Filed by:
G. Scott Shepherd - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 – Gshepherd@SBASite.com

June 8, 2020

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

Notice of Exempt Modification
101 Burbank Road, Ellington, CT 06029
N 41.936257
W 72.385383
T-Mobile#: CT11292A_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 186-foot level of the existing 189-foot Monopole Tower at 101 Burbank Road, Ellington, CT. The tower is owned SBA Towers V, LLC. The property is owned by Bernard and Jane Asumadu. T-Mobile intends to replace three (3) antennas with three (3) new 600 MHz/700 MHz/1900 MHZ/2100 MHz antennas. The new antennas would be installed at the 186-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) LNX-6515DS-A1M antenna (remove) – (3) RFS APXVAARR24_43-U-NA20 (replace)

Install New:
- (1) 1 5/8" Fiber
- (3) Ericsson KRY 112 489/2 TMAs

- (3) Ericsson Radio 4449 B71+B12 RRU
- (2) V-bracing kit (MS-C2B-350P)
- (1) Support Rail Kit (M-HR35-2375)
- (3) Stabilizer kit (MSSTZ-2PST)
- (12) 2" PST

Existing Equipment to Remain:

- (3) sector frames
- (3) EMS RR90-17-02DP antenna
- (3) Ericsson KRY 112 144/1 TMAs
- (3) Kathrein 782 11056 BIAS T's
- (12) 1 5/8" coax

Entitlements:

- N/A

GROUND

Install New:

- Equipment inside existing 6102 cabinet
- (3) Ericsson Radio 4415

This facility was approved by the Town of Ellington on October 4, 1999 under Case V9915. A 190' tower was approved. It was to have a fence of 6' above ground level and no lighting with the exception of ground lighting for maintenance purposes. There were to be no signs on the tower and space was to be provided for municipal emergency service transmission as required by the Town. Utilities were to be installed underground unless otherwise approved. There were no 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 Town of Ellington's First Selectman, Lori Spielman, and Town Planner, Lisa M. Houlihan, as well as the property owner. (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@@sbasite.com

Attachments
cc: Lori Spielman, First Selectman / with attachments
55 Main Street, Ellington, CT 06029
Lisa M. Houlihan, AICP, Town Planner / with attachments
55 Main Street, Ellington, CT 06029
Bernard and Jane Asumadu / with attachments
101 Burbank Rd., Ellington, CT 06029

EXHIBIT LIST

Exhibit 1	Check Copy	
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	Town of Ellington P&Z Commission 10/25/99
Exhibit 6	Construction Drawings	Chappell Engineering Associates 9/17/19
Exhibit 7	Modification Drawings	Chappell Engineering Associates 8/8/19
Exhibit 8	Structural Analysis	TES 5/27/20
Exhibit 9	Mount Analysis	TES 5/26/20
Exhibit 10	EME Report	Transcom Engineering 5/17/19

EXHIBIT 1

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

EXHIBIT 2

FedEx Express **Package US Airbill**

FedEx Tracking Number **8142 4463 7235**

Form ID No. 0200 — **Sender's Copy**

1 From *Please print and press hard.*

Date 5-29-20 Sender's FedEx Account Number 1058-4330-4

Sender's Name GLENN S. SHEPHERD Phone (508) 251-0720

Company SBA COMMUNICATIONS

Address 134 FLANDERS RD., SUITE 125 Dept./Floor/Suite/Room

City WESTBOROUGH State MA ZIP 01581

2 Your Internal Billing Reference First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name MELANIE BACHMAN Phone ( )

Company EXECUTIVE DIRECTOR CSC

Address CONNECTICUT SITING COUNCIL
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address TEN FRANKLIN SQ
Use this line for the HOLD location address or for continuation of your shipping address.

City NEW BRITAIN State CT ZIP 06051

☐ Hold Weekday — FedEx location address REQUIRED. NOT available for FedEx First Overnight.

☐ Hold Saturday — FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

4 Express Package Service • To most locations. *Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.*

Next Business Day

☐ FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

☑ FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

☐ FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

☐ FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.

☐ FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.

☐ FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging • Declared value limit $500.

☑ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☐ Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

☐ Saturday Delivery — NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

☑ No Signature Required — Package may be left without obtaining a signature for delivery.

☐ Direct Signature — Someone at recipient's address may sign for delivery.

☐ Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods? One box must be checked.

☑ No ☐ Yes — As per attached Shipper's Declaration. ☐ Yes — Shipper's Declaration not required. ☐ Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Restrictions apply for dangerous goods — see the current FedEx Service Guide. ☐ Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

☑ Sender — Acct. No. in Section 1 will be billed. ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†
1	1 lbs.	$ 0 .00

†Our liability is limited to US$100 unless you declare a higher value. See back for details. By using this airbill you agree to the service conditions on the back of this airbill and in the current FedEx Service Guide, including terms that limit our liability.

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FedEx Express Package US Airbill

FedEx Tracking Number 8131 9963 5571

Form ID No. 0200

Sender's Copy

1 From *Please print and press hard.*

Date 5-29-20 Sender's FedEx Account Number 1058-4330-4

Sender's Name GLENN S. SHEPHERD Phone (508) 251-0720

Company SBA COMMUNICATIONS

Address 134 FLANDERS RD, SUITE 125

Dept./Floor/Suite/Room

City WESTBOROUGH State MA ZIP 01581

2 Your Internal Billing Reference
First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name LISA M. HOULIHAN Phone ( )

Company TOWN PLANNER

Address 55 MAIN ST.
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address
Use this line for the HOLD location address or for continuation of your shipping address.

City ELLINGTON State CT ZIP 06029

Hold Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.

Hold Saturday
FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

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Packages up to 150 lbs.
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- ☐ FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
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☑ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☐ Other

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☑ Sender Acct. No. in Section 1 will be billed. ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†
1	1 lbs.	$ 0 .00

†Our liability is limited to US$100 unless you declare a higher value. See back for details. By using this airbill you agree to the service conditions on the back of this airbill and in the current FedEx Service Guide, including terms that limit our liability.

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FedEx Tracking Number 8131 9963 5619

Form ID No. 0200

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Sender's Name GLENN S. SHEPHERD Phone 508 251-0720

Company SBA COMMUNICATIONS

Address 134 FLANDERS RD. Suite 125

Dept./Floor/Suite/Room

City WESTBOROUGH State MA ZIP 01581

2 Your Internal Billing Reference
First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name BERNARD ASUMADU Phone ( )

Company

Address 101 BURBANK RD
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address
Use this line for the HOLD location address or for continuation of your shipping address.

City ELLINGTON State CT ZIP 06029

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☐ Hold Saturday — FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

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FedEx Express **Package US Airbill**

FedEx Tracking Number **8142 4463 7018**

Form ID No. **0200**

Sender's Copy

1 From *Please print and press hard.*

Date 5-29-20 Sender's FedEx Account Number 1058-4330-4

Sender's Name GLENN S. SHEPHERD Phone (508) 251-0720

Company SBA COMMUNICATIONS

Address 134 FLANDERS RD, Suite 125

Dept./Floor/Suite/Room

City WESTBOROUGH State MA ZIP 01581

2 Your Internal Billing Reference First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name LORI SPIELMAN Phone ( )

Company FIRST SELECTMAN

Address 55 MAIN ST

We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City ELLINGTON State CT ZIP 06029

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FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages 1 Total Weight 1 lbs. Total Declared Value† $ 0 .00

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EXHIBIT 3

101 BURBANK RD

Location	101 BURBANK RD	**Mblu**	148/ 017/ 0000/ /
Acct#	00396900	**Owner**	ASUMADU BERNARD + JANE K
Assessment	$504,700	**Appraisal**	$720,990
PID	4680		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$384,400	$336,590	$720,990
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$269,080	$235,620	$504,700

Owner of Record

Owner	ASUMADU BERNARD + JANE K	**Sale Price**	$265,000
Co-Owner		**Book & Page**	484/ 677
Address	101 BURBANK RD ELLINGTON, CT 06029	**Sale Date**	05/18/2017

Ownership History

Ownership History			
Owner	**Sale Price**	**Book & Page**	**Sale Date**
ASUMADU BERNARD + JANE K	$265,000	484/ 677	05/18/2017
STAVENS DONALD E + ROSALIE M TRUSTEES	$0	375/1106	11/06/2006
STAVENS DONALD E + ROSALIE M	$0	139/ 936	06/05/1986
MCKAY JOYCE G	$0	111/ 796	11/30/1978
LIMBERGER JOHN A SR	$0	111/ 794	11/30/1978

Building Information

Building 1 : Section 1

Year Built:	1987
Living Area:	3,664
Replacement Cost:	$429,600

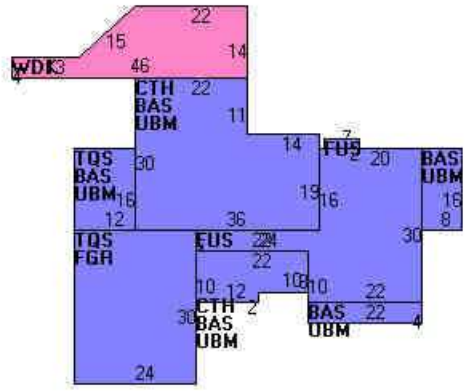
Building Percent Good:	85
Replacement Cost Less Depreciation:	$365,160

Building Attributes	
Field	**Description**
Style	Contemporary
Model	Residential
Grade:	B
Stories:	2
Occupancy	1
Exterior Wall A	Vinyl Siding
Exterior Wall B	
Roof Structure:	Gable
Roof Cover	Asphalt
Interior Wall A	Drywall
Interior Wall B	
Interior Flr A	Carpet
Interior Flr B	Hardwood
Heat Fuel	Oil
Heat Type:	Forced Air
AC Type:	Central
Total Bedrooms:	4 Bedrooms
Total Bthrms:	3
Total Half Baths:	1
Total Xtra Fixtrs:	5
Total Rooms:	11
Bath Style:	Average
Kitchen Style:	Average
Fireplaces	1
Gas Fireplaces	
Fin Bsmnt	1000
Fin Bsmnt Qual	Semi- Finished
Attic Entry	None
Bsmnt Garages	1

Building Photo

(http://images.vgsi.com/photos2/EllingtonCTPhotos//\00\03\53/6

Building Layout



(http://images.vgsi.com/photos2/EllingtonCTPhotos//Sketches/46

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	2,250	2,250
FUS	Finished Upper Story	730	730
TQS	Three Quarter Story	912	684
CTH	Cathedral Ceiling	1,126	0
FGR	Garage	720	0
UBM	Basement	2,250	0
WDK	Wood Deck	459	0
		8,447	3,664

Building 1 : Section 1

Year Built:	1987
Living Area:	0
Replacement Cost:	$429,600
Building Percent Good:	85

Replacement Cost
Less Depreciation: $365,160

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall A	
Exterior Wall B	
Roof Structure:	
Roof Cover	
Interior Wall A	
Interior Wall B	
Interior Flr A	
Interior Flr B	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplaces	
Gas Fireplaces	
Fin Bsmnt	
Fin Bsmnt Qual	
Attic Entry	
Bsmnt Garages	

Building Photo

(http://images.vgsi.com/photos2/EllingtonCTPhotos//default.jpg)

Building Layout

(http://images.vgsi.com/photos2/EllingtonCTPhotos//Sketches/4

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	1010
Description	Primary Homesite
Zone	RAR
Neighborhood	R50
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	6.20
Frontage	
Depth	
Assessed Value	$235,620
Appraised Value	$336,590

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SPL2	Pool- Inground Vinyl			680 S.F.	$14,860	1
SHD2	Shed w/electric			288 S.F.	$4,380	1

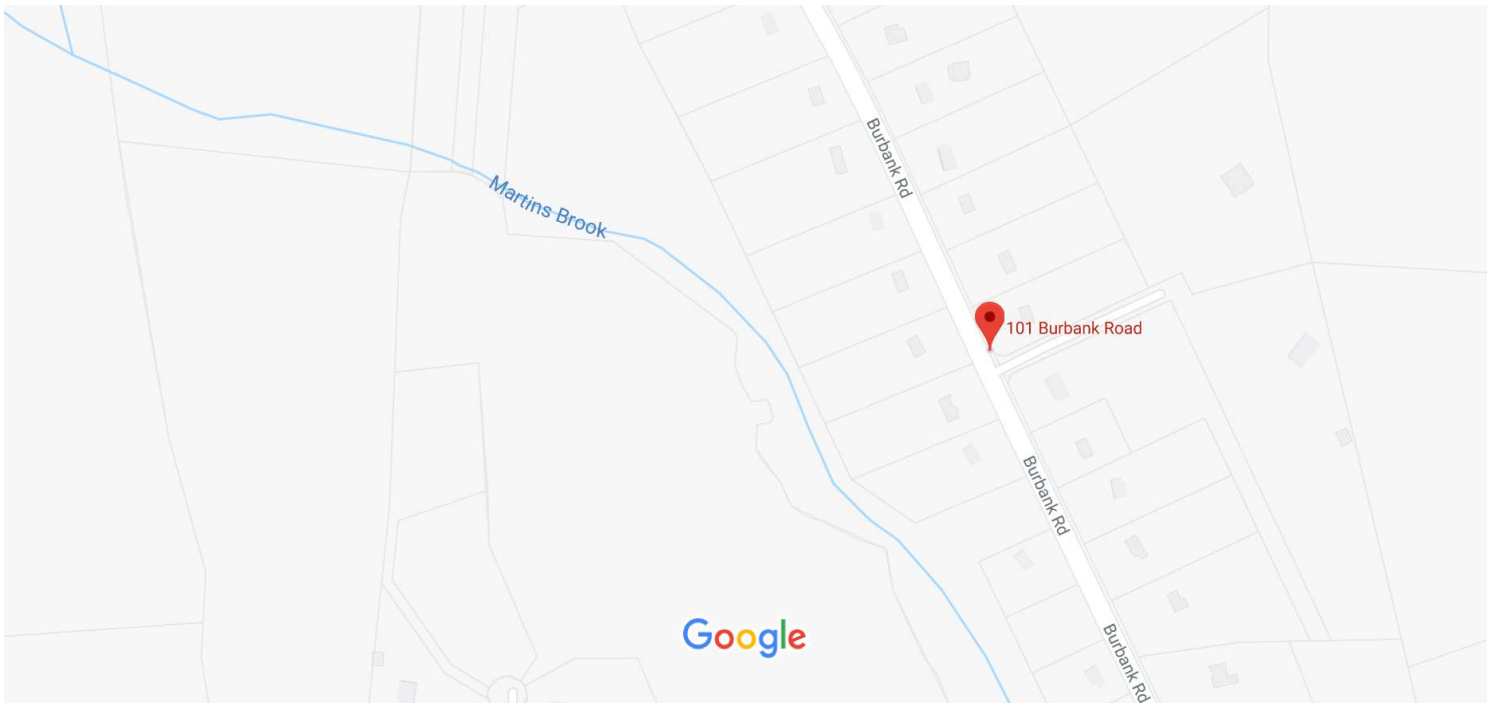
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$351,900	$336,590	$688,490
2016	$351,900	$336,590	$688,490
2015	$351,900	$379,750	$731,650

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$246,330	$235,620	$481,950
2016	$246,330	$235,620	$481,950
2015	$246,330	$265,830	$512,160

EXHIBIT 4

Google Maps 101 Burbank Rd



Map data ©2019 Google 200 ft

101 Burbank Rd

Ellington, CT 06029

Directions Save Nearby Send to your phone Share

WJP6+MJ Ellington, Connecticut

Photos

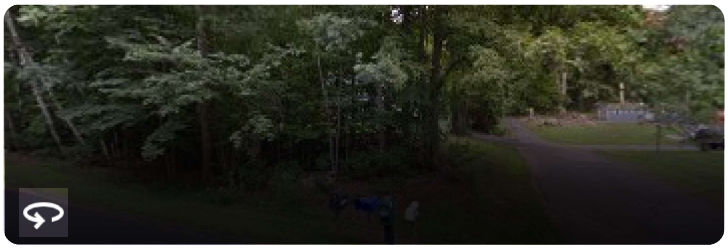


EXHIBIT 5

STATE OF CONNECTICUT • COUNTY OF TOLLAND
INCORPORATED 1786

TOWN OF ELLINGTON

55 MAIN STREET • P.O. BOX 187
ELLINGTON, CONNECTICUT 06029

December 10, 1999

Crossroads Site Management LLC
1050 Buckley Highway
Union CT 06076

Dear Sirs:

The Ellington Planning and Zoning Commission, at their meeting on Monday, October 25, 1999, approved your application with the following motion:

MOVED (AUCTER) SECONDED (SPIELMAN) CARRIED UNANIMOUSLY (AYES: ZAHNER, AUCTER, SPIELMAN, KUPECKY, HEIDARI, HARFORD) (NAYES: 0) TO APPROVE #Z9939 SUBJECT TO THE RECOMMENDATIONS OF THE TOWN ENGINEER'S LETTER OF 10/25/99.

I am enclosing a copy of the Legal Notice for your records.

Very truly yours,
Cornelia B. Nichols
Cornelia B. Nichols, Clerk
Planning and Zoning Commission

enclosure

VOL. 257 PAGE 238

2773

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TOWN OF ELLINGTON
CERTIFICATE OF VARIANCE

Notice is hereby given that the Zoning Board of Appeals of the Town of Ellington, at its Meeting on Monday, October 4, 1999, granted a Variance to Donald & Rosalie Stavens, 101 Burbank Road, Ellington, Connecticut 06029 as follows:

NATURE OF VARIANCE(S)

The Zoning Board of Appeals granted a Variance to allow construction of a communication tower with the condition that it be available to other providers and the Public Safety Agencies of the Town of Ellington.

ZONING REGULATION(S) VARIED

Ellington Zoning Regulations, Section 5.2, Area & Yard Requirements. Height Requirements 35' to 190'.

NAME OF OWNER(S) OF PROPERTY

Donald & Rosalie Stavens, 101 Burbank Road. Ellington, Connecticut 06029.

Dated at Ellington, Connecticut, this 29th day of October 1999.

I hereby certify that the above is a true and attested copy of the aforesaid Variance from the records of the Zoning Board of Appeals.

Signed Michael Riley, Chairman
Michael Riley, Chairman

Signed Cornelia B. Nicholas
Cornelia B. Nicholas, Clerk

Recorded-Ellington Land Records

on Nov 2, 1999

@ Volume 257 Page 238 Attest: Town Clerk

In order to issue a Zoning Permit involving this property, a copy of this document listing the date same was recorded in the Ellington Land Records, must be presented to the Zoning Enforcement Officer.

Town of Ellington
Planning and Zoning Commission
Application

Application # Z 9939
Date Received 10/5/99

Type of Application:

☐ Change of Zone ☐ Amendment to Regulations ☑ Site Plan Approval
☐ Special Permit ☐ Earth Excavation

Applicant's Information:

Name Crossroads Site Management, LLC

Mailing Address
1050 Buckley Hwy
Union, CT 06076

Telephone
Work 860-684-3060
Home 860-684-7747

Owner's Information:

Name Donald E Stavens Rosalie M. Stavens

Mailing Address
101 Burbank Road
Ellington, Connecticut

Telephone
Work
Home 875-8937

Property Description:

Street Address 101 Burbank Road, Ellington, CT
Assessor's Parcel Number 148-017-0000
Zone: Present RA Proposed
Is the parcel within 500 feet of any municipal boundary? ☐ Yes ☑ No

Description of Request:

Site Approval And Zoning Permit To Construct Telecommunications Tower And Related Equipment Buildings

Please Note: Zoning Board of Appeals variance (V9915) approval granted October 4, 1999 listed under "David Smith" the engineer.

Adjoining Property Owners: Please indicate on an attached list the names of property owners within 500 feet of the parcel which is the subject of this application, their mailing addresses (including zip code), and location. This information may be provided by a registered land surveyor, professional engineer, or attorney. The applicant shall be responsible for notifying all property owners within this area by US Postal Service Certificate of Mailing. Evidence of the mailing of the notification shall be delivered to the Planning Department no later than the Wednesday prior to the scheduled public hearing. The Planning Department will provide the applicant with a cop of the legal notice to be enclosed with the mailing.

Statement of Accuracy and Permission: I hereby certify that all information submitted with this application is true and accurate to the best of my knowledge. The applicant understands that this application is to be considered complete only when all information and documents required by the Commission have been submitted. The applicant grants permission for the members of the Planning and Zoning Commission and their designated agents to inspect the property which is the subject of this application.

October 4, 1999
Date

Donald E Stavens Rosalie M. Stavens
Signature of Petitioner CSM, LLC.
(Must be owner or holder of an option to purchase)

Section 7.3 Communication Tower

A. The applicant will be required to take reasonable steps to mitigate any adverse visual impact from all new communication tower facilities. Steps shall include but are not limited to: landscaping, fencing, painting or similar measures as appropriate to camouflage the communication tower.

B. A communication tower must comply with the setback requirements of the zone in which it is located or be set back from the property lines a distance equal to the height of the tower, whichever is greater.

C. Towers shall not exceed 190 feet in height above the ground.

D. To discourage unauthorized trespassing and provide for the public safety, the base of any ground-mounted tower shall be secured by fence enclosure to a height of 6 feet above the ground.

E. No lighting of any communication tower will be permitted, with the exception of ground lighting for maintenance purposes, except as required by the Federal Communications Commission, Federal Aviation Administration, or the Connecticut Siting Council.

F. No advertising or signs shall be permitted on any communication tower.

G. To avoid unnecessary proliferation of communication towers, new towers will not be approved unless there is a need demonstrated such as all available space on existing or approved towers covering the same geographic area has been utilized or that there is an area within Ellington or immediately adjacent to Ellington which is not served by existing facilities; i.e. a hole exists in a propagation mapped area.

H. To protect the public health from the unknown effects of electromagnetic fields, all communication transmitters much comply with FCC emissions regulations.

I. Communication towers shall provide space for municipal emergency service transmission antennas as required by the town.

J. The facility owner at their expense shall remove a communication tower facility not in use for 12 consecutive months. This removal shall occur within 20 days of the end of such a 12 month period. The commission may require a bond or other security to the Town of Ellington valid for the life of the tower to guarantee removal.

K. All utilities installed in conjunction with any communication tower site shall be installed underground unless otherwise approved by the commission.

Section 7.4 Composting Facility

A. A complete site development plan as required under Section 8.2 of these Regulations shall be submitted for any proposed composting facility. In addition, this site development plan shall show the following items.

1. The location of all wetlands, watercourses, and wells within 1,000 feet of the lot where the composting facility is located. Wetlands may be plotted using data obtained from USDA Soil Conservation Service soil surveys.
2. Existing and proposed topographic contours on the project site shall be shown on separate sheets at intervals of 2 feet or less, unless otherwise directed by the Commission.

EXHIBIT 6

ELLINGTON/RT 30

101 BURBANK ROAD
ELLINGTON, CT 06029
TOLLAND COUNTY

SITE NO.: CT11292A

SITE TYPE: 189'± SELF-SUPPORT TOWER

RF DESIGN GUIDELINE: CUSTOM

APPROVALS

PROJECT MANAGER:	DATE:	ZONING/SITE ACQ.:	DATE:
CONSTRUCTION:	DATE:	OPERATIONS:	DATE:
RF ENGINEERING:	DATE:	TOWER OWNER:	DATE:

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS BY CERTIFIED CLIMBER
SECTOR B:	ACCESS BY CERTIFIED CLIMBER
SECTOR C:	ACCESS BY CERTIFIED CLIMBER
SECTOR D:	ACCESS BY CERTIFIED CLIMBER
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

SITE NOTES

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS TELECOMMUNICATION FACILITY, AND IS NOT FOR HUMAN HABITATION. IT WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
   - ADA COMPLIANCE NOT REQUIRED.
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

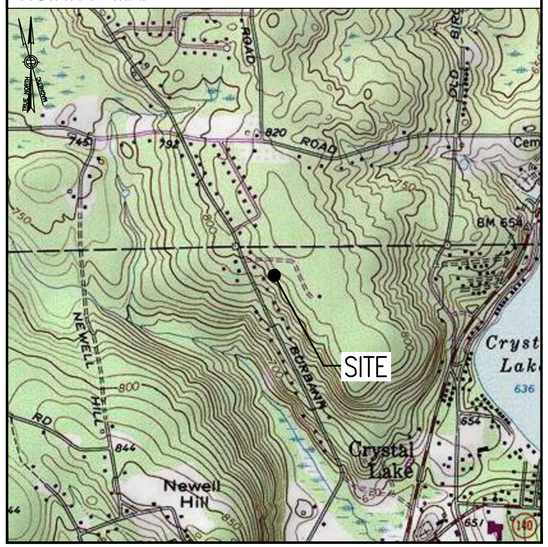
GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OMNIPOINT REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
15. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK.

AT LEAST 72 HOURS PRIOR TO DIGGING, THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT 811

VICINITY MAP

SCALE: 1" = 1000'-0"



DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SHEET INDEX

SHEET NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
A-1	COMPOUND & EQUIPMENT PLAN	2
A-2	TOWER ELEVATIONS & ANTENNA PLAN	2
A-3	SITE DETAILS	2
E-1	ELECTRIC & GROUNDING DETAILS	2
-	MOUNT MODIFICATION AND DESIGN DRAWINGS (BY OTHERS)	0

SPECIAL ZONING NOTE:
BASED ON INFORMATION PROVIDED BY T-MOBILE REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW, AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW, OR ADMINISTRATIVE REVIEW).

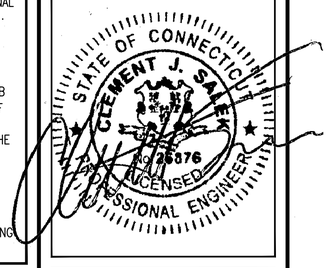
PROJECT SUMMARY

SITE NUMBER:	CT11292A
SBA SITE NUMBER:	CT10008-A
SBA SITE NAME:	ELLINGTON
SITE ADDRESS:	101 BURBANK ROAD ELLINGTON CT, 06029
PROPERTY OWNER:	DONALD E. AND ROSALIE M. STAVENS EDGARTOWN, MA
TOWER OWNER:	SBA TOWERS V, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	TOLLAND
ZONING DISTRICT:	RAR (RURAL AGRICULTURAL RESIDENTIAL)
STRUCTURE TYPE:	SELF-SUPPORT TOWER
STRUCTURE HEIGHT:	189'±
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.936257° N.41°56'10.53" LONGITUDE W.72.385383° W.72°23'07.38"

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700

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

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil ·Structural ·Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST, SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com



CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	09/17/19	REVISED CONSTRUCTION	JRV
1	05/09/19	ISSUED FOR CONSTRUCTION	JRV
0	05/07/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11292A

SITE ADDRESS:
101 BURBANK ROAD
ELLINGTON, CT 06029

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.064

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – T–MOBILE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T–MOBILE
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

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

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

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

5. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

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

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 FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER, T1 CABLES AND 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 AND/OR LANDLORD PRIOR TO CONSTRUCTION.

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 THE OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION AND RETURN DISTURBED AREAS TO ORIGINAL CONDITIONS.

13. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

14. SUBCONTRACTOR SHALL NOTIFY CHAPPELL ENGINEERING ASSOCIATES, LLC 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS AND POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.

15. CONSTRUCTION SHALL COMPLY WITH ALL T–MOBILE STANDARDS AND SPECIFICATIONS.

16. 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.

17. THE EXISTING CELL SITES ARE 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.

18. IF THE EXISTING 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 TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

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

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

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

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

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

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

7. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

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

9. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

10. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

11. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T–MOBILE SPECIFICATION FOR SITE SIGNAGE.

CONCRETE AND REINFORCING STEEL NOTES:

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

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS

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

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF .....1½ IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER
   OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....¾ IN.
   BEAMS AND COLUMNS .....1½ IN.

5. A CHAMFER ¾" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

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

7. CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIERS PLANT.
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.

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

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

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND T–MOBILE SPECIFICATIONS UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM–A–36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".

2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (⅞"ø) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.

4. NON–STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE ⅝" DIA. ASTM A 307 BOLTS (GALV) UNLESS NOTED OTHERWISE.

5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL

6. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

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

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

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

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

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

COMPACTION EQUIPMENT:

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

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T–MOBILE ANTENNA PLATFORM LOCATION AND UTILITY TRENCHWORK.

2. COORDINATION OF WORK:
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR.

3. CABLE LADDER RACK:
SUBCONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY AND/OR ICE BRIDGE, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

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

2. SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR APPROVAL.

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

4. CABLES SHALL NOT BE ROUTED THROUGH LADDER–STYLE CABLE TRAY RUNGS.

5. EACH END OF EVERY POWER, GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA, AND MATCH INSTALLATION REQUIREMENTS.

6. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, ½ INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC AND OSHA.

7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).

8. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.

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

10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

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

12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.

13. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.

14. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY HARGER (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75'C (90'C IF AVAILABLE).

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

16. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

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

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

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

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

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

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

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

24. CABINETS, BOXES AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

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

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

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

28. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

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

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

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

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

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STATE OF CONNECTICUT
CLEMENT J. GAUTHIER
No. 26876
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	09/17/19	REVISED CONSTRUCTION	JRV
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0	05/07/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11292A

SITE ADDRESS:
101 BURBANK ROAD
ELLINGTON, CT 06029

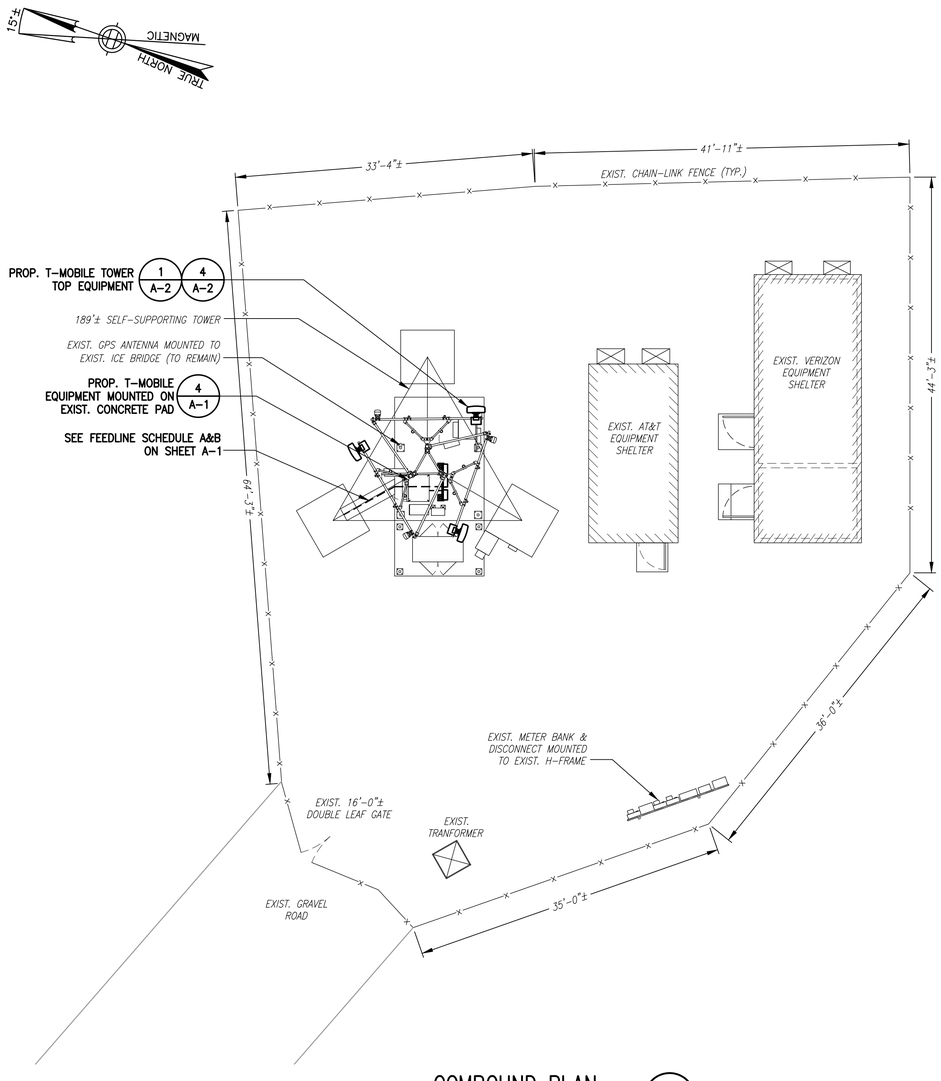
SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

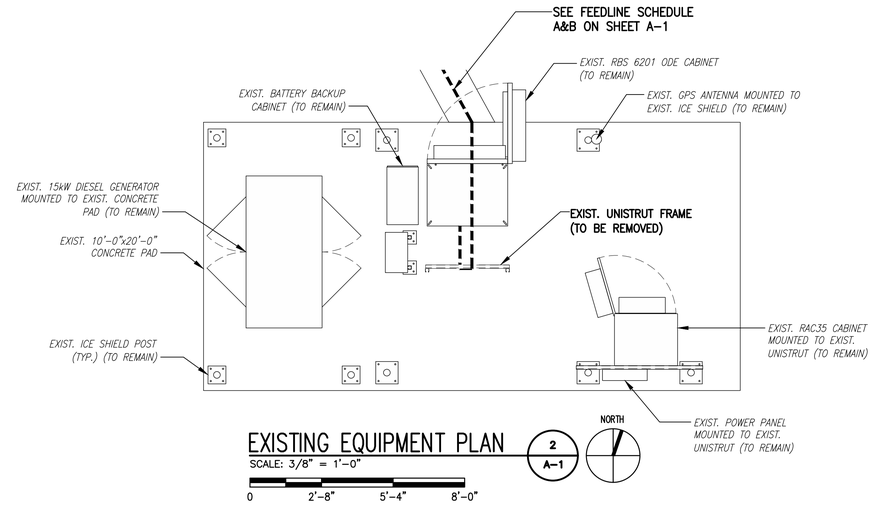
1815.064

FEEDLINE SCHEDULE	FEEDLINES	LOCATION
A	*EXISTING TO REMAIN:* *(12) 1⅝" COAX CABLES*	ROUTED PER STRUCTURAL ANALYSIS
B	PROPOSED: (1) 1-⅝" HCS FIBER CABLE	

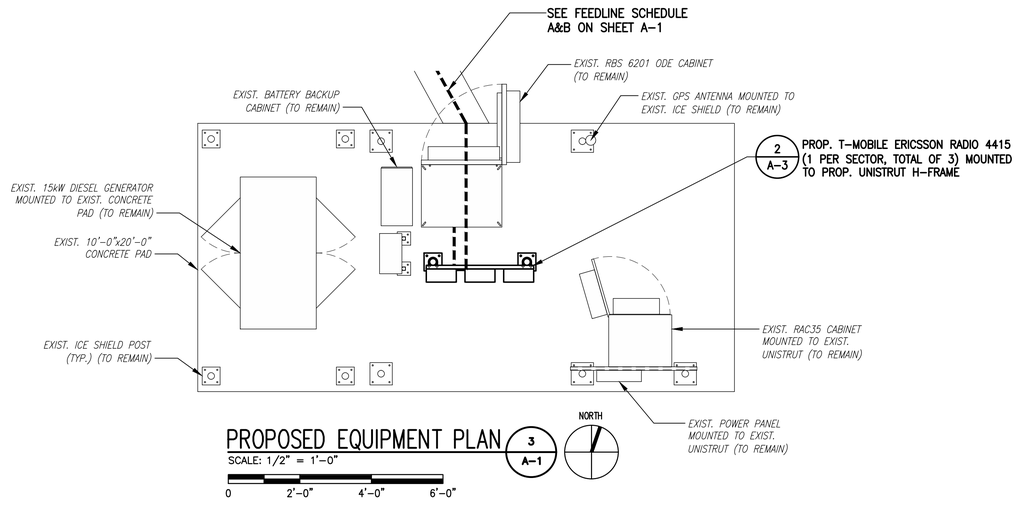
NOTE:
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.



COMPOUND PLAN 1 A-1
SCALE: 3/16" = 1'-0"
0 5'-4" 10'-8" 16'-0"



EXISTING EQUIPMENT PLAN 2 A-1
SCALE: 3/8" = 1'-0"
0 2'-8" 5'-4" 8'-0"



PROPOSED EQUIPMENT PLAN 3 A-1
SCALE: 1/2" = 1'-0"
0 2'-0" 4'-0" 6'-0"

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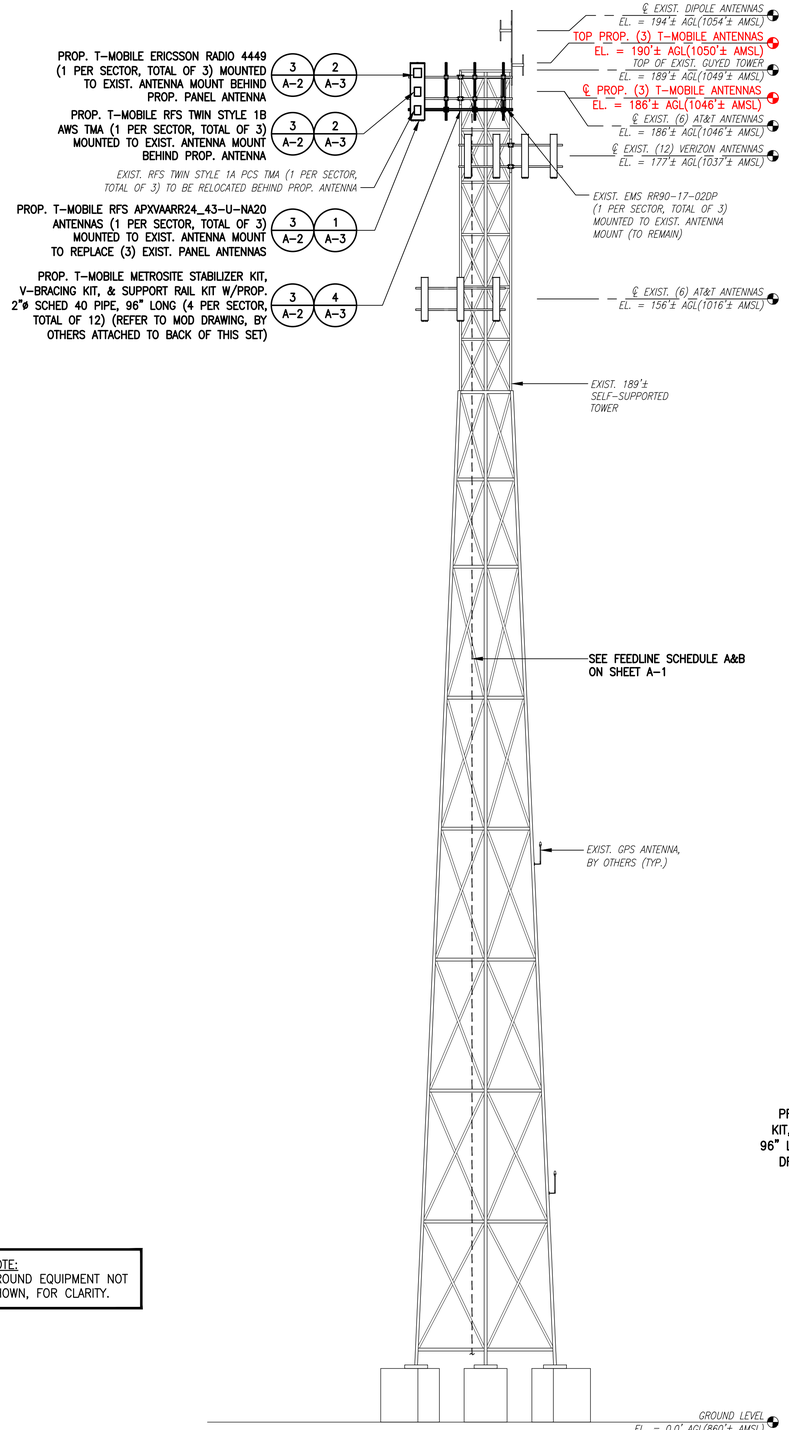
ELLINGTON, CT 06029

SHEET TITLE
COMPOUND & EQUIPMENT PLAN

SHEET NUMBER
A-1

1815.064

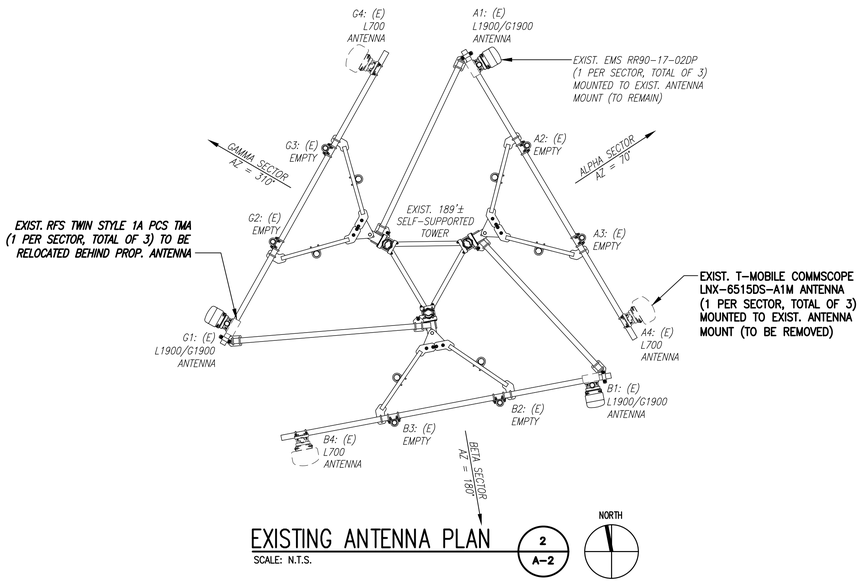


TOWER ELEVATION 1 A-2
SCALE: 1" = 20'
0 10' 20' 40' 60'

NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):
GENERAL CONTRACTOR SHALL ORIENT PROPOSED PLATFORM REINFORCEMENT KIT RING-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOOSED RING-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.

RAD CENTER NOTE:
T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.

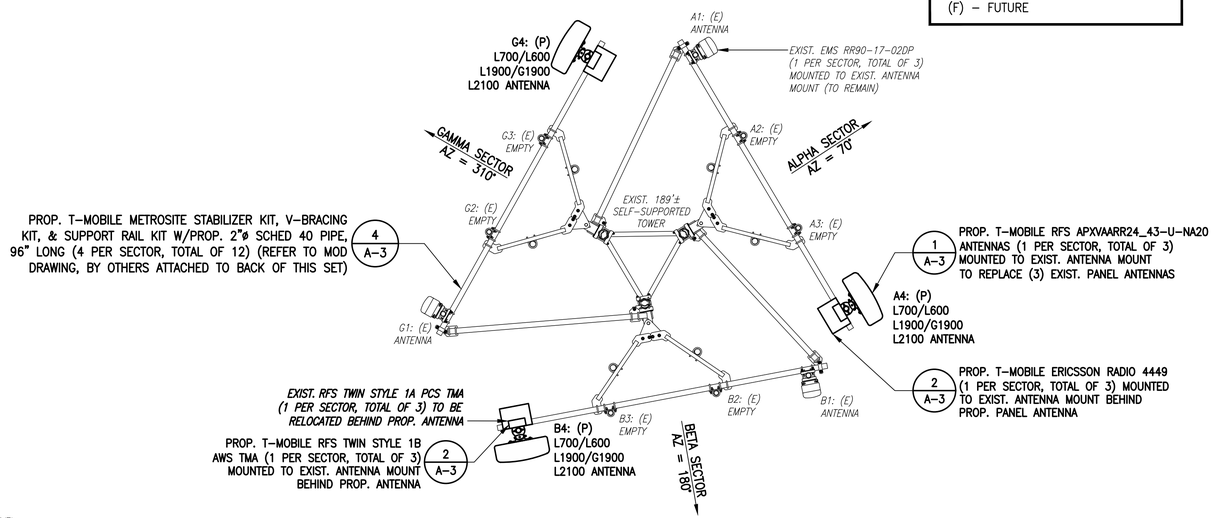


EXISTING ANTENNA PLAN 2 A-2
SCALE: N.T.S.

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

(E) – EXISTING
(P) – INSTALL
(F) – FUTURE



PROPOSED ANTENNA PLAN 3 A-2
SCALE: N.T.S.

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

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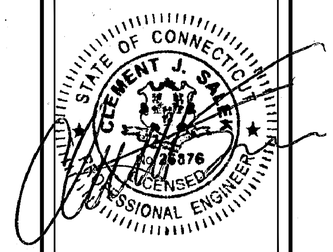

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SITE ADDRESS:
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ELLINGTON, CT 06029

SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLAN

SHEET NUMBER
A-2

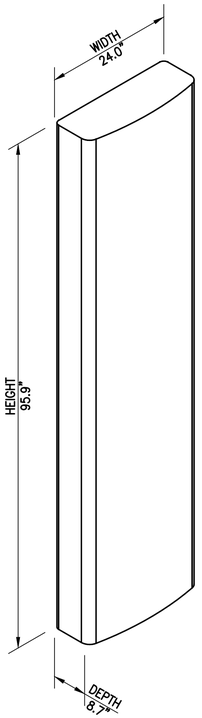
1815.064

FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	RADIOS/TMAS	CABLES
ALPHA	*EMS RR90-17-XXDP*	*186'± AGL*	*70°*	*0°*	*2°*	–	–	–
	RFS APXVAARR24_43-U-NA20	186'± AGL	70°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 (1-5/8") HCS CABLE (SHARED) *(4) 1 5/8" COAX CABLE*
						L1900/G1900	*TWIN STYLE 1A PCS TMA*	
						L2100	RADIO 4415 B66A (AT CABINET) TWIN STYLE 1B AWS TMA	
BETA	*EMS RR90-17-XXDP*	*186'± AGL*	*180°*	*0°*	*2°*	–	–	–
	RFS APXVAARR24_43-U-NA20	186'± AGL	180°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 (1-5/8") HCS CABLE (SHARED) *(4) 1 5/8" COAX CABLE*
						L1900/G1900	*TWIN STYLE 1A PCS TMA*	
						L2100	RADIO 4415 B66A (AT CABINET) TWIN STYLE 1B AWS TMA	
GAMMA	*EMS RR90-17-XXDP*	*186'± AGL*	*310°*	*0°*	*2°*	–	–	–
	RFS APXVAARR24_43-U-NA20	186'± AGL	310°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 (1-5/8") HCS CABLE (SHARED) *(4) 1 5/8" COAX CABLE*
						L1900/G1900	*TWIN STYLE 1A PCS TMA*	
						L2100	RADIO 4415 B66A (AT CABINET) TWIN STYLE 1B AWS TMA	

CABLE NOTE: SEE FEEDLINE SCHEDULE A&B ON SHEET A-1

NOTE: RFDS REV1.1 – 04/25/19



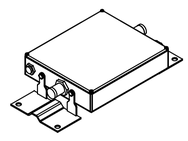
RFS APXVAARR24_43-NA20 PANEL ANTENNA
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 LBS
1 PER SECTOR, TOTAL OF 3

ANTENNA DETAILS (1 / A-3)
SCALE: N.T.S.

ERICSSON RRUS 4415 B66A
DIMENSIONS: 16.5"H x 13.4"W x 5.9"D
WEIGHT: 46 LBS
(1 PER SECTOR, TOTAL OF 3)

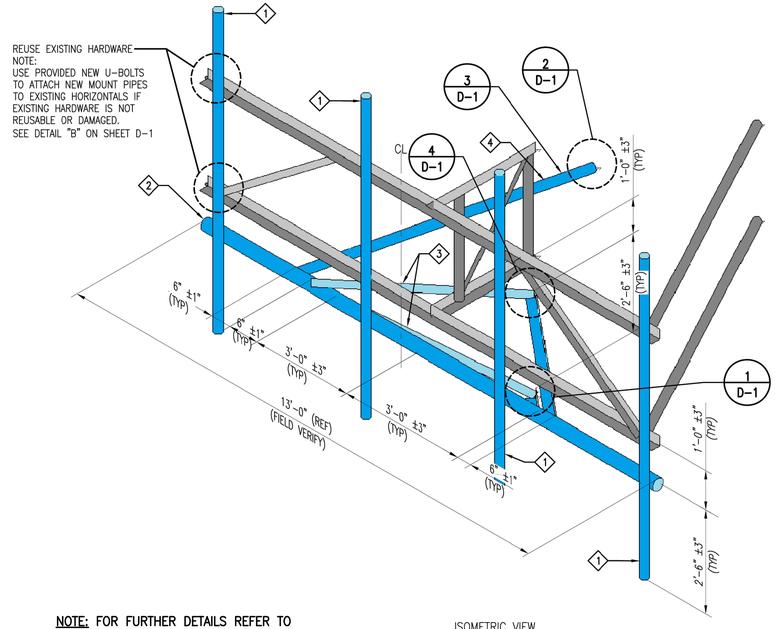
RRUS DETAILS (2 / A-3)
SCALE: N.T.S.

ERICSSON RADIO 4449 B12+B71
DIMENSIONS: 14.9"H x 13.2"W x 9.3"D
WEIGHT: 74.0 LBS
1 PER SECTOR, TOTAL OF 3



TMA 17/21
DIMENSIONS: 7.7"H x 7.5"W x 3.4"D
WEIGHT: 11.0 LBS
2 PER SECTOR, TOTAL OF 6

TMA DETAIL (3 / A-3)
SCALE: N.T.S.



NOTE: FOR FURTHER DETAILS REFER TO MOD DRAWINGS, BY OTHER (ATTACHED TO BACK BACK OF THIS SET)

ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 185' ELEV.
(MODIFICATION IS TYPICAL FOR ALL (3) SECTORS)

MOUNT MODIFICATION DETAIL (4 / A-3)
SCALE: N.T.S.

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SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

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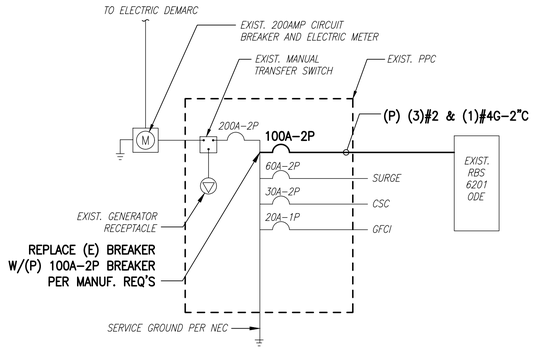
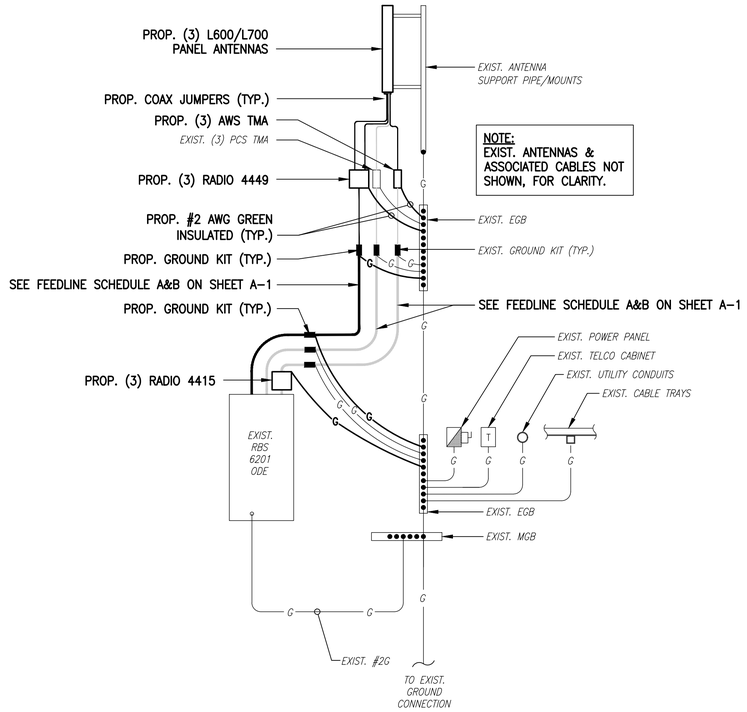
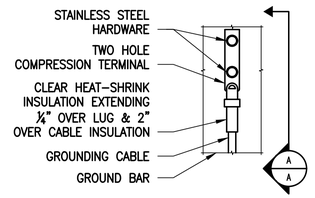


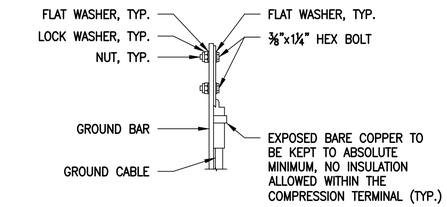
ONE LINE DIAGRAM (1 / E-1)
SCALE: NOT TO SCALE



GROUNDING RISER DIAGRAM (2 / E-1)
SCALE: NOT TO SCALE



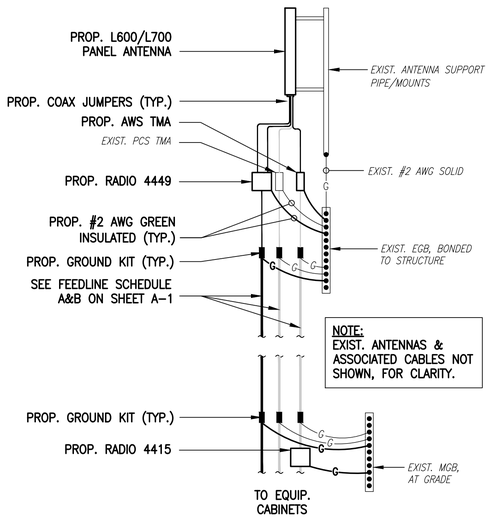
ELEVATION



SECTION A-A

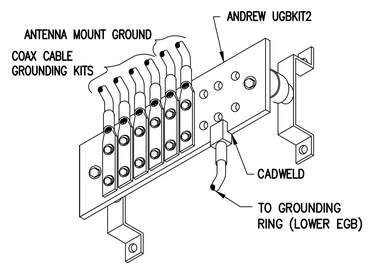
NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELL DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

TYPICAL GROUND BAR CONNECTIONS DETAIL (3 / E-1)
SCALE: NOT TO SCALE



L600/L700

COAX CABLE CONNECTION AND GROUNDING DETAIL (4 / E-1)
SCALE: NOT TO SCALE



GROUND BAR (EGB) (5 / E-1)
SCALE: NOT TO SCALE

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXIST. TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
21. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMNS MINIMUM RESISTANCE REQUIRED.
22. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
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CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil ·Structural ·Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST, SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT
CLEMENT J. SAMSEL
No. 26876
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	09/17/19	REVISED CONSTRUCTION	JRV
1	05/09/19	ISSUED FOR CONSTRUCTION	JRV
0	05/07/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11292A

SITE ADDRESS:
101 BURBANK ROAD
ELLINGTON, CT 06029

SHEET TITLE
ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.064

EXHIBIT 7

MODIFICATION AND DESIGN
DRAWINGS FOR EXISTING ANTENNA MOUNTS
EXISTING SELF SUPPORTING TOWER

PROPOSED CARRIER: T-MOBILE

TOWER OWNER: SBA / TOWER OWNER SITE #: CT10008-A

CARRIER SITE #/NAME: CT11292A / ELLINGTON

COORDINATES (LATITUDE: 41.939764°, LONGITUDE: -72.387069°)

PLEASE NOTE THIS SET OF DRAWINGS ARE FOR INSTALLATION AND ASSEMBLY ONLY. FABRICATION DETAIL DRAWINGS ARE NOT PROVIDED AND MUST BE COMPLETED BY THE STEEL FABRICATOR SELECTED. TES CAN PROVIDE THE FABRICATION DETAIL DRAWINGS FOR AN ADDITIONAL FEE.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	ANTENNA MOUNT MODIFICATION DETAILS	0
A-2	ANTENNA MOUNT PHOTOS	0
D-1	STANDARD DETAILS	0
MS-HR35-2375	METROSITE SUPPORT RAIL KIT	
MS-C2B-350P	METROSITE V-BRACING KIT	
MS-STZ-350P	METROSITE STABILIZER ADAPTER KIT	
MS-STZ-2PST	METROSITE STABILIZER KIT	

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE **TES** PROJECT NO. 77627, DATED 06/21/2019.

TES
Tower Engineering Solutions
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IRVING, TX 75038
PH: (972) 483-0607

SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
83029

CUSTOMER SITE NO:
CT10008-A-SBA

CUSTOMER SITE NAME:
ELLINGTON
101 BURBANK ROAD
ELLINGTON, CT 06029

STATE OF CONNECTICUT
HANNING YOU
28931
LICENSED PROFESSIONAL ENGINEER
8/8/19

DRAWN BY: SP | CHECKED BY: LK/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	SP	08/08/19

SHEET TITLE:
TITLE SHEET

SHEET NUMBER: T-1
REV #: 0

BILL OF MATERIALS

QUANTITY COUNTED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTIONS	SHEET LIST	PIECE WEIGHT (LBS)	WEIGHT (LB)	NOTES
			MATERIAL & HARDWARE				
1	1	MS-HR35-2375	METROSITE SUPPORT RAIL KIT	A-1, MS-HR35-2375	430.0	430.0	Galvanized
2	2	MS-C2B-350P	METROSITE V BRACING KIT	A-1, MS-C2B-350P	338.0	676.0	Galvanized
3	3	MS-STZ-350P	METROSITE STABILIZER ADAPTER KIT	A-1, MS-STZ-350P	4.4	13.2	Galvanized
3	3	MS-STZ-2PST	METROSITE STABILIZER KIT	A-1, MS-STZ-2PST	79.3	237.9	Galvanized
			FOLLOWING ITEMS ARE "CUSTOM" PARTS				
12	12	PST2375-8	2" PST (2.375" O.D. X 0.154" THICKNESS) X 8'-0" A53 GR-B 35KSI	A-1	30.10	361.2	GALVANIZED
24	26	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)	D-1	1.17	31.9	(2) HHN & LKW-EA GALVANIZED
					TOTAL WEIGHT (LBS) =	**1750.2**	

ALL METROSITE PARTS ARE AVAILABLE FROM METROSITE, LLC.

180 IND PARK BLVD COMMERCE, GA 30529
OFFICE: (706) 335-7045
FAX: (706) 335-7056

NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

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TES JOB NO:
83029

CUSTOMER SITE NO:
CT10008-A-SBA
CUSTOMER SITE NAME:
ELLINGTON
101 BURBANK ROAD
ELLINGTON, CT 06029

DRAWN BY: SP | CHECKED BY: LK/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	SP	08/08/19

SHEET TITLE:
BILL OF MATERIALS

SHEET NUMBER: BOM
REV #: 0

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48,2018 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.
7. IT IS THE RESPONSIBILITY OF THE GC TO VERIFY THAT THERE IS NO INTERFERENCES (WITH SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.
8. PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESCONSTRUCTION@TESTOWER.US

FABRICATION

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

WELDING

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RCSC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

VERIFICATION AND INSPECTION

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2015 SECTION 1705 FOR STEEL CONSTRUCTION AND TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING [a,b]

BOLT LENGTH [c]	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 [d]	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS [d]
NOT MORE THAN $4d_b$	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN $4d_b$ BUT NOT MORE THAN $8d_b$	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN $8d_b$ BUT NOT MORE THAN $12d_b$	2/3 TURN	5/6 TURN	1 TURN

[a] NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

[b] APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

[c] WHEN THE BOLT LENGTH EXCEEDS $12d_b$, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

[d] BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.

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TES JOB NO:
83029

CUSTOMER SITE NO:
CT10008-A-SBA
CUSTOMER SITE NAME:
ELLINGTON
101 BURBANK ROAD
ELLINGTON, CT 06029

DRAWN BY: SP | CHECKED BY: LK/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	SP	08/08/19

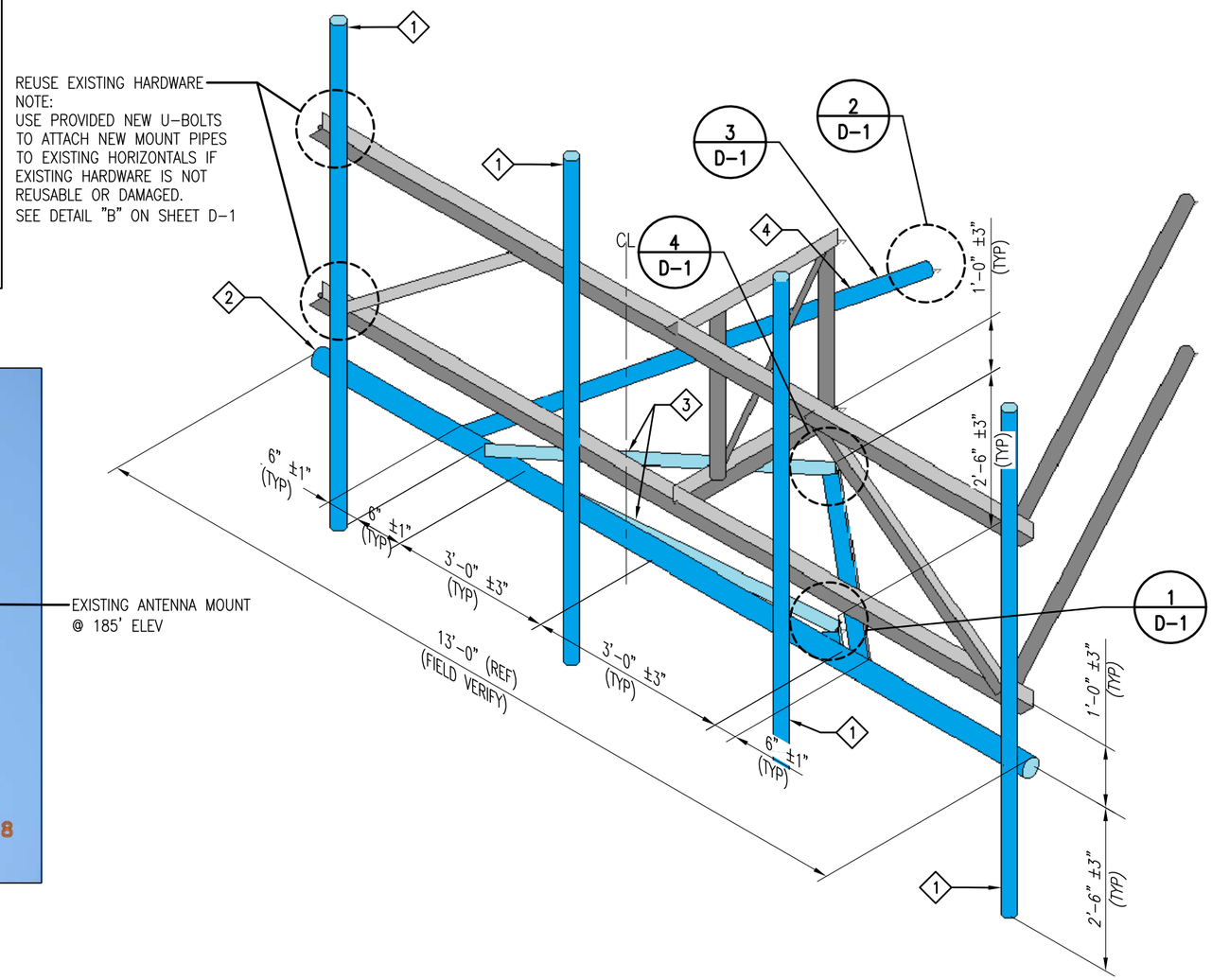
SHEET TITLE:
GENERAL NOTES

SHEET NUMBER: GN-1
REV #: 0

SCOPE OF WORK

1. REPLACE ALL EXISTING ANTENNA MOUNT PIPES WITH NEW 2" PST PIPES (8'-0" LONG) THEN RELOCATE EXISTING ANTENNAS TO NEW MOUNT PIPES (TYP). (4) PER SECTOR. EXISTING ANTENNA RAD CENTER TO BE MAINTAINED.
2. INSTALL NEW SUPPORT RAIL KIT. SEE SHEET MS-HR35-2375 FOR DETAILS
3. INSTALL (2) NEW V-BRACING KITS. SEE SHEET MS-C2B-350P & D-1 FOR DETAILS.
4. INSTALL NEW STABILIZER KIT AND STABILIZER ADAPTER KIT. SEE SHEETS MS-STZ-2PST, MS-STZ-350P & D-1 FOR DETAILS
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.

PHOTO 1



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 185' ELEV.
(MODIFICATION IS TYPICAL FOR ALL (3) SECTORS)

GC NOTE:
1. **IT IS THE RESPONSIBILITY OF THE GC TO VERIFY THAT THERE IS NO INTERFERENCES WITH (SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.**
2. **PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESCONSTRUCTION@TESTOWER.US**

NOTES:
1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
2. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS.
3. APPLY (2) COATS OF ZINC RICH GALVANIZING COMPOUND AS PER THE MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT AND DRILLED AREAS.
4. **MEMBERS IN BLUE COLOR ARE NEW REINFORCEMENTS.**

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	12	PST2375-8	2" PST (2.375" O.D. X 0.154" THICKNESS) X 8'-0" A53 GR-
2	1	MS-HR35-2375	METROSITE SUPPORT RAIL KIT
3	2	MS-C2B-350P	METROSITE V BRACING KIT
4	3	MS-STZ-350P	METROSITE STABILIZER ADAPTER KIT
5	3	MS-STZ-2PST	METROSITE STABILIZER KIT

TES
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(800)-487-SITE

TES JOB NO: 83029

CUSTOMER SITE NO: CT10008-A-SBA

CUSTOMER SITE NAME: ELLINGTON

101 BURBANK ROAD
ELLINGTON, CT 06029

DRAWN BY: SP | CHECKED BY: LK/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	SP	08/08/19

SHEET TITLE:

ANTENNA MOUNT MODIFICATION DETAILS

SHEET NUMBER: A-1

REV #: 0

PHOTO 1

PHOTO 2

REPLACE ALL EXISTING MOUNT PIPE WITH NEW ANTENNA MOUNT PIPES THEN RELOCATE EXISTING ANTENNAS TO NEW MOUNT PIPES (TYP) (4) PER SECTOR. EXISTING ANTENNA RAD CENTER TO BE MAINTAINED

EXISTING RAYCAP MAY BE RELOCATED TO ACCOMMODATE THE INSTALLATION OF MOUNT MODIFICATION

PHOTO 3

TES
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1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
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BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
83029

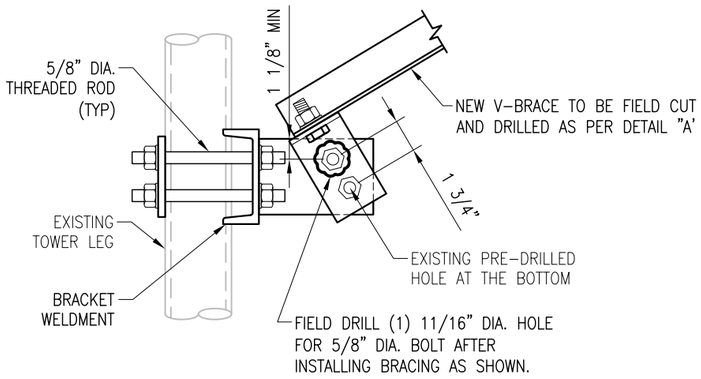
CUSTOMER SITE NO:
CT10008-A-SBA
CUSTOMER SITE NAME:
ELLINGTON
101 BURBANK ROAD
ELLINGTON, CT 06029

DRAWN BY: SP | CHECKED BY: LK/HMA

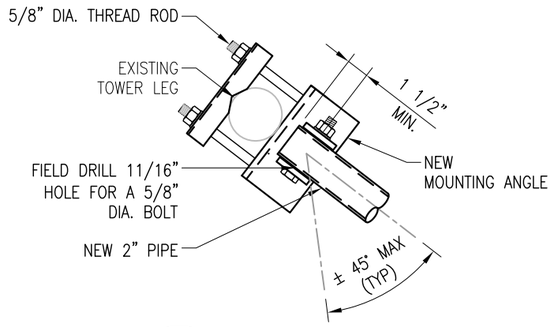
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	SP	08/08/19

SHEET TITLE:
ANTENNA MOUNT PHOTOS

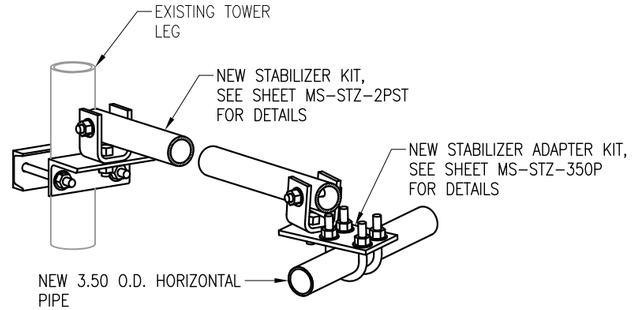
SHEET NUMBER: A-2
REV #: 0



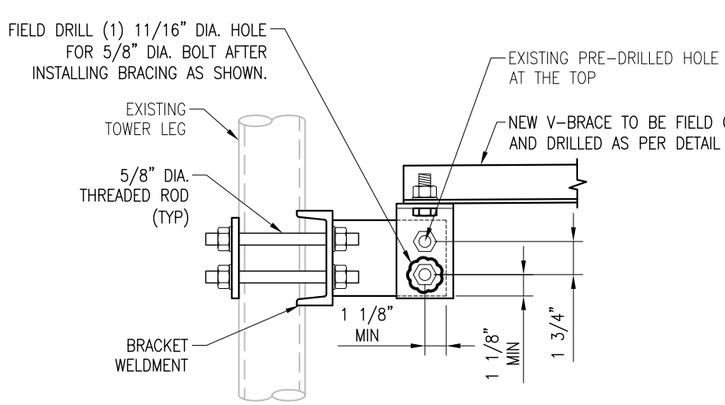
1 / D-1 DETAIL



2 / D-1 DETAIL



3 / D-1 STABILIZER DETAIL

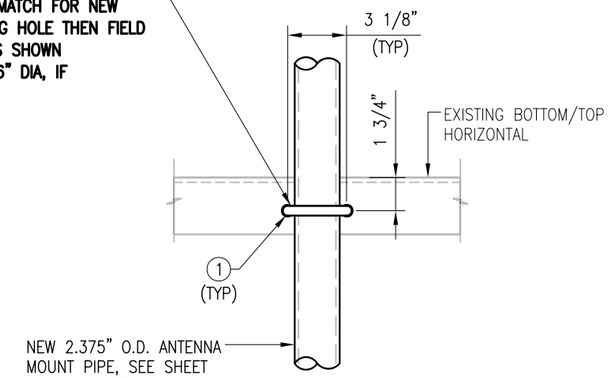


4 / D-1 DETAIL

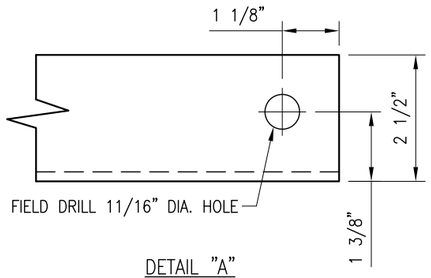
REUSE EXISTING HOLES ON EXISTING HORIZONTAL MEMBER

NOTE:

1. **IF EXISTING HOLES ARE NOT A MATCH FOR NEW VERTICAL PIPE. USE (1) EXISTING HOLE THEN FIELD DRILL NEW 11/16" DIA HOLE AS SHOWN**
2. **REAM EXISTING HOLES TO 11/16" DIA, IF NECESSARY**



DETAIL "B"



DETAIL "A"

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.
2. ALL HOLES ARE 11/16" DIA. U.N.O

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	24	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)

Tower Engineering Solutions
1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PH: (972) 483-0607

SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO: 83029

CUSTOMER SITE NO: CT10008-A-SBA

CUSTOMER SITE NAME: ELLINGTON

101 BURBANK ROAD
ELLINGTON, CT 06029

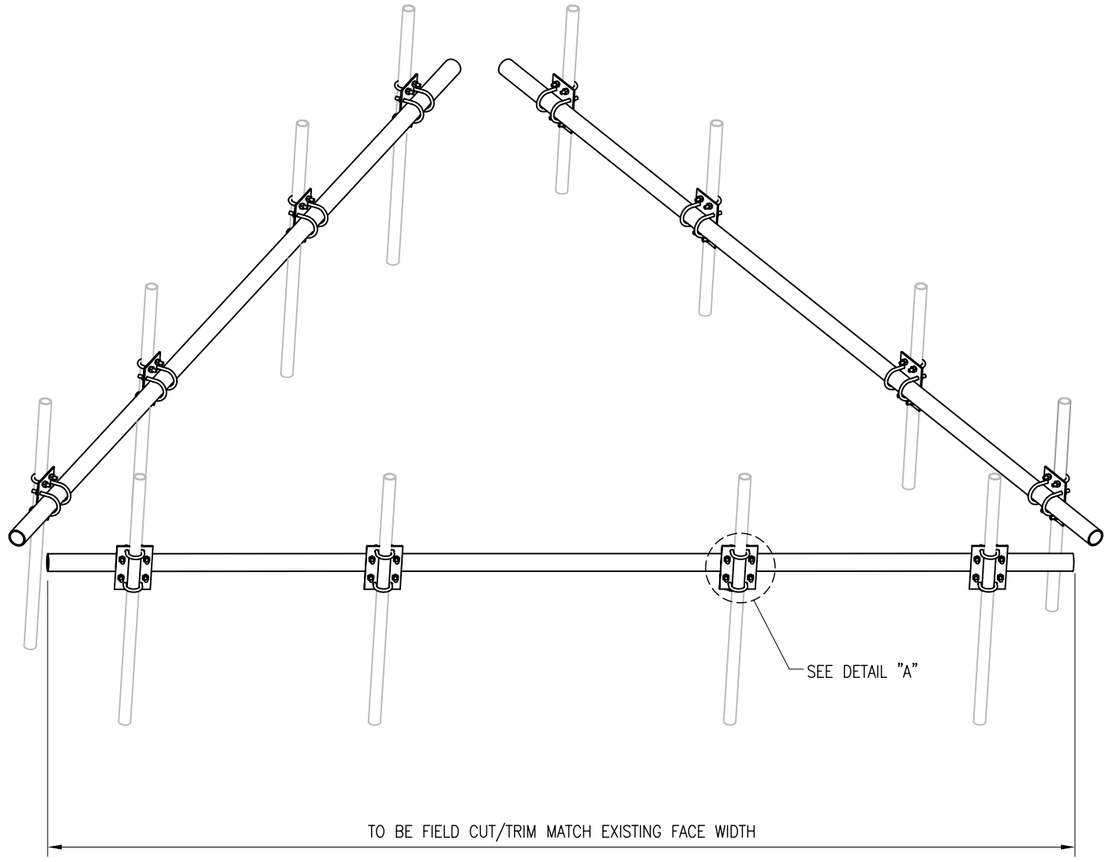
DRAWN BY: SP | CHECKED BY: LK/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	SP	08/08/19

SHEET TITLE: STANDARD DETAILS

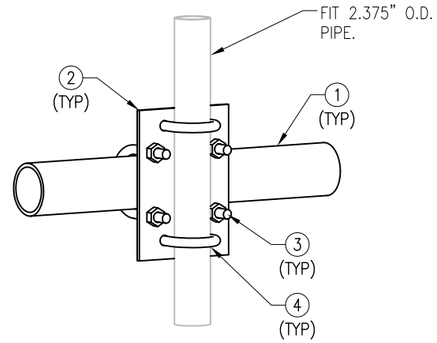
SHEET NUMBER: D-1 | REV #: 0

THE FOLLOWING DRAWINGS ARE INCLUDED FOR REFERENCE ONLY
PLEASE REFER TO THE INSTALLATION DRAWINGS FOR ACTUAL INSTALLATION DETAILS



ELEVATION VIEW

MS-HR35-2375						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	3PST-140	3" PST (3.50" O.D X .216" THICK) X 14'-0"	A53 GR-B	TAF-1	337.2
2	12	PL375-10	PL 3/8" X 7 1/8" X 10"	A36	TAF-1	92.4
3	24	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
4	24	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
				GALVANIZED WT		430



DETAIL "A"

NOTES:
1. ALL HOLES ARE 11/16" DIA. U.N.O
2. HOT-DIPPED GALVANIZED PER ASTM A123.

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH

STANDARD SHEET TOLERANCES

DECIMALS	ANGLES
.X ± 0.1	± 1°
.XX ± 0.02	FRACTIONS
.XXX ± 0.005	± 1/32

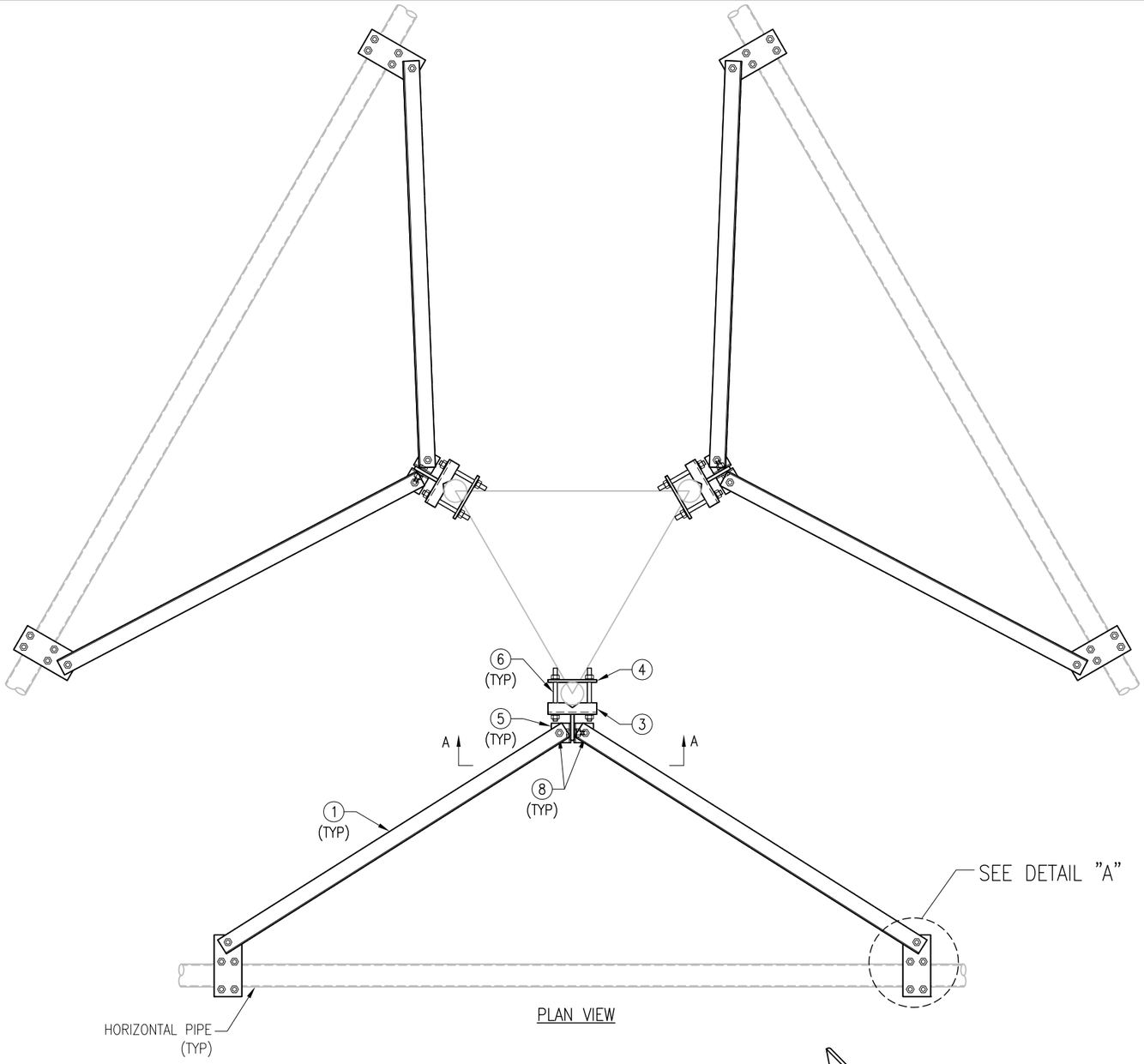
APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE
MS-HR35-2375
SUPPORT RAIL KIT

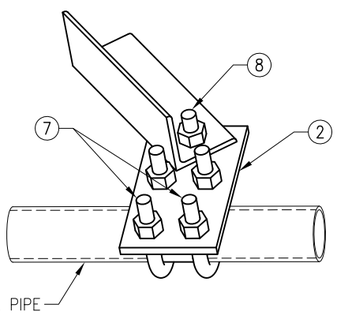
SIZE	DWG NO	REV
B	MS-HR35-2375	1

SCALE - SHEET 1 OF 1

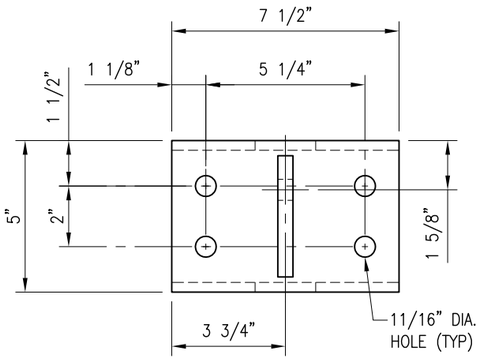
MS-C2B-350P						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	6	VB-25-10	L 2 1/2" X 2 1/2" X 1/4" X 10'-0"	A36	BK-1	258
2	6	PL375-42595	PL 3/8" X 4 1/4" X 9 1/2"	A36	BK-1	26.4
3	3	C2BW-275-450	BRACKET WELDMENT	A36	C2BW-275-450	28.5
4	3	PL5-42575	PL 1/2" X 4 1/4" X 7 1/2"	A572-50	BK-2	14.4
5	6	AL-533	L 5" X 3" X 1/4" X 3"	A36	BK-1	10.2
6	12	---	THREADED ROD 5/8" X 10" W/ (2) HHN & LKW EA.	A36	--	--
7	12	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	---	RBC-1	--
8	12	---	BOLT 5/8" X 1 3/4" A325 W/ HHN & LKW EA.	---	--	--
9	6	---	BOLT 5/8" X 2 1/4" A325 W/ HHN & LKW EA.	---	---	--
					GALVANIZED WT	338



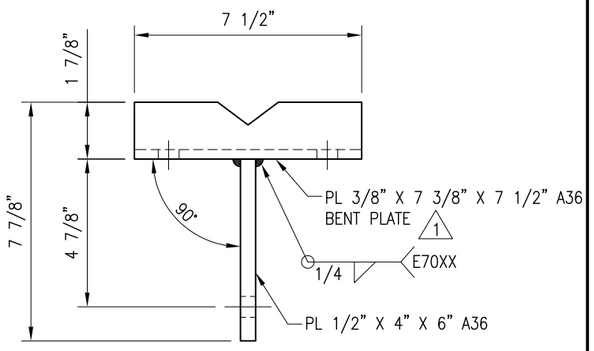
PLAN VIEW



DETAIL "A"

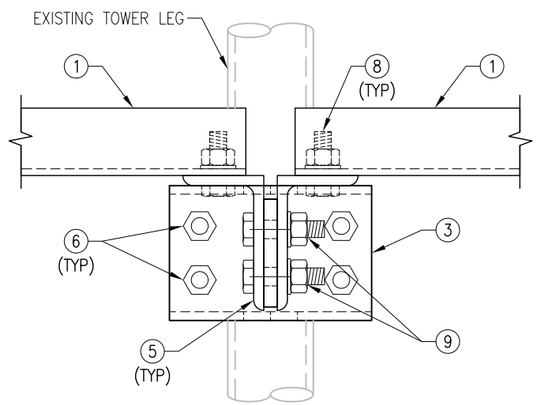


FRONT VIEW



TOP VIEW

C2BW-275-450 WELDMENT



SECTION "A-A"

NOTE:
1) FITS 2 7/8" DIA. TO 4 1/2" DIA. LEG.
2) THREADED ROD MAY BE CUT TO LENGTH AS REQUIRED.
3) FITS 2 7/8" DIA TO 3 1/2" O.D HORIZONTAL PIPE.

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH
STANDARD SHEET TOLERANCES
DECIMALS .X ± 0.1, .XX ± 0.02, .XXX ± 0.005
ANGLES ± 1°
FRACTIONS ± 1/32

APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE
MS-C2B-350P V-BRACING KIT

SIZE	DWG NO	REV
B	MS-C2B-350P	1

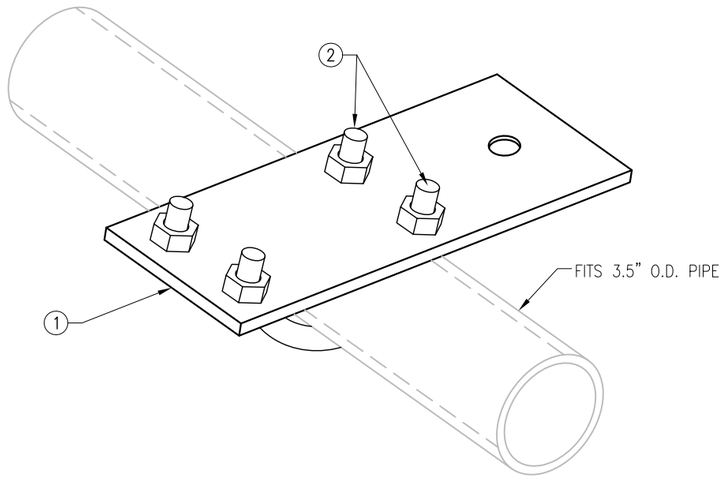
SCALE -

SHEET 1 OF 1

NOTES:
1) FIELD ASSEMBLY ALL PARTS.
2) FITS 3.5" O.D. HORIZONTAL PIPE.

MS-STZ-350P

ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	1	PL375-42595	PL 3/8" X 4 1/4" X 9 1/2"	A36	BK-1	4.4
2	2	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	---	RBC-1	--
					GALVANIZED WT	4.4



THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH

STANDARD SHEET TOLERANCES

DECIMALS	ANGLES
.X ± 0.1	± 1°
.XX ± 0.02	FRACTIONS
.XXX ± 0.005	± 1/32

APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE
MS-STZ-350P
STABILIZER ADAPTER KIT

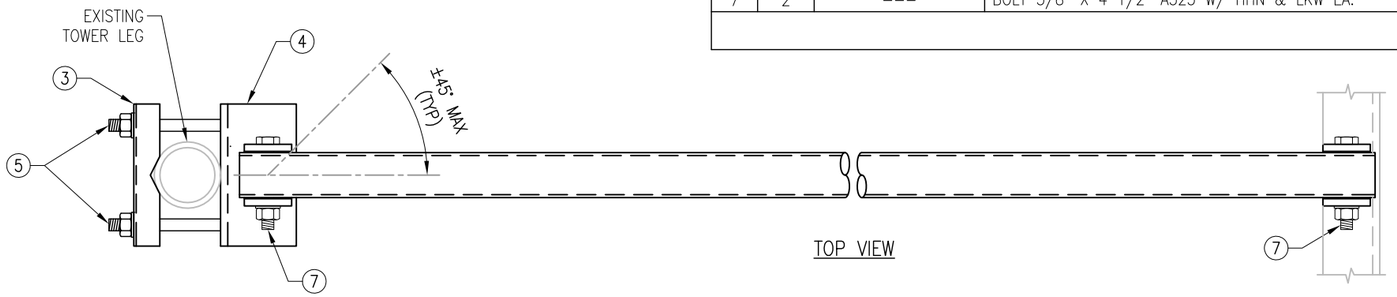
SIZE	DWG NO	REV
B	MS-STZ-350P	0

SCALE -

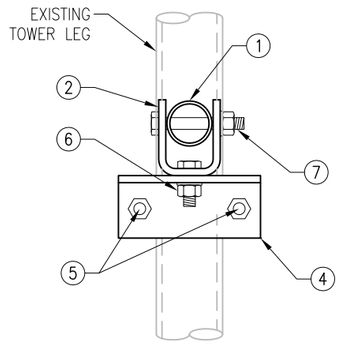
NOTES:
1) FITS 1 1/4" DIA. TO 4 1/2" DIA. LEG.
2) FIELD ASSEMBLY ALL PARTS.
3) THREADED ROD MAY BE CUT TO LENGTH AS REQUIRED.

MS-STZ-2PST

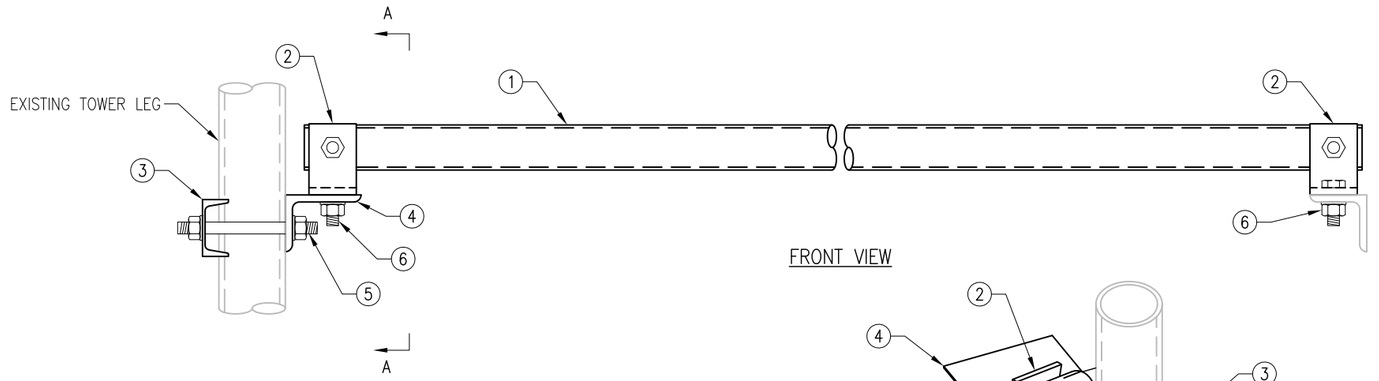
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	1	PP2375-15	2" PST PIPE (2.375" O.D. X 0.154" THICKNESS) X 15'-0"	1 A53 GR. B OR A500 GR. B/C	STZ-1	56.8
2	2	UP-2375P	PL 3/8" X 2 1/2" X 9 3/4" BENT PLATE	A36	STZ-1	19.0
3	1	C-3750	C3X6 X 0'-7 1/2"	A36	STZ-1	1.2
4	1	AL-4375	L 4" X 3" X 3/8" X 7 1/2"	A36	STZ-1	2.3
5	2	---	THREADED ROD 5/8" X 8" W/ (2) HHN & LKW EA.	A36	--	--
6	2	---	BOLT 5/8" X 2" A325 W/ HHN & LKW EA.	---	--	--
7	2	---	BOLT 5/8" X 4 1/2" A325 W/ HHN & LKW EA.	---	---	--
					GALVANIZED WT	79.3



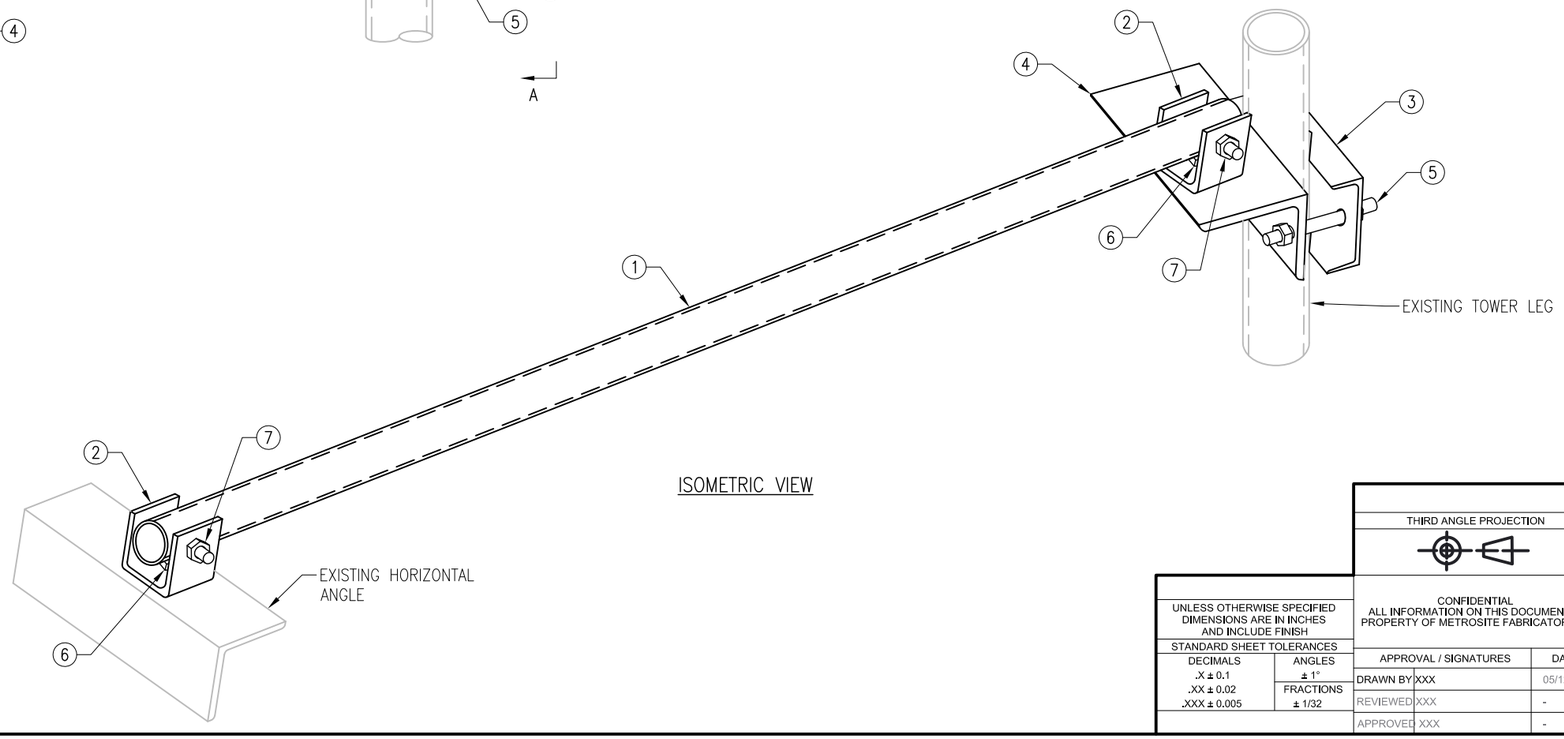
TOP VIEW



SECTION "A-A"



FRONT VIEW



ISOMETRIC VIEW

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH
STANDARD SHEET TOLERANCES
DECIMALS .X ± 0.1, .XX ± 0.02, .XXX ± 0.005
ANGLES ± 1°
FRACTIONS ± 1/32

APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE
MS-STZ-2PST
STABILIZER KIT

SIZE	DWG NO	REV
B	MS-STZ-2PST	1

SCALE -
SHEET 1 OF 1

EXHIBIT 8

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

Structural Analysis Report

Existing 189 ft Rohn Self Supporting Tower
Customer Name: SBA Communications Corp
Customer Site Number: CT10008-A
Customer Site Name: Ellington
Carrier Name: T-Mobile (App#: 115955, v2)
Carrier Site ID / Name: CT11292A / Ellington
Site Location: 101 Burbank Road
Ellington, Connecticut
Tolland County
Latitude: 41.939764
Longitude: -72.387069

5/27/20

Analysis Result:

Max Structural Usage: 63.1% [Pass]
Max Foundation Usage: 28.3% [Pass]
Additional Usage Caused by Mount Modification: +0.9%

Report Prepared By: Cesar Rojas

Introduction

The purpose of this report is to summarize the analysis results on the 189 ft Rohn Self Supporting Tower 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	Rohn File Number: 42895AE, dated: 05/30/2000.
Foundation Drawing	Rohn File Number: 42895AE, dated: 05/30/2000.
Geotechnical Report	Applied Earth Technologies (Site Address 101 Burbank Rd. Ellington, CT) Report on Subsurface Investigation dated February 14, 2000.
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** In accordance with this standard, the structure was analyzed using **TESTowers,** 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} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 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:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S =0.176, 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
1	189.0	1	Decibel DB222-A Dipole	Direct Mount	(1) 1 1/4"	NE Site Management
-	186.0	3	EMS RR90-17-02DP - Panels	(3) Sector Frames	(12) 1 5/8"	T-Mobile
-		3	Commscope LNX-6515DS- Panels			
-		3	Ericsson KRY 112 144/1 - TMAs			
-		3	Kathrein 782 11056 - Bias Ts			
8	177.0	2	Antel BXA-70063-4CF-EDIN-X	(3) Sector Frames	(12) 1 5/8" (1) Fiber Cable	`Verizon
9		4	Antel BXA-70080-4CF-EDIN-0			
10		6	Commscope HBXX-6517DS-A2M			
11		3	Alcatel Lucent 1900 RRH 2x60W			
12		3	Alcatel Lucent RRH AWS			
13		6	RFS Celwave FD9R6004/2C-3L			
14	157.0	3	Kathrein 800-10121	(3) Sector Frames	(12) 1 5/8" (1) 3" Flex Conduit (1) 3/8" RET	AT&T
15		4	Powerwave P65-17-XLH-RR			
16		2	KMW AM-X-CD-16-65-005-RET			
17		3	Powerwave 7770.00			
18		6	Powerwave TT19-08BP111-001			
19		6	CCI DTMABP7819VG12A			
20		6	Kathrein 860-10025			
21		6	Ericsson RRUS-11			
22		1	DC6-48-60-18-8F			
23	78.0	1	Andrew GPS	Pipe Mount	(1) 1/2"	Verizon
24	32.0	1	GPS	Pipe Mount	(1) 1/2"	AT&T

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
2	186.0	3	EMS RR90-17-02DP - Panels	(3) Sector Frames w/modifications	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
3		3	RFS APXVAARR24_43-U-NA20 - Panels			
4		3	Ericsson KRY 112 144/1 - TMAs			
5		3	Ericsson KRY 112 489/2 -TMAs			
6		3	Ericsson Radio 4449 B71+B12 -RRUs			
7		3	Kathrein 782 11056 - Bias Ts			

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:

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	**60.9%**	**63.1%**	**4.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	295.2	255.7	30.3

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):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.2604 degrees under the operational wind speed as specified in the Analysis Criteria.

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 ANSI/TIA/EIA 222-G 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 EIA/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.

Structure: CT10008-A-SBA

Site Name:	Ellington			**Code:**	EIA/TIA-222-G	5/27/2020
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	180.00 (ft)	**Base Width:**	21.12	**Basic Ice WS:**	50.00	
Base Elev:	9.00 (ft)	**Top Width:**	4.58	**Operational WS:**	60.00	Page: 1

Tower Engineering Solutions

Section Properties

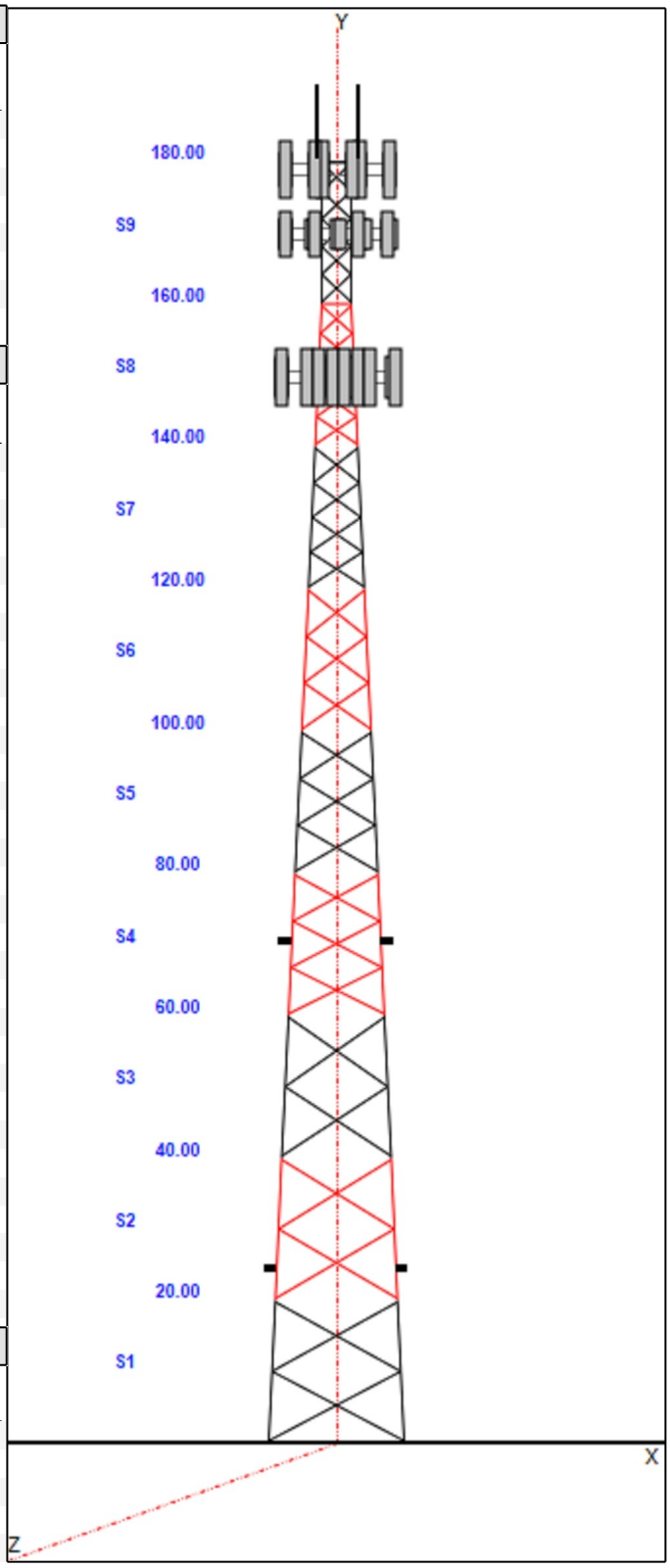
Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	PX 8" DIA PIPE	SAE 4X4X0.25	
3	PSP ROHN 8 EHS	SAE 3.5X3.5X0.25	
4	PX 6" DIA PIPE	SAE 3X3X0.25	
5	PSP ROHN 6 EHS	SAE 2.5X2.5X0.25	
6	PX 5" DIA PIPE	SAE 2.5X2.5X0.25	
7	PX 4" DIA PIPE	SAE 2X2X0.25	
8	PX 3" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25
9	PST 2-1/2" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
180.00	185.29	1	Decibel DB222-A Dipole
178.50	178.50	3	RR90-17-02DP
178.50	178.50	3	APXVAARR24_43-U-NA20
178.50	178.50	3	KRY 112 144/1
178.50	178.50	3	KRY 112 489/2
178.50	178.50	3	Radio 4449 B71+B12
178.50	178.50	3	782 11056
178.50	178.50	3	Light Sector Frame-Flat
178.50	178.50	1	(3) Stabilizer Kit (12' FW) + Suport Rail
178.50	178.50	1	(3) HR w/ Double V-Brace Kits
169.50	169.50	3	Light Sector Frame-Flat
169.50	169.50	2	Antel BXA-70063-4CF-EDIN-X
169.50	169.50	4	Antel BXA-70080-4CF-EDIN-0
169.50	169.50	6	Commscope HBXX-6517DS-A2M
169.50	169.50	3	Alcatel Lucent 1900 RRH 2x60W
169.50	169.50	3	Alcatel Lucent RRH AWS
169.50	169.50	6	RFS Celwave FD9R6004/2C-3L
149.50	149.50	3	Light Sector Frame-Flat
149.50	149.50	3	Kathrein 800-10121
149.50	149.50	4	Powerwave P65-17-XLH-RR
149.50	149.50	2	KMW AM-X-CD-16-65-005-RET
149.50	149.50	3	Powerwave 7770.00
149.50	149.50	6	Powerwave TT19-08BP111-001
149.50	149.50	6	CCI DTMABP7819VG12A
149.50	149.50	6	Kathrein 860-10025
149.50	149.50	6	Ericsson RRUS-11
149.50	149.50	1	DC6-48-60-18-8F
70.50	70.50	1	Andrew GPS
70.50	70.50	1	Pipe Mount
24.50	24.50	1	GPS
24.50	24.50	1	Pipe Mount

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	180.00	1	1 1/4" Coax
0.00	180.00	1	Safety Cable
0.00	178.50	12	1 5/8" Coax
0.00	178.50	1	1 5/8" Fiber
0.00	178.50	1	W/G Ladder
0.00	169.50	12	1 5/8" Coax
0.00	169.50	1	1 5/8" Fiber



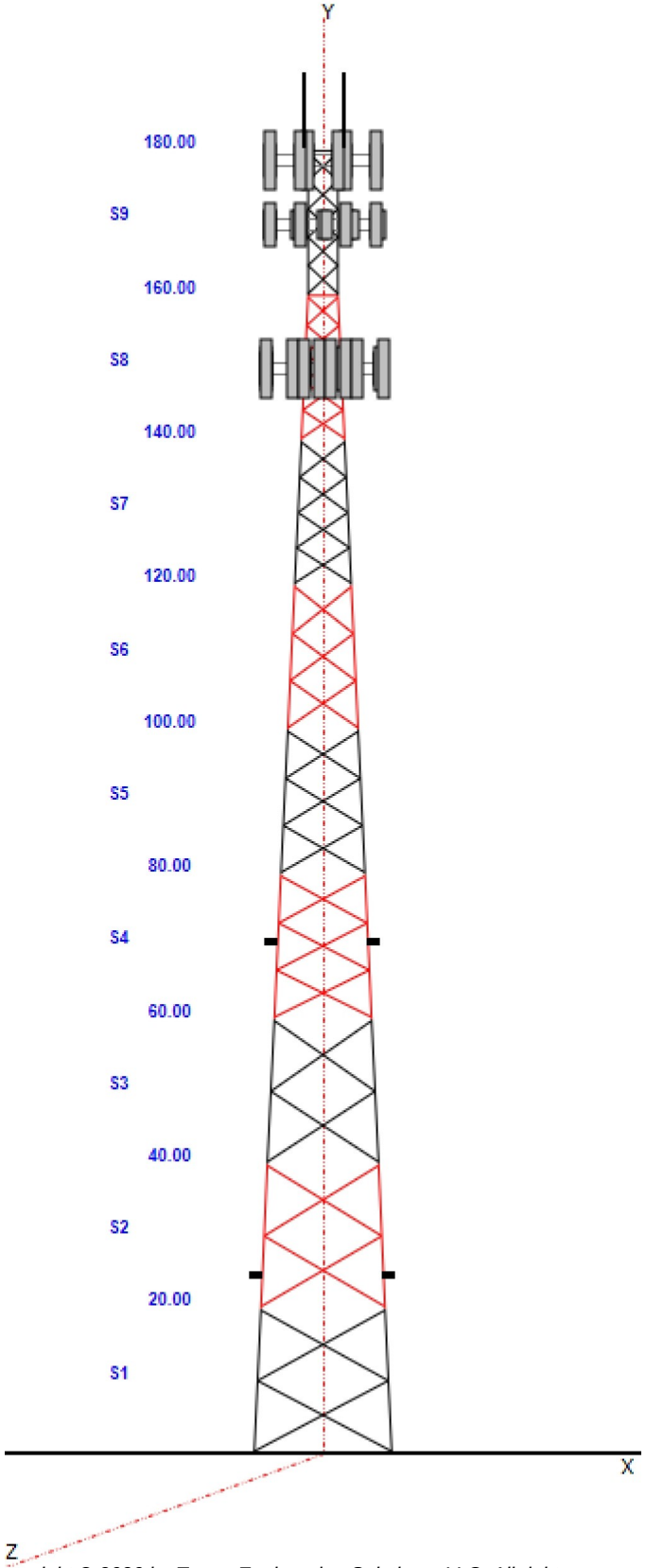
0.00	169.50	1	W/G Ladder
0.00	149.50	12	1 5/8" Coax
0.00	149.50	1	3" Flex Conduit
0.00	149.50	1	3/8" RET
0.00	149.00	1	W/G Ladder
0.00	70.50	1	1/2" Coax
0.00	24.50	1	1/2" Coax

Base Reactions

Leg			Overturning		
Max Uplift:	-255.67	(kips	Moment:	5093.64	(ft-kips)
Max Down:	295.22	(kips	Total Down:	50.21	(kips)
Max Shear:	30.32	(kips	Total Shear:	49.20	(kips)

Structure: CT10008-A-SBA

Site Name:	Ellington			**Code:**	EIA/TIA-222-G	5/27/2020
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	180.00 (ft)	**Base Width:**	21.12	**Basic Ice WS:**	50.00	
Base Elev:	9.00 (ft)	**Top Width:**	4.58	**Operational WS:**	60.00	Page: 3

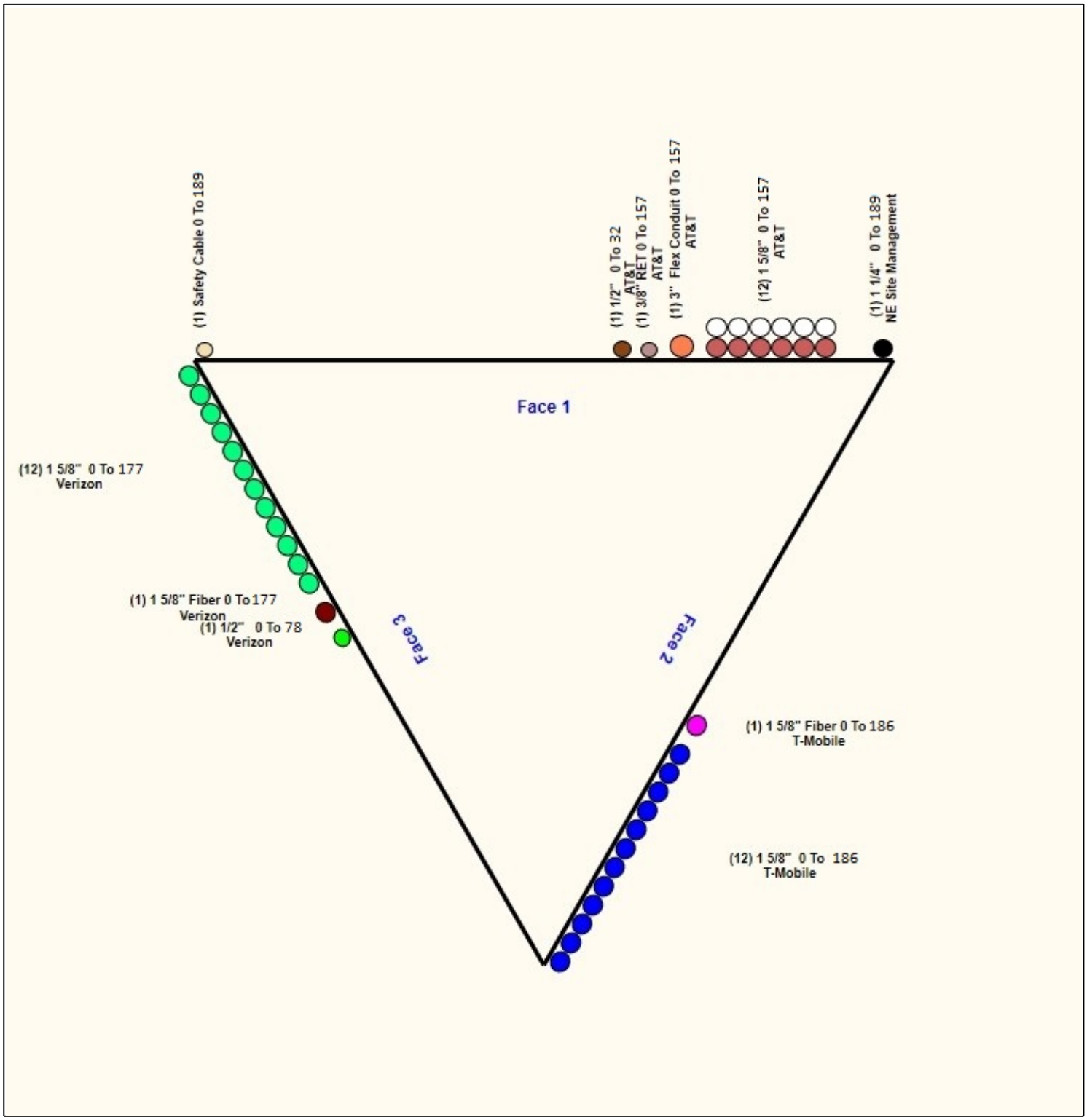


Structure: CT10008-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Ellington
Height: 180.00 (ft)

5/27/2020

Tower Engineering Solutions



Loading Summary

Structure:	CT10008-A-SBA		**Code:**	EIA/TIA-222-G	5/27/2020
Site Name:	Ellington		**Exposure:**	B	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	9.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
180.00	Decibel DB222-A Dipole	1	16.00	2.250	110.06	10.476	127.000	0.000	0.000	1.00	1.00	5.292
178.50	RR90-17-02DP	3	13.50	4.360	161.80	5.744	56.000	8.000	2.800	0.80	0.68	0.000
178.50	APXVAARR24_43-U-NA20	3	128.00	20.240	721.19	22.853	95.900	24.000	7.800	0.80	0.70	0.000
178.50	KRY 112 144/1	3	11.00	0.410	25.63	1.055	6.900	6.100	2.700	0.80	0.67	0.000
178.50	KRY 112 489/2	3	6.60	0.490	28.30	1.251	11.000	4.600	4.500	0.80	0.67	0.000
178.50	Radio 4449 B71+B12	3	71.00	1.970	143.44	2.713	13.100	14.900	9.200	0.80	0.67	0.000
178.50	782 11056	3	2.60	0.280	11.46	0.825	5.700	5.000	1.500	0.80	0.67	0.000
178.50	Light Sector Frame-Flat	3	500.00	17.500	1447.38	36.400	0.000	0.000	0.000	0.75	0.75	0.000
178.50	(3) Stabilizer Kit (12' FW) + Suport	1	180.00	8.000	486.95	19.369	0.000	0.000	0.000	1.00	1.00	0.000
178.50	(3) HR w/ Double V-Brace Kits	1	650.00	15.500	1758.43	37.527	0.000	0.000	0.000	1.00	1.00	0.000
169.50	Light Sector Frame-Flat	3	500.00	17.500	1447.38	36.400	0.000	0.000	0.000	0.75	0.75	0.000
169.50	Antel BXA-70063-4CF-EDIN-X	2	9.90	4.720	148.12	7.229	47.400	11.200	5.200	0.80	0.73	0.000
169.50	Antel BXA-70080-4CF-EDIN-0	4	9.90	4.720	148.12	7.229	47.400	11.200	5.200	0.80	0.73	0.000
169.50	Commscope HBXX-6517DS-A2M	6	40.80	8.550	279.99	12.511	74.900	12.000	6.500	0.80	0.77	0.000
169.50	Alcatel Lucent 1900 RRH 2x60W	3	49.30	2.620	151.54	4.328	25.500	10.600	9.700	0.80	0.67	0.000
169.50	Alcatel Lucent RRH AWS	3	43.00	2.890	147.33	4.639	25.200	11.800	9.000	0.80	0.67	0.000
169.50	RFS Celwave FD9R6004/2C-3L	6	3.10	0.360	13.99	0.962	5.800	6.500	1.500	0.80	0.67	0.000
149.50	Light Sector Frame-Flat	3	500.00	17.500	1436.22	36.178	0.000	0.000	0.000	0.75	0.75	0.000
149.50	Kathrein 800-10121	3	44.10	5.150	198.14	7.975	54.500	10.300	5.900	0.80	0.79	0.000
149.50	Powerwave P65-17-XLH-RR	4	59.00	11.440	349.49	15.778	96.000	12.000	6.000	0.80	0.75	0.000
149.50	KMW AM-X-CD-16-65-005-RET	2	41.80	8.020	259.46	11.767	72.000	11.800	5.900	0.80	0.75	0.000
149.50	Powerwave 7770.00	3	35.00	5.500	230.59	6.961	55.000	11.000	5.000	0.80	0.73	0.000
149.50	Powerwave TT19-08BP111-001	6	16.00	0.640	43.14	1.435	9.900	6.700	5.400	0.80	0.67	0.000
149.50	CCI DTMABP7819VG12A	6	19.20	1.140	53.43	2.172	10.600	11.000	3.800	0.80	0.67	0.000
149.50	Kathrein 860-10025	6	1.10	0.160	8.30	0.626	6.900	2.400	2.000	0.80	0.67	0.000
149.50	Ericsson RRUS-11	6	51.00	2.520	147.93	3.369	17.000	17.800	7.200	0.80	0.67	0.000
149.50	DC6-48-60-18-8F	1	31.80	0.920	114.71	1.507	24.000	11.000	11.000	0.80	0.67	0.000
70.50	Andrew GPS	1	10.00	0.160	16.93	0.640	8.000	2.000	2.000	1.00	1.00	0.000
70.50	Pipe Mount	1	350.00	1.500	716.65	2.809	0.000	0.000	0.000	1.00	1.00	0.000
24.50	GPS	1	10.00	0.160	16.46	0.608	8.000	2.000	2.000	1.00	1.00	0.000
24.50	Pipe Mount	1	350.00	1.500	691.66	2.720	0.000	0.000	0.000	1.00	1.00	0.000
	Totals:	**95**	**8,476.30**		**28,449.30**						**Number of Appurtenances :**	**31**

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	180.00	1 1/4" Coax	1	1.55	0.66	100.00	1	Individual NR		N	1.00	1.00	
0.00	180.00	Safety Cable	1	0.38	0.27	100.00	1	Individual NR		N	1.00	1.00	
0.00	178.50	1 5/8" Coax	12	1.98	1.04	100.00	2	Individual IR		N	1.00	1.00	
0.00	178.50	1 5/8" Fiber	1	2.00	1.10	100.00	2	Individual NR		N	1.00	1.00	
0.00	178.50	W/G Ladder	1	2.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	169.50	1 5/8" Coax	12	1.98	1.04	100.00	3	Individual IR		N	1.00	1.00	
0.00	169.50	1 5/8" Fiber	1	1.98	1.04	100.00	3	Individual NR		N	1.00	1.00	
0.00	169.50	W/G Ladder	1	2.00	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	149.50	1 5/8" Coax	12	1.98	1.04	50.00	1	Block		N	0.50	1.00	
0.00	149.50	3" Flex Conduit	1	3.02	1.78	100.00	1	Individual NR		N	1.00	1.00	
0.00	149.50	3/8" RET	1	0.38	0.06	100.00	1	Individual NR		N	1.00	1.00	
0.00	149.00	W/G Ladder	1	2.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	70.50	1/2" Coax	1	0.65	0.16	100.00	3	Individual NR		N	1.00	1.00	
0.00	24.50	1/2" Coax	1	0.65	0.16	100.00	1	Individual NR		N	1.00	1.00	

Section Forces

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W Normal Wind — 1.2D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.49	130.83	0.00	6,710.5	0.0	2275.62	2013.72	4,289.34
2	30.0	15.46	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	38.89	129.99	0.00	6,536.4	0.0	2275.46	2159.59	4,435.05
3	50.0	17.40	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	33.08	129.75	0.00	5,404.4	0.0	2172.48	2426.59	4,599.07
4	70.0	18.92	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	32.79	129.24	0.00	5,136.8	0.0	2327.77	2628.13	4,955.90
5	90.0	20.18	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	26.62	128.67	0.00	4,293.0	0.0	2012.13	2791.93	4,804.06
6	110.0	21.26	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	23.46	128.67	0.00	3,984.2	0.0	1855.13	2942.63	4,797.76
7	130.0	22.23	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	19.77	128.67	0.00	3,363.3	0.0	1622.06	3076.19	4,698.24
8	150.0	23.10	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.33	111.28	0.00	2,765.9	0.0	1499.63	2704.58	4,204.21
9	170.0	23.89	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	67.97	0.00	1,839.9	0.0	1326.96	1663.05	2,990.01
														40,034.3	**0.0**			**39,773.64**

Load Case: 1.2D + 1.6W 60° Wind — 1.2D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	35.72	130.83	0.00	6,710.5	0.0	1959.57	2013.72	3,973.29
2	30.0	15.46	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	33.61	129.99	0.00	6,536.4	0.0	1966.33	2159.59	4,125.92
3	50.0	17.40	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	28.87	129.75	0.00	5,404.4	0.0	1896.22	2426.59	4,322.81
4	70.0	18.92	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	28.35	129.24	0.00	5,136.8	0.0	2012.37	2628.13	4,640.50
5	90.0	20.18	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	23.38	128.67	0.00	4,293.0	0.0	1767.18	2791.93	4,559.11
6	110.0	21.26	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	20.65	128.67	0.00	3,984.2	0.0	1632.82	2942.63	4,575.45
7	130.0	22.23	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	17.45	128.67	0.00	3,363.3	0.0	1431.56	3076.19	4,507.74
8	150.0	23.10	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	16.01	111.28	0.00	2,765.9	0.0	1309.47	2704.58	4,014.05
9	170.0	23.89	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	67.97	0.00	1,839.9	0.0	1153.85	1663.05	2,816.90
														40,034.3	**0.0**			**37,535.77**

Section Forces

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 90° Wind — 1.2D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60
Dead Load Factor: 1.20
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	37.16	130.83	0.00	6,710.5	0.0	2038.59	2013.72	4,052.30
2	30.0	15.46	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	34.93	129.99	0.00	6,536.4	0.0	2043.61	2159.59	4,203.20
3	50.0	17.40	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	29.92	129.75	0.00	5,404.4	0.0	1965.28	2426.59	4,391.88
4	70.0	18.92	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	29.46	129.24	0.00	5,136.8	0.0	2091.22	2628.13	4,719.35
5	90.0	20.18	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	24.19	128.67	0.00	4,293.0	0.0	1828.42	2791.93	4,620.35
6	110.0	21.26	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	21.35	128.67	0.00	3,984.2	0.0	1688.39	2942.63	4,631.03
7	130.0	22.23	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	18.03	128.67	0.00	3,363.3	0.0	1479.18	3076.19	4,555.37
8	150.0	23.10	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.59	111.28	0.00	2,765.9	0.0	1357.01	2704.58	4,061.59
9	170.0	23.89	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	67.97	0.00	1,839.9	0.0	1197.13	1663.05	2,860.18
														40,034.3	**0.0**			**38,095.24**

Load Case: 0.9D + 1.6W Normal Wind — 0.9D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.49	130.83	0.00	5,032.9	0.0	2275.62	2013.72	4,289.34
2	30.0	15.46	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	38.89	129.99	0.00	4,902.3	0.0	2275.46	2159.59	4,435.05
3	50.0	17.40	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	33.08	129.75	0.00	4,053.3	0.0	2172.48	2426.59	4,599.07
4	70.0	18.92	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	32.79	129.24	0.00	3,852.6	0.0	2327.77	2628.13	4,955.90
5	90.0	20.18	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	26.62	128.67	0.00	3,219.7	0.0	2012.13	2791.93	4,804.06
6	110.0	21.26	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	23.46	128.67	0.00	2,988.1	0.0	1855.13	2942.63	4,797.76
7	130.0	22.23	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	19.77	128.67	0.00	2,522.4	0.0	1622.06	3076.19	4,698.24
8	150.0	23.10	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.33	111.28	0.00	2,074.4	0.0	1499.63	2704.58	4,204.21
9	170.0	23.89	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	67.97	0.00	1,379.9	0.0	1326.96	1663.05	2,990.01
														30,025.7	**0.0**			**39,773.64**

Section Forces

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 60° Wind — 0.9D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	35.72	130.83	0.00	5,032.9	0.0	1959.57	2013.72	3,973.29
2	30.0	15.46	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	33.61	129.99	0.00	4,902.3	0.0	1966.33	2159.59	4,125.92
3	50.0	17.40	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	28.87	129.75	0.00	4,053.3	0.0	1896.22	2426.59	4,322.81
4	70.0	18.92	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	28.35	129.24	0.00	3,852.6	0.0	2012.37	2628.13	4,640.50
5	90.0	20.18	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	23.38	128.67	0.00	3,219.7	0.0	1767.18	2791.93	4,559.11
6	110.0	21.26	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	20.65	128.67	0.00	2,988.1	0.0	1632.82	2942.63	4,575.45
7	130.0	22.23	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	17.45	128.67	0.00	2,522.4	0.0	1431.56	3076.19	4,507.74
8	150.0	23.10	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	16.01	111.28	0.00	2,074.4	0.0	1309.47	2704.58	4,014.05
9	170.0	23.89	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	67.97	0.00	1,379.9	0.0	1153.85	1663.05	2,816.90
														30,025.7	**0.0**			**37,535.77**

Load Case: 0.9D + 1.6W 90° Wind — 0.9D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	37.16	130.83	0.00	5,032.9	0.0	2038.59	2013.72	4,052.30
2	30.0	15.46	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	34.93	129.99	0.00	4,902.3	0.0	2043.61	2159.59	4,203.20
3	50.0	17.40	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	29.92	129.75	0.00	4,053.3	0.0	1965.28	2426.59	4,391.88
4	70.0	18.92	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	29.46	129.24	0.00	3,852.6	0.0	2091.22	2628.13	4,719.35
5	90.0	20.18	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	24.19	128.67	0.00	3,219.7	0.0	1828.42	2791.93	4,620.35
6	110.0	21.26	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	21.35	128.67	0.00	2,988.1	0.0	1688.39	2942.63	4,631.03
7	130.0	22.23	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	18.03	128.67	0.00	2,522.4	0.0	1479.18	3076.19	4,555.37
8	150.0	23.10	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.59	111.28	0.00	2,074.4	0.0	1357.01	2704.58	4,061.59
9	170.0	23.89	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	67.97	0.00	1,379.9	0.0	1197.13	1663.05	2,860.18
														30,025.7	**0.0**			**38,095.24**

Section Forces

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.808	69.61	40.81	0.23	2.49	1.00	1.00	1.89	69.25	205.35	50.47	17,492.	10782.2	558.01	777.81	1,335.81
2	30.0	4.11	26.417	70.21	41.42	0.25	2.43	1.00	1.00	2.03	67.54	207.33	48.98	17,813.	11277.0	572.93	836.52	1,409.45
3	50.0	4.62	21.031	69.45	40.65	0.26	2.39	1.00	1.00	2.12	61.93	208.81	49.46	16,481.	11076.9	582.52	945.65	1,528.17
4	70.0	5.03	22.214	70.22	48.10	0.31	2.27	1.00	1.00	2.18	64.53	209.55	47.47	16,544.	11407.5	624.53	1008.89	1,633.42
5	90.0	5.36	16.204	67.20	45.08	0.33	2.23	1.00	1.00	2.23	57.04	209.98	44.64	15,034.	10741.9	578.98	1063.16	1,642.14
6	110.0	5.65	14.054	60.38	41.80	0.35	2.17	1.00	1.00	2.27	51.30	210.81	45.47	14,371.	10387.5	533.82	1119.01	1,652.83
7	130.0	5.91	11.609	58.41	43.39	0.42	2.03	1.00	1.00	2.31	49.19	211.52	46.19	13,471.	10108.3	502.05	1127.51	1,629.56
8	150.0	6.14	11.624	55.78	44.09	0.54	1.86	1.00	1.00	2.34	50.95	186.37	38.62	11,980.	9214.6	493.76	812.75	1,306.51
9	170.0	6.35	10.350	50.93	41.34	0.59	1.81	1.00	1.00	2.37	47.83	115.74	26.84	8,607.9	6768.0	467.77	470.33	938.10
														131,798.2	**91763.9**			**13,075.99**

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.808	69.61	40.81	0.23	2.49	0.80	1.00	1.89	63.49	205.35	50.47	17,492.	10782.2	511.58	777.81	1,289.39
2	30.0	4.11	26.417	70.21	41.42	0.25	2.43	0.80	1.00	2.03	62.25	207.33	48.98	17,813.	11277.0	528.11	836.52	1,364.63
3	50.0	4.62	21.031	69.45	40.65	0.26	2.39	0.80	1.00	2.12	57.72	208.81	49.46	16,481.	11076.9	542.95	945.65	1,488.60
4	70.0	5.03	22.214	70.22	48.10	0.31	2.27	0.80	1.00	2.18	60.09	209.55	47.47	16,544.	11407.5	581.54	1008.89	1,590.43
5	90.0	5.36	16.204	67.20	45.08	0.33	2.23	0.80	1.00	2.23	53.80	209.98	44.64	15,034.	10741.9	546.08	1063.16	1,609.24
6	110.0	5.65	14.054	60.38	41.80	0.35	2.17	0.80	1.00	2.27	48.49	210.81	45.47	14,371.	10387.5	504.57	1119.01	1,623.58
7	130.0	5.91	11.609	58.41	43.39	0.42	2.03	0.80	1.00	2.31	46.87	211.52	46.19	13,471.	10108.3	478.35	1127.51	1,605.86
8	150.0	6.14	11.624	55.78	44.09	0.54	1.86	0.80	1.00	2.34	48.63	186.37	38.62	11,980.	9214.6	471.23	812.75	1,283.98
9	170.0	6.35	10.350	50.93	41.34	0.59	1.81	0.80	1.00	2.37	45.76	115.74	26.84	8,607.9	6768.0	447.53	470.33	917.86
														131,798.2	**91763.9**			**12,773.56**

Section Forces

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.808	69.61	40.81	0.23	2.49	0.85	1.00	1.89	64.93	205.35	50.47	17,492.	10782.2	523.19	777.81	1,301.00
2	30.0	4.11	26.417	70.21	41.42	0.25	2.43	0.85	1.00	2.03	63.57	207.33	48.98	17,813.	11277.0	539.32	836.52	1,375.83
3	50.0	4.62	21.031	69.45	40.65	0.26	2.39	0.85	1.00	2.12	58.77	208.81	49.46	16,481.	11076.9	552.84	945.65	1,498.49
4	70.0	5.03	22.214	70.22	48.10	0.31	2.27	0.85	1.00	2.18	61.20	209.55	47.47	16,544.	11407.5	592.29	1008.89	1,601.18
5	90.0	5.36	16.204	67.20	45.08	0.33	2.23	0.85	1.00	2.23	54.61	209.98	44.64	15,034.	10741.9	554.31	1063.16	1,617.47
6	110.0	5.65	14.054	60.38	41.80	0.35	2.17	0.85	1.00	2.27	49.19	210.81	45.47	14,371.	10387.5	511.88	1119.01	1,630.89
7	130.0	5.91	11.609	58.41	43.39	0.42	2.03	0.85	1.00	2.31	47.45	211.52	46.19	13,471.	10108.3	484.27	1127.51	1,611.79
8	150.0	6.14	11.624	55.78	44.09	0.54	1.86	0.85	1.00	2.34	49.21	186.37	38.62	11,980.	9214.6	476.86	812.75	1,289.61
9	170.0	6.35	10.350	50.93	41.34	0.59	1.81	0.85	1.00	2.37	46.28	115.74	26.84	8,607.9	6768.0	452.59	470.33	922.92
														131,798.2	**91763.9**			**12,849.17**

Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

Wind Load Factor: 1.00
Dead Load Factor: 1.00
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	44.56	130.83	0.00	5,592.1	0.0	584.51	481.55	1,066.05
2	30.0	5.92	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	42.01	129.99	0.00	5,447.0	0.0	587.80	516.43	1,104.23
3	50.0	6.66	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	36.33	129.75	0.00	4,503.6	0.0	570.66	580.28	1,150.94
4	70.0	7.24	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	34.78	129.24	0.00	4,280.7	0.0	590.36	628.47	1,218.83
5	90.0	7.72	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	28.68	128.67	0.00	3,577.5	0.0	518.41	667.64	1,186.05
6	110.0	8.14	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	24.62	128.67	0.00	3,320.1	0.0	465.60	703.68	1,169.28
7	130.0	8.51	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	20.16	128.67	0.00	2,802.7	0.0	395.63	735.62	1,131.25
8	150.0	8.84	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.33	111.28	0.00	2,304.9	0.0	358.61	646.75	1,005.36
9	170.0	9.14	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	67.97	0.00	1,533.2	0.0	317.32	397.69	715.01
														33,361.9	**0.0**			**9,747.01**

Section Forces

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60° Wind — 1.0D + 1.0W 60 mph Wind at 60° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.00
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	38.80	130.83	0.00	5,592.1	0.0	508.93	481.55	990.47
2	30.0	5.92	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	36.73	129.99	0.00	5,447.0	0.0	513.88	516.43	1,030.31
3	50.0	6.66	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	32.13	129.75	0.00	4,503.6	0.0	504.60	580.28	1,084.88
4	70.0	7.24	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	30.33	129.24	0.00	4,280.7	0.0	514.94	628.47	1,143.41
5	90.0	7.72	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	25.44	128.67	0.00	3,577.5	0.0	459.83	667.64	1,127.48
6	110.0	8.14	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	21.81	128.67	0.00	3,320.1	0.0	412.44	703.68	1,116.12
7	130.0	8.51	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	17.84	128.67	0.00	2,802.7	0.0	350.08	735.62	1,085.69
8	150.0	8.84	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	16.01	111.28	0.00	2,304.9	0.0	313.14	646.75	959.89
9	170.0	9.14	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	67.97	0.00	1,533.2	0.0	275.92	397.69	673.61
														33,361.9	**0.0**			**9,211.86**

Load Case: 1.0D + 1.0W 90° Wind — 1.0D + 1.0W 60 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.00
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	40.24	130.83	0.00	5,592.1	0.0	527.82	481.55	1,009.37
2	30.0	5.92	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	38.05	129.99	0.00	5,447.0	0.0	532.36	516.43	1,048.79
3	50.0	6.66	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	33.18	129.75	0.00	4,503.6	0.0	521.12	580.28	1,101.39
4	70.0	7.24	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	31.44	129.24	0.00	4,280.7	0.0	533.79	628.47	1,162.26
5	90.0	7.72	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	26.25	128.67	0.00	3,577.5	0.0	474.48	667.64	1,142.12
6	110.0	8.14	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	22.51	128.67	0.00	3,320.1	0.0	425.73	703.68	1,129.41
7	130.0	8.51	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	18.42	128.67	0.00	2,802.7	0.0	361.46	735.62	1,097.08
8	150.0	8.84	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.59	111.28	0.00	2,304.9	0.0	324.51	646.75	971.26
9	170.0	9.14	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	67.97	0.00	1,533.2	0.0	286.27	397.69	683.96
														33,361.9	**0.0**			**9,345.65**

Force/Stress Compression Summary

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	-288.30	1.2D + 1.6W Normal Wind	9.77	100	100	100	40.73	50.00	508.62	56.7	Member X
2	40	PX - 8" DIA PIPE	-259.06	1.2D + 1.6W Normal Wind	9.77	100	100	100	40.72	50.00	508.65	50.9	Member X
3	60	PSP - ROHN 8 EHS	-228.16	1.2D + 1.6W Normal Wind	9.77	100	100	100	40.15	50.00	388.77	58.7	Member X
4	80	PX - 6" DIA PIPE	-200.31	1.2D + 1.6W Normal Wind	6.51	100	100	100	35.68	50.00	344.41	58.2	Member X
5	100	PSP - ROHN 6 EHS	-168.19	1.2D + 1.6W Normal Wind	6.51	100	100	100	35.12	50.00	276.03	60.9	Member X
6	120	PX - 5" DIA PIPE	-136.60	1.2D + 1.6W Normal Wind	6.51	100	100	100	42.47	50.00	240.98	56.7	Member X
7	140	PX - 4" DIA PIPE	-104.36	1.2D + 1.6W Normal Wind	4.88	100	100	100	39.60	50.00	176.96	59.0	Member X
8	160	PX - 3" DIA PIPE	-67.61	1.2D + 1.6W Normal Wind	3.91	100	100	100	41.12	50.00	120.09	56.3	Member X
9	180	PST - 2-1/2" DIA PIPE	-29.09	1.2D + 1.6W Normal Wind	3.90	100	100	100	49.42	50.00	64.14	45.4	Member X

Splices

		Top Splice					Bottom Splice				
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	1.2D + 1.6W Normal Wind	268.56	0.00	0.0			1.2D + 1.6W Normal Wind	296.04	0.00			
2	40	1.2D + 1.6W Normal Wind	236.46	0.00	0.0			1.2D + 1.6W Normal Wind	268.56	0.00		1 A325	8
3	60	1.2D + 1.6W Normal Wind	206.74	0.00	0.0			1.2D + 1.6W Normal Wind	236.46	0.00		1 A325	8
4	80	1.2D + 1.6W Normal Wind	174.28	0.00	0.0			1.2D + 1.6W Normal Wind	206.74	0.00		1 A325	8
5	100	1.2D + 1.6W Normal Wind	142.91	0.00	0.0			1.2D + 1.6W Normal Wind	174.28	0.00		1 A325	6
6	120	1.2D + 1.6W Normal Wind	109.43	0.00	0.0			1.2D + 1.6W Normal Wind	142.91	0.00		1 A325	6
7	140	1.2D + 1.6W Normal Wind	72.19	0.00	0.0			1.2D + 1.6W Normal Wind	109.43	0.00		1 A325	4
8	160	1.2D + 1.6W Normal Wind	34.31	0.00	0.0			1.2D + 1.6W Normal Wind	72.19	0.00		7/8 A325	4
9	180	1.2D + 1.0Di + 1.0Wi 90° Wind	0.44	0.00	0.0			1.2D + 1.6W Normal Wind	34.31	0.00		3/4 A325	4

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20										0.00	0	0				
2	40										0.00	0	0				
3	60										0.00	0	0				
4	80										0.00	0	0				
5	100										0.00	0	0				
6	120										0.00	0	0				
7	140										0.00	0	0				
8	160	SAE - 2X2X0.25	-0.07	0.9D + 1.6W Normal Wind	4.58	100	100	100	140.56	36.00	10.75	1	1	12.43	13.05	1	Member Z
9	180	SAE - 2X2X0.25	-0.37	0.9D + 1.6W 60° Wind	4.58	100	100	100	140.56	36.00	10.75	1	1	12.43	13.05	3	Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	-8.68	0.9D + 1.6W 90° Wind	21.87	49	49	49	161.75	50.00	16.75	1	1	17.89	16.0	54	Bolt Bear
2	40	SAE - 4X4X0.25	-8.79	0.9D + 1.6W 90° Wind	20.11	49	49	49	148.76	50.00	19.80	1	1	17.89	16.0	55	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	-7.45	0.9D + 1.6W 90° Wind	19.20	49	49	49	162.65	50.00	14.43	1	1	17.89	16.0	52	Member Z
4	80	SAE - 3X3X0.25	-6.81	1.2D + 1.6W 90° Wind	15.95	49	49	49	158.46	50.00	12.96	1	1	17.89	16.0	53	Member Z
5	100	SAE - 2.5X2.5X0.25	-5.93	1.2D + 1.6W 90° Wind	14.12	49	49	49	169.14	36.00	9.40	1	1	12.43	13.0	63	Member Z
6	120	SAE - 2.5X2.5X0.25	-5.76	1.2D + 1.6W 90° Wind	11.14	50	50	50	136.16	36.00	14.50	1	1	12.43	13.0	46	Bolt Shear
7	140	SAE - 2X2X0.25	-4.73	1.2D + 1.6W 90° Wind	9.72	50	50	50	149.11	36.00	9.55	1	1	12.43	13.0	50	Member Z
8	160	SAE - 2X2X0.25	-4.32	1.2D + 1.6W 90° Wind	7.50	50	50	50	116.31	36.00	14.94	1	1	12.43	13.0	35	Bolt Shear
9	180	SAE - 2X2X0.25	-4.10	1.2D + 1.6W 90° Wind	6.02	50	50	50	99.23	36.00	18.14	1	1	12.43	13.0	33	Bolt Shear

Force/Stress Compression Summary

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	

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DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls

Force/Stress Tension Summary

Structure:	CT10008-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2020	
Site Name:	Ellington	**Exposure:**	B		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	9.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	

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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	257.17	0.9D + 1.6W 60° Wind	50	574.20	44.8	Member
2	40	PX - 8" DIA PIPE	233.78	0.9D + 1.6W 60° Wind	50	574.20	40.7	Member
3	60	PSP - ROHN 8 EHS	207.26	0.9D + 1.6W 60° Wind	50	437.40	47.4	Member
4	80	PX - 6" DIA PIPE	182.02	0.9D + 1.6W 60° Wind	50	378.00	48.2	Member
5	100	PSP - ROHN 6 EHS	154.30	0.9D + 1.6W 60° Wind	50	302.09	51.1	Member
6	120	PX - 5" DIA PIPE	126.60	0.9D + 1.6W 60° Wind	50	274.95	46.0	Member
7	140	PX - 4" DIA PIPE	96.54	0.9D + 1.6W 60° Wind	50	198.45	48.6	Member
8	160	PX - 3" DIA PIPE	62.36	0.9D + 1.6W 60° Wind	50	135.90	45.9	Member
9	180	PST - 2-1/2" DIA PIPE	28.62	0.9D + 1.6W 60° Wind	50	76.68	37.3	Member

Splices

		Top Splice					Bottom Splice				
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	0.9D + 1.6W 60° Wind	233.50	0.00	0.0			0.9D + 1.6W 60° Wind	257.1	0.00			
2	40	0.9D + 1.6W 60° Wind	206.81	0.00	0.0			0.9D + 1.6W 60° Wind	233.5	424.08	55.1	1 A325	8
3	60	0.9D + 1.6W 60° Wind	181.75	0.00	0.0			0.9D + 1.6W 60° Wind	206.8	424.08	48.8	1 A325	8
4	80	0.9D + 1.6W 60° Wind	154.04	0.00	0.0			0.9D + 1.6W 60° Wind	181.7	424.08	42.9	1 A325	8
5	100	0.9D + 1.6W 60° Wind	126.41	0.00	0.0			0.9D + 1.6W 60° Wind	154.0	318.06	48.4	1 A325	6
6	120	0.9D + 1.6W 60° Wind	96.37	0.00	0.0			0.9D + 1.6W 60° Wind	126.4	318.06	39.7	1 A325	6
7	140	0.9D + 1.6W 60° Wind	62.23	0.00	0.0			0.9D + 1.6W 60° Wind	96.37	212.04	45.4	1 A325	4
8	160	0.9D + 1.6W 60° Wind	28.75	0.00	0.0			0.9D + 1.6W 60° Wind	62.23	166.24	37.4	7/8 A325	4
9	180		0.00	0.00	0.0			0.9D + 1.6W 60° Wind	28.75	120.40	23.9	3/4 A325	4

HORIZONTAL MEMBERS

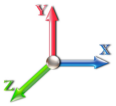
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			50	0.00	0	0					
2	40	-			50	0.00	0	0					
3	60	-			50	0.00	0	0					
4	80	-			50	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	140	-			36	0.00	0	0					
8	160	SAE - 2X2X0.25	0.04	1.2D + 1.6W 60° Wind	36	30.46	1	1	12.43	13.05	9.99	0.4	Blck Shear
9	180	SAE - 2X2X0.25	0.48	1.2D + 1.6W Normal W	36	30.46	1	1	12.43	13.05	9.99	4.8	Blck Shear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	8.50	0.9D + 1.6W 90° Wind	50	62.93	1	1	17.89	16.09	18.89	52.8	Bolt Bear
2	40	SAE - 4X4X0.25	8.67	0.9D + 1.6W 90° Wind	50	62.93	1	1	17.89	16.09	18.89	53.9	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	7.34	0.9D + 1.6W 90° Wind	50	53.79	1	1	17.89	16.09	18.89	45.6	Bolt Bear
4	80	SAE - 3X3X0.25	6.79	1.2D + 1.6W 90° Wind	50	44.65	1	1	17.89	16.09	15.84	42.9	Blck Shear
5	100	SAE - 2.5X2.5X0.25	5.91	1.2D + 1.6W 90° Wind	36	32.71	1	1	12.43	13.05	12.71	47.6	Bolt Shear
6	120	SAE - 2.5X2.5X0.25	5.59	1.2D + 1.6W 90° Wind	36	32.71	1	1	12.43	13.05	12.71	45.0	Bolt Shear
7	140	SAE - 2X2X0.25	5.04	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	50.4	Blck Shear
8	160	SAE - 2X2X0.25	4.29	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	42.9	Blck Shear
9	180	SAE - 2X2X0.25	3.97	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	39.7	Blck Shear

Support Forces Summary

Structure:	CT10008-A-SBA		**Code:**	EIA/TIA-222-G	5/27/2020
Site Name:	Ellington		**Exposure:**	B	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	9.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 16



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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	295.22	-30.32	
	1a	10.31	-122.51	-9.44	
	1b	-10.31	-122.51	-9.44	
1.2D + 1.6W 60° Wind	1	-2.78	151.03	-15.07	
	1a	-14.43	150.99	5.13	
	1b	-23.46	-251.81	-13.55	
1.2D + 1.6W 90° Wind	1	-3.29	16.74	-1.04	
	1a	-22.97	251.44	11.39	
	1b	-21.27	-217.97	-10.35	
0.9D + 1.6W Normal Wind	1	0.00	290.70	-30.04	
	1a	10.54	-126.52	-9.58	
	1b	-10.54	-126.52	-9.58	
0.9D + 1.6W 60° Wind	1	-2.78	146.68	-14.79	
	1a	-14.20	146.65	4.99	
	1b	-23.69	-255.67	-13.68	
0.9D + 1.6W 90° Wind	1	-3.30	12.56	-0.77	
	1a	-22.73	246.97	11.25	
	1b	-21.50	-221.87	-10.48	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	142.15	-9.59	
	1a	3.47	8.11	-3.10	
	1b	-3.47	8.11	-3.10	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.92	96.85	-4.79	
	1a	-4.61	96.82	1.60	
	1b	-7.88	-35.31	-4.55	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-1.07	52.79	-0.16	
	1a	-7.38	129.35	3.65	
	1b	-7.11	-23.78	-3.48	
1.0D + 1.0W Normal Wind	1	0.00	80.97	-8.02	
	1a	1.93	-19.56	-1.97	
	1b	-1.93	-19.56	-1.97	
1.0D + 1.0W 60° Wind	1	-0.69	46.28	-4.31	
	1a	-4.08	46.27	1.55	
	1b	-5.13	-50.71	-2.96	
1.0D + 1.0W 90° Wind	1	-0.82	13.95	-0.90	
	1a	-6.16	70.57	3.09	
	1b	-4.61	-42.68	-2.19	

Max Reactions

Leg			Overturning		
Max Uplift:	-255.67	(kips)	Moment:	5093.64	(ft-kips)
Max Down:	295.22	(kips)	Total Down:	50.21	(kips)
Max Shear:	30.32	(kips)	Total Shear:	49.20	(kips)

Max Reactions

Leg			Overturning		
Max Uplift:	-255.67	(kips)	Moment:	5093.64	(ft-kips)
Max Down:	295.22	(kips)	Total Down:	50.21	(kips)
Max Shear:	30.32	(kips)	Total Shear:	49.20	(kips)

Anchor Bolts

Bolt Size (in.):	1.00	Number Bolts:	10
Yield Strength (Ksi):	109.00	Tensile Strength (Ksi):	125.00
Detail Type:	A		

Interaction Ratio: 0.48

Max Usages

Max Leg: 60.9% (1.2D + 1.6W Normal Wind - Sect 5)
Max Diag: 63.1% (1.2D + 1.6W 90° Wind - Sect 5)
Max Horiz: 4.8% (1.2D + 1.6W Normal Wind - Sect 9)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.6W 97 mph Wind at 60° From Face	20.25	0.0197	0.0050	0.1073
	73.25	0.1937	0.0150	0.3042
	148.05	0.9054	0.0364	0.8350
	168.05	1.2279	0.0453	1.0180
	179.75	1.4377	0.0509	1.0519
	180.00	1.4423	0.0510	1.0520
0.9D + 1.6W 97 mph Wind at 90° From Face	20.25	0.0196	-0.0056	0.1063
	73.25	0.1951	-0.0166	0.3083
	148.05	0.9117	-0.0367	0.8408
	168.05	1.2363	-0.0399	1.0253
	179.75	1.4472	-0.0398	1.0334
	180.00	1.4517	-0.0398	1.0293
0.9D + 1.6W 97 mph Wind at Normal To Face	20.25	0.0206	-0.0050	0.1119
	73.25	0.2005	0.0148	0.3143
	148.05	0.9321	0.0323	0.8571
	168.05	1.2635	0.0349	1.0441
	179.75	1.4787	0.0344	1.1183
	180.00	1.4834	0.0344	1.1275
1.0D + 1.0W 60 mph Wind at 60° From Face	20.25	0.0047	0.0012	0.0262
	73.25	0.0466	0.0034	0.0730
	148.05	0.2168	0.0073	0.1995
	168.05	0.2938	0.0077	0.2433
	179.75	0.3439	0.0078	0.2532
	180.00	0.3450	0.0078	0.2534

1.0D + 1.0W 60 mph Wind at 90° From Face	20.25	0.0048	-0.0013	0.0260
	73.25	0.0471	-0.0039	0.0742
	148.05	0.2190	-0.0083	0.2014
	168.05	0.2967	-0.0087	0.2456
	179.75	0.3472	-0.0085	0.2493
	180.00	0.3482	-0.0085	0.2485
1.0D + 1.0W 60 mph Wind at Normal To Face	20.25	0.0050	0.0012	0.0269
	73.25	0.0483	0.0035	0.0755
	148.05	0.2234	0.0072	0.2051
	168.05	0.3024	0.0074	0.2498
	179.75	0.3538	0.0072	0.2647
	180.00	0.3550	0.0071	0.2667
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	20.25	0.0077	0.0016	0.0346
	73.25	0.0648	0.0048	0.0994
	148.05	0.2941	0.0110	0.2697
	168.05	0.3975	0.0131	0.3299
	179.75	0.4648	0.0142	0.3410
	180.00	0.4663	0.0142	0.3407
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	20.25	0.0075	-0.0019	0.0371
	73.25	0.0647	-0.0054	0.1004
	148.05	0.2948	-0.0115	0.2701
	168.05	0.3984	-0.0123	0.3303
	179.75	0.4657	-0.0122	0.3255
	180.00	0.4671	-0.0122	0.3221
1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	20.25	0.0070	0.0016	0.0386
	73.25	0.0648	0.0047	0.1010
	148.05	0.2972	0.0098	0.2722
	168.05	0.4020	0.0104	0.3325
	179.75	0.4701	0.0101	0.3645
	180.00	0.4717	0.0101	0.3697
1.2D + 1.6W 97 mph Wind at 60° From Face	20.25	0.0197	0.0050	0.1074
	73.25	0.1939	0.0151	0.3047
	148.05	0.9071	0.0365	0.8370
	168.05	1.2306	0.0454	1.0206
	179.75	1.4409	0.0510	1.0558
	180.00	1.4455	0.0511	1.0560
1.2D + 1.6W 97 mph Wind at 90° From Face	20.25	0.0196	-0.0056	0.1064
	73.25	0.1953	-0.0166	0.3088
	148.05	0.9135	-0.0368	0.8430
	168.05	1.2389	-0.0399	1.0282
	179.75	1.4504	-0.0399	1.0372
	180.00	1.4549	-0.0399	1.0332
1.2D + 1.6W 97 mph Wind at Normal To Face	20.25	0.0206	0.0050	0.1119
	73.25	0.2007	0.0148	0.3148
	148.05	0.9339	0.0324	0.8594
	168.05	1.2662	0.0350	1.0472
	179.75	1.4819	0.0344	1.1206
	180.00	1.4867	0.0344	1.1298

EXHIBIT 9

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

Post-Mod Antenna Mount Analysis Report

Existing 189-Ft Self Support Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT10008-A-SBA

Customer Site Name: Ellington

Carrier Name: T-Mobile (App#: 115955, V2)

Carrier Site ID / Name: CT11292A / Ellington

Site Location: 101 Burbank Road

Ellington, Connecticut

Tolland County

Latitude: 41.939764

Longitude: -72.387069

5/26/20

Analysis Result:

Max Structural Usage: 65% [Pass]

Report Prepared By: Leonardo Klem

Introduction

The purpose of this report is to summarize the analysis results on the (3) Sector Frame at 185.00' 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	Mount mapping by Full metal Tower Services dated 4/29/19.
Antenna Loading	SBA Application #: 115955, v2 dated 5/20/19.
Modification Drawings	N/A

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 125 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 97 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-222-G
Exposure Category: B
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

(3) Sector Frame at 185.00' elevation

Proposed Modification

(2) V-bracing Kit (MS-C1B-350P)
(1) Support Rail Kit (M-HR35-18)
(12) 2" PST.

Final Antenna Configuration

3 EMS RR90-17-02DP
3 RFS APXVAARR24_43-U-NA20
3 Ericsson KRY 112 144/1
3 Ericsson KRY 112 489/2
3 Ericsson Radio 4449 B71+B12
3 Kathrein 782 11056

Any proposed antennas not currently installed should be mounted such that the centers of the antennas do not exceed 0.5 ft vertically from the center of the Sector Frame.

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 after the proposed modification is successfully completed. The maximum structural usage is 65%, which occurs in the face horizontal. 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.

Attachments

1. Mount Photos Before Modification
2. Antenna Placement Diagram
3. Mount Mapping Information
4. 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.


04.29.2019 07:35


04.29.2019 07:39

Structure: CT10008-A-SBA - Ellington

Sector: A

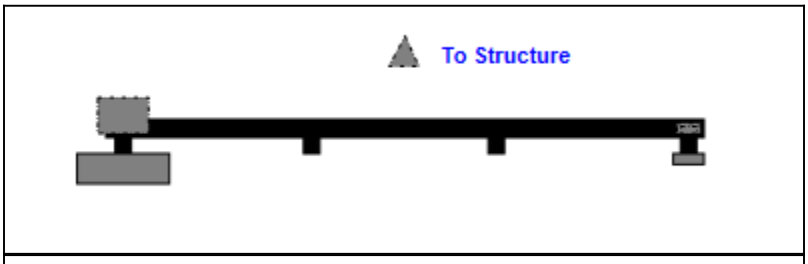
Structure Type: Self Support

Mount Elev: 185.00

8/5/2019

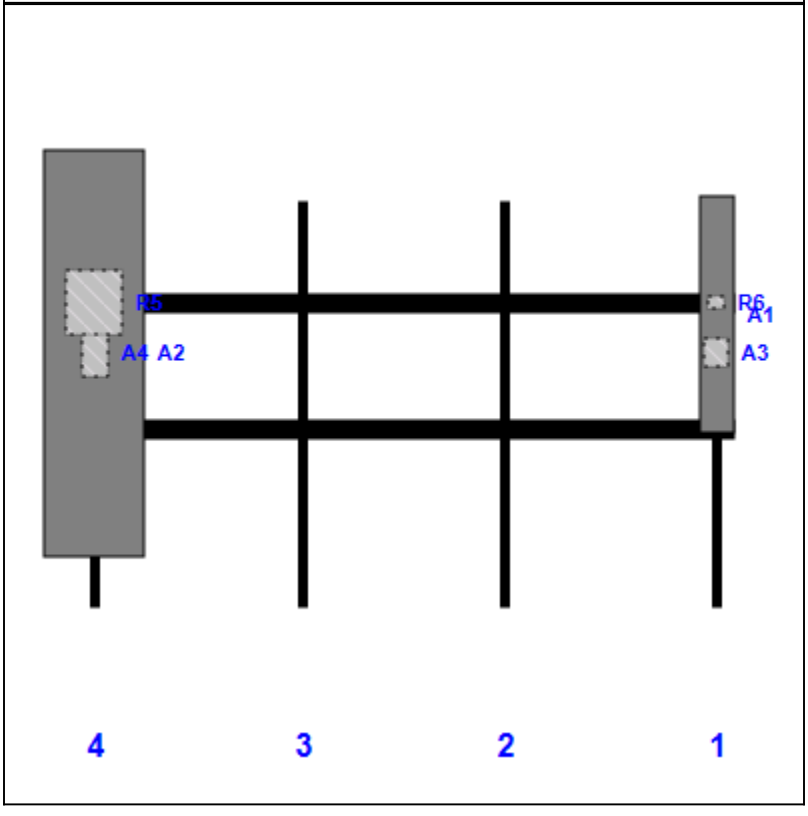
Tower Engineering Solutions

Plan View



Front View

Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	EMS RR90-17-02DP	56.00	8.00	152.00	1	a	Front	27.00	0.00
A3	Ericsson KRY 112 144/1	6.90	6.10	152.00	1	a	Behind	36.00	0.00
R6	Kathrein 782 11056	2.90	4.20	152.00	1	a	Behind	24.00	0.00
A2	RFS	95.90	24.00	5.00	4	a	Front	36.00	0.00
A4	Ericsson KRY 112 489/2	11.00	6.10	5.00	4	a	Behind	36.00	0.00
R5	Ericsson Radio 4449 B71+B12	15.00	13.20	5.00	4	a	Behind	24.00	0.00

Structure: CT10008-A-SBA - Ellington

Sector: B

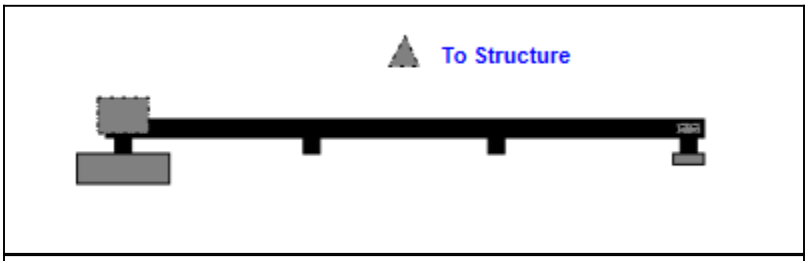
Structure Type: Self Support

Mount Elev: 185.00

8/5/2019

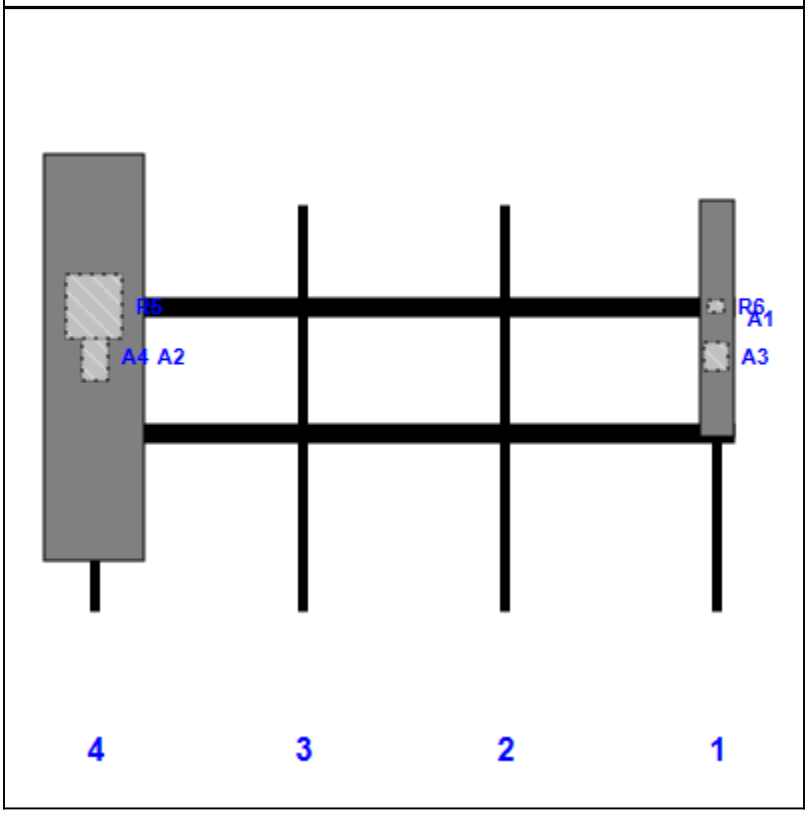
Tower Engineering Solutions

Plan View



Front View

Looking Toward Structure



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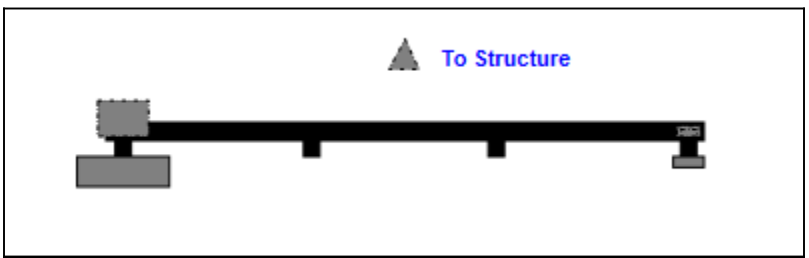
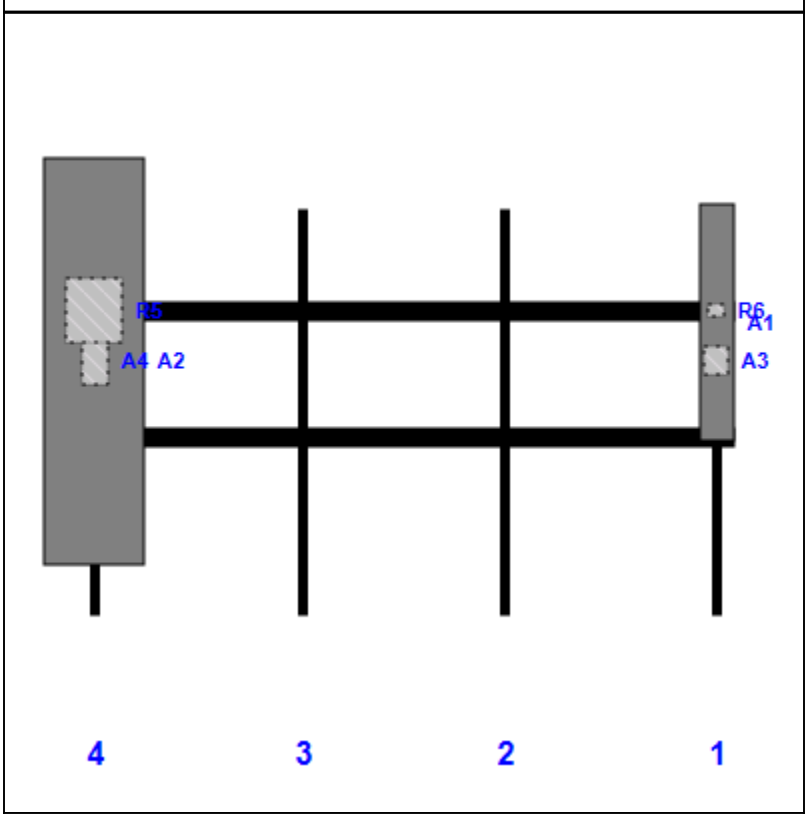
A3	Ericsson KRY 112 144/1	6.90	6.10	152.00	1	a	Behind	36.00	0.00
R6	Kathrein 782 11056	2.90	4.20	152.00	1	a	Behind	24.00	0.00
A2	RFS	95.90	24.00	5.00	4	a	Front	36.00	0.00
A4	Ericsson KRY 112 489/2	11.00	6.10	5.00	4	a	Behind	36.00	0.00
R5	Ericsson Radio 4449 B71+B12	15.00	13.20	5.00	4	a	Behind	24.00	0.00

Plan View



Front View

Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
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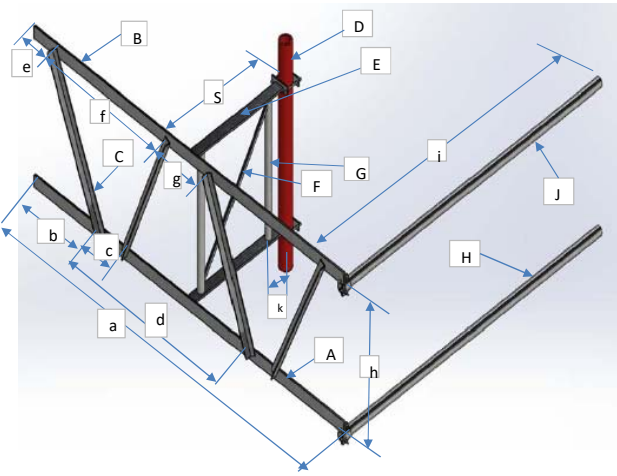
R6	Kathrein 782 11056	2.90	4.20	152.00	1	a	Behind	24.00	0.00
A2	RFS	95.90	24.00	5.00	4	a	Front	36.00	0.00
A4	Ericsson KRY 112 489/2	11.00	6.10	5.00	4	a	Behind	36.00	0.00
R5	Ericsson Radio 4449 B71+B12	15.00	13.20	5.00	4	a	Behind	24.00	0.00

Antenna Mount Type "MT-C" Mapping Form (PATENT PENDING)

FCC # Not Posted

Tower Owner:	SBA Communications	**Mapping Date:**	4/29/19
Site Name:	Ellington	**Structure Type:**	3-Sided S.S. Tower
Site Number or ID:	CT10008-A-SBA	**Structure Height (Ft.):**	187
Mapping Contractor:	Full Metal Tower Services	**Mount Height (Ft.):**	185.7



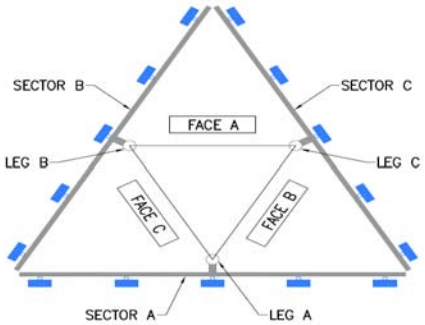
Geometries (Unit: inches)									
a	156	**e**	45	**j**	97.5	**o**	N/A	**s**	35
b	12	**f**	0	**k**	N/A	**p**	N/A	**t**	N/A
c	0	**g**	64	**m**	N/A	**q**	N/A	**u ***	54
d	132	**h**	32	**n**	N/A	**r**	N/A	**v ***	73

Members (Unit: inches)						* - See Ant. Layout for "u", "v" and member "K" (pipe)			
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	L3x3x3/8	3	3	0.375	**F**	0.75" Solid Rod	0.75	0.75	N/A
B	L3x3x3/8	3	3	0.375	**G**	2.375 OD x 0.154 Pipe	2.375	2.067	0.154
C	L2x2x3/16	2	2	0.1875	**H**	2.375 OD x 0.154 Pipe	2.375	2.067	0.154
D	2.875 OD x 0.203 Pipe	2.875	2.469	0.203	**J**	2.375 OD x 0.154 Pipe	2.375	2.067	0.154
E	L3x3x3/8	3	3	0.375	**K (pipe)***	2.375 OD x 0.154 Pipe	2.375	2.067	0.154

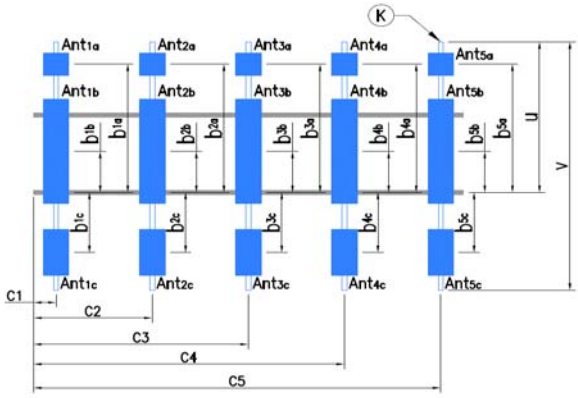
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)	N/A
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)	5'

Please enter the infomation below if members can't be found from the drop down lists

Tower Face Width at the mount (ft.):	56"	Tower Leg Size at the mount (in.):	2.875" OD x 0.203" Pipe



Climbing facility is On Leg C, at 220° Degree Azimuth

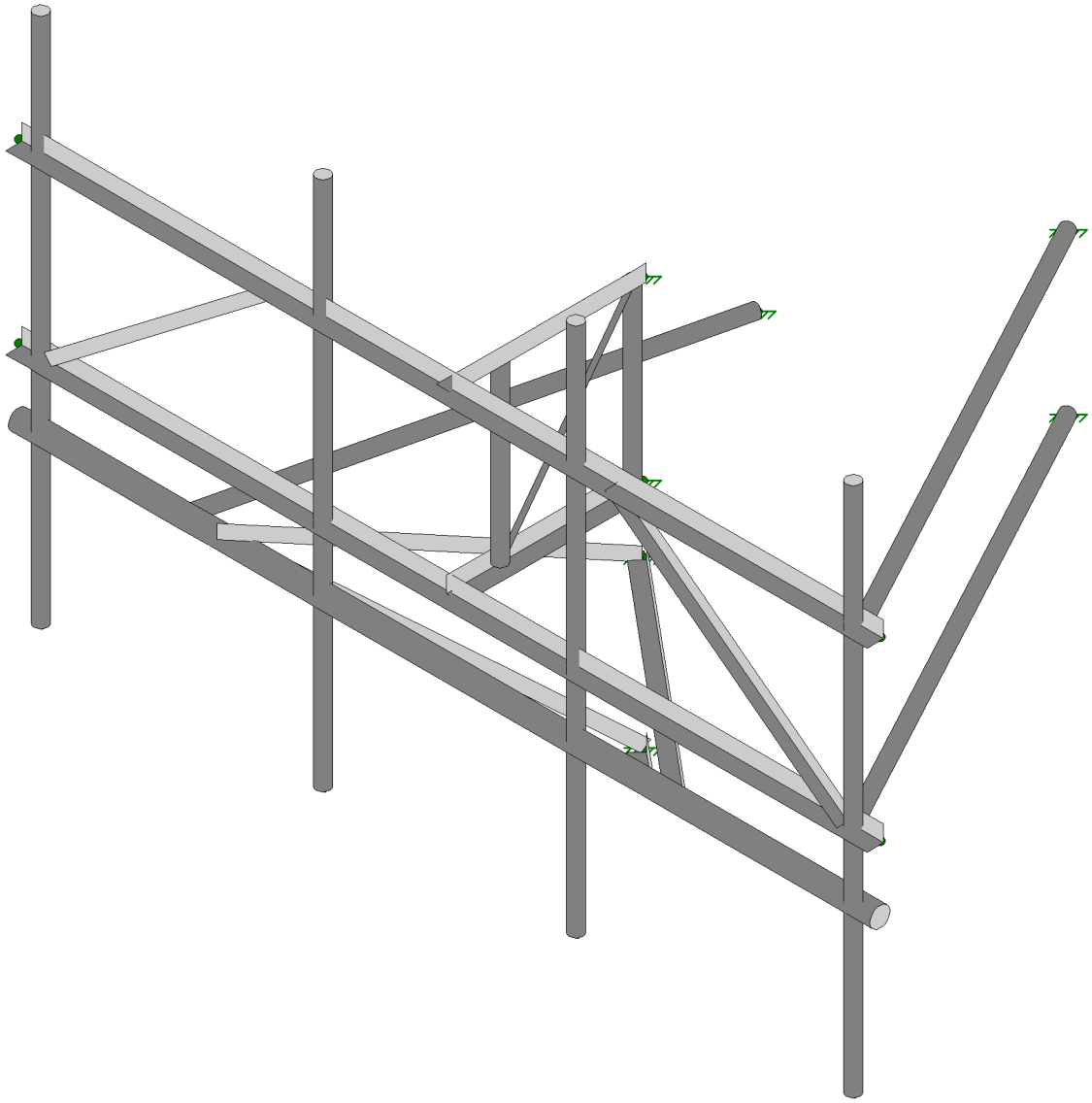


Antenna Layout

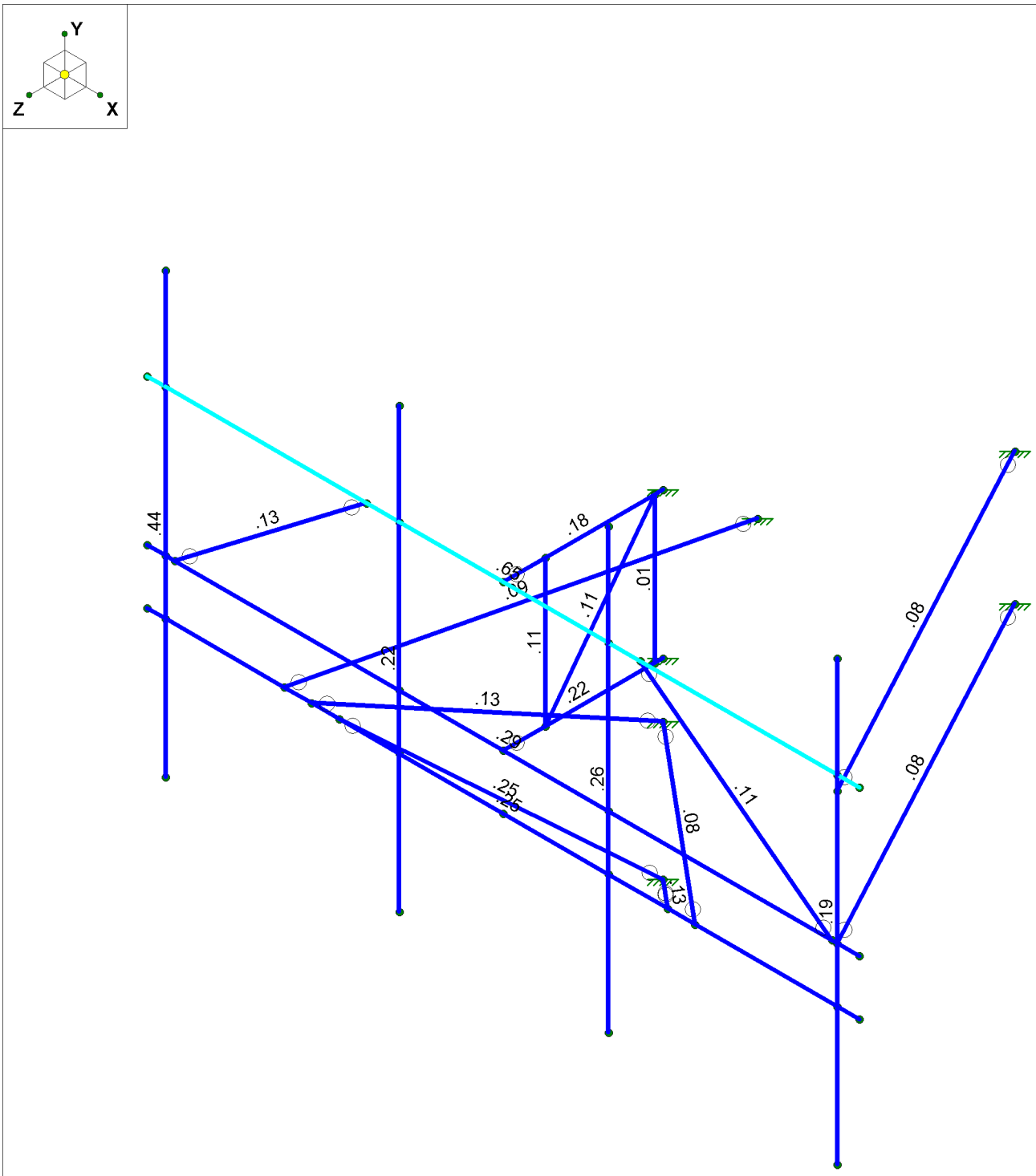
Ants. Items	Enter antenna model. If not labled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector.					Mounting Locations (Unit: inches)			Photos of antennas
	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (In.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C_1, C_2, C_3, C_4, C_5" (in.)	Photo Numbers
Sector A									
Ant_{1a}									
Ant_{1b}	Antenna A	8.5	3	56	1/2" (2)	+28"	6	5	
Ant_{1c}	TMA A	6	4	12	1/2" (2)	+22"	N/A	5	
Ant_{2a}									
Ant_{2b}	Empty Mast	N/A	N/A	N/A	N/A	N/A	N/A	54	
Ant_{2c}									
Ant_{3a}									
Ant_{3b}	Empty Mast	N/A	N/A	N/A	N/A	N/A	N/A	102	
Ant_{3c}									
Ant_{4a}									
Ant_{4b}	Antenna B	12	7.5	96.5	1/2" (2)	+34"	7	152	
Ant_{4c}									
Ant_{5a}									
Ant_{5b}									
Ant_{5c}									
Are Ant same as sector A?	Yes	**Antennas on Sector B are the same as Sector A**							

Azimuth (Degree) of Each Sector and Climbing Information

Sector A:	60°	Deg	
Sector B:	180°	Deg	
Sector C:	325°	Deg	
Climbing	220°	Deg	On Leg C
Climbing Facility	Corrosion Type:		No corrosion observed
	Access:		Climbing path was unobstructed.
	Condition:		N/A

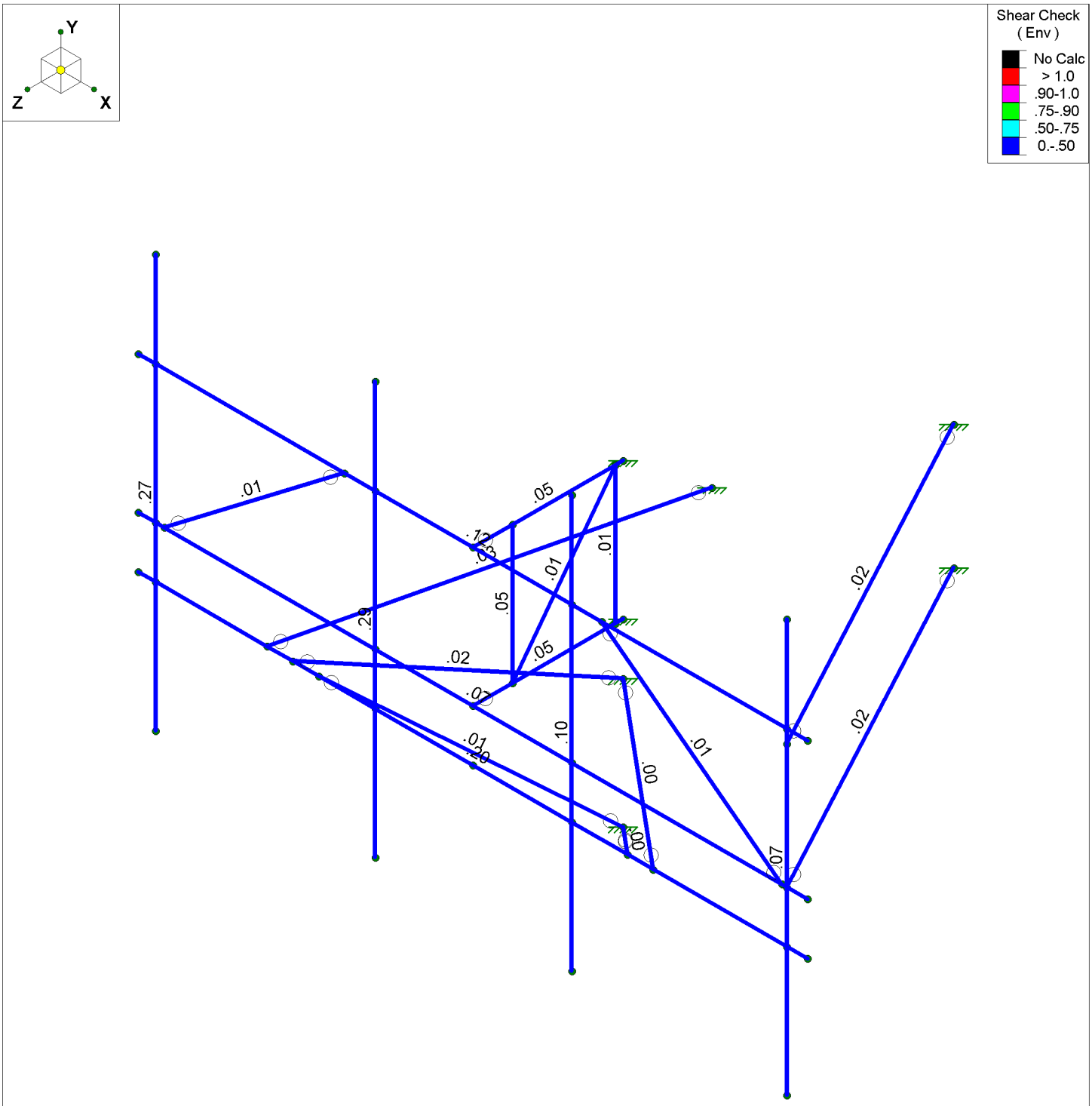


Tower Engineering Solutio...	CT10008-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 1
		Aug 5, 2019 at 3:50 PM
TES Project No. 83029		CT10008-A-SBA_83029_G_RISA_L...



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

Tower Engineering Solutio...	CT10008-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 2
		Aug 5, 2019 at 3:50 PM
TES Project No. 83029		CT10008-A-SBA_83029_G_RISA_L...



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

Tower Engineering Solutio...	CT10008-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 3
		Aug 5, 2019 at 3:50 PM
TES Project No. 83029		CT10008-A-SBA_83029_G_RISA_L...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					8			
2	Antenna Di	None					8			
3	Antenna W Front	None					8			
4	Antenna Wi Front	None					8			
5	Antenna W Side	None					8			
6	Antenna Wi Side	None					8			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1						
10	Structure Di	None						21		
11	Structure W Front	None						21		
12	Structure Wi Front	None						21		
13	Structure W Side	None						21		
14	Structure Wi Side	None						21		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
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	1								
6	1.2D+1.0Di+1.0Wi (Back)	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12	-1								
7	1.2D+1.0Di+1.0Wi (Left)	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14	1								
8	1.2D+1.0Di+1.0Wi (Right)	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14	-1								
9	1.2D+1.5L1+.16W (Main..	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16										
10	1.2D+1.5L2+.16W (Main..	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																

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	-2e-14	0	-0.000078	0	
2	N2	0	0	2.919	0	
3	N3	6.5	0	2.919	0	
4	N4	-6.5	0	2.919	0	
5	N5	0	0	0.15233	0	
6	N6	5e-14	0	2.1523	0	
7	N7	0	-2.66333	0.15233	0	
8	N8	5e-14	-2.66333	2.1523	0	
9	N9	-2e-14	-2.66333	-0.000078	0	
10	N10	0	-2.66333	2.919	0	
11	N11	6.5	-2.66333	2.919	0	
12	N12	-6.5	-2.66333	2.919	0	
13	N13	-6	-2.66333	2.919	0	
14	N14	6	-2.66333	2.919	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
15	N15	-2.5	0	2.919	0	
16	N16	2.5	0	2.919	0	
17	N17	-6.1667	0	2.919	0	
18	N18	-6.1667	-2.66333	2.919	0	
19	N19	-1.9	0	2.919	0	
20	N20	-1.9	-2.66333	2.919	0	
21	N21	1.92	0	2.919	0	
22	N22	1.92	-2.66333	2.919	0	
23	N23	6.1	0	2.919	0	
24	N24	6.1	-2.66333	2.919	0	
25	N25	-6.1667	-6.16333	2.919	0	
26	N26	-6.1667	1.84	2.919	0	
27	N27	-1.9	1.84	2.919	0	
28	N28	1.92	1.84	2.919	0	
29	N29	6.1	1.84	2.919	0	
30	N30	-1.9	-6.16	2.919	0	
31	N31	1.92	-6.16	2.919	0	
32	N32	6.1	-6.16	2.919	0	
33	N33	6.1	-.25	2.919	0	
34	N34	2.35	-.25	-4.070397	0	
35	N35	2.35	-2.66333	-4.070397	0	
36	N36	-2e-14	-3.66333	-0.000078	0	
37	N37	-2e-14	-6.16333	-0.000078	0	
38	N38	6.5	-3.66333	2.919	0	
39	N39	-6.5	-3.66333	2.919	0	
40	N40	0	-3.66333	2.919	0	
41	N41	3	-3.66333	2.919	0	
42	N42	3.5	-3.66333	2.919	0	
43	N43	-3.5	-3.66333	2.919	0	
44	N44	-3	-3.66333	2.919	0	
45	N45	-4	-3.66333	2.919	0	
46	N46	-2.35	-3.66333	-4.070397	0	
47	N47	-6.1667	-3.66333	2.919	0	
48	N48	-1.9	-3.66333	2.919	0	
49	N49	1.92	-3.66333	2.919	0	
50	N50	6.1	-3.66333	2.919	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MS-C1B (V-brace kits)	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
2	MS-HR-35 (SR Kits)	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	Standoff	L3X3X6	Beam	Single Angle	A36 Gr.36	Typical	2.11	1.75	1.75	.101
4	Standoff Diagonal	SR_0.75	Beam	BAR	A36 Gr.36	Typical	.442	.016	.016	.031
5	Standoff Vertical	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Face Horizontal	L3X3X6	Beam	Single Angle	A36 Gr.36	Typical	2.11	1.75	1.75	.101
7	FH diagonals	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
8	Mount Pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
9	All thread rods	0.5_All_Thread	Beam	BAR	A36 Gr.36	Typical	.142	.002	.002	.003
10	Stabilizer	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X...	Beam	None	A570 Gr.33	Typical	.581	.057	4.41	.00063

Aluminum Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	AL1A	AA I3X1.64	Beam	None	3003-H14	Typical	1.39	.522	2.24	.019

Hot Rolled Steel Properties

	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	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A570 Gr.33	29500	11346	.3	.65	.49	33	52
2	A607 C1 Gr.55	29500	11346	.3	.65	.49	55	70

Aluminum Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (...	Density[...	Table B.4	kt	Ftu[ksi]	Fty[ksi]	Fcy[ksi]	Fsu[ksi]	Ct
1	3003-H14	10100	3787.5	.33	1.3	.173	Table B...	1	19	16	14.4	11.4	141
2	6061-T6	10100	3787.5	.33	1.3	.173	Table B...	1	38	35	35	22.8	141
3	6063-T5	10100	3787.5	.33	1.3	.173	Table B...	1	22	16	16	13.2	141
4	6063-T6	10100	3787.5	.33	1.3	.173	Table B...	1	30	25	25	18	141
5	5052-H34	10100	3787.5	.33	1.3	.173	Table B...	1	34	26	23.4	20.4	141
6	6061-T6 W	10100	3787.5	.33	1.3	.173	Table B...	1	24	15	15	14.4	141

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N4	N3			Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N1	N2			Standoff	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N6	N8			Standoff Vertical	Beam	Pipe	A53 Gr.B	Typical
4	M4	N5	N7			Standoff Vertical	Beam	Pipe	A53 Gr.B	Typical
5	M5	N12	N11			Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
6	M6	N10	N9			Standoff	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N5	N8			Standoff Diago...	Beam	BAR	A36 Gr.36	Typical
8	M8	N15	N13			FH diagonals	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N16	N14			FH diagonals	Beam	Single Angle	A36 Gr.36	Typical
10	MP4A	N26	N25			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
11	MP3A	N27	N30			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
12	MP2A	N28	N31			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
13	MP1A	N29	N32			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
14	M16	N33	N34			Stabilizer	Beam	Pipe	A53 Gr.B	Typical
15	M16A	N24	N35			Stabilizer	Beam	Pipe	A53 Gr.B	Typical
16	M16B	N39	N38			MS-HR-35 (S...	Beam	Pipe	A53 Gr.B	Typical
17	M17	N36	N43			MS-C1B (V-br...	Beam	Single Angle	A36 Gr.36	Typical
18	M18	N36	N42			MS-C1B (V-br...	Beam	Single Angle	A36 Gr.36	Typical
19	M19	N37	N44			MS-C1B (V-br...	Beam	Single Angle	A36 Gr.36	Typical
20	M20	N37	N41			MS-C1B (V-br...	Beam	Single Angle	A36 Gr.36	Typical
21	M21	N45	N46			Stabilizer	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	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		BenPIN				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	BenPIN				Yes				None
9	M9	BenPIN	BenPIN				Yes				None
10	MP4A						Yes				None
11	MP3A						Yes				None
12	MP2A						Yes				None
13	MP1A						Yes				None
14	M16	BenPIN	BenPIN				Yes				None
15	M16A	BenPIN	BenPIN				Yes				None
16	M16B						Yes				None
17	M17	BenPIN	BenPIN				Yes				None
18	M18	BenPIN	BenPIN				Yes				None
19	M19	BenPIN	BenPIN				Yes				None
20	M20	BenPIN	BenPIN				Yes				None
21	M21	BenPIN	BenPIN				Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Face Horizo...	13			Lbyy						Lateral
2	M2	Standoff	2.919			Lbyy						Lateral
3	M3	Standoff Ve...	2.663			Lbyy						Lateral
4	M4	Standoff Ve...	2.663			Lbyy						Lateral
5	M5	Face Horizo...	13			Lbyy						Lateral
6	M6	Standoff	2.919			Lbyy						Lateral
7	M7	Standoff Dia...	3.331			Lbyy						Lateral
8	M8	FH diagonals	4.398			Lbyy						Lateral
9	M9	FH diagonals	4.398			Lbyy						Lateral
10	MP4A	Mount Pipe	8.003			Lbyy						Lateral
11	MP3A	Mount Pipe	8			Lbyy						Lateral
12	MP2A	Mount Pipe	8			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
13	MP1A	Mount Pipe	8			Lbyy						Lateral
14	M16	Stabilizer	7.932			Lbyy						Lateral
15	M16A	Stabilizer	7.932			Lbyy						Lateral
16	M16B	MS-HR-35 (...	13			Lbyy						Lateral
17	M17	MS-C1B (V-...	4.558			Lbyy						Lateral
18	M18	MS-C1B (V-...	4.558			Lbyy						Lateral
19	M19	MS-C1B (V-...	4.876			Lbyy						Lateral
20	M20	MS-C1B (V-...	4.876			Lbyy						Lateral
21	M21	Stabilizer	7.182			Lbyy						Lateral

Cold Formed Steel Design Parameters

Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp t...	Lcomp ...	L-torque...	Kyy	Kzz	Cm-...	Cm-...	Cb	R	a[ft]	y sw...	z sw...
No Data to Print ...																

Aluminum Design Parameters

Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
No Data to Print ...											

Joint Loads and Enforced Displacements

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

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-6.75	1
2	MP1A	Y	-6.75	3.5
3	MP4A	Y	-64	.5
4	MP4A	Y	-64	5.5
5	MP1A	Y	-11	3
6	MP4A	Y	-15.4	3
7	MP4A	Y	-70	2
8	MP1A	Y	-2.9	2

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-74.487	1
2	MP1A	Y	-74.487	3.5
3	MP4A	Y	-297.739	.5
4	MP4A	Y	-297.739	5.5
5	MP1A	Y	-26.859	3
6	MP4A	Y	-39.456	3
7	MP4A	Y	-101.816	2
8	MP1A	Y	-13.838	2

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-44.696	1
2	MP1A	Z	-44.696	3.5
3	MP4A	Z	-207.489	.5
4	MP4A	Z	-207.489	5.5
5	MP1A	Z	-4.203	3
6	MP4A	Z	-6.663	3
7	MP4A	Z	-16.915	2
8	MP1A	Z	-1.23	2

Member Point Loads (BLC 4 : Antenna Wi Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-15.659	1
2	MP1A	Z	-15.659	3.5
3	MP4A	Z	-62.273	.5
4	MP4A	Z	-62.273	5.5
5	MP1A	Z	-2.073	3
6	MP4A	Z	-2.898	3
7	MP4A	Z	-6.568	2
8	MP1A	Z	-1.022	2

Member Point Loads (BLC 5 : Antenna W Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	20.465	1
2	MP1A	X	20.465	3.5
3	MP4A	X	83.951	.5
4	MP4A	X	83.951	5.5
5	MP1A	X	3.19	3
6	MP4A	X	7.417	3
7	MP4A	X	23.835	2
8	MP1A	X	.892	2

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	8.959	1
2	MP1A	X	8.959	3.5
3	MP4A	X	28.31	.5
4	MP4A	X	28.31	5.5
5	MP1A	X	2.652	3
6	MP4A	X	4.421	3
7	MP4A	X	9.989	2
8	MP1A	X	1.427	2

Member Point Loads (BLC 7 : Service Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M5	Y	-500	%50

Member Point Loads (BLC 8 : Service Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M5	Y	-500	%98

Member Distributed Loads (BLC 10 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-15.481	-15.481	0	%100
2	M2	Y	-15.481	-15.481	0	%100
3	M3	Y	-13.794	-13.794	0	%100
4	M4	Y	-13.794	-13.794	0	%100
5	M5	Y	-15.481	-15.481	0	%100
6	M6	Y	-15.481	-15.481	0	%100
7	M7	Y	-9.076	-9.076	0	%100
8	M8	Y	-11.785	-11.785	0	%100
9	M9	Y	-11.785	-11.785	0	%100
10	MP4A	Y	-13.794	-13.794	0	%100
11	MP3A	Y	-13.794	-13.794	0	%100
12	MP2A	Y	-13.794	-13.794	0	%100
13	MP1A	Y	-13.794	-13.794	0	%100
14	M16	Y	-13.794	-13.794	0	%100
15	M16A	Y	-13.794	-13.794	0	%100
16	M16B	Y	-17.06	-17.06	0	%100
17	M17	Y	-13.633	-13.633	0	%100
18	M18	Y	-13.633	-13.633	0	%100
19	M19	Y	-13.633	-13.633	0	%100
20	M20	Y	-13.633	-13.633	0	%100
21	M21	Y	-13.794	-13.794	0	%100

Member Distributed Loads (BLC 11 : Structure W Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-10.251	-10.251	0	%100
2	M2	PZ	-10.251	-10.251	0	%100
3	M3	PZ	-4.869	-4.869	0	%100
4	M4	PZ	-4.869	-4.869	0	%100
5	M5	PZ	-10.251	-10.251	0	%100
6	M6	PZ	-10.251	-10.251	0	%100
7	M7	PZ	-1.538	-1.538	0	%100
8	M8	PZ	-6.834	-6.834	0	%100
9	M9	PZ	-6.834	-6.834	0	%100
10	MP4A	PZ	-4.869	-4.869	0	%100
11	MP3A	PZ	-4.869	-4.869	0	%100
12	MP2A	PZ	-4.869	-4.869	0	%100
13	MP1A	PZ	-4.869	-4.869	0	%100
14	M16	PZ	-4.869	-4.869	0	%100
15	M16A	PZ	-4.869	-4.869	0	%100
16	M16B	PZ	-7.176	-7.176	0	%100
17	M17	PZ	-8.543	-8.543	0	%100
18	M18	PZ	-8.543	-8.543	0	%100
19	M19	PZ	-8.543	-8.543	0	%100
20	M20	PZ	-8.543	-8.543	0	%100
21	M21	PZ	-4.869	-4.869	0	%100

Member Distributed Loads (BLC 12 : Structure Wi Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-5.313	-5.313	0	%100
2	M2	PZ	-5.313	-5.313	0	%100

Member Distributed Loads (BLC 12 : Structure Wi Front) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
3	M3	PZ	-3.883	-3.883	0	%100
4	M4	PZ	-3.883	-3.883	0	%100
5	M5	PZ	-5.313	-5.313	0	%100
6	M6	PZ	-5.313	-5.313	0	%100
7	M7	PZ	-2.998	-2.998	0	%100
8	M8	PZ	-4.405	-4.405	0	%100
9	M9	PZ	-4.405	-4.405	0	%100
10	MP4A	PZ	-3.883	-3.883	0	%100
11	MP3A	PZ	-3.883	-3.883	0	%100
12	MP2A	PZ	-3.883	-3.883	0	%100
13	MP1A	PZ	-3.883	-3.883	0	%100
14	M16	PZ	-3.883	-3.883	0	%100
15	M16A	PZ	-3.883	-3.883	0	%100
16	M16B	PZ	-4.496	-4.496	0	%100
17	M17	PZ	-4.859	-4.859	0	%100
18	M18	PZ	-4.859	-4.859	0	%100
19	M19	PZ	-4.859	-4.859	0	%100
20	M20	PZ	-4.859	-4.859	0	%100
21	M21	PZ	-3.883	-3.883	0	%100

Member Distributed Loads (BLC 13 : Structure W Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	10.251	10.251	0	%100
2	M2	PX	10.251	10.251	0	%100
3	M3	PX	4.869	4.869	0	%100
4	M4	PX	4.869	4.869	0	%100
5	M5	PX	10.251	10.251	0	%100
6	M6	PX	10.251	10.251	0	%100
7	M7	PX	1.538	1.538	0	%100
8	M8	PX	6.834	6.834	0	%100
9	M9	PX	6.834	6.834	0	%100
10	MP4A	PX	4.869	4.869	0	%100
11	MP3A	PX	4.869	4.869	0	%100
12	MP2A	PX	4.869	4.869	0	%100
13	MP1A	PX	4.869	4.869	0	%100
14	M16	PX	4.869	4.869	0	%100
15	M16A	PX	4.869	4.869	0	%100
16	M16B	PX	7.176	7.176	0	%100
17	M17	PX	8.543	8.543	0	%100
18	M18	PX	8.543	8.543	0	%100
19	M19	PX	8.543	8.543	0	%100
20	M20	PX	8.543	8.543	0	%100
21	M21	PX	4.869	4.869	0	%100

Member Distributed Loads (BLC 14 : Structure Wi Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	5.313	5.313	0	%100
2	M2	PX	5.313	5.313	0	%100
3	M3	PX	3.883	3.883	0	%100
4	M4	PX	3.883	3.883	0	%100
5	M5	PX	5.313	5.313	0	%100

Member Distributed Loads (BLC 14 : Structure Wi Side) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
6	M6	PX	5.313	5.313	0	%100
7	M7	PX	2.998	2.998	0	%100
8	M8	PX	4.405	4.405	0	%100
9	M9	PX	4.405	4.405	0	%100
10	MP4A	PX	3.883	3.883	0	%100
11	MP3A	PX	3.883	3.883	0	%100
12	MP2A	PX	3.883	3.883	0	%100
13	MP1A	PX	3.883	3.883	0	%100
14	M16	PX	3.883	3.883	0	%100
15	M16A	PX	3.883	3.883	0	%100
16	M16B	PX	4.496	4.496	0	%100
17	M17	PX	4.859	4.859	0	%100
18	M18	PX	4.859	4.859	0	%100
19	M19	PX	4.859	4.859	0	%100
20	M20	PX	4.859	4.859	0	%100
21	M21	PX	3.883	3.883	0	%100

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

Joint Boundary Conditions

	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	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N5						
3	N6						
4	N7						
5	N8						
6	N9	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N34	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N35	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N36	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
10	N37	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
11	N46	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	234.28	8	1032.037	8	682.678	1	.083	10	.567	8	.002	4
2		min	-120.941	3	220.936	2	-1131.887	2	-.517	8	-.3	10	-.002	7
3	N9	max	71.198	4	140.84	7	601.461	9	.085	4	.144	4	.002	3
4		min	-91.599	3	4.156	4	-69.892	2	-.094	3	-.171	3	-.003	4
5	N34	max	45.753	4	71.229	8	47.137	5	.006	10	0	11	.012	10
6		min	-38.825	3	16.518	2	-21.859	10	-.01	8	0	1	-.019	8
7	N35	max	203.821	1	71.238	5	394.436	1	.006	10	0	11	.011	10
8		min	-182.284	2	16.383	10	-354.464	2	-.007	8	0	1	-.013	8
9	N36	max	1849.5	4	87.32	8	230.405	2	.004	1	0	11	.002	2
10		min	-1140.043	3	22.188	2	-2748.023	8	-.003	2	0	1	-.002	1

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
11	N37	max	1195.853	10	2481.955	7	2805.533	5	.002	1	.001	2	.001	2
12		min	-1526.843	8	594.371	1	720.753	1	-.002	2	-.001	1	-.001	1
13	N46	max	358.205	2	64.688	6	1521.498	1	.012	1	0	11	.032	2
14		min	-357.48	1	14.229	1	-1523.14	2	-.008	2	0	1	-.051	1
15	Totals:	max	1191.936	4	3913.209	8	2096.435	1						
16		min	-1191.936	3	1048.232	1	-2096.435	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
1	M1	1	max	0	11	0	11	0	11	0	11	0	11	0	11
2			min	0	1	0	1	0	1	0	1	0	1	0	1
3		2	max	255.026	3	171.595	1	353.459	2	.052	2	.159	2	.608	2
4			min	-235.224	4	-154.153	2	-361.597	1	-.054	1	-.109	1	-.69	1
5		3	max	-108.283	2	242.707	8	497.94	2	.023	2	.572	2	1.596	2
6			min	-1345.77	5	-106.932	10	-521.651	1	-.024	1	-.69	1	-1.533	1
7		4	max	87.839	4	118.169	2	203.274	1	.007	1	.147	6	.491	2
8			min	-87.393	3	-141.279	1	-206.498	2	-.007	2	-.036	1	-.567	1
9		5	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	M2	1	max	682.678	1	1031.91	8	120.922	3	.002	4	.112	4	.766	8
12			min	-1131.887	2	220.912	2	-234.165	8	-.002	7	-.153	10	-.271	10
13		2	max	930.299	1	152.761	8	117.251	10	.002	10	.096	8	.485	8
14			min	-948.039	2	-54.863	10	-218.138	8	-.004	8	-.077	10	-.231	10
15		3	max	930.299	1	135.176	8	117.251	10	.002	10	.059	8	.299	8
16			min	-948.039	2	-61.15	10	-214.261	8	-.004	8	-.046	10	-.141	10
17		4	max	964.696	1	322.473	6	123.754	10	.01	8	.042	1	.26	8
18			min	-912.372	2	-28.261	1	-215.524	8	-.006	10	-.097	10	-.031	10
19		5	max	964.696	1	304.888	6	123.754	10	.01	8	0	11	0	11
20			min	-912.372	2	-34.548	1	-211.647	8	-.006	10	0	1	0	1
21	M3	1	max	242.254	6	13.164	7	132.554	6	.058	8	-.029	1	.013	8
22			min	-99.146	1	-6.425	10	33.982	4	-.044	10	-.147	6	-.008	10
23		2	max	254.212	6	10.578	7	129.969	6	.058	8	-.004	1	.009	4
24			min	-96.373	1	-6.425	10	30.476	2	-.044	10	-.06	6	-.006	3
25		3	max	266.169	6	10.256	8	128.376	7	.058	8	.036	9	.006	4
26			min	-93.599	1	-6.425	10	25.289	2	-.044	10	-.008	2	-.006	3
27		4	max	278.127	6	13.073	4	130.87	5	.058	8	.119	5	.005	10
28			min	-90.826	1	-7.681	3	20.101	2	-.044	10	.007	2	-.009	7
29		5	max	290.084	6	18.26	4	133.456	5	.058	8	.207	5	.009	10
30			min	-88.053	1	-12.868	3	14.914	2	-.044	10	.018	2	-.014	8
31	M4	1	max	192.423	5	10.087	3	11.753	2	.009	8	-.001	1	.001	10
32			min	3.603	2	-11.111	4	-8.34	1	-.005	10	-.014	6	-.003	7
33		2	max	204.381	5	4.899	3	8.487	6	.009	8	0	2	.003	4
34			min	6.376	2	-5.924	4	-3.153	1	-.005	10	-.009	5	-.004	3
35		3	max	216.338	5	.942	10	6.179	7	.009	8	.003	2	.006	4
36			min	9.149	2	-2.162	7	1.316	4	-.005	10	-.006	5	-.006	3
37		4	max	228.296	5	4.451	4	8.748	5	.009	8	.002	2	.004	4
38			min	11.923	2	-5.476	3	-3.81	2	-.005	10	-.003	1	-.004	3
39		5	max	240.253	5	9.639	4	12.41	1	.009	8	.005	5	.003	7
40			min	14.696	2	-10.663	3	-8.997	2	-.005	10	-.002	2	-.001	10
41	M5	1	max	0	11	0	11	0	11	0	11	0	11	0	11

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
42			min	0	1	0	1	0	1	0	1	0	1	0	1
43		2	max	526.395	10	19.784	1	25.36	2	.027	2	.064	2	.311	2
44			min	.745	4	-53.565	6	-48.75	5	-.026	1	-.091	1	-.375	1
45		3	max	872.152	8	411.667	8	119.606	3	.018	2	.183	2	.485	6
46			min	127.129	3	-257.974	10	-246.528	6	-.02	1	-.214	1	-.211	1
47		4	max	829.845	8	32.573	10	19.966	8	0	1	.018	5	.016	3
48			min	-97.496	3	-5.86	4	-4.368	3	-.003	6	-.022	10	-.059	8
49		5	max	0	11	0	11	0	11	0	11	0	11	0	11
50			min	0	1	0	1	0	1	0	1	0	1	0	1
51	M6	1	max	1.023	1	16.824	2	53.04	5	.011	8	0	11	0	11
52			min	-487.328	6	-639.158	5	-20.789	2	-.006	10	0	1	0	1
53		2	max	1.023	1	10.536	2	53.04	5	.011	8	-.004	2	.362	5
54			min	-487.328	6	-656.744	5	-20.789	2	-.006	10	-.307	5	-.018	2
55		3	max	596.99	9	150.14	8	57.044	3	.002	10	-.006	2	.155	9
56			min	-60.894	2	-2.091	2	-37.686	4	-.004	8	-.11	8	-.047	2
57		4	max	596.99	9	135.777	9	69.014	3	.002	10	.023	3	.137	3
58			min	-60.894	2	-8.379	2	-49.656	4	-.004	8	-.034	4	-.102	4
59		5	max	601.461	9	-4.156	4	91.606	3	.002	3	.059	9	.188	3
60			min	-69.892	2	-140.842	7	-71.205	4	-.003	4	-.042	2	-.162	4
61	M7	1	max	-285.556	2	12.564	5	4.772	7	0	3	.003	8	.006	5
62			min	-1321.699	7	-.789	2	-5.541	8	0	8	-.003	3	0	2
63		2	max	-283.371	2	5.528	5	2.391	3	0	3	0	7	0	2
64			min	-1314.455	7	-.381	2	-3.045	8	0	8	0	8	-.001	5
65		3	max	-281.186	2	.027	2	.603	10	0	3	.001	3	0	2
66			min	-1307.21	7	-1.508	5	-.585	4	0	8	-.002	8	-.003	5
67		4	max	-279.001	2	.435	2	1.947	8	0	3	0	10	.002	9
68			min	-1299.966	7	-8.544	5	-2.716	7	0	8	-.001	8	0	2
69		5	max	-276.816	2	.843	2	4.443	8	0	3	.001	8	.011	5
70			min	-1292.722	7	-15.58	5	-5.212	7	0	8	-.003	7	0	2
71	M8	1	max	-122.426	2	29.335	7	24.046	2	0	2	0	11	0	11
72			min	-1624.276	5	-3.659	4	-24.046	1	0	1	0	1	0	1
73		2	max	-120.463	2	14.667	7	12.023	2	0	2	.021	6	.011	2
74			min	-1614.466	5	-1.829	4	-12.023	1	0	1	-.011	1	-.021	5
75		3	max	-118.5	2	0	11	0	11	0	2	.028	6	.015	2
76			min	-1604.657	5	0	1	0	1	0	1	-.015	1	-.028	5
77		4	max	-116.537	2	1.829	4	12.023	1	0	2	.021	6	.011	2
78			min	-1594.847	5	-14.667	7	-12.023	2	0	1	-.011	1	-.021	5
79		5	max	-114.574	2	3.659	4	24.046	1	0	2	0	11	0	11
80			min	-1585.037	5	-29.335	7	-24.046	2	0	1	0	1	0	1
81	M9	1	max	-84.495	2	29.335	8	24.046	1	0	1	0	11	0	11
82			min	-1215.825	8	-3.659	3	-24.046	2	0	2	0	1	0	1
83		2	max	-82.532	2	14.667	8	12.023	1	0	1	.021	5	.011	1
84			min	-1208.35	8	-1.829	3	-12.023	2	0	2	-.011	2	-.021	6
85		3	max	-80.569	2	0	11	0	11	0	1	.028	5	.015	1
86			min	-1200.874	8	0	1	0	1	0	2	-.015	2	-.028	6
87		4	max	-78.606	2	1.829	3	12.023	2	0	1	.021	5	.011	1
88			min	-1193.399	8	-14.667	8	-12.023	1	0	2	-.011	2	-.021	6
89		5	max	-76.643	2	3.659	3	24.046	2	0	1	0	11	0	11
90			min	-1185.923	8	-29.335	8	-24.046	1	0	2	0	1	0	1
91	MP4A	1	max	0	11	.318	8	2.011	5	0	11	0	11	0	11
92			min	0	1	-.086	3	-1.625	2	0	1	0	1	0	1
93		2	max	712.83	5	74.656	3	72.584	1	.421	1	.416	1	.117	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
94			min	25.943	2	-54.701	4	-68.721	2	-.419	2	-.416	2	-.091	2
95		3	max	844.378	5	55.993	1	104.322	1	.421	1	.598	1	.019	10
96			min	69.79	2	-35.349	2	-100.459	2	-.419	2	-.591	2	-.023	6
97		4	max	-8.333	10	15.589	3	15.669	2	0	11	.016	1	.016	3
98			min	-35.932	5	-15.595	4	-15.674	1	0	1	-.016	2	-.016	4
99		5	max	0	11	.004	10	.081	2	0	11	0	11	0	11
100			min	0	1	-.052	8	-.116	5	0	1	0	1	0	1
101	MP3A	1	max	0	11	.041	5	.039	5	0	11	0	11	0	11
102			min	0	1	0	2	-.029	2	0	1	0	1	0	1
103		2	max	1017.946	7	21.389	2	50.886	2	.466	1	.031	1	.026	4
104			min	197.504	4	-132.824	10	-74.117	1	-.433	2	-.035	2	-.181	10
105		3	max	1053.863	7	30.302	4	35.304	2	.466	1	.051	2	.085	10
106			min	205.834	4	-132.824	10	-58.535	1	-.433	2	-.112	5	-.021	2
107		4	max	-8.33	10	15.583	3	15.625	2	0	11	.016	1	.016	3
108			min	-35.917	5	-15.582	4	-15.631	1	0	1	-.016	2	-.016	4
109		5	max	0	11	.004	6	.043	2	0	11	0	11	0	11
110			min	0	1	-.001	1	-.089	5	0	1	0	1	0	1
111	MP2A	1	max	0	11	.002	2	.014	2	0	11	0	11	0	11
112			min	0	1	-.013	5	-.02	5	0	1	0	1	0	1
113		2	max	671.166	10	221.266	5	113.642	2	.036	1	.023	1	.308	5
114			min	84.035	9	-25.92	2	-138.766	1	-.042	2	-.026	2	-.041	2
115		3	max	679.496	10	221.266	5	98.06	2	.036	1	.186	2	.011	2
116			min	92.365	9	-25.92	2	-123.184	1	-.042	2	-.239	1	-.135	5
117		4	max	-8.33	10	15.581	3	15.594	2	0	11	.016	1	.016	3
118			min	-35.917	5	-15.584	4	-15.598	1	0	1	-.016	2	-.016	4
119		5	max	0	11	0	10	.012	2	0	11	0	11	0	11
120			min	0	1	-.022	5	-.043	5	0	1	0	1	0	1
121	MP1A	1	max	0	11	.106	8	.005	10	0	11	0	11	0	11
122			min	0	1	-.007	10	-.046	6	0	1	0	1	0	1
123		2	max	284.021	5	38.423	3	65.286	2	.101	2	.056	1	.029	2
124			min	-72.205	2	-38.804	4	-61.986	1	-.087	1	-.055	2	-.061	5
125		3	max	523.502	5	24.15	4	34.172	1	.101	2	.031	10	.004	10
126			min	-24.108	2	-31.449	3	-43.088	2	-.087	1	-.04	4	-.013	8
127		4	max	-8.33	10	15.584	3	15.584	2	0	11	.016	1	.016	3
128			min	-35.917	5	-15.587	4	-15.585	1	0	1	-.016	2	-.016	4
129		5	max	0	11	.008	10	.002	2	0	11	0	11	0	11
130			min	0	1	-.019	8	-.007	8	0	1	0	1	0	1
131	M16	1	max	38.804	5	71.223	8	23.992	4	.013	10	0	11	0	11
132			min	-27.758	10	16.518	1	-23.992	3	-.022	8	0	1	0	1
133		2	max	42.012	5	35.611	8	11.996	4	.013	10	.036	4	-.025	10
134			min	-27.115	10	8.259	1	-11.996	3	-.022	8	-.036	3	-.106	5
135		3	max	45.219	5	0	11	0	11	.013	10	.048	4	-.033	10
136			min	-26.471	10	0	1	0	1	-.022	8	-.048	3	-.141	5
137		4	max	48.427	5	-8.259	10	11.996	3	.013	10	.036	4	-.025	10
138			min	-30.954	3	-35.611	5	-11.996	4	-.022	8	-.036	3	-.106	5
139		5	max	52.1	4	-16.518	10	23.992	3	.013	10	0	11	0	11
140			min	-37.39	3	-71.223	5	-23.992	4	-.022	8	0	1	0	1
141	M16A	1	max	418.186	1	71.223	8	23.992	4	.013	10	0	11	0	11
142			min	-372.783	2	16.518	1	-23.992	3	-.015	8	0	1	0	1
143		2	max	424.623	1	35.611	8	11.996	4	.013	10	.036	4	-.025	10
144			min	-379.219	2	8.259	1	-11.996	3	-.015	8	-.036	3	-.106	5
145		3	max	431.059	1	0	11	0	11	.013	10	.048	4	-.033	10

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
146			min	-385.655	2	0	1	0	1	-.015	8	-.048	3	-.141	5
147		4	max	437.495	1	-8.259	10	11.996	3	.013	10	.036	4	-.025	10
148			min	-392.091	2	-35.611	5	-11.996	4	-.015	8	-.036	3	-.106	5
149		5	max	443.931	1	-16.518	10	23.992	3	.013	10	0	11	0	11
150			min	-398.528	2	-71.223	5	-23.992	4	-.015	8	0	1	0	1
151	M16B	1	max	0	11	0	11	0	11	0	11	0	11	0	11
152			min	0	1	0	1	0	1	0	1	0	1	0	1
153		2	max	3113.1	8	-34.879	10	-55.011	1	.743	2	.604	2	.868	8
154			min	47.231	3	-598.738	8	-1830.525	6	-.722	1	-.773	1	-.002	10
155		3	max	758.047	1	91.762	4	192.279	1	.691	2	.22	2	-.023	1
156			min	-535.017	2	-58.494	3	-125.21	2	-.735	1	-.286	1	-.15	6
157		4	max	2075.705	10	337.494	10	1181.675	10	.192	2	.386	1	.569	10
158			min	-308.086	2	-32.246	4	-127.43	2	-.261	1	-.314	2	-.111	4
159		5	max	0	11	0	11	0	11	0	11	0	11	0	11
160			min	0	1	0	1	0	1	0	1	0	1	0	1
161	M17	1	max	632.682	3	42.139	8	18.37	2	.004	2	0	11	0	11
162			min	-3260.915	8	11.073	1	-18.37	1	-.004	1	0	1	0	1
163		2	max	625.022	3	21.07	8	9.185	2	.004	2	.029	6	.004	2
164			min	-3258.192	8	5.536	1	-9.185	1	-.004	1	-.004	1	-.029	5
165		3	max	617.361	3	0	11	0	11	.004	2	.039	6	.006	2
166			min	-3255.468	8	0	1	0	1	-.004	1	-.006	1	-.039	5
167		4	max	609.701	3	-5.536	10	9.185	1	.004	2	.029	6	.004	2
168			min	-3252.745	8	-21.07	5	-9.185	2	-.004	1	-.004	1	-.029	5
169		5	max	602.04	3	-11.073	10	18.37	1	.004	2	0	11	0	11
170			min	-3250.022	8	-42.139	5	-18.37	2	-.004	1	0	1	0	1
171	M18	1	max	360.324	2	42.139	8	18.37	1	0	1	0	11	0	11
172			min	-1991.488	10	11.073	1	-18.37	2	0	2	0	1	0	1
173		2	max	367.985	2	21.07	8	9.185	1	0	1	.029	5	.004	1
174			min	-1992.254	10	5.536	1	-9.185	2	0	2	-.004	2	-.029	6
175		3	max	375.645	2	0	11	0	11	0	1	.039	5	.006	1
176			min	-1993.02	10	0	1	0	1	0	2	-.006	2	-.039	6
177		4	max	383.305	2	-5.536	10	9.185	2	0	1	.029	5	.004	1
178			min	-1993.786	10	-21.07	5	-9.185	1	0	2	-.004	2	-.029	6
179		5	max	390.966	2	-11.073	10	18.37	2	0	1	0	11	0	11
180			min	-1994.552	10	-42.139	5	-18.37	1	0	2	0	1	0	1
181	M19	1	max	3597.289	8	42.134	8	19.128	2	.002	2	0	11	0	11
182			min	248.137	10	.517	3	-19.128	1	-.003	1	0	1	0	1
183		2	max	3588.604	8	21.067	8	9.564	2	.002	2	.032	6	.012	3
184			min	244.301	10	.258	3	-9.564	1	-.003	1	-.012	1	-.031	8
185		3	max	3579.92	8	0	11	0	11	.002	2	.042	6	.015	3
186			min	240.465	10	0	1	0	1	-.003	1	-.016	1	-.042	8
187		4	max	3571.235	8	-.258	3	9.564	1	.002	2	.032	6	.012	3
188			min	236.629	10	-21.067	8	-9.564	2	-.003	1	-.012	1	-.031	8
189		5	max	3562.55	8	-.517	3	19.128	1	.002	2	0	11	0	11
190			min	232.793	10	-42.134	8	-19.128	2	-.003	1	0	1	0	1
191	M20	1	max	2191.603	10	42.134	7	19.128	1	0	1	0	11	0	11
192			min	-126.101	4	.517	4	-19.128	2	0	2	0	1	0	1
193		2	max	2187.767	10	21.067	7	9.564	1	0	1	.031	7	.012	1
194			min	-137.219	4	.258	4	-9.564	2	0	2	-.012	4	-.032	6
195		3	max	2183.931	10	0	11	0	11	0	1	.042	7	.016	1
196			min	-148.337	4	0	1	0	1	0	2	-.015	4	-.042	6
197		4	max	2180.095	10	-.258	4	9.564	2	0	1	.031	7	.012	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
198			min	-159.455	4	-21.067	7	-9.564	1	0	2	-.012	4	-.032	6
199		5	max	2176.259	10	-.517	4	19.128	2	0	1	0	11	0	11
200			min	-170.573	4	-42.134	7	-19.128	1	0	2	0	1	0	1
201	M21	1	max	1550.417	1	64.485	8	26.499	4	.033	2	0	11	0	11
202			min	-1552.182	2	14.956	1	-26.499	3	-.053	1	0	1	0	1
203		2	max	1553.545	1	32.243	8	13.25	4	.033	2	.036	4	-.02	10
204			min	-1555.31	2	7.478	1	-13.25	3	-.053	1	-.036	3	-.087	5
205		3	max	1556.673	1	0	11	0	11	.033	2	.048	4	-.027	10
206			min	-1558.438	2	0	1	0	1	-.053	1	-.048	3	-.116	5
207		4	max	1559.801	1	-7.478	10	13.25	3	.033	2	.036	4	-.02	10
208			min	-1561.566	2	-32.243	5	-13.25	4	-.053	1	-.036	3	-.087	5
209		5	max	1562.928	1	-14.956	10	26.499	3	.033	2	0	11	0	11
210			min	-1564.693	2	-64.485	5	-26.499	4	-.053	1	0	1	0	1

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Ch...	Loc[ft]	...	L...	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	M1	L3X3X6	.649	6.5	1	.121	4.469	z	1	6611.8...	68364	2.307	4.489	1...	H2-1
2	MP4A	PIPE_2.0	.438	4.502	1	.266	4.502		1	14906...	32130	1.872	1.872	2...	H3-6
3	M5	L3X3X6	.288	8.396	8	.067	.406	y	1	6611.8...	68364	2.307	4.669	1...	H2-1
4	MP2A	PIPE_2.0	.256	5.5	2	.096	4.583		1	14916...	32130	1.872	1.872	1...	H1-1b
5	M16B	PIPE_3.0	.252	3.385	5	.195	2.573		2	26386...	65205	5.749	5.749	1...	H1-1b
6	M19	L2.5x2.5x4	.247	2.387	8	.014	0	z	1	17751...	38556	1.114	2.314	1...	H2-1
7	MP3A	PIPE_2.0	.222	5.5	8	.291	1.917		1	14916...	32130	1.872	1.872	2...	H1-1b
8	M6	L3X3X6	.216	.76	5	.049	.76	y	8	56457...	68364	2.307	5.322	1...	H2-1
9	MP1A	PIPE_2.0	.189	5.5	10	.068	1.917		2	14916...	32130	1.872	1.872	4...	H1-1b
10	M2	L3X3X6	.183	.152	8	.050	0	y	7	56457...	68364	2.307	5.322	1...	H2-1
11	M20	L2.5x2.5x4	.134	2.387	10	.004	0	y	6	17751...	38556	1.114	2.314	1...	H2-1
12	M8	L2x2x3	.130	2.199	7	.007	0	z	1	8860.9...	23392.8	.558	1.083	1...	H2-1
13	M17	L2.5x2.5x4	.128	2.279	8	.023	4.558	z	1	19576...	38556	1.114	2.345	1...	H2-1
14	M3	PIPE_2.0	.114	2.663	5	.048	2.663		8	29510...	32130	1.872	1.872	2...	H1-1b
15	M9	L2x2x3	.113	2.199	8	.007	0	z	2	8860.9...	23392.8	.558	1.083	1...	H2-1
16	M7	SR_0.75	.108	3.331	5	.007	3.331		8	2196.52	14313....	.179	.179	2...	H1-1b
17	M21	PIPE_2.0	.090	7.182	1	.033	0		1	17312...	32130	1.872	1.872	1...	H1-1...
18	M18	L2.5x2.5x4	.083	2.279	7	.005	4.558	z	1	19576...	38556	1.114	2.345	1...	H2-1
19	M16A	PIPE_2.0	.082	3.966	5	.016	0		8	15111...	32130	1.872	1.872	1...	H1-1b
20	M16	PIPE_2.0	.078	3.966	8	.021	0		8	15111...	32130	1.872	1.872	1...	H1-1b
21	M4	PIPE_2.0	.011	0	6	.006	0		8	29510...	32130	1.872	1.872	2...	H1-1b

Envelope AISI S100-12: LRFD Cold Formed Steel Code Checks

Member	Shape	Code Ch...	Loc[ft]	LC	Shear...	Loc[ft]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mn...	phi*Mn...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

Envelope AA ADM1-15: LRFD - Building Aluminum Code Checks

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt[...	phi*Mn...	phi*Mn...	phi*Vny...	phi*Vnz...	Cb	Eqn
No Data to Print ...																

Wood Wall Panel Parameters

	Label	Top Plate	Sill Plate	Studs	Min Stud Sp...	Max Stud Sp...	Green Lumb...	Header Size	Header Matl
1	Typical	2-2X6	2X6	2X6	16	16		6x8	Same as Wall

Additional Wood Wall Panel Parameters

	Label	Schedule	Min. Pan...	Max. Pan...	Double S...	Max. Nail...	Min. Nail ...	HD Chor...	HD Chor...	Hold Down	Chord...	Eccen...
1	Typical	IBC2012 Pan...	.375	.75	Optimum	6-in.	2-in.	2-2X6	Same as...	SIMPSON H...	SIMP...	Yes

EXHIBIT 10

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11292A

Ellington / Rt 30
101 Burbank Road
Ellington, CT 06029

May 17, 2019

Transcom Engineering Project Number: 737001-0007

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**5.47 %**

May 17, 2019

T-MOBILE
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CT11292A – Ellington / Rt 30**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **101 Burbank Road, Ellington, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **101 Burbank Road, Ellington, CT**, 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
UMTS	1900 MHz (PCS)	1	30
GSM	1900 MHz (PCS)	1	30
LTE	2100 MHz (AWS)	2	60

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAARR24_43-U-NA20	186
A	2	EMS RR90-17-XXDP (Dormant)	186
B	1	RFS APXVAARR24_43-U-NA20	186
B	2	EMS RR90-17-XXDP (Dormant)	186
C	1	RFS APXVAARR24_43-U-NA20	186
C	2	EMS RR90-17-XXDP (Dormant)	186

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

Cable losses were factored in the calculations for this site. Since the 1900 MHz and 2100 MHz radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **1.96 dB** of cable loss calculated into the system gains / losses for this site. For each ground mounted **2100 MHz (AWS)** radio there was **2.01 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **190 feet** of **1-5/8”** coax

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	8	295	9,641.31	1.64
Antenna A2	EMS RR90-17-XXDP	Dormant	Dormant	0	0	0.00	0.00
						Sector A Composite MPE%	**1.64**
Antenna B1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	8	295	9,641.31	1.64
Antenna B2	EMS RR90-17-XXDP	Dormant	Dormant	0	0	0.00	0.00
						Sector B Composite MPE%	**1.64**
Antenna C1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	8	295	9,641.31	1.64
Antenna C2	EMS RR90-17-XXDP	Dormant	Dormant	0	0	0.00	0.00
						Sector C Composite MPE%	**1.64**

Table 3: T-MOBILE Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**1.64 %**
Verizon Wireless	1.70 %
Crossroads	0.25 %
AT&T	1.88 %
Site Total MPE %:	**5.47 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	1.64 %
T-MOBILE Sector B Total:	1.64 %
T-MOBILE Sector C Total:	1.64 %
Site Total:	5.47 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	788.97	186	1.99	600 MHz	400	0.50%
T-Mobile 700 MHz LTE	2	432.54	186	1.09	700 MHz	467	0.23%
T-Mobile 1900 MHz (PCS) UMTS	1	1,469.13	186	1.85	1900 MHz (PCS)	1000	0.19%
T-Mobile 1900 MHz (PCS) GSM	1	550.92	186	0.69	1900 MHz (PCS)	1000	0.07%
T-Mobile 2100 MHz (AWS) LTE	2	2,589.11	186	6.52	2100 MHz (AWS)	1000	0.65%
						Total:	**1.64%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

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:	1.64 %
Sector B:	1.64 %
Sector C:	1.64 %
T-MOBILE Maximum Total (per sector):	1.64 %
Site Total:	5.47 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **5.47 %** 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.

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