EXHIBIT 1

EXHIBIT 2

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.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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.

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EXHIBIT 3

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

August 12, 2019

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

RE: Notice of Exempt Modification
12 Orchard Drive, Ledyard, CT 06335
Latitude: 41.468327
Longitude: -72.055981
T-Mobile Site #: CT11841B_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 147-foot level of the existing 150-foot Monopole Tower at 12 Orchard Drive, Ledyard, CT. The 150-foot tower is owned by SBA Towers IV, LLC. The property is owned by Richard H. & Diane Y. Holmberg. T-Mobile now intends to install three (3) new 600/700 MHz antennas. The new antennas would be installed at the 147-foot level of the tower.

Planned Modifications:

TOWER

Remove:
- (3) 1-5/8" lines

Remove and Replace:
- N/A

Install New:
- (3) RFS APXVAARR24_43-U-NA20 600/700 MHz
- (3) Ericsson Radio 4449 B71+B12
- (1) Handrail and kicker kit (MS-KI22-5)
- (1) collar mount (MS-1436),
- (1) Support rail w/end connection (MS-HRCEP-35)
- (3) 1-5/8" fiber

Existing Equipment to Remain:
- (3) Ericsson AIR 21 B2A B4P 1900 MHz
- (3) Ericsson AIR 21 B4A B2P 2100 MHz
- (3) Ericsson KRY 112 144/1 TMA
- (1) low profile platform
- (9) 1-5/8" coax

Entitlements:
- (1) 1-5/8" fiber

GROUND

Install New:

- Equipment inside existing 6131 Cabinet

This facility was approved by Council on February 27, 2007 under Case 322. Approval was given for a monopole no taller than necessary to provide proposed telecommunications services sufficient to accommodate the antennas and other entities, both public and private. Antennas mounted on the tower were not to exceed the approved tower height of 150' above ground level. A recalculated EME report was to be provided when circumstances in operation caused a change in power density. Upon establishment of any new State or federal radio frequency standards applicable to frequencies of the facility, the facility was to be brought into compliance with such standards. The tower was to provide public or private entities shared space for fair consideration or to provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. Space was to be provided for no compensation to any Town public safety services. And any nonfunctioning antenna and associated mounting was to be removed within 60 days of the date the antenna ceased to function. 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 Town of Ledyard's Mayor, Fred Allyn III, and Zoning Official, Kyle Faulise, 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

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@sbasite.com
Attachments

cc: The Honorable Fred Allyn III / with attachments
Town of Ledyard, 741 Colonel Ledyard Highway, Ledyard, CT 06339
Kyle Faulise, Zoning Official / with attachments
Town of Ledyard, 741 Colonel Ledyard Highway, Ledyard, CT 06339
Richard and Diane Holmberg / with attachments
4 Orchard Drive, Gales Ferry, CT 06339

Exhibit List

Exhibit 1	Check Copy	x
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	CSC 2/27/07
Exhibit 6	Construction Drawings	7/24/19
Exhibit 7	Structural Analysis	TES dated 7/17/19
Exhibit 8	Post Mod Mount Analysis	TES dated 7/26/19
Exhibit 9	Mount Mod Drawings	7/19/19
Exhibit 10	EME Report	Transcom 6/16/19

Town of Ledyard Property Summary Report

12 ORCHARD DR

PARCEL ID:	24-1790-12
LOCATION:	12 ORCHARD DR
OWNER NAME:	HOLMBERG RICHARD H + DIANE Y

OWNER OF RECORD
HOLMBERG RICHARD H + DIANE Y 4 ORCHARD DR GALES FERRY, CT 06339

LIVING AREA:	2382	**ZONING:**	R40	**ACREAGE:**	139.61

SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
HOLMBERG RICHARD H + DIANE Y	407/ 329	22-Jul-2005	$0.00
HOLMBERG RICHARD H + DIANE Y	329/1023	02-May-2002	$0.00
HOLMBERG RICHARD H	00153/0417	11-Jun-1986	$0.00

CURRENT ASSESSED VALUE

TOTAL:	$340,760.00	**IMPROVEMENTS:**	$226,100.00	**LAND:**	$114,660.00

ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2018	$340,760.00	$226,100.00	$114,660.00
2017	$340,760.00	$226,100.00	$114,660.00
2016	$340,760.00	$226,100.00	$114,660.00
2015	$340,760.00	$226,100.00	$114,660.00
2014	$301,310.00	$210,840.00	$90,470.00

Town of Ledyard Property Summary Report

12 ORCHARD DR

PARCEL ID:	24-1790-12
LOCATION:	12 ORCHARD DR
OWNER NAME:	HOLMBERG RICHARD H + DIANE Y

BUILDING # 1

YEAR BUILT	1730	**ROOF STRUCTURE**	Gable/Hip
STYLE	Antique	**ROOF COVER**	Asphalt Shingl
MODEL	Residential	**FLOOR COVER 1**	Hardwood
GRADE	Average +	**FLOOR COVER 2**	
STORIES	2	**HEAT FUEL**	Oil
OCCUPANCY	Single Fam M01	**HEAT TYPE**	Hot Water
EXT WALL 1	Wood Shingle	**AC TYPE**	None
EXT WALL 2		**BEDROOMS**	3 Bedrooms
INT WALLS 1	Plastered	**FULL BATHS**	1
INT WALLS 2		**HALF BATHS**	1
		TOT ROOMS	8

EXTRA FEATURES

DESCRIPTION	CODE	UNITS
2ST Fireplace	FPL3	1 UNITS

OUTBUILDINGS

DESCRIPTION	CODE	UNITS
1 st Barn	BRN1	1914 S.F.
Shed	SHD1	256 S.F.
WorkShop- Ave	SHP1	900 S.F.
1 st Barn	BRN1	3930 S.F.
1 st Barn	BRN1	1546 S.F.
Hoop House	GRN3	1056 S.F.
Implement Shed	IMP	494 S.F.
1 st Barn	BRN1	3200 S.F.
MH/Trailer	TRL	1 UNITS
Lean-to	LNT	210 S.F.
Hoop House	GRN3	440 S.F.

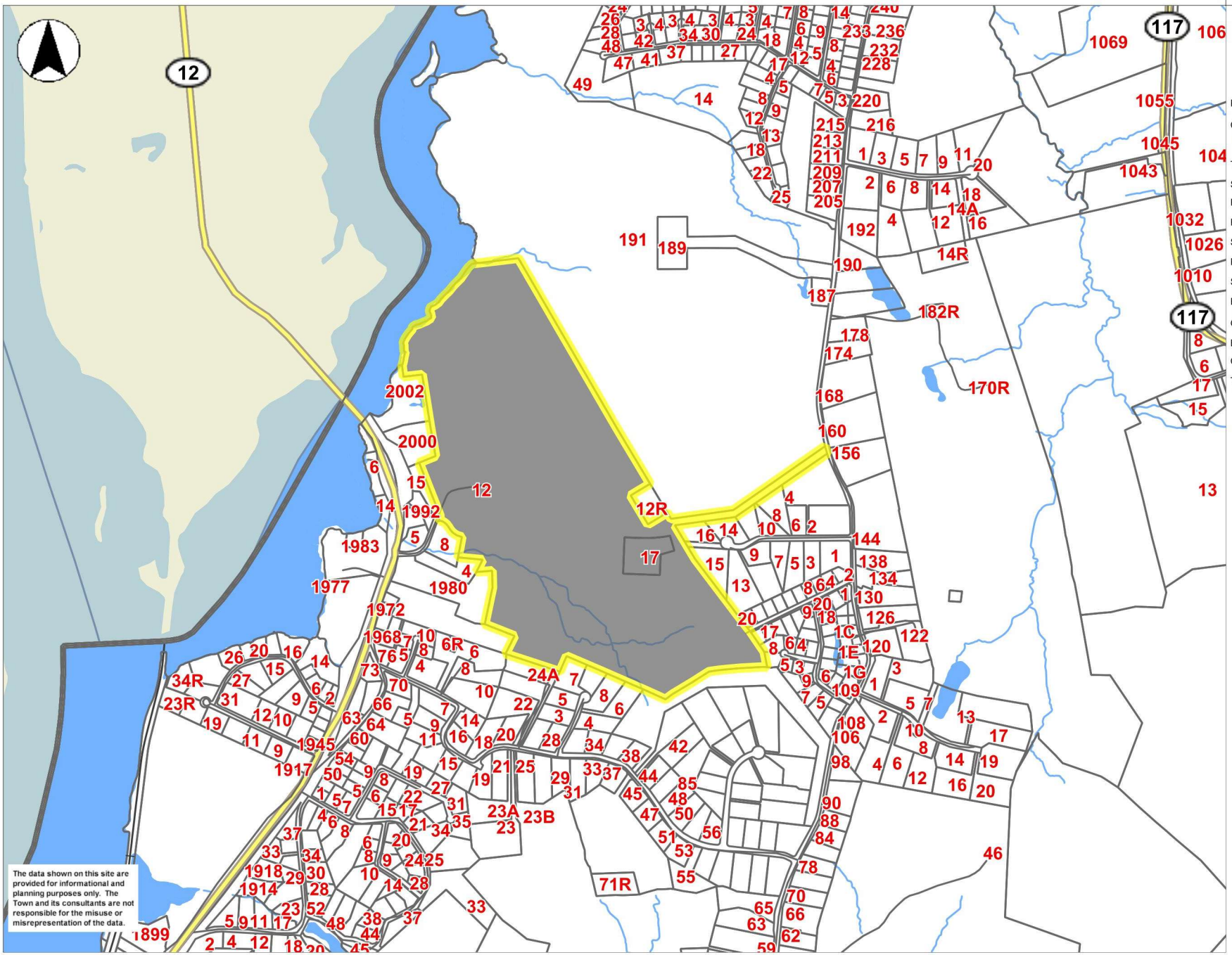
Town of Ledyard Property Summary Report

12 ORCHARD DR

PARCEL ID:	24-1790-12
LOCATION:	12 ORCHARD DR
OWNER NAME:	HOLMBERG RICHARD H + DIANE Y

Pole barn	BRN8	2880 S.F.
Patio-Concrete	PAT2	240 S.F.
CELL TOWER		1

EXHIBIT 4



0 1600 3200 ft

Printed on 05/16/2019 at 09:52 AM

Ledyard, CT MapsOnline

EXHIBIT 5

DOCKET NO. 322 - Optasite, Inc. and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 12 Orchard Drive, Ledyard, Connecticut.	Connecticut Siting Council February 27, 2007

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 Optasite, Inc., hereinafter referred to as the Certificate Holder, for a telecommunications facility at Site B, 12 Orchard Drive, Ledyard, Connecticut. The Council denies certification of proposed Site A, 12 Orchard Drive, Ledyard, 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 Omnipoint Communications, Inc. and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level. Antennas mounted on the tower shall not exceed a height of 150 feet above ground level.

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 Town of Ledyard 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 Town of Ledyard public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), 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. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Ledyard. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility 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.

10. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

11. 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 Day and the Norwich Bulletin.

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:

Certificate Holder	**Its Representative**
Optasite, Inc.	Julie D. Kohler, Esq. Carrie L. Larson, Esq. Cohen & Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604 Jennifer Young Gaudet 345 Taylor Street Talcottville, CT 06066
Co-Applicant	**Its Representative**
Omnipoint Communications, Inc.	Julie D. Kohler, Esq. Carrie L. Larson, Esq. Cohen & Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604

CERTIFICATION

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in **DOCKET NO. 322** - Optasite, Inc. and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 12 Orchard Drive, Ledyard, Connecticut, and voted as follows to approve proposed Site B, located at 12 Orchard Drive, Ledyard, Connecticut, and deny certification of proposed Site A, also located at 12 Orchard Drive, Ledyard, Connecticut:

Council Members	Vote Cast
Daniel F. Caruso, Chairman	Yes
Colin C. Tait, Vice Chairman	Absent
Commissioner Donald W. Downes Designee: Gerald J. Heffernan	Absent
Commissioner Gina McCarthy Designee: Brian J. Emerick	Yes
Philip T. Ashton	Absent
Daniel P. Lynch, Jr.	Yes
James J. Murphy, Jr.	Yes
Dr. Barbara Currier Bell	Yes
Edward S. Wilensky	Yes

Dated at New Britain, Connecticut, February 27, 2007.

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

March 2, 2007

Julie D. Kohler, Esq.
Carrie L. Larson, Esq.
Cohen & Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604

RE: **DOCKET NO. 322** - Optasite, Inc. and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 12 Orchard Drive, Ledyard, Connecticut.

Dear Attorney Kohler and Attorney Larson:

By its Decision and Order dated February 27, 2007, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance and operation of a telecommunications facility located at Site B, 12 Orchard Drive, Ledyard, Connecticut.

Enclosed are the Council's Certificate, Findings of Fact, Opinion, and Decision and Order.

Very truly yours,

S. Derek Phelps
Executive Director

SDPRDM/laf

Enclosures (4)

G:\DOCKETS\322\322CERTPKG.DOC

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

CERTIFICATE

OF

ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

DOCKET NO. 322

Pursuant to General Statutes § 16-50k, as amended, the Connecticut Siting Council hereby issues a Certificate of Environmental Compatibility and Public Need to Optasite, Inc. for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at Site B, 12 Orchard Drive, Ledyard, Connecticut. This Certificate is issued in accordance with and subject to the terms and conditions set forth in the Decision and Order of the Council on February 27, 2007.

By order of the Council,

Daniel F. Caruso, Chairman

February 27, 2007

EXHIBIT 6

SPECIAL CONSTRUCTION NOTE (SBA-PROVIDED ANTENNA MOUNT STRUCTURAL MOD SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT THE T-MOBILE RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

CT841/HOLMBERG ORCHARD-RL

APPROVALS

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

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

12 ORCHARD DRIVE
LEDYARD, CT 06339
NEW LONDON COUNTY

SITE NO.: CT11841B

SITE TYPE: 150'± MONOPOLE

RF DESIGN GUIDELINE: 67D02C

SITE NOTES

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

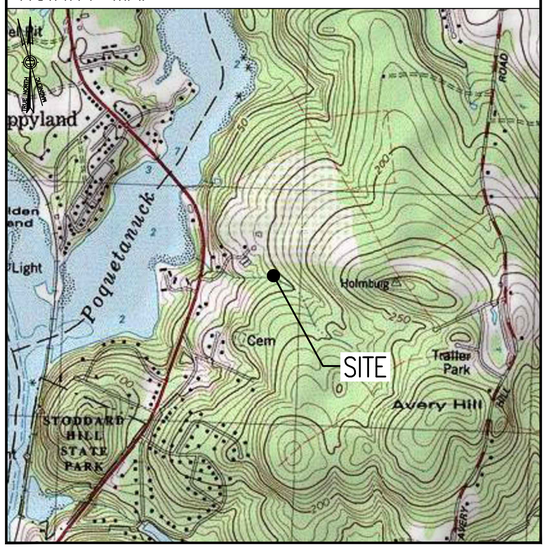
GENERAL NOTES

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

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

VICINITY MAP

SCALE: 1" = 1000'-0"



DO NOT SCALE DRAWINGS

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

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

PROJECT SUMMARY

SITE NUMBER:	CT11841B
SBA SITE NUMBER:	CT13076-A
SBA SITE NAME:	LEDYARD
SITE ADDRESS:	12 ORCHARD DRIVE LEDYARD, CT 06339
PROPERTY OWNER:	RICHARD H. & DIANE Y. HOLMBERG 4 ORCHARD DRIVE GALES FERRY, CT 06339
TOWER OWNER:	SBA TOWERS IV, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	NEW LONDON COUNTY
ZONING DISTRICT:	MEDIUM DENSITY RESIDENTIAL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	150'
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: 41.468327° N41°28'05.9772" LONGITUDE: -72.055981° W72°03'21.5316"

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CHAPPELL ENGINEERING ASSOCIATES, LLC
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R.K. EXECUTIVE CENTRE
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MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

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

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	07/24/19	ISSUED FOR CONSTRUCTION	CMC
0	05/09/19	ISSUED FOR REVIEW	CMC

SITE NUMBER:
CT11841B

SITE ADDRESS:
12 ORCHARD DRIVE
LEDYARD, CT 06339

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.098

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SITE WORK GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

CONCRETE AND REINFORCING STEEL NOTES:

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

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

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

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

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

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

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

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

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

STRUCTURAL STEEL NOTES:

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

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

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (¾"ø) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.

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

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

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

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

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

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

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

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

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

COMPACTION EQUIPMENT:

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

CONSTRUCTION NOTES:

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	07/24/19	ISSUED FOR CONSTRUCTION	CMC
0	05/09/19	ISSUED FOR REVIEW	CMC

SITE NUMBER:
CT11841B

SITE ADDRESS:
12 ORCHARD DRIVE
LEDYARD, CT 06339

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

1815.098

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

TRUE NORTH
MAGNETIC

FEEDLINE SCHEDULE	FEEDLINES	LOCATION
A	*EXISTING TO REMAIN:* (9) 1-5/8" COAX CABLES (1) 1-5/8" HCS FIBER CABLE *EXISTING TO BE REMOVED:* (3) 1-5/8" COAX CABLES	ROUTED PER TOWER STRUCTURAL ANALYSIS
B	PROPOSED: (1) 1-5/8" HCS FIBER CABLE	

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

PROP. T-MOBILE EQUIPMENT MOUNTED WITHIN EXIST. EQUIPMENT CABINET (3 / A-1)

EXIST. T-MOBILE GPS/GSM ANTENNA (& ASSOCIATED ½" COAX CABLE) MOUNTED TO EXIST. ICE BRIDGE (TO REMAIN)

SEE FEEDLINE SCHEDULE A&B

EXIST. VERIZON EQUIPMENT PLATFORM W/ICE SHIELD

EXIST. ICE BRIDGE (TYP.)

EXIST. CONCRETE PAD

EXIST. GRAVEL ACCESS DRIVE

EXIST. HANDHOLES

EXIST. TELCO PEDESTALS

EXIST. TRANSFORMER

EXIST. BOLLARD (TYP.)

EXIST. METER BANK & TELCO BACKBOARD

EXIST. 12'-0" WIDE DOUBLE SWING GATE

T-MOBILE TO UTILIZE EXIST. SITE ACCESS

PROP. T-MOBILE TOWER TOP EQUIPMENT (1 / A-2) (4 / A-2)

EXIST. CHAIN LINK FENCE (TYP.)

49'-8"±

49'-6"±

EXIST. TREELINE

COMPOUND PLAN (1 / A-1)
SCALE: 1/8" = 1'-0"
0 2'-8" 5'-4" 8'-0"

EXIST. EQUIPMENT AREA (3 / A-1)

SOURCE: CEA SITE VISIT 04.19.19

EQUIPMENT AREA PHOTO (2 / A-1)
SCALE: N.T.S.

REPLACE EXIST. 60A-2P BREAKER FOR ERICSSON RBS 6131 EQUIPMENT CABINET W/PROP. 100A-2P BREAKER PER MANUF. REQ'S

13'-0"±

EXIST. PPC

EXIST. T-MOBILE CIENA FIBER BOX (TO REMAIN)

EXIST. NORTEL S12000 EQUIPMENT CABINET

EXIST. T-MOBILE GPS/GSM ANTENNA (& ASSOCIATED ½" COAX CABLE) MOUNTED TO EXIST. ICE BRIDGE (TO REMAIN)

EXIST. ERICSSON RBS 6131 EQUIPMENT CABINET

PROP. T-MOBILE ERICSSON RBS 6131 EQUIPMENT CABINET TO BE UPGRADED PER RFDS

EXIST. 12'-0"x13'-0" CONC. PAD

12'-0"±

SEE FEEDLINE SCHEDULE A&B

EXIST. T-MOBILE ICE BRIDGE (TO REMAIN)

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

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COMPOUND & EQUIPMENT PLAN

SHEET NUMBER
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SPECIAL CONSTRUCTION NOTE (SBA-PROVIDED ANTENNA MOUNT STRUCTURAL MOD SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT THE T-MOBILE RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

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

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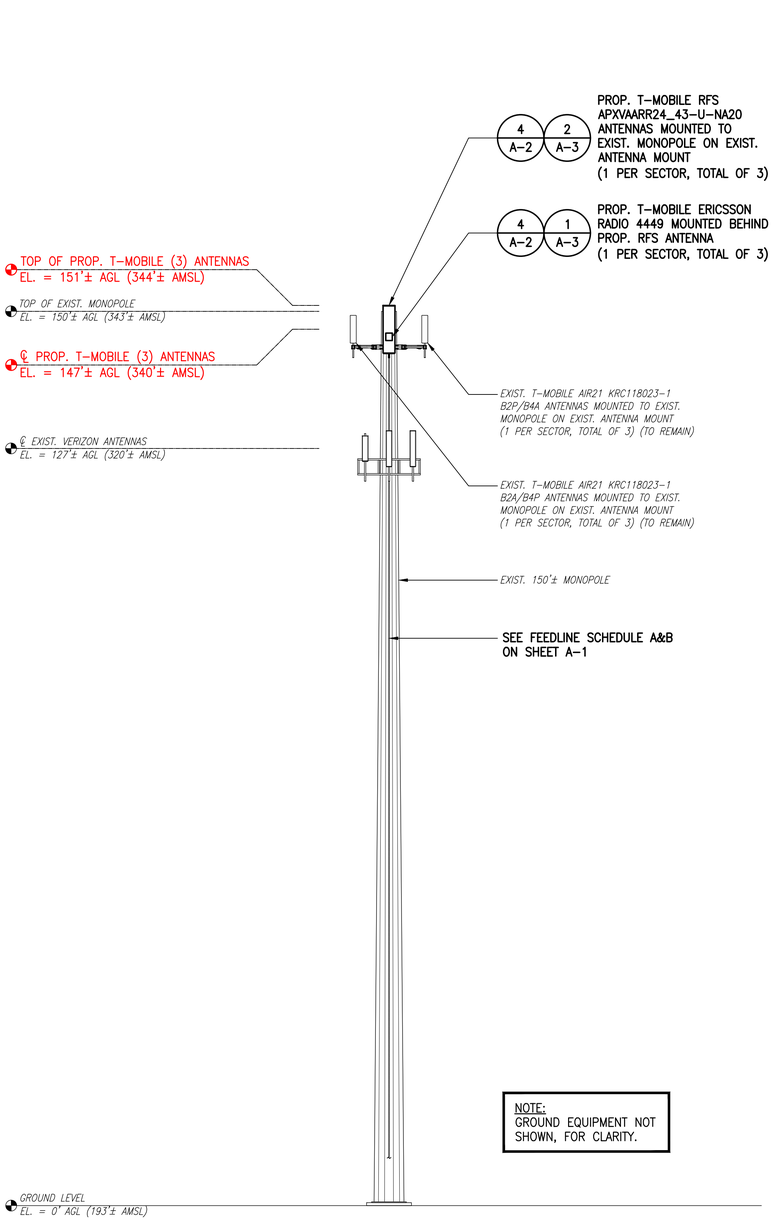
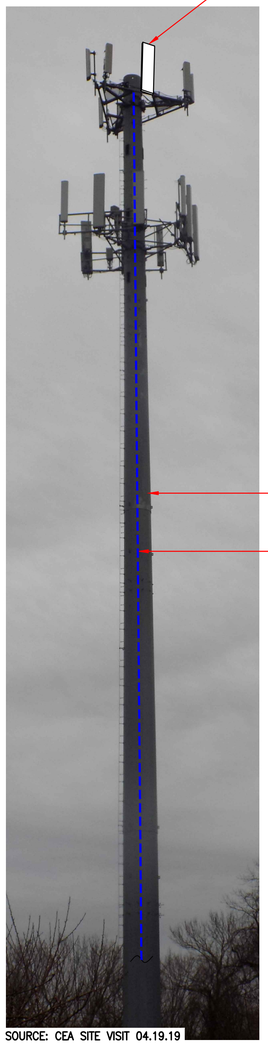


NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

TOWER ELEVATION (1 / A-2)
SCALE: 1" = 12'-0"
0 6' 12' 24' 36'

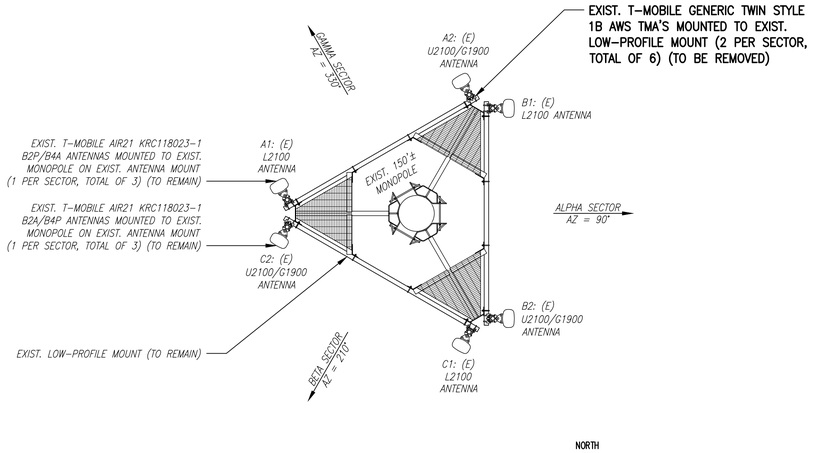


SOURCE: CEA SITE VISIT 04.19.19

NOTE:
PROPOSED T-MOBILE RRH'S NOT SHOWN, FOR CLARITY.

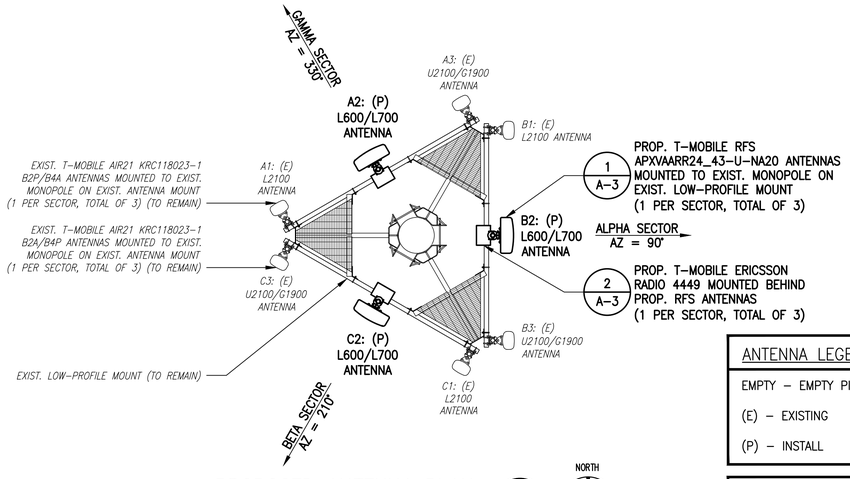
NOTE: ONE SECTOR SHOWN FOR CLARITY

TOWER PHOTO (2 / A-2)
SCALE: N.T.S.



EXISTING ANTENNA PLAN (3 / A-2)
SCALE: N.T.S.

NORTH



PROPOSED ANTENNA PLAN (4 / A-2)
SCALE: N.T.S.

NORTH

ANTENNA LEGEND:
EMPTY – EMPTY PIPE
(E) – EXISTING
(P) – INSTALL

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

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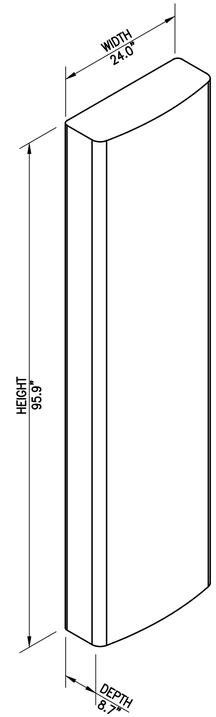
SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLAN

SHEET NUMBER
A-2

1815.098

FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	CABLES
ALPHA	*ERICSSON AIR21 KRC118023-1 B2P/B4A*	*147'± AGL*	*90°*	*0°*	*2°*	*U2100*	–	*(1) 9x18 HCS CABLE 1-5/8" (SHARED)*
	RFS APXVAARR24_43-U-NA20	**147'± AGL**	**90°**	**0°**	**2°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	**(1) 6x12 HCS CABLE (1-5/8")**
	ERICSSON AIR21 KRC118023-1 B2A/B4P	*147'± AGL*	*90°*	*0°*	*2°*	*U1900/G1900*	–	*(3) 1-5/8" COAX CABLES (1) 9x18 HCS CABLE 1-5/8" (SHARED)*
BETA	*ERICSSON AIR21 KRC118023-1 B2P/B4A*	*147'± AGL*	*210°*	*0°*	*2°*	*U2100*	–	*(1) 9x18 HCS CABLE 1-5/8" (SHARED)*
	RFS APXVAARR24_43-U-NA20	**147'± AGL**	**210°**	**0°**	**2°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	**(1) 6x12 HCS CABLE (1-5/8")**
	ERICSSON AIR21 KRC118023-1 B2A/B4P	*147'± AGL*	*210°*	*0°*	*2°*	*U1900/G1900*	–	*(3) 1-5/8" COAX CABLES (1) 9x18 HCS CABLE 1-5/8" (SHARED)*
GAMMA	*ERICSSON AIR21 KRC118023-1 B2P/B4A*	*147'± AGL*	*330°*	*0°*	*2°*	*U2100*	–	*(1) 9x18 HCS CABLE 1-5/8" (SHARED)*
	RFS APXVAARR24_43-U-NA20	**147'± AGL**	**330°**	**0°**	**2°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	**(1) 6x12 HCS CABLE (1-5/8")**
	ERICSSON AIR21 KRC118023-1 B2A/B4P	*147'± AGL*	*330°*	*0°*	*2°*	*U1900/G1900*	–	*(3) 1-5/8" COAX CABLES (1) 9x18 HCS CABLE 1-5/8" (SHARED)*

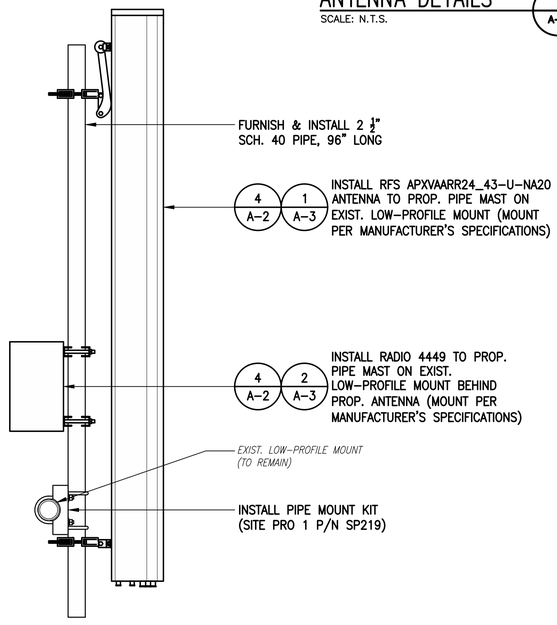


RFS APXVAARR24_43-U-NA20 PANEL ANTENNA
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 LBS
1 PER SECTOR, TOTAL OF 3

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

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

RRU DETAIL (2 / A-3)
SCALE: N.T.S.



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

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SITE DETAILS

SHEET NUMBER
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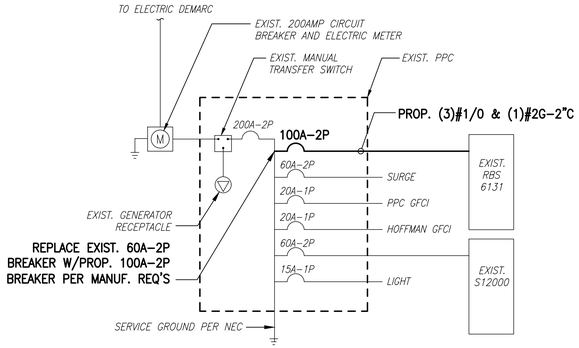
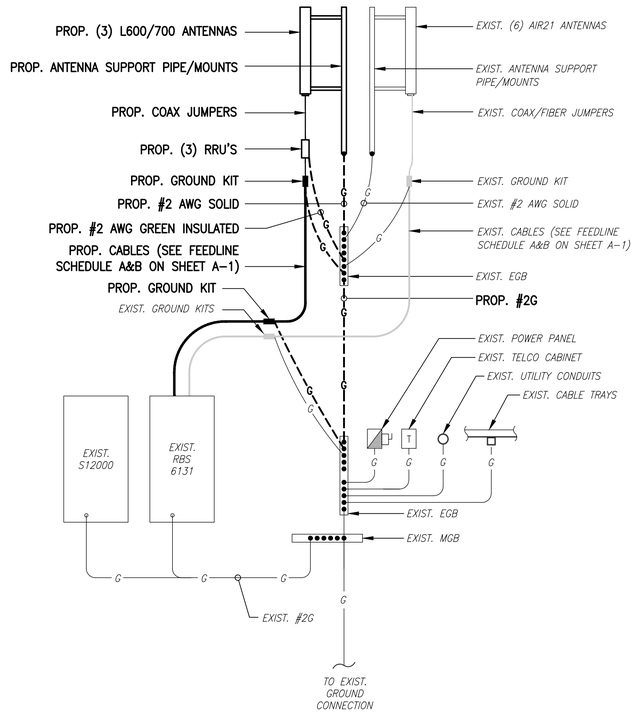
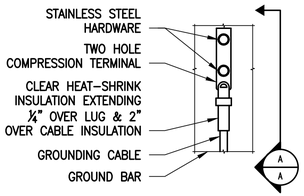


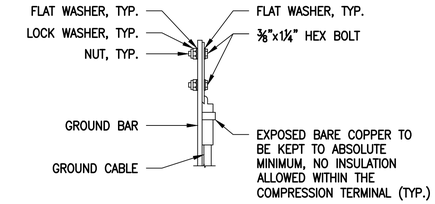
ONE LINE DIAGRAM (1 / E-1)
SCALE: NOT TO SCALE



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



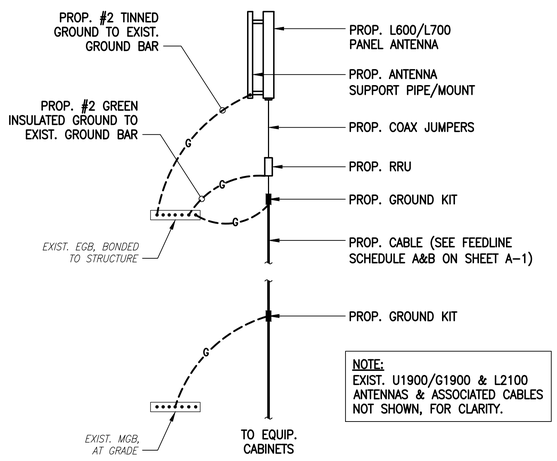
ELEVATION



SECTION A-A

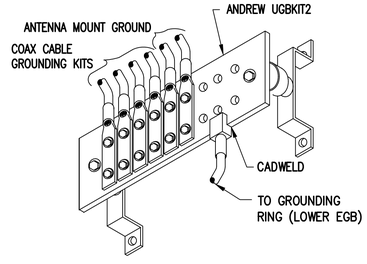
NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELL DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

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



L600/L700

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



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

ELECTRICAL AND GROUNDING NOTES

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

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SHEET NUMBER
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EXHIBIT 7

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

Structural Analysis Report

Existing 150 ft Rohn Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13076-A

Customer Site Name: Ledyard

Carrier Name: T- Mobile (App#: 116798, V1)

Carrier Site ID / Name: CT11841B / Ledyard

Site Location: 12 Orchard Drive

Ledyard, Connecticut

New London County

Latitude: 41.468277

Longitude: -72.054472

Analysis Result:

Max Structural Usage: 68.3% [Pass]

Max Foundation Usage: 60.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: +2.1%

Report Prepared By: Sital Shrestha

Introduction

The purpose of this report is to summarize the analysis results on the 150 ft Rohn 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	Radian Communication Services, File # 060-3664, Drawing # A070132, dated 03-15-2007
Foundation Drawing	Radian Communication Services, File # 060-3664, Drawing # A070146, dated 03-26-2007
Geotechnical Report	Gemini Geotechnical Associates, Inc. Geotechnical Report, dated 03-22-2007
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** In accordance with this standard, the structure was analyzed using **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} =133.0mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 103.0 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 = 0.165, S_1 = 0.059

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
-	147.0	3	Ericsson AIR 21 B2A B4P	(1) Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson AIR 21 B4A B2P			
-		3	Ericsson KRY 112 144/1 TMA			
4	137.0	6	Kathrein 742 351	(3) T-Arms	(12) 1 5/8"	Metro PCS*
5	127.0	6	SBNHH-1D45C - Panel	(1) Platform w/ Handrails	(2) 1 5/8" Hybrid	Verizon
6		3	LNX-6514DS-AIM - Panel			
7		3	ALU B13 RRH4X30-4R - RRH			
8		3	ALU RRH2X60-PCS - RRH			
9		3	ALU RRH2x90-AWS - RRH			
10		2	RFS DB-T1-6Z-8AB-0Z - ODU			

*Metro PCS is removed from 137' but Lease is still active.

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	147.0	3	Ericsson Air 21 B2A/B4P	(1) Low Profile Platform (1) Kicker support (MS-KI22-5) (1) collar mount (MS-1436) (1) Support rail w/end connection (MS-HRCEP-35)	(9) 1 5/8" Coax (4) 1 5/8" Fiber	T-Mobile
2		3	Ericsson Air 21 B4A/B2P			
3		3	RFS APXVAARR24_43-U-NA20			
4		3	Ericsson KRY 112 144/1			
5		3	Ericsson Radio 4449 B71+B12			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**44.0%**	**57.0%**	**68.3%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3510.2	33.8	75.0

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.6295 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 43.96% at 0.0ft

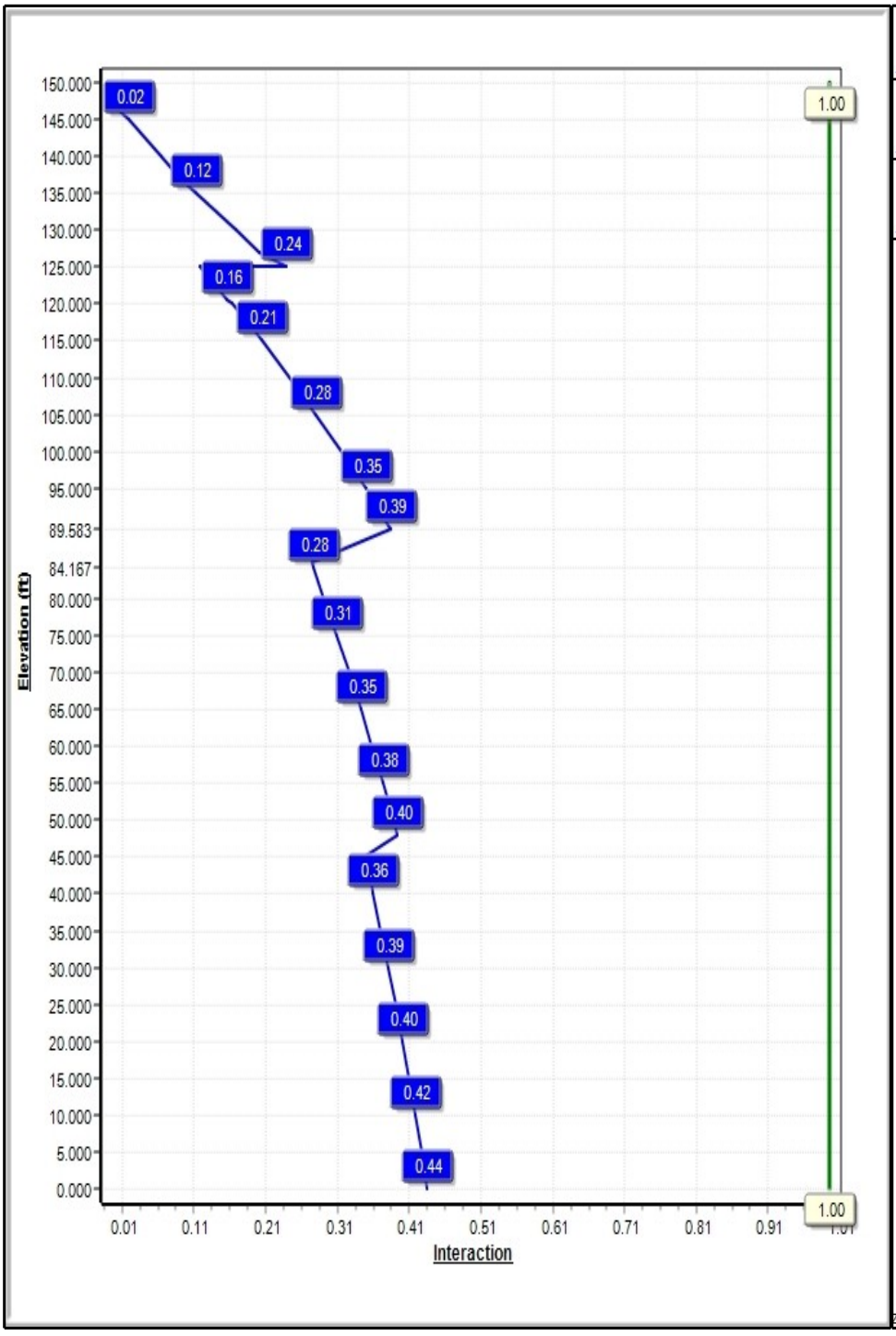
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019
Site Name:	Ledyard	**Exposure:**	C	
Height:	150.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

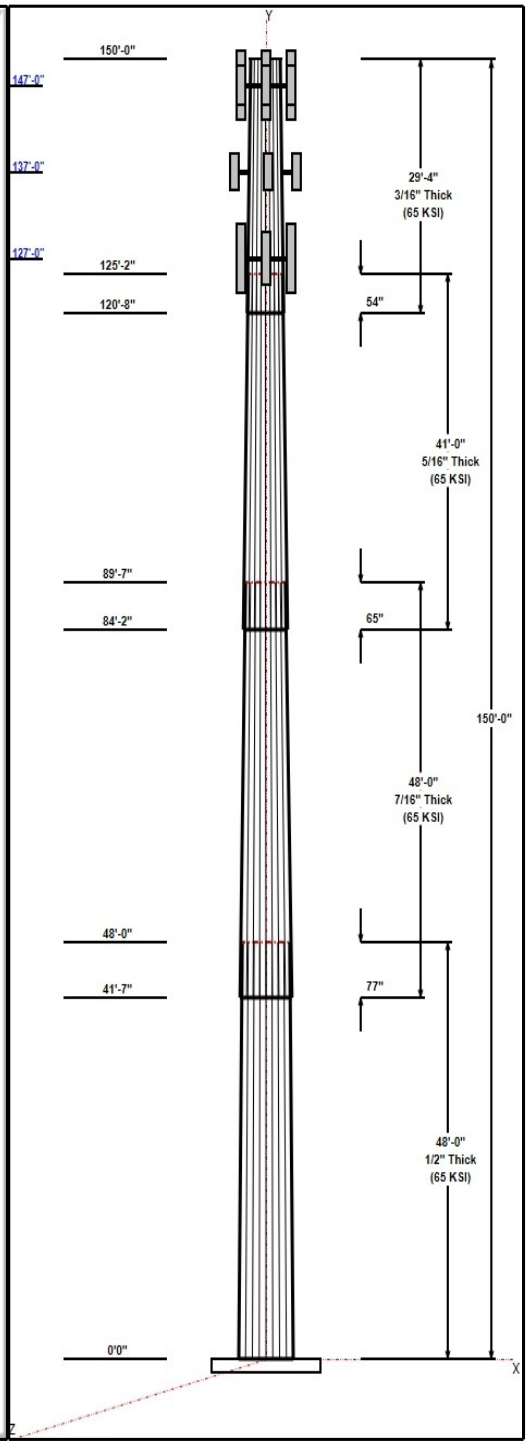
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 103 mph Wind

Iterations: 21





Structure: CT13076-A-SBA

Type: Tapered
Site Name: Ledyard
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.21250

7/1/2019

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.00	49.80	60.00	0.500		0.21250	65
2	48.00	41.84	52.04	0.438	Slip	0.21250	65
3	41.00	34.90	43.61	0.313	Slip	0.21250	65
4	29.33	30.00	36.23	0.188	Slip	0.21250	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
150.00	152.50	1	Lightning Rod	
147.00	147.00	3	APXVAARR24_43-U-NA20	T-Mobile
147.00	147.00	3	Radio 4449 B71+B12	T-Mobile
147.00	147.00	1	Kickers w/o Collar	T-Mobile
147.00	147.00	3	Ericsson AIR 21 B2A B4P	T-Mobile
147.00	147.00	3	Ericsson AIR 21 B4A B2P	T-Mobile
147.00	147.00	3	Ericsson KRY 112 144/1	T-Mobile
147.00	147.00	1	Platform w/ Hand Rail	T-Mobile
137.00	137.00	6	Kathrein 742 351	Metro PCS
137.00	137.00	3	T-Arms	Metro PCS
127.00	127.00	3	B13 RRH4X30-4R	Verizon
127.00	127.00	6	SBNHH-1D45C	Verizon
127.00	127.00	3	LNX-6514DS-AIM	Verizon
127.00	127.00	3	RRH2X60-PCS	Verizon
127.00	127.00	3	RRH2x90-AWS	Verizon
127.00	127.00	2	RFS DB-T1-6Z-8AB-0Z	Verizon
127.00	127.00	1	Platform w/ Handrails	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	150.00	Outside	Safety Cable	
0.00	150.00	Outside	Step bolts (ladder)	
0.00	147.00	Inside	1 5/8" Coax	T-Mobile
0.00	147.00	Inside	1 5/8" Fiber	T-Mobile
0.00	137.00	Inside	1 5/8" Coax	Metro PCS
0.00	137.00	Inside	3/8"	Metro PCS
0.00	127.00	Inside	1 5/8" Hybrid	Verizon

Anchor Bolts

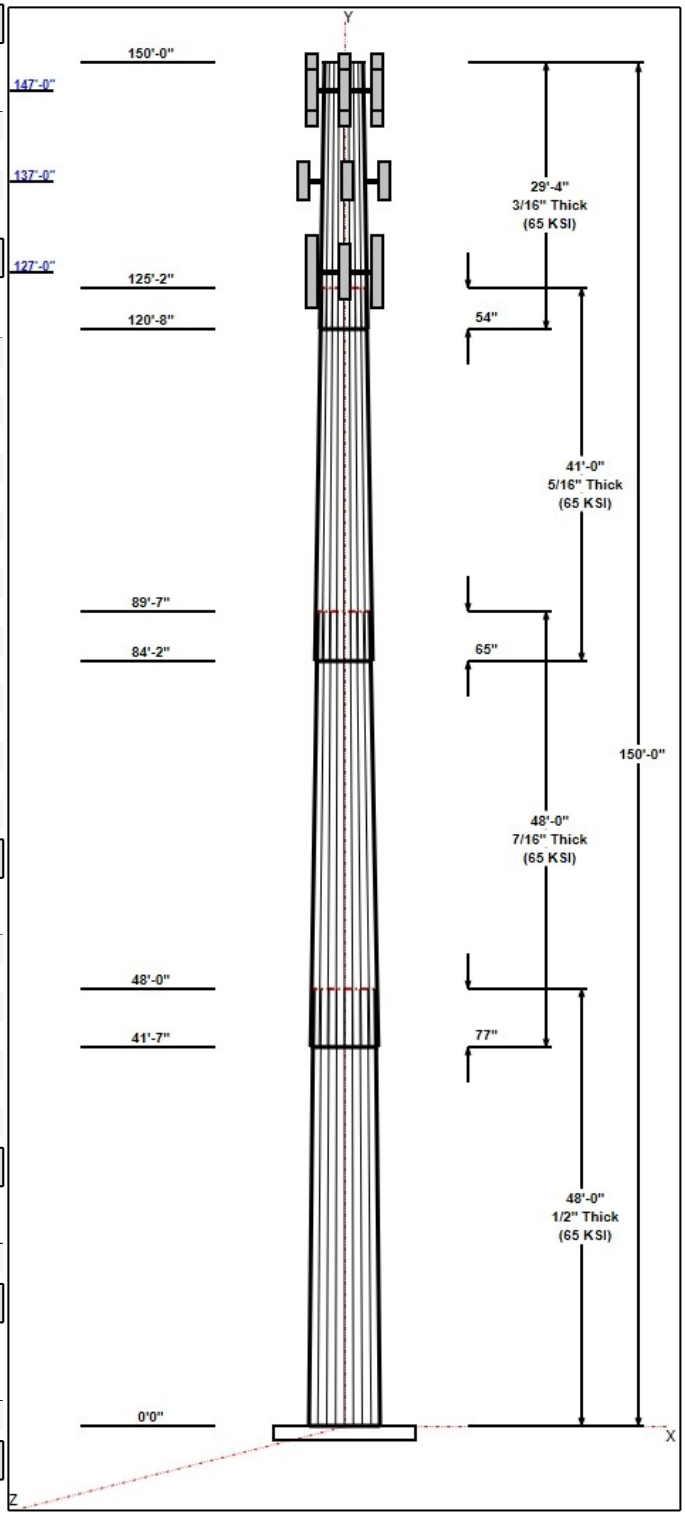
Qty	Specifications	Grade (ksi)	Arrangement
34	1.5" F1554 105	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	69.5	50.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 103 mph Wind	3510.2	33.8	51.1
0.9D + 1.6W 103 mph Wind	3491.1	33.8	38.3
1.2D + 1.0Di + 1.0Wi 50 mph Wind	922.5	9.0	75.0
1.2D + 1.0E	177.6	1.6	51.1



0.9D + 1.0E	176.6	1.6	38.3
1.0D + 1.0W 60 mph Wind	742.0	7.2	42.6

Structure: CT13076-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Ledyard
Height: 150.00 (ft)

7/1/2019

Tower Engineering Solutions

Shaft Properties

Structure:	CT13076-A-SBA		**Code:**	EIA/TIA-222-G	7/1/2019
Site Name:	Ledyard		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	48.000	0.5000	65		0.00	14,101
2	18	48.000	0.4375	65	Slip	77.00	10,546
3	18	41.000	0.3125	65	Slip	65.00	5,389
4	18	29.333	0.1875	65	Slip	54.00	1,956
					Total Shaft Weight:		**31,992**

	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	60.00	0.00	94.42	42234.30	19.75	120.00	49.80	48.00	78.24	24024.5	16.15	99.60	0.212500
2	52.04	41.58	71.65	24104.48	19.56	118.95	41.84	89.58	57.49	12449.6	15.45	95.63	0.212500
3	43.61	84.17	42.95	10174.68	23.20	139.57	34.90	125.17	34.31	5185.97	18.28	111.6	0.212500
4	36.23	120.6	21.45	3521.36	32.66	193.24	30.00	150.00	17.74	1992.24	26.80	160.0	0.212500

Load Summary

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	**Elev (ft)**	**Description**	**Qty**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Hor. Ecc. (ft)**	**Vert Ecc (ft)**
1	150.00	Lightning Rod	1	35.00	1.05	1.00	66.41	3.424	1.00	0.00	2.50
2	147.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.50	544.98	22.136	0.70	0.00	0.00
3	147.00	Radio 4449 B71+B12	3	71.00	1.97	0.67	124.27	2.516	0.67	0.00	0.00
4	147.00	Kickers w/o Collar	1	146.00	5.33	1.00	349.43	10.900	1.00	0.00	0.00
5	147.00	Ericsson AIR 21 B2A B4P	3	91.50	6.09	0.86	259.98	7.185	0.87	0.00	0.00
6	147.00	Ericsson AIR 21 B4A B2P	3	90.40	6.09	0.86	258.88	7.185	0.87	0.00	0.00
7	147.00	Ericsson KRY 112 144/1 TMA	3	11.00	0.41	0.70	21.76	0.884	0.71	0.00	0.00
8	147.00	Platform w/ Hand Rail (round)	1	1600.00	32.00	1.00	3695.61	59.867	1.00	0.00	0.00
9	137.00	Kathrein 742 351	6	29.80	5.38	0.61	124.24	7.349	0.62	0.00	0.00
10	137.00	T-Arms	3	242.00	8.19	0.75	446.08	18.359	1.00	0.00	0.00
11	127.00	B13 RRH4X30-4R	3	57.20	2.16	0.88	118.46	2.761	0.89	0.00	0.00
12	127.00	SBNHH-1D45C	6	49.60	11.39	0.84	307.15	13.018	0.85	0.00	0.00
13	127.00	LNX-6514DS-AIM	3	38.80	8.17	0.83	212.19	10.947	0.84	0.00	0.00
14	127.00	RRH2X60-PCS	3	55.00	2.20	0.89	137.81	2.825	0.90	0.00	0.00
15	127.00	RRH2x90-AWS	3	44.00	2.52	0.82	103.72	3.722	0.83	0.00	0.00
16	127.00	RFS DB-T1-6Z-8AB-0Z	2	18.90	4.80	0.71	159.84	5.658	0.72	0.00	0.00
17	127.00	Platform w/ Handrails	1	1600.00	32.00	1.00	3665.18	59.462	1.00	0.00	0.00
		Totals:	**48**	**6,381.90**			**17,369.03**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	150.00	(1) Safety Cable	0.00	Outside
0.00	150.00	(1) Step bolts (ladder)	0.00	Outside
0.00	147.00	(9) 1 5/8" Coax	0.00	Inside
0.00	147.00	(4) 1 5/8" Fiber	0.00	Inside
0.00	137.00	(12) 1 5/8" Coax	0.00	Inside
0.00	137.00	(1) 3/8"	0.00	Inside
0.00	127.00	(2) 1 5/8" Hybrid	0.00	Inside

Shaft Section Properties

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 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		0.5000	60.000	94.423	42234.3	19.75	120.00	78.2	1386.	0.0
5.00		0.5000	58.938	92.737	40011.9	19.37	117.88	78.6	1337.	1592.2
10.00		0.5000	57.875	91.051	37868.9	19.00	115.75	79.1	1288.	1563.5
15.00		0.5000	56.813	89.365	35803.8	18.62	113.63	79.5	1241.	1534.8
20.00		0.5000	55.750	87.679	33815.1	18.25	111.50	79.9	1194.	1506.1
25.00		0.5000	54.688	85.992	31901.5	17.88	109.38	80.4	1149.	1477.4
30.00		0.5000	53.625	84.306	30061.5	17.50	107.25	80.8	1104.	1448.7
35.00		0.5000	52.563	82.620	28293.7	17.13	105.13	81.3	1060.	1420.0
40.00		0.5000	51.500	80.934	26596.5	16.75	103.00	81.7	1017.	1391.3
41.58	Bot - Section 2	0.5000	51.164	80.400	26073.6	16.63	102.33	81.8	1003.	434.6
45.00		0.5000	50.438	79.248	24968.6	16.38	100.88	82.1	975.0	1755.2
48.00	Top - Section 1	0.4375	50.675	69.759	22243.7	19.01	115.83	0.0	0.0	1520.5
50.00		0.4375	50.250	69.168	21683.9	18.84	114.86	79.2	849.9	472.7
55.00		0.4375	49.188	67.693	20325.7	18.41	112.43	79.7	813.9	1164.3
60.00		0.4375	48.125	66.218	19025.5	17.99	110.00	80.2	778.7	1139.2
65.00		0.4375	47.063	64.742	17781.9	17.56	107.57	80.8	744.2	1114.1
70.00		0.4375	46.000	63.267	16593.8	17.13	105.14	81.3	710.5	1089.0
75.00		0.4375	44.938	61.792	15459.7	16.70	102.71	81.8	677.6	1063.9
80.00		0.4375	43.875	60.316	14378.6	16.27	100.29	82.3	645.5	1038.8
84.17	Bot - Section 3	0.4375	42.990	59.087	13517.1	15.92	98.26	82.5	619.3	846.5
85.00		0.4375	42.813	58.841	13349.1	15.84	97.86	82.5	614.1	288.7
89.58	Top - Section 2	0.3125	42.464	41.807	9384.7	22.55	135.88	0.0	0.0	1566.7
90.00		0.3125	42.375	41.719	9325.7	22.50	135.60	74.9	433.5	59.2
95.00		0.3125	41.313	40.665	8636.7	21.90	132.20	75.6	411.8	700.8
100.00		0.3125	40.250	39.612	7982.5	21.30	128.80	76.3	390.6	682.9
105.00		0.3125	39.188	38.558	7362.2	20.70	125.40	77.1	370.0	665.0
110.00		0.3125	38.125	37.504	6774.9	20.10	122.00	77.8	350.0	647.1
115.00		0.3125	37.063	36.450	6219.7	19.50	118.60	78.5	330.5	629.1
120.00		0.3125	36.000	35.396	5695.6	18.90	115.20	79.2	311.6	611.2
120.67	Bot - Section 4	0.3125	35.858	35.256	5628.1	18.82	114.75	79.3	309.1	80.1
125.00		0.3125	34.938	34.342	5201.9	18.30	111.80	79.9	293.3	825.4
125.17	Top - Section 3	0.1875	35.277	20.882	3248.5	31.76	188.14	0.0	0.0	31.3
127.00		0.1875	34.888	20.650	3141.5	31.40	186.07	64.5	177.4	129.5
130.00		0.1875	34.250	20.271	2971.5	30.80	182.67	65.2	170.9	208.9
135.00		0.1875	33.188	19.638	2702.0	29.80	177.00	66.4	160.4	339.5
137.00		0.1875	32.763	19.385	2599.0	29.40	174.73	66.8	156.2	132.8
140.00		0.1875	32.125	19.006	2449.3	28.80	171.33	67.5	150.2	196.0
145.00		0.1875	31.063	18.374	2212.9	27.80	165.67	68.7	140.3	318.0
147.00		0.1875	30.638	18.121	2122.8	27.40	163.40	69.2	136.5	124.2
150.00		0.1875	30.000	17.742	1992.2	26.80	160.00	69.9	130.8	183.0
										31992.1

Wind Loading - Shaft

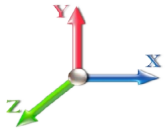
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 103 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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	21.931	24.12	482.13	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.931	24.12	473.59	0.650	0.000	5.00	25.161	16.35	631.3	0.0	1910.6
10.00		1.00	0.85	21.931	24.12	465.06	0.650	0.000	5.00	24.711	16.06	620.0	0.0	1876.2
15.00		1.00	0.85	21.931	24.12	456.52	0.650	0.000	5.00	24.262	15.77	608.7	0.0	1841.7
20.00		1.00	0.90	23.270	25.60	461.45	0.650	0.000	5.00	23.812	15.48	633.9	0.0	1807.3
25.00		1.00	0.95	24.389	26.83	463.41	0.650	0.000	5.00	23.363	15.19	651.8	0.0	1772.9
30.00		1.00	0.98	25.343	27.88	463.22	0.650	0.000	5.00	22.913	14.89	664.3	0.0	1738.5
35.00		1.00	1.01	26.179	28.80	461.47	0.650	0.000	5.00	22.464	14.60	672.8	0.0	1704.0
40.00		1.00	1.04	26.926	29.62	458.54	0.650	0.000	5.00	22.014	14.31	678.1	0.0	1669.6
41.58	Bot - Section 2	1.00	1.05	27.146	29.86	457.41	0.650	0.000	1.58	6.877	4.47	213.6	0.0	521.5
45.00		1.00	1.07	27.602	30.36	454.68	0.650	0.000	3.42	14.940	9.71	471.8	0.0	2106.3
48.00	Top - Section 1	1.00	1.08	27.979	30.78	451.99	0.650	0.000	3.00	12.945	8.41	414.3	0.0	1824.6
50.00		1.00	1.09	28.221	31.04	458.04	0.650	0.000	2.00	8.540	5.55	275.7	0.0	567.3
55.00		1.00	1.12	28.793	31.67	452.88	0.650	0.000	5.00	21.036	13.67	692.9	0.0	1397.1
60.00		1.00	1.14	29.325	32.26	447.17	0.650	0.000	5.00	20.586	13.38	690.6	0.0	1367.0
65.00		1.00	1.16	29.823	32.81	441.00	0.650	0.000	5.00	20.137	13.09	687.0	0.0	1336.9
70.00		1.00	1.17	30.292	33.32	434.42	0.650	0.000	5.00	19.687	12.80	682.2	0.0	1306.8
75.00		1.00	1.19	30.735	33.81	427.48	0.650	0.000	5.00	19.238	12.50	676.4	0.0	1276.6
80.00		1.00	1.21	31.156	34.27	420.22	0.650	0.000	5.00	18.788	12.21	669.6	0.0	1246.5
84.17	Bot - Section 3	1.00	1.22	31.491	34.64	413.94	0.650	0.000	4.17	15.313	9.95	551.7	0.0	1015.8
85.00		1.00	1.22	31.556	34.71	412.66	0.650	0.000	0.83	3.069	2.00	110.8	0.0	346.5
89.58	Top - Section 2	1.00	1.24	31.907	35.10	405.51	0.650	0.000	4.58	16.658	10.83	608.0	0.0	1880.0
90.00		1.00	1.24	31.938	35.13	410.91	0.650	0.000	0.42	1.496	0.97	54.6	0.0	71.1
95.00		1.00	1.25	32.304	35.53	402.90	0.650	0.000	5.00	17.704	11.51	654.3	0.0	841.0
100.00		1.00	1.27	32.654	35.92	394.66	0.650	0.000	5.00	17.254	11.22	644.6	0.0	819.5
105.00		1.00	1.28	32.991	36.29	386.22	0.650	0.000	5.00	16.805	10.92	634.3	0.0	798.0
110.00		1.00	1.29	33.316	36.65	377.59	0.650	0.000	5.00	16.355	10.63	623.4	0.0	776.5
115.00		1.00	1.30	33.629	36.99	368.79	0.650	0.000	5.00	15.906	10.34	611.9	0.0	754.9
120.00		1.00	1.32	33.932	37.33	359.83	0.650	0.000	5.00	15.456	10.05	600.0	0.0	733.4
120.67	Bot - Section 4	1.00	1.32	33.972	37.37	358.62	0.650	0.000	0.67	2.027	1.32	78.8	0.0	96.2
125.00		1.00	1.33	34.225	37.65	350.71	0.650	0.000	4.33	13.117	8.53	513.6	0.0	990.5
125.17	Top - Section 3	1.00	1.33	34.235	37.66	350.40	0.650	0.000	0.17	0.498	0.32	19.5	0.0	37.6
127.00	Appurtenance(s)	1.00	1.33	34.340	37.77	350.79	0.650	0.000	1.83	5.442	3.54	213.8	0.0	155.5
130.00		1.00	1.34	34.509	37.96	345.23	0.650	0.000	3.00	8.776	5.70	346.4	0.0	250.6
135.00		1.00	1.35	34.784	38.26	335.85	0.650	0.000	5.00	14.266	9.27	567.7	0.0	407.4
137.00	Appurtenance(s)	1.00	1.35	34.892	38.38	332.07	0.650	0.000	2.00	5.581	3.63	222.8	0.0	159.3
140.00		1.00	1.36	35.051	38.56	326.35	0.650	0.000	3.00	8.236	5.35	330.3	0.0	235.1
145.00		1.00	1.37	35.311	38.84	316.72	0.650	0.000	5.00	13.367	8.69	540.0	0.0	381.6
147.00	Appurtenance(s)	1.00	1.37	35.413	38.95	312.84	0.650	0.000	2.00	5.221	3.39	211.5	0.0	149.0
150.00	Appurtenance(s)	1.00	1.38	35.564	39.12	306.98	0.650	0.000	3.00	7.697	5.00	313.1	0.0	219.7
								Totals:	**150.00**			**19,086.0**		**38,390.5**

Discrete Appurtenance Forces

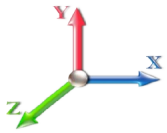
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 103 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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	150.00	Lightning Rod	1	35.688	39.257	1.00	1.00	1.05	42.00	0.000	2.500	65.95	0.00	164.88
2	147.00	Platform w/ Hand Rail	1	35.413	38.955	1.00	1.00	32.00	1920.00	0.000	0.000	1994.47	0.00	0.00
3	147.00	Ericsson KRY 112 144/1	3	35.413	38.955	0.56	0.80	0.69	39.60	0.000	0.000	42.93	0.00	0.00
4	147.00	Ericsson AIR 21 B4A B2P	3	35.413	38.955	0.69	0.80	12.57	325.44	0.000	0.000	783.44	0.00	0.00
5	147.00	Ericsson AIR 21 B2A B4P	3	35.413	38.955	0.69	0.80	12.57	329.40	0.000	0.000	783.44	0.00	0.00
6	147.00	Kickers w/o Collar	1	35.413	38.955	1.00	1.00	5.33	175.20	0.000	0.000	332.20	0.00	0.00
7	147.00	Radio 4449 B71+B12	3	35.413	38.955	0.54	0.80	3.17	255.60	0.000	0.000	197.44	0.00	0.00
8	147.00	APXVAARR24 43-U-NA2	3	35.413	38.955	0.40	0.80	24.29	460.80	0.000	0.000	1513.81	0.00	0.00
9	137.00	T-Arms	3	34.892	38.381	0.56	0.75	13.82	871.20	0.000	0.000	848.72	0.00	0.00
10	137.00	Kathrein 742 351	6	34.892	38.381	0.49	0.80	15.75	214.56	0.000	0.000	967.36	0.00	0.00
11	127.00	Platform w/ Handrails	1	34.340	37.773	1.00	1.00	32.00	1920.00	0.000	0.000	1934.00	0.00	0.00
12	127.00	RFS DB-T1-6Z-8AB-0Z	2	34.340	37.773	0.71	1.00	6.82	45.36	0.000	0.000	411.94	0.00	0.00
13	127.00	RRH2x90-AWS	3	34.340	37.773	0.82	1.00	6.20	158.40	0.000	0.000	374.66	0.00	0.00
14	127.00	RRH2X60-PCS	3	34.340	37.773	0.89	1.00	5.87	198.00	0.000	0.000	355.01	0.00	0.00
15	127.00	LNX-6514DS-AIM	3	34.340	37.773	0.66	0.80	16.27	139.68	0.000	0.000	983.60	0.00	0.00
16	127.00	SBNHH-1D45C	6	34.340	37.773	0.67	0.80	45.92	357.12	0.000	0.000	2775.56	0.00	0.00
17	127.00	B13 RRH4X30-4R	3	34.340	37.773	0.88	1.00	5.70	205.92	0.000	0.000	344.64	0.00	0.00
							Totals:		**7,658.28**			**14,709.19**		

Total Applied Force Summary

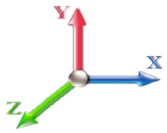
Structure:	CT13076-A-SBA		**Code:**	EIA/TIA-222-G	7/1/2019
Site Name:	Ledyard		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 103 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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		631.26	2089.59	0.00	0.00
10.00		619.98	2055.17	0.00	0.00
15.00		608.70	2020.74	0.00	0.00
20.00		633.89	1986.32	0.00	0.00
25.00		651.84	1951.89	0.00	0.00
30.00		664.31	1917.46	0.00	0.00
35.00		672.76	1883.04	0.00	0.00
40.00		678.10	1848.61	0.00	0.00
41.58		213.58	578.22	0.00	0.00
45.00		471.75	2228.58	0.00	0.00
48.00		414.35	1931.95	0.00	0.00
50.00		275.71	638.88	0.00	0.00
55.00		692.89	1576.13	0.00	0.00
60.00		690.62	1546.00	0.00	0.00
65.00		687.02	1515.88	0.00	0.00
70.00		682.24	1485.76	0.00	0.00
75.00		676.42	1455.64	0.00	0.00
80.00		669.65	1425.52	0.00	0.00
84.17		551.67	1164.92	0.00	0.00
85.00		110.80	376.32	0.00	0.00
89.58		608.03	2044.12	0.00	0.00
90.00		54.65	85.97	0.00	0.00
95.00		654.25	1020.01	0.00	0.00
100.00		644.56	998.49	0.00	0.00
105.00		634.25	976.98	0.00	0.00
110.00		623.36	955.46	0.00	0.00
115.00		611.93	933.95	0.00	0.00
120.00		599.98	912.43	0.00	0.00
120.67		78.77	120.03	0.00	0.00
125.00		513.59	1145.60	0.00	0.00
125.17		19.49	43.55	0.00	0.00
127.00	(21) attachments	7393.23	3245.57	0.00	0.00
130.00		346.44	350.12	0.00	0.00
135.00		567.69	573.20	0.00	0.00
137.00	(9) attachments	2038.84	1311.43	0.00	0.00
140.00		330.26	289.41	0.00	0.00
145.00		539.98	472.02	0.00	0.00
147.00	(17) attachments	5859.25	3691.24	0.00	0.00
150.00	(1) attachments	379.09	266.38	0.00	164.88
	Totals:	**33,795.19**	**51,112.57**	**0.00**	**164.88**

Linear Appurtenance Segment Forces (Factored)

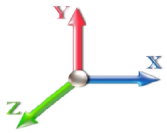
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 103 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	1.64
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	6.24
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	1.64
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	6.24
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	1.64
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	6.24
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.270	0.00	1.64
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.270	0.00	6.24
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.389	0.00	1.64
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.389	0.00	6.24
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.343	0.00	1.64
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.343	0.00	6.24
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.179	0.00	1.64
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.179	0.00	6.24
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.926	0.00	1.64
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.926	0.00	6.24
41.58	Safety Cable	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	27.146	0.00	0.52
41.58	Step bolts (ladder)	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	27.146	0.00	1.98
45.00	Safety Cable	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	27.602	0.00	1.12
45.00	Step bolts (ladder)	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	27.602	0.00	4.26
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.979	0.00	0.98
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.979	0.00	3.74
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.221	0.00	0.66
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.221	0.00	2.50
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.793	0.00	1.64
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.793	0.00	6.24
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.325	0.00	1.64
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.325	0.00	6.24
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.823	0.00	1.64
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.823	0.00	6.24
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.292	0.00	1.64
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.292	0.00	6.24
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.735	0.00	1.64
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.735	0.00	6.24
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.156	0.00	1.64
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.156	0.00	6.24
84.17	Safety Cable	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	31.491	0.00	1.37
84.17	Step bolts (ladder)	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	31.491	0.00	5.20
85.00	Safety Cable	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	31.556	0.00	0.27
85.00	Step bolts (ladder)	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	31.556	0.00	1.04
89.58	Safety Cable	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	31.907	0.00	1.50
89.58	Step bolts (ladder)	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	31.907	0.00	5.72
90.00	Safety Cable	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	31.938	0.00	0.14
90.00	Step bolts (ladder)	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	31.938	0.00	0.52
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.304	0.00	1.64
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.304	0.00	6.24
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.654	0.00	1.64

Linear Appurtenance Segment Forces (Factored)

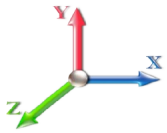
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 103 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.654	0.00	6.24
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	1.64
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	6.24
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.316	0.00	1.64
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.316	0.00	6.24
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.629	0.00	1.64
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.629	0.00	6.24
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.932	0.00	1.64
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.932	0.00	6.24
120.67	Safety Cable	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	33.972	0.00	0.22
120.67	Step bolts (ladder)	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	33.972	0.00	0.83
125.00	Safety Cable	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	34.225	0.00	1.42
125.00	Step bolts (ladder)	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	34.225	0.00	5.41
125.17	Safety Cable	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	34.235	0.00	0.05
125.17	Step bolts (ladder)	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	34.235	0.00	0.21
127.00	Safety Cable	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	34.340	0.00	0.60
127.00	Step bolts (ladder)	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	34.340	0.00	2.29
130.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.509	0.00	0.98
130.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.509	0.00	3.74
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.784	0.00	1.64
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.784	0.00	6.24
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.892	0.00	0.66
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.892	0.00	2.50
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.051	0.00	0.98
140.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.051	0.00	3.74
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.311	0.00	1.64
145.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.311	0.00	6.24
147.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.413	0.00	0.66
147.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.413	0.00	2.50
150.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.564	0.00	0.98
150.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.564	0.00	3.74
									Totals:		**0.0**	**236.3**

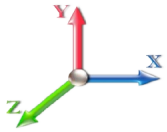
Calculated Forces

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Load Case: 1.2D + 1.6W 103 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

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	-51.08	-33.85	0.00	-3510.2	0.00	3510.25	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.440
5.00	-48.92	-33.31	0.00	-3341.0	0.00	3341.01	6561.33	3280.67	15744.2	7883.82	0.06	-0.115	0.000	0.431
10.00	-46.80	-32.78	0.00	-3174.4	0.00	3174.45	6478.15	3239.07	15259.6	7641.15	0.25	-0.231	0.000	0.423
15.00	-44.72	-32.25	0.00	-3010.5	0.00	3010.55	6393.63	3196.81	14779.2	7400.59	0.55	-0.347	0.000	0.414
20.00	-42.67	-31.69	0.00	-2849.2	0.00	2849.28	6307.77	3153.88	14303.2	7162.24	0.98	-0.464	0.000	0.405
25.00	-40.66	-31.11	0.00	-2690.8	0.00	2690.82	6220.57	3110.29	13831.8	6926.18	1.53	-0.580	0.000	0.395
30.00	-38.69	-30.50	0.00	-2535.3	0.00	2535.30	6132.04	3066.02	13365.1	6692.51	2.20	-0.697	0.000	0.385
35.00	-36.76	-29.88	0.00	-2382.8	0.00	2382.81	6042.17	3021.08	12903.4	6461.30	2.99	-0.813	0.000	0.375
40.00	-34.88	-29.22	0.00	-2233.4	0.00	2233.44	5950.96	2975.48	12446.8	6232.66	3.90	-0.929	0.000	0.364
41.58	-34.28	-29.03	0.00	-2187.1	0.00	2187.18	5921.80	2960.90	12303.3	6160.80	4.22	-0.967	0.000	0.361
45.00	-32.02	-28.56	0.00	-2088.0	0.00	2088.00	5858.41	2929.21	11995.4	6006.66	4.94	-1.046	0.000	0.353
48.00	-30.07	-28.14	0.00	-2002.3	0.00	2002.33	4962.21	2481.10	10234.7	5124.96	5.62	-1.116	0.000	0.397
50.00	-29.39	-27.89	0.00	-1946.0	0.00	1946.05	4932.77	2466.38	10087.1	5051.08	6.10	-1.163	0.000	0.391
55.00	-27.77	-27.23	0.00	-1806.5	0.00	1806.59	4858.24	2429.12	9721.01	4867.73	7.38	-1.286	0.000	0.377
60.00	-26.19	-26.56	0.00	-1670.4	0.00	1670.46	4782.37	2391.18	9358.79	4686.35	8.80	-1.408	0.000	0.362
65.00	-24.64	-25.88	0.00	-1537.6	0.00	1537.68	4705.16	2352.58	9000.68	4507.03	10.34	-1.528	0.000	0.347
70.00	-23.12	-25.20	0.00	-1408.2	0.00	1408.28	4626.62	2313.31	8646.87	4329.86	12.00	-1.646	0.000	0.330
75.00	-21.63	-24.53	0.00	-1282.2	0.00	1282.26	4546.74	2273.37	8297.53	4154.93	13.79	-1.761	0.000	0.313
80.00	-20.19	-23.85	0.00	-1159.6	0.00	1159.62	4465.52	2232.76	7952.84	3982.33	15.69	-1.873	0.000	0.296
84.17	-19.02	-23.28	0.00	-1060.2	0.00	1060.24	4389.85	2194.93	7657.14	3834.26	17.37	-1.965	0.000	0.281
85.00	-18.63	-23.17	0.00	-1040.8	0.00	1040.85	4371.58	2185.79	7593.21	3802.25	17.71	-1.983	0.000	0.278
89.58	-16.58	-22.51	0.00	-934.64	0.00	934.64	2817.41	1408.71	4881.90	2444.58	19.66	-2.080	0.000	0.388
90.00	-16.47	-22.47	0.00	-925.26	0.00	925.26	2813.70	1406.85	4865.15	2436.19	19.85	-2.089	0.000	0.386
95.00	-15.43	-21.81	0.00	-812.91	0.00	812.91	2768.43	1384.22	4665.07	2336.00	22.11	-2.221	0.000	0.354
100.00	-14.41	-21.16	0.00	-703.85	0.00	703.85	2721.83	1360.91	4466.78	2236.71	24.50	-2.346	0.000	0.320
105.00	-13.42	-20.51	0.00	-598.05	0.00	598.05	2673.89	1336.94	4270.46	2138.40	27.02	-2.462	0.000	0.285
110.00	-12.46	-19.87	0.00	-495.50	0.00	495.50	2624.60	1312.30	4076.27	2041.17	29.66	-2.568	0.000	0.248
115.00	-11.53	-19.23	0.00	-396.16	0.00	396.16	2573.99	1286.99	3884.41	1945.09	32.40	-2.661	0.000	0.208
120.00	-10.63	-18.60	0.00	-300.00	0.00	300.00	2522.03	1261.02	3695.03	1850.26	35.23	-2.741	0.000	0.167
120.67	-10.50	-18.52	0.00	-287.60	0.00	287.60	2515.00	1257.50	3669.98	1837.72	35.61	-2.751	0.000	0.161
125.00	-9.37	-17.95	0.00	-207.36	0.00	207.36	2468.74	1234.37	3508.34	1756.78	38.14	-2.805	0.000	0.122
125.17	-9.33	-17.93	0.00	-204.36	0.00	204.36	1203.56	601.78	1739.68	871.13	38.23	-2.807	0.000	0.243
127.00	-6.45	-10.39	0.00	-171.48	0.00	171.48	1198.21	599.10	1712.61	857.58	39.32	-2.826	0.000	0.206
130.00	-6.10	-10.04	0.00	-140.30	0.00	140.30	1189.06	594.53	1668.14	835.31	41.11	-2.868	0.000	0.173
135.00	-5.55	-9.44	0.00	-90.12	0.00	90.12	1172.74	586.37	1593.65	798.01	44.14	-2.923	0.000	0.118
137.00	-4.35	-7.34	0.00	-71.23	0.00	71.23	1165.84	582.92	1563.75	783.04	45.37	-2.940	0.000	0.095
140.00	-4.07	-7.00	0.00	-49.21	0.00	49.21	1155.08	577.54	1518.83	760.54	47.22	-2.960	0.000	0.068
145.00	-3.63	-6.44	0.00	-14.21	0.00	14.21	1136.09	568.04	1443.87	723.01	50.33	-2.978	0.000	0.023
147.00	-0.25	-0.39	0.00	-1.34	0.00	1.34	1128.12	564.06	1413.88	707.99	51.58	-2.980	0.000	0.002
150.00	0.00	-0.38	0.00	-0.16	0.00	0.16	1115.76	557.88	1368.94	685.49	53.45	-2.981	0.000	0.000

Wind Loading - Shaft

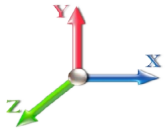
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 103 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

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	21.931	24.12	482.13	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.931	24.12	473.59	0.650	0.000	5.00	25.161	16.35	631.3	0.0	1432.9
10.00		1.00	0.85	21.931	24.12	465.06	0.650	0.000	5.00	24.711	16.06	620.0	0.0	1407.1
15.00		1.00	0.85	21.931	24.12	456.52	0.650	0.000	5.00	24.262	15.77	608.7	0.0	1381.3
20.00		1.00	0.90	23.270	25.60	461.45	0.650	0.000	5.00	23.812	15.48	633.9	0.0	1355.5
25.00		1.00	0.95	24.389	26.83	463.41	0.650	0.000	5.00	23.363	15.19	651.8	0.0	1329.7
30.00		1.00	0.98	25.343	27.88	463.22	0.650	0.000	5.00	22.913	14.89	664.3	0.0	1303.9
35.00		1.00	1.01	26.179	28.80	461.47	0.650	0.000	5.00	22.464	14.60	672.8	0.0	1278.0
40.00		1.00	1.04	26.926	29.62	458.54	0.650	0.000	5.00	22.014	14.31	678.1	0.0	1252.2
41.58	Bot - Section 2	1.00	1.05	27.146	29.86	457.41	0.650	0.000	1.58	6.877	4.47	213.6	0.0	391.2
45.00		1.00	1.07	27.602	30.36	454.68	0.650	0.000	3.42	14.940	9.71	471.8	0.0	1579.7
48.00	Top - Section 1	1.00	1.08	27.979	30.78	451.99	0.650	0.000	3.00	12.945	8.41	414.3	0.0	1368.4
50.00		1.00	1.09	28.221	31.04	458.04	0.650	0.000	2.00	8.540	5.55	275.7	0.0	425.5
55.00		1.00	1.12	28.793	31.67	452.88	0.650	0.000	5.00	21.036	13.67	692.9	0.0	1047.8
60.00		1.00	1.14	29.325	32.26	447.17	0.650	0.000	5.00	20.586	13.38	690.6	0.0	1025.3
65.00		1.00	1.16	29.823	32.81	441.00	0.650	0.000	5.00	20.137	13.09	687.0	0.0	1002.7
70.00		1.00	1.17	30.292	33.32	434.42	0.650	0.000	5.00	19.687	12.80	682.2	0.0	980.1
75.00		1.00	1.19	30.735	33.81	427.48	0.650	0.000	5.00	19.238	12.50	676.4	0.0	957.5
80.00		1.00	1.21	31.156	34.27	420.22	0.650	0.000	5.00	18.788	12.21	669.6	0.0	934.9
84.17	Bot - Section 3	1.00	1.22	31.491	34.64	413.94	0.650	0.000	4.17	15.313	9.95	551.7	0.0	761.8
85.00		1.00	1.22	31.556	34.71	412.66	0.650	0.000	0.83	3.069	2.00	110.8	0.0	259.9
89.58	Top - Section 2	1.00	1.24	31.907	35.10	405.51	0.650	0.000	4.58	16.658	10.83	608.0	0.0	1410.0
90.00		1.00	1.24	31.938	35.13	410.91	0.650	0.000	0.42	1.496	0.97	54.6	0.0	53.3
95.00		1.00	1.25	32.304	35.53	402.90	0.650	0.000	5.00	17.704	11.51	654.3	0.0	630.8
100.00		1.00	1.27	32.654	35.92	394.66	0.650	0.000	5.00	17.254	11.22	644.6	0.0	614.6
105.00		1.00	1.28	32.991	36.29	386.22	0.650	0.000	5.00	16.805	10.92	634.3	0.0	598.5
110.00		1.00	1.29	33.316	36.65	377.59	0.650	0.000	5.00	16.355	10.63	623.4	0.0	582.3
115.00		1.00	1.30	33.629	36.99	368.79	0.650	0.000	5.00	15.906	10.34	611.9	0.0	566.2
120.00		1.00	1.32	33.932	37.33	359.83	0.650	0.000	5.00	15.456	10.05	600.0	0.0	550.1
120.67	Bot - Section 4	1.00	1.32	33.972	37.37	358.62	0.650	0.000	0.67	2.027	1.32	78.8	0.0	72.1
125.00		1.00	1.33	34.225	37.65	350.71	0.650	0.000	4.33	13.117	8.53	513.6	0.0	742.8
125.17	Top - Section 3	1.00	1.33	34.235	37.66	350.40	0.650	0.000	0.17	0.498	0.32	19.5	0.0	28.2
127.00	Appurtenance(s)	1.00	1.33	34.340	37.77	350.79	0.650	0.000	1.83	5.442	3.54	213.8	0.0	116.6
130.00		1.00	1.34	34.509	37.96	345.23	0.650	0.000	3.00	8.776	5.70	346.4	0.0	188.0
135.00		1.00	1.35	34.784	38.26	335.85	0.650	0.000	5.00	14.266	9.27	567.7	0.0	305.6
137.00	Appurtenance(s)	1.00	1.35	34.892	38.38	332.07	0.650	0.000	2.00	5.581	3.63	222.8	0.0	119.5
140.00		1.00	1.36	35.051	38.56	326.35	0.650	0.000	3.00	8.236	5.35	330.3	0.0	176.4
145.00		1.00	1.37	35.311	38.84	316.72	0.650	0.000	5.00	13.367	8.69	540.0	0.0	286.2
147.00	Appurtenance(s)	1.00	1.37	35.413	38.95	312.84	0.650	0.000	2.00	5.221	3.39	211.5	0.0	111.8
150.00	Appurtenance(s)	1.00	1.38	35.564	39.12	306.98	0.650	0.000	3.00	7.697	5.00	313.1	0.0	164.7
								Totals:	**150.00**			**19,086.0**		**28,792.9**

Discrete Appurtenance Forces

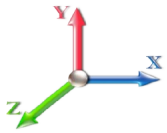
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 103 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

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	150.00	Lightning Rod	1	35.688	39.257	1.00	1.00	1.05	31.50	0.000	2.500	65.95	0.00	164.88
2	147.00	Platform w/ Hand Rail	1	35.413	38.955	1.00	1.00	32.00	1440.00	0.000	0.000	1994.47	0.00	0.00
3	147.00	Ericsson KRY 112 144/1	3	35.413	38.955	0.56	0.80	0.69	29.70	0.000	0.000	42.93	0.00	0.00
4	147.00	Ericsson AIR 21 B4A B2P	3	35.413	38.955	0.69	0.80	12.57	244.08	0.000	0.000	783.44	0.00	0.00
5	147.00	Ericsson AIR 21 B2A B4P	3	35.413	38.955	0.69	0.80	12.57	247.05	0.000	0.000	783.44	0.00	0.00
6	147.00	Kickers w/o Collar	1	35.413	38.955	1.00	1.00	5.33	131.40	0.000	0.000	332.20	0.00	0.00
7	147.00	Radio 4449 B71+B12	3	35.413	38.955	0.54	0.80	3.17	191.70	0.000	0.000	197.44	0.00	0.00
8	147.00	APXVAARR24 43-U-NA2	3	35.413	38.955	0.40	0.80	24.29	345.60	0.000	0.000	1513.81	0.00	0.00
9	137.00	T-Arms	3	34.892	38.381	0.56	0.75	13.82	653.40	0.000	0.000	848.72	0.00	0.00
10	137.00	Kathrein 742 351	6	34.892	38.381	0.49	0.80	15.75	160.92	0.000	0.000	967.36	0.00	0.00
11	127.00	Platform w/ Handrails	1	34.340	37.773	1.00	1.00	32.00	1440.00	0.000	0.000	1934.00	0.00	0.00
12	127.00	RFS DB-T1-6Z-8AB-0Z	2	34.340	37.773	0.71	1.00	6.82	34.02	0.000	0.000	411.94	0.00	0.00
13	127.00	RRH2x90-AWS	3	34.340	37.773	0.82	1.00	6.20	118.80	0.000	0.000	374.66	0.00	0.00
14	127.00	RRH2X60-PCS	3	34.340	37.773	0.89	1.00	5.87	148.50	0.000	0.000	355.01	0.00	0.00
15	127.00	LNX-6514DS-AIM	3	34.340	37.773	0.66	0.80	16.27	104.76	0.000	0.000	983.60	0.00	0.00
16	127.00	SBNHH-1D45C	6	34.340	37.773	0.67	0.80	45.92	267.84	0.000	0.000	2775.56	0.00	0.00
17	127.00	B13 RRH4X30-4R	3	34.340	37.773	0.88	1.00	5.70	154.44	0.000	0.000	344.64	0.00	0.00
							Totals:		**5,743.71**			**14,709.19**		

Total Applied Force Summary

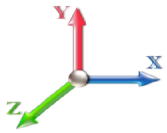
Structure:	CT13076-A-SBA		**Code:**	EIA/TIA-222-G	7/1/2019
Site Name:	Ledyard		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 16

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 103 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

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		631.26	1567.19	0.00	0.00
10.00		619.98	1541.37	0.00	0.00
15.00		608.70	1515.56	0.00	0.00
20.00		633.89	1489.74	0.00	0.00
25.00		651.84	1463.92	0.00	0.00
30.00		664.31	1438.10	0.00	0.00
35.00		672.76	1412.28	0.00	0.00
40.00		678.10	1386.46	0.00	0.00
41.58		213.58	433.66	0.00	0.00
45.00		471.75	1671.44	0.00	0.00
48.00		414.35	1448.97	0.00	0.00
50.00		275.71	479.16	0.00	0.00
55.00		692.89	1182.09	0.00	0.00
60.00		690.62	1159.50	0.00	0.00
65.00		687.02	1136.91	0.00	0.00
70.00		682.24	1114.32	0.00	0.00
75.00		676.42	1091.73	0.00	0.00
80.00		669.65	1069.14	0.00	0.00
84.17		551.67	873.69	0.00	0.00
85.00		110.80	282.24	0.00	0.00
89.58		608.03	1533.09	0.00	0.00
90.00		54.65	64.48	0.00	0.00
95.00		654.25	765.01	0.00	0.00
100.00		644.56	748.87	0.00	0.00
105.00		634.25	732.73	0.00	0.00
110.00		623.36	716.60	0.00	0.00
115.00		611.93	700.46	0.00	0.00
120.00		599.98	684.32	0.00	0.00
120.67		78.77	90.02	0.00	0.00
125.00		513.59	859.20	0.00	0.00
125.17		19.49	32.66	0.00	0.00
127.00	(21) attachments	7393.23	2434.18	0.00	0.00
130.00		346.44	262.59	0.00	0.00
135.00		567.69	429.90	0.00	0.00
137.00	(9) attachments	2038.84	983.57	0.00	0.00
140.00		330.26	217.06	0.00	0.00
145.00		539.98	354.02	0.00	0.00
147.00	(17) attachments	5859.25	2768.43	0.00	0.00
150.00	(1) attachments	379.09	199.79	0.00	164.88
	Totals:	**33,795.19**	**38,334.43**	**0.00**	**164.88**

Linear Appurtenance Segment Forces (Factored)

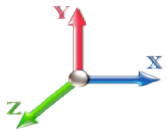
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 103 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	1.23
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	4.68
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	1.23
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	4.68
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	1.23
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.931	0.00	4.68
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.270	0.00	1.23
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.270	0.00	4.68
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.389	0.00	1.23
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.389	0.00	4.68
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.343	0.00	1.23
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.343	0.00	4.68
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.179	0.00	1.23
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.179	0.00	4.68
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.926	0.00	1.23
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.926	0.00	4.68
41.58	Safety Cable	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	27.146	0.00	0.39
41.58	Step bolts (ladder)	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	27.146	0.00	1.48
45.00	Safety Cable	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	27.602	0.00	0.84
45.00	Step bolts (ladder)	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	27.602	0.00	3.20
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.979	0.00	0.74
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	27.979	0.00	2.81
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.221	0.00	0.49
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.221	0.00	1.87
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.793	0.00	1.23
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.793	0.00	4.68
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.325	0.00	1.23
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.325	0.00	4.68
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.823	0.00	1.23
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.823	0.00	4.68
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.292	0.00	1.23
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.292	0.00	4.68
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.735	0.00	1.23
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.735	0.00	4.68
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.156	0.00	1.23
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.156	0.00	4.68
84.17	Safety Cable	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	31.491	0.00	1.02
84.17	Step bolts (ladder)	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	31.491	0.00	3.90
85.00	Safety Cable	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	31.556	0.00	0.20
85.00	Step bolts (ladder)	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	31.556	0.00	0.78
89.58	Safety Cable	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	31.907	0.00	1.13
89.58	Step bolts (ladder)	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	31.907	0.00	4.29
90.00	Safety Cable	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	31.938	0.00	0.10
90.00	Step bolts (ladder)	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	31.938	0.00	0.39
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.304	0.00	1.23
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.304	0.00	4.68
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.654	0.00	1.23

Linear Appurtenance Segment Forces (Factored)

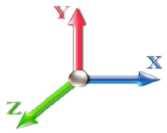
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 103 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.654	0.00	4.68
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	1.23
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.991	0.00	4.68
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.316	0.00	1.23
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.316	0.00	4.68
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.629	0.00	1.23
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.629	0.00	4.68
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.932	0.00	1.23
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.932	0.00	4.68
120.67	Safety Cable	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	33.972	0.00	0.16
120.67	Step bolts (ladder)	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	33.972	0.00	0.62
125.00	Safety Cable	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	34.225	0.00	1.06
125.00	Step bolts (ladder)	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	34.225	0.00	4.06
125.17	Safety Cable	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	34.235	0.00	0.04
125.17	Step bolts (ladder)	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	34.235	0.00	0.16
127.00	Safety Cable	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	34.340	0.00	0.45
127.00	Step bolts (ladder)	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	34.340	0.00	1.72
130.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.509	0.00	0.74
130.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.509	0.00	2.81
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.784	0.00	1.23
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.784	0.00	4.68
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.892	0.00	0.49
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.892	0.00	1.87
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.051	0.00	0.74
140.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.051	0.00	2.81
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.311	0.00	1.23
145.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.311	0.00	4.68
147.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.413	0.00	0.49
147.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.413	0.00	1.87
150.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.564	0.00	0.74
150.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	35.564	0.00	2.81
									Totals:		**0.0**	**177.3**

Calculated Forces

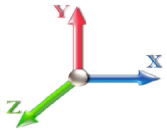
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 103 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

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	-38.30	-33.83	0.00	-3491.0	0.00	3491.06	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.435
5.00	-36.67	-33.27	0.00	-3321.8	0.00	3321.89	6561.33	3280.67	15744.2	7883.82	0.06	-0.115	0.000	0.427
10.00	-35.06	-32.72	0.00	-3155.5	0.00	3155.52	6478.15	3239.07	15259.6	7641.15	0.24	-0.230	0.000	0.418
15.00	-33.48	-32.17	0.00	-2991.9	0.00	2991.91	6393.63	3196.81	14779.2	7400.59	0.55	-0.345	0.000	0.410
20.00	-31.93	-31.59	0.00	-2831.0	0.00	2831.06	6307.77	3153.88	14303.2	7162.24	0.97	-0.461	0.000	0.400
25.00	-30.41	-30.99	0.00	-2673.1	0.00	2673.10	6220.57	3110.29	13831.8	6926.18	1.52	-0.577	0.000	0.391
30.00	-28.92	-30.37	0.00	-2518.1	0.00	2518.16	6132.04	3066.02	13365.1	6692.51	2.18	-0.693	0.000	0.381
35.00	-27.46	-29.73	0.00	-2366.3	0.00	2366.32	6042.17	3021.08	12903.4	6461.30	2.97	-0.808	0.000	0.371
40.00	-26.04	-29.07	0.00	-2217.6	0.00	2217.67	5950.96	2975.48	12446.8	6232.66	3.88	-0.923	0.000	0.360
41.58	-25.59	-28.87	0.00	-2171.6	0.00	2171.65	5921.80	2960.90	12303.3	6160.80	4.19	-0.961	0.000	0.357
45.00	-23.89	-28.40	0.00	-2073.0	0.00	2073.01	5858.41	2929.21	11995.4	6006.66	4.91	-1.040	0.000	0.349
48.00	-22.42	-27.98	0.00	-1987.8	0.00	1987.80	4962.21	2481.10	10234.7	5124.96	5.59	-1.109	0.000	0.393
50.00	-21.90	-27.73	0.00	-1931.8	0.00	1931.84	4932.77	2466.38	10087.1	5051.08	6.06	-1.155	0.000	0.387
55.00	-20.68	-27.06	0.00	-1793.1	0.00	1793.19	4858.24	2429.12	9721.01	4867.73	7.34	-1.278	0.000	0.373
60.00	-19.48	-26.38	0.00	-1657.9	0.00	1657.91	4782.37	2391.18	9358.79	4686.35	8.74	-1.398	0.000	0.358
65.00	-18.31	-25.70	0.00	-1526.0	0.00	1526.01	4705.16	2352.58	9000.68	4507.03	10.27	-1.517	0.000	0.343
70.00	-17.16	-25.02	0.00	-1397.5	0.00	1397.50	4626.62	2313.31	8646.87	4329.86	11.92	-1.634	0.000	0.327
75.00	-16.04	-24.35	0.00	-1272.3	0.00	1272.39	4546.74	2273.37	8297.53	4154.93	13.70	-1.749	0.000	0.310
80.00	-14.95	-23.67	0.00	-1150.6	0.00	1150.65	4465.52	2232.76	7952.84	3982.33	15.59	-1.860	0.000	0.292
84.17	-14.08	-23.10	0.00	-1052.0	0.00	1052.03	4389.85	2194.93	7657.14	3834.26	17.25	-1.951	0.000	0.278
85.00	-13.78	-23.00	0.00	-1032.7	0.00	1032.77	4371.58	2185.79	7593.21	3802.25	17.60	-1.969	0.000	0.275
89.58	-12.24	-22.35	0.00	-927.37	0.00	927.37	2817.41	1408.71	4881.90	2444.58	19.53	-2.065	0.000	0.384
90.00	-12.15	-22.30	0.00	-918.06	0.00	918.06	2813.70	1406.85	4865.15	2436.19	19.71	-2.074	0.000	0.381
95.00	-11.37	-21.65	0.00	-806.54	0.00	806.54	2768.43	1384.22	4665.07	2336.00	21.96	-2.205	0.000	0.350
100.00	-10.60	-21.00	0.00	-698.30	0.00	698.30	2721.83	1360.91	4466.78	2236.71	24.34	-2.329	0.000	0.316
105.00	-9.85	-20.35	0.00	-593.33	0.00	593.33	2673.89	1336.94	4270.46	2138.40	26.84	-2.444	0.000	0.281
110.00	-9.13	-19.71	0.00	-491.57	0.00	491.57	2624.60	1312.30	4076.27	2041.17	29.46	-2.549	0.000	0.245
115.00	-8.43	-19.08	0.00	-393.01	0.00	393.01	2573.99	1286.99	3884.41	1945.09	32.18	-2.642	0.000	0.206
120.00	-7.76	-18.46	0.00	-297.60	0.00	297.60	2522.03	1261.02	3695.03	1850.26	34.99	-2.721	0.000	0.164
120.67	-7.67	-18.38	0.00	-285.30	0.00	285.30	2515.00	1257.50	3669.98	1837.72	35.37	-2.731	0.000	0.159
125.00	-6.82	-17.83	0.00	-205.66	0.00	205.66	2468.74	1234.37	3508.34	1756.78	37.87	-2.785	0.000	0.120
125.17	-6.79	-17.81	0.00	-202.69	0.00	202.69	1203.56	601.78	1739.68	871.13	37.97	-2.786	0.000	0.239
127.00	-4.71	-10.31	0.00	-170.04	0.00	170.04	1198.21	599.10	1712.61	857.58	39.05	-2.805	0.000	0.203
130.00	-4.46	-9.95	0.00	-139.12	0.00	139.12	1189.06	594.53	1668.14	835.31	40.82	-2.847	0.000	0.171
135.00	-4.05	-9.37	0.00	-89.37	0.00	89.37	1172.74	586.37	1593.65	798.01	43.83	-2.902	0.000	0.116
137.00	-3.17	-7.28	0.00	-70.64	0.00	70.64	1165.84	582.92	1563.75	783.04	45.05	-2.919	0.000	0.093
140.00	-2.97	-6.94	0.00	-48.80	0.00	48.80	1155.08	577.54	1518.83	760.54	46.89	-2.938	0.000	0.067
145.00	-2.64	-6.38	0.00	-14.10	0.00	14.10	1136.09	568.04	1443.87	723.01	49.98	-2.957	0.000	0.022
147.00	-0.18	-0.39	0.00	-1.33	0.00	1.33	1128.12	564.06	1413.88	707.99	51.22	-2.959	0.000	0.002
150.00	0.00	-0.38	0.00	-0.16	0.00	0.16	1115.76	557.88	1368.94	685.49	53.08	-2.959	0.000	0.000

Wind Loading - Shaft

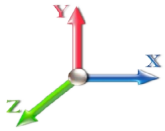
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	26.196	31.44	178.7	468.3	2378.9
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.821	30.98	176.1	493.7	2369.9
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	25.417	30.50	173.4	505.4	2347.1
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	25.001	30.00	181.0	511.0	2318.3
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.579	29.49	186.5	513.1	2286.0
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	24.151	28.98	190.4	512.9	2251.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.721	28.47	193.2	511.1	2215.1
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	23.288	27.95	195.0	507.9	2177.5
41.58	Bot - Section 2	1.00	1.05	6.397	7.04	0.00	1.200	1.535	1.58	7.283	8.74	61.5	160.5	682.0
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	3.42	15.821	18.99	135.8	350.1	2456.3
48.00	Top - Section 1	1.00	1.08	6.593	7.25	0.00	1.200	1.557	3.00	13.724	16.47	119.4	305.7	2130.3
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	2.00	9.061	10.87	79.5	203.0	770.3
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	22.351	26.82	200.2	502.0	1899.1
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	21.913	26.30	199.9	495.9	1862.9
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	21.474	25.77	199.2	489.3	1826.2
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	21.035	25.24	198.2	482.3	1789.1
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	20.595	24.71	196.9	474.9	1751.6
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	20.154	24.18	195.3	467.2	1713.7
84.17	Bot - Section 3	1.00	1.22	7.421	8.16	0.00	1.200	1.647	4.17	16.457	19.75	161.2	383.8	1399.5
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	0.83	3.298	3.96	32.4	77.6	424.1
89.58	Top - Section 2	1.00	1.24	7.519	8.27	0.00	1.200	1.658	4.58	17.924	21.51	177.9	419.9	2299.9
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	0.42	1.611	1.93	16.0	38.1	109.2
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	19.093	22.91	191.9	448.8	1289.8
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	18.651	22.38	189.4	440.0	1259.5
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	18.208	21.85	186.9	431.1	1229.0
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	17.765	21.32	184.1	421.9	1198.4
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	17.322	20.79	181.2	412.5	1167.5
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	16.878	20.25	178.1	403.0	1136.4
120.67	Bot - Section 4	1.00	1.32	8.005	8.81	0.00	1.200	1.708	0.67	2.217	2.66	23.4	53.6	149.7
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	4.33	14.355	17.23	152.8	344.4	1334.8
125.17	Top - Section 3	1.00	1.33	8.067	8.87	0.00	1.200	1.714	0.17	0.545	0.65	5.8	13.2	50.8
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	1.83	5.967	7.16	63.7	144.3	299.7
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	9.636	11.56	103.4	232.5	483.2
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	15.705	18.85	169.9	377.6	785.0
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	2.00	6.157	7.39	66.8	149.4	308.8
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.00	9.103	10.92	99.2	220.5	455.6
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	14.817	17.78	162.7	357.2	738.8
147.00	Appurtenance(s)	1.00	1.37	8.345	9.18	0.00	1.200	1.742	2.00	5.802	6.96	63.9	141.2	290.3
150.00	Appurtenance(s)	1.00	1.38	8.381	9.22	0.00	1.200	1.745	3.00	8.569	10.28	94.8	208.1	427.8
								Totals:	**150.00**			**5,566.0**		**52,063.5**

Discrete Appurtenance Forces

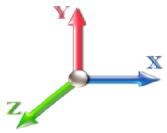
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

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	150.00	Lightning Rod	1	8.410	9.251	1.00	1.00	3.42	64.41	0.000	2.500	31.67	0.00	79.18
2	147.00	Platform w/ Hand Rail	1	8.345	9.180	1.00	1.00	59.87	3415.60	0.000	0.000	549.56	0.00	0.00
3	147.00	Ericsson KRY 112 144/1	3	8.345	9.180	0.57	0.80	1.51	62.58	0.000	0.000	13.83	0.00	0.00
4	147.00	Ericsson AIR 21 B4A B2P	3	8.345	9.180	0.70	0.80	15.00	830.88	0.000	0.000	137.71	0.00	0.00
5	147.00	Ericsson AIR 21 B2A B4P	3	8.345	9.180	0.70	0.80	15.00	834.84	0.000	0.000	137.71	0.00	0.00
6	147.00	Kickers w/o Collar	1	8.345	9.180	1.00	1.00	10.90	314.63	0.000	0.000	100.06	0.00	0.00
7	147.00	Radio 4449 B71+B12	3	8.345	9.180	0.54	0.80	4.05	374.62	0.000	0.000	37.14	0.00	0.00
8	147.00	APXVAARR24 43-U-NA2	3	8.345	9.180	0.56	0.80	37.19	1711.75	0.000	0.000	341.38	0.00	0.00
9	137.00	T-Arms	3	8.222	9.044	0.75	0.75	41.31	1306.43	0.000	0.000	373.61	0.00	0.00
10	137.00	Kathrein 742 351	6	8.222	9.044	0.50	0.80	21.87	617.39	0.000	0.000	197.80	0.00	0.00
11	127.00	Platform w/ Handrails	1	8.092	8.901	1.00	1.00	59.46	3385.18	0.000	0.000	529.29	0.00	0.00
12	127.00	RFS DB-T1-6Z-8AB-0Z	2	8.092	8.901	0.72	1.00	8.15	327.24	0.000	0.000	72.53	0.00	0.00
13	127.00	RRH2x90-AWS	3	8.092	8.901	0.83	1.00	9.27	285.37	0.000	0.000	82.51	0.00	0.00
14	127.00	RRH2X60-PCS	3	8.092	8.901	0.90	1.00	7.63	446.43	0.000	0.000	67.89	0.00	0.00
15	127.00	LNX-6514DS-AIM	3	8.092	8.901	0.67	0.80	22.07	508.35	0.000	0.000	196.44	0.00	0.00
16	127.00	SBNHH-1D45C	6	8.092	8.901	0.68	0.80	53.11	1902.39	0.000	0.000	472.78	0.00	0.00
17	127.00	B13 RRH4X30-4R	3	8.092	8.901	0.89	1.00	7.37	343.81	0.000	0.000	65.61	0.00	0.00
							Totals:		**16,731.91**			**3,407.51**		

Total Applied Force Summary

Structure:	CT13076-A-SBA		**Code:**	EIA/TIA-222-G	7/1/2019
Site Name:	Ledyard		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

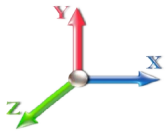
Tower Engineering Solutions

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

Iterations 20

Dead Load Factor 1.20

Wind Load Factor 1.00



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		178.70	2581.75	0.00	0.00
10.00		176.14	2575.95	0.00	0.00
15.00		173.39	2555.24	0.00	0.00
20.00		180.96	2527.97	0.00	0.00
25.00		186.46	2496.91	0.00	0.00
30.00		190.39	2463.35	0.00	0.00
35.00		193.17	2428.00	0.00	0.00
40.00		195.05	2391.28	0.00	0.00
41.58		61.49	749.76	0.00	0.00
45.00		135.84	2602.91	0.00	0.00
48.00		119.44	2259.20	0.00	0.00
50.00		79.54	856.34	0.00	0.00
55.00		200.18	2114.90	0.00	0.00
60.00		199.89	2079.29	0.00	0.00
65.00		199.21	2043.14	0.00	0.00
70.00		198.20	2006.53	0.00	0.00
75.00		196.89	1969.50	0.00	0.00
80.00		195.31	1932.11	0.00	0.00
84.17		161.20	1581.83	0.00	0.00
85.00		32.37	460.56	0.00	0.00
89.58		177.89	2500.86	0.00	0.00
90.00		16.00	127.44	0.00	0.00
95.00		191.85	1509.48	0.00	0.00
100.00		189.44	1479.59	0.00	0.00
105.00		186.86	1449.46	0.00	0.00
110.00		184.10	1419.13	0.00	0.00
115.00		181.20	1388.60	0.00	0.00
120.00		178.15	1357.88	0.00	0.00
120.67		23.42	179.26	0.00	0.00
125.00		152.82	1527.03	0.00	0.00
125.17		5.81	58.20	0.00	0.00
127.00	(21) attachments	1550.77	7579.85	0.00	0.00
130.00		103.43	608.48	0.00	0.00
135.00		169.93	994.14	0.00	0.00
137.00	(9) attachments	638.24	2316.30	0.00	0.00
140.00		99.25	536.09	0.00	0.00
145.00		162.74	873.21	0.00	0.00
147.00	(17) attachments	1381.30	7888.96	0.00	0.00
150.00	(1) attachments	126.47	523.47	0.00	79.18
	Totals:	**8,973.51**	**74,993.94**	**0.00**	**79.18**

Linear Appurtenance Segment Forces (Factored)

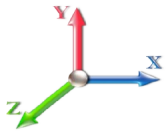
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	12.93
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	18.85
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	14.46
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	20.46
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	15.46
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	21.51
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	16.21
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	22.31
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	16.83
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	22.95
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	17.35
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	23.50
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	17.80
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	23.98
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	18.21
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	24.40
41.58	Safety Cable	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	6.397	0.00	5.80
41.58	Step bolts (ladder)	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	6.397	0.00	7.77
45.00	Safety Cable	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	12.69
45.00	Step bolts (ladder)	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	16.94
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	6.593	0.00	11.27
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	6.593	0.00	15.00
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	7.56
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	10.06
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	19.22
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	25.46
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	19.51
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	25.76
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	19.78
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	26.04
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	20.03
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	26.31
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	20.27
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	26.56
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	20.49
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	26.79
84.17	Safety Cable	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	7.421	0.00	17.23
84.17	Step bolts (ladder)	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	7.421	0.00	22.48
85.00	Safety Cable	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	3.45
85.00	Step bolts (ladder)	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	4.50
89.58	Safety Cable	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	7.519	0.00	19.16
89.58	Step bolts (ladder)	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	7.519	0.00	24.95
90.00	Safety Cable	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	1.74
90.00	Step bolts (ladder)	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	2.27
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	21.11
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	27.44
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	21.30

Linear Appurtenance Segment Forces (Factored)

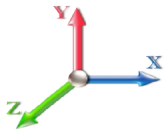
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	27.63
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	21.48
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	27.82
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	21.65
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	28.00
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	21.82
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	28.18
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	21.98
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	28.34
120.67	Safety Cable	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	8.005	0.00	2.93
120.67	Step bolts (ladder)	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	8.005	0.00	3.78
125.00	Safety Cable	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	19.18
125.00	Step bolts (ladder)	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	24.71
125.17	Safety Cable	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	8.067	0.00	0.74
125.17	Step bolts (ladder)	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	8.067	0.00	0.95
127.00	Safety Cable	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	8.092	0.00	8.14
127.00	Step bolts (ladder)	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	8.092	0.00	10.48
130.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	13.37
130.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	17.20
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	22.43
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	28.82
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.222	0.00	9.00
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.222	0.00	11.55
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	13.54
140.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	17.38
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	22.71
145.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	29.11
147.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.345	0.00	9.11
147.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.345	0.00	11.67
150.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.381	0.00	13.71
150.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.381	0.00	17.55
									Totals:		**0.0**	**1,371.1**

Calculated Forces

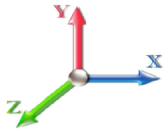
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 20

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	-74.99	-8.99	0.00	-922.51	0.00	922.51	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.125
5.00	-72.41	-8.85	0.00	-877.54	0.00	877.54	6561.33	3280.67	15744.2	7883.82	0.02	-0.030	0.000	0.122
10.00	-69.82	-8.71	0.00	-833.28	0.00	833.28	6478.15	3239.07	15259.6	7641.15	0.06	-0.061	0.000	0.120
15.00	-67.27	-8.57	0.00	-789.73	0.00	789.73	6393.63	3196.81	14779.2	7400.59	0.14	-0.091	0.000	0.117
20.00	-64.73	-8.42	0.00	-746.88	0.00	746.88	6307.77	3153.88	14303.2	7162.24	0.26	-0.122	0.000	0.115
25.00	-62.23	-8.26	0.00	-704.79	0.00	704.79	6220.57	3110.29	13831.8	6926.18	0.40	-0.152	0.000	0.112
30.00	-59.77	-8.09	0.00	-663.49	0.00	663.49	6132.04	3066.02	13365.1	6692.51	0.58	-0.183	0.000	0.109
35.00	-57.33	-7.92	0.00	-623.03	0.00	623.03	6042.17	3021.08	12903.4	6461.30	0.78	-0.213	0.000	0.106
40.00	-54.94	-7.74	0.00	-583.42	0.00	583.42	5950.96	2975.48	12446.8	6232.66	1.02	-0.244	0.000	0.103
41.58	-54.19	-7.69	0.00	-571.17	0.00	571.17	5921.80	2960.90	12303.3	6160.80	1.11	-0.253	0.000	0.102
45.00	-51.58	-7.56	0.00	-544.90	0.00	544.90	5858.41	2929.21	11995.4	6006.66	1.30	-0.274	0.000	0.100
48.00	-49.32	-7.44	0.00	-522.24	0.00	522.24	4962.21	2481.10	10234.7	5124.96	1.47	-0.292	0.000	0.112
50.00	-48.46	-7.37	0.00	-507.36	0.00	507.36	4932.77	2466.38	10087.1	5051.08	1.60	-0.305	0.000	0.110
55.00	-46.35	-7.19	0.00	-470.49	0.00	470.49	4858.24	2429.12	9721.01	4867.73	1.94	-0.337	0.000	0.106
60.00	-44.27	-7.00	0.00	-434.55	0.00	434.55	4782.37	2391.18	9358.79	4686.35	2.31	-0.368	0.000	0.102
65.00	-42.22	-6.81	0.00	-399.56	0.00	399.56	4705.16	2352.58	9000.68	4507.03	2.71	-0.399	0.000	0.098
70.00	-40.21	-6.62	0.00	-365.52	0.00	365.52	4626.62	2313.31	8646.87	4329.86	3.14	-0.430	0.000	0.093
75.00	-38.24	-6.43	0.00	-332.43	0.00	332.43	4546.74	2273.37	8297.53	4154.93	3.61	-0.460	0.000	0.088
80.00	-36.31	-6.23	0.00	-300.30	0.00	300.30	4465.52	2232.76	7952.84	3982.33	4.11	-0.489	0.000	0.084
84.17	-34.72	-6.06	0.00	-274.34	0.00	274.34	4389.85	2194.93	7657.14	3834.26	4.55	-0.513	0.000	0.079
85.00	-34.26	-6.04	0.00	-269.29	0.00	269.29	4371.58	2185.79	7593.21	3802.25	4.64	-0.518	0.000	0.079
89.58	-31.76	-5.84	0.00	-241.63	0.00	241.63	2817.41	1408.71	4881.90	2444.58	5.14	-0.543	0.000	0.110
90.00	-31.63	-5.84	0.00	-239.19	0.00	239.19	2813.70	1406.85	4865.15	2436.19	5.19	-0.545	0.000	0.109
95.00	-30.12	-5.65	0.00	-210.01	0.00	210.01	2768.43	1384.22	4665.07	2336.00	5.78	-0.579	0.000	0.101
100.00	-28.64	-5.46	0.00	-181.78	0.00	181.78	2721.83	1360.91	4466.78	2236.71	6.41	-0.611	0.000	0.092
105.00	-27.19	-5.27	0.00	-154.49	0.00	154.49	2673.89	1336.94	4270.46	2138.40	7.06	-0.641	0.000	0.082
110.00	-25.77	-5.08	0.00	-128.15	0.00	128.15	2624.60	1312.30	4076.27	2041.17	7.75	-0.669	0.000	0.073
115.00	-24.38	-4.89	0.00	-102.75	0.00	102.75	2573.99	1286.99	3884.41	1945.09	8.46	-0.693	0.000	0.062
120.00	-23.03	-4.70	0.00	-78.29	0.00	78.29	2522.03	1261.02	3695.03	1850.26	9.20	-0.714	0.000	0.051
120.67	-22.85	-4.68	0.00	-75.16	0.00	75.16	2515.00	1257.50	3669.98	1837.72	9.30	-0.716	0.000	0.050
125.00	-21.32	-4.51	0.00	-54.88	0.00	54.88	2468.74	1234.37	3508.34	1756.78	9.96	-0.730	0.000	0.040
125.17	-21.26	-4.50	0.00	-54.13	0.00	54.13	1203.56	601.78	1739.68	871.13	9.98	-0.731	0.000	0.080
127.00	-13.70	-2.86	0.00	-45.87	0.00	45.87	1198.21	599.10	1712.61	857.58	10.26	-0.736	0.000	0.065
130.00	-13.10	-2.75	0.00	-37.30	0.00	37.30	1189.06	594.53	1668.14	835.31	10.73	-0.747	0.000	0.056
135.00	-12.10	-2.57	0.00	-23.54	0.00	23.54	1172.74	586.37	1593.65	798.01	11.52	-0.762	0.000	0.040
137.00	-9.80	-1.90	0.00	-18.40	0.00	18.40	1165.84	582.92	1563.75	783.04	11.84	-0.766	0.000	0.032
140.00	-9.26	-1.80	0.00	-12.70	0.00	12.70	1155.08	577.54	1518.83	760.54	12.33	-0.771	0.000	0.025
145.00	-8.39	-1.62	0.00	-3.72	0.00	3.72	1136.09	568.04	1443.87	723.01	13.14	-0.776	0.000	0.013
147.00	-0.52	-0.13	0.00	-0.48	0.00	0.48	1128.12	564.06	1413.88	707.99	13.46	-0.777	0.000	0.001
150.00	0.00	-0.13	0.00	-0.08	0.00	0.08	1115.76	557.88	1368.94	685.49	13.95	-0.777	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	19
Gust Response Factor	1.10				**Sds**	0.18		**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.09		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48		**SA**	0.05	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1592.1	0.00	0.03	0.02	21.05	
10.00		1563.4	0.01	0.05	0.03	31.25	
15.00		1534.7	0.02	0.06	0.04	36.16	
20.00		1506.1	0.03	0.07	0.04	38.43	
25.00		1477.4	0.05	0.07	0.04	39.45	
30.00		1448.7	0.08	0.07	0.04	39.96	
35.00		1420.0	0.10	0.07	0.04	40.31	
40.00		1391.3	0.13	0.07	0.03	40.53	
41.58	Bot - Section 2	434.61	0.15	0.07	0.03	12.75	
45.00		1755.2	0.17	0.07	0.03	52.11	
48.00	Top - Section 1	1520.4	0.19	0.06	0.02	45.35	
50.00		472.74	0.21	0.06	0.02	14.09	
55.00		1164.2	0.25	0.05	0.02	33.87	
60.00		1139.1	0.30	0.04	0.01	30.94	
65.00		1114.0	0.35	0.03	0.01	26.30	
70.00		1088.9	0.41	0.01	0.01	19.78	
75.00		1063.8	0.47	-0.01	0.01	11.62	
80.00		1038.7	0.54	-0.03	0.01	2.52	
84.17	Bot - Section 3	846.46	0.60	-0.05	0.01	-4.11	
85.00		288.74	0.61	-0.06	0.02	-1.81	
89.58	Top - Section 2	1566.7	0.67	-0.08	0.03	-20.70	
90.00		59.21	0.68	-0.08	0.03	-0.81	
95.00		700.84	0.76	-0.10	0.04	-13.13	
100.00		682.91	0.84	-0.12	0.07	-13.74	
105.00		664.98	0.93	-0.12	0.10	-11.49	
110.00		647.05	1.02	-0.11	0.14	-6.38	
115.00		629.12	1.11	-0.06	0.19	1.45	
120.00		611.19	1.21	0.01	0.26	11.78	
120.67	Bot - Section 4	80.14	1.22	0.03	0.27	1.75	
125.00		825.39	1.31	0.14	0.35	33.91	
125.17	Top - Section 3	31.32	1.32	0.14	0.35	1.31	
127.00	Appurtenance(s)	2649.9	1.35	0.20	0.39	135.61	
130.00		208.87	1.42	0.32	0.45	14.16	
135.00		339.50	1.53	0.58	0.58	33.76	
137.00	Appurtenance(s)	1037.5	1.58	0.71	0.64	117.78	
140.00		195.96	1.65	0.93	0.73	26.68	
145.00		317.99	1.77	1.39	0.92	56.58	
147.00	Appurtenance(s)	3045.8	1.82	1.61	1.00	597.25	
150.00	Appurtenance(s)	218.05	1.89	1.98	1.14	49.04	
	Totals:	**38,374.0**				**1,545.4**	**Total Wind:** **33,795.2**

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

Calculated Forces

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 19

Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48	**SA**	0.05			**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-51.11	-1.62	0.00	-177.59	0.00	177.59	6643.18	3321.59	16232.9	8128.53		0.00	0.00	0.030
5.00	-49.02	-1.60	0.00	-169.49	0.00	169.49	6561.33	3280.67	15744.2	7883.82		0.00	-0.01	0.029
10.00	-46.97	-1.58	0.00	-161.48	0.00	161.48	6478.15	3239.07	15259.6	7641.15		0.01	-0.01	0.028
15.00	-44.95	-1.54	0.00	-153.59	0.00	153.59	6393.63	3196.81	14779.2	7400.59		0.03	-0.02	0.028
20.00	-42.96	-1.51	0.00	-145.87	0.00	145.87	6307.77	3153.88	14303.2	7162.24		0.05	-0.02	0.027
25.00	-41.01	-1.47	0.00	-138.32	0.00	138.32	6220.57	3110.29	13831.8	6926.18		0.08	-0.03	0.027
30.00	-39.09	-1.44	0.00	-130.95	0.00	130.95	6132.04	3066.02	13365.1	6692.51		0.11	-0.04	0.026
35.00	-37.21	-1.40	0.00	-123.77	0.00	123.77	6042.17	3021.08	12903.4	6461.30		0.15	-0.04	0.025
40.00	-35.36	-1.36	0.00	-116.77	0.00	116.77	5950.96	2975.48	12446.8	6232.66		0.20	-0.05	0.025
41.58	-34.78	-1.35	0.00	-114.62	0.00	114.62	5921.80	2960.90	12303.3	6160.80		0.22	-0.05	0.024
45.00	-32.55	-1.30	0.00	-110.01	0.00	110.01	5858.41	2929.21	11995.4	6006.66		0.25	-0.05	0.024
48.00	-30.62	-1.25	0.00	-106.12	0.00	106.12	4962.21	2481.10	10234.7	5124.96		0.29	-0.06	0.027
50.00	-29.98	-1.24	0.00	-103.62	0.00	103.62	4932.77	2466.38	10087.1	5051.08		0.31	-0.06	0.027
55.00	-28.40	-1.21	0.00	-97.43	0.00	97.43	4858.24	2429.12	9721.01	4867.73		0.38	-0.07	0.026
60.00	-26.86	-1.18	0.00	-91.40	0.00	91.40	4782.37	2391.18	9358.79	4686.35		0.45	-0.07	0.025
65.00	-25.34	-1.15	0.00	-85.52	0.00	85.52	4705.16	2352.58	9000.68	4507.03		0.53	-0.08	0.024
70.00	-23.86	-1.13	0.00	-79.76	0.00	79.76	4626.62	2313.31	8646.87	4329.86		0.62	-0.09	0.024
75.00	-22.40	-1.12	0.00	-74.10	0.00	74.10	4546.74	2273.37	8297.53	4154.93		0.71	-0.09	0.023
80.00	-20.98	-1.12	0.00	-68.50	0.00	68.50	4465.52	2232.76	7952.84	3982.33		0.81	-0.10	0.022
84.17	-19.81	-1.12	0.00	-63.84	0.00	63.84	4389.85	2194.93	7657.14	3834.26		0.90	-0.11	0.021
85.00	-19.43	-1.12	0.00	-62.91	0.00	62.91	4371.58	2185.79	7593.21	3802.25		0.92	-0.11	0.021
89.58	-17.39	-1.11	0.00	-57.79	0.00	57.79	2817.41	1408.71	4881.90	2444.58		1.03	-0.11	0.030
90.00	-17.30	-1.12	0.00	-57.32	0.00	57.32	2813.70	1406.85	4865.15	2436.19		1.04	-0.11	0.030
95.00	-16.28	-1.12	0.00	-51.74	0.00	51.74	2768.43	1384.22	4665.07	2336.00		1.16	-0.12	0.028
100.00	-15.28	-1.12	0.00	-46.16	0.00	46.16	2721.83	1360.91	4466.78	2236.71		1.29	-0.13	0.026
105.00	-14.31	-1.12	0.00	-40.58	0.00	40.58	2673.89	1336.94	4270.46	2138.40		1.43	-0.14	0.024
110.00	-13.35	-1.11	0.00	-35.01	0.00	35.01	2624.60	1312.30	4076.27	2041.17		1.58	-0.14	0.022
115.00	-12.42	-1.11	0.00	-29.43	0.00	29.43	2573.99	1286.99	3884.41	1945.09		1.73	-0.15	0.020
120.00	-11.51	-1.10	0.00	-23.87	0.00	23.87	2522.03	1261.02	3695.03	1850.26		1.89	-0.16	0.017
120.67	-11.39	-1.10	0.00	-23.14	0.00	23.14	2515.00	1257.50	3669.98	1837.72		1.91	-0.16	0.017
125.00	-10.24	-1.06	0.00	-18.38	0.00	18.38	2468.74	1234.37	3508.34	1756.78		2.06	-0.16	0.015
125.17	-10.20	-1.06	0.00	-18.20	0.00	18.20	1203.56	601.78	1739.68	871.13		2.06	-0.16	0.029
127.00	-6.95	-0.92	0.00	-16.26	0.00	16.26	1198.21	599.10	1712.61	857.58		2.13	-0.16	0.025
130.00	-6.60	-0.90	0.00	-13.51	0.00	13.51	1189.06	594.53	1668.14	835.31		2.23	-0.17	0.022
135.00	-6.03	-0.87	0.00	-9.01	0.00	9.01	1172.74	586.37	1593.65	798.01		2.41	-0.17	0.016
137.00	-4.72	-0.74	0.00	-7.28	0.00	7.28	1165.84	582.92	1563.75	783.04		2.48	-0.18	0.013
140.00	-4.43	-0.72	0.00	-5.05	0.00	5.05	1155.08	577.54	1518.83	760.54		2.60	-0.18	0.010
145.00	-3.96	-0.66	0.00	-1.47	0.00	1.47	1136.09	568.04	1443.87	723.01		2.78	-0.18	0.006
147.00	-0.27	-0.05	0.00	-0.15	0.00	0.15	1128.12	564.06	1413.88	707.99		2.86	-0.18	0.000
150.00	0.00	-0.05	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49		2.97	-0.18	0.000

Seismic Segment Forces (Factored)

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E					**Iterations**	19
Gust Response Factor	1.10			**Sds**	0.18	**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48	**SA**	0.05	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1592.1	0.00	0.03	0.02	21.05	
10.00		1563.4	0.01	0.05	0.03	31.25	
15.00		1534.7	0.02	0.06	0.04	36.16	
20.00		1506.1	0.03	0.07	0.04	38.43	
25.00		1477.4	0.05	0.07	0.04	39.45	
30.00		1448.7	0.08	0.07	0.04	39.96	
35.00		1420.0	0.10	0.07	0.04	40.31	
40.00		1391.3	0.13	0.07	0.03	40.53	
41.58	Bot - Section 2	434.61	0.15	0.07	0.03	12.75	
45.00		1755.2	0.17	0.07	0.03	52.11	
48.00	Top - Section 1	1520.4	0.19	0.06	0.02	45.35	
50.00		472.74	0.21	0.06	0.02	14.09	
55.00		1164.2	0.25	0.05	0.02	33.87	
60.00		1139.1	0.30	0.04	0.01	30.94	
65.00		1114.0	0.35	0.03	0.01	26.30	
70.00		1088.9	0.41	0.01	0.01	19.78	
75.00		1063.8	0.47	-0.01	0.01	11.62	
80.00		1038.7	0.54	-0.03	0.01	2.52	
84.17	Bot - Section 3	846.46	0.60	-0.05	0.01	-4.11	
85.00		288.74	0.61	-0.06	0.02	-1.81	
89.58	Top - Section 2	1566.7	0.67	-0.08	0.03	-20.70	
90.00		59.21	0.68	-0.08	0.03	-0.81	
95.00		700.84	0.76	-0.10	0.04	-13.13	
100.00		682.91	0.84	-0.12	0.07	-13.74	
105.00		664.98	0.93	-0.12	0.10	-11.49	
110.00		647.05	1.02	-0.11	0.14	-6.38	
115.00		629.12	1.11	-0.06	0.19	1.45	
120.00		611.19	1.21	0.01	0.26	11.78	
120.67	Bot - Section 4	80.14	1.22	0.03	0.27	1.75	
125.00		825.39	1.31	0.14	0.35	33.91	
125.17	Top - Section 3	31.32	1.32	0.14	0.35	1.31	
127.00	Appurtenance(s)	2649.9	1.35	0.20	0.39	135.61	
130.00		208.87	1.42	0.32	0.45	14.16	
135.00		339.50	1.53	0.58	0.58	33.76	
137.00	Appurtenance(s)	1037.5	1.58	0.71	0.64	117.78	
140.00		195.96	1.65	0.93	0.73	26.68	
145.00		317.99	1.77	1.39	0.92	56.58	
147.00	Appurtenance(s)	3045.8	1.82	1.61	1.00	597.25	
150.00	Appurtenance(s)	218.05	1.89	1.98	1.14	49.04	
	Totals:	**38,374.0**				**1,545.4**	**Total Wind:** **33,795.2**

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

Calculated Forces

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.18			**Iterations**	19
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.17
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48	**SA**	0.05			**S1**	0.06
								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	-38.33	-1.62	0.00	-176.56	0.00	176.56	6643.18	3321.59	16232.9	8128.53		0.00	0.00	0.027
5.00	-36.77	-1.60	0.00	-168.47	0.00	168.47	6561.33	3280.67	15744.2	7883.82		0.00	-0.01	0.027
10.00	-35.23	-1.57	0.00	-160.46	0.00	160.46	6478.15	3239.07	15259.6	7641.15		0.01	-0.01	0.026
15.00	-33.71	-1.54	0.00	-152.59	0.00	152.59	6393.63	3196.81	14779.2	7400.59		0.03	-0.02	0.026
20.00	-32.22	-1.50	0.00	-144.89	0.00	144.89	6307.77	3153.88	14303.2	7162.24		0.05	-0.02	0.025
25.00	-30.76	-1.47	0.00	-137.37	0.00	137.37	6220.57	3110.29	13831.8	6926.18		0.08	-0.03	0.025
30.00	-29.32	-1.43	0.00	-130.03	0.00	130.03	6132.04	3066.02	13365.1	6692.51		0.11	-0.04	0.024
35.00	-27.91	-1.39	0.00	-122.88	0.00	122.88	6042.17	3021.08	12903.4	6461.30		0.15	-0.04	0.024
40.00	-26.52	-1.35	0.00	-115.92	0.00	115.92	5950.96	2975.48	12446.8	6232.66		0.20	-0.05	0.023
41.58	-26.08	-1.34	0.00	-113.78	0.00	113.78	5921.80	2960.90	12303.3	6160.80		0.21	-0.05	0.023
45.00	-24.41	-1.29	0.00	-109.20	0.00	109.20	5858.41	2929.21	11995.4	6006.66		0.25	-0.05	0.022
48.00	-22.96	-1.24	0.00	-105.33	0.00	105.33	4962.21	2481.10	10234.7	5124.96		0.29	-0.06	0.025
50.00	-22.49	-1.23	0.00	-102.85	0.00	102.85	4932.77	2466.38	10087.1	5051.08		0.31	-0.06	0.025
55.00	-21.30	-1.20	0.00	-96.70	0.00	96.70	4858.24	2429.12	9721.01	4867.73		0.38	-0.07	0.024
60.00	-20.14	-1.17	0.00	-90.71	0.00	90.71	4782.37	2391.18	9358.79	4686.35		0.45	-0.07	0.024
65.00	-19.01	-1.14	0.00	-84.87	0.00	84.87	4705.16	2352.58	9000.68	4507.03		0.53	-0.08	0.023
70.00	-17.89	-1.12	0.00	-79.16	0.00	79.16	4626.62	2313.31	8646.87	4329.86		0.61	-0.09	0.022
75.00	-16.80	-1.11	0.00	-73.55	0.00	73.55	4546.74	2273.37	8297.53	4154.93		0.71	-0.09	0.021
80.00	-15.73	-1.11	0.00	-68.00	0.00	68.00	4465.52	2232.76	7952.84	3982.33		0.81	-0.10	0.021
84.17	-14.86	-1.11	0.00	-63.38	0.00	63.38	4389.85	2194.93	7657.14	3834.26		0.90	-0.10	0.020
85.00	-14.57	-1.11	0.00	-62.45	0.00	62.45	4371.58	2185.79	7593.21	3802.25		0.92	-0.11	0.020
89.58	-13.04	-1.11	0.00	-57.38	0.00	57.38	2817.41	1408.71	4881.90	2444.58		1.02	-0.11	0.028
90.00	-12.98	-1.11	0.00	-56.92	0.00	56.92	2813.70	1406.85	4865.15	2436.19		1.03	-0.11	0.028
95.00	-12.21	-1.11	0.00	-51.38	0.00	51.38	2768.43	1384.22	4665.07	2336.00		1.15	-0.12	0.026
100.00	-11.46	-1.11	0.00	-45.85	0.00	45.85	2721.83	1360.91	4466.78	2236.71		1.28	-0.13	0.025
105.00	-10.73	-1.11	0.00	-40.31	0.00	40.31	2673.89	1336.94	4270.46	2138.40		1.42	-0.14	0.023
110.00	-10.01	-1.11	0.00	-34.78	0.00	34.78	2624.60	1312.30	4076.27	2041.17		1.57	-0.14	0.021
115.00	-9.31	-1.10	0.00	-29.25	0.00	29.25	2573.99	1286.99	3884.41	1945.09		1.72	-0.15	0.019
120.00	-8.63	-1.09	0.00	-23.73	0.00	23.73	2522.03	1261.02	3695.03	1850.26		1.88	-0.16	0.016
120.67	-8.54	-1.09	0.00	-23.00	0.00	23.00	2515.00	1257.50	3669.98	1837.72		1.90	-0.16	0.016
125.00	-7.68	-1.05	0.00	-18.28	0.00	18.28	2468.74	1234.37	3508.34	1756.78		2.04	-0.16	0.014
125.17	-7.65	-1.05	0.00	-18.10	0.00	18.10	1203.56	601.78	1739.68	871.13		2.05	-0.16	0.027
127.00	-5.21	-0.91	0.00	-16.17	0.00	16.17	1198.21	599.10	1712.61	857.58		2.11	-0.16	0.023
130.00	-4.95	-0.90	0.00	-13.44	0.00	13.44	1189.06	594.53	1668.14	835.31		2.22	-0.17	0.020
135.00	-4.52	-0.86	0.00	-8.97	0.00	8.97	1172.74	586.37	1593.65	798.01		2.39	-0.17	0.015
137.00	-3.54	-0.74	0.00	-7.25	0.00	7.25	1165.84	582.92	1563.75	783.04		2.47	-0.17	0.012
140.00	-3.32	-0.71	0.00	-5.02	0.00	5.02	1155.08	577.54	1518.83	760.54		2.58	-0.18	0.009
145.00	-2.97	-0.66	0.00	-1.46	0.00	1.46	1136.09	568.04	1443.87	723.01		2.76	-0.18	0.005
147.00	-0.20	-0.05	0.00	-0.15	0.00	0.15	1128.12	564.06	1413.88	707.99		2.84	-0.18	0.000
150.00	0.00	-0.05	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49		2.95	-0.18	0.000

Wind Loading - Shaft

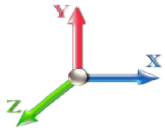
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 20

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	280.85	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	275.88	0.650	0.000	5.00	25.161	16.35	133.9	0.0	1592.2
10.00		1.00	0.85	7.442	8.19	270.91	0.650	0.000	5.00	24.711	16.06	131.5	0.0	1563.5
15.00		1.00	0.85	7.442	8.19	265.93	0.650	0.000	5.00	24.262	15.77	129.1	0.0	1534.8
20.00		1.00	0.90	7.896	8.69	268.81	0.650	0.000	5.00	23.812	15.48	134.4	0.0	1506.1
25.00		1.00	0.95	8.276	9.10	269.95	0.650	0.000	5.00	23.363	15.19	138.2	0.0	1477.4
30.00		1.00	0.98	8.600	9.46	269.83	0.650	0.000	5.00	22.913	14.89	140.9	0.0	1448.7
35.00		1.00	1.01	8.883	9.77	268.81	0.650	0.000	5.00	22.464	14.60	142.7	0.0	1420.0
40.00		1.00	1.04	9.137	10.05	267.11	0.650	0.000	5.00	22.014	14.31	143.8	0.0	1391.3
41.58	Bot - Section 2	1.00	1.05	9.212	10.13	266.45	0.650	0.000	1.58	6.877	4.47	45.3	0.0	434.6
45.00		1.00	1.07	9.366	10.30	264.86	0.650	0.000	3.42	14.940	9.71	100.1	0.0	1755.2
48.00	Top - Section 1	1.00	1.08	9.494	10.44	263.30	0.650	0.000	3.00	12.945	8.41	87.9	0.0	1520.5
50.00		1.00	1.09	9.576	10.53	266.82	0.650	0.000	2.00	8.540	5.55	58.5	0.0	472.7
55.00		1.00	1.12	9.770	10.75	263.81	0.650	0.000	5.00	21.036	13.67	147.0	0.0	1164.3
60.00		1.00	1.14	9.951	10.95	260.49	0.650	0.000	5.00	20.586	13.38	146.5	0.0	1139.2
65.00		1.00	1.16	10.120	11.13	256.89	0.650	0.000	5.00	20.137	13.09	145.7	0.0	1114.1
70.00		1.00	1.17	10.279	11.31	253.06	0.650	0.000	5.00	19.687	12.80	144.7	0.0	1089.0
75.00		1.00	1.19	10.430	11.47	249.02	0.650	0.000	5.00	19.238	12.50	143.5	0.0	1063.9
80.00		1.00	1.21	10.572	11.63	244.79	0.650	0.000	5.00	18.788	12.21	142.0	0.0	1038.8
84.17	Bot - Section 3	1.00	1.22	10.686	11.75	241.13	0.650	0.000	4.17	15.313	9.95	117.0	0.0	846.5
85.00		1.00	1.22	10.708	11.78	240.39	0.650	0.000	0.83	3.069	2.00	23.5	0.0	288.7
89.58	Top - Section 2	1.00	1.24	10.827	11.91	236.22	0.650	0.000	4.58	16.658	10.83	129.0	0.0	1566.7
90.00		1.00	1.24	10.838	11.92	239.37	0.650	0.000	0.42	1.496	0.97	11.6	0.0	59.2
95.00		1.00	1.25	10.962	12.06	234.70	0.650	0.000	5.00	17.704	11.51	138.8	0.0	700.8
100.00		1.00	1.27	11.081	12.19	229.90	0.650	0.000	5.00	17.254	11.22	136.7	0.0	682.9
105.00		1.00	1.28	11.195	12.31	224.98	0.650	0.000	5.00	16.805	10.92	134.5	0.0	665.0
110.00		1.00	1.29	11.305	12.44	219.96	0.650	0.000	5.00	16.355	10.63	132.2	0.0	647.1
115.00		1.00	1.30	11.412	12.55	214.83	0.650	0.000	5.00	15.906	10.34	129.8	0.0	629.1
120.00		1.00	1.32	11.514	12.67	209.61	0.650	0.000	5.00	15.456	10.05	127.2	0.0	611.2
120.67	Bot - Section 4	1.00	1.32	11.528	12.68	208.90	0.650	0.000	0.67	2.027	1.32	16.7	0.0	80.1
125.00		1.00	1.33	11.614	12.78	204.30	0.650	0.000	4.33	13.117	8.53	108.9	0.0	825.4
125.17	Top - Section 3	1.00	1.33	11.617	12.78	204.12	0.650	0.000	0.17	0.498	0.32	4.1	0.0	31.3
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	204.35	0.650	0.000	1.83	5.442	3.54	45.3	0.0	129.5
130.00		1.00	1.34	11.710	12.88	201.11	0.650	0.000	3.00	8.776	5.70	73.5	0.0	208.9
135.00		1.00	1.35	11.803	12.98	195.64	0.650	0.000	5.00	14.266	9.27	120.4	0.0	339.5
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	193.44	0.650	0.000	2.00	5.581	3.63	47.2	0.0	132.8
140.00		1.00	1.36	11.894	13.08	190.11	0.650	0.000	3.00	8.236	5.35	70.0	0.0	196.0
145.00		1.00	1.37	11.982	13.18	184.50	0.650	0.000	5.00	13.367	8.69	114.5	0.0	318.0
147.00	Appurtenance(s)	1.00	1.37	12.017	13.22	182.24	0.650	0.000	2.00	5.221	3.39	44.9	0.0	124.2
150.00	Appurtenance(s)	1.00	1.38	12.068	13.27	178.82	0.650	0.000	3.00	7.697	5.00	66.4	0.0	183.0
								Totals:	**150.00**			**4,047.8**		**31,992.1**

Discrete Appurtenance Forces

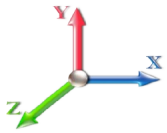
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 20

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	150.00	Lightning Rod	1	12.110	13.321	1.00	1.00	1.05	35.00	0.000	2.500	13.99	0.00	34.97
2	147.00	Platform w/ Hand Rail	1	12.017	13.219	1.00	1.00	32.00	1600.00	0.000	0.000	423.00	0.00	0.00
3	147.00	Ericsson KRY 112 144/1	3	12.017	13.219	0.56	0.80	0.69	33.00	0.000	0.000	9.10	0.00	0.00
4	147.00	Ericsson AIR 21 B4A B2P	3	12.017	13.219	0.69	0.80	12.57	271.20	0.000	0.000	166.15	0.00	0.00
5	147.00	Ericsson AIR 21 B2A B4P	3	12.017	13.219	0.69	0.80	12.57	274.50	0.000	0.000	166.15	0.00	0.00
6	147.00	Kickers w/o Collar	1	12.017	13.219	1.00	1.00	5.33	146.00	0.000	0.000	70.46	0.00	0.00
7	147.00	Radio 4449 B71+B12	3	12.017	13.219	0.54	0.80	3.17	213.00	0.000	0.000	41.87	0.00	0.00
8	147.00	APXVAARR24 43-U-NA2	3	12.017	13.219	0.40	0.80	24.29	384.00	0.000	0.000	321.05	0.00	0.00
9	137.00	T-Arms	3	11.840	13.024	0.56	0.75	13.82	726.00	0.000	0.000	180.00	0.00	0.00
10	137.00	Kathrein 742 351	6	11.840	13.024	0.49	0.80	15.75	178.80	0.000	0.000	205.16	0.00	0.00
11	127.00	Platform w/ Handrails	1	11.653	12.818	1.00	1.00	32.00	1600.00	0.000	0.000	410.17	0.00	0.00
12	127.00	RFS DB-T1-6Z-8AB-0Z	2	11.653	12.818	0.71	1.00	6.82	37.80	0.000	0.000	87.37	0.00	0.00
13	127.00	RRH2x90-AWS	3	11.653	12.818	0.82	1.00	6.20	132.00	0.000	0.000	79.46	0.00	0.00
14	127.00	RRH2X60-PCS	3	11.653	12.818	0.89	1.00	5.87	165.00	0.000	0.000	75.29	0.00	0.00
15	127.00	LNX-6514DS-AIM	3	11.653	12.818	0.66	0.80	16.27	116.40	0.000	0.000	208.61	0.00	0.00
16	127.00	SBNHH-1D45C	6	11.653	12.818	0.67	0.80	45.92	297.60	0.000	0.000	588.65	0.00	0.00
17	127.00	B13 RRH4X30-4R	3	11.653	12.818	0.88	1.00	5.70	171.60	0.000	0.000	73.09	0.00	0.00
							Totals:		**6,381.90**			**3,119.58**		

Total Applied Force Summary

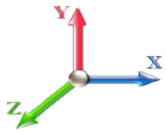
Structure:	CT13076-A-SBA		**Code:**	EIA/TIA-222-G	7/1/2019
Site Name:	Ledyard		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 32

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 20

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		133.88	1741.33	0.00	0.00
10.00		131.49	1712.64	0.00	0.00
15.00		129.10	1683.95	0.00	0.00
20.00		134.44	1655.26	0.00	0.00
25.00		138.24	1626.58	0.00	0.00
30.00		140.89	1597.89	0.00	0.00
35.00		142.68	1569.20	0.00	0.00
40.00		143.81	1540.51	0.00	0.00
41.58		45.30	481.85	0.00	0.00
45.00		100.05	1857.15	0.00	0.00
48.00		87.88	1609.96	0.00	0.00
50.00		58.47	532.40	0.00	0.00
55.00		146.95	1313.44	0.00	0.00
60.00		146.47	1288.34	0.00	0.00
65.00		145.71	1263.23	0.00	0.00
70.00		144.69	1238.13	0.00	0.00
75.00		143.46	1213.03	0.00	0.00
80.00		142.02	1187.93	0.00	0.00
84.17		117.00	970.77	0.00	0.00
85.00		23.50	313.60	0.00	0.00
89.58		128.95	1703.43	0.00	0.00
90.00		11.59	71.64	0.00	0.00
95.00		138.76	850.01	0.00	0.00
100.00		136.70	832.08	0.00	0.00
105.00		134.51	814.15	0.00	0.00
110.00		132.20	796.22	0.00	0.00
115.00		129.78	778.29	0.00	0.00
120.00		127.25	760.36	0.00	0.00
120.67		16.71	100.03	0.00	0.00
125.00		108.92	954.66	0.00	0.00
125.17		4.13	36.29	0.00	0.00
127.00	(21) attachments	1567.99	2704.64	0.00	0.00
130.00		73.47	291.77	0.00	0.00
135.00		120.40	477.67	0.00	0.00
137.00	(9) attachments	432.41	1092.86	0.00	0.00
140.00		70.04	241.18	0.00	0.00
145.00		114.52	393.35	0.00	0.00
147.00	(17) attachments	1242.65	3076.03	0.00	0.00
150.00	(1) attachments	80.40	221.99	0.00	34.97
	Totals:	**7,167.42**	**42,593.81**	**0.00**	**34.97**

Linear Appurtenance Segment Forces (Factored)

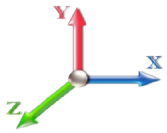
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 20

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
20.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	1.37
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	5.20
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	1.37
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	5.20
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	1.37
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	5.20
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	1.37
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	5.20
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	1.37
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	5.20
41.58	Safety Cable	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	9.212	0.00	0.43
41.58	Step bolts (ladder)	Yes	1.58	0.000	0.00	0.00	0.00	0.000	0.000	9.212	0.00	1.65
45.00	Safety Cable	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	0.93
45.00	Step bolts (ladder)	Yes	3.42	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	3.55
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	9.494	0.00	0.82
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	9.494	0.00	3.12
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	0.55
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	2.08
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	1.37
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	5.20
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	1.37
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	5.20
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	1.37
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	5.20
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	1.37
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	5.20
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	1.37
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	5.20
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	1.37
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	5.20
84.17	Safety Cable	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	10.686	0.00	1.14
84.17	Step bolts (ladder)	Yes	4.17	0.000	0.00	0.00	0.00	0.000	0.000	10.686	0.00	4.33
85.00	Safety Cable	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	0.23
85.00	Step bolts (ladder)	Yes	0.83	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	0.87
89.58	Safety Cable	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	10.827	0.00	1.25
89.58	Step bolts (ladder)	Yes	4.58	0.000	0.00	0.00	0.00	0.000	0.000	10.827	0.00	4.77
90.00	Safety Cable	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	0.11
90.00	Step bolts (ladder)	Yes	0.42	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	0.43
95.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	1.37
95.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	5.20
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	1.37

Linear Appurtenance Segment Forces (Factored)

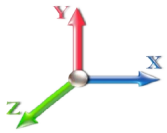
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 20

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	5.20
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	1.37
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	5.20
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	1.37
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	5.20
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	1.37
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	5.20
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	1.37
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	5.20
120.67	Safety Cable	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	11.528	0.00	0.18
120.67	Step bolts (ladder)	Yes	0.67	0.000	0.00	0.00	0.00	0.000	0.000	11.528	0.00	0.69
125.00	Safety Cable	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	1.18
125.00	Step bolts (ladder)	Yes	4.33	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	4.51
125.17	Safety Cable	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	11.617	0.00	0.05
125.17	Step bolts (ladder)	Yes	0.17	0.000	0.00	0.00	0.00	0.000	0.000	11.617	0.00	0.17
127.00	Safety Cable	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	11.653	0.00	0.50
127.00	Step bolts (ladder)	Yes	1.83	0.000	0.00	0.00	0.00	0.000	0.000	11.653	0.00	1.91
130.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	0.82
130.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	3.12
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	1.37
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	5.20
137.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.840	0.00	0.55
137.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.840	0.00	2.08
140.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	0.82
140.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	3.12
145.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	1.37
145.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	5.20
147.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.017	0.00	0.55
147.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.017	0.00	2.08
150.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.068	0.00	0.82
150.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.068	0.00	3.12
									Totals:		**0.0**	**197.0**

Calculated Forces

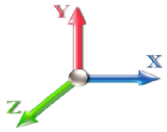
Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 35	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 20

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	-42.59	-7.18	0.00	-741.98	0.00	741.98	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.098
5.00	-40.85	-7.06	0.00	-706.10	0.00	706.10	6561.33	3280.67	15744.2	7883.82	0.01	-0.024	0.000	0.096
10.00	-39.13	-6.94	0.00	-670.80	0.00	670.80	6478.15	3239.07	15259.6	7641.15	0.05	-0.049	0.000	0.094
15.00	-37.45	-6.83	0.00	-636.09	0.00	636.09	6393.63	3196.81	14779.2	7400.59	0.12	-0.073	0.000	0.092
20.00	-35.79	-6.71	0.00	-601.94	0.00	601.94	6307.77	3153.88	14303.2	7162.24	0.21	-0.098	0.000	0.090
25.00	-34.16	-6.58	0.00	-568.41	0.00	568.41	6220.57	3110.29	13831.8	6926.18	0.32	-0.123	0.000	0.088
30.00	-32.56	-6.45	0.00	-535.51	0.00	535.51	6132.04	3066.02	13365.1	6692.51	0.46	-0.147	0.000	0.085
35.00	-30.99	-6.32	0.00	-503.26	0.00	503.26	6042.17	3021.08	12903.4	6461.30	0.63	-0.172	0.000	0.083
40.00	-29.45	-6.18	0.00	-471.68	0.00	471.68	5950.96	2975.48	12446.8	6232.66	0.82	-0.196	0.000	0.081
41.58	-28.96	-6.13	0.00	-461.91	0.00	461.91	5921.80	2960.90	12303.3	6160.80	0.89	-0.204	0.000	0.080
45.00	-27.10	-6.04	0.00	-440.95	0.00	440.95	5858.41	2929.21	11995.4	6006.66	1.04	-0.221	0.000	0.078
48.00	-25.49	-5.95	0.00	-422.84	0.00	422.84	4962.21	2481.10	10234.7	5124.96	1.19	-0.236	0.000	0.088
50.00	-24.96	-5.89	0.00	-410.95	0.00	410.95	4932.77	2466.38	10087.1	5051.08	1.29	-0.246	0.000	0.086
55.00	-23.64	-5.75	0.00	-381.48	0.00	381.48	4858.24	2429.12	9721.01	4867.73	1.56	-0.272	0.000	0.083
60.00	-22.35	-5.61	0.00	-352.73	0.00	352.73	4782.37	2391.18	9358.79	4686.35	1.86	-0.297	0.000	0.080
65.00	-21.09	-5.47	0.00	-324.68	0.00	324.68	4705.16	2352.58	9000.68	4507.03	2.18	-0.323	0.000	0.077
70.00	-19.85	-5.32	0.00	-297.36	0.00	297.36	4626.62	2313.31	8646.87	4329.86	2.54	-0.348	0.000	0.073
75.00	-18.63	-5.18	0.00	-270.75	0.00	270.75	4546.74	2273.37	8297.53	4154.93	2.91	-0.372	0.000	0.069
80.00	-17.45	-5.03	0.00	-244.86	0.00	244.86	4465.52	2232.76	7952.84	3982.33	3.31	-0.396	0.000	0.065
84.17	-16.47	-4.91	0.00	-223.88	0.00	223.88	4389.85	2194.93	7657.14	3834.26	3.67	-0.415	0.000	0.062
85.00	-16.16	-4.89	0.00	-219.79	0.00	219.79	4371.58	2185.79	7593.21	3802.25	3.74	-0.419	0.000	0.062
89.58	-14.46	-4.75	0.00	-197.36	0.00	197.36	2817.41	1408.71	4881.90	2444.58	4.15	-0.439	0.000	0.086
90.00	-14.38	-4.74	0.00	-195.38	0.00	195.38	2813.70	1406.85	4865.15	2436.19	4.19	-0.441	0.000	0.085
95.00	-13.53	-4.61	0.00	-171.66	0.00	171.66	2768.43	1384.22	4665.07	2336.00	4.67	-0.469	0.000	0.078
100.00	-12.70	-4.47	0.00	-148.63	0.00	148.63	2721.83	1360.91	4466.78	2236.71	5.18	-0.495	0.000	0.071
105.00	-11.89	-4.33	0.00	-126.29	0.00	126.29	2673.89	1336.94	4270.46	2138.40	5.71	-0.520	0.000	0.064
110.00	-11.09	-4.20	0.00	-104.64	0.00	104.64	2624.60	1312.30	4076.27	2041.17	6.27	-0.542	0.000	0.055
115.00	-10.31	-4.06	0.00	-83.66	0.00	83.66	2573.99	1286.99	3884.41	1945.09	6.84	-0.562	0.000	0.047
120.00	-9.55	-3.93	0.00	-63.35	0.00	63.35	2522.03	1261.02	3695.03	1850.26	7.44	-0.579	0.000	0.038
120.67	-9.45	-3.91	0.00	-60.74	0.00	60.74	2515.00	1257.50	3669.98	1837.72	7.52	-0.581	0.000	0.037
125.00	-8.50	-3.79	0.00	-43.79	0.00	43.79	2468.74	1234.37	3508.34	1756.78	8.06	-0.592	0.000	0.028
125.17	-8.46	-3.79	0.00	-43.15	0.00	43.15	1203.56	601.78	1739.68	871.13	8.08	-0.593	0.000	0.057
127.00	-5.77	-2.19	0.00	-36.21	0.00	36.21	1198.21	599.10	1712.61	857.58	8.31	-0.597	0.000	0.047
130.00	-5.48	-2.12	0.00	-29.62	0.00	29.62	1189.06	594.53	1668.14	835.31	8.68	-0.606	0.000	0.040
135.00	-5.00	-1.99	0.00	-19.03	0.00	19.03	1172.74	586.37	1593.65	798.01	9.33	-0.617	0.000	0.028
137.00	-3.92	-1.55	0.00	-15.04	0.00	15.04	1165.84	582.92	1563.75	783.04	9.59	-0.621	0.000	0.023
140.00	-3.68	-1.48	0.00	-10.39	0.00	10.39	1155.08	577.54	1518.83	760.54	9.98	-0.625	0.000	0.017
145.00	-3.28	-1.36	0.00	-3.00	0.00	3.00	1136.09	568.04	1443.87	723.01	10.63	-0.629	0.000	0.007
147.00	-0.22	-0.08	0.00	-0.28	0.00	0.28	1128.12	564.06	1413.88	707.99	10.90	-0.629	0.000	0.001
150.00	0.00	-0.08	0.00	-0.03	0.00	0.03	1115.76	557.88	1368.94	685.49	11.29	-0.629	0.000	0.000

Final Analysis Summary

Structure:	CT13076-A-SBA	**Code:**	EIA/TIA-222-G	7/1/2019	
Site Name:	Ledyard	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 36	

Tower Engineering Solutions

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 103 mph Wind	33.8	0.00	51.08	0.00	0.00	3510.25
0.9D + 1.6W 103 mph Wind	33.8	0.00	38.30	0.00	0.00	3491.06
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.0	0.00	74.99	0.00	0.00	922.51
1.2D + 1.0E	1.6	0.00	51.11	0.00	0.00	177.59
0.9D + 1.0E	1.6	0.00	38.33	0.00	0.00	176.56
1.0D + 1.0W 60 mph Wind	7.2	0.00	42.59	0.00	0.00	741.98

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 103 mph Wind	-51.08	-33.85	0.00	-3510.2	0.00	-3510.2	6643.18	3321.5	16232.9	8128.53	0.00	0.440
0.9D + 1.6W 103 mph Wind	-38.30	-33.83	0.00	-3491.0	0.00	-3491.0	6643.18	3321.5	16232.9	8128.53	0.00	0.435
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-74.99	-8.99	0.00	-922.51	0.00	-922.51	6643.18	3321.5	16232.9	8128.53	0.00	0.125
1.2D + 1.0E	-17.39	-1.11	0.00	-57.79	0.00	-57.79	2817.41	1408.7	4881.90	2444.58	89.58	0.030
0.9D + 1.0E	-13.04	-1.11	0.00	-57.38	0.00	-57.38	2817.41	1408.7	4881.90	2444.58	89.58	0.028
1.0D + 1.0W 60 mph Wind	-42.59	-7.18	0.00	-741.98	0.00	-741.98	6643.18	3321.5	16232.9	8128.53	0.00	0.098

Base Plate Summary

Structure:	CT13076-A-SB		**Code:**	EIA/TIA-222-G	7/1/2019
Site Name:	Ledyard		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 37

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	6054.10
Axial (kip):	94.70
Shear (kip):	55.40
Analysis	
Moment (kip-ft):	3510.25
Axial (kip):	74.99
Shear (kip):	33.85
Moment Design %:	57.98

Base Plate	
Yield (ksi):	50.00
Width (in):	69.50
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	8.33
Moment (kip-in):	196.12
Allow Stress (ksi):	67.50
Applied Stress (ksi):	0.00
Stress Ratio:	0.68

Anchor Bolts	
Bolt Circle:	65.00
Number Bolts:	34.00
Bolt Type:	1.5" F1554 105
Bolt Diameter (in):	1.50
Yield (ksi):	105.00
Ultimate (ksi):	125.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00
Compression	
Force (kip):	78.45
Allowable (kip):	141.00
Ratio:	0.57
Tension	
Force (kip):	74.03
Allowable (kip):	141.00
Ratio:	0.54

Monopole Mat Foundation Design

			Date: 7/1/2019
Customer Name:	T-Mobile	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	150
Site Number:	CT13076-A-SBA	**Engineer Name:**	J. Tibbetts
Engr. Number:	78518	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

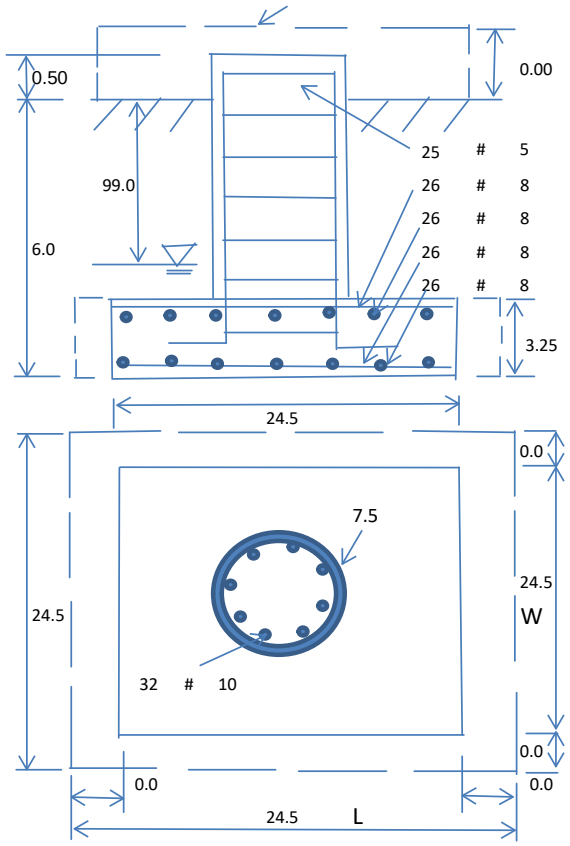
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	75.0	Shear Force (Kips):	33.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3510.2
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.5	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	3.25
Length of Pad (ft.):	24.5	Width of Pad (ft.):	24.5
Final Length of pad (ft)	24.5	Final width of pad (ft):	24.5



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	32	Tie Spacing (in):	3.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	26	Qty. of Rebar in Pad (W):	26	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	26	Qty. of Rebar in Pad (W):	26	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	10000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	1529.20	Total Dry Soil Weight (Kips):	168.21
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	168.21	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2094.39	Total Dry Concrete Weight (Kips):	314.16
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	314.16	Total Vertical Load on Base (Kips):	557.37

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2850	<	Allowable Factored Soil Bearing (psf):	7500	0.38	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6236.9	>	Design Factored Momont (kips-ft):	3730	0.60	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.67	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.27		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	7267.6	>	Design Factored Moment (Mu, Kips-F	3620.1	0.50	OK!
Calculated Shear Capacity (Kips):	1496.3	>	Design Factored Shear (Kips):	33.8	0.02	OK!
Calculated Tension Capacity (Tn, Kips):	2194.6	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	11175.7	>	Design Factored Axial Load (Pu Kips):	75.0	0.01	OK!
Moment & Axial Strength Combination:	0.50	OK!	Check Tie Spacing (Design/Required):		0.25	OK!
Pier Reinforcement Ratio:	0.006		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	990.1	>	One-Way Factored Shear (L-D. Kips):	224.4	0.23	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	990.1	>	One-Way Factored Shear (W-D., Kips)	224.4	0.23	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	858.1	>	One-Way Factored Shear (C-C, Kips):	215.7	0.25	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0020	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0020		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3224.3	>	Moment at Bottom (L-Dir. K-Ft):	1239.7	0.38	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3224.3	>	Moment at Bottom (W-Dir. K-Ft):	1239.7	0.38	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	4537.6	>	Moment at Bottom (C-C Dir. K-Ft):	1753.2	0.39	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0020	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0020		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	3224.3	>	Moment at the top (L-Dir K-Ft):	501.8	0.16	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	3224.3	>	Moment at the top (W-Dir K-Ft):	501.8	0.16	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	4537.6	>	Moment at the top (C-C Dir. K-Ft):	472.7	0.10	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1404.1	k-ft.	Max. factored shear stress v_{u_CD}:		1.2	Psi
Max. factored shear stress v_{u_AB}:	9.6	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	9.6	Psi	Check Usage of Punching Shear Capacity:		0.05	OK!

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 150-Ft Monopole Tower
Customer Name: SBA Communications Corp
Customer Site Number: CT13076-A-SBA
Customer Site Name: Ledyard
Carrier Name: T-Mobile (App#: 116798, V1)
Carrier Site ID / Name: CT11841B / Ledyard
Site Location: 12 Orchard Drive
Ledyard, Connecticut
New London County
Latitude: 41.468277
Longitude: -72.054472

7/26/19

Analysis Result:

Max Structural Usage: 84.9% [Pass]

Report Prepared By: Kiran Sharma Paudel

Introduction

The purpose of this report is to summarize the analysis results on the (1) Low Profile Platform at 147.00' 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 Full Metal Tower Services, Dated 4/29/2019
Antenna Loading	Provided by SBA Application #: 116798, v1. Dated 6/6/2019
Existing Modification	N/A
Proposed Modification	TES Project No. 81109

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 135 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 105 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 2015 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

(1) Low Profile Platform at 147.00' elevation

Proposed Modification

(1) Metrosite support rail w/ end connection: MS-HRECP-35
(1) Metrosite light Collar Mount Assembly: MS-1436
(1) Metrosite kicker support: MS-KI22-5
(3) Mount pipes- one per sector: PST2375-8

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 Low Profile Platform.

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 84.9%, which occurs in the mount pipe. 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: CT13076-A-SBA - Ledyard

Sector: A

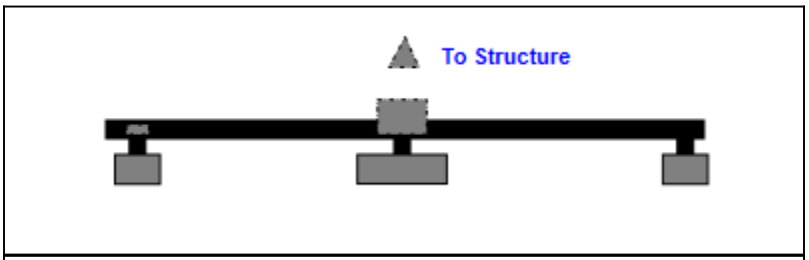
Structure Type: Monopole

Mount Elev: 147.00

7/12/2019

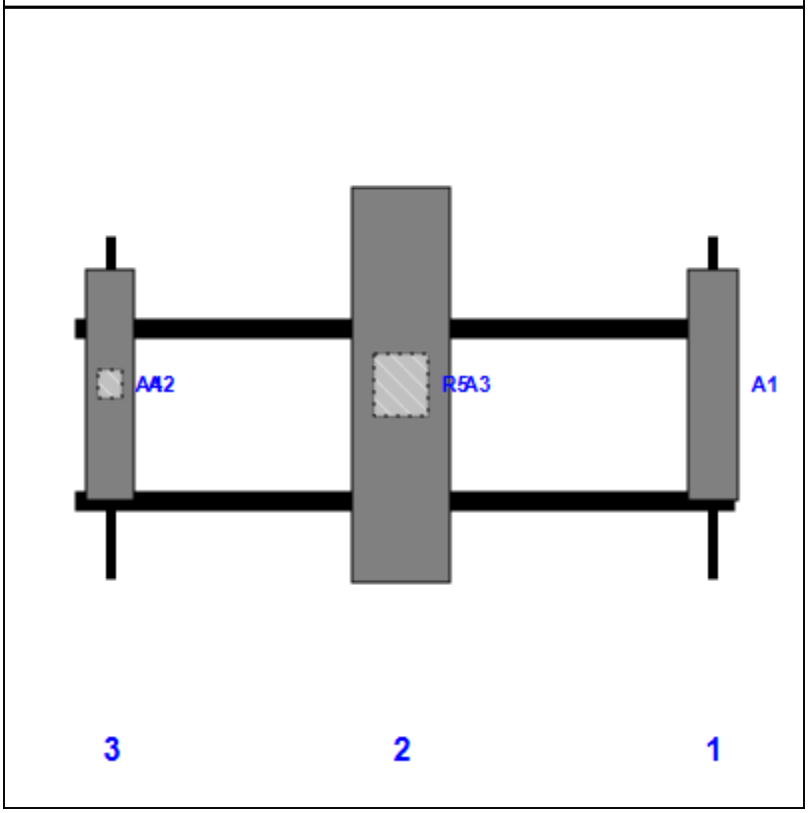
Tower Engineering Solutions

Plan View



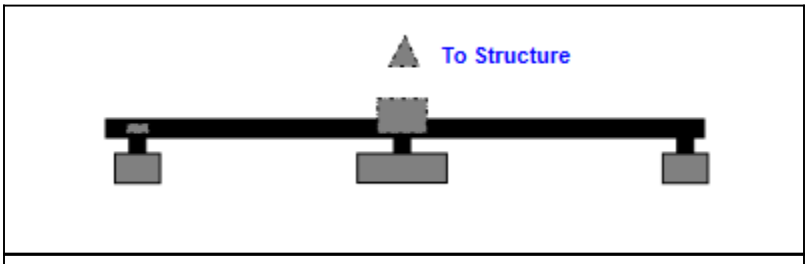
Front View

Looking Toward Structure



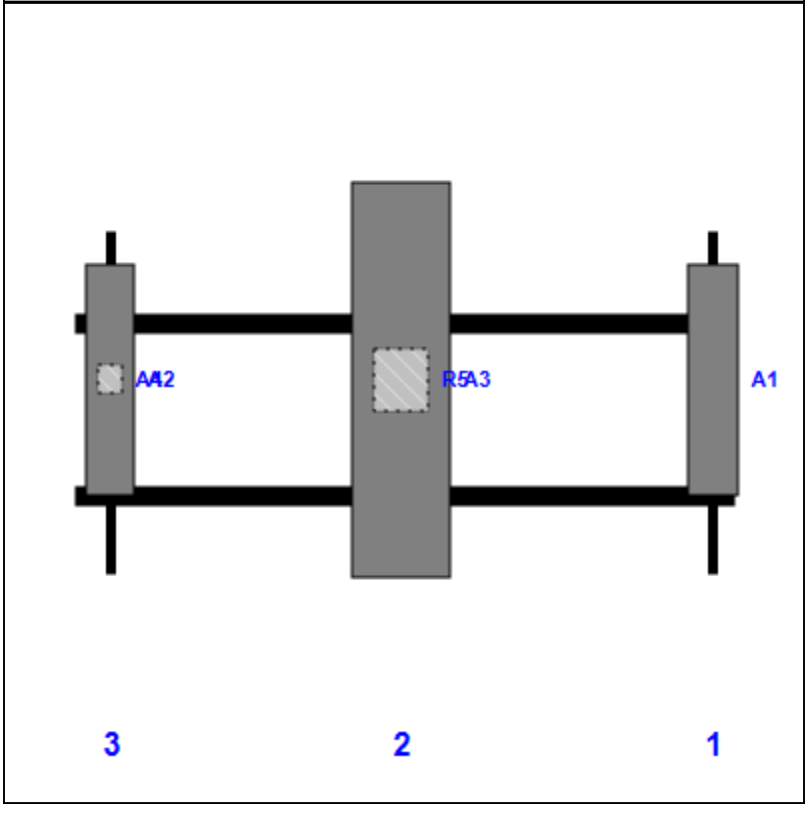
Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air 21 B2A/B4P	56.00	12.10	156.00	1	a	Front	36.00	0.00
A3	APXVAARR24_43-U-NA20	95.90	24.00	80.00	2	a	Front	36.00	0.00
R5	Radio 4449 B71+B12	15.00	13.20	80.00	2	a	Behind	36.00	0.00
A2	Air 21 B4A/B2P	56.00	12.10	9.00	3	a	Front	36.00	0.00
A4	KRY 112 144/1	6.90	6.10	9.00	3	a	Behind	36.00	0.00

Plan View



Front View

Looking Toward Structure



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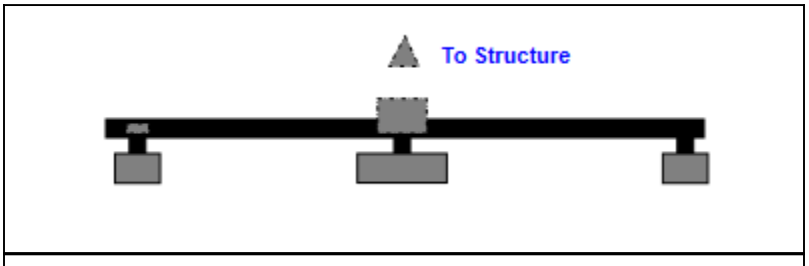
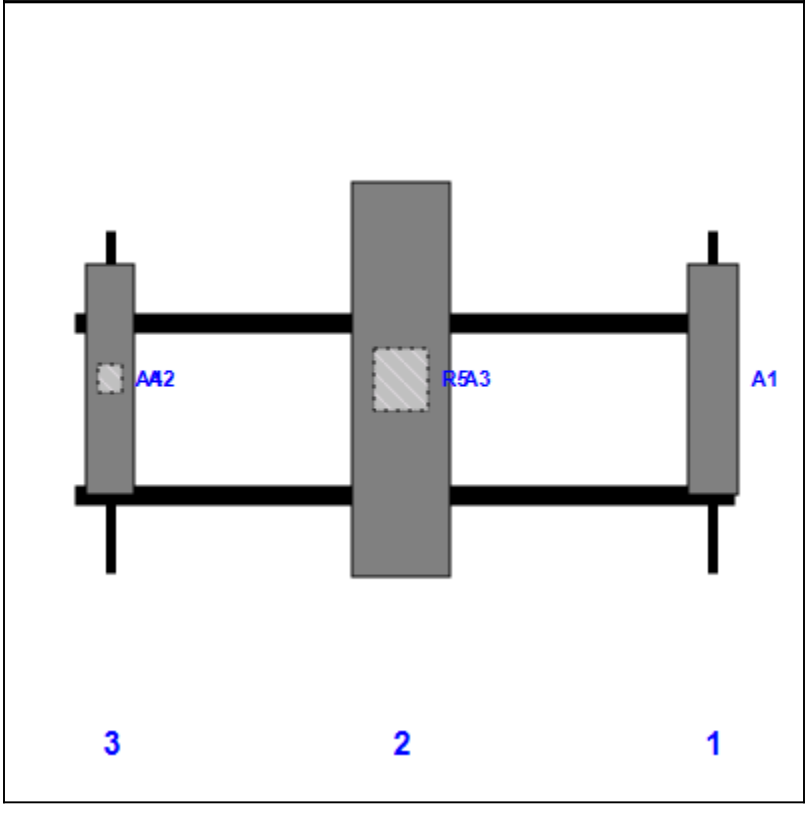
Plan View



Front View

Looking Toward Structure



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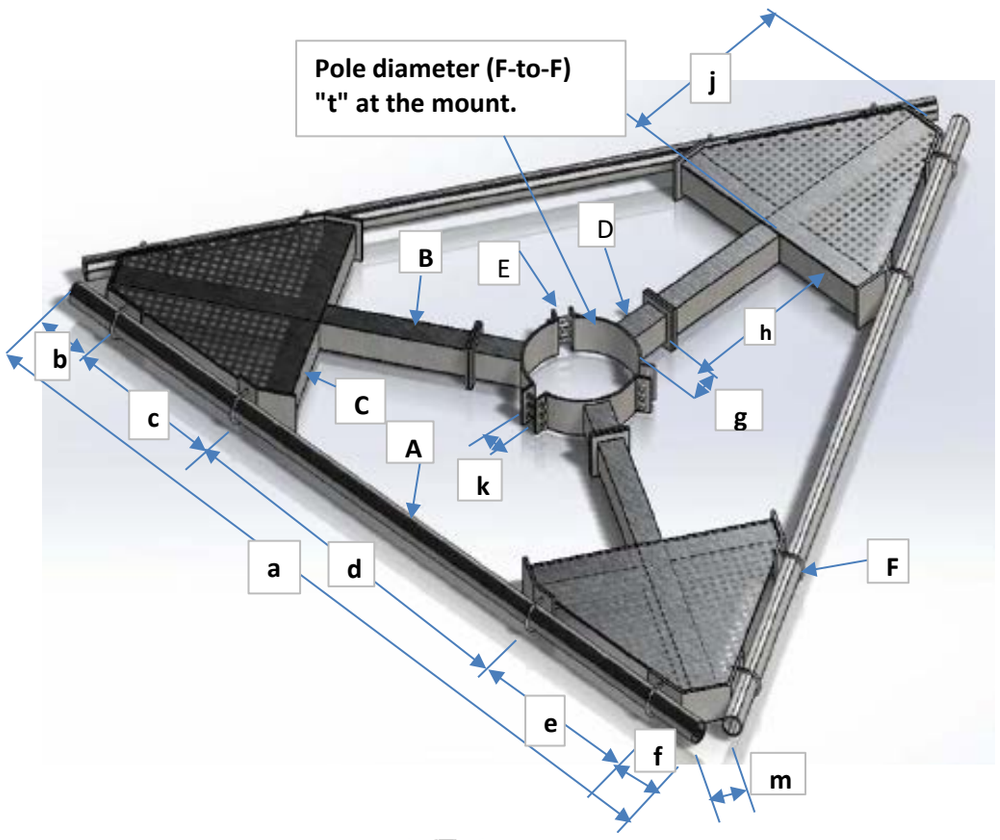
A4	KRY 112 144/1	6.90	6.10	9.00	3	a	Behind	36.00	0.00

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

FCC #
1257191

Tower Owner:	SBA Communications	**Mapping Date:**	4/29/19
Site Name:	Ledyard	**Structure Type:**	Monopole
Site Number or ID:	CT13076-A-SBA	**Structure Height (Ft.):**	152
Mapping Contractor:	Full Metal Tower Services	**Mount Height (Ft.):**	145.9

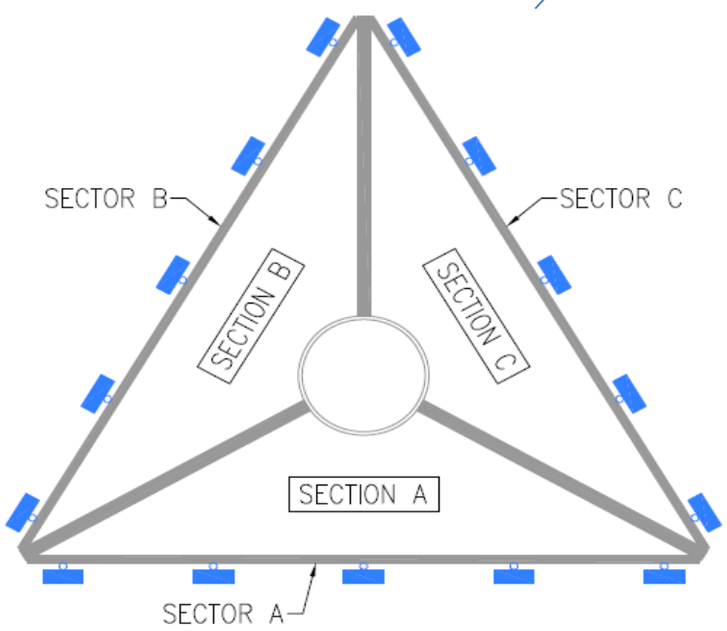


Geometries (Unit: inches)									
a	161	**e**	45	**j**	45	**o**		**s**	
b	13	**f**	12	**k**	24	**p**		**t**	30
c	45	**g**	6	**m**	8	**q**		**u ***	64
d	46	**h**	18	**n**		**r**		**v ***	83

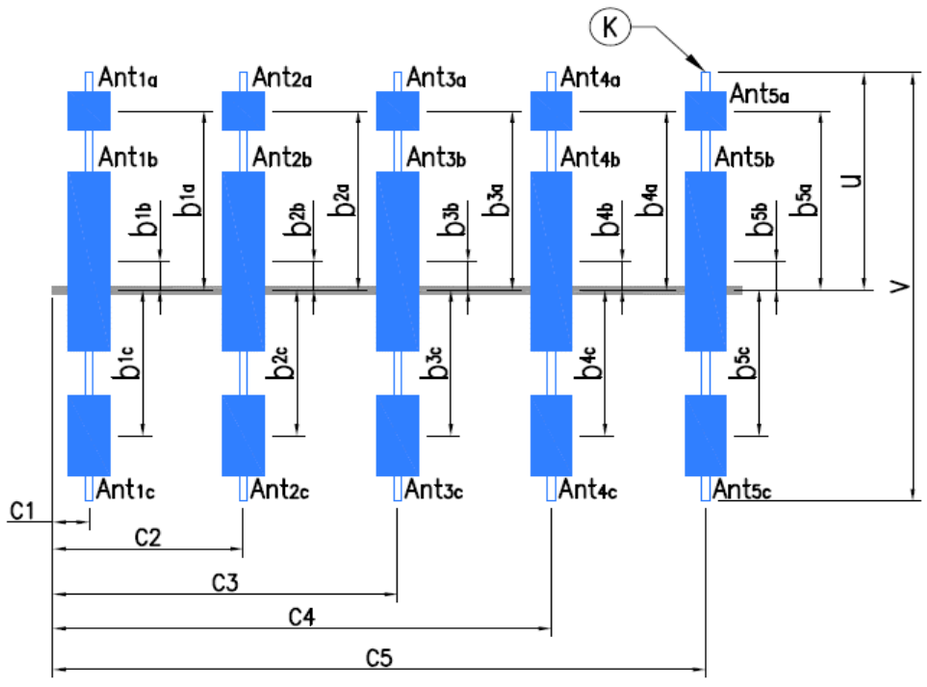
Members/Bolts (Unit: inches) * - See Ant. Layout for "u", "v" and member "K" (pipe)

Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	3.5 OD x 0.216 Pipe	3.5	3.068	0.216	**F**	1/2" U-Bolt	U-Bolt		
B	Tubing 4x4x1/4	4	4	0.25	**G**				
C	Tubing 4x4x1/4	4	4	0.25	**H**				
D	1/2" Thick. Plate	0	0	0.5	**J**				
E	3/4" Bolt	24			**K* (pipe)**	.375 OD x 0.154 Pip	2.375	2.067	0.154
Distance from top of main platform member to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)									
Distance from top of main platform member to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)									

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



Climbing facility is Located at Section A, at 90° Degree Azimuth



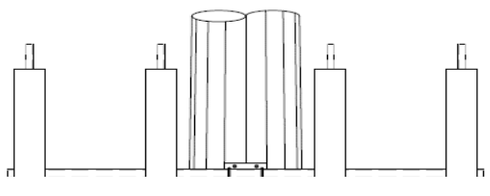
Antenna Layout

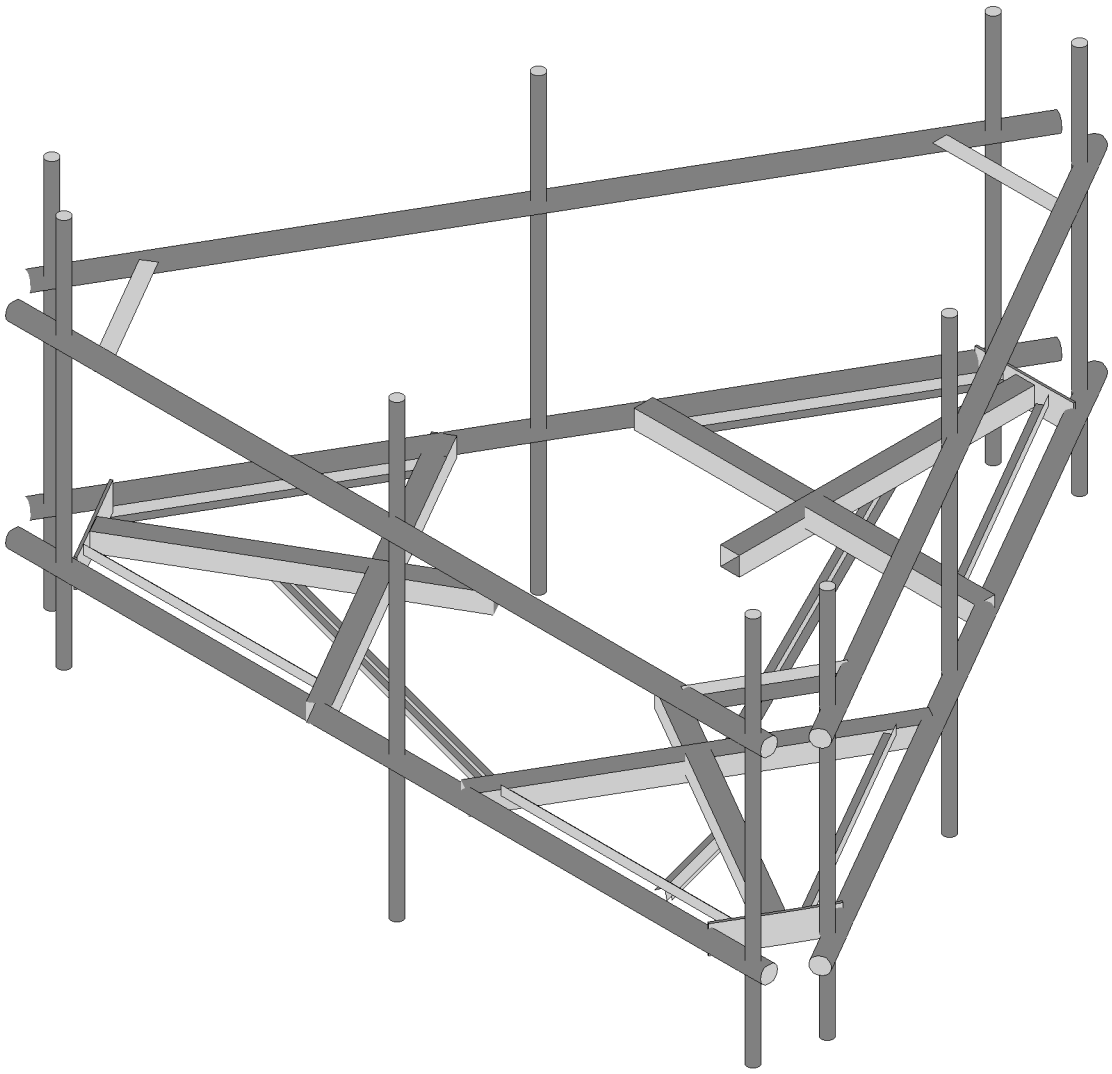
Ants. Items	Enter antenna model. If not labled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector.					Mounting Locations (Unit: inches)			Photos of antennas
	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (In.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C_1, C_2, C_3, C_4, C_5" (in.)	Photo Numbers
Sector A									
Ant_{1a}	Antenna A	12	8	56	1/2" (1)	+36"	7	156	
Ant_{1b}									
Ant_{1c}									
Ant_{2a}								80	
Ant_{2b}									
Ant_{2c}									
Ant_{3a}	Antenna B	13	9	56	1/2" (2)	+36"	8	9	
Ant_{3b}	TMA A	6	3	8	1/2" (2)	+27"		9	
Ant_{3c}									
Ant_{4a}									
Ant_{4b}									
Ant_{4c}									
Ant_{5a}									
Ant_{5b}									
Ant_{5c}									
Are Ant same as sector A?	Yes	**Antennas on Sector B are the same as Sector A**							

Azimuth (Degree) of Each Sector and Climbing Information

Sector A:	345°		Deg	
Sector B:	105°		Deg	
Sector C:	235°		Deg	
Climbing	90°		Deg	Located at Section A
Climbing Facility	Corrosion Type:			Severe corrosion observed
	Access:			Climbing path was unobstructed.
	Condition:			N/A

Are Ant same as sector A/B?	Same As A	**Antennas on Sector C are the same as Sector A**





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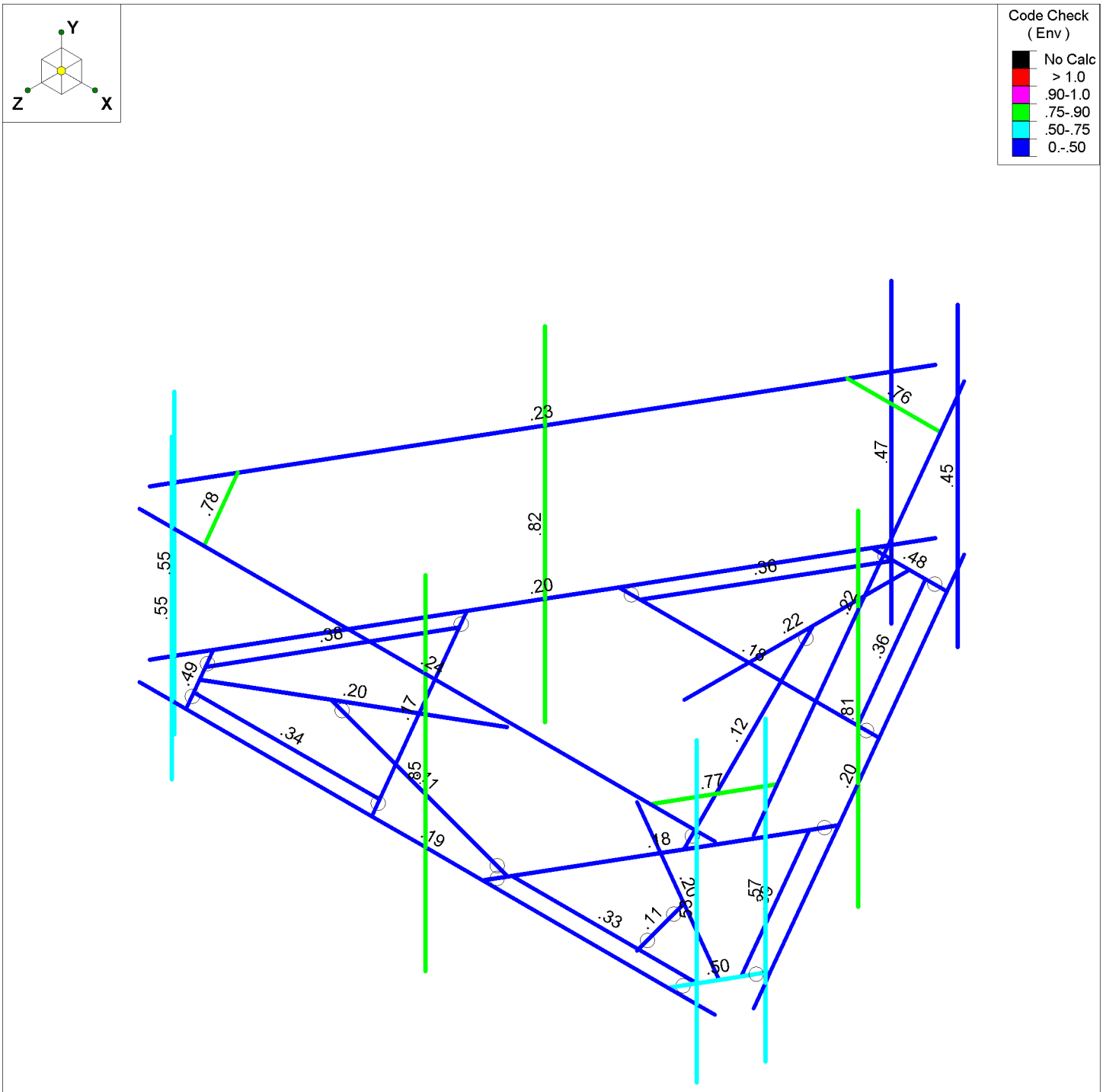
		July 12, 2019 at 1:53 PM
TES Project No. 81109		CT13076-A-SBA_81109_G_RISA_L...



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

Tower Engineering Solutio...	CT13076-A-SBA_MT_LO_Loads Only_G	SK - 2
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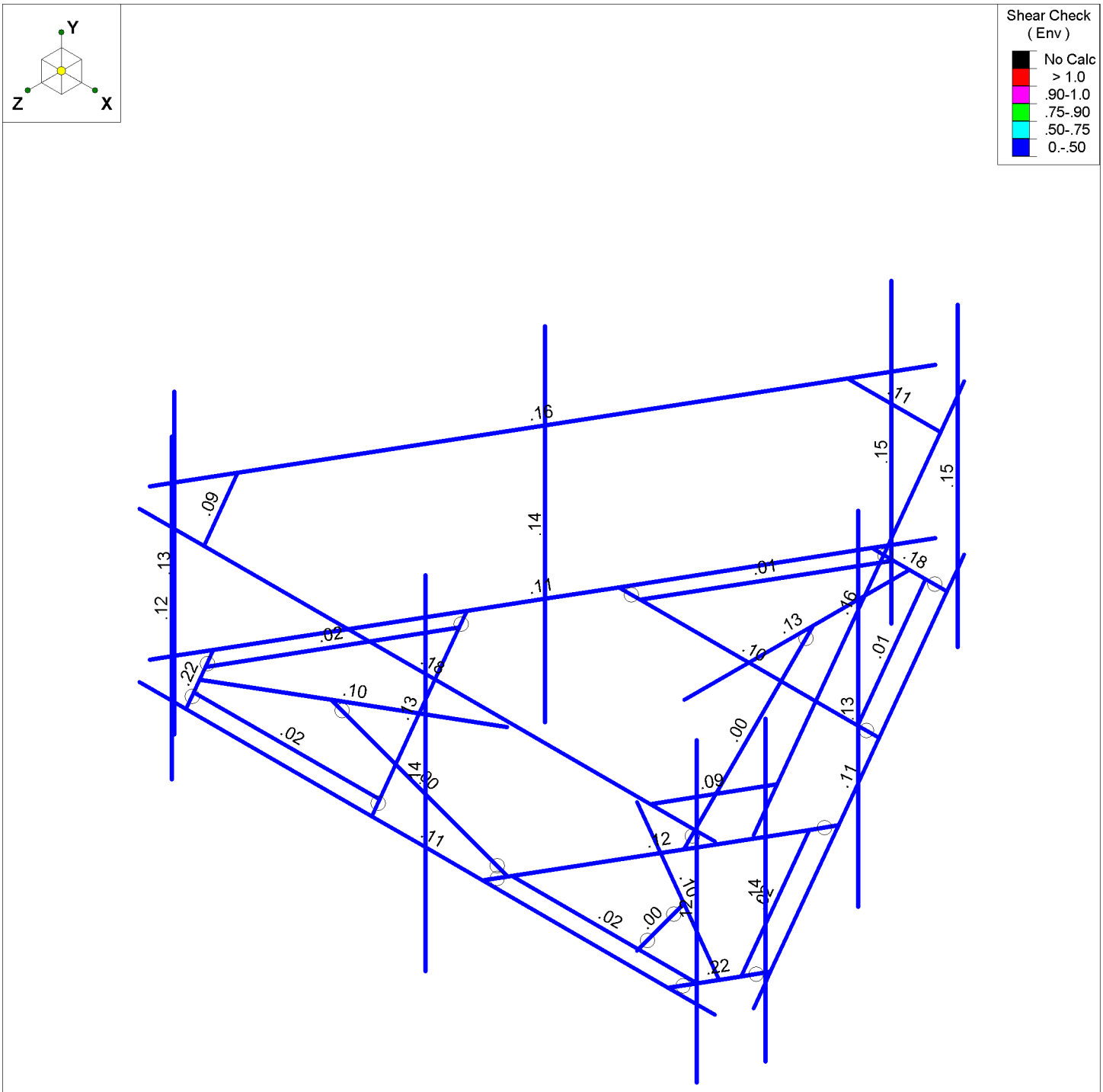


Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.6W (Front)

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					24			
2	Antenna Di	None					24			
3	Antenna W Front	None					24			
4	Antenna Wi Front	None					24			
5	Antenna W Side	None					24			
6	Antenna Wi Side	None					24			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1					3	
10	Structure Di	None						36	3	
11	Structure W Front	None						36		
12	Structure Wi Front	None						36		
13	Structure W Side	None						36		
14	Structure Wi Side	None						36		
15	BLC 9 Transient Area...	None						102		
16	BLC 10 Transient Are...	None						102		

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...
1	1.2D+1.6W (Front)	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6														
2	1.2D+1.6W (Back)	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6														
3	1.2D+1.6W (Left)	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6														
4	1.2D+1.6W (Right)	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6														
5	1.2D+1.0Di+1.0Wi (Front)	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12	1										
6	1.2D+1.0Di+1.0Wi (Back)	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12	-1										
7	1.2D+1.0Di+1.0Wi (Left)	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14	1										
8	1.2D+1.0Di+1.0Wi (Right)	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14	-1										
9	1.2D+1.5L1+.16W (Maintain..	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16												
10	1.2D+1.5L2+.16W (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	-1.515544	0	.875	0	
2	N2	1.515544	0	.875	0	
3	N3	0	0	-1.75	0	
4	N4	-6.708333	0	4.257958	0	
5	N5	6.708333	0	4.257958	0	
6	N6	7.041667	0	3.680608	0	
7	N7	0.333333	0	-7.938566	0	
8	N8	-0.333333	0	-7.938566	0	
9	N9	-7.041667	0	3.680608	0	
10	N10	-6.062178	0	3.5	0	
11	N11	6.062178	0	3.5	0	
12	N12	0	0	-7	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
13	N13	-5.62457	0	4.257958	0	
14	N14	-1.294443	0	4.257958	0	
15	N15	1.294443	0	4.257958	0	
16	N16	5.62457	0	4.257958	0	
17	N17	6.499785	0	2.742042	0	
18	N18	4.334722	0	-1.007958	0	
19	N19	3.040278	0	-3.25	0	
20	N20	0.875215	0	-7	0	
21	N21	-0.875215	0	-7	0	
22	N22	-3.040278	0	-3.25	0	
23	N23	-4.334722	0	-1.007958	0	
24	N24	-6.499785	0	2.742042	0	
25	NP1	6.291667	5.333333	4.257958	0	
26	NP2	6.291667	-1.583333	4.257958	0	
27	NP3	-0.041667	5.5	4.257958	0	
28	NP4	-0.041667	-2.5	4.257958	0	
29	NP5	-5.958333	5.333333	4.257958	0	
30	NP6	-5.958333	-1.583333	4.257958	0	
31	NP11	-6.833333	5.333333	3.319764	0	
32	NP12	-6.833333	-1.583333	3.319764	0	
33	NP13	-3.666667	5.5	-2.165064	0	
34	NP14	-3.666667	-2.5	-2.165064	0	
35	NP15	-0.708333	5.333333	-7.289047	0	
36	NP16	-0.708333	-1.583333	-7.289047	0	
37	NP21	0.541667	5.333333	-7.577722	0	
38	NP22	0.541667	-1.583333	-7.577722	0	
39	NP23	3.708333	5.5	-2.092895	0	
40	NP24	3.708333	-2.5	-2.092895	0	
41	NP25	6.666667	5.333333	3.031089	0	
42	NP26	6.666667	-1.583333	3.031089	0	
43	N43	-6.708333	3.5	4.257958	0	
44	N44	6.708333	3.5	4.257958	0	
45	N45	-5.208333	3.5	4.257958	0	
46	N46	5.208333	3.5	4.257958	0	
47	N47	7.041667	3.5	3.680608	0	
48	N48	0.333333	3.5	-7.938566	0	
49	N49	6.291667	3.5	2.38157	0	
50	N50	1.083333	3.5	-6.639528	0	
51	N51	-0.333333	3.5	-7.938566	0	
52	N52	-7.041667	3.5	3.680608	0	
53	N53	-1.083333	3.5	-6.639528	0	
54	N54	-6.291667	3.5	2.38157	0	
55	N55	6.291667	0	4.257958	0	
56	N56	-0.041667	0	4.257958	0	
57	N57	-5.958333	0	4.257958	0	
58	N58	0.541667	0	-7.577722	0	
59	N59	3.708333	0	-2.092895	0	
60	N60	6.666667	0	3.031089	0	
61	N61	-6.833333	0	3.319764	0	
62	N62	-3.666667	0	-2.165064	0	
63	N63	-0.708333	0	-7.289047	0	
64	N64	-2.814583	0	1.625	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
65	N65	2.814583	0	1.625	0	
66	N66	0	0	-3.25	0	
67	N67	6.291667	3.5	4.257958	0	
68	N68	-0.041667	3.5	4.257958	0	
69	N69	-5.958333	3.5	4.257958	0	
70	N70	-6.833333	3.5	3.319764	0	
71	N71	-3.666667	3.5	-2.165064	0	
72	N72	-0.708333	3.5	-7.289047	0	
73	N73	0.541667	3.5	-7.577722	0	
74	N74	3.708333	3.5	-2.092895	0	
75	N75	6.666667	3.5	3.031089	0	
76	N76	0	-3	-1.75	0	
77	N77	0	0	-4.75	0	
78	N78	-1.515544	-3	.875	0	
79	N79	-4.113621	0	2.375	0	
80	N80	1.515544	-3	.875	0	
81	N81	4.113621	0	2.375	0	
82	N82	-0.375215	0	-7	0	
83	N83	-2.540278	0	-3.25	0	
84	N84	0.375215	0	-7	0	
85	N85	2.540278	0	-3.25	0	
86	N86	-5.87457	0	3.824946	0	
87	N87	-1.544443	0	3.824946	0	
88	N88	-6.249785	0	3.175054	0	
89	N89	-4.084722	0	-0.574946	0	
90	N90	6.249785	0	3.175054	0	
91	N91	4.084722	0	-0.574946	0	
92	N92	5.87457	0	3.824946	0	
93	N93	1.544443	0	3.824946	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	12	141
2	6061-T6	10100	3787.5	.33	1.3	.173	Table B...	1	38	35	35	24	141
3	6063-T5	10100	3787.5	.33	1.3	.173	Table B...	1	22	16	16	13	141
4	6063-T6	10100	3787.5	.33	1.3	.173	Table B...	1	30	25	25	19	141
5	5052-H34	10200	3787.5	.33	1.3	.173	Table B...	1	34	26	24	20	141
6	6061-T6 W	10100	3787.5	.33	1.3	.173	Table B...	1	24	15	15	15	141

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N4	N5			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
2	M2	N6	N7			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
3	M3	N8	N9			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
4	M4	N1	N10			HSS4x4x4	Beam	None	A500 Gr.B...	DR1
5	M5	N2	N11			HSS4x4x4	Beam	None	A500 Gr.B...	DR1
6	M6	N3	N12			HSS4x4x4	Beam	None	A500 Gr.B...	DR1
7	M7	N23	N14			HSS4x4x4	Beam	None	A500 Gr.B...	DR1
8	M8	N15	N18			HSS4x4x4	Beam	None	A500 Gr.B...	DR1
9	M9	N19	N22			HSS4x4x4	Beam	None	A500 Gr.B...	DR1
10	M10	N24	N13			pl1/2X6	Beam	RECT	A36 Gr.36	DR1
11	M11	N16	N17			pl1/2X6	Beam	RECT	A36 Gr.36	DR1
12	M12	N20	N21			pl1/2X6	Beam	RECT	A36 Gr.36	DR1
13	MP1A	NP1	NP2			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
14	MP2A	NP3	NP4			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
15	MP3A	NP5	NP6			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
16	MP1B	NP11	NP12		300	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
17	MP2B	NP13	NP14		300	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
18	MP3B	NP15	NP16		300	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
19	MP1C	NP21	NP22		60	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
20	MP2C	NP23	NP24		60	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
21	MP3C	NP25	NP26		60	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
22	M22	N43	N44			PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical
23	M23	N47	N48			PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
24	M24	N51	N52			PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical
25	M25	N45	N54		90	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
26	M26	N53	N50		90	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
27	M27	N49	N46		90	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
28	M28	N77	N76			LL2x2x4x0	Beam	Double Angle (...	A36 Gr.36	Typical
29	M29	N79	N78			LL2x2x4x0	Beam	Double Angle (...	A36 Gr.36	Typical
30	M30	N81	N80			LL2x2x4x0	Beam	Double Angle (...	A36 Gr.36	Typical
31	M31	N83	N82			L2x2x4	Beam	Single Angle	A36 Gr.36	Typical
32	M32	N84	N85			L2x2x4	Beam	Single Angle	A36 Gr.36	Typical
33	M33	N87	N86			L2x2x4	Beam	Single Angle	A36 Gr.36	Typical
34	M34	N88	N89			L2x2x4	Beam	Single Angle	A36 Gr.36	Typical
35	M35	N91	N90			L2x2x4	Beam	Single Angle	A36 Gr.36	Typical
36	M36	N92	N93			L2x2x4	Beam	Single Angle	A36 Gr.36	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	M3						Yes			None
4	M4						Yes			None
5	M5						Yes			None
6	M6						Yes			None
7	M7	BenPIN	BenPIN				Yes			None
8	M8	BenPIN	BenPIN				Yes			None
9	M9	BenPIN	BenPIN				Yes			None
10	M10	BenPIN	BenPIN				Yes			None
11	M11	BenPIN	BenPIN				Yes			None
12	M12	BenPIN	BenPIN				Yes			None
13	MP1A						Yes	-z		None
14	MP2A						Yes	-z		None
15	MP3A						Yes	-z		None
16	MP1B						Yes	+z		None
17	MP2B						Yes	+z		None
18	MP3B						Yes	+z		None
19	MP1C						Yes	+z		None
20	MP2C						Yes	+z		None
21	MP3C						Yes	+z		None
22	M22						Yes			None
23	M23						Yes			None
24	M24						Yes			None
25	M25						Yes			None
26	M26						Yes			None
27	M27						Yes			None
28	M28	BenPIN	BenPIN				Yes			None
29	M29	BenPIN	BenPIN				Yes			None
30	M30	BenPIN	BenPIN				Yes			None
31	M31						Yes			None
32	M32						Yes			None
33	M33						Yes			None
34	M34						Yes			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
35	M35						Yes			None
36	M36						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	13.417			Lbyy						Gravity
2	M2	PIPE_3.0	13.417			Lbyy						Gravity
3	M3	PIPE_3.0	13.417			Lbyy						Gravity
4	M4	HSS4x4x4	5.25			Lbyy						Gravity
5	M5	HSS4x4x4	5.25			Lbyy						Gravity
6	M6	HSS4x4x4	5.25			Lbyy						Gravity
7	M7	HSS4x4x4	6.081			Lbyy						Gravity
8	M8	HSS4x4x4	6.081			Lbyy						Gravity
9	M9	HSS4x4x4	6.081			Lbyy						Gravity
10	M10	pl1/2X6	1.75			Lbyy						Gravity
11	M11	pl1/2X6	1.75			Lbyy						Gravity
12	M12	pl1/2X6	1.75			Lbyy						Gravity
13	MP1A	PIPE_2.0	6.917			Lbyy						Gravity
14	MP2A	PIPE_2.0	8			Lbyy						Gravity
15	MP3A	PIPE_2.0	6.917			Lbyy						Gravity
16	MP1B	PIPE_2.0	6.917			Lbyy						Gravity
17	MP2B	PIPE_2.0	8			Lbyy						Gravity
18	MP3B	PIPE_2.0	6.917			Lbyy						Gravity
19	MP1C	PIPE_2.0	6.917			Lbyy						Gravity
20	MP2C	PIPE_2.0	8			Lbyy						Gravity
21	MP3C	PIPE_2.0	6.917			Lbyy						Gravity
22	M22	PIPE_3.0	13.417			Lbyy						Lateral
23	M23	PIPE_3.0	13.417			Lbyy						Lateral
24	M24	PIPE_3.0	13.417			Lbyy						Lateral
25	M25	L3x3x4	2.167			Lbyy						Lateral
26	M26	L3x3x4	2.167			Lbyy						Lateral
27	M27	L3x3x4	2.167			Lbyy						Lateral
28	M28	LL2x2x4x0	4.243			Lbyy						Lateral
29	M29	LL2x2x4x0	4.243			Lbyy						Lateral
30	M30	LL2x2x4x0	4.243			Lbyy						Lateral
31	M31	L2x2x4	4.33			Lbyy						Lateral
32	M32	L2x2x4	4.33			Lbyy						Lateral
33	M33	L2x2x4	4.33			Lbyy						Lateral
34	M34	L2x2x4	4.33			Lbyy						Lateral
35	M35	L2x2x4	4.33			Lbyy						Lateral
36	M36	L2x2x4	4.33			Lbyy						Lateral

Cold Formed Steel Design Parameters

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

Aluminum Design Parameters

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

Joint Loads and Enforced Displacements

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

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-45.75	1
2	MP1A	Y	-45.75	5
3	MP1B	Y	-45.75	1
4	MP1B	Y	-45.75	5
5	MP1C	Y	-45.75	1
6	MP1C	Y	-45.75	5
7	MP3A	Y	-45.2	1
8	MP3A	Y	-45.2	5
9	MP3B	Y	-45.2	1
10	MP3B	Y	-45.2	5
11	MP3C	Y	-45.2	1
12	MP3C	Y	-45.2	5
13	MP2A	Y	-64	0
14	MP2A	Y	-64	6
15	MP2B	Y	-64	0
16	MP2B	Y	-64	6
17	MP2C	Y	-64	0
18	MP2C	Y	-64	6
19	MP3A	Y	-11	3
20	MP3B	Y	-11	3
21	MP3C	Y	-11	3
22	MP2A	Y	-70	3
23	MP2B	Y	-70	3
24	MP2C	Y	-70	3

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-84.24	1
2	MP1A	Y	-84.24	5
3	MP1B	Y	-84.24	1
4	MP1B	Y	-84.24	5
5	MP1C	Y	-84.24	1
6	MP1C	Y	-84.24	5
7	MP3A	Y	-84.24	1
8	MP3A	Y	-84.24	5
9	MP3B	Y	-84.24	1
10	MP3B	Y	-84.24	5
11	MP3C	Y	-84.24	1
12	MP3C	Y	-84.24	5

Member Point Loads (BLC 2 : Antenna Di) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP2A	Y	-208.491	0
14	MP2A	Y	-208.491	6
15	MP2B	Y	-208.491	0
16	MP2B	Y	-208.491	6
17	MP2C	Y	-208.491	0
18	MP2C	Y	-208.491	6
19	MP3A	Y	-16.257	3
20	MP3B	Y	-16.257	3
21	MP3C	Y	-16.257	3
22	MP2A	Y	-68.074	3
23	MP2B	Y	-68.074	3
24	MP2C	Y	-68.074	3

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-123.268	1
2	MP1A	Z	-123.268	5
3	MP1B	Z	-96.249	1
4	MP1B	Z	-96.249	5
5	MP1C	Z	-96.249	1
6	MP1C	Z	-96.249	5
7	MP3A	Z	-123.268	1
8	MP3A	Z	-123.268	5
9	MP3B	Z	-96.249	1
10	MP3B	Z	-96.249	5
11	MP3C	Z	-96.249	1
12	MP3C	Z	-96.249	5
13	MP2A	Z	-409.678	0
14	MP2A	Z	-409.678	6
15	MP2B	Z	-226.738	0
16	MP2B	Z	-226.738	6
17	MP2C	Z	-226.738	0
18	MP2C	Z	-226.738	6
19	MP3A	Z	-8.299	3
20	MP3B	Z	-4.436	3
21	MP3C	Z	-4.436	3
22	MP2A	Z	-33.398	3
23	MP2B	Z	-25.997	3
24	MP2C	Z	-25.997	3

Member Point Loads (BLC 4 : Antenna Wi Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-32.977	1
2	MP1A	Z	-32.977	5
3	MP1B	Z	-26.484	1
4	MP1B	Z	-26.484	5
5	MP1C	Z	-26.484	1
6	MP1C	Z	-26.484	5
7	MP3A	Z	-32.977	1
8	MP3A	Z	-32.977	5
9	MP3B	Z	-26.484	1

Member Point Loads (BLC 4 : Antenna Wi Front) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
10	MP3B	Z	-26.484	5
11	MP3C	Z	-26.484	1
12	MP3C	Z	-26.484	5
13	MP2A	Z	-101.601	0
14	MP2A	Z	-101.601	6
15	MP2B	Z	-59.011	0
16	MP2B	Z	-59.011	6
17	MP2C	Z	-59.011	0
18	MP2C	Z	-59.011	6
19	MP3A	Z	-2.891	3
20	MP3B	Z	-2.02	3
21	MP3C	Z	-2.02	3
22	MP2A	Z	-10.036	3
23	MP2B	Z	-8.13	3
24	MP2C	Z	-8.13	3

Member Point Loads (BLC 5 : Antenna W Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	87.243	1
2	MP1A	X	87.243	5
3	MP1B	X	114.262	1
4	MP1B	X	114.262	5
5	MP1C	X	114.262	1
6	MP1C	X	114.262	5
7	MP3A	X	87.243	1
8	MP3A	X	87.243	5
9	MP3B	X	114.262	1
10	MP3B	X	114.262	5
11	MP3C	X	114.262	1
12	MP3C	X	114.262	5
13	MP2A	X	165.759	0
14	MP2A	X	165.759	6
15	MP2B	X	348.698	0
16	MP2B	X	348.698	6
17	MP2C	X	348.698	0
18	MP2C	X	348.698	6
19	MP3A	X	6.298	3
20	MP3B	X	14.023	3
21	MP3C	X	14.023	3
22	MP2A	X	47.06	3
23	MP2B	X	61.862	3
24	MP2C	X	61.862	3

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	24.319	1
2	MP1A	X	24.319	5
3	MP1B	X	30.813	1
4	MP1B	X	30.813	5
5	MP1C	X	30.813	1
6	MP1C	X	30.813	5

Member Point Loads (BLC 6 : Antenna Wi Side) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP3A	X	24.319	1
8	MP3A	X	24.319	5
9	MP3B	X	30.813	1
10	MP3B	X	30.813	5
11	MP3C	X	30.813	1
12	MP3C	X	30.813	5
13	MP2A	X	44.814	0
14	MP2A	X	44.814	6
15	MP2B	X	87.404	0
16	MP2B	X	87.404	6
17	MP2C	X	87.404	0
18	MP2C	X	87.404	6
19	MP3A	X	3.459	3
20	MP3B	X	5.201	3
21	MP3C	X	5.201	3
22	MP2A	X	14.99	3
23	MP2B	X	18.801	3
24	MP2C	X	18.801	3

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	-11.154	-11.154	0	%100
2	M2	Y	-11.154	-11.154	0	%100
3	M3	Y	-11.154	-11.154	0	%100
4	M4	Y	-15.556	-15.556	0	%100
5	M5	Y	-15.556	-15.556	0	%100
6	M6	Y	-15.556	-15.556	0	%100
7	M7	Y	-15.556	-15.556	0	%100
8	M8	Y	-15.556	-15.556	0	%100
9	M9	Y	-15.556	-15.556	0	%100
10	M10	Y	-13.524	-13.524	0	%100
11	M11	Y	-13.524	-13.524	0	%100
12	M12	Y	-13.524	-13.524	0	%100
13	MP1A	Y	-8.76	-8.76	0	%100
14	MP2A	Y	-8.76	-8.76	0	%100
15	MP3A	Y	-8.76	-8.76	0	%100
16	MP1B	Y	-8.76	-8.76	0	%100
17	MP2B	Y	-8.76	-8.76	0	%100
18	MP3B	Y	-8.76	-8.76	0	%100
19	MP1C	Y	-8.76	-8.76	0	%100
20	MP2C	Y	-8.76	-8.76	0	%100

Member Distributed Loads (BLC 10 : Structure Di) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
21	MP3C	Y	-8.76	-8.76	0	%100
22	M22	Y	-11.154	-11.154	0	%100
23	M23	Y	-11.154	-11.154	0	%100
24	M24	Y	-11.154	-11.154	0	%100
25	M25	Y	-10.487	-10.487	0	%100
26	M26	Y	-10.487	-10.487	0	%100
27	M27	Y	-10.487	-10.487	0	%100
28	M28	Y	-12.847	-12.847	0	%100
29	M29	Y	-12.847	-12.847	0	%100
30	M30	Y	-12.847	-12.847	0	%100
31	M31	Y	-7.778	-7.778	0	%100
32	M32	Y	-7.778	-7.778	0	%100
33	M33	Y	-7.778	-7.778	0	%100
34	M34	Y	-7.778	-7.778	0	%100
35	M35	Y	-7.778	-7.778	0	%100
36	M36	Y	-7.778	-7.778	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	-14.169	-14.169	0	%100
2	M2	PZ	-14.169	-14.169	0	%100
3	M3	PZ	-14.169	-14.169	0	%100
4	M4	PZ	-26.988	-26.988	0	%100
5	M5	PZ	-26.988	-26.988	0	%100
6	M6	PZ	-26.988	-26.988	0	%100
7	M7	PZ	-26.988	-26.988	0	%100
8	M8	PZ	-26.988	-26.988	0	%100
9	M9	PZ	-26.988	-26.988	0	%100
10	M10	PZ	-40.482	-40.482	0	%100
11	M11	PZ	-40.482	-40.482	0	%100
12	M12	PZ	-40.482	-40.482	0	%100
13	MP1A	PZ	-9.614	-9.614	0	%100
14	MP2A	PZ	-9.614	-9.614	0	%100
15	MP3A	PZ	-9.614	-9.614	0	%100
16	MP1B	PZ	-9.614	-9.614	0	%100
17	MP2B	PZ	-9.614	-9.614	0	%100
18	MP3B	PZ	-9.614	-9.614	0	%100
19	MP1C	PZ	-9.614	-9.614	0	%100
20	MP2C	PZ	-9.614	-9.614	0	%100
21	MP3C	PZ	-9.614	-9.614	0	%100
22	M22	PZ	-14.169	-14.169	0	%100
23	M23	PZ	-14.169	-14.169	0	%100
24	M24	PZ	-14.169	-14.169	0	%100
25	M25	PZ	-20.241	-20.241	0	%100
26	M26	PZ	-20.241	-20.241	0	%100
27	M27	PZ	-20.241	-20.241	0	%100
28	M28	PZ	-13.494	-13.494	0	%100
29	M29	PZ	-13.494	-13.494	0	%100
30	M30	PZ	-13.494	-13.494	0	%100
31	M31	PZ	-13.494	-13.494	0	%100
32	M32	PZ	-13.494	-13.494	0	%100

Member Distributed Loads (BLC 11 : Structure W Front) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
33	M33	PZ	-13.494	-13.494	0	%100
34	M34	PZ	-13.494	-13.494	0	%100
35	M35	PZ	-13.494	-13.494	0	%100
36	M36	PZ	-13.494	-13.494	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	-6.41	-6.41	0	%100
2	M2	PZ	-6.41	-6.41	0	%100
3	M3	PZ	-6.41	-6.41	0	%100
4	M4	PZ	-9.317	-9.317	0	%100
5	M5	PZ	-9.317	-9.317	0	%100
6	M6	PZ	-9.317	-9.317	0	%100
7	M7	PZ	-9.317	-9.317	0	%100
8	M8	PZ	-9.317	-9.317	0	%100
9	M9	PZ	-9.317	-9.317	0	%100
10	M10	PZ	-12.377	-12.377	0	%100
11	M11	PZ	-12.377	-12.377	0	%100
12	M12	PZ	-12.377	-12.377	0	%100
13	MP1A	PZ	-5.378	-5.378	0	%100
14	MP2A	PZ	-5.378	-5.378	0	%100
15	MP3A	PZ	-5.378	-5.378	0	%100
16	MP1B	PZ	-5.378	-5.378	0	%100
17	MP2B	PZ	-5.378	-5.378	0	%100
18	MP3B	PZ	-5.378	-5.378	0	%100
19	MP1C	PZ	-5.378	-5.378	0	%100
20	MP2C	PZ	-5.378	-5.378	0	%100
21	MP3C	PZ	-5.378	-5.378	0	%100
22	M22	PZ	-6.41	-6.41	0	%100
23	M23	PZ	-6.41	-6.41	0	%100
24	M24	PZ	-6.41	-6.41	0	%100
25	M25	PZ	-7.787	-7.787	0	%100
26	M26	PZ	-7.787	-7.787	0	%100
27	M27	PZ	-7.787	-7.787	0	%100
28	M28	PZ	-6.257	-6.257	0	%100
29	M29	PZ	-6.257	-6.257	0	%100
30	M30	PZ	-6.257	-6.257	0	%100
31	M31	PZ	-6.257	-6.257	0	%100
32	M32	PZ	-6.257	-6.257	0	%100
33	M33	PZ	-6.257	-6.257	0	%100
34	M34	PZ	-6.257	-6.257	0	%100
35	M35	PZ	-6.257	-6.257	0	%100
36	M36	PZ	-6.257	-6.257	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	14.169	14.169	0	%100
2	M2	PX	14.169	14.169	0	%100
3	M3	PX	14.169	14.169	0	%100
4	M4	PX	26.988	26.988	0	%100
5	M5	PX	26.988	26.988	0	%100

Member Distributed Loads (BLC 13 : Structure W Side) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
6	M6	PX	26.988	26.988	0	%100
7	M7	PX	26.988	26.988	0	%100
8	M8	PX	26.988	26.988	0	%100
9	M9	PX	26.988	26.988	0	%100
10	M10	PX	40.482	40.482	0	%100
11	M11	PX	40.482	40.482	0	%100
12	M12	PX	40.482	40.482	0	%100
13	MP1A	PX	9.614	9.614	0	%100
14	MP2A	PX	9.614	9.614	0	%100
15	MP3A	PX	9.614	9.614	0	%100
16	MP1B	PX	9.614	9.614	0	%100
17	MP2B	PX	9.614	9.614	0	%100
18	MP3B	PX	9.614	9.614	0	%100
19	MP1C	PX	9.614	9.614	0	%100
20	MP2C	PX	9.614	9.614	0	%100
21	MP3C	PX	9.614	9.614	0	%100
22	M22	PX	14.169	14.169	0	%100
23	M23	PX	14.169	14.169	0	%100
24	M24	PX	14.169	14.169	0	%100
25	M25	PX	20.241	20.241	0	%100
26	M26	PX	20.241	20.241	0	%100
27	M27	PX	20.241	20.241	0	%100
28	M28	PX	13.494	13.494	0	%100
29	M29	PX	13.494	13.494	0	%100
30	M30	PX	13.494	13.494	0	%100
31	M31	PX	13.494	13.494	0	%100
32	M32	PX	13.494	13.494	0	%100
33	M33	PX	13.494	13.494	0	%100
34	M34	PX	13.494	13.494	0	%100
35	M35	PX	13.494	13.494	0	%100
36	M36	PX	13.494	13.494	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	6.41	6.41	0	%100
2	M2	PX	6.41	6.41	0	%100
3	M3	PX	6.41	6.41	0	%100
4	M4	PX	9.317	9.317	0	%100
5	M5	PX	9.317	9.317	0	%100
6	M6	PX	9.317	9.317	0	%100
7	M7	PX	9.317	9.317	0	%100
8	M8	PX	9.317	9.317	0	%100
9	M9	PX	9.317	9.317	0	%100
10	M10	PX	12.377	12.377	0	%100
11	M11	PX	12.377	12.377	0	%100
12	M12	PX	12.377	12.377	0	%100
13	MP1A	PX	5.378	5.378	0	%100
14	MP2A	PX	5.378	5.378	0	%100
15	MP3A	PX	5.378	5.378	0	%100
16	MP1B	PX	5.378	5.378	0	%100
17	MP2B	PX	5.378	5.378	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
18	MP3B	PX	5.378	5.378	0	%100
19	MP1C	PX	5.378	5.378	0	%100
20	MP2C	PX	5.378	5.378	0	%100
21	MP3C	PX	5.378	5.378	0	%100
22	M22	PX	6.41	6.41	0	%100
23	M23	PX	6.41	6.41	0	%100
24	M24	PX	6.41	6.41	0	%100
25	M25	PX	7.787	7.787	0	%100
26	M26	PX	7.787	7.787	0	%100
27	M27	PX	7.787	7.787	0	%100
28	M28	PX	6.257	6.257	0	%100
29	M29	PX	6.257	6.257	0	%100
30	M30	PX	6.257	6.257	0	%100
31	M31	PX	6.257	6.257	0	%100
32	M32	PX	6.257	6.257	0	%100
33	M33	PX	6.257	6.257	0	%100
34	M34	PX	6.257	6.257	0	%100
35	M35	PX	6.257	6.257	0	%100
36	M36	PX	6.257	6.257	0	%100

Member Distributed Loads (BLC 15 : BLC 9 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M2	Y	-.015	-.472	6.708	8.05
2	M2	Y	-.472	-1.016	8.05	9.392
3	M2	Y	-1.016	-1.115	9.392	10.733
4	M2	Y	-1.115	-.648	10.733	12.075
5	M2	Y	-.648	-.015	12.075	13.417
6	M3	Y	-.015	-.649	0	1.342
7	M3	Y	-.649	-1.117	1.342	2.683
8	M3	Y	-1.117	-1.018	2.683	4.025
9	M3	Y	-1.018	-.473	4.025	5.367
10	M3	Y	-.473	-.015	5.367	6.708
11	M6	Y	-.175	-5.385	1.575	2.31
12	M6	Y	-5.385	-9.765	2.31	3.045
13	M6	Y	-9.765	-7.332	3.045	3.78
14	M6	Y	-7.332	-3.975	3.78	4.515
15	M6	Y	-3.975	-.469	4.515	5.25
16	M9	Y	-.148	-2.813	0	1.216
17	M9	Y	-2.813	-3.85	1.216	2.432
18	M9	Y	-3.85	-3.844	2.432	3.648
19	M9	Y	-3.844	-2.801	3.648	4.864
20	M9	Y	-2.801	-.148	4.864	6.081
21	M12	Y	-1.1	-1.025	0	.438
22	M12	Y	-1.025	-.988	.438	.875
23	M12	Y	-.988	-1.026	.875	1.313
24	M12	Y	-1.026	-1.102	1.313	1.75
25	M31	Y	-1.716	-3.785	0	.866
26	M31	Y	-3.785	-4.676	.866	1.732
27	M31	Y	-4.676	-4.107	1.732	2.598
28	M31	Y	-4.107	-2.968	2.598	3.464
29	M31	Y	-2.968	-1.538	3.464	4.33

Member Distributed Loads (BLC 15 : BLC 9 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
30	M32	Y	-1.532	-2.966	0	.866
31	M32	Y	-2.966	-4.107	.866	1.732
32	M32	Y	-4.107	-4.674	1.732	2.598
33	M32	Y	-4.674	-3.785	2.598	3.464
34	M32	Y	-3.785	-1.721	3.464	4.33
35	M1	Y	-.02	-.517	6.708	8.05
36	M1	Y	-.517	-1.061	8.05	9.392
37	M1	Y	-1.061	-1.108	9.392	10.733
38	M1	Y	-1.108	-.662	10.733	12.075
39	M1	Y	-.662	-.02	12.075	13.417
40	M2	Y	-.015	-.649	0	1.342
41	M2	Y	-.649	-1.117	1.342	2.683
42	M2	Y	-1.117	-1.018	2.683	4.025
43	M2	Y	-1.018	-.473	4.025	5.367
44	M2	Y	-.473	-.015	5.367	6.708
45	M5	Y	-.175	-5.385	1.575	2.31
46	M5	Y	-5.385	-9.765	2.31	3.045
47	M5	Y	-9.765	-7.332	3.045	3.78
48	M5	Y	-7.332	-3.975	3.78	4.515
49	M5	Y	-3.975	-.469	4.515	5.25
50	M8	Y	-.137	-2.746	0	1.216
51	M8	Y	-2.746	-3.839	1.216	2.432
52	M8	Y	-3.839	-3.832	2.432	3.648
53	M8	Y	-3.832	-2.79	3.648	4.864
54	M8	Y	-2.79	-.137	4.864	6.081
55	M11	Y	-.659	-.891	0	.438
56	M11	Y	-.891	-1.007	.438	.875
57	M11	Y	-1.007	-1.045	.875	1.313
58	M11	Y	-1.045	-1.121	1.313	1.75
59	M35	Y	-1.716	-3.785	0	.866
60	M35	Y	-3.785	-4.676	.866	1.732
61	M35	Y	-4.676	-4.107	1.732	2.598
62	M35	Y	-4.107	-2.968	2.598	3.464
63	M35	Y	-2.968	-1.538	3.464	4.33
64	M36	Y	-1.701	-3.021	0	.866
65	M36	Y	-3.021	-4.102	.866	1.732
66	M36	Y	-4.102	-4.667	1.732	2.598
67	M36	Y	-4.667	-3.793	2.598	3.464
68	M36	Y	-3.793	-1.758	3.464	4.33
69	M1	Y	-.02	-.664	0	1.342
70	M1	Y	-.664	-1.111	1.342	2.683
71	M1	Y	-1.111	-1.062	2.683	4.025
72	M1	Y	-1.062	-.517	4.025	5.367
73	M1	Y	-.517	-.02	5.367	6.708
74	M3	Y	-.015	-.472	6.708	8.05
75	M3	Y	-.472	-1.016	8.05	9.392
76	M3	Y	-1.016	-1.115	9.392	10.733
77	M3	Y	-1.115	-.648	10.733	12.075
78	M3	Y	-.648	-.015	12.075	13.417
79	M4	Y	-2.519	-5.47	1.575	2.31
80	M4	Y	-5.47	-8.119	2.31	3.045
81	M4	Y	-8.119	-7.658	3.045	3.78

Member Distributed Loads (BLC 15 : BLC 9 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
82	M4	Y	-7.658	-4.199	3.78	4.515
83	M4	Y	-4.199	-.552	4.515	5.25
84	M7	Y	-.137	-2.775	0	1.216
85	M7	Y	-2.775	-3.768	1.216	2.432
86	M7	Y	-3.768	-3.762	2.432	3.648
87	M7	Y	-3.762	-2.708	3.648	4.864
88	M7	Y	-2.708	-.137	4.864	6.081
89	M10	Y	-1.125	-1.035	0	.438
90	M10	Y	-1.035	-.991	.438	.875
91	M10	Y	-.991	-.882	.875	1.313
92	M10	Y	-.882	-.665	1.313	1.75
93	M33	Y	-1.666	-3.903	0	.866
94	M33	Y	-3.903	-4.693	.866	1.732
95	M33	Y	-4.693	-4.042	1.732	2.598
96	M33	Y	-4.042	-3.049	2.598	3.464
97	M33	Y	-3.049	-1.71	3.464	4.33
98	M34	Y	-1.535	-2.993	0	.866
99	M34	Y	-2.993	-4.045	.866	1.732
100	M34	Y	-4.045	-4.699	1.732	2.598
101	M34	Y	-4.699	-3.897	2.598	3.464
102	M34	Y	-3.897	-1.632	3.464	4.33

Member Distributed Loads (BLC 16 : BLC 10 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M2	Y	-.038	-1.161	6.708	8.05
2	M2	Y	-1.161	-2.499	8.05	9.392
3	M2	Y	-2.499	-2.742	9.392	10.733
4	M2	Y	-2.742	-1.594	10.733	12.075
5	M2	Y	-1.594	-.038	12.075	13.417
6	M3	Y	-.038	-1.597	0	1.342
7	M3	Y	-1.597	-2.749	1.342	2.683
8	M3	Y	-2.749	-2.504	2.683	4.025
9	M3	Y	-2.504	-1.163	4.025	5.367
10	M3	Y	-1.163	-.038	5.367	6.708
11	M6	Y	-.431	-13.25	1.575	2.31
12	M6	Y	-13.25	-24.027	2.31	3.045
13	M6	Y	-24.027	-18.041	3.045	3.78
14	M6	Y	-18.041	-9.782	3.78	4.515
15	M6	Y	-9.782	-1.154	4.515	5.25
16	M9	Y	-.364	-6.921	0	1.216
17	M9	Y	-6.921	-9.472	1.216	2.432
18	M9	Y	-9.472	-9.457	2.432	3.648
19	M9	Y	-9.457	-6.893	3.648	4.864
20	M9	Y	-6.893	-.364	4.864	6.081
21	M12	Y	-2.706	-2.523	0	.438
22	M12	Y	-2.523	-2.431	.438	.875
23	M12	Y	-2.431	-2.525	.875	1.313
24	M12	Y	-2.525	-2.711	1.313	1.75
25	M31	Y	-4.222	-9.314	0	.866
26	M31	Y	-9.314	-11.505	.866	1.732
27	M31	Y	-11.505	-10.106	1.732	2.598

Member Distributed Loads (BLC 16 : BLC 10 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
28	M31	Y	-10.106	-7.303	2.598	3.464
29	M31	Y	-7.303	-3.785	3.464	4.33
30	M32	Y	-3.77	-7.299	0	.866
31	M32	Y	-7.299	-10.106	.866	1.732
32	M32	Y	-10.106	-11.5	1.732	2.598
33	M32	Y	-11.5	-9.314	2.598	3.464
34	M32	Y	-9.314	-4.235	3.464	4.33
35	M1	Y	-.048	-1.271	6.708	8.05
36	M1	Y	-1.271	-2.61	8.05	9.392
37	M1	Y	-2.61	-2.727	9.392	10.733
38	M1	Y	-2.727	-1.63	10.733	12.075
39	M1	Y	-1.63	-.048	12.075	13.417
40	M2	Y	-.038	-1.597	0	1.342
41	M2	Y	-1.597	-2.749	1.342	2.683
42	M2	Y	-2.749	-2.504	2.683	4.025
43	M2	Y	-2.504	-1.163	4.025	5.367
44	M2	Y	-1.163	-.038	5.367	6.708
45	M5	Y	-.431	-13.25	1.575	2.31
46	M5	Y	-13.25	-24.027	2.31	3.045
47	M5	Y	-24.027	-18.041	3.045	3.78
48	M5	Y	-18.041	-9.782	3.78	4.515
49	M5	Y	-9.782	-1.154	4.515	5.25
50	M8	Y	-.336	-6.757	0	1.216
51	M8	Y	-6.757	-9.445	1.216	2.432
52	M8	Y	-9.445	-9.43	2.432	3.648
53	M8	Y	-9.43	-6.865	3.648	4.864
54	M8	Y	-6.865	-.336	4.864	6.081
55	M11	Y	-1.621	-2.193	0	.438
56	M11	Y	-2.193	-2.479	.438	.875
57	M11	Y	-2.479	-2.572	.875	1.313
58	M11	Y	-2.572	-2.758	1.313	1.75
59	M35	Y	-4.222	-9.314	0	.866
60	M35	Y	-9.314	-11.505	.866	1.732
61	M35	Y	-11.505	-10.106	1.732	2.598
62	M35	Y	-10.106	-7.303	2.598	3.464
63	M35	Y	-7.303	-3.785	3.464	4.33
64	M36	Y	-4.185	-7.433	0	.866
65	M36	Y	-7.433	-10.093	.866	1.732
66	M36	Y	-10.093	-11.482	1.732	2.598
67	M36	Y	-11.482	-9.332	2.598	3.464
68	M36	Y	-9.332	-4.326	3.464	4.33
69	M1	Y	-.048	-1.633	0	1.342
70	M1	Y	-1.633	-2.734	1.342	2.683
71	M1	Y	-2.734	-2.614	2.683	4.025
72	M1	Y	-2.614	-1.273	4.025	5.367
73	M1	Y	-1.273	-.048	5.367	6.708
74	M3	Y	-.038	-1.161	6.708	8.05
75	M3	Y	-1.161	-2.499	8.05	9.392
76	M3	Y	-2.499	-2.742	9.392	10.733
77	M3	Y	-2.742	-1.594	10.733	12.075
78	M3	Y	-1.594	-.038	12.075	13.417
79	M4	Y	-6.199	-13.46	1.575	2.31

Member Distributed Loads (BLC 16 : BLC 10 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
80	M4	Y	-13.46	-19.977	2.31	3.045
81	M4	Y	-19.977	-18.843	3.045	3.78
82	M4	Y	-18.843	-10.333	3.78	4.515
83	M4	Y	-10.333	-1.357	4.515	5.25
84	M7	Y	-.336	-6.827	0	1.216
85	M7	Y	-6.827	-9.271	1.216	2.432
86	M7	Y	-9.271	-9.256	2.432	3.648
87	M7	Y	-9.256	-6.663	3.648	4.864
88	M7	Y	-6.663	-.336	4.864	6.081
89	M10	Y	-2.768	-2.547	0	.438
90	M10	Y	-2.547	-2.437	.438	.875
91	M10	Y	-2.437	-2.17	.875	1.313
92	M10	Y	-2.17	-1.636	1.313	1.75
93	M33	Y	-4.1	-9.603	0	.866
94	M33	Y	-9.603	-11.548	.866	1.732
95	M33	Y	-11.548	-9.945	1.732	2.598
96	M33	Y	-9.945	-7.502	2.598	3.464
97	M33	Y	-7.502	-4.209	3.464	4.33
98	M34	Y	-3.778	-7.365	0	.866
99	M34	Y	-7.365	-9.953	.866	1.732
100	M34	Y	-9.953	-11.562	1.732	2.598
101	M34	Y	-11.562	-9.59	2.598	3.464
102	M34	Y	-9.59	-4.015	3.464	4.33

Member Area Loads (BLC 9 : Structure D)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N19	N20	N21	N22	Y	Two Way	-.005
2	N15	N16	N17	N18	Y	Two Way	-.005
3	N13	N14	N23	N24	Y	Two Way	-.005

Member Area Loads (BLC 10 : Structure Di)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N19	N20	N21	N22	Y	Two Way	-.013
2	N15	N16	N17	N18	Y	Two Way	-.013
3	N13	N14	N23	N24	Y	Two Way	-.013

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	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N3	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N76	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N77						
6	N78	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N79						
8	N80	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N81						

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	5925.058	4	782.781	3	2731.217	1	.485	4	2.043	1	.454	2
2		min	-4093.84	3	-747.312	4	-3791.786	2	-.553	3	-2.038	2	-.525	1
3	N2	max	4153.391	4	752.019	4	2671.472	1	.482	3	1.999	2	.597	1
4		min	-5983.515	3	-716.919	3	-3734.494	2	-.512	4	-2.006	1	-.504	2
5	N3	max	2610.337	4	871.299	2	7376.904	1	.468	2	3.127	3	.756	3
6		min	-2611.619	3	-832.242	1	-5266.62	2	-.368	1	-3.127	4	-.777	4
7	N76	max	44.608	4	3672.364	1	1403.665	2	0	1	0	4	0	3
8		min	-44.553	3	-1419.962	2	-3625.009	1	0	1	0	3	0	4
9	N78	max	930.878	3	3395.045	8	1676.226	8	0	1	0	2	0	2
10		min	-2892.769	8	-1100.478	3	-558.301	3	0	2	0	1	0	1
11	N80	max	2890.246	7	3392.124	7	1674.751	7	0	1	0	1	0	1
12		min	-916.915	4	-1084.354	4	-550.245	4	0	2	0	2	0	2
13	Totals:	max	8958.8	4	9022.957	8	9066.29	1						
14		min	-8958.8	3	3439.337	3	-9066.29	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
1	M1	1	max	0	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	757.121	3	218.983	4	82.658	2	.202	2	.108	2	.441	4
4			min	-703.845	4	-249.624	3	-80.73	1	-.212	1	-.112	1	-.367	3
5		3	max	1064.96	2	367.875	4	548.815	2	.415	2	.438	1	.55	4
6			min	-1067.612	1	-735.592	3	-554.787	1	-.407	1	-.429	2	-.828	3
7		4	max	726.659	4	223.654	4	51.86	1	.17	1	.137	2	.438	2
8			min	-662.366	3	-204.486	3	-56.091	2	-.155	2	-.145	1	-.323	1
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	0	1	.013	3	.004	2	0	1	0	1	0	1
12			min	0	1	0	5	0	9	0	1	0	1	0	1
13		2	max	705.95	4	274.398	2	79.777	1	.211	1	.202	1	.537	3
14			min	-636.517	3	-305.133	1	-78.615	2	-.222	2	-.204	2	-.461	4
15		3	max	1183.057	1	348.91	2	775.018	3	.318	3	.431	4	.732	2
16			min	-1183.946	2	-716.921	1	-781.658	4	-.311	4	-.421	3	-1.01	1
17		4	max	829.312	2	230.106	3	111.079	4	.246	4	.323	3	.589	1
18			min	-756.856	1	-210.123	4	-114.957	3	-.23	3	-.331	4	-.477	2
19		5	max	0	1	0	7	0	6	0	1	0	1	0	1
20			min	0	1	-.01	1	-.004	4	0	1	0	1	0	1
21	M3	1	max	0	1	.016	1	.007	3	0	1	0	1	0	1
22			min	0	1	0	8	0	9	0	1	0	1	0	1
23		2	max	854.536	2	257.453	3	140.18	4	.276	4	.294	4	.556	1
24			min	-792.564	1	-289.21	4	-138.386	3	-.287	3	-.297	3	-.482	2
25		3	max	1323.363	4	259.861	1	463.959	1	.429	4	.275	3	.682	3
26			min	-1326.142	3	-628.22	2	-470.785	2	-.422	3	-.266	4	-.962	4
27		4	max	688.82	3	258.095	1	61.798	2	.201	2	.22	1	.606	4
28			min	-608.92	4	-238.961	2	-64.466	1	-.185	1	-.225	2	-.493	3
29		5	max	0	1	0	5	0	7	0	1	0	1	0	1
30			min	0	1	-.008	4	-.002	2	0	1	0	1	0	1
31	M4	1	max	4408.134	3	783.064	3	1895.117	2	.661	2	2.043	1	.433	3
32			min	-6523.507	4	-747.16	4	-1900.891	1	-.641	1	-2.038	2	-.389	9

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
33		2	max	4383.593	3	763.64	3	1852.611	2	.661	2	.427	3	.658	4
34			min	-6498.966	4	-766.585	4	-1858.385	1	-.641	1	-.43	4	-.582	3
35		3	max	4092.144	3	684.558	3	137.442	2	.711	2	.07	2	2.202	4
36			min	-6214.709	4	-1943.771	4	-138.785	1	-.69	1	-.07	1	-.837	3
37		4	max	2919.574	3	1343.858	4	58.116	2	.712	2	.189	2	1.662	4
38			min	-2817.16	4	-482.559	3	-58.868	1	-.691	1	-.19	1	-.65	3
39		5	max	2895.033	3	1318.487	4	26.514	3	.712	2	.237	2	.001	3
40			min	-2792.619	4	-507.931	3	-23.715	4	-.691	1	-.24	1	-.122	8
41	M5	1	max	4434.181	4	752.258	4	1850.359	1	.666	1	1.999	2	.399	4
42			min	-6549.071	3	-716.835	3	-1846.861	2	-.643	2	-2.006	1	-.302	3
43		2	max	4409.64	4	732.833	4	1807.853	1	.666	1	.468	3	.651	3
44			min	-6524.53	3	-736.26	3	-1804.355	2	-.643	2	-.47	4	-.575	4
45		3	max	4115.467	4	687.294	4	141.148	1	.676	1	.064	1	2.157	3
46			min	-6237.395	3	-1945.152	3	-137.554	2	-.655	2	-.066	2	-.792	4
47		4	max	2959.018	4	1325.38	3	61.25	1	.677	1	.187	1	1.635	3
48			min	-2855.829	3	-464.728	4	-58.221	2	-.656	2	-.185	2	-.623	4
49		5	max	2934.477	4	1300.326	3	23.224	3	.677	1	.239	1	.004	4
50			min	-2831.288	3	-489.782	4	-23.739	4	-.656	2	-.233	2	-.123	7
51	M6	1	max	5266.62	2	871.642	2	2609.236	4	.777	4	3.127	3	.468	2
52			min	-7376.904	1	-832.071	1	-2610.552	3	-.756	3	-3.127	4	-.368	1
53		2	max	5266.62	2	852.217	2	2552.561	4	.777	4	.26	4	.737	1
54			min	-7376.904	1	-851.496	1	-2553.877	3	-.756	3	-.263	3	-.664	2
55		3	max	4939.436	2	879.126	2	162.954	4	.805	4	.068	4	2.401	1
56			min	-7057.287	1	-2132.86	1	-161.832	3	-.784	3	-.069	3	-1.041	2
57		4	max	3471	2	1467.392	1	60.557	4	.806	4	.202	4	1.816	1
58			min	-3367.506	1	-609.749	2	-59.425	3	-.784	3	-.202	3	-.808	2
59		5	max	3471	2	1442.338	1	4.969	8	.806	4	.245	4	.01	2
60			min	-3367.506	1	-634.803	2	-2.75	3	-.784	3	-.243	3	-.124	5
61	M7	1	max	858.413	4	101.742	3	1775.118	4	.93	4	0	1	0	1
62			min	-897.745	3	-689.79	8	-1844.799	3	-.947	3	0	1	0	1
63		2	max	642.619	2	-7.976	3	145.648	4	.851	4	.842	4	1.107	8
64			min	-633.292	1	-796.259	8	-148.406	3	-.811	3	-.854	3	-.129	3
65		3	max	1015.254	1	866.923	8	194.878	4	1.042	1	1.101	4	2.367	8
66			min	-1001.758	2	-850.897	6	-197.637	3	-1.112	2	-1.117	3	-.095	3
67		4	max	986.831	1	801.162	8	148.923	1	1.042	1	.692	2	1.097	8
68			min	-973.334	2	-13.767	3	-145.402	2	-1.112	2	-.703	1	-.085	3
69		5	max	754.504	4	684.352	8	1524.344	1	1.193	1	0	1	0	1
70			min	-777.754	3	-84.353	3	-1458.53	2	-1.205	2	0	1	0	1
71	M8	1	max	759.421	3	113.027	4	1410.497	2	1.139	2	0	1	0	1
72			min	-787.842	4	-690.63	7	-1481.752	1	-1.154	1	0	1	0	1
73		2	max	889.439	1	41.098	4	139.02	2	1.052	2	.669	2	1.105	7
74			min	-878.942	2	-806.052	7	-141.62	1	-1.01	1	-.681	1	-.129	4
75		3	max	917.863	1	843.866	6	206.047	4	1.052	2	1.134	3	2.38	7
76			min	-907.366	2	-872.185	7	-158.03	1	-1.01	1	-1.15	4	-.17	4
77		4	max	688.601	2	797.849	7	156.816	4	.839	4	.864	3	1.11	7
78			min	-677.818	1	2.562	4	-153.165	3	-.907	3	-.874	4	-.14	4
79		5	max	802.133	3	690.63	7	1876.955	4	.979	4	0	1	0	1
80			min	-835.252	4	-108.244	4	-1812.929	3	-.99	3	0	1	0	1
81	M9	1	max	1059.551	1	159.886	2	1667.892	1	1.095	3	0	1	0	1
82			min	-1093.401	2	-700.963	5	-1729.796	2	-1.113	4	0	1	0	1
83		2	max	1131.352	4	62.08	2	92.74	3	1.027	3	.776	1	1.122	5
84			min	-1120.583	3	-810.152	5	-95.939	4	-.988	4	-.785	2	-.208	2

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
85		3	max	1214.627	3	813.188	7	167.3	2	1.027	3	.986	1	2.403	5
86			min	-1201.419	4	-876.416	5	-95.939	4	-1.081	4	-1	2	-.28	2
87		4	max	1214.627	3	808.115	5	101.659	2	1.012	3	.788	1	1.119	5
88			min	-1201.419	4	-49.371	2	-97.423	1	-1.081	4	-.796	2	-.188	2
89		5	max	1026.108	1	697.776	5	1736.979	2	1.145	3	0	1	0	1
90			min	-1054.363	2	-146.638	2	-1681.28	1	-1.156	4	0	1	0	1
91	M10	1	max	397.674	3	425.237	3	84.672	3	.134	4	0	1	0	1
92			min	-356.801	4	-769.721	4	-77.459	4	-.149	3	0	1	0	1
93		2	max	409.947	3	419.309	3	63.414	3	.134	4	.032	3	.338	4
94			min	-369.074	4	-775.649	4	-56.201	4	-.149	3	-.029	4	-.185	3
95		3	max	709.057	4	861.673	2	1715.505	4	.073	4	.419	4	.793	4
96			min	-719.474	3	-862.534	4	-1771.808	3	-.095	2	-.434	3	-.454	3
97		4	max	452.697	1	778.925	2	64.52	2	.158	1	.032	1	.34	2
98			min	-408.115	2	-397.025	1	-69.733	1	-.139	2	-.03	2	-.175	1
99		5	max	440.424	1	773.159	2	71.606	2	.158	1	0	1	0	1
100			min	-395.842	2	-402.792	1	-76.819	1	-.139	2	0	1	0	1
101	M11	1	max	439.052	1	416.967	1	75.778	1	.142	2	0	1	0	1
102			min	-389.945	2	-760.415	2	-68.121	2	-.157	1	0	1	0	1
103		2	max	451.325	1	411.199	1	68.692	1	.142	2	.032	1	.334	2
104			min	-402.219	2	-766.182	2	-61.035	2	-.157	1	-.028	2	-.181	1
105		3	max	718.211	3	902.468	3	1794.569	4	.091	2	.427	3	.826	3
106			min	-727.456	4	-847.271	2	-1742.59	3	-.077	3	-.44	4	-.466	4
107		4	max	414.648	4	814.964	3	59.535	3	.152	4	.033	4	.355	3
108			min	-378.459	3	-432.072	4	-64.283	4	-.132	3	-.031	3	-.19	4
109		5	max	402.374	4	809.034	3	80.793	3	.152	4	0	1	0	1
110			min	-366.186	3	-438.002	4	-85.541	4	-.132	3	0	1	0	1
111	M12	1	max	342.917	4	273.718	2	69.926	2	.115	3	0	1	0	1
112			min	-296.316	3	-619.888	1	-63.309	1	-.131	4	0	1	0	1
113		2	max	342.917	4	267.799	2	41.582	2	.115	3	.024	2	.273	1
114			min	-296.316	3	-625.807	1	-34.965	1	-.131	4	-.022	1	-.118	2
115		3	max	852.206	1	754.859	1	1732.516	2	.09	3	.413	1	.699	1
116			min	-864.466	2	-654.746	3	-1688.461	1	-.093	4	-.424	2	-.339	2
117		4	max	347.371	3	682.606	1	37.688	1	.132	3	.025	2	.297	1
118			min	-305.583	4	-298.141	2	-41.848	2	-.112	4	-.023	1	-.132	2
119		5	max	347.371	3	676.687	1	66.032	1	.132	3	0	1	0	1
120			min	-305.583	4	-304.06	2	-70.192	2	-.112	4	0	1	0	1
121	MP1A	1	max	0	1	.159	4	.361	1	0	3	0	1	0	1
122			min	0	1	-.158	3	-.357	2	0	4	0	1	0	1
123		2	max	161.489	7	166.347	4	224.19	1	0	3	.167	1	.125	3
124			min	62.102	4	-166.346	3	-224.186	2	0	4	-.167	2	-.125	4
125		3	max	773.729	2	499.403	4	60.789	1	.144	1	.033	6	.059	1
126			min	-607.458	1	-454.594	3	-42.619	2	-.143	2	.003	4	-.082	2
127		4	max	835.831	2	665.591	4	284.618	1	.144	1	.173	1	.78	3
128			min	-545.356	1	-620.782	3	-266.448	2	-.143	2	-.122	2	-.881	4
129		5	max	0	2	.018	7	.035	2	0	4	0	1	0	1
130			min	0	1	-.011	4	-.034	1	0	7	0	2	0	1
131	MP2A	1	max	285.291	5	265.628	4	657.732	1	.026	3	.028	8	0	1
132			min	76.8	1	-265.63	3	-657.704	2	-.026	4	.008	2	0	1
133		2	max	549.645	6	757.174	4	688.498	1	.073	4	1.354	1	1.371	4
134			min	85.13	1	-760.138	3	-688.47	2	-.074	3	-1.339	2	-1.373	3
135		3	max	727.568	6	863.237	4	451.617	1	.073	4	.496	1	.254	3
136			min	136.19	1	-866.201	3	-442.865	2	-.074	3	-.462	2	-.25	4

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
137		4	max	-69.77	1	242.942	3	555.558	2	0	8	.034	1	.032	3
138			min	-254.082	6	-242.945	4	-555.528	1	0	3	-.034	2	-.032	4
139		5	max	0	1	.005	3	.439	6	0	8	0	1	0	3
140			min	0	2	-.017	8	-.374	1	0	3	0	2	0	4
141	MP3A	1	max	0	1	.146	4	.363	1	0	3	0	1	0	1
142			min	0	1	-.145	3	-.357	2	0	4	0	1	0	1
143		2	max	160.829	6	166.334	4	224.191	1	0	3	.167	1	.125	3
144			min	61.442	9	-166.333	3	-224.186	2	0	4	-.167	2	-.125	4
145		3	max	838.521	2	494.016	4	89.662	1	.148	2	.042	6	.063	4
146			min	-632.214	1	-532.149	3	-73.65	2	-.147	1	-.05	9	-.049	3
147		4	max	899.963	2	660.204	4	313.49	1	.148	2	.209	1	.921	3
148			min	-570.772	1	-698.337	3	-297.479	2	-.147	1	-.157	2	-.84	4
149		5	max	0	2	.011	3	.037	2	0	8	0	1	0	1
150			min	0	1	-.015	8	-.035	1	0	3	0	2	0	1
151	MP1B	1	max	0	1	.152	2	.276	4	0	2	0	1	0	1
152			min	0	1	-.152	1	-.28	3	0	1	0	1	0	1
153		2	max	161.489	7	156.555	2	181.638	4	0	2	.136	4	.117	1
154			min	62.102	3	-156.555	1	-181.642	3	0	1	-.136	3	-.117	2
155		3	max	640.813	4	443.617	2	86.212	1	.106	2	.017	2	.104	4
156			min	-474.151	3	-488.255	1	-105.848	2	-.106	1	-.06	9	-.081	3
157		4	max	702.914	4	600.019	2	176.511	1	.106	2	.14	1	.897	1
158			min	-412.049	3	-644.658	1	-196.148	2	-.106	1	-.192	2	-.797	2
159		5	max	0	1	.011	3	.026	3	0	3	0	1	0	1
160			min	0	1	-.018	8	-.027	4	0	8	0	2	0	2
161	MP2B	1	max	285.291	7	314.63	2	484.946	4	.031	2	-.008	3	0	1
162			min	76.8	4	-314.628	1	-484.975	3	-.031	1	-.028	6	0	1
163		2	max	547.943	8	717.428	2	511.59	4	.082	1	.989	4	1.258	2
164			min	85.13	3	-713.63	1	-511.62	3	-.082	2	-1.004	3	-1.255	1
165		3	max	725.866	8	780.095	2	398.733	4	.082	1	.353	4	.235	1
166			min	142.535	3	-776.297	1	-407.863	3	-.082	2	-.388	3	-.24	2
167		4	max	-69.77	3	277.991	1	413.52	3	0	8	.029	4	.028	1
168			min	-254.082	8	-277.988	2	-413.549	4	0	3	-.029	3	-.028	2
169		5	max	0	3	.017	8	.339	3	0	8	0	1	0	1
170			min	0	4	-.004	3	-.41	8	0	3	0	2	0	2
171	MP3B	1	max	0	1	.129	2	.335	4	0	2	0	1	0	1
172			min	0	1	-.131	1	-.341	3	0	1	0	1	0	1
173		2	max	160.829	7	156.532	2	181.697	4	0	2	.136	4	.117	1
174			min	61.442	1	-156.534	1	-181.703	3	0	1	-.136	3	-.117	2
175		3	max	766.453	4	466.047	2	134.075	4	.151	4	.038	3	.064	2
176			min	-559.782	3	-427.173	1	-150.996	3	-.15	3	-.061	4	-.078	1
177		4	max	827.895	4	622.45	2	315.437	4	.151	4	.22	4	.706	1
178			min	-498.34	3	-583.576	1	-332.358	3	-.15	3	-.273	3	-.787	2
179		5	max	0	1	.016	5	.035	3	0	5	0	4	0	1
180			min	0	1	-.012	2	-.037	4	0	2	0	3	0	2
181	MP1C	1	max	0	1	.132	1	.335	3	0	1	0	1	0	1
182			min	0	1	-.133	2	-.339	4	0	2	0	1	0	1
183		2	max	161.489	5	156.535	1	181.697	3	0	1	.136	3	.117	2
184			min	62.102	1	-156.536	2	-181.701	4	0	2	-.136	4	-.117	1
185		3	max	720.768	3	394.935	1	101.486	3	.151	4	.022	4	.093	1
186			min	-554.336	4	-440.325	2	-120.503	4	-.15	3	-.041	3	-.07	2
187		4	max	782.87	3	551.338	1	282.848	3	.151	4	.184	3	.736	2
188			min	-492.234	4	-596.727	2	-301.865	4	-.15	3	-.236	4	-.635	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
189		5	max	0	1	.013	2	.034	4	0	2	0	3	0	4
190			min	0	2	-.019	5	-.035	3	0	5	0	4	0	3
191	MP2C	1	max	285.291	8	314.649	1	484.94	3	.031	1	-.008	1	0	1
192			min	76.8	1	-314.647	2	-484.97	4	-.031	2	-.028	6	0	1
193		2	max	546.31	7	708.235	1	511.584	3	.081	2	.989	3	1.232	1
194			min	85.13	4	-706.068	2	-511.614	4	-.081	1	-1.004	4	-1.232	2
195		3	max	724.233	7	770.902	1	403.547	3	.081	2	.354	3	.243	2
196			min	150.716	4	-768.735	2	-413.242	4	-.081	1	-.389	4	-.247	1
197		4	max	-69.77	3	277.989	2	413.517	4	0	8	.029	3	.028	2
198			min	-254.082	8	-277.986	1	-413.546	3	0	10	-.029	4	-.028	1
199		5	max	0	3	.015	8	.336	4	0	8	0	3	0	3
200			min	0	4	-.009	10	-.407	7	0	10	0	4	0	4
201	MP3C	1	max	0	1	.129	1	.273	3	0	1	0	1	0	1
202			min	0	1	-.131	2	-.279	4	0	2	0	1	0	1
203		2	max	160.829	7	156.532	1	181.635	3	0	1	.136	3	.117	2
204			min	61.442	3	-156.534	2	-181.641	4	0	2	-.136	4	-.117	1
205		3	max	712.072	3	521.391	1	103.128	1	.105	1	.022	2	.057	4
206			min	-505.733	4	-483.586	2	-120.749	2	-.104	2	-.044	1	-.071	3
207		4	max	773.514	3	677.793	1	197.69	3	.105	1	.16	1	.836	2
208			min	-444.291	4	-639.989	2	-213.771	4	-.104	2	-.213	2	-.916	1
209		5	max	0	3	.014	7	.027	4	0	7	0	1	0	2
210			min	0	4	-.009	4	-.029	3	0	4	0	2	0	1
211	M22	1	max	0	1	0	1	0	1	0	1	0	1	0	1
212			min	0	1	0	1	0	1	0	1	0	1	0	1
213		2	max	192.663	3	370.232	4	234.152	1	.832	1	.499	4	.307	4
214			min	-255.749	4	-404.253	3	-241.554	2	-.828	2	-.501	3	-.341	3
215		3	max	203.632	4	423.761	4	175.941	3	.829	2	.943	1	1.042	4
216			min	-269.536	3	-333.254	3	-170.199	4	-.84	1	-.97	2	-.876	3
217		4	max	203.632	4	395.41	4	245.694	2	.829	2	.504	3	.289	3
218			min	-269.536	3	-361.606	3	-237.234	1	-.84	1	-.504	4	-.332	4
219		5	max	0	1	0	1	0	1	0	1	0	1	0	1
220			min	0	1	0	1	0	1	0	1	0	1	0	1
221	M23	1	max	0	1	.014	2	.016	3	0	1	0	1	0	1
222			min	0	1	0	11	-.01	1	0	1	0	1	0	1
223		2	max	271.294	1	381.76	2	239.247	4	.723	4	.548	2	.245	2
224			min	-333.321	2	-415.734	1	-245.363	3	-.718	3	-.548	1	-.279	1
225		3	max	220.973	3	362.894	3	157.748	1	.591	3	.657	4	.956	3
226			min	-282.564	4	-272.096	4	-152.252	2	-.603	4	-.683	3	-.789	4
227		4	max	188.048	3	334.543	3	176.757	1	.591	3	.47	4	.203	1
228			min	-249.638	4	-300.447	4	-171.262	2	-.603	4	-.465	3	-.246	2
229		5	max	0	1	0	11	.007	3	0	1	0	1	0	1
230			min	0	1	-.008	2	-.002	1	0	1	0	1	0	1
231	M24	1	max	0	1	.014	1	.003	1	0	1	0	1	0	1
232			min	0	1	0	11	-.014	4	0	1	0	1	0	1
233		2	max	177.509	4	317.777	1	168.147	2	.59	3	.48	3	.267	1
234			min	-235.264	3	-352.23	2	-173.16	1	-.586	4	-.479	4	-.301	2
235		3	max	315.296	1	452.851	1	193.844	4	.714	4	.771	3	1.152	1
236			min	-381.048	2	-362.314	2	-186.969	3	-.726	3	-.797	4	-.986	2
237		4	max	282.37	1	424.5	1	250.873	4	.714	4	.549	2	.277	2
238			min	-348.123	2	-390.665	2	-243.998	3	-.726	3	-.546	1	-.319	1
239		5	max	0	1	0	11	.005	1	0	1	0	1	0	1
240			min	0	1	-.009	1	-.008	4	0	1	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
241	M25	1	max	426.531	3	432.442	1	772.873	1	.008	1	.953	2	.767	2
242			min	-459.046	4	-434.576	2	-795.967	2	-.008	2	-.954	1	-.785	1
243		2	max	418.935	3	436.828	1	776.058	1	.008	1	.481	2	.63	2
244			min	-451.45	4	-438.961	2	-792.782	2	-.008	2	-.491	1	-.654	1
245		3	max	411.339	3	441.213	1	779.243	1	.008	1	.034	4	.644	4
246			min	-443.854	4	-443.347	2	-789.597	2	-.008	2	-.049	3	-.672	3
247		4	max	403.743	3	445.599	1	782.428	1	.008	1	.444	1	.667	4
248			min	-436.258	4	-447.733	2	-786.412	2	-.008	2	-.463	2	-.698	3
249		5	max	396.147	3	449.985	1	785.613	1	.008	1	.916	1	.696	4
250			min	-428.662	4	-452.118	2	-783.227	2	-.008	2	-.936	2	-.728	3
251	M26	1	max	344.319	2	470.221	3	944.935	3	.009	3	1.092	4	.671	1
252			min	-373.949	1	-468.436	4	-965.351	4	-.009	4	-1.097	3	-.687	2
253		2	max	344.319	2	470.221	3	948.12	3	.009	3	.544	4	.649	1
254			min	-373.949	1	-468.436	4	-962.166	4	-.009	4	-.555	3	-.673	2
255		3	max	344.319	2	470.221	3	951.305	3	.009	3	.058	1	.635	1
256			min	-373.949	1	-468.436	4	-958.981	4	-.009	4	-.074	2	-.664	2
257		4	max	344.319	2	470.221	3	954.49	3	.009	3	.534	3	.629	1
258			min	-373.949	1	-468.436	4	-955.796	4	-.009	4	-.55	4	-.66	2
259		5	max	344.319	2	470.221	3	957.675	3	.009	3	1.08	3	.631	1
260			min	-373.949	1	-468.436	4	-952.611	4	-.009	4	-1.095	4	-.662	2
261	M27	1	max	390.404	4	463.997	2	765.234	2	.008	2	.923	1	.751	3
262			min	-423.418	3	-458.122	1	-782.641	1	-.008	1	-.934	2	-.769	4
263		2	max	398	4	459.611	2	768.419	2	.008	2	.45	1	.706	3
264			min	-431.014	3	-453.737	1	-779.456	1	-.008	1	-.464	2	-.731	4
265		3	max	405.596	4	455.226	2	771.604	2	.008	2	.033	3	.668	3
266			min	-438.61	3	-449.351	1	-776.271	1	-.008	1	-.049	4	-.697	4
267		4	max	413.192	4	450.84	2	774.789	2	.008	2	.476	2	.636	3
268			min	-446.206	3	-444.965	1	-773.086	1	-.008	1	-.489	1	-.667	4
269		5	max	420.788	4	446.455	2	777.974	2	.008	2	.945	2	.698	2
270			min	-453.802	3	-440.58	1	-769.901	1	-.008	1	-.954	1	-.729	1
271	M28	1	max	5182.669	1	37.483	5	45.8	3	0	4	0	1	0	1
272			min	-2065.558	2	-11.324	2	-45.8	4	0	3	0	1	0	1
273		2	max	5177.007	1	18.742	5	22.9	3	0	4	.036	3	.009	2
274			min	-2048.32	2	-5.662	2	-22.9	4	0	3	-.036	4	-.03	5
275		3	max	5171.346	1	0	1	0	1	0	4	.049	3	.012	2
276			min	-2031.082	2	0	1	0	1	0	3	-.049	4	-.04	5
277		4	max	5165.684	1	5.662	2	22.9	4	0	4	.036	3	.009	2
278			min	-2013.844	2	-18.742	5	-22.9	3	0	3	-.036	4	-.03	5
279		5	max	5160.022	1	11.324	2	45.8	4	0	4	0	1	0	1
280			min	-1996.606	2	-37.483	5	-45.8	3	0	3	0	1	0	1
281	M29	1	max	4735.588	4	37.273	8	37.102	1	0	2	0	1	0	1
282			min	-1613.087	3	-10.597	3	-37.102	2	0	1	0	1	0	1
283		2	max	4730.289	4	18.636	8	18.551	1	0	2	.03	1	.008	3
284			min	-1596.212	3	-5.298	3	-18.551	2	0	1	-.03	2	-.03	8
285		3	max	4740.327	8	0	1	0	1	0	2	.039	1	.011	3
286			min	-1579.337	3	0	1	0	1	0	1	-.039	2	-.04	8
287		4	max	4752.537	8	5.298	3	18.551	2	0	2	.03	1	.008	3
288			min	-1562.463	3	-18.636	8	-18.551	1	0	1	-.03	2	-.03	8
289		5	max	4764.747	8	10.597	3	37.102	2	0	2	0	1	0	1
290			min	-1545.588	3	-37.273	8	-37.102	1	0	1	0	1	0	1
291	M30	1	max	4712.99	3	37.273	7	37.102	2	0	1	0	1	0	1
292			min	-1590.287	4	-10.597	4	-37.102	1	0	2	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
293		2	max	4723.985	7	18.636	7	18.551	2	0	1	.03	2	.008	4
294			min	-1573.412	4	-5.298	4	-18.551	1	0	2	-.03	1	-.03	7
295		3	max	4736.195	7	0	1	0	1	0	1	.039	2	.011	4
296			min	-1556.538	4	0	1	0	1	0	2	-.039	1	-.04	7
297		4	max	4748.405	7	5.298	4	18.551	1	0	1	.03	2	.008	4
298			min	-1539.663	4	-18.636	7	-18.551	2	0	2	-.03	1	-.03	7
299		5	max	4760.615	7	10.597	4	37.102	1	0	1	0	1	0	1
300			min	-1522.789	4	-37.273	7	-37.102	2	0	2	0	1	0	1
301	M31	1	max	1953.084	1	77.076	6	86.888	1	0	4	.032	2	.208	3
302			min	-2019.881	2	-28.884	1	-93.44	2	0	3	-.061	1	-.143	4
303		2	max	1963.205	1	65.556	2	81.045	1	0	4	.016	2	.107	3
304			min	-2030.001	2	-36.928	1	-87.597	2	0	3	-.022	1	-.076	4
305		3	max	1973.326	1	55.643	2	75.202	1	0	4	.023	4	.052	1
306			min	-2040.122	2	-46.841	1	-81.754	2	0	3	-.019	3	-.04	2
307		4	max	1983.446	1	46.394	2	69.359	1	0	4	.022	1	.147	1
308			min	-2050.243	2	-56.09	1	-75.911	2	0	3	-.023	2	-.14	2
309		5	max	1993.567	1	39.072	2	63.516	1	0	4	.027	1	.244	1
310			min	-2060.363	2	-63.412	1	-70.068	2	0	3	-.047	2	-.228	2
311	M32	1	max	1985.724	1	64.785	1	70.098	2	0	4	.024	1	.249	1
312			min	-2060.645	2	-39.592	2	-63.684	1	0	3	-.046	2	-.23	2
313		2	max	1975.604	1	57.467	1	75.941	2	0	4	.02	1	.151	1
314			min	-2050.525	2	-46.91	2	-69.527	1	0	3	-.023	2	-.141	2
315		3	max	1965.483	1	48.218	1	81.784	2	0	4	.021	3	.055	1
316			min	-2040.404	2	-56.158	2	-75.37	1	0	3	-.019	4	-.041	2
317		4	max	1955.363	1	38.307	1	87.628	2	0	4	.016	2	.101	4
318			min	-2030.284	2	-66.069	2	-81.214	1	0	3	-.022	1	-.068	3
319		5	max	1945.242	1	30.261	1	93.471	2	0	4	.032	2	.197	4
320			min	-2020.163	2	-76.231	6	-87.057	1	0	3	-.06	1	-.132	3
321	M33	1	max	1604.124	2	83.04	1	120.148	2	0	9	.023	1	.269	1
322			min	-1680.982	1	-38.226	2	-126.98	1	0	1	-.053	6	-.204	2
323		2	max	1604.124	2	74.934	1	96.775	2	0	9	.018	3	.12	1
324			min	-1680.982	1	-46.332	2	-103.608	1	0	1	-.024	4	-.089	2
325		3	max	1604.124	2	64.98	1	73.403	2	0	9	.025	2	.057	4
326			min	-1680.982	1	-56.286	2	-80.235	1	0	1	-.021	1	-.045	3
327		4	max	1604.124	2	55.762	1	50.031	2	0	9	.025	2	.109	2
328			min	-1680.982	1	-65.503	2	-56.863	1	0	1	-.028	1	-.102	1
329		5	max	1604.124	2	48.292	1	40.689	4	0	9	.016	4	.192	2
330			min	-1680.982	1	-72.973	2	-47.039	3	0	1	-.036	7	-.177	1
331	M34	1	max	2046.645	4	76.712	4	56.942	3	0	2	.015	4	.252	4
332			min	-2131.374	3	-51.482	3	-50.294	4	0	1	-.037	7	-.233	3
333		2	max	2036.525	4	69.374	4	74.471	3	0	2	.025	4	.151	4
334			min	-2121.253	3	-58.819	3	-67.823	4	0	1	-.029	3	-.141	3
335		3	max	2026.404	4	60.169	4	92	3	0	2	.017	4	.049	2
336			min	-2111.133	3	-68.024	3	-85.352	4	0	1	-.014	3	-.035	1
337		4	max	2016.284	4	50.212	4	109.529	3	0	2	.016	1	.104	3
338			min	-2101.012	3	-77.982	3	-102.882	4	0	1	-.022	2	-.072	4
339		5	max	2006.163	4	42.127	4	127.059	3	0	2	.035	3	.258	3
340			min	-2090.892	3	-86.066	3	-120.411	4	0	1	-.064	4	-.193	4
341	M35	1	max	2041.921	3	87.112	4	121.754	3	0	1	.035	4	.264	4
342			min	-2119.16	4	-42.408	3	-128.559	4	0	2	-.064	3	-.199	3
343		2	max	2052.042	3	79.068	4	104.225	3	0	1	.017	1	.108	4
344			min	-2129.281	4	-50.451	3	-111.03	4	0	2	-.023	2	-.077	3

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
345		3	max	2062.162	3	69.155	4	86.695	3	0	1	.018	3	.05	2
346			min	-2139.401	4	-60.364	3	-93.501	4	0	2	-.014	4	-.038	1
347		4	max	2072.283	3	59.906	4	69.166	3	0	1	.028	3	.148	3
348			min	-2149.522	4	-69.613	3	-75.972	4	0	2	-.03	4	-.141	4
349		5	max	2082.404	3	52.584	4	51.637	3	0	1	.018	3	.25	3
350			min	-2159.642	4	-76.935	3	-58.442	4	0	2	-.038	4	-.235	4
351	M36	1	max	1554.715	2	71.477	2	48.05	4	0	1	.014	3	.191	2
352			min	-1638.882	1	-45.961	1	-41.821	3	0	2	-.038	8	-.172	1
353		2	max	1554.715	2	64.031	2	54.469	1	0	1	.023	2	.111	2
354			min	-1638.882	1	-53.407	1	-47.791	2	0	2	-.027	1	-.101	1
355		3	max	1554.715	2	54.772	2	77.842	1	0	1	.023	2	.058	3
356			min	-1638.882	1	-62.666	1	-71.164	2	0	2	-.02	1	-.044	4
357		4	max	1554.715	2	44.866	2	101.214	1	0	1	.018	4	.114	1
358			min	-1638.882	1	-72.572	1	-94.536	2	0	2	-.024	3	-.081	2
359		5	max	1554.715	2	36.795	2	124.586	1	0	1	.024	1	.259	1
360			min	-1638.882	1	-80.643	1	-117.908	2	0	2	-.052	2	-.194	2

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	MP2A	PIPE_2.0	.849	5.5	3	.136	5.5		3	14916....	32130	1.872	1.872	2...	H1-1b
2	MP2B	PIPE_2.0	.817	5.5	2	.136	5.5		2	14916....	32130	1.872	1.872	2...	H1-1b
3	MP2C	PIPE_2.0	.809	5.5	1	.134	5.5		2	14916....	32130	1.872	1.872	2...	H1-1b
4	M25	L3x3x4	.781	0	1	.088	0	z	2	42048.03	46656	1.688	3.756	1...	H2-1
5	M27	L3x3x4	.767	2.167	1	.086	0	z	1	42048.03	46656	1.688	3.756	1...	H2-1
6	M26	L3x3x4	.759	0	3	.105	0	z	4	42048.03	46656	1.688	3.756	2...	H2-1
7	MP3C	PIPE_2.0	.566	5.332	1	.136	5.332		1	18105....	32130	1.872	1.872	2...	H1-1b
8	MP3A	PIPE_2.0	.551	5.332	3	.121	5.332		1	18105....	32130	1.872	1.872	2...	H1-1b
9	MP1B	PIPE_2.0	.551	5.332	1	.133	5.332		1	18105....	32130	1.872	1.872	2...	H1-1b
10	MP1A	PIPE_2.0	.527	5.332	4	.116	5.332		1	18105....	32130	1.872	1.872	2...	H1-1b
11	M11	pl1/2X6	.501	.875	3	.215	0	y	1	32001....	97200	1.012	12.15	1...	H1-1b
12	M10	pl1/2X6	.490	.875	4	.217	1.75	y	1	32001....	97200	1.012	12.15	1...	H1-1b
13	M12	pl1/2X6	.479	.875	1	.178	1.75	y	3	32001....	97200	1.012	12.15	1...	H1-1b
14	MP3B	PIPE_2.0	.473	5.332	2	.151	5.332		4	18105....	32130	1.872	1.872	2...	H1-1b
15	MP1C	PIPE_2.0	.446	5.332	3	.146	5.332		3	18105....	32130	1.872	1.872	2...	H1-1b
16	M35	L2x2x4	.391	0	3	.016	0	z	4	11829....	30585.6	.691	1.577	2...	H2-1
17	M34	L2x2x4	.384	4.33	4	.016	4.33	z	3	11829....	30585.6	.691	1.577	2...	H2-1
18	M31	L2x2x4	.362	4.33	1	.013	0	z	3	11829....	30585.6	.691	1.577	2...	H2-1
19	M32	L2x2x4	.360	0	1	.014	4.33	z	4	11829....	30585.6	.691	1.577	2...	H2-1
20	M33	L2x2x4	.340	0	2	.017	0	z	1	11829....	30585.6	.691	1.577	2...	H2-1
21	M36	L2x2x4	.330	4.33	2	.018	4.33	z	1	11829....	30585.6	.691	1.577	2...	H2-1
22	M22	PIPE_3.0	.236	1.537	3	.179	11.8...		1	24838....	65205	5.749	5.749	1...	H1-1b
23	M24	PIPE_3.0	.231	11.879	1	.158	11.8...		3	24838....	65205	5.749	5.749	1...	H1-1b
24	M23	PIPE_3.0	.223	1.537	1	.158	1.537		4	24838....	65205	5.749	5.749	2...	H1-1b
25	M6	HSS4x4x4	.217	2.953	1	.125	0	z	4	124317...	139518	16.181	16.181	1...	H1-1b
26	M4	HSS4x4x4	.202	2.953	4	.098	0	z	2	124317...	139518	16.181	16.181	1...	H1-1b
27	M3	PIPE_3.0	.200	6.708	4	.113	7.966		4	24838....	65205	5.749	5.749	1...	H1-1b
28	M5	HSS4x4x4	.200	2.953	3	.097	0	z	1	124317...	139518	16.181	16.181	1...	H1-1b
29	M2	PIPE_3.0	.200	6.708	1	.111	5.451		3	24838....	65205	5.749	5.749	1...	H1-1b
30	M1	PIPE_3.0	.186	.839	3	.114	7.966		2	24838....	65205	5.749	5.749	1...	H1-1b
31	M8	HSS4x4x4	.181	3.04	3	.123	.443	z	1	119516...	139518	16.181	16.181	1...	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear..	Loc[ft]	Dir	LC	phi*Pnc..	phi*Pnt...	phi*Mn ..	phi*Mn ..	Cb	Eqn
32	M9	HSS4x4x4	.177	3.04	1	.102	5.637	z	3	119516...	139518	16.181	16.181	1...	H1-1b
33	M7	HSS4x4x4	.174	3.04	4	.127	5.637	z	1	119516...	139518	16.181	16.181	1...	H1-1b
34	M28	LL2x2x4x0	.123	0	1	.004	0	z	4	42184....	61236	2.894	2.114	1	H1-1b*
35	M29	LL2x2x4x0	.113	4.243	8	.004	0	z	2	42184....	61236	2.894	2.114	1...	H1-1b*
36	M30	LL2x2x4x0	.113	4.243	7	.004	0	z	1	42184....	61236	2.894	2.114	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 #: CT13076-A

CARRIER SITE #/NAME: CT11841B / LEDYARD

COORDINATES (LATITUDE: 41.468277°, LONGITUDE: -72.054472°)

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

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	ANTENNA MOUNT MODIFICATION DETAILS	0
A-2	ANTENNA MOUNT PHOTOS	0
D-1	STANDARD DETAILS	0
MS-HRECP-35	METROSITE SUPPORT RAIL W/ END CONNECTION	
MS-1436	METROSITE LIGHT COLLAR MOUNT ASSEMBLY	
MPW-1	METROSITE LIGHT COLLAR MOUNT PLATE WELDMENT DETAIL	
MS-KI22-5	METROSITE KICKER SUPPORT KIT	

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE **TES** PROJECT NO. 78333, DATED 06/14/19.

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

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

TES JOB NO: 81109

CUSTOMER SITE NO: CT13076-A-SBA

CUSTOMER SITE NAME: LEDYARD

12 ORCHARD DRIVE
LEDYARD, CT 06335

STATE OF CONNECTICUT
JAIME R. CHLES
No. 17534
LICENSED PROFESSIONAL ENGINEER
7/18/19

DRAWN BY: CHLE | CHECKED BY: KSP/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	07/18/19

SHEET TITLE: TITLE SHEET

SHEET NUMBER: T-1 | REV #: 0

BILL OF MATERIALS

QUANTITY COUNTED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTIONS	SHEET LIST	PIECE WEIGHT (LBS)	WEIGHT (LB)	NOTES
			MATERIAL & HARDWARE				
1	1	MS-HRECP-35	METROSITE SUPPORT RAIL W/ END CONNECTION	A-1, MS-HRECP-35	514.0	514.0	Galvanized
1	1	MS-1436	METROSITE LIGHT COLLAR MOUNT ASSEMBLY	A-1, MS-1436	87.0	87.0	Galvanized
1	1	MS-KI22-5	METROSITE KICKER SUPPORT	A-1, MS-KI22-5	146.0	146.0	Galvanized
			FOLLOWING ITEMS ARE "CUSTOM" PARTS				
3	3	PST2375-8	2" PST (2.375" O.D. X 0.154" THK) X 8'-0" A53 GR-B	A-1, F-1	30.10	90.3	GALVANIZED
			ALL METROSITE PARTS ARE AVAILABLE FROM METROSITE, LLC. **180 IND PARK BLVD COMMERCE, GA 30529** **OFFICE: (706) 335-7045** **FAX: (706) 335-7056**				
			NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.				
				TOTAL WEIGHT (LBS) =		**837.3**	

TES

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

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

TES JOB NO:
81109

CUSTOMER SITE NO:
CT13076-A-SBA
CUSTOMER SITE NAME:
LEDYARD
12 ORCHARD DRIVE
LEDYARD, CT 06335

DRAWN BY: CHLE | CHECKED BY: KSP/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	07/18/19

SHEET TITLE:
BILL OF MATERIALS

SHEET NUMBER: BOM
REV #: 0

GENERAL NOTES

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

FABRICATION

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

WELDING

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

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

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

VERIFICATION AND INSPECTION

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

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

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

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

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

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

[d] BEVELED WASHER NOT USED.

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

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

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

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

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

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

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

TES JOB NO:
81109

CUSTOMER SITE NO:
CT13076-A-SBA
CUSTOMER SITE NAME:
LEDYARD
12 ORCHARD DRIVE
LEDYARD, CT 06335

DRAWN BY: CHLE | CHECKED BY: KSP/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	07/18/19

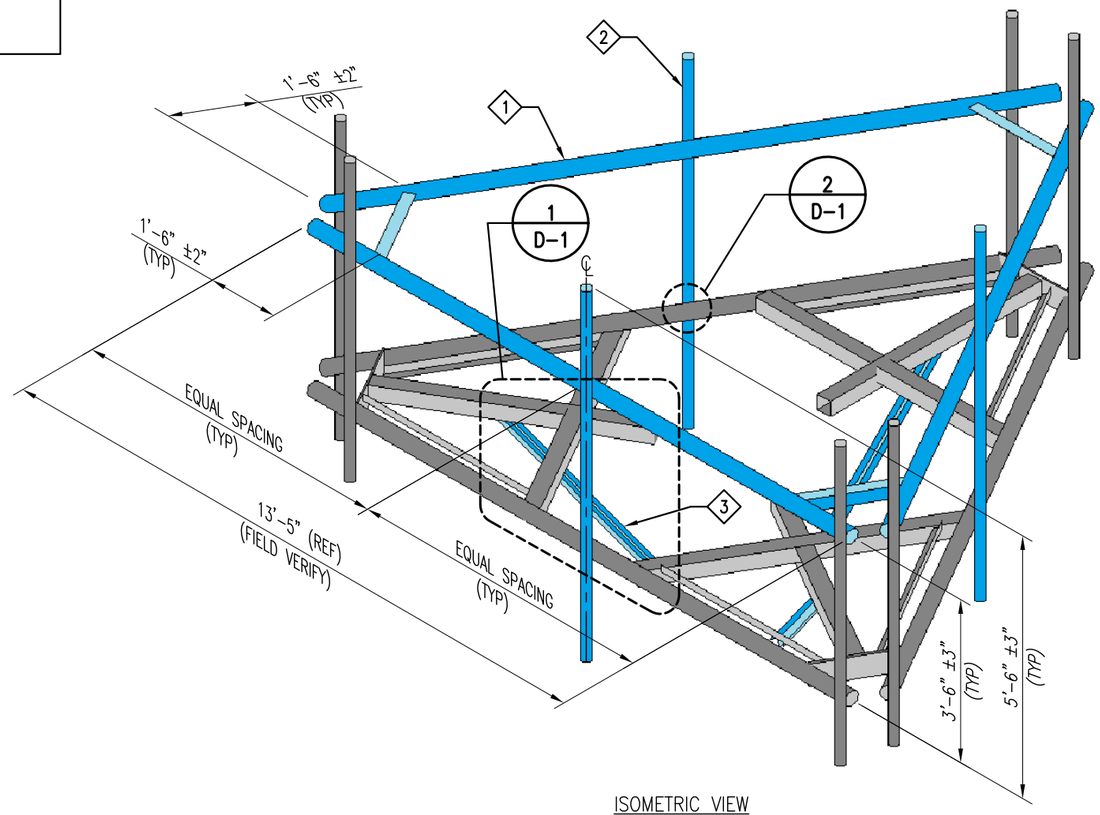
SHEET TITLE:
GENERAL NOTES

SHEET NUMBER: GN-1
REV #: 0

SCOPE OF WORK

1. INSTALL NEW SUPPORT RAIL WITH END CONNECTION KIT. SEE SHEET MS-HRECP-35 FOR DETAILS.
2. INSTALL NEW 2" PST ANTENNA MOUNT PIPE. (1) PER SECTOR AS SHOWN.
3. INSTALL NEW LIGHT COLLAR MOUNT (NOT SHOWN FOR CLARITY) & KICKER SUPPORT KIT. SEE SHEETS D-1, MS-1436 & MS-KI22-5 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



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 147' ELEV.

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-HRECP-35	METROSITE SUPPORT RAIL W/ END CONNECTION
2	3	PST2375-8	2" PST (2.375" O.D. X 0.154" THK) X 8'-0" A53 GR-B
3	1	MS-1436	METROSITE LIGHT COLLAR MOUNT ASSEMBLY
4	1	MS-KI22-5	METROSITE KICKER SUPPORT

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

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

TES JOB NO: 81109

CUSTOMER SITE NO: CT13076-A-SBA
CUSTOMER SITE NAME: LEDYARD
12 ORCHARD DRIVE
LEDYARD, CT 06335

DRAWN BY: CHLE | CHECKED BY: KSP/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	07/18/19

SHEET TITLE:
ANTENNA MOUNT MODIFICATION DETAILS

SHEET NUMBER: A-1
REV #: 0

PHOTO 1

PHOTO 2

PHOTO 3

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

TES
Tower Engineering Solutions
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IRVING, TX 75038
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(800)-487-SITE

TES JOB NO:
81109

CUSTOMER SITE NO:
CT13076-A-SBA

CUSTOMER SITE NAME:
LEDYARD

12 ORCHARD DRIVE
LEDYARD, CT 06335

DRAWN BY: CHLE | CHECKED BY: KSP/HMA

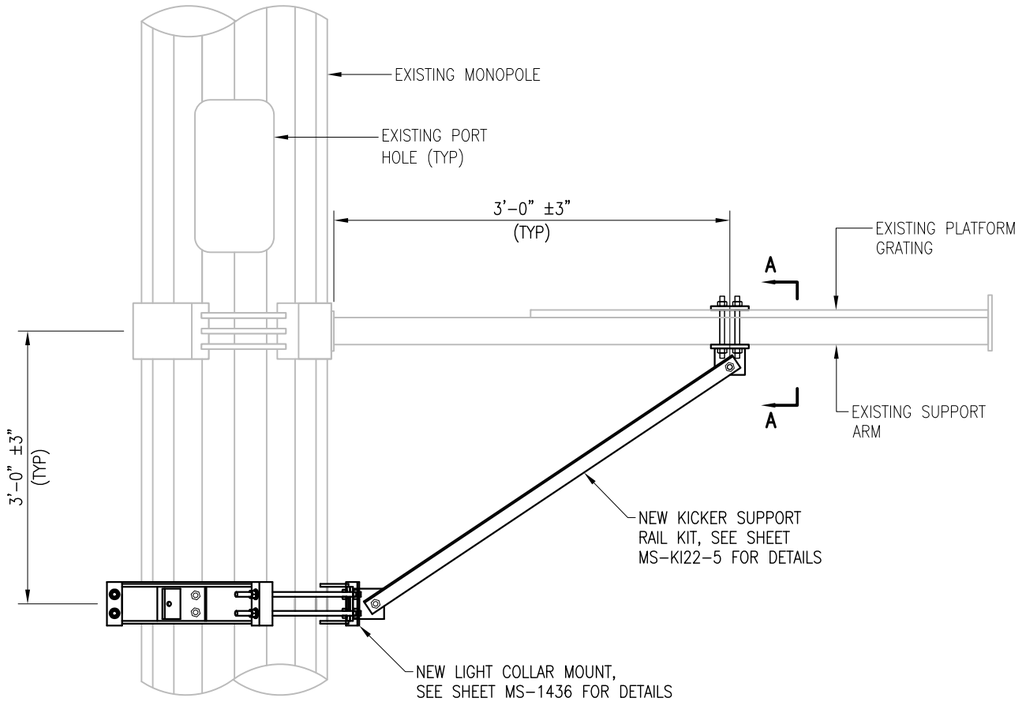
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	07/18/19

SHEET TITLE:

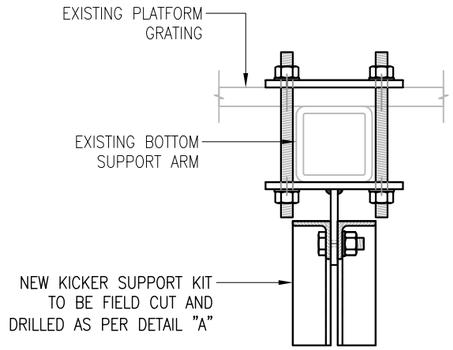
ANTENNA MOUNT PHOTOS

SHEET NUMBER: A-2

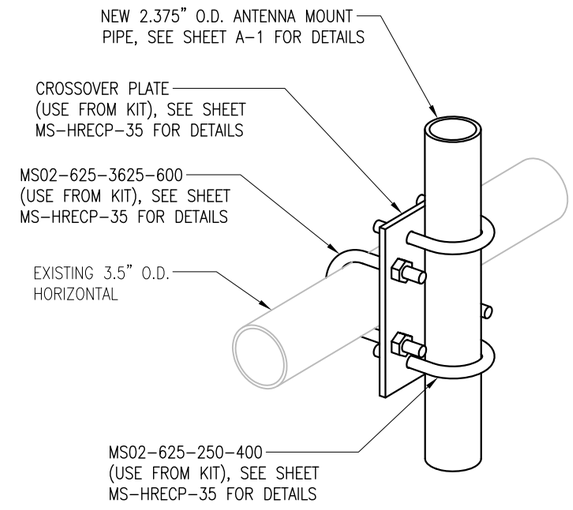
REV #: 0



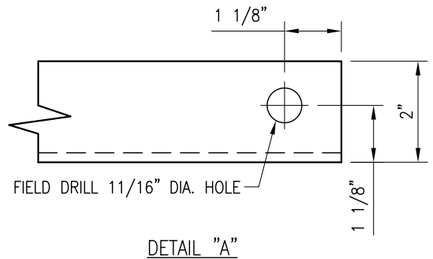
1 / D-1 DETAIL



SECTION A-A



2 / D-1 DETAIL



DETAIL "A"

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

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

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

TES JOB NO: 81109

CUSTOMER SITE NO: CT13076-A-SBA

CUSTOMER SITE NAME: LEDYARD

12 ORCHARD DRIVE
LEDYARD, CT 06335

DRAWN BY: CHLE | CHECKED BY: KSP/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	07/18/19

SHEET TITLE: STANDARD DETAILS

SHEET NUMBER: D-1

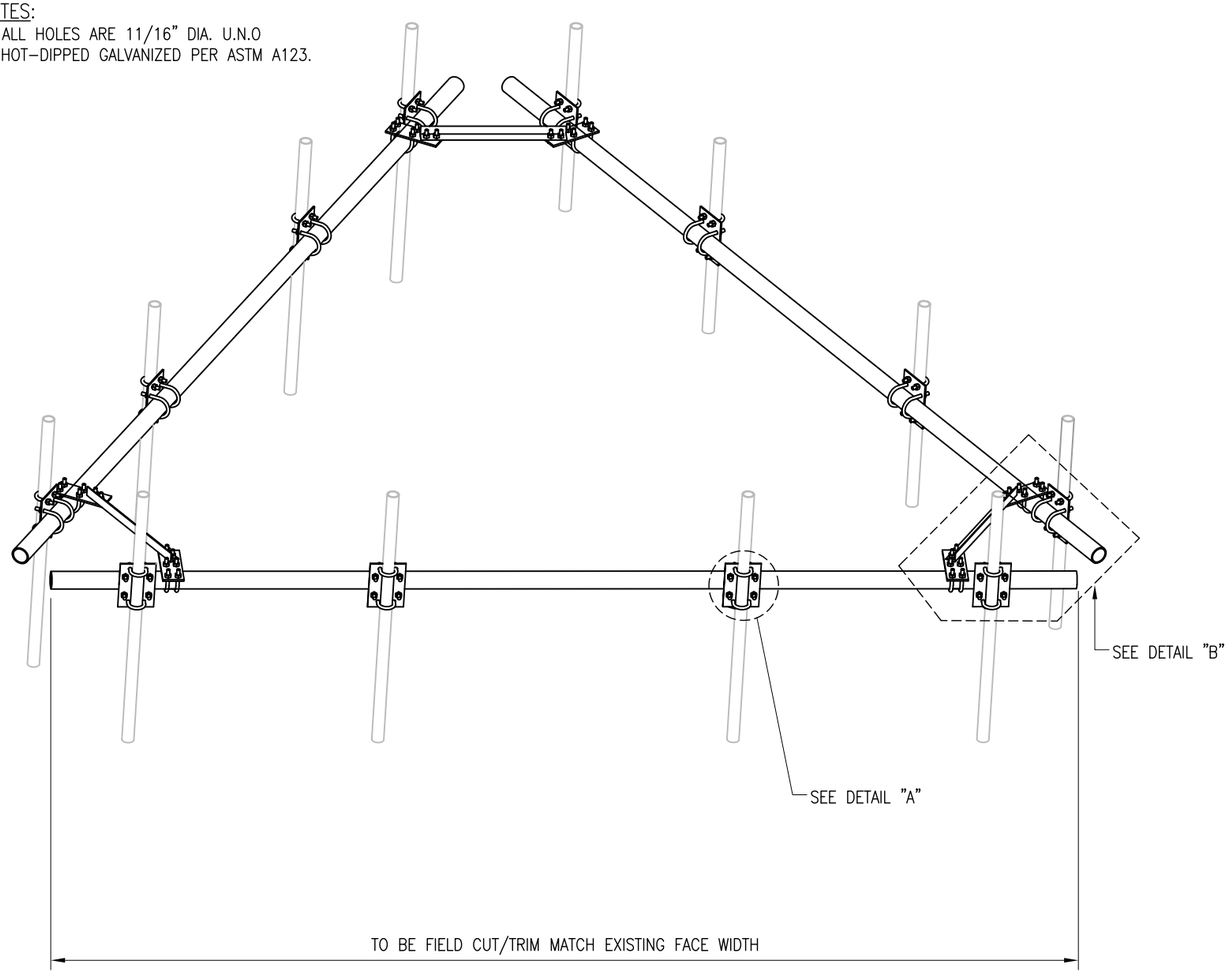
REV #: 0

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

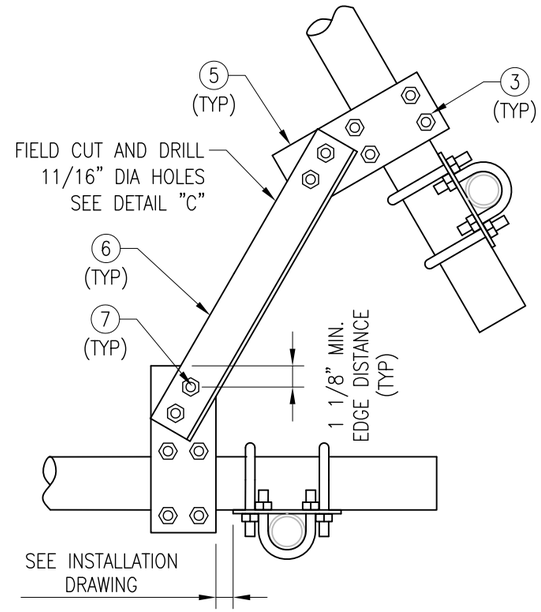
NOTES:
1. ALL HOLES ARE 11/16" DIA. U.N.O
2. HOT-DIPPED GALVANIZED PER ASTM A123.

MS-HRECP-35

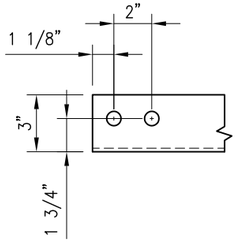
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	3PST-140	3" PST (3.50" O.D X .216" THICK) X 14'-0"	A53 GR-B	TAF-1	337.2
2	12	PL375-10	PL 3/8" X 7 1/8" X 10"	A36	TAF-1	92.4
3	36	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
4	24	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
5	6	PL375-11	PL 3/8" X 4 1/4" X 0'-11"	A36	TAF-1	30.2
6	3	AL-33C	L 3" X 3" X 1/4" X 3'-6"	A36	ECP-1	54.0
7	12	--	BOLT 5/8" X 2" A325 W/ HHN & LKW	A325	--	--
				GALVANIZED WT		514



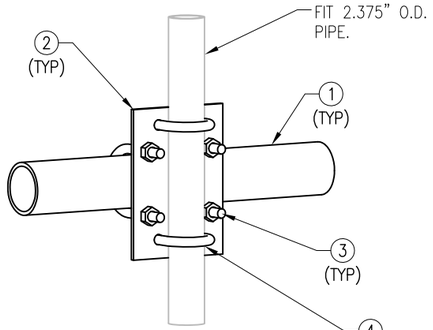
ELEVATION VIEW



DETAIL "B"



DETAIL "C"
11/16"ø HOLES FIELD DRILLED



DETAIL "A"

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

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

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

TITLE
MS-HRECP-35
SUPPORT RAIL WITH END CONNECTION KIT

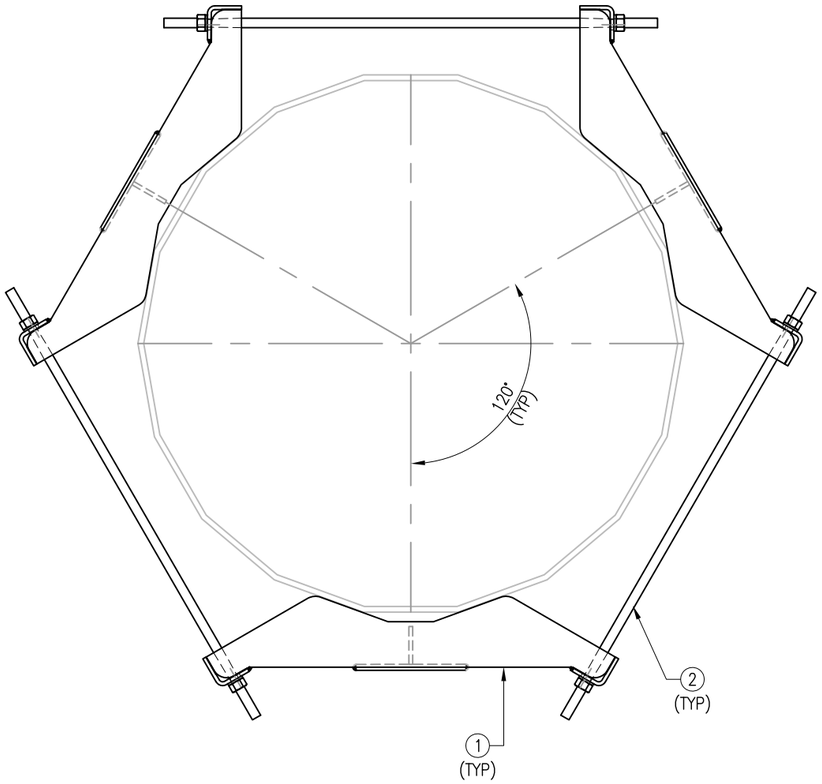
SIZE	DWG NO	REV
B	MS-HRECP-35	1

SCALE: -
SHEET 1 OF 1

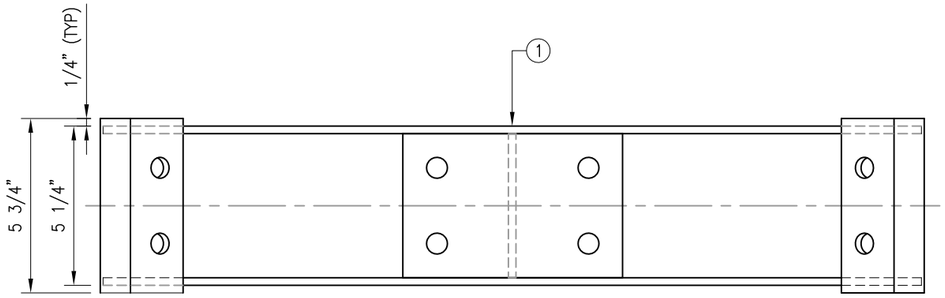
NOTE:
1) FITS 12" DIA TO 32" DIA.

ITEM NO.	QTY.	PART NO.	DESCRIPTION
2	6	---	THREADED ROD 5/8" X 2'-4 3/4" W/ 2 HHN & LK EA A36
1	3	MPW-1	MOUNT PLATE WELDMENT A36

GALVANIZED WEIGHT: 65.6 LBS



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
STANDARD SHEET TOLERANCES
DECIMALS: .X ± 0.1, .XX ± 0.02, .XXX ± 0.005
ANGLES ± 1°
FRACTIONS ± 1/32

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

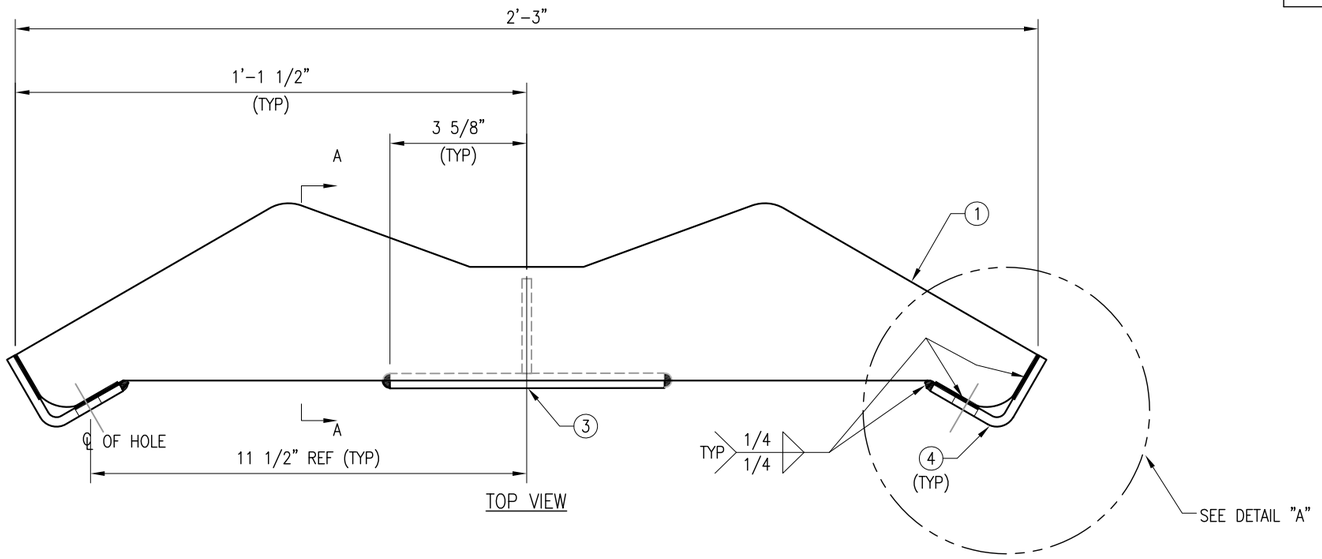
TITLE
LIGHT COLLAR MOUNT PLATE
ASSEMBLY DETAIL MS-1436

SIZE	DWG NO	REV
B	MS-1436	1

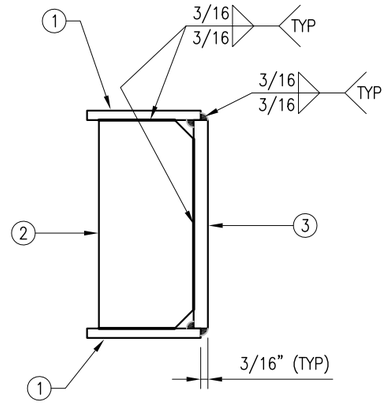
SCALE -
SHEET 1 OF 1

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

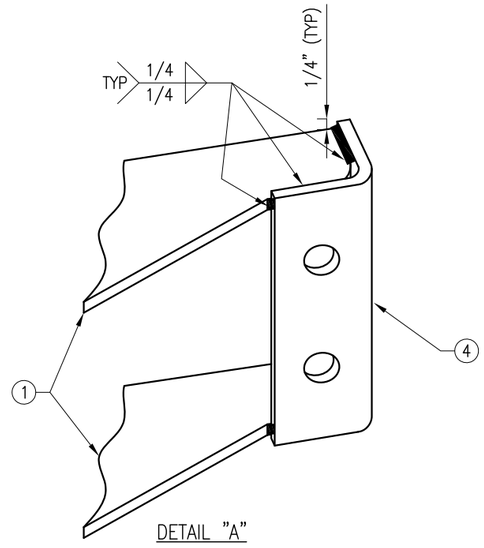
MPW-1 WELDMENT						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	2	PL-1	PL 1/4" X 5 3/8" X 2'-3"	A36	F-2	12.6
2	1	PL-2	PL 1/4" X 2 1/2" X 0'-4 3/4"	A36	F-2	.83
3	1	PL-3	PL 3/8" X 4 3/4" X 0'-7 1/4"	A36	F-2	3.7
4	2	PL-8	PL 1/4" x 4 1/8" x 5 3/4"	A36	F-2	3.2
					BLACK WT	20.3
					GALVANIZED WT	21



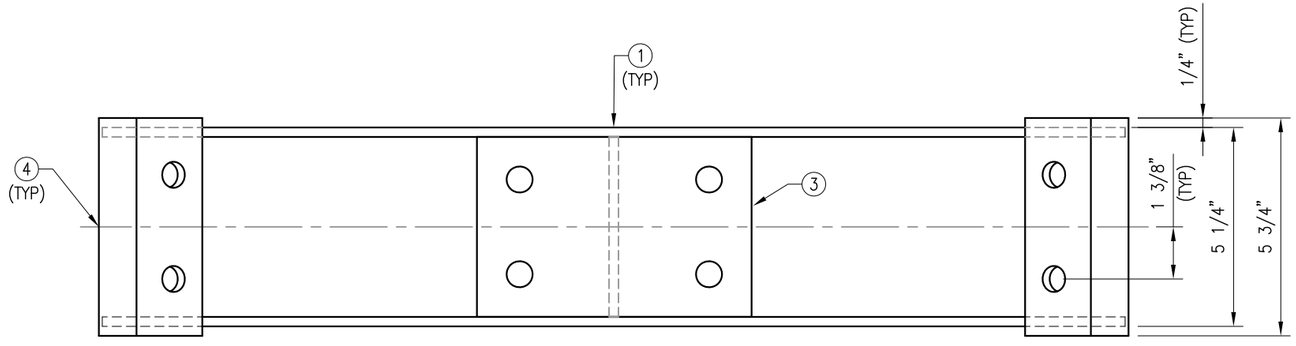
TOP VIEW



SECTION "A-A"



DETAIL "A"



FRONT VIEW

MPW-1 WELDMENT

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH

STANDARD SHEET TOLERANCES

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

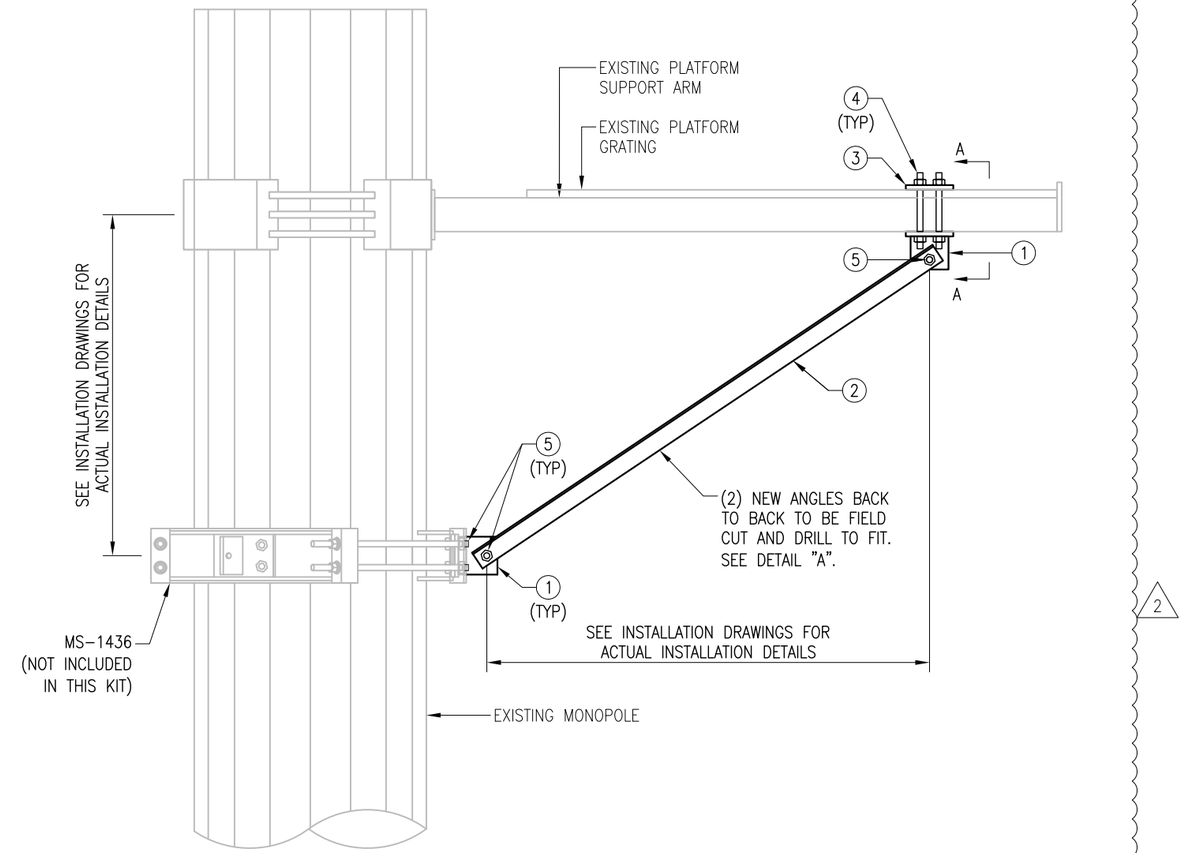
APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE
LIGHT COLLAR MOUNT
PLATE WELDMENT DETAIL

SIZE	DWG NO	REV
B	MPW-1	0

SCALE - SHEET 1 OF 1

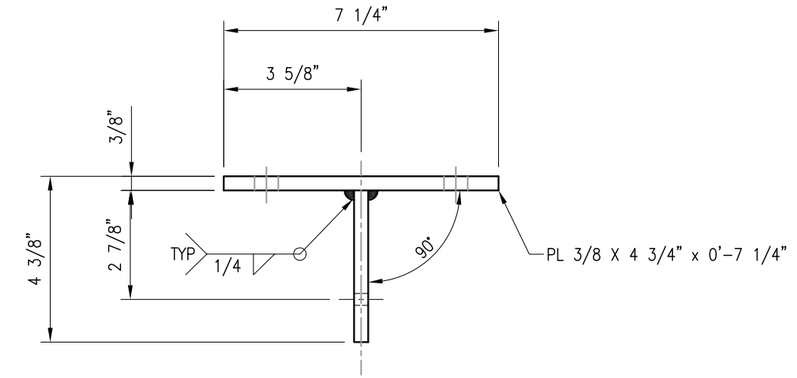
NOTE:
THE LOCATION OF KICKER AND EXISTING ANTENNA MOUNT SHOWN ON THE DRAWING IS FOR REPRESENTATION PURPOSE ONLY. SEE INSTALLATION DRAWINGS FOR ACTUAL INSTALLATION OF DETAILS.



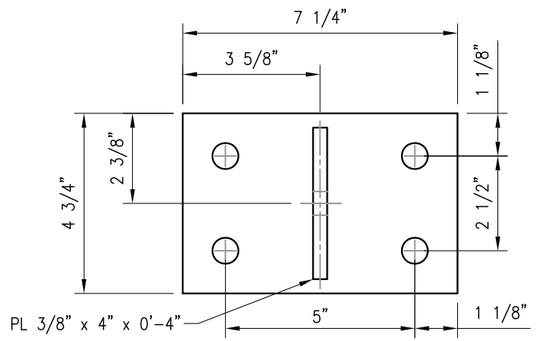
ELEVATION

MS-KI22-5

ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	6	BRKMW-1S	BRACKET WELDMENT	---	BRKMW-1S	34.8
2	6	D2225-5	L 2" X 2" X 1/4" X 5'-0"	A36	KF-1	100.5
3	3	PL1S-375	PL 3/8" X 4 3/4" X 7 1/4"	A36	KF-1	11.1
4	12	---	ALL THREAD ROD 5/8" DIA. X 10" HDG W/ (2) HHN & LKW EA.	A36	---	--
5	18	---	BOLT 5/8" X 2" W/ HHN & LKW	A325	--	--
					GALVANIZED WT	146

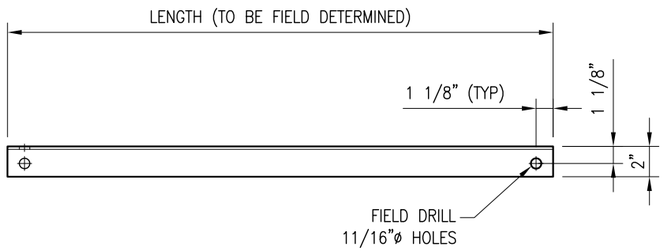


TOP VIEW

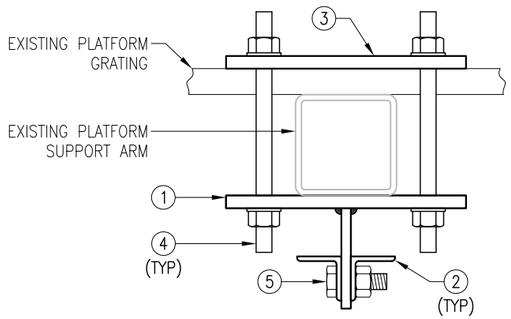


FRONT VIEW

BRKMW-1S WELDMENT



DETAIL "A"



SECTION "A-A"

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

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

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

APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	06/21/18
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE: KICKER SUPPORT KIT

SIZE B | DWG NO MS-KI22-5 | REV 2
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: CT11841B

CT841_Holmberg Orchard_RL
12 Orchard Drive
Ledyard, CT 06335

June 16, 2019

Transcom Engineering Project Number: 737001-0136

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**4.67 %**

June 16, 2019

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

Emissions Analysis for Site: **CT11841B – CT841_Holmberg Orchard_RL**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **12 Orchard Drive, Ledyard, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **12 Orchard Drive, Ledyard, 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)
GSM	1900 MHz (PCS)	1	15
UMTS	1900 MHz (PCS)	1	40
UMTS	2100 MHz (AWS)	1	40
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

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	147
A	2	Ericsson AIR21 B4A/B2P	147
A	3	RFS APXVAARR24_43-U-NA20	147
B	1	Ericsson AIR21 B2A/B4P	147
B	2	Ericsson AIR21 B4A/B2P	147
B	3	RFS APXVAARR24_43-U-NA20	147
C	1	Ericsson AIR21 B2A/B4P	147
C	2	Ericsson AIR21 B4A/B2P	147
C	3	RFS APXVAARR24_43-U-NA20	147

Table 2: Antenna Data

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

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)	15.9	2	55	2,139.75	0.39
Antenna A2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	0.84
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.04
						Sector A Composite MPE%	**2.27**
Antenna B1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	2	55	2,139.75	0.39
Antenna B2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	0.84
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.04
						Sector B Composite MPE%	**2.27**
Antenna C1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	2	55	2,139.75	0.39
Antenna C2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	0.84
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.04
						Sector C Composite MPE%	**2.27**

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**2.27 %**
Verizon Wireless	2.12 %
MetroPCS	0.28 %
Site Total MPE %:	**4.67 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	2.27 %
T-MOBILE Sector B Total:	2.27 %
T-MOBILE Sector C Total:	2.27 %
Site Total:	4.67 %

Table 5: Site MPE Summary

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) GSM	1	583.57	147	1.06	1900 MHz (PCS)	1000	0.11%
T-Mobile 1900 MHz (PCS) UMTS	1	1,556.18	147	2.81	1900 MHz (PCS)	1000	0.28%
T-Mobile 2100 MHz (AWS) LTE	2	2,334.27	147	8.44	2100 MHz (AWS)	1000	0.84%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	147	2.85	600 MHz	400	0.71%
T-Mobile 700 MHz LTE	2	432.54	147	1.56	700 MHz	467	0.33%
						Total:	**2.27%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	2.27 %
Sector B:	2.27 %
Sector C:	2.27 %
T-MOBILE Maximum Total (per sector):	2.27 %
Site Total:	4.67 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.67 %** 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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