



Filed by:

G. Scott Shepherd, Site Development Specialist II - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - gshepherd@sbsite.com

April 14, 2021

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

RE: Notice of Exempt Modification
1214 Farmington Ave., Bristol, CT 06010
Latitude: 41.695472
Longitude: -72.901658
Sprint, now a part of T-Mobile USA #: CTHA274A_Sprint Keep

Dear Ms. Bachman:

Sprint, now a part of T-Mobile USA, hereinafter referred to as "Sprint/T-Mobile", currently maintains nine (9) antennas at the 140-foot level of the existing 150-foot Monopole Tower at 1214 Farmington Ave., Bristol, CT. The 150-foot tower is owned by SBA Steel II, LLC. The property is owned by Route 6 Developers, LLC. Sprint/T-Mobile now intends to remove six (6) antennas and replace with six (6) new 600/700/1900MHz antennas and install three (3) new 2500 MHz antennas. Three (3) Dish antennas will remain for a total of twelve (12) antennas.

The new antennas support 5g services and would be installed at the 140-foot level of the tower.

Please note: Per the Connecticut Siting Council Website: CSC COVID 19 Guidelines.
In order to prevent the spread of Coronavirus and protect the health and safety of our members and staff, as of March 18, 2020, the Connecticut Siting Council shall convert to full remote operations until March 30, 2020. Please be advised that during this time period, all hard copy filing requirements will be waived in lieu of an electronic filing. Please also be advised that the March 26, 2020 regular meeting shall be held via teleconference. The Council's website is not equipped with an on-line filing fee receipt service. Therefore, filing fees and/or direct cost charges associated with matters received electronically during the above-mentioned time period will be directly invoiced at a later date.

Planned Modifications:

TOWER

Remove:

- N/A

Remove and Replace:

- (3) Nokia AAHC panel antenna (remove) – (3) Ericsson AIR32 KRD901146-1_B66A_B2A 1900/2100MHz antennas (replace)
- (3) Commscope NNVV-65B-R antennas (remove) – (3) RFS APXVAALL24_43-U-NA20 600/700/1900MHz antenna (replace)
- (3) ALU 800 MHz RRU (remove) – (3) Ericsson 4449 B71+B85 RRU (replace)
- (3) ALU 800MHz RRH (remove) - (3) Ericsson 4415 B25 RRU (replace)

Install New:

- (3) Ericsson AIR6449 B41 2500MHz antennas
- (3) 2" Hybrid

Existing Equipment to Remain:

- (1) Platform w/handrail (RMQR-4096-HK)
- (3) Dragonwave VHLPX3-11W-4GP Dish antennas
- (1) 1.689" fiber

Entitlements:

- (3) ALU 1900 MHz RRH

GROUND

Remove:

- Sprint equipment (cabinet)

Install New:

- T-Mobile 6160 cabinet
- T-Mobile B160 Battery cabinet
- AAV cabinet on proposed H-Frame
- (3) 2" conduit
- (1) 1" conduit
- (3) 1-5/8" hybrid fiber

Remain:

- T-Mobile Telco
- T-Mobile PPC
- T-Mobile FMB

Entitlements:

- (3) 1-5/8" hybrid cables
- (4) 1/2" DC lines
- 1" coax
- 1/4" GPS line



This facility was approved by the Bristol Zoning Commission at its meeting of August 9, 2000 for the Special Permit #1707 for public utility facility (telecommunications tower), with the stipulation the facility be located at the southeast corner of the subject property. This Special Permit is granted under section VI.B.3.I of the Bristol Zoning Regulations for the property located at 1214 Farmington Ave., more particularly described as Assessor's Map No. 46, Lot 72A-3. Zoning Permit No. zp-14412 was granted by the for the facility's Site Plan by the Bristol Zoning Enforcement Officer on October 20, 2000. The City of Bristol's Building Department approved Permit #69666 on October 23, 2000 to install a telecommunications facility with a 150-foot tower and a Certificate of Use and Occupancy No. 13220 was also granted on October 23, 2000 by the City of Bristol Building Department. There were no further post construction stipulations set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the City of Bristol's Mayor Ellen Zoppo-Sassu, and City Planner Robert M. Flanagan, AICP, as well as to the property owner, Route 6 Developers, LLC. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

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

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

Sincerely,

G. Scott Shepherd
Site Development Specialist II
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3807 + T
508.366.2610 + F
508.868.6000 + C
gshepherd@sbsite.com

Attachments



cc: *Mayor Ellen Zoppo-Sassu / with attachments*
City of Bristol, Mayor's Office, 3rd Fl. 111 North Main St., Bristol, CT 06010
Robert M. Flanagan, AICP, City Planner / with attachments
City of Bristol, 111 North Main St., Bristol, CT 06010
Richard Brown, Chief Building Official / with attachments
City of Bristol, 2nd Fl. 111 North Main St., Bristol, CT 06010
Route 6 Developers, LLC / with attachments
1224 Mill Street Building D, Suite 103 East Berlin, CT 06023

EXHIBIT LIST

Exhibit 1	Check Copy	x To be invoiced at a later date per Covid guidelines.
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	Special Permit#1707 8/9/00, City of Bristol ZP 14414 9/13/00, BP# 69666 10/23/00
Exhibit 6	Construction Drawings	Centerline 2/26/21
Exhibit 7	Structural Analysis	TES 3/11/21
Exhibit 8	Mount Analysis	TES 12/14/20
Exhibit 9	EME Report	EBI Consulting 2/23/21

EXHIBIT 1

Normally, Exhibit 1 would contain a copy of the check for the filing fee.

EXHIBIT 2

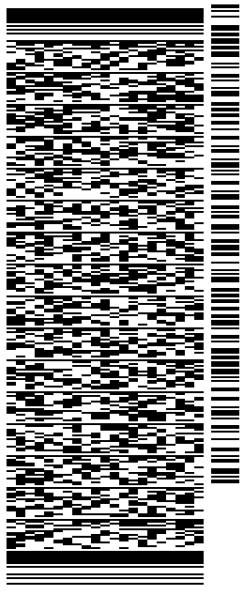
ORIGIN ID:BFBA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 14APR21
ACTWGT: 1.00 LB
CAD: 105843304/NET14340
BILL SENDER

TO **MELANIE A. BACHMAN EXEC. DIR**
CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE

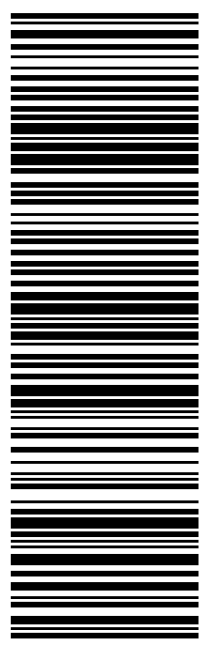
NEW BRITAIN CT 06051
(508) 251-0720 X 3807 REF: 105692009-6089
INV# PO: DEPT:

56D.J25EF2/FE4A



TRK# 7734 4170 9080
0201
THU - 15 APR 10:30A
PRIORITY OVERNIGHT

EB BDLA
06051
CT:US BDL



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SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

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TO MAYOR, ELLEN ZOPPO-SASSU

CITY OF BRISTOL

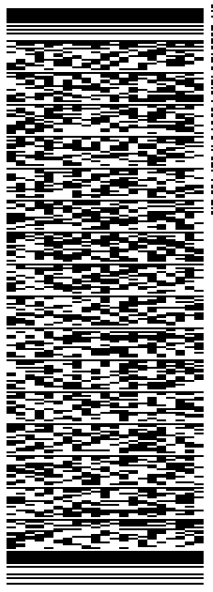
3RD FL

111 NORTH MAIN ST.

BRISTOL CT 06010

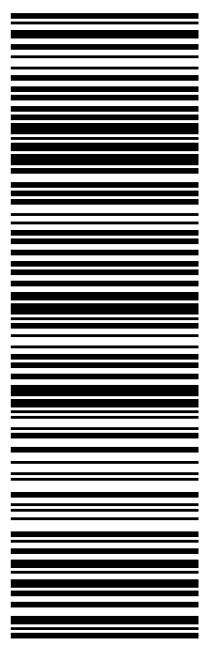
(508) 251-0720 X 3807 REF: 105692009-6089
INV/ PO: DEPT:

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ORIGIN ID:BBFA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

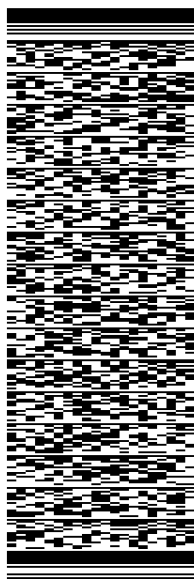
SHIP DATE: 14APR21
ACTWGT: 1.00 LB
CAD: 105843304/NET14340

BILL SENDER

TO
ROBERT M. FLANAGAN, CITY PLANNER
CITY OF BRISTOL
111 NORTH MAIN ST.

BRISTOL CT 06010

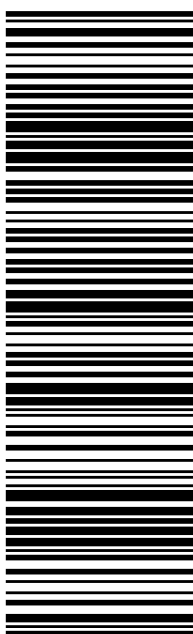
(508) 251-0720 X 3807 REF: 105692009-6089
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PO:



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SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

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ACTWGT: 1.00 LB
CAD: 105843304/NET14340
BILL SENDER

TO RICHARD BROWN, BUILDING OFFICIAL
CITY OF BRISTOL
2ND FLOOR
111 NORTH MAIN ST.
BRISTOL CT 06010
(508) 251-0720 X 3807
REF: 105692009-6089
PO: DEPT:

56D.J25EF2/FE4A



TRK# 7734 4183 5561
0201
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06010
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Large barcode

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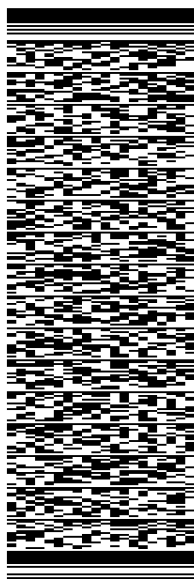
SHIP DATE: 14APR21
ACTWGT: 1.00 LB
CAD: 105843304/NET14340
BILL SENDER

TO

ROUTE 6 DEVELOPERS, LLC
1224 MILL ST
BUILDING D, SUITE 103
EAST BERLIN CT 06023

(508) 251-0720 X 3807 REF: 105692009-6089
INV# PO: DEPT:

56D.J25EF2/FE4A

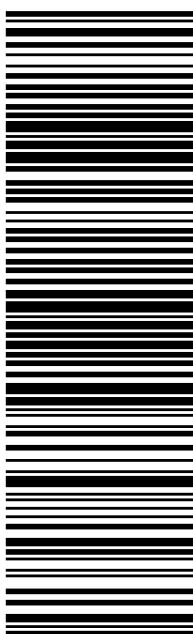


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EXHIBIT 3

1214 FARMINGTON AVE

Location 1214 FARMINGTON AVE

Mblu 46 / 72A-3 / 1

Acct# 0054445

Owner ROUTE 6 DEVELOPERS LLC

Assessment \$9,513,000

Appraisal \$13,590,000

PID 1763

Building Count 3

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$11,125,500	\$2,464,500	\$13,590,000

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$7,787,850	\$1,725,150	\$9,513,000

Owner of Record

Owner ROUTE 6 DEVELOPERS LLC
Co-Owner
Address 1224 MILL ST BLDG D STE 103
EAST BERLIN, CT 06023-1159

Sale Price \$0
Certificate 1
Book & Page 1514/1092
Sale Date 09/08/2003
Instrument 00

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
ROUTE 6 DEVELOPERS LLC	\$0	1	1514/1092	00	09/08/2003
EISENBAUM WAYNE+ ALLAN+ MARLA	\$0		1448/1117		10/31/2002
EISENBAUM WAYNE+ ALLAN+ MARLA	\$0		1044/0346		03/02/1992
EISENBAUM WAYNE + MARLA	\$0		1023/0480		06/10/1991
EISENBAUM ALAN+WAYNE+MARLA	\$0		1023/0478		06/07/1991

Building Information

Building 1 : Section 1

Year Built: 1964

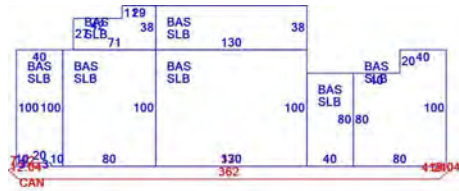
Building Photo

Living Area: 42,516
Replacement Cost: \$4,602,769
Building Percent Good: 67
Replacement Cost
Less Depreciation: \$3,083,900



(http://images.vgsi.com/photos2/BristolCTPhotos/\00\05\72\42.jpg)

Building Layout



(ParcelSketch.ashx?pid=1763&bid=1763)

Building Attributes	
Field	Description
Style:	Shop Center
Model	Comm/Ind
Grade	
Stories:	1
Occupancy	6.00
Exterior Wall 1	Stucco/Masonry
Exterior Wall 2	Concr/Cinder
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Propane Gas
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	Shopping Ctr
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	18.00
% Comn Wall	

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	42,516	42,516
CAN	Canopy	4,093	0
SLB	Slab	42,516	0
		89,125	42,516

Building 2 : Section 1

Year Built: 1964
Living Area: 70,720
Replacement Cost: \$8,826,079
Building Percent Good: 57
Replacement Cost
Less Depreciation: \$5,030,900

Building Attributes : Bldg 2 of 3

Field	Description
Style:	Supermarket
Model	Comm/Ind
Grade	
Stories:	1
Occupancy	2.00
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	Shopping Ctr
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	20.00
% Comn Wall	

Building Photo



(<http://images.vgsi.com/photos2/BristolCTPhotos/\00\05\72\43.jpg>)

Building Layout



(ParcelSketch.ashx?pid=1763&bid=40095)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	70,720	70,720
CAN	Canopy	2,916	0
SLB	Slab	69,960	0
UEP	Porch, Enclosed, Unfinished	900	0
		144,496	70,720

Building 3 : Section 1

Year Built: 2003
Living Area: 20,772
Replacement Cost: \$2,573,520
Building Percent Good: 92
Replacement Cost Less Depreciation: \$2,367,600

Building Attributes : Bldg 3 of 3

Field	Description
Style:	Shop Center

Land

Land Use

Use Code 328
Description Shopping Ctr
Zone BG
Neighborhood
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 10.4
Frontage 483
Depth
Assessed Value \$1,725,150
Appraised Value \$2,464,500

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asph.			325000.00 S.F.	\$341,300	1
CELL	Cell Tower/Site			1.00 UNITS	\$0	1
CB3	PreCastConcCel			240.00 S.F.	\$43,200	2
FN3	Fence 6'			250.00 L.F.	\$1,900	2
PAV2	Paving Concrct			900.00 S.F.	\$1,800	2

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$11,125,500	\$2,464,500	\$13,590,000
2019	\$11,125,500	\$2,464,500	\$13,590,000
19	\$11,125,500	\$2,464,500	\$13,590,000

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$7,787,850	\$1,725,150	\$9,513,000
2019	\$7,787,850	\$1,725,150	\$9,513,000
19	\$7,787,850	\$1,725,150	\$9,513,000

EXHIBIT 4

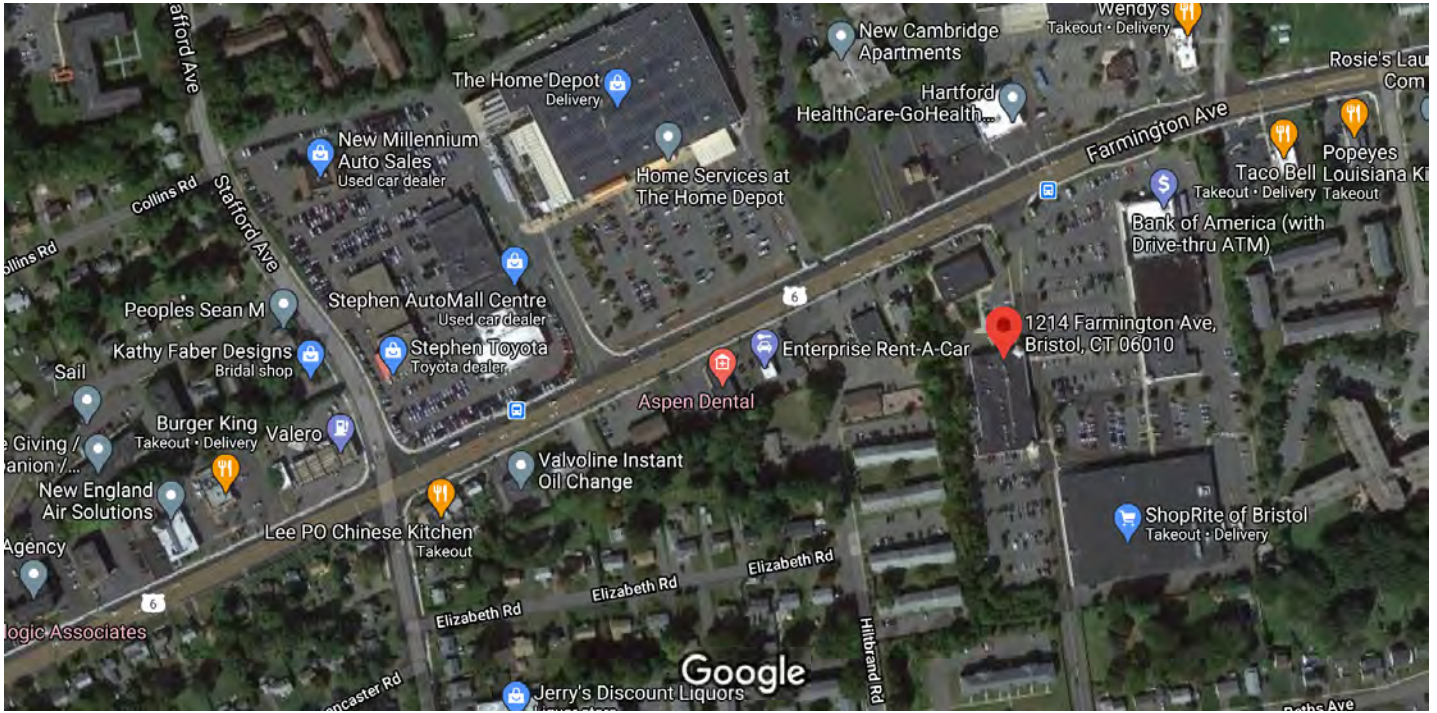
Full Town View Reset Map Search Print Map Layer



Full Extent Zoom In Zoom Out Prev Extent Next Extent Pan Parcel Information Simple M

[MapXpress v1.2](#)

Google Maps 1214 Farmington Ave



Imagery ©2021 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 200 ft

EXHIBIT 5



City of Bristol

BRISTOL, CONNECTICUT 06010

CERTIFIED MAIL

August 11, 2000

Steven Howard
Nextel Communications of the Mid-Atlantic, Inc.
100 Corporate Place
Rocky Hill, CT 06067

Re: Application #1707 - Special Permit for public utility facility (telecommunications tower)
1214 Farmington Avenue

Dear Mr. Howard:

This is to inform you that at its meeting of August 9, 2000, the Bristol Zoning Commission approved the above-referenced Special Permit, with the stipulation that the facility shall be located in the southeast corner of the subject property.

This Special Permit shall not become effective until you bring the enclosed form to the Office of the City Clerk, Bristol City Hall, and record it on the city land records as per Section 8-3d of the Connecticut General Statutes. Should you have any questions, please contact me at 860/584-7645.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Alan L. Weiner".

Alan L. Weiner
City Planner

ALW/nk

c: Attorney John Knuff

In accordance with Section 8-3d of the Connecticut General Statutes, as amended, notice is hereby given that on the 9th day of August, 2000, the Zoning Commission of the City of Bristol granted Application #1707 for the following:

Special Permit for public utility facility (telecommunications tower), with the stipulation that the facility be located in the southeast corner of the subject property

This Special Permit is granted under Section VI.B.3.I. of the Bristol Zoning Regulations for the property located at 1214 Farmington Avenue, more particularly described as Assessor's Map No. 46, Lot No. 72A-3.

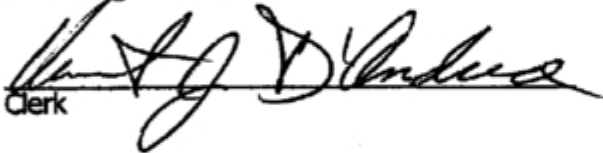
The owner of record of this property is Marion Eisenbaum Self-Trust.

Dated at Bristol, Connecticut, this 11th day of August, 2000.

Bristol Zoning Commission

By:

Clerk



In accordance with Section 8-3d of the Connecticut General Statutes, as amended, notice is hereby given that on the 9th day of August, 2000, the Zoning Commission of the City of Bristol granted Application #1707 for the following:

Special Permit for public utility facility (telecommunications tower), with the stipulation that the facility be located in the southeast corner of the subject property

This Special Permit is granted under Section VI.B.3.i. of the Bristol Zoning Regulations for the property located at 1214 Farmington Avenue, more particularly described as Assessor's Map No. 46, Lot No. 72A-3.

The owner of record of this property is Marion Eisenbaum Self-Trust.

Dated at Bristol, Connecticut, this 11th day of August, 2000.

Bristol Zoning Commission

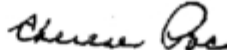
By:

Clerk



Received AUG 16 2000
Bristol Land Records

@ 3²³ PM



Town Clerk

Fee Received: \$15.00

No ZP-14412



ZONING PERMIT

CITY OF BRISTOL ZONING COMMISSION

THIS IS TO CERTIFY that in accordance with Section XII.D of the Zoning Regulations, this Permit is hereby granted.

PROPERTY INFORMATION

Location: 1214 FARMINGTON AVE

Zoning District: BG, Property Use: BUSINESS - RETAIL

TYPE OF PERMIT

- New Construction
- Addition
- Accessory Structure
- Fence
- Deck
- Swimming Pool
- Home Business/Office
- Change of Use
- Other: _____

SIGNS		
Classification: <input type="checkbox"/> Permanent	<input type="checkbox"/> Temporary (30-Day)	<input type="checkbox"/> Portable (1-Year)
Type: <input type="checkbox"/> Wall	<input type="checkbox"/> Freestanding	<input type="checkbox"/> A-Frame <input type="checkbox"/> Sandwich Other: _____

DESCRIPTION OF ACTIVITY

INSTALL TELECOMMUNICATIONS FACILITY WITH A 150' MONOPOLE TOWER

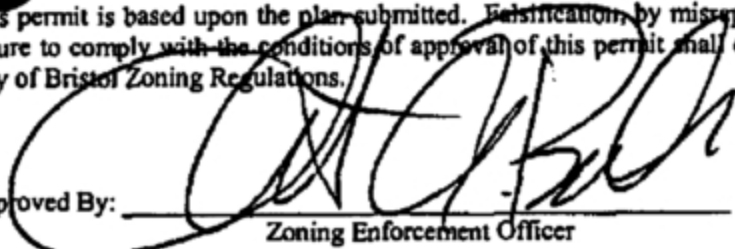
OTHER APPROVALS

Description: SITE PLAN - 9/13/00

APPLICANT INFORMATION

Applicant Name(s): ARTHUR G. SIMONIAN
Business Name: DIVERSIFIED TECHNOLOGIES

This permit is based upon the plan submitted. Falsification, by misrepresentation or omission, or failure to comply with the conditions of approval of this permit shall constitute a violation of the City of Bristol Zoning Regulations.

Approved By: 
Zoning Enforcement Officer

10-20-00
Date Issued

**BUILDING DEPARTMENT
REQUIRED INSPECTIONS**

IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO NOTIFY THE BUILDING DEPT. WHEN A REQUIRED INSPECTION IS NEEDED.

(** Minimum 48 hours notice **)

FOOTINGS - BEFORE CONCRETE IS POURED

PIERS - BEFORE CONCRETE IS POURED

DAMP PROOFING/CURTAIN DRAIN - BEFORE BACKFILL

ROOFING - APPROXIMATELY AT 50% COMPLETION

ROUGH - IN:

ELECTRICAL (includes all underground piping)

PLUMBING (includes all underground piping)

HEATING/COOLING (includes underground tanks and piping)

FRAMING/FIRE STOPPING: (after approval of mechanical & electrical)

INSULATION: (after approval of framing/fire stopping)

CHIMNEY/FIREPLACE

FIRE BOX/THROAT

CHIMNEY HEIGHT AT MIDPOINT

CHIMNEY HEIGHT AT COMPLETION

CERTIFICATE OF OCCUPANCY/FINAL INSPECTION

STRUCTURAL (As-Built plot plans must be submitted prior to inspection)

ELECTRICAL

PLUMBING

HEATING/COOLING

OTHER INSPECTIONS: ANY INSPECTION DEEMED NECESSARY TO DETERMINE COMPLIANCE WITH THE BUILDING CODE AND OTHER LAWS AND ORDINANCES ENFORCED BY THE BUILDING DEPT.

OCCUPANCY OR USE OF ANY NEW STRUCTURE OR ADDITION PRIOR TO ISSUANCE OF A CERTIFICATE OF USE & OCCUPANCY IS A VIOLATION OF THE BASIC BUILDING CODE AND IS PUNISHABLE BY FINES OF UP TO \$500.00 PER DAY

REINSPECTION FEE - \$15.00 WILL BE ASSESSED FOR REPETITIVE INSPECTION

CONTACT THE BUILDING DEPT. WITH ANY QUESTIONS.

FRONT DESK (860) 584-7608

FAX (860) 584-3827

COMMERCIAL (860) 584-7784

RESIDENTIAL (860) 584-7783

MECHANICAL (860) 584-7655

ELECTRICAL (860) 584-7609

EST. COST: \$ 130,000
PERMIT FEE: \$ 1,563
CERT. OF OCCUP: \$ 25
ZONING CERT: \$ 15
TOTAL FEE: \$ 1,603

CT-1026



BUILDING DEPARTMENT

PERMIT #: 69666 ✓

DATE: 10/23/00
TIME: 3:09 PM

Z.C.#: 14412

CO DTE:

TCO DTE:

C.O.#: 13220

City of Bristol

BRISTOL, CONNECTICUT 06010

CR # 22786

I HEREBY APPLY FOR A BUILDING PERMIT TO
(TYPE OF IMPROVEMENT): INSTALL TELECOMMUNICATIONS FACILITY
WITH A 150' TOWER

LOT #: ST #: 1214 LOCATION: FARMINGTON AVENUE

OWNER: WAYNE/ALLAN EISENBAUM

PHONE #:

ADDRESS: 10 CROSS ROADS PLAZA, WEST HARTFORD

CONTRACTOR: DIVERSIFIED TECHNOLOGIES CONS

PHONE #: 2032394200

ADDRESS: 556 WASHINGTON AVE NORTH HAVEN

LICENSE #:

EXP:

PROP. USE: TOWER

DWELLING UNITS:

USE GROUP:

CITY SEWER: Y

CITY WATER: Y

SEPTIC TANK:

WELL WATER:

COMMENTS OR SPECIAL CONDITIONS: BG ZONE COMMER.

I HEREBY CERTIFY THAT THE PROPOSED WORK IS AUTHORIZED BY THE OWNER OF RECORD AND THAT I HAVE BEEN AUTHORIZED BY THE OWNER TO MAKE THIS APPLICATION AS AN AUTHORIZED AGENT AND WE AGREE TO CONFORM TO ALL OF THE REQUIREMENTS OF THE LAWS OF THE STATE OF CONNECTICUT AND THE ORDINANCES OF THE CITY OF BRISTOL AND TO NOTIFY THE BUILDING OFFICIAL OF ANY ALTERATION IN THE PLANS OR SPECIFICATIONS OF THE BUILDING FOR WHICH THE PERMIT IS ASKED. I ALSO AGREE THAT THIS BUILDING IS TO BE LOCATED THE PROPER DISTANCE FROM ALL STREET LINES AND REQUIRED DISTANCES FROM ALL OTHER LINES AND IN THE PROPER ZONE.

APPLICANT

DATE

APPROVED BY

DATE

SIGNATURE

10/23/00

Bob Laurie
BUILDING OFFICIAL

10/23/00

Paul Jemdrzejczyk
PRINT APPLICANT NAME

SEPARATE PERMITS ARE REQUIRED FOR ELECTRICAL, PLUMBING AND MECHANICAL WORK
THIS PERMIT IS VOID IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

BEFORE ISSUANCE OF A CERTIFICATE OF USE OR OCCUPANCY A FINAL INSPECTION IS REQUIRED. CALL (860) 584-7608.

DATE 10-23-50 1950

PERMIT

ISSUED TO A. Simonian
 TO Install tower
 AT LOCATION 1214 Farmington Ave

CITY OF BRISTOL, CONN. BUILDING DEPARTMENT

THIS CARD MUST BE CONSPICUOUSLY DISPLAYED AT ALL TIMES DURING
 THE PROGRESS OF OPERATIONS

DATE OF INSPECTION

INSPECTOR



CERTIFICATE OF USE AND OCCUPANCY

BUILDING DEPARTMENT • BRISTOL, CONNECTICUT

No. 13220

This is to certify that the telecommunications facility with tower

at 1214 Farmington Avenue

has been erected and completed as specified under Building Permit No. 69666

Dated 10/23/00 and substantially conforms to the requirements of the State of Connecticut Building Code and is hereby approved for occupancy.

Wayne/Allan Eisenbaum OWNER

Diversified Tech CONTRACTOR

CONDITIONS

July 2 2001
DATE

Ralph Lavinia
BUILDING OFFICIAL

NOTE: Any Change or extension of the use herein approved requires a new certificate.

CF-1026

EXHIBIT 6

PROJECT INFORMATION

TOWER OWNER: SBA PROPERTIES, LLC
8501 CONGRESS AVENUE
BOCA RATON, FL 33487
PHONE: 561-226-9523

SBA TOWER ID: CT46136-A

SBA SITE NAME: BRISTOL-EAST

T-MOBILE SITE NAME: CTHA274A

T-MOBILE SITE NUMBER: CTHA274A

SBA SITE ADDRESS: 1214 FARMINGTON AVE
BRISTOL, CT 06010

LATITUDE: 41.69539000

LONGITUDE: -72.90170000

TOWER HEIGHT: 150'-0"± AGL

RAD CENTER: 140'-0"± AGL

ZONING JURISDICTION: TOWN OF BRISTOL

COUNTY: HARTFORD COUNTY

DESCRIPTION OF WORK:
TELECOMMUNICATIONS FACILITY UPGRADE (SPRINT RETAIN);
MONOPOLE

APPROVED

By Stephen Roth at 4:44:11 AM, 3/3/2021

COMPLIANCE CODES:

1.	BUILDING CODE: IBC 2015 & CONNECTICUT STATE BUILDING CODE 2018
2.	ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
3.	CONCRETE CODE: AMERICAN CONCRETE INSTITUTE (ACI) 318
4.	STEEL CODE: AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), 14TH EDITION
5.	TELECOMMUNICATIONS CODE: EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL

BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).

PROJECT DIRECTORY

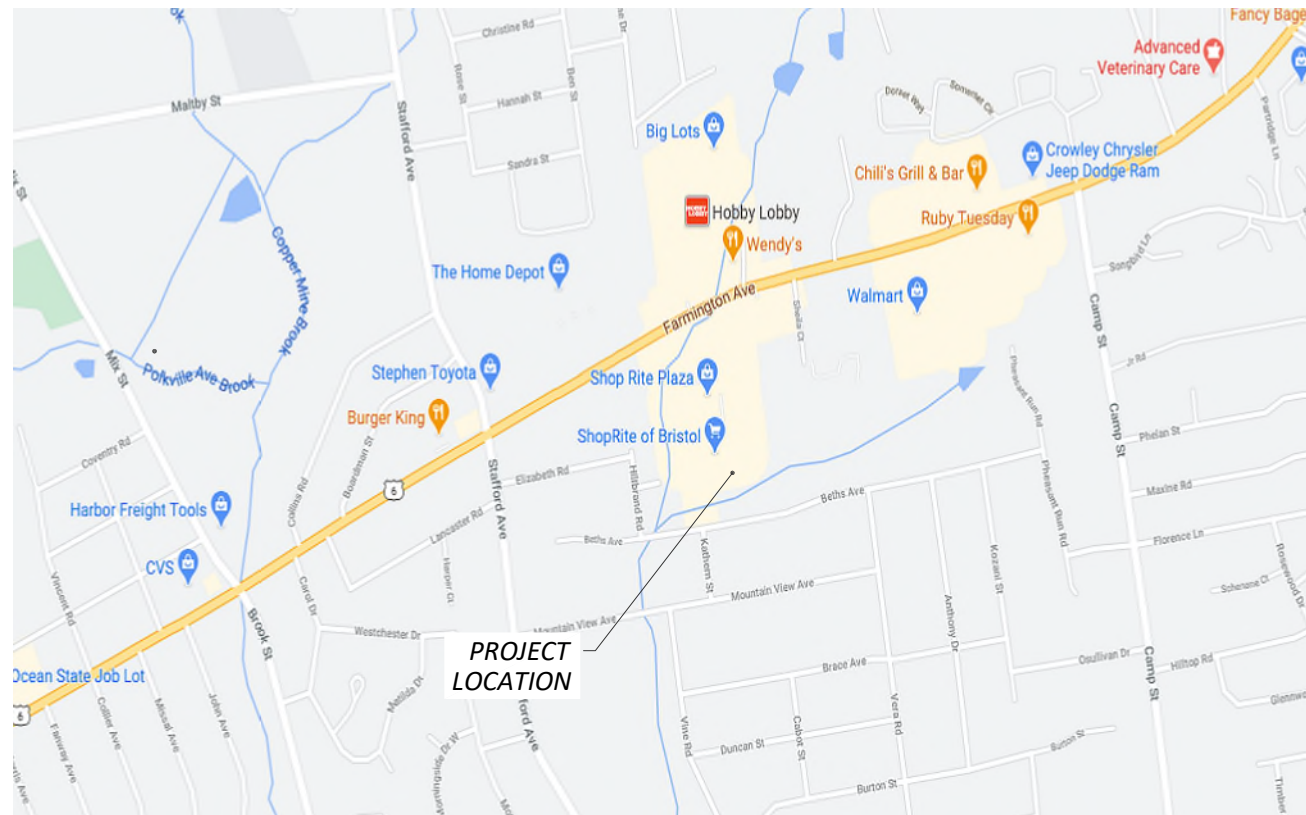
A&E / PROJECT MANAGER:
CENTERLINE COMMUNICATIONS
750 WEST CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE 781.713.4725

APPLICANT:
T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893

SITE NAME: CTHA274A
1214 FARMINGTON AVE
BRISTOL, CT 06010

SITE NUMBER: CTHA274A
SBA SITE #: CT46136-A
PROJECT: SPRINT RETAIN

CONFIGURATION: 67D5A997DB 6160 (GSM ONLY)



VICINITY MAP
NOT TO SCALE

GENERAL NOTES:

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSE OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. 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.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

DRAWING INDEX

NO.	DESCRIPTION	REV.	DATE
T-1	TITLE SHEET	1	02/26/21
GN-1	GENERAL NOTES	1	02/26/21
A-1	COMPOUND & EQUIPMENT PLANS	1	02/26/21
A-2	ANTENNA LAYOUT & ELEVATIONS	1	02/26/21
A-3	DETAILS	1	02/26/21
SN-1	STRUCTURAL NOTES	1	02/26/21
RF-1	RF PLUMBING DIAGRAM	1	02/26/21
G-1	GROUNDING DETAILS	1	02/26/21

T-Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893



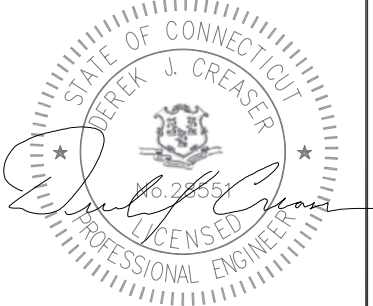
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
PHONE: (508) 251-0720



750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

NO.	DATE	DESCRIPTION
1	02/26/21	ISSUED FOR CONSTRUCTION
0	12/18/20	ISSUED FOR REVIEW
DESIGNED BY:	AG	APPROVED BY:
		DC



DATE: 02/26/21

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SITE NAME: CTHA274A

SITE NUMBER: CTHA274A

SITE ADDRESS:
1214 FARMINGTON AVE
BRISTOL, CT 06010

PROJECT TYPE:
SPRINT RETAIN

SHEET TITLE:
TITLE SHEET

DRAWING #: T-1 REVISION: 1

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR – CENTERLINE COMMUNICATIONS
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – T-MOBILE

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 BE SCALED 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. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

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

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

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. 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.

11. 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.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES: SUBCONTRACTOR'S 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: IBC 2015 & CONNECTICUT STATE BUILDING CODE 2018
ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
LIGHTNING CODE: NFPA 70-2017

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, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G,
STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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.

RF NOTES

1. ACTUAL LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR

2. THE DESIGN IS BASED ON RF DATA SHEETS, SIGNED AND APPROVED.

3. RADIO SIGNAL CABLE AND RACEWAY SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8.

4. ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G. OUT DOORS-OCCUPIED, INDOORS-UNOCCUPIED, PLENUMS, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC.

5. RADIO SIGNAL CABLE SHALL BE SUPPORTED AT MINIMUM OF EVERY THREE (3) FEET EXCEPT INSIDE MONOPOLES OR MONOPOLES WHERE CABLE AND CONNECTOR MANUFACTURERS SUPPORT RECOMMENDATIONS SHALL BE FOLLOWED. MANUFACTURER RECOMMENDATION CABLES SUPPORT ACCESSORIES SHALL BE USED.

6. THE OUTDOOR CABLE SUPPORT SYSTEM SHALL BE PROVIDED WITH AN ICE SHIELD TO SUPPORT AND PROTECT ANTENNA CABLE RUNS.

7. DRIP LOOPS SHALL BE REQUIRED ON ALL OUTSIDE CABLES. CABLES SHALL BE SLOPED AWAY FROM BUILDING OR OUTDOOR BTS CABINETS TO PREVENT WATER FROM ENTERING THROUGH THE COAXIAL CABLE PORT.

8. ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE 7/16 DIN CABLE CONNECTORS THAT MEET IP68 STANDARDS.

9. 7/16 DIN CONNECTORS REQUIRE NO ADDITIONAL WEATHER PROOFING IN INDOOR APPLICATIONS IF INSTALLED AND TORQUED PROPERLY. IN OUTDOOR APPLICATIONS WEATHER PROOFING IS REQUIRED AND THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED.

10. USING WEATHERPROOFING KIT APPROVED BY CABLE MANUFACTURER AND CONTRACTOR START TAPE APPROXIMATELY 5 INCHES FROM THE CONNECTOR, AND WRAP 2 INCHES TOWARD THE CONNECTOR, THEN REVERSE THE TAPE SO THAT THE STICKY SIDE IS UP. TAPE OVER THE CONNECTOR OR SURGE ARRESTOR UNTIL THREE (3) TO FOUR (4) INCHES BEYOND THE CONNECTOR AND REVERSE AGAIN WITH THE STICKY SIDE DOWN FOR ANOTHER INCH OR TWO. PASS THE BUTYL RUBBER AND FINISH WITH A FINAL LAYER OF TAPE.

11. ANTENNAS SHALL BE PAINTED, WHEN REQUIRED, BY THE LANDLORD OR AUTHORITY OF HAVING JURISDICTION IN ACCORDANCE WITH ANTENNA MANUFACTURERS' SURFACES PREPARATION AND PAINTING REQUIREMENTS.

12. CABLE SHIELDS AND TOWER CONDUITS SHALL BE GROUNDED AT THE TOP OF THE TOWER WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 6 INCHES BEFORE THEY TURN TOWARD THE FACILITY. THEY SHALL BE GROUNDED AT THE MIDPOINT OF THE TOWERS THAT ARE BETWEEN 60 FEET AND 200 FEET HIGH, AND AT INTERVALS OF 60 FEET OR LESS ON TOWERS THAT ARE HIGHER THAN 200 FEET.

ANTENNA CABLE AND SCHEDULING NOTES

1. SUBCONTRACTOR SHALL VERIFY THE ACTUAL LENGTH IN THE FIELD BEFORE INSTALLATION.

2. TAG AND COLOR CODE ALL MAIN CABLES AT LOCATIONS PER T-MOBILE ANTENNA CABLE MARKING STANDARD:

- TOP OF TOWER END OF MAIN COAX
- BOTTOM OF TOWER END OF MAIN COAX
- DIRECTLY BEFORE AND AFTER RF EQUIPMENT
- END OF JUMPERS AT BTS EQUIPMENT

3. ANTENNAS SHALL BE PROCURED AND INSTALLED WITH DOWN TILT MOUNTING BRACKETS SUPPLIED BY ANTENNA MANUFACTURER.

4. PRIOR APPROVAL IS REQUIRED BEFORE PERFORMING ANY WORK ON EXISTING CELL SITE EQUIPMENT.

T-Mobile

NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893



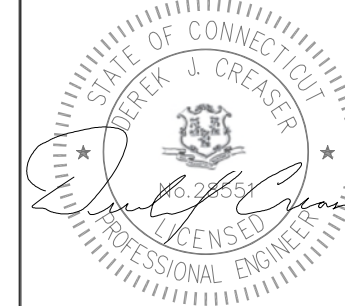
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PHONE: (508) 251-0720



750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

NO.	DATE	DESCRIPTION
1	02/26/21	ISSUED FOR CONSTRUCTION
0	12/18/20	ISSUED FOR REVIEW
DESIGNED BY:	AG	APPROVED BY:
		DC



DATE: 02/26/21

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ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		

SITE NAME: CTHA274A

SITE NUMBER: CTHA274A

SITE ADDRESS:
1214 FARMINGTON AVE
BRISTOL, CT 06010

PROJECT TYPE:
SPRINT RETAIN

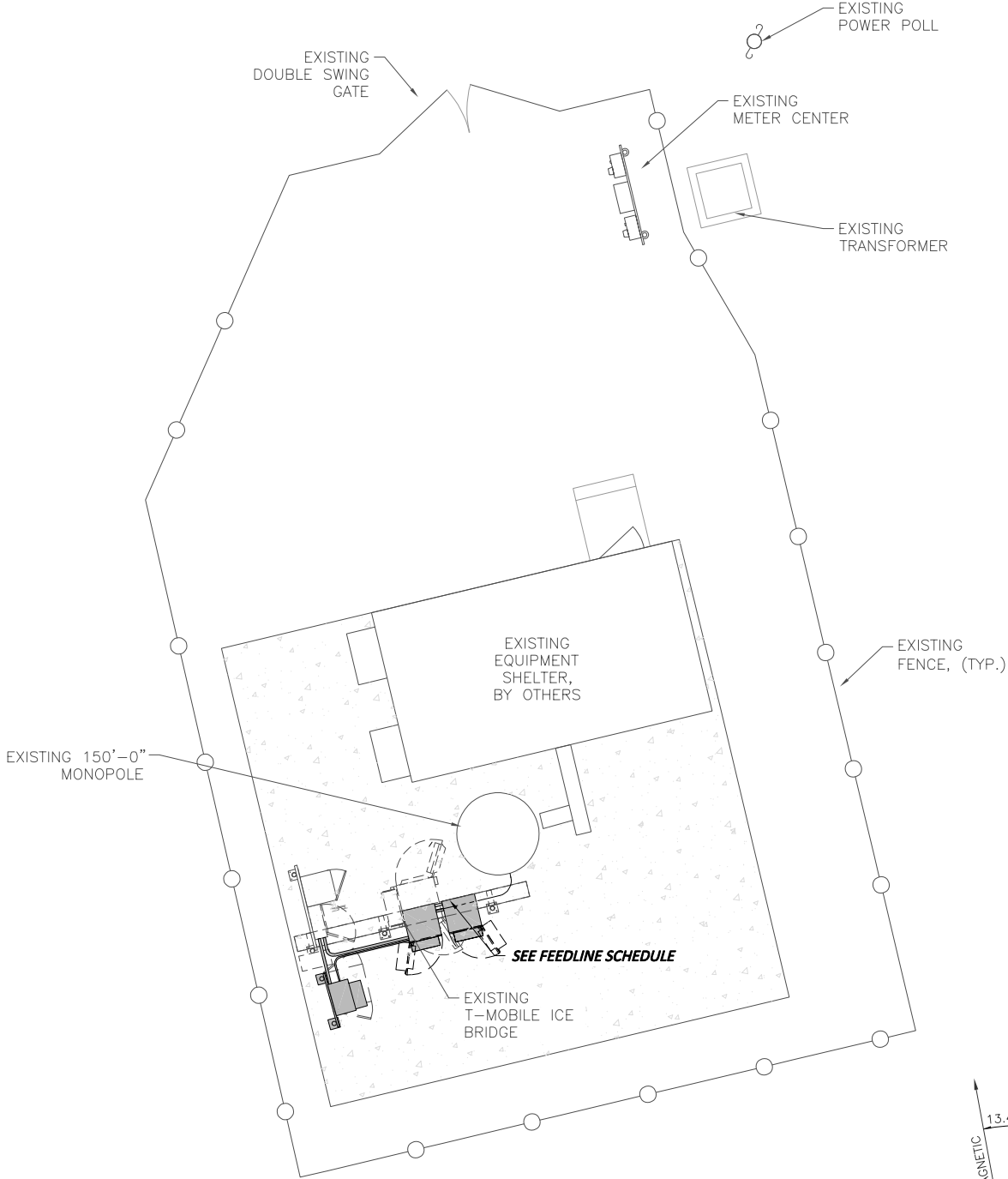
SHEET TITLE:
GENERAL NOTES

DRAWING #: GN-1 REVISION: 1

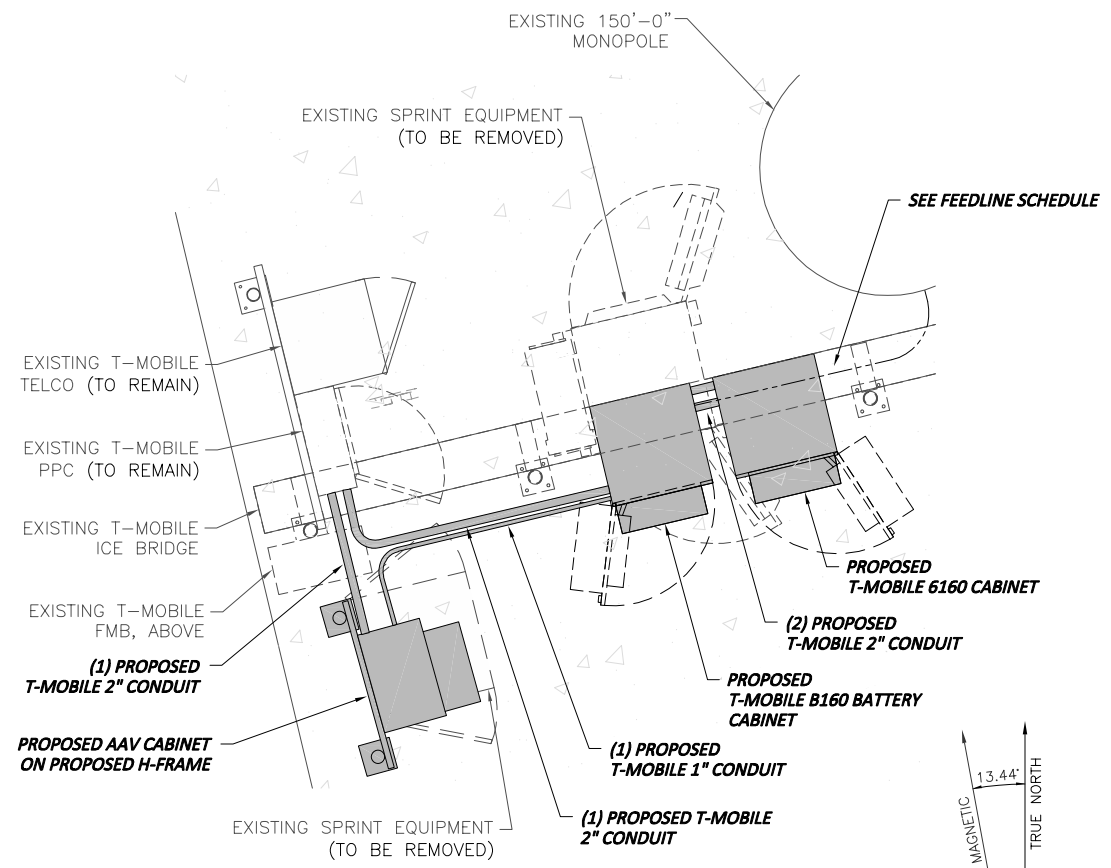
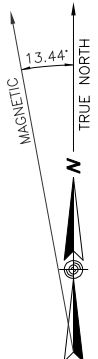
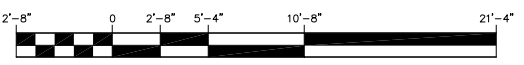
- NOTES:**
1. REFERENCE STRUCTURAL ANALYSIS BY OTHERS FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
 2. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

FEEDLINE SCHEDULE	FEEDLINES	LOCATION
A	EXISTING TO BE REMOVED: (3) 1-5/8" HYBRID CABLES (4) 1/2" DC LINES (1) 1" COAX LINE (1) 1/4" GPS LINE	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (3) 6x12 (1-5/8") HYBRID FIBER	UP INSIDE MONOPOLE TO RAD

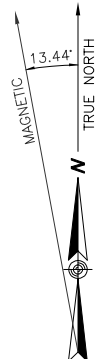
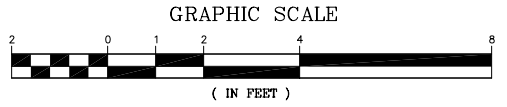
NOTE:
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON COLLOCATION APPLICATION AND SBA RECORD, NOT FIELD OBSERVATIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER. SEE STRUCTURAL ANALYSIS FOR FEEDLINE INSTALLATION.



COMPOUND PLAN
SCALE: 3/16" = 1'-0" (22"X34")
3/32" = 1'-0" (11"X17")



EQUIPMENT PLAN
SCALE: 1/2" = 1'-0" (22"X34")
1/4" = 1'-0" (11"X17")

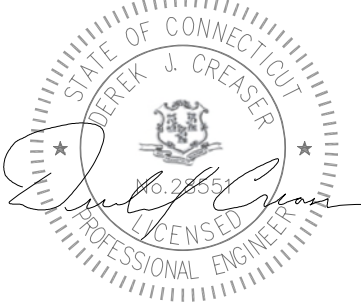


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REVISIONS	
1	02/26/21 ISSUED FOR CONSTRUCTION
0	12/18/20 ISSUED FOR REVIEW
NO.	DATE DESCRIPTION
DESIGNED BY:	APPROVED BY:
AG	DC

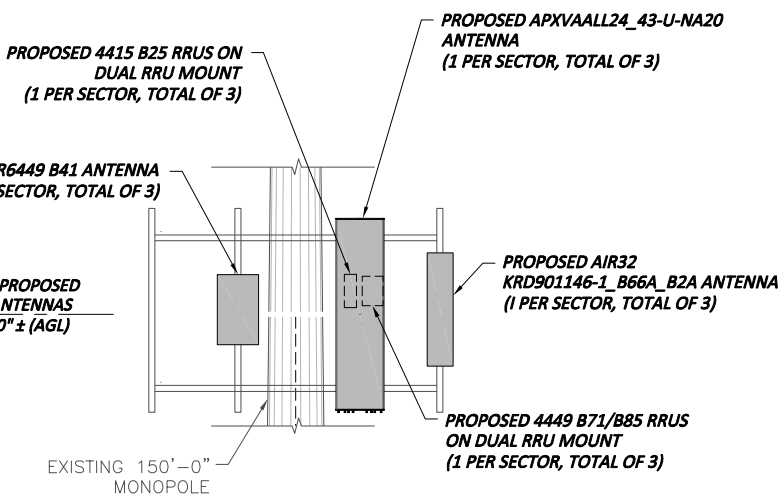
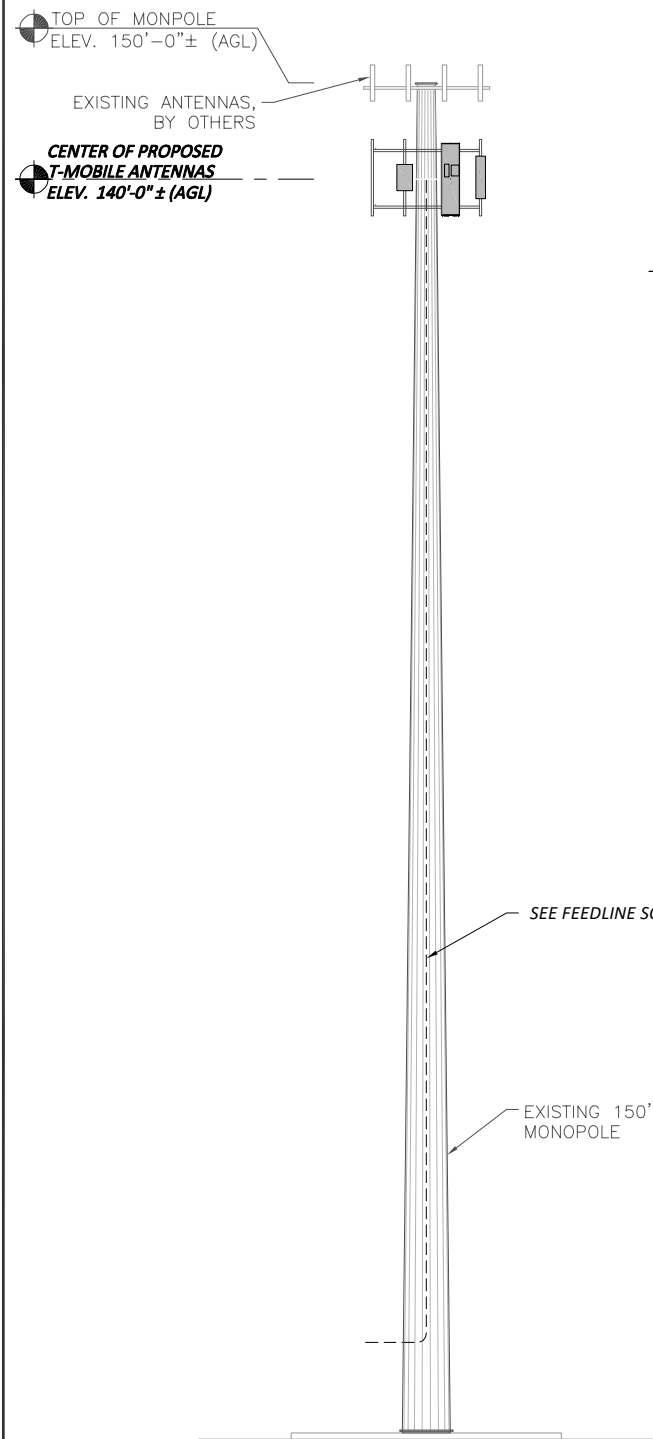


DATE: 02/26/21

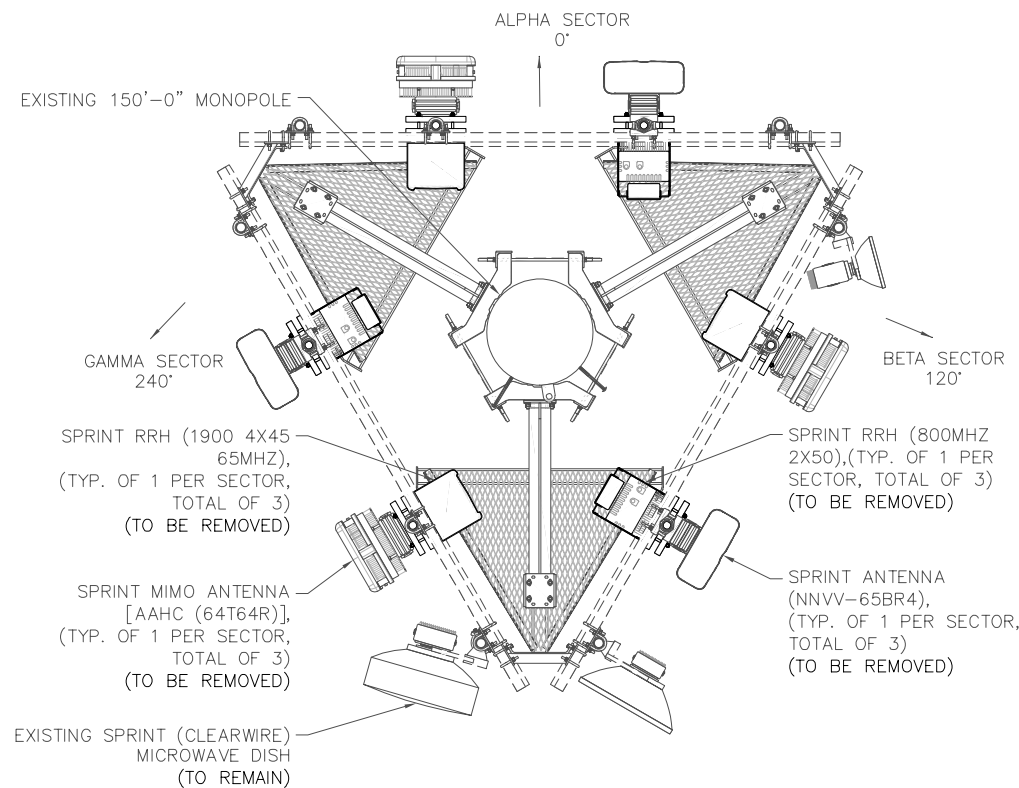
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SITE NAME:	CTHA274A
SITE NUMBER:	CTHA274A
SITE ADDRESS:	1214 FARMINGTON AVE BRISTOL, CT 06010
PROJECT TYPE:	SPRINT RETAIN
SHEET TITLE:	COMPOUND & EQUIPMENT PLANS
DRAWING #:	A-1
REVISION:	1

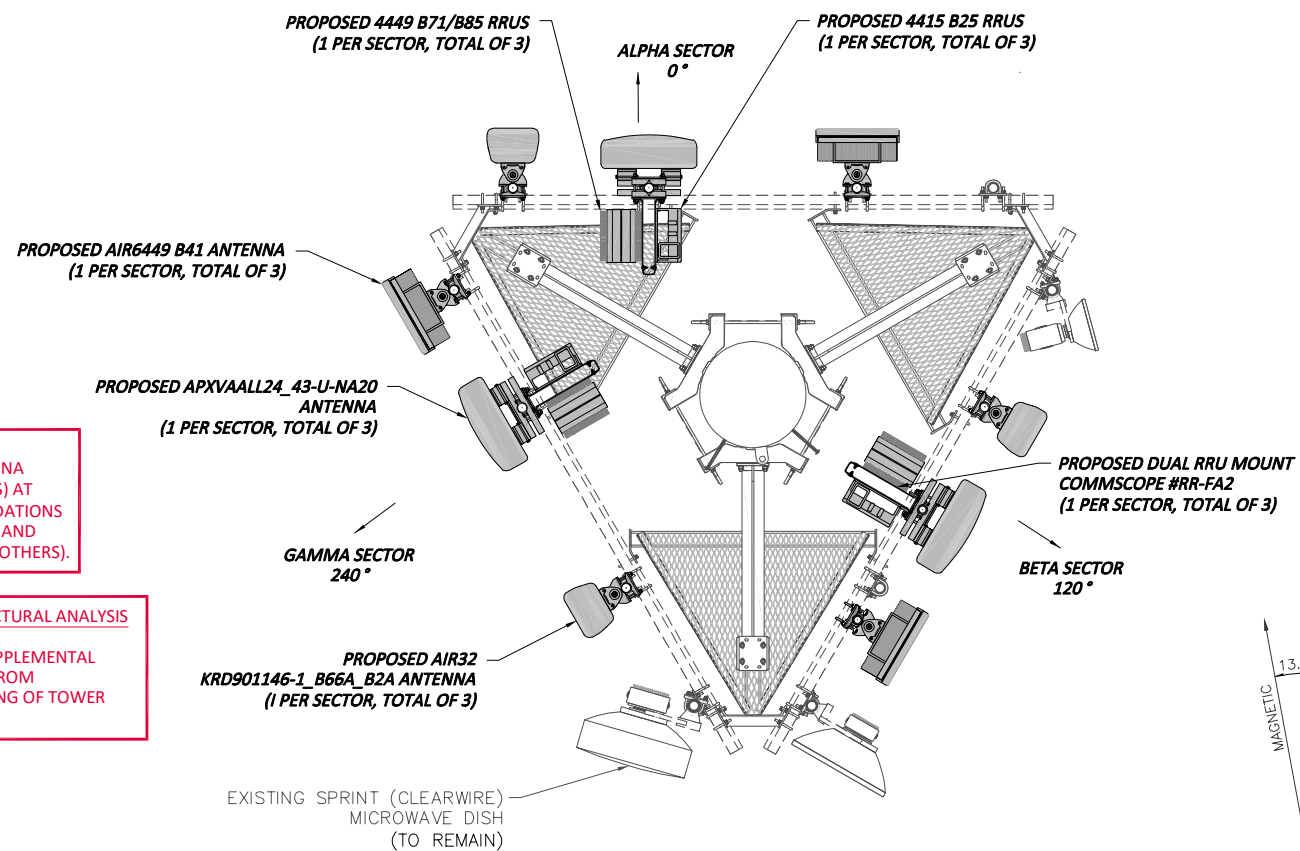
- NOTES:**
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 2. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



ENLARGED ANTENNA ELEVATION
SCALE: N.T.S



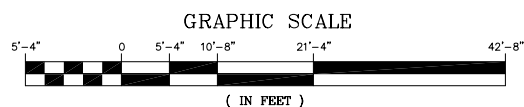
EXISTING ANTENNA CONFIGURATION
SCALE: N.T.S



PROPOSED ANTENNA CONFIGURATION
SCALE: N.T.S

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT T-MOBILE'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS)
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE OR RELOCATION.



TOWER ELEVATION
SCALE: 3/32" = 1'-0" (22"X34")
3/64" = 1'-0" (11"X17")

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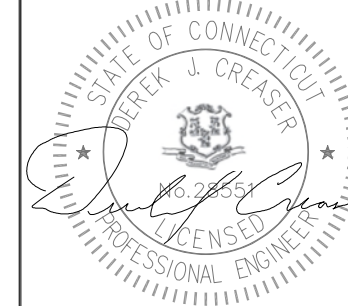


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NO.	DATE	DESCRIPTION
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0	12/18/20	ISSUED FOR REVIEW
DESIGNED BY:	AG	APPROVED BY:
		DC



DATE: 02/26/21

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SITE NUMBER:	CTHA274A
SITE ADDRESS:	1214 FARMINGTON AVE BRISTOL, CT 06010
PROJECT TYPE:	SPRINT RETAIN
SHEET TITLE:	ANTENNA LAYOUT & ELEVATIONS
DRAWING #:	A-2
REVISION:	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER
A1	PROPOSED	L2100, G1900, L1900	AIR32 KRD901146-1 B66A_B2A	56.6x12.9x8.7	±140'	0°	-	-	-	(P) (3) 1-5/8" HCS
A2	PROPOSED	L700, L600, N600, L1900	RFS-APXVALL24_4 3-U-NA20	95.9x24.0x8.7	±140'	0°	-	(P) (1) 4449 B71 B85 RRUS (P) (1) 4415 B25 RRUS	15x13.2x10.4 16.5x13.4x5.9	
A3	PROPOSED	L2500, N2500	AIR6449 B41	33.1x20.6x8.6	±140'	0°	-	-	-	
B1	PROPOSED	L2100, G1900, L1900	AIR32 KRD901146-1 B66A_B2A	56.6x12.9x8.7	±140'	120°	-	-	-	
B2	PROPOSED	L700, L600, N600, L1900	RFS-APXVALL24_4 3-U-NA20	95.9x24.0x8.7	±140'	120°	-	(P) (1) 4449 B71 B85 RRUS (P) (1) 4415 B25 RRUS	15x13.2x10.4 16.5x13.4x5.9	
B3	PROPOSED	L2500, N2500	AIR6449 B41	33.1x20.6x8.6	±140'	120°	-	-	-	
C1	PROPOSED	L2100, G1900, L1900	AIR32 KRD901146-1 B66A_B2A	56.6x12.9x8.7	±140'	240°	-	-	-	
C2	PROPOSED	L700, L600, N600, L1900	RFS-APXVALL24_4 3-U-NA20	95.9x24.0x8.7	±140'	240°	-	(P) (1) 4449 B71 B85 RRUS (P) (1) 4415 B25 RRUS	15x13.2x10.4 16.5x13.4x5.9	
C3	PROPOSED	L2500, N2500	AIR6449 B41	33.1x20.6x8.6	±140'	240°	-	-	-	

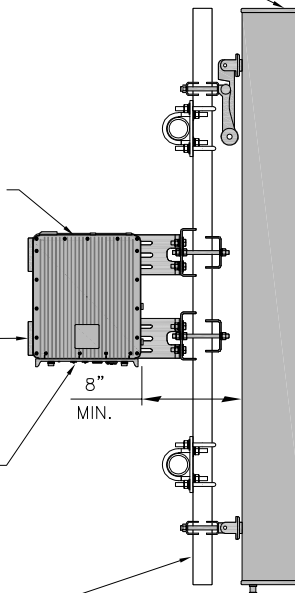
PROPOSED T-MOBILE ANTENNA
(3 PER SECTOR, TOTAL OF 9)

PROPOSED 4449 B5/B12 RRUS,
BEHIND
(1 PER SECTOR, TOTAL OF 3)

PROPOSED DUAL RRU MOUNT
COMMSCOPE #RR-FA2
(1 PER SECTOR, TOTAL OF 3)

PROPOSED 4415 B25 RRUS
(1 PER SECTOR, TOTAL OF 3)

PROPOSED 2" SCH. 40 GALV PIPE
(4 PER SECTOR, TOTAL OF 12)



ANTENNA MOUNTING DETAIL

N.T.S.

NOTES:

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RRU CHART				
QUANTITY	MODEL	L	W	D
3(P)	4449 B71/B85	15.0"	13.2"	10.4"
3(P)	4415 B25	16.5"	13.4"	5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.



RRUS DETAIL

N.T.S.

REFER TO THE FINAL RFDS AND TABLE FOR THE PROPOSED RRUS MODEL, QUANTITY, AND DIMENSIONS



ERICSSON RBS6160 EQUIPMENT CABINET

ENCLOSURE: ALUMINUM
DIMENSIONS (HxWxD): 63" X 25.6" X 33.5"
WEIGHT: 188LBS (EXCLUDES EQUIPMENT)
WEATHER TIGHTNESS: NEMA TYPE 3R

EQUIPMENT CABINET DETAIL

N.T.S.



ERICSSON B160 BATTERY CABINET

ENCLOSURE: ALUMINUM
DIMENSIONS (HxWxD): 63" X 26" X 26"
WEIGHT: 188LBS (EXCLUDES EQUIPMENT)
WEATHER TIGHTNESS: NEMA TYPE 3R

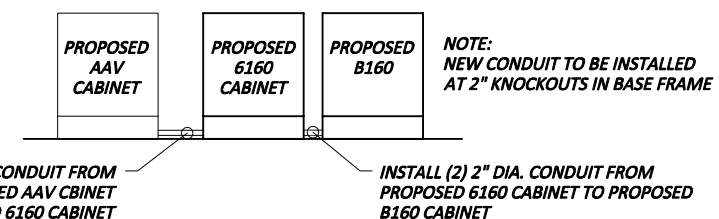


EMERSON NETXTEND COMPACT 2416 CABINET

ENCLOSURE: ALUMINUM
DIMENSIONS (HxWxD): 24" X 24" X 25.25"
WEIGHT: 64LBS (EXCLUDES EQUIPMENT)
WEATHER TIGHTNESS: NEMA TYPE 3R

AAV CABINET DETAIL

N.T.S.



CONDUIT DETAIL

N.T.S.

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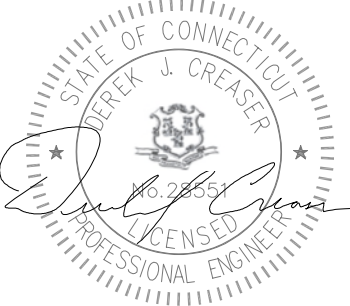


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SITE NUMBER:	CTHA274A
SITE ADDRESS:	1214 FARMINGTON AVE BRISTOL, CT 06010
PROJECT TYPE:	SPRINT RETAIN
SHEET TITLE:	DETAILS
DRAWING #:	A-3
REVISION:	1

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
N/A	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS ³
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS ⁴
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION ⁵
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
- AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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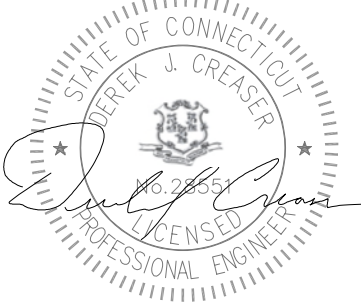


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750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS		
1	02/26/21	ISSUED FOR CONSTRUCTION
0	12/18/20	ISSUED FOR REVIEW
NO.	DATE	DESCRIPTION
DESIGNED BY:		APPROVED BY:
AG		DC



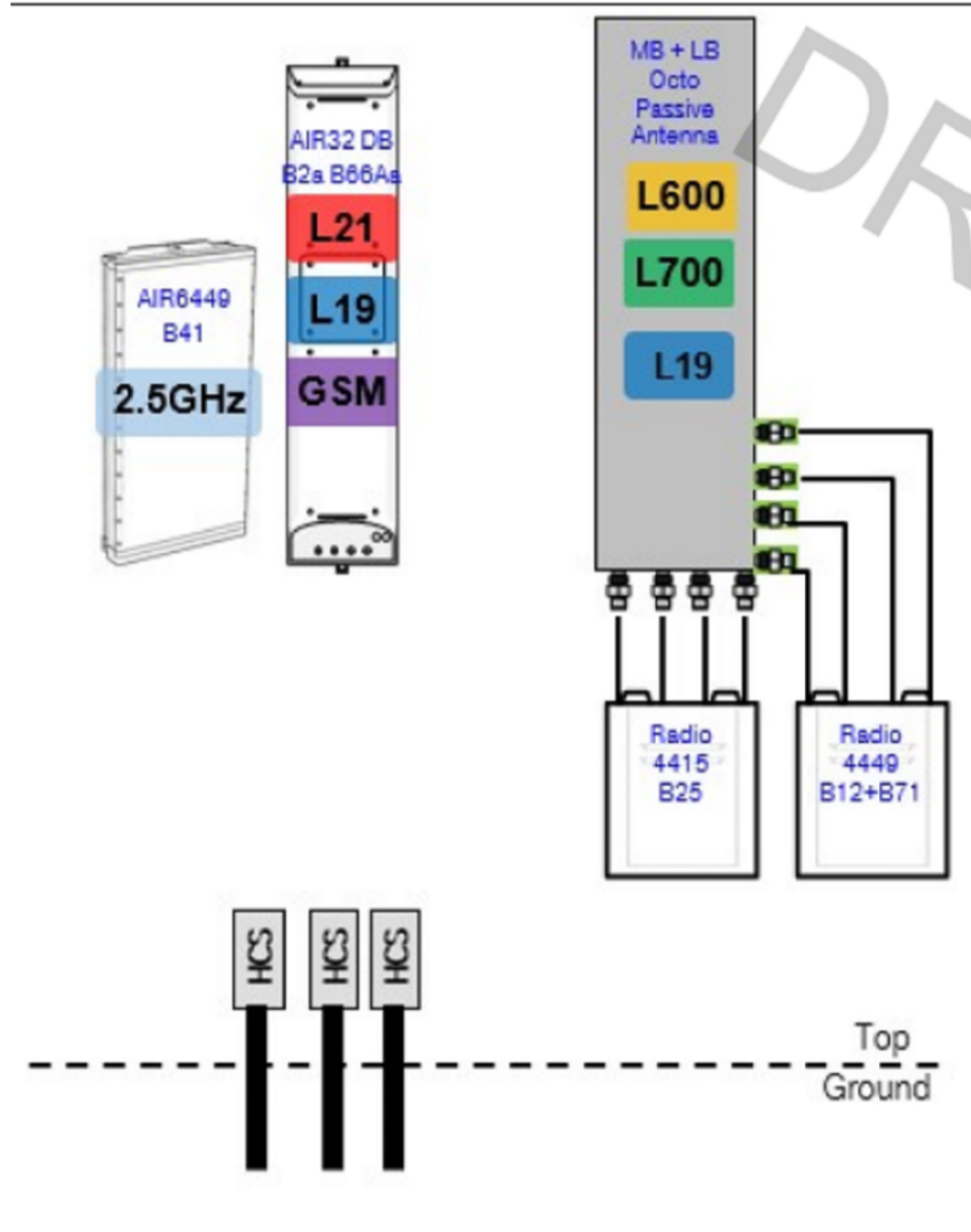
DATE: 02/26/21

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Blank area for additional notes or signatures.

SITE NAME:	CTHA274A
SITE NUMBER:	CTHA274A
SITE ADDRESS:	1214 FARMINGTON AVE BRISTOL, CT 06010
PROJECT TYPE:	SPRINT RETAIN
SHEET TITLE:	STRUCTURAL NOTES
DRAWING #:	SN-1
REVISION:	1

67D5A997DB_2xAIR+1xOP.jpg



PLUMBING DIAGRAM
N.T.S.

T - Mobile
NORTHEAST LLC
T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893

SBA 
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
PHONE: (508) 251-0720

CENTERLINE
COMMUNICATIONS
750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS		
NO.	DATE	DESCRIPTION
1	02/26/21	ISSUED FOR CONSTRUCTION
0	12/18/20	ISSUED FOR REVIEW
DESIGNED BY:		APPROVED BY:
AG		DC



DATE: 02/26/21

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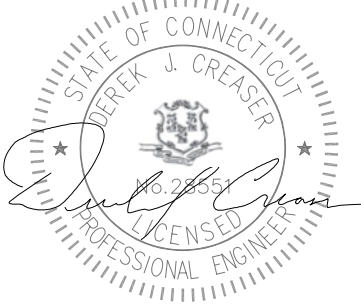
SITE NAME:	CTHA274A
SITE NUMBER:	CTHA274A
SITE ADDRESS:	1214 FARMINGTON AVE BRISTOL, CT 06010
PROJECT TYPE:	SPRINT RETAIN
SHEET TITLE:	RF PLUMBING DIAGRAM
DRAWING #:	RF-1
REVISION:	1



REVISIONS

NO.	DATE	DESCRIPTION
1	02/26/21	ISSUED FOR CONSTRUCTION
0	12/18/20	ISSUED FOR REVIEW

DESIGNED BY: AG APPROVED BY: DC



DATE: 02/26/21

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SITE NAME:	CTHA274A
SITE NUMBER:	CTHA274A
SITE ADDRESS:	1214 FARMINGTON AVE BRISTOL, CT 06010
PROJECT TYPE:	SPRINT RETAIN
SHEET TITLE:	GROUNDING DETAILS
DRAWING #:	G-1
REVISION:	1

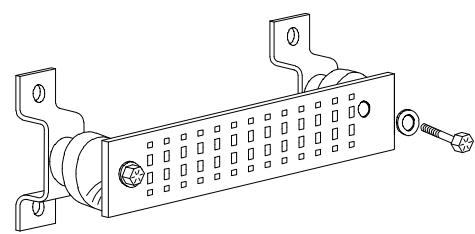
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES.

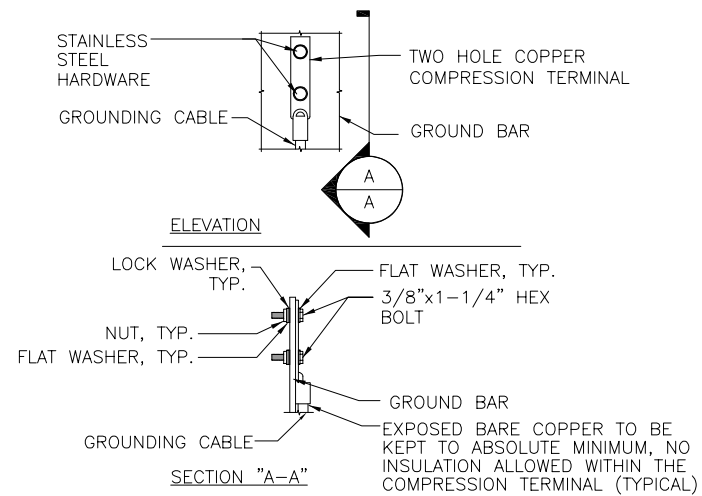
SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR DETAIL

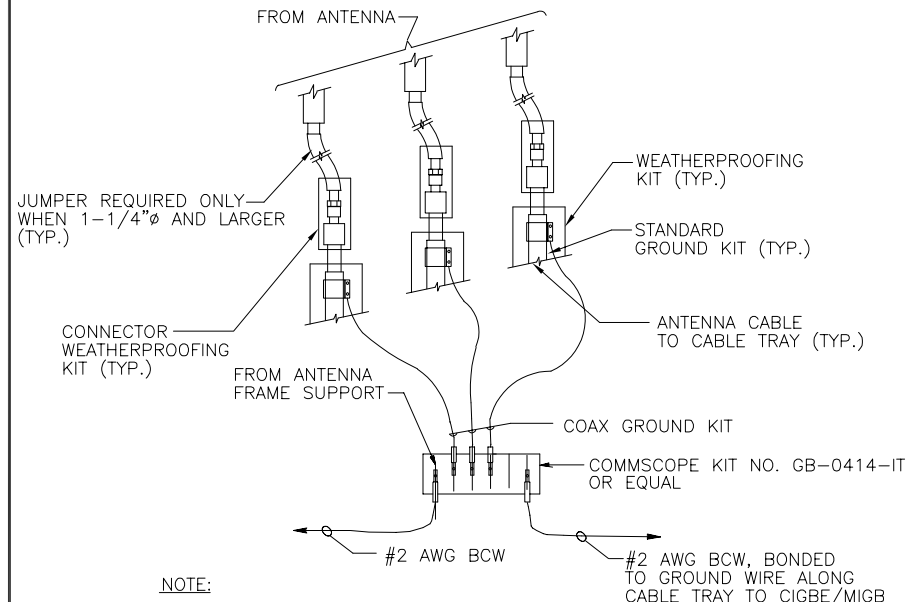
N.T.S.



- NOTE:
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
 - CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

GROUND BAR CONNECTION DETAIL

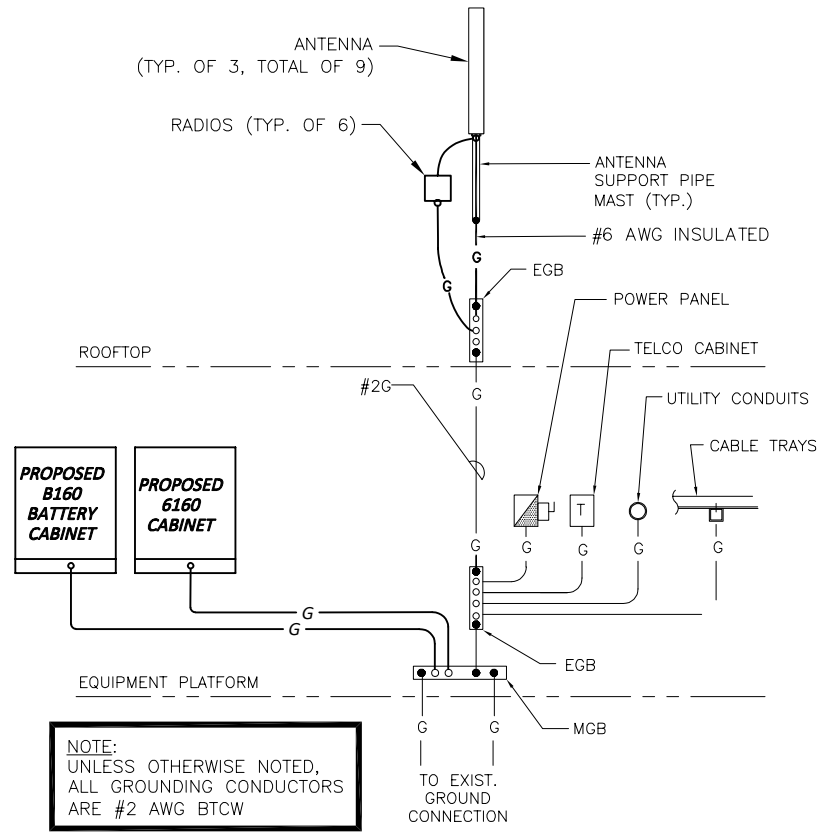
N.T.S.



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

GROUNDING RISER DIAGRAM

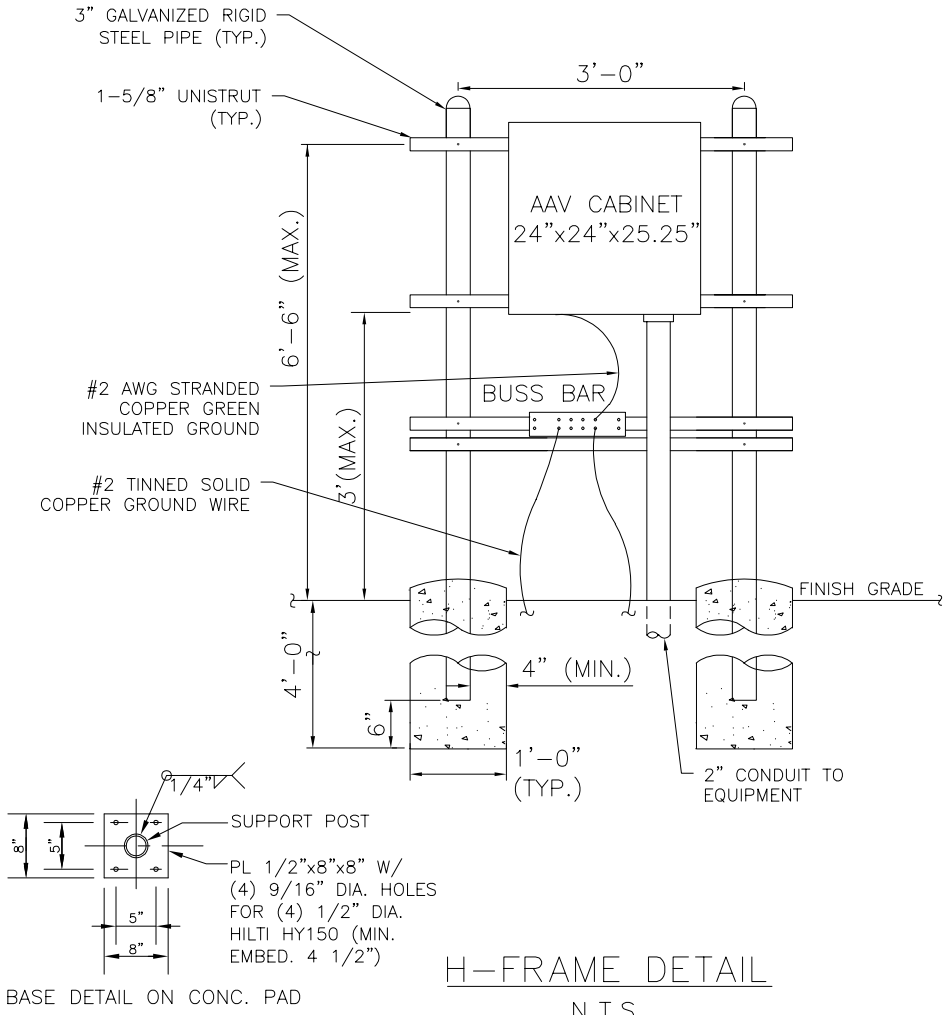
N.T.S.



NOTE:
UNLESS OTHERWISE NOTED,
ALL GROUNDING CONDUCTORS
ARE #2 AWG BTCW

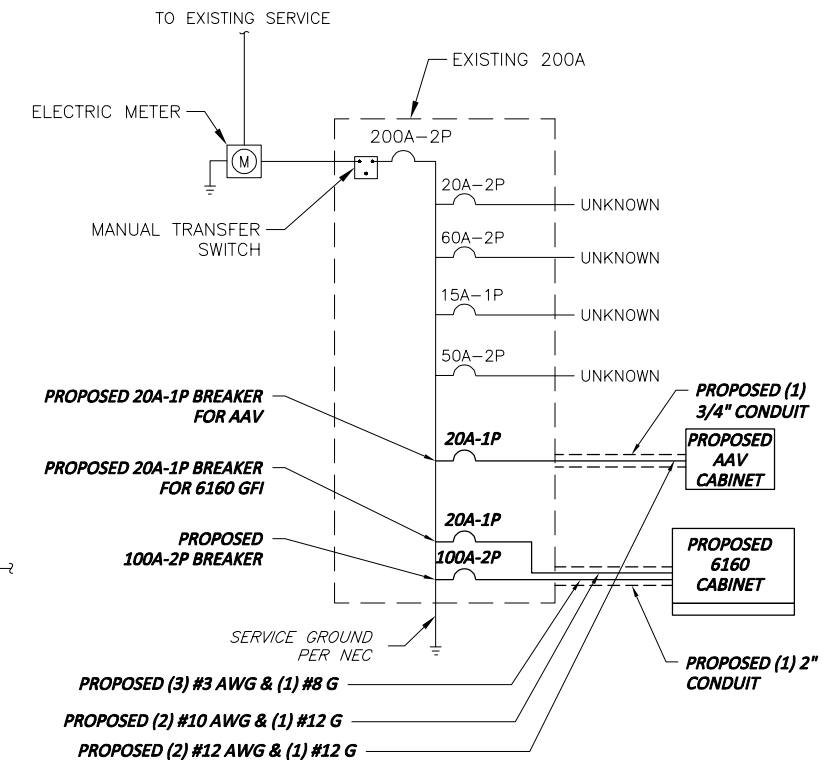
GROUNDING RISER DIAGRAM

N.T.S.



H-FRAME DETAIL

N.T.S.



- PROPOSED (3) #3 AWG & (1) #8 G
- PROPOSED (2) #10 AWG & (1) #12 G
- PROPOSED (2) #12 AWG & (1) #12 G

NOTE:
ALL WORK NEEDS TO BE PERFORMED BY
LICENSED ELECTRICIAN ADHERING TO THE
NEC AND LOCAL CODE REQUIREMENTS

ONE LINE POWER DIAGRAM

N.T.S.

EXHIBIT 7



Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 150 ft SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46136-A

Customer Site Name: Bristol-east

Carrier Name: T-Mobile Sprint (App#: 143986, V1)

Carrier Site ID / Name: CT52XC042

Site Location: 1214 Farmington Ave.

Bristol, Connecticut

Hartford County

Latitude: 41.695472

Longitude: -72.901658

Analysis Result:

Max Structural Usage: 37.2% [Pass]

Max Foundation Usage: 35.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Younus Alkarawi



Introduction

The purpose of this report is to summarize the analysis results on the 150 ft SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	PJF, Job#: 29200-1543. Summit job#: 11622. dated 10/16/2000.
Foundation Drawing	PJF, Job#: 29200-1543. Summit job#: 11622. dated 10/16/2000.
Geotechnical Report	Diversified Technology Consultants. Dated 09/14/2000.
Modification Drawings	N/A
Mount Analysis	T-Mobile Sprint MA by TES # 100562, Dated 12/14/2020

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2. In accordance with this standard, the structure was analyzed using **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 120.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 93.0$ mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.185, S_1 = 0.064$

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
-	150.0	12	Andrew - DB844H90E-XY - Panel	Low Profile Platform	(12) 1-1/4"	*Sprint Nextel
-	140.0	3	NNVV-65B-R4 - Panel	Platform w/ Hand Rail (RMQR-4096-HK) W/Site Pro 1 SFR-K V-Brace	(3) 1-1/4 Fiber (1) 1.689" Fiber (3) 1/2"	Sprint-Clear
-		3	AAHC - Panel			
-		3	ALU 1900 Mhz RRUs			
-		6	ALU 800 Mhz RRUs			
-		3	Dragonwave - Dish			
8	130.0	3	RFS APXVAA24_43-U-A20 - Panel	(1) SitePro Platform FSP-10W w/ SitePro f#P-HRK10 Handrail Kit	(3) 1 5/8" Fiber (1) 1/2"	T-Mobile
9		3	RFS APX16DWV-16DWV-S-EA20 (Quad) - Panel			
10		3	Ericsson AIR3246 B66 (Octa) - Panel			
11		3	Ericsson AIR 5122 28GHz - Panel			
12		1	Commscope SHP2-13 - Dish			
13		3	Ericsson Radio 4415 B25			
14		3	Ericsson Radio 4449 B71 + B12			
15		3	Ericsson Radio 2217 B66A			

*Sprint Nextel is terminated at 150.0'. T-Mobile will remove the equipment at 150.0' as part of their install.

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	140.0	3	Ericsson AIR32 KRD901146-1_B66A_B2A (Octo)- Panel	Platform w/ Hand Rail (RMQR-4096-HK) W/ Site Pro 1 SFR-K V-Brace	(3) 2" Hybrid (1) 1.689" Fiber	T-Mobile Sprint
2		3	RFS APXVAALL24_43-U-NA20- Panel			
3		3	Ericsson AIR6449 B41- Panel			
4		3	DragonWave VHLPX3-11W-4GR - Dish			
5		3	ALU 1900MHz RRH			
6		3	Ericsson 4449 B71 + B85- RRU			
7		3	Ericsson 4415 B25 - RRU			

See the attached coax layout for the line placement considered in the analysis.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	36.1%	36.9%	37.2%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3182.5	30.4	55.1

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
140.0	DragonWave VHLPX3-11W-4GR - Dish	T-Mobile Sprint	0.001	0.566
130.0	Commscope SHP2-13 - Dish	T-Mobile	0.001	0.559

It is recommended that the carriers review the twist and sway values of the microwave dishes.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222 Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 36.12% at 0.0ft

Structure: CT46136-A-SBA
Site Name: Bristol-east
Height: 150.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-G
Exposure: C
Gh: 1.1

12/16/2020



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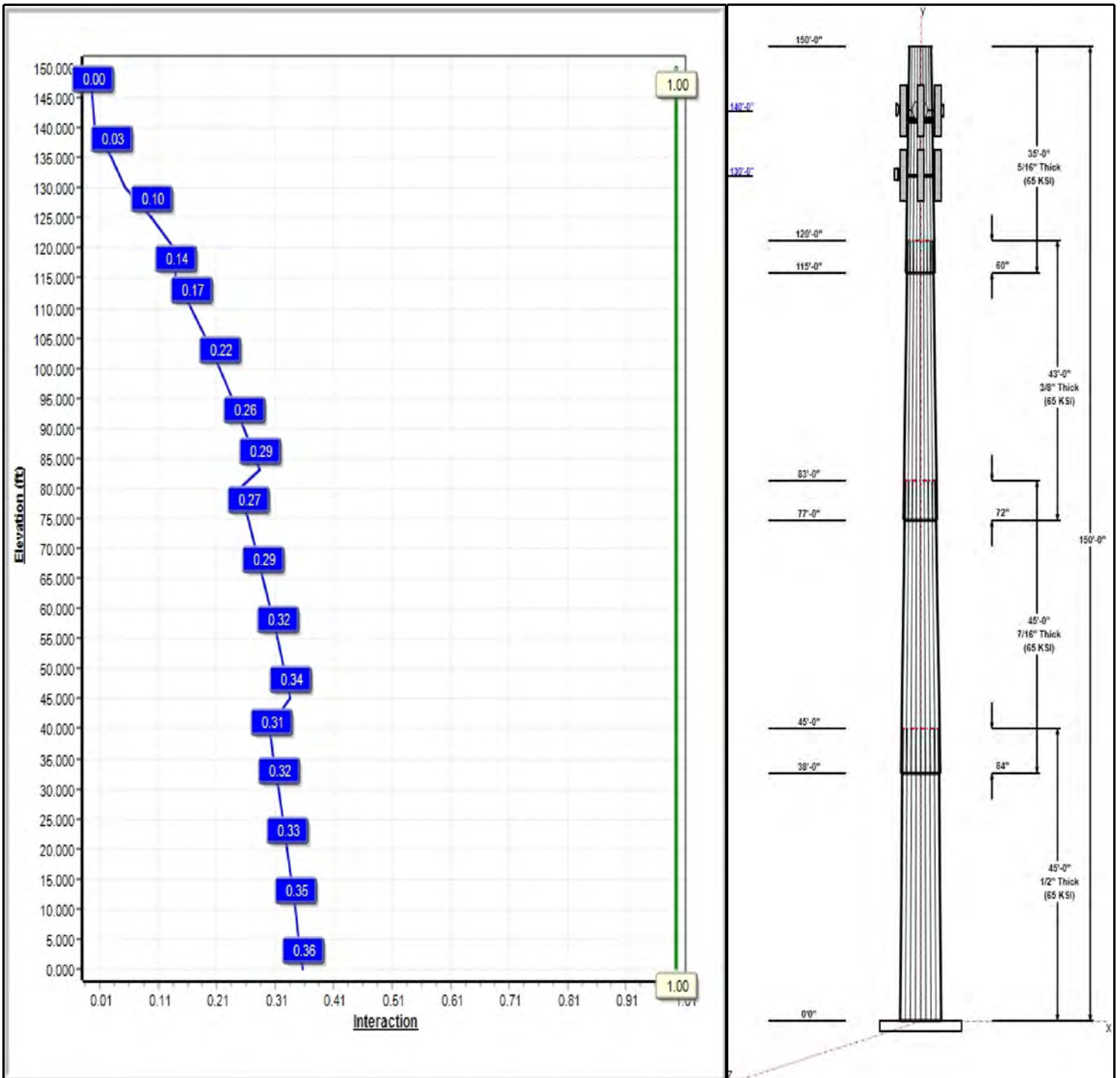
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Iterations: 19

Load Case : 1.2D + 1.6W 93 mph Wind



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Structure: CT46136-A-SBA

Type: Tapered
Site Name: Bristol-east
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23607

12/16/2020

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	53.15	63.77	0.500		0.23607	65
2	45.00	45.05	55.67	0.438	Slip	0.23607	65
3	43.00	37.07	47.22	0.375	Slip	0.23607	65
4	35.00	30.61	38.87	0.313	Slip	0.23607	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
140.00	140.00	3	Dragonwave	T-Mobile Sprint
140.00	140.00	3	ALU 1900 Mhz RRUs	T-Mobile Sprint
140.00	140.00	1	RMQP-496-HK	T-Mobile Sprint
140.00	140.00	3	AIR32 KRD901146-	T-Mobile Sprint
140.00	140.00	3	APXVAALL24_43-U-NA20	T-Mobile Sprint
140.00	140.00	3	AIR6449 B41	T-Mobile Sprint
140.00	140.00	3	4449 B71 + B85	T-Mobile Sprint
140.00	140.00	3	4415 B25	T-Mobile Sprint
140.00	140.00	1	SFR-K-V-Brace	T-Mobile Sprint
130.00	130.00	3	APXVAA24_43-U-A20	T-Mobile
130.00	130.00	3	APX16DWV-16DWV-S-EA	T-Mobile
130.00	130.00	3	AIR3246 B66	T-Mobile
130.00	130.00	3	AIR 5122 28GHz	T-Mobile
130.00	130.00	1	SHP2-13	T-Mobile
130.00	130.00	3	Radio 4415 B25	T-Mobile
130.00	130.00	3	Radio 4449 B71 + B12	T-Mobile
130.00	130.00	3	Radio 2217 B66A	T-Mobile
130.00	130.00	1	FSP-10W	T-Mobile
130.00	130.00	1	f#P-HRK10	T-Mobile

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	140.00	Inside	1/2" Coax	T-Mobile Sprint
0.00	140.00	Inside	2" Hybrid	T-Mobile Sprint
0.00	130.00	Inside	1 5/8" Fiber	T-Mobile
0.00	130.00	Inside	1/2" Coax	T-Mobile

Anchor Bolts

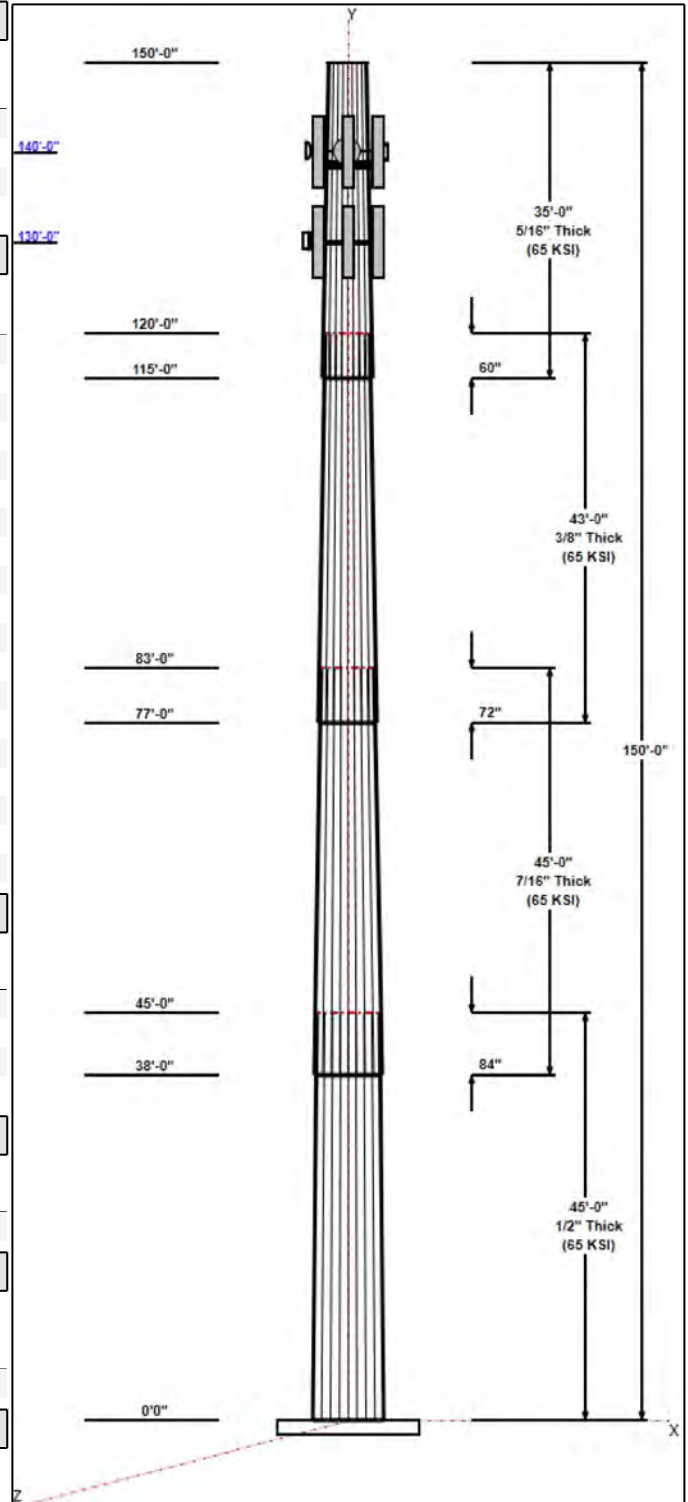
Qty	Specifications	Grade (ksi)	Arrangement
24	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	71.0	55.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	3182.5	30.4	55.1
0.9D + 1.6W 93 mph Wind	3165.0	30.3	41.3
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1078.4	10.3	89.0
1.2D + 1.0E	237.5	2.2	55.1
0.9D + 1.0E	236.1	2.2	41.3



Structure: CT46136-A-SBA

Type: Tapered
Site Name: Bristol-east
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23607

12/16/2020

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1.0D + 1.0W 60 mph Wind 825.0 7.9 45.9

Structure: CT46136-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Bristol-east
Height: 150.00 (ft)

12/16/2020



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Shaft Properties

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.5000	65		0.00	14,084
2	18	45.000	0.4375	65	Slip	84.00	10,615
3	18	43.000	0.3750	65	Slip	72.00	7,274
4	18	35.000	0.3125	65	Slip	60.00	4,067
Total Shaft Weight:							36,040

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper
1	63.77	0.00	100.4	50781.78	21.08	127.54	53.15	45.00	83.55	29257.3	17.33	106.2	0.236067
2	55.67	38.00	76.70	29567.32	21.03	127.26	45.05	83.00	61.95	15578.8	16.75	102.9	0.236067
3	47.22	77.00	55.75	15456.32	20.79	125.91	37.07	120.00	43.67	7428.31	16.02	98.85	0.236067
4	38.87	115.0	38.25	7184.55	20.52	124.39	30.61	150.00	30.05	3485.10	15.86	97.95	0.236067

Load Summary

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	140.00	Dragonwave	3	27.10	4.68	1.00	156.69	6.367	1.00	0.10	0.00
2	140.00	ALU 1900 Mhz RRUs	3	60.00	2.77	0.67	170.48	4.450	0.67	0.00	0.00
3	140.00	RMQP-496-HK	1	2449.00	48.00	1.00	5844.72	92.370	1.00	0.00	0.00
4	140.00	AIR32 KRD901146-	3	132.20	6.51	0.87	389.47	8.026	0.87	0.00	0.00
5	140.00	APXVAALL24_43-U-NA20	3	122.80	20.24	0.73	712.29	22.787	0.73	0.00	0.00
6	140.00	AIR6449 B41	3	103.00	5.65	0.71	284.57	6.909	0.71	0.00	0.00
7	140.00	4449 B71 + B85	3	73.20	1.97	0.67	149.66	2.724	0.67	0.00	0.00
8	140.00	4415 B25	3	46.30	1.86	0.67	134.23	2.634	0.67	0.00	0.00
9	140.00	SFR-K-V-Brace	1	394.00	16.60	1.00	1352.59	32.712	1.00	0.00	0.00
10	130.00	APXVAA24_43-U-A20	3	99.00	20.24	0.73	683.43	22.767	0.73	0.00	0.00
11	130.00	APX16DWV-16DWV-S-EA20	3	40.70	6.46	0.62	233.83	7.954	0.62	0.00	0.00
12	130.00	AIR3246 B66	3	132.20	6.51	0.87	387.12	8.014	0.87	0.00	0.00
13	130.00	AIR 5122 28GHz	3	24.30	1.89	0.76	89.58	3.147	0.76	0.00	0.00
14	130.00	SHP2-13	1	152.00	3.96	1.00	165.95	4.323	1.00	1.00	0.00
15	130.00	Radio 4415 B25	3	46.00	1.64	0.67	100.03	2.317	0.67	0.00	0.00
16	130.00	Radio 4449 B71 + B12	3	70.00	1.65	0.67	167.14	2.381	0.67	0.00	0.00
17	130.00	Radio 2217 B66A	3	27.00	1.35	0.67	72.11	1.974	0.67	0.00	0.00
18	130.00	FSP-10W	1	2396.00	58.98	1.00	5473.85	50.980	1.00	0.00	0.00
19	130.00	##P-HRK10	1	478.27	9.00	1.00	1092.65	23.039	1.00	0.00	0.00
Totals:			47	8,880.67			25,121.66				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	140.00	(3) 1/2" Coax	0.00	Inside
0.00	140.00	(3) 2" Hybrid	0.00	Inside
0.00	130.00	(3) 1 5/8" Fiber	0.00	Inside
0.00	130.00	(1) 1/2" Coax	0.00	Inside

Shaft Section Properties

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in ³)	Weight (lb)
0.00		0.5000	63.770	100.406	50781.8	21.08	127.54	76.6	1568.	0.0
5.00		0.5000	62.590	98.533	47992.4	20.66	125.18	77.1	1510.	1692.4
10.00		0.5000	61.409	96.660	45307.1	20.25	122.82	77.6	1453.	1660.5
15.00		0.5000	60.229	94.787	42723.8	19.83	120.46	78.1	1397.	1628.6
20.00		0.5000	59.049	92.913	40240.7	19.41	118.10	78.6	1342.	1596.8
25.00		0.5000	57.868	91.040	37855.7	19.00	115.74	79.1	1288.	1564.9
30.00		0.5000	56.688	89.167	35566.8	18.58	113.38	79.5	1235.	1533.0
35.00		0.5000	55.508	87.294	33372.1	18.16	111.02	80.0	1184.	1501.1
38.00	Bot - Section 2	0.5000	54.799	86.170	32099.7	17.91	109.60	80.3	1153.	885.4
40.00		0.5000	54.327	85.421	31269.6	17.75	108.65	80.5	1133.	1103.6
45.00	Top - Section 1	0.4375	54.022	74.406	26992.3	20.36	123.48	0.0	0.0	2717.3
50.00		0.4375	52.842	72.767	25247.6	19.89	120.78	78.0	941.1	1252.0
55.00		0.4375	51.661	71.128	23579.7	19.41	118.08	78.6	899.0	1224.1
60.00		0.4375	50.481	69.489	21987.0	18.93	115.39	79.1	857.9	1196.2
65.00		0.4375	49.301	67.850	20467.6	18.46	112.69	79.7	817.7	1168.3
70.00		0.4375	48.120	66.211	19019.9	17.98	109.99	80.2	778.5	1140.5
75.00		0.4375	46.940	64.572	17642.1	17.51	107.29	80.8	740.3	1112.6
77.00	Bot - Section 3	0.4375	46.468	63.917	17110.2	17.32	106.21	81.0	725.2	437.2
80.00		0.4375	45.760	62.933	16332.6	17.03	104.59	81.4	703.0	1212.3
83.00	Top - Section 2	0.3750	45.801	54.067	14096.2	20.13	122.14	0.0	0.0	1193.7
85.00		0.3750	45.329	53.505	13661.2	19.90	120.88	78.0	593.6	366.0
90.00		0.3750	44.149	52.100	12613.2	19.35	117.73	78.6	562.7	898.4
95.00		0.3750	42.969	50.695	11620.1	18.79	114.58	79.3	532.6	874.5
100.00		0.3750	41.788	49.290	10680.6	18.24	111.44	79.9	503.4	850.6
105.00		0.3750	40.608	47.886	9793.2	17.68	108.29	80.6	475.0	826.7
110.00		0.3750	39.428	46.481	8956.3	17.13	105.14	81.3	447.4	802.8
115.00	Bot - Section 4	0.3750	38.247	45.076	8168.5	16.57	101.99	81.9	420.7	778.9
120.00	Top - Section 3	0.3125	37.692	37.074	6544.8	19.86	120.61	0.0	0.0	1395.7
125.00		0.3125	36.512	35.904	5944.2	19.19	116.84	78.8	320.7	620.8
130.00		0.3125	35.331	34.733	5381.5	18.52	113.06	79.6	300.0	600.9
135.00		0.3125	34.151	33.562	4855.4	17.86	109.28	80.4	280.0	581.0
140.00		0.3125	32.971	32.392	4364.9	17.19	105.51	81.2	260.7	561.1
145.00		0.3125	31.790	31.221	3908.5	16.53	101.73	82.0	242.2	541.1
150.00		0.3125	30.610	30.050	3485.1	15.86	97.95	82.5	224.3	521.2

36040.1

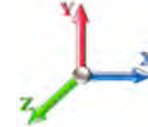
Wind Loading - Shaft

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Page: 8
	Struct Class: II	



Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	17.879	19.67	462.68	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	454.11	0.650	0.000	5.00	26.731	17.38	546.8	0.0	2030.8
10.00		1.00	0.85	17.879	19.67	445.55	0.650	0.000	5.00	26.232	17.05	536.5	0.0	1992.6
15.00		1.00	0.85	17.879	19.67	436.98	0.650	0.000	5.00	25.732	16.73	526.3	0.0	1954.3
20.00		1.00	0.90	18.971	20.87	441.30	0.650	0.000	5.00	25.233	16.40	547.6	0.0	1916.1
25.00		1.00	0.95	19.883	21.87	442.76	0.650	0.000	5.00	24.733	16.08	562.6	0.0	1877.9
30.00		1.00	0.98	20.661	22.73	442.13	0.650	0.000	5.00	24.234	15.75	572.8	0.0	1839.6
35.00		1.00	1.01	21.343	23.48	440.01	0.650	0.000	5.00	23.735	15.43	579.5	0.0	1801.4
38.00 Bot - Section 2		1.00	1.03	21.715	23.89	438.17	0.650	0.000	3.00	14.001	9.10	347.8	0.0	1062.5
40.00		1.00	1.04	21.951	24.15	436.75	0.650	0.000	2.00	9.382	6.10	235.6	0.0	1324.4
45.00 Top - Section 1		1.00	1.07	22.502	24.75	432.59	0.650	0.000	5.00	23.106	15.02	594.8	0.0	3260.7
50.00		1.00	1.09	23.007	25.31	434.90	0.650	0.000	5.00	22.607	14.69	595.0	0.0	1502.4
55.00		1.00	1.12	23.473	25.82	429.47	0.650	0.000	5.00	22.107	14.37	593.7	0.0	1468.9
60.00		1.00	1.14	23.907	26.30	423.52	0.650	0.000	5.00	21.608	14.05	591.0	0.0	1435.5
65.00		1.00	1.16	24.313	26.74	417.12	0.650	0.000	5.00	21.109	13.72	587.1	0.0	1402.0
70.00		1.00	1.17	24.696	27.17	410.32	0.650	0.000	5.00	20.609	13.40	582.2	0.0	1368.5
75.00		1.00	1.19	25.057	27.56	403.17	0.650	0.000	5.00	20.110	13.07	576.5	0.0	1335.1
77.00 Bot - Section 3		1.00	1.20	25.196	27.72	400.23	0.650	0.000	2.00	7.904	5.14	227.8	0.0	524.7
80.00		1.00	1.21	25.400	27.94	395.72	0.650	0.000	3.00	11.897	7.73	345.7	0.0	1454.8
83.00 Top - Section 2		1.00	1.22	25.597	28.16	391.10	0.650	0.000	3.00	11.717	7.62	343.1	0.0	1432.4
85.00		1.00	1.22	25.726	28.30	394.50	0.650	0.000	2.00	7.711	5.01	227.0	0.0	439.3
90.00		1.00	1.24	26.037	28.64	386.55	0.650	0.000	5.00	18.929	12.30	563.8	0.0	1078.1
95.00		1.00	1.25	26.336	28.97	378.36	0.650	0.000	5.00	18.429	11.98	555.2	0.0	1049.4
100.00		1.00	1.27	26.621	29.28	369.96	0.650	0.000	5.00	17.930	11.65	546.1	0.0	1020.7
105.00		1.00	1.28	26.896	29.59	361.36	0.650	0.000	5.00	17.431	11.33	536.3	0.0	992.0
110.00		1.00	1.29	27.161	29.88	352.58	0.650	0.000	5.00	16.931	11.01	526.1	0.0	963.3
115.00 Bot - Section 4		1.00	1.30	27.416	30.16	343.63	0.650	0.000	5.00	16.432	10.68	515.4	0.0	934.6
120.00 Top - Section 3		1.00	1.32	27.663	30.43	334.52	0.650	0.000	5.00	16.197	10.53	512.6	0.0	1674.8
125.00		1.00	1.33	27.902	30.69	330.93	0.650	0.000	5.00	15.698	10.20	501.1	0.0	745.0
130.00 Appurtenance(s)		1.00	1.34	28.133	30.95	321.56	0.650	0.000	5.00	15.198	9.88	489.1	0.0	721.1
135.00		1.00	1.35	28.358	31.19	312.05	0.650	0.000	5.00	14.699	9.55	476.8	0.0	697.2
140.00 Appurtenance(s)		1.00	1.36	28.576	31.43	302.42	0.650	0.000	5.00	14.199	9.23	464.2	0.0	673.3
145.00		1.00	1.37	28.788	31.67	292.67	0.650	0.000	5.00	13.700	8.91	451.2	0.0	649.4
150.00		1.00	1.38	28.994	31.89	282.81	0.650	0.000	5.00	13.201	8.58	437.8	0.0	625.5
Totals:									150.00			16,295.2		43,248.1

Discrete Appurtenance Forces

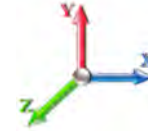
Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 19

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	140.00	Dragonwave	3	28.576	31.433	1.00	1.00	14.04	97.56	1.495	0.000	706.12	659.76	0.00
2	140.00	SFR-K-V-Brace	1	28.576	31.433	1.00	1.00	16.60	472.80	0.000	0.000	834.87	0.00	0.00
3	140.00	4415 B25	3	28.576	31.433	0.50	0.75	2.80	166.68	0.000	0.000	141.02	0.00	0.00
4	140.00	4449 B71 + B85	3	28.576	31.433	0.50	0.75	2.97	263.52	0.000	0.000	149.36	0.00	0.00
5	140.00	AIR6449 B41	3	28.576	31.433	0.53	0.75	9.03	370.80	0.000	0.000	453.94	0.00	0.00
6	140.00	APXVAALL24_43-U-NA20	3	28.576	31.433	0.55	0.75	33.24	442.08	0.000	0.000	1671.96	0.00	0.00
7	140.00	AIR32 KRD901146-	3	28.576	31.433	0.65	0.75	12.74	475.92	0.000	0.000	640.90	0.00	0.00
8	140.00	ALU 1900 Mhz RRU's	3	28.576	31.433	0.50	0.75	4.18	216.00	0.000	0.000	210.01	0.00	0.00
9	140.00	RMQP-496-HK	1	28.576	31.433	1.00	1.00	48.00	2938.80	0.000	0.000	2414.07	0.00	0.00
10	130.00	APXVAA24_43-U-A20	3	28.133	30.947	0.55	0.75	33.24	356.40	0.000	0.000	1646.07	0.00	0.00
11	130.00	f#P-HRK10	1	28.133	30.947	1.00	1.00	9.00	573.92	0.000	0.000	445.63	0.00	0.00
12	130.00	FSP-10W	1	28.133	30.947	1.00	1.00	58.98	2875.20	0.000	0.000	2920.37	0.00	0.00
13	130.00	Radio 2217 B66A	3	28.133	30.947	0.50	0.75	2.04	97.20	0.000	0.000	100.77	0.00	0.00
14	130.00	Radio 4449 B71 + B12	3	28.133	30.947	0.50	0.75	2.49	252.00	0.000	0.000	123.16	0.00	0.00
15	130.00	Radio 4415 B25	3	28.133	30.947	0.50	0.75	2.47	165.60	0.000	0.000	122.41	0.00	0.00
16	130.00	SHP2-13	1	28.133	30.947	1.00	1.00	3.96	182.40	2.495	0.000	196.08	305.74	0.00
17	130.00	AIR 5122 28GHz	3	28.133	30.947	0.57	0.75	3.23	87.48	0.000	0.000	160.03	0.00	0.00
18	130.00	AIR3246 B66	3	28.133	30.947	0.65	0.75	12.74	475.92	0.000	0.000	630.98	0.00	0.00
19	130.00	APX16DWV-16DWV-S-EA	3	28.133	30.947	0.46	0.75	9.01	146.52	0.000	0.000	446.21	0.00	0.00
Totals:									10,656.80			14,013.96		

Total Applied Force Summary

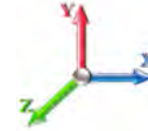
Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 19

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		546.75	2074.27	0.00	0.00
10.00		536.54	2036.03	0.00	0.00
15.00		526.32	1997.79	0.00	0.00
20.00		547.61	1959.54	0.00	0.00
25.00		562.59	1921.30	0.00	0.00
30.00		572.80	1883.06	0.00	0.00
35.00		579.50	1844.81	0.00	0.00
38.00		347.82	1088.53	0.00	0.00
40.00		235.61	1341.75	0.00	0.00
45.00		594.81	3304.18	0.00	0.00
50.00		595.01	1545.83	0.00	0.00
55.00		593.65	1512.37	0.00	0.00
60.00		590.97	1478.91	0.00	0.00
65.00		587.12	1445.45	0.00	0.00
70.00		582.25	1411.98	0.00	0.00
75.00		576.45	1378.52	0.00	0.00
77.00		227.83	542.04	0.00	0.00
80.00		345.69	1480.83	0.00	0.00
83.00		343.11	1458.46	0.00	0.00
85.00		226.95	456.63	0.00	0.00
90.00		563.83	1121.49	0.00	0.00
95.00		555.24	1092.81	0.00	0.00
100.00		546.06	1064.13	0.00	0.00
105.00		536.33	1035.45	0.00	0.00
110.00		526.09	1006.76	0.00	0.00
115.00		515.38	978.08	0.00	0.00
120.00		512.58	1718.29	0.00	0.00
125.00		501.06	788.43	0.00	0.00
130.00	(24) attachments	7280.86	5977.17	305.74	0.00
135.00		476.85	719.86	0.00	0.00
140.00	(23) attachments	7686.43	6140.12	659.76	0.00
145.00		451.18	649.38	0.00	0.00
150.00		437.85	625.48	0.00	0.00
	Totals:	30,309.14	55,079.72	965.50	0.00

Calculated Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

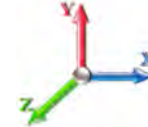


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Load Case: 1.2D + 1.6W 93 mph Wind

Iterations 19

Dead Load Factor 1.20
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-55.06	-30.35	-0.96	-3182.5	0.00	3182.52	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.361
5.00	-52.94	-29.88	-0.96	-3030.7	0.00	3030.77	6837.06	3418.53	17439.8	8732.91	0.05	-0.087	0.000	0.355
10.00	-50.86	-29.42	-0.96	-2881.3	0.00	2881.35	6749.68	3374.84	16887.0	8456.09	0.19	-0.175	0.000	0.348
15.00	-48.82	-28.96	-0.96	-2734.2	0.00	2734.24	6660.64	3330.32	16338.7	8181.53	0.42	-0.263	0.000	0.342
20.00	-46.82	-28.48	-0.96	-2589.4	0.00	2589.43	6569.96	3284.98	15795.1	7909.33	0.74	-0.351	0.000	0.335
25.00	-44.85	-27.97	-0.96	-2447.0	0.00	2447.05	6477.62	3238.81	15256.5	7639.63	1.16	-0.440	0.000	0.327
30.00	-42.93	-27.45	-0.96	-2307.2	-0.01	2307.20	6383.64	3191.82	14723.2	7372.54	1.67	-0.530	0.000	0.320
35.00	-41.06	-26.90	-0.96	-2169.9	-0.01	2169.96	6288.00	3144.00	14195.2	7108.19	2.27	-0.619	0.000	0.312
38.00	-39.96	-26.57	-0.96	-2089.2	-0.01	2089.25	6229.82	3114.91	13881.2	6950.95	2.68	-0.674	0.000	0.307
40.00	-38.59	-26.37	-0.96	-2036.1	-0.01	2036.10	6190.71	3095.36	13673.0	6846.70	2.97	-0.710	0.000	0.304
45.00	-35.25	-25.78	-0.96	-1904.2	-0.01	1904.28	5186.56	2593.28	11416.3	5716.63	3.76	-0.800	0.000	0.340
50.00	-33.67	-25.22	-0.96	-1775.3	-0.01	1775.37	5108.96	2554.48	10995.7	5506.06	4.65	-0.889	0.000	0.329
55.00	-32.13	-24.65	-0.96	-1649.2	-0.01	1649.28	5029.70	2514.85	10579.3	5297.54	5.63	-0.986	0.000	0.318
60.00	-30.62	-24.09	-0.96	-1526.0	-0.01	1526.01	4948.79	2474.40	10167.2	5091.20	6.71	-1.082	0.000	0.306
65.00	-29.15	-23.52	-0.96	-1405.5	-0.01	1405.57	4866.24	2433.12	9759.82	4887.17	7.90	-1.177	-0.001	0.294
70.00	-27.71	-22.95	-0.96	-1287.9	-0.01	1287.97	4782.03	2391.02	9357.20	4685.56	9.18	-1.270	-0.001	0.281
75.00	-26.32	-22.37	-0.96	-1173.2	-0.01	1173.21	4696.17	2348.09	8959.67	4486.49	10.56	-1.362	-0.001	0.267
77.00	-25.77	-22.15	-0.96	-1128.4	-0.01	1128.46	4661.37	2330.68	8802.13	4407.61	11.14	-1.399	-0.001	0.262
80.00	-24.28	-21.79	-0.96	-1062.0	-0.01	1062.00	4608.66	2304.33	8567.45	4290.09	12.04	-1.454	-0.001	0.253
83.00	-22.81	-21.43	-0.96	-996.61	-0.01	996.61	3782.33	1891.17	7057.27	3533.88	12.97	-1.508	-0.001	0.288
85.00	-22.34	-21.22	-0.96	-953.75	-0.02	953.75	3755.60	1877.80	6933.95	3472.13	13.61	-1.543	-0.001	0.281
90.00	-21.20	-20.66	-0.96	-847.66	-0.02	847.66	3687.60	1843.80	6628.16	3319.01	15.28	-1.637	-0.001	0.261
95.00	-20.09	-20.10	-0.96	-744.37	-0.02	744.37	3617.94	1808.97	6326.13	3167.77	17.04	-1.727	-0.001	0.241
100.00	-19.02	-19.55	-0.96	-643.87	-0.02	643.87	3546.64	1773.32	6028.11	3018.53	18.90	-1.812	-0.001	0.219
105.00	-17.97	-19.00	-0.96	-546.12	-0.02	546.12	3473.69	1736.85	5734.33	2871.43	20.84	-1.891	-0.001	0.195
110.00	-16.96	-18.46	-0.96	-451.10	-0.02	451.10	3399.09	1699.54	5445.04	2726.57	22.86	-1.964	-0.001	0.171
115.00	-15.99	-17.93	-0.96	-358.78	-0.03	358.78	3322.84	1661.42	5160.48	2584.08	24.95	-2.028	-0.002	0.144
120.00	-14.27	-17.37	-0.96	-269.12	-0.03	269.12	2604.14	1302.07	3997.79	2001.87	27.10	-2.083	-0.002	0.140
125.00	-13.49	-16.85	-0.96	-182.27	-0.03	182.27	2547.22	1273.61	3785.91	1895.77	29.31	-2.126	-0.002	0.102
130.00	-7.79	-9.35	-0.66	-98.02	-0.02	98.02	2488.65	1244.32	3577.22	1791.27	31.56	-2.159	-0.002	0.058
135.00	-7.08	-8.85	-0.66	-51.25	-0.02	51.25	2428.43	1214.21	3371.96	1688.49	33.83	-2.179	-0.002	0.033
140.00	-1.24	-0.94	0.00	-6.99	0.00	6.99	2366.56	1183.28	3170.38	1587.54	36.12	-2.188	-0.003	0.005
145.00	-0.61	-0.46	0.00	-2.31	0.00	2.31	2303.03	1151.52	2972.71	1488.57	38.41	-2.189	-0.003	0.002
150.00	0.00	-0.44	0.00	0.00	0.00	0.00	2232.58	1116.29	2772.66	1388.39	40.70	-2.189	-0.003	0.000

Wind Loading - Shaft

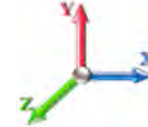
Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	17.879	19.67	462.68	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	454.11	0.650	0.000	5.00	26.731	17.38	546.8	0.0	1523.1
10.00		1.00	0.85	17.879	19.67	445.55	0.650	0.000	5.00	26.232	17.05	536.5	0.0	1494.4
15.00		1.00	0.85	17.879	19.67	436.98	0.650	0.000	5.00	25.732	16.73	526.3	0.0	1465.8
20.00		1.00	0.90	18.971	20.87	441.30	0.650	0.000	5.00	25.233	16.40	547.6	0.0	1437.1
25.00		1.00	0.95	19.883	21.87	442.76	0.650	0.000	5.00	24.733	16.08	562.6	0.0	1408.4
30.00		1.00	0.98	20.661	22.73	442.13	0.650	0.000	5.00	24.234	15.75	572.8	0.0	1379.7
35.00		1.00	1.01	21.343	23.48	440.01	0.650	0.000	5.00	23.735	15.43	579.5	0.0	1351.0
38.00 Bot - Section 2		1.00	1.03	21.715	23.89	438.17	0.650	0.000	3.00	14.001	9.10	347.8	0.0	796.9
40.00		1.00	1.04	21.951	24.15	436.75	0.650	0.000	2.00	9.382	6.10	235.6	0.0	993.3
45.00 Top - Section 1		1.00	1.07	22.502	24.75	432.59	0.650	0.000	5.00	23.106	15.02	594.8	0.0	2445.6
50.00		1.00	1.09	23.007	25.31	434.90	0.650	0.000	5.00	22.607	14.69	595.0	0.0	1126.8
55.00		1.00	1.12	23.473	25.82	429.47	0.650	0.000	5.00	22.107	14.37	593.7	0.0	1101.7
60.00		1.00	1.14	23.907	26.30	423.52	0.650	0.000	5.00	21.608	14.05	591.0	0.0	1076.6
65.00		1.00	1.16	24.313	26.74	417.12	0.650	0.000	5.00	21.109	13.72	587.1	0.0	1051.5
70.00		1.00	1.17	24.696	27.17	410.32	0.650	0.000	5.00	20.609	13.40	582.2	0.0	1026.4
75.00		1.00	1.19	25.057	27.56	403.17	0.650	0.000	5.00	20.110	13.07	576.5	0.0	1001.3
77.00 Bot - Section 3		1.00	1.20	25.196	27.72	400.23	0.650	0.000	2.00	7.904	5.14	227.8	0.0	393.5
80.00		1.00	1.21	25.400	27.94	395.72	0.650	0.000	3.00	11.897	7.73	345.7	0.0	1091.1
83.00 Top - Section 2		1.00	1.22	25.597	28.16	391.10	0.650	0.000	3.00	11.717	7.62	343.1	0.0	1074.3
85.00		1.00	1.22	25.726	28.30	394.50	0.650	0.000	2.00	7.711	5.01	227.0	0.0	329.4
90.00		1.00	1.24	26.037	28.64	386.55	0.650	0.000	5.00	18.929	12.30	563.8	0.0	808.5
95.00		1.00	1.25	26.336	28.97	378.36	0.650	0.000	5.00	18.429	11.98	555.2	0.0	787.0
100.00		1.00	1.27	26.621	29.28	369.96	0.650	0.000	5.00	17.930	11.65	546.1	0.0	765.5
105.00		1.00	1.28	26.896	29.59	361.36	0.650	0.000	5.00	17.431	11.33	536.3	0.0	744.0
110.00		1.00	1.29	27.161	29.88	352.58	0.650	0.000	5.00	16.931	11.01	526.1	0.0	722.5
115.00 Bot - Section 4		1.00	1.30	27.416	30.16	343.63	0.650	0.000	5.00	16.432	10.68	515.4	0.0	701.0
120.00 Top - Section 3		1.00	1.32	27.663	30.43	334.52	0.650	0.000	5.00	16.197	10.53	512.6	0.0	1256.1
125.00		1.00	1.33	27.902	30.69	330.93	0.650	0.000	5.00	15.698	10.20	501.1	0.0	558.7
130.00 Appurtenance(s)		1.00	1.34	28.133	30.95	321.56	0.650	0.000	5.00	15.198	9.88	489.1	0.0	540.8
135.00		1.00	1.35	28.358	31.19	312.05	0.650	0.000	5.00	14.699	9.55	476.8	0.0	522.9
140.00 Appurtenance(s)		1.00	1.36	28.576	31.43	302.42	0.650	0.000	5.00	14.199	9.23	464.2	0.0	505.0
145.00		1.00	1.37	28.788	31.67	292.67	0.650	0.000	5.00	13.700	8.91	451.2	0.0	487.0
150.00		1.00	1.38	28.994	31.89	282.81	0.650	0.000	5.00	13.201	8.58	437.8	0.0	469.1
Totals:									150.00			16,295.2		32,436.1

Discrete Appurtenance Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 19

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	140.00	Dragonwave	3	28.576	31.433	1.00	1.00	14.04	73.17	1.495	0.000	706.12	659.76	0.00
2	140.00	SFR-K-V-Brace	1	28.576	31.433	1.00	1.00	16.60	354.60	0.000	0.000	834.87	0.00	0.00
3	140.00	4415 B25	3	28.576	31.433	0.50	0.75	2.80	125.01	0.000	0.000	141.02	0.00	0.00
4	140.00	4449 B71 + B85	3	28.576	31.433	0.50	0.75	2.97	197.64	0.000	0.000	149.36	0.00	0.00
5	140.00	AIR6449 B41	3	28.576	31.433	0.53	0.75	9.03	278.10	0.000	0.000	453.94	0.00	0.00
6	140.00	APXVAALL24_43-U-NA20	3	28.576	31.433	0.55	0.75	33.24	331.56	0.000	0.000	1671.96	0.00	0.00
7	140.00	AIR32 KRD901146-	3	28.576	31.433	0.65	0.75	12.74	356.94	0.000	0.000	640.90	0.00	0.00
8	140.00	ALU 1900 Mhz RRU's	3	28.576	31.433	0.50	0.75	4.18	162.00	0.000	0.000	210.01	0.00	0.00
9	140.00	RMQP-496-HK	1	28.576	31.433	1.00	1.00	48.00	2204.10	0.000	0.000	2414.07	0.00	0.00
10	130.00	APXVAA24_43-U-A20	3	28.133	30.947	0.55	0.75	33.24	267.30	0.000	0.000	1646.07	0.00	0.00
11	130.00	f#P-HRK10	1	28.133	30.947	1.00	1.00	9.00	430.44	0.000	0.000	445.63	0.00	0.00
12	130.00	FSP-10W	1	28.133	30.947	1.00	1.00	58.98	2156.40	0.000	0.000	2920.37	0.00	0.00
13	130.00	Radio 2217 B66A	3	28.133	30.947	0.50	0.75	2.04	72.90	0.000	0.000	100.77	0.00	0.00
14	130.00	Radio 4449 B71 + B12	3	28.133	30.947	0.50	0.75	2.49	189.00	0.000	0.000	123.16	0.00	0.00
15	130.00	Radio 4415 B25	3	28.133	30.947	0.50	0.75	2.47	124.20	0.000	0.000	122.41	0.00	0.00
16	130.00	SHP2-13	1	28.133	30.947	1.00	1.00	3.96	136.80	2.495	0.000	196.08	305.74	0.00
17	130.00	AIR 5122 28GHz	3	28.133	30.947	0.57	0.75	3.23	65.61	0.000	0.000	160.03	0.00	0.00
18	130.00	AIR3246 B66	3	28.133	30.947	0.65	0.75	12.74	356.94	0.000	0.000	630.98	0.00	0.00
19	130.00	APX16DWV-16DWV-S-EA	3	28.133	30.947	0.46	0.75	9.01	109.89	0.000	0.000	446.21	0.00	0.00
Totals:									7,992.60			14,013.96		

Total Applied Force Summary

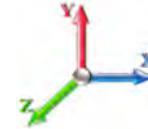
Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 19

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		546.75	1555.70	0.00	0.00
10.00		536.54	1527.02	0.00	0.00
15.00		526.32	1498.34	0.00	0.00
20.00		547.61	1469.66	0.00	0.00
25.00		562.59	1440.98	0.00	0.00
30.00		572.80	1412.29	0.00	0.00
35.00		579.50	1383.61	0.00	0.00
38.00		347.82	816.40	0.00	0.00
40.00		235.61	1006.31	0.00	0.00
45.00		594.81	2478.14	0.00	0.00
50.00		595.01	1159.37	0.00	0.00
55.00		593.65	1134.28	0.00	0.00
60.00		590.97	1109.18	0.00	0.00
65.00		587.12	1084.08	0.00	0.00
70.00		582.25	1058.99	0.00	0.00
75.00		576.45	1033.89	0.00	0.00
77.00		227.83	406.53	0.00	0.00
80.00		345.69	1110.62	0.00	0.00
83.00		343.11	1093.84	0.00	0.00
85.00		226.95	342.47	0.00	0.00
90.00		563.83	841.12	0.00	0.00
95.00		555.24	819.61	0.00	0.00
100.00		546.06	798.10	0.00	0.00
105.00		536.33	776.58	0.00	0.00
110.00		526.09	755.07	0.00	0.00
115.00		515.38	733.56	0.00	0.00
120.00		512.58	1288.72	0.00	0.00
125.00		501.06	591.32	0.00	0.00
130.00	(24) attachments	7280.86	4482.88	305.74	0.00
135.00		476.85	539.90	0.00	0.00
140.00	(23) attachments	7686.43	4605.09	659.76	0.00
145.00		451.18	487.03	0.00	0.00
150.00		437.85	469.11	0.00	0.00
	Totals:	30,309.14	41,309.79	965.50	0.00

Calculated Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 93 mph Wind	Iterations 19
Dead Load Factor 0.90	
Wind Load Factor 1.60	

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.29	-30.34	-0.96	-3165.0	0.00	3165.01	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.357
5.00	-39.69	-29.85	-0.96	-3013.3	0.00	3013.30	6837.06	3418.53	17439.8	8732.91	0.05	-0.087	0.000	0.351
10.00	-38.12	-29.37	-0.96	-2864.0	0.00	2864.04	6749.68	3374.84	16887.0	8456.09	0.18	-0.174	0.000	0.344
15.00	-36.57	-28.90	-0.96	-2717.1	0.00	2717.18	6660.64	3330.32	16338.7	8181.53	0.41	-0.261	0.000	0.338
20.00	-35.06	-28.39	-0.96	-2572.7	0.00	2572.71	6569.96	3284.98	15795.1	7909.33	0.74	-0.349	0.000	0.331
25.00	-33.58	-27.87	-0.96	-2430.7	0.00	2430.74	6477.62	3238.81	15256.5	7639.63	1.15	-0.438	0.000	0.323
30.00	-32.13	-27.34	-0.96	-2291.3	0.00	2291.38	6383.64	3191.82	14723.2	7372.54	1.66	-0.526	0.000	0.316
35.00	-30.72	-26.78	-0.96	-2154.6	0.00	2154.68	6288.00	3144.00	14195.2	7108.19	2.26	-0.615	0.000	0.308
38.00	-29.89	-26.45	-0.96	-2074.3	0.00	2074.34	6229.82	3114.91	13881.2	6950.95	2.66	-0.669	0.000	0.303
40.00	-28.86	-26.23	-0.96	-2021.4	-0.01	2021.44	6190.71	3095.36	13673.0	6846.70	2.95	-0.706	0.000	0.300
45.00	-26.35	-25.65	-0.96	-1890.2	-0.01	1890.27	5186.56	2593.28	11416.3	5716.63	3.74	-0.795	0.000	0.336
50.00	-25.16	-25.08	-0.96	-1762.0	-0.01	1762.03	5108.96	2554.48	10995.7	5506.06	4.62	-0.884	0.000	0.325
55.00	-23.99	-24.50	-0.96	-1636.6	-0.01	1636.65	5029.70	2514.85	10579.3	5297.54	5.59	-0.979	0.000	0.314
60.00	-22.85	-23.93	-0.96	-1514.1	-0.01	1514.13	4948.79	2474.40	10167.2	5091.20	6.67	-1.074	0.000	0.302
65.00	-21.74	-23.36	-0.96	-1394.4	-0.01	1394.47	4866.24	2433.12	9759.82	4887.17	7.85	-1.168	-0.001	0.290
70.00	-20.66	-22.79	-0.96	-1277.6	-0.01	1277.68	4782.03	2391.02	9357.20	4685.56	9.12	-1.261	-0.001	0.277
75.00	-19.62	-22.21	-0.96	-1163.7	-0.01	1163.75	4696.17	2348.09	8959.67	4486.49	10.49	-1.353	-0.001	0.264
77.00	-19.20	-21.99	-0.96	-1119.3	-0.01	1119.33	4661.37	2330.68	8802.13	4407.61	11.07	-1.389	-0.001	0.258
80.00	-18.07	-21.63	-0.96	-1053.3	-0.01	1053.37	4608.66	2304.33	8567.45	4290.09	11.96	-1.444	-0.001	0.250
83.00	-16.97	-21.27	-0.96	-988.48	-0.01	988.48	3782.33	1891.17	7057.27	3533.88	12.88	-1.497	-0.001	0.284
85.00	-16.61	-21.06	-0.96	-945.93	-0.01	945.93	3755.60	1877.80	6933.95	3472.13	13.52	-1.532	-0.001	0.277
90.00	-15.76	-20.49	-0.96	-840.65	-0.02	840.65	3687.60	1843.80	6628.16	3319.01	15.17	-1.625	-0.001	0.258
95.00	-14.92	-19.94	-0.96	-738.18	-0.02	738.18	3617.94	1808.97	6326.13	3167.77	16.92	-1.714	-0.001	0.237
100.00	-14.11	-19.39	-0.96	-638.49	-0.02	638.49	3546.64	1773.32	6028.11	3018.53	18.77	-1.799	-0.001	0.216
105.00	-13.33	-18.84	-0.96	-541.56	-0.02	541.56	3473.69	1736.85	5734.33	2871.43	20.69	-1.877	-0.001	0.193
110.00	-12.57	-18.31	-0.96	-447.34	-0.02	447.34	3399.09	1699.54	5445.04	2726.57	22.70	-1.949	-0.001	0.168
115.00	-11.84	-17.78	-0.96	-355.80	-0.03	355.80	3322.84	1661.42	5160.48	2584.08	24.78	-2.013	-0.002	0.141
120.00	-10.55	-17.23	-0.96	-266.90	-0.03	266.90	2604.14	1302.07	3997.79	2001.87	26.91	-2.067	-0.002	0.138
125.00	-9.97	-16.72	-0.96	-180.75	-0.03	180.75	2547.22	1273.61	3785.91	1895.77	29.10	-2.110	-0.002	0.099
130.00	-5.76	-9.28	-0.66	-97.17	-0.02	97.17	2488.65	1244.32	3577.22	1791.27	31.33	-2.143	-0.002	0.057
135.00	-5.23	-8.78	-0.66	-50.80	-0.02	50.80	2428.43	1214.21	3371.96	1688.49	33.59	-2.163	-0.002	0.032
140.00	-0.92	-0.92	0.00	-6.90	0.00	6.90	2366.56	1183.28	3170.38	1587.54	35.86	-2.171	-0.003	0.005
145.00	-0.45	-0.46	0.00	-2.28	0.00	2.28	2303.03	1151.52	2972.71	1488.57	38.13	-2.173	-0.003	0.002
150.00	0.00	-0.44	0.00	0.00	0.00	0.00	2232.58	1116.29	2772.66	1388.39	40.41	-2.173	-0.003	0.000

Wind Loading - Shaft

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



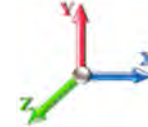
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 18

Dead Load Factor 1.20

Wind Load Factor 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.656	5.00	28.111	33.73	191.8	666.5	2697.3
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.775	5.00	27.711	33.25	189.0	702.5	2695.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.848	5.00	27.273	32.73	186.0	718.7	2673.1
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.902	5.00	26.818	32.18	194.1	726.3	2642.4
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.945	5.00	26.354	31.63	199.9	728.8	2606.6
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.981	5.00	25.885	31.06	204.1	728.0	2567.6
35.00		1.00	1.01	6.169	6.79	0.00	1.200	2.012	5.00	25.411	30.49	206.9	724.8	2526.2
38.00 Bot - Section 2		1.00	1.03	6.277	6.90	0.00	1.200	2.028	3.00	15.015	18.02	124.4	433.2	1495.6
40.00		1.00	1.04	6.345	6.98	0.00	1.200	2.039	2.00	10.062	12.07	84.3	292.4	1616.8
45.00 Top - Section 1		1.00	1.07	6.504	7.15	0.00	1.200	2.063	5.00	24.825	29.79	213.1	724.7	3985.4
50.00		1.00	1.09	6.650	7.32	0.00	1.200	2.085	5.00	24.344	29.21	213.7	717.2	2219.6
55.00		1.00	1.12	6.785	7.46	0.00	1.200	2.105	5.00	23.861	28.63	213.7	708.8	2177.7
60.00		1.00	1.14	6.910	7.60	0.00	1.200	2.123	5.00	23.377	28.05	213.2	699.5	2135.0
65.00		1.00	1.16	7.028	7.73	0.00	1.200	2.140	5.00	22.892	27.47	212.4	689.5	2091.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	2.156	5.00	22.406	26.89	211.1	678.9	2047.4
75.00		1.00	1.19	7.243	7.97	0.00	1.200	2.171	5.00	21.919	26.30	209.6	667.7	2002.8
77.00 Bot - Section 3		1.00	1.20	7.283	8.01	0.00	1.200	2.177	2.00	8.630	10.36	83.0	265.3	789.9
80.00		1.00	1.21	7.342	8.08	0.00	1.200	2.185	3.00	12.989	15.59	125.9	399.8	1854.6
83.00 Top - Section 2		1.00	1.22	7.399	8.14	0.00	1.200	2.193	3.00	12.814	15.38	125.1	395.5	1827.9
85.00		1.00	1.22	7.436	8.18	0.00	1.200	2.198	2.00	8.444	10.13	82.9	261.7	701.0
90.00		1.00	1.24	7.526	8.28	0.00	1.200	2.211	5.00	20.771	24.93	206.4	641.9	1720.0
95.00		1.00	1.25	7.612	8.37	0.00	1.200	2.223	5.00	20.282	24.34	203.8	629.1	1678.5
100.00		1.00	1.27	7.695	8.46	0.00	1.200	2.234	5.00	19.792	23.75	201.0	616.0	1636.7
105.00		1.00	1.28	7.774	8.55	0.00	1.200	2.245	5.00	19.302	23.16	198.1	602.5	1594.5
110.00		1.00	1.29	7.851	8.64	0.00	1.200	2.256	5.00	18.811	22.57	194.9	588.8	1552.1
115.00 Bot - Section 4		1.00	1.30	7.925	8.72	0.00	1.200	2.266	5.00	18.320	21.98	191.6	574.8	1509.4
120.00 Top - Section 3		1.00	1.32	7.996	8.80	0.00	1.200	2.276	5.00	18.093	21.71	191.0	569.5	2244.3
125.00		1.00	1.33	8.065	8.87	0.00	1.200	2.285	5.00	17.602	21.12	187.4	555.0	1300.0
130.00 Appurtenance(s)		1.00	1.34	8.132	8.95	0.00	1.200	2.294	5.00	17.110	20.53	183.7	540.4	1261.4
135.00		1.00	1.35	8.197	9.02	0.00	1.200	2.303	5.00	16.618	19.94	179.8	525.5	1222.7
140.00 Appurtenance(s)		1.00	1.36	8.260	9.09	0.00	1.200	2.311	5.00	16.125	19.35	175.8	510.4	1183.7
145.00		1.00	1.37	8.321	9.15	0.00	1.200	2.319	5.00	15.633	18.76	171.7	495.2	1144.6
150.00		1.00	1.38	8.381	9.22	0.00	1.200	2.327	5.00	15.140	18.17	167.5	479.8	1105.3
Totals:									150.00			5,936.9		62,506.6

Discrete Appurtenance Forces

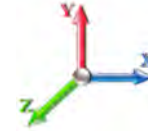
Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 18

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	140.00	Dragonwave	3	8.260	9.086	1.00	1.00	19.10	402.32	1.495	0.000	173.55	259.46	0.00	
2	140.00	SFR-K-V-Brace	1	8.260	9.086	1.00	1.00	32.71	1251.39	0.000	0.000	297.21	0.00	0.00	
3	140.00	4415 B25	3	8.260	9.086	0.50	0.75	3.97	430.47	0.000	0.000	36.08	0.00	0.00	
4	140.00	4449 B71 + B85	3	8.260	9.086	0.50	0.75	4.11	317.70	0.000	0.000	37.31	0.00	0.00	
5	140.00	AIR6449 B41	3	8.260	9.086	0.53	0.75	11.04	820.40	0.000	0.000	100.28	0.00	0.00	
6	140.00	APXVAALL24_43-U-NA20	3	8.260	9.086	0.55	0.75	37.43	2210.54	0.000	0.000	340.05	0.00	0.00	
7	140.00	AIR32 KRD901146-	3	8.260	9.086	0.65	0.75	15.71	1247.72	0.000	0.000	142.75	0.00	0.00	
8	140.00	ALU 1900 Mhz RRU's	3	8.260	9.086	0.50	0.75	6.71	475.75	0.000	0.000	60.95	0.00	0.00	
9	140.00	RMQP-496-HK	1	8.260	9.086	1.00	1.00	92.37	5544.52	0.000	0.000	839.26	0.00	0.00	
10	130.00	APXVAA24_43-U-A20	3	8.132	8.945	0.55	0.75	37.39	2109.70	0.000	0.000	334.50	0.00	0.00	
11	130.00	f#P-HRK10	1	8.132	8.945	1.00	1.00	23.04	1666.57	0.000	0.000	206.08	0.00	0.00	
12	130.00	FSP-10W	1	8.132	8.945	1.00	1.00	150.98	5262.05	0.000	0.000	1350.54	0.00	0.00	
13	130.00	Radio 2217 B66A	3	8.132	8.945	0.50	0.75	2.98	208.84	0.000	0.000	26.62	0.00	0.00	
14	130.00	Radio 4449 B71 + B12	3	8.132	8.945	0.50	0.75	3.59	543.42	0.000	0.000	32.11	0.00	0.00	
15	130.00	Radio 4415 B25	3	8.132	8.945	0.50	0.75	3.49	299.48	0.000	0.000	31.25	0.00	0.00	
16	130.00	SHP2-13	1	8.132	8.945	1.00	1.00	4.32	348.35	2.495	0.000	38.67	96.48	0.00	
17	130.00	AIR 5122 28GHz	3	8.132	8.945	0.57	0.75	5.38	240.73	0.000	0.000	48.14	0.00	0.00	
18	130.00	AIR3246 B66	3	8.132	8.945	0.65	0.75	15.69	1240.69	0.000	0.000	140.33	0.00	0.00	
19	130.00	APX16DWV-16DWV-S-EA	3	8.132	8.945	0.46	0.75	11.10	725.92	0.000	0.000	99.26	0.00	0.00	
Totals:									25,346.56						4,334.94

Total Applied Force Summary

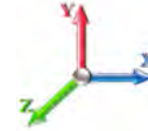
Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 18

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		191.77	2740.75	0.00	0.00
10.00		189.04	2738.51	0.00	0.00
15.00		186.05	2716.51	0.00	0.00
20.00		194.11	2685.80	0.00	0.00
25.00		199.93	2650.07	0.00	0.00
30.00		204.06	2611.03	0.00	0.00
35.00		206.93	2569.59	0.00	0.00
38.00		124.41	1521.71	0.00	0.00
40.00		84.27	1634.14	0.00	0.00
45.00		213.14	4028.85	0.00	0.00
50.00		213.70	2263.04	0.00	0.00
55.00		213.70	2221.13	0.00	0.00
60.00		213.24	2178.40	0.00	0.00
65.00		212.36	2134.95	0.00	0.00
70.00		211.12	2090.88	0.00	0.00
75.00		209.56	2046.26	0.00	0.00
77.00		82.96	807.29	0.00	0.00
80.00		125.88	1880.64	0.00	0.00
83.00		125.14	1853.97	0.00	0.00
85.00		82.89	718.36	0.00	0.00
90.00		206.35	1763.39	0.00	0.00
95.00		203.80	1721.91	0.00	0.00
100.00		201.04	1680.09	0.00	0.00
105.00		198.08	1637.97	0.00	0.00
110.00		194.94	1595.55	0.00	0.00
115.00		191.64	1552.87	0.00	0.00
120.00		190.97	2287.75	0.00	0.00
125.00		187.39	1343.45	0.00	0.00
130.00	(24) attachments	2491.16	13950.64	96.48	0.00
135.00		179.80	1245.36	0.00	0.00
140.00	(23) attachments	2203.25	13907.21	259.46	0.00
145.00		171.71	1144.57	0.00	0.00
150.00		167.48	1105.25	0.00	0.00
	Totals:	10,271.87	89,027.93	355.94	0.00

Calculated Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 18

Dead Load Factor 1.20
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-89.03	-10.29	-0.36	-1078.3	0.00	1078.38	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.133
5.00	-86.28	-10.15	-0.36	-1026.9	0.00	1026.91	6837.06	3418.53	17439.8	8732.91	0.02	-0.029	0.000	0.130
10.00	-83.54	-10.00	-0.36	-976.18	0.00	976.18	6749.68	3374.84	16887.0	8456.09	0.06	-0.059	0.000	0.128
15.00	-80.81	-9.85	-0.36	-926.18	0.00	926.18	6660.64	3330.32	16338.7	8181.53	0.14	-0.089	0.000	0.125
20.00	-78.12	-9.69	-0.36	-876.93	0.00	876.93	6569.96	3284.98	15795.1	7909.33	0.25	-0.119	0.000	0.123
25.00	-75.47	-9.53	-0.36	-828.46	0.00	828.46	6477.62	3238.81	15256.5	7639.63	0.39	-0.149	0.000	0.120
30.00	-72.85	-9.35	-0.36	-780.82	0.00	780.82	6383.64	3191.82	14723.2	7372.54	0.56	-0.179	0.000	0.117
35.00	-70.28	-9.17	-0.36	-734.06	0.00	734.06	6288.00	3144.00	14195.2	7108.19	0.77	-0.210	0.000	0.114
38.00	-68.76	-9.06	-0.36	-706.55	0.00	706.55	6229.82	3114.91	13881.2	6950.95	0.91	-0.228	0.000	0.113
40.00	-67.12	-8.99	-0.36	-688.44	0.00	688.44	6190.71	3095.36	13673.0	6846.70	1.00	-0.241	0.000	0.111
45.00	-63.09	-8.79	-0.36	-643.49	0.00	643.49	5186.56	2593.28	11416.3	5716.63	1.27	-0.271	0.000	0.125
50.00	-60.82	-8.60	-0.36	-599.52	0.00	599.52	5108.96	2554.48	10995.7	5506.06	1.57	-0.301	0.000	0.121
55.00	-58.60	-8.41	-0.36	-556.52	0.00	556.52	5029.70	2514.85	10579.3	5297.54	1.91	-0.334	0.000	0.117
60.00	-56.41	-8.21	-0.36	-514.48	0.00	514.48	4948.79	2474.40	10167.2	5091.20	2.27	-0.366	0.000	0.112
65.00	-54.28	-8.02	-0.36	-473.41	0.00	473.41	4866.24	2433.12	9759.82	4887.17	2.67	-0.398	0.000	0.108
70.00	-52.18	-7.82	-0.36	-433.33	0.00	433.33	4782.03	2391.02	9357.20	4685.56	3.11	-0.429	0.000	0.103
75.00	-50.14	-7.61	-0.36	-394.23	0.00	394.23	4696.17	2348.09	8959.67	4486.49	3.57	-0.460	0.000	0.099
77.00	-49.33	-7.54	-0.36	-379.01	0.00	379.01	4661.37	2330.68	8802.13	4407.61	3.77	-0.473	0.000	0.097
80.00	-47.45	-7.41	-0.36	-356.40	0.00	356.40	4608.66	2304.33	8567.45	4290.09	4.07	-0.491	0.000	0.093
83.00	-45.59	-7.28	-0.36	-334.17	0.00	334.17	3782.33	1891.17	7057.27	3533.88	4.39	-0.509	0.000	0.107
85.00	-44.87	-7.21	-0.36	-319.61	0.00	319.61	3755.60	1877.80	6933.95	3472.13	4.60	-0.521	0.000	0.104
90.00	-43.11	-7.01	-0.36	-283.57	0.00	283.57	3687.60	1843.80	6628.16	3319.01	5.17	-0.553	0.000	0.097
95.00	-41.38	-6.81	-0.36	-248.53	0.00	248.53	3617.94	1808.97	6326.13	3167.77	5.76	-0.583	0.000	0.090
100.00	-39.70	-6.61	-0.36	-214.48	0.00	214.48	3546.64	1773.32	6028.11	3018.53	6.39	-0.611	0.000	0.082
105.00	-38.06	-6.41	-0.36	-181.44	0.00	181.44	3473.69	1736.85	5734.33	2871.43	7.04	-0.637	0.000	0.074
110.00	-36.47	-6.21	-0.36	-149.39	0.00	149.39	3399.09	1699.54	5445.04	2726.57	7.72	-0.661	-0.001	0.066
115.00	-34.91	-6.01	-0.36	-118.33	0.00	118.33	3322.84	1661.42	5160.48	2584.08	8.43	-0.683	-0.001	0.056
120.00	-32.63	-5.80	-0.36	-88.26	0.00	88.26	2604.14	1302.07	3997.79	2001.87	9.15	-0.701	-0.001	0.057
125.00	-31.28	-5.61	-0.36	-59.24	0.00	59.24	2547.22	1273.61	3785.91	1895.77	9.89	-0.715	-0.001	0.044
130.00	-17.37	-2.94	-0.26	-31.21	0.00	31.21	2488.65	1244.32	3577.22	1791.27	10.65	-0.725	-0.001	0.024
135.00	-16.12	-2.75	-0.26	-16.49	0.00	16.49	2428.43	1214.21	3371.96	1688.49	11.41	-0.732	-0.001	0.016
140.00	-2.25	-0.37	0.00	-2.75	0.00	2.75	2366.56	1183.28	3170.38	1587.54	12.18	-0.735	-0.001	0.003
145.00	-1.10	-0.18	0.00	-0.91	0.00	0.91	2303.03	1151.52	2972.71	1488.57	12.95	-0.735	-0.001	0.001
150.00	0.00	-0.17	0.00	0.00	0.00	0.00	2232.58	1116.29	2772.66	1388.39	13.72	-0.735	-0.001	0.000

Seismic Segment Forces (Factored)

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

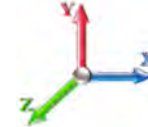


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Load Case: 1.2D + 1.0E

Iterations 17

Gust Response Factor 1.10		Sds 0.20	Ss 0.18
Dead Load Factor 1.20	Seismic Load Factor 1.00	Sd1 0.10	S1 0.06
Wind Load Factor 0.00	Structure Frequency (f1) 0.48	SA 0.05	Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1692.3	0.00	0.03	0.02	25.91	
10.00		1660.4	0.01	0.05	0.03	38.24	
15.00		1628.6	0.02	0.06	0.04	44.10	
20.00		1596.7	0.03	0.07	0.04	46.73	
25.00		1564.8	0.05	0.07	0.04	47.86	
30.00		1533.0	0.08	0.07	0.04	48.38	
35.00		1501.1	0.10	0.07	0.04	48.71	
38.00	Bot - Section 2	885.39	0.12	0.07	0.03	29.18	
40.00		1103.6	0.13	0.07	0.03	36.71	
45.00	Top - Section 1	2717.2	0.17	0.07	0.03	92.03	
50.00		1251.9	0.21	0.06	0.02	42.50	
55.00		1224.1	0.25	0.05	0.02	40.49	
60.00		1196.2	0.30	0.04	0.01	36.80	
65.00		1168.3	0.35	0.03	0.01	30.98	
70.00		1140.4	0.41	0.01	0.01	22.86	
75.00		1112.5	0.47	-0.01	0.01	12.74	
77.00	Bot - Section 3	437.22	0.50	-0.02	0.01	3.30	
80.00		1212.3	0.54	-0.03	0.01	1.71	
83.00	Top - Section 2	1193.6	0.58	-0.05	0.01	-5.72	
85.00		366.04	0.61	-0.06	0.02	-3.21	
90.00		898.38	0.68	-0.08	0.03	-15.71	
95.00		874.47	0.76	-0.10	0.04	-20.26	
100.00		850.57	0.84	-0.12	0.07	-20.98	
105.00		826.67	0.93	-0.12	0.10	-17.61	
110.00		802.77	1.02	-0.11	0.14	-10.25	
115.00	Bot - Section 4	778.87	1.11	-0.06	0.19	0.84	
120.00	Top - Section 3	1395.7	1.21	0.01	0.26	28.34	
125.00		620.82	1.31	0.14	0.35	27.90	
130.00	Appurtenance(s)	4944.7	1.42	0.32	0.45	370.96	
135.00		580.99	1.53	0.58	0.58	64.28	
140.00	Appurtenance(s)	5097.8	1.65	0.93	0.73	774.13	
145.00		541.15	1.77	1.39	0.92	107.57	
150.00		521.23	1.89	1.98	1.14	131.10	
Totals:		44,920.8				2,060.6	Total Wind: 30,309.1

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E										Iterations 17
Gust Response Factor 1.10					Sds 0.20					Ss 0.18
Dead Load Factor 1.20			Seismic Load Factor 1.00			Sd1 0.10			S1 0.06	
Wind Load Factor 0.00		Structure Frequency (f1) 0.48		SA 0.05		Seismic Importance Factor 1.00				



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-55.08	-2.16	0.00	-237.51	0.00	237.51	6922.80	3461.40	17996.9	9011.85	0.00	0.00	0.00	0.034
5.00	-53.01	-2.14	0.00	-226.73	0.00	226.73	6837.06	3418.53	17439.8	8732.91	0.00	-0.01	0.034	
10.00	-50.97	-2.10	0.00	-216.04	0.00	216.04	6749.68	3374.84	16887.0	8456.09	0.01	-0.01	0.033	
15.00	-48.97	-2.07	0.00	-205.52	0.00	205.52	6660.64	3330.32	16338.7	8181.53	0.03	-0.02	0.032	
20.00	-47.01	-2.02	0.00	-195.20	0.00	195.20	6569.96	3284.98	15795.1	7909.33	0.06	-0.03	0.032	
25.00	-45.09	-1.98	0.00	-185.08	0.00	185.08	6477.62	3238.81	15256.5	7639.63	0.09	-0.03	0.031	
30.00	-43.21	-1.94	0.00	-175.19	0.00	175.19	6383.64	3191.82	14723.2	7372.54	0.12	-0.04	0.031	
35.00	-41.36	-1.89	0.00	-165.51	0.00	165.51	6288.00	3144.00	14195.2	7108.19	0.17	-0.05	0.030	
38.00	-40.27	-1.86	0.00	-159.84	0.00	159.84	6229.82	3114.91	13881.2	6950.95	0.20	-0.05	0.029	
40.00	-38.93	-1.83	0.00	-156.12	0.00	156.12	6190.71	3095.36	13673.0	6846.70	0.22	-0.05	0.029	
45.00	-35.63	-1.74	0.00	-146.99	0.00	146.99	5186.56	2593.28	11416.3	5716.63	0.28	-0.06	0.033	
50.00	-34.08	-1.70	0.00	-138.31	0.00	138.31	5108.96	2554.48	10995.7	5506.06	0.35	-0.07	0.032	
55.00	-32.57	-1.66	0.00	-129.83	0.00	129.83	5029.70	2514.85	10579.3	5297.54	0.42	-0.08	0.031	
60.00	-31.09	-1.62	0.00	-121.55	0.00	121.55	4948.79	2474.40	10167.2	5091.20	0.51	-0.08	0.030	
65.00	-29.64	-1.59	0.00	-113.43	0.00	113.43	4866.24	2433.12	9759.82	4887.17	0.60	-0.09	0.029	
70.00	-28.23	-1.57	0.00	-105.46	0.00	105.46	4782.03	2391.02	9357.20	4685.56	0.70	-0.10	0.028	
75.00	-26.85	-1.56	0.00	-97.60	0.00	97.60	4696.17	2348.09	8959.67	4486.49	0.80	-0.11	0.027	
77.00	-26.31	-1.56	0.00	-94.48	0.00	94.48	4661.37	2330.68	8802.13	4407.61	0.85	-0.11	0.027	
80.00	-24.83	-1.55	0.00	-89.81	0.00	89.81	4608.66	2304.33	8567.45	4290.09	0.92	-0.11	0.026	
83.00	-23.37	-1.55	0.00	-85.15	0.00	85.15	3782.33	1891.17	7057.27	3533.88	0.99	-0.12	0.030	
85.00	-22.91	-1.55	0.00	-82.04	0.00	82.04	3755.60	1877.80	6933.95	3472.13	1.04	-0.12	0.030	
90.00	-21.79	-1.56	0.00	-74.27	0.00	74.27	3687.60	1843.80	6628.16	3319.01	1.17	-0.13	0.028	
95.00	-20.70	-1.56	0.00	-66.49	0.00	66.49	3617.94	1808.97	6326.13	3167.77	1.31	-0.14	0.027	
100.00	-19.64	-1.56	0.00	-58.72	0.00	58.72	3546.64	1773.32	6028.11	3018.53	1.46	-0.14	0.025	
105.00	-18.60	-1.56	0.00	-50.94	0.00	50.94	3473.69	1736.85	5734.33	2871.43	1.61	-0.15	0.023	
110.00	-17.59	-1.55	0.00	-43.16	0.00	43.16	3399.09	1699.54	5445.04	2726.57	1.78	-0.16	0.021	
115.00	-16.61	-1.55	0.00	-35.39	0.00	35.39	3322.84	1661.42	5160.48	2584.08	1.95	-0.16	0.019	
120.00	-14.90	-1.52	0.00	-27.63	0.00	27.63	2604.14	1302.07	3997.79	2001.87	2.12	-0.17	0.020	
125.00	-14.11	-1.49	0.00	-20.03	0.00	20.03	2547.22	1273.61	3785.91	1895.77	2.30	-0.17	0.016	
130.00	-8.13	-1.10	0.00	-12.57	0.00	12.57	2488.65	1244.32	3577.22	1791.27	2.49	-0.18	0.010	
135.00	-7.41	-1.04	0.00	-7.06	0.00	7.06	2428.43	1214.21	3371.96	1688.49	2.68	-0.18	0.007	
140.00	-1.27	-0.24	0.00	-1.88	0.00	1.88	2366.56	1183.28	3170.38	1587.54	2.87	-0.18	0.002	
145.00	-0.63	-0.13	0.00	-0.67	0.00	0.67	2303.03	1151.52	2972.71	1488.57	3.06	-0.18	0.001	
150.00	0.00	-0.13	0.00	0.00	0.00	0.00	2232.58	1116.29	2772.66	1388.39	3.25	-0.18	0.000	

Seismic Segment Forces (Factored)

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

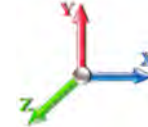


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Load Case: 0.9D + 1.0E

Iterations 17

Gust Response Factor 1.10	Sds 0.20	Ss 0.18
Dead Load Factor 0.90	Seismic Load Factor 1.00	S1 0.06
Wind Load Factor 0.00	Structure Frequency (f1) 0.48	SA 0.05
		Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1692.3	0.00	0.03	0.02	25.91	
10.00		1660.4	0.01	0.05	0.03	38.24	
15.00		1628.6	0.02	0.06	0.04	44.10	
20.00		1596.7	0.03	0.07	0.04	46.73	
25.00		1564.8	0.05	0.07	0.04	47.86	
30.00		1533.0	0.08	0.07	0.04	48.38	
35.00		1501.1	0.10	0.07	0.04	48.71	
38.00	Bot - Section 2	885.39	0.12	0.07	0.03	29.18	
40.00		1103.6	0.13	0.07	0.03	36.71	
45.00	Top - Section 1	2717.2	0.17	0.07	0.03	92.03	
50.00		1251.9	0.21	0.06	0.02	42.50	
55.00		1224.1	0.25	0.05	0.02	40.49	
60.00		1196.2	0.30	0.04	0.01	36.80	
65.00		1168.3	0.35	0.03	0.01	30.98	
70.00		1140.4	0.41	0.01	0.01	22.86	
75.00		1112.5	0.47	-0.01	0.01	12.74	
77.00	Bot - Section 3	437.22	0.50	-0.02	0.01	3.30	
80.00		1212.3	0.54	-0.03	0.01	1.71	
83.00	Top - Section 2	1193.6	0.58	-0.05	0.01	-5.72	
85.00		366.04	0.61	-0.06	0.02	-3.21	
90.00		898.38	0.68	-0.08	0.03	-15.71	
95.00		874.47	0.76	-0.10	0.04	-20.26	
100.00		850.57	0.84	-0.12	0.07	-20.98	
105.00		826.67	0.93	-0.12	0.10	-17.61	
110.00		802.77	1.02	-0.11	0.14	-10.25	
115.00	Bot - Section 4	778.87	1.11	-0.06	0.19	0.84	
120.00	Top - Section 3	1395.7	1.21	0.01	0.26	28.34	
125.00		620.82	1.31	0.14	0.35	27.90	
130.00	Appurtenance(s)	4944.7	1.42	0.32	0.45	370.96	
135.00		580.99	1.53	0.58	0.58	64.28	
140.00	Appurtenance(s)	5097.8	1.65	0.93	0.73	774.13	
145.00		541.15	1.77	1.39	0.92	107.57	
150.00		521.23	1.89	1.98	1.14	131.10	
Totals:		44,920.8				2,060.6	Total Wind: 30,309.1

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

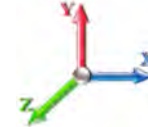
Calculated Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0E										Iterations 17
Gust Response Factor 1.10					Sds 0.20					Ss 0.18
Dead Load Factor 0.90			Seismic Load Factor 1.00			Sd1 0.10			S1 0.06	
Wind Load Factor 0.00		Structure Frequency (f1) 0.48		SA 0.05		Seismic Importance Factor 1.00				



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.31	-2.16	0.00	-236.14	0.00	236.14	6922.80	3461.40	17996.9	9011.85	0.00	0.00	0.00	0.032
5.00	-39.75	-2.13	0.00	-225.36	0.00	225.36	6837.06	3418.53	17439.8	8732.91	0.00	-0.01	0.032	
10.00	-38.23	-2.10	0.00	-214.69	0.00	214.69	6749.68	3374.84	16887.0	8456.09	0.01	-0.01	0.031	
15.00	-36.73	-2.06	0.00	-204.19	0.00	204.19	6660.64	3330.32	16338.7	8181.53	0.03	-0.02	0.030	
20.00	-35.26	-2.02	0.00	-193.89	0.00	193.89	6569.96	3284.98	15795.1	7909.33	0.06	-0.03	0.030	
25.00	-33.82	-1.97	0.00	-183.80	0.00	183.80	6477.62	3238.81	15256.5	7639.63	0.09	-0.03	0.029	
30.00	-32.40	-1.93	0.00	-173.94	0.00	173.94	6383.64	3191.82	14723.2	7372.54	0.12	-0.04	0.029	
35.00	-31.02	-1.88	0.00	-164.31	0.00	164.31	6288.00	3144.00	14195.2	7108.19	0.17	-0.05	0.028	
38.00	-30.20	-1.85	0.00	-158.67	0.00	158.67	6229.82	3114.91	13881.2	6950.95	0.20	-0.05	0.028	
40.00	-29.20	-1.82	0.00	-154.97	0.00	154.97	6190.71	3095.36	13673.0	6846.70	0.22	-0.05	0.027	
45.00	-26.72	-1.73	0.00	-145.88	0.00	145.88	5186.56	2593.28	11416.3	5716.63	0.28	-0.06	0.031	
50.00	-25.56	-1.68	0.00	-137.26	0.00	137.26	5108.96	2554.48	10995.7	5506.06	0.35	-0.07	0.030	
55.00	-24.43	-1.65	0.00	-128.83	0.00	128.83	5029.70	2514.85	10579.3	5297.54	0.42	-0.07	0.029	
60.00	-23.32	-1.61	0.00	-120.60	0.00	120.60	4948.79	2474.40	10167.2	5091.20	0.50	-0.08	0.028	
65.00	-22.23	-1.58	0.00	-112.55	0.00	112.55	4866.24	2433.12	9759.82	4887.17	0.59	-0.09	0.028	
70.00	-21.17	-1.56	0.00	-104.64	0.00	104.64	4782.03	2391.02	9357.20	4685.56	0.69	-0.10	0.027	
75.00	-20.14	-1.55	0.00	-96.84	0.00	96.84	4696.17	2348.09	8959.67	4486.49	0.80	-0.10	0.026	
77.00	-19.73	-1.54	0.00	-93.75	0.00	93.75	4661.37	2330.68	8802.13	4407.61	0.84	-0.11	0.026	
80.00	-18.62	-1.54	0.00	-89.12	0.00	89.12	4608.66	2304.33	8567.45	4290.09	0.91	-0.11	0.025	
83.00	-17.53	-1.54	0.00	-84.49	0.00	84.49	3782.33	1891.17	7057.27	3533.88	0.98	-0.12	0.029	
85.00	-17.18	-1.54	0.00	-81.41	0.00	81.41	3755.60	1877.80	6933.95	3472.13	1.03	-0.12	0.028	
90.00	-16.34	-1.54	0.00	-73.70	0.00	73.70	3687.60	1843.80	6628.16	3319.01	1.16	-0.13	0.027	
95.00	-15.52	-1.54	0.00	-65.99	0.00	65.99	3617.94	1808.97	6326.13	3167.77	1.30	-0.14	0.025	
100.00	-14.73	-1.54	0.00	-58.28	0.00	58.28	3546.64	1773.32	6028.11	3018.53	1.45	-0.14	0.023	
105.00	-13.95	-1.54	0.00	-50.57	0.00	50.57	3473.69	1736.85	5734.33	2871.43	1.60	-0.15	0.022	
110.00	-13.19	-1.54	0.00	-42.86	0.00	42.86	3399.09	1699.54	5445.04	2726.57	1.76	-0.16	0.020	
115.00	-12.46	-1.54	0.00	-35.15	0.00	35.15	3322.84	1661.42	5160.48	2584.08	1.93	-0.16	0.017	
120.00	-11.17	-1.51	0.00	-27.45	0.00	27.45	2604.14	1302.07	3997.79	2001.87	2.11	-0.17	0.018	
125.00	-10.58	-1.48	0.00	-19.90	0.00	19.90	2547.22	1273.61	3785.91	1895.77	2.29	-0.17	0.015	
130.00	-6.10	-1.10	0.00	-12.50	0.00	12.50	2488.65	1244.32	3577.22	1791.27	2.47	-0.18	0.009	
135.00	-5.56	-1.03	0.00	-7.02	0.00	7.02	2428.43	1214.21	3371.96	1688.49	2.66	-0.18	0.006	
140.00	-0.96	-0.24	0.00	-1.87	0.00	1.87	2366.56	1183.28	3170.38	1587.54	2.85	-0.18	0.002	
145.00	-0.47	-0.13	0.00	-0.66	0.00	0.66	2303.03	1151.52	2972.71	1488.57	3.04	-0.18	0.001	
150.00	0.00	-0.13	0.00	0.00	0.00	0.00	2232.58	1116.29	2772.66	1388.39	3.23	-0.18	0.000	

Wind Loading - Shaft

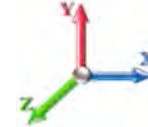
Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 18

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	298.50	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	292.98	0.650	0.000	5.00	26.731	17.38	142.2	0.0	1692.4
10.00		1.00	0.85	7.442	8.19	287.45	0.650	0.000	5.00	26.232	17.05	139.6	0.0	1660.5
15.00		1.00	0.85	7.442	8.19	281.93	0.650	0.000	5.00	25.732	16.73	136.9	0.0	1628.6
20.00		1.00	0.90	7.896	8.69	284.71	0.650	0.000	5.00	25.233	16.40	142.5	0.0	1596.8
25.00		1.00	0.95	8.276	9.10	285.65	0.650	0.000	5.00	24.733	16.08	146.4	0.0	1564.9
30.00		1.00	0.98	8.600	9.46	285.25	0.650	0.000	5.00	24.234	15.75	149.0	0.0	1533.0
35.00		1.00	1.01	8.883	9.77	283.88	0.650	0.000	5.00	23.735	15.43	150.8	0.0	1501.1
38.00 Bot - Section 2		1.00	1.03	9.039	9.94	282.69	0.650	0.000	3.00	14.001	9.10	90.5	0.0	885.4
40.00		1.00	1.04	9.137	10.05	281.77	0.650	0.000	2.00	9.382	6.10	61.3	0.0	1103.6
45.00 Top - Section 1		1.00	1.07	9.366	10.30	279.09	0.650	0.000	5.00	23.106	15.02	154.7	0.0	2717.3
50.00		1.00	1.09	9.576	10.53	280.58	0.650	0.000	5.00	22.607	14.69	154.8	0.0	1252.0
55.00		1.00	1.12	9.770	10.75	277.08	0.650	0.000	5.00	22.107	14.37	154.4	0.0	1224.1
60.00		1.00	1.14	9.951	10.95	273.24	0.650	0.000	5.00	21.608	14.05	153.7	0.0	1196.2
65.00		1.00	1.16	10.120	11.13	269.11	0.650	0.000	5.00	21.109	13.72	152.7	0.0	1168.3
70.00		1.00	1.17	10.279	11.31	264.72	0.650	0.000	5.00	20.609	13.40	151.5	0.0	1140.5
75.00		1.00	1.19	10.430	11.47	260.11	0.650	0.000	5.00	20.110	13.07	150.0	0.0	1112.6
77.00 Bot - Section 3		1.00	1.20	10.488	11.54	258.21	0.650	0.000	2.00	7.904	5.14	59.3	0.0	437.2
80.00		1.00	1.21	10.572	11.63	255.30	0.650	0.000	3.00	11.897	7.73	89.9	0.0	1212.3
83.00 Top - Section 2		1.00	1.22	10.654	11.72	252.33	0.650	0.000	3.00	11.717	7.62	89.3	0.0	1193.7
85.00		1.00	1.22	10.708	11.78	254.52	0.650	0.000	2.00	7.711	5.01	59.0	0.0	366.0
90.00		1.00	1.24	10.838	11.92	249.39	0.650	0.000	5.00	18.929	12.30	146.7	0.0	898.4
95.00		1.00	1.25	10.962	12.06	244.11	0.650	0.000	5.00	18.429	11.98	144.4	0.0	874.5
100.00		1.00	1.27	11.081	12.19	238.68	0.650	0.000	5.00	17.930	11.65	142.1	0.0	850.6
105.00		1.00	1.28	11.195	12.31	233.14	0.650	0.000	5.00	17.431	11.33	139.5	0.0	826.7
110.00		1.00	1.29	11.305	12.44	227.47	0.650	0.000	5.00	16.931	11.01	136.9	0.0	802.8
115.00 Bot - Section 4		1.00	1.30	11.412	12.55	221.70	0.650	0.000	5.00	16.432	10.68	134.1	0.0	778.9
120.00 Top - Section 3		1.00	1.32	11.514	12.67	215.82	0.650	0.000	5.00	16.197	10.53	133.3	0.0	1395.7
125.00		1.00	1.33	11.614	12.78	213.50	0.650	0.000	5.00	15.698	10.20	130.3	0.0	620.8
130.00 Appurtenance(s)		1.00	1.34	11.710	12.88	207.46	0.650	0.000	5.00	15.198	9.88	127.2	0.0	600.9
135.00		1.00	1.35	11.803	12.98	201.32	0.650	0.000	5.00	14.699	9.55	124.0	0.0	581.0
140.00 Appurtenance(s)		1.00	1.36	11.894	13.08	195.11	0.650	0.000	5.00	14.199	9.23	120.8	0.0	561.1
145.00		1.00	1.37	11.982	13.18	188.82	0.650	0.000	5.00	13.700	8.91	117.4	0.0	541.1
150.00		1.00	1.38	12.068	13.27	182.46	0.650	0.000	5.00	13.201	8.58	113.9	0.0	521.2
Totals:									150.00			4,239.1		36,040.1

Discrete Appurtenance Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 18

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor	x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	140.00	Dragonwave	3	11.894	13.084	1.00	1.00	14.04	81.30	81.30	1.495	0.000	183.69	274.62	0.00
2	140.00	SFR-K-V-Brace	1	11.894	13.084	1.00	1.00	16.60	394.00	394.00	0.000	0.000	217.19	0.00	0.00
3	140.00	4415 B25	3	11.894	13.084	0.50	0.75	2.80	138.90	138.90	0.000	0.000	36.69	0.00	0.00
4	140.00	4449 B71 + B85	3	11.894	13.084	0.50	0.75	2.97	219.60	219.60	0.000	0.000	38.86	0.00	0.00
5	140.00	AIR6449 B41	3	11.894	13.084	0.53	0.75	9.03	309.00	309.00	0.000	0.000	118.09	0.00	0.00
6	140.00	APXVAALL24_43-U-NA20	3	11.894	13.084	0.55	0.75	33.24	368.40	368.40	0.000	0.000	434.95	0.00	0.00
7	140.00	AIR32 KRD901146-	3	11.894	13.084	0.65	0.75	12.74	396.60	396.60	0.000	0.000	166.73	0.00	0.00
8	140.00	ALU 1900 Mhz RRU's	3	11.894	13.084	0.50	0.75	4.18	180.00	180.00	0.000	0.000	54.63	0.00	0.00
9	140.00	RMQP-496-HK	1	11.894	13.084	1.00	1.00	48.00	2449.00	2449.00	0.000	0.000	628.01	0.00	0.00
10	130.00	APXVAA24_43-U-A20	3	11.710	12.881	0.55	0.75	33.24	297.00	297.00	0.000	0.000	428.22	0.00	0.00
11	130.00	f#P-HRK10	1	11.710	12.881	1.00	1.00	9.00	478.27	478.27	0.000	0.000	115.93	0.00	0.00
12	130.00	FSP-10W	1	11.710	12.881	1.00	1.00	58.98	2396.00	2396.00	0.000	0.000	759.72	0.00	0.00
13	130.00	Radio 2217 B66A	3	11.710	12.881	0.50	0.75	2.04	81.00	81.00	0.000	0.000	26.21	0.00	0.00
14	130.00	Radio 4449 B71 + B12	3	11.710	12.881	0.50	0.75	2.49	210.00	210.00	0.000	0.000	32.04	0.00	0.00
15	130.00	Radio 4415 B25	3	11.710	12.881	0.50	0.75	2.47	138.00	138.00	0.000	0.000	31.85	0.00	0.00
16	130.00	SHP2-13	1	11.710	12.881	1.00	1.00	3.96	152.00	152.00	2.495	0.000	51.01	127.26	0.00
17	130.00	AIR 5122 28GHz	3	11.710	12.881	0.57	0.75	3.23	72.90	72.90	0.000	0.000	41.63	0.00	0.00
18	130.00	AIR3246 B66	3	11.710	12.881	0.65	0.75	12.74	396.60	396.60	0.000	0.000	164.15	0.00	0.00
19	130.00	APX16DWV-16DWV-S-EA	3	11.710	12.881	0.46	0.75	9.01	122.10	122.10	0.000	0.000	116.08	0.00	0.00
Totals:									8,880.67				3,645.67		

Total Applied Force Summary

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 18

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		142.24	1728.56	0.00	0.00
10.00		139.58	1696.69	0.00	0.00
15.00		136.92	1664.82	0.00	0.00
20.00		142.46	1632.95	0.00	0.00
25.00		146.36	1601.08	0.00	0.00
30.00		149.01	1569.21	0.00	0.00
35.00		150.76	1537.35	0.00	0.00
38.00		90.48	907.11	0.00	0.00
40.00		61.29	1118.13	0.00	0.00
45.00		154.74	2753.49	0.00	0.00
50.00		154.79	1288.19	0.00	0.00
55.00		154.44	1260.31	0.00	0.00
60.00		153.74	1232.42	0.00	0.00
65.00		152.74	1204.54	0.00	0.00
70.00		151.47	1176.65	0.00	0.00
75.00		149.96	1148.77	0.00	0.00
77.00		59.27	451.70	0.00	0.00
80.00		89.93	1234.02	0.00	0.00
83.00		89.26	1215.38	0.00	0.00
85.00		59.04	380.52	0.00	0.00
90.00		146.68	934.58	0.00	0.00
95.00		144.44	910.67	0.00	0.00
100.00		142.06	886.77	0.00	0.00
105.00		139.52	862.87	0.00	0.00
110.00		136.86	838.97	0.00	0.00
115.00		134.07	815.07	0.00	0.00
120.00		133.35	1431.91	0.00	0.00
125.00		130.35	657.02	0.00	0.00
130.00	(24) attachments	1894.08	4980.97	127.26	0.00
135.00		124.05	599.89	0.00	0.00
140.00	(23) attachments	1999.59	5116.77	274.62	0.00
145.00		117.37	541.15	0.00	0.00
150.00		113.90	521.23	0.00	0.00
	Totals:	7,884.79	45,899.76	401.87	0.00

Calculated Forces

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

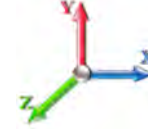


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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 18

Dead Load Factor 1.00
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.90	-7.89	-0.40	-825.01	0.00	825.01	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.098
5.00	-44.17	-7.77	-0.40	-785.54	0.00	785.54	6837.06	3418.53	17439.8	8732.91	0.01	-0.023	0.000	0.096
10.00	-42.47	-7.64	-0.40	-746.70	0.00	746.70	6749.68	3374.84	16887.0	8456.09	0.05	-0.045	0.000	0.095
15.00	-40.80	-7.52	-0.40	-708.48	0.00	708.48	6660.64	3330.32	16338.7	8181.53	0.11	-0.068	0.000	0.093
20.00	-39.16	-7.39	-0.40	-670.87	0.00	670.87	6569.96	3284.98	15795.1	7909.33	0.19	-0.091	0.000	0.091
25.00	-37.56	-7.26	-0.40	-633.90	0.00	633.90	6477.62	3238.81	15256.5	7639.63	0.30	-0.114	0.000	0.089
30.00	-35.99	-7.12	-0.40	-597.60	0.00	597.60	6383.64	3191.82	14723.2	7372.54	0.43	-0.137	0.000	0.087
35.00	-34.45	-6.98	-0.40	-562.00	0.00	562.00	6288.00	3144.00	14195.2	7108.19	0.59	-0.160	0.000	0.085
38.00	-33.54	-6.89	-0.40	-541.06	0.00	541.06	6229.82	3114.91	13881.2	6950.95	0.69	-0.175	0.000	0.083
40.00	-32.42	-6.84	-0.40	-527.28	0.00	527.28	6190.71	3095.36	13673.0	6846.70	0.77	-0.184	0.000	0.082
45.00	-29.66	-6.68	-0.40	-493.10	0.00	493.10	5186.56	2593.28	11416.3	5716.63	0.97	-0.207	0.000	0.092
50.00	-28.37	-6.54	-0.40	-459.68	0.00	459.68	5108.96	2554.48	10995.7	5506.06	1.20	-0.230	0.000	0.089
55.00	-27.11	-6.39	-0.40	-427.00	0.00	427.00	5029.70	2514.85	10579.3	5297.54	1.46	-0.255	0.000	0.086
60.00	-25.88	-6.24	-0.40	-395.06	0.00	395.06	4948.79	2474.40	10167.2	5091.20	1.74	-0.280	0.000	0.083
65.00	-24.67	-6.09	-0.40	-363.86	0.00	363.86	4866.24	2433.12	9759.82	4887.17	2.05	-0.305	0.000	0.080
70.00	-23.49	-5.94	-0.40	-333.40	0.00	333.40	4782.03	2391.02	9357.20	4685.56	2.38	-0.329	0.000	0.076
75.00	-22.34	-5.79	-0.40	-303.69	0.00	303.69	4696.17	2348.09	8959.67	4486.49	2.74	-0.353	0.000	0.072
77.00	-21.89	-5.74	-0.40	-292.10	0.00	292.10	4661.37	2330.68	8802.13	4407.61	2.89	-0.362	0.000	0.071
80.00	-20.66	-5.64	-0.40	-274.89	0.00	274.89	4608.66	2304.33	8567.45	4290.09	3.12	-0.377	0.000	0.069
83.00	-19.44	-5.55	-0.40	-257.97	0.00	257.97	3782.33	1891.17	7057.27	3533.88	3.36	-0.390	0.000	0.078
85.00	-19.06	-5.49	-0.40	-246.87	0.00	246.87	3755.60	1877.80	6933.95	3472.13	3.53	-0.400	0.000	0.076
90.00	-18.12	-5.35	-0.40	-219.40	0.00	219.40	3687.60	1843.80	6628.16	3319.01	3.96	-0.424	0.000	0.071
95.00	-17.21	-5.20	-0.40	-192.67	0.00	192.67	3617.94	1808.97	6326.13	3167.77	4.41	-0.447	0.000	0.066
100.00	-16.32	-5.06	-0.40	-166.65	0.00	166.65	3546.64	1773.32	6028.11	3018.53	4.89	-0.469	0.000	0.060
105.00	-15.46	-4.92	-0.40	-141.35	0.00	141.35	3473.69	1736.85	5734.33	2871.43	5.40	-0.490	-0.001	0.054
110.00	-14.62	-4.78	-0.40	-116.76	0.00	116.76	3399.09	1699.54	5445.04	2726.57	5.92	-0.508	-0.001	0.047
115.00	-13.81	-4.64	-0.40	-92.87	0.00	92.87	3322.84	1661.42	5160.48	2584.08	6.46	-0.525	-0.001	0.040
120.00	-12.37	-4.50	-0.40	-69.67	0.00	69.67	2604.14	1302.07	3997.79	2001.87	7.02	-0.539	-0.001	0.040
125.00	-11.72	-4.36	-0.40	-47.18	0.00	47.18	2547.22	1273.61	3785.91	1895.77	7.59	-0.550	-0.001	0.029
130.00	-6.76	-2.42	-0.27	-25.37	0.00	25.37	2488.65	1244.32	3577.22	1791.27	8.17	-0.559	-0.001	0.017
135.00	-6.16	-2.29	-0.27	-13.26	0.00	13.26	2428.43	1214.21	3371.96	1688.49	8.76	-0.564	-0.001	0.010
140.00	-1.06	-0.24	0.00	-1.80	0.00	1.80	2366.56	1183.28	3170.38	1587.54	9.36	-0.566	-0.001	0.002
145.00	-0.52	-0.12	0.00	-0.59	0.00	0.59	2303.03	1151.52	2972.71	1488.57	9.95	-0.567	-0.001	0.001
150.00	0.00	-0.11	0.00	0.00	0.00	0.00	2232.58	1116.29	2772.66	1388.39	10.54	-0.567	-0.001	0.000

Final Analysis Summary

Structure: CT46136-A-SBA	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 28

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 93 mph Wind	30.4	0.00	55.06	0.00	0.96	3182.52
0.9D + 1.6W 93 mph Wind	30.3	0.00	41.29	0.00	0.96	3165.01
1.2D + 1.0Di + 1.0Wi 50 mph Wind	10.3	0.00	89.03	0.00	0.36	1078.38
1.2D + 1.0E	2.2	0.00	55.08	0.00	0.00	237.51
0.9D + 1.0E	2.2	0.00	41.31	0.00	0.00	236.14
1.0D + 1.0W 60 mph Wind	7.9	0.00	45.90	0.00	0.40	825.01

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 93 mph Wind	-55.06	-30.35	-0.96	-3182.5	0.00	-3182.5	6922.80	3461.4	17996.9	9011.85	0.00	0.361
0.9D + 1.6W 93 mph Wind	-41.29	-30.34	-0.96	-3165.0	0.00	-3165.0	6922.80	3461.4	17996.9	9011.85	0.00	0.357
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-89.03	-10.29	-0.36	-1078.3	0.00	-1078.3	6922.80	3461.4	17996.9	9011.85	0.00	0.133
1.2D + 1.0E	-55.08	-2.16	0.00	-237.51	0.00	-237.51	6922.80	3461.4	17996.9	9011.85	0.00	0.034
0.9D + 1.0E	-41.31	-2.16	0.00	-236.14	0.00	-236.14	6922.80	3461.4	17996.9	9011.85	0.00	0.032
1.0D + 1.0W 60 mph Wind	-45.90	-7.89	-0.40	-825.01	0.00	-825.01	6922.80	3461.4	17996.9	9011.85	0.00	0.098

Base Plate Summary

Structure: CT46136-A-SB	Code: EIA/TIA-222-G	12/16/2020
Site Name: Bristol-east	Exposure: C	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 29

Reactions	Base Plate	Anchor Bolts
Original Design	Yield (ksi): 55.00	Bolt Circle: 71.00
Moment (kip-ft): 6300.00	Width (in): 71.00	Number Bolts: 24.00
Axial (kip): 52.00	Style: Clipped	Bolt Type: 2.25" 18J
Shear (kip): 48.00	Polygon Sides: 4.00	Bolt Diameter (in): 2.25
Analysis (1.2D + 1.6W)	Clip Length (in): 6.00	Yield (ksi): 75.00
Moment (kip-ft): 3182.52	Effective Len (in): 8.14	Ultimate (ksi): 100.00
Axial (kip): 55.06	Moment (kip-in): 337.49	Arrangement: Clustered
Shear (kip): 30.35	Allow Stress (ksi): 74.25	Cluster Dist (in): 6.00
	Applied Stress (ksi): 27.47	Start Angle (deg): 45.00
	Stress Ratio: 0.37	Compression
		Force (kip): 93.36
		Allowable (kip): 260.00
		Ratio: 0.37
		Tension
		Force (kip): 85.94
		Allowable (kip): 260.00
		Ratio: 0.34



Monopole Mat Foundation Design

Date

7/30/2020

Customer Name:		EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	300
Site Number:	194213-VZW	Engineer Name:	Rama K.
Engr. Number:		Engineer Login ID:	

Foundation Info Obtained from:

Mapping Operation
Monopole
Analysis

Structure Type:

Analysis or Design?

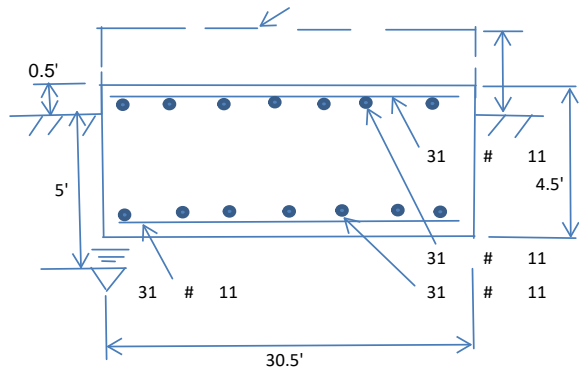
Base Reactions (Factored):

Axial Load (Kips):	55.1	Shear Force (Kips):	30.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3182.5

Allowable overstress %: 5.0%

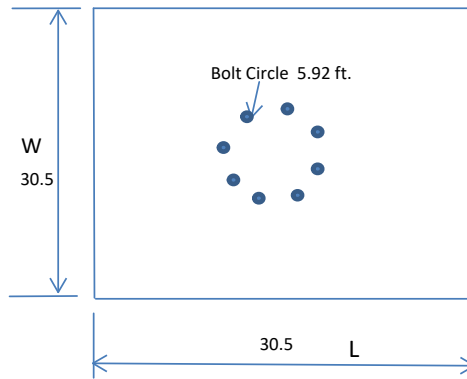
Foundation Geometries:

Anchor Bolt Circle (ft.):	5.92	Depth of Base BG (ft.):	4.00
Thickness of Pad (ft.):	4.50	Width of Pad (ft.):	30.5
Length of Pad (ft.):	30.5	Final Length of pad (ft)	30.5
		Final width of pad (ft):	30.5



Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	12.0	
Pad Steel Rebar Size (#):	11	Unit Weight of Concrete:	150.0	pcf
Concrete Cover (in.):	3			
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	31	Qty. of Rebar in Pad (W):	30.5	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	31	Qty. of Rebar in Pad (W):	31	



Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

Water Table B.G.S. (ft):	5.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	Yes		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	4186.13	Total Dry Concrete Weight (Kips):	627.92
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	627.92	Total Vertical Load on Base (Kips):	682.98

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	1720	<	Allowable Factored Soil Bearing (psf):	9000	0.19	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9457.8	>	Design Factored Momnt (kips-ft):	3321	0.35	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.85					OK!

Load/
Capacity
Ratio

Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00

Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1512.9	>	One-Way Factored Shear (L-D. Kips):	288.2	0.19	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1512.9	>	One-Way Factored Shear (W-D., Kips)	288.2	0.19	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1821.1	>	One-Way Factored Shear (C-C, Kips):	467.2	0.26	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0026	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0026		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	10610.7	>	Moment at Bottom (L-Direct. K-Ft):	1130.8	0.11	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	10444.9	>	Moment at Bottom (W-Direct. K-Ft):	1130.8	0.11	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	14806.3	>	Moment at Bottom (C-C Dir. K-Ft):	1599.2	0.11	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0026	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0026		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	10610.7	>	Moment at the top (L-Dir Kips-Ft):	285.3	0.03	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	10610.7	>	Moment at the top (W-Dir Kips-Ft):	285.3	0.03	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	14922.2	>	Moment at the top (C-C Direc. K-Ft):	488.8	0.03	OK!

EXHIBIT 8



Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Antenna Mount Analysis Report

Existing Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT46136-A-SBA / Bristol-east

Customer Site Name: Bristol-east

Carrier Name: T-Mobile Sprint (App#: 143986, v1)

Carrier Site ID / Name: CT52XC042

Site Location: 1214 Farmington Ave.

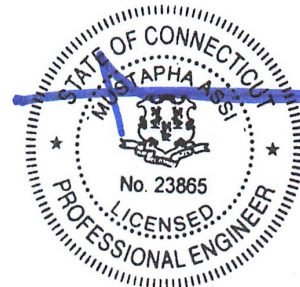
Bristol, Connecticut

Hartford County

Latitude: 41.695472

Longitude: -72.901658

Exp.01/31/2021



Analysis Result:

12/14/2020

Max Structural Usage: 63.2% [Pass]

Report Prepared By: Bikkey Shah

NOTE: The (1) Site Pro 1 Platform RMQP-4096 w/ Site Pro 1 SFR-K V-Brace currently installed on the monopole tower is assumed to be installed per the manufacturer's instructions. TES is not liable for any fit-up issues.

Introduction

The purpose of this report is to summarize the analysis results on the (1) Platform w/ Handrail RMQP-4096-HK at 140.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Mount Drawings	Provided by Site Pro 1; Drawing No: RMQP-496-HK, dated 7/14/2014.
Antenna Loading	Provided by SBA; Application #: 143986, v1, dated 12/4/2020
Modification Drawings	N/A

Analysis Criteria

Basic Wind Speed Used in the Analysis: $V_{ULT} = 120$ mph (3-Sec. Gust) / Equivalent to
 $V_{ASD} = 93$ mph (3-Sec. Gust)

Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 1" radial ice concurrent

Operational Wind Speed: 60 mph +0" Radial ice

Standard/Codes: ANSI/TIA/EIA 222-G

Exposure Category: C

Structure Class: II

Topographic Category: 1

Crest Height (Ft): 0

The site is a Risk Category II structure per IBC Table 1604.5. This site does not support emergency communication equipment for first responders such as fire departments, police, hospitals, ambulance services or any of the facilities listed for Risk Categories III and IV. The scope of work detailed in this structural analysis does not include items that are a part of emergency service as the 911 or essential facility service of an emergency response system.

Mount Information

(1) Site Pro 1 Platform RMQP-4096 w/ Site Pro 1 SFR-K V-Brace at 140.00' elevation.

Final Antenna Configuration

- 3 Ericsson AIR32 KRD901146-1_B66A_B2A
- 3 RFS APXVAALL24_43-U-NA20
- 3 Ericsson AIR6449 B41
- 3 DragonWave VHLPX3-11W-4GR
- 3 ALU 1900MHz RRH
- 3 Ericsson 4449 B71 + B85
- 3 Ericsson 4415 B25

In addition to the proposed equipment loading, a 500 lb serviceability load was also considered in this analysis in accordance with TIA requirements.

Analysis Results

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 63.2%, which occurs in the support rail. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

NOTE: The (1) Site Pro 1 Platform RMQP-4096 w/ Site Pro 1 SFR-K V-Brace currently installed on the monopole tower is assumed to be installed per the manufacturer's instructions. TES is not liable for any fit-up issues

Attachments

1. Mount Photos
2. Antenna Placement Diagram
3. Analysis Calculations

Standard Conditions

1. The loading configuration as analyzed in this report is as provided from the customer. Any deviation from this design shall be communicated to TES to verify deviation will not adversely impact the analysis.
2. The analysis is based on the presumption that the antenna mount members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion. The mount analysis is not a condition assessment of the mount.
4. The mount analysis was performed in accordance with the loading provided, and if applicable the modification required to support the additional loading.
5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.
6. The modification drawings are not intended to convey means or methods. These are the responsibility of the installing contractor.
7. Rigging plan review is available if the contractor requires for a construction class IV or other if required. Review fee would apply.
8. The mount modification package was created based upon information provided for the mount loading. The underlying tower is assumed to provide support and sufficient rigidity to support the mount loads as a tower analysis was not part of the mount analysis.
9. TES is not responsible for modifications to climbing facilities unless communicated to TES in writing.



Sector: **A**

12/14/2020

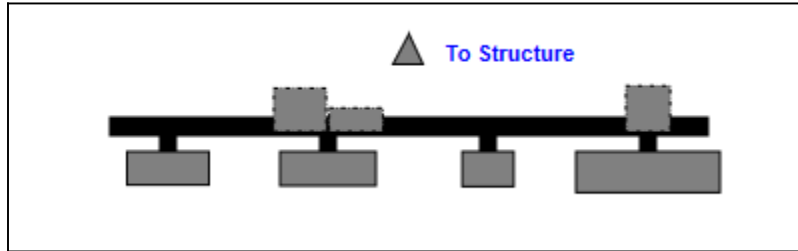
Structure Type: Monopole

Mount Elev: 140.00

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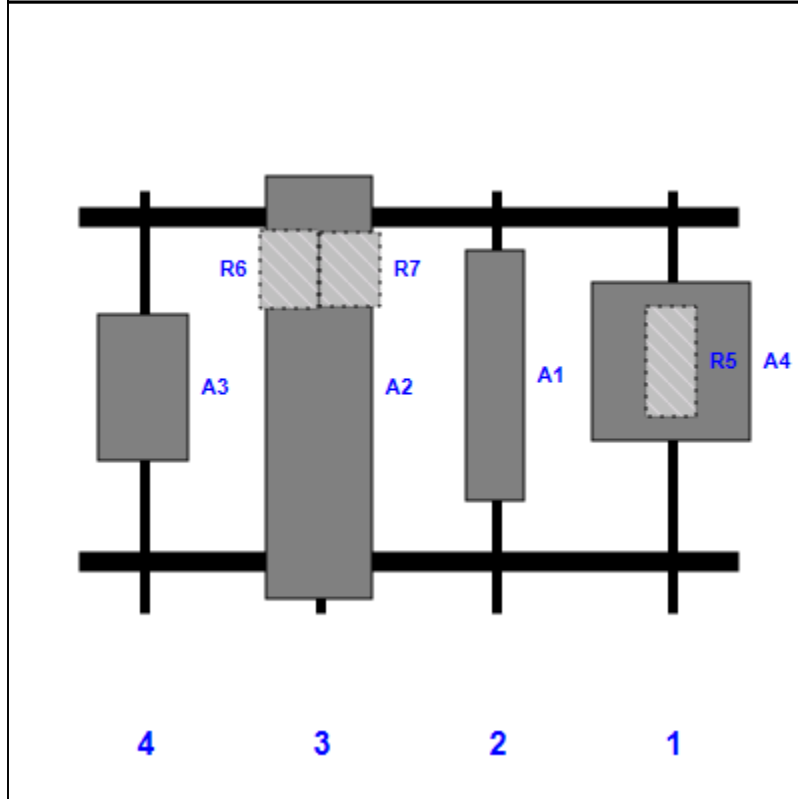


Plan View



Front View

Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A4	VHLPX3-11W-4GR	26.00	26.00	135.00	1	a	Front	39.00			
R5	1900MHz RRH	25.00	11.10	135.00	1	a	Behind	39.00			
A1	AIR32 KRD901146-1_B66A_B2A	56.60	12.90	95.00	2	a	Front	42.00			
A2	APXVAALL24_43-U-NA20	95.90	24.00	55.00	3	a	Front	45.00			
R6	4449 B71 + B85	17.90	13.10	55.00	3	a	Behind	18.00	-7.00		
R7	4415 B25	16.50	13.40	55.00	3	a	Behind	18.00	7.00		
A3	AIR6449 B41	33.10	20.50	15.00	4	a	Front	45.00			

Structure: CT46136-A-SBA - Bristol-east

Sector: B

12/14/2020

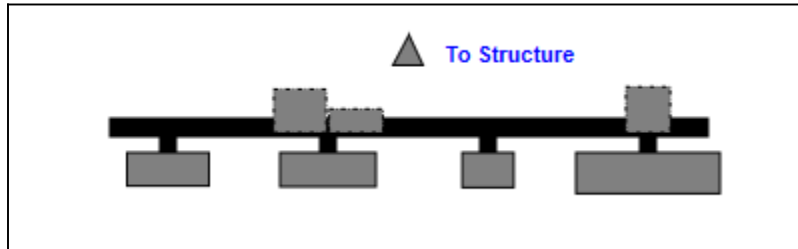


Structure Type: Monopole

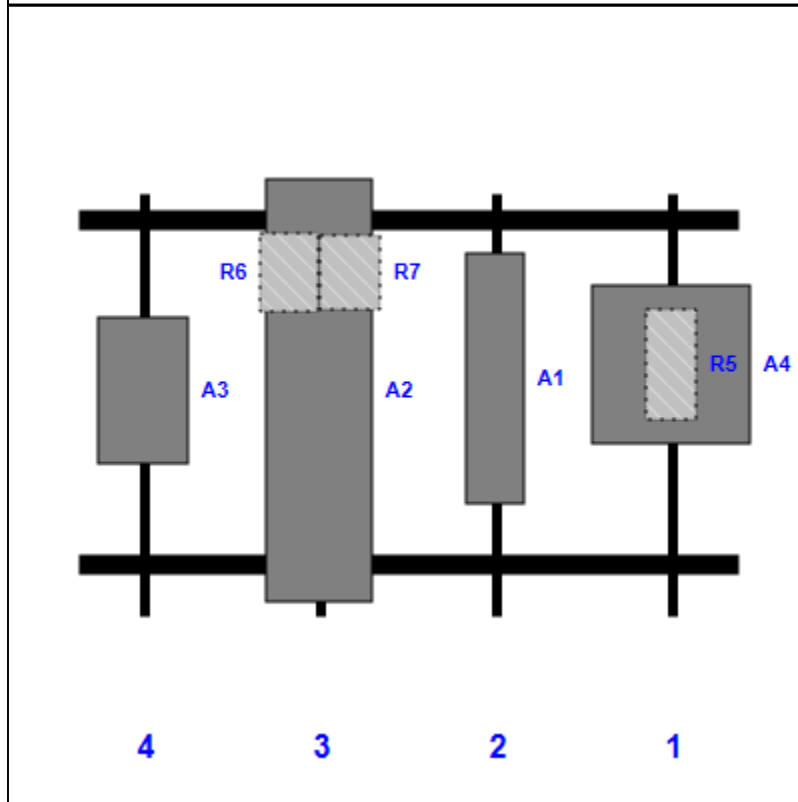
Page: 2

Mount Elev: 140.00

Plan View



Front View
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A4	VHLPX3-11W-4GR	26.00	26.00	135.00	1	a	Front	39.00			
R5	1900MHz RRH	25.00	11.10	135.00	1	a	Behind	39.00			
A1	AIR32 KRD901146-1_B66A_B2A	56.60	12.90	95.00	2	a	Front	42.00			
A2	APXVAALL24_43-U-NA20	95.90	24.00	55.00	3	a	Front	45.00			
R6	4449 B71 + B85	17.90	13.10	55.00	3	a	Behind	18.00	-7.00		
R7	4415 B25	16.50	13.40	55.00	3	a	Behind	18.00	7.00		
A3	AIR6449 B41	33.10	20.50	15.00	4	a	Front	45.00			

Structure: CT46136-A-SBA - Bristol-east

Sector: C

12/14/2020

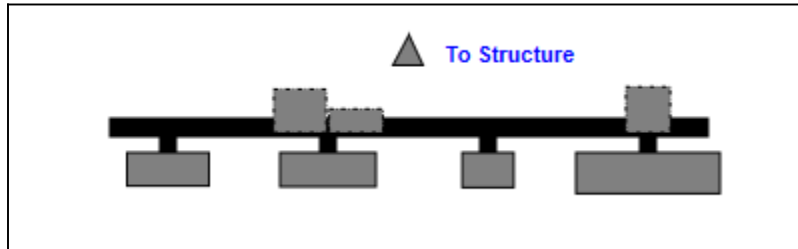


Structure Type: Monopole

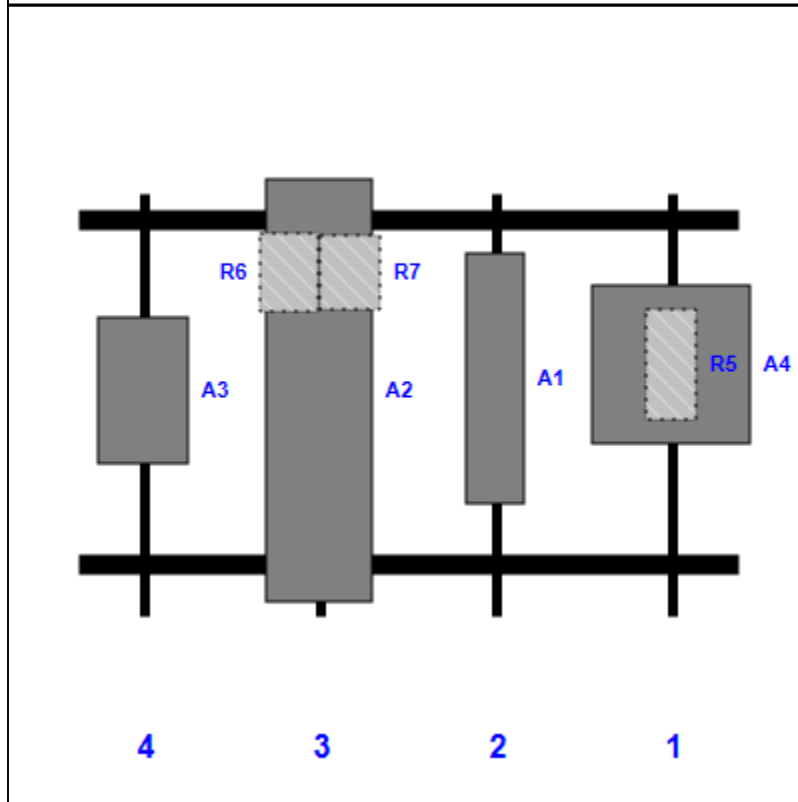
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Mount Elev: 140.00

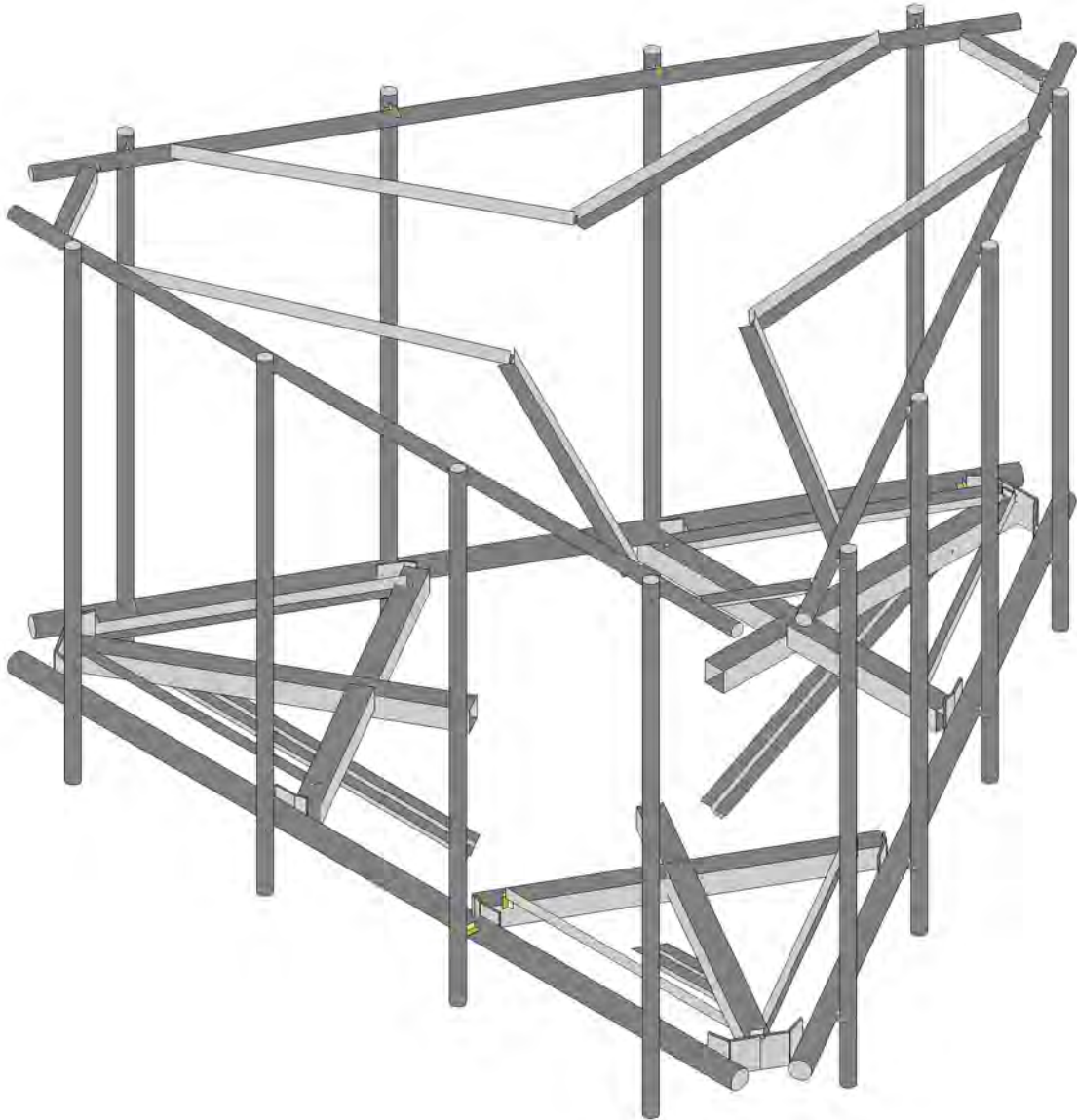
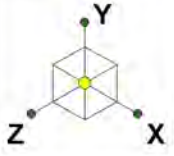
Plan View



Front View
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A4	VHLPX3-11W-4GR	26.00	26.00	135.00	1	a	Front	39.00			
R5	1900MHz RRH	25.00	11.10	135.00	1	a	Behind	39.00			
A1	AIR32 KRD901146-1_B66A_B2A	56.60	12.90	95.00	2	a	Front	42.00			
A2	APXVAALL24_43-U-NA20	95.90	24.00	55.00	3	a	Front	45.00			
R6	4449 B71 + B85	17.90	13.10	55.00	3	a	Behind	18.00	-7.00		
R7	4415 B25	16.50	13.40	55.00	3	a	Behind	18.00	7.00		
A3	AIR6449 B41	33.10	20.50	15.00	4	a	Front	45.00			



Tower Engineering Solutio...

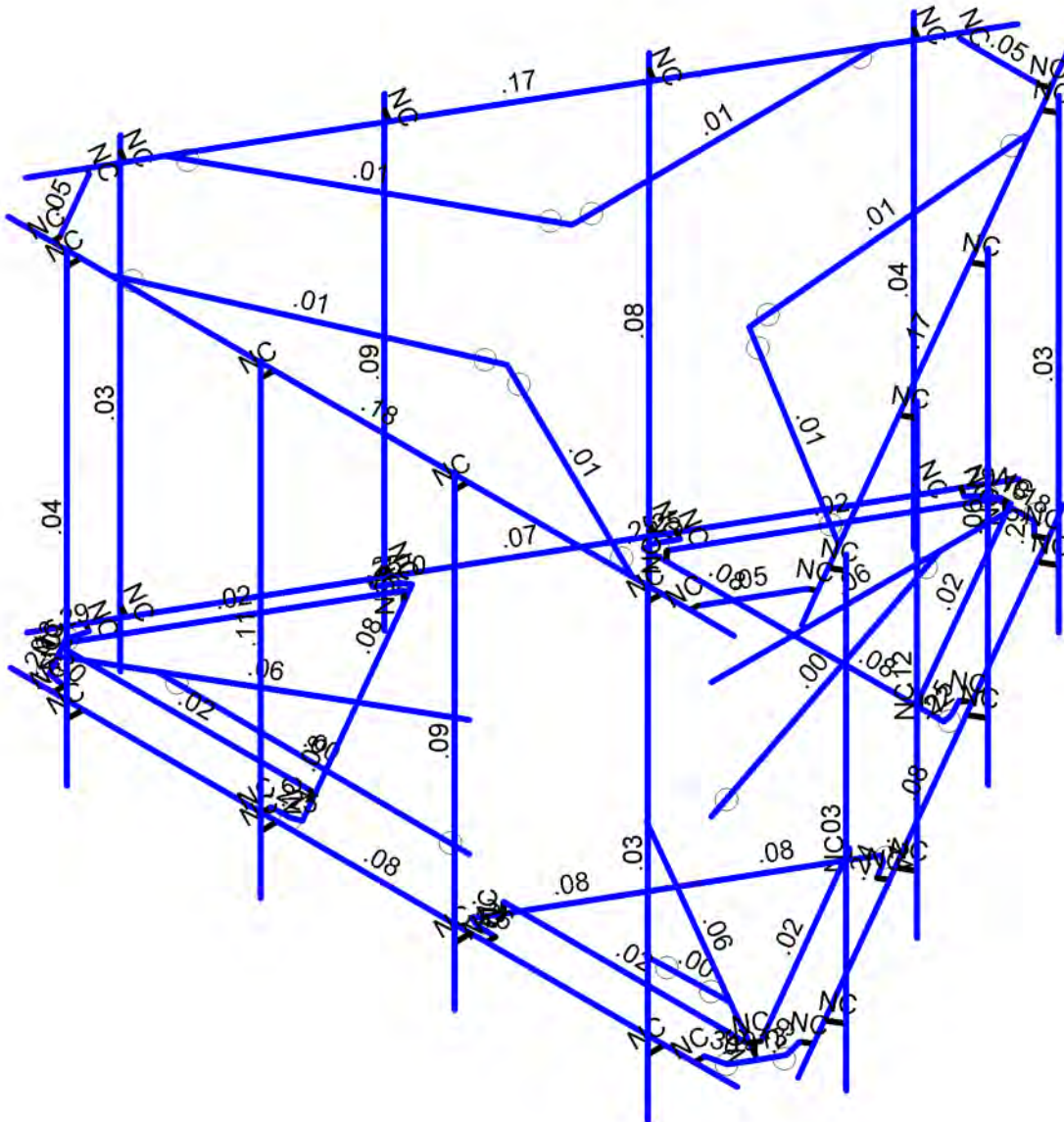
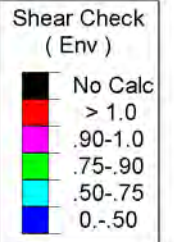
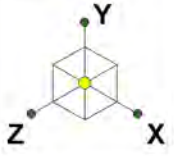
CT46136-A-SBA_MT_LO_Loads Only_G

SK - 1

Dec 14, 2020 at 4:42 PM

TES Project No. 100562

CT46136-A-SBA_100562_G_RISA_...



Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.6W (Front)

Tower Engineering Solutio...	CT46136-A-SBA_MT_LO_Loads Only_G	SK - 3
TES Project No. 100562		Dec 14, 2020 at 4:43 PM
		CT46136-A-SBA_100562_G_RISA_...



Company : Tower Engineering Solutions, LLC
 Designer :
 Job Number : TES Project No. 100562
 Model Name : CT46136-A-SBA_MT_LO_Loads Only_G

Dec 14, 2020
 5:06 PM
 Checked By: _____

6 UjW@ UX'7 UjYg

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Antenna D	None					33		
2	Antenna Di	None					33		
3	Antenna W Front	None					33		
4	Antenna Wi Front	None					33		
5	Antenna W Side	None					33		
6	Antenna Wi Side	None					33		
7	Service Lm1	None					1		
8	Service Lm2	None					1		
9	Structure D	None		-1				5	
10	Structure Di	None						69	3
11	Structure W Front	None						69	
12	Structure Wi Front	None						69	
13	Structure W Side	None						69	
14	Structure Wi Side	None						69	
15	BLC 9 Transient Area..	None						33	
16	BLC 10 Transient Are..	None						33	

@ UX'7 ca VjbUjcbg

	Description	S...	P...	S...	B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...
1	1.2D+1.6W (Front)	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6			
2	1.2D+1.6W (Back)	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6			
3	1.2D+1.6W (Left)	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6			
4	1.2D+1.6W (Right)	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6			
5	1.2D+1.0Di+1.0Wi (Front)	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12
6	1.2D+1.0Di+1.0Wi (Back)	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12
7	1.2D+1.0Di+1.0Wi (Left)	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14
8	1.2D+1.0Di+1.0Wi (Right)	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14
9	1.2D+1.5L1+.16W (Mainta..	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16	
10	1.2D+1.5L2+.16W (Mainta..	Yes	Y		1	1.2	9	1.2	8	1.5	3	.16	11	.16	
11	1.4D	Yes	Y		1	1.4	9	1.4							

>c]bh7 ccfX]bUjYg'UbX'HYa dYfUi fYg

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	-6.248693	-1.5	4.052255	0	
2	N2	6.251307	-1.5	4.052255	0	
3	N3	0	-1.5	0	0	
4	N4	-1.525645	-1.5	0.880833	0	
5	N5	0.001306	-1.5	-1.760626	0	
6	N6	1.525423	-1.5	0.879222	0	
7	N7	5.518027	-1.5	4.052255	0	
8	N8	1.934693	-1.5	4.052255	0	
9	N9	-1.932785	-1.5	4.052255	0	
10	N10	-5.516118	-1.5	4.052255	0	
11	N11	-6.267414	-1.5	2.750973	0	
12	N12	-4.475747	-1.5	-0.352284	0	



Company : Tower Engineering Solutions, LLC
 Designer :
 Job Number : TES Project No. 100562
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>c]bh7ccfX]bUhg'UbX'HYa dYUhi fYg'f7 cb]bi YXL

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
13	N13	-2.542008	-1.5	-3.701619	0	
14	N14	-0.750341	-1.5	-6.804876	0	
15	N15	0.750819	-1.5	-6.80406	0	
16	N16	2.542485	-1.5	-3.700803	0	
17	N17	4.476224	-1.5	-0.351469	0	
18	N18	6.267891	-1.5	2.75179	0	
19	N19	-3e-14	-1.5	-3.17336	0	
20	N20	2.180513	-1.5	-3.17336	0	
21	N21	-2.178604	-1.5	-3.17336	0	
22	N22	-3e-14	-1.5	-6.948466	0	
23	N23	.375	-1.5	-6.948466	0	
24	N24	-.375	-1.5	-6.948466	0	
25	N25	2.58	-1.5	-3.17336	0	
26	N26	-2.58	-1.5	-3.17336	0	
27	N27	2.748854	-1.5	1.585571	0	
28	N28	6.018192	-1.5	3.473123	0	
29	N29	-2.74678	-1.5	1.585856	0	
30	N30	-6.016118	-1.5	3.473409	0	
31	N31	-1.525645	-3.5	0.880833	0	
32	N32	0.001306	-3.5	-1.760626	0	
33	N33	1.525423	-3.5	0.879222	0	
34	N34	-4.933586	-1.5	2.848409	0	
35	N35	-2e-14	-1.5	-5.698466	0	
36	N36	4.93566	-1.5	2.848123	0	
37	N37	-6.248693	5.25	4.098255	0	
38	N38	6.251307	5.25	4.098255	0	
39	N39	5.491469	5.25	4.098255	0	
40	N40	-5.48956	5.25	4.098255	0	
41	N41	-4.998693	5.5	4.328256	0	
42	N42	-4.998693	-2.5	4.328256	0	
43	N43	5.001307	5.5	4.328256	0	
44	N44	5.001307	-2.5	4.328256	0	
45	N45	-1.665693	5.5	4.328256	0	
46	N46	-1.665693	-2.5	4.328256	0	
47	N47	1.668306	5.5	4.328256	0	
48	N48	1.668306	-2.5	4.328256	0	
49	N49	6.247726	5.5	2.164868	0	
50	N50	6.247726	-2.5	2.164868	0	
51	N51	1.247726	5.5	-6.495386	0	
52	N52	1.247726	-2.5	-6.495386	0	
53	N53	4.581226	5.5	-0.721595	0	
54	N54	4.581226	-2.5	-0.721595	0	
55	N55	2.914226	5.5	-3.608924	0	
56	N56	2.914226	-2.5	-3.608924	0	
57	N57	-1.249032	5.5	-6.493123	0	
58	N58	-1.249032	-2.5	-6.493123	0	
59	N59	-6.249032	5.5	2.167131	0	
60	N60	-6.249032	-2.5	2.167131	0	
61	N61	-2.915532	5.5	-3.606661	0	
62	N62	-2.915532	-2.5	-3.606661	0	
63	N63	-4.582532	5.5	-0.719332	0	
64	N64	-4.582532	-2.5	-0.719332	0	



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>c]bh7ccfX]bUHyg'UbX'HYa dYUhi fYg'f7 cb]bi YXL

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
65	N65	6.009184	-1.5	2.303696	0	
66	N66	1.009184	-1.5	-6.356558	0	
67	N67	4.342684	-1.5	-0.582766	0	
68	N68	2.675684	-1.5	-3.470095	0	
69	N69	-1.010006	-1.5	-6.355124	0	
70	N70	-6.010006	-1.5	2.30513	0	
71	N71	-2.676506	-1.5	-3.468661	0	
72	N72	-4.343506	-1.5	-0.581332	0	
73	N73	-4.998693	-1.5	4.052255	0	
74	N74	5.001307	-1.5	4.052255	0	
75	N75	-1.665693	-1.5	4.052255	0	
76	N76	1.668306	-1.5	4.052255	0	
77	N77	6.633707	-1.5	3.385402	0	
78	N78	0.383707	-1.5	-7.439915	0	
79	N79	-0.385005	-1.5	-7.437658	0	
80	N80	-6.635005	-1.5	3.38766	0	
81	N81	6.673544	5.25	3.362403	0	
82	N82	0.423544	5.25	-7.462915	0	
83	N83	-0.424841	5.25	-7.460657	0	
84	N84	-6.674841	5.25	3.36466	0	
85	N85	-4.998693	5.25	4.328256	0	
86	N86	-4.998693	-1.5	4.328256	0	
87	N87	5.001307	-1.5	4.328256	0	
88	N88	-1.665693	-1.5	4.328256	0	
89	N89	1.668306	-1.5	4.328256	0	
90	N90	5.001307	5.25	4.328256	0	
91	N91	-1.665693	5.25	4.328256	0	
92	N92	1.668306	5.25	4.328256	0	
93	N93	6.247726	5.25	2.164868	0	
94	N94	6.247726	-1.5	2.164868	0	
95	N95	1.247726	-1.5	-6.495386	0	
96	N96	4.581226	-1.5	-0.721595	0	
97	N97	2.914226	-1.5	-3.608924	0	
98	N98	1.247726	5.25	-6.495386	0	
99	N99	4.581226	5.25	-0.721595	0	
100	N100	2.914226	5.25	-3.608924	0	
101	N101	-1.249032	5.25	-6.493123	0	
102	N102	-1.249032	-1.5	-6.493123	0	
103	N103	-6.249032	-1.5	2.167131	0	
104	N104	-2.915532	-1.5	-3.606661	0	
105	N105	-4.582532	-1.5	-0.719332	0	
106	N106	-6.249032	5.25	2.167131	0	
107	N107	-2.915532	5.25	-3.606661	0	
108	N108	-4.582532	5.25	-0.719332	0	
109	N109	-4.998693	5.25	4.098255	0	
110	N110	5.001307	5.25	4.098255	0	
111	N111	-1.665693	5.25	4.098255	0	
112	N112	1.668306	5.25	4.098255	0	
113	N113	6.048542	5.25	2.279867	0	
114	N114	1.048542	5.25	-6.380387	0	
115	N115	4.382042	5.25	-0.606596	0	
116	N116	2.715042	5.25	-3.493924	0	



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	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
117	N117	-1.049844	5.25	-6.378122	0	
118	N118	-6.049844	5.25	2.282133	0	
119	N119	-2.716344	5.25	-3.491659	0	
120	N120	-4.383344	5.25	-0.60433	0	
121	N121	5.491469	5.25	3.968255	0	
122	N122	-5.48956	5.25	3.968255	0	
123	N123	0.80346	5.25	-6.80488	0	
124	N124	6.293975	5.25	2.70497	0	
125	N125	0.690875	5.25	-6.739879	0	
126	N126	6.181389	5.25	2.769971	0	
127	N127	-6.294925	5.25	2.706626	0	
128	N128	-0.80441	5.25	-6.803225	0	
129	N129	-6.182344	5.25	2.771625	0	
130	N130	-0.691829	5.25	-6.738226	0	
131	N131	5.518027	-1.5	3.872255	0	
132	N132	-5.516118	-1.5	3.872255	0	
133	N133	0.594458	-1.5	-6.714879	0	
134	N134	6.111531	-1.5	2.840971	0	
135	N135	-6.112485	-1.5	2.842624	0	
136	N136	-0.595413	-1.5	-6.713226	0	
137	N137	1.934693	-1.5	3.892255	0	
138	N138	-1.932785	-1.5	3.892255	0	
139	N139	2.403445	-1.5	-3.621621	0	
140	N140	4.337184	-1.5	-0.272287	0	
141	N141	-4.338139	-1.5	-0.270634	0	
142	N142	-2.4044	-1.5	-3.619968	0	
143	N143	2.561452	-1.5	-3.327946	0	
144	N144	-2.561452	-1.5	-3.327946	0	
145	N145	2.180513	-1.3255	-3.17336	0	
146	N146	-2.178604	-1.3255	-3.17336	0	
147	N147	-3e-14	-1.5	-6.823466	0	
148	N148	-3e-14	-1.3255	-6.823466	0	
149	N149	0.0835	-1.3255	-6.823466	0	
150	N150	-0.0835	-1.3255	-6.823466	0	
151	N151	-3.838172	-1.5	-0.3017	0	
152	N152	-1.658612	-1.5	3.473406	0	
153	N153	-6.205048	-1.5	3.149473	0	
154	N154	-5.830048	-1.5	3.798993	0	
155	N155	-4.03821	-1.5	-0.647666	0	
156	N156	-1.45821	-1.5	3.821026	0	
157	N157	-4.162812	-1.5	-0.554309	0	
158	N158	-1.60136	-1.5	3.882255	0	
159	N159	-3.838467	-1.3255	-0.3017	0	
160	N160	-1.658908	-1.3255	3.473406	0	
161	N161	-5.909291	-1.5	3.411733	0	
162	N162	-5.909291	-1.3255	3.411733	0	
163	N163	-5.951045	-1.3255	3.33942	0	
164	N164	-5.867545	-1.3255	3.484046	0	
165	N165	1.657955	-1.5	3.475059	0	
166	N166	3.837513	-1.5	-0.300047	0	
167	N167	5.830048	-1.5	3.798993	0	
168	N168	6.205048	-1.5	3.149473	0	



>c]bh7ccfX]bUHyg'UbX'HYa dYUhi fYg'f cbi]bi YXL

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
169	N169	1.45821	-1.5	3.821026	0	
170	N170	4.03821	-1.5	-0.647666	0	
171	N171	1.60136	-1.5	3.882255	0	
172	N172	4.162812	-1.5	-0.554309	0	
173	N173	1.657954	-1.3255	3.475059	0	
174	N174	3.837512	-1.3255	-0.300047	0	
175	N175	5.91186	-1.5	3.411733	0	
176	N176	5.909295	-1.3255	3.411733	0	
177	N177	5.867545	-1.3255	3.484046	0	
178	N178	5.951045	-1.3255	3.33942	0	
179	N179	0.000002	5	1.761664	0	
180	N180	-1.524093	5	-0.881444	0	
181	N181	1.524141	5	-0.881444	0	
182	N182	-4.498693	5.25	4.098255	0	
183	N183	4.501307	5.25	4.098255	0	
184	N186	5.798539	5.25	1.846856	0	
185	N187	1.298539	5.25	-5.947373	0	
186	N190	-1.299846	5.25	-5.94511	0	
187	N191	-5.799846	5.25	1.849119	0	

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	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	V/Brace	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
2	Footrails	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	Grating Ang...	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
4	Handrails	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Standoff Arm	HSS4X4X4	Beam	SquareTube	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
6	Plan Bracing	HSS4X4X4	Beam	SquareTube	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
7	Kickers	LL2.5x2.5x3x3	Beam	Double Angle (3/8 Gap)	A36 Gr.36	Typical	1.8	2.46	1.07	.023
8	Mount Pipes	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
9	Footrail Con...	PL1/2x6	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237
10	Plan Bracin...	PL3/8x6	Beam	RECT	A36 Gr.36	Typical	2.25	.026	6.75	.101
11	Handrail Co...	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026

<chFc`YX'GhYY'DfcdYf]Yg

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.5	58	1.2
7	Q235	29000	11154	.3	.65	.49	34	1.5	58	1.2
8	J429-Gr5	29000	11154	.3	.65	.49	92	1.5	120	1.2



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	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N30	N4			Standoff Arm	Beam	SquareTube	A500 Gr.46	Typical
2	M2	N28	N6			Standoff Arm	Beam	SquareTube	A500 Gr.46	Typical
3	M3	N22	N24			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
4	M4	N22	N23			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
5	M5	N26	N144			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
6	M6	N144	N142			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
7	M7	N25	N143			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
8	M8	N143	N139			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
9	M9	N149	N145			Grating Angles	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N150	N146		270	Grating Angles	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N24	N136			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
12	M12	N23	N133			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
13	M13	N22	N5			Standoff Arm	Beam	SquareTube	A500 Gr.46	Typical
14	M14	N26	N19			Plan Bracing	Beam	SquareTube	A500 Gr.46	Typical
15	M15	N19	N25			Plan Bracing	Beam	SquareTube	A500 Gr.46	Typical
16	M16	N77	N78			Footrails	Beam	Pipe	A53 Gr.B	Typical
17	M17	N79	N80			Footrails	Beam	Pipe	A53 Gr.B	Typical
18	M18	N1	N2			Footrails	Beam	Pipe	A53 Gr.B	Typical
19	M19	N31	N34			Kickers	Beam	Double Angle (...)	A36 Gr.36	Typical
20	M20	N32	N35			Kickers	Beam	Double Angle (...)	A36 Gr.36	Typical
21	M21	N33	N36			Kickers	Beam	Double Angle (...)	A36 Gr.36	Typical
22	M22	N37	N38			Handrails	Beam	Pipe	A53 Gr.B	Typical
23	M23	N81	N82			Handrails	Beam	Pipe	A53 Gr.B	Typical
24	M24	N83	N84			Handrails	Beam	Pipe	A53 Gr.B	Typical
25	M25	N130	N125		180	Handrail Corne...	Beam	Single Angle	A36 Gr.36	Typical
26	MP4A	N41	N42			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
27	MP1A	N43	N44			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
28	MP3A	N45	N46			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
29	MP2A	N47	N48			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
30	MP4C	N49	N50			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
31	MP1C	N51	N52			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
32	MP3C	N53	N54			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
33	MP2C	N55	N56			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
34	MP4B	N57	N58			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
35	MP1B	N59	N60			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
36	MP3B	N61	N62			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
37	MP2B	N63	N64			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
38	M38	N74	N87			RIGID	None	None	RIGID	Typical
39	M39	N76	N89			RIGID	None	None	RIGID	Typical
40	M40	N75	N88			RIGID	None	None	RIGID	Typical
41	M41	N73	N86			RIGID	None	None	RIGID	Typical
42	M42	N66	N95			RIGID	None	None	RIGID	Typical
43	M43	N68	N97			RIGID	None	None	RIGID	Typical
44	M44	N67	N96			RIGID	None	None	RIGID	Typical
45	M45	N65	N94			RIGID	None	None	RIGID	Typical
46	M46	N70	N103			RIGID	None	None	RIGID	Typical
47	M47	N72	N105			RIGID	None	None	RIGID	Typical
48	M48	N71	N104			RIGID	None	None	RIGID	Typical
49	M49	N69	N102			RIGID	None	None	RIGID	Typical
50	M50	N110	N90			RIGID	None	None	RIGID	Typical
51	M51	N112	N92			RIGID	None	None	RIGID	Typical



A Ya Vyf Df ja Ufm8 UUf7 cbHbi YXL

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
52	M52	N111	N91			RIGID	None	None	RIGID	Typical
53	M53	N109	N85			RIGID	None	None	RIGID	Typical
54	M54	N114	N98			RIGID	None	None	RIGID	Typical
55	M55	N116	N100			RIGID	None	None	RIGID	Typical
56	M56	N115	N99			RIGID	None	None	RIGID	Typical
57	M57	N113	N93			RIGID	None	None	RIGID	Typical
58	M58	N118	N106			RIGID	None	None	RIGID	Typical
59	M59	N120	N108			RIGID	None	None	RIGID	Typical
60	M60	N119	N107			RIGID	None	None	RIGID	Typical
61	M61	N117	N101			RIGID	None	None	RIGID	Typical
62	M62	N39	N121			RIGID	None	None	RIGID	Typical
63	M63	N40	N122			RIGID	None	None	RIGID	Typical
64	M64	N123	N125			RIGID	None	None	RIGID	Typical
65	M65	N124	N126			RIGID	None	None	RIGID	Typical
66	M66	N127	N129			RIGID	None	None	RIGID	Typical
67	M67	N128	N130			RIGID	None	None	RIGID	Typical
68	M68	N122	N129		180	Handrail Corne...	Beam	Single Angle	A36 Gr.36	Typical
69	M69	N126	N121		180	Handrail Corne...	Beam	Single Angle	A36 Gr.36	Typical
70	M70	N10	N132			RIGID	None	None	RIGID	Typical
71	M71	N7	N131			RIGID	None	None	RIGID	Typical
72	M72	N18	N134			RIGID	None	None	RIGID	Typical
73	M73	N15	N133			RIGID	None	None	RIGID	Typical
74	M74	N14	N136			RIGID	None	None	RIGID	Typical
75	M75	N11	N135			RIGID	None	None	RIGID	Typical
76	M76	N8	N137			RIGID	None	None	RIGID	Typical
77	M77	N9	N138			RIGID	None	None	RIGID	Typical
78	M78	N16	N139			RIGID	None	None	RIGID	Typical
79	M79	N17	N140			RIGID	None	None	RIGID	Typical
80	M80	N12	N141			RIGID	None	None	RIGID	Typical
81	M81	N13	N142			RIGID	None	None	RIGID	Typical
82	M82	N21	N146			RIGID	None	None	RIGID	Typical
83	M83	N20	N145			RIGID	None	None	RIGID	Typical
84	M84	N147	N148			RIGID	None	None	RIGID	Typical
85	M85	N149	N150			RIGID	None	None	RIGID	Typical
86	M86	N30	N154			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
87	M87	N30	N153			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
88	M88	N156	N158			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
89	M89	N158	N138			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
90	M90	N155	N157			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
91	M91	N157	N141			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
92	M92	N163	N159			Grating Angles	Beam	Single Angle	A36 Gr.36	Typical
93	M93	N164	N160		270	Grating Angles	Beam	Single Angle	A36 Gr.36	Typical
94	M94	N154	N132			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
95	M95	N153	N135			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
96	M96	N156	N29			Plan Bracing	Beam	SquareTube	A500 Gr.46	Typical
97	M97	N29	N155			Plan Bracing	Beam	SquareTube	A500 Gr.46	Typical
98	M98	N152	N160			RIGID	None	None	RIGID	Typical
99	M99	N151	N159			RIGID	None	None	RIGID	Typical
100	M100	N161	N162			RIGID	None	None	RIGID	Typical
101	M101	N163	N164			RIGID	None	None	RIGID	Typical
102	M102	N28	N168			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
103	M103	N28	N167			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical



A Ya Vyf Df ja Ufm8 UU'f7 cbHbi YXL

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
104	M104	N170	N172			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
105	M105	N172	N140			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
106	M106	N169	N171			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
107	M107	N171	N137			Plan Bracing C...	Beam	RECT	A36 Gr.36	Typical
108	M108	N177	N173			Grating Angles	Beam	Single Angle	A36 Gr.36	Typical
109	M109	N178	N174		270	Grating Angles	Beam	Single Angle	A36 Gr.36	Typical
110	M110	N168	N134			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
111	M111	N167	N131			Footrail Conne...	Beam	RECT	A36 Gr.36	Typical
112	M112	N170	N27			Plan Bracing	Beam	SquareTube	A500 Gr.46	Typical
113	M113	N27	N169			Plan Bracing	Beam	SquareTube	A500 Gr.46	Typical
114	M114	N166	N174			RIGID	None	None	RIGID	Typical
115	M115	N165	N173			RIGID	None	None	RIGID	Typical
116	M116	N175	N176			RIGID	None	None	RIGID	Typical
117	M117	N177	N178			RIGID	None	None	RIGID	Typical
118	M118	N179	N182			V/Brace	Beam	Single Angle	A36 Gr.36	Typical
119	M119	N179	N183			V/Brace	Beam	Single Angle	A36 Gr.36	Typical
120	M120	N181	N186			V/Brace	Beam	Single Angle	A36 Gr.36	Typical
121	M121	N181	N187			V/Brace	Beam	Single Angle	A36 Gr.36	Typical
122	M122	N180	N190			V/Brace	Beam	Single Angle	A36 Gr.36	Typical
123	M123	N180	N191			V/Brace	Beam	Single Angle	A36 Gr.36	Typical

A Ya Vyf 5 Xj Ub WX 8 UHU

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes				None
4	M4						Yes				None
5	M5						Yes				None
6	M6		BenPIN				Yes				None
7	M7						Yes				None
8	M8		BenPIN				Yes				None
9	M9						Yes				None
10	M10						Yes				None
11	M11		BenPIN				Yes				None
12	M12		BenPIN				Yes				None
13	M13						Yes				None
14	M14						Yes				None
15	M15						Yes				None
16	M16						Yes				None
17	M17						Yes				None
18	M18						Yes				None
19	M19	BenPIN	BenPIN				Yes				None
20	M20	BenPIN	BenPIN				Yes				None
21	M21	BenPIN	BenPIN				Yes				None
22	M22						Yes				None
23	M23						Yes				None
24	M24						Yes				None
25	M25						Yes				None
26	MP4A						Yes				None
27	MP1A						Yes				None



Company : Tower Engineering Solutions, LLC
 Designer :
 Job Number : TES Project No. 100562
 Model Name : CT46136-A-SBA_MT_LO_Loads Only_G

Dec 14, 2020
 5:06 PM
 Checked By: _____

A Ya Vyf'5 Xj Ub WX'8 Uu f7 cb h bi YxL

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
28	MP3A						Yes				None
29	MP2A						Yes				None
30	MP4C						Yes				None
31	MP1C						Yes				None
32	MP3C						Yes				None
33	MP2C						Yes				None
34	MP4B						Yes				None
35	MP1B						Yes				None
36	MP3B						Yes				None
37	MP2B						Yes				None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41						Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49						Yes	** NA **			None
50	M50						Yes	** NA **			None
51	M51						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55						Yes	** NA **			None
56	M56						Yes	** NA **			None
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59						Yes	** NA **			None
60	M60						Yes	** NA **			None
61	M61						Yes	** NA **			None
62	M62						Yes	** NA **			None
63	M63						Yes	** NA **			None
64	M64						Yes	** NA **			None
65	M65						Yes	** NA **			None
66	M66						Yes	** NA **			None
67	M67						Yes	** NA **			None
68	M68						Yes				None
69	M69						Yes				None
70	M70						Yes	** NA **			None
71	M71						Yes	** NA **			None
72	M72						Yes	** NA **			None
73	M73						Yes	** NA **			None
74	M74						Yes	** NA **			None
75	M75						Yes	** NA **			None
76	M76						Yes	** NA **			None
77	M77						Yes	** NA **			None
78	M78						Yes	** NA **			None
79	M79						Yes	** NA **			None



A Ya Vyf'5 Xj Ub WX'8 UHfT' cbHbi YXL

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
80	M80						Yes	** NA **			None
81	M81						Yes	** NA **			None
82	M82						Yes	** NA **			None
83	M83						Yes	** NA **			None
84	M84						Yes	** NA **			None
85	M85						Yes	** NA **			None
86	M86						Yes				None
87	M87						Yes				None
88	M88						Yes				None
89	M89		BenPIN				Yes				None
90	M90						Yes				None
91	M91		BenPIN				Yes				None
92	M92						Yes				None
93	M93						Yes				None
94	M94		BenPIN				Yes				None
95	M95		BenPIN				Yes				None
96	M96						Yes				None
97	M97						Yes				None
98	M98						Yes	** NA **			None
99	M99						Yes	** NA **			None
100	M100						Yes	** NA **			None
101	M101						Yes	** NA **			None
102	M102						Yes				None
103	M103						Yes				None
104	M104						Yes				None
105	M105		BenPIN				Yes				None
106	M106						Yes				None
107	M107		BenPIN				Yes				None
108	M108						Yes				None
109	M109						Yes				None
110	M110		BenPIN				Yes				None
111	M111		BenPIN				Yes				None
112	M112						Yes				None
113	M113						Yes				None
114	M114						Yes	** NA **			None
115	M115						Yes	** NA **			None
116	M116						Yes	** NA **			None
117	M117						Yes	** NA **			None
118	M118	BenPIN	BenPIN				Yes				None
119	M119	BenPIN	BenPIN				Yes				None
120	M120	BenPIN	BenPIN				Yes				None
121	M121	BenPIN	BenPIN				Yes				None
122	M122	BenPIN	BenPIN				Yes				None
123	M123	BenPIN	BenPIN				Yes				None

< chFc`YX'GhYY'8 YgJ[b'DUfUa YhYfg

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoff Arm	5.185			Lbyy			2.1	2.1		Lateral
2	M2	Standoff Arm	5.188			Lbyy			2.1	2.1		Lateral
3	M3	Footrail Con...	.375			Lbyy			.65	.65		Lateral



<chFc`YX'GhY'8 Yg]] b'DU'Ua YhYfg f'7 cbh]bi YXL

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
4	M4	Footrail Con...	.375			Lbyy			.65	.65		Lateral
5	M5	Plan Bracin...	.156			Lbyy			.65	.65		Lateral
6	M6	Plan Bracin...	.332			Lbyy			.8	.8		Lateral
7	M7	Plan Bracin...	.156			Lbyy			.65	.65		Lateral
8	M8	Plan Bracin...	.333			Lbyy			.8	.8		Lateral
9	M9	Grating Ang...	4.21			Lbyy			.65	.65		Lateral
10	M10	Grating Ang...	4.209			Lbyy			.65	.65		Lateral
11	M11	Footrail Con...	.322			Lbyy			.8	.8		Lateral
12	M12	Footrail Con...	.321			Lbyy			.8	.8		Lateral
13	M13	Standoff Arm	5.188			Lbyy			2.1	2.1		Lateral
14	M14	Plan Bracing	2.58			Lbyy			1	1		Lateral
15	M15	Plan Bracing	2.58			Lbyy			1	1		Lateral
16	M16	Footrails	12.5			Lbyy			1	1		Lateral
17	M17	Footrails	12.5			Lbyy			1	1		Lateral
18	M18	Footrails	12.5			Lbyy			1	1		Lateral
19	M19	Kickers	4.414			Lbyy			1	1		Lateral
20	M20	Kickers	4.417			Lbyy			1	1		Lateral
21	M21	Kickers	4.417			Lbyy			1	1		Lateral
22	M22	Handrails	12.5			Lbyy			1	1		Lateral
23	M23	Handrails	12.5			Lbyy			1	1		Lateral
24	M24	Handrails	12.5			Lbyy			1	1		Lateral
25	M25	Handrail Co...	1.383			Lbyy			.65	.65		Lateral
26	MP4A	Mount Pipes	8			Lbyy			1	1		Lateral
27	MP1A	Mount Pipes	8			Lbyy			1	1		Lateral
28	MP3A	Mount Pipes	8			Lbyy			1	1		Lateral
29	MP2A	Mount Pipes	8			Lbyy			1	1		Lateral
30	MP4C	Mount Pipes	8			Lbyy			1	1		Lateral
31	MP1C	Mount Pipes	8			Lbyy			1	1		Lateral
32	MP3C	Mount Pipes	8			Lbyy			1	1		Lateral
33	MP2C	Mount Pipes	8			Lbyy			1	1		Lateral
34	MP4B	Mount Pipes	8			Lbyy			1	1		Lateral
35	MP1B	Mount Pipes	8			Lbyy			1	1		Lateral
36	MP3B	Mount Pipes	8			Lbyy			1	1		Lateral
37	MP2B	Mount Pipes	8			Lbyy			1	1		Lateral
38	M68	Handrail Co...	1.383			Lbyy			.65	.65		Lateral
39	M69	Handrail Co...	1.383			Lbyy			.65	.65		Lateral
40	M86	Footrail Con...	.375			Lbyy			.65	.65		Lateral
41	M87	Footrail Con...	.375			Lbyy			.65	.65		Lateral
42	M88	Plan Bracin...	.156			Lbyy			.65	.65		Lateral
43	M89	Plan Bracin...	.332			Lbyy			.8	.8		Lateral
44	M90	Plan Bracin...	.156			Lbyy			.65	.65		Lateral
45	M91	Plan Bracin...	.333			Lbyy			.8	.8		Lateral
46	M92	Grating Ang...	4.21			Lbyy			.65	.65		Lateral
47	M93	Grating Ang...	4.209			Lbyy			.65	.65		Lateral
48	M94	Footrail Con...	.322			Lbyy			.8	.8		Lateral
49	M95	Footrail Con...	.321			Lbyy			.8	.8		Lateral
50	M96	Plan Bracing	2.58			Lbyy			1	1		Lateral
51	M97	Plan Bracing	2.58			Lbyy			1	1		Lateral
52	M102	Footrail Con...	.374			Lbyy			.65	.65		Lateral
53	M103	Footrail Con...	.376			Lbyy			.65	.65		Lateral
54	M104	Plan Bracin...	.156			Lbyy			.65	.65		Lateral
55	M105	Plan Bracin...	.332			Lbyy			.8	.8		Lateral



<chFc`YX`GhYY`8 YgJ] b`DU`Ua YhYfg`f7 cbh]bi YXL`

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
56	M106	Plan Bracin...	.156			Lbyy			.65	.65		Lateral
57	M107	Plan Bracin...	.333			Lbyy			.8	.8		Lateral
58	M108	Grating Ang...	4.21			Lbyy			.65	.65		Lateral
59	M109	Grating Ang...	4.209			Lbyy			.65	.65		Lateral
60	M110	Footrail Con...	.322			Lbyy			.8	.8		Lateral
61	M111	Footrail Con...	.321			Lbyy			.8	.8		Lateral
62	M112	Plan Bracing	2.579			Lbyy			1	1		Lateral
63	M113	Plan Bracing	2.581			Lbyy			1	1		Lateral
64	M118	V/Brace	5.075			Lbyy						Lateral
65	M119	V/Brace	5.078			Lbyy						Lateral
66	M120	V/Brace	5.077			Lbyy						Lateral
67	M121	V/Brace	5.077			Lbyy						Lateral
68	M122	V/Brace	5.075			Lbyy						Lateral
69	M123	V/Brace	5.079			Lbyy						Lateral

>c]bh]@UXg`UbX`9 bZ`fVWX`8]gd`UMWa`Ybhg`

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
No Data to Print ...			

A`Ya`VYf`Dc]bh]@UXg`f6`@`%`5`bhYbbU8`L`

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-66.1	1.5
2	MP2A	Y	-66.1	5.5
3	MP2B	Y	-66.1	1.5
4	MP2B	Y	-66.1	5.5
5	MP2C	Y	-66.1	1.5
6	MP2C	Y	-66.1	5.5
7	MP3A	Y	-61.4	.75
8	MP3A	Y	-61.4	6.75
9	MP3B	Y	-61.4	.75
10	MP3B	Y	-61.4	6.75
11	MP3C	Y	-61.4	.75
12	MP3C	Y	-61.4	6.75
13	MP4A	Y	-51.5	2.5
14	MP4A	Y	-51.5	5
15	MP4B	Y	-51.5	2.5
16	MP4B	Y	-51.5	5
17	MP4C	Y	-51.5	2.5
18	MP4C	Y	-51.5	5
19	MP1A	Y	-21.5	2
20	MP1A	Y	-21.5	4.5
21	MP1B	Y	-21.5	2
22	MP1B	Y	-21.5	4.5
23	MP1C	Y	-21.5	2
24	MP1C	Y	-21.5	4.5
25	MP1A	Y	-60	3.25
26	MP1B	Y	-60	3.25
27	MP1C	Y	-60	3.25
28	MP3A	Y	-75	1.5



A Ya Vyf Dc]bh @ UXg f6 @ '%. '5 bhYbbU8 L'f7 c bh]bi YXL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP3B	Y	-75	1.5
30	MP3C	Y	-75	1.5
31	MP3A	Y	-46	1.5
32	MP3B	Y	-46	1.5
33	MP3C	Y	-46	1.5

A Ya Vyf Dc]bh @ UXg f6 @ '&. '5 bhYbbU8 JL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-128.633	1.5
2	MP2A	Y	-128.633	5.5
3	MP2B	Y	-128.633	1.5
4	MP2B	Y	-128.633	5.5
5	MP2C	Y	-128.633	1.5
6	MP2C	Y	-128.633	5.5
7	MP3A	Y	-294.743	.75
8	MP3A	Y	-294.743	6.75
9	MP3B	Y	-294.743	.75
10	MP3B	Y	-294.743	6.75
11	MP3C	Y	-294.743	.75
12	MP3C	Y	-294.743	6.75
13	MP4A	Y	-107.162	2.5
14	MP4A	Y	-107.162	5
15	MP4B	Y	-107.162	2.5
16	MP4B	Y	-107.162	5
17	MP4C	Y	-107.162	2.5
18	MP4C	Y	-107.162	5
19	MP1A	Y	-20.361	2
20	MP1A	Y	-20.361	4.5
21	MP1B	Y	-20.361	2
22	MP1B	Y	-20.361	4.5
23	MP1C	Y	-20.361	2
24	MP1C	Y	-20.361	4.5
25	MP1A	Y	-139.291	3.25
26	MP1B	Y	-139.291	3.25
27	MP1C	Y	-139.291	3.25
28	MP3A	Y	-117.408	1.5
29	MP3B	Y	-117.408	1.5
30	MP3C	Y	-117.408	1.5
31	MP3A	Y	-87.524	1.5
32	MP3B	Y	-87.524	1.5
33	MP3C	Y	-87.524	1.5

A Ya Vyf Dc]bh @ UXg f6 @ ' " : '5 bhYbbU'K : fcbL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Z	-102.315	1.5
2	MP2A	Z	-102.315	5.5
3	MP2B	Z	-81.125	1.5
4	MP2B	Z	-81.125	5.5
5	MP2C	Z	-81.125	1.5
6	MP2C	Z	-81.125	5.5
7	MP3A	Z	-318.104	.75



A Ya Vyf Dc]bh @ UXg f6 @ ' : 5 bhYbbUK : fcbL f7 c bhpi YXL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
8	MP3A	Z	-318.104	6.75
9	MP3B	Z	-182.467	.75
10	MP3B	Z	-182.467	6.75
11	MP3C	Z	-182.467	.75
12	MP3C	Z	-182.467	6.75
13	MP4A	Z	-88.799	2.5
14	MP4A	Z	-88.799	5
15	MP4B	Z	-50.673	2.5
16	MP4B	Z	-50.673	5
17	MP4C	Z	-50.673	2.5
18	MP4C	Z	-50.673	5
19	MP1A	Z	-42.592	2
20	MP1A	Z	-42.592	4.5
21	MP1B	Z	-48.093	2
22	MP1B	Z	-48.093	4.5
23	MP1C	Z	-48.093	2
24	MP1C	Z	-48.093	4.5
25	MP1A	Z	-59.723	3.25
26	MP1B	Z	-42.926	3.25
27	MP1C	Z	-42.926	3.25
28	MP3A	Z	-30.962	1.5
29	MP3B	Z	-26.73	1.5
30	MP3C	Z	-26.73	1.5
31	MP3A	Z	-25.775	1.5
32	MP3B	Z	-16.111	1.5
33	MP3C	Z	-16.111	1.5

A Ya Vyf Dc]bh @ UXg f6 @ (: 5 bhYbbUK]: fcbL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Z	-36.463	1.5
2	MP2A	Z	-36.463	5.5
3	MP2B	Z	-29.891	1.5
4	MP2B	Z	-29.891	5.5
5	MP2C	Z	-29.891	1.5
6	MP2C	Z	-29.891	5.5
7	MP3A	Z	-103.517	.75
8	MP3A	Z	-103.517	6.75
9	MP3B	Z	-63.019	.75
10	MP3B	Z	-63.019	6.75
11	MP3C	Z	-63.019	.75
12	MP3C	Z	-63.019	6.75
13	MP4A	Z	-31.631	2.5
14	MP4A	Z	-31.631	5
15	MP4B	Z	-19.399	2.5
16	MP4B	Z	-19.399	5
17	MP4C	Z	-19.399	2.5
18	MP4C	Z	-19.399	5
19	MP1A	Z	-14.587	2
20	MP1A	Z	-14.587	4.5
21	MP1B	Z	-14.587	2
22	MP1B	Z	-14.587	4.5



A Ya Vyf Dc]bh @ UXg f6 @ ' (: ' 5 bhYbbUK] : fcbL f7 cb]bi YXL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
23	MP1C	Z	-14.587	2
24	MP1C	Z	-14.587	4.5
25	MP1A	Z	-14.662	3.25
26	MP1B	Z	-14.898	3.25
27	MP1C	Z	-14.898	3.25
28	MP3A	Z	-12.513	1.5
29	MP3B	Z	-11.168	1.5
30	MP3C	Z	-11.168	1.5
31	MP3A	Z	-11.894	1.5
32	MP3B	Z	-7.806	1.5
33	MP3C	Z	-7.806	1.5

A Ya Vyf Dc]bh @ UXg f6 @ ') : ' 5 bhYbbUK 'GJXYL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	74.061	1.5
2	MP2A	X	74.061	5.5
3	MP2B	X	95.252	1.5
4	MP2B	X	95.252	5.5
5	MP2C	X	95.252	1.5
6	MP2C	X	95.252	5.5
7	MP3A	X	137.255	.75
8	MP3A	X	137.255	6.75
9	MP3B	X	272.892	.75
10	MP3B	X	272.892	6.75
11	MP3C	X	272.892	.75
12	MP3C	X	272.892	6.75
13	MP4A	X	37.965	2.5
14	MP4A	X	37.965	5
15	MP4B	X	76.09	2.5
16	MP4B	X	76.09	5
17	MP4C	X	76.09	2.5
18	MP4C	X	76.09	5
19	MP1A	X	49.926	2
20	MP1A	X	49.926	4.5
21	MP1B	X	44.426	2
22	MP1B	X	44.426	4.5
23	MP1C	X	44.426	2
24	MP1C	X	44.426	4.5
25	MP1A	X	74.654	3.25
26	MP1B	X	108.248	3.25
27	MP1C	X	108.248	3.25
28	MP3A	X	50.639	1.5
29	MP3B	X	59.102	1.5
30	MP3C	X	59.102	1.5
31	MP3A	X	25.78	1.5
32	MP3B	X	45.108	1.5
33	MP3C	X	45.108	1.5

A Ya Vyf Dc]bh @ UXg f6 @ ' * : ' 5 bhYbbUK]GJXYL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	27.7	1.5



A Ya VYf Dc]bh @ UXg f6 @ * : 5 bhYbbUK]GXylf7 cb]jbi YXL

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
2	MP2A	X	27.7	5.5
3	MP2B	X	34.272	1.5
4	MP2B	X	34.272	5.5
5	MP2C	X	34.272	1.5
6	MP2C	X	34.272	5.5
7	MP3A	X	49.52	.75
8	MP3A	X	49.52	6.75
9	MP3B	X	90.018	.75
10	MP3B	X	90.018	6.75
11	MP3C	X	90.018	.75
12	MP3C	X	90.018	6.75
13	MP4A	X	15.322	2.5
14	MP4A	X	15.322	5
15	MP4B	X	27.554	2.5
16	MP4B	X	27.554	5
17	MP4C	X	27.554	2.5
18	MP4C	X	27.554	5
19	MP1A	X	-13.726	2
20	MP1A	X	-13.726	4.5
21	MP1B	X	-13.726	2
22	MP1B	X	-13.726	4.5
23	MP1C	X	-13.726	2
24	MP1C	X	-13.726	4.5
25	MP1A	X	29.953	3.25
26	MP1B	X	29.481	3.25
27	MP1C	X	29.481	3.25
28	MP3A	X	21.439	1.5
29	MP3B	X	24.129	1.5
30	MP3C	X	24.129	1.5
31	MP3A	X	12.887	1.5
32	MP3B	X	21.063	1.5
33	MP3C	X	21.063	1.5

A Ya VYf Dc]bh @ UXg f6 @ + : Gyfj JW @ %L

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M18	Y	-500	%10

A Ya VYf Dc]bh @ UXg f6 @ ; : Gyfj JW @ &L

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M18	Y	-500	%90

>c]bh6 ci bXUf mi7 cbX]hcbg

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N3						
2	N5	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N29						
4	N6	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N4	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N31	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction



>c]bh6 ci bXUf mi7 cbX]hcbg f7 cb]bi YXL

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
7	N32	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N33	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N179	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
10	N180	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
11	N181	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

9bj YcdY5-G7 % h fl * \$!% L ' @ : 8 'GhY7 cXY71 YWg

Member	Shape	Code	Check	Loc...	LC	Shea...	Loc.....	L...	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn.....	Eqn
1	M23	PIPE 2.0	.632	1.823	3	.171	1.172	3	6295.4...	32130	1.872	1.872	3...H1-1a
2	M22	PIPE 2.0	.630	4.557	2	.178	1.172	2	6295.4...	32130	1.872	1.872	2...H1-1a
3	M24	PIPE 2.0	.576	10....	4	.170	11....	4	6295.4...	32130	1.872	1.872	2...H1-1a
4	M88	PL3/8x6	.468	0	2	.254	0	y 5	72418...	72900	.57	9.113	1...H1-1b
5	M5	PL3/8x6	.437	0	4	.248	0	y 7	72418...	72900	.57	9.113	1...H1-1b
6	M89	PL3/8x6	.393	0	1	.269	0	y 2	69656...	72900	.57	9.113	1...H1-1b
7	M7	PL3/8x6	.360	0	3	.217	0	y 4	72418...	72900	.57	9.113	1...H1-1b
8	M6	PL3/8x6	.343	0	3	.246	0	y 8	69656...	72900	.57	9.113	1...H1-1b
9	M106	PL3/8x6	.330	0	2	.227	0	y 1	72418...	72900	.57	9.113	1...H1-1b
10	M8	PL3/8x6	.281	0	4	.249	0	y 7	69619...	72900	.57	9.113	1...H1-1b
11	M104	PL3/8x6	.280	0	3	.241	0	y 8	72418...	72900	.57	9.113	1...H1-1b
12	M107	PL3/8x6	.280	0	1	.259	0	y 6	69619...	72900	.57	9.113	1...H1-1b
13	M105	PL3/8x6	.266	0	4	.244	0	y 7	69656...	72900	.57	9.113	1...H1-1b
14	M108	L2x2x3	.265	0	8	.021	0	y 6	16076...	23392.8	.558	1.239	2...H2-1
15	M92	L2x2x3	.264	0	8	.021	0	y 5	16076...	23392.8	.558	1.239	2...H2-1
16	M93	L2x2x3	.262	0	7	.021	0	z 6	16079...	23392.8	.558	1.235	2...H2-1
17	M109	L2x2x3	.260	0	8	.021	0	z 5	16079...	23392.8	.558	1.234	2...H2-1
18	M9	L2x2x3	.249	0	6	.020	0	y 7	16076...	23392.8	.558	1.239	2...H2-1
19	M10	L2x2x3	.243	0	6	.019	0	z 8	16079...	23392.8	.558	1.235	2...H2-1
20	M119	L2.5x2.5x3	.242	2.486	1	.008	5.078	z 2	12585...	29192.4	.873	1.61	1...H2-1
21	M118	L2.5x2.5x3	.239	2.485	1	.007	5.075	z 2	12595...	29192.4	.873	1.611	1...H2-1
22	M121	L2.5x2.5x3	.210	2.539	4	.008	5.077	z 3	12588...	29192.4	.873	1.61	1...H2-1
23	M112	HSS4X4X4	.207	2.579	7	.083	2.579	y 8	13568...	139518	16.181	16.181	1...H1-1b
24	MP3B	PIPE 2.0	.207	7	7	.083	.25	4	14916...	32130	1.872	1.872	2...H1-1b
25	M96	HSS4X4X4	.204	2.58	6	.084	2.58	y 5	13568...	139518	16.181	16.181	1...H1-1b
26	MP3A	PIPE 2.0	.204	7	5	.107	7	2	14916...	32130	1.872	1.872	1...H1-1b
27	M14	HSS4X4X4	.201	2.58	5	.082	2.58	y 7	13568...	139518	16.181	16.181	1...H1-1b
28	M122	L2.5x2.5x3	.200	2.537	3	.006	0	z 4	12598...	29192.4	.873	1.611	1...H2-1
29	M68	L2.5x2.5x4	.199	0	2	.046	1.383	z 4	37553...	38556	1.114	2.537	1...H2-1
30	MP3C	PIPE 2.0	.197	7	8	.118	.25	3	14916...	32130	1.872	1.872	2...H1-1b
31	M91	PL3/8x6	.197	0	3	.246	0	y 8	69619...	72900	.57	9.113	1...H1-1b
32	M120	L2.5x2.5x3	.196	2.433	4	.006	0	y 7	12588...	29192.4	.873	1.61	1...H2-1
33	M69	L2.5x2.5x4	.195	0	3	.049	1.383	z 2	37553...	38556	1.114	2.537	1...H2-1
34	M90	PL3/8x6	.194	.156	3	.200	0	y 7	72418...	72900	.57	9.113	1...H1-1b
35	M97	HSS4X4X4	.192	0	8	.077	0	y 7	13568...	139518	16.181	16.181	1...H1-1b
36	M123	L2.5x2.5x3	.190	2.434	3	.007	5.079	y 8	12579...	29192.4	.873	1.61	1...H2-1
37	M113	HSS4X4X4	.190	0	6	.077	0	y 5	13568...	139518	16.181	16.181	1...H1-1b
38	M15	HSS4X4X4	.186	0	5	.076	0	y 8	13568...	139518	16.181	16.181	1...H1-1b
39	MP4B	PIPE 2.0	.185	7	7	.041	.25	4	14916...	32130	1.872	1.872	2...H1-1b
40	MP2C	PIPE 2.0	.182	7	8	.058	7	3	14916...	32130	1.872	1.872	2...H1-1b
41	MP1B	PIPE 2.0	.182	3.25	4	.030	.25	3	14916...	32130	1.872	1.872	1...H1-1b
42	MP4C	PIPE 2.0	.181	7	7	.025	.25	1	14916...	32130	1.872	1.872	1...H1-1b



9bj YcdY5=G7 %h fl * \$!% L @ : 8 GhY 7 cXY7 \ YWg f7 cbhbi YXL

Member	Shape	Code	Check	Loc...	LC	Shea...	Loc.....	L...	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn.....	Egn	
43	M25	L2.5x2.5x4	.181	0	4	.048	1.383	y	4	37553...	38556	1.114	2.537	2...H2-1
44	MP1C	PIPE 2.0	.179	.25	3	.033	.25	y	3	14916...	32130	1.872	1.872	1...H1-1b
45	MP4A	PIPE 2.0	.176	7	5	.037	.25	y	2	14916...	32130	1.872	1.872	1...H1-1b
46	MP2A	PIPE 2.0	.173	7	5	.090	7	y	2	14916...	32130	1.872	1.872	1...H1-1b
47	MP2B	PIPE 2.0	.170	7	6	.088	7	y	4	14916...	32130	1.872	1.872	1...H1-1b
48	MP1A	PIPE 2.0	.163	.25	4	.027	.25	y	3	14916...	32130	1.872	1.872	2...H1-1b
49	M13	HSS4X4X4	.161	5.188	7	.062	5.188	y	8	84899...	139518	16.181	16.181	2...H1-1b
50	M1	HSS4X4X4	.149	5.185	5	.062	5.185	y	6	84943...	139518	16.181	16.181	2...H1-1b
51	M2	HSS4X4X4	.145	5.188	6	.061	5.188	y	5	84900...	139518	16.181	16.181	2...H1-1b
52	M19	LL2.5x2.5x3x3	.137	0	8	.004	0	y	8	44464...	58320	3.954	2.55	1...H1-1b*
53	M21	LL2.5x2.5x3x3	.137	0	7	.004	4.417	y	7	44462...	58320	3.954	2.55	1...H1-1b*
54	M20	LL2.5x2.5x3x3	.136	0	5	.004	0	y	7	44462...	58320	3.954	2.55	1...H1-1b*
55	M3	PL1/2x6	.090	0	6	.180	0	y	3	95121...	97200	1.012	12.15	1...H1-1b
56	M16	PIPE 3.0	.083	4.687	8	.077	4.427	y	3	28250...	65205	5.749	5.749	2...H1-1b
57	M4	PL1/2x6	.083	0	2	.180	0	y	4	95121...	97200	1.012	12.15	1...H1-1b
58	M86	PL1/2x6	.082	0	7	.200	0	y	9	95121...	97200	1.012	12.15	1...H1-1b
59	M102	PL1/2x6	.082	0	8	.133	0	y	4	95135...	97200	1.012	12.15	1...H1-1b
60	M17	PIPE 3.0	.082	4.687	6	.074	4.427	y	4	28250...	65205	5.749	5.749	2...H1-1b
61	M18	PIPE 3.0	.081	4.687	7	.082	4.427	y	2	28250...	65205	5.749	5.749	2...H1-1b
62	M87	PL1/2x6	.079	0	3	.129	0	y	3	95121...	97200	1.012	12.15	1...H1-1b
63	M103	PL1/2x6	.068	0	8	.186	0	y	10	95107...	97200	1.012	12.15	1...H1-1b
64	M94	PL1/2x6	.061	0	1	.303	0	y	6	94875...	97200	1.012	12.15	1...H1-1b
65	M110	PL1/2x6	.050	0	4	.289	0	y	7	94875...	97200	1.012	12.15	1...H1-1b
66	M11	PL1/2x6	.046	0	3	.295	0	y	8	94875...	97200	1.012	12.15	1...H1-1b
67	M95	PL1/2x6	.044	0	3	.286	0	y	8	94902...	97200	1.012	12.15	1...H1-1b
68	M12	PL1/2x6	.040	0	4	.293	0	y	7	94902...	97200	1.012	12.15	1...H1-1b
69	M111	PL1/2x6	.039	0	1	.301	0	y	6	94902...	97200	1.012	12.15	1...H1-1b

9bj YcdY>c]bh8]gd`UWw Yblg

Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC				
1	N1	max	.019	4	.004	3	.037	4	5.975e-3	6	1.204e-3	1	-3.46e-4	4
2		min	-.019	3	-.044	9	-.039	3	-3.018e-3	1	-1.227e-3	2	-2.175e-3	7
3	N2	max	.019	4	.009	4	.035	3	5.187e-3	6	8.889e-4	2	1.31e-3	8
4		min	-.019	3	-.042	10	-.037	4	-2.477e-3	1	-8.697e-4	1	-8.602e-5	3
5	N3	max	0	11	0	11	0	11	0	11	0	11	0	11
6		min	0	1	0	1	0	1	0	1	0	1	0	1
7	N4	max	0	11	0	11	0	11	0	11	0	11	0	11
8		min	0	1	0	1	0	1	0	1	0	1	0	1
9	N5	max	0	11	0	11	0	11	0	11	0	11	0	11
10		min	0	1	0	1	0	1	0	1	0	1	0	1
11	N6	max	0	11	0	11	0	11	0	11	0	11	0	11
12		min	0	1	0	1	0	1	0	1	0	1	0	1
13	N7	max	.019	4	.001	4	.031	3	5.187e-3	6	8.914e-4	2	1.313e-3	8
14		min	-.019	3	-.049	10	-.032	4	-2.477e-3	1	-8.722e-4	1	-8.481e-5	3
15	N8	max	.019	4	-.014	1	.048	2	6.866e-3	2	1.213e-3	2	1.103e-3	8
16		min	-.019	3	-.081	6	-.049	1	-3.629e-3	1	-1.28e-3	1	-3.133e-4	10
17	N9	max	.019	4	-.019	1	.066	2	7.343e-3	2	8.627e-4	1	4.196e-4	9
18		min	-.019	3	-.113	6	-.068	1	-3.89e-3	1	-8.084e-4	2	-5.103e-4	7
19	N10	max	.019	4	-.003	3	.031	4	5.975e-3	6	1.206e-3	1	-3.472e-4	4
20		min	-.019	3	-.058	8	-.033	3	-3.018e-3	1	-1.23e-3	2	-2.179e-3	7



9bj YcdY>c]bhi8]gd'UWw Ybtg f7 cb]bi YXŁ

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC			
21	N11	max	.006	2	-.003	1	.035	4	4.486e-4	3	1.18e-3	4	4.061e-3	4
22		min	-.006	1	-.044	6	-.034	3	-3.463e-3	8	-1.155e-3	3	-2.212e-3	3
23	N12	max	.044	3	-.016	3	.022	2	1.345e-3	3	1.272e-3	4	5.117e-3	4
24		min	-.044	4	-.08	8	-.022	1	-4.015e-3	8	-1.33e-3	3	-2.595e-3	3
25	N13	max	.067	3	-.022	3	.021	2	1.463e-3	3	5.152e-4	2	6.322e-3	8
26		min	-.066	4	-.112	8	-.021	1	-3.061e-3	8	-4.686e-4	1	-2.691e-3	3
27	N14	max	.054	3	-.005	2	.013	2	1.377e-3	3	4.378e-4	2	6.107e-3	8
28		min	-.052	4	-.058	5	-.013	1	-1.803e-3	4	-4.853e-4	1	-1.771e-3	3
29	N15	max	.054	3	-.002	2	.009	2	1.312e-3	4	9.256e-5	5	2.194e-3	4
30		min	-.054	4	-.044	5	-.009	1	-1.908e-3	3	-5.628e-5	2	-4.956e-3	7
31	N16	max	.057	3	-.014	4	.01	2	1.61e-3	4	4.459e-4	3	2.72e-3	4
32		min	-.058	4	-.08	7	-.01	1	-2.767e-3	3	-5.071e-4	4	-6.051e-3	7
33	N17	max	.054	3	-.021	4	.012	2	1.399e-3	4	1.252e-3	4	2.478e-3	4
34		min	-.055	4	-.112	7	-.011	1	-3.891e-3	7	-1.203e-3	3	-5.767e-3	7
35	N18	max	.003	10	-.007	1	.036	3	2.056e-4	4	1.602e-3	4	1.988e-3	4
36		min	-.003	8	-.058	6	-.034	4	-4.579e-3	7	-1.638e-3	3	-3.886e-3	7
37	N19	max	.012	3	-.003	1	0	2	-2.13e-4	1	8.998e-4	4	4.593e-4	8
38		min	-.012	4	-.012	6	-.001	5	-9.198e-4	6	-9.023e-4	3	6.944e-6	9
39	N20	max	.012	3	-.011	10	.022	3	-4.416e-4	1	7.753e-4	4	-4.733e-4	4
40		min	-.012	4	-.047	7	-.022	4	-2.273e-3	6	-8.333e-4	3	-2.22e-3	5
41	N21	max	.012	3	-.017	9	.021	4	-4.546e-4	1	7.791e-4	4	3.313e-3	5
42		min	-.012	4	-.073	8	-.021	3	-2.37e-3	6	-7.258e-4	3	6.536e-4	2
43	N22	max	.055	3	-.001	2	0	2	2.63e-4	2	9.262e-4	4	7.591e-4	7
44		min	-.055	4	-.043	5	-.003	5	-1.444e-3	5	-9.327e-4	3	-2.984e-4	4
45	N23	max	.055	3	0	2	.005	2	2.237e-3	4	1.233e-3	1	6.658e-4	7
46		min	-.055	4	-.041	5	-.005	1	-2.949e-3	3	-1.557e-3	2	-3.234e-4	4
47	N24	max	.055	3	-.002	2	.006	2	2.31e-3	3	1.984e-3	2	8.606e-4	7
48		min	-.055	4	-.047	5	-.007	1	-2.748e-3	4	-1.617e-3	1	-2.628e-4	4
49	N25	max	.012	3	-.014	4	.025	3	-5.147e-4	1	7.919e-4	4	-4.608e-4	4
50		min	-.012	4	-.058	7	-.026	4	-2.472e-3	6	-8.687e-4	3	-2.252e-3	5
51	N26	max	.012	3	-.02	2	.024	4	-5.319e-4	1	8.2e-4	4	3.346e-3	5
52		min	-.012	4	-.09	8	-.025	3	-2.584e-3	6	-7.481e-4	3	6.535e-4	2
53	N27	max	.002	4	-.003	3	.003	3	5.494e-4	10	5.641e-4	4	-9.237e-5	10
54		min	-.001	3	-.013	8	-.003	4	4.441e-5	3	-5.665e-4	3	-1.02e-3	8
55	N28	max	.017	4	-.001	4	.032	3	1.86e-3	10	7.9e-4	4	1.18e-4	1
56		min	-.016	3	-.043	7	-.031	4	-6.085e-4	4	-7.986e-4	3	-1.582e-3	6
57	N29	max	.003	2	-.003	4	.006	2	8.455e-4	7	5.664e-4	4	5.834e-4	5
58		min	-.003	1	-.012	5	-.006	1	2.095e-4	3	-5.693e-4	3	9.674e-6	9
59	N30	max	.016	4	-.002	3	.032	4	2.085e-3	9	7.997e-4	4	8.978e-4	2
60		min	-.018	3	-.043	8	-.032	3	-2.858e-4	3	-8.047e-4	3	-3.361e-4	1
61	N31	max	0	11	0	11	0	11	0	11	0	11	0	11
62		min	0	1	0	1	0	1	0	1	0	1	0	1
63	N32	max	0	11	0	11	0	11	0	11	0	11	0	11
64		min	0	1	0	1	0	1	0	1	0	1	0	1
65	N33	max	0	11	0	11	0	11	0	11	0	11	0	11
66		min	0	1	0	1	0	1	0	1	0	1	0	1
67	N34	max	.01	4	-.004	3	.022	4	1.591e-3	9	7.534e-4	4	5.365e-4	2
68		min	-.012	3	-.023	8	-.021	3	-1.556e-4	3	-7.592e-4	3	-2.112e-4	1
69	N35	max	.041	3	-.004	2	0	2	1.361e-4	2	9.466e-4	4	6.459e-4	7
70		min	-.041	4	-.023	5	-.003	5	-8.885e-4	5	-9.534e-4	3	-1.665e-4	4
71	N36	max	.012	4	-.004	4	.022	3	1.392e-3	10	7.54e-4	4	4.646e-5	1
72		min	-.01	3	-.023	7	-.021	4	-4.113e-4	4	-7.621e-4	3	-1.074e-3	6



9bj YcdY>c]bhi8]gd`UWw Ybtg f7 cb]bi YXL

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC			
73	N37	max	.045	4	0	3	.1	4	1.045e-3	9	6.638e-4	1	2.223e-3	1
74		min	-.043	3	-.069	8	-.096	3	-1.336e-3	2	-9.574e-4	2	-3.026e-3	2
75	N38	max	.045	4	-.011	2	.077	3	1.446e-3	1	7.323e-4	3	2.611e-3	2
76		min	-.043	3	-.065	7	-.083	4	-2.192e-3	2	-5.262e-4	4	-2.151e-3	1
77	N39	max	.045	4	-.009	1	.084	3	1.446e-3	1	7.323e-4	3	2.614e-3	2
78		min	-.043	3	-.07	7	-.088	4	-2.192e-3	2	-5.262e-4	4	-2.148e-3	1
79	N40	max	.045	4	-.007	3	.1	4	1.045e-3	9	6.724e-4	1	2.22e-3	1
80		min	-.043	3	-.083	6	-.094	3	-1.336e-3	2	-9.66e-4	2	-3.029e-3	2
81	N41	max	.047	4	-.005	1	.096	4	1.903e-3	1	2.258e-3	1	1.546e-3	1
82		min	-.044	3	-.091	6	-.09	3	-2.553e-3	2	-2.879e-3	2	-2.219e-3	2
83	N42	max	.018	4	-.004	1	.007	1	6.084e-3	6	1.208e-3	1	-2.606e-4	4
84		min	-.03	3	-.09	6	-.067	6	-3.166e-3	1	-1.24e-3	2	-1.953e-3	7
85	N43	max	.047	4	-.004	1	.084	3	2.375e-3	1	1.134e-3	2	1.858e-3	2
86		min	-.045	3	-.069	6	-.09	4	-3.325e-3	2	-5.696e-4	1	-1.471e-3	1
87	N44	max	.031	4	-.003	1	.017	1	5.325e-3	6	8.908e-4	2	1.125e-3	8
88		min	-.023	3	-.068	6	-.059	6	-2.592e-3	1	-8.646e-4	1	-1.702e-4	3
89	N45	max	.05	4	-.006	1	.383	2	2.587e-3	1	4.913e-3	1	5.839e-4	3
90		min	-.048	3	-.141	6	-.333	1	-3.282e-3	2	-5.686e-3	2	-7.139e-4	4
91	N46	max	.021	4	-.006	1	-.019	4	7.469e-3	2	7.196e-4	1	4.18e-4	9
92		min	-.023	3	-.139	6	-.071	7	-4.005e-3	1	-6.812e-4	2	-3.407e-4	10
93	N47	max	.05	2	-.002	1	.27	2	2.433e-3	1	8.923e-3	2	8.755e-4	7
94		min	-.047	3	-.108	6	-.229	1	-3.295e-3	2	-7.893e-3	1	-1.512e-4	2
95	N48	max	.025	4	-.002	1	-.008	1	7.016e-3	2	1.232e-3	2	1.163e-3	8
96		min	-.019	3	-.107	6	-.065	6	-3.764e-3	1	-1.285e-3	1	-2.615e-4	10
97	N49	max	.059	4	-.008	4	.08	3	7.67e-4	10	1.584e-3	4	3.869e-3	3
98		min	-.057	3	-.09	7	-.084	4	-6.442e-4	5	-2.111e-3	3	-2.94e-3	4
99	N50	max	.011	4	-.007	4	.067	3	3.148e-4	4	1.581e-3	4	2.034e-3	4
100		min	-.047	7	-.089	7	-.038	4	-4.436e-3	7	-1.625e-3	3	-4.078e-3	7
101	N51	max	.105	3	-.005	2	.004	4	2.333e-3	1	9.454e-4	7	1.569e-3	5
102		min	-.111	4	-.068	5	-.003	3	-1.482e-3	2	-1.686e-4	4	-7.672e-4	4
103	N52	max	-.007	3	-.004	2	.03	3	1.318e-3	4	9.335e-5	5	2.348e-3	4
104		min	-.058	8	-.067	5	-.021	4	-2.049e-3	3	-2.661e-5	3	-5.015e-3	3
105	N53	max	.254	3	-.012	4	.049	4	1.721e-3	3	7.138e-3	4	3.404e-3	3
106		min	-.217	4	-.139	7	-.072	3	-1.427e-3	4	-7.802e-3	3	-2.669e-3	4
107	N54	max	-.006	3	-.011	4	.048	7	1.46e-3	4	1.124e-3	4	2.585e-3	4
108		min	-.063	8	-.137	7	-.023	4	-3.748e-3	7	-1.088e-3	3	-5.893e-3	7
109	N55	max	.266	3	-.004	4	.094	4	1.89e-3	5	4.718e-3	3	2.173e-3	3
110		min	-.236	4	-.106	7	-.115	3	-3.928e-4	4	-3.845e-3	4	-1.55e-3	4
111	N56	max	-.012	2	-.004	4	.035	3	1.678e-3	4	4.957e-4	3	2.78e-3	4
112		min	-.065	8	-.105	7	-.021	4	-2.821e-3	3	-5.436e-4	4	-6.131e-3	7
113	N57	max	.113	3	-.011	2	.004	1	2.247e-3	5	2.283e-3	3	7.382e-4	2
114		min	-.119	4	-.089	5	-.004	2	-1.26e-3	3	-2.856e-3	4	-1.049e-3	1
115	N58	max	.068	7	-.011	2	.027	4	1.375e-3	3	4.467e-4	3	6.084e-3	8
116		min	.002	2	-.087	5	-.02	3	-1.94e-3	4	-4.937e-4	4	-1.925e-3	3
117	N59	max	.068	4	-.003	3	.096	4	9.918e-4	9	9.32e-4	8	3.81e-3	3
118		min	-.064	3	-.068	8	-.09	3	2.443e-5	4	-3.022e-4	3	-4.859e-3	4
119	N60	max	.043	8	-.002	3	.065	4	5.494e-4	3	1.159e-3	4	4.224e-3	4
120		min	-.016	3	-.067	8	-.041	3	-3.365e-3	8	-1.127e-3	3	-2.263e-3	3
121	N61	max	.294	3	-.011	3	.115	3	1.311e-3	1	3.104e-3	2	2.074e-3	3
122		min	-.332	4	-.139	8	-.135	4	-7.128e-4	2	-3.505e-3	1	-2.7e-3	4
123	N62	max	.067	7	-.011	3	.039	8	1.496e-3	3	4.91e-4	2	6.259e-3	8
124		min	.004	4	-.137	8	-.015	3	-3.236e-3	8	-4.552e-4	1	-2.802e-3	3



9bj YcdY>c]bhi8]gd`UWw Ybtg f7 cb]bi YXL

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC			
125	N63	max	.17	3	-.006	3	.065	2	1.902e-3	4	8.939e-3	4	1.967e-3	3
126		min	-.201	4	-.106	8	-.076	1	-1.727e-3	3	-8.056e-3	3	-2.979e-3	4
127	N64	max	.051	7	-.006	3	.053	4	1.348e-3	3	1.265e-3	4	5.229e-3	4
128		min	.009	2	-.105	8	-.028	3	-4.098e-3	8	-1.309e-3	3	-2.708e-3	3
129	N65	max	.01	3	-.012	1	.03	3	3.148e-4	4	1.581e-3	4	2.054e-3	4
130		min	-.011	4	-.07	6	-.029	4	-4.436e-3	7	-1.625e-3	3	-4.088e-3	7
131	N66	max	.054	3	-.006	2	.01	2	1.318e-3	4	9.335e-5	5	2.368e-3	4
132		min	-.054	4	-.051	5	-.009	1	-2.049e-3	3	-2.661e-5	3	-5.035e-3	3
133	N67	max	.057	3	-.021	4	.012	2	1.46e-3	4	1.124e-3	4	2.605e-3	4
134		min	-.058	4	-.114	7	-.011	1	-3.748e-3	7	-1.088e-3	3	-5.904e-3	7
135	N68	max	.058	3	-.014	4	.011	2	1.678e-3	4	4.957e-4	3	2.799e-3	4
136		min	-.059	4	-.084	7	-.01	1	-2.821e-3	3	-5.436e-4	4	-6.142e-3	7
137	N69	max	.056	3	-.011	2	.014	2	1.375e-3	3	4.467e-4	3	6.094e-3	8
138		min	-.055	4	-.07	5	-.014	1	-1.94e-3	4	-4.937e-4	4	-1.944e-3	3
139	N70	max	.009	3	-.008	1	.031	4	5.494e-4	3	1.159e-3	4	4.244e-3	4
140		min	-.009	4	-.051	6	-.031	3	-3.365e-3	8	-1.127e-3	3	-2.283e-3	3
141	N71	max	.068	3	-.021	3	.022	2	1.496e-3	3	4.91e-4	2	6.27e-3	8
142		min	-.067	4	-.113	8	-.022	1	-3.236e-3	8	-4.552e-4	1	-2.821e-3	3
143	N72	max	.048	3	-.016	3	.023	2	1.348e-3	3	1.265e-3	4	5.249e-3	4
144		min	-.047	4	-.084	8	-.022	1	-4.098e-3	8	-1.309e-3	3	-2.727e-3	3
145	N73	max	.019	4	-.008	3	.029	2	6.095e-3	6	1.208e-3	1	-2.409e-4	4
146		min	-.019	3	-.071	8	-.031	1	-3.186e-3	1	-1.24e-3	2	-1.964e-3	7
147	N74	max	.019	4	-.004	4	.027	3	5.336e-3	6	8.908e-4	2	1.136e-3	8
148		min	-.019	3	-.053	10	-.028	4	-2.612e-3	1	-8.646e-4	1	-1.899e-4	3
149	N75	max	.018	4	-.019	1	.069	2	7.489e-3	2	7.196e-4	1	4.18e-4	9
150		min	-.019	3	-.115	6	-.071	1	-4.025e-3	1	-6.812e-4	2	-3.407e-4	10
151	N76	max	.019	4	-.014	1	.052	2	7.036e-3	2	1.232e-3	2	1.174e-3	8
152		min	-.019	3	-.085	6	-.053	1	-3.784e-3	1	-1.285e-3	1	-2.615e-4	10
153	N77	max	.01	4	0	1	.043	3	2.066e-4	4	1.601e-3	4	1.987e-3	4
154		min	-.011	3	-.04	6	-.041	4	-4.576e-3	7	-1.636e-3	3	-3.887e-3	7
155	N78	max	.054	3	.005	2	.009	2	1.311e-3	4	9.229e-5	5	2.194e-3	4
156		min	-.055	4	-.034	5	-.009	1	-1.909e-3	3	-5.565e-5	2	-4.954e-3	7
157	N79	max	.05	3	.003	2	.011	2	1.376e-3	3	4.371e-4	2	6.105e-3	8
158		min	-.048	4	-.04	5	-.01	1	-1.804e-3	4	-4.847e-4	1	-1.771e-3	3
159	N80	max	.007	4	.004	1	.04	4	4.496e-4	3	1.178e-3	4	4.062e-3	4
160		min	-.006	3	-.034	6	-.04	3	-3.46e-3	8	-1.153e-3	3	-2.211e-3	3
161	N81	max	.055	4	-.001	1	.08	3	1.132e-3	4	1.78e-4	2	3.275e-3	3
162		min	-.055	3	-.07	6	-.082	4	-1.605e-3	3	-4.925e-4	5	-2.519e-3	4
163	N82	max	.111	3	-.013	3	.01	4	2.299e-3	1	4.943e-4	4	1.248e-3	8
164		min	-.119	4	-.062	8	-.008	3	-1.486e-3	2	-2.308e-4	3	-2.003e-4	2
165	N83	max	.1	3	-.004	4	.01	4	2.297e-3	4	9.661e-4	3	1.065e-3	4
166		min	-.103	4	-.066	7	-.009	3	-1.409e-3	3	-1.277e-3	4	-1.013e-3	3
167	N84	max	.05	4	-.007	4	.091	4	1.122e-3	3	7.976e-4	3	3.349e-3	3
168		min	-.045	3	-.063	6	-.085	3	-1.108e-3	4	-6.307e-4	4	-4.261e-3	4
169	N85	max	.047	4	-.005	1	.098	4	1.904e-3	1	2.258e-3	1	1.546e-3	1
170		min	-.045	3	-.091	6	-.09	3	-2.553e-3	2	-2.879e-3	2	-2.219e-3	2
171	N86	max	.021	4	-.004	1	.029	2	6.095e-3	6	1.208e-3	1	-2.409e-4	4
172		min	-.021	3	-.09	6	-.031	1	-3.186e-3	1	-1.24e-3	2	-1.964e-3	7
173	N87	max	.021	4	-.003	1	.027	3	5.336e-3	6	8.908e-4	2	1.136e-3	8
174		min	-.02	3	-.068	6	-.028	4	-2.612e-3	1	-8.646e-4	1	-1.899e-4	3
175	N88	max	.019	4	-.006	1	.069	2	7.489e-3	2	7.196e-4	1	4.18e-4	9
176		min	-.02	3	-.139	6	-.071	1	-4.025e-3	1	-6.812e-4	2	-3.407e-4	10



9bj YcdY>c]bh8]gd'UWw Ybtg f7 cb]bi YXŁ

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC			
177	N89	max	.02	4	-.002	1	.052	2	7.036e-3	2	1.232e-3	2	1.174e-3	8
178		min	-.02	3	-.107	6	-.053	1	-3.784e-3	1	-1.285e-3	1	-2.615e-4	10
179	N90	max	.045	4	-.004	1	.087	3	2.376e-3	1	1.134e-3	2	1.858e-3	2
180		min	-.042	3	-.069	6	-.089	4	-3.325e-3	2	-5.696e-4	1	-1.471e-3	1
181	N91	max	.048	4	-.006	1	.393	2	2.587e-3	1	4.913e-3	1	5.842e-4	3
182		min	-.047	3	-.141	6	-.341	1	-3.282e-3	2	-5.686e-3	2	-7.142e-4	4
183	N92	max	.05	4	-.002	1	.28	2	2.433e-3	1	8.923e-3	2	8.757e-4	7
184		min	-.046	3	-.108	6	-.236	1	-3.296e-3	2	-7.893e-3	1	-1.512e-4	2
185	N93	max	.05	4	-.008	4	.081	3	7.67e-4	10	1.584e-3	4	3.869e-3	3
186		min	-.045	3	-.09	7	-.084	4	-6.44e-4	5	-2.111e-3	3	-2.94e-3	4
187	N94	max	.013	3	-.007	4	.035	3	3.148e-4	4	1.581e-3	4	2.054e-3	4
188		min	-.014	4	-.089	7	-.034	4	-4.436e-3	7	-1.625e-3	3	-4.088e-3	7
189	N95	max	.054	3	-.004	2	.01	2	1.318e-3	4	9.335e-5	5	2.368e-3	4
190		min	-.054	4	-.067	5	-.009	1	-2.049e-3	3	-2.661e-5	3	-5.035e-3	3
191	N96	max	.059	3	-.011	4	.011	2	1.46e-3	4	1.124e-3	4	2.605e-3	4
192		min	-.06	4	-.137	7	-.011	1	-3.748e-3	7	-1.088e-3	3	-5.904e-3	7
193	N97	max	.058	3	-.004	4	.012	2	1.678e-3	4	4.957e-4	3	2.799e-3	4
194		min	-.058	4	-.105	7	-.011	1	-2.821e-3	3	-5.436e-4	4	-6.142e-3	7
195	N98	max	.109	3	-.005	2	.008	4	2.334e-3	1	9.454e-4	7	1.569e-3	5
196		min	-.113	4	-.068	5	-.009	3	-1.483e-3	2	-1.686e-4	4	-7.675e-4	4
197	N99	max	.264	3	-.012	4	.054	4	1.721e-3	3	7.138e-3	4	3.405e-3	3
198		min	-.225	4	-.139	7	-.077	3	-1.427e-3	4	-7.802e-3	3	-2.67e-3	4
199	N100	max	.272	3	-.004	4	.095	4	1.89e-3	5	4.718e-3	3	2.173e-3	3
200		min	-.24	4	-.106	7	-.119	3	-3.928e-4	4	-3.845e-3	4	-1.551e-3	4
201	N101	max	.113	3	-.011	2	.006	3	2.247e-3	5	2.283e-3	3	7.382e-4	2
202		min	-.12	4	-.089	5	-.008	4	-1.26e-3	3	-2.856e-3	4	-1.049e-3	1
203	N102	max	.055	3	-.011	2	.016	2	1.375e-3	3	4.467e-4	3	6.094e-3	8
204		min	-.054	4	-.087	5	-.015	1	-1.94e-3	4	-4.937e-4	4	-1.944e-3	3
205	N103	max	.011	3	-.002	3	.035	4	5.494e-4	3	1.159e-3	4	4.244e-3	4
206		min	-.01	4	-.067	8	-.034	3	-3.365e-3	8	-1.127e-3	3	-2.283e-3	3
207	N104	max	.068	3	-.011	3	.023	2	1.496e-3	3	4.91e-4	2	6.27e-3	8
208		min	-.067	4	-.137	8	-.023	1	-3.236e-3	8	-4.552e-4	1	-2.821e-3	3
209	N105	max	.05	3	-.006	3	.022	2	1.348e-3	3	1.265e-3	4	5.249e-3	4
210		min	-.049	4	-.105	8	-.022	1	-4.098e-3	8	-1.309e-3	3	-2.727e-3	3
211	N106	max	.054	4	-.003	3	.096	4	9.919e-4	9	9.32e-4	8	3.811e-3	3
212		min	-.053	3	-.068	8	-.09	3	2.443e-5	4	-3.022e-4	3	-4.859e-3	4
213	N107	max	.3	3	-.011	3	.116	3	1.311e-3	1	3.104e-3	2	2.074e-3	3
214		min	-.34	4	-.139	8	-.138	4	-7.132e-4	2	-3.505e-3	1	-2.7e-3	4
215	N108	max	.176	3	-.006	3	.067	2	1.902e-3	4	8.939e-3	4	1.967e-3	3
216		min	-.21	4	-.106	8	-.078	1	-1.727e-3	3	-8.056e-3	3	-2.979e-3	4
217	N109	max	.045	4	0	1	.098	4	1.904e-3	1	2.258e-3	1	1.546e-3	1
218		min	-.043	3	-.096	6	-.09	3	-2.553e-3	2	-2.879e-3	2	-2.219e-3	2
219	N110	max	.045	4	.002	1	.087	3	2.376e-3	1	1.134e-3	2	1.858e-3	2
220		min	-.042	3	-.076	6	-.089	4	-3.325e-3	2	-5.696e-4	1	-1.471e-3	1
221	N111	max	.044	4	0	1	.393	2	2.587e-3	1	4.913e-3	1	5.842e-4	3
222		min	-.042	3	-.148	6	-.341	1	-3.282e-3	2	-5.686e-3	2	-7.142e-4	4
223	N112	max	.044	4	.005	1	.28	2	2.433e-3	1	8.923e-3	2	8.757e-4	7
224		min	-.042	3	-.116	6	-.236	1	-3.296e-3	2	-7.893e-3	1	-1.512e-4	2
225	N113	max	.052	4	0	4	.076	3	7.67e-4	10	1.584e-3	4	3.869e-3	3
226		min	-.048	3	-.095	7	-.081	4	-6.44e-4	5	-2.111e-3	3	-2.94e-3	4
227	N114	max	.11	3	-.002	2	.007	4	2.334e-3	1	9.454e-4	7	1.569e-3	5
228		min	-.114	4	-.075	5	-.008	3	-1.483e-3	2	-1.686e-4	4	-7.675e-4	4



9bj YcdY>c]bh8]gd'UWw Ybtg f7 cb]bi YXL

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC			
229	N115	max	.253	3	-.003	4	.071	4	1.721e-3	3	7.138e-3	4	3.405e-3	3
230		min	-.215	4	-.146	7	-.095	3	-1.427e-3	4	-7.802e-3	3	-2.67e-3	4
231	N116	max	.279	3	0	4	.086	4	1.89e-3	5	4.718e-3	3	2.173e-3	3
232		min	-.246	4	-.113	7	-.107	3	-3.928e-4	4	-3.845e-3	4	-1.551e-3	4
233	N117	max	.116	3	-.008	2	0	3	2.247e-3	5	2.283e-3	3	7.382e-4	2
234		min	-.124	4	-.093	5	-.004	5	-1.26e-3	3	-2.856e-3	4	-1.049e-3	1
235	N118	max	.055	4	.006	3	.094	4	9.919e-4	9	9.32e-4	8	3.811e-3	3
236		min	-.053	3	-.075	8	-.089	3	2.443e-5	4	-3.022e-4	3	-4.859e-3	4
237	N119	max	.303	3	-.006	3	.111	3	1.311e-3	1	3.104e-3	2	2.074e-3	3
238		min	-.344	4	-.145	8	-.131	4	-7.132e-4	2	-3.505e-3	1	-2.7e-3	4
239	N120	max	.165	3	0	3	.07	2	1.902e-3	4	8.939e-3	4	1.967e-3	3
240		min	-.198	4	-.113	8	-.082	1	-1.727e-3	3	-8.056e-3	3	-2.979e-3	4
241	N121	max	.046	4	-.006	1	.084	3	1.446e-3	1	7.323e-4	3	2.614e-3	2
242		min	-.044	3	-.073	7	-.088	4	-2.192e-3	2	-5.262e-4	4	-2.148e-3	1
243	N122	max	.045	4	-.006	3	.1	4	1.045e-3	9	6.724e-4	1	2.22e-3	1
244		min	-.043	3	-.085	6	-.094	3	-1.336e-3	2	-9.66e-4	2	-3.029e-3	2
245	N123	max	.109	3	-.008	2	.008	4	2.302e-3	1	4.878e-4	4	1.242e-3	8
246		min	-.115	4	-.069	5	-.007	3	-1.483e-3	2	-2.243e-4	3	-2.018e-4	2
247	N124	max	.056	4	-.013	4	.079	3	1.13e-3	4	1.801e-4	2	3.277e-3	3
248		min	-.053	3	-.083	7	-.083	4	-1.607e-3	3	-4.937e-4	5	-2.517e-3	4
249	N125	max	.109	3	-.007	2	.009	4	2.302e-3	1	4.878e-4	4	1.242e-3	8
250		min	-.114	4	-.072	5	-.007	3	-1.483e-3	2	-2.243e-4	3	-2.018e-4	2
251	N126	max	.056	4	-.01	4	.079	3	1.13e-3	4	1.801e-4	2	3.277e-3	3
252		min	-.054	3	-.085	7	-.083	4	-1.607e-3	3	-4.937e-4	5	-2.517e-3	4
253	N127	max	.055	4	-.009	3	.094	4	1.12e-3	3	7.911e-4	3	3.347e-3	3
254		min	-.051	3	-.069	8	-.088	3	-1.11e-3	4	-6.242e-4	4	-4.263e-3	4
255	N128	max	.108	3	-.012	2	.004	4	2.299e-3	4	9.726e-4	3	1.066e-3	4
256		min	-.113	4	-.083	5	-.004	3	-1.407e-3	3	-1.284e-3	4	-1.012e-3	3
257	N129	max	.054	4	-.005	3	.095	4	1.12e-3	3	7.911e-4	3	3.347e-3	3
258		min	-.05	3	-.072	8	-.089	3	-1.11e-3	4	-6.242e-4	4	-4.263e-3	4
259	N130	max	.109	3	-.01	2	.006	4	2.299e-3	4	9.726e-4	3	1.066e-3	4
260		min	-.114	4	-.084	5	-.005	3	-1.407e-3	3	-1.284e-3	4	-1.012e-3	3
261	N131	max	.017	4	.002	4	.031	3	5.187e-3	6	8.914e-4	2	1.313e-3	8
262		min	-.017	3	-.046	10	-.032	4	-2.477e-3	1	-8.722e-4	1	-8.481e-5	3
263	N132	max	.017	4	-.001	3	.031	4	5.975e-3	6	1.206e-3	1	-3.472e-4	4
264		min	-.017	3	-.048	9	-.033	3	-3.018e-3	1	-1.23e-3	2	-2.179e-3	7
265	N133	max	.054	3	0	3	.009	2	1.312e-3	4	9.256e-5	5	2.194e-3	4
266		min	-.054	4	-.034	5	-.009	1	-1.908e-3	3	-5.628e-5	2	-4.956e-3	7
267	N134	max	.003	10	-.002	1	.033	3	2.056e-4	4	1.602e-3	4	1.988e-3	4
268		min	-.003	8	-.048	6	-.031	4	-4.579e-3	7	-1.638e-3	3	-3.886e-3	7
269	N135	max	.006	2	.002	1	.033	4	4.486e-4	3	1.18e-3	4	4.061e-3	4
270		min	-.005	1	-.036	6	-.032	3	-3.463e-3	8	-1.155e-3	3	-2.212e-3	3
271	N136	max	.054	3	-.004	4	.012	2	1.377e-3	3	4.378e-4	2	6.107e-3	8
272		min	-.052	4	-.046	5	-.012	1	-1.803e-3	4	-4.853e-4	1	-1.771e-3	3
273	N137	max	.018	4	-.021	1	.048	2	6.866e-3	2	1.213e-3	2	1.103e-3	8
274		min	-.018	3	-.069	7	-.049	1	-3.629e-3	1	-1.28e-3	1	-3.133e-4	10
275	N138	max	.018	4	-.025	3	.066	2	7.343e-3	2	8.627e-4	1	4.196e-4	9
276		min	-.018	3	-.099	8	-.068	1	-3.89e-3	1	-8.084e-4	2	-5.103e-4	7
277	N139	max	.057	3	-.017	10	.01	2	1.61e-3	4	4.459e-4	3	2.72e-3	4
278		min	-.058	4	-.068	7	-.01	1	-2.767e-3	3	-5.071e-4	4	-6.051e-3	7
279	N140	max	.053	3	-.018	10	.012	2	1.399e-3	4	1.252e-3	4	2.478e-3	4
280		min	-.054	4	-.099	7	-.012	1	-3.891e-3	7	-1.203e-3	3	-5.767e-3	7



9bj YcdY>c]bh8]gd'UWw Ybtg f7 cb]bi YXL

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC			
281	N141	max	.043	3	-.013	9	.023	2	1.345e-3	3	1.272e-3	4	5.117e-3	4
282		min	-.042	4	-.068	8	-.022	1	-4.015e-3	8	-1.33e-3	3	-2.595e-3	3
283	N142	max	.067	3	-.023	9	.02	2	1.463e-3	3	5.152e-4	2	6.322e-3	8
284		min	-.066	4	-.098	5	-.02	1	-3.061e-3	8	-4.686e-4	1	-2.691e-3	3
285	N143	max	.02	3	-.015	10	.025	3	-5.634e-4	1	6.996e-3	4	1.315e-3	4
286		min	-.02	4	-.062	7	-.025	4	-2.378e-3	6	-6.996e-3	3	-2.041e-3	3
287	N144	max	.021	3	-.022	9	.023	4	-5.634e-4	1	8.36e-3	4	2.317e-3	8
288		min	-.021	4	-.094	8	-.024	3	-2.463e-3	6	-8.405e-3	3	-1.195e-3	3
289	N145	max	.014	3	-.011	10	.02	3	-4.416e-4	1	7.753e-4	4	-4.733e-4	4
290		min	-.011	4	-.047	7	-.024	4	-2.273e-3	6	-8.333e-4	3	-2.22e-3	5
291	N146	max	.011	3	-.017	9	.02	4	-4.546e-4	1	7.791e-4	4	3.313e-3	5
292		min	-.014	4	-.073	8	-.023	3	-2.37e-3	6	-7.258e-4	3	6.536e-4	2
293	N147	max	.054	3	-.002	2	0	2	2.583e-4	2	9.185e-4	4	7.504e-4	7
294		min	-.053	4	-.041	5	-.003	5	-1.437e-3	5	-9.252e-4	3	-2.956e-4	4
295	N148	max	.053	3	-.002	2	.001	2	2.583e-4	2	9.185e-4	4	7.504e-4	7
296		min	-.053	4	-.041	5	-.006	5	-1.437e-3	5	-9.252e-4	3	-2.956e-4	4
297	N149	max	.053	3	-.001	2	.001	2	2.583e-4	2	9.185e-4	4	7.504e-4	7
298		min	-.053	4	-.04	5	-.006	5	-1.437e-3	5	-9.252e-4	3	-2.956e-4	4
299	N150	max	.053	3	-.002	2	.001	2	2.583e-4	2	9.185e-4	4	7.504e-4	7
300		min	-.053	4	-.042	5	-.006	5	-1.437e-3	5	-9.252e-4	3	-2.956e-4	4
301	N151	max	.02	3	-.005	9	.016	4	1.384e-4	9	1.214e-3	4	3.018e-3	7
302		min	-.021	4	-.047	8	-.016	3	-8.522e-4	8	-1.272e-3	3	8.756e-4	4
303	N152	max	.014	4	-.016	1	.006	2	4.027e-3	6	5.84e-4	4	5.861e-4	1
304		min	-.015	3	-.074	6	-.005	1	1.003e-3	1	-5.306e-4	3	-2.691e-4	2
305	N153	max	.009	4	-.003	1	.036	4	2.275e-3	9	2.469e-3	4	2.252e-3	4
306		min	-.01	3	-.04	6	-.036	3	-1.267e-3	3	-2.812e-3	3	-1.744e-3	3
307	N154	max	.017	4	-.001	3	.031	4	1.428e-3	2	9.467e-4	5	2.953e-3	2
308		min	-.018	3	-.047	8	-.031	3	-9.161e-4	1	-4.002e-4	2	-2.758e-3	1
309	N155	max	.026	3	-.007	9	.019	4	1.666e-4	9	1.232e-3	4	3.203e-3	6
310		min	-.026	4	-.058	8	-.019	3	-7.784e-4	8	-1.309e-3	3	9.593e-4	4
311	N156	max	.017	4	-.019	1	.006	2	4.17e-3	6	5.887e-4	4	6.945e-4	5
312		min	-.017	3	-.091	6	-.006	1	1.011e-3	1	-5.166e-4	3	-2.149e-4	2
313	N157	max	.026	3	-.009	9	.019	4	1.461e-3	3	2.775e-3	2	2.747e-3	8
314		min	-.026	4	-.062	8	-.019	3	-1.357e-3	4	-2.836e-3	1	7.406e-5	3
315	N158	max	.018	4	-.021	1	.013	2	3.302e-3	6	8.16e-3	2	1.49e-3	5
316		min	-.018	3	-.095	6	-.013	1	-8.864e-4	1	-8.293e-3	1	-6.931e-4	2
317	N159	max	.018	3	-.005	9	.015	4	1.384e-4	9	1.214e-3	4	3.018e-3	7
318		min	-.022	4	-.047	8	-.016	3	-8.522e-4	8	-1.272e-3	3	8.756e-4	4
319	N160	max	.014	4	-.016	1	.011	6	4.027e-3	6	5.84e-4	4	5.861e-4	1
320		min	-.016	3	-.074	6	-.003	1	1.003e-3	1	-5.306e-4	3	-2.691e-4	2
321	N161	max	.016	4	-.003	3	.031	4	2.052e-3	9	7.998e-4	4	8.956e-4	6
322		min	-.017	3	-.041	8	-.03	3	-2.794e-4	3	-8.051e-4	3	-3.298e-4	1
323	N162	max	.014	4	-.003	3	.033	4	2.052e-3	9	7.998e-4	4	8.956e-4	6
324		min	-.017	3	-.041	8	-.031	3	-2.794e-4	3	-8.051e-4	3	-3.298e-4	1
325	N163	max	.013	4	-.003	3	.033	4	2.052e-3	9	7.998e-4	4	8.956e-4	6
326		min	-.016	3	-.04	8	-.031	3	-2.794e-4	3	-8.051e-4	3	-3.298e-4	1
327	N164	max	.015	4	-.002	3	.033	4	2.052e-3	9	7.998e-4	4	8.956e-4	6
328		min	-.017	3	-.042	8	-.031	3	-2.794e-4	3	-8.051e-4	3	-3.298e-4	1
329	N165	max	.015	4	-.012	1	.006	2	3.037e-3	6	5.333e-4	4	5.178e-5	2
330		min	-.014	3	-.048	6	-.006	1	7.987e-4	1	-5.914e-4	3	-9.533e-4	5
331	N166	max	.022	3	-.011	10	.016	3	6.13e-6	4	1.328e-3	4	-9.796e-4	3
332		min	-.021	4	-.074	7	-.016	4	-1.769e-3	7	-1.274e-3	3	-3.66e-3	8



9bj YcdY>c]bh8]gd'UWw Ybtg f' cb]bi YXL

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [... LC	Y Rotation [... LC	Z Rotation [... LC			
333	N167	max	.018	4	0	4	.031	3	1.094e-3	2	9.84e-4	2	2.116e-3	10
334		min	-.017	3	-.041	7	-.031	4	-8.978e-4	1	-1.336e-3	1	-2.826e-3	2
335	N168	max	.01	4	-.004	4	.035	3	1.965e-3	10	2.612e-3	4	1.665e-3	4
336		min	-.01	3	-.046	7	-.035	4	-1.611e-3	4	-2.219e-3	3	-2.207e-3	3
337	N169	max	.017	4	-.014	1	.007	2	3.171e-3	6	5.206e-4	4	-6.32e-7	2
338		min	-.017	3	-.059	6	-.007	1	8.066e-4	1	-5.974e-4	3	-1.112e-3	5
339	N170	max	.027	3	-.013	10	.02	3	3.906e-5	4	1.358e-3	4	-1.066e-3	3
340		min	-.027	4	-.09	7	-.019	4	-1.688e-3	7	-1.285e-3	3	-3.856e-3	8
341	N171	max	.018	4	-.015	1	.012	2	2.539e-3	6	5.398e-3	1	4.474e-4	2
342		min	-.018	3	-.063	6	-.012	1	-9.17e-4	1	-5.348e-3	2	-1.778e-3	5
343	N172	max	.029	3	-.015	10	.018	3	1.416e-3	4	3.73e-3	3	-1.856e-4	4
344		min	-.028	4	-.094	7	-.018	4	-1.574e-3	3	-3.792e-3	4	-3.225e-3	7
345	N173	max	.016	4	-.012	1	.009	6	3.037e-3	6	5.333e-4	4	5.178e-5	2
346		min	-.014	3	-.048	6	-.004	1	7.987e-4	1	-5.914e-4	3	-9.533e-4	5
347	N174	max	.024	3	-.011	10	.015	3	6.13e-6	4	1.328e-3	4	-9.796e-4	3
348		min	-.019	4	-.074	7	-.016	4	-1.769e-3	7	-1.274e-3	3	-3.66e-3	8
349	N175	max	.017	4	-.002	4	.031	3	1.83e-3	10	7.916e-4	4	1.124e-4	1
350		min	-.015	3	-.041	7	-.03	4	-5.978e-4	4	-8.003e-4	3	-1.572e-3	6
351	N176	max	.017	4	-.002	4	.033	3	1.83e-3	10	7.916e-4	4	1.124e-4	1
352		min	-.014	3	-.041	7	-.031	4	-5.978e-4	4	-8.003e-4	3	-1.572e-3	6
353	N177	max	.017	4	-.001	4	.032	3	1.83e-3	10	7.916e-4	4	1.124e-4	1
354		min	-.015	3	-.04	7	-.031	4	-5.978e-4	4	-8.003e-4	3	-1.572e-3	6
355	N178	max	.016	4	-.002	4	.033	3	1.83e-3	10	7.916e-4	4	1.124e-4	1
356		min	-.013	3	-.042	7	-.032	4	-5.978e-4	4	-8.003e-4	3	-1.572e-3	6
357	N179	max	0	11	0	11	0	11	0	11	0	11	0	11
358		min	0	1	0	1	0	1	0	1	0	1	0	1
359	N180	max	0	11	0	11	0	11	0	11	0	11	0	11
360		min	0	1	0	1	0	1	0	1	0	1	0	1
361	N181	max	0	11	0	11	0	11	0	11	0	11	0	11
362		min	0	1	0	1	0	1	0	1	0	1	0	1
363	N182	max	.045	4	.008	1	.093	4	2.006e-3	1	4.899e-3	1	8.599e-4	1
364		min	-.043	3	-.107	6	-.082	3	-2.662e-3	2	-5.868e-3	2	-1.947e-3	6
365	N183	max	.045	4	.01	1	.087	3	2.383e-3	1	3.901e-3	2	1.432e-3	2
366		min	-.042	3	-.083	6	-.086	4	-3.319e-3	2	-2.985e-3	1	-9.066e-4	1
367	N186	max	.038	4	.006	4	.065	3	6.143e-4	10	4.337e-3	4	3.584e-3	3
368		min	-.03	3	-.107	7	-.072	4	-9.218e-4	8	-5.159e-3	3	-2.57e-3	4
369	N187	max	.118	3	.002	2	.01	4	2.106e-3	3	2.576e-3	3	1.551e-3	5
370		min	-.118	4	-.081	5	-.012	3	-1.177e-3	4	-1.725e-3	4	-8.769e-4	4
371	N190	max	.133	3	-.005	3	.01	3	2.407e-3	8	4.276e-3	3	1.044e-3	2
372		min	-.144	4	-.103	5	-.013	4	-1.114e-3	3	-5.111e-3	4	-1.312e-3	1
373	N191	max	.046	4	.015	3	.088	4	8.257e-4	9	3.261e-3	4	3.223e-3	3
374		min	-.047	3	-.082	8	-.086	3	-6.687e-4	3	-2.497e-3	3	-4.335e-3	4

9bj YcdY>c]bhFYUM]cbg

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N5	max	1352.788	4	1472.286	6	5046.673	5	1.844	6	1.746	3	-.005	9
2		min	-1352.699	3	401.271	10	-734.368	2	.484	1	-1.744	4	-.322	8
3	N6	max	694.825	4	1484.864	8	613.609	1	-.197	3	.63	2	1.763	8
4		min	-4396.671	7	417.232	10	-2649.32	6	-.668	8	-.624	1	.373	10
5	N4	max	4367.934	8	1485.423	5	889.46	1	-.328	2	1.086	1	-.316	9



Company : Tower Engineering Solutions, LLC
 Designer :
 Job Number : TES Project No. 100562
 Model Name : CT46136-A-SBA_MT_LO_Loads Only_G

Dec 14, 2020
 5:06 PM
 Checked By: _____

9bj YcdY>c]bhFYUM]cbgf77 cbljbi YXL

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
6		min	-561.028	3	418.294	9	-2691.992	6	-1.197	7	-1.086	2	-1.455	5
7	N31	max	-1258.323	3	2810.386	8	2709.81	8	0	2	0	9	0	9
8		min	-4680.821	8	737.106	3	708.68	3	0	9	0	2	0	2
9	N32	max	44.849	4	2777.196	5	-1398.923	2	0	11	0	3	0	4
10		min	-44.855	3	715.994	2	-5348.536	5	0	1	0	4	0	3
11	N33	max	4683.744	6	2808.357	7	2709.689	7	0	6	0	6	0	6
12		min	1243.614	4	728.011	4	700.21	4	0	10	0	10	0	10
13	N179	max	316.084	4	234.704	1	2105.894	1	0	2	0	7	0	7
14		min	-318.61	3	-193.697	2	-2123.307	2	0	1	0	4	0	4
15	N180	max	1746.346	4	193.71	3	835.326	1	0	3	0	4	0	4
16		min	-1728.681	3	-153.822	4	-829.438	2	0	4	0	3	0	3
17	N181	max	1870.008	4	202.849	4	671.497	1	0	4	0	8	0	4
18		min	-1885.447	3	-163.081	3	-661.283	2	0	3	0	2	0	3
19	Totals:	max	8587.855	4	12982.047	7	8242.034	1						
20		min	-8587.829	3	4034.739	4	-8241.96	2						

EXHIBIT 9

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

T-Mobile Existing Facility

Site ID: CTHA274A

1214 Farmington Avenue
Bristol, Connecticut 06010

February 23, 2021

EBI Project Number: 6221000655

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	21.19%

February 23, 2021

T-Mobile

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

Emissions Analysis for Site: CTHA274A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1214 Farmington Avenue in Bristol, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 1214 Farmington Avenue in Bristol, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 7) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 8) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 12) The antenna mounting height centerline of the proposed antennas is 140 feet above ground level (AGL).



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environmental | engineering | due diligence

- 13) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 14) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A1 MPE %:	2.36%	Antenna B1 MPE %:	2.36%	Antenna C1 MPE %:	2.36%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	7	Channel Count:	7	Channel Count:	7
Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts	Total TX Power (W):	320 Watts
ERP (W):	8,360.85	ERP (W):	8,360.85	ERP (W):	8,360.85
Antenna A2 MPE %:	2.58%	Antenna B2 MPE %:	2.58%	Antenna C2 MPE %:	2.58%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A3 MPE %:	7.06%	Antenna B3 MPE %:	7.06%	Antenna C3 MPE %:	7.06%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	12.00%
T-Mobile (Lower Antennas)	5.9%
Sprint	3.19%
Clearwire	0.1%
Site Total MPE % :	21.19%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	12.00%
T-Mobile Sector B Total:	12.00%
T-Mobile Sector C Total:	12.00%
Site Total MPE % :	21.19%

T-Mobile Maximum MPE Power Values (Sector A)							
T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	140.0	7.54	1900 MHz GSM	1000	0.75%
T-Mobile 1900 MHz LTE	2	2056.61	140.0	7.54	1900 MHz LTE	1000	0.75%
T-Mobile 2100 MHz LTE	2	2307.55	140.0	8.47	2100 MHz LTE	1000	0.85%
T-Mobile 600 MHz LTE	2	591.73	140.0	2.17	600 MHz LTE	400	0.54%
T-Mobile 600 MHz NR	1	1577.94	140.0	2.89	600 MHz NR	400	0.72%
T-Mobile 700 MHz LTE	2	695.22	140.0	2.55	700 MHz LTE	467	0.55%
T-Mobile 1900 MHz LTE	2	2104.51	140.0	7.72	1900 MHz LTE	1000	0.77%
T-Mobile 2500 MHz LTE	1	19238.94	140.0	35.29	2500 MHz LTE	1000	3.53%
T-Mobile 2500 MHz NR	1	19238.94	140.0	35.29	2500 MHz NR	1000	3.53%
						Total:	12.00%

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	12.00%
Sector B:	12.00%
Sector C:	12.00%
T-Mobile Maximum MPE % (Sector A):	12.00%
Site Total:	21.19%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **21.19%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.