



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/2" solid	B	Pirod 105244 (12x1.25)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

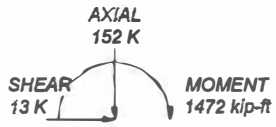
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.8%

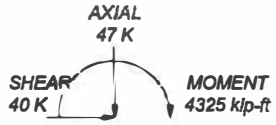
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 293 K
SHEAR: 27 K

UPLIFT: -260 K
SHEAR: 24 K



TORQUE 9 kip-ft
50.0 mph WIND - 1.00 in ICE



TORQUE 34 kip-ft
REACTIONS - 97.0 mph WIND

Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: 180-ft Self-Support Tower / WESTHARTFORD_DEXTERS			
Project: PJF# 64120-0001 / CT0001			
Client: Hirschfeld Communications, LLC	Drawn by: Michael Bange	App'd:	
Code: TIA-222-G	Date: 04/28/20	Scale: NTS	
Path:		Dwg No. E-1	

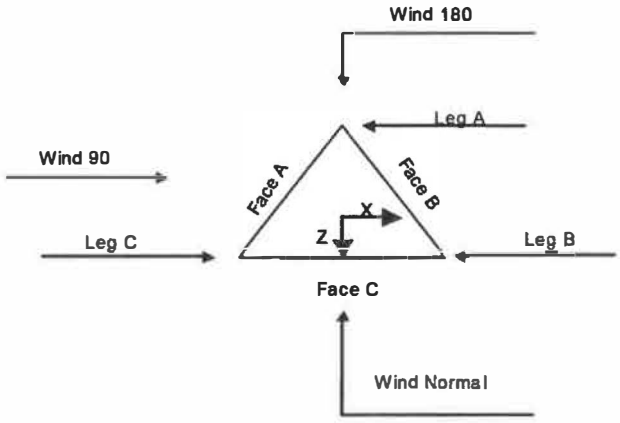
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.00 ft at the top and 18.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97.0 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.00 ft.
8) Nominal ice thickness of 1.00 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56 pcf.
11) A wind speed of 50.0 mph is used in combination with ice.
12) Deflections calculated using a wind speed of 60.0 mph.
13) Pressures are calculated at each section.
14) Stress ratio used in tower member design is 1.
15) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	180.00-170.00		106778 (48)	4.00	1	10.00
T2	170.00-150.00		100246 (48/54)	4.00	1	20.00
T3	150.00-130.00		119703 (54/60)	4.50	1	20.00
T4	130.00-120.00		U06 105218 [L2.5 x 3/16]	5.00	1	10.00
T5	120.00-100.00		U08 105217 [L2.5 x 3/16]	6.00	1	20.00
T6	100.00-80.00		U10 105217 [L2.5 x 3/16]	8.00	1	20.00
T7	80.00-60.00		U12 105218 [L3 x 3/16]	10.00	1	20.00
T8	60.00-40.00		U14 105218 [L3 x 3/16]	12.00	1	20.00
T9	40.00-20.00		U16 105219 [L3 x 5/16]	14.00	1	20.00
T10	20.00-0.00		U18 105219 [L3 x 5/16]	16.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-170.00	2.25	X Brace	No	Steps	6.00	6.00
T2	170.00-150.00	2.36	X Brace	No	Steps	6.80	6.80
T3	150.00-130.00	2.36	X Brace	No	Steps	6.80	6.80
T4	130.00-120.00	10.00	X Brace	No	No	0.00	0.00
T5	120.00-100.00	10.00	X Brace	No	No	0.00	0.00
T6	100.00-80.00	10.00	X Brace	No	No	0.00	0.00
T7	80.00-60.00	10.00	X Brace	No	No	0.00	0.00
T8	60.00-40.00	10.00	X Brace	No	No	0.00	0.00
T9	40.00-20.00	10.00	X Brace	No	No	0.00	0.00
T10	20.00-0.00	10.00	X Brace	No	No	0.00	0.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-170.00	Solid Round	1 1/2" solid	A572-50 (50 ksi)	Solid Round	3/4" solid	A572-50 (50 ksi)
T2 170.00-150.00	Solid Round	2" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T3 150.00-130.00	Solid Round	2 1/4" solid	A572-50 (50 ksi)	Solid Round	1" solid	A572-50 (50 ksi)
T4 130.00-120.00	Truss Leg	Pirod 105244 (12x1.25)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T5 120.00-100.00	Truss Leg	Pirod 105217 (12x1.5)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T6 100.00-80.00	Truss Leg	Pirod 105217 (12x1.5)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T7 80.00-60.00	Truss Leg	Pirod 105218 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T8 60.00-40.00	Truss Leg	Pirod 105218 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T9 40.00-20.00	Truss Leg	Pirod 105219 (12x2)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)
T10 20.00-0.00	Truss Leg	Pirod 105219 (12x2)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-170.00	Solid Round	7/8" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T2 170.00-150.00	Solid Round	7/8" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T3 150.00-130.00	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	1" solid	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	3/4" solid	A572-50 (50 ksi)
T2 170.00-150.00	None	Solid Round		A36 (36 ksi)	Solid Round	3/4" solid	A572-50 (50 ksi)
T3 150.00-130.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-170.00	0.00	0.00	A36 (36 ksi)	1	1	1.02	Mid-Pt	Mid-Pt	Mid-Pt
T2 170.00-150.00	0.00	0.00	A36 (36 ksi)	1	1	1.03	Mid-Pt	Mid-Pt	Mid-Pt
T3 150.00-130.00	0.00	0.00	A36 (36 ksi)	1	1	1.03	Mid-Pt	Mid-Pt	Mid-Pt
T4 130.00-120.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 120.00-100.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 100.00-80.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 80.00-60.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 60.00-40.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 40.00-20.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 20.00-0.00	0.00	0.75	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-170.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 170.00-150.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 150.00-130.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 130.00-120.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 120.00-100.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 100.00-80.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 80.00-60.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 60.00-40.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 40.00-20.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 20.00-0.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
Tower Elevation ft	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T4 130.00-120.00	1	0.5	0.85	1	0.5	0.85
T5 120.00-100.00	1	0.5	0.85	1	0.5	0.85
T6 100.00-80.00	1	0.5	0.85	1	0.5	0.85
T7 80.00-60.00	1	0.5	0.85	1	0.5	0.85
T8 60.00-40.00	1	0.5	0.85	1	0.5	0.85
T9 40.00-20.00	1	0.5	0.85	1	0.5	0.85
T10 20.00-0.00	1	0.5	0.85	1	0.5	0.85

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.00-170.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T2 170.00-150.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T3 150.00-130.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T4 130.00-120.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 120.00-100.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 100.00-80.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 80.00-60.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 60.00-40.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 40.00-20.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T10 20.00-0.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-170.00	Sleeve DS	0.63 A325N	5	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.00 A325N	0	0.63 A325N	0
T2 170.00-150.00	Sleeve DS	0.75 A325N	5	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0
T3 150.00-130.00	Flange	1.00 A325N	6	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.50 A325N	0	0.00 A325N	0	0.50 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T4 130.00-120.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0
T5 120.00-100.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0
T6 100.00-80.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0
T7 80.00-60.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0
T8 60.00-40.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0
T9 40.00-20.00	Flange	1.25 A325N	6	1.25 A325N	1	0.00 A325N	0	0.00 A325N	0	1.25 A325N	0	1.25 A325N	0	1.25 A325N	0
T10 20.00-0.00	Flange	1.25 F1554-105	0	1.25 A325N	1	0.00 A325N	0	0.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1 5/8" foam)	A	No	No	Ar (CaAa)	180.00 - 8.00	-6.00	0.45	12	6	1.00 0.50	1.98		0.92
FSJ4-50B(1/2")	A	No	No	Ar (CaAa)	180.00 - 8.00	-6.00	0.45	2	2	1.00 0.50	0.52		0.14
9776(3/4")	A	No	No	Ar (CaAa)	180.00 - 8.00	-6.00	0.45	4	4	1.00 0.50	0.73		0.31
T-Brackets (Af) ***	A	No	No	Af (CaAa)	180.00 - 8.00	-6.00	0.45	1	1	1.00	1.00		8.40
T-Brackets (Af)	C	No	No	Af (CaAa)	165.00 - 8.00	-6.00	-0.45	1	1	1.00	1.00		8.40
LDF6-50 (1 1/4" foam)	C	No	No	Ar (CaAa)	165.00 - 8.00	-6.00	-0.45	6	6	1.00	1.55		0.66

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 405-1]	C	None		0.000	180.00	No Ice 1/2" Ice 1" Ice	20.88 28.89 37.04	20.88 28.89 37.04	1.80 2.28 2.87
7770_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) OPA-65R-LCUU-H6_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	9.68 10.25 10.79	7.12 8.30 9.20	0.11 0.18 0.26
(2) OPA-65R-LCUU-H6_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	9.68 10.25 10.79	7.12 8.30 9.20	0.11 0.18 0.26
(2) OPA-65R-LCUU-H6_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	9.68 10.25 10.79	7.12 8.30 9.20	0.11 0.18 0.26
80010965_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	14.05 14.69 15.30	7.63 8.90 9.96	0.14 0.23 0.34
80010965_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	14.05 14.69 15.30	7.63 8.90 9.96	0.14 0.23 0.34
80010965_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	14.05 14.69 15.30	7.63 8.90 9.96	0.14 0.23 0.34
ION-M23 SDARS	A	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	1.84 2.05 2.27	1.76 1.98 2.19	0.05 0.06 0.08
ION-M23 SDARS	B	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	1.84 2.05 2.27	1.76 1.98 2.19	0.05 0.06 0.08
ION-M23 SDARS	C	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	1.84 2.05 2.27	1.76 1.98 2.19	0.05 0.06 0.08
CBC23SR-43	A	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	0.42 0.50 0.59	0.14 0.20 0.27	0.01 0.01 0.01
CBC23SR-43	B	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	0.42 0.50 0.59	0.14 0.20 0.27	0.01 0.01 0.01
CBC23SR-43	C	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	0.42 0.50 0.59	0.14 0.20 0.27	0.01 0.01 0.01
DC6-48-60-18-8F	A	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
DC6-48-60-18-8F	C	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.000	180.00	1" Ice No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
RRUS 11	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
RRUS 11	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
RRUS 11	C	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
RRUS 12	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS 12	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS 12	C	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS A2 MODULE	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	1.60 1.76 1.92	0.38 0.47 0.57	0.02 0.03 0.04
RRUS A2 MODULE	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	1.60 1.76 1.92	0.38 0.47 0.57	0.02 0.03 0.04
RRUS A2 MODULE	C	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	1.60 1.76 1.92	0.38 0.47 0.57	0.02 0.03 0.04
RRUS 32	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
RRUS 32	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
RRUS 32	C	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.32	1.78 1.97 2.17	0.06 0.08 0.10
RRUS 32 B66	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B66	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B66	C	From Leg	4.00	0.000	180.00	No Ice	2.74	1.67	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	2.96	1.86	0.07
			0.00			Ice	3.19	2.05	0.10
						1" Ice			
RRUS 4478 B14	A	From Leg	4.00	0.000	180.00	No Ice	0.00	1.25	0.06
			0.00			1/2"	0.00	1.40	0.08
			0.00			Ice	0.00	1.55	0.10
						1" Ice			
RRUS 4478 B14	B	From Leg	4.00	0.000	180.00	No Ice	0.00	1.25	0.06
			0.00			1/2"	0.00	1.40	0.08
			0.00			Ice	0.00	1.55	0.10
						1" Ice			
RRUS 4478 B14	C	From Leg	4.00	0.000	180.00	No Ice	0.00	1.25	0.06
			0.00			1/2"	0.00	1.40	0.08
			0.00			Ice	0.00	1.55	0.10
						1" Ice			
GPS	C	From Leg	4.00	0.000	180.00	No Ice	0.13	0.13	0.02
			0.00			1/2"	0.24	0.24	0.02
			0.00			Ice	0.31	0.31	0.02
						1" Ice			
***									
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	A	From Leg	4.00	0.000	165.00	No Ice	20.48	11.02	0.19
			0.00			1/2"	21.23	12.55	0.32
			0.00			Ice	21.99	14.10	0.47
						1" Ice			
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	B	From Leg	4.00	0.000	165.00	No Ice	20.48	11.02	0.19
			0.00			1/2"	21.23	12.55	0.32
			0.00			Ice	21.99	14.10	0.47
						1" Ice			
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	C	From Leg	4.00	0.000	165.00	No Ice	20.48	11.02	0.19
			0.00			1/2"	21.23	12.55	0.32
			0.00			Ice	21.99	14.10	0.47
						1" Ice			
AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	A	From Leg	4.00	0.000	165.00	No Ice	11.39	5.90	0.11
			0.00			1/2"	11.86	6.56	0.19
			0.00			Ice	12.33	7.24	0.28
						1" Ice			
AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	B	From Leg	4.00	0.000	165.00	No Ice	11.39	5.90	0.11
			0.00			1/2"	11.86	6.56	0.19
			0.00			Ice	12.33	7.24	0.28
						1" Ice			
AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	C	From Leg	4.00	0.000	165.00	No Ice	11.39	5.90	0.11
			0.00			1/2"	11.86	6.56	0.19
			0.00			Ice	12.33	7.24	0.28
						1" Ice			
RADIO 4449 B12/B71	A	From Leg	4.00	0.000	165.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			0.00			Ice	1.98	1.45	0.11
						1" Ice			
RADIO 4449 B12/B71	B	From Leg	4.00	0.000	165.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			0.00			Ice	1.98	1.45	0.11
						1" Ice			
RADIO 4449 B12/B71	C	From Leg	4.00	0.000	165.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			0.00			Ice	1.98	1.45	0.11
						1" Ice			
AIR 6488 B41	A	From Leg	4.00	0.000	165.00	No Ice	5.99	2.69	0.11
			0.00			1/2"	6.30	2.93	0.15
			0.00			Ice	6.62	3.18	0.20
						1" Ice			
AIR 6488 B41	B	From Leg	4.00	0.000	165.00	No Ice	5.99	2.69	0.11
			0.00			1/2"	6.30	2.93	0.15
			0.00			Ice	6.62	3.18	0.20
						1" Ice			
AIR 6488 B41	C	From Leg	4.00	0.000	165.00	No Ice	5.99	2.69	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	6.30	2.93	0.15
			0.00			1" Ice	6.62	3.18	0.20
AIR 3246 B66	A	From Leg	4.00	0.000	165.00	No Ice	7.94	5.17	0.18
			0.00			1/2" Ice	8.34	5.54	0.23
			0.00			1" Ice	8.75	5.91	0.30
AIR 3246 B66	B	From Leg	4.00	0.000	165.00	No Ice	7.94	5.17	0.18
			0.00			1/2" Ice	8.34	5.54	0.23
			0.00			1" Ice	8.75	5.91	0.30
AIR 3246 B66	C	From Leg	4.00	0.000	165.00	No Ice	7.94	5.17	0.18
			0.00			1/2" Ice	8.34	5.54	0.23
			0.00			1" Ice	8.75	5.91	0.30
RRUS 4415 B25	A	From Leg	4.00	0.000	165.00	No Ice	0.00	0.68	0.04
			0.00			1/2" Ice	0.00	0.79	0.06
			0.00			1" Ice	0.00	0.91	0.07
RRUS 4415 B25	B	From Leg	4.00	0.000	165.00	No Ice	0.00	0.68	0.04
			0.00			1/2" Ice	0.00	0.79	0.06
			0.00			1" Ice	0.00	0.91	0.07
RRUS 4415 B25	C	From Leg	4.00	0.000	165.00	No Ice	0.00	0.68	0.04
			0.00			1/2" Ice	0.00	0.79	0.06
			0.00			1" Ice	0.00	0.91	0.07
Sector Mount [SM 402-3]	C	From Leg	0.00	0.000	165.00	No Ice	18.87	18.87	0.85
			0.00			1/2" Ice	26.47	26.47	1.21
			0.00			1" Ice	33.99	33.99	1.70
(2) L 2 x 2 x 3/16 x 6.5' Mount Angle	A	From Leg	2.00	0.000	165.00	No Ice	1.30	0.03	0.02
			0.00			1/2" Ice	1.75	0.06	0.03
			0.00			1" Ice	2.20	0.09	0.05
(2) L 2 x 2 x 3/16 x 6.5' Mount Angle	B	From Leg	2.00	0.000	165.00	No Ice	1.30	0.03	0.02
			0.00			1/2" Ice	1.75	0.06	0.03
			0.00			1" Ice	2.20	0.09	0.05
(2) L 2 x 2 x 3/16 x 6.5' Mount Angle	C	From Leg	2.00	0.000	165.00	No Ice	1.30	0.03	0.02
			0.00			1/2" Ice	1.75	0.06	0.03
			0.00			1" Ice	2.20	0.09	0.05
****									

Truss-Leg Properties

Section Designation	Area in^2	Area Ice in^2	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in^2
Pirod 105244 (12x1.25)	1026.86	3397.26	0.56	0.95	7.13	23.59	3.68
Pirod 105217 (12x1.5)	2303.92	6585.93	0.71	1.94	8.00	22.87	5.30
Pirod 105217 (12x1.5)	2303.92	6554.05	0.71	1.88	8.00	22.76	5.30

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in^2	in^2	K	K	in	in	in^2
Pirod 105218 (12x1.75)	2432.86	6587.02	0.85	1.83	8.45	22.87	7.22
Pirod 105218 (12x1.75)	2432.86	6536.27	0.85	1.74	8.45	22.70	7.22
Pirod 105219 (12x2)	2608.79	6534.42	1.22	1.70	9.06	22.69	9.42
Pirod 105219 (12x2)	2608.79	6387.80	1.22	1.38	9.06	22.18	9.42

Load Combinations

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	7.96	43	0.483	0.077
T2	170 - 150	6.91	43	0.471	0.073
T3	150 - 130	4.97	43	0.415	0.063
T4	130 - 120	3.36	43	0.320	0.051
T5	120 - 100	2.74	43	0.264	0.041
T6	100 - 80	1.77	43	0.195	0.029
T7	80 - 60	1.07	43	0.134	0.019
T8	60 - 40	0.58	43	0.093	0.013
T9	40 - 20	0.25	43	0.055	0.007
T10	20 - 0	0.07	43	0.027	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Platform Mount [LP 405-1]	43	7.96	0.483	0.077	38323
165.00	APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	43	6.40	0.462	0.071	18034

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	33.36	11	2.012	0.323
T2	170 - 150	28.93	11	1.965	0.307
T3	150 - 130	20.79	11	1.734	0.264
T4	130 - 120	14.07	11	1.341	0.212
T5	120 - 100	11.47	10	1.103	0.173
T6	100 - 80	7.41	10	0.816	0.119
T7	80 - 60	4.47	10	0.561	0.080
T8	60 - 40	2.42	10	0.390	0.053
T9	40 - 20	1.05	10	0.229	0.028
T10	20 - 0	0.29	10	0.112	0.013

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Platform Mount [LP 405-1]	11	33.36	2.012	0.323	9263
165.00	APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	11	26.79	1.925	0.297	4370

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.63	5	4.36	24.85	0.175	1	Bolt DS
T2	170	Leg	A325N	0.75	5	16.48	35.78	0.461	1	Bolt DS
T3	150	Leg	A325N	1.00	6	22.83	53.01	0.431	1	Bolt Tension
T4	130	Leg	A325N	1.00	6	22.42	53.01	0.423	1	Bolt Tension
		Diagonal	A325N	1.00	1	7.64	10.66	0.716	1	Member Block Shear
T5	120	Leg	A325N	1.00	6	26.49	53.01	0.500	1	Bolt Tension
		Diagonal	A325N	1.00	1	5.90	10.66	0.553	1	Member Block Shear
T6	100	Leg	A325N	1.00	6	29.75	53.01	0.561	1	Bolt Tension
		Diagonal	A325N	1.00	1	4.95	10.66	0.464	1	Member Block Shear
T7	80	Leg	A325N	1.00	6	33.03	53.01	0.623	1	Bolt Tension
		Diagonal	A325N	1.00	1	5.41	11.68	0.463	1	Member Block Shear
T8	60	Leg	A325N	1.00	6	36.27	53.01	0.684	1	Bolt Tension
		Diagonal	A325N	1.00	1	5.85	11.68	0.501	1	Member Block Shear
T9	40	Leg	A325N	1.25	6	39.49	82.83	0.477	1	Bolt Tension
		Diagonal	A325N	1.25	1	6.51	20.30	0.321	1	Member Block Shear
T10	20	Diagonal	A325N	1.25	1	7.83	20.30	0.386	1	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	1 1/2" solid	10.00	2.25	72.0 K=1.00	1.77	-18.88	54.43	0.347 [1]
T2	170 - 150	2" solid	20.00	2.36	56.6 K=1.00	3.14	-77.35	111.84	0.692 [1]
T3	150 - 130	2 1/4" solid	20.00	2.36	50.3 K=1.00	3.98	-140.88	148.69	0.947 [1]
T4	130 - 120	Pirod 105244 (12x1.25)	10.02	10.02	45.4 K=1.00	3.68	-142.27	142.49	0.998 [1]
T5	120 - 100	Pirod 105217 (12x1.5)	20.03	10.02	37.8 K=1.00	5.30	-170.22	214.86	0.792 [1]
T6	100 - 80	Pirod 105217 (12x1.5)	20.03	10.02	37.8 K=1.00	5.30	-192.89	214.86	0.898 [1]
T7	80 - 60	Pirod 105218 (12x1.75)	20.03	10.02	32.4 K=1.00	7.22	-216.09	300.68	0.719 [1]
T8	60 - 40	Pirod 105218 (12x1.75)	20.03	10.02	32.4 K=1.00	7.22	-239.34	300.68	0.796 [1]
T9	40 - 20	Pirod 105219 (12x2)	20.03	10.02	28.4 K=1.00	9.42	-263.48	399.87	0.659 [1]
T10	20 - 0	Pirod 105219 (12x2)	20.03	10.02	28.4 K=1.00	9.42	-286.35	399.87	0.716 [1]

[1] $P_u / \phi P_n$ controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T4	130 - 120	0.5	1.48	121.0	165.67	0.20	1.18	3.39	0.351
T5	120 - 100	0.5	1.47	120.0	238.57	0.20	0.98	3.34	0.295
T6	100 - 80	0.5	1.47	120.0	238.57	0.20	0.30	3.34	0.093
T7	80 - 60	0.5	1.46	119.0	324.71	0.20	0.28	3.38	0.084
T8	60 - 40	0.5	1.46	119.0	324.71	0.20	0.27	3.38	0.080
T9	40 - 20	0.625	1.45	94.4	424.12	0.31	0.31	6.96	0.046
T10	20 - 0	0.625	1.45	94.4	424.12	0.31	0.94	6.96	0.136

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.59	2.22	128.0 K=0.90	0.44	-3.41	6.09	0.560 [1]
T2	170 - 150	7/8" solid	5.04	2.44	120.6 K=0.90	0.60	-5.89	9.34	0.631 [1]
T3	150 - 130	1" solid	5.12	2.47	107.6 K=0.91	0.79	-6.48	15.16	0.428 [1]
T4	130 - 120	L 2.5 x 2.5 x 3/16	11.42	4.98	120.8 K=1.00	0.90	-8.24	13.56	0.608 [1]
T5	120 - 100	L 2.5 x 2.5 x 3/16	11.93	5.38	130.5 K=1.00	0.90	-5.63	11.92	0.472 [1]
T6	100 - 80	L 2.5 x 2.5 x 3/16	13.80	6.33	153.4 K=1.00	0.90	-5.19	8.66	0.600 [1]
T7	80 - 60	L 3 x 3 x 3/16	15.24	7.08	142.5 K=1.00	1.09	-5.61	12.12	0.463 [1]
T8	60 - 40	L 3 x 3 x 3/16	16.80	7.88	158.6 K=1.00	1.09	-6.05	9.79	0.618 [1]
T9	40 - 20	L 3 x 3 x 5/16	18.45	8.68	176.8 K=1.00	1.78	-6.76	12.87	0.525 [1]
T10	20 - 0	L 3 x 3 x 5/16	20.16	9.54	194.4 K=1.00	1.78	-8.56	10.64	0.805 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.00	3.88	173.6 K=0.70	0.44	-0.49	3.31	0.149 [1]
T2	170 - 150	3/4" solid	4.37	4.20	188.2 K=0.70	0.44	-0.92	2.82	0.327 [1]
T3	150 - 130	7/8" solid	4.57	4.39	168.4 K=0.70	0.60	-1.92	4.79	0.400 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	148.8 K=0.70	0.60	-1.72	6.14	0.281 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 150	7/8" solid	4.01	3.85	147.7 K=0.70	0.60	-1.97	6.22	0.317 [1]
T3	150 - 130	1" solid	4.51	4.33	145.4 K=0.70	0.79	-2.35	8.40	0.280 [1]

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	148.8 K=0.70	0.60	-1.40	6.14	0.229 [1]
T2	170 - 150	7/8" solid	4.49	4.32	165.9 K=0.70	0.60	-2.65	4.94	0.536 [1]
T3	150 - 130	1" solid	4.99	4.80	161.2 K=0.70	0.79	-2.83	6.83	0.415 [1]

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	1 1/2" solid	10.00	0.50	16.0	1.77	18.46	79.52	0.232 [1]
T2	170 - 150	2" solid	20.00	0.57	13.6	2.19	76.12	106.69	0.713 [1] #
T3	150 - 130	2 1/4" solid	20.00	0.57	12.1	3.98	136.96	178.92	0.765 [1]
T4	130 - 120	Pirod 105244 (12x1.25)	10.02	10.02	45.4	3.68	134.50	165.67	0.812 [1]
T5	120 - 100	Pirod 105217 (12x1.5)	20.03	10.02	37.8	5.30	158.93	238.57	0.666 [1]
T6	100 - 80	Pirod 105217 (12x1.5)	20.03	10.02	37.8	5.30	178.48	238.57	0.748 [1]
T7	80 - 60	Pirod 105218 (12x1.75)	20.03	10.02	32.4	7.22	198.15	324.71	0.610 [1]
T8	60 - 40	Pirod 105218 (12x1.75)	20.03	10.02	32.4	7.22	217.62	324.71	0.670 [1]
T9	40 - 20	Pirod 105219 (12x2)	20.03	10.02	28.4	9.42	236.93	424.12	0.559 [1]
T10	20 - 0	Pirod 105219 (12x2)	20.03	10.02	28.4	9.42	254.85	424.12	0.601 [1]

[1] $P_u / \phi P_n$ controls
Based on net area of leg in section below

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T4	130 - 120	0.5	1.48	121.0	165.67	0.20	1.18	3.39	0.351
T5	120 - 100	0.5	1.47	120.0	238.57	0.20	0.98	3.34	0.295
T6	100 - 80	0.5	1.47	120.0	238.57	0.20	0.30	3.34	0.093
T7	80 - 60	0.5	1.46	119.0	324.71	0.20	0.28	3.38	0.084
T8	60 - 40	0.5	1.46	119.0	324.71	0.20	0.27	3.38	0.080
T9	40 - 20	0.625	1.45	94.4	424.12	0.31	0.31	6.96	0.046

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T10	20 - 0	0.625	1.45	94.4	424.12	0.31	0.94	6.96	0.136

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.59	2.22	142.3	0.44	3.40	19.88	0.171 [1]
T2	170 - 150	7/8" solid	5.04	2.44	134.0	0.60	5.85	27.06	0.216 [1]
T3	150 - 130	1" solid	5.12	2.47	118.7	0.79	6.43	35.34	0.182 [1]
T4	130 - 120	L 2.5 x 2.5 x 3/16	11.42	4.98	80.0	0.52	7.64	22.55	0.339 [1]
T5	120 - 100	L 2.5 x 2.5 x 3/16	11.93	5.38	86.2	0.52	5.90	22.55	0.262 [1]
T6	100 - 80	L 2.5 x 2.5 x 3/16	13.80	6.33	100.7	0.52	4.95	22.55	0.219 [1]
T7	80 - 60	L 3 x 3 x 3/16	15.24	7.08	93.1	0.66	5.41	28.67	0.189 [1]
T8	60 - 40	L 3 x 3 x 3/16	16.80	7.88	103.4	0.66	5.85	28.67	0.204 [1]
T9	40 - 20	L 3 x 3 x 5/16	18.45	8.68	116.3	1.01	6.51	44.05	0.148 [1]
T10	20 - 0	L 3 x 3 x 5/16	20.16	9.54	127.6	1.01	7.83	44.05	0.178 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.00	3.88	248.0	0.44	0.65	19.88	0.033 [1]
T2	170 - 150	3/4" solid	4.37	4.20	268.9	0.44	1.08	19.88	0.054 [1]
T3	150 - 130	7/8" solid	4.57	4.39	240.6	0.60	2.11	27.06	0.078 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	212.6	0.60	1.72	27.06	0.064 [1]
T2	170 - 150	7/8" solid	4.01	3.85	211.1	0.60	1.97	27.06	0.073 [1]
T3	150 - 130	1" solid	4.51	4.33	207.7	0.79	2.39	35.34	0.068 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	212.6	0.60	1.48	27.06	0.055 [1]
T2	170 - 150	7/8" solid	4.49	4.32	236.9	0.60	2.70	27.06	0.100 [1]
T3	150 - 130	1" solid	4.99	4.80	230.3	0.79	3.02	35.34	0.085 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

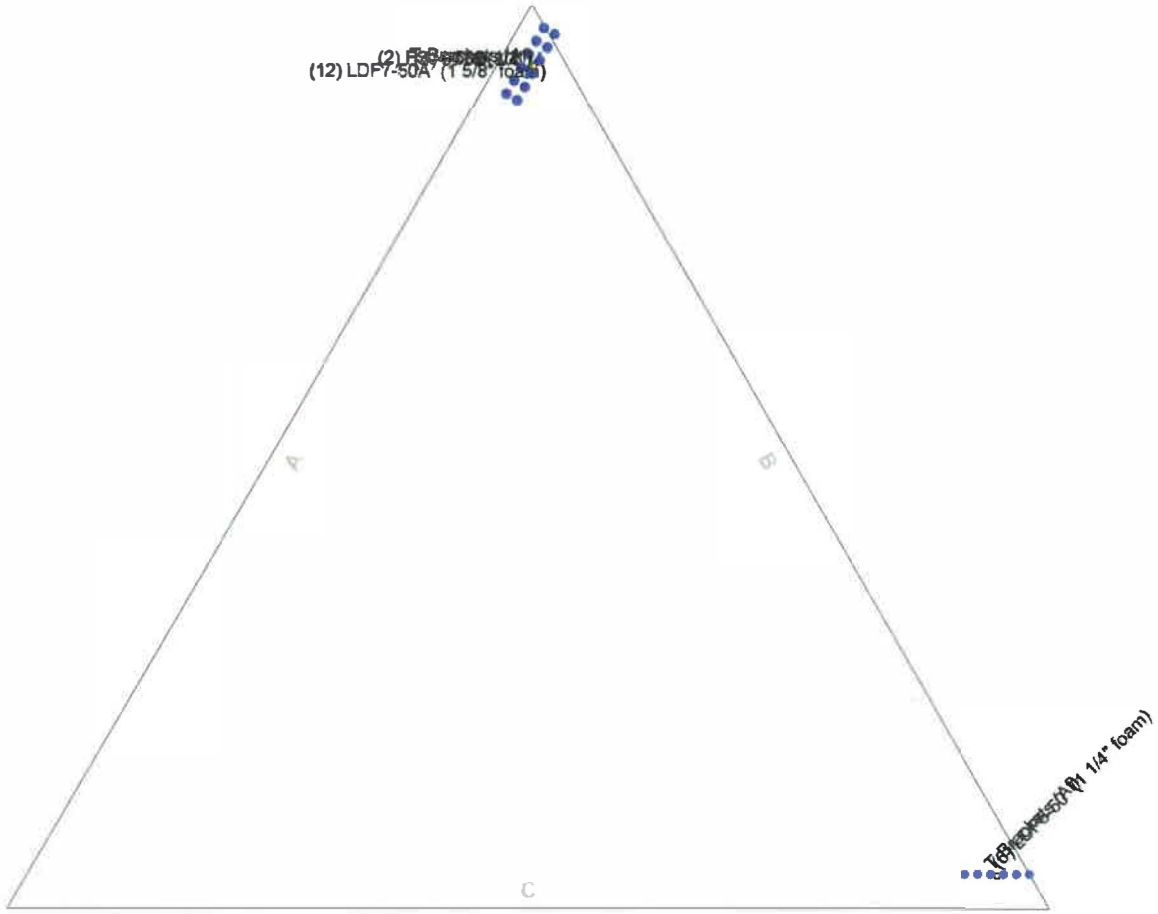
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 170	Leg	1 1/2" solid	2	-18.88	54.43	34.7	Pass
T2	170 - 150	Leg	2" solid	38	76.12	106.69	71.3	Pass
T3	150 - 130	Leg	2 1/4" solid	102	-140.88	148.69	94.7	Pass
T4	130 - 120	Leg	Pirod 105244 (12x1.25)	166	-142.27	142.49	99.8	Pass
T5	120 - 100	Leg	Pirod 105217 (12x1.5)	175	-170.22	214.86	79.2	Pass
T6	100 - 80	Leg	Pirod 105217 (12x1.5)	190	-192.89	214.86	89.8	Pass
T7	80 - 60	Leg	Pirod 105218 (12x1.75)	205	-216.09	300.68	71.9	Pass
T8	60 - 40	Leg	Pirod 105218 (12x1.75)	220	-239.34	300.68	79.6	Pass
T9	40 - 20	Leg	Pirod 105219 (12x2)	235	-263.48	399.87	65.9	Pass
T10	20 - 0	Leg	Pirod 105219 (12x2)	250	-286.35	399.87	71.6	Pass
T1	180 - 170	Diagonal	3/4" solid	12	-3.41	6.09	56.0	Pass
T2	170 - 150	Diagonal	7/8" solid	48	-5.89	9.34	63.1	Pass
T3	150 - 130	Diagonal	1" solid	161	-6.48	15.16	42.8	Pass
T4	130 - 120	Diagonal	L 2.5 x 2.5 x 3/16	173	-8.24	13.56	60.8 71.6 (b)	Pass
T5	120 - 100	Diagonal	L 2.5 x 2.5 x 3/16	186	-5.63	11.92	47.2 55.3 (b)	Pass
T6	100 - 80	Diagonal	L 2.5 x 2.5 x 3/16	194	-5.19	8.66	60.0	Pass
T7	80 - 60	Diagonal	L 3 x 3 x 3/16	209	-5.61	12.12	46.3	Pass
T8	60 - 40	Diagonal	L 3 x 3 x 3/16	224	-6.05	9.79	61.8	Pass
T9	40 - 20	Diagonal	L 3 x 3 x 5/16	239	-6.76	12.87	52.5	Pass
T10	20 - 0	Diagonal	L 3 x 3 x 5/16	254	-8.56	10.64	80.5	Pass
T1	180 - 170	Horizontal	3/4" solid	30	-0.49	3.31	14.9	Pass
T2	170 - 150	Horizontal	3/4" solid	59	-0.92	2.82	32.7	Pass
T3	150 - 130	Horizontal	7/8" solid	158	-1.92	4.79	40.0	Pass
T1	180 - 170	Top Girt	7/8" solid	5	-1.72	6.14	28.1	Pass
T2	170 - 150	Top Girt	7/8" solid	42	-1.97	6.22	31.7	Pass
T3	150 - 130	Top Girt	1" solid	106	-2.35	8.40	28.0	Pass
T1	180 - 170	Bottom Girt	7/8" solid	7	-1.40	6.14	22.9	Pass
T2	170 - 150	Bottom Girt	7/8" solid	45	-2.65	4.94	53.6	Pass
T3	150 - 130	Bottom Girt	1" solid	107	-2.83	6.83	41.5	Pass
						Summary		
						Leg (T4)	99.8	Pass
						Diagonal (T10)	80.5	Pass
						Horizontal (T3)	40.0	Pass
						Top Girt (T2)	31.7	Pass
						Bottom Girt (T2)	53.6	Pass
						Bolt Checks	71.6	Pass
						RATING =	**99.8**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

Feed Line Plan

Round _____ Flat _____ App In Face _____ App Out Face _____ Truss-Leg



Paul J. Ford and Company 250 E. Broad St., Ste 600 Columbus, OH 43215 Phone: 614-221-6679 FAX:	Job: 180-ft Self-Support Tower / WESTHARTFORD_DEXTERS		
	Project: PJF# 64120-0001 / CT0001		
	Client: Hirschfeld Communications, LLC	Drawn by: Michael Bange	App'd:
	Code: TIA-222-G	Date: 04/28/20	Scale: NTS
	Path:		Dwg No. E-7

APPENDIX C

ADDITIONAL CALCULATIONS

PAUL J. FORD
& COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Page	1	of	1
By	MTB	Date	4/28/2020
Project #	64120-0001		

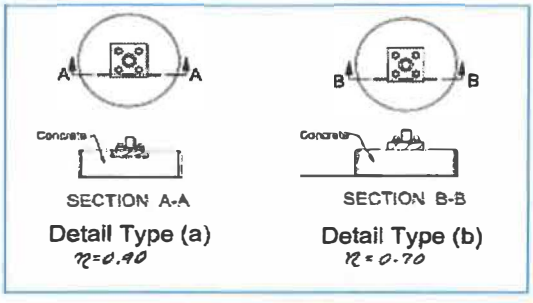
Self-Support Tower Anchor Rod Capacity - TIA-G

Loads

Uplift :	260	kips	1.00 Maximum Ratio
Shear :	24	kips	

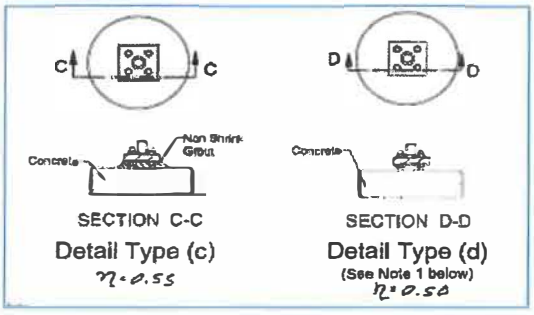
Existing Anchor Rods

Anchor Rod Condition (n) :	0.55	
Anchor Rod ø :	1 1/4	in
Anchor Rod Quantity :	6	
Anchor Rod Grade :	F1554 Gr. 105	
F_y :	105	ksi
F_u :	125	ksi
Threads per Inch	7	
Total Net Tensile Area	5.81	in^2
ϕ :	0.8	
Total Anchor Rod Capacity ϕR_{nt} :	581.47	kip
Anchor Rod Ratio :	0.522	



SECTION A-A
Detail Type (a)
η=0.90

SECTION B-B
Detail Type (b)
η = 0.70



SECTION C-C
Detail Type (c)
η = 0.55

SECTION D-D
Detail Type (d)
(See Note 1 below)
η = 0.50

PJF Job No. 64118-0001 Project Name: West Hartford Engineer: MTB

Factored Foundation Loads:

	Comp	Uplift	
Factored Axial Load (+Comp, -Ten) =	293	-260	kips
Factored Horiz. Load at Top of Pier =	27	24	kips
Factored OTM at Top of Pier =	0	0	k-ft

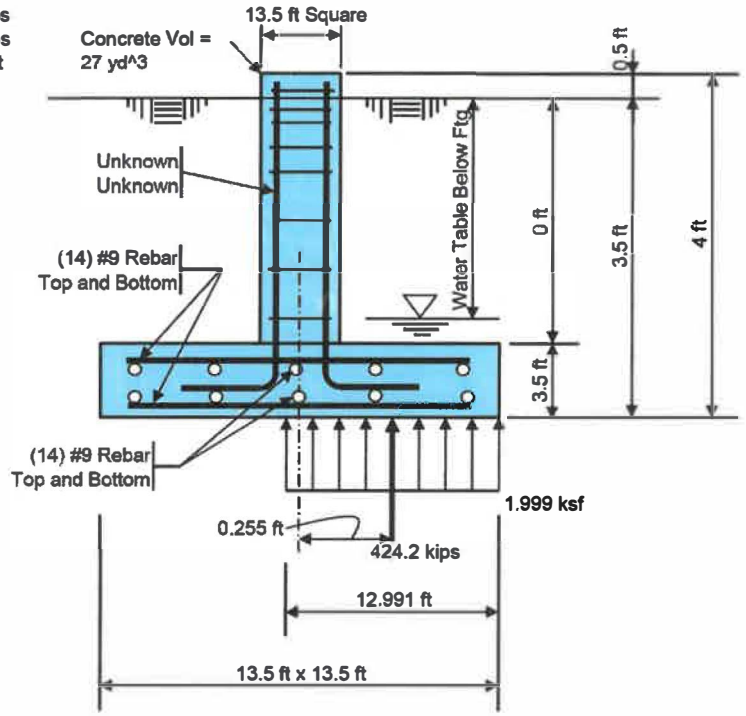
LRFD Resistance and Load Factors:

	Φ	Dead Load Factors	
Soil Bearing =	0.75		
Soil Weight =	0.75	1.2	0.9
Concrete Weight =	0.75	1.2	0.9

Soil Properties:

Depth to Water Table = 99 ft
Uplift Cone from Top of footing
Depth to Ignore for Uplift and PP = 3.33 ft

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
3.5	100	0	28	12	3.50



Dimensions:

Pier Shape = Square
Pier Width = 13.5 ft Square
Pier Height above Grade = 0.5 ft
Depth to Bottom of Footing = 3.5 ft
Footing Thickness = 3.5 ft
Footing Width, B = 13.5 ft
Footing Length, L = 13.5 ft

Concrete:

Concrete Strength = 3 ksi
Rebar Strength = 60 ksi

Total Pad Reinf Stl = 28.00 in^2 >= 12.25 in^2 = Min Stl, OK
Total Pier Reinf Stl =
Footing Thickness = 3.50 ft >= 0.75 ft = Min Ftg Thk, OK

Summary Results:

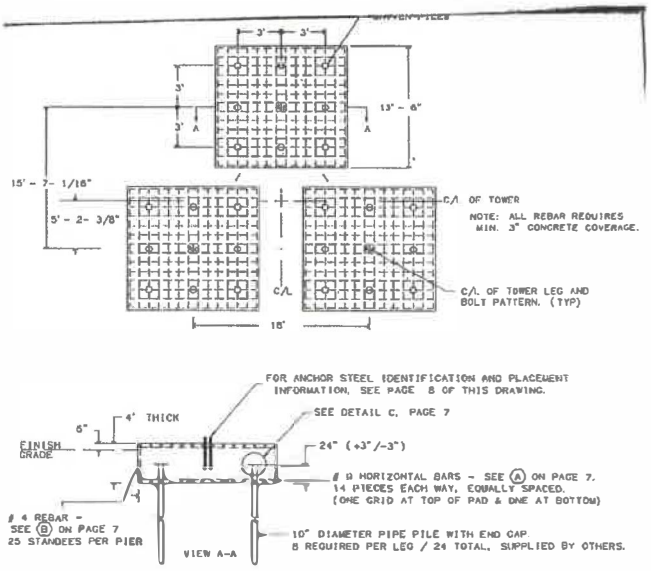
	Required	Available	
Maximum Net Soil Bearing =	1.999 ksf	9.000	ksf
Uplift =	260.0 kips	96.4	kips
Punching Shear Stress =	0.000 ksi	0.159	ksi
Bending Shear Stress =	-4.7 kips	496.6	kips
Bending Moment =	0.004 in / in	0.0	in / in
Conc Pier Reinforcing Steel =			Rebar Unknown

Stress Ratio = 0.0% in Punching Shear
Stress Ratio = 0.9% in Bending Shear
Stress Ratio = 9.1% in Bending Moment

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

West Hartford Foundation Analysis

Uplift (kips):	260
Compression (kips):	293
Concrete Weight (kcf):	0.15
Mat Length/Width (ft):	13.5
Mat Depth (ft):	4
Mat Weight (kips):	109.4
Mat Bearing Area (ft^2):	182.3
Pile Quantity	8
Pile Diameter (in):	10
Pile Length (ft):	50
Depth to Ignore (ft):	8
Total Pile Surface Area (ft^2):	879.6
Ultimate Bearing Pressure (ksf):	12
Ultimate Skin Friction (ksf):	1
$Ø_{soil}$:	0.75
Mat Bearing Capacity (kips):	1640.3
Skin Friction Capcity (kips):	659.7
Total Uplift Load (kips):	260.0
Total Compression Load (kips):	424.2



Uplift Capacity (kips):	758.1
Compression Capacity (kips):	2300.0
Uplift Usage Capacity:	34.3%
Compression Usage Capacity:	18.4%

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) Paul J. Ford and Company has not made a field inspection to verify the tower member sizes or the antenna/coax loading. If the existing conditions are not as represented on these drawings, we should be contacted immediately to evaluate the significance of the deviation.

2) No allowance was made for any damaged, missing, or rusted members. The analysis of this tower assumes that no physical deterioration has occurred in any of the structural components of the tower and that all the tower members have the same load carrying capacity as the day the tower was erected.

3) It is not possible to have all the detailed information to perform a thorough analysis of every structural sub-component of an existing tower. The structural analysis by Paul J. Ford and Company verifies the adequacy of the main structural members of the tower. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc.

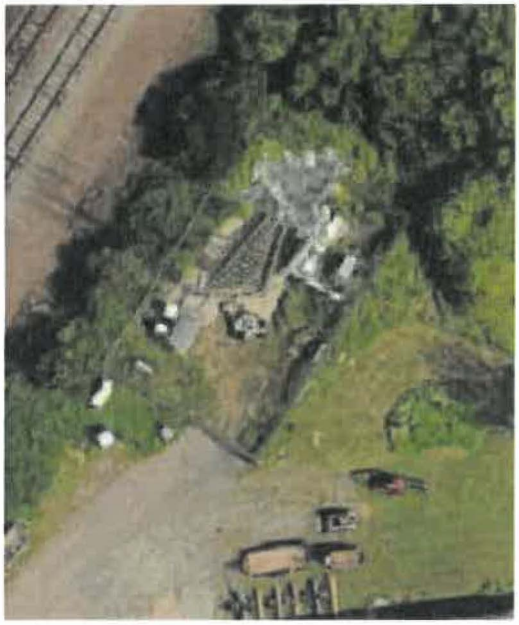
4) This tower has been analyzed according to the minimum design wind loads recommended by the Telecommunications Industry Association Standard ANSI/TIA-222-G. If the owner or local or state agencies require a higher design wind load, Paul J. Ford and Company should be made aware of this requirement.

5) The enclosed sketches are a schematic representation of the tower that we have analyzed. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions and for the proper fit and clearance in the field.

6) Miscellaneous items such as antenna mounts etc. have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

SITESAFE
RF COMPLIANCE EXPERTS

8618 Westwood Center Drive, Suite 315, Vienna, VA 22182
703.276.1100 • 703.276.1169 fax
info@sitesafe.com • www.sitesafe.com



Empire Telecom on behalf of AT&T Mobility, LLC
Site FA – 10071358
Site ID – CTL05259
USID – 25914
Site Name – WEST HARTFORD-ELMWOOD (MRCTB037960)

1030 New Britain Avenue
West Hartford, CT 06110

Latitude: N41-43-52.70
Longitude: W72-43-25.70
Structure Type: Self-Support

Report generated date: January 30, 2020
Report by: Zyotty Thamsil
Customer Contact: Nora Oliver

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

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1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Max Cumulative Simulated RFE Level on the Ground	<1% General Public Limit
Compliant per FCC Rules and Regulations?	Will Be Compliant
Compliant per AT&T Mobility, LLC's Policy?	No

The following documents were provided by the client and were utilized to create this report:

RFDS: 10071358. AS BUILT RFDS. CTL05259.

CD's: 10071358.AE201.FINALCDCD.LTE.RFMod.Rev1.09.24.2019

RF Powers Used: Max RRH Power

1.2 Fall Arrest Anchor Point Summary

Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	N	N/A	N

1.3 Signage Summary

a. Pre-Site Visit AT&T Signage (Existing Signage)

AT&T Signage Locations	 Information 1	 Information 2	 Notice	 Notice 2	 Caution	 Caution 2	 Warning	 Warning 2	 Barriers
Access Point(s)									
Alpha									
Beta									
Gamma									

b. Proposed AT&T Signage

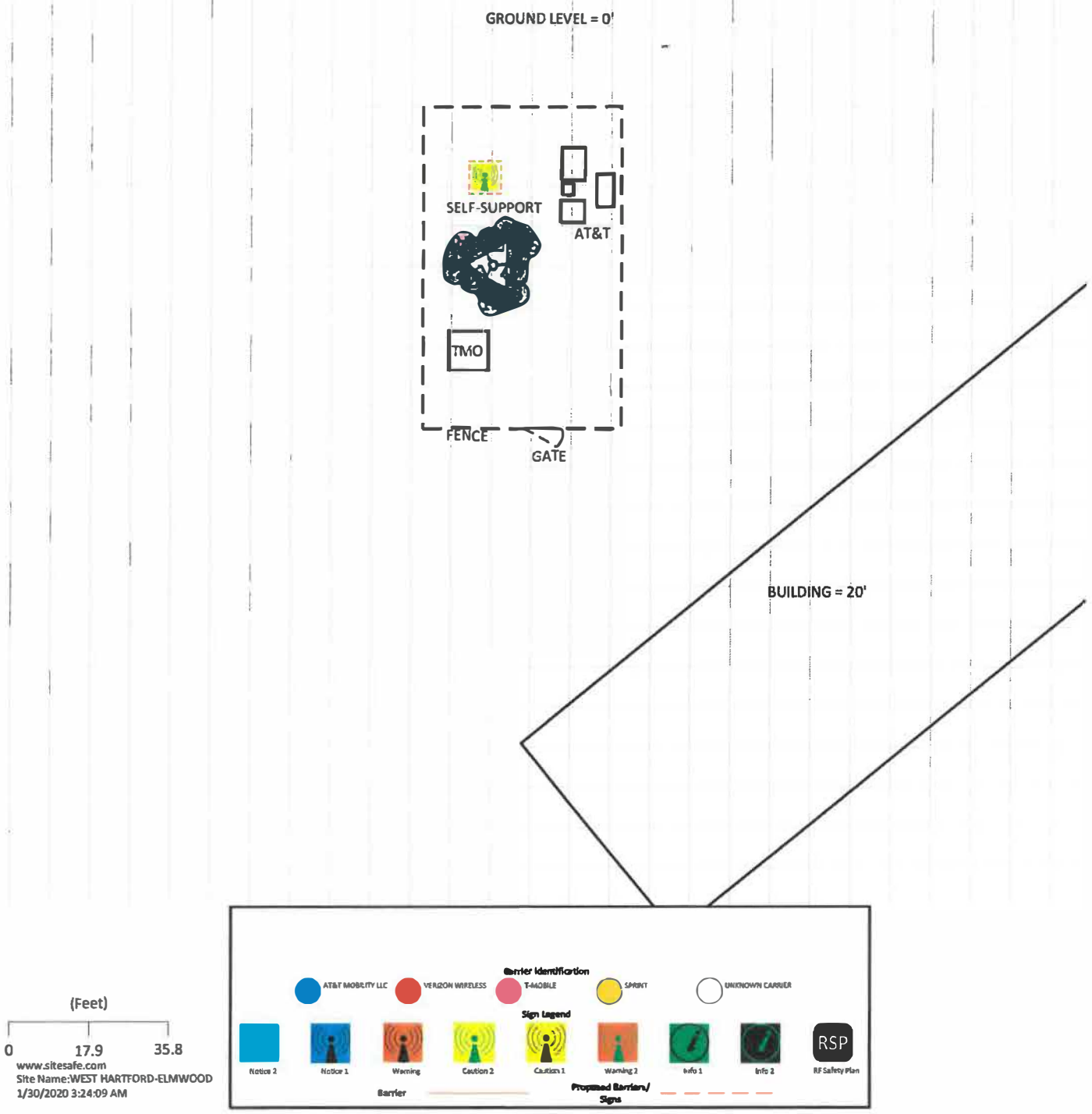
AT&T Signage Locations	 Information 1	 Information 2	 Notice	 Notice 2	 Caution	 Caution 2B	 Warning	 Warning 2	 Barriers
Access Point(s)						1			
Alpha									
Beta									
Gamma									

2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- RF Exposure Diagram – All Sector Detailed View
- RF Exposure Diagram – Elevation View
- AT&T Mobility, LLC Contribution

Site Scale Map For: WEST HARTFORD-ELMWOOD



3 Antenna Inventory

The following antenna inventory was obtained by the customer and was utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az	Hor BW	Ant Len (ft)	Power	Power Type	Power Unit	Misc	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (AGL)	MDT	EDT
1	AT&T MOBIUTY LLC	Powerwave 7770	Panel	850	UMTS	0	82	4.6	40	TPO	Watt	0	1	566.3	11.51	177.7'	0°	0°
2	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	722	LTE	0	66.4	6	80	TPO	Watt	0	1	1256.3	11.96	177'	0°	3°
2	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	850	LTE	0	59.1	6	120	TPO	Watt	0	1	2265.6	12.76	177'	0°	10°
2	AT&T MOBILITY LLC	Cci OPA-65R-LCUU-H6	Panel	2300	LTE	0	63.7	6	100	TPO	Watt	0	1	3206.3	15.06	177'	0°	3°
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	763	LTE	0	63.9	6.6	160	TPO	Watt	0	1	2845.2	12.5	176.7'	0°	10°
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	2100	LTE	0	65.2	6.6	160	TPO	Watt	0	1	7114.1	16.48	176.7'	0°	7°
4	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	737	LTE	0	66.4	6		TPO	Watt	0	1	942.2	11.96	177'	0°	3°
4	AT&T MOBILITY LLC	Cci OPA-65R-LCUU-H6	Panel	1900	LTE	0	61.9	6	160	TPO	Watt	0	1	4678.6	14.66	177'	0°	7°
5	AT&T MOBILITY LLC	Powerwave 7770	Panel		UMTS	120	82	4.6	40	TPO	Watt	0	1	566.3	11.51	177.7'	0°	0°
6	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	722	LTE	120	66.4	6	80	TPO	Watt	0	1	1256.3	11.96	177'	0°	10°
6	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel		LTE	120	59.1	6	120	TPO	Watt	0	1	2265.6	12.76	177'	0°	10°
6	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel		LTE	120	63.7	6	100	TPO	Watt	0	1	3206.3	15.06	177'	0°	3°
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	763	LTE	120	63.9	6.6	160	TPO	Watt	0	1	2845.2	12.5	176.7'	0°	10°
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	2100	LTE	120	65.2	6.6	160	TPO	Watt	0	1	7114.1	16.48	176.7'	0°	7°
8	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	737	LTE	120	66.4	6		TPO	Watt	0	1	942.2	11.96	177'	0°	10°
8	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	1900	LTE	120	61.9	6	160	TPO	Watt	0	1	4678.6	14.66	177'	0°	7°
9	AT&T MOBILITY LLC	Powerwave 7770	Panel		UMTS	240	82	4.6	40	TPO	Watt	0	1	566.3	11.51	177.7'	0°	0°
10	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	722	LTE	240	66.4	6	80	TPO	Watt	0	1	1256.3	11.96	177'	0°	6°
10	AT&T MOBILITY LLC	Cci OPA-65R-LCUU-H6	Panel		LTE	240	59.1	6	120	TPO	Watt	0	1	2265.6	12.76	177'	0°	6°
10	AT&T MOBILITY LLC	Cci OPA-65R-LCUU-H6	Panel	2300	LTE	240	63.7	6	100	TPO	Watt	0	1	3206.3	15.06	177'	0°	3°
11	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	763	LTE	240	63.9	6.6	160	TPO	Watt	0	1	2845.2	12.5	176.7'	0°	6°
11	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	2100	LTE	240	65.2	6.6	160	TPO	Watt	0	1	7114.1	16.48	176.7'	0°	5°
12	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	737	LTE	240	66.4	6		TPO	Watt	0	1	942.2	11.96	177'	0°	6°
12	AT&T MOBILITY LLC	Ccl OPA-65R-LCUU-H6	Panel	1900	LTE	240	61.9	6	160	TPO	Watt	0	1	4678.6	14.66	177'	0°	5°
13	T-MOBILE	Generic	Panel	700		30	65	6.3	160	TPO	Watt	0	1	2884.8	12.56	166.9'	0°	0°
14	T-MOBILE	Generic	Panel	1900		30	65	6.3	160	TPO	Watt	0	1	6762.7	16.26	166.9'	0°	0°
15	T-MOBILE	Generic	Panel	2100		30	65	6.3	160	TPO	Watt	0	1	5716.4	15.53	166.9'	0°	0°
16	T-MOBILE	Generic	Panel	700		150	65	6.3	160	TPO	Watt	0	1	2884.8	12.56	166.9'	0°	0°

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (AGL)	MDT	EDT
17	T-MOBILE	Generic	Panel	1900		150	65	6.3	160	TPO	Watt	0	1	6762.7	16.26	166.9'	0°	0°
18	T-MOBILE	Generic	Panel	2100		150	65	6.3	160	TPO	Watt	0	1	5716.4	15.53	166.9'	0°	0°
19	T-MOBILE	Generic	Panel	700		270	65	6.3	160	TPO	Watt	0	1	2884.8	12.56	166.9'	0°	0°
20	T-MOBILE	Generic	Panel	1900		270	65	6.3	160	TPO	Watt	0	1	6762.7	16.26	166.9'	0°	0°
21	T-MOBILE	Generic	Panel	2100		270	65	6.3	160	TPO	Watt	0	1	5716.4	15.53	166.9'	0°	0°

Note: The Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. Effective Radiated Power (ERP is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

Note: AT&T Mobility, LLC is proposing to add SDARS remotes on antennas 2, 6 and 10.

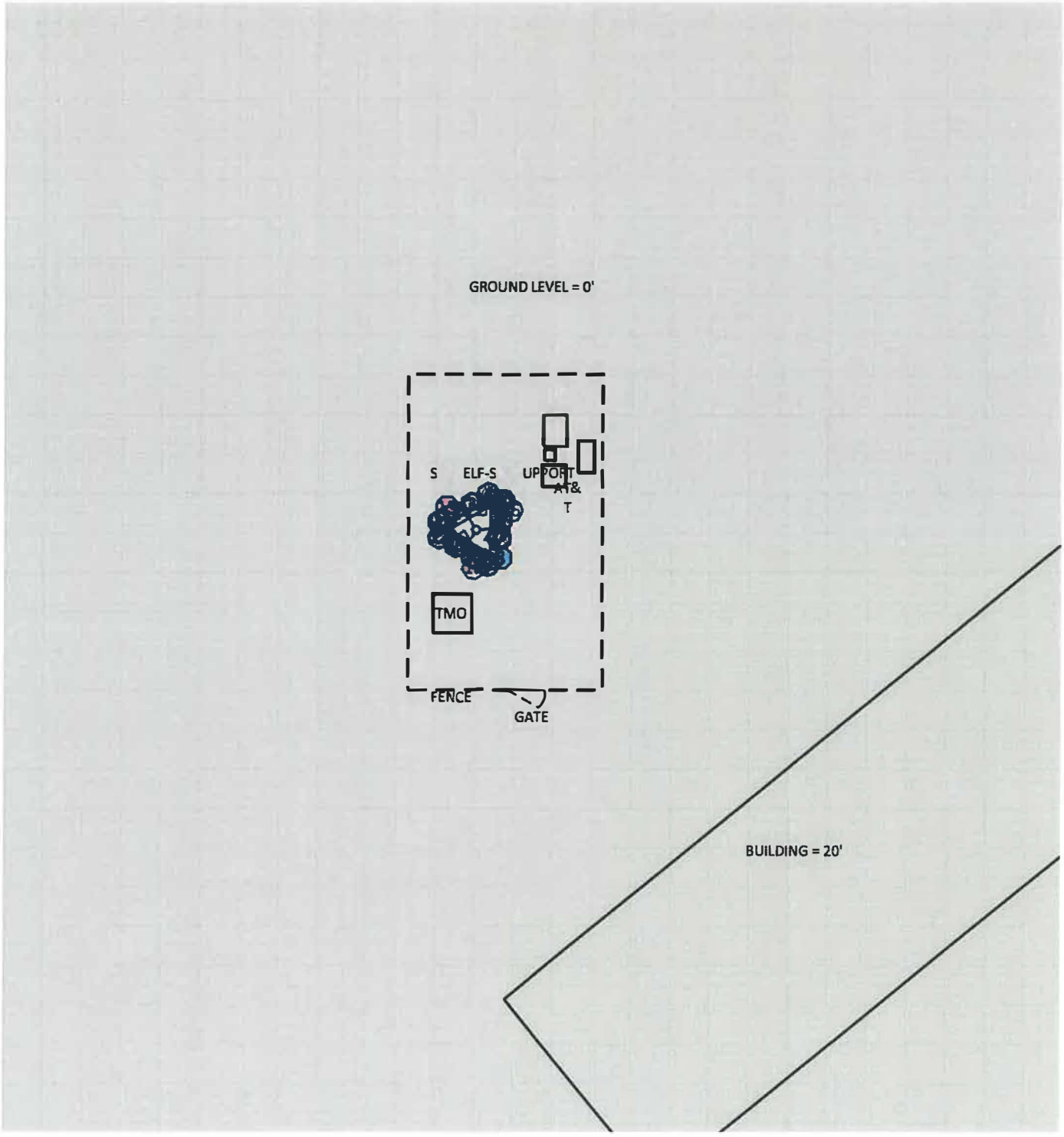
4 Emission Predictions

In the RF Exposure Simulations below, all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas. The total analyzed elevations in the below RF Exposure Simulations are listed below.

- Ground Level = 0'
- Building = 20'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: WEST HARTFORD-ELMWOOD
Composite Diagram



% of FCC Public Exposure Limit
Spatial average 0' - 6'

% of FCC Public Exposure Limit
>= 5000 >= 500 >= 100 >= 5 < 5

Carrier Identification
AT&T MOBILITY LLC VERIZON WIRELESS T-MOBILE SPRINT UNKNOWN CARRIER

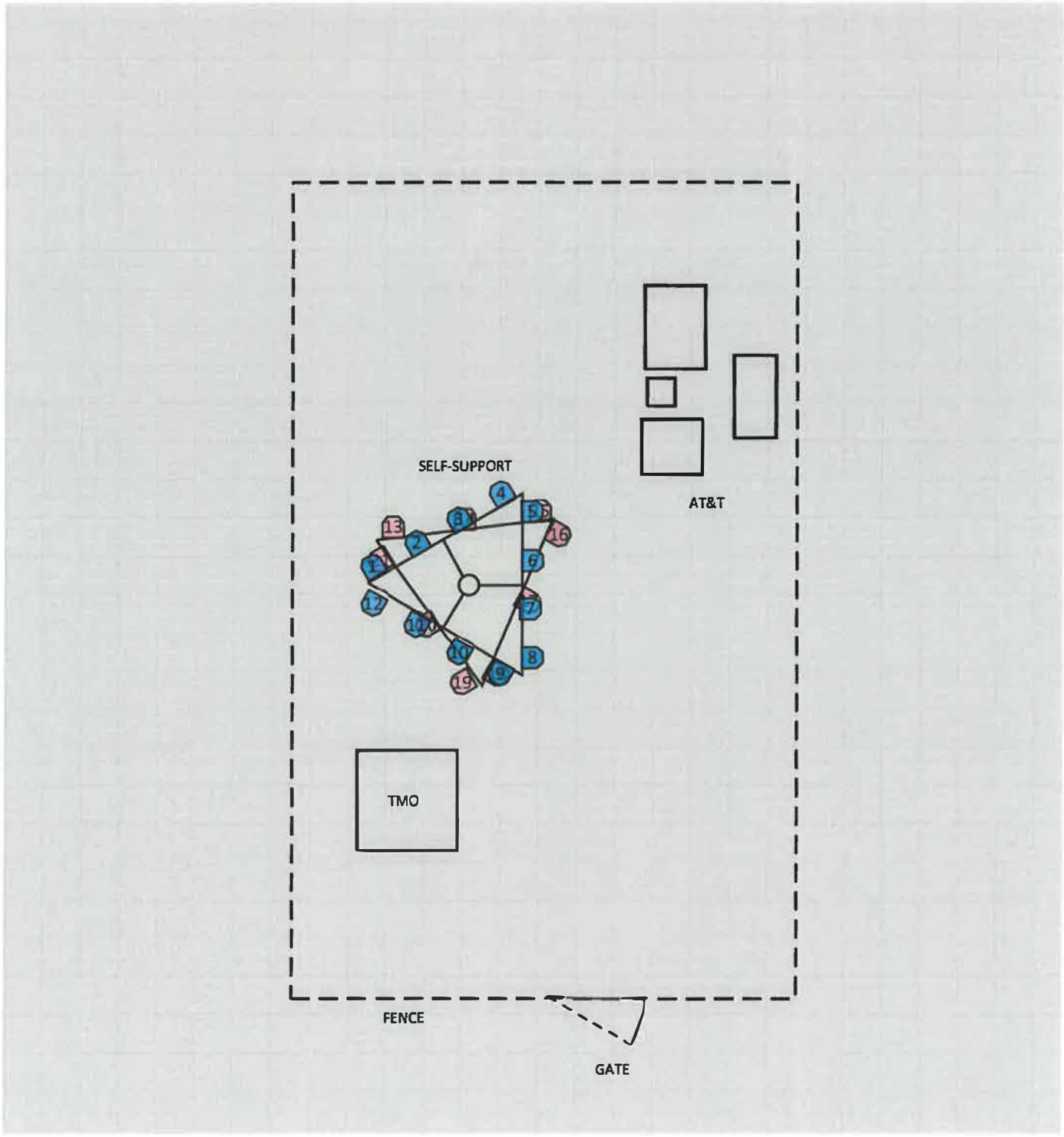
Barrier Proposed Barriers/ Signs

(Feet)
0 19.1 38.2

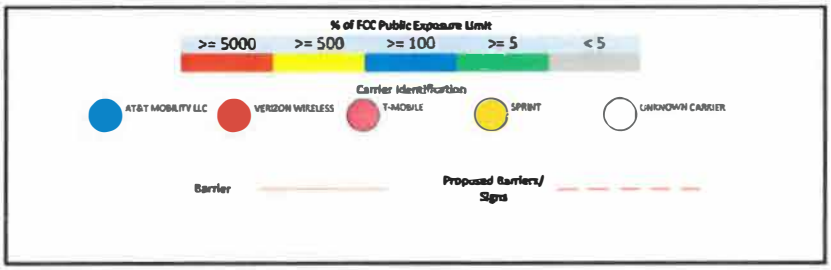
www.sitesafe.com
Site Name:WEST HARTFORD-ELMWOOD
1/30/2020 3:22:00 AM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: WEST HARTFORD-ELMWOOD
All Sector Detailed View



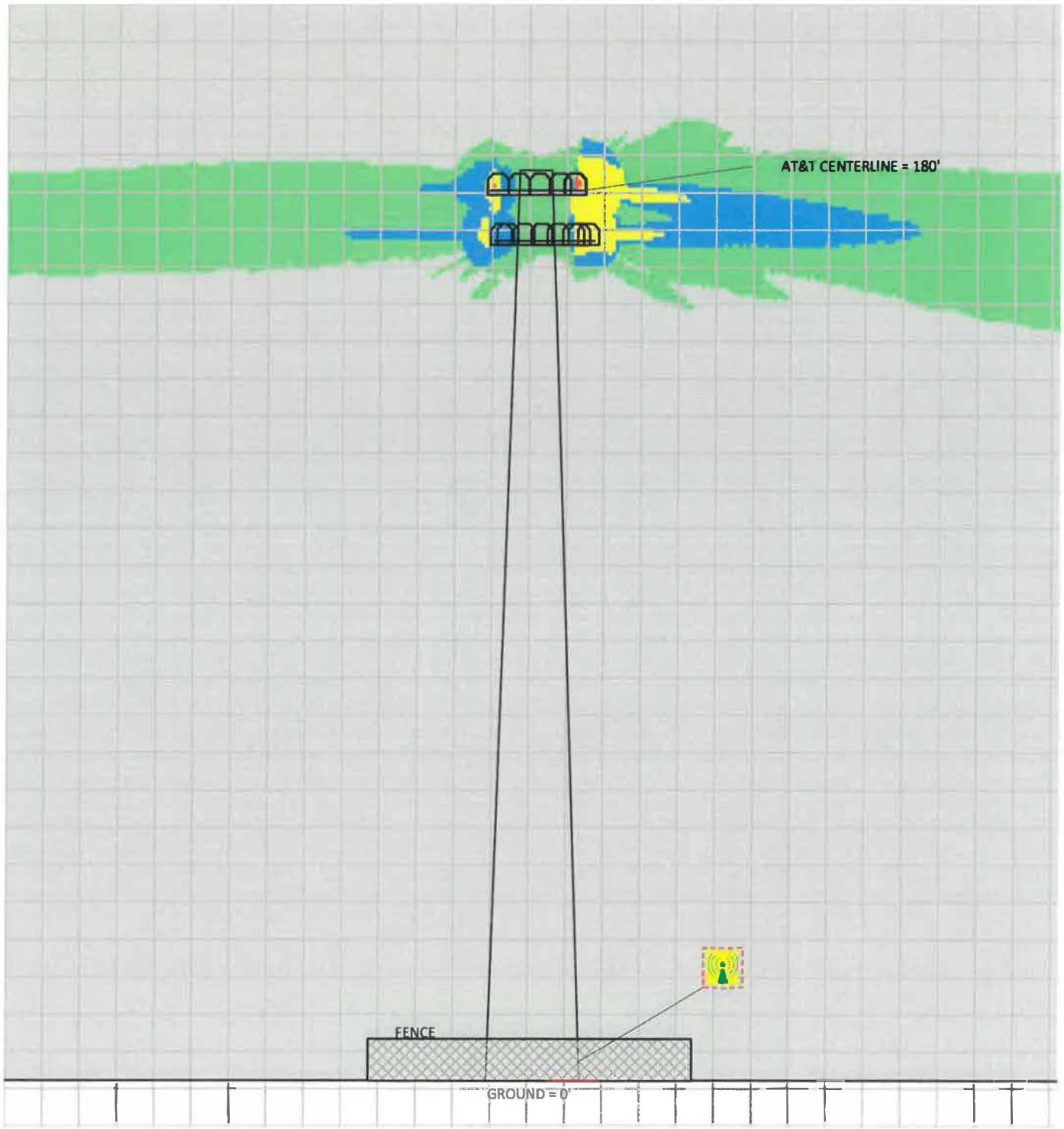
% of FCC Public Exposure Limit
Spatial average 0' - 6'



(Feet)
0 7.1 14.2
www.sitesafe.com
Site Name:WEST HARTFORD-ELMWOOD
1/30/2020 3:22:33 AM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: WEST HARTFORD-ELMWOOD
Elevation View



% of FCC Public Exposure Limit

% of FCC Public Exposure Limit
>= 5000 | >= 500 | >= 100 | >= 5 | < 5

Carrier Identification
AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

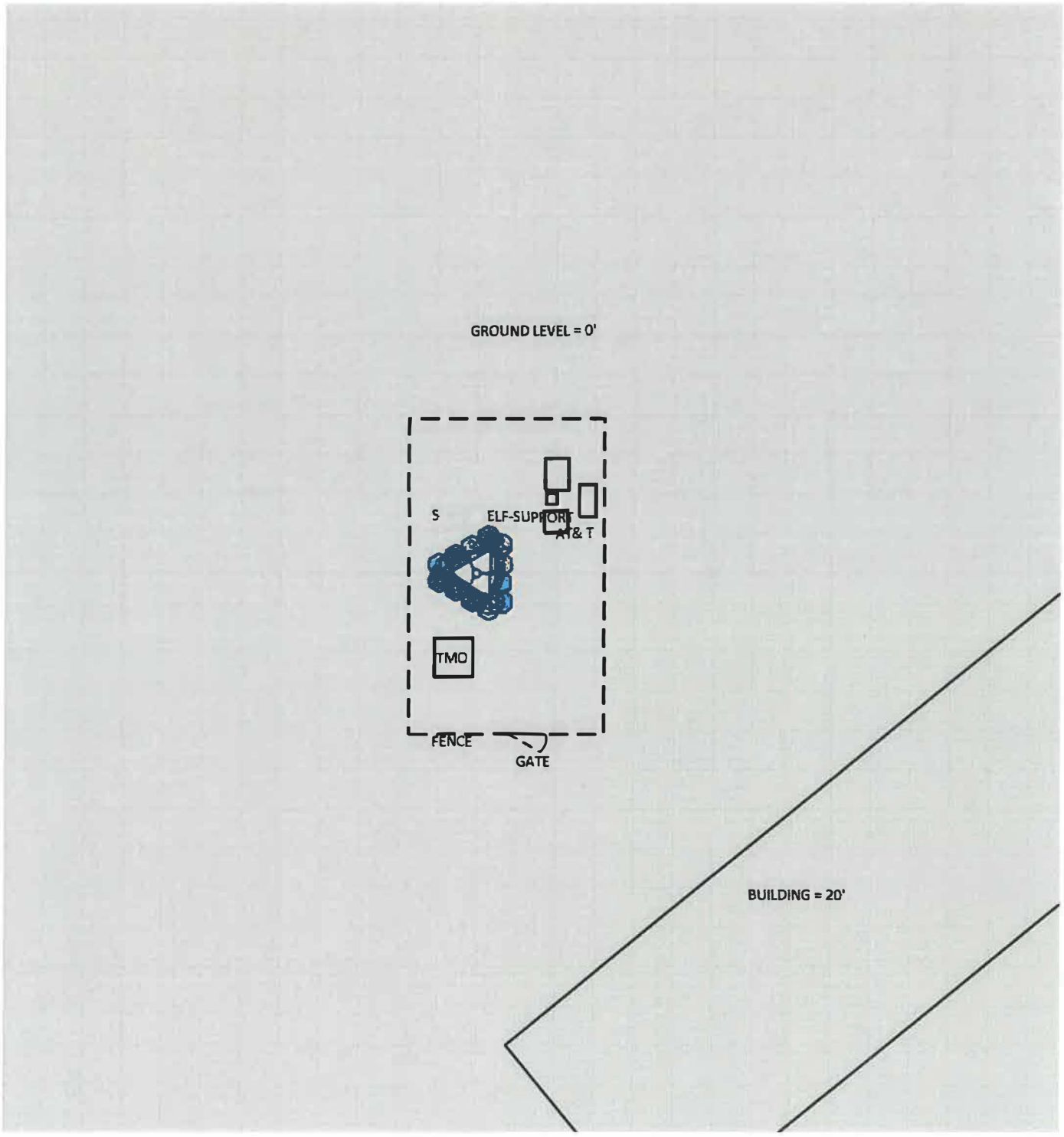
Barrier | Proposed Barriers/ Signs

(Feet)
0 15 30

www.sitesafe.com
Site Name:WEST HARTFORD-ELMWOOD
1/30/2020 3:30:12 AM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Single Level (0)

RF Exposure Simulation For: WEST HARTFORD-ELMWOOD
AT&T Mobility, LLC Contribution



% of FCC Public Exposure Limit
Spatial average 0' - 6'

% of FCC Public Exposure Limit
>= 5000 | >= 500 | >= 100 | >= 5 | < 5

Carrier Identification
AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

Barrier | Proposed Barriers/ Signs

(Feet)
0 19 38

www.sitesafe.com
Site Name:WEST HARTFORD-ELMWOOD
1/30/2020 3:23:14 AM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC'S RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Monopole Access Location

(1) Yellow Caution 2B sign(s) required.

Notes:

- Any existing signage that conflicts with the proposed signage in this report should be removed per AT&T Signage Posting Rules.
- Signage may already be in place. Sitesafe does not have record of any existing signage because there were no previous visits or data supplied regarding them. All remediation is based on a worst-case scenario.

6 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Site Safe, LLC, in Vienna, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Zyotty Thamsil.

January 30, 2020

Anthony Handley

Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for evaluating the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996, the FCC periodically reviews these rules and regulations as per their congressional mandate.

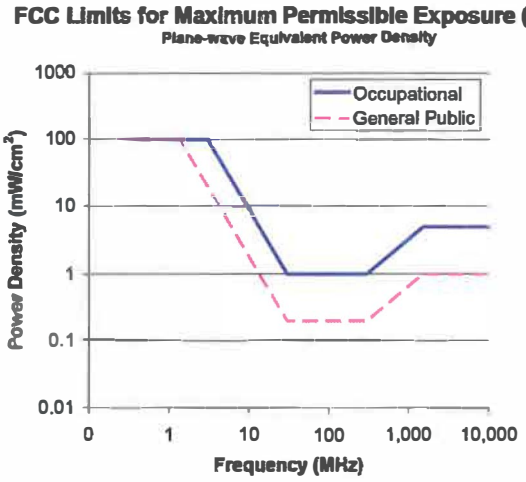
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:



Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lockout/Tagout procedure aimed to control the unexpected energization or startup of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a worker's understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet-based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3-foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram(s): Section 4 of this report contains RF Diagram(s) that outline various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst-case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. Gray represents areas more than 20 times below the most conservative exposure limit. **Gray areas are accessible to anyone.**
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone.**
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers.**
- Yellow represents areas predicted to exceed Occupational MPE limits. **Yellow areas should be accessible only to RF trained workers able to assess current exposure levels.**
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

If trained occupational personnel require access to areas that are delineated as above 100% of the limit, Sitesafe recommends that they utilize the proper personal protection equipment (RF monitors), coordinate with the carriers to reduce or shutdown power, or make real-time power density measurements with the appropriate power density meter to determine real-time MPE levels. This will allow the personnel to ensure that their work area is within exposure limits.

Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Appendix F – Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible for taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site complies with FCC standards with regards to Human Exposure to Radio Frequency Electromagnetic Fields from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to a half-wave dipole antenna.

Gain (of an antenna) – The ratio of the maximum power in a given direction to the maximum power in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antenna as compared to an omnidirectional antenna.

General Population/Uncontrolled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **unaware** of the potential for exposure and who have no control over their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use its industry specific knowledge of antenna models to select a worst-case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **aware** of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of RF exposure on humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency Exposure or Electromagnetic Fields – Electromagnetic waves that are propagated from antennas through space.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy a 6-foot tall human body will absorb while present in an electromagnetic field of energy.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.

Appendix G – References

The following references can be followed for further information about RF Health and Safety.

Site Safe, LLC
http://www.sitesafe.com
FCC Radio Frequency Safety
http://www.fcc.gov/encyclopedia/radio-frequency-safety
National Council on Radiation Protection and Measurements (NCRP)
http://www.ncrponline.org
Institute of Electrical and Electronics Engineers, Inc., (IEEE)
http://www.ieee.org
American National Standards Institute (ANSI)
http://www.ansi.org
Environmental Protection Agency (EPA)
http://www.epa.gov/radtown/wireless-tech.html
National Institutes of Health (NIH)
http://www.niehs.nih.gov/health/topics/agents/emf/
Occupational Safety and Health Agency (OSHA)
http://www.osha.gov/SLTC/radiofrequencyradiation/
International Commission on Non-Ionizing Radiation Protection (ICNIRP)
http://www.icnirp.org
World Health Organization (WHO)
http://www.who.int/peh-emf/en/
National Cancer Institute
http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones
American Cancer Society (ACS)
http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?siteArea=PED
European Commission Scientific Committee on Emerging and Newly Identified Health Risks
http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf
Fairfax County, Virginia Public School Survey
http://www.fcps.edu/fts/safety-security/RFEESurvey/
UK Health Protection Agency Advisory Group on Non-Ionizing Radiation
http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368
Norwegian Institute of Public Health
http://www.fhi.no/dokumenter/545eea7147.pdf

Did you know you can request a refund similar for unused Click-N-Ship® labels in your Shipping History? Click here to learn more.

Create Label | Preferences | Shipping History | Address Book

Account # 161958927

Label Details

Label Number:
9405503699300355626183

Terms
Acceptance Cutoff: 04/30/2020 4:30 PM
Acceptance Time: 05/05/2020 11:54 AM
Expected Date: 05/04/2020 11:59 PM
Delivery Status: Delivered, In/At Mailbox 2020-05-11 10:26:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
MORIAH KING
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
moking@empiretelecomm.com

Delivery Address:
TEN THIRTY TOWER COMPANY LLC BY
HIRSCHFIELD MANAGE
1030 NEW BRITAIN AVE
ATTN: JEFFREY A HIRSCHFELD
WEST HARTFORD, CT 06110-2261

Package:
Ship Date: 04/30/20
Value: $50.00
From: 01862

Service:
Priority Mail® 2-Day
Flat Rate Envelope
USPS Tracking®

Transaction Number:	491972570
Transaction Type:	Label
Payment Method:	VISA-7463
Payment Status:	Account Charged

Postage Cost	$7.75
USPS Tracking®	Free
Label Total:	**$7.75**
Order Total:	**$7.75**

Account # 161958927

Label Details

Label Number:
9405503699300355689539

Terms
Acceptance Cutoff: 04/30/2020 4:30 PM
Acceptance Time: 05/05/2020 11:57 AM
Expected Date: 05/04/2020 11:59 PM
Delivery Status: Delivered, In/At Mailbox 2020-05-09 08:35:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
MORIAH KING
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
moking@empiretelecomm.com

Delivery Address:
SHARI CANTOR
WEST HARTFORD TOWN HALL
50 S MAIN ST
WEST HARTFORD, CT 06107-2485

Package:
Ship Date: 04/30/20
Value: $50.00
Weight: 1 lbs 0 oz
From: 01862

Service:
Priority Mail® 2-Day
USPS Tracking®

Transaction Number: 491977882
Transaction Type: Label
Payment Method: VISA-4325
Payment Status: Account Charged

Postage Cost	$7.50
USPS Tracking®	Free
Label Total:	**$7.50**
Order Total:	**$15.00**

Account # 161958927

Label Details

Label Number:
9405503699300355689508

Terms
Acceptance Cutoff: 04/30/2020 4:30 PM
Acceptance Time: 05/05/2020 11:54 AM
Expected Date: 05/04/2020 11:59 PM
Delivery Status: Delivered, In/At Mailbox 2020-05-09 08:35:00.0
Label Actions

USPS Tracking®
Ship Again

Need help

File an insurance claim
Request A Service Refund

Return Address:
MORIAH KING
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
moking@empiretelecomm.com

Delivery Address:
TODD DUMAS
WEST HARTFORD TOWN HALL
50 S MAIN ST
WEST HARTFORD, CT 06107-2485

Package:
Ship Date: 04/30/20
Value: $50.00
Weight: 1 lbs 0 oz
From: 01862

Service:
Priority Mail® 2-Day
USPS Tracking®

Transaction Number: 491977882
Transaction Type: Label
Payment Method: VISA-4325
Payment Status: Account Charged

Postage Cost	$7.50
USPS Tracking®	Free
Label Total:	**$7.50**
Order Total:	**$15.00**

Timestamp	Message