



Filed by:

G. Scott Shepherd, Sr. Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - GShepherd@sbsite.com

July 24, 2020

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

RE: Notice of Exempt Modification
389 Forbes Ave, New Haven, CT
Latitude: 41.290166
Longitude: -72.895277
T-Mobile Site #: CTNH041A

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 58-foot level of the existing 86.5-foot Monopole Tower at 389 Forbes Ave. New Haven, CT. The 86.5-foot tower is owned by SBA 2012 TC Assets, LLC. The property is owned by A.F. Forbes, Inc. / Hennessey Family Limited Partnership. T-Mobile now intends to remove (3) 1900/2100 MHz antennas and replace with three (3) 600/700 MHz antennas. The new antennas would be installed at the 58-foot level of the tower.

Planned Modifications:

TOWER

Remove:

- (4) 7/8" Coax

Remove and Replace:

- (3) LNX6515 Antenna (Remove) – (3) APXVAARR24_43U-NA20 Antenna 600/700 MHz (Replace)
- (3) Ericsson S11B12 RRUs (Remove) – (3) Ericsson Radio 4449 B71+B12 (Replace)

Install New:

- (2) 1-5/8" Fiber
- (3) T-Arm
- (1) MetroSite Rotatable T-Arm Kit (MS-TAW-350RO)
- (1) MetroSite Heavy Collar Mount Plate Assembly (MS-H1436)
- (1) MetroSite Support Rail Kit (MS-HR35-2375)

Existing Equipment to Remain:

- (3) Ericsson KRY 112 144/1 TMAs
- (3) AIR 21 KRC118023-1_B2A-B4P 1900/2100 MHz Antenna
- (3) Air 21 KRC118023-1_B4A/B2P 1900/2100 MHz Antenna



- (6) 7/8" Coax
- (1) 1-5/8" Fiber

Entitlements:

- (2) 7/8" Coax

GROUND

Install New:

- Equipment inside existing RBS 6131 cabinet

This facility was originally approved for antenna tops not to exceed 70' agl. The Tower was to be a monopole with height and antennas not to exceed 70 feet above ground level. On August 17, 2010, Petition No 955 was considered and Council allowed an extension to the tower bringing it to 76 feet. Pocket received approval under Petition 908 for an extension of 10'. Clearwire later received approval under Petition 955 for a further extension of 10'. An RF report was to be provide when circumstances in operation caused a change in power density. Upon the establishment of any new State or Federal RF standards applicable to the facility, it was to be brought into compliance with same. Public or private entities were to be able to share space on the tower for fair consideration, or provided reasons precluding same. Reasonable space was to be provided for municipal antennas for no compensation provided they were compatible with the structural integrity of the tower. Obsolete antennas were to be removed within 60 days. There were no further post construction stipulations set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the City of New Haven's Mayor, Toni N. Harp, and Executive Director of City Planning, Aicha Woods, as well as to 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
 Sr. Property Specialist
 SBA COMMUNICATIONS CORPORATION
 134 Flanders Rd., Suite 125
 Westborough, MA 01581
 508.251.0720 x3804 + T
 508.366.2610 + F
 508.868.6000 + C
GShepherd@sbsite.com

Attachments

cc: The Honorable Toni N. Harp / with attachments
City of New Haven, 165 Church Street, New Haven, CT 06510
 Aicha Woods, Executive Director of City Planning / with attachments
City of New Haven, 165 Church Street, New Haven, CT 06510
 A.F. Forbes, Inc. / Hennessey Family Limited Partnership / with attachments
389 Forbes Ave., New Haven, CT 06512 (town address on file)

401 Forbes Ave., #411, New Haven CT, 06512 (SBA address on file)

Exhibit List

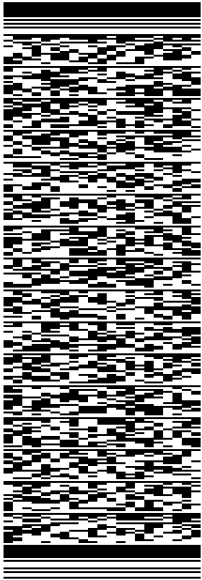
Exhibit 1	Check Copy	Invoiced at a later date per CSC
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	Docket 298, Petition 955 and Petition 908
Exhibit 6	Construction Drawings	B+T Group 8/14/19
Exhibit 7	Structural Analysis	TES 7/15/19
Exhibit 8	Post Mod Mount Analysis	TES 7/26/19
Exhibit 9	Mount Mod Drawings	B+T Group 8/14/19
Exhibit 10	EME Report	Transcom 6/19/19

EXHIBIT 1

Normally, Exhibit 1 would contain a copy of the check, which due to COVID 19, will be invoiced by the CSC at a later date.

EXHIBIT 2

ORIGIN ID: BFFA (508) 614-0389 RICK WOODS SBA COMMUNICATIONS CORPORATION 134 FLANDERS RD SUITE 125 WESTBOROUGH, MA 01581 UNITED STATES US		SHIP DATE: 24 JUL 20 ACTWGT: 1.00 LB CAD: 105843304/NET4280
TO MELANIE A. BACHMAN EXEC. DIR CONNECTICUT SITING COUNCIL TEN FRANKLIN SQUARE NEW BRITAIN CT 06051 (508) 251-0720 X 302 INV: REF: 105692009-6089 PO: DEPT:		BILL SENDER




MON - 27 JUL 10:30A

PRIORITY OVERNIGHT

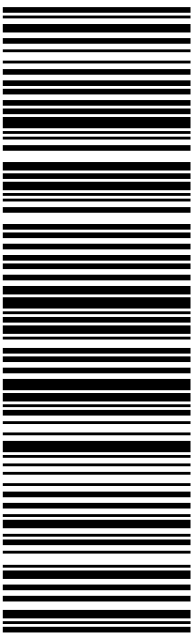
TRK# 7710 8605 1969

0201

SEBDLA

CT-US BDL

06051



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
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Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID: BBFA (508) 614-0389 RICK WOODS SBA COMMUNICATIONS CORPORATION 134 FLANDERS RD SUITE 125 WESTBOROUGH, MA 01581 UNITED STATES US		SHIP DATE: 24 JUL 20 ACTWGT: 1.00 LB CAD: 105843304/NET4280
TO THE HONORABLE TONI N. HARP CITY OF NEW HAVEN 165 CHURCH STREET NEW HAVEN CT 06510 (505) 251-0720 INV: REF: 1056-92009-6089 PO: DEPT:		
56BJ3/C6A6/B766		

TRK# 7710 8610 4381 0201 SE EFBA CT-US BDL 06510	MON - 27 JUL 10:30A PRIORITY OVERNIGHT
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TO AICHA WOODS, EX. DIR. OF CITY PLANN CITY OF NEW HAVEN 165 CHURCH STREET NEW HAVEN CT 06510 (505) 251-0720 INV: REF: 1056-92009-6089 PO: DEPT:		BILL SENDER
 		
		
TRK# 7710 8613 7659 MON - 27 JUL 10:30A 0201 PRIORITY OVERNIGHT SE EFBA 06510 CT-US BDL		
		

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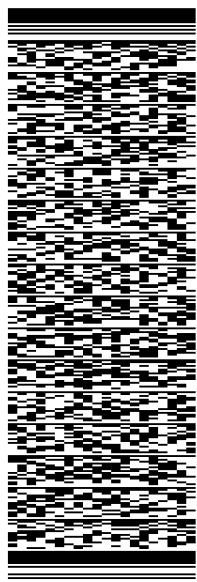
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RICK WOODS		ACTWGT: 1.00 LB
SBA COMMUNICATIONS CORPORATION		CAD: 105843304/NET4280
134 FLANDERS RD		
SUITE 125		
WESTBOROUGH, MA 01581		
UNITED STATES US		
TO HENNESSEY FAMILY LIMITED PARTNERSHI		BILL SENDER
A.F. FORBES INC.		
389 FORBES AVE		
NEW HAVEN CT 06512		
(508) 251-0720	REF: 1056-92009-6089	
INV:		
PO:	DEPT:	







TRK#	7710 8617 9416	MON - 27 JUL 10:30A
0201		PRIORITY OVERNIGHT
SE EFBA		06512
	CT-US	BDL



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EXHIBIT 3

389 FORBES AV

Location 389 FORBES AV

Mblu 068/ 0955/ 00300/ /

Acct# 068 0955 00300

Owner HENNESSEY FAMILY LIMITED
*

Assessment \$395,500

Appraisal \$565,000

PID 2929

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$523,800	\$41,200	\$565,000
Assessment			
Valuation Year	Improvements	Land	Total
2018	\$366,660	\$28,840	\$395,500

Owner of Record

Owner HENNESSEY FAMILY LIMITED *
Co-Owner PARTNERSHIP
Address 389 FORBES AV
NEW HAVEN, CT 06512

Sale Price \$50,000
Certificate
Book & Page 8054/ 32
Sale Date 09/06/2007
Instrument 25

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
HENNESSEY FAMILY LIMITED *	\$50,000		8054/ 32	25	09/06/2007
HENNESSEY FAMILY LP	\$50,000		6129/ 205		05/31/2002
WACHOVIA BANK NA	\$0		6116/ 296		05/13/2002
FIRST UNION NATIONAL BANK	\$0		5880/ 90	1	06/22/2001
DILLON MARY F	\$0		3096/ 330		09/23/1983

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: \$0

Building Percent
Good:
Replacement Cost
Less Depreciation: \$0

Building Attributes	
Field	Description
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Interior Condition	
Fin Bsmnt Area	
Fin Bsmnt Qual	
NBHD Code	

Building Photo

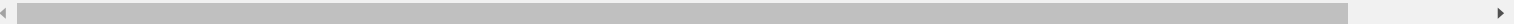


(http://images.vgsi.com/photos/NewHavenCTPhotos//\00\02\96/

Building Layout

 Building Layout
(http://images.vgsi.com/photos/NewHavenCTPhotos//Sketches/2

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



Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land UseLand Line Valuation

Use Code 1060
Description Outbuilding Only
Zone BA
Neighborhood 0400
Alt Land Appr No
Category

Size (Acres) 0.26
Frontage 90
Depth 105
Assessed Value \$28,840
Appraised Value \$41,200

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CELT	CELL ANTENNA			3 UNITS	\$523,800	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$742,500	\$41,200	\$783,700
2016	\$742,500	\$41,200	\$783,700
2015	\$600,000	\$38,900	\$638,900

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$519,750	\$28,840	\$548,590
2016	\$519,750	\$28,840	\$548,590
2015	\$420,000	\$27,230	\$447,230

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EXHIBIT 4

Google Maps 389 Forbes Ave



Map data ©2019 Google 200 ft



389 Forbes Ave

New Haven, CT 06512



Directions



Save



Nearby

Send to your
phone

Share



74R3+3W New Haven, Connecticut

Photos



EXHIBIT 5



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

Daniel F. Caruso

Chairman

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

August 18, 2010

Thomas J. Regan, Esq.
Brown Rudnick LLP
CityPlace I, 185 Asylum Street
Hartford, CT 06103

RE: **PETITION NO. 955** - The Clear Wireless LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing telecommunications facility located at 389 Forbes Avenue, New Haven, Connecticut.

Dear Attorney Regan:

At a public meeting held on August 17, 2010, the Connecticut Siting Council (Council) considered and ruled that this proposal would not have a substantial adverse environmental effect, and pursuant to General Statutes § 16-50k would not require a Certificate of Environmental Compatibility and Public Need.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition, dated July 1, 2010.

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

Very truly yours,

Daniel F. Caruso
Chairman

DFC/CDM/laf

Enclosure: Staff Report dated August 17, 2010

c: The Honorable John DeStefano, Jr, Mayor, City of New Haven
Thomas Talbot, Deputy Director-Plan Department, City of New Haven



Daniel F. Caruso
Chairman

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

Petition No. 955

Clearwire

New Haven, Connecticut

Staff Report

August 17, 2010

On July 1, 2010, the Connecticut Siting Council (Council) received a petition from Clear Wireless LLC (Clearwire) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the addition of a ten-foot extension to an existing 76-foot tall monopole tower located at 389 Forbes Avenue in New Haven, Connecticut. Council member Dr. Barbara Bell visited the site with staff member David Martin on July 23, 2010 to review the proposal. Jennifer Herz, a lawyer with Brown Rudnick, and Paul Fanos, an engineer with Infinigy Engineering & Surveying, represented Clearwire at the field review.

The existing tower was approved at 66 feet under Docket 298 on February 2, 2005. It replaced a billboard on which Sprint had mounted antennas on an adjacent property at 401-411 Forbes Avenue. The replacement was necessitated by the reconstruction of I-95, a project that resulted in the condemnation of the 401-411 Forbes Avenue property. There are three carriers on the existing tower: Sprint at a centerline height of 62.5 feet, T-Mobile at 55 feet, and Pocket at a centerline height of 72 feet. Pocket received approval on July 22, 2009 from the Council under Petition 908 to extend the height of the tower to 76 feet in order to place its antennas at its current height.

Now Clearwire would like to extend the tower an additional ten feet in order to install three WiMAX antennas, three remote radio heads, and four microwave dishes. Clearwire's antennas would be installed on T-arm mounts. These mounts, however, would not extend as far out from the tower as the mounts of Sprint and T-Mobile, nor would they be as wide, making Clearwire's visual profile smaller than the two lowest carriers. Pocket's antennas are flush-mounted. Clearwire's ground equipment would be installed inside a seven-foot by seven-foot leased area within the existing compound.

A structural analysis of the tower concluded that it could support the proposed extension and additional antennas. Council staff calculates that the addition of Clearwire's antennas would bring the aggregate power density of the tower's existing antenna arrays to 54.8% of the FCC's Maximum Permissible Emission.

The existing tower is located towards the rear of its host property—a gas station/convenience store—approximately 70 feet from Forbes Avenue (Route 1) and 30 feet from the retaining wall at the edge of the I-95 right-of-way. The immediate vicinity of the site consists mostly of commercial and industrial uses, although there is a small side street with four residences directly across Forbes Avenue from the tower site. There are a number of tall 345 kV transmission towers in the near vicinity and an industrial smoke stack across I-95, so this tower would not be a singular vertical intrusion on the heavily urbanized viewscape.

The proposed extension of this existing tower is not expected to have any substantial adverse environmental effects.



Affirmative Action / Equal Opportunity Employer

CT598C929

DOCKET NO. 298 - Sprint Spectrum, L.P. d/b/a Sprint PCS }
application for a Certificate of Environmental Compatibility and }
Public Need for the construction, maintenance and operation of a }
wireless telecommunications facility at 389 Forbes Avenue, New }
Haven, Connecticut. }

Connecticut

Siting

Council

February 2, 2005

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Sprint Spectrum, L.P. d/b/a Sprint PCS, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 389 Forbes Avenue, New Haven, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint and other entities, both public and private, but such tower shall not exceed a height of 70 feet above ground level. The height at the top of the antennas shall not exceed 70 feet above ground level. The tower design shall include a tower yield point of 40 feet above ground level to prevent the upper 30 feet of the tower from affecting adjacent parcels in the event of a tower failure.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the City of New Haven for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. Any request for an extension of this period shall be filed with the Council not later than sixty days prior to the expiration date of this Certificate and shall be served on the City of New Haven and all parties and intervenors as listed on the service list. Any proposed modifications to this Decision and Order shall likewise be so served.
10. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The New Haven Register and The New Haven Inquirer.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant

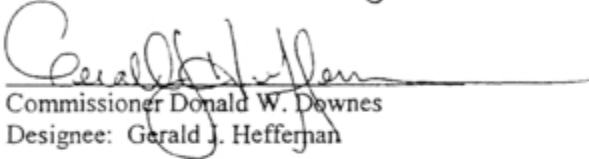
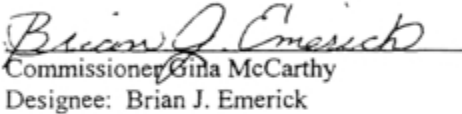
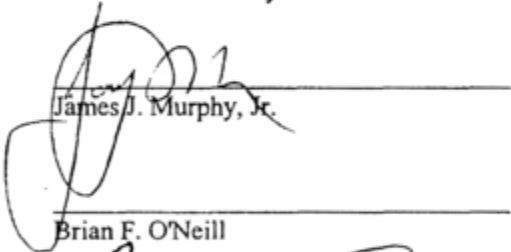
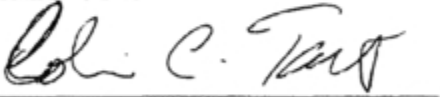
Sprint Spectrum, L.P. d/b/a Sprint PCS

Its Representative

Thomas J. Regan, Esq.
Brown Rudnick Berlack Israels LLP
CityPlace I, 38th Floor
185 Asylum Street
Hartford, CT 06103-3402

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case, or read the record thereof, in **DOCKET NO. 298** – Sprint Spectrum, L.P. d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at 389 Forbes Avenue, New Haven, Connecticut, and voted as follows to approve the proposed facility:

<u>Council Members</u>	<u>Vote Cast</u>
 Pamela B. Katz, P.E., Chairman	Yes
 Commissioner Donald W. Downes Designee: Gerald J. Hefferman	Yes
 Commissioner Gina McCarthy Designee: Brian J. Emerick	Yes
_____ Philip T. Ashton	Absent
 Daniel P. Lynch, Jr.	Yes
 James J. Murphy, Jr.	Abstain
_____ Brian F. O'Neill	Absent
 Colin C. Tait	Yes
_____ Edward S. Wilensky	Absent

Dated at New Britain, Connecticut February 2, 2005.

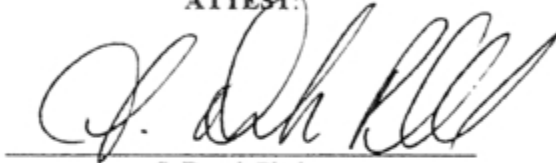
STATE OF CONNECTICUT)

ss. New Britain, Connecticut :

COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

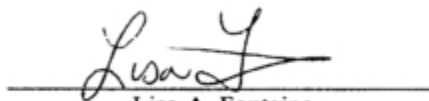
ATTEST:

A handwritten signature in dark ink, appearing to read 'S. Derek Phelps', written over a horizontal line.

S. Derek Phelps
Executive Director
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 298 has been forwarded by Certified First Class Return Receipt Requested mail on February 4, 2005, to all parties and intervenors of record as listed on the attached service list, dated September 8, 2004.

ATTEST:

A handwritten signature in dark ink, appearing to read 'Lisa A. Fontaine', written over a horizontal line.

Lisa A. Fontaine
Administrative Assistant
Connecticut Siting Council

PULLMAN & COMLEY, LLC
ATTORNEYS AT LAW

CARRIE L. LARSON
90 State House Square
Hartford, CT 06103-3702
p (860) 424-4312
f (860) 424-4370
clarson@pullcom.com

June 23, 2009

Via Federal Express

S. Derek Phelps, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

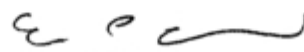
**Re: Petition for Declaratory Ruling re: Installation of Telecommunications
Equipment TowerCo, LLC Telecommunications Facility at
389 Forbes Avenue, New Haven, Connecticut**

Dear Mr. Phelps:

Please be advised that Pullman & Comley, LLC represents Youghioghny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket") in the above-referenced matter. Pocket is pleased to submit this Petition to install antennas and appurtenant equipment at the existing 66.5-foot monopole facility located at 389 Forbes Avenue in New Haven, Connecticut. Please find attached an original and twenty-five (25) copies of a Petition for a Declaratory Ruling that No Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing telecommunications facility, located at 389 Forbes Avenue in the City of New Haven ("Facility"). Specifically, Pocket seeks to install a ten foot extension on the existing monopole, increasing the overall height to 76.5 feet. The extension would accommodate the proposed installation of Pocket antennas at the 72 foot level on the proposed extension. A check in the amount of \$500 to cover the filing fee for this Petition is also enclosed. The chief elected official of New Haven, as well as the owners of the tower and the underlying property have been sent notice of this Petition by first class mail.

We believe this represents an opportunity to take advantage of an existing telecommunication facility thereby reducing the need for additional wireless towers. We look forward to your review and are happy to answer any questions you may have.

Respectfully Submitted,


Carrie L. Larson

DM 308307
727683

PULLMAN & COMLEY, LLC
ATTORNEYS AT LAW

cc: Hennessey Family Limited Partnership
Ms. Catherine Godwin, TowerCo, LLC
John DeStefano, Jr., Mayor, City of New Haven

Hartford/72572.2/KSHEATHELM/374843v1

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

**RE: Petition of Youghiogheny
Communications-Northeast, LLC,
for a Declaratory ruling that a
Modification to an Existing TowerCo, LLC
Telecommunications Facility at 389 Forbes Avenue,
New Haven, Connecticut, Does Not Require a
Certificate of Environmental Compatibility and Public
Need as the Proposed Modification Will Not
Have a Substantial Adverse Environmental Effect**

PETITION NO. _____

June 23, 2009

Introduction

Youghiogheny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket") hereby Petitions the Connecticut Siting Council("Council") for a Declaratory Ruling that a Certificate of Environmental Compatibility and Public Need ("Certificate") is not required pursuant to Section 16-50 *et seq.* of the Connecticut General Statutes ("CGS") for the modification of an existing telecommunications facility described herein. The modification involves the installation of a ten foot extension on the existing monopole, increasing the overall height an additional ten feet, from 66.5 feet to 76.5 feet. The extension would accommodate the proposed installation of Pocket antennas at the 72 foot level, flush mounted on the proposed extension. Pocket submits that no Certificate is required because the proposed modification, a ten foot height increase, will not have a substantial adverse environmental effect.

Pocket as Petitioner

Pocket is licensed by the Federal Communications Commission ("FCC") to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation.

Description of the Project

The existing facility includes a 66.5 foot self-supporting monopole and associated equipment compound, located at 389 Forbes Avenue, New Haven (the "Facility"). As shown in the topographic map attached hereto as Exhibit A, The Facility is located in the eastern portion of New Haven, immediately north of Interstate 95 North, roughly 100 feet south of Forbes Avenue (Route 1) and roughly 200 feet west of Woodward Avenue. The coordinates for the site are **Lat: 41°-17'-24"** and **Long: 72°-53'-43"**. The tower is located in a predominantly commercial/industrial area, with I-95 and associated ramps to the immediate south, gas stations to the east and a commercial building to the west. A small cluster of four houses (Brown Place), with a wooded area to the west and more commercial/industrial buildings to the east, lies across Forbes Avenue. An aerial photograph of the area is included with the map in Exhibit A.

The tower currently supports T-Mobile antennas at the fifty-five foot (55') level centerline AGL (above ground level) and Sprint antennas at the sixty-two point five foot level (62.5') AGL. Pocket proposes to install a ten foot monopole extension to the Facility in order to install three APXV18-206517-C flush mount antennas on the tower at the seventy two foot centerline (72') AGL, and a Nortel CDMA Micro BTS 3231 cabinet, mounted on an "H-Frame," contained within a six foot by six foot (6'-0" x 6'-0") lease area. A small GPS antenna will be mounted to the H-Frame. An ice bridge will run from the lease area to the tower. As mentioned above and shown in the site plans attached hereto as Exhibit B, Pocket will need to install a ten foot extension on the tower, increasing the height from sixty six point five feet (66.5') AGL, to seventy six point five feet (76.5') AGL to attain the necessary coverage for it's antennas. Utilities will be run via a proposed underground conduit from an existing utility backboard, located at the Facility (See Design Drawings and Equipment Specifications, attached as Exhibits

B and C respectively). A structural analysis of the monopole tower facility has been performed and is attached as Exhibit D. As shown in Drawing E-1 of the structural analysis, the tower extension is twelve inches (12") in diameter at both the bottom and top of the extension. As shown in Drawing E-1, the overall tower tapers to the top of the existing tower, which would constitute the base of the proposed extension. The structural analysis confirms that the tower is structurally capable of safely supporting the proposed extension and antenna installation. To accommodate Pocket's equipment on a temporary basis, a mobile, EPA approved generator and small microwave dish antenna (approximately 14" by 14") may be used at the site to provide electricity until permanent power can be established by the utility provider. Pocket anticipates that, if needed at all, the temporary generator will be in use for a maximum of eight weeks from the time of approval. The specifications on this proposed temporary generator and microwave dish are included in the Equipment Specifications, attached as Exhibit C. Due to the temporary use and low emissions from the generator, no permit is required from the Department of Environmental Protection. Pocket would propose to refuel the generator every 48 hours.

Surrounding Land Uses

As discussed above and shown in Exhibit A, the proposed project area is in a predominantly commercial/industrial area, with I-95 and associated ramps to the immediate south, gas stations to the east and a commercial building to the west. A small cluster of four houses (Brown Place), with a wooded area to it's west and more commercial/industrial buildings to it's east, lies across Forbes Avenue. An aerial photograph of the area is included with the map in Exhibit A. Abutting property owners have been notified by certified mail of the proposed project. A list of abutting property owners is included with the site plans, attached as Exhibit B.

Proposed Service Area

As can be seen in the propagation maps attached hereto as Exhibit E, Pocket's antennas will be used to fill an existing gap in coverage in New Haven and East Haven along Interstate 95 and the highly traveled areas Forbes Avenue (Route 1), Townsend Avenue (Route 337), Frontage Road and areas ranging toward New Haven Harbor to the east. The antennas will also enhance existing coverage for capacity and facilitate in-building coverage in the area. This area encompasses a number of commercial and industrial enterprises. This location is important to Pocket's system, as Interstate 95 and Route 1 are major transportation arteries of the state.

The Project Will Not Have a Substantial Adverse Environmental Effect

The project will not have a substantial adverse environmental effect:

- Pocket's installation will have no substantial adverse visual impact. The tower is located in an area in which a ten foot increase in height will have a minimal visual effect. The overall height of the tower, after the proposed extension will be 76.5 feet. While the Facility is visible from areas along Interstate 95, Forbes Avenue, and much of the immediate surrounding area, the addition of the proposed extension and telecommunications equipment to the Facility will not create a significant visual impact. The extension is designed to blend in visually with the tower. As shown in the photo simulations, attached as Exhibit G, the tower is located in a predominantly commercial/industrial area in which a ten foot extension to the tower will have a minimal visual effect. In addition, Pocket's antennas will be flush-mounted, reducing the overall visibility even further. The associated equipment will be located directly underneath the Facility in the existing equipment compound. A chain-link fence surrounds the

compound. Pocket submits that the installation will have virtually no visual impact on the surrounding area.

- The project will involve very limited construction activity and minor disturbance to the area. The area is currently an open area with no vegetation. No cutting or other vegetative removal will be necessary.
- Pocket's utility routing will be done via underground conduits within appropriate easements and therefore will have no substantial adverse effect.
- The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the site boundary, to a level at or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and MPE limits established by the Federal Communications Commission. The worst-case RF power density calculations for the proposed Pocket antennas would be 54.73% of the FCC standard (see general power density calculations table, attached as Exhibit F).
- Pocket's installation will have no impact on water flow, water quality, or air quality and will comply with relevant noise regulations.

Conclusion

Pocket will not have a need to construct a new telecommunications tower to provide coverage for the target area if the Council determines that no Certificate is required. This Project involves the installation of a ten foot monopole extension the existing tower facility, and involves virtually no new construction activity to the existing equipment compound. Pocket intends to use an H-Frame rather than an equipment building and its utility routing work will be minimal, with excavation entirely contained within the easement area. This Project is consistent

with the legislative policy set forth in CGS 16-50g and 16-50aa that encourages the use of existing structures and seeks to avoid the unnecessary proliferation of towers in the State.

CGS 16-50k(a) provides that a Certificate of Environmental Compatibility and Public Need is not required for a proposed modification of a facility that the Council determines does not have a "substantial adverse environmental effect." The environmental effects of this proposed antenna installation have been evaluated and will not result in a substantial adverse effect on the environment or ecology, nor will there be damage to the existing scenic, historical or recreational values. Accordingly, we request that the Council determine that the proposed modifications to an existing facility will have no such substantial adverse environmental effect and, therefore, that no Certificate is required.

Communications regarding this Petition for a Declaratory Ruling should be directed to:

Carrie L. Larson
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103-3702
Telephone: (860) 424-4312
Fax: (860) 424-4370

Respectfully submitted,

YOUGHIOGHENY COMMUNICATIONS-
NORTHEAST, LLC, D/B/A POCKET
COMMUNICATIONS ("POCKET")

By 

Carrie L. Larson
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103-3702
Telephone: (860) 424-4312
Fax: (860) 424-4370

Enclosure

cc: Hennessey Family Limited partnership
Ms. Catherine Godwin, TowerCo, LLC
John DeStefano, Jr., Mayor, City of New Haven

Hartford/72572.2/KSHEATHELM/374844v1

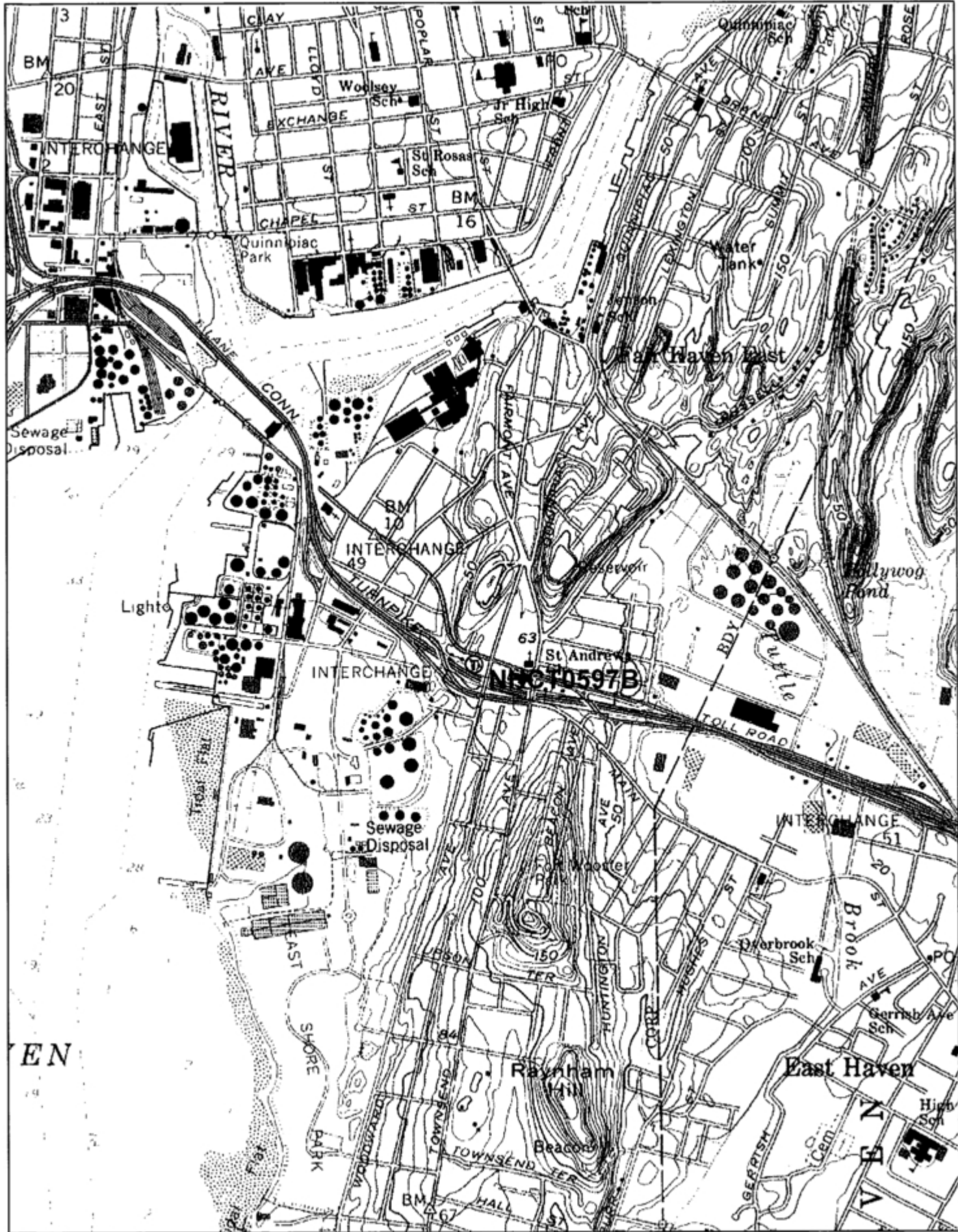
Exhibit A

**Site Map and Aerial
Photograph**

Pocket Site NHCT0597B

389 Forbes Avenue

New Haven, Connecticut



Bing Maps

Aerial photo of surrounding area of proposed tower extension, 389 Forbes Avenue, New Haven

FREE! Use Live Search 411 to find movies, businesses & more: 800-CALL-411.



Bird's eye view maps can't be printed, so another map view has been substituted.

Exhibit B

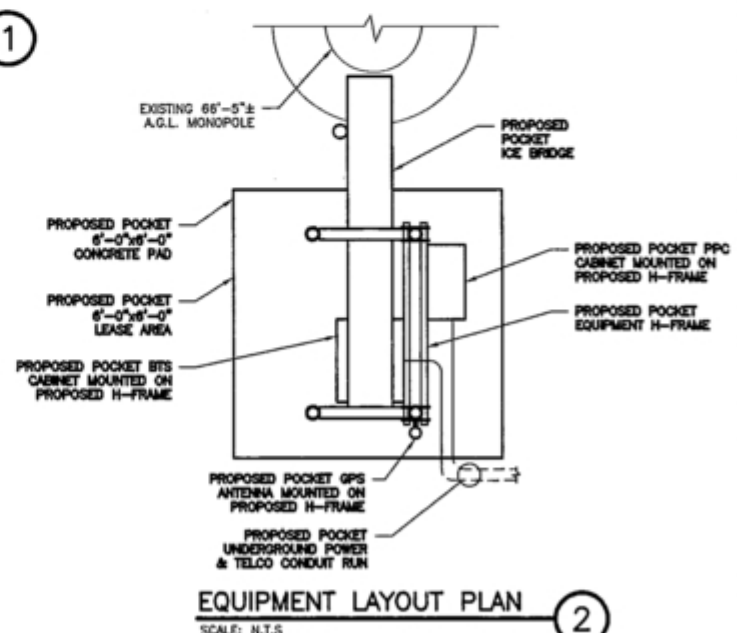
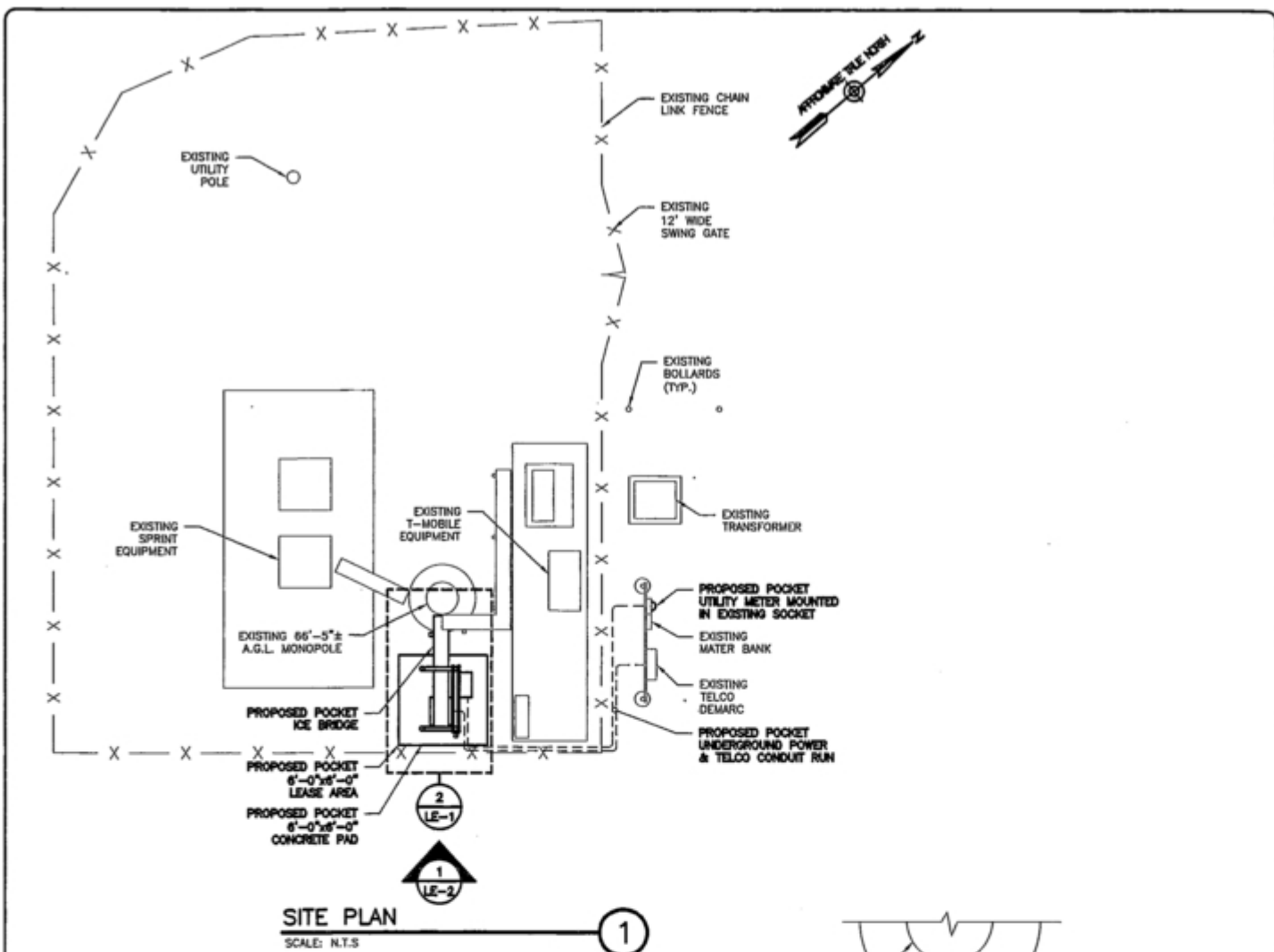
Design Drawings

with Abutter List

Pocket Site NHCT0597B

389 Forbes Avenue

New Haven, Connecticut



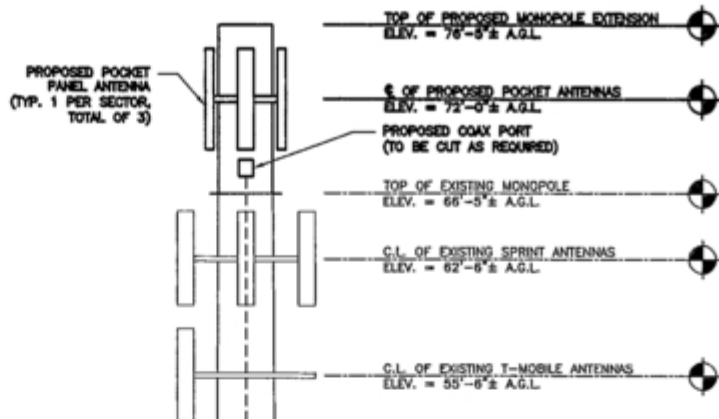
APPROX. COAX RUN	
100'	
APPROVALS	
SITE OWNER	DATE
CONSTRUCTION MANAGER	DATE
R.F. ENGINEER	DATE
SITE ACQUISITION	DATE

THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES.

MAXTON	50 Gardner St. South Carlin, NH 03305 Phone (603) 838-4383 Fax (603) 838-4385
BAY STATE DESIGN	Bay State Design, Inc. Architects • Engineers 340 Boston Post Road West Methuen, MA 01757 Phone: 978-229-1188 Fax: 978-229-1121

Copyright © 2009 Bay State Design, Incorporated

PREPARED FOR: Pocket Communications P.O. Box 5936 San Antonio, TX 78201	SITE NUMBER: NHCT0597B	DRAWN BY: KW	PROJECT NUMBER: 2882.093
	SITE NAME: HENNESSY PROPERTY NEW HAVEN, CT	CHECKED BY: JP	SHEET: LE-1
	SITE ADDRESS: 389 FORBES ROAD NEW HAVEN, CT 06515	DATE: 06/04/09	



PROPOSED POCKET
7/8" COAX RUN
(TOTAL OF 6 LINES)

EXISTING 66'-0" ±
A.G.L. MONOPOLE

PROPOSED POCKET GPS
ANTENNA MOUNTED ON
PROPOSED H-FRAME

PROPOSED POCKET
EQUIPMENT H-FRAME

PROPOSED POCKET BTS
CABINET MOUNTED ON
PROPOSED H-FRAME

PROPOSED POCKET PPC
CABINET MOUNTED ON
PROPOSED H-FRAME

PROPOSED POCKET
UTILITY METER MOUNTED
IN EXISTING SOCKET

EXISTING METER BANK

EXISTING BOLLARDS
(TYP.)

EXISTING
T-MOBILE
EQUIPMENT

EXISTING
TRANSFORMER

EXISTING CHAIN
LINK FENCE

EXISTING
SPRINT
EQUIPMENT

EXISTING ENTRY
PORT (BEYOND)

PROPOSED POCKET
8'-0"x8'-0"
LEASE AREA

ELEVATION

SCALE: N.T.S.

1

APPROVALS

SITE OWNER _____ DATE _____

CONSTRUCTION MANAGER _____ DATE _____

A/E ENGINEER _____ DATE _____

SITE ACQUISITION _____ DATE _____

THE ABOVE SIGNED INDENTURE APPROVES AND ACCEPTS THESE
DRAWINGS AND SPECIFICATIONS AND AGREES TO PROCEED
WITH THE CONSTRUCTION OF THE PROJECT IN ACCORDANCE
WITH THE CONDITIONS AND TERMS OF THE CONTRACT
AND THE LOCAL, STATE AND FEDERAL LAWS AND ORDINANCES
AND ANY OTHER LAWS AND ORDINANCES.

MAXTON
30 Easton St.
South Grafton, MA 02375
Phone: (508) 456-4361
Fax: (508) 456-4362

**BAY STATE
DESIGN**
Bay State Design, Inc.
Architects • Engineers
241 Shutes Ford Road West
Marblehead, MA 02148
Phone: 781-223-4100
Fax: 781-481-3321

Copyright © 2009 Bay State Design, Incorporated

PREPARED FOR:



Pocket Communications
P.O. Box 5936
San Antonio, TX 78201

SITE NUMBER:

NHCT0597B

SITE NAME:

HENNESSY PROPERTY
NEW HAVEN, CT

SITE ADDRESS:

389 FORBES ROAD
NEW HAVEN, CT 06515

DRAWN BY:

KW

CHECKED BY:

JP

DATE:

06/04/09

PROJECT NUMBER:

2882.093

SHEET:

LE-2



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

July 23, 2009

Carrie L. Larson, Esq.
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103-3702

RE: **PETITION NO. 908** - Youghioghny Communications-Northeast, LLC d/b/a Pocket Communications petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing telecommunications facility located at 389 Forbes Avenue, New Haven, Connecticut.

Dear Attorney Larson:

At a public meeting held on July 22, 2009, the Connecticut Siting Council (Council) considered and ruled that this proposal would not have a substantial adverse environmental effect, and pursuant to General Statutes § 16-50k would not require a Certificate of Environmental Compatibility and Public Need. This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition, dated July 9, 2009.

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

Very truly yours,

Daniel F. Caruso
Chairman

DFC/CDM/laf

Enclosure: Staff Report dated July 22, 2009

c: The Honorable John Destefano, Jr, Mayor, City of New Haven
Frank Gargiulo, Zoning Administrator, City of New Haven
Lewis K. Wise, Rogin Nassau LLC



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

Petition No. 908

Pocket Communications

New Haven, Connecticut

Staff Report

July 22, 2009

On June 24, 2009, the Connecticut Siting Council (Council) received a petition from Youghiogheny Communications-Northeast, LLC d/b/a Pocket Communications (Pocket) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for a ten-foot extension of an existing 66.5 foot monopole telecommunications tower at 389 Forbes Avenue in New Haven, Connecticut. Council member Phil Ashton and staff member David Martin visited the property on July 14, 2009 to review the proposal. Attorney Carrie Larson and Eric Dahl represented Pocket at the field review.

The existing tower was approved under Docket 298. It replaced a billboard on which Sprint had mounted antennas on an adjacent property at 401-411 Forbes Avenue. The replacement was necessitated by the reconstruction of I-95, a project that resulted in the condemnation of the 401-411 Forbes Avenue property. There are two carriers on the existing tower: Sprint at 62.5 feet and T-Mobile at 55 feet. Pocket would install three flush mounted antennas at a centerline height of 72 feet.

The existing tower is located towards the rear of its host property, approximately 70 feet from Forbes Avenue (Route 1). The rear of the property overlooks the I-95 right-of-way. The immediate vicinity of the site consists mostly of commercial and industrial uses, although there is a small side street with four residences directly across Forbes Avenue from the tower site. Pocket did send certified mail notices to surrounding property owners and did not receive any adverse comments. There are a number of tall 345 kV transmission towers nearby and an industrial smoke stack across I-95, so this tower would not be a singular vertical intrusion on the heavily urbanized viewscape.

A structural analysis concluded that the existing tower and foundation would be capable of accommodating the proposed extension. The addition of Pocket's antennas would bring the aggregate power density at the tower to 54.73% of the FCC's Maximum Permissible Emission.

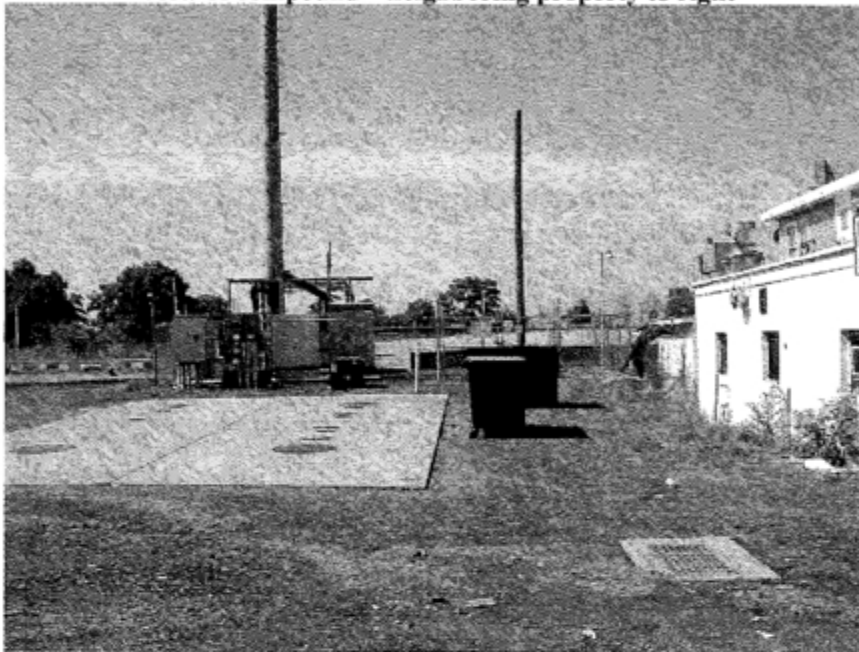
Addendum: On July 17, 2009, Council member Phil Ashton and staff member David Martin returned to the site of the petition to inspect a retaining wall, about which the owner of the property next to the wall had expressed some concerns in a letter submitted by his lawyer. The wall was built as part of the reconstruction of I-95 and runs along two sides of the 389 Forbes Avenue property, the side that abuts the I-95 right-of-way and the side next to a commercial building housing a package store on the complaining neighbor's property.

The retaining wall appeared to be in excellent condition, and there was no sign of subsidence in the tower's compound. Based on this inspection, and the structural analysis submitted with the petition, there is no apparent basis for concern about the retaining wall.

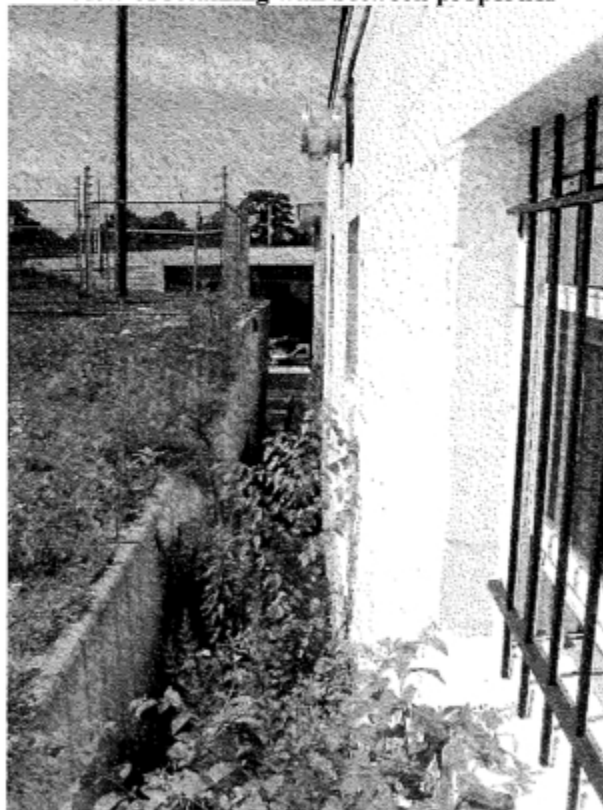
View of Existing Tower



View of compound – neighboring property to right



View of retaining wall between properties



View of retaining wall from near bottom of wall



Retaining on I-95 side of property

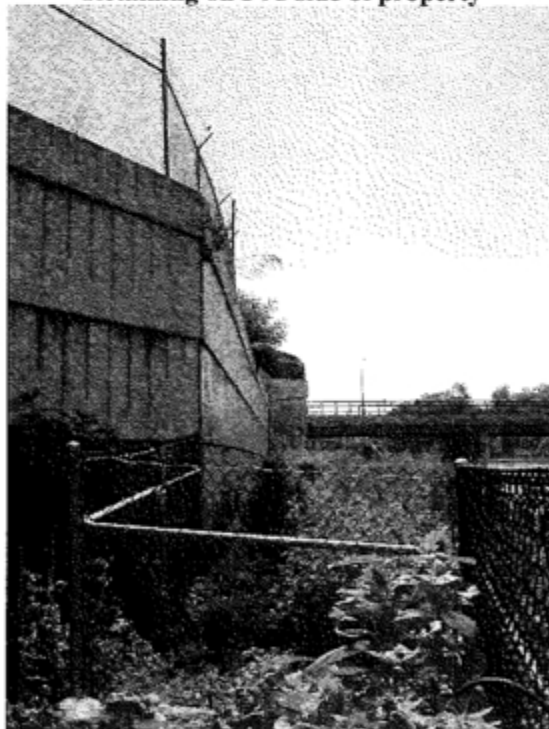


EXHIBIT 6

SITE NAME: NH041/SPRINT FORBES_ET

389 FORBES AVE.
NEW HAVEN, CT 06511

SITE NUMBER: CTNH041A

SITE CONFIG: 67D02C OUTDOOR



B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com



T-MOBILE NORTHEAST, LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766



SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581

CTNH041A

NH041/SPRINT
FORBES_ET

389 FORBES AVE.
NEW HAVEN, CT 06511

PROJECT NO: 101030.004.01

CHECKED BY: FWP

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	6/26/19	MMI	FOR REVIEW
1	8/14/19	JJD	CONSTRUCTION
2	9/12/19	JCO	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20



IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-1

REVISION: 2

PROJECT NOTES

GENERAL NOTES:

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC, ROUTINE MAINTENANCE AND THEREFORE, DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES:

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

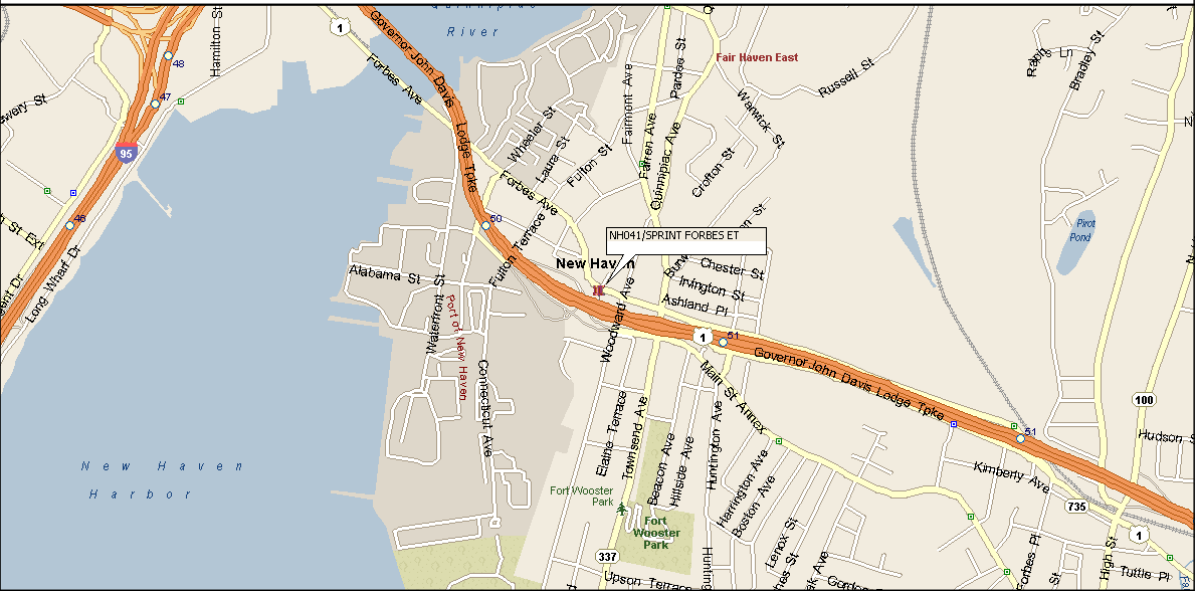
ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND HAS DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOAD. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

B+T GROUP ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTIONS ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES.

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS	LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS NOT PERMITTED	DIPLEXERS:	UNRESTRICTED
SECTOR B:	ACCESS NOT PERMITTED	RADIO CABINETS:	UNRESTRICTED
SECTOR C:	ACCESS NOT PERMITTED	PPC DISCONNECT:	UNRESTRICTED
RRH:	ACCESS NOT PERMITTED	MAIN CIRCUIT D/C:	UNRESTRICTED
TMA:	ACCESS NOT PERMITTED	NIU/T DEMARC:	UNRESTRICTED
GPS/LMU:	CAUTION: OSHA APPROVED PORTABLE 8" STEP-LADDER REQUIRED	OTHER/SPECIAL:	NONE

LOCATION MAP



NO SCALE

APPROVALS

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

ACCEPTANCE DOES NOT CONSTITUTE APPROVAL OF DESIGN, CALCULATIONS, ANALYSIS, TEST METHODS OF MATERIALS DEVELOPED OR SELECTED BY THE SUBCONTRACTOR AND DOES NOT RELIEVE SUBCONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY
T-MOBILE EQUIPMENT MODERNIZATION

ZONING JURISDICTION: (TOWN OF NEW HAVEN)
BASED ON INFORMATION PROVIDED BY T-MOBILE, REGULATORY COMPLIANCE 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 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).

SITE ADDRESS: 389 FORBES AVE.
NEW HAVEN, CT 06511

LATITUDE: 41.29018° N
LONGITUDE: 72.89528° W

JURISDICTION: NATIONAL, STATE & LOCAL CODES & ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

TOWER OWNER: SBA 2012 TC ASSETS, LLC.

SBA SITE ID: CT46149-A

SBA SITE NAME: HENNESSY PROPERTY

SBA REGIONAL SITE MANAGER: STEPHEN ROTH
(860) 539-4920
sroth@sbasite.com

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
C-1	COMPOUND AND ELEVATION PLAN	2
C-2	EXISTING AND PROPOSED ANTENNA PLANS	2
C-3	DETAILS	2
RF-1	RFDS DIAGRAMS	2
E-1	GROUNDING DETAILS AND NOTES	2



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GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI OR NFPA) LIGHTING PROTECTION CODE AND GENERAL COMPLIANCE WITH TELECORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATION OR ADVERSE FINDING TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GE'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 & 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BUS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDED FITTINGS OR BY BINDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20' OR MORE OF 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BAR TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

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

CONTRACTOR: SBA COMMUNICATIONS CORP.
SUBCONTRACTOR: GENERAL CONTRACTOR (CONSTRUCTION)
OWNER: T-MOBILE
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALL AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY, SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS NOTED OTHERWISE, PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WETHER SHALL BE HOT DIPPED GALVANIZED. TOUCH-UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW, USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, AL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION, EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT IF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:

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

BUILDING CODE: IBC 2015
ELECTRICAL CODE: NEC 2017

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318;
BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION; ASD, FOURTEENTH EDITION

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

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

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

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	GC	GENERAL CONTRACTOR	REF.	REFERENCE
AWG	AMERICAN WIRE GAUGE	MAX.	MAXIMUM	REQ.	REQUIRED
BCW	BARE COPPER WIRE	MGB	MASTER GROUND BAR	RF	RADIO FREQUENCY
BTS	BASE TRANSCEIVER STATION	MIN.	MINIMUM	T.B.D.	TO BE DETERMINED
(E)	EXISTING	(N)	PROPOSED	T.B.R.	TO BE REMOVED
EG	EQUIPMENT GROUND	N.T.S.	NOT TO SCALE	T.B.R.R.	TO BE REMOVED AND REPLACED
EGR	EQUIPMENT GROUND RING	RE:	REFERENCE	(TYP)	TYPICAL



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NORTON, MA 02766



SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581

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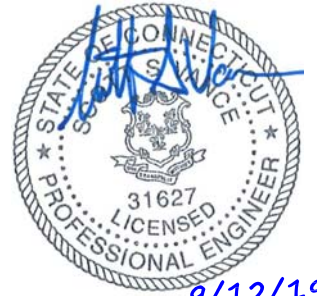
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PROJECT NO: 101030.004.01

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ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
0	6/26/19	MMI	FOR REVIEW
1	8/14/19	JJD	CONSTRUCTION
2	9/12/19	JCO	CONSTRUCTION

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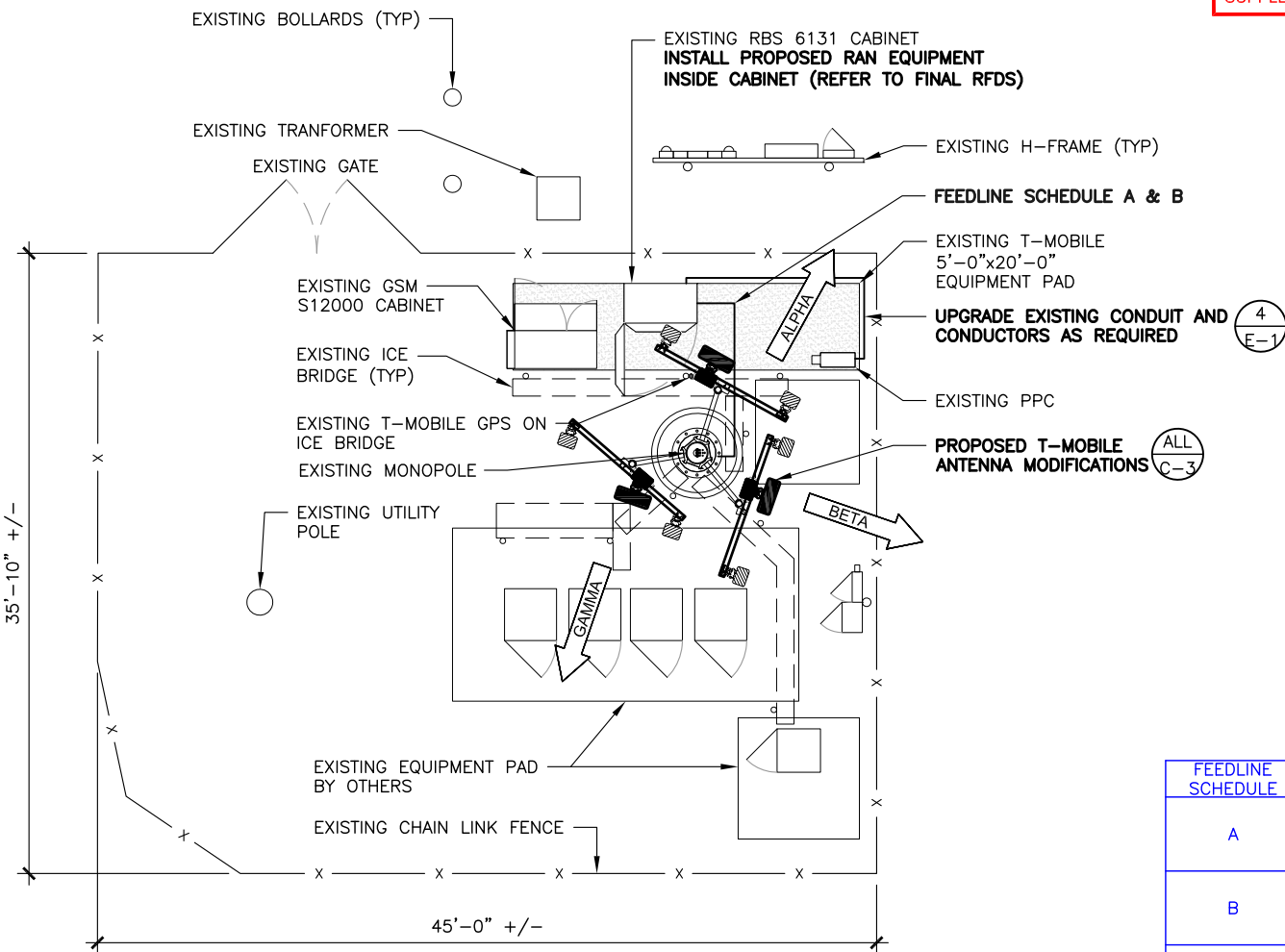
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SHEET NUMBER: GN-1

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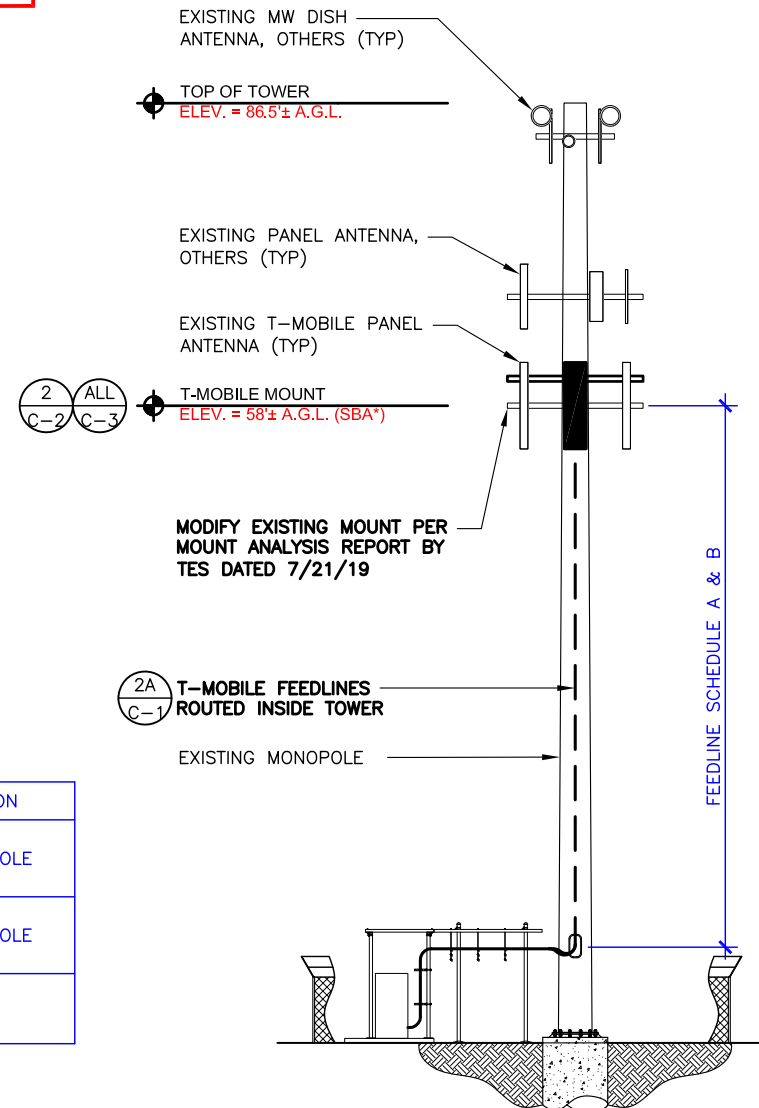


SPECIAL PRE-CONSTRUCTION WORK NOTE:

GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.

ANTENNA MOUNT STRUCTURAL DESIGN NOTE:

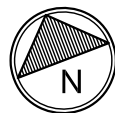
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FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO REMAIN: (6) 7/8" COAX (1) 9X18 HCS	INSIDE POLE
B	PROPOSED: (3) 6x12 HCS FIBER	INSIDE POLE
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER		

1 OVERALL SITE PLAN

SCALE: 11x17 SCALE: 3/32"=1'-0"
22x34 SCALE: 3/16"=1'-0"



2 ELEVATION DETAIL

SCALE: N.T.S.

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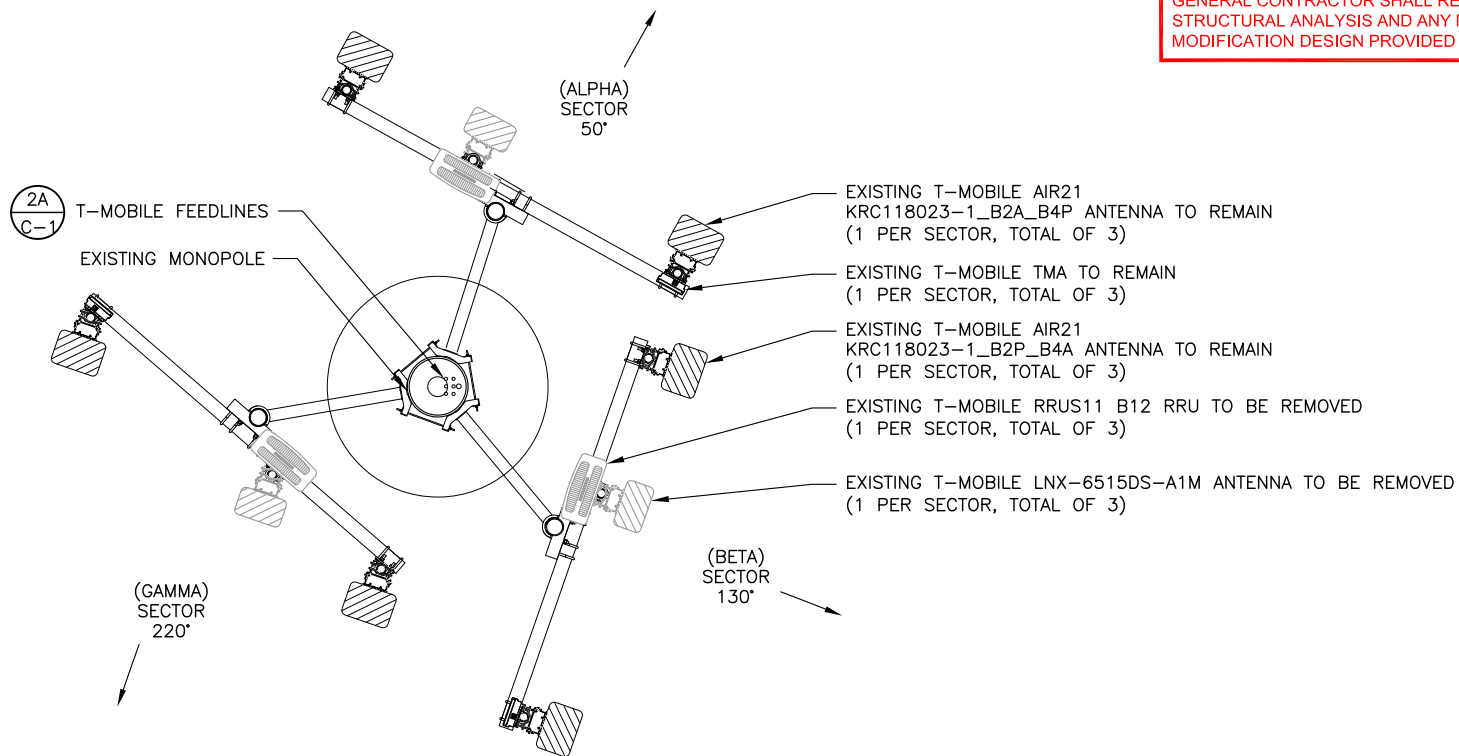
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REVISION:

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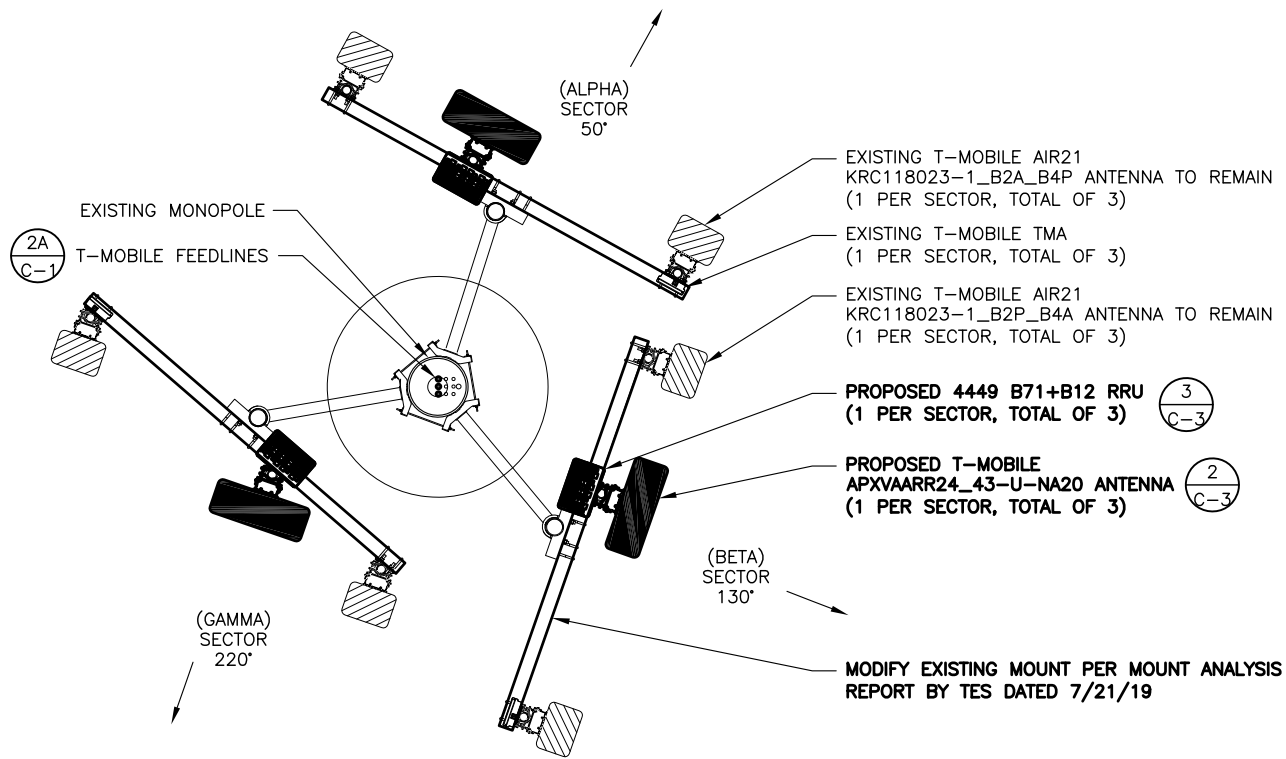
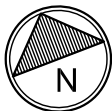


NOTE:
GENERAL CONTRACTOR SHALL REFER TO MOUNT
STRUCTURAL ANALYSIS AND ANY MOUNT
MODIFICATION DESIGN PROVIDED BY SBA.

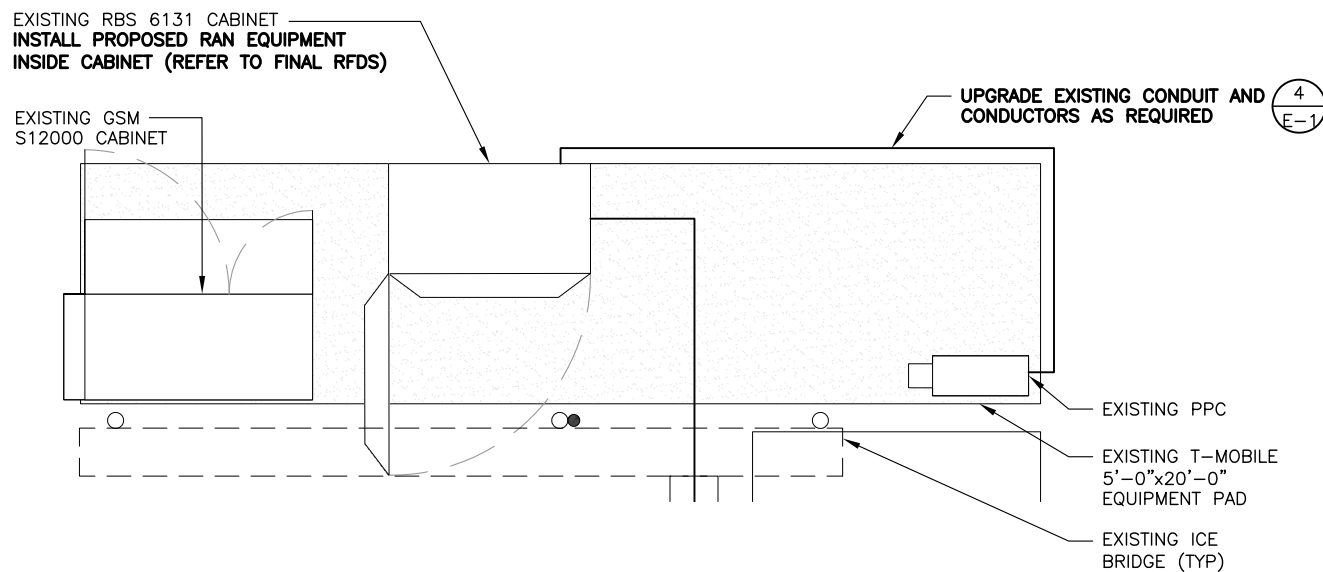
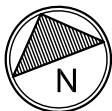
NOTE:
AT TIME OF CONSTRUCTION, CONTRACTOR TO VERIFY
AZIMUTHS OF EXISTING ANTENNAS. IF DIFFERENT
FROM RFDS, PLEASE NOTIFY THE RF ENGINEER AND
CONSTRUCTION MANAGER WITH ACTUAL AZIMUTH TO
ENSURE T-MOBILE'S DATABASE IS ACCURATE AND
UP-TO-DATE.

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

1 EXISTING ANTENNA PLAN
SCALE: 0' 1' 2' 4' 10' 11x17 SCALE: 1/4"=1'-0"
22x34 SCALE: 1/2"=1'-0"



2 PROPOSED ANTENNA PLAN
SCALE: 0' 1' 2' 4' 10' 11x17 SCALE: 1/4"=1'-0"
22x34 SCALE: 1/2"=1'-0"



3 EQUIPMENT PLAN
SCALE: 0' 1' 2' 4' 10' 11x17 SCALE: 1/4"=1'-0"
22x34 SCALE: 1/2"=1'-0"



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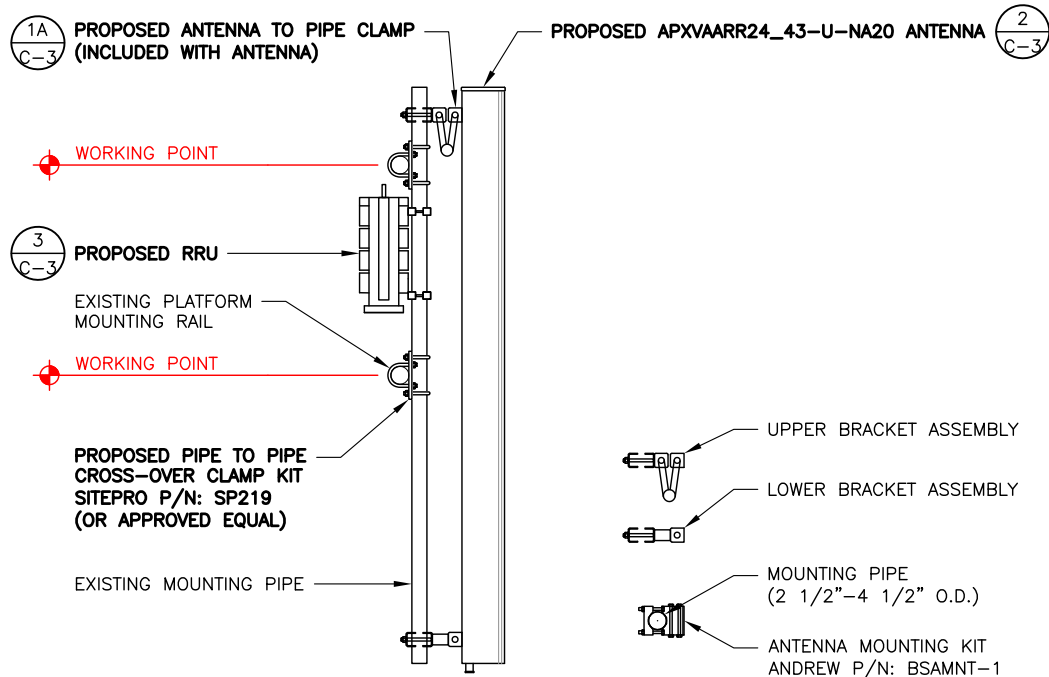
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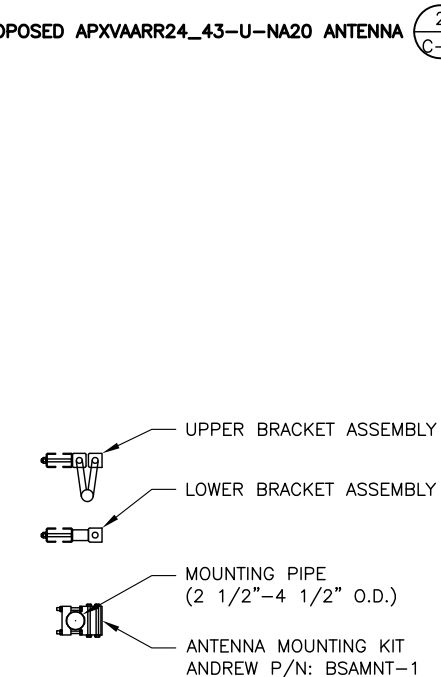
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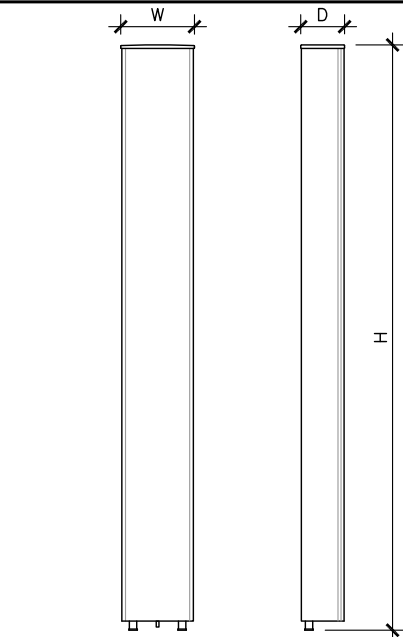
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1 PROPOSED L7/L6 ANTENNA & RRU MOUNTING DETAIL
SCALE: N.T.S.

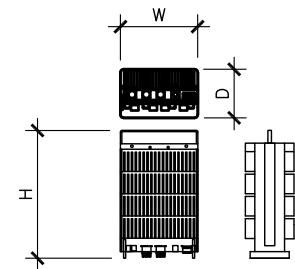


1A L7/L6 ANTENNA MOUNTING BRACKET
SCALE: N.T.S.



2 L7/L6 ANTENNA DETAIL
SCALE: N.T.S.

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



3 REMOTE RADIO UNIT (RRU)
SCALE: N.T.S.

ANTENNA MOUNT STRUCTURAL DESIGN NOTE:
ENGINEER-OF-RECORD HAS MADE A VISUAL ASSESSMENT ONLY OF EXISTING ANTENNA MOUNT ASSEMBLIES, WITHOUT THE BENEFIT OF A RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS, AND RECOMMENDS THAT EXISTING AND PROPOSED TOWER TOP EQUIPMENT BE INSTALLED AS DEPICTED HEREIN. STRUCTURAL DETAILS AS DEPICTED HEREIN FOR MODIFICATION OF EXISTING ANTENNA MOUNT ASSEMBLIES ARE PRELIMINARY ONLY AND THAT FINAL CONSTRUCTION DETAILS MAY BE SUBJECT TO CHANGE PENDING THE COMPLETION OF A SEPARATE SUPPLEMENTAL ANTENNA MOUNT STRUCTURAL ASSESSMENT. SUPPLEMENTAL STRUCTURAL MAPPING/CONDITIONS ASSESSMENT REPORT AND/OR SUPPLEMENTAL RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS.

FINAL ANTENNA SCHEDULE									
SECTOR	TECH	ANTENNA MODEL	AZIMUTH	RAD CENTER	M-TILT	E-TILT	RADIOS	CABLE TYPE	CABLE LENGTH
ALPHA	L21	ERICSSON AIR21 KRC118023-1_B2P_B4A	50°	58'	0	3	-	(1) 9x19 HCS FIBER	105'
	L7/L6	RFS APXVAARR24_43-U-NA20	50°	58'	0	2	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	105'
	U19/G19/U21	ERICSSON AIR21 KRC118023-1_B2A_B4P	50°	58'	0	3/3	(1) AWS TMA	(2) COAX 7/8"	105'
BETA	U21/L21	ERICSSON AIR21 KRC118023-1_B2P_B4A	130°	58'	0	4	-	-	105'
	L7/L6	RFS APXVAARR24_43-U-NA20	130°	58'	0	2	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	105'
	U19/G19/U21	ERICSSON AIR21 KRC118023-1_B2A_B4P	130°	58'	0	4/4	(1) AWS TMA	(2) COAX 7/8"	105'
GAMMA	U21/L21	ERICSSON AIR21 KRC118023-1_B2P_B4A	220°	58'	0	5	-	-	105'
	L7/L6	RFS APXVAARR24_43-U-NA20	220°	58'	0	2/2	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	105'
	U19/G19/U21	ERICSSON AIR21 KRC118023-1_B2A_B4P	220°	58'	0	5/5	(1) AWS TMA	(2) COAX 7/8"	105'

4 FINAL ANTENNA SCHEDULE
SCALE: N.T.S.

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WESTBOROUGH, MA 01581

CTNH041A
NH041/SPRINT
FORBES_ET
389 FORBES AVE.
NEW HAVEN, CT 06511

PROJECT NO: 101030.004.01
CHECKED BY: FWP

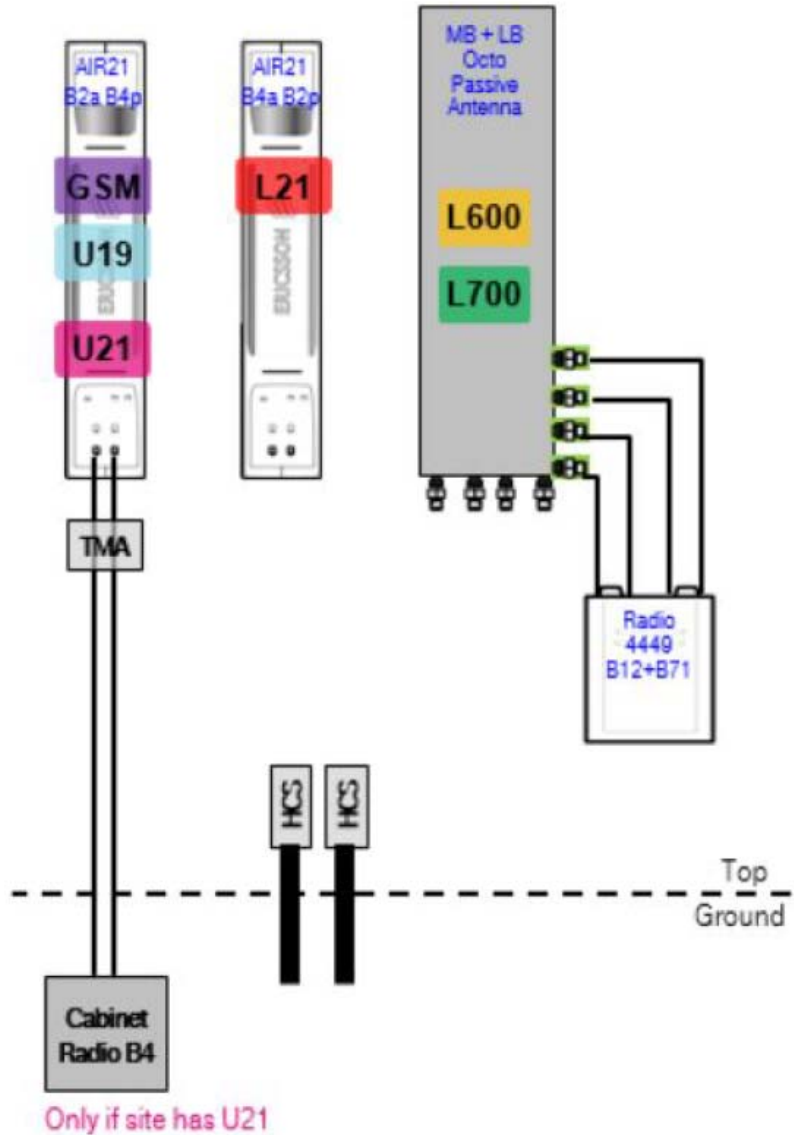
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REV	DATE	DRWN	DESCRIPTION
0	6/26/19	MMI	FOR REVIEW
1	8/14/19	JJD	CONSTRUCTION
2	9/12/19	JCO	CONSTRUCTION

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PEC.0001564
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SHEET NUMBER: **C-3**
REVISION: **2**



RF DESIGN GENERAL NOTE:

1. RF DESIGN BASED ON RFDS DATED 05/08/2019 . GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST RFDS AND RAN WIRING DIAGRAM IS USED FOR EQUIPMENT INSTALLATION.
2. PRIOR TO INSTALLATION OF TOWER TOP EQUIPMENT, GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY AZIMUTHS OF EXISTING ANTENNAS. DISCREPANCIES AND ACTUAL AZIMUTHS SHALL BE REPORTED IMMEDIATELY TO RF ENGINEER AND T-MOBILE CONSTRUCTION MANAGER.

RFDS FOOTNOTES:

1. INFORMATION IN BOLD RED TEXT IS PROVIDED BY A&E AND HIGHLIGHTS IMPORTANT DISCREPANCIES BETWEEN RFDS AND ACTUAL FIELD MEASUREMENTS OR SBA-PROVIDED RECORD INFORMATION.
- * SBA-PROVIDED ANTENNA RAD AGL BASED ON COLOCATION APPLICATION AND STRUCTURAL ANALYSIS AND SHALL SUPERCEDE ANY CONFLICTING RFDS ANTENNA RAD AGL.
- ** HYBRID TRUNK FEEDLINE LENGTHS AS PROVIDED BY A&E BASED ON SCALED DIMENSIONS FROM RBS TO ANTENNA/RRU CONNECTIONS PLUS 20' FOR (2) 10' COILS EACH AT TOP AND BOTTOM TERMINATIONS. T-MOBILE CONSTRUCTION MANAGER SHALL CONFIRM ALL EQUIPMENT SCHEDULES, PART NUMBERS AND FEEDLINE/JUMPER LENGTHS BEFORE PREPARING A BILL OF MATERIALS.

5/8/2019

CTNH041A_L600_2_1_draft_2019-05-08

CTNH041A_L600_2_1_draft

RAN Template: 67D02C Outdoor
A&E Template: 67D02C_2xAIR+1OP
Power System Template: Custom

Section 1 - Site Information

Site ID: CTNH041A
Status: Draft
Version: 2.1
Project Type: L600
Approved: Not Approved
Last Modified: 4/29/2019 4:21:31 PM
Last Modified By: GSM1900/MLov1

Site Name: NH041/Sprint Forbes_ET
Site Class: Monopole
Site Type: Structure Non Building
Plan Year:
Market: CONNECTICUT
Vendor: Ericsson
Landlord: Sprint

Latitude: 41.2901760000
Longitude: -72.8952810000
Address: 389 Forbes Ave
City/State: New Haven, CT
Region: NORTHEAST

RAN Template: 67D02C Outdoor
Sector Count: 3
Antenna Count: 9
Coax Line Count: 6
TMA Count: 3
RRU Count: 3

AL Template: 67D02C_2xAIR+1OP

Section 2 - Existing Template Images

Existing RAN Equipment	
Template: 702Cu	
Enclosure	1 2
Enclosure Type	RBS 6131 S12000 Outdoor
Baseband	DUW30 (x2) DUG20 DUS41
Hybrid Cable System	Ericsson 9x18 HCS "Select Length"
Radio	RU22 (x6)

Proposed RAN Equipment	
Template: 67D02C Outdoor	
Enclosure	1 2
Enclosure Type	RBS 6131 S12000 Outdoor
Baseband	DUW30 DUW30 DUG20 BB 6630 BB 6630 U2100 U1900 G1900 L2100 N600 (DARK) L700 L600
Hybrid Cable System	Ericsson 6x12 HCS "Select Length & AWG" (x3)
Radio	RU22 (x6) U2100

RAN Scope of Work:

*** Existing Cabinet is RBS6131 ***
Replace (1) DU341 with (1) BB6630 for LTE.
Add (1) BB6630 for future 5G N600.
Add (3) 6X12 HCS
Existing: (6) Coaxial Lines; (1) 9X18 HCS

Sector 1 (Proposed) view from behind									
Coverage Type	A - Outdoor Macro								
Antenna	1			2			3		
Antenna Model	Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		
Azimuth	50			50			50		
M. Tilt	0			0			0		
Height	56			56			56		
Ports	P1	P2	P3	P4	P5	P6	P7	P8	
Active Tech.	L2100		L700 L600	L700 L600			U1900 G1900	U2100	
Dark Tech.									
Restricted Tech.									
Decomm. Tech.									
E. Tilt	3		2				3	3	
Cables	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft. (x2)				Fiber Jumper - 15 ft. (x2)		7/8" Coax - 105 ft. (x2)
TMA's							Generic Twin Style 1B - AWS (AIAntenna)		
Diplexers / Combiners									
Radio	Radio 4449 B71+B1 2 (AI Antenna)			Radio 4449 B71+B1 2 (AI Antenna)					
Sector Equipment									

Sector 2 (Proposed) view from behind									
Coverage Type	A - Outdoor Macro								
Antenna	1			2			3		
Antenna Model	Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		
Azimuth	130			130			130		
M. Tilt	0			0			0		
Height	56			56			56		
Ports	P1	P2	P3	P4	P5	P6	P7	P8	
Active Tech.	L2100		L700 L600	L700 L600			U1900 G1900	U2100	
Dark Tech.									
Restricted Tech.									
Decomm. Tech.									
E. Tilt	4		2				4	4	
Cables	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft. (x2)				Fiber Jumper - 15 ft. (x2)		7/8" Coax - 105 ft. (x2)
TMA's							Generic Twin Style 1B - AWS (AIAntenna)		
Diplexers / Combiners									
Radio	Radio 4449 B71+B1 2 (AI Antenna)			Radio 4449 B71+B1 2 (AI Antenna)					
Sector Equipment									

Sector 3 (Proposed) view from behind									
Coverage Type	A - Outdoor Macro								
Antenna	1			2			3		
Antenna Model	Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		
Azimuth	220			220			220		
M. Tilt	0			0			0		
Height	56			56			56		
Ports	P1	P2	P3	P4	P5	P6	P7	P8	
Active Tech.	L2100		L700 L600	L700 L600			U1900 G1900	U2100	
Dark Tech.									
Restricted Tech.									
Decomm. Tech.									
E. Tilt	6		2	2			6	6	
Cables	Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft. (x2)				Fiber Jumper - 15 ft. (x2)		7/8" Coax - 105 ft. (x2)
TMA's							Generic Twin Style 1B - AWS (AIAntenna)		
Diplexers / Combiners									
Radio	Radio 4449 B71+B1 2 (AI Antenna)			Radio 4449 B71+B1 2 (AI Antenna)					
Sector Equipment									

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T-Mobile

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NORTON, MA 02766

SBA

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WESTBOROUGH, MA 01581

CTNH041A

**NH041/SPRINT
FORBES_ET**

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PROJECT NO: 101030.004.01

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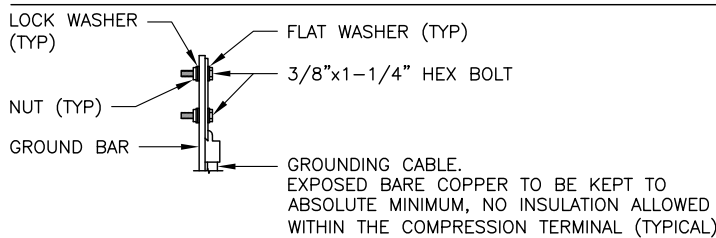
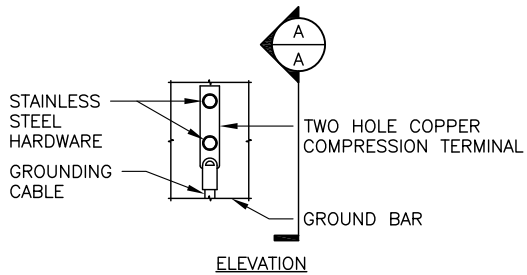
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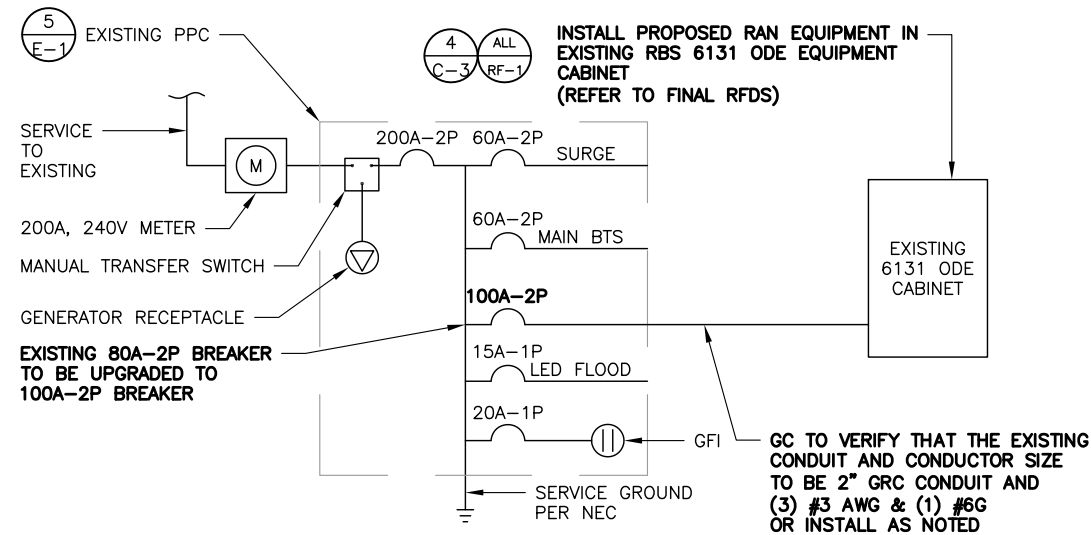
RF-1 **2**



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

1 TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



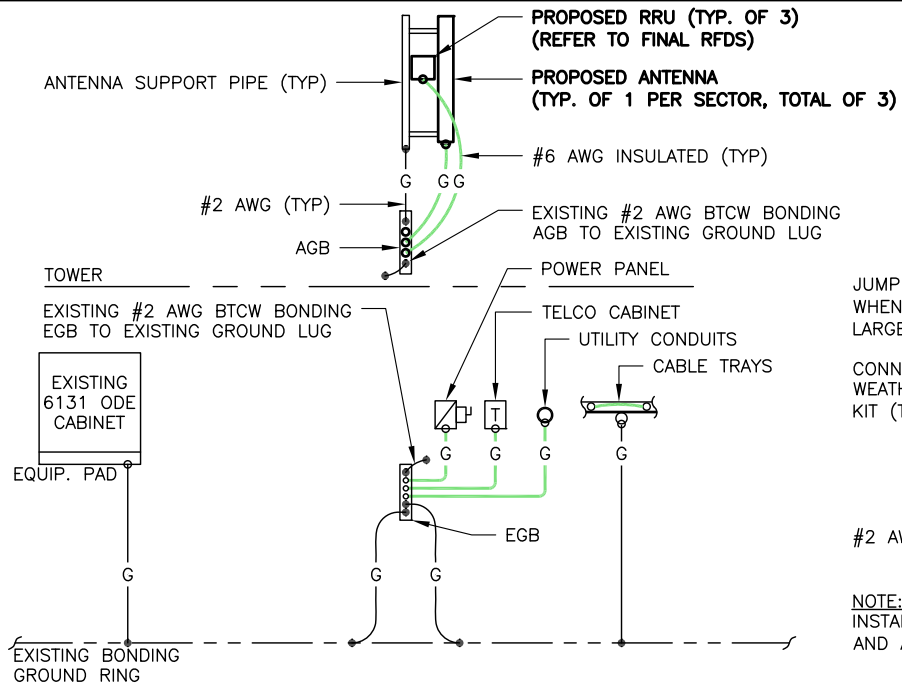
4 ONE-LINE POWER DIAGRAM

SCALE: N.T.S.

ELECTRICAL LEGEND	
A	AMPERE
BTWC	BARE TINNED (SOLID) COPPER WIRE
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
KWH	KILOWATT - HOUR
PPC	POWER PROTECTION CABINET
V	VOLT
5/8"x8"	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
GROUND	GROUND
EXOTHERMIC CONNECTION (CAD WELD)	MECHANICAL CONNECTION
AGB/EGB	ANTENNA GROUND BAR/EQUIPMENT GROUND BAR
MGB	MASTER GROUND BAR
G	GROUND COPPER WIRE, SIZED AS NOTED
EXPOSED WIRING, SIZE AS NOTED	
INSULATED WIRING, SIZE AS NOTED	
OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL	

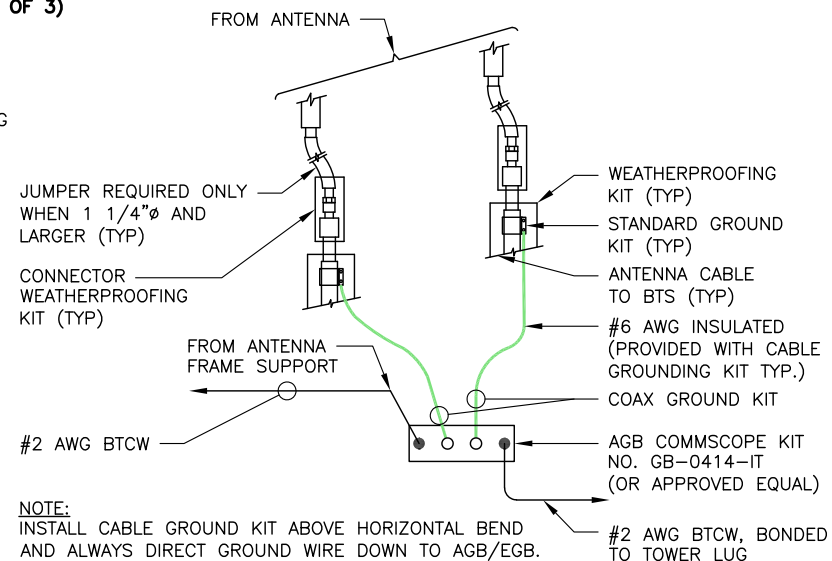
ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATIONS 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. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.



2 TYPICAL GROUNDING RISER DIAGRAM

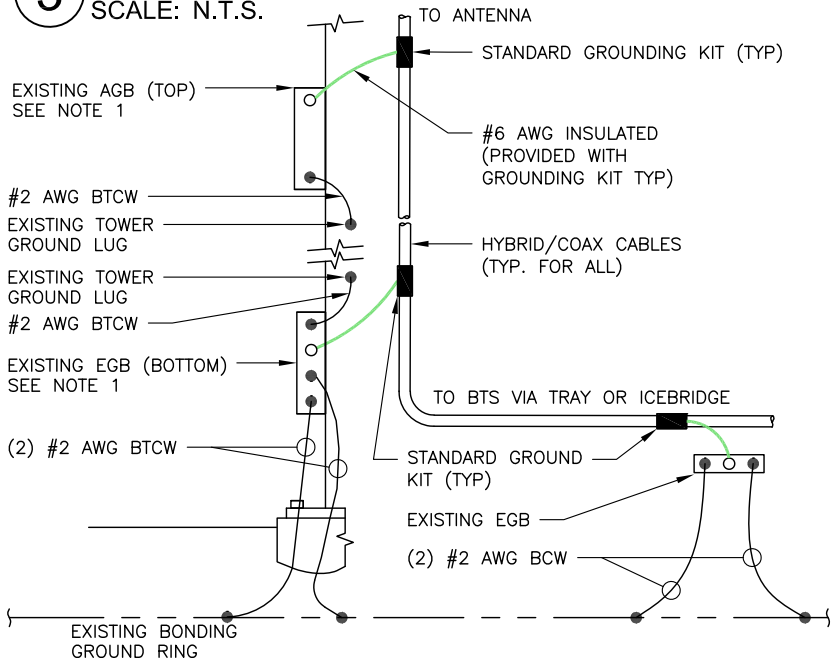
SCALE: N.T.S.



- NOTE:
1. INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

3 TOWER TOP CABLE GROUNDING DETAIL

SCALE: N.T.S.



- NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
 2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

5 TOWER BOTTOM CABLE GROUNDING DETAIL

SCALE: N.T.S.

13. 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.
14. 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.
15. 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 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

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SHEET NUMBER: E-1

REVISION: 2

MODIFICATION AND DESIGN
DRAWINGS FOR EXISTING ANTENNA MOUNTS
EXISTING MONOPOLE TOWER

PROPOSED CARRIER: T-MOBILE
TOWER OWNER: SBA / TOWER OWNER SITE #: CT46149-A
CARRIER SITE #/NAME: CTNH041A / HENNESSY PROPERTY
COORDINATES (LATITUDE: 41.290166°, LONGITUDE: -72.895277°)

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
MS-H1436	METROSITE HEAVY COLLAR MOUNT PLATE ASSEMBLY	
MPHW-1	METROSITE HEAVY COLLAR MOUNT PLATE WELDMENT	
MS-HR35-2375	METROSITE SUPPORT RAIL KIT	
MS-TAW-350RO	METROSITE ROTATABLE T-ARM KIT	

NOTE:
1. THE MODIFICATION DRAWINGS ARE BASED ON THE
TES PROJECT NO. 77886, DATED 06/11/2019.



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



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

TES JOB NO:
80489

CUSTOMER SITE NO:
CT46149-A-SBA

CUSTOMER SITE NAME:
HENNESSY PROPERTY

389 FORBES AVE
NEW HAVEN, CT 06511



DRAWN BY: GA CHECKED BY: KSP/HMA

REV.	DESCRIPTION	BY	DATE
△	FIRST ISSUE	GA	07/08/19
△			
△			
△			

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T-1

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BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:

80489

CUSTOMER SITE NO:

CT46149-A-SBA

CUSTOMER SITE NAME

HENNESSY PROPERTY

389 FORBES AVE
NEW HAVEN, CT 0651

DRAWN BY: GA	CHECKED BY: KSP/HMA
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GA 07/08/19

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BOM

FV #:

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GENERAL NOTES

- ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
- ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
- 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.
- CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
- THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
- 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.
- 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.
- PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESCONSTRUCTION@TESTOWER.US

FABRICATION

- 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.
- 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

- 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).
- PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5” BEYOND THE PROPOSED FIELD WELD SURFACES.
- 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.
- WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
- 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

- 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.
- 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.
- SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
- 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.
- HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

VERIFICATION AND INSPECTION

- 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 ^f	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:

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

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

- CONTRACTOR’S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
- HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
- CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
- 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.
- 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.
- FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
- CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
- ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
- IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
- PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.



Tower Engineering Solutions

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



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

TES JOB NO:
80489
CUSTOMER SITE NO:
CT46149-A-SBA
CUSTOMER SITE NAME:
HENNESSY PROPERTY
389 FORBES AVE
NEW HAVEN, CT 06511

DRAWN BY: GA CHECKED BY: KSP/HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	GA	07/08/19

SHEET TITLE:

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GN-1
REV #:
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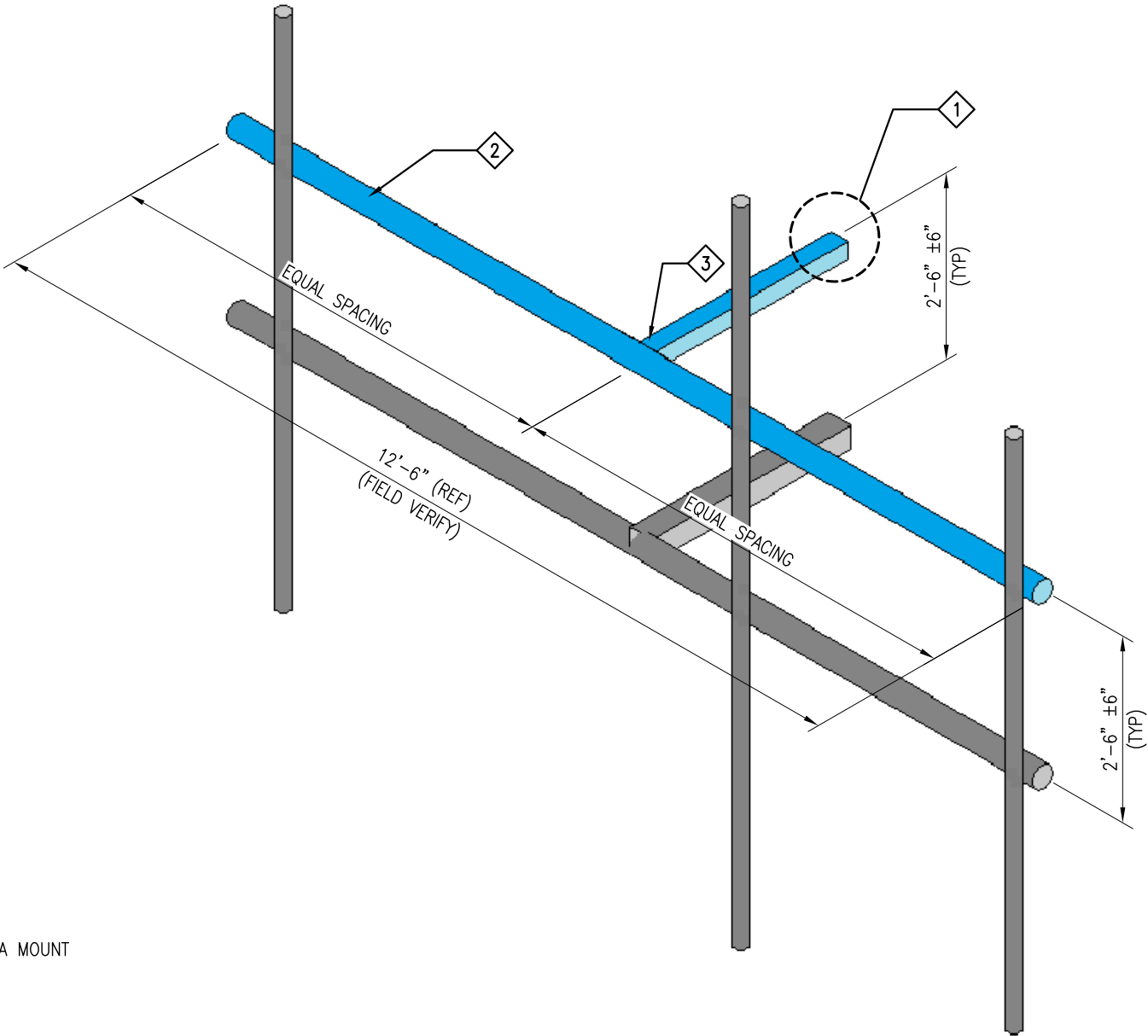
SCOPE OF WORK

- 1
- INSTALL NEW HEAVY COLLAR MOUNT (NOT SHOWN FOR CLARITY). SEE SHEET MS-H1436 FOR DETAILS.
- 2
- INSTALL NEW SUPPORT RAIL KIT. SEE SHEET MS-HR35-2375 FOR DETAILS.
- 3
- INSTALL NEW ROTATABLE T-ARM KIT. SEE SHEET MS-TAW-350R0 FOR DETAILS.
- 4
- 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

EXISTING ANTENNA MOUNT
@ 58' ELEV



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 58' 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 (PORT HOLES, 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	1	MS-H1436	METROSITE HEAVY COLLAR MOUNT PLATE ASSEMBLY
2	1	MS-HR35-2375	METROSITE SUPPORT RAIL KIT
3	1	MS-TAW-350R0	METROSITE ROTATABLE T-ARM KIT



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BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
80489

CUSTOMER SITE NO:
CT46149-A-SBA
CUSTOMER SITE NAME:
HENNESSY PROPERTY
389 FORBES AVE
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DRAWN BY: GA CHECKED BY: KSP/HMA

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SHEET TITLE:

ANTENNA MOUNT
MODIFICATION DETAILS

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SHEET NUMBER:

A-1

REV #:

0



PHOTO 1



PHOTO 2

EXISTING EQUIPMENT MUST BE RELOCATED UP OR
DOWN ALONG THE MEMBER TO ACCOMMODATE
INSTALLATION OF MOUNT MODIFICATION



PHOTO 3



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5900 BROKEN SOUND PARKWAY, NW
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(800)-487-SITE

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1	FIRST ISSUE	GA	07/08/19
2			
3			
4			
5			

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ANTENNA MOUNT
PHOTOS

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SHEET NUMBER:

A-2

REV #:

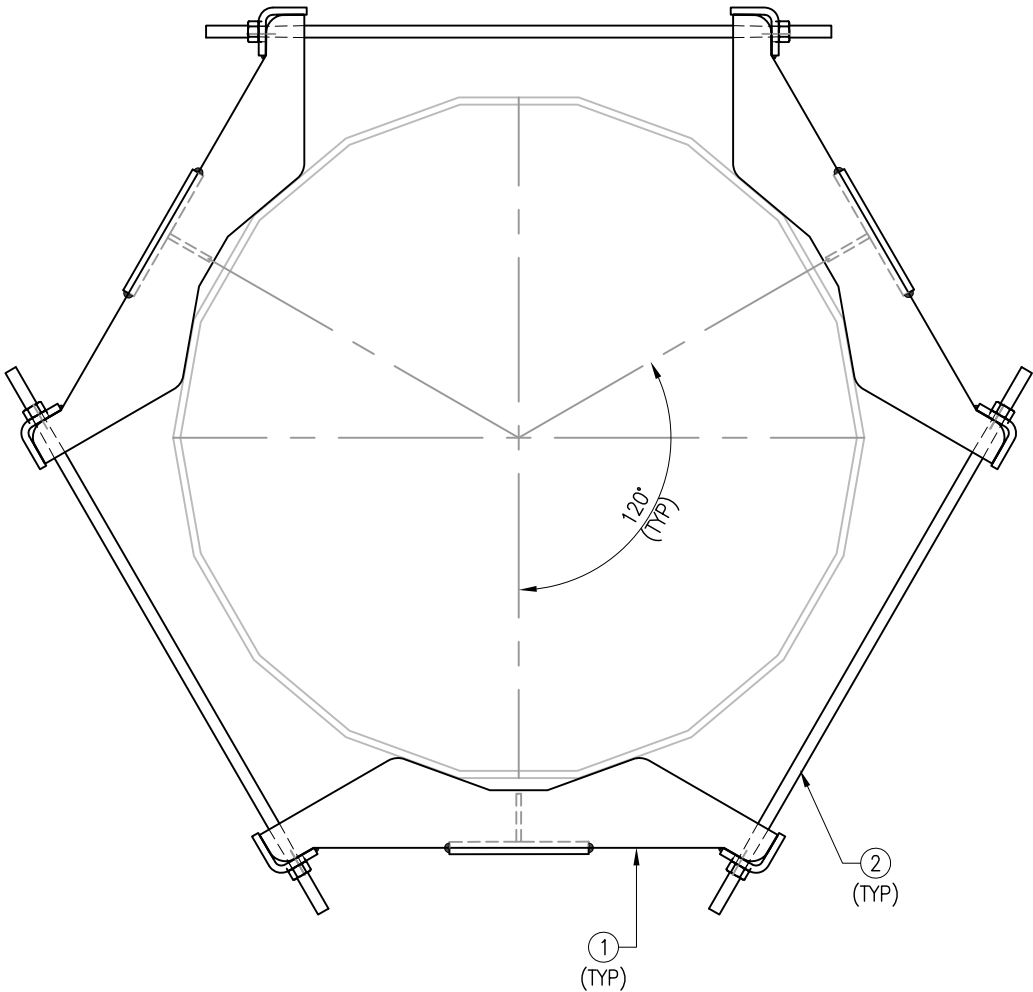
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THE FOLLOWING DRAWINGS ARE INCLUDED FOR REFERENCE ONLY
PLEASE REFER TO THE INSTALLATION DRAWINGS FOR ACTUAL INSTALLATION DETAILS

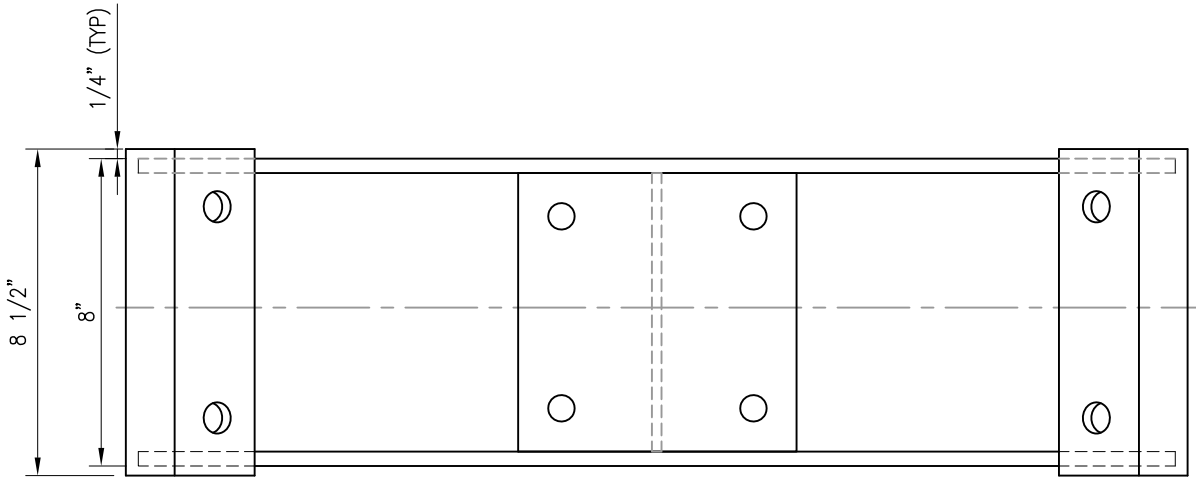
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	MPHW-1	MOUNT PLATE WELDMENT A36
2	6	---	THREADED ROD 3/4" X 2'-4 3/4" W/ 2 HHN & LW EA A36

GALVANIZED WEIGHT: 136.7 LBS

NOTE:
1) FITS 12" DIA TO 32" DIA.



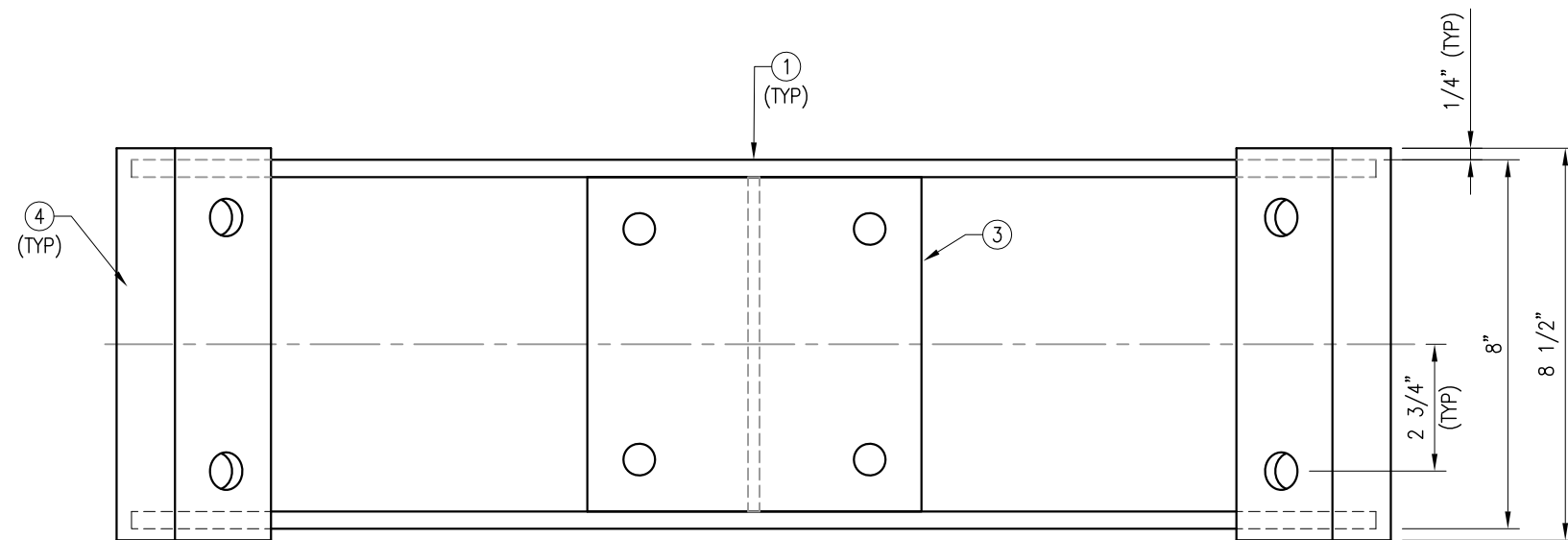
TOP VIEW



FRONT VIEW

		THIRD ANGLE PROJECTION				METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529					
											
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE HEAVY COLLAR MOUNT PLATE ASSEMBLY DETAIL MS-H1436							
STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES		DATE							
DECIMALS		ANGLES		DRAWN BY XXX		05/12/17		SIZE DWG NO B MS-H1436		REV 1	
.X ± 0.1		± 1°									
.XX ± 0.02		FRACTIONS		REVIEWED XXX		-					
.XXX ± 0.005		± 1/32		APPROVED XXX		-		SCALE		-	
								SHEET 1 OF 1			

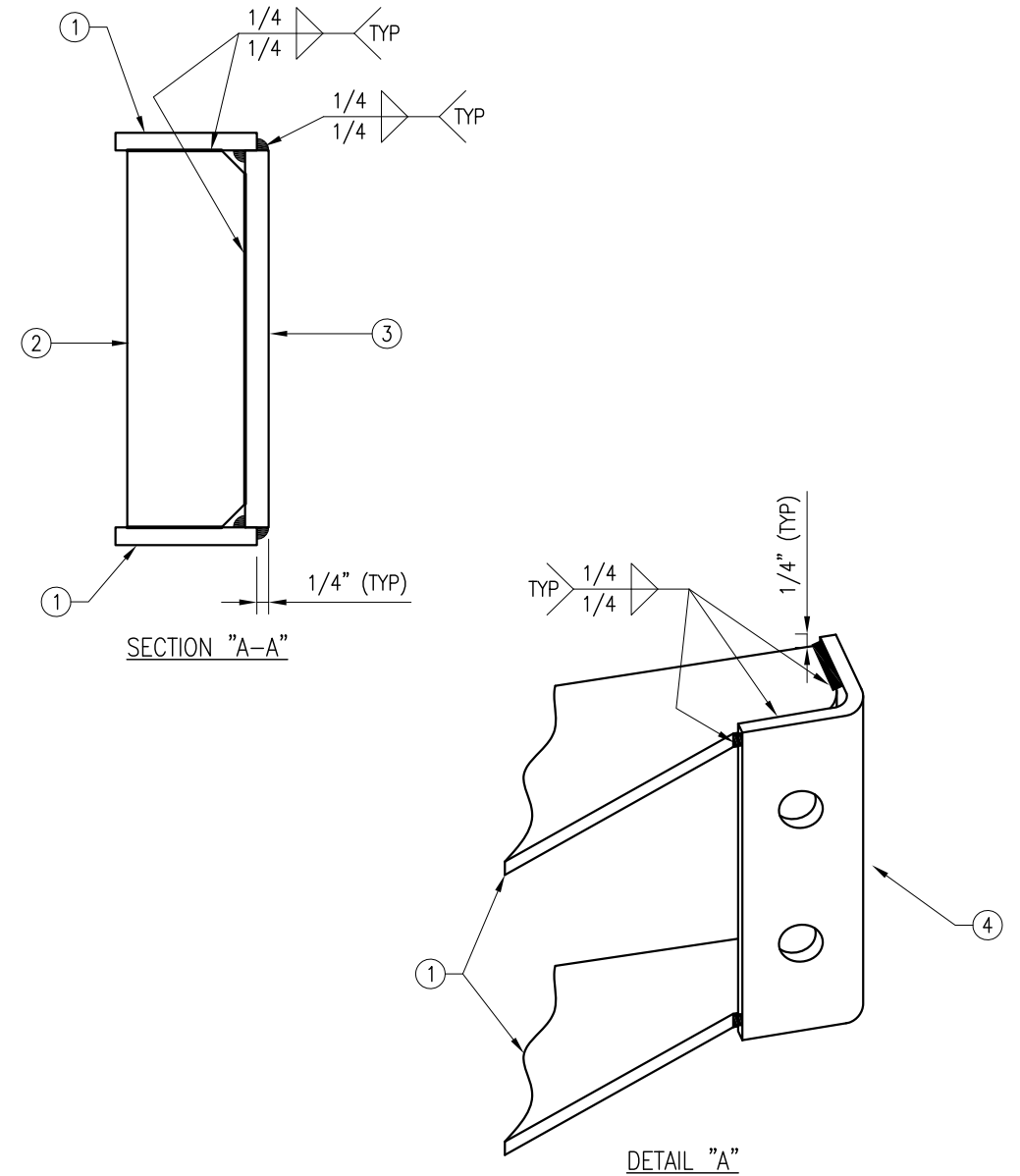
1. HOT-DIPPED GALVANIZED PER ASTM A123.
2. WELD TYPE: E70XX.

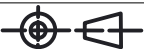


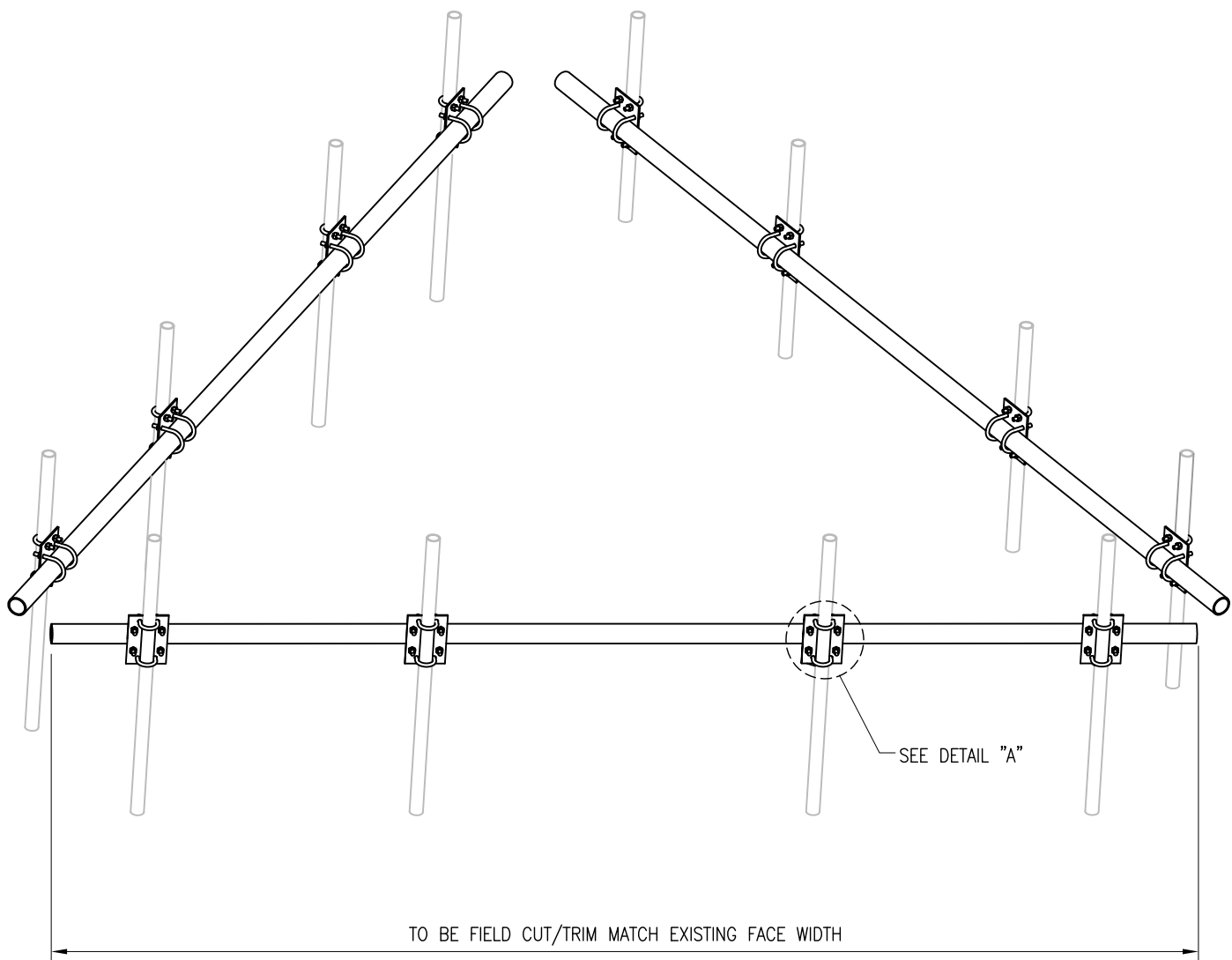
FRONT VIEW

MPW-1 WELDMENT

MPHW-1 WELDMENT						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	2	PL-4	PL 3/8" X 5 3/8" X 2'-3"	A36	F-2	18.8
2	1	PL-5	PL 3/8" X 2 1/2" X 0'-7 1/4"	A36	F-2	1.9
3	1	PL-6	PL 1/2" X 7 1/4" X 0'-7 1/4"	A36	F-2	7.5
4	2	PL-7	PL 3/8" x 4 3/8" x 8 1/2"	A36	F-2	7.8
BLACK WT						36
GALVANIZED WT						38



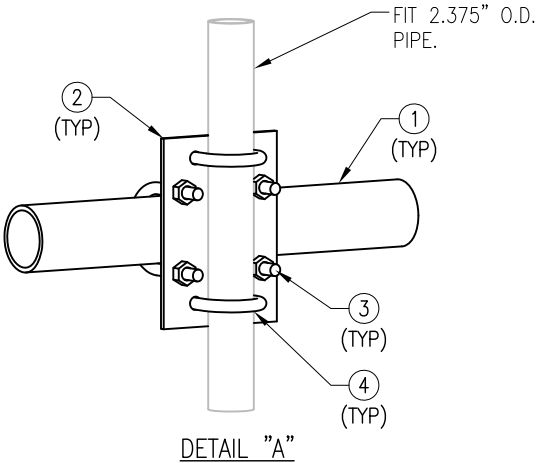
		THIRD ANGLE PROJECTION				METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529	
				TITLE HEAVY COLLAR MOUNT PLATE WELDMENT DETAIL			
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STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES DATE					
DECIMALS $.X \pm 0.1$ $.XX \pm 0.02$ $.XXX \pm 0.005$	ANGLES $\pm 1^\circ$ FRACTIONS $\pm 1/32$	DRAWN BY XXX REVIEWED XXX APPROVED XXX	05/12/17 - -	SIZE/DWG NO B MPHW-1		REV 0	
				SCALE -		SHEET 1 OF 1	



ELEVATION VIEW

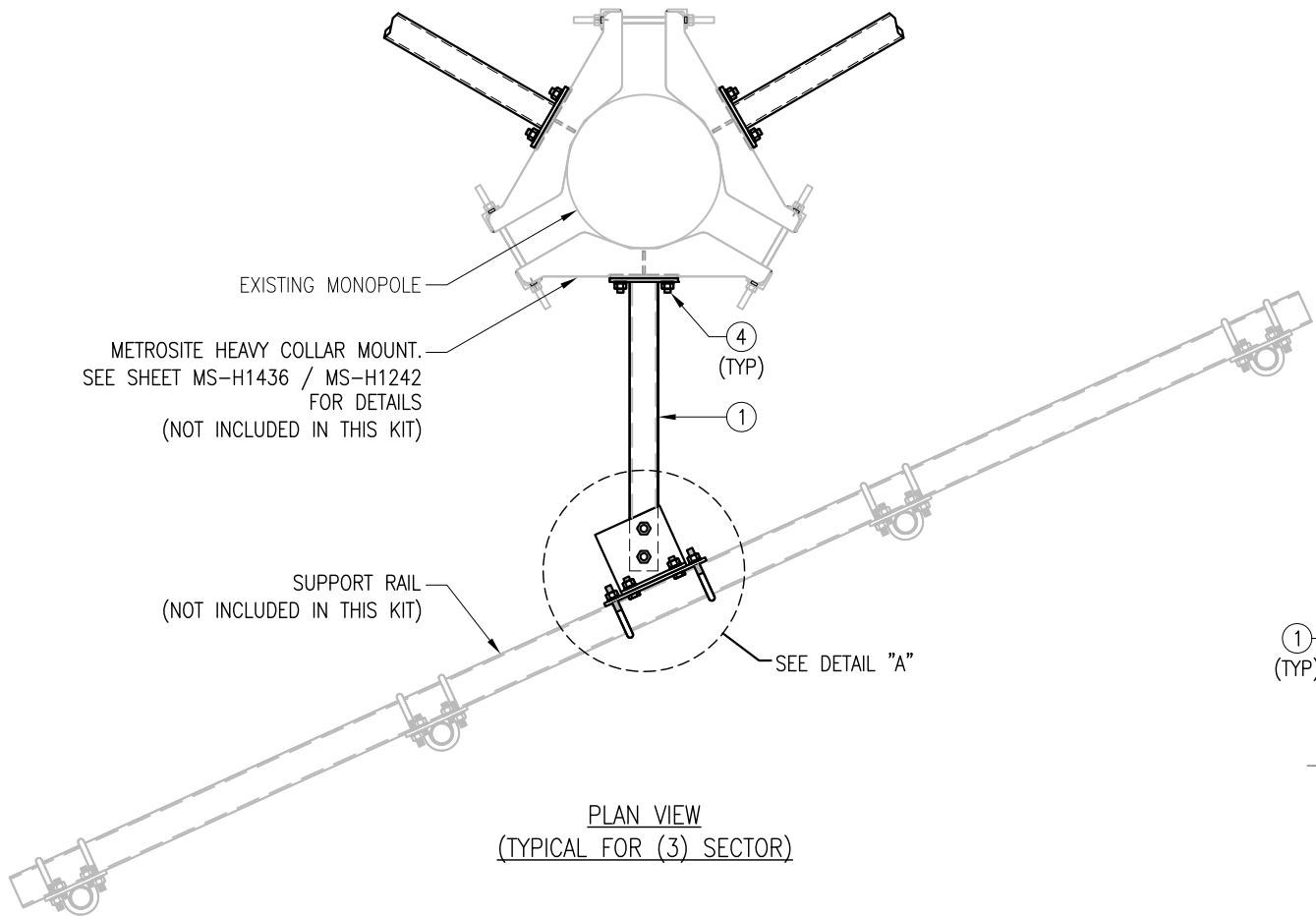
- NOTES:
1. ALL HOLES ARE 11/16" DIA. U.N.O
 2. HOT-DIPPED GALVANIZED PER ASTM A123.

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

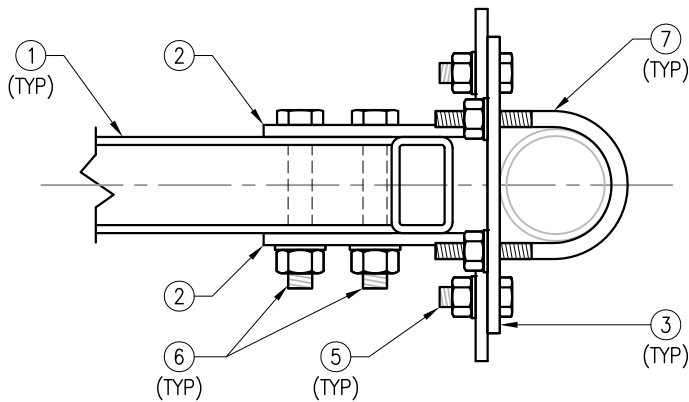


		THIRD ANGLE PROJECTION 		 METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE MS-HR35-2375 SUPPORT RAIL KIT			
STANDARD SHEET TOLERANCES							
DECIMALS .X ± 0.1 .XX ± 0.02 .XXX ± 0.005		APPROVAL / SIGNATURES				DATE	
ANGLES ± 1° FRACTIONS ± 1/32		DRAWN BY XXX				05/12/17	
		REVIEWED XXX				-	
		APPROVED XXX		-			
				SCALE			
				SHEET 1 OF 1			

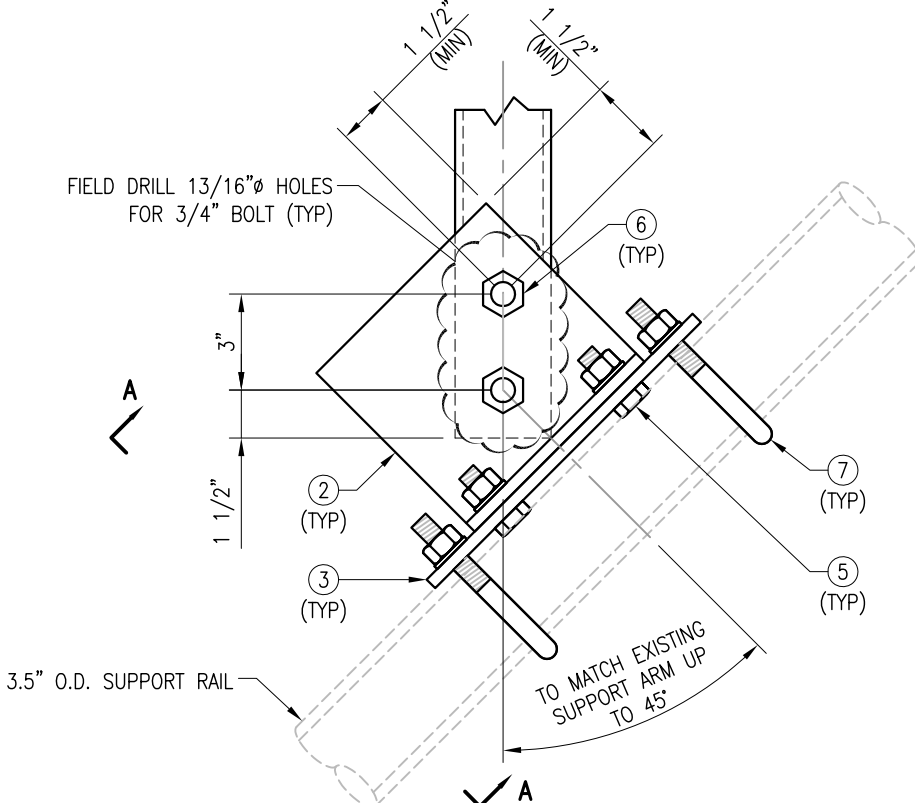
MS-TAW-350RO						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	TAW-6	T-ARM WELDMENT	A36	TAW-6	192
2	6	TARM-CPL-750	PL 3/8" X 7 1/2" X 9 7/16" A36 BENT PLATE	A36	BK-5	47.4
3	3	TARM-CPL-1175	PL 3/8" X 9 1/4" X 11 3/4"	A36	BK-5	36.3
4	12	----	BOLT 5/8" X 2 1/4" A325 W/ HHN & LKW EA.	A325	----	--
5	12	----	BOLT 5/8" X 2" A325 W/ HHN & LKW EA.	A325	----	--
6	6	----	BOLT 3/4" X 5" A325 W/ HHN & LKW EA.	A325	----	--
7	6	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	----	RBC-1	8.7
GALVANIZED WT						284



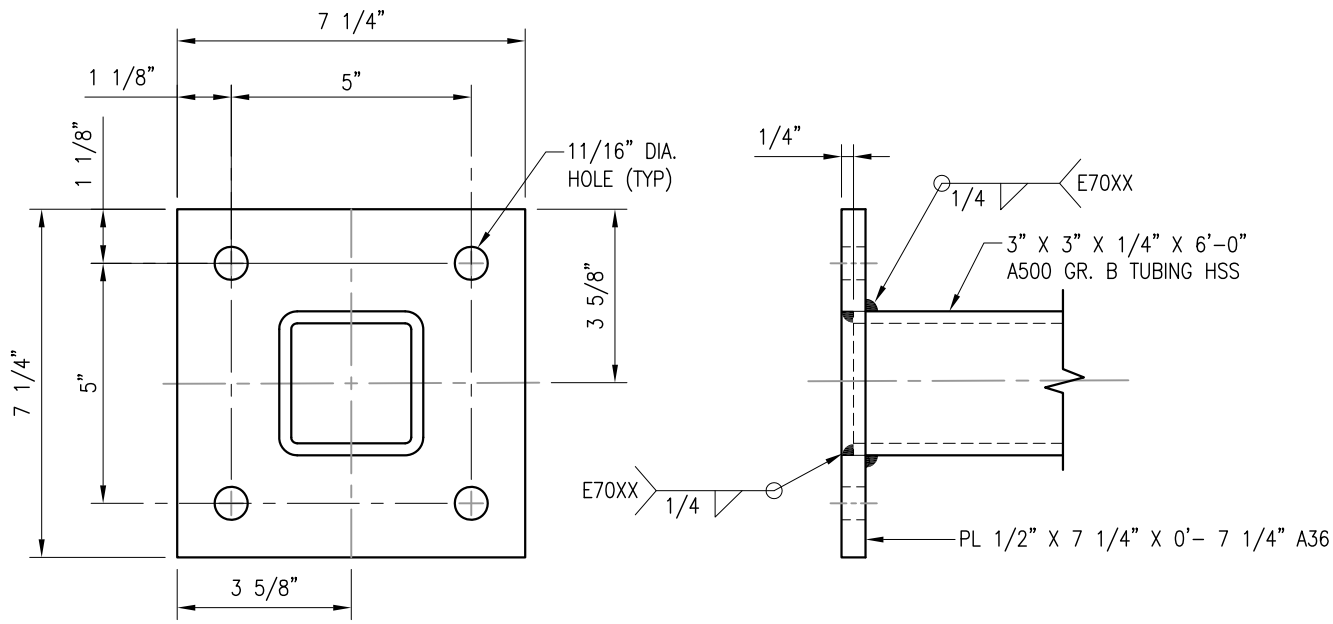
PLAN VIEW
(TYPICAL FOR (3) SECTOR)



SECTION "A-A"



DETAIL "A"



FRONT VIEW

TAW-6 WELDMENT

SIDE VIEW

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

THIRD ANGLE PROJECTION						METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE ROTATABLE T-ARM KIT							
STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES		DATE		SIZE DWG NO					
DECIMALS .X ± 0.1 .XX ± 0.02 .XXX ± 0.005	ANGLES ± 1° FRACTIONS ± 1/32	DRAWN BY: XXX		11/19/18		B MS-TAW-350RO					
REVIEWED: XXX		APPROVED: XXX		-		SCALE -					
						SHEET 1 OF 1					
						REV 1					

EXHIBIT 7



Tower Engineering Solutions

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

Structural Analysis Report

Existing 86.5 ft EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46149-A

Customer Site Name: Hennessy Property

Carrier Name: T-Mobile (App#: 116916, v1)

Carrier Site ID / Name: CTNH041A / Hennessy Property

Site Location: 389 Forbes Ave

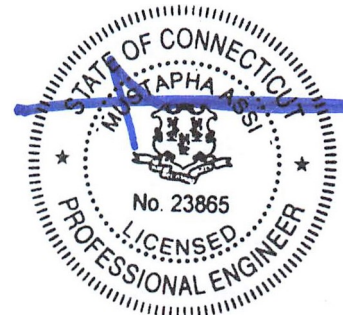
New Haven, Connecticut

New Haven County

Latitude: 41.290166

Longitude: -72.895277

Exp.
01/31/2020



Analysis Result:

Max Structural Usage: 86.4% [Pass]

Max Foundation Usage: 64.0% [Pass]

Additional Usage Caused by Mount Modification: +5.9%

07/29/2019

Report Prepared By: Vishnu Paidimarri

Introduction

The purpose of this report is to summarize the analysis results on the 86.5 ft EEI Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Engineered Endeavors Incorporated, Project No. 12546, Drawing No. GS55217, dated June 30, 2005; Engineered Endeavors Incorporated, "Structure & Foundation Design Calculations," Job No. 12546-M01, dated June 30, 2005
Foundation Drawing	Engineered Endeavors Incorporated, Project No. 12546, Drawing No. D12546-70.1, dated February 25, 2005
Geotechnical Report	Dr. Clarence Welti, P.E., P.C., "Geotechnical Study for Proposed Sprint Site - CT59XC929," dated March 29, 2004
Modification Drawings	Vertical Solutions, VSI # 090665.04, dated August 11, 2009; Vertical Solutions, VSI # 100722.05, dated July 15, 2010

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 **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 125.0$ 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 3/4" 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:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.184$, $S_1 = 0.062$

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 ¹	Owner
1	85.0	3	Argus LLPX310R	(3) T-Arms	(6) 1/2" (6) 5/16"	Clear Wireless
2		1	DragonWave A-ANT-11G-2-C Dish			
3		1	DragonWave A-ANT-18G-2-C Dish			
4		2	DragonWave A-ANT-23G-1-C Dish			
5		3	Samsung FDD R6 RRHs			
6	72.0	3	RFS APXV18-206517S-C	Direct Mount	(6) 1 5/8"	MetroPCS
7	62.5	3	RFS APXVTM14-C-I20	(3) T-Arms	(3) 1 1/4" (1) 1 5/8" Hybrid	Sprint
8		3	Powerwave P40-16-XLPP-RR-A			
9		3	Alcatel Lucent TD-RRH8x20-25 RRHs			
10		3	Alcatel Lucent 800 MHz RRHs			
11		3	Alcatel Lucent 1900 MHz RRHs			
12		3	RF Filters			
13		3	Alcatel Lucent 800 MHz External Notch Filters			
14	58.0	4	RFS ACU-A20-N RETs	(3) T-Arms	(12) 7/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson AIR21 B2A/B4P - Panel			
-		3	Ericsson AIR21 B4A/B2P - Panel			
-		3	Commscope LNX-6515DS-A1M - Panel			
-		6	Ericsson KRY 112 144/1 - TMA/TTA			
-		3	Ericsson S11B12 - RRU			

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
15	58.0	3	Ericsson AIR21 B2A/B4P - Panel	(3) T-Arms MS-TAW-350RO (T-arm Kit) MS-HR35-2375 (Support Rail Kit) MS-H1436 (Heavy Collar Mount Plate Assembly)	(8) 7/8" (3) 1 5/8" Fiber	T-Mobile
16		3	Ericsson AIR21 B4A/B2P - Panel			
17		3	RFS APXVAARR24_43-U-NA20 - Panel			
18		6	Ericsson KRY 112 144/1 - TMA/TTA			
19		3	Ericsson Radio 4449 B71+B12 - RRU			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate	Flange Connection @ 66.5'	Flange Connection @ 76.5'
Max. Usage:	86.4%	79.3%	61.8%	60.8%	21.2%
Pass/Fail	Pass	Pass	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	825.0	13.6	27.7

The foundation has been analyzed using the supplied documents and was found adequate. Therefore, no modification to the foundation will be required. Geotechnical soil parameters were obtained from the original foundation calculations included with the referenced tower and foundation design drawings.

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 1.3613 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.

Usage Diagram - Max Ratio 86.41% at 40.0ft

Structure: CT46149-A-SBA
Site Name: Hennessy Property
Height: 86.50 (ft)
Base Elev: 1.500 (ft)

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

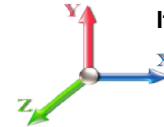
7/29/2019

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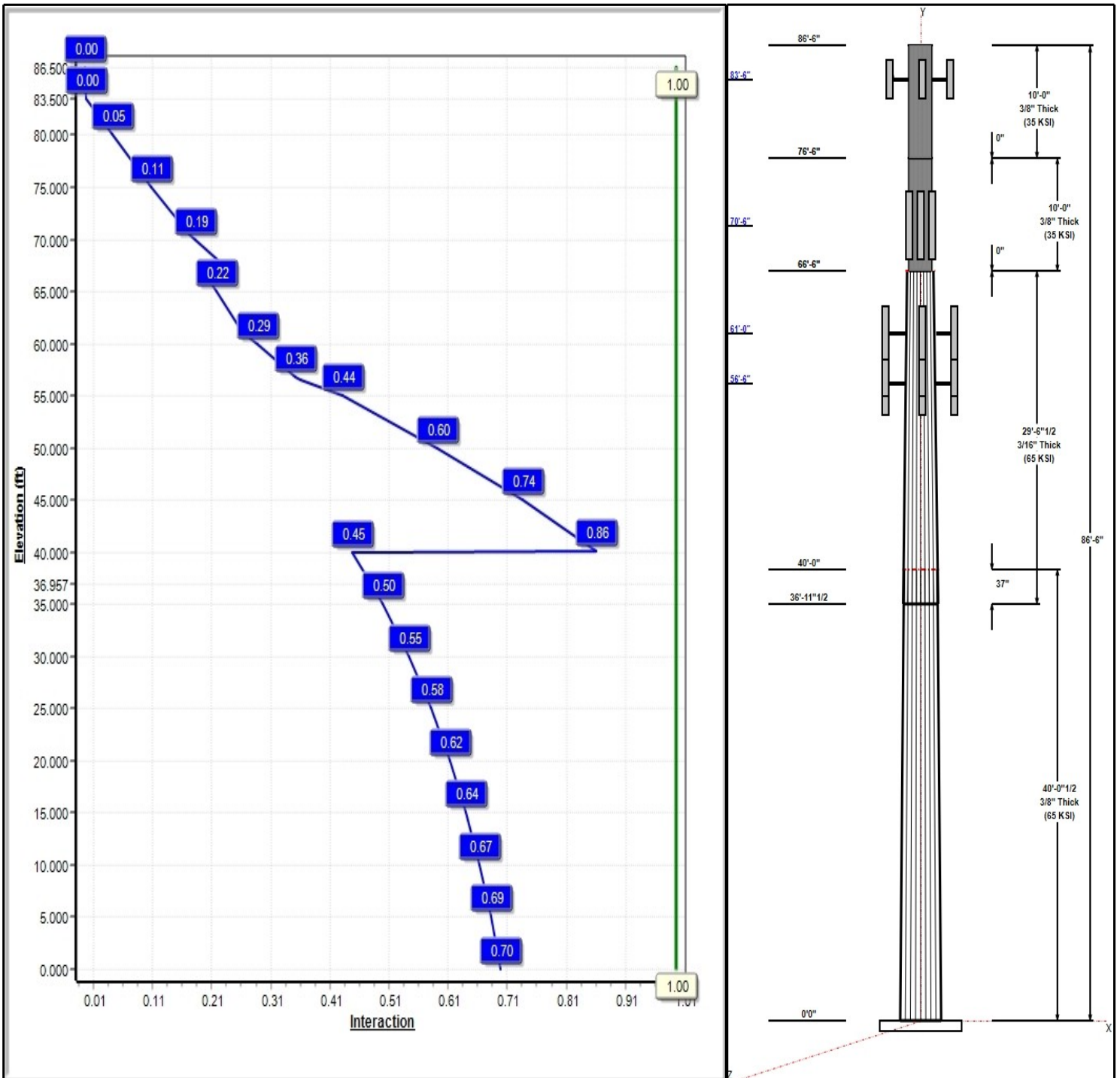
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 97 mph Wind



Iterations: 26

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Structure: CT46149-A-SBA

Type: Custom
Site Name: Hennessy Property
Height: 86.50 (ft)
Base Elev: 1.50 (ft)

Base Shape: 18 Sided
Taper: 0.00000

7/29/2019

Page: 2



Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	40.04	19.75	26.00	0.375		0.15602	65
2	29.54	16.00	20.61	0.188	Slip	0.15602	65
3	10.00	14.00	14.00	0.375	Butt	0.00000	35
4	10.00	14.00	14.00	0.375	Butt	0.00000	35

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
83.50	83.50	3	Argus LLPX310R	Clear Wireless
83.50	83.50	3	Samsung FDD R6 RRHs	Clear Wireless
83.50	83.50	2	DragonWave	Clear Wireless
83.50	83.50	1	DragonWave	Clear Wireless
83.50	83.50	1	DragonWave	Clear Wireless
83.50	83.50	3	T-Arms	Clear Wireless
70.50	70.50	3	RFS APXV18-206517S-C	MetroPCS
70.50	70.50	1	Direct Mount	MetroPCS
61.00	61.00	3	RFS APXVTM14-C-120	Sprint
61.00	61.00	3	Alcatel Lucent	Sprint
61.00	61.00	3	Powerwave	Sprint
61.00	61.00	3	Alcatel Lucent 800 MHz	Sprint
61.00	61.00	3	ALU 800MHz External	Sprint
61.00	61.00	3	Alcatel Lucent 1900MHz	Sprint
61.00	61.00	3	RF Filters	Sprint
61.00	61.00	4	RFS ACU-A20-N RETs	Sprint
61.00	61.00	3	T-Arms	Sprint
56.80	56.80	1	MS-H1436 (Heavy Collar)	T-Mobile
56.80	56.80	1	MS-HR35	T-Mobile
56.80	56.80	1	(3) T-Arm Kit	T-Mobile
56.50	57.70	3	Ericsson Air 21 B2A/B4P	T-Mobile
56.50	57.70	3	Ericsson Air 21 B4A/B2P	T-Mobile
56.50	57.70	6	KRY 112 144/1	T-Mobile
56.50	57.70	3	T-Arms	T-Mobile
56.50	57.70	3	APXVAARR24_43-U-NA20	T-Mobile
56.50	57.70	3	Radio 4449 B71+B12	T-Mobile

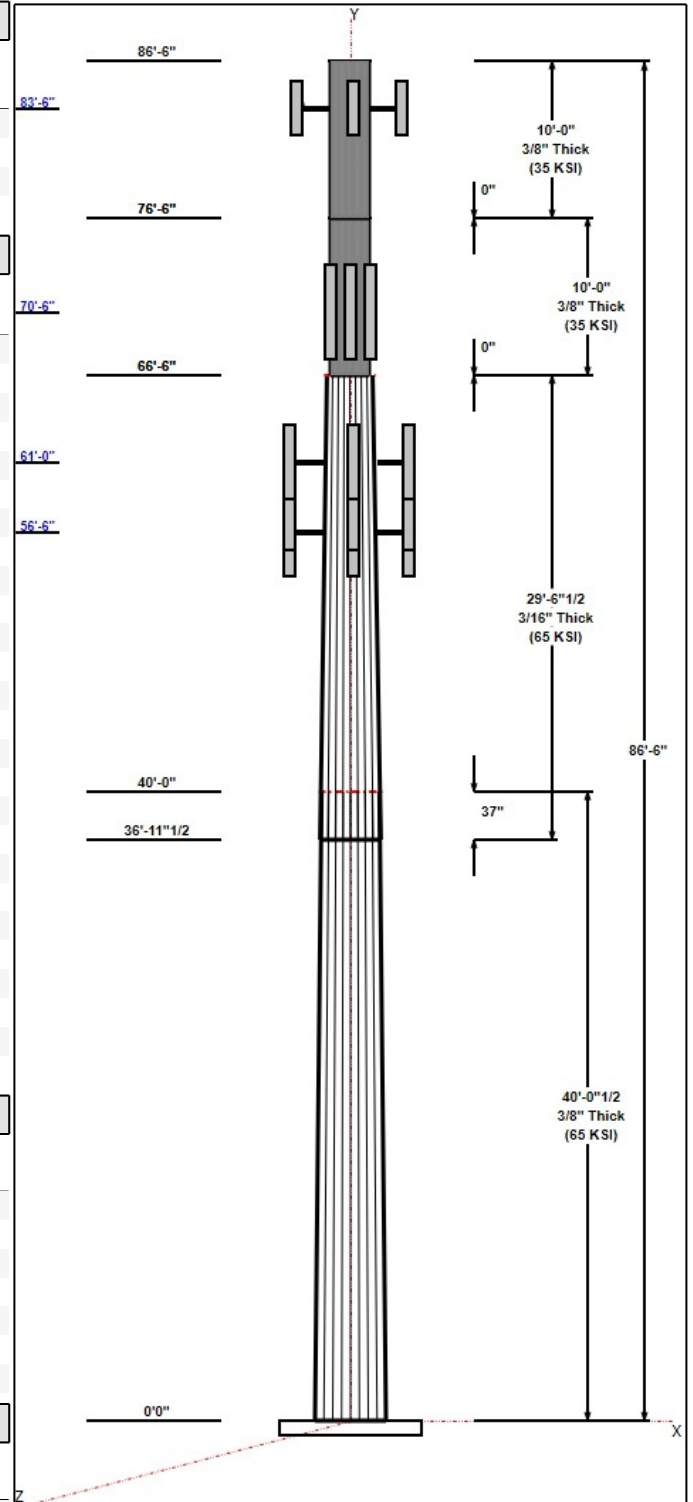
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	83.50	Inside	1/2" Coax	Clear Wireless
0.00	83.50	Inside	5/16" Coax	Clear Wireless
0.00	70.50	Inside	1 5/8" Coax	MetroPCS
0.00	61.00	Inside	1 1/4" Coax	Sprint
0.00	61.00	Inside	1 5/8" Coax	Sprint
0.00	58.00	Inside	1 5/8" Fiber	T-Mobile
0.00	58.00	Inside	7/8" Coax	T-Mobile

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
6	2.25" 18J	75.0	Radial

Base Plate



Structure: CT46149-A-SBA

Type: Custom
Site Name: Hennessy Property
Height: 86.50 (ft)
Base Elev: 1.50 (ft)

Base Shape: 18 Sided
Taper: 0.00000

7/29/2019

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Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.0000	39.5	60.0	Round

Reactions

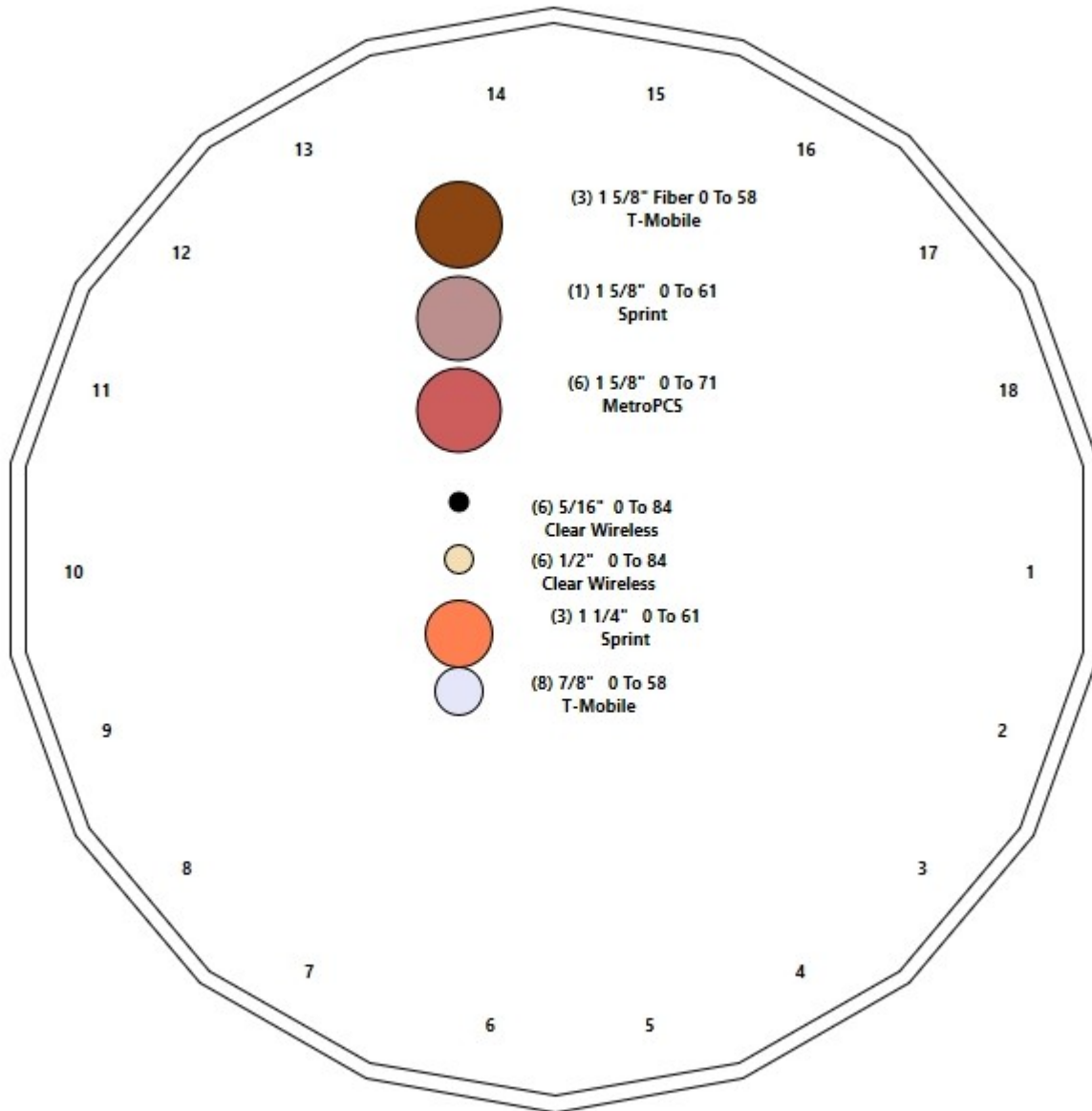
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	825.0	13.6	16.8
0.9D + 1.6W 97 mph Wind	815.0	13.6	12.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	239.5	3.9	27.7
1.2D + 1.0E	34.9	0.5	16.9
0.9D + 1.0E	34.4	0.5	12.7
1.0D + 1.0W 60 mph Wind	195.9	3.2	14.1

Structure: CT46149-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Hennessy Property
Height: 86.50 (ft)

7/29/2019

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Shaft Properties

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	40.040	0.3750	65		0.00	3,649
2	18	29.543	0.1875	65	Slip	37.00	1,084
3	R	10.000	0.3750	35	Flange	0.00	546
4	R	10.000	0.3750	35	Flange	0.00	546
Total Shaft Weight:							5,825

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	26.00	0.00	30.50	2530.27	10.81	69.33	19.75	40.04	23.06	1094.24	7.88	52.68	0.156015
2	20.61	36.96	12.15	640.36	17.97	109.92	16.00	66.50	9.41	297.27	13.64	85.33	0.156015
3	14.00	66.50	16.05	372.76	0.00	37.33	14.00	76.50	16.05	372.76	0.00	37.33	0.000000
4	14.00	76.50	16.05	372.76	0.00	37.33	14.00	86.50	16.05	372.76	0.00	37.33	0.000000

Load Summary

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	83.50	Argus LLPX310R	3	28.60	4.30	0.72	113.92	5.868	0.77	0.00	0.00
2	83.50	Samsung FDD R6 RRHs	3	33.00	1.80	0.72	71.18	2.714	0.75	0.00	0.00
3	83.50	DragonWave A-ANT-23G-1-C	2	15.00	1.61	1.00	48.45	2.327	1.00	0.00	0.00
4	83.50	DragonWave A-ANT-11G-2-C	1	27.00	4.69	1.00	119.26	5.896	1.00	0.00	0.00
5	83.50	DragonWave A-ANT-18G-2-C	1	27.10	4.69	1.00	119.49	5.896	1.00	0.00	0.00
6	83.50	T-Arms	3	300.00	8.00	0.75	497.86	14.595	0.75	0.00	0.00
7	70.50	RFS APXV18-206517S-C	3	53.00	5.17	0.94	226.21	7.377	0.98	0.00	0.00
8	70.50	Direct Mount	1	150.00	5.00	1.00	266.76	8.243	1.00	0.00	0.00
9	61.00	RFS APXVTM14-C-120	3	56.00	6.34	0.79	200.48	7.354	0.84	0.00	0.00
10	61.00	Alcatel Lucent TD-RRH8x20-25	3	70.00	4.05	0.50	169.44	4.790	0.75	0.00	0.00
11	61.00	Powerwave P40-16-XLPP-RR-A	3	53.00	9.08	0.66	242.51	10.200	0.71	0.00	0.00
12	61.00	Alcatel Lucent 800 MHz RRHs	3	53.00	2.49	0.50	120.76	3.538	0.97	0.00	0.00
13	61.00	ALU 800MHz External Notch Filt	3	8.80	0.78	0.50	24.96	1.373	0.75	0.00	0.00
14	61.00	Alcatel Lucent 1900MHz RRH	3	44.00	3.80	0.50	144.01	5.074	0.93	0.00	0.00
15	61.00	RF Filters	3	15.50	0.93	0.50	42.85	1.315	0.75	0.00	0.00
16	61.00	RFS ACU-A20-N RETs	4	1.00	0.14	0.79	4.94	0.412	0.84	0.00	0.00
17	61.00	T-Arms	3	400.00	10.00	0.67	655.83	17.995	0.75	0.00	0.00
18	56.80	MS-H1436 (Heavy Collar Mount)	1	136.70	2.25	1.00	310.35	4.394	1.00	0.00	0.00
19	56.80	MS-HR35	1	430.00	8.75	1.00	894.28	16.530	1.00	0.00	0.00
20	56.80	(3) T-Arm Kit	1	500.00	16.50	1.00	1039.87	31.172	1.00	0.00	0.00
21	56.50	Ericsson Air 21 B2A/B4P	3	91.50	6.09	0.86	242.39	7.082	0.91	0.00	1.20
22	56.50	Ericsson Air 21 B4A/B2P	3	90.40	6.09	0.86	241.29	7.082	0.91	0.00	1.20
23	56.50	KRY 112 144/1	6	11.00	0.41	0.70	20.80	0.842	0.75	0.00	1.20
24	56.50	T-Arms	3	400.00	8.00	0.75	653.92	14.348	0.75	0.00	1.20
25	56.50	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	503.68	21.962	0.70	0.00	1.20
26	56.50	Radio 4449 B71+B12	3	70.00	1.65	0.67	130.62	2.134	0.67	0.00	1.20
Totals:			69	7,055.20			15,837.21				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	83.50	(6) 1/2" Coax	0.00	Inside
0.00	83.50	(6) 5/16" Coax	0.00	Inside
0.00	70.50	(6) 1 5/8" Coax	0.00	Inside
0.00	61.00	(3) 1 1/4" Coax	0.00	Inside
0.00	61.00	(1) 1 5/8" Coax	0.00	Inside
0.00	58.00	(3) 1 5/8" Fiber	0.00	Inside
0.00	58.00	(8) 7/8" Coax	0.00	Inside

Shaft Section Properties

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 7



Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3750	26.000	30.499	2530.3	10.81	69.33	82.5	191.7	0.0
5.00		0.3750	25.220	29.571	2306.2	10.45	67.25	82.5	180.1	511.0
10.00		0.3750	24.440	28.642	2095.7	10.08	65.17	82.5	168.9	495.2
15.00		0.3750	23.660	27.714	1898.4	9.71	63.09	82.5	158.0	479.4
20.00		0.3750	22.880	26.785	1713.9	9.35	61.01	82.5	147.5	463.6
25.00		0.3750	22.100	25.857	1541.8	8.98	58.93	82.5	137.4	447.8
30.00		0.3750	21.320	24.928	1381.6	8.61	56.85	82.5	127.6	432.0
35.00		0.3750	20.539	24.000	1232.9	8.25	54.77	82.5	118.2	416.2
36.96	Bot - Section 2	0.3750	20.234	23.637	1177.8	8.10	53.96	82.5	114.6	158.6
40.00		0.3750	19.759	23.071	1095.3	7.88	52.69	82.5	109.2	366.2
40.04	Top - Section 1	0.1875	20.128	11.867	596.2	17.52	107.35	0.0	0.0	4.8
45.00		0.1875	19.354	11.406	529.4	16.79	103.22	81.7	53.9	196.4
50.00		0.1875	18.574	10.942	467.4	16.06	99.06	82.5	49.6	190.1
55.00		0.1875	17.794	10.478	410.4	15.32	94.90	82.5	45.4	182.2
56.50		0.1875	17.560	10.339	394.2	15.10	93.65	82.5	44.2	53.1
56.80		0.1875	17.513	10.311	391.0	15.06	93.40	82.5	44.0	10.5
60.00		0.1875	17.014	10.014	358.2	14.59	90.74	82.5	41.5	110.7
61.00		0.1875	16.858	9.921	348.3	14.44	89.91	82.5	40.7	33.9
65.00		0.1875	16.234	9.549	310.7	13.86	86.58	82.5	37.7	132.5
66.50	Top - Section 2	0.1875	16.000	9.410	297.3	13.64	85.33	82.5	36.6	48.4
66.50	Bot - Section 3	0.3750	14.000	16.052	372.8	6.82	42.67	35.0	53.3	
70.00		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	191.2
70.50		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	27.3
75.00		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	245.8
76.50	Top - Section 3	0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	81.9
76.50	Bot - Section 4	0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	
80.00		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	191.2
83.50		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	191.2
85.00		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	81.9
86.50		0.3750	14.000	16.052	372.8	0.00	37.33	35.0	53.3	81.9

5825.2

Wind Loading - Shaft

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

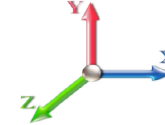


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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	196.75	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	190.85	0.650	0.000	5.00	10.835	7.04	241.1	0.0	613.2
10.00		1.00	0.85	19.450	21.40	184.95	0.650	0.000	5.00	10.505	6.83	233.8	0.0	594.3
15.00		1.00	0.87	19.818	21.80	180.73	0.650	0.000	5.00	10.175	6.61	230.7	0.0	575.3
20.00		1.00	0.92	20.954	23.05	179.71	0.650	0.000	5.00	9.845	6.40	236.0	0.0	556.3
25.00		1.00	0.96	21.897	24.09	177.45	0.650	0.000	5.00	9.515	6.18	238.4	0.0	537.4
30.00		1.00	0.99	22.709	24.98	174.32	0.650	0.000	5.00	9.185	5.97	238.6	0.0	518.4
35.00		1.00	1.02	23.424	25.77	170.57	0.650	0.000	5.00	8.855	5.76	237.3	0.0	499.5
36.96 Bot - Section 2		1.00	1.03	23.683	26.05	168.96	0.650	0.000	1.96	3.375	2.19	91.5	0.0	190.3
40.00		1.00	1.05	24.066	26.47	166.33	0.650	0.000	3.04	5.246	3.41	144.4	0.0	439.5
40.04 Top - Section 1		1.00	1.05	24.071	26.48	166.29	0.650	0.000	0.04	0.068	0.04	1.9	0.0	5.7
45.00		1.00	1.08	24.649	27.11	164.88	0.650	0.000	4.96	8.286	5.39	233.6	0.0	235.7
50.00		1.00	1.10	25.185	27.70	159.94	0.650	0.000	5.00	8.024	5.22	231.2	0.0	228.1
55.00		1.00	1.12	25.681	28.25	154.73	0.650	0.000	5.00	7.694	5.00	226.0	0.0	218.7
56.50 Appurtenance(s)		1.00	1.13	25.823	28.41	153.11	0.650	0.000	1.50	2.244	1.46	66.3	0.0	63.7
56.80 Appurtenance(s)		1.00	1.13	25.851	28.44	152.79	0.650	0.000	0.30	0.445	0.29	13.2	0.0	12.6
60.00		1.00	1.14	26.143	28.76	149.27	0.650	0.000	3.20	4.675	3.04	139.8	0.0	132.8
61.00 Appurtenance(s)		1.00	1.15	26.232	28.86	148.15	0.650	0.000	1.00	1.433	0.93	43.0	0.0	40.7
65.00		1.00	1.16	26.577	29.23	143.60	0.650	0.000	4.00	5.600	3.64	170.3	0.0	159.0
66.50 Top - Section 2		1.00	1.17	26.702	29.37	141.87	0.650	0.000	1.50	2.046	1.33	62.5	0.0	58.1
70.00		1.00	1.18	26.986	29.68	122.89	0.600	0.000	3.50	4.083	2.45	116.4	0.0	229.4
70.50 Appurtenance(s)		1.00	1.18	27.026	29.73	122.99	0.600	0.000	0.50	0.583	0.35	16.6	0.0	32.8
75.00		1.00	1.20	27.373	30.11	123.77	0.600	0.000	4.50	5.250	3.15	151.8	0.0	294.9
76.50 Top - Section 3		1.00	1.20	27.485	30.23	124.03	0.600	0.000	1.50	1.750	1.05	50.8	0.0	98.3
80.00		1.00	1.21	27.740	30.51	124.60	0.600	0.000	3.50	4.083	2.45	119.6	0.0	229.4
83.50 Appurtenance(s)		1.00	1.22	27.987	30.79	125.15	0.600	0.000	3.50	4.083	2.45	120.7	0.0	229.4
85.00		1.00	1.23	28.090	30.90	125.38	0.600	0.000	1.50	1.750	1.05	51.9	0.0	98.3
86.50		1.00	1.23	28.192	31.01	125.61	0.600	0.000	1.50	1.750	1.05	52.1	0.0	98.3
Totals:									86.50			3,759.3		6,990.2

Discrete Appurtenance Forces

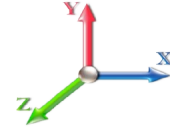
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 26

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	83.50	DragonWave	1	27.987	30.785	1.00	1.00	4.69	32.52	0.000	0.000	231.01	0.00	0.00
2	83.50	DragonWave	1	27.987	30.785	1.00	1.00	4.69	32.40	0.000	0.000	231.01	0.00	0.00
3	83.50	DragonWave	2	27.987	30.785	1.00	1.00	3.22	36.00	0.000	0.000	158.61	0.00	0.00
4	83.50	Samsung FDD R6 RRHs	3	27.987	30.785	0.58	0.80	3.11	118.80	0.000	0.000	153.21	0.00	0.00
5	83.50	Argus LLPX310R	3	27.987	30.785	0.58	0.80	7.43	102.96	0.000	0.000	366.00	0.00	0.00
6	83.50	T-Arms	3	27.987	30.785	0.56	0.75	13.50	1080.00	0.000	0.000	664.96	0.00	0.00
7	70.50	RFS APXV18-206517S-C	3	27.026	29.728	0.75	0.80	11.60	190.80	0.000	0.000	551.82	0.00	0.00
8	70.50	Direct Mount	1	27.026	29.728	1.00	1.00	5.00	180.00	0.000	0.000	237.82	0.00	0.00
9	61.00	T-Arms	3	26.232	28.856	0.50	0.75	15.08	1440.00	0.000	0.000	696.00	0.00	0.00
10	61.00	RFS ACU-A20-N RETs	4	26.232	28.856	0.63	0.80	0.35	4.80	0.000	0.000	16.34	0.00	0.00
11	61.00	RF Filters	3	26.232	28.856	0.40	0.80	1.12	55.80	0.000	0.000	51.52	0.00	0.00
12	61.00	Alcatel Lucent 1900MHz	3	26.232	28.856	0.40	0.80	4.56	158.40	0.000	0.000	210.53	0.00	0.00
13	61.00	ALU 800MHz External	3	26.232	28.856	0.40	0.80	0.94	31.68	0.000	0.000	43.21	0.00	0.00
14	61.00	Alcatel Lucent 800 MHz	3	26.232	28.856	0.40	0.80	2.99	190.80	0.000	0.000	137.95	0.00	0.00
15	61.00	Alcatel Lucent	3	26.232	28.856	0.40	0.80	4.86	252.00	0.000	0.000	224.38	0.00	0.00
16	61.00	RFS APXVTM14-C-120	3	26.232	28.856	0.63	0.80	12.02	201.60	0.000	0.000	554.98	0.00	0.00
17	61.00	Powerwave	3	26.232	28.856	0.53	0.80	14.38	190.80	0.000	0.000	664.04	0.00	0.00
18	56.80	MS-HR35	1	25.851	28.436	1.00	1.00	8.75	516.00	0.000	0.000	398.11	0.00	0.00
19	56.80	MS-H1436 (Heavy Collar	1	25.851	28.436	1.00	1.00	2.25	164.04	0.000	0.000	102.37	0.00	0.00
20	56.80	(3) T-Arm Kit	1	25.851	28.436	0.75	0.75	12.38	600.00	0.000	0.000	563.03	0.00	0.00
21	56.50	Radio 4449 B71+B12	3	25.934	28.528	0.54	0.80	2.65	252.00	0.000	1.200	121.10	0.00	145.33
22	56.50	APXVAARR24 43-U-NA2	3	25.934	28.528	0.56	0.80	34.00	460.80	0.000	1.200	1552.07	0.00	1862.48
23	56.50	T-Arms	3	25.934	28.528	0.56	0.75	13.50	1440.00	0.000	1.200	616.20	0.00	739.44
24	56.50	KRY 112 144/1	6	25.934	28.528	0.56	0.80	1.38	79.20	0.000	1.200	62.88	0.00	75.46
25	56.50	Ericsson Air 21 B4A/B2P	3	25.934	28.528	0.69	0.80	12.57	325.44	0.000	1.200	573.74	0.00	688.49
26	56.50	Ericsson Air 21 B2A/B4P	3	25.934	28.528	0.69	0.80	12.57	329.40	0.000	1.200	573.74	0.00	688.49

Totals: 8,466.24

9,756.65

Total Applied Force Summary

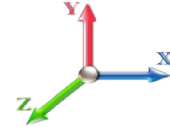
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019	
Site Name: Hennessy Property	Exposure: C		
Height: 86.50 (ft)	Crest Height: 0.00		
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil		
Gh: 1.1	Topography: 1	Struct Class: II	Page: 10



Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		241.10	722.17	0.00	0.00
10.00		233.76	703.22	0.00	0.00
15.00		230.70	684.26	0.00	0.00
20.00		236.01	665.30	0.00	0.00
25.00		238.36	646.35	0.00	0.00
30.00		238.62	627.39	0.00	0.00
35.00		237.29	608.44	0.00	0.00
36.96		91.45	232.94	0.00	0.00
40.00		144.43	505.81	0.00	0.00
40.04		1.88	6.58	0.00	0.00
45.00		233.64	343.77	0.00	0.00
50.00		231.17	337.10	0.00	0.00
55.00		226.03	327.62	0.00	0.00
56.50	(21) attachments	3566.02	2983.28	0.00	4199.69
56.80	(3) attachments	1076.67	1299.23	0.00	0.00
60.00		139.81	184.62	0.00	0.00
61.00	(28) attachments	2641.96	2579.42	0.00	0.00
65.00		170.28	195.87	0.00	0.00
66.50		62.49	71.89	0.00	0.00
70.00		116.36	261.66	0.00	0.00
70.50	(4) attachments	806.30	408.18	0.00	0.00
75.00		151.75	302.72	0.00	0.00
76.50		50.79	100.91	0.00	0.00
80.00		119.61	235.45	0.00	0.00
83.50	(13) attachments	1925.48	1638.13	0.00	0.00
85.00		51.91	98.32	0.00	0.00
86.50		52.10	98.32	0.00	0.00
Totals:		13,515.99	16,868.92	0.00	4,199.69

Calculated Forces

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

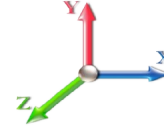


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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-16.82	-13.58	0.00	-824.95	0.00	824.95	2265.93	1132.96	2369.95	1186.73	0.00	0.000	0.000	0.703
5.00	-15.99	-13.46	0.00	-757.04	0.00	757.04	2196.95	1098.47	2226.84	1115.08	0.24	-0.445	0.000	0.686
10.00	-15.19	-13.34	0.00	-689.73	0.00	689.73	2127.97	1063.98	2088.20	1045.65	0.94	-0.891	0.000	0.667
15.00	-14.40	-13.21	0.00	-623.03	0.00	623.03	2058.99	1029.49	1954.01	978.46	2.11	-1.336	0.000	0.644
20.00	-13.65	-13.06	0.00	-556.99	0.00	556.99	1990.01	995.01	1824.27	913.49	3.75	-1.779	0.000	0.617
25.00	-12.91	-12.90	0.00	-491.70	0.00	491.70	1921.03	960.52	1699.00	850.76	5.85	-2.214	0.000	0.585
30.00	-12.20	-12.72	0.00	-427.22	0.00	427.22	1852.05	926.03	1578.18	790.26	8.40	-2.638	0.000	0.547
35.00	-11.55	-12.51	0.00	-363.62	0.00	363.62	1783.07	891.54	1461.81	731.99	11.38	-3.045	0.000	0.503
36.96	-11.28	-12.44	0.00	-339.15	0.00	339.15	1756.08	878.04	1417.49	709.80	12.66	-3.203	0.000	0.484
40.00	-10.75	-12.29	0.00	-301.28	0.00	301.28	1714.09	857.05	1349.91	675.96	14.78	-3.439	0.000	0.452
40.04	-10.71	-12.32	0.00	-300.79	0.00	300.79	862.91	431.45	705.96	353.50	14.81	-3.442	0.000	0.864
45.00	-10.28	-12.15	0.00	-239.66	0.00	239.66	838.21	419.10	658.89	329.93	18.57	-3.790	0.000	0.740
50.00	-9.86	-11.99	0.00	-178.90	0.00	178.90	812.59	406.30	612.50	306.71	22.85	-4.353	0.000	0.596
55.00	-9.49	-11.78	0.00	-118.97	0.00	118.97	778.45	389.22	561.62	281.23	27.66	-4.806	0.000	0.436
56.50	-6.81	-7.98	0.00	-97.11	0.00	97.11	768.10	384.05	546.71	273.76	29.19	-4.921	0.000	0.364
56.80	-5.60	-6.81	0.00	-94.71	0.00	94.71	766.03	383.02	543.76	272.28	29.49	-4.941	0.000	0.355
60.00	-5.41	-6.66	0.00	-72.93	0.00	72.93	743.96	371.98	512.71	256.74	32.87	-5.137	0.000	0.292
61.00	-3.07	-3.81	0.00	-66.27	0.00	66.27	737.06	368.53	503.19	251.97	33.95	-5.192	0.000	0.267
65.00	-2.89	-3.63	0.00	-51.04	0.00	51.04	709.47	354.73	466.02	233.36	38.38	-5.383	0.000	0.223
66.50	-2.81	-3.56	0.00	-45.60	0.00	45.60	699.12	349.56	452.45	226.56	40.08	-5.450	0.000	0.205
66.50	-2.81	-3.56	0.00	-45.60	0.00	45.60	505.62	252.81	279.19	182.79	40.08	-5.450	0.000	0.255
70.00	-2.56	-3.42	0.00	-33.14	0.00	33.14	505.62	252.81	279.19	182.79	44.12	-5.582	0.000	0.187
70.50	-2.23	-2.58	0.00	-31.42	0.00	31.42	505.62	252.81	279.19	182.79	44.71	-5.594	0.000	0.176
75.00	-1.94	-2.40	0.00	-19.80	0.00	19.80	505.62	252.81	279.19	182.79	50.01	-5.682	0.000	0.112
76.50	-1.85	-2.34	0.00	-16.19	0.00	16.19	505.62	252.81	279.19	182.79	51.80	-5.703	0.000	0.092
76.50	-1.85	-2.34	0.00	-16.19	0.00	16.19	505.62	252.81	279.19	182.79	51.80	-5.703	0.000	0.092
80.00	-1.62	-2.20	0.00	-7.99	0.00	7.99	505.62	252.81	279.19	182.79	55.99	-5.735	0.000	0.047
83.50	-0.19	-0.12	0.00	-0.28	0.00	0.28	505.62	252.81	279.19	182.79	60.19	-5.746	0.000	0.002
85.00	-0.09	-0.06	0.00	-0.09	0.00	0.09	505.62	252.81	279.19	182.79	61.99	-5.746	0.000	0.001
86.50	0.00	-0.05	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	63.79	-5.746	0.000	0.000

Wind Loading - Shaft

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

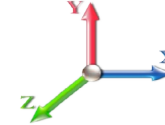


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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	196.75	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	190.85	0.650	0.000	5.00	10.835	7.04	241.1	0.0	459.9
10.00		1.00	0.85	19.450	21.40	184.95	0.650	0.000	5.00	10.505	6.83	233.8	0.0	445.7
15.00		1.00	0.87	19.818	21.80	180.73	0.650	0.000	5.00	10.175	6.61	230.7	0.0	431.5
20.00		1.00	0.92	20.954	23.05	179.71	0.650	0.000	5.00	9.845	6.40	236.0	0.0	417.3
25.00		1.00	0.96	21.897	24.09	177.45	0.650	0.000	5.00	9.515	6.18	238.4	0.0	403.0
30.00		1.00	0.99	22.709	24.98	174.32	0.650	0.000	5.00	9.185	5.97	238.6	0.0	388.8
35.00		1.00	1.02	23.424	25.77	170.57	0.650	0.000	5.00	8.855	5.76	237.3	0.0	374.6
36.96 Bot - Section 2		1.00	1.03	23.683	26.05	168.96	0.650	0.000	1.96	3.375	2.19	91.5	0.0	142.7
40.00		1.00	1.05	24.066	26.47	166.33	0.650	0.000	3.04	5.246	3.41	144.4	0.0	329.6
40.04 Top - Section 1		1.00	1.05	24.071	26.48	166.29	0.650	0.000	0.04	0.068	0.04	1.9	0.0	4.3
45.00		1.00	1.08	24.649	27.11	164.88	0.650	0.000	4.96	8.286	5.39	233.6	0.0	176.8
50.00		1.00	1.10	25.185	27.70	159.94	0.650	0.000	5.00	8.024	5.22	231.2	0.0	171.1
55.00		1.00	1.12	25.681	28.25	154.73	0.650	0.000	5.00	7.694	5.00	226.0	0.0	164.0
56.50 Appurtenance(s)		1.00	1.13	25.823	28.41	153.11	0.650	0.000	1.50	2.244	1.46	66.3	0.0	47.8
56.80 Appurtenance(s)		1.00	1.13	25.851	28.44	152.79	0.650	0.000	0.30	0.445	0.29	13.2	0.0	9.5
60.00		1.00	1.14	26.143	28.76	149.27	0.650	0.000	3.20	4.675	3.04	139.8	0.0	99.6
61.00 Appurtenance(s)		1.00	1.15	26.232	28.86	148.15	0.650	0.000	1.00	1.433	0.93	43.0	0.0	30.5
65.00		1.00	1.16	26.577	29.23	143.60	0.650	0.000	4.00	5.600	3.64	170.3	0.0	119.3
66.50 Top - Section 2		1.00	1.17	26.702	29.37	141.87	0.650	0.000	1.50	2.046	1.33	62.5	0.0	43.5
70.00		1.00	1.18	26.986	29.68	122.89	0.600	0.000	3.50	4.083	2.45	116.4	0.0	172.1
70.50 Appurtenance(s)		1.00	1.18	27.026	29.73	122.99	0.600	0.000	0.50	0.583	0.35	16.6	0.0	24.6
75.00		1.00	1.20	27.373	30.11	123.77	0.600	0.000	4.50	5.250	3.15	151.8	0.0	221.2
76.50 Top - Section 3		1.00	1.20	27.485	30.23	124.03	0.600	0.000	1.50	1.750	1.05	50.8	0.0	73.7
80.00		1.00	1.21	27.740	30.51	124.60	0.600	0.000	3.50	4.083	2.45	119.6	0.0	172.1
83.50 Appurtenance(s)		1.00	1.22	27.987	30.79	125.15	0.600	0.000	3.50	4.083	2.45	120.7	0.0	172.1
85.00		1.00	1.23	28.090	30.90	125.38	0.600	0.000	1.50	1.750	1.05	51.9	0.0	73.7
86.50		1.00	1.23	28.192	31.01	125.61	0.600	0.000	1.50	1.750	1.05	52.1	0.0	73.7
Totals:									86.50			3,759.3		5,242.7

Discrete Appurtenance Forces

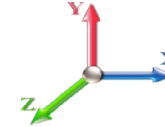
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 13



Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	83.50	DragonWave	1	27.987	30.785	1.00	1.00	4.69	24.39	0.000	0.000	231.01	0.00	0.00
2	83.50	DragonWave	1	27.987	30.785	1.00	1.00	4.69	24.30	0.000	0.000	231.01	0.00	0.00
3	83.50	DragonWave	2	27.987	30.785	1.00	1.00	3.22	27.00	0.000	0.000	158.61	0.00	0.00
4	83.50	Samsung FDD R6 RRHs	3	27.987	30.785	0.58	0.80	3.11	89.10	0.000	0.000	153.21	0.00	0.00
5	83.50	Argus LLPX310R	3	27.987	30.785	0.58	0.80	7.43	77.22	0.000	0.000	366.00	0.00	0.00
6	83.50	T-Arms	3	27.987	30.785	0.56	0.75	13.50	810.00	0.000	0.000	664.96	0.00	0.00
7	70.50	RFS APXV18-206517S-C	3	27.026	29.728	0.75	0.80	11.60	143.10	0.000	0.000	551.82	0.00	0.00
8	70.50	Direct Mount	1	27.026	29.728	1.00	1.00	5.00	135.00	0.000	0.000	237.82	0.00	0.00
9	61.00	T-Arms	3	26.232	28.856	0.50	0.75	15.08	1080.00	0.000	0.000	696.00	0.00	0.00
10	61.00	RFS ACU-A20-N RETs	4	26.232	28.856	0.63	0.80	0.35	3.60	0.000	0.000	16.34	0.00	0.00
11	61.00	RF Filters	3	26.232	28.856	0.40	0.80	1.12	41.85	0.000	0.000	51.52	0.00	0.00
12	61.00	Alcatel Lucent 1900MHz	3	26.232	28.856	0.40	0.80	4.56	118.80	0.000	0.000	210.53	0.00	0.00
13	61.00	ALU 800MHz External	3	26.232	28.856	0.40	0.80	0.94	23.76	0.000	0.000	43.21	0.00	0.00
14	61.00	Alcatel Lucent 800 MHz	3	26.232	28.856	0.40	0.80	2.99	143.10	0.000	0.000	137.95	0.00	0.00
15	61.00	Alcatel Lucent	3	26.232	28.856	0.40	0.80	4.86	189.00	0.000	0.000	224.38	0.00	0.00
16	61.00	RFS APXVTM14-C-120	3	26.232	28.856	0.63	0.80	12.02	151.20	0.000	0.000	554.98	0.00	0.00
17	61.00	Powerwave	3	26.232	28.856	0.53	0.80	14.38	143.10	0.000	0.000	664.04	0.00	0.00
18	56.80	MS-HR35	1	25.851	28.436	1.00	1.00	8.75	387.00	0.000	0.000	398.11	0.00	0.00
19	56.80	MS-H1436 (Heavy Collar	1	25.851	28.436	1.00	1.00	2.25	123.03	0.000	0.000	102.37	0.00	0.00
20	56.80	(3) T-Arm Kit	1	25.851	28.436	0.75	0.75	12.38	450.00	0.000	0.000	563.03	0.00	0.00
21	56.50	Radio 4449 B71+B12	3	25.934	28.528	0.54	0.80	2.65	189.00	0.000	1.200	121.10	0.00	145.33
22	56.50	APXVAARR24 43-U-NA2	3	25.934	28.528	0.56	0.80	34.00	345.60	0.000	1.200	1552.07	0.00	1862.48
23	56.50	T-Arms	3	25.934	28.528	0.56	0.75	13.50	1080.00	0.000	1.200	616.20	0.00	739.44
24	56.50	KRY 112 144/1	6	25.934	28.528	0.56	0.80	1.38	59.40	0.000	1.200	62.88	0.00	75.46
25	56.50	Ericsson Air 21 B4A/B2P	3	25.934	28.528	0.69	0.80	12.57	244.08	0.000	1.200	573.74	0.00	688.49
26	56.50	Ericsson Air 21 B2A/B4P	3	25.934	28.528	0.69	0.80	12.57	247.05	0.000	1.200	573.74	0.00	688.49

Totals: 6,349.68

9,756.65

Total Applied Force Summary

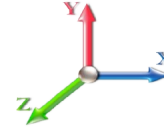
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019	
Site Name: Hennessy Property	Exposure: C		
Height: 86.50 (ft)	Crest Height: 0.00		
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil		
Gh: 1.1	Topography: 1	Struct Class: II	Page: 14



Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		241.10	541.63	0.00	0.00
10.00		233.76	527.41	0.00	0.00
15.00		230.70	513.19	0.00	0.00
20.00		236.01	498.98	0.00	0.00
25.00		238.36	484.76	0.00	0.00
30.00		238.62	470.54	0.00	0.00
35.00		237.29	456.33	0.00	0.00
36.96		91.45	174.71	0.00	0.00
40.00		144.43	379.36	0.00	0.00
40.04		1.88	4.93	0.00	0.00
45.00		233.64	257.82	0.00	0.00
50.00		231.17	252.82	0.00	0.00
55.00		226.03	245.72	0.00	0.00
56.50	(21) attachments	3566.02	2237.46	0.00	4199.69
56.80	(3) attachments	1076.67	974.42	0.00	0.00
60.00		139.81	138.46	0.00	0.00
61.00	(28) attachments	2641.96	1934.56	0.00	0.00
65.00		170.28	146.90	0.00	0.00
66.50		62.49	53.92	0.00	0.00
70.00		116.36	196.24	0.00	0.00
70.50	(4) attachments	806.30	306.13	0.00	0.00
75.00		151.75	227.04	0.00	0.00
76.50		50.79	75.68	0.00	0.00
80.00		119.61	176.59	0.00	0.00
83.50	(13) attachments	1925.48	1228.60	0.00	0.00
85.00		51.91	73.74	0.00	0.00
86.50		52.10	73.74	0.00	0.00
Totals:		13,515.99	12,651.69	0.00	4,199.69

Calculated Forces

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

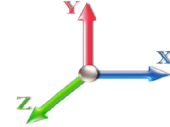


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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-12.60	-13.57	0.00	-815.01	0.00	815.01	2265.93	1132.96	2369.95	1186.73	0.00	0.000	0.000	0.692
5.00	-11.96	-13.41	0.00	-747.18	0.00	747.18	2196.95	1098.47	2226.84	1115.08	0.24	-0.439	0.000	0.676
10.00	-11.33	-13.26	0.00	-680.11	0.00	680.11	2127.97	1063.98	2088.20	1045.65	0.93	-0.879	0.000	0.656
15.00	-10.72	-13.10	0.00	-613.81	0.00	613.81	2058.99	1029.49	1954.01	978.46	2.09	-1.318	0.000	0.633
20.00	-10.13	-12.93	0.00	-548.29	0.00	548.29	1990.01	995.01	1824.27	913.49	3.70	-1.754	0.000	0.605
25.00	-9.56	-12.75	0.00	-483.64	0.00	483.64	1921.03	960.52	1699.00	850.76	5.77	-2.182	0.000	0.574
30.00	-9.01	-12.55	0.00	-419.90	0.00	419.90	1852.05	926.03	1578.18	790.26	8.28	-2.599	0.000	0.536
35.00	-8.51	-12.33	0.00	-357.14	0.00	357.14	1783.07	891.54	1461.81	731.99	11.22	-2.999	0.000	0.493
36.96	-8.30	-12.26	0.00	-333.00	0.00	333.00	1756.08	878.04	1417.49	709.80	12.48	-3.155	0.000	0.474
40.00	-7.90	-12.11	0.00	-295.68	0.00	295.68	1714.09	857.05	1349.91	675.96	14.56	-3.386	0.000	0.442
40.04	-7.86	-12.13	0.00	-295.20	0.00	295.20	862.91	431.45	705.96	353.50	14.59	-3.389	0.000	0.845
45.00	-7.52	-11.95	0.00	-235.01	0.00	235.01	838.21	419.10	658.89	329.93	18.30	-3.731	0.000	0.722
50.00	-7.18	-11.76	0.00	-175.28	0.00	175.28	812.59	406.30	612.50	306.71	22.51	-4.282	0.000	0.581
55.00	-6.90	-11.55	0.00	-116.48	0.00	116.48	778.45	389.22	561.62	281.23	27.24	-4.726	0.000	0.424
56.50	-4.96	-7.81	0.00	-94.96	0.00	94.96	768.10	384.05	546.71	273.76	28.74	-4.838	0.000	0.354
56.80	-4.07	-6.67	0.00	-92.62	0.00	92.62	766.03	383.02	543.76	272.28	29.05	-4.858	0.000	0.346
60.00	-3.93	-6.52	0.00	-71.29	0.00	71.29	743.96	371.98	512.71	256.74	32.37	-5.049	0.000	0.283
61.00	-2.23	-3.72	0.00	-64.77	0.00	64.77	737.06	368.53	503.19	251.97	33.43	-5.103	0.000	0.260
65.00	-2.09	-3.55	0.00	-49.87	0.00	49.87	709.47	354.73	466.02	233.36	37.78	-5.291	0.000	0.217
66.50	-2.04	-3.48	0.00	-44.55	0.00	44.55	699.12	349.56	452.45	226.56	39.45	-5.355	0.000	0.200
66.50	-2.04	-3.48	0.00	-44.55	0.00	44.55	505.62	252.81	279.19	182.79	39.45	-5.355	0.000	0.248
70.00	-1.85	-3.35	0.00	-32.36	0.00	32.36	505.62	252.81	279.19	182.79	43.42	-5.484	0.000	0.181
70.50	-1.62	-2.52	0.00	-30.69	0.00	30.69	505.62	252.81	279.19	182.79	44.00	-5.496	0.000	0.171
75.00	-1.41	-2.35	0.00	-19.35	0.00	19.35	505.62	252.81	279.19	182.79	49.21	-5.582	0.000	0.109
76.50	-1.33	-2.29	0.00	-15.83	0.00	15.83	505.62	252.81	279.19	182.79	50.97	-5.602	0.000	0.089
76.50	-1.33	-2.29	0.00	-15.83	0.00	15.83	505.62	252.81	279.19	182.79	50.97	-5.602	0.000	0.089
80.00	-1.17	-2.15	0.00	-7.81	0.00	7.81	505.62	252.81	279.19	182.79	55.08	-5.634	0.000	0.045
83.50	-0.14	-0.12	0.00	-0.27	0.00	0.27	505.62	252.81	279.19	182.79	59.21	-5.645	0.000	0.002
85.00	-0.07	-0.06	0.00	-0.09	0.00	0.09	505.62	252.81	279.19	182.79	60.98	-5.645	0.000	0.001
86.50	0.00	-0.05	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	62.75	-5.645	0.000	0.000

Wind Loading - Shaft

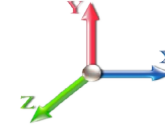
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019	
Site Name: Hennessy Property	Exposure: C		
Height: 86.50 (ft)	Crest Height: 0.00		
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil		
Gh: 1.1	Topography: 1	Struct Class: II	Page: 16



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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	1.101	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.275	5.00	11.898	14.28	81.2	209.4	822.6
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.350	5.00	11.630	13.96	79.3	215.8	810.0
15.00		1.00	0.87	5.266	5.79	0.00	1.200	1.400	5.00	11.342	13.61	78.8	217.4	792.7
20.00		1.00	0.92	5.568	6.12	0.00	1.200	1.437	5.00	11.043	13.25	81.2	216.6	772.9
25.00		1.00	0.96	5.818	6.40	0.00	1.200	1.467	5.00	10.738	12.89	82.5	214.3	751.7
30.00		1.00	0.99	6.034	6.64	0.00	1.200	1.493	5.00	10.429	12.52	83.1	211.1	729.5
35.00		1.00	1.02	6.224	6.85	0.00	1.200	1.515	5.00	10.118	12.14	83.1	207.1	706.5
36.96 Bot - Section 2		1.00	1.03	6.293	6.92	0.00	1.200	1.523	1.96	3.872	4.65	32.2	80.4	270.7
40.00		1.00	1.05	6.394	7.03	0.00	1.200	1.535	3.04	6.025	7.23	50.9	125.4	564.9
40.04 Top - Section 1		1.00	1.05	6.396	7.04	0.00	1.200	1.535	0.04	0.078	0.09	0.7	1.6	7.4
45.00		1.00	1.08	6.549	7.20	0.00	1.200	1.552	4.96	9.569	11.48	82.7	199.5	435.2
50.00		1.00	1.10	6.692	7.36	0.00	1.200	1.568	5.00	9.331	11.20	82.4	195.7	423.8
55.00		1.00	1.12	6.823	7.51	0.00	1.200	1.583	5.00	9.013	10.82	81.2	190.0	408.7
56.50 Appurtenance(s)		1.00	1.13	6.861	7.55	0.00	1.200	1.587	1.50	2.640	3.17	23.9	56.5	120.2
56.80 Appurtenance(s)		1.00	1.13	6.869	7.56	0.00	1.200	1.588	0.30	0.525	0.63	4.8	11.3	23.9
60.00		1.00	1.14	6.946	7.64	0.00	1.200	1.596	3.20	5.526	6.63	50.7	117.8	250.6
61.00 Appurtenance(s)		1.00	1.15	6.970	7.67	0.00	1.200	1.599	1.00	1.700	2.04	15.6	36.6	77.3
65.00		1.00	1.16	7.062	7.77	0.00	1.200	1.609	4.00	6.673	8.01	62.2	142.3	301.3
66.50 Top - Section 2		1.00	1.17	7.095	7.80	0.00	1.200	1.612	1.50	2.449	2.94	22.9	52.8	110.8
70.00		1.00	1.18	7.170	7.89	0.00	1.200	1.621	3.50	5.029	6.03	47.6	108.2	337.6
70.50 Appurtenance(s)		1.00	1.18	7.181	7.90	0.00	1.200	1.622	0.50	0.718	0.86	6.8	15.5	48.2
75.00		1.00	1.20	7.273	8.00	0.00	1.200	1.632	4.50	6.474	7.77	62.1	140.2	435.2
76.50 Top - Section 3		1.00	1.20	7.303	8.03	0.00	1.200	1.635	1.50	2.159	2.59	20.8	46.8	145.2
80.00		1.00	1.21	7.371	8.11	0.00	1.200	1.642	3.50	5.041	6.05	49.0	109.8	339.2
83.50 Appurtenance(s)		1.00	1.22	7.436	8.18	0.00	1.200	1.649	3.50	5.045	6.05	49.5	110.3	339.7
85.00		1.00	1.23	7.464	8.21	0.00	1.200	1.652	1.50	2.163	2.60	21.3	47.4	145.7
86.50		1.00	1.23	7.491	8.24	0.00	1.200	1.655	1.50	2.164	2.60	21.4	47.5	145.8
Totals:									86.50			1,357.9		10,317.3

Discrete Appurtenance Forces

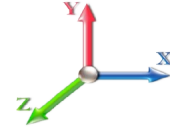
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 17



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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	83.50	DragonWave	1	7.436	8.180	1.00	1.00	5.90	96.91	0.000	0.000	48.23	0.00	0.00
2	83.50	DragonWave	1	7.436	8.180	1.00	1.00	5.90	96.56	0.000	0.000	48.23	0.00	0.00
3	83.50	DragonWave	2	7.436	8.180	1.00	1.00	4.65	82.70	0.000	0.000	38.06	0.00	0.00
4	83.50	Samsung FDD R6 RRHs	3	7.436	8.180	0.60	0.80	4.89	198.83	0.000	0.000	39.96	0.00	0.00
5	83.50	Argus LLPX310R	3	7.436	8.180	0.62	0.80	10.84	281.21	0.000	0.000	88.71	0.00	0.00
6	83.50	T-Arms	3	7.436	8.180	0.56	0.75	24.63	1313.59	0.000	0.000	201.47	0.00	0.00
7	70.50	RFS APXV18-206517S-C	3	7.181	7.899	0.78	0.80	17.33	602.42	0.000	0.000	136.91	0.00	0.00
8	70.50	Direct Mount	1	7.181	7.899	1.00	1.00	8.24	196.76	0.000	0.000	65.11	0.00	0.00
9	61.00	T-Arms	3	6.970	7.667	0.56	0.75	30.37	1967.48	0.000	0.000	232.82	0.00	0.00
10	61.00	RFS ACU-A20-N RETs	4	6.970	7.667	0.67	0.80	1.11	15.34	0.000	0.000	8.49	0.00	0.00
11	61.00	RF Filters	3	6.970	7.667	0.60	0.80	2.37	137.86	0.000	0.000	18.15	0.00	0.00
12	61.00	Alcatel Lucent 1900MHz	3	6.970	7.667	0.74	0.80	11.32	364.84	0.000	0.000	86.82	0.00	0.00
13	61.00	ALU 800MHz External	3	6.970	7.667	0.60	0.80	2.47	65.17	0.000	0.000	18.94	0.00	0.00
14	61.00	Alcatel Lucent 800 MHz	3	6.970	7.667	0.78	0.80	8.24	330.78	0.000	0.000	63.15	0.00	0.00
15	61.00	Alcatel Lucent	3	6.970	7.667	0.60	0.80	8.62	550.32	0.000	0.000	66.11	0.00	0.00
16	61.00	RFS APXVTM14-C-120	3	6.970	7.667	0.67	0.80	14.83	635.05	0.000	0.000	113.68	0.00	0.00
17	61.00	Powerwave	3	6.970	7.667	0.57	0.80	17.38	759.33	0.000	0.000	133.26	0.00	0.00
18	56.80	MS-HR35	1	6.869	7.556	1.00	1.00	16.53	1410.28	0.000	0.000	124.90	0.00	0.00
19	56.80	MS-H1436 (Heavy Collar	1	6.869	7.556	1.00	1.00	4.39	277.59	0.000	0.000	33.20	0.00	0.00
20	56.80	(3) T-Arm Kit	1	6.869	7.556	0.75	0.75	23.38	989.87	0.000	0.000	176.64	0.00	0.00
21	56.50	Radio 4449 B71+B12	3	6.891	7.580	0.54	0.80	3.43	433.87	0.000	1.200	26.01	0.00	31.21
22	56.50	APXVAARR24 43-U-NA2	3	6.891	7.580	0.56	0.80	36.90	1587.83	0.000	1.200	279.67	0.00	335.61
23	56.50	T-Arms	3	6.891	7.580	0.56	0.75	24.21	1901.77	0.000	1.200	183.53	0.00	220.23
24	56.50	KRY 112 144/1	6	6.891	7.580	0.60	0.80	3.03	119.42	0.000	1.200	22.98	0.00	27.57
25	56.50	Ericsson Air 21 B4A/B2P	3	6.891	7.580	0.73	0.80	15.47	778.10	0.000	1.200	117.24	0.00	140.68
26	56.50	Ericsson Air 21 B2A/B4P	3	6.891	7.580	0.73	0.80	15.47	782.06	0.000	1.200	117.24	0.00	140.68

Totals: 15,975.95

2,489.48

Total Applied Force Summary

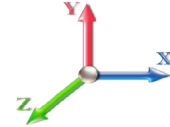
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019	
Site Name: Hennessy Property	Exposure: C		
Height: 86.50 (ft)	Crest Height: 0.00		
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil		
Gh: 1.1	Topography: 1	Struct Class: II	Page: 18



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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		81.17	931.57	0.00	0.00
10.00		79.34	918.99	0.00	0.00
15.00		78.83	901.62	0.00	0.00
20.00		81.16	881.87	0.00	0.00
25.00		82.47	860.66	0.00	0.00
30.00		83.07	838.45	0.00	0.00
35.00		83.12	815.50	0.00	0.00
36.96		32.16	313.30	0.00	0.00
40.00		50.85	631.24	0.00	0.00
40.04		0.66	8.23	0.00	0.00
45.00		82.72	543.24	0.00	0.00
50.00		82.42	532.81	0.00	0.00
55.00		81.18	517.64	0.00	0.00
56.50	(21) attachments	770.58	5755.97	0.00	895.99
56.80	(3) attachments	339.49	2708.20	0.00	0.00
60.00		50.67	302.40	0.00	0.00
61.00	(28) attachments	757.04	4916.28	0.00	0.00
65.00		62.20	338.13	0.00	0.00
66.50		22.93	124.66	0.00	0.00
70.00		47.59	369.91	0.00	0.00
70.50	(4) attachments	208.83	852.04	0.00	0.00
75.00		62.15	442.94	0.00	0.00
76.50		20.81	147.75	0.00	0.00
80.00		49.05	345.27	0.00	0.00
83.50	(13) attachments	514.18	2415.58	0.00	0.00
85.00		21.31	145.69	0.00	0.00
86.50		21.39	145.78	0.00	0.00
Totals:		3,847.37	27,705.72	0.00	895.99

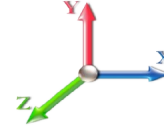
Calculated Forces

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 19



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-27.70	-3.88	0.00	-239.50	0.00	239.50	2265.93	1132.96	2369.95	1186.73	0.00	0.000	0.000	0.214
5.00	-26.76	-3.86	0.00	-220.11	0.00	220.11	2196.95	1098.47	2226.84	1115.08	0.07	-0.129	0.000	0.210
10.00	-25.83	-3.83	0.00	-200.82	0.00	200.82	2127.97	1063.98	2088.20	1045.65	0.27	-0.259	0.000	0.204
15.00	-24.92	-3.81	0.00	-181.65	0.00	181.65	2058.99	1029.49	1954.01	978.46	0.61	-0.389	0.000	0.198
20.00	-24.03	-3.77	0.00	-162.63	0.00	162.63	1990.01	995.01	1824.27	913.49	1.09	-0.518	0.000	0.190
25.00	-23.17	-3.73	0.00	-143.77	0.00	143.77	1921.03	960.52	1699.00	850.76	1.70	-0.645	0.000	0.181
30.00	-22.32	-3.69	0.00	-125.11	0.00	125.11	1852.05	926.03	1578.18	790.26	2.44	-0.769	0.000	0.170
35.00	-21.50	-3.62	0.00	-106.69	0.00	106.69	1783.07	891.54	1461.81	731.99	3.31	-0.888	0.000	0.158
36.96	-21.19	-3.61	0.00	-99.61	0.00	99.61	1756.08	878.04	1417.49	709.80	3.69	-0.935	0.000	0.152
40.00	-20.55	-3.56	0.00	-88.63	0.00	88.63	1714.09	857.05	1349.91	675.96	4.31	-1.004	0.000	0.143
40.04	-20.54	-3.57	0.00	-88.49	0.00	88.49	862.91	431.45	705.96	353.50	4.32	-1.005	0.000	0.274
45.00	-19.99	-3.53	0.00	-70.76	0.00	70.76	838.21	419.10	658.89	329.93	5.42	-1.108	0.000	0.238
50.00	-19.45	-3.49	0.00	-53.12	0.00	53.12	812.59	406.30	612.50	306.71	6.67	-1.274	0.000	0.197
55.00	-18.93	-3.42	0.00	-35.68	0.00	35.68	778.45	389.22	561.62	281.23	8.08	-1.409	0.000	0.151
56.50	-13.20	-2.51	0.00	-29.65	0.00	29.65	768.10	384.05	546.71	273.76	8.53	-1.444	0.000	0.126
56.80	-10.50	-2.11	0.00	-28.90	0.00	28.90	766.03	383.02	543.76	272.28	8.62	-1.450	0.000	0.120
60.00	-10.19	-2.06	0.00	-22.15	0.00	22.15	743.96	371.98	512.71	256.74	9.61	-1.509	0.000	0.100
61.00	-5.30	-1.17	0.00	-20.09	0.00	20.09	737.06	368.53	503.19	251.97	9.93	-1.526	0.000	0.087
65.00	-4.96	-1.11	0.00	-15.39	0.00	15.39	709.47	354.73	466.02	233.36	11.23	-1.584	0.000	0.073
66.50	-4.84	-1.08	0.00	-13.73	0.00	13.73	699.12	349.56	452.45	226.56	11.73	-1.604	0.000	0.068
66.50	-4.84	-1.08	0.00	-13.73	0.00	13.73	505.62	252.81	279.19	182.79	11.73	-1.604	0.000	0.085
70.00	-4.47	-1.03	0.00	-9.94	0.00	9.94	505.62	252.81	279.19	182.79	12.93	-1.644	0.000	0.063
70.50	-3.62	-0.79	0.00	-9.43	0.00	9.43	505.62	252.81	279.19	182.79	13.10	-1.648	0.000	0.059
75.00	-3.18	-0.72	0.00	-5.86	0.00	5.86	505.62	252.81	279.19	182.79	14.66	-1.674	0.000	0.038
76.50	-3.03	-0.70	0.00	-4.78	0.00	4.78	505.62	252.81	279.19	182.79	15.19	-1.680	0.000	0.032
76.50	-3.03	-0.70	0.00	-4.78	0.00	4.78	505.62	252.81	279.19	182.79	15.19	-1.680	0.000	0.032
80.00	-2.69	-0.64	0.00	-2.34	0.00	2.34	505.62	252.81	279.19	182.79	16.43	-1.689	0.000	0.018
83.50	-0.29	-0.05	0.00	-0.12	0.00	0.12	505.62	252.81	279.19	182.79	17.67	-1.693	0.000	0.001
85.00	-0.15	-0.03	0.00	-0.04	0.00	0.04	505.62	252.81	279.19	182.79	18.20	-1.693	0.000	0.000
86.50	0.00	-0.02	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	18.73	-1.693	0.000	0.000

Seismic Segment Forces (Factored)

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E

Iterations 22

Gust Response Factor 1.10

Sds 0.20

Ss 0.18

Dead Load Factor 1.20 **Seismic Load Factor** 1.00

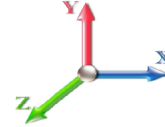
Sd1 0.10

S1 0.06

Wind Load Factor 0.00 **Structure Frequency (f1)** 0.44

SA 0.04

Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.02	0.01	0.00	
5.00		511.01	0.01	0.06	0.03	13.15	
10.00		495.21	0.03	0.07	0.04	15.23	
15.00		479.42	0.07	0.07	0.04	15.71	
20.00		463.62	0.11	0.07	0.04	15.87	
25.00		447.82	0.17	0.07	0.03	15.83	
30.00		432.03	0.24	0.06	0.02	14.99	
35.00		416.23	0.33	0.04	0.01	12.37	
36.96	Bot - Section 2	158.58	0.36	0.03	0.01	4.12	
40.00		366.24	0.42	0.01	0.01	6.56	
40.04	Top - Section 1	4.76	0.42	0.01	0.01	0.08	
45.00		196.40	0.53	-0.03	0.01	-0.07	
50.00		190.12	0.65	-0.07	0.02	-3.62	
55.00		182.22	0.78	-0.11	0.05	-5.36	
56.50	Appurtenance(s)	2458.8	0.82	-0.12	0.06	-73.79	
56.80	Appurtenance(s)	1077.2	0.83	-0.12	0.06	-32.29	
60.00		110.65	0.92	-0.12	0.10	-2.90	
61.00	Appurtenance(s)	2138.8	0.95	-0.12	0.11	-50.85	
65.00		132.50	1.08	-0.08	0.17	-1.04	
66.50	Top - Section 2	48.39	1.13	-0.05	0.20	0.03	
70.00		191.17	1.25	0.05	0.29	4.93	
70.50	Appurtenance(s)	336.31	1.27	0.08	0.31	10.09	
75.00		245.79	1.43	0.34	0.46	18.41	
76.50	Top - Section 3	81.93	1.48	0.46	0.52	7.60	
80.00		191.17	1.62	0.85	0.70	26.73	
83.50	Appurtenance(s)	1360.0	1.76	1.38	0.92	265.11	
85.00		81.93	1.83	1.66	1.02	18.11	
86.50		81.93	1.89	1.98	1.14	20.37	

Totals: 12,880.4

315.4

Total Wind: 13,516.0

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

Calculated Forces

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E

Iterations 22

Gust Response Factor 1.10

Sds 0.20

Ss 0.18

Dead Load Factor 1.20 **Seismic Load Factor** 1.00

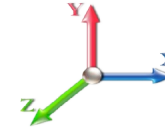
Sd1 0.10

S1 0.06

Wind Load Factor 0.00 **Structure Frequency (f1)** 0.44

SA 0.04

Seismic Importance Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-16.87	-0.49	0.00	-34.88	0.00	34.88	2265.93	1132.96	2369.95	1186.73		0.00	0.00	0.037
5.00	-16.15	-0.48	0.00	-32.44	0.00	32.44	2196.95	1098.47	2226.84	1115.08		0.01	-0.02	0.036
10.00	-15.44	-0.47	0.00	-30.05	0.00	30.05	2127.97	1063.98	2088.20	1045.65		0.04	-0.04	0.036
15.00	-14.76	-0.46	0.00	-27.70	0.00	27.70	2058.99	1029.49	1954.01	978.46		0.09	-0.06	0.035
20.00	-14.09	-0.45	0.00	-25.42	0.00	25.42	1990.01	995.01	1824.27	913.49		0.16	-0.08	0.035
25.00	-13.45	-0.43	0.00	-23.19	0.00	23.19	1921.03	960.52	1699.00	850.76		0.25	-0.10	0.034
30.00	-12.82	-0.42	0.00	-21.02	0.00	21.02	1852.05	926.03	1578.18	790.26		0.37	-0.12	0.034
35.00	-12.21	-0.41	0.00	-18.91	0.00	18.91	1783.07	891.54	1461.81	731.99		0.50	-0.14	0.033
36.96	-11.98	-0.41	0.00	-18.10	0.00	18.10	1756.08	878.04	1417.49	709.80		0.56	-0.15	0.032
40.00	-11.47	-0.40	0.00	-16.86	0.00	16.86	1714.09	857.05	1349.91	675.96		0.66	-0.16	0.032
40.04	-11.47	-0.40	0.00	-16.84	0.00	16.84	862.91	431.45	705.96	353.50		0.66	-0.16	0.061
45.00	-11.12	-0.41	0.00	-14.83	0.00	14.83	838.21	419.10	658.89	329.93		0.84	-0.18	0.058
50.00	-10.78	-0.41	0.00	-12.79	0.00	12.79	812.59	406.30	612.50	306.71		1.05	-0.22	0.055
55.00	-10.46	-0.42	0.00	-10.71	0.00	10.71	778.45	389.22	561.62	281.23		1.29	-0.25	0.052
56.50	-7.47	-0.41	0.00	-10.09	0.00	10.09	768.10	384.05	546.71	273.76		1.38	-0.26	0.047
56.80	-6.17	-0.40	0.00	-9.97	0.00	9.97	766.03	383.02	543.76	272.28		1.39	-0.27	0.045
60.00	-5.99	-0.40	0.00	-8.69	0.00	8.69	743.96	371.98	512.71	256.74		1.58	-0.29	0.042
61.00	-3.41	-0.39	0.00	-8.28	0.00	8.28	737.06	368.53	503.19	251.97		1.64	-0.29	0.038
65.00	-3.21	-0.39	0.00	-6.73	0.00	6.73	709.47	354.73	466.02	233.36		1.90	-0.32	0.033
66.50	-3.14	-0.39	0.00	-6.15	0.00	6.15	699.12	349.56	452.45	226.56		2.00	-0.33	0.032
66.50	-3.14	-0.39	0.00	-6.15	0.00	6.15	505.62	252.81	279.19	182.79		2.00	-0.33	0.040
70.00	-2.88	-0.38	0.00	-4.78	0.00	4.78	505.62	252.81	279.19	182.79		2.25	-0.35	0.032
70.50	-2.47	-0.37	0.00	-4.59	0.00	4.59	505.62	252.81	279.19	182.79		2.28	-0.35	0.030
75.00	-2.17	-0.35	0.00	-2.92	0.00	2.92	505.62	252.81	279.19	182.79		2.62	-0.36	0.020
76.50	-2.07	-0.34	0.00	-2.39	0.00	2.39	505.62	252.81	279.19	182.79		2.73	-0.36	0.017
76.50	-2.07	-0.34	0.00	-2.39	0.00	2.39	505.62	252.81	279.19	182.79		2.73	-0.36	0.017
80.00	-1.83	-0.32	0.00	-1.19	0.00	1.19	505.62	252.81	279.19	182.79		3.00	-0.37	0.010
83.50	-0.20	-0.04	0.00	-0.09	0.00	0.09	505.62	252.81	279.19	182.79		3.27	-0.37	0.001
85.00	-0.10	-0.02	0.00	-0.03	0.00	0.03	505.62	252.81	279.19	182.79		3.39	-0.37	0.000
86.50	0.00	-0.02	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79		3.51	-0.37	0.000

Seismic Segment Forces (Factored)

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 22

Load Case: 0.9D + 1.0E

Iterations 22

Gust Response Factor 1.10

Sds 0.20

Ss 0.18

Dead Load Factor 0.90 **Seismic Load Factor** 1.00

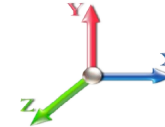
Sd1 0.10

S1 0.06

Wind Load Factor 0.00 **Structure Frequency (f1)** 0.44

SA 0.04

Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.02	0.01	0.00	
5.00		511.01	0.01	0.06	0.03	13.15	
10.00		495.21	0.03	0.07	0.04	15.23	
15.00		479.42	0.07	0.07	0.04	15.71	
20.00		463.62	0.11	0.07	0.04	15.87	
25.00		447.82	0.17	0.07	0.03	15.83	
30.00		432.03	0.24	0.06	0.02	14.99	
35.00		416.23	0.33	0.04	0.01	12.37	
36.96	Bot - Section 2	158.58	0.36	0.03	0.01	4.12	
40.00		366.24	0.42	0.01	0.01	6.56	
40.04	Top - Section 1	4.76	0.42	0.01	0.01	0.08	
45.00		196.40	0.53	-0.03	0.01	-0.07	
50.00		190.12	0.65	-0.07	0.02	-3.62	
55.00		182.22	0.78	-0.11	0.05	-5.36	
56.50	Appurtenance(s)	2458.8	0.82	-0.12	0.06	-73.79	
56.80	Appurtenance(s)	1077.2	0.83	-0.12	0.06	-32.29	
60.00		110.65	0.92	-0.12	0.10	-2.90	
61.00	Appurtenance(s)	2138.8	0.95	-0.12	0.11	-50.85	
65.00		132.50	1.08	-0.08	0.17	-1.04	
66.50	Top - Section 2	48.39	1.13	-0.05	0.20	0.03	
70.00		191.17	1.25	0.05	0.29	4.93	
70.50	Appurtenance(s)	336.31	1.27	0.08	0.31	10.09	
75.00		245.79	1.43	0.34	0.46	18.41	
76.50	Top - Section 3	81.93	1.48	0.46	0.52	7.60	
80.00		191.17	1.62	0.85	0.70	26.73	
83.50	Appurtenance(s)	1360.0	1.76	1.38	0.92	265.11	
85.00		81.93	1.83	1.66	1.02	18.11	
86.50		81.93	1.89	1.98	1.14	20.37	

Totals: 12,880.4

315.4

Total Wind: 13,516.0

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

Calculated Forces

Structure: CT46149-A-SBA **Code:** EIA/TIA-222-G 7/29/2019
Site Name: Hennessy Property **Exposure:** C
Height: 86.50 (ft) **Crest Height:** 0.00
Base Elev: 1.500 (ft) **Site Class:** D - Stiff Soil
Gh: 1.1 **Topography:** 1 **Struct Class:** II Page: 23



Load Case: 0.9D + 1.0E

Iterations 22

Gust Response Factor 1.10

Sds 0.20

Ss 0.18

Dead Load Factor 0.90 **Seismic Load Factor** 1.00

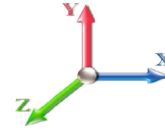
Sd1 0.10

S1 0.06

Wind Load Factor 0.00 **Structure Frequency (f1)** 0.44

SA 0.04

Seismic Importance Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-12.65	-0.49	0.00	-34.39	0.00	34.39	2265.93	1132.96	2369.95	1186.73	0.00	0.00	0.00	0.035
5.00	-12.11	-0.48	0.00	-31.96	0.00	31.96	2196.95	1098.47	2226.84	1115.08	0.01	-0.02	0.034	
10.00	-11.58	-0.47	0.00	-29.57	0.00	29.57	2127.97	1063.98	2088.20	1045.65	0.04	-0.04	0.034	
15.00	-11.07	-0.45	0.00	-27.24	0.00	27.24	2058.99	1029.49	1954.01	978.46	0.09	-0.06	0.033	
20.00	-10.57	-0.44	0.00	-24.98	0.00	24.98	1990.01	995.01	1824.27	913.49	0.16	-0.08	0.033	
25.00	-10.08	-0.43	0.00	-22.78	0.00	22.78	1921.03	960.52	1699.00	850.76	0.25	-0.10	0.032	
30.00	-9.61	-0.41	0.00	-20.64	0.00	20.64	1852.05	926.03	1578.18	790.26	0.36	-0.12	0.031	
35.00	-9.16	-0.40	0.00	-18.57	0.00	18.57	1783.07	891.54	1461.81	731.99	0.49	-0.14	0.031	
36.96	-8.98	-0.40	0.00	-17.78	0.00	17.78	1756.08	878.04	1417.49	709.80	0.55	-0.14	0.030	
40.00	-8.60	-0.39	0.00	-16.56	0.00	16.56	1714.09	857.05	1349.91	675.96	0.65	-0.16	0.030	
40.04	-8.60	-0.40	0.00	-16.54	0.00	16.54	862.91	431.45	705.96	353.50	0.65	-0.16	0.057	
45.00	-8.34	-0.40	0.00	-14.58	0.00	14.58	838.21	419.10	658.89	329.93	0.82	-0.18	0.054	
50.00	-8.09	-0.40	0.00	-12.59	0.00	12.59	812.59	406.30	612.50	306.71	1.03	-0.21	0.051	
55.00	-7.84	-0.41	0.00	-10.57	0.00	10.57	778.45	389.22	561.62	281.23	1.27	-0.25	0.048	
56.50	-5.60	-0.40	0.00	-9.96	0.00	9.96	768.10	384.05	546.71	273.76	1.35	-0.26	0.044	
56.80	-4.63	-0.39	0.00	-9.84	0.00	9.84	766.03	383.02	543.76	272.28	1.37	-0.26	0.042	
60.00	-4.49	-0.39	0.00	-8.59	0.00	8.59	743.96	371.98	512.71	256.74	1.55	-0.28	0.039	
61.00	-2.56	-0.38	0.00	-8.19	0.00	8.19	737.06	368.53	503.19	251.97	1.61	-0.29	0.036	
65.00	-2.41	-0.38	0.00	-6.66	0.00	6.66	709.47	354.73	466.02	233.36	1.87	-0.31	0.032	
66.50	-2.36	-0.38	0.00	-6.08	0.00	6.08	699.12	349.56	452.45	226.56	1.97	-0.32	0.030	
66.50	-2.36	-0.38	0.00	-6.08	0.00	6.08	505.62	252.81	279.19	182.79	1.97	-0.32	0.038	
70.00	-2.16	-0.38	0.00	-4.73	0.00	4.73	505.62	252.81	279.19	182.79	2.21	-0.34	0.030	
70.50	-1.85	-0.37	0.00	-4.55	0.00	4.55	505.62	252.81	279.19	182.79	2.25	-0.34	0.029	
75.00	-1.63	-0.35	0.00	-2.89	0.00	2.89	505.62	252.81	279.19	182.79	2.58	-0.36	0.019	
76.50	-1.55	-0.34	0.00	-2.37	0.00	2.37	505.62	252.81	279.19	182.79	2.69	-0.36	0.016	
76.50	-1.55	-0.34	0.00	-2.37	0.00	2.37	505.62	252.81	279.19	182.79	2.69	-0.36	0.016	
80.00	-1.37	-0.31	0.00	-1.18	0.00	1.18	505.62	252.81	279.19	182.79	2.95	-0.36	0.009	
83.50	-0.15	-0.04	0.00	-0.09	0.00	0.09	505.62	252.81	279.19	182.79	3.22	-0.37	0.001	
85.00	-0.07	-0.02	0.00	-0.03	0.00	0.03	505.62	252.81	279.19	182.79	3.34	-0.37	0.000	
86.50	0.00	-0.02	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	3.45	-0.37	0.000	

Wind Loading - Shaft

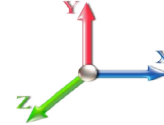
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 24



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	121.70	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	118.05	0.650	0.000	5.00	10.835	7.04	57.7	0.0	511.0
10.00		1.00	0.85	7.442	8.19	114.40	0.650	0.000	5.00	10.505	6.83	55.9	0.0	495.2
15.00		1.00	0.87	7.583	8.34	111.79	0.650	0.000	5.00	10.175	6.61	55.2	0.0	479.4
20.00		1.00	0.92	8.017	8.82	111.16	0.650	0.000	5.00	9.845	6.40	56.4	0.0	463.6
25.00		1.00	0.96	8.378	9.22	109.76	0.650	0.000	5.00	9.515	6.18	57.0	0.0	447.8
30.00		1.00	0.99	8.689	9.56	107.83	0.650	0.000	5.00	9.185	5.97	57.1	0.0	432.0
35.00		1.00	1.02	8.962	9.86	105.51	0.650	0.000	5.00	8.855	5.76	56.7	0.0	416.2
36.96 Bot - Section 2		1.00	1.03	9.061	9.97	104.51	0.650	0.000	1.96	3.375	2.19	21.9	0.0	158.6
40.00		1.00	1.05	9.208	10.13	102.88	0.650	0.000	3.04	5.246	3.41	34.5	0.0	366.2
40.04 Top - Section 1		1.00	1.05	9.210	10.13	102.86	0.650	0.000	0.04	0.068	0.04	0.4	0.0	4.8
45.00		1.00	1.08	9.431	10.37	101.99	0.650	0.000	4.96	8.286	5.39	55.9	0.0	196.4
50.00		1.00	1.10	9.636	10.60	98.93	0.650	0.000	5.00	8.024	5.22	55.3	0.0	190.1
55.00		1.00	1.12	9.826	10.81	95.71	0.650	0.000	5.00	7.694	5.00	54.1	0.0	182.2
56.50 Appurtenance(s)		1.00	1.13	9.880	10.87	94.71	0.650	0.000	1.50	2.244	1.46	15.9	0.0	53.1
56.80 Appurtenance(s)		1.00	1.13	9.891	10.88	94.51	0.650	0.000	0.30	0.445	0.29	3.1	0.0	10.5
60.00		1.00	1.14	10.003	11.00	92.33	0.650	0.000	3.20	4.675	3.04	33.4	0.0	110.7
61.00 Appurtenance(s)		1.00	1.15	10.037	11.04	91.64	0.650	0.000	1.00	1.433	0.93	10.3	0.0	33.9
65.00		1.00	1.16	10.169	11.19	88.83	0.650	0.000	4.00	5.600	3.64	40.7	0.0	132.5
66.50 Top - Section 2		1.00	1.17	10.217	11.24	87.75	0.650	0.000	1.50	2.046	1.33	14.9	0.0	48.4
70.00		1.00	1.18	10.325	11.36	76.02	0.600	0.000	3.50	4.083	2.45	27.8	0.0	191.2
70.50 Appurtenance(s)		1.00	1.18	10.340	11.37	76.07	0.600	0.000	0.50	0.583	0.35	4.0	0.0	27.3
75.00		1.00	1.20	10.473	11.52	76.56	0.600	0.000	4.50	5.250	3.15	36.3	0.0	245.8
76.50 Top - Section 3		1.00	1.20	10.516	11.57	76.72	0.600	0.000	1.50	1.750	1.05	12.1	0.0	81.9
80.00		1.00	1.21	10.614	11.68	77.07	0.600	0.000	3.50	4.083	2.45	28.6	0.0	191.2
83.50 Appurtenance(s)		1.00	1.22	10.708	11.78	77.41	0.600	0.000	3.50	4.083	2.45	28.9	0.0	191.2
85.00		1.00	1.23	10.748	11.82	77.56	0.600	0.000	1.50	1.750	1.05	12.4	0.0	81.9
86.50		1.00	1.23	10.787	11.87	77.70	0.600	0.000	1.50	1.750	1.05	12.5	0.0	81.9
Totals:									86.50			899.0		5,825.2

Discrete Appurtenance Forces

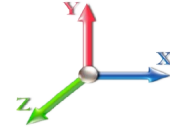
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 25



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	83.50	DragonWave	1	10.708	11.779	1.00	1.00	4.69	27.10	0.000	0.000	55.24	0.00	0.00
2	83.50	DragonWave	1	10.708	11.779	1.00	1.00	4.69	27.00	0.000	0.000	55.24	0.00	0.00
3	83.50	DragonWave	2	10.708	11.779	1.00	1.00	3.22	30.00	0.000	0.000	37.93	0.00	0.00
4	83.50	Samsung FDD R6 RRHs	3	10.708	11.779	0.58	0.80	3.11	99.00	0.000	0.000	36.64	0.00	0.00
5	83.50	Argus LLPX310R	3	10.708	11.779	0.58	0.80	7.43	85.80	0.000	0.000	87.52	0.00	0.00
6	83.50	T-Arms	3	10.708	11.779	0.56	0.75	13.50	900.00	0.000	0.000	159.01	0.00	0.00
7	70.50	RFS APXV18-206517S-C	3	10.340	11.374	0.75	0.80	11.60	159.00	0.000	0.000	131.96	0.00	0.00
8	70.50	Direct Mount	1	10.340	11.374	1.00	1.00	5.00	150.00	0.000	0.000	56.87	0.00	0.00
9	61.00	T-Arms	3	10.037	11.041	0.50	0.75	15.08	1200.00	0.000	0.000	166.44	0.00	0.00
10	61.00	RFS ACU-A20-N RETs	4	10.037	11.041	0.63	0.80	0.35	4.00	0.000	0.000	3.91	0.00	0.00
11	61.00	RF Filters	3	10.037	11.041	0.40	0.80	1.12	46.50	0.000	0.000	12.32	0.00	0.00
12	61.00	Alcatel Lucent 1900MHz	3	10.037	11.041	0.40	0.80	4.56	132.00	0.000	0.000	50.34	0.00	0.00
13	61.00	ALU 800MHz External	3	10.037	11.041	0.40	0.80	0.94	26.40	0.000	0.000	10.33	0.00	0.00
14	61.00	Alcatel Lucent 800 MHz	3	10.037	11.041	0.40	0.80	2.99	159.00	0.000	0.000	32.99	0.00	0.00
15	61.00	Alcatel Lucent	3	10.037	11.041	0.40	0.80	4.86	210.00	0.000	0.000	53.66	0.00	0.00
16	61.00	RFS APXVTM14-C-120	3	10.037	11.041	0.63	0.80	12.02	168.00	0.000	0.000	132.71	0.00	0.00
17	61.00	Powerwave	3	10.037	11.041	0.53	0.80	14.38	159.00	0.000	0.000	158.79	0.00	0.00
18	56.80	MS-HR35	1	9.891	10.880	1.00	1.00	8.75	430.00	0.000	0.000	95.20	0.00	0.00
19	56.80	MS-H1436 (Heavy Collar	1	9.891	10.880	1.00	1.00	2.25	136.70	0.000	0.000	24.48	0.00	0.00
20	56.80	(3) T-Arm Kit	1	9.891	10.880	0.75	0.75	12.38	500.00	0.000	0.000	134.64	0.00	0.00
21	56.50	Radio 4449 B71+B12	3	9.923	10.915	0.54	0.80	2.65	210.00	0.000	1.200	28.96	0.00	34.75
22	56.50	APXVAARR24 43-U-NA2	3	9.923	10.915	0.56	0.80	34.00	384.00	0.000	1.200	371.15	0.00	445.38
23	56.50	T-Arms	3	9.923	10.915	0.56	0.75	13.50	1200.00	0.000	1.200	147.35	0.00	176.83
24	56.50	KRY 112 144/1	6	9.923	10.915	0.56	0.80	1.38	66.00	0.000	1.200	15.04	0.00	18.04
25	56.50	Ericsson Air 21 B4A/B2P	3	9.923	10.915	0.69	0.80	12.57	271.20	0.000	1.200	137.20	0.00	164.64
26	56.50	Ericsson Air 21 B2A/B4P	3	9.923	10.915	0.69	0.80	12.57	274.50	0.000	1.200	137.20	0.00	164.64

Totals: 7,055.20

2,333.13

Total Applied Force Summary

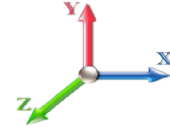
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019	
Site Name: Hennessy Property	Exposure: C		
Height: 86.50 (ft)	Crest Height: 0.00		
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil		
Gh: 1.1	Topography: 1	Struct Class: II	Page: 26



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		57.66	601.81	0.00	0.00
10.00		55.90	586.01	0.00	0.00
15.00		55.17	570.22	0.00	0.00
20.00		56.44	554.42	0.00	0.00
25.00		57.00	538.62	0.00	0.00
30.00		57.06	522.83	0.00	0.00
35.00		56.74	507.03	0.00	0.00
36.96		21.87	194.12	0.00	0.00
40.00		34.54	421.51	0.00	0.00
40.04		0.45	5.48	0.00	0.00
45.00		55.87	286.47	0.00	0.00
50.00		55.28	280.92	0.00	0.00
55.00		54.05	273.02	0.00	0.00
56.50	(21) attachments	852.75	2486.06	0.00	1004.28
56.80	(3) attachments	257.47	1082.69	0.00	0.00
60.00		33.43	153.85	0.00	0.00
61.00	(28) attachments	631.78	2149.52	0.00	0.00
65.00		40.72	163.22	0.00	0.00
66.50		14.94	59.91	0.00	0.00
70.00		27.83	218.05	0.00	0.00
70.50	(4) attachments	192.81	340.15	0.00	0.00
75.00		36.29	252.27	0.00	0.00
76.50		12.15	84.09	0.00	0.00
80.00		28.60	196.21	0.00	0.00
83.50	(13) attachments	460.44	1365.11	0.00	0.00
85.00		12.41	81.93	0.00	0.00
86.50		12.46	81.93	0.00	0.00
Totals:		3,232.12	14,057.43	0.00	1,004.28

Calculated Forces

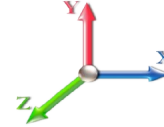
Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 27



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-14.05	-3.24	0.00	-195.92	0.00	195.92	2265.93	1132.96	2369.95	1186.73	0.00	0.000	0.000	0.171
5.00	-13.45	-3.21	0.00	-179.70	0.00	179.70	2196.95	1098.47	2226.84	1115.08	0.06	-0.106	0.000	0.167
10.00	-12.86	-3.18	0.00	-163.64	0.00	163.64	2127.97	1063.98	2088.20	1045.65	0.22	-0.211	0.000	0.163
15.00	-12.28	-3.14	0.00	-147.76	0.00	147.76	2058.99	1029.49	1954.01	978.46	0.50	-0.317	0.000	0.157
20.00	-11.72	-3.10	0.00	-132.04	0.00	132.04	1990.01	995.01	1824.27	913.49	0.89	-0.422	0.000	0.150
25.00	-11.18	-3.06	0.00	-116.53	0.00	116.53	1921.03	960.52	1699.00	850.76	1.39	-0.525	0.000	0.143
30.00	-10.65	-3.02	0.00	-101.22	0.00	101.22	1852.05	926.03	1578.18	790.26	1.99	-0.626	0.000	0.134
35.00	-10.14	-2.97	0.00	-86.13	0.00	86.13	1783.07	891.54	1461.81	731.99	2.70	-0.722	0.000	0.123
36.96	-9.94	-2.95	0.00	-80.32	0.00	80.32	1756.08	878.04	1417.49	709.80	3.00	-0.760	0.000	0.119
40.00	-9.52	-2.92	0.00	-71.34	0.00	71.34	1714.09	857.05	1349.91	675.96	3.51	-0.815	0.000	0.111
40.04	-9.51	-2.92	0.00	-71.23	0.00	71.23	862.91	431.45	705.96	353.50	3.51	-0.816	0.000	0.213
45.00	-9.22	-2.88	0.00	-56.73	0.00	56.73	838.21	419.10	658.89	329.93	4.41	-0.899	0.000	0.183
50.00	-8.94	-2.84	0.00	-42.34	0.00	42.34	812.59	406.30	612.50	306.71	5.42	-1.032	0.000	0.149
55.00	-8.66	-2.79	0.00	-28.15	0.00	28.15	778.45	389.22	561.62	281.23	6.56	-1.139	0.000	0.111
56.50	-6.19	-1.89	0.00	-22.96	0.00	22.96	768.10	384.05	546.71	273.76	6.92	-1.166	0.000	0.092
56.80	-5.11	-1.61	0.00	-22.40	0.00	22.40	766.03	383.02	543.76	272.28	7.00	-1.171	0.000	0.089
60.00	-4.96	-1.58	0.00	-17.24	0.00	17.24	743.96	371.98	512.71	256.74	7.80	-1.217	0.000	0.074
61.00	-2.82	-0.90	0.00	-15.67	0.00	15.67	737.06	368.53	503.19	251.97	8.06	-1.230	0.000	0.066
65.00	-2.66	-0.86	0.00	-12.07	0.00	12.07	709.47	354.73	466.02	233.36	9.11	-1.276	0.000	0.055
66.50	-2.60	-0.84	0.00	-10.78	0.00	10.78	699.12	349.56	452.45	226.56	9.51	-1.291	0.000	0.051
66.50	-2.60	-0.84	0.00	-10.78	0.00	10.78	505.62	252.81	279.19	182.79	9.51	-1.291	0.000	0.064
70.00	-2.38	-0.81	0.00	-7.83	0.00	7.83	505.62	252.81	279.19	182.79	10.47	-1.322	0.000	0.048
70.50	-2.05	-0.61	0.00	-7.43	0.00	7.43	505.62	252.81	279.19	182.79	10.61	-1.325	0.000	0.045
75.00	-1.80	-0.57	0.00	-4.68	0.00	4.68	505.62	252.81	279.19	182.79	11.87	-1.346	0.000	0.029
76.50	-1.71	-0.55	0.00	-3.83	0.00	3.83	505.62	252.81	279.19	182.79	12.29	-1.351	0.000	0.024
76.50	-1.71	-0.55	0.00	-3.83	0.00	3.83	505.62	252.81	279.19	182.79	12.29	-1.351	0.000	0.024
80.00	-1.52	-0.52	0.00	-1.89	0.00	1.89	505.62	252.81	279.19	182.79	13.28	-1.359	0.000	0.013
83.50	-0.16	-0.03	0.00	-0.06	0.00	0.06	505.62	252.81	279.19	182.79	14.28	-1.361	0.000	0.001
85.00	-0.08	-0.01	0.00	-0.02	0.00	0.02	505.62	252.81	279.19	182.79	14.71	-1.361	0.000	0.000
86.50	0.00	-0.01	0.00	0.00	0.00	0.00	505.62	252.81	279.19	182.79	15.14	-1.361	0.000	0.000

Final Analysis Summary

Structure: CT46149-A-SBA	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	13.6	0.00	16.82	0.00	0.00	824.95
0.9D + 1.6W 97 mph Wind	13.6	0.00	12.60	0.00	0.00	815.01
1.2D + 1.0Di + 1.0Wi 50 mph Wind	3.9	0.00	27.70	0.00	0.00	239.50
1.2D + 1.0E	0.5	0.00	16.87	0.00	0.00	34.88
0.9D + 1.0E	0.5	0.00	12.65	0.00	0.00	34.39
1.0D + 1.0W 60 mph Wind	3.2	0.00	14.05	0.00	0.00	195.92

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-10.71	-12.32	0.00	-300.79	0.00	-300.79	862.91	431.45	705.96	353.50	40.04	0.864
0.9D + 1.6W 97 mph Wind	-7.86	-12.13	0.00	-295.20	0.00	-295.20	862.91	431.45	705.96	353.50	40.04	0.845
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-20.54	-3.57	0.00	-88.49	0.00	-88.49	862.91	431.45	705.96	353.50	40.04	0.274
1.2D + 1.0E	-11.47	-0.40	0.00	-16.84	0.00	-16.84	862.91	431.45	705.96	353.50	40.04	0.061
0.9D + 1.0E	-8.60	-0.40	0.00	-16.54	0.00	-16.54	862.91	431.45	705.96	353.50	40.04	0.057
1.0D + 1.0W 60 mph Wind	-9.51	-2.92	0.00	-71.23	0.00	-71.23	862.91	431.45	705.96	353.50	40.04	0.213

Base Plate Summary

Structure: CT46149-A-SB	Code: EIA/TIA-222-G	7/29/2019
Site Name: Hennessy Property	Exposure: C	
Height: 86.50 (ft)	Crest Height: 0.00	
Base Elev: 1.500 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 29



Reactions		Base Plate		Anchor Bolts	
Original Design		Yield (ksi):	60.00	Bolt Circle:	33.50
Moment (kip-ft):	587.40	Width (in):	39.50	Number Bolts:	6.00
Axial (kip):	10.00	Style:	Round	Bolt Type:	2.25" 18J
Shear (kip):	11.10	Polygon Sides:	0.00	Bolt Diameter (in):	2.25
Analysis		Clip Length (in):	0.00	Yield (ksi):	75.00
Moment (kip-ft):	824.95	Effective Len (in):	22.66	Ultimate (ksi):	100.00
Axial (kip):	27.70	Moment (kip-in):	756.08	Arrangement:	Radial
Shear (kip):	13.58	Allow Stress (ksi):	81.00	Cluster Dist (in):	0.00
		Applied Stress (ksi):	0.00	Start Angle (deg):	0.00
Moment Design %:	140.44	Stress Ratio:	0.62	Compression	
				Force (kip):	201.62
				Allowable (kip):	260.00
				Ratio:	0.79
				Tension	
				Force (kip):	192.39
				Allowable (kip):	260.00
				Ratio:	0.76



Pier Foundation Design For Monopole			Date
			7/29/2019
Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	86.5
Site Number:	CT46149-A-SBA	Engineer Name:	J. Chen
Engr. Number:	77992	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations

Acceptable overstress ($\leq 5.0\%$)

Structure Type:

Monopole

Analysis or Design?

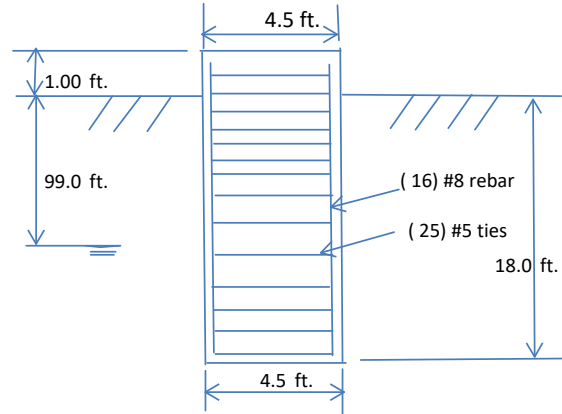
Analysis

Base Reactions (Factored):

Axial Load (Kips):	27.7	Shear Force (Kips):	13.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	825.0

Foundation Geometries:

Diameter of Pier (ft.):	4.5	Depth of Base B. G. S. :	18.0 ft.
Pier Height A. G. (ft.):	1.00		



Monopole Pier Foundation

Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield strength:	40	ksi
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	16	Tie Spacing:	12.0	in.
Concrete Cover (in.):	4	Concrete unit weight:	150.0	pcf

Soil Design Parameters:

Water Table B.G.S. (ft):	99.0	Unit weight of water:	62.4	psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30	(°)
Skin Frictions are to be obtained from:		Soil Report		

Depth of Layers (ft)		γ_{soil}	ϕ	Cohesion	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types					
Top	Bottom	(pcf)	(°)	(psf)								
0.0	3.0	125	0	0	410	0	Sand					
3.0	20.5	125	34	0	410	3000	Sand					
20.5	25.5	125	34	0	410	30000	Sand					

Soil weight Increase Factor for bouyant soils (1.0 to 1.15):

1.1

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Soil Bearing Strength Reduction Factor:	0.75
Total Dry Soil Volume from Conical Failure (cu. Ft.):	3342	Dry Soil Weight from Conical Failure:	418 Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	0	Buoyant Soil Weight from Conical Failure (Kips)	0 Kips
Total Dry Concrete Volume (cu. Ft.):	302	Total Dry Concrete Weight:	45.3 Kips
Total Buoyant Concrete Volume (cu. Ft.):	0.0	Total Buoyant Concrete Weight:	0.00 Kips
Total Effective Concrete Weight (Kips):	45.3	Total Effective Soil Weight:	417.8 Kips
Total Effective Vertical Load on Base (Kips):	37.2		

Check Soil Capacities:

Allowable Foundation Overturning Resistance (kips-ft.):	2030.4	>	Design Factored Moment (kips-ft):	1004	Usage	0.49	OK!
Factor of Safety of Passive Soil Resistance against Moment:	2.02	OK!					

Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75				
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00				
Reinforcing Concrete Pier:					Usage		
Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.31				
Calculated Moment Capacity (Mn,Kips-Ft):	1373.7	>	Design Factored Moment (Mu, K-Ft):	879.8	0.64	OK!	
Calculated Shear Capacity (Kips):	428.4	>	Design Factored Shear (Kips):	121.4	0.28	OK!	
Calculated Tension Capacity (Tn, Kips):	682.6	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!	
Calculated Compression Capacity (Pn, Kips):	4027	>	Design Factored Axial Load (Pu Kips):	27.7	0.01	OK!	
Moment & Axial Strength Combination:	0.64	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.		
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI					

EXHIBIT 8



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 86.5 Ft Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT46149-A-SBA

Customer Site Name: Hennessy Property

Carrier Name: T-Mobile (App#: 116916, V1)

Carrier Site ID / Name: CTNH041A / Hennessy Property

Site Location: 389 Forbes Ave

New Haven, Connecticut

New Haven County

Latitude: 41.290166

Longitude: -72.895277

Analysis Result:

Max Structural Usage: 74.1% [Pass]

Report Prepared By: Kiran Sharma Paudel



Introduction

The purpose of this report is to summarize the analysis results on the (3) T-Arm at 58.00' elevation including the proposed modifications to support the proposed antenna configuration. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by **TES** listed under Sources of Information was considered completed and was included in this analysis.

Sources of Information

Mount Drawings	Mount Mapping by Sky Tower, LLC, Dated 5/4/2019
Antenna Loading	Provided by SBA Application #: 116916, v1, Dated 6/3/2019
Existing Modification	N/A
Proposed Modification	TES Project No. 80489

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 0.75" radial ice concurrent

Operational Wind Speed: 60 mph +0" Radial ice

Standard/Codes: ANSI/TIA/EIA 222-G/ 2015 IBC/ 2018 CSBC

Exposure Category: C

Structure Class: II

Topographic Category: 1

Crest Height (Ft): 0

The site is a Risk Category II structure per table 1604.5 of the IBC. 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) T-Arm at 58.00' elevation

Proposed Modification

- (1) Metrosite Heavy Collar Mount Plate Assembly: MS-H1436
- (1) Metrosite Support Rail Kit: MS-HR35-2375
- (1) Metrosite Rotatable T-arm Kit: MS-TAW-350R0

Final Antenna Configuration

3	Ericsson Air 21 B2A/B4P
3	Ericsson Air 21 B4A/B2P
3	RFS APXVAARR24_43-U-NA20
3	Ericsson KRY 112 144/1
3	Ericsson Radio 4449 B71+B12

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 T-Arm.

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 74.1%, which occurs in the mount pipes. 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.



Structure: CT46149-A-SBA - Hennessy Property

Sector: **A**

7/2/2019

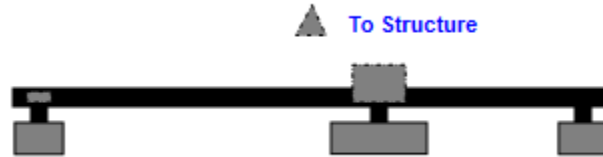
Structure Type: Monopole

Mount Elev: 58.00

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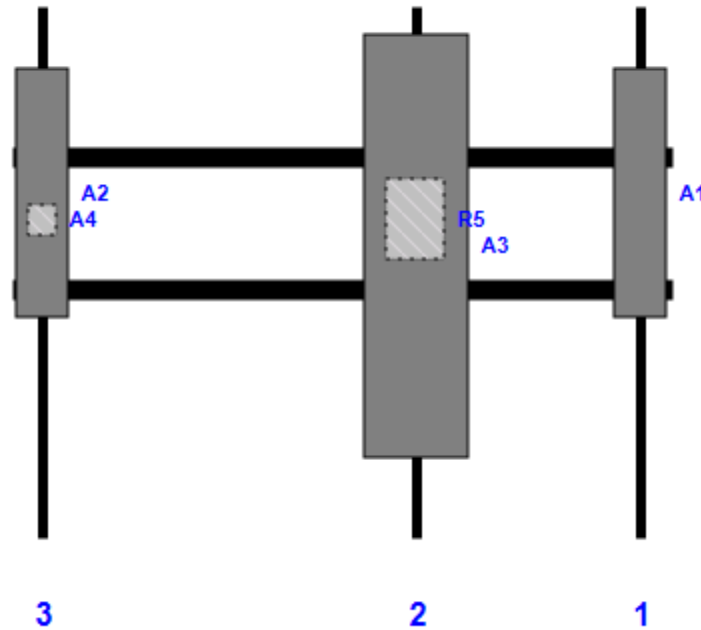


Plan View



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	Air 21 B2A/B4P	56.00	12.10	143.00	1	a	Front	42.00	0.00
A3	APXVAARR24_43-U-NA20	95.90	24.00	92.00	2	a	Front	54.00	0.00
R5	Radio 4449 B71+B12	17.90	13.20	92.00	2	a	Behind	48.00	0.00
A2	Air 21 B4A/B2P	56.00	12.10	7.00	3	a	Front	42.00	0.00
A4	KRY 112 144/1	6.90	6.10	7.00	3	a	Behind	48.00	0.00

Structure: CT46149-A-SBA - Hennessy Property

Sector: **B**

7/2/2019

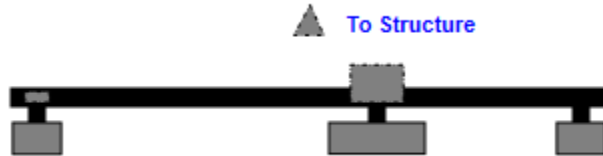
Structure Type: Monopole

Mount Elev: 58.00

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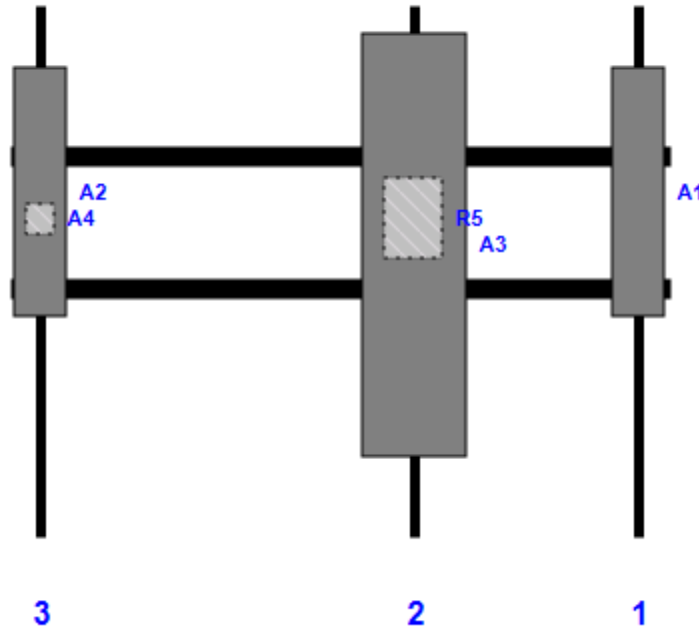


Plan View



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	Air 21 B2A/B4P	56.00	12.10	143.00	1	a	Front	42.00	0.00
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R5	Radio 4449 B71+B12	17.90	13.20	92.00	2	a	Behind	48.00	0.00
A2	Air 21 B4A/B2P	56.00	12.10	7.00	3	a	Front	42.00	0.00
A4	KRY 112 144/1	6.90	6.10	7.00	3	a	Behind	48.00	0.00

Structure: CT46149-A-SBA - Hennessy Property

Sector: **C**

7/2/2019

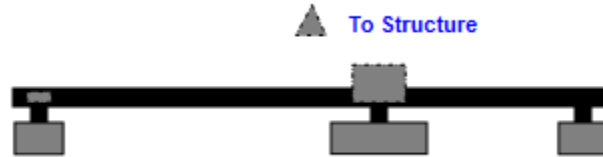
Structure Type: Monopole

Mount Elev: 58.00

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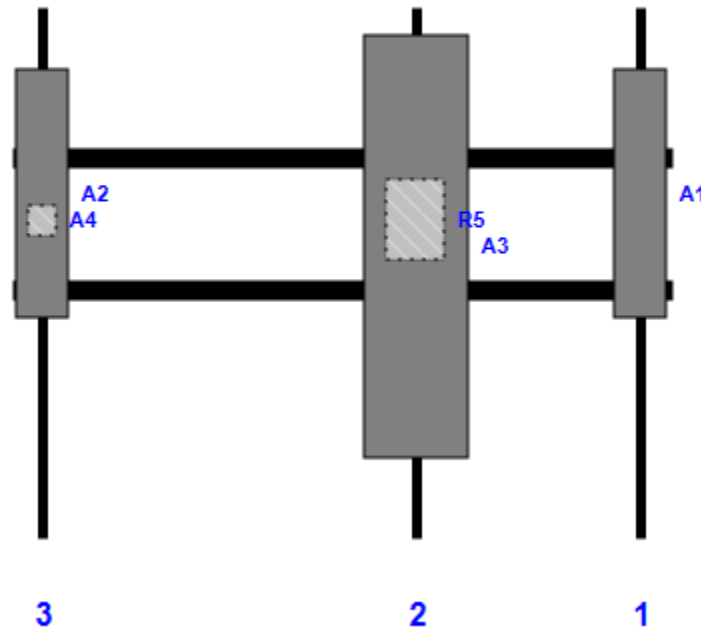


Plan View

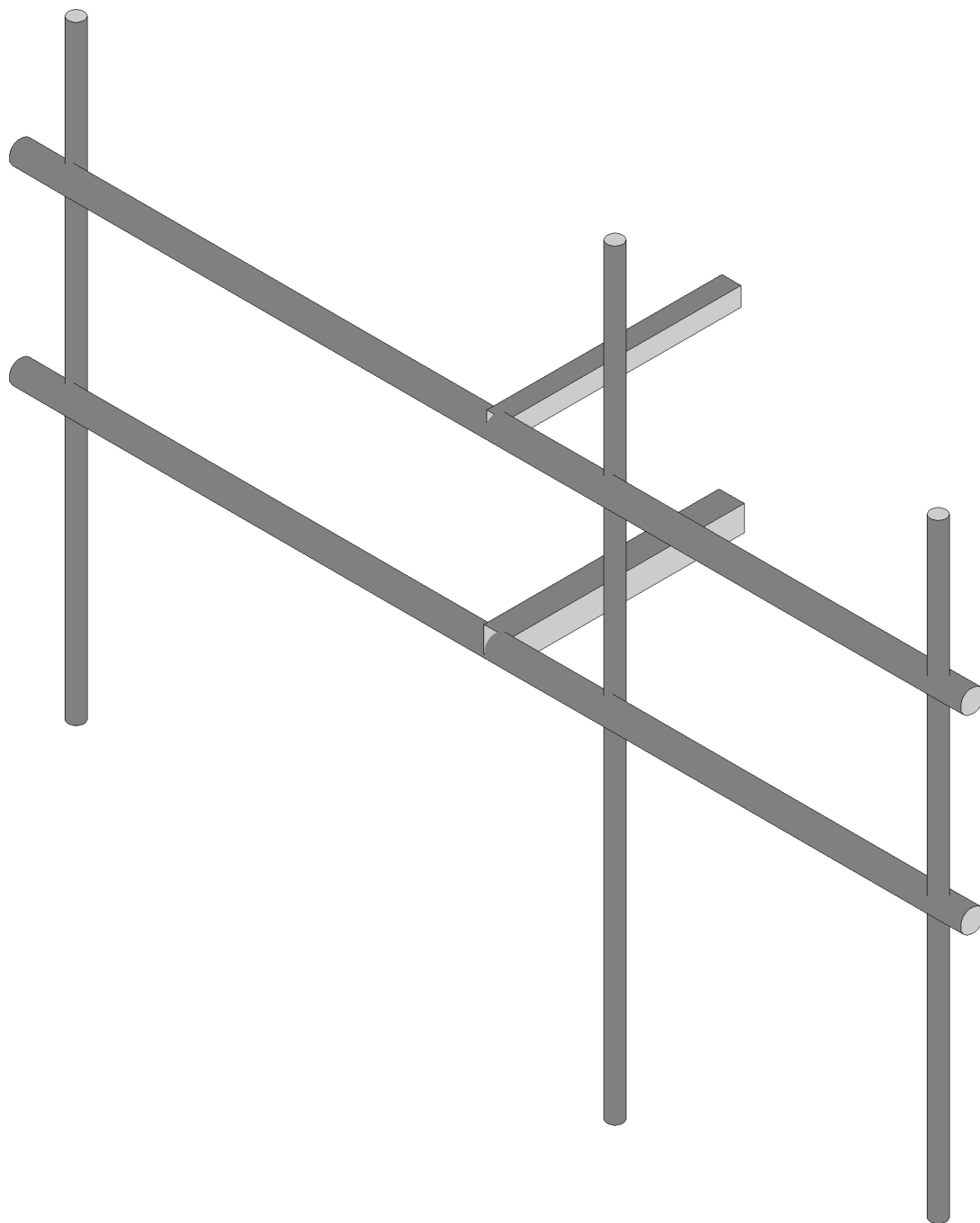
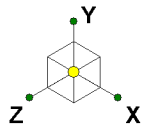


Front View

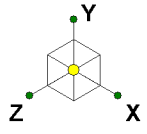
Looking Toward Structure



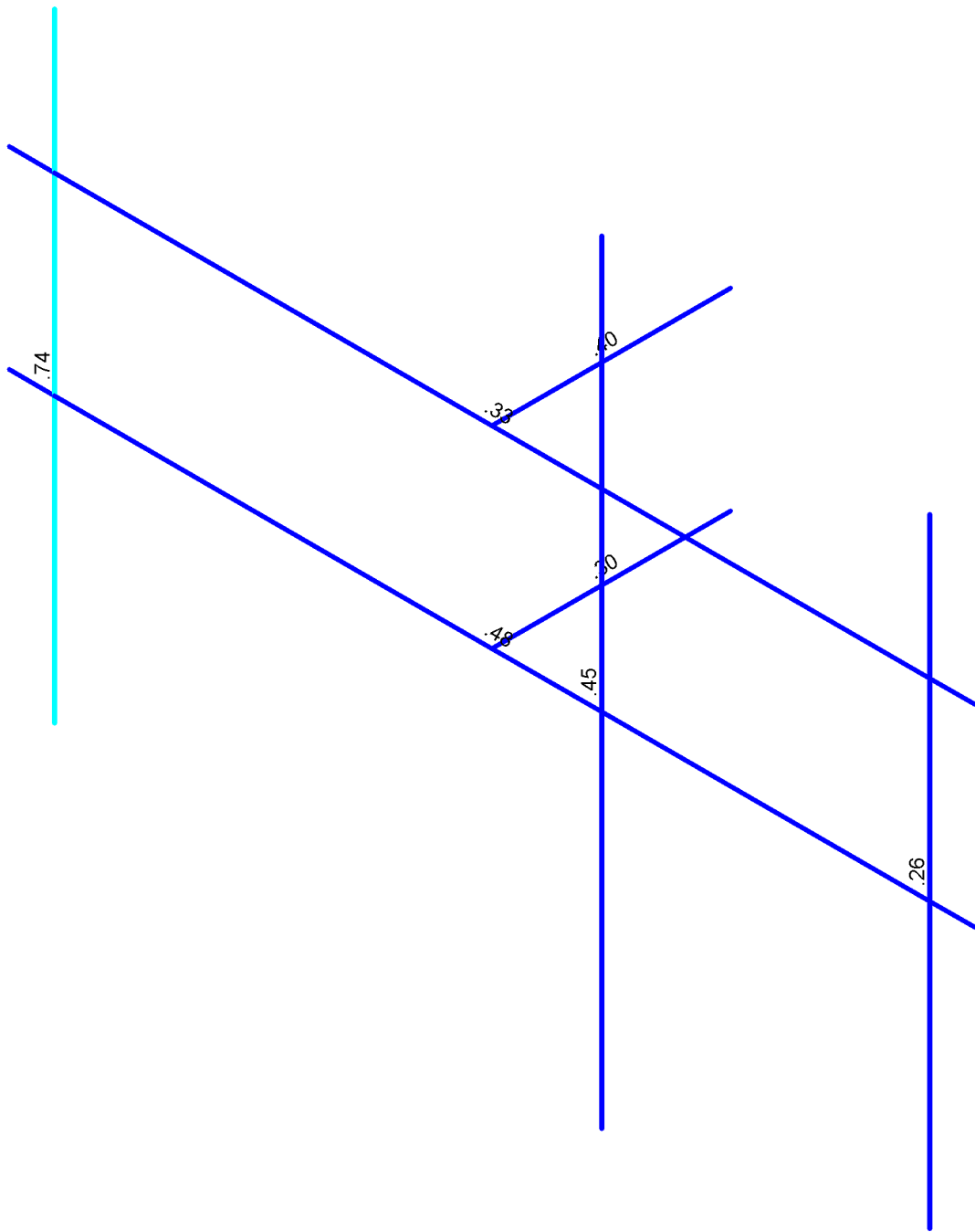
Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
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R5	Radio 4449 B71+B12	17.90	13.20	92.00	2	a	Behind	48.00	0.00
A2	Air 21 B4A/B2P	56.00	12.10	7.00	3	a	Front	42.00	0.00
A4	KRY 112 144/1	6.90	6.10	7.00	3	a	Behind	48.00	0.00



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TES Project No. 80489		CT46149-A-SBA_80489_G_RISA_L...

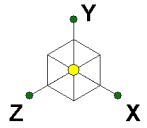


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 	.90-1.0
 	.75-.90
 	.50-.75
 	0-.50



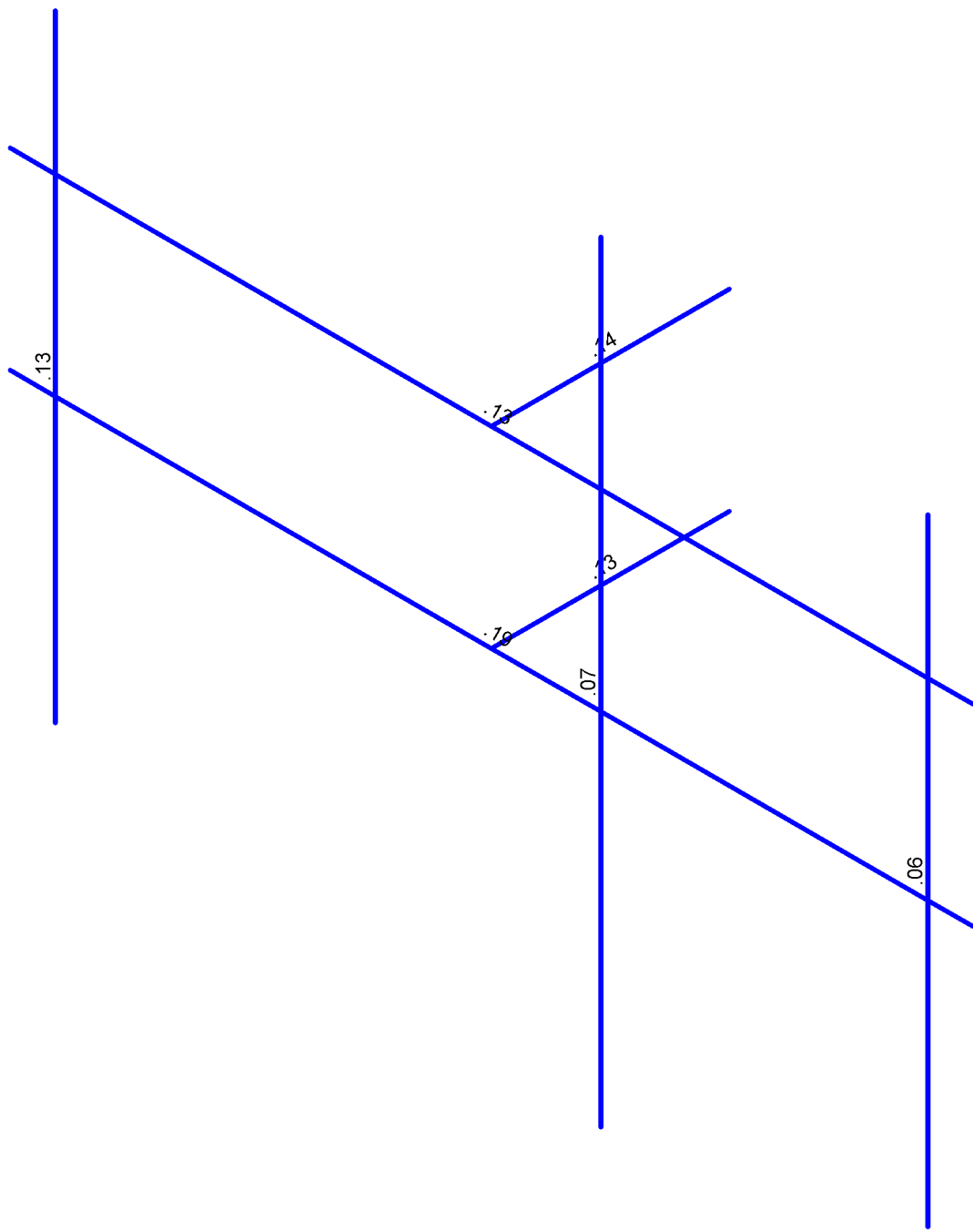
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Results for LC 1, 1.2D+1.6W (Front)

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TES Project No. 80489		CT46149-A-SBA_80489_G_RISA_L...



Shear Check
(Env)

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.50-.75
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Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.6W (Front)

Tower Engineering Solutio...	CT46149-A-SBA_MT-Z_Loads Only_Sector A_G	SK - 3
		July 2, 2019 at 12:31 PM
TES Project No. 80489		CT46149-A-SBA_80489_G_RISA_L...



Company : Tower Engineering Solutions, LLC
Designer :
Job Number : TES Project No. 80489
Model Name : CT46149-A-SBA_MT-Z_Loads Only_Sector A_G

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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						7	
11	Structure W Front	None						7	
12	Structure Wi Front	None						7	
13	Structure W Side	None						7	
14	Structure Wi Side	None						7	

Load Combinations

	Description	S...	P...	S...	B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...
1	1.2D+1.6W (Front)	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6							
2	1.2D+1.6W (Back)	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6							
3	1.2D+1.6W (Left)	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6							
4	1.2D+1.6W (Right)	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6							
5	1.2D+1.0Di+1.0Wi (Front)	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12	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+1.6W (Maintain..	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16					
10	1.2D+1.5L2+1.6W (Maintain..	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	0	0	0	0	
2	N2	0	0	3.083333	0	
3	N3	-6.25	0	3.083333	0	
4	N4	6.25	0	3.083333	0	
5	NP1	5.666667	4.333333	3.083333	0	
6	NP2	5.666667	-3.666667	3.083333	0	
7	NP3	1.416667	5.333333	3.083333	0	
8	NP5	-5.666667	4.333333	3.083333	0	
9	NP6	-5.666667	-3.666667	3.083333	0	
10	NP4	1.416667	-4.666667	3.083333	0	
11	N11	5.666667	0	3.083333	0	
12	N12	1.416667	0	3.083333	0	
13	N13	-5.666667	0	3.083333	0	
14	N14	0	2.5	0	0	



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Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
15	N15	0	2.5	3.083333	0	
16	N16	-6.25	2.5	3.083333	0	
17	N17	6.25	2.5	3.083333	0	
18	N18	5.666667	2.5	3.083333	0	
19	N19	1.416667	2.5	3.083333	0	
20	N20	-5.666667	2.5	3.083333	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	xxxxx	HSS16x0.438	Beam	None	A572 Gr.50	Typical	19.9	606	606	1210

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF	4CU5.25X03...	Beam	CU	A570 Gr.33	Typical	4.854	13.238	12.817	.228

Aluminum Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	AL1A	AACS14X13.9	Beam	AA Channel	3003-H14	Typical	11.8	44.7	401	1.19

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	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	13	141
2	6061-T6	10100	3787.5	.33	1.3	.173	Table B...	1	38	35	35	141
3	6063-T5	10100	3787.5	.33	1.3	.173	Table B...	1	22	16	16	141
4	6063-T6	10100	3787.5	.33	1.3	.173	Table B...	1	30	25	25	141
5	5052-H34	10200	3787.5	.33	1.3	.173	Table B...	1	34	26	24	141
6	6061-T6 W	10100	3787.5	.33	1.3	.173	Table B...	1	24	15	15	141



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Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N4			PIPE 3.0	Beam	Pipe	A53 Gr.B	DR1
2	M2	N1	N2			HSS4x4x4	Beam	None	A500 Gr.B...	DR1
3	MP1A	NP1	NP2			PIPE 2.0	Beam	Pipe	A53 Gr.B	DR1
4	MP2A	NP3	NP4			PIPE 2.0	Beam	Pipe	A53 Gr.B	DR1
5	MP3A	NP5	NP6			PIPE 2.0	Beam	Pipe	A53 Gr.B	DR1
6	M7	N14	N15			HSS3x3x4	Beam	None	A500 Gr.B...	DR1
7	M8A	N16	N17			PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M1						Yes			None
2	M2						Yes			None
3	MP1A						Yes	-z		None
4	MP2A						Yes	-z		None
5	MP3A						Yes	-z		None
6	M7						Yes			None
7	M8A						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	PIPE 3.0	12.5			Lbyy						Gravity
2	M2	HSS4x4x4	3.083			Lbyy						Gravity
3	MP1A	PIPE 2.0	8			Lbyy						Gravity
4	MP2A	PIPE 2.0	10			Lbyy						Lateral
5	MP3A	PIPE 2.0	8			Lbyy						Gravity
6	M7	HSS3x3x4	3.083			Lbyy						Gravity
7	M8A	PIPE 3.0	12.5			Lbyy						Lateral

Cold Formed Steel Design Parameters

Label	Shape	Length...	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 ...			



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Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-45.75	1
2	MP1A	Y	-45.75	6
3	MP3A	Y	-45.2	1
4	MP3A	Y	-45.2	6
5	MP2A	Y	-64	2
6	MP2A	Y	-64	7
7	MP3A	Y	-11	4
8	MP2A	Y	-71	4

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-75.444	1
2	MP1A	Y	-75.444	6
3	MP3A	Y	-75.444	1
4	MP3A	Y	-75.444	6
5	MP2A	Y	-187.838	2
6	MP2A	Y	-187.838	7
7	MP3A	Y	-14.102	4
8	MP2A	Y	-68.634	4

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-86.494	1
2	MP1A	Z	-86.494	6
3	MP3A	Z	-86.494	1
4	MP3A	Z	-86.494	6
5	MP2A	Z	-287.461	2
6	MP2A	Z	-287.461	7
7	MP3A	Z	-5.823	4
8	MP2A	Z	-27.979	4

Member Point Loads (BLC 4 : Antenna Wi Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-26.724	1
2	MP1A	Z	-26.724	6
3	MP3A	Z	-26.724	1
4	MP3A	Z	-26.724	6
5	MP2A	Z	-82.878	2
6	MP2A	Z	-82.878	7
7	MP3A	Z	-2.265	4
8	MP2A	Z	-9.426	4

Member Point Loads (BLC 5 : Antenna W Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	61.216	1
2	MP1A	X	61.216	6
3	MP3A	X	61.216	1
4	MP3A	X	61.216	6
5	MP2A	X	116.309	2



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Member Point Loads (BLC 5 : Antenna W Side) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
6	MP2A	X	116.309	7
7	MP3A	X	4.419	4
8	MP2A	X	39.829	4

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	19.635	1
2	MP1A	X	19.635	6
3	MP3A	X	19.635	1
4	MP3A	X	19.635	6
5	MP2A	X	36.281	2
6	MP2A	X	36.281	7
7	MP3A	X	2.659	4
8	MP2A	X	14.131	4

Member Point Loads (BLC 7 : Service Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-500	0

Member Point Loads (BLC 8 : Service Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-500	%50

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	-9.863	-9.863	0	%100
2	M2	Y	-13.793	-13.793	0	%100
3	MP1A	Y	-7.682	-7.682	0	%100
4	MP2A	Y	-7.682	-7.682	0	%100
5	MP3A	Y	-7.682	-7.682	0	%100
6	M7	Y	-11.324	-11.324	0	%100
7	M8A	Y	-9.863	-9.863	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	-9.942	-9.942	0	%100
2	M2	PZ	-18.937	-18.937	0	%100
3	MP1A	PZ	-6.746	-6.746	0	%100
4	MP2A	PZ	-6.746	-6.746	0	%100
5	MP3A	PZ	-6.746	-6.746	0	%100
6	M7	PZ	-14.203	-14.203	0	%100
7	M8A	PZ	-9.942	-9.942	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	-5.037	-5.037	0	%100
2	M2	PZ	-7.427	-7.427	0	%100
3	MP1A	PZ	-4.188	-4.188	0	%100



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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,%]
4	MP2A	PZ	-4.188	-4.188	0	%100
5	MP3A	PZ	-4.188	-4.188	0	%100
6	M7	PZ	-6.169	-6.169	0	%100
7	M8A	PZ	-5.037	-5.037	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	9.942	9.942	0	%100
2	M2	PX	18.937	18.937	0	%100
3	MP1A	PX	6.746	6.746	0	%100
4	MP2A	PX	6.746	6.746	0	%100
5	MP3A	PX	6.746	6.746	0	%100
6	M7	PX	14.203	14.203	0	%100
7	M8A	PX	9.942	9.942	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	5.037	5.037	0	%100
2	M2	PX	7.427	7.427	0	%100
3	MP1A	PX	4.188	4.188	0	%100
4	MP2A	PX	4.188	4.188	0	%100
5	MP3A	PX	4.188	4.188	0	%100
6	M7	PX	6.169	6.169	0	%100
7	M8A	PX	5.037	5.037	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	N14	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	954.556	4	1424.653	6	1463.91	1	-1.375	2	2.794	4	.31	8
2		min	-845.402	9	367.921	1	-1150.996	2	-3.784	5	-2.48	3	-1.46	9
3	N14	max	845.402	9	806.195	5	741.925	1	-.482	2	1.783	9	.073	5
4		min	-503.361	3	119.515	2	-1054.839	2	-1.865	5	-1.319	3	-.782	9
5	Totals:	max	1278.896	4	2152.501	6	2205.835	1						
6		min	-1278.896	3	868.555	1	-2205.835	2						



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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	1	0	1	0	1	0	1	0	1	0	1
2			min	0	1	-750	9	0	1	0	1	0	1	0	1
3		2	max	994.069	9	-86.053	3	249.509	2	.118	1	.604	2	.371	9
4			min	-38.879	4	-522.91	9	-284.292	1	-.143	2	-.623	1	.002	4
5		3	max	994.069	9	994.991	6	1131.666	1	.719	2	2.322	2	2.046	9
6			min	257.912	1	-549.324	9	-853.424	2	-.433	1	-2.692	1	.391	10
7		4	max	423.743	8	233.929	7	285.121	1	.053	2	.633	2	.076	1
8			min	-64.248	3	23.313	4	-267.301	2	-.081	9	-.628	1	-.036	2
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1
11	M2	1	max	1463.91	1	1424.851	6	845.79	9	.31	8	2.794	4	3.784	5
12			min	-1150.996	2	369.749	1	-954.841	4	-1.46	9	-2.48	3	1.375	2
13		2	max	1463.91	1	1402.811	6	845.79	9	.31	8	2.067	4	2.753	5
14			min	-1150.996	2	358.341	1	-931.486	4	-1.46	9	-1.891	3	.802	2
15		3	max	1463.91	1	1380.771	6	845.79	9	.31	8	1.358	4	1.739	5
16			min	-1150.996	2	346.933	1	-908.131	4	-1.46	9	-1.32	3	.239	2
17		4	max	1463.91	1	1358.731	6	845.79	9	.31	8	.938	2	.805	1
18			min	-1150.996	2	335.524	1	-884.775	4	-1.46	9	-1.044	1	-.316	2
19		5	max	1463.91	1	1336.691	6	845.79	9	.31	8	.861	2	.551	1
20			min	-1150.996	2	324.116	1	-861.42	4	-1.46	9	-1.103	1	-.862	2
21	MP1A	1	max	0	1	.114	9	.019	1	0	7	0	1	0	1
22			min	0	1	-.192	7	-.168	6	0	9	0	1	0	1
23		2	max	52.605	3	379.018	8	30.876	1	.033	1	.166	1	.411	8
24			min	-83.475	4	98.433	3	-46.679	9	-.013	2	-.186	2	.118	3
25		3	max	60.935	3	387.394	8	52.463	1	.033	1	.25	1	-.057	3
26			min	-75.145	4	76.846	3	-44.52	9	-.013	2	-.233	2	-.356	8
27		4	max	-28.293	10	57.176	3	71.765	2	0	9	.022	1	.022	3
28			min	-71.091	6	-57.111	4	-71.71	1	0	8	-.023	2	-.022	4
29		5	max	.001	5	.251	8	.273	5	0	9	0	5	0	3
30			min	0	9	-.138	9	-.146	2	0	8	0	9	0	4
31	MP2A	1	max	0	1	.205	9	.101	1	0	7	0	1	0	1
32			min	0	1	-.351	7	-.402	6	0	9	0	1	0	1
33		2	max	294.256	5	213.086	4	487.023	1	0	7	.264	1	.127	3
34			min	87.213	1	-213.155	3	-487.096	2	0	9	-.264	2	-.127	4
35		3	max	401.011	6	322.676	8	366.728	5	.09	9	.403	1	-.026	3
36			min	-57.39	10	10.302	3	-22.705	2	.005	2	-.163	2	-.316	8
37		4	max	-10.413	9	26.842	3	26.564	2	0	9	.032	1	.033	3
38			min	-29.618	5	-26.745	4	-26.484	1	0	8	-.033	2	-.033	4
39		5	max	0	9	.595	8	.664	5	0	9	0	9	0	3
40			min	0	5	-.181	9	-.421	2	0	8	0	5	0	4
41	MP3A	1	max	0	1	.228	9	-.013	1	0	3	0	1	0	1
42			min	0	1	-.009	3	-.229	6	0	9	0	1	0	1
43		2	max	32.018	4	-130.904	4	129.493	9	-.002	2	.109	1	-.152	2
44			min	-355.547	9	-995.556	9	13.118	2	-.049	9	-.161	9	-.954	9
45		3	max	42.988	4	-107.902	4	131.839	9	-.002	2	.173	1	1.037	9
46			min	-344.577	9	-995.556	9	-10.333	2	-.049	9	-.142	2	.086	4
47		4	max	-28.051	9	57.12	3	71.801	2	0	9	.022	1	.022	3
48			min	-70.851	8	-57.161	4	-71.722	1	0	4	-.023	2	-.022	4
49		5	max	.003	9	.044	4	.34	5	0	9	0	9	0	3
50			min	0	4	-.341	9	-.111	2	0	4	0	3	0	4
51	M7	1	max	741.925	1	805.686	5	503.025	3	.073	5	1.783	9	1.865	5



Company : Tower Engineering Solutions, LLC
Designer :
Job Number : TES Project No. 80489
Model Name : CT46149-A-SBA_MT-Z_Loads Only_Sector A_G

July 2, 2019
12:31 PM
Checked By: _____

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
52		min	-1054.839	2	118.521	2	-845.079	9	-.782	9	-1.319	3	.482	2
53		2 max	741.925	1	788.697	5	485.508	3	.073	5	1.132	9	1.251	5
54		min	-1054.839	2	110.261	2	-845.079	9	-.782	9	-.938	3	.394	2
55		3 max	741.925	1	771.708	5	467.992	3	.073	5	.537	4	.662	6
56		min	-1054.839	2	102.001	2	-845.079	9	-.782	9	-.57	3	.211	1
57		4 max	741.925	1	754.719	5	450.475	3	.073	5	.527	2	.237	2
58		min	-1054.839	2	93.741	2	-845.079	9	-.782	9	-.424	1	-.16	1
59		5 max	741.925	1	737.73	5	432.959	3	.073	5	.606	2	.168	2
60		min	-1054.839	2	85.481	2	-845.079	9	-.782	9	-.823	9	-.524	1
61	M8A	1 max	0	1	0	1	0	1	0	1	0	1	0	1
62		min	0	1	0	1	0	1	0	1	0	1	0	1
63		2 max	-98.831	3	-56.831	4	222.355	2	-.008	3	.498	2	.043	4
64		min	-994.07	9	-435.257	9	-187.741	1	-.154	9	-.479	1	-.049	3
65		3 max	-250.434	4	461.884	5	502.944	1	.504	1	1.877	2	1.362	9
66		min	-994.07	9	-461.671	9	-781.064	2	-.179	2	-1.507	1	.234	2
67		4 max	-79.972	4	269.034	8	177.562	1	.04	2	.446	2	.156	9
68		min	-383.373	7	36.806	3	-195.276	2	-.064	9	-.45	1	-.001	10
69		5 max	0	1	0	1	0	1	0	1	0	1	0	1
70		min	0	1	0	1	0	1	0	1	0	1	0	1

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

Member	Shape	Code Check	Loc [ft]	LC	Shear...	Loc [ft]	Dir	LC	phi*Pnc...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M1	PIPE 3.0	.479	6.25	1	.192	6.25	2	28250....	65205	5.749	5.749	1..	H1-1b
2	M2	HSS4x4x4	.301	0	8	.132	0	y 9	134075...	139518	16.181	16.181	1..	H1-1b
3	MP1A	PIPE 2.0	.262	4.333	8	.057	4.333	5	14916....	32130	1.872	1.872	1..	H1-1b
4	MP2A	PIPE 2.0	.450	5.417	2	.071	5.313	9	9836.597	32130	1.872	1.872	2..	H1-1b
5	MP3A	PIPE 2.0	.741	4.333	9	.133	4.333	9	14916....	32130	1.872	1.872	1..	H1-1b
6	M7	HSS3x3x4	.395	0	9	.138	0	z 9	93772....	101016	8.556	8.556	1..	H1-1b
7	M8A	PIPE 3.0	.331	6.25	2	.129	6.25	1	28250....	65205	5.749	5.749	1..	H1-1b

Envelope AISI S100-10: LRFD Cold Formed Steel Code Checks

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

Envelope AA ADM1-10: ASD - Building Aluminum Code Checks

Member	Shape	Code C...	Loc [ft]	LC	Shear ...	Loc [ft]	Dir	LC	Pnc/O...	Pnt/Om...	Mny/O...	Mnz/O...	Vny/O...	Vnz/O...	Cb	Eqn
No Data to Print ...																

EXHIBIT 9

MODIFICATION AND DESIGN
DRAWINGS FOR EXISTING ANTENNA MOUNTS
EXISTING MONOPOLE TOWER

PROPOSED CARRIER: T-MOBILE
TOWER OWNER: SBA / TOWER OWNER SITE #: CT46149-A
CARRIER SITE #/NAME: CTNH041A / HENNESSY PROPERTY
COORDINATES (LATITUDE: 41.290166°, LONGITUDE: -72.895277°)

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
MS-H1436	METROSITE HEAVY COLLAR MOUNT PLATE ASSEMBLY	
MPHW-1	METROSITE HEAVY COLLAR MOUNT PLATE WELDMENT	
MS-HR35-2375	METROSITE SUPPORT RAIL KIT	
MS-TAW-350R0	METROSITE ROTATABLE T-ARM KIT	

NOTE:
1. THE MODIFICATION DRAWINGS ARE BASED ON THE
TES PROJECT NO. 77886, DATED 06/11/2019.



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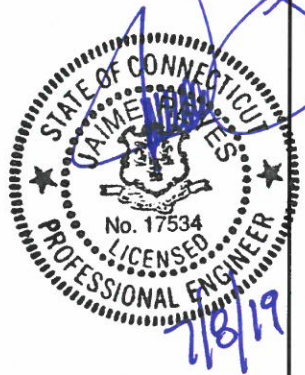
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BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
80489

CUSTOMER SITE NO:
CT46149-A-SBA

CUSTOMER SITE NAME:
HENNESSY PROPERTY

389 FORBES AVE
NEW HAVEN, CT 06511



DRAWN BY: GA CHECKED BY: KSP/HMA

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TITLE SHEET

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GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 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 ^f	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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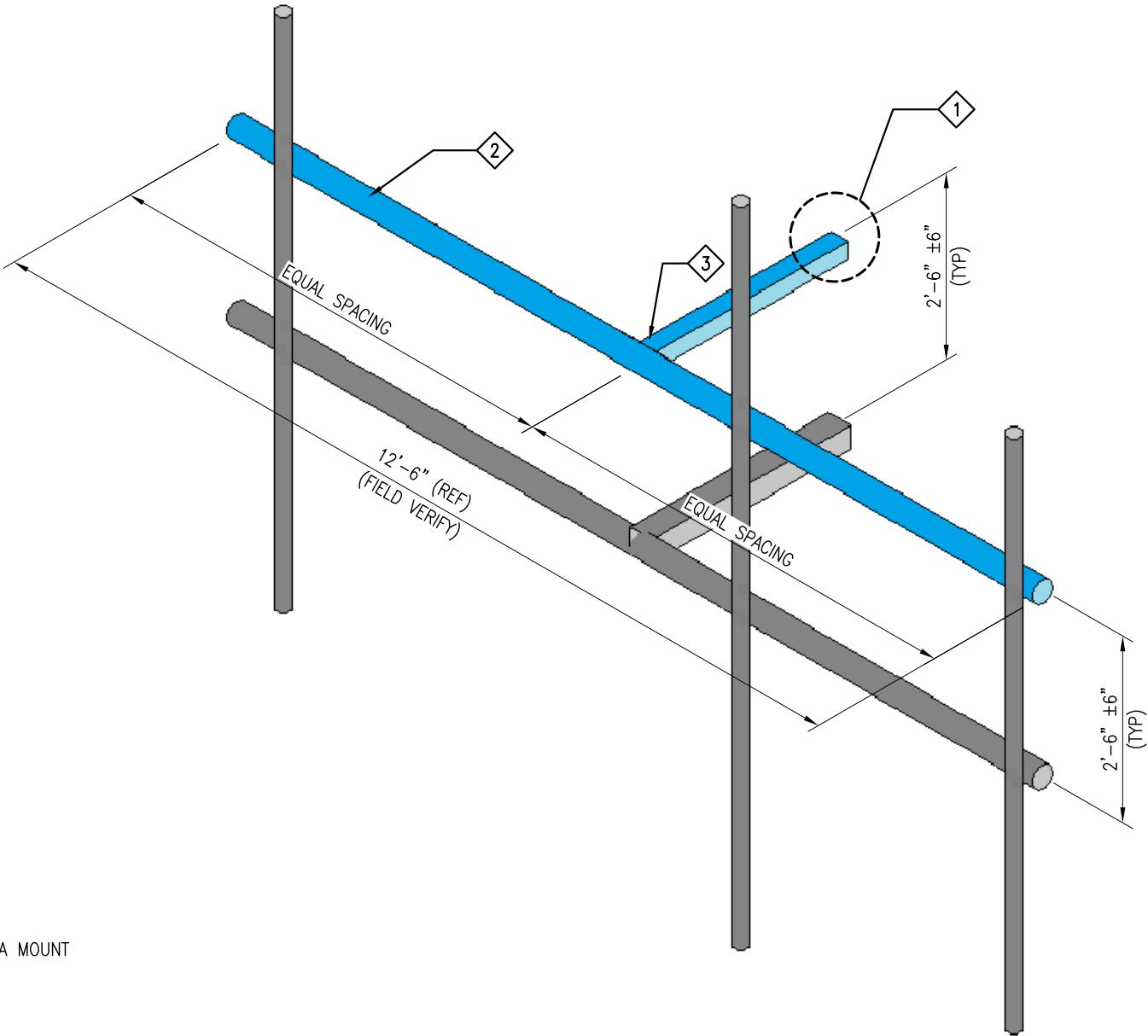
SCOPE OF WORK

- 1
- INSTALL NEW HEAVY COLLAR MOUNT (NOT SHOWN FOR CLARITY). SEE SHEET MS-H1436 FOR DETAILS.
- 2
- INSTALL NEW SUPPORT RAIL KIT. SEE SHEET MS-HR35-2375 FOR DETAILS.
- 3
- INSTALL NEW ROTATABLE T-ARM KIT. SEE SHEET MS-TAW-350R0 FOR DETAILS.
- 4
- 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

EXISTING ANTENNA MOUNT
@ 58' ELEV



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 58' 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 (PORT HOLES, 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	1	MS-H1436	METROSITE HEAVY COLLAR MOUNT PLATE ASSEMBLY
2	1	MS-HR35-2375	METROSITE SUPPORT RAIL KIT
3	1	MS-TAW-350R0	METROSITE ROTATABLE T-ARM KIT



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CUSTOMER SITE NO:
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ANTENNA MOUNT
MODIFICATION DETAILS

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PHOTO 1



PHOTO 2

EXISTING EQUIPMENT MUST BE RELOCATED UP OR DOWN ALONG THE MEMBER TO ACCOMMODATE INSTALLATION OF MOUNT MODIFICATION



PHOTO 3



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ANTENNA MOUNT PHOTOS

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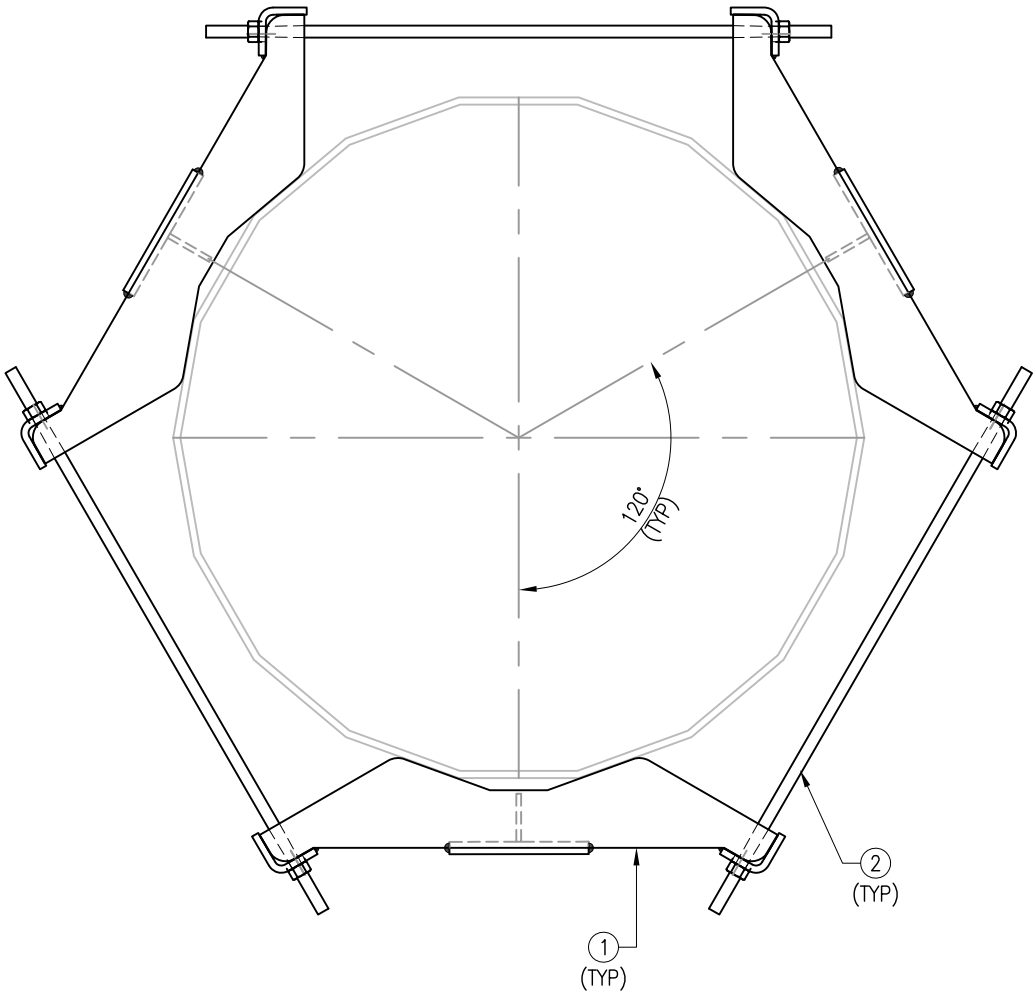
SHEET NUMBER:	REV #:
A-2	0

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PLEASE REFER TO THE INSTALLATION DRAWINGS FOR ACTUAL INSTALLATION DETAILS

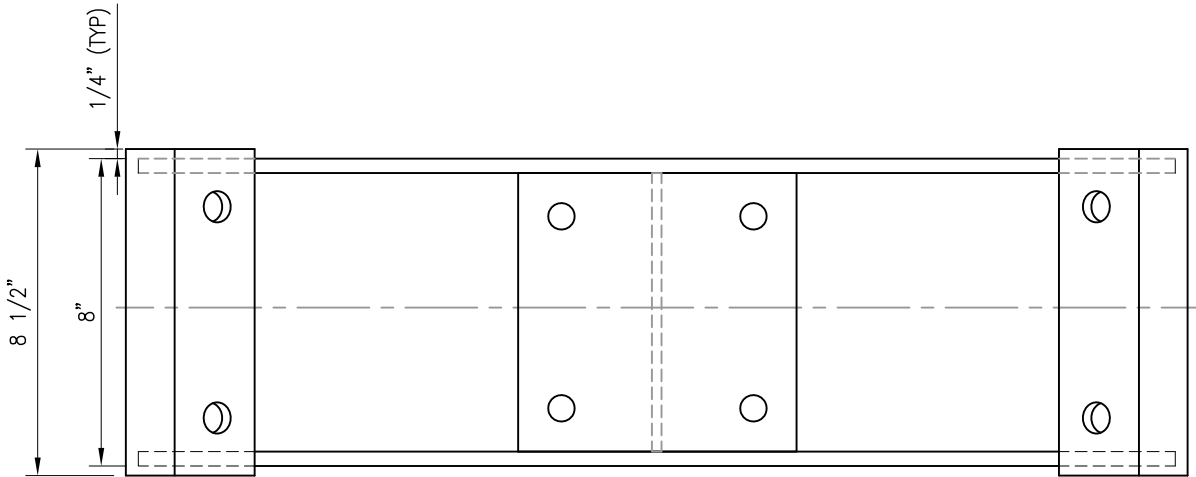
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	MPHW-1	MOUNT PLATE WELDMENT A36
2	6	---	THREADED ROD 3/4" X 2'-4 3/4" W/ 2 HHN & LW EA A36

GALVANIZED WEIGHT: 136.7 LBS

NOTE:
1) FITS 12" DIA TO 32" DIA.



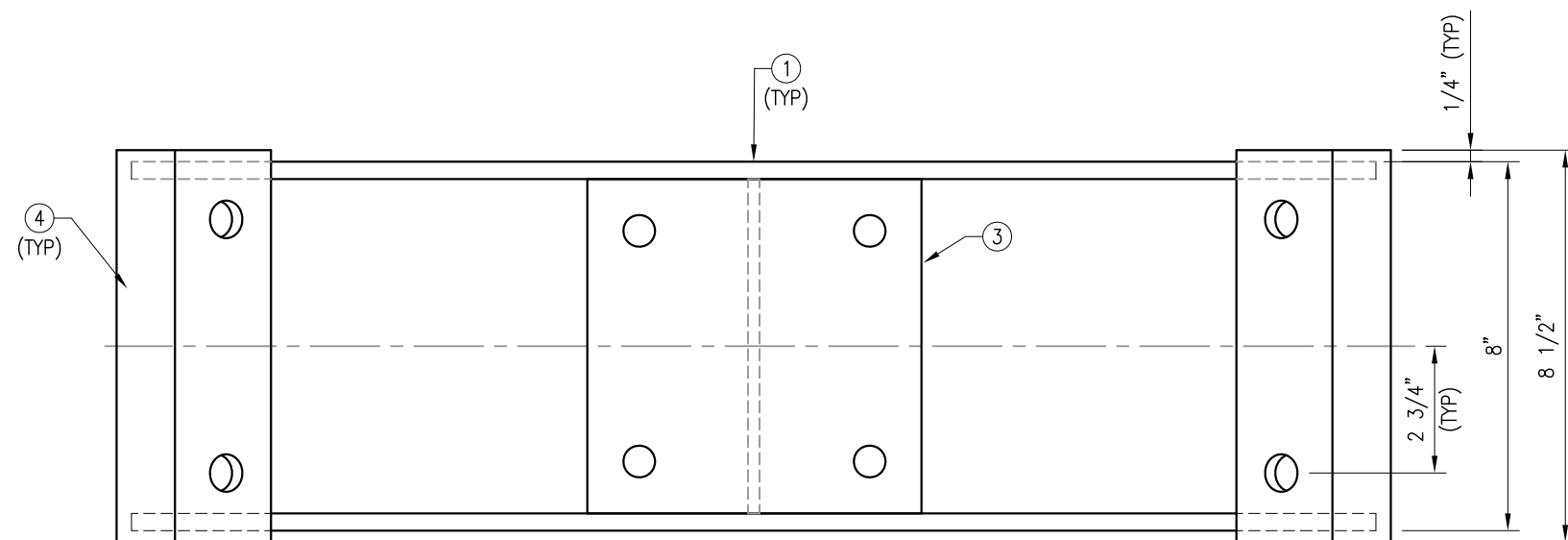
TOP VIEW



FRONT VIEW

		THIRD ANGLE PROJECTION				METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529					
											
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE HEAVY COLLAR MOUNT PLATE ASSEMBLY DETAIL MS-H1436							
STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES		DATE							
DECIMALS		ANGLES		DRAWN BY XXX		05/12/17		SIZE DWG NO		REV	
.X ± 0.1		± 1°									
.XX ± 0.02		FRACTIONS		REVIEWED XXX		-		B MS-H1436		1	
.XXX ± 0.005		± 1/32									
		APPROVED XXX		-		SCALE		-		SHEET 1 OF 1	

1. HOT-DIPPED GALVANIZED PER ASTM A123.
2. WELD TYPE: E70XX.



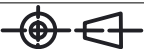
FRONT VIEW

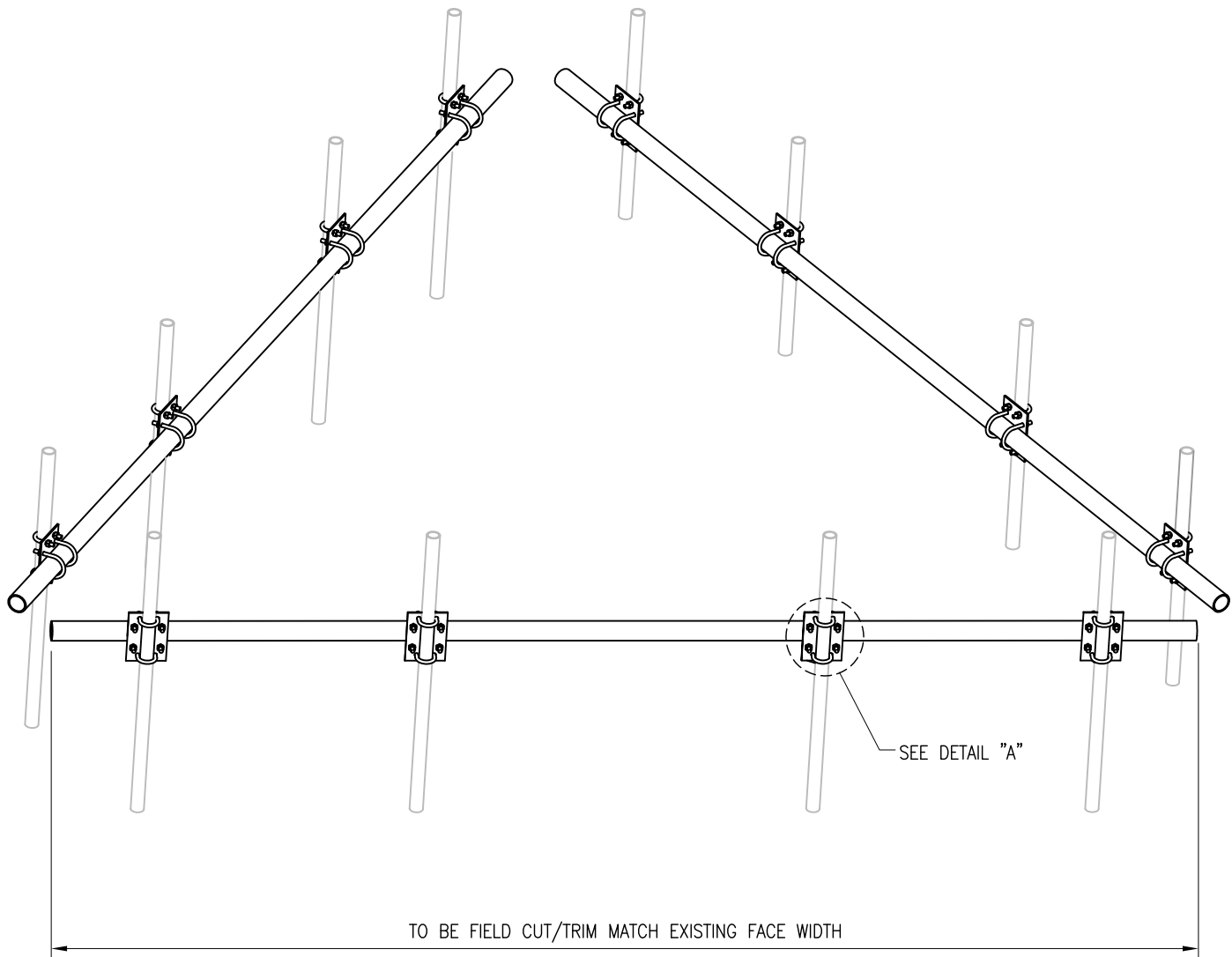
MPW-1 WELDMENT

The image contains two technical drawings of a door assembly.

SECTION "A-A": This is a cross-sectional view of the door. It shows a central panel (2) between two vertical stiles (3). The top and bottom rails (1) are shown with a thickness of 1/4" (TYP). The corner joints are indicated with 1/4" (TYP) dimensions and a 'TYP' symbol.

DETAIL "A": This is a detailed view of the corner joint. It shows the intersection of the stiles (3) and rails (1). The joint is secured with a 1/4" (TYP) fastener. The detail shows the internal structure and the placement of the fastener.

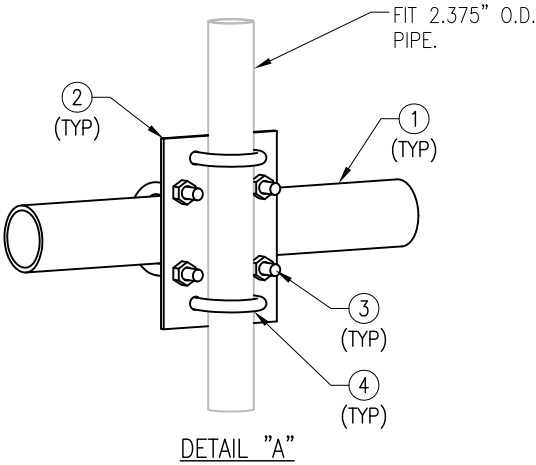
		THIRD ANGLE PROJECTION				METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529	
							
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE HEAVY COLLAR MOUNT PLATE WELDMENT DETAIL			
STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES		DATE			
DECIMALS $.X \pm 0.1$ $.XX \pm 0.02$ $.XXX \pm 0.005$	ANGLES $\pm 1^\circ$ FRACTIONS $\pm 1/32$	DRAWN BY XXX REVIEWED XXX APPROVED XXX	05/12/17 - -	SIZE/DWG NO B MPHW-1		REV 0	
				SCALE		SHEET 1 OF 1	



ELEVATION VIEW

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

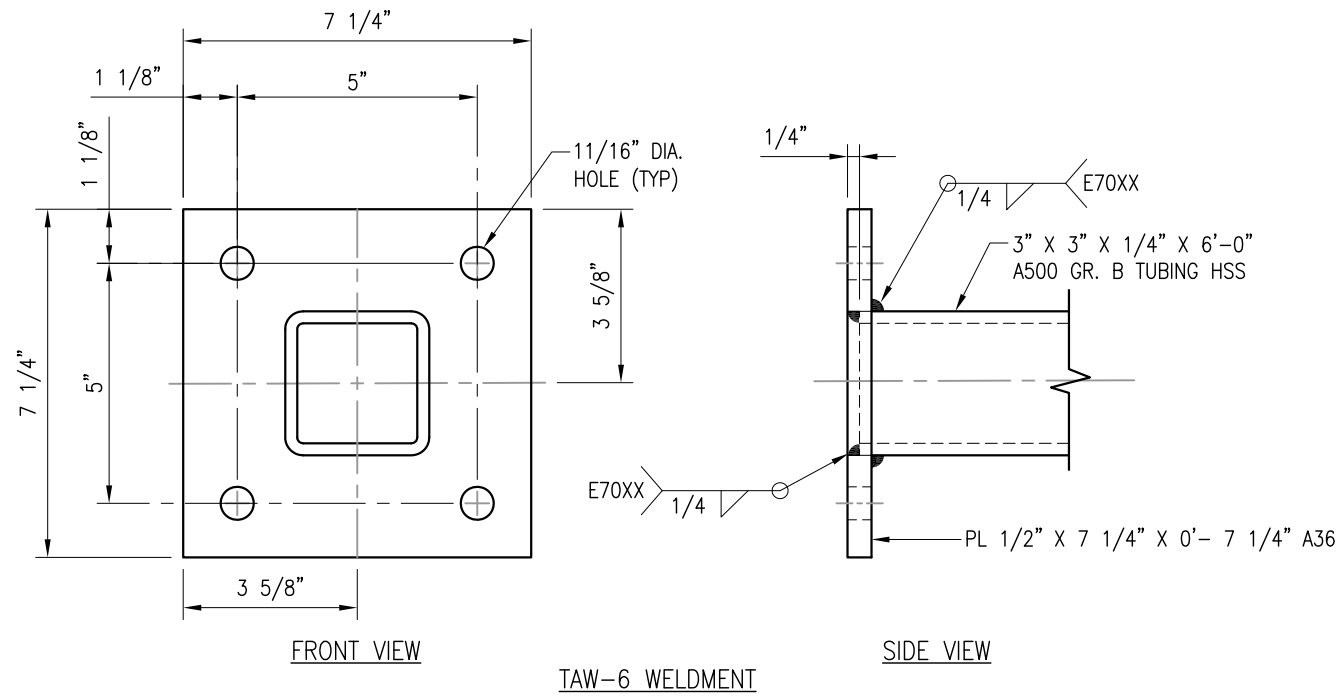
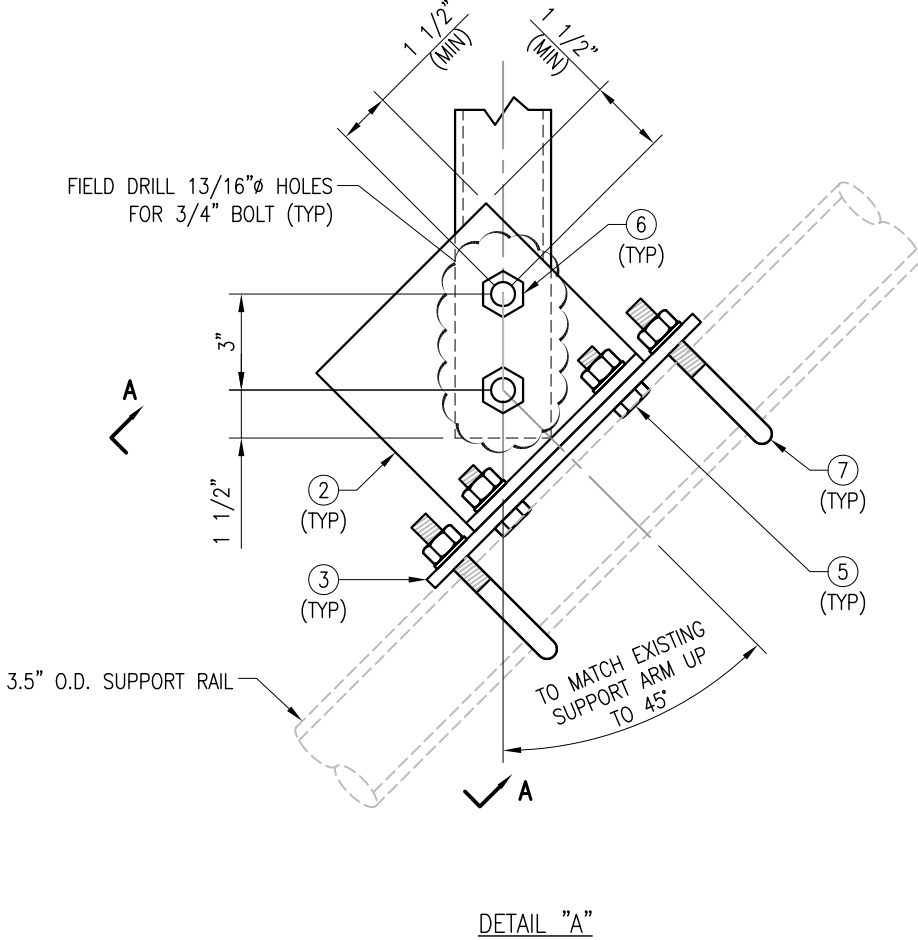
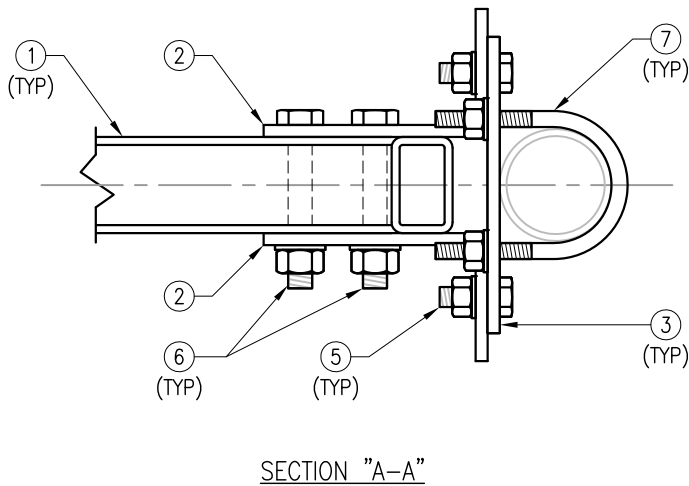
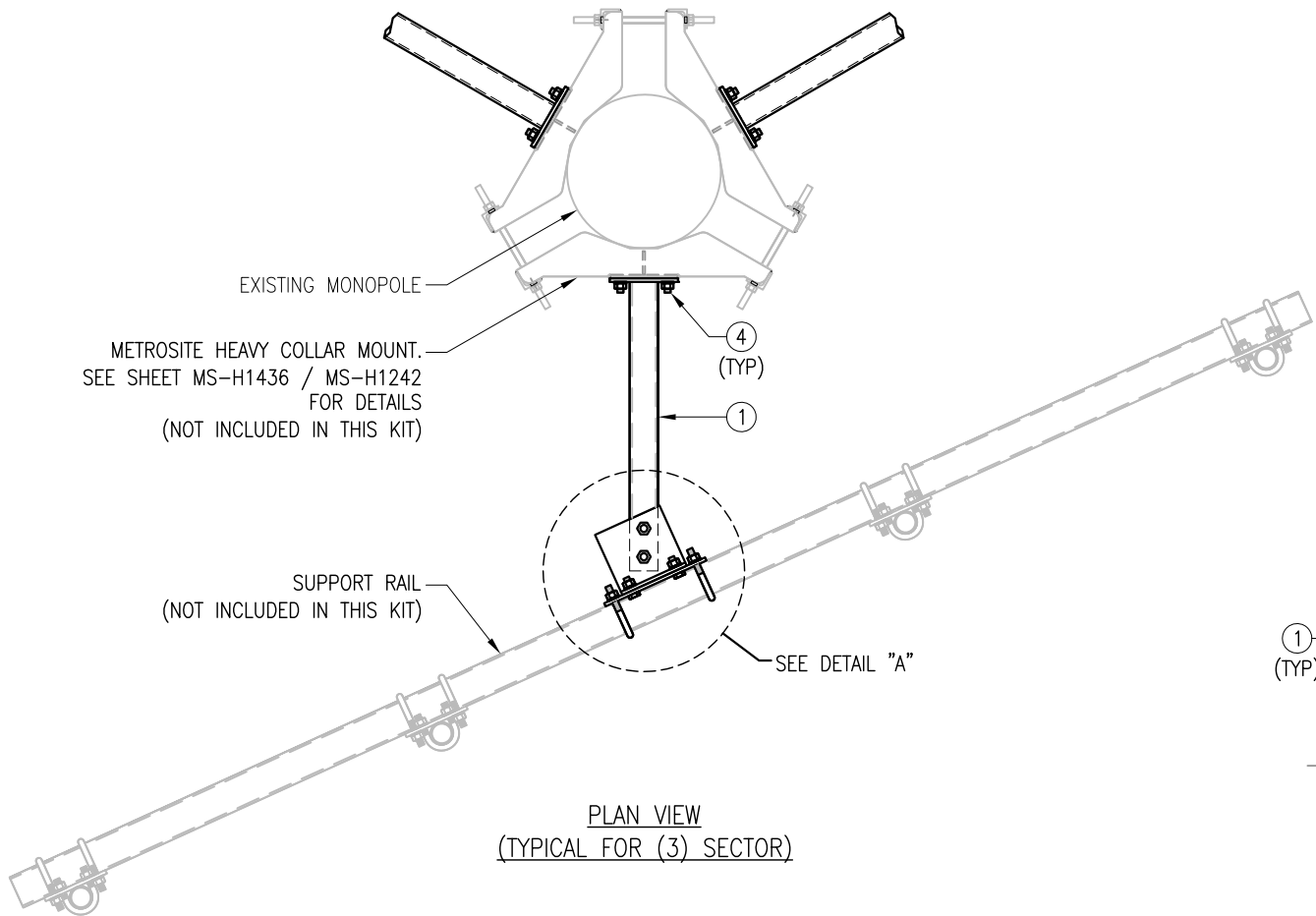
MS-HR35-2375						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	3PST-140	3" PST (3.50" O.D X .216" THICK) X 14'-0"	A53 GR-B	TAF-1	337.2
2	12	PL375-10	PL 3/8" X 7 1/8" X 10"	A36	TAF-1	92.4
3	24	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
4	24	MS02-625-250-400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

						METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE MS-HR35-2375 SUPPORT RAIL KIT			
STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES		DATE			
DECIMALS .X ± 0.1 .XX ± 0.02 .XXX ± 0.005		ANGLES ± 1° FRACTIONS ± 1/32		DRAWN BY XXX		05/12/17	
				REVIEWED XXX		-	
				APPROVED XXX		-	
				SCALE		-	
						SHEET 1 OF 1	

MS-TAW-350RO						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	TAW-6	T-ARM WELDMENT	A36	TAW-6	192
2	6	TARM-CPL-750	PL 3/8" X 7 1/2" X 9 7/16" A36 BENT PLATE	A36	BK-5	47.4
3	3	TARM-CPL-1175	PL 3/8" X 9 1/4" X 11 3/4"	A36	BK-5	36.3
4	12	----	BOLT 5/8" X 2 1/4" A325 W/ HHN & LKW EA.	A325	----	--
5	12	----	BOLT 5/8" X 2" A325 W/ HHN & LKW EA.	A325	----	--
6	6	----	BOLT 3/4" X 5" A325 W/ HHN & LKW EA.	A325	----	--
7	6	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	----	RBC-1	8.7
GALVANIZED WT						284



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

THIRD ANGLE PROJECTION						METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE ROTATABLE T-ARM KIT						
STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES		DATE		SIZE DWG NO				
DECIMALS	ANGLES	DRAWN BY:XXX	REVIEWED:XXX	11/19/18	-	B	MS-TAW-350RO			
.X ± 0.1	± 1°									
.XX ± 0.02	FRACTIONS ± 1/32									
.XXX ± 0.005		APPROVED:XXX		-		SCALE -				
						SHEET 1 OF 1				

EXHIBIT 10

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CTNH041A

NH041_Sprint Forbes_ET
389 Forbes Ave
New Haven, CT 06512

June 13, 2019

Transcom Engineering Project Number: 737001-0100

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	21.21 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

June 13, 2019

T-MOBILE

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

Emissions Analysis for Site: **CTNH041A – NH041_Sprint Forbes_ET**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **389 Forbes Ave, New Haven, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

Transcom Engineering, Inc.

Wireless Network Design and Deployment

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.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **389 Forbes Ave, New Haven, 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)
UMTS	1900 MHz (PCS)	1	40
GSM	1900 MHz (PCS)	1	15
UMTS	2100 MHz (AWS)	1	40
LTE	2100 MHz (AWS)	2	60
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

Transcom Engineering, Inc.

Wireless Network Design and Deployment

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 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	Ericsson AIR21 B2A/B4P	58
A	2	Ericsson AIR21 B4A/B2P	58
A	3	RFS APXVAARR24_43-U-NA20	58
B	1	Ericsson AIR21 B2A/B4P	58
B	2	Ericsson AIR21 B4A/B2P	58
B	3	RFS APXVAARR24_43-U-NA20	58
C	1	Ericsson AIR21 B2A/B4P	58
C	2	Ericsson AIR21 B4A/B2P	58
C	3	RFS APXVAARR24_43-U-NA20	58

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 all **2100 MHz (AWS) UMTS** radios are ground mounted the following cable loss values were used. For each ground mounted **2100 MHz (AWS) UMTS** radio there was **1.82 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **105 feet** of **7/8"** coax.

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Wireless Network Design and Deployment

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	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	3	95	3,163.18	4.21
Antenna A2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	6.21
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	7.70
Sector A Composite MPE%							18.12
Antenna B1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	3	95	3,163.18	4.21
Antenna B2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	6.21
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	7.70
Sector B Composite MPE%							18.12
Antenna C1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	3	95	3,163.18	4.21
Antenna C2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	6.21
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	7.70
Sector C Composite MPE%							18.12

Table 3: T-MOBILE Emissions Levels

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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	18.12 %
Sprint	0.00 %
MetroPCS	2.79 %
Clearwire	0.30 %
Site Total MPE %:	21.21 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	18.12 %
T-MOBILE Sector B Total:	18.12 %
T-MOBILE Sector C Total:	18.12 %
Site Total:	21.21 %

Table 5: Site MPE Summary

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Wireless Network Design and Deployment

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 ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) UMTS	1	1,556.18	58	20.69	1900 MHz (PCS)	1000	2.07%
T-Mobile 1900 MHz (PCS) GSM	1	583.57	58	7.76	1900 MHz (PCS)	1000	0.78%
T-Mobile 2100 MHz (AWS) UMTS	1	1,023.43	58	13.61	2100 MHz (AWS)	1000	1.36%
T-Mobile 2100 MHz (AWS) LTE	2	2,334.27	58	62.07	2100 MHz (AWS)	1000	6.21%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	58	20.98	600 MHz	400	5.24%
T-Mobile 700 MHz LTE	2	432.54	58	11.50	700 MHz	467	2.46%
						Total:	18.12%

Table 6: T-MOBILE Maximum Sector MPE Power Values

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Wireless Network Design and Deployment

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:	18.12 %
Sector B:	18.12 %
Sector C:	18.12 %
T-MOBILE Maximum Total (per sector):	18.12 %
Site Total:	21.21 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **21.21 %** 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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