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 23, 2019

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

RE: Notice of Exempt Modification
56 Floydville Road (aka 54 Floydville Rd per Town Assessor), East Granby, CT 06026
Latitude: 41.928649
Longitude: -72.776099
T-Mobile Site #: CT11386G_L600

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 107-foot level of the existing 120-foot Monopole Tower at 56 Floydville Road, East Granby, CT. The 120-foot tower is owned by SBA Properties, LLC. The property is owned by D I Paine & Sons, LLC. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700/1900/2100 MHz antennas. The new antennas would be installed at the 107-foot level of the tower.

Planned Modifications:

TOWER

Remove: N/A

Remove and Replace:

- (3) Thales P65Q56NS2B – Panel (Remove) – (3) RFS APXVAARR24_43-U-NA20 600/700/1900/2100 MHz(Replace)
- (6) Remec TMA (Remove) – (6) Ericsson KRY 112 489/2 (Replace)

Install New:

- (3) Ericsson Radio 4449 B71+B12
- (3) Ericsson KRY 112 144/1
- (1) Handrail kit and kicker support
- (1) 1-5/8" fiber

Existing Equipment to Remain:

- (6) Remec TMA
- (1) low profile platform
- (12) 1-5/8" lines

Entitlements:

- (2) 1-5/8" fiber

GROUND

Install New:

- Equipment inside existing 6201 cabinet
- (3) Ericsson 4415 RRH mounted to proposed H-Frame

Remove:

- (6) TMA – relocating from ground level

Remove and Replace:

- (1) 60A-2P Breaker (Remove) – (1) 100A-2P breaker (Replace)

This facility was approved by the Town of East Granby's Planning & Zoning Commission on June 5, 2001 under Application #01-03. Approval was given for a tower not to exceed 120-feet. All utilities were to be underground. Approval was initially for one carrier, Verizon, at the 120-foot height. Additional levels and carriers were to need further approval. 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 East Granby's First Selectman, James Hayden, and Zoning Enforcement Officer, Gary Haynes, 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: James Hayden, First Selectman / with attachments
Town of East Granby, 9 Center Street, East Granby, CT 06026
Gary Haynes, Zoning Enforcement Officer / with attachments
Town of East Granby, 9 Center Street, East Granby, CT 06026
D I Paine & Sons LLC / with attachments
54 Floydville Road, East Granby, CT 06026

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	Town of East Granby P&Z Commission 6/5/01
Exhibit 6	Construction Drawings	Chappell dated 8/9/19
Exhibit 7	Structural Analysis	TES dated 7/5/19
Exhibit 8	Post Mod Mount Analysis	TES dated 7/25/19
Exhibit 9	Mount Mod Drawings	TES dated 7/3/19
Exhibit 10	EME Report	Transcom dated 6/10/19

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

54 FLOYDVILLE ROAD

Location	54 FLOYDVILLE ROAD	**Mblu**	15/ 10/ / /
Acct#	100469	**Owner**	D I PAINE & SONS LLC
Assessment	$1,222,600	**Appraisal**	$1,746,400
PID	649	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$1,230,400	$516,000	$1,746,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$861,400	$361,200	$1,222,600

Owner of Record

Owner D I PAINE & SONS LLC
Co-Owner
Address 54 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

Sale Price $0
Certificate
Book & Page 0160/0707
Sale Date 01/03/2006
Instrument CN

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
D I PAINE & SONS LLC	$0		0160/0707	CN	01/03/2006
D I PAINE & SONS	$0		0129/0622		08/01/2001
TYLER RUSSELL	$0		0129/0616		08/01/2001
D I PAINE & SONS	$0		0108/0546		12/05/1995

Building Information

Building 1 : Section 1

Year Built: 1986
Living Area: 24,900
Replacement Cost: $1,292,584
Building Percent Good: 73

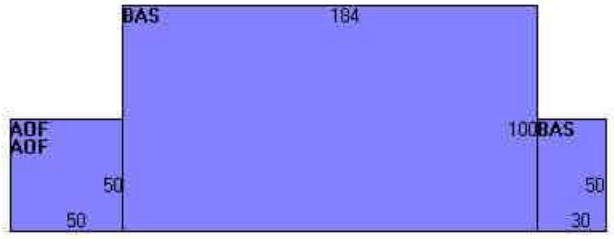
Replacement Cost Less Depreciation: $943,600

Building Attributes	
Field	**Description**
STYLE	Light Indust
MODEL	Industrial
Grade	Average +10
Stories:	1
Occupancy	2
Exterior Wall A	Concr/Cinder
Exterior Wall B	Pre-finsh Metl
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall A	Unfin/Minimum
Interior Wall B	Drywall
Interior Floor A	Concr-Finished
Interior Floor B	Vinyl/Asphalt
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Partial
Bldg Use	Industrial C
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3-1
Heat/AC	HEAT/AC SPLIT
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	-DESCRIPTION-
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	0

Building Photo

(http://images.vgsi.com/photos/EastGranbyCTPhotos//\00\01\17

Building Layout



(http://images.vgsi.com/photos/EastGranbyCTPhotos//Sketches/

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	19,900	19,900
AOF	Office, (Average)	5,000	5,000
		24,900	24,900

Building 2 : Section 1

Year Built: 2017
Living Area: 10,200
Replacement Cost: $210,146
Building Percent Good: 74
Replacement Cost Less Depreciation: $155,500

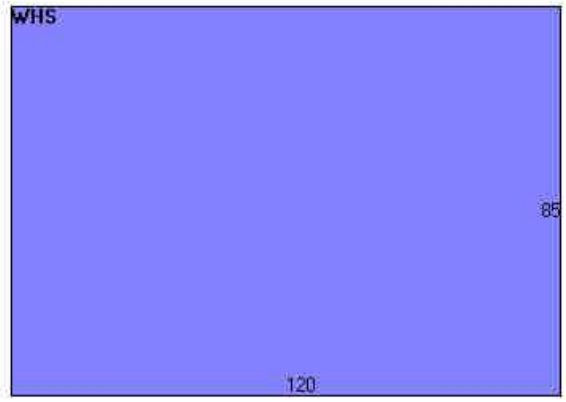
Building Attributes : Bldg 2 of 2	
Field	**Description**

STYLE	Warehouse
MODEL	Industrial
Grade	Minimum
Stories:	1
Occupancy	1
Exterior Wall A	VinylPolyester
Exterior Wall B	
Roof Structure	Irregular
Roof Cover	Rubber Mem
Interior Wall A	Unfin/Minimum
Interior Wall B	
Interior Floor A	Concr Abv Grad
Interior Floor B	
Heating Fuel	None
Heating Type	None
AC Type	None
Bldg Use	Industrial C
Total Rooms	
Total Bedrms	
Total Baths	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	NONE
Baths/Plumbing	NONE
Ceiling/Wall	NONE
Rooms/Prtns	LIGHT
Wall Height	
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/EastGranbyCTPhotos//\00\01\17

Building Layout



(http://images.vgsi.com/photos/EastGranbyCTPhotos//Sketches/

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
WHS	Warehouse	10,200	10,200
		10,200	10,200

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
MEZ	Mezzanine	2000 S.F.	$21,900	1
A/C	Air Condition	5000 S.F.	$9,100	1

Land

Land Use

Use Code 3-1
Description Industrial C

Land Line Valuation

Size (Acres) 17.3
Frontage 0

Zone	CP	**Depth**	0
Neighborhood		**Assessed Value**	$361,200
Alt Land Appr	No	**Appraised Value**	$516,000
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHED	Shed	A	Average	280 S.F.	$3,500	2
FNC	Chain Link Fence	08	8 Ft. Height	420 L.F.	$4,100	2
SHED	Shed	A	Average	96 S.F.	$900	1
PAV	Paving	A	Asphalt	73445 S.F.	$91,800	1

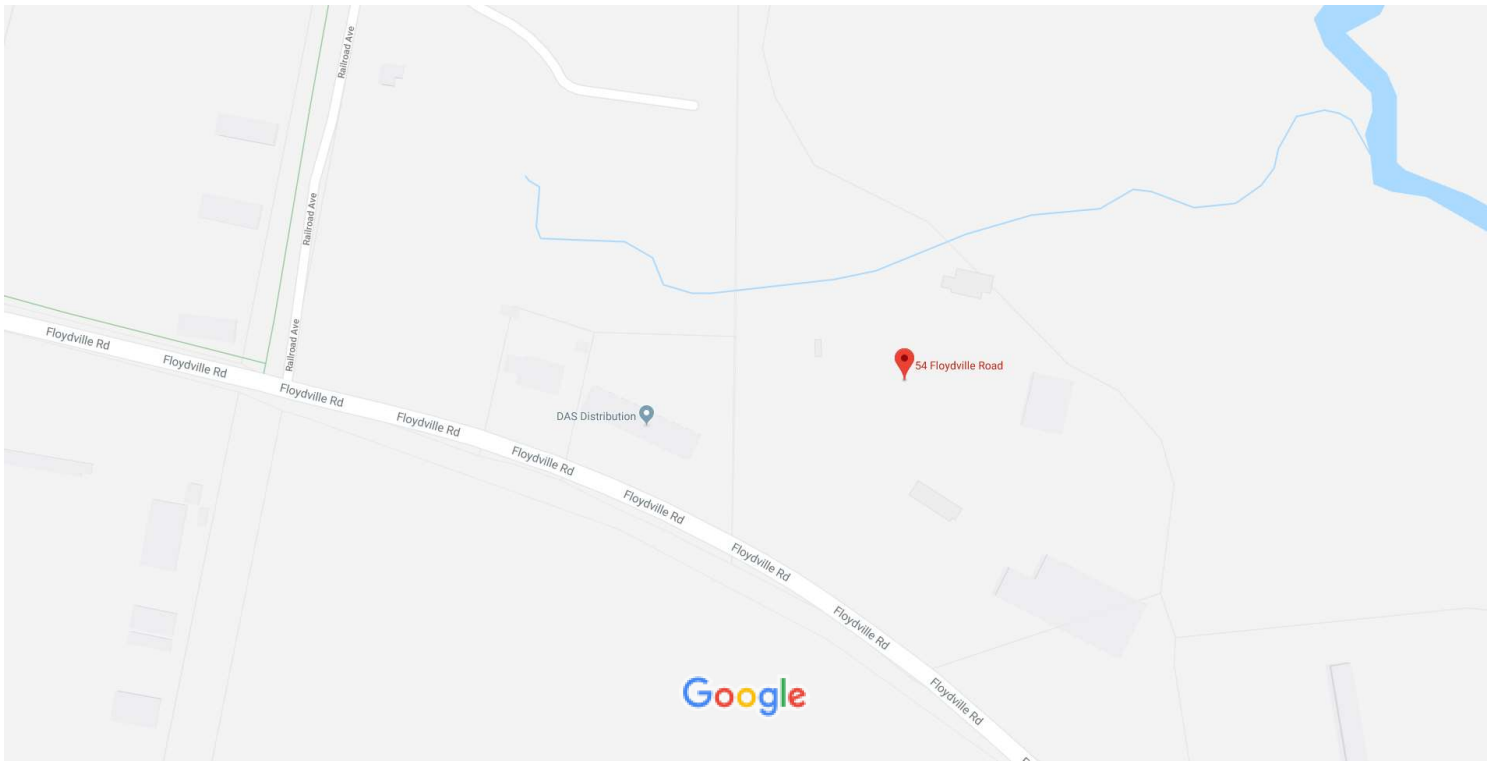
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$939,700	$685,800	$1,625,500
2012	$750,900	$502,100	$1,253,000
2007	$547,900	$506,100	$1,054,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$657,800	$480,000	$1,137,800
2012	$525,700	$351,500	$877,200
2007	$383,500	$354,400	$737,900

EXHIBIT 4

Google Maps 54 Floydville Rd



Map data ©2019 100 ft

54 Floydville Rd

East Granby, CT 06026

Directions Save Nearby Send to your phone Share

W6HF+CR East Granby, Simsbury, CT

Photos

EXHIBIT 5

EAST GRANBY, CONNECTICUT
TURKEY HILLS ECCLESIASTICAL SOCIETY, 1736
INCORPORATED 1858

TOWN
PLANNING
9
EAST

7099 3400 0008 6493 1724

CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

Article Sent To:
SBA Inc

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Name (Please Print Clearly) (to be completed by mailer)

Street, Apt. No.; or PO Box No.

City, State, ZIP+4

PS Form 3800, July 1999 See Reverse for Instructions

June 6, 2001

SBA Properties, Inc.
C/o Thomas F. Flynn III
80 Eastern Boulevard
Glastonbury, CT 06033

CERTIFIED MAIL

Dear Sir,

At its meeting on June 5, 2001, the East Granby Planning & Zoning Commission voted to approve your Application #01-03 for a communication tower on the Paine property (ref. Sheets T-1, S-1, Z-1, Z-2, and Z-5 all dated revised 1/26/01 and Sheets 2, 3 and Z-4 all dated 11/01/00) subject to the following conditions:

1. The tower height shall be 120 feet maximum. (Data provided did not show the 130 feet tower was necessary.)

2. The two Paine properties shall be legally combined and evidence of such shall be provided to the Commission. The necessary revisions shall be made to the plans (Resolve yard requirements and confusion as noted in the Town Engineer's letter dated 3/06/01 item 2.3.)

3. A letter of approval be provided from the FAA that the proposed tower meets their requirements (ref. section IX, G3d of the Zoning Regulations).

4. A $70,000 bond shall be posted prior to construction to be used to remove the tower if abandoned per section IX, G7 of the Zoning Regulations.

5. A written statement from the applicant/First Selectman indicating what agreement for Town use was reached (ref. section IX, G3e).

6. The entrance driveway shall remain as shown for approximately 160 feet where it reaches the 190-foot elevation. It shall turn towards the right and follow the 190-foot contour line to the site. A 10-foot side yard dimension shall also be added.

7. Add a note that all utilities must be underground and remove all references to new overhead utilities (ref. 4/04/01 minutes of the Inland/Wetlands Commission and the PZC public hearing).

8. Add a note that this approval is for one carrier, Verizon at the 120-foot height level. All additional levels and carriers need further approval.

9. A written statement by a competent professional describing the impact on public health and safety associated with the proposed activity with particular emphasis on radio emissions (signal frequency, intensity and power density) and structural integrity shall be provided to the Commission. (Note: Information provided at the public hearing was not signed by anyone.)

10. Landscaping shall be added to the west and south side of the facility per the PZC's approval.

11. As noted above, the conditions require numerous revisions to the detailed plans on almost every page. This includes the property size which is a total of 17.3 acres for the two lots that will become one.

Please submit a mylar and four copies of the revised plans for the Commission's signature.

Sincerely,

Frederick O'Brien

Frederick O'Brien
Chairman

Cc: Town Clerk
Building Official
Town Engineer
Assessor

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

SBA
C/o T. Flynn
80 Eastern Boulevard
Glastonbury, CT
06033

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)* B. Date of Deliv 6-7-01

C. Signature X [signature] ☐ Agent ☐ Address

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandis
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* 7099 3400 0008 8633 1724

PS Form 3811, July 1999 Domestic Return Receipt 102595-99-M-1789

EXHIBIT 6

SIMSBURY NORTH/RT 10

56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026
HARTFORD COUNTY

SITE NO.: CT11386G

SITE TYPE: 120'± MONOPOLE

RF DESIGN GUIDELINE: CUSTOM

APPROVALS

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

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

SITE NOTES

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

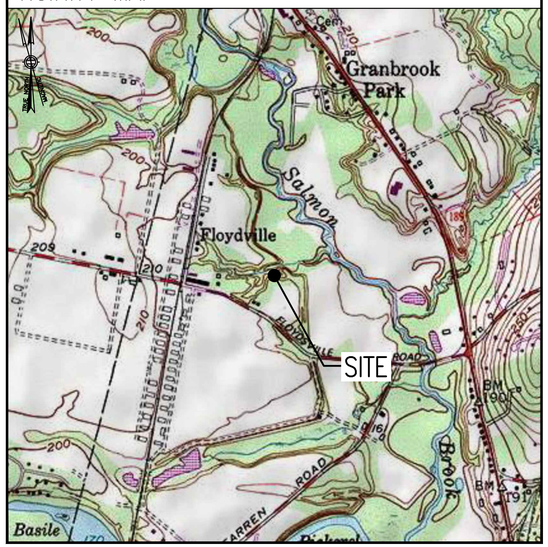
GENERAL NOTES

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

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

VICINITY MAP

SCALE: 1" = 1000'-0"



DO NOT SCALE DRAWINGS

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

SHEET INDEX

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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:	CT11386G
SBA SITE NUMBER:	CT03801-S
SBA SITE NAME:	EAST GRANBY
SITE ADDRESS:	56 FLOYDVILLE ROAD EAST GRANBY, CT 06026
PROPERTY OWNER:	D I PAINE & SONS LLC. 54 FLOYDVILLE ROAD EAST GRANBY, CT 06026
TOWER OWNER:	SBA PROPERTIES, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	HARTFORD
ZONING DISTRICT:	INDUSTRIAL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	120'±
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	RUSS PUTNAM PHONE: 603-210-1000 EMAIL: RPutnam@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.928653° N41°55'43.15" LONGITUDE W.72.776137° W72°46'34.09"

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT
CLEMENT J. SAMEK
No. 26876
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	08/09/19	ISSUED FOR CONSTRUCTION	CMC
0	06/10/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11386G

SITE ADDRESS:
56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.081

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 (400PSI) 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
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No. 25876
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	08/09/19	ISSUED FOR CONSTRUCTION	CMC
0	06/10/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11386G

SITE ADDRESS:
56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

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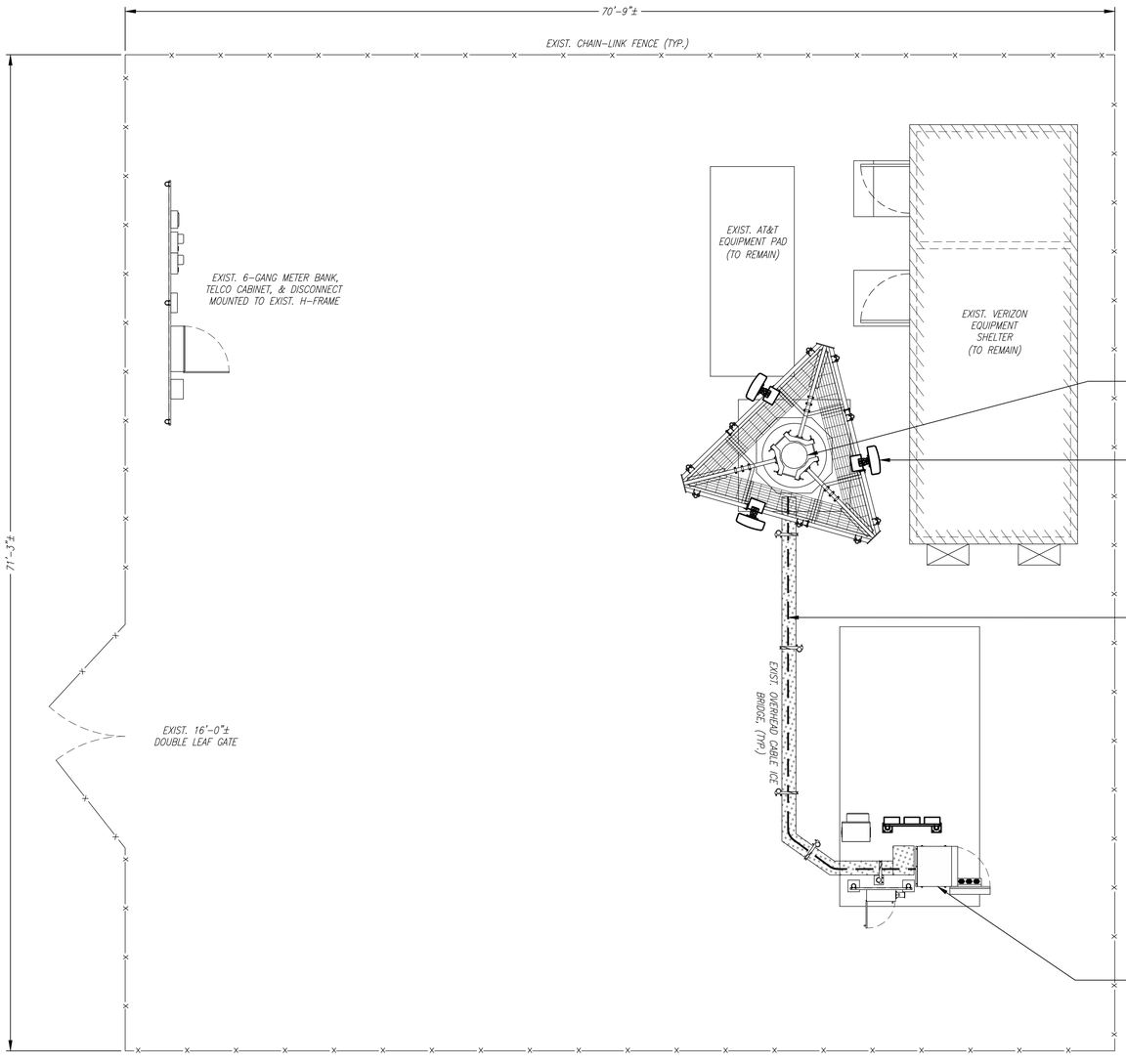
GN-1

1815.081

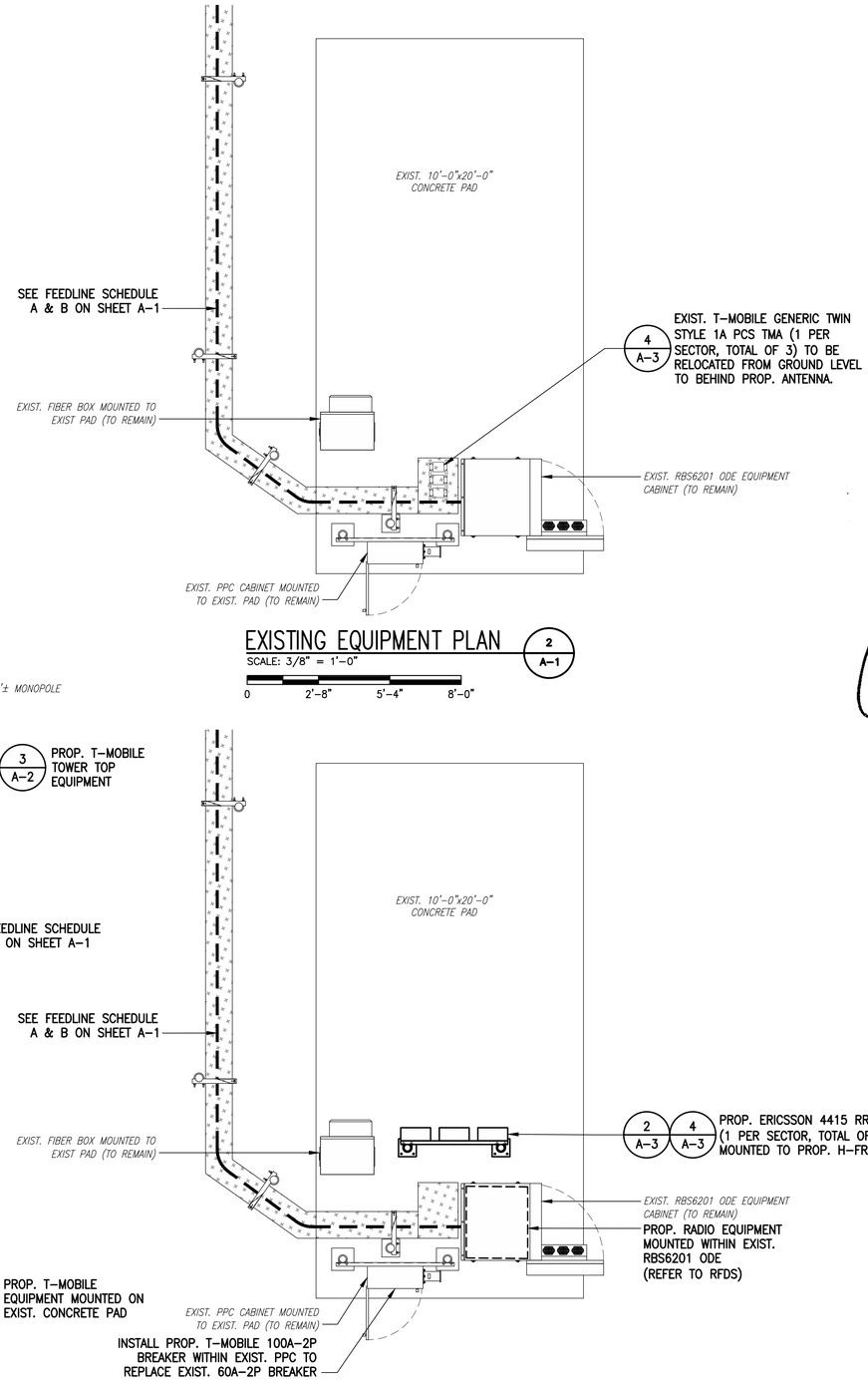
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY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

FEEDLINE SCHEDULE	FEEDLINES	LOCATION
A	*EXISTING TO REMAIN:* *(6) 1-5/8" COAX CABLES*	ROUTED PER TOWER STRUCTURAL ANALYSIS
B	**PROPOSED:** **(6) 1-5/8" COAX CABLES** **(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.



COMPOUND PLAN
1 A-1
SCALE: 1" = 8'-0"
0 8'-0" 16'-0 24'-0"



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

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

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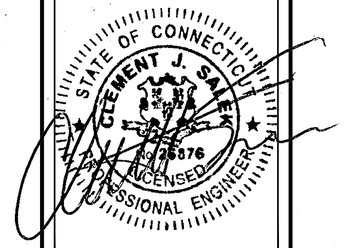

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	08/09/19	ISSUED FOR CONSTRUCTION	CMC
0	06/10/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11386G

SITE ADDRESS:
56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

SHEET TITLE
COMPOUND & EQUIPMENT PLAN

SHEET NUMBER
A-1

1815.081

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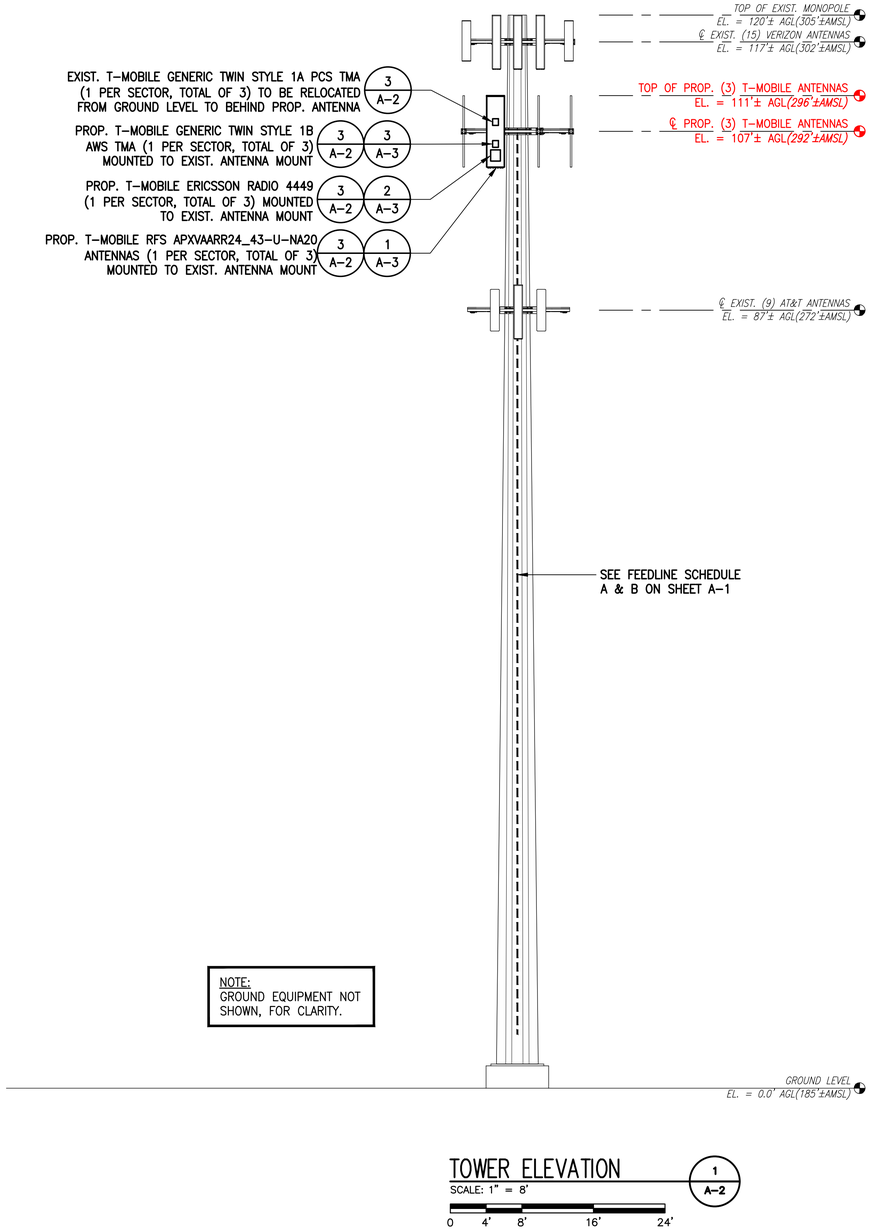
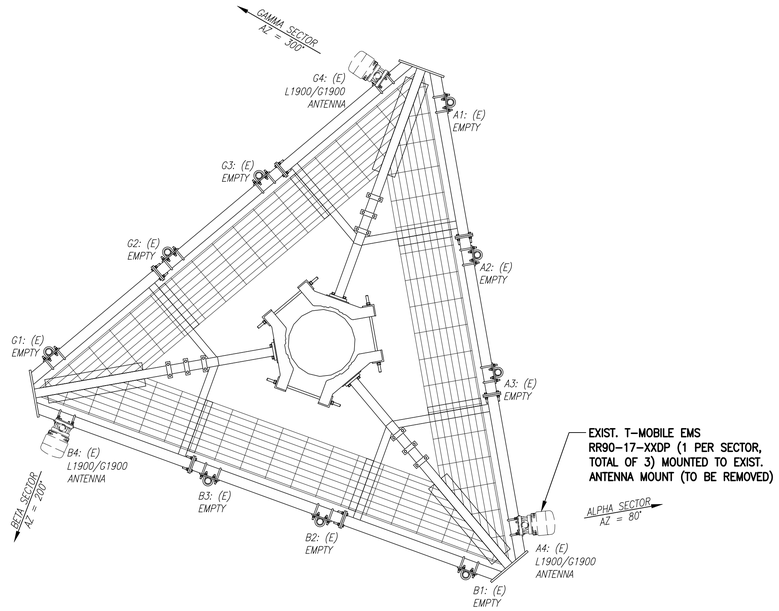
RAD CENTER NOTE:
T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.

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

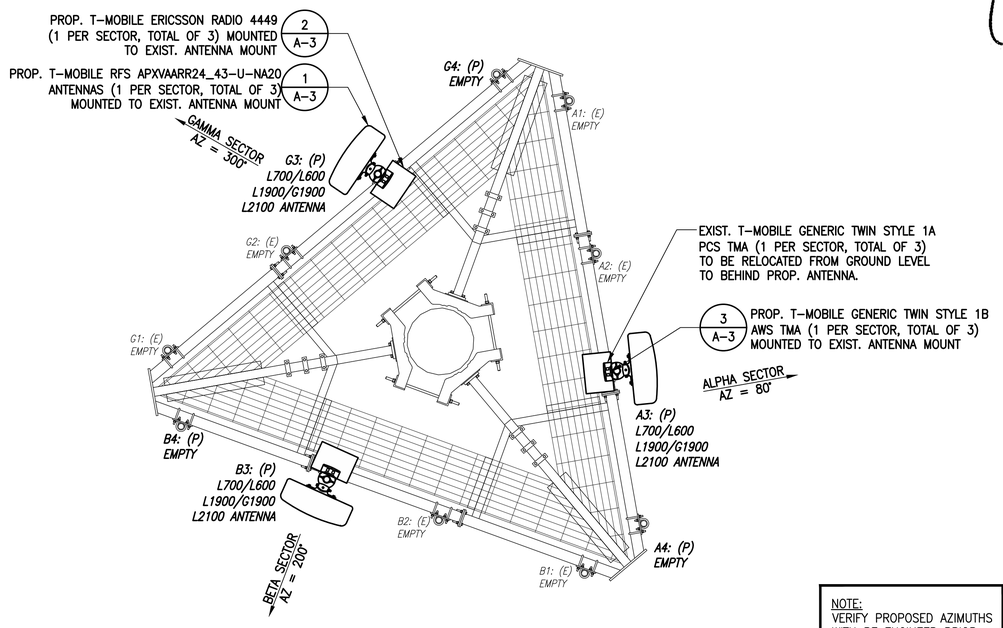


NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

TOWER ELEVATION
SCALE: 1" = 8'
1 A-2
0 4' 8' 16' 24'



EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0"
2 A-2



PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0"
3 A-2

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

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

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

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

CHECKED BY: JMT

APPROVED BY: JMT

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EAST GRANBY, CT 06026

SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLAN

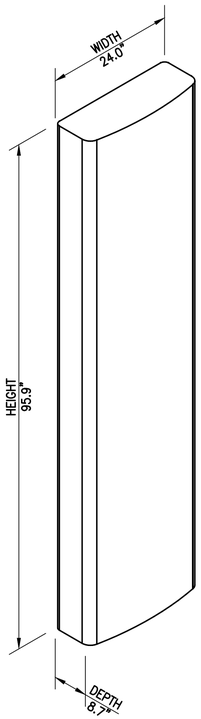
SHEET NUMBER
A-2

1815.081

FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	RADIOS/TMAS	CABLES
ALPHA	RFS APXVAARR24_43-U-NA20	107'± AGL	80°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 (1-5/8") HCS CABLE (SHARED)
						L1900/G1900	*(1) TWIN STYLE 1A PCS TMA*	*(2) 1-5/8" COAX CABLES*
						L2100	RADIO 4415 B66A (AT CABINET) TWIN STYLE 1B AWS TMA	(2) 1-5/8" COAX CABLES
BETA	RFS APXVAARR24_43-U-NA20	107'± AGL	200°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 (1-5/8") HCS CABLE (SHARED)
						L1900/G1900	*(1) TWIN STYLE 1A PCS TMA*	*(2) 1-5/8" COAX CABLES*
						L2100	RADIO 4415 B66A (AT CABINET) TWIN STYLE 1B AWS TMA	(2) 1-5/8" COAX CABLES
GAMMA	RFS APXVAARR24_43-U-NA20	107'± AGL	300°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 (1-5/8") HCS CABLE (SHARED)
						L1900/G1900	*(1) TWIN STYLE 1A PCS TMA*	*(2) 1-5/8" COAX CABLES*
						L2100	RADIO 4415 B66A (AT CABINET) TWIN STYLE 1B AWS TMA	(2) 1-5/8" COAX CABLES
CABLE NOTE: SEE FEEDLINE SCHEDULE A&B ON SHEET A-1								

NOTE: RFDS REV2.1 - 05/14/19



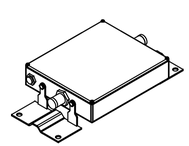
RFS APXVAARR24_43-NA20 PANEL ANTENNA
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 LBS
1 PER SECTOR, TOTAL OF 3

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

ERICSSON 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

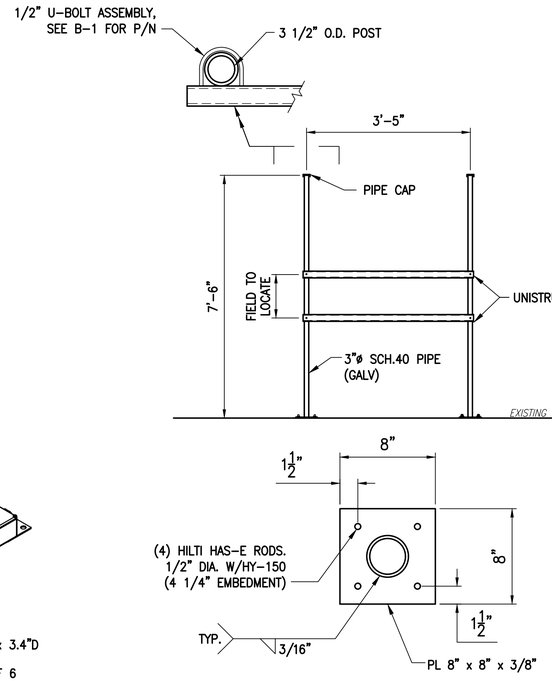
ERICSSON RRUS 4415 B66A
DIMENSIONS: 16.5"H x 13.4"W x 5.9"D
WEIGHT: 46 LBS
(1 PER SECTOR, TOTAL OF 3)

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



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

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



H-FRAME DETAILS (4, A-3)
SCALE: NOT TO SCALE

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SITE ADDRESS:
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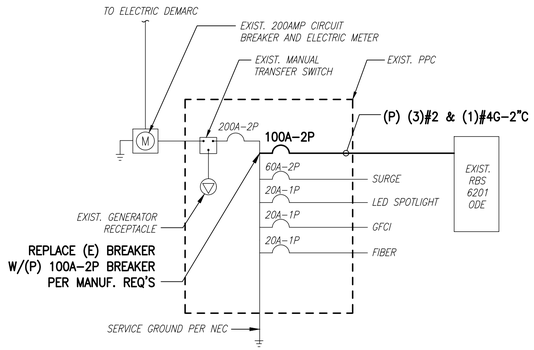
EAST GRANBY, CT 06026

SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

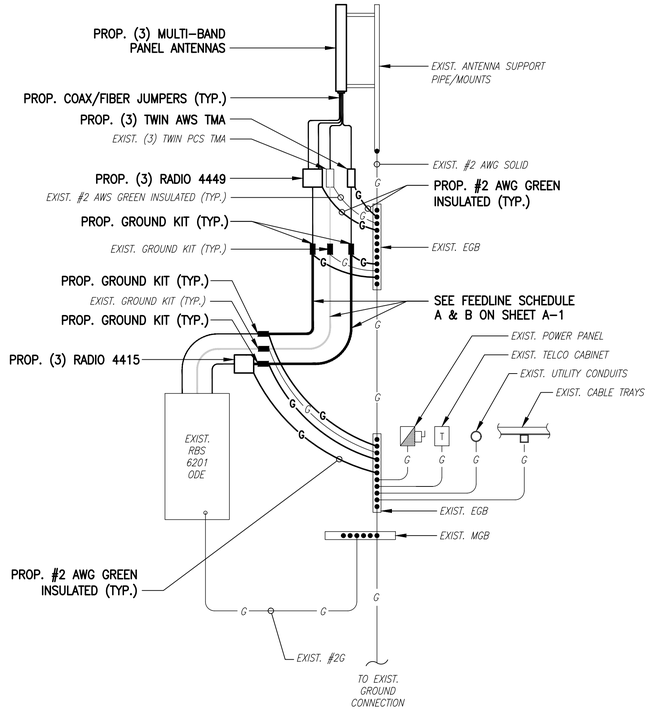
1815.081



ONE LINE DIAGRAM

SCALE: NOT TO SCALE

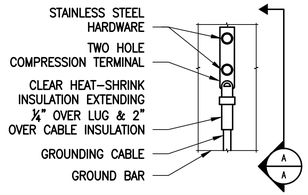
1 / E-1



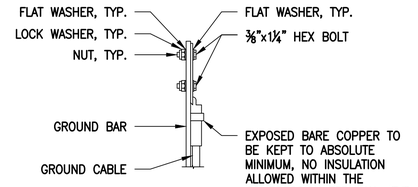
GROUNDING RISER DIAGRAM

SCALE: NOT TO SCALE

2 / E-1



ELEVATION



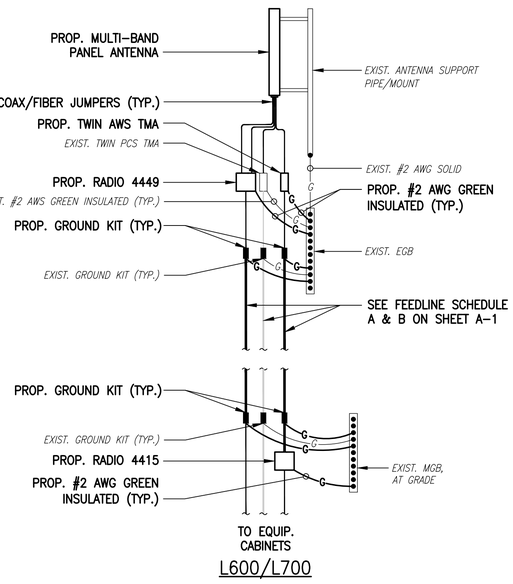
SECTION A-A

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

SCALE: NOT TO SCALE

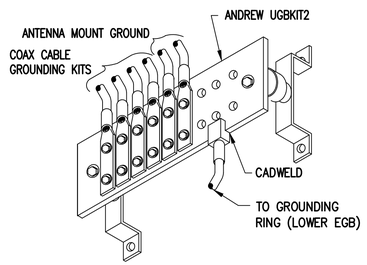
3 / E-1



COAX CABLE CONNECTION AND GROUNDING DETAIL

SCALE: NOT TO SCALE

4 / E-1



GROUND BAR (EGB)

SCALE: NOT TO SCALE

5 / E-1

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 TITLE
ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.081

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 120 ft Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT03801-S

Customer Site Name: East Granby

Carrier Name: T-Mobile (App#: 117019, V1)

Carrier Site ID / Name: CT11386G / Simsbury North

Site Location: 56 Floydville Road

East Granby, Connecticut

Hartford County

Latitude: 41.928649

Longitude: -72.776099

Analysis Result:

Max Structural Usage: 48.6% [Pass]

Max Foundation Usage: 43.0% [Pass]

Additional Usage Caused by Mount Modification: +1.5%

Report Prepared By : Dipika Dhungana

Introduction

The purpose of this report is to summarize the analysis results on the 120 ft 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	PiRod Engineering, File A-118, 413-1, on June 14, 2001.
Foundation Drawing	PiRod Engineering, File A-118, 413-1, on June 14, 2001.
Geotechnical Report	Jaworski Geotech, Inc., Project #00729G, on May 111, 2001.
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 Vult = 120.0mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	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 = 0.177, S_1 = 0.065

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	117.0	6	Andrew HBXX-6517DS-VTM - Panel	Low Profile Platform	(12) 1 5/8" (2) 1 5/8" Fiber (1) 1/2"	Verizon
2		3	Andrew LNX-6514DS-VTM - Panel			
3		6	Antel LPA-80080/4CF - Panel			
4		1	Lucent KS24019-L112A GPS			
5		6	RFS FD9R6004/2C-3L Diplexer			
6		3	ALU RRH 2x60-AWS			
7		3	ALU RRH 2x60W-PCS			
8		2	RFS DB-T1-6Z-8AB-0Z			
-	107.0	3	Thales P65Q56NS2B - Panel	Low Profile Platform	(12) 1 5/8"	T-Mobile
-		6	Remec TMA			
13	87.0	3	Powerwave 7770 - Panel	Low Profile Platform + SitePro1 PRK-1245L (reinforcement Kit) + SitePro1 HRK-12 (Hanrail Kit)	(12) 1 5/8" (2) 1/2" Fiber (1) 2" Conduit (1) 3" Conduit (4) 3/4" DC	AT&T*
14		3	Cci HPA-65R-BU8AA - Panel			
15		3	Kathrein 800 10966 - Panel			
16		6	Powerwave TT19-08BP111-001 TMA			
17		6	Powerwave 21903 Diplexer			
18		3	Ericsson RRUS 8843 B2 B66A			
19		3	Ericsson RRUS 4449 B5			
20		1	Raycap DC6-48-60-18-8F			
21		1	Raycap DC6-48-60-18-8C			

*(1) 3” Conduit housing (2) 3/4” DC and (1) 1/2" Fiber; (1) 2” Conduit housing (2) 3/4” DC and (1) Fiber.

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
9	107.0	3	RFS APXVAARR24_43-U-NA20	Low Profile Platform w/ handrail kit and kicker support	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
10		3	Ericsson KRY 112 144/1			
11		6	Ericsson KRY 112 489/2			
12		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
Max. Usage:	**48.6%**
Pass/Fail	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2311.7	27.1	69.5

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 0.6108 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.

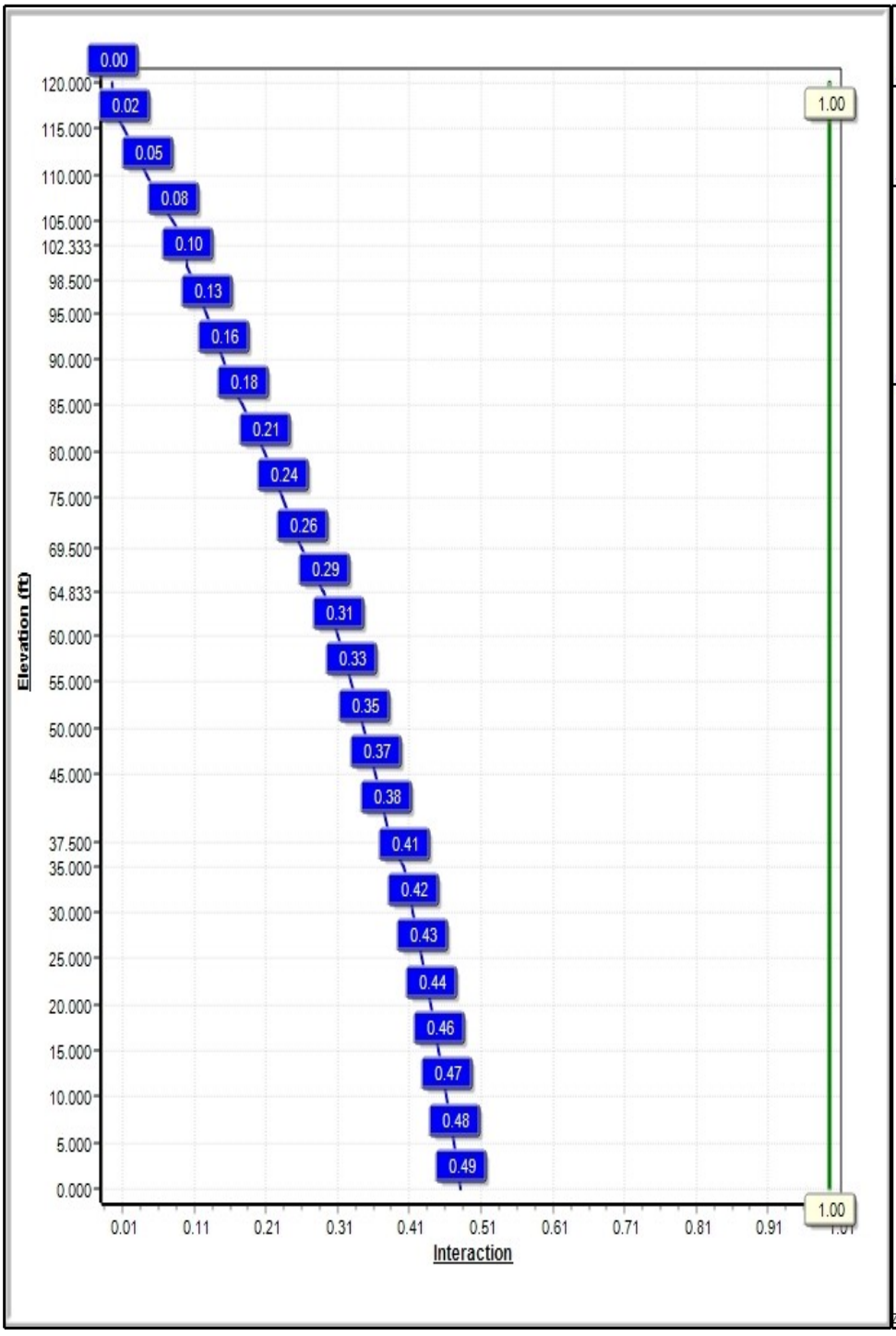
Usage Diagram - Max Ratio 48.63% at 0.0ft

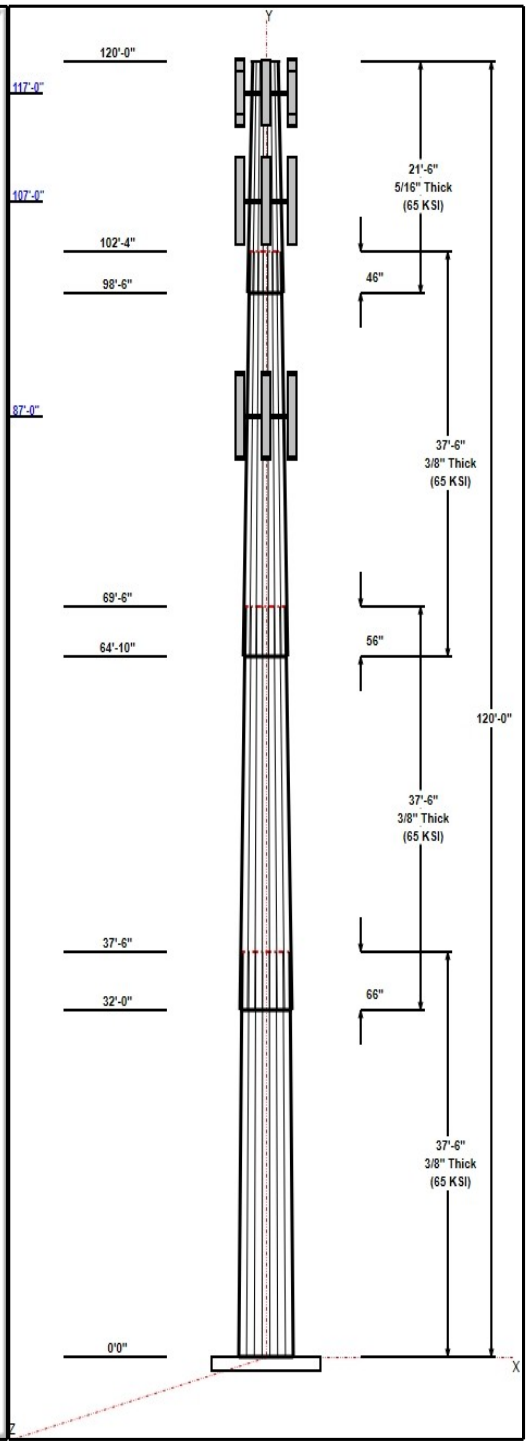
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	20
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 93 mph Wind





Structure: CT03801-S-SBA

Type: Tapered
Site Name: East Granby
Height: 120.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.28333

7/5/2019

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	37.50	45.50	56.13	0.375		0.28333	65
2	37.50	37.18	47.81	0.375	Slip	0.28333	65
3	37.50	28.63	39.26	0.375	Slip	0.28333	65
4	21.50	24.25	30.34	0.313	Slip	0.28333	65

Discrete Appurtenances

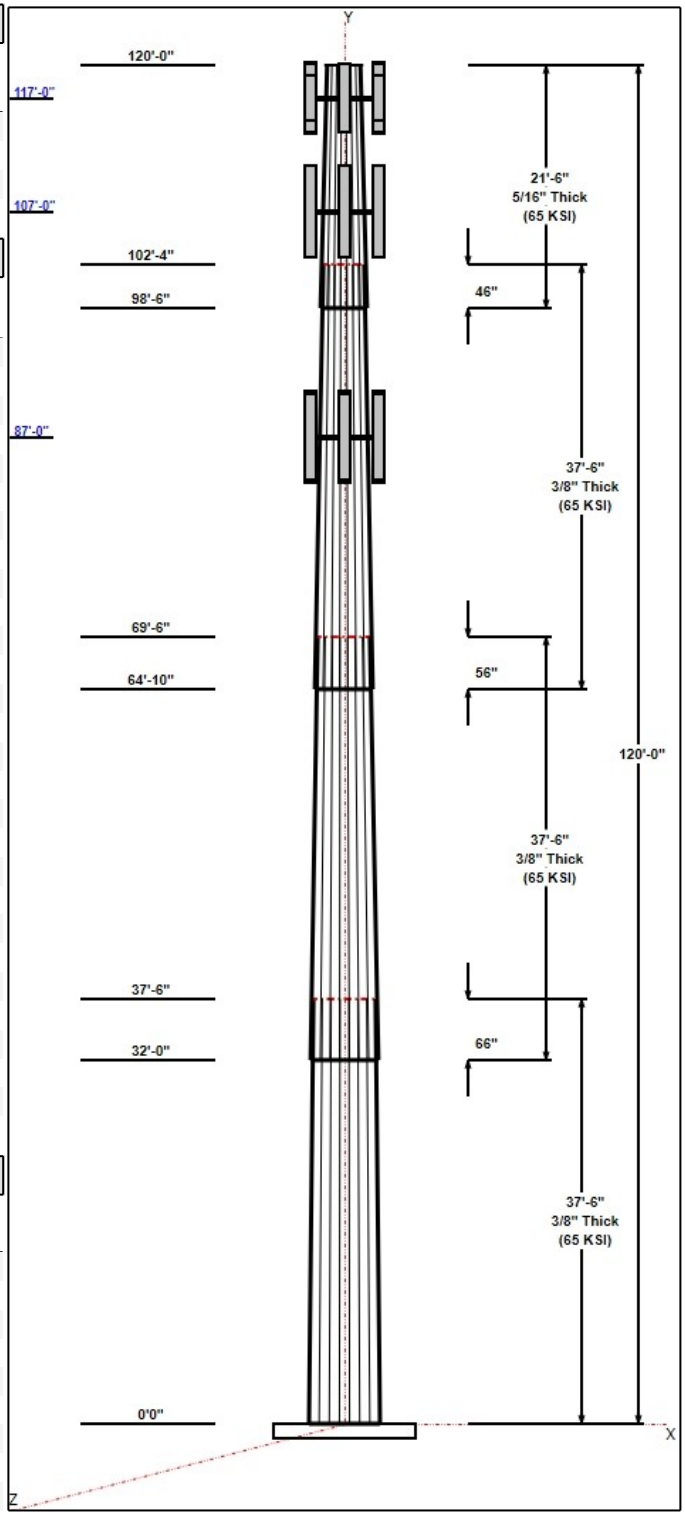
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
117.00	117.00	6	HBXX-6517DS-VTM	Verizon
117.00	117.00	3	LNX-6514DS-VTM (72.7"	Verizon
117.00	117.00	6	LPA-80080/4CF ___	Verizon
117.00	117.00	1	GPS	Verizon
117.00	117.00	6	FD9R6004/2C-3L 3.1#	Verizon
117.00	117.00	3	RRH2X60-AWS	Verizon
117.00	117.00	3	RRH2X60-PCS	Verizon
117.00	117.00	2	DB-T1-6Z-8AB-0Z	Verizon
117.00	117.00	1	Low Profile	Verizon
107.00	107.00	1	Low Profile	T-Mobile
107.00	107.00	3	APXVAARR24_43-U-NA20	T-Mobile
107.00	107.00	1	HRK12 (Handrail Kit)	T-Mobile
107.00	107.00	3	KRY 112 144/1	T-Mobile
107.00	107.00	6	KRY 112 489/2	T-Mobile
107.00	107.00	3	4449	T-Mobile
107.00	107.00	1	MS-KI22-5 (Kickers w/o	T-Mobile
87.00	87.00	3	7770.00	AT&T
87.00	87.00	3	HPA-65R-BUU-H8	AT&T
87.00	87.00	3	800 10966	AT&T
87.00	87.00	1	Low Profile	AT&T
87.00	87.00	1	PRK-1245 (kicker kit)	AT&T
87.00	87.00	1	HRK12 (Handrail Kit)	AT&T
87.00	87.00	6	TT19-08BP111-001	AT&T
87.00	87.00	6	LGP21903	AT&T
87.00	87.00	3	B2 B66A 8843	AT&T
87.00	87.00	3	4449 B5/B12	AT&T
87.00	87.00	1	DC6-48-60-18-8F(23.5"	AT&T
87.00	87.00	1	DC6-48-60-18-8C	AT&T

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	117.00	Inside	1 5/8" Coax	Verizon
0.00	117.00	Inside	1 5/8" Fiber	Verizon
0.00	117.00	Inside	1/2" Coax	Verizon
0.00	107.00	Inside	1 5/8" Coax	T-Mobile
0.00	87.00	Inside	1 5/8" Coax	AT&T
0.00	87.00	Inside	1/2" Fiber	AT&T
0.00	87.00	Inside	2" Conduit	AT&T
0.00	87.00	Inside	3" Conduit	AT&T
0.00	87.00	Inside	3/4" DC	AT&T

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
39	1.25" F1554-36	36.0	Radial



Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	65.0	36.0	Round

Reactions

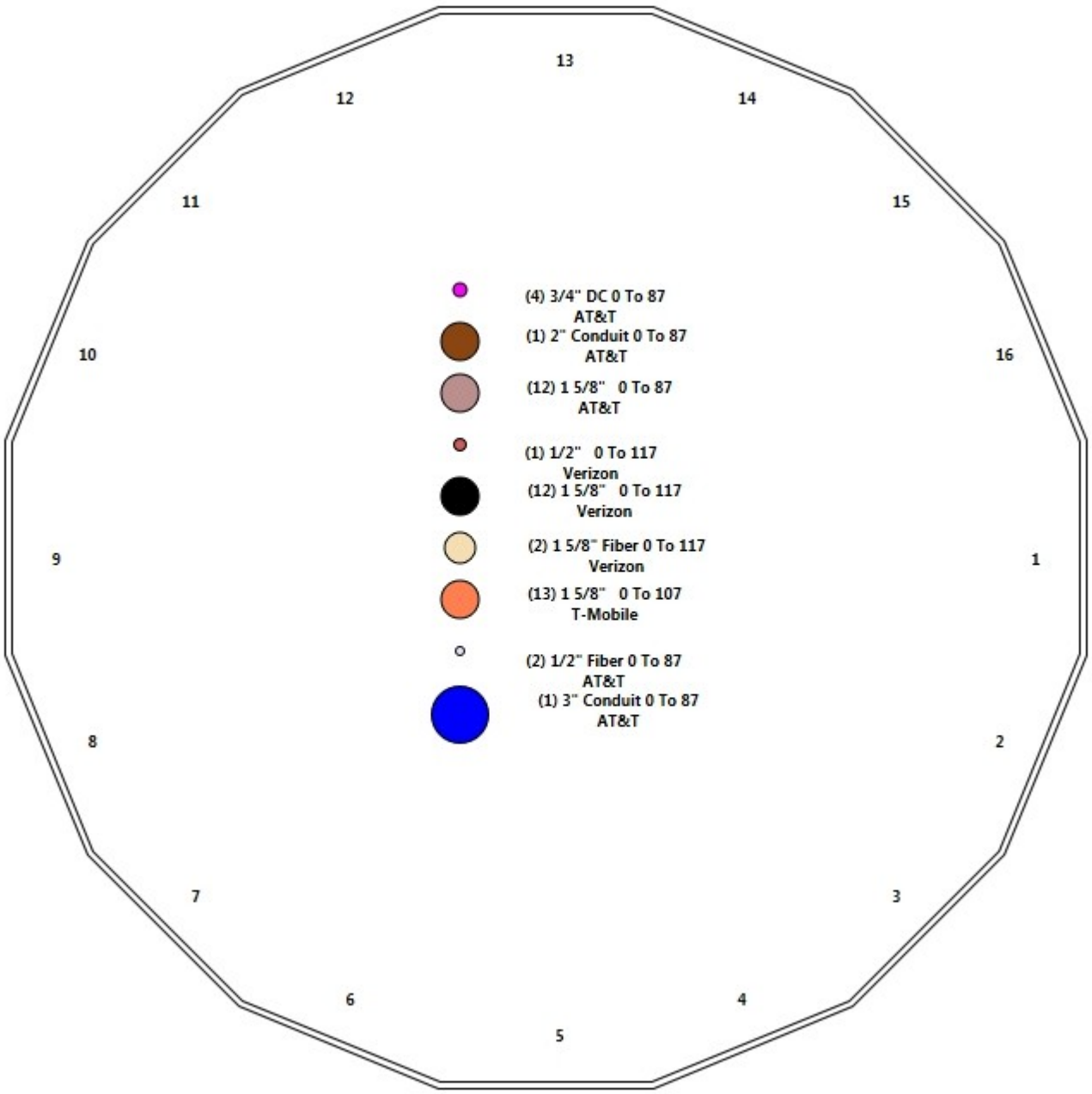
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	2311.7	27.1	41.0
0.9D + 1.6W 93 mph Wind	2299.2	27.0	30.8
1.2D + 1.0Di + 1.0Wi 50 mph Wind	705.4	8.2	69.5
1.2D + 1.0E	133.8	1.4	41.1
0.9D + 1.0E	133.1	1.4	30.8
1.0D + 1.0W 60 mph Wind	599.3	7.0	34.2

Structure: CT03801-S-SBA - Coax Line Placement

Type: Monopole
Site Name: East Granby
Height: 120.00 (ft)

7/5/2019

Tower Engineering Solutions



Shaft Properties

Structure:	CT03801-S-SBA		**Code:**	EIA/TIA-222-G	7/5/2019
Site Name:	East Granby		**Exposure:**	C	
Height:	120.00 (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	16	37.500	0.3750	65		0.00	7,699
2	16	37.500	0.3750	65	Slip	66.00	6,430
3	16	37.500	0.3750	65	Slip	56.00	5,124
4	16	21.500	0.3125	65	Slip	46.00	1,968
					Total Shaft Weight:		**21,221**

	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	56.13	0.00	66.69	26186.11	28.18	149.67	45.50	37.50	53.98	13886.3	22.54	121.3	0.283333
2	47.81	32.00	56.74	16128.25	23.77	127.49	37.18	69.50	44.03	7536.59	18.13	99.16	0.283333
3	39.26	64.83	46.51	8882.47	19.23	104.68	28.63	102.33	33.80	3409.16	13.60	76.35	0.283333
4	30.34	98.50	29.94	3410.24	17.72	97.09	24.25	120.00	23.86	1727.39	13.84	77.60	0.283333

Load Summary

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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	117.00	HBXX-6517DS-VTM	6	40.70	8.55	0.77	269.92	12.346	0.79	0.00	0.00
2	117.00	LNX-6514DS-VTM (72.7" height)	3	38.80	8.17	0.83	268.10	11.842	0.85	0.00	0.00
3	117.00	LPA-80080/4CF ___	6	12.00	2.61	1.70	199.58	3.745	1.70	0.00	0.00
4	117.00	GPS	1	10.00	1.00	0.50	48.13	1.926	0.52	0.00	0.00
5	117.00	FD9R6004/2C-3L 3.1#	6	3.10	0.36	1.00	13.54	0.937	1.00	0.00	0.00
6	117.00	RRH2X60-AWS	3	55.00	3.50	0.76	159.07	4.526	0.76	0.00	0.00
7	117.00	RRH2X60-PCS	3	55.00	2.20	0.89	172.88	3.050	0.91	0.00	0.00
8	117.00	DB-T1-6Z-8AB-0Z	2	18.90	4.80	0.71	216.03	5.959	0.73	0.00	0.00
9	117.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	3202.39	44.971	1.00	0.00	0.00
10	107.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	3187.25	44.767	1.00	0.00	0.00
11	107.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	686.69	22.716	0.70	0.00	0.00
12	107.00	HRK12 (Handrail Kit)	1	261.72	6.75	1.00	662.09	15.254	1.00	0.00	0.00
13	107.00	KRY 112 144/1	3	11.00	0.41	0.67	24.90	1.022	0.67	0.00	0.00
14	107.00	KRY 112 489/2	6	0.10	0.01	0.67	0.10	0.010	0.67	0.00	0.00
15	107.00	4449	3	70.00	1.65	0.67	164.66	2.365	0.67	0.00	0.00
16	107.00	MS-KI22-5 (Kickers w/o Collar)	1	146.00	5.33	1.00	408.76	12.524	1.00	0.00	0.00
17	87.00	7770.00	3	35.00	5.50	0.73	216.01	6.868	0.75	0.00	0.00
18	87.00	HPA-65R-BUU-H8	3	68.00	12.98	0.79	451.53	15.052	0.81	0.00	0.00
19	87.00	800 10966	3	125.70	17.36	0.72	594.38	19.668	0.74	0.00	0.00
20	87.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	3152.69	44.300	1.00	0.00	0.00
21	87.00	PRK-1245 (kicker kit)	1	464.91	9.50	1.00	874.70	22.061	1.00	0.00	0.00
22	87.00	HRK12 (Handrail Kit)	1	261.72	6.75	1.00	653.89	15.080	1.00	0.00	0.00
23	87.00	TT19-08BP111-001	6	16.00	0.64	0.90	41.55	1.389	0.92	0.00	0.00
24	87.00	LGP21903	6	5.50	0.27	0.84	16.14	0.772	0.86	0.00	0.00
25	87.00	B2 B66A 8843	3	70.00	1.64	0.85	128.06	2.292	0.87	0.00	0.00
26	87.00	4449 B5/B12	3	71.00	1.97	0.86	138.40	2.661	0.88	0.00	0.00
27	87.00	DC6-48-60-18-8F(23.5" Height)	1	20.00	1.26	1.00	86.62	2.093	1.00	0.00	0.00
28	87.00	DC6-48-60-18-8C	1	20.00	1.26	1.00	86.62	2.093	1.00	0.00	0.00
		Totals:	**81**	**8,369.05**			**25,054.22**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	117.00	(12) 1 5/8" Coax	0.00	Inside
0.00	117.00	(2) 1 5/8" Fiber	0.00	Inside
0.00	117.00	(1) 1/2" Coax	0.00	Inside
0.00	107.00	(13) 1 5/8" Coax	0.00	Inside
0.00	87.00	(12) 1 5/8" Coax	0.00	Inside
0.00	87.00	(2) 1/2" Fiber	0.00	Inside
0.00	87.00	(1) 2" Conduit	0.00	Inside
0.00	87.00	(1) 3" Conduit	0.00	Inside
0.00	87.00	(4) 3/4" DC	0.00	Inside

Shaft Section Properties

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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		0.3750	56.125	66.691	26186.1	28.18	149.67	70.7	915.2	0.0
5.00		0.3750	54.708	64.996	24240.2	27.43	145.89	71.5	869.1	1120.3
10.00		0.3750	53.292	63.302	22393.1	26.68	142.11	72.4	824.2	1091.4
15.00		0.3750	51.875	61.607	20642.3	25.92	138.33	73.2	780.6	1062.6
20.00		0.3750	50.458	59.912	18985.2	25.17	134.56	74.1	738.1	1033.8
25.00		0.3750	49.042	58.218	17419.3	24.42	130.78	74.9	696.7	1004.9
30.00		0.3750	47.625	56.523	15942.0	23.67	127.00	75.8	656.6	976.1
32.00	Bot - Section 2	0.3750	47.058	55.845	15375.2	23.37	125.49	76.1	640.9	382.4
35.00		0.3750	46.208	54.828	14550.6	22.92	123.22	76.6	617.7	1138.9
37.50	Top - Section 1	0.3750	46.250	54.878	14590.3	22.94	123.33	0.0	0.0	933.3
40.00		0.3750	45.542	54.031	13924.8	22.57	121.44	77.0	599.8	463.2
45.00		0.3750	44.125	52.336	12655.2	21.81	117.67	77.9	562.6	904.9
50.00		0.3750	42.708	50.641	11465.3	21.06	113.89	78.7	526.6	876.0
55.00		0.3750	41.292	48.947	10352.3	20.31	110.11	79.6	491.8	847.2
60.00		0.3750	39.875	47.252	9313.8	19.56	106.33	80.4	458.2	818.4
64.83	Bot - Section 3	0.3750	38.506	45.614	8378.3	18.83	102.68	81.3	426.8	763.7
65.00		0.3750	38.458	45.557	8347.2	18.81	102.56	81.3	425.7	52.2
69.50	Top - Section 2	0.3750	37.933	44.929	8006.7	18.53	101.16	0.0	0.0	1385.6
70.00		0.3750	37.792	44.760	7916.5	18.45	100.78	81.7	410.9	76.3
75.00		0.3750	36.375	43.065	7050.9	17.70	97.00	82.5	380.2	747.1
80.00		0.3750	34.958	41.370	6250.8	16.95	93.22	82.5	350.7	718.3
85.00		0.3750	33.542	39.676	5513.7	16.20	89.44	82.5	322.4	689.5
87.00		0.3750	32.975	38.998	5235.9	15.90	87.93	82.5	311.5	267.7
90.00		0.3750	32.125	37.981	4836.9	15.45	85.67	82.5	295.3	392.9
95.00		0.3750	30.708	36.286	4217.9	14.70	81.89	82.5	269.4	631.8
98.50	Bot - Section 4	0.3750	29.717	35.100	3817.6	14.17	79.24	82.5	252.0	425.1
100.00		0.3750	29.292	34.592	3654.1	13.95	78.11	82.5	244.7	329.6
102.33	Top - Section 3	0.3125	29.256	28.853	3053.4	17.03	93.62	0.0	0.0	503.2
105.00		0.3125	28.500	28.099	2820.5	16.55	91.20	82.5	194.1	258.4
107.00		0.3125	27.933	27.535	2653.8	16.19	89.39	82.5	186.4	189.3
110.00		0.3125	27.083	26.687	2416.2	15.65	86.67	82.5	175.0	276.8
115.00		0.3125	25.667	25.275	2052.6	14.75	82.13	82.5	156.9	442.0
117.00		0.3125	25.100	24.710	1918.0	14.39	80.32	82.5	149.9	170.1
120.00		0.3125	24.250	23.863	1727.4	13.84	77.60	82.5	139.7	247.9
										21220.7

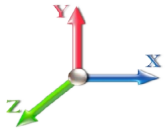
Wind Loading - Shaft

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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	

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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	17.879	19.67	408.88	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	398.56	0.750	0.000	5.00	23.543	17.66	555.6	0.0	1344.3
10.00		1.00	0.85	17.879	19.67	388.24	0.750	0.000	5.00	22.941	17.21	541.4	0.0	1309.7
15.00		1.00	0.85	17.879	19.67	377.92	0.750	0.000	5.00	22.339	16.75	527.2	0.0	1275.1
20.00		1.00	0.90	18.971	20.87	378.65	0.750	0.000	5.00	21.737	16.30	544.3	0.0	1240.5
25.00		1.00	0.95	19.883	21.87	376.76	0.750	0.000	5.00	21.135	15.85	554.7	0.0	1205.9
30.00		1.00	0.98	20.661	22.73	372.97	0.750	0.000	5.00	20.533	15.40	560.0	0.0	1171.3
32.00	Bot - Section 2	1.00	1.00	20.944	23.04	371.04	0.750	0.000	2.00	8.045	6.03	222.4	0.0	458.8
35.00		1.00	1.01	21.343	23.48	367.80	0.750	0.000	3.00	12.078	9.06	340.3	0.0	1366.7
37.50	Top - Section 1	1.00	1.03	21.655	23.82	364.80	0.750	0.000	2.50	9.899	7.42	283.0	0.0	1119.9
40.00		1.00	1.04	21.951	24.15	367.62	0.750	0.000	2.50	9.749	7.31	282.5	0.0	555.9
45.00		1.00	1.07	22.502	24.75	360.63	0.750	0.000	5.00	19.047	14.28	565.7	0.0	1085.8
50.00		1.00	1.09	23.007	25.31	352.94	0.750	0.000	5.00	18.445	13.83	560.1	0.0	1051.2
55.00		1.00	1.12	23.473	25.82	344.68	0.750	0.000	5.00	17.843	13.38	552.9	0.0	1016.6
60.00		1.00	1.14	23.907	26.30	335.91	0.750	0.000	5.00	17.241	12.93	544.1	0.0	982.0
64.83	Bot - Section 3	1.00	1.16	24.300	26.73	327.03	0.750	0.000	4.83	16.094	12.07	516.2	0.0	916.4
65.00		1.00	1.16	24.313	26.74	326.72	0.750	0.000	0.17	0.556	0.42	17.8	0.0	62.7
69.50	Top - Section 2	1.00	1.17	24.658	27.12	318.12	0.750	0.000	4.50	14.747	11.06	480.0	0.0	1662.7
70.00		1.00	1.17	24.696	27.17	323.57	0.750	0.000	0.50	1.609	1.21	52.4	0.0	91.6
75.00		1.00	1.19	25.057	27.56	313.71	0.750	0.000	5.00	15.754	11.82	521.1	0.0	896.5
80.00		1.00	1.21	25.400	27.94	303.55	0.750	0.000	5.00	15.152	11.36	508.0	0.0	861.9
85.00		1.00	1.22	25.726	28.30	293.11	0.750	0.000	5.00	14.550	10.91	494.1	0.0	827.3
87.00	Appurtenance(s)	1.00	1.23	25.852	28.44	288.87	0.750	0.000	2.00	5.652	4.24	192.9	0.0	321.2
90.00		1.00	1.24	26.037	28.64	282.43	0.750	0.000	3.00	8.297	6.22	285.2	0.0	471.5
95.00		1.00	1.25	26.336	28.97	271.51	0.750	0.000	5.00	13.347	10.01	464.0	0.0	758.1
98.50	Bot - Section 4	1.00	1.26	26.537	29.19	263.75	0.750	0.000	3.50	8.985	6.74	314.7	0.0	510.1
100.00		1.00	1.27	26.621	29.28	260.39	0.750	0.000	1.50	3.840	2.88	134.9	0.0	395.5
102.33	Top - Section 3	1.00	1.27	26.751	29.43	255.13	0.750	0.000	2.33	5.866	4.40	207.1	0.0	603.9
105.00		1.00	1.28	26.896	29.59	254.66	0.750	0.000	2.67	6.543	4.91	232.3	0.0	310.1
107.00	Appurtenance(s)	1.00	1.28	27.003	29.70	250.09	0.750	0.000	2.00	4.795	3.60	170.9	0.0	227.2
110.00		1.00	1.29	27.161	29.88	243.19	0.750	0.000	3.00	7.012	5.26	251.4	0.0	332.1
115.00		1.00	1.30	27.416	30.16	231.55	0.750	0.000	5.00	11.205	8.40	405.5	0.0	530.4
117.00	Appurtenance(s)	1.00	1.31	27.516	30.27	226.85	0.750	0.000	2.00	4.313	3.24	156.7	0.0	204.1
120.00		1.00	1.32	27.663	30.43	219.75	0.750	0.000	3.00	6.290	4.72	229.7	0.0	297.5
								Totals:	**120.00**			**12,269.2**		**25,464.8**

Discrete Appurtenance Forces

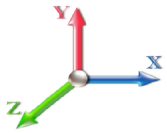
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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	117.00	GPS	1	27.516	30.268	0.50	1.00	0.50	12.00	0.000	0.000	24.21	0.00	0.00
2	117.00	HBXX-6517DS-VTM	6	27.516	30.268	0.77	1.00	39.50	293.04	0.000	0.000	1912.97	0.00	0.00
3	117.00	LNX-6514DS-VTM (72.7"	3	27.516	30.268	0.83	1.00	20.34	139.68	0.000	0.000	985.19	0.00	0.00
4	117.00	LPA-80080/4CF ___	6	27.516	30.268	1.70	1.00	26.62	86.40	0.000	0.000	1289.26	0.00	0.00
5	117.00	Low Profile	1	27.516	30.268	1.00	1.00	22.00	1800.00	0.000	0.000	1065.42	0.00	0.00
6	117.00	FD9R6004/2C-3L 3.1#	6	27.516	30.268	1.00	1.00	2.16	22.32	0.000	0.000	104.61	0.00	0.00
7	117.00	RRH2X60-AWS	3	27.516	30.268	0.76	1.00	7.98	198.00	0.000	0.000	386.46	0.00	0.00
8	117.00	RRH2X60-PCS	3	27.516	30.268	0.89	1.00	5.87	198.00	0.000	0.000	284.47	0.00	0.00
9	117.00	DB-T1-6Z-8AB-0Z	2	27.516	30.268	0.71	1.00	6.82	45.36	0.000	0.000	330.09	0.00	0.00
10	107.00	MS-KI22-5 (Kickers w/o	1	27.003	29.704	1.00	1.00	5.33	175.20	0.000	0.000	253.31	0.00	0.00
11	107.00	4449	3	27.003	29.704	0.50	0.75	2.49	252.00	0.000	0.000	118.21	0.00	0.00
12	107.00	KRY 112 489/2	6	27.003	29.704	0.50	0.75	0.03	0.72	0.000	0.000	1.43	0.00	0.00
13	107.00	KRY 112 144/1	3	27.003	29.704	0.50	0.75	0.62	39.60	0.000	0.000	29.37	0.00	0.00
14	107.00	HRK12 (Handrail Kit)	1	27.003	29.704	1.00	1.00	6.75	314.06	0.000	0.000	320.80	0.00	0.00
15	107.00	APXVAARR24_43-U-NA2	3	27.003	29.704	0.52	0.75	31.88	460.80	0.000	0.000	1515.03	0.00	0.00
16	107.00	Low Profile	1	27.003	29.704	1.00	1.00	22.00	1800.00	0.000	0.000	1045.57	0.00	0.00
17	87.00	HRK12 (Handrail Kit)	1	25.852	28.438	1.00	1.00	6.75	314.06	0.000	0.000	307.13	0.00	0.00
18	87.00	7770.00	3	25.852	28.438	0.55	0.75	9.03	126.00	0.000	0.000	411.04	0.00	0.00
19	87.00	HPA-65R-BUU-H8	3	25.852	28.438	0.59	0.75	23.07	244.80	0.000	0.000	1049.78	0.00	0.00
20	87.00	800 10966	3	25.852	28.438	0.54	0.75	28.12	452.52	0.000	0.000	1279.61	0.00	0.00
21	87.00	Low Profile	1	25.852	28.438	1.00	1.00	22.00	1800.00	0.000	0.000	1001.00	0.00	0.00
22	87.00	PRK-1245 (kicker kit)	1	25.852	28.438	1.00	1.00	9.50	557.89	0.000	0.000	432.25	0.00	0.00
23	87.00	TT19-08BP111-001	6	25.852	28.438	0.68	0.75	2.59	115.20	0.000	0.000	117.94	0.00	0.00
24	87.00	LGP21903	6	25.852	28.438	0.63	0.75	1.02	39.60	0.000	0.000	46.44	0.00	0.00
25	87.00	B2 B66A 8843	3	25.852	28.438	0.64	0.75	3.14	252.00	0.000	0.000	142.71	0.00	0.00
26	87.00	4449 B5/B12	3	25.852	28.438	0.65	0.75	3.81	255.60	0.000	0.000	173.44	0.00	0.00
27	87.00	DC6-48-60-18-8F(23.5"	1	25.852	28.438	1.00	1.00	1.26	24.00	0.000	0.000	57.33	0.00	0.00
28	87.00	DC6-48-60-18-8C	1	25.852	28.438	1.00	1.00	1.26	24.00	0.000	0.000	57.33	0.00	0.00
							Totals:		**10,042.86**			**14,742.41**		

Total Applied Force Summary

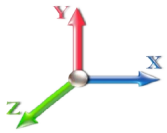
Structure:	CT03801-S-SBA		**Code:**	EIA/TIA-222-G	7/5/2019
Site Name:	East Granby		**Exposure:**	C	
Height:	120.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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		555.62	1617.13	0.00	0.00
10.00		541.42	1582.53	0.00	0.00
15.00		527.21	1547.93	0.00	0.00
20.00		544.32	1513.33	0.00	0.00
25.00		554.71	1478.73	0.00	0.00
30.00		560.00	1444.13	0.00	0.00
32.00		222.41	567.96	0.00	0.00
35.00		340.26	1530.43	0.00	0.00
37.50		282.97	1256.33	0.00	0.00
40.00		282.48	692.30	0.00	0.00
45.00		565.74	1358.65	0.00	0.00
50.00		560.15	1324.05	0.00	0.00
55.00		552.85	1289.45	0.00	0.00
60.00		544.08	1254.85	0.00	0.00
64.83		516.24	1180.13	0.00	0.00
65.00		17.83	71.75	0.00	0.00
69.50		480.02	1908.22	0.00	0.00
70.00		52.43	118.84	0.00	0.00
75.00		521.07	1169.36	0.00	0.00
80.00		508.02	1134.76	0.00	0.00
85.00		494.11	1100.16	0.00	0.00
87.00	(32) attachments	5268.85	4636.05	0.00	0.00
90.00		285.16	569.27	0.00	0.00
95.00		463.97	921.10	0.00	0.00
98.50		314.72	624.19	0.00	0.00
100.00		134.94	444.37	0.00	0.00
102.33		207.12	679.90	0.00	0.00
105.00		232.30	396.98	0.00	0.00
107.00	(18) attachments	3454.65	3334.74	0.00	0.00
110.00		251.39	381.21	0.00	0.00
115.00		405.50	612.29	0.00	0.00
117.00	(31) attachments	6539.35	3031.64	0.00	0.00
120.00		229.67	297.51	0.00	0.00
	Totals:	**27,011.56**	**41,070.26**	**0.00**	**0.00**

Calculated Forces

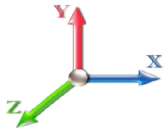
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



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	-41.04	-27.06	0.00	-2311.6	0.00	2311.66	4242.75	2121.37	9773.47	4851.96	0.00	0.000	0.000	0.486
5.00	-39.37	-26.58	0.00	-2176.3	0.00	2176.38	4184.67	2092.33	9393.09	4663.13	0.07	-0.122	0.000	0.476
10.00	-37.73	-26.12	0.00	-2043.4	0.00	2043.46	4124.00	2062.00	9013.89	4474.88	0.26	-0.246	0.000	0.466
15.00	-36.13	-25.66	0.00	-1912.8	0.00	1912.87	4060.73	2030.37	8636.33	4287.44	0.59	-0.371	0.000	0.455
20.00	-34.56	-25.19	0.00	-1784.5	0.00	1784.55	3994.87	1997.44	8260.86	4101.04	1.04	-0.499	0.000	0.444
25.00	-33.03	-24.69	0.00	-1658.6	0.00	1658.63	3926.42	1963.21	7887.94	3915.90	1.64	-0.628	0.000	0.432
30.00	-31.56	-24.16	0.00	-1535.1	0.00	1535.18	3855.38	1927.69	7518.03	3732.27	2.37	-0.758	0.000	0.420
32.00	-30.96	-23.97	0.00	-1486.8	0.00	1486.85	3826.23	1913.12	7371.01	3659.28	2.69	-0.812	0.000	0.415
35.00	-29.41	-23.64	0.00	-1414.9	0.00	1414.94	3781.74	1890.87	7151.59	3550.35	3.23	-0.893	0.000	0.406
37.50	-28.13	-23.38	0.00	-1355.8	0.00	1355.83	3783.94	1891.97	7162.31	3555.67	3.72	-0.960	0.000	0.389
40.00	-27.40	-23.13	0.00	-1297.4	0.00	1297.40	3746.19	1873.09	6980.48	3465.40	4.24	-1.028	0.000	0.382
45.00	-26.01	-22.59	0.00	-1181.7	0.00	1181.76	3668.73	1834.37	6619.97	3286.43	5.39	-1.155	0.000	0.367
50.00	-24.64	-22.06	0.00	-1068.8	0.00	1068.80	3588.69	1794.34	6264.07	3109.75	6.66	-1.281	0.000	0.351
55.00	-23.32	-21.53	0.00	-958.50	0.00	958.50	3506.05	1753.02	5913.22	2935.57	8.07	-1.407	0.000	0.333
60.00	-22.04	-21.00	0.00	-850.86	0.00	850.86	3420.81	1710.41	5567.90	2764.14	9.62	-1.532	0.000	0.314
64.83	-20.85	-20.47	0.00	-749.38	0.00	749.38	3335.96	1667.98	5239.76	2601.24	11.23	-1.650	0.000	0.294
65.00	-20.76	-20.47	0.00	-745.96	0.00	745.96	3332.99	1666.49	5228.55	2595.67	11.29	-1.654	0.000	0.294
69.50	-18.85	-19.95	0.00	-653.84	0.00	653.84	3299.78	1649.89	5104.40	2534.04	12.90	-1.761	0.000	0.264
70.00	-18.71	-19.92	0.00	-643.86	0.00	643.86	3290.76	1645.38	5071.06	2517.49	13.08	-1.773	0.000	0.262
75.00	-17.52	-19.39	0.00	-544.28	0.00	544.28	3199.12	1599.56	4741.34	2353.80	15.00	-1.880	0.000	0.237
80.00	-16.37	-18.87	0.00	-447.32	0.00	447.32	3073.61	1536.80	4374.21	2171.54	17.02	-1.980	0.000	0.211
85.00	-15.27	-18.36	0.00	-352.95	0.00	352.95	2947.70	1473.85	4021.34	1996.36	19.15	-2.071	0.000	0.182
87.00	-10.82	-12.93	0.00	-316.24	0.00	316.24	2897.34	1448.67	3884.35	1928.35	20.02	-2.106	0.000	0.168
90.00	-10.25	-12.63	0.00	-277.45	0.00	277.45	2821.79	1410.90	3683.31	1828.55	21.36	-2.154	0.000	0.155
95.00	-9.33	-12.15	0.00	-214.28	0.00	214.28	2695.89	1347.94	3360.11	1668.10	23.66	-2.227	0.000	0.132
98.50	-8.72	-11.81	0.00	-171.77	0.00	171.77	2607.75	1303.88	3142.71	1560.17	25.31	-2.272	0.000	0.114
100.00	-8.27	-11.66	0.00	-154.05	0.00	154.05	2569.98	1284.99	3051.76	1515.02	26.03	-2.290	0.000	0.105
102.33	-7.60	-11.43	0.00	-126.84	0.00	126.84	2143.60	1071.80	2553.25	1267.54	27.15	-2.316	0.000	0.104
105.00	-7.20	-11.19	0.00	-96.36	0.00	96.36	2087.65	1043.82	2420.99	1201.88	28.45	-2.341	0.000	0.084
107.00	-4.01	-7.60	0.00	-73.99	0.00	73.99	2045.68	1022.84	2324.11	1153.79	29.44	-2.358	0.000	0.066
110.00	-3.64	-7.33	0.00	-51.19	0.00	51.19	1982.72	991.36	2182.49	1083.48	30.93	-2.378	0.000	0.049
115.00	-3.04	-6.90	0.00	-14.53	0.00	14.53	1877.80	938.90	1956.35	971.22	33.43	-2.397	0.000	0.017
117.00	-0.29	-0.24	0.00	-0.73	0.00	0.73	1835.83	917.92	1869.36	928.03	34.43	-2.399	0.000	0.001
120.00	0.00	-0.23	0.00	0.00	0.00	0.00	1772.88	886.44	1742.58	865.09	35.94	-2.400	0.000	0.000

Wind Loading - Shaft

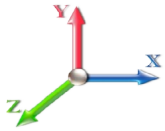
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	17.879	19.67	408.88	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	398.56	0.750	0.000	5.00	23.543	17.66	555.6	0.0	1008.2
10.00		1.00	0.85	17.879	19.67	388.24	0.750	0.000	5.00	22.941	17.21	541.4	0.0	982.3
15.00		1.00	0.85	17.879	19.67	377.92	0.750	0.000	5.00	22.339	16.75	527.2	0.0	956.3
20.00		1.00	0.90	18.971	20.87	378.65	0.750	0.000	5.00	21.737	16.30	544.3	0.0	930.4
25.00		1.00	0.95	19.883	21.87	376.76	0.750	0.000	5.00	21.135	15.85	554.7	0.0	904.4
30.00		1.00	0.98	20.661	22.73	372.97	0.750	0.000	5.00	20.533	15.40	560.0	0.0	878.5
32.00	Bot - Section 2	1.00	1.00	20.944	23.04	371.04	0.750	0.000	2.00	8.045	6.03	222.4	0.0	344.1
35.00		1.00	1.01	21.343	23.48	367.80	0.750	0.000	3.00	12.078	9.06	340.3	0.0	1025.1
37.50	Top - Section 1	1.00	1.03	21.655	23.82	364.80	0.750	0.000	2.50	9.899	7.42	283.0	0.0	839.9
40.00		1.00	1.04	21.951	24.15	367.62	0.750	0.000	2.50	9.749	7.31	282.5	0.0	416.9
45.00		1.00	1.07	22.502	24.75	360.63	0.750	0.000	5.00	19.047	14.28	565.7	0.0	814.4
50.00		1.00	1.09	23.007	25.31	352.94	0.750	0.000	5.00	18.445	13.83	560.1	0.0	788.4
55.00		1.00	1.12	23.473	25.82	344.68	0.750	0.000	5.00	17.843	13.38	552.9	0.0	762.5
60.00		1.00	1.14	23.907	26.30	335.91	0.750	0.000	5.00	17.241	12.93	544.1	0.0	736.5
64.83	Bot - Section 3	1.00	1.16	24.300	26.73	327.03	0.750	0.000	4.83	16.094	12.07	516.2	0.0	687.3
65.00		1.00	1.16	24.313	26.74	326.72	0.750	0.000	0.17	0.556	0.42	17.8	0.0	47.0
69.50	Top - Section 2	1.00	1.17	24.658	27.12	318.12	0.750	0.000	4.50	14.747	11.06	480.0	0.0	1247.0
70.00		1.00	1.17	24.696	27.17	323.57	0.750	0.000	0.50	1.609	1.21	52.4	0.0	68.7
75.00		1.00	1.19	25.057	27.56	313.71	0.750	0.000	5.00	15.754	11.82	521.1	0.0	672.4
80.00		1.00	1.21	25.400	27.94	303.55	0.750	0.000	5.00	15.152	11.36	508.0	0.0	646.5
85.00		1.00	1.22	25.726	28.30	293.11	0.750	0.000	5.00	14.550	10.91	494.1	0.0	620.5
87.00	Appurtenance(s)	1.00	1.23	25.852	28.44	288.87	0.750	0.000	2.00	5.652	4.24	192.9	0.0	240.9
90.00		1.00	1.24	26.037	28.64	282.43	0.750	0.000	3.00	8.297	6.22	285.2	0.0	353.6
95.00		1.00	1.25	26.336	28.97	271.51	0.750	0.000	5.00	13.347	10.01	464.0	0.0	568.6
98.50	Bot - Section 4	1.00	1.26	26.537	29.19	263.75	0.750	0.000	3.50	8.985	6.74	314.7	0.0	382.6
100.00		1.00	1.27	26.621	29.28	260.39	0.750	0.000	1.50	3.840	2.88	134.9	0.0	296.6
102.33	Top - Section 3	1.00	1.27	26.751	29.43	255.13	0.750	0.000	2.33	5.866	4.40	207.1	0.0	452.9
105.00		1.00	1.28	26.896	29.59	254.66	0.750	0.000	2.67	6.543	4.91	232.3	0.0	232.6
107.00	Appurtenance(s)	1.00	1.28	27.003	29.70	250.09	0.750	0.000	2.00	4.795	3.60	170.9	0.0	170.4
110.00		1.00	1.29	27.161	29.88	243.19	0.750	0.000	3.00	7.012	5.26	251.4	0.0	249.1
115.00		1.00	1.30	27.416	30.16	231.55	0.750	0.000	5.00	11.205	8.40	405.5	0.0	397.8
117.00	Appurtenance(s)	1.00	1.31	27.516	30.27	226.85	0.750	0.000	2.00	4.313	3.24	156.7	0.0	153.1
120.00		1.00	1.32	27.663	30.43	219.75	0.750	0.000	3.00	6.290	4.72	229.7	0.0	223.1
								Totals:	**120.00**			**12,269.2**		**19,098.6**

Discrete Appurtenance Forces

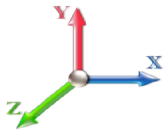
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	117.00	GPS	1	27.516	30.268	0.50	1.00	0.50	9.00	0.000	0.000	24.21	0.00	0.00
2	117.00	HBXX-6517DS-VTM	6	27.516	30.268	0.77	1.00	39.50	219.78	0.000	0.000	1912.97	0.00	0.00
3	117.00	LNX-6514DS-VTM (72.7"	3	27.516	30.268	0.83	1.00	20.34	104.76	0.000	0.000	985.19	0.00	0.00
4	117.00	LPA-80080/4CF ___	6	27.516	30.268	1.70	1.00	26.62	64.80	0.000	0.000	1289.26	0.00	0.00
5	117.00	Low Profile	1	27.516	30.268	1.00	1.00	22.00	1350.00	0.000	0.000	1065.42	0.00	0.00
6	117.00	FD9R6004/2C-3L 3.1#	6	27.516	30.268	1.00	1.00	2.16	16.74	0.000	0.000	104.61	0.00	0.00
7	117.00	RRH2X60-AWS	3	27.516	30.268	0.76	1.00	7.98	148.50	0.000	0.000	386.46	0.00	0.00
8	117.00	RRH2X60-PCS	3	27.516	30.268	0.89	1.00	5.87	148.50	0.000	0.000	284.47	0.00	0.00
9	117.00	DB-T1-6Z-8AB-0Z	2	27.516	30.268	0.71	1.00	6.82	34.02	0.000	0.000	330.09	0.00	0.00
10	107.00	MS-KI22-5 (Kickers w/o	1	27.003	29.704	1.00	1.00	5.33	131.40	0.000	0.000	253.31	0.00	0.00
11	107.00	4449	3	27.003	29.704	0.50	0.75	2.49	189.00	0.000	0.000	118.21	0.00	0.00
12	107.00	KRY 112 489/2	6	27.003	29.704	0.50	0.75	0.03	0.54	0.000	0.000	1.43	0.00	0.00
13	107.00	KRY 112 144/1	3	27.003	29.704	0.50	0.75	0.62	29.70	0.000	0.000	29.37	0.00	0.00
14	107.00	HRK12 (Handrail Kit)	1	27.003	29.704	1.00	1.00	6.75	235.55	0.000	0.000	320.80	0.00	0.00
15	107.00	APXVAARR24_43-U-NA2	3	27.003	29.704	0.52	0.75	31.88	345.60	0.000	0.000	1515.03	0.00	0.00
16	107.00	Low Profile	1	27.003	29.704	1.00	1.00	22.00	1350.00	0.000	0.000	1045.57	0.00	0.00
17	87.00	HRK12 (Handrail Kit)	1	25.852	28.438	1.00	1.00	6.75	235.55	0.000	0.000	307.13	0.00	0.00
18	87.00	7770.00	3	25.852	28.438	0.55	0.75	9.03	94.50	0.000	0.000	411.04	0.00	0.00
19	87.00	HPA-65R-BUU-H8	3	25.852	28.438	0.59	0.75	23.07	183.60	0.000	0.000	1049.78	0.00	0.00
20	87.00	800 10966	3	25.852	28.438	0.54	0.75	28.12	339.39	0.000	0.000	1279.61	0.00	0.00
21	87.00	Low Profile	1	25.852	28.438	1.00	1.00	22.00	1350.00	0.000	0.000	1001.00	0.00	0.00
22	87.00	PRK-1245 (kicker kit)	1	25.852	28.438	1.00	1.00	9.50	418.42	0.000	0.000	432.25	0.00	0.00
23	87.00	TT19-08BP111-001	6	25.852	28.438	0.68	0.75	2.59	86.40	0.000	0.000	117.94	0.00	0.00
24	87.00	LGP21903	6	25.852	28.438	0.63	0.75	1.02	29.70	0.000	0.000	46.44	0.00	0.00
25	87.00	B2 B66A 8843	3	25.852	28.438	0.64	0.75	3.14	189.00	0.000	0.000	142.71	0.00	0.00
26	87.00	4449 B5/B12	3	25.852	28.438	0.65	0.75	3.81	191.70	0.000	0.000	173.44	0.00	0.00
27	87.00	DC6-48-60-18-8F(23.5"	1	25.852	28.438	1.00	1.00	1.26	18.00	0.000	0.000	57.33	0.00	0.00
28	87.00	DC6-48-60-18-8C	1	25.852	28.438	1.00	1.00	1.26	18.00	0.000	0.000	57.33	0.00	0.00
							Totals:		**7,532.14**			**14,742.41**		

Total Applied Force Summary

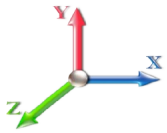
Structure:	CT03801-S-SBA		**Code:**	EIA/TIA-222-G	7/5/2019
Site Name:	East Granby		**Exposure:**	C	
Height:	120.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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		555.62	1212.85	0.00	0.00
10.00		541.42	1186.90	0.00	0.00
15.00		527.21	1160.95	0.00	0.00
20.00		544.32	1135.00	0.00	0.00
25.00		554.71	1109.05	0.00	0.00
30.00		560.00	1083.10	0.00	0.00
32.00		222.41	425.97	0.00	0.00
35.00		340.26	1147.82	0.00	0.00
37.50		282.97	942.24	0.00	0.00
40.00		282.48	519.22	0.00	0.00
45.00		565.74	1018.98	0.00	0.00
50.00		560.15	993.03	0.00	0.00
55.00		552.85	967.08	0.00	0.00
60.00		544.08	941.13	0.00	0.00
64.83		516.24	885.10	0.00	0.00
65.00		17.83	53.81	0.00	0.00
69.50		480.02	1431.17	0.00	0.00
70.00		52.43	89.13	0.00	0.00
75.00		521.07	877.02	0.00	0.00
80.00		508.02	851.07	0.00	0.00
85.00		494.11	825.12	0.00	0.00
87.00	(32) attachments	5268.85	3477.04	0.00	0.00
90.00		285.16	426.95	0.00	0.00
95.00		463.97	690.83	0.00	0.00
98.50		314.72	468.14	0.00	0.00
100.00		134.94	333.28	0.00	0.00
102.33		207.12	509.93	0.00	0.00
105.00		232.30	297.74	0.00	0.00
107.00	(18) attachments	3454.65	2501.05	0.00	0.00
110.00		251.39	285.91	0.00	0.00
115.00		405.50	459.21	0.00	0.00
117.00	(31) attachments	6539.35	2273.73	0.00	0.00
120.00		229.67	223.13	0.00	0.00
	Totals:	**27,011.56**	**30,802.69**	**0.00**	**0.00**

Calculated Forces

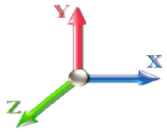
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



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	-30.77	-27.05	0.00	-2299.1	0.00	2299.16	4242.75	2121.37	9773.47	4851.96	0.00	0.000	0.000	0.481
5.00	-29.50	-26.55	0.00	-2163.9	0.00	2163.93	4184.67	2092.33	9393.09	4663.13	0.07	-0.121	0.000	0.471
10.00	-28.26	-26.07	0.00	-2031.1	0.00	2031.18	4124.00	2062.00	9013.89	4474.88	0.26	-0.244	0.000	0.461
15.00	-27.05	-25.59	0.00	-1900.8	0.00	1900.85	4060.73	2030.37	8636.33	4287.44	0.58	-0.369	0.000	0.450
20.00	-25.86	-25.10	0.00	-1772.8	0.00	1772.88	3994.87	1997.44	8260.86	4101.04	1.04	-0.496	0.000	0.439
25.00	-24.70	-24.59	0.00	-1647.4	0.00	1647.40	3926.42	1963.21	7887.94	3915.90	1.63	-0.624	0.000	0.427
30.00	-23.59	-24.05	0.00	-1524.4	0.00	1524.46	3855.38	1927.69	7518.03	3732.27	2.35	-0.753	0.000	0.415
32.00	-23.14	-23.85	0.00	-1476.3	0.00	1476.36	3826.23	1913.12	7371.01	3659.28	2.68	-0.807	0.000	0.410
35.00	-21.97	-23.52	0.00	-1404.8	0.00	1404.80	3781.74	1890.87	7151.59	3550.35	3.21	-0.887	0.000	0.402
37.50	-21.00	-23.25	0.00	-1346.0	0.00	1346.00	3783.94	1891.97	7162.31	3555.67	3.70	-0.954	0.000	0.384
40.00	-20.45	-22.99	0.00	-1287.8	0.00	1287.88	3746.19	1873.09	6980.48	3465.40	4.21	-1.022	0.000	0.377
45.00	-19.39	-22.45	0.00	-1172.9	0.00	1172.92	3668.73	1834.37	6619.97	3286.43	5.35	-1.147	0.000	0.362
50.00	-18.36	-21.91	0.00	-1060.6	0.00	1060.67	3588.69	1794.34	6264.07	3109.75	6.62	-1.273	0.000	0.346
55.00	-17.36	-21.37	0.00	-951.13	0.00	951.13	3506.05	1753.02	5913.22	2935.57	8.02	-1.398	0.000	0.329
60.00	-16.39	-20.84	0.00	-844.28	0.00	844.28	3420.81	1710.41	5567.90	2764.14	9.55	-1.521	0.000	0.310
64.83	-15.50	-20.31	0.00	-743.56	0.00	743.56	3335.96	1667.98	5239.76	2601.24	11.16	-1.638	0.000	0.291
65.00	-15.43	-20.31	0.00	-740.18	0.00	740.18	3332.99	1666.49	5228.55	2595.67	11.21	-1.642	0.000	0.290
69.50	-13.99	-19.80	0.00	-648.79	0.00	648.79	3299.78	1649.89	5104.40	2534.04	12.81	-1.749	0.000	0.260
70.00	-13.88	-19.76	0.00	-638.89	0.00	638.89	3290.76	1645.38	5071.06	2517.49	13.00	-1.761	0.000	0.258
75.00	-12.99	-19.24	0.00	-540.08	0.00	540.08	3199.12	1599.56	4741.34	2353.80	14.90	-1.867	0.000	0.234
80.00	-12.12	-18.72	0.00	-443.91	0.00	443.91	3073.61	1536.80	4374.21	2171.54	16.91	-1.966	0.000	0.209
85.00	-11.29	-18.21	0.00	-350.31	0.00	350.31	2947.70	1473.85	4021.34	1996.36	19.02	-2.057	0.000	0.179
87.00	-8.00	-12.82	0.00	-313.90	0.00	313.90	2897.34	1448.67	3884.35	1928.35	19.89	-2.091	0.000	0.166
90.00	-7.57	-12.53	0.00	-275.43	0.00	275.43	2821.79	1410.90	3683.31	1828.55	21.22	-2.139	0.000	0.153
95.00	-6.89	-12.05	0.00	-212.78	0.00	212.78	2695.89	1347.94	3360.11	1668.10	23.50	-2.211	0.000	0.130
98.50	-6.43	-11.72	0.00	-170.61	0.00	170.61	2607.75	1303.88	3142.71	1560.17	25.14	-2.256	0.000	0.112
100.00	-6.09	-11.57	0.00	-153.03	0.00	153.03	2569.98	1284.99	3051.76	1515.02	25.85	-2.274	0.000	0.103
102.33	-5.59	-11.35	0.00	-126.03	0.00	126.03	2143.60	1071.80	2553.25	1267.54	26.97	-2.299	0.000	0.102
105.00	-5.30	-11.11	0.00	-95.77	0.00	95.77	2087.65	1043.82	2420.99	1201.88	28.26	-2.324	0.000	0.082
107.00	-2.93	-7.55	0.00	-73.56	0.00	73.56	2045.68	1022.84	2324.11	1153.79	29.24	-2.341	0.000	0.065
110.00	-2.66	-7.29	0.00	-50.90	0.00	50.90	1982.72	991.36	2182.49	1083.48	30.72	-2.361	0.000	0.048
115.00	-2.21	-6.87	0.00	-14.45	0.00	14.45	1877.80	938.90	1956.35	971.22	33.20	-2.380	0.000	0.016
117.00	-0.21	-0.24	0.00	-0.72	0.00	0.72	1835.83	917.92	1869.36	928.03	34.20	-2.383	0.000	0.001
120.00	0.00	-0.23	0.00	0.00	0.00	0.00	1772.88	886.44	1742.58	865.09	35.69	-2.383	0.000	0.000

Wind Loading - Shaft

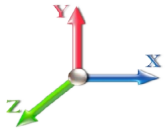
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.656	5.00	24.923	29.91	170.0	590.0	1934.3
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.775	5.00	24.420	29.30	166.6	617.7	1927.5
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.848	5.00	23.879	28.66	162.9	627.6	1902.7
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.902	5.00	23.322	27.99	168.8	629.5	1870.0
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.945	5.00	22.756	27.31	172.6	626.8	1832.7
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.981	5.00	22.184	26.62	174.9	621.0	1792.3
32.00	Bot - Section 2	1.00	1.00	6.054	6.66	0.00	1.200	1.994	2.00	8.709	10.45	69.6	247.2	706.1
35.00		1.00	1.01	6.169	6.79	0.00	1.200	2.012	3.00	13.084	15.70	106.5	373.5	1740.3
37.50	Top - Section 1	1.00	1.03	6.259	6.89	0.00	1.200	2.026	2.50	10.743	12.89	88.8	309.0	1428.9
40.00		1.00	1.04	6.345	6.98	0.00	1.200	2.039	2.50	10.598	12.72	88.8	306.5	862.4
45.00		1.00	1.07	6.504	7.15	0.00	1.200	2.063	5.00	20.766	24.92	178.3	602.1	1687.9
50.00		1.00	1.09	6.650	7.32	0.00	1.200	2.085	5.00	20.182	24.22	177.2	590.1	1641.3
55.00		1.00	1.12	6.785	7.46	0.00	1.200	2.105	5.00	19.597	23.52	175.5	577.1	1593.8
60.00		1.00	1.14	6.910	7.60	0.00	1.200	2.123	5.00	19.010	22.81	173.4	563.4	1545.4
64.83	Bot - Section 3	1.00	1.16	7.024	7.73	0.00	1.200	2.140	4.83	17.818	21.38	165.2	531.2	1447.6
65.00		1.00	1.16	7.028	7.73	0.00	1.200	2.140	0.17	0.615	0.74	5.7	18.6	81.3
69.50	Top - Section 2	1.00	1.17	7.128	7.84	0.00	1.200	2.155	4.50	16.363	19.64	154.0	491.1	2153.8
70.00		1.00	1.17	7.138	7.85	0.00	1.200	2.156	0.50	1.788	2.15	16.8	54.4	146.0
75.00		1.00	1.19	7.243	7.97	0.00	1.200	2.171	5.00	17.563	21.08	167.9	528.7	1425.2
80.00		1.00	1.21	7.342	8.08	0.00	1.200	2.185	5.00	16.973	20.37	164.5	512.7	1374.7
85.00		1.00	1.22	7.436	8.18	0.00	1.200	2.198	5.00	16.382	19.66	160.8	496.3	1323.7
87.00	Appurtenance(s)	1.00	1.23	7.473	8.22	0.00	1.200	2.204	2.00	6.386	7.66	63.0	195.9	517.1
90.00		1.00	1.24	7.526	8.28	0.00	1.200	2.211	3.00	9.402	11.28	93.4	287.7	759.2
95.00		1.00	1.25	7.612	8.37	0.00	1.200	2.223	5.00	15.199	18.24	152.7	462.4	1220.5
98.50	Bot - Section 4	1.00	1.26	7.671	8.44	0.00	1.200	2.231	3.50	10.286	12.34	104.1	315.1	825.2
100.00		1.00	1.27	7.695	8.46	0.00	1.200	2.234	1.50	4.399	5.28	44.7	136.1	531.6
102.33	Top - Section 3	1.00	1.27	7.732	8.51	0.00	1.200	2.240	2.33	6.737	8.08	68.8	207.9	811.8
105.00		1.00	1.28	7.774	8.55	0.00	1.200	2.245	2.67	7.541	9.05	77.4	232.5	542.6
107.00	Appurtenance(s)	1.00	1.28	7.805	8.59	0.00	1.200	2.250	2.00	5.545	6.65	57.1	171.5	398.7
110.00		1.00	1.29	7.851	8.64	0.00	1.200	2.256	3.00	8.140	9.77	84.4	250.8	582.9
115.00		1.00	1.30	7.925	8.72	0.00	1.200	2.266	5.00	13.093	15.71	137.0	399.7	930.1
117.00	Appurtenance(s)	1.00	1.31	7.954	8.75	0.00	1.200	2.270	2.00	5.070	6.08	53.2	156.9	361.0
120.00		1.00	1.32	7.996	8.80	0.00	1.200	2.276	3.00	7.427	8.91	78.4	228.7	526.2
								Totals:	**120.00**			**3,923.0**		**38,424.7**

Discrete Appurtenance Forces

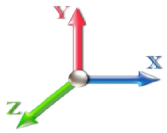
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	117.00	GPS	1	7.954	8.749	0.52	1.00	1.00	42.13	0.000	0.000	8.76	0.00	0.00
2	117.00	HBXX-6517DS-VTM	6	7.954	8.749	0.79	1.00	58.52	1361.16	0.000	0.000	511.99	0.00	0.00
3	117.00	LNX-6514DS-VTM (72.7"	3	7.954	8.749	0.85	1.00	30.20	676.08	0.000	0.000	264.19	0.00	0.00
4	117.00	LPA-80080/4CF ___	6	7.954	8.749	1.70	1.00	38.20	1211.88	0.000	0.000	334.25	0.00	0.00
5	117.00	Low Profile	1	7.954	8.749	1.00	1.00	44.97	3202.39	0.000	0.000	393.45	0.00	0.00
6	117.00	FD9R6004/2C-3L 3.1#	6	7.954	8.749	1.00	1.00	5.62	71.16	0.000	0.000	49.16	0.00	0.00
7	117.00	RRH2X60-AWS	3	7.954	8.749	0.76	1.00	10.32	449.90	0.000	0.000	90.29	0.00	0.00
8	117.00	RRH2X60-PCS	3	7.954	8.749	0.91	1.00	8.33	551.63	0.000	0.000	72.86	0.00	0.00
9	117.00	DB-T1-6Z-8AB-0Z	2	7.954	8.749	0.73	1.00	8.70	439.62	0.000	0.000	76.12	0.00	0.00
10	107.00	MS-KI22-5 (Kickers w/o	1	7.805	8.586	1.00	1.00	12.52	373.96	0.000	0.000	107.53	0.00	0.00
11	107.00	4449	3	7.805	8.586	0.50	0.75	3.57	535.99	0.000	0.000	30.61	0.00	0.00
12	107.00	KRY 112 489/2	6	7.805	8.586	0.50	0.75	0.03	1.32	0.000	0.000	0.26	0.00	0.00
13	107.00	KRY 112 144/1	3	7.805	8.586	0.50	0.75	1.54	71.99	0.000	0.000	13.23	0.00	0.00
14	107.00	HRK12 (Handrail Kit)	1	7.805	8.586	1.00	1.00	15.25	976.16	0.000	0.000	130.97	0.00	0.00
15	107.00	APXVAARR24_43-U-NA2	3	7.805	8.586	0.52	0.75	35.78	2136.88	0.000	0.000	307.18	0.00	0.00
16	107.00	Low Profile	1	7.805	8.586	1.00	1.00	44.77	3187.25	0.000	0.000	384.36	0.00	0.00
17	87.00	HRK12 (Handrail Kit)	1	7.473	8.220	1.00	1.00	15.08	967.96	0.000	0.000	123.95	0.00	0.00
18	87.00	7770.00	3	7.473	8.220	0.56	0.75	11.59	669.02	0.000	0.000	95.27	0.00	0.00
19	87.00	HPA-65R-BUU-H8	3	7.473	8.220	0.61	0.75	27.43	1395.38	0.000	0.000	225.49	0.00	0.00
20	87.00	800 10966	3	7.473	8.220	0.55	0.75	32.75	1858.55	0.000	0.000	269.18	0.00	0.00
21	87.00	Low Profile	1	7.473	8.220	1.00	1.00	44.30	3152.69	0.000	0.000	364.14	0.00	0.00
22	87.00	PRK-1245 (kicker kit)	1	7.473	8.220	1.00	1.00	22.06	872.59	0.000	0.000	181.33	0.00	0.00
23	87.00	TT19-08BP111-001	6	7.473	8.220	0.69	0.75	5.75	233.73	0.000	0.000	47.25	0.00	0.00
24	87.00	LGP21903	6	7.473	8.220	0.65	0.75	2.99	89.05	0.000	0.000	24.56	0.00	0.00
25	87.00	B2 B66A 8843	3	7.473	8.220	0.65	0.75	4.49	392.28	0.000	0.000	36.88	0.00	0.00
26	87.00	4449 B5/B12	3	7.473	8.220	0.66	0.75	5.27	417.00	0.000	0.000	43.31	0.00	0.00
27	87.00	DC6-48-60-18-8F(23.5"	1	7.473	8.220	1.00	1.00	2.09	75.52	0.000	0.000	17.20	0.00	0.00
28	87.00	DC6-48-60-18-8C	1	7.473	8.220	1.00	1.00	2.09	75.52	0.000	0.000	17.20	0.00	0.00
							Totals:		**25,488.78**			**4,221.00**		

Total Applied Force Summary

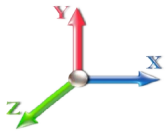
Structure:	CT03801-S-SBA		**Code:**	EIA/TIA-222-G	7/5/2019
Site Name:	East Granby		**Exposure:**	C	
Height:	120.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		170.02	2207.12	0.00	0.00
10.00		166.59	2200.27	0.00	0.00
15.00		162.90	2175.52	0.00	0.00
20.00		168.81	2142.83	0.00	0.00
25.00		172.64	2105.52	0.00	0.00
30.00		174.88	2065.15	0.00	0.00
32.00		69.60	815.18	0.00	0.00
35.00		106.54	1903.97	0.00	0.00
37.50		88.77	1565.32	0.00	0.00
40.00		88.77	998.80	0.00	0.00
45.00		178.29	1960.75	0.00	0.00
50.00		177.16	1914.13	0.00	0.00
55.00		175.51	1866.58	0.00	0.00
60.00		173.41	1818.24	0.00	0.00
64.83		165.20	1711.28	0.00	0.00
65.00		5.71	90.39	0.00	0.00
69.50		153.95	2399.36	0.00	0.00
70.00		16.85	173.26	0.00	0.00
75.00		167.91	1698.06	0.00	0.00
80.00		164.49	1647.50	0.00	0.00
85.00		160.81	1596.50	0.00	0.00
87.00	(32) attachments	1508.78	10825.52	0.00	0.00
90.00		93.41	857.00	0.00	0.00
95.00		152.73	1383.50	0.00	0.00
98.50		104.15	939.32	0.00	0.00
100.00		44.68	580.50	0.00	0.00
102.33		68.76	887.80	0.00	0.00
105.00		77.39	629.51	0.00	0.00
107.00	(18) attachments	1031.28	7747.43	0.00	0.00
110.00		84.35	631.99	0.00	0.00
115.00		136.96	1011.95	0.00	0.00
117.00	(31) attachments	1854.30	8399.70	0.00	0.00
120.00		78.39	526.18	0.00	0.00
	Totals:	**8,143.96**	**69,476.10**	**0.00**	**0.00**

Calculated Forces

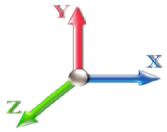
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

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	-69.47	-8.17	0.00	-705.42	0.00	705.42	4242.75	2121.37	9773.47	4851.96	0.00	0.000	0.000	0.162
5.00	-67.26	-8.04	0.00	-664.58	0.00	664.58	4184.67	2092.33	9393.09	4663.13	0.02	-0.037	0.000	0.159
10.00	-65.06	-7.91	0.00	-624.38	0.00	624.38	4124.00	2062.00	9013.89	4474.88	0.08	-0.075	0.000	0.155
15.00	-62.88	-7.79	0.00	-584.81	0.00	584.81	4060.73	2030.37	8636.33	4287.44	0.18	-0.113	0.000	0.152
20.00	-60.73	-7.66	0.00	-545.86	0.00	545.86	3994.87	1997.44	8260.86	4101.04	0.32	-0.152	0.000	0.148
25.00	-58.62	-7.52	0.00	-507.57	0.00	507.57	3926.42	1963.21	7887.94	3915.90	0.50	-0.192	0.000	0.145
30.00	-56.55	-7.37	0.00	-469.97	0.00	469.97	3855.38	1927.69	7518.03	3732.27	0.72	-0.232	0.000	0.141
32.00	-55.73	-7.31	0.00	-455.24	0.00	455.24	3826.23	1913.12	7371.01	3659.28	0.82	-0.248	0.000	0.139
35.00	-53.83	-7.22	0.00	-433.30	0.00	433.30	3781.74	1890.87	7151.59	3550.35	0.99	-0.273	0.000	0.136
37.50	-52.26	-7.14	0.00	-415.26	0.00	415.26	3783.94	1891.97	7162.31	3555.67	1.14	-0.294	0.000	0.131
40.00	-51.26	-7.07	0.00	-397.41	0.00	397.41	3746.19	1873.09	6980.48	3465.40	1.30	-0.315	0.000	0.128
45.00	-49.29	-6.92	0.00	-362.04	0.00	362.04	3668.73	1834.37	6619.97	3286.43	1.65	-0.353	0.000	0.124
50.00	-47.37	-6.76	0.00	-327.46	0.00	327.46	3588.69	1794.34	6264.07	3109.75	2.04	-0.392	0.000	0.119
55.00	-45.50	-6.60	0.00	-293.66	0.00	293.66	3506.05	1753.02	5913.22	2935.57	2.47	-0.431	0.000	0.113
60.00	-43.68	-6.44	0.00	-260.66	0.00	260.66	3420.81	1710.41	5567.90	2764.14	2.94	-0.469	0.000	0.107
64.83	-41.97	-6.28	0.00	-229.52	0.00	229.52	3335.96	1667.98	5239.76	2601.24	3.43	-0.505	0.000	0.101
65.00	-41.88	-6.28	0.00	-228.48	0.00	228.48	3332.99	1666.49	5228.55	2595.67	3.45	-0.506	0.000	0.101
69.50	-39.48	-6.12	0.00	-200.21	0.00	200.21	3299.78	1649.89	5104.40	2534.04	3.95	-0.539	0.000	0.091
70.00	-39.30	-6.11	0.00	-197.15	0.00	197.15	3290.76	1645.38	5071.06	2517.49	4.00	-0.543	0.000	0.090
75.00	-37.60	-5.95	0.00	-166.59	0.00	166.59	3199.12	1599.56	4741.34	2353.80	4.59	-0.575	0.000	0.083
80.00	-35.96	-5.79	0.00	-136.85	0.00	136.85	3073.61	1536.80	4374.21	2171.54	5.21	-0.606	0.000	0.075
85.00	-34.36	-5.62	0.00	-107.92	0.00	107.92	2947.70	1473.85	4021.34	1996.36	5.86	-0.634	0.000	0.066
87.00	-23.55	-3.99	0.00	-96.68	0.00	96.68	2897.34	1448.67	3884.35	1928.35	6.13	-0.644	0.000	0.058
90.00	-22.69	-3.90	0.00	-84.70	0.00	84.70	2821.79	1410.90	3683.31	1828.55	6.54	-0.659	0.000	0.054
95.00	-21.31	-3.74	0.00	-65.20	0.00	65.20	2695.89	1347.94	3360.11	1668.10	7.24	-0.681	0.000	0.047
98.50	-20.37	-3.62	0.00	-52.13	0.00	52.13	2607.75	1303.88	3142.71	1560.17	7.74	-0.695	0.000	0.041
100.00	-19.79	-3.58	0.00	-46.69	0.00	46.69	2569.98	1284.99	3051.76	1515.02	7.96	-0.701	0.000	0.039
102.33	-18.90	-3.50	0.00	-38.35	0.00	38.35	2143.60	1071.80	2553.25	1267.54	8.31	-0.708	0.000	0.039
105.00	-18.28	-3.41	0.00	-29.02	0.00	29.02	2087.65	1043.82	2420.99	1201.88	8.71	-0.716	0.000	0.033
107.00	-10.54	-2.29	0.00	-22.19	0.00	22.19	2045.68	1022.84	2324.11	1153.79	9.01	-0.721	0.000	0.024
110.00	-9.91	-2.20	0.00	-15.33	0.00	15.33	1982.72	991.36	2182.49	1083.48	9.46	-0.727	0.000	0.019
115.00	-8.90	-2.05	0.00	-4.35	0.00	4.35	1877.80	938.90	1956.35	971.22	10.23	-0.733	0.000	0.009
117.00	-0.53	-0.09	0.00	-0.26	0.00	0.26	1835.83	917.92	1869.36	928.03	10.54	-0.734	0.000	0.001
120.00	0.00	-0.08	0.00	0.00	0.00	0.00	1772.88	886.44	1742.58	865.09	11.00	-0.734	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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 + 1.0E					**Iterations**	18
Gust Response Factor	1.10			**Sds**	0.19	**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.54	**SA**	0.06	**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		1120.2	0.00	0.04	0.02	16.41	
10.00		1091.4	0.01	0.06	0.03	23.37	
15.00		1062.5	0.03	0.07	0.04	26.19	
20.00		1033.7	0.05	0.07	0.04	27.28	
25.00		1004.9	0.08	0.07	0.04	27.78	
30.00		976.09	0.12	0.07	0.03	28.10	
32.00	Bot - Section 2	382.36	0.13	0.07	0.03	11.17	
35.00		1138.9	0.16	0.07	0.03	33.93	
37.50	Top - Section 1	933.26	0.18	0.06	0.03	28.11	
40.00		463.24	0.21	0.06	0.02	14.02	
45.00		904.85	0.27	0.05	0.02	26.78	
50.00		876.02	0.33	0.04	0.01	23.73	
55.00		847.19	0.40	0.02	0.01	18.77	
60.00		818.35	0.47	-0.01	0.01	12.02	
64.83	Bot - Section 3	763.67	0.55	-0.04	0.01	4.36	
65.00		52.21	0.55	-0.04	0.01	0.28	
69.50	Top - Section 2	1385.5	0.63	-0.07	0.02	-4.35	
70.00		76.30	0.64	-0.07	0.02	-0.31	
75.00		747.12	0.74	-0.10	0.04	-8.32	
80.00		718.29	0.84	-0.12	0.07	-9.77	
85.00		689.45	0.95	-0.12	0.11	-6.66	
87.00	Appurtenance(s)	3772.4	0.99	-0.11	0.13	-22.74	
90.00		392.91	1.06	-0.09	0.17	0.69	
95.00		631.79	1.18	-0.01	0.24	13.35	
98.50	Bot - Section 4	425.10	1.27	0.09	0.31	16.83	
100.00		329.57	1.31	0.14	0.35	16.06	
102.33	Top - Section 3	503.21	1.37	0.24	0.41	32.44	
105.00		258.39	1.45	0.38	0.48	21.88	
107.00	Appurtenance(s)	2724.6	1.50	0.51	0.55	276.37	
110.00		276.76	1.59	0.74	0.65	35.73	
115.00		442.04	1.74	1.26	0.87	80.52	
117.00	Appurtenance(s)	2499.0	1.80	1.52	0.97	514.38	
120.00		247.92	1.89	1.98	1.14	60.49	
	Totals:	**29,589.7**				**1,338.9**	**Total Wind:** **27,011.6**

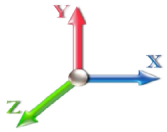
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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 + 1.0E



Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.54	**SA**	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	-41.07	-1.39	0.00	-133.83	0.00	133.83	4242.75	2121.37	9773.47	4851.96		0.00	0.00	0.037
5.00	-39.45	-1.38	0.00	-126.87	0.00	126.87	4184.67	2092.33	9393.09	4663.13		0.00	-0.01	0.037
10.00	-37.87	-1.36	0.00	-119.96	0.00	119.96	4124.00	2062.00	9013.89	4474.88		0.02	-0.01	0.036
15.00	-36.32	-1.34	0.00	-113.14	0.00	113.14	4060.73	2030.37	8636.33	4287.44		0.03	-0.02	0.035
20.00	-34.81	-1.32	0.00	-106.44	0.00	106.44	3994.87	1997.44	8260.86	4101.04		0.06	-0.03	0.035
25.00	-33.33	-1.29	0.00	-99.85	0.00	99.85	3926.42	1963.21	7887.94	3915.90		0.10	-0.04	0.034
30.00	-31.89	-1.27	0.00	-93.38	0.00	93.38	3855.38	1927.69	7518.03	3732.27		0.14	-0.04	0.033
32.00	-31.32	-1.26	0.00	-90.85	0.00	90.85	3826.23	1913.12	7371.01	3659.28		0.16	-0.05	0.033
35.00	-29.79	-1.23	0.00	-87.08	0.00	87.08	3781.74	1890.87	7151.59	3550.35		0.19	-0.05	0.032
37.50	-28.53	-1.20	0.00	-84.01	0.00	84.01	3783.94	1891.97	7162.31	3555.67		0.22	-0.06	0.031
40.00	-27.84	-1.19	0.00	-81.02	0.00	81.02	3746.19	1873.09	6980.48	3465.40		0.25	-0.06	0.031
45.00	-26.48	-1.16	0.00	-75.09	0.00	75.09	3668.73	1834.37	6619.97	3286.43		0.32	-0.07	0.030
50.00	-25.16	-1.14	0.00	-69.28	0.00	69.28	3588.69	1794.34	6264.07	3109.75		0.40	-0.08	0.029
55.00	-23.87	-1.12	0.00	-63.58	0.00	63.58	3506.05	1753.02	5913.22	2935.57		0.48	-0.09	0.028
60.00	-22.61	-1.11	0.00	-57.97	0.00	57.97	3420.81	1710.41	5567.90	2764.14		0.58	-0.09	0.028
64.83	-21.43	-1.11	0.00	-52.59	0.00	52.59	3335.96	1667.98	5239.76	2601.24		0.68	-0.10	0.027
65.00	-21.36	-1.11	0.00	-52.41	0.00	52.41	3332.99	1666.49	5228.55	2595.67		0.68	-0.10	0.027
69.50	-19.45	-1.11	0.00	-47.42	0.00	47.42	3299.78	1649.89	5104.40	2534.04		0.78	-0.11	0.025
70.00	-19.33	-1.11	0.00	-46.87	0.00	46.87	3290.76	1645.38	5071.06	2517.49		0.79	-0.11	0.024
75.00	-18.16	-1.11	0.00	-41.33	0.00	41.33	3199.12	1599.56	4741.34	2353.80		0.91	-0.12	0.023
80.00	-17.03	-1.11	0.00	-35.79	0.00	35.79	3073.61	1536.80	4374.21	2171.54		1.04	-0.13	0.022
85.00	-15.93	-1.11	0.00	-30.26	0.00	30.26	2947.70	1473.85	4021.34	1996.36		1.18	-0.13	0.021
87.00	-11.29	-1.10	0.00	-28.05	0.00	28.05	2897.34	1448.67	3884.35	1928.35		1.24	-0.14	0.018
90.00	-10.72	-1.09	0.00	-24.76	0.00	24.76	2821.79	1410.90	3683.31	1828.55		1.32	-0.14	0.017
95.00	-9.80	-1.08	0.00	-19.28	0.00	19.28	2695.89	1347.94	3360.11	1668.10		1.48	-0.15	0.015
98.50	-9.18	-1.06	0.00	-15.50	0.00	15.50	2607.75	1303.88	3142.71	1560.17		1.59	-0.15	0.013
100.00	-8.73	-1.05	0.00	-13.91	0.00	13.91	2569.98	1284.99	3051.76	1515.02		1.63	-0.15	0.013
102.33	-8.05	-1.01	0.00	-11.47	0.00	11.47	2143.60	1071.80	2553.25	1267.54		1.71	-0.16	0.013
105.00	-7.65	-0.99	0.00	-8.77	0.00	8.77	2087.65	1043.82	2420.99	1201.88		1.80	-0.16	0.011
107.00	-4.32	-0.70	0.00	-6.79	0.00	6.79	2045.68	1022.84	2324.11	1153.79		1.87	-0.16	0.008
110.00	-3.94	-0.67	0.00	-4.69	0.00	4.69	1982.72	991.36	2182.49	1083.48		1.97	-0.16	0.006
115.00	-3.33	-0.58	0.00	-1.35	0.00	1.35	1877.80	938.90	1956.35	971.22		2.14	-0.16	0.003
117.00	-0.30	-0.06	0.00	-0.18	0.00	0.18	1835.83	917.92	1869.36	928.03		2.21	-0.16	0.000
120.00	0.00	-0.06	0.00	0.00	0.00	0.00	1772.88	886.44	1742.58	865.09		2.31	-0.16	0.000

Seismic Segment Forces (Factored)

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.54	**SA**	0.06	**S1**	0.07
						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		1120.2	0.00	0.04	0.02	16.41	
10.00		1091.4	0.01	0.06	0.03	23.37	
15.00		1062.5	0.03	0.07	0.04	26.19	
20.00		1033.7	0.05	0.07	0.04	27.28	
25.00		1004.9	0.08	0.07	0.04	27.78	
30.00		976.09	0.12	0.07	0.03	28.10	
32.00	Bot - Section 2	382.36	0.13	0.07	0.03	11.17	
35.00		1138.9	0.16	0.07	0.03	33.93	
37.50	Top - Section 1	933.26	0.18	0.06	0.03	28.11	
40.00		463.24	0.21	0.06	0.02	14.02	
45.00		904.85	0.27	0.05	0.02	26.78	
50.00		876.02	0.33	0.04	0.01	23.73	
55.00		847.19	0.40	0.02	0.01	18.77	
60.00		818.35	0.47	-0.01	0.01	12.02	
64.83	Bot - Section 3	763.67	0.55	-0.04	0.01	4.36	
65.00		52.21	0.55	-0.04	0.01	0.28	
69.50	Top - Section 2	1385.5	0.63	-0.07	0.02	-4.35	
70.00		76.30	0.64	-0.07	0.02	-0.31	
75.00		747.12	0.74	-0.10	0.04	-8.32	
80.00		718.29	0.84	-0.12	0.07	-9.77	
85.00		689.45	0.95	-0.12	0.11	-6.66	
87.00	Appurtenance(s)	3772.4	0.99	-0.11	0.13	-22.74	
90.00		392.91	1.06	-0.09	0.17	0.69	
95.00		631.79	1.18	-0.01	0.24	13.35	
98.50	Bot - Section 4	425.10	1.27	0.09	0.31	16.83	
100.00		329.57	1.31	0.14	0.35	16.06	
102.33	Top - Section 3	503.21	1.37	0.24	0.41	32.44	
105.00		258.39	1.45	0.38	0.48	21.88	
107.00	Appurtenance(s)	2724.6	1.50	0.51	0.55	276.37	
110.00		276.76	1.59	0.74	0.65	35.73	
115.00		442.04	1.74	1.26	0.87	80.52	
117.00	Appurtenance(s)	2499.0	1.80	1.52	0.97	514.38	
120.00		247.92	1.89	1.98	1.14	60.49	
	Totals:	**29,589.7**				**1,338.9**	**Total Wind:** **27,011.6**

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

Calculated Forces

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.19			**Iterations**	18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.54	**SA**	0.06			**S1**	0.07
								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	-30.80	-1.39	0.00	-133.05	0.00	133.05	4242.75	2121.37	9773.47	4851.96		0.00	0.00	0.035
5.00	-29.59	-1.38	0.00	-126.09	0.00	126.09	4184.67	2092.33	9393.09	4663.13		0.00	-0.01	0.034
10.00	-28.40	-1.36	0.00	-119.19	0.00	119.19	4124.00	2062.00	9013.89	4474.88		0.02	-0.01	0.034
15.00	-27.24	-1.34	0.00	-112.39	0.00	112.39	4060.73	2030.37	8636.33	4287.44		0.03	-0.02	0.033
20.00	-26.11	-1.31	0.00	-105.71	0.00	105.71	3994.87	1997.44	8260.86	4101.04		0.06	-0.03	0.032
25.00	-25.00	-1.29	0.00	-99.15	0.00	99.15	3926.42	1963.21	7887.94	3915.90		0.10	-0.04	0.032
30.00	-23.91	-1.26	0.00	-92.71	0.00	92.71	3855.38	1927.69	7518.03	3732.27		0.14	-0.04	0.031
32.00	-23.49	-1.25	0.00	-90.19	0.00	90.19	3826.23	1913.12	7371.01	3659.28		0.16	-0.05	0.031
35.00	-22.34	-1.22	0.00	-86.44	0.00	86.44	3781.74	1890.87	7151.59	3550.35		0.19	-0.05	0.030
37.50	-21.40	-1.19	0.00	-83.39	0.00	83.39	3783.94	1891.97	7162.31	3555.67		0.22	-0.06	0.029
40.00	-20.88	-1.18	0.00	-80.41	0.00	80.41	3746.19	1873.09	6980.48	3465.40		0.25	-0.06	0.029
45.00	-19.86	-1.15	0.00	-74.52	0.00	74.52	3668.73	1834.37	6619.97	3286.43		0.32	-0.07	0.028
50.00	-18.87	-1.13	0.00	-68.76	0.00	68.76	3588.69	1794.34	6264.07	3109.75		0.39	-0.08	0.027
55.00	-17.90	-1.11	0.00	-63.11	0.00	63.11	3506.05	1753.02	5913.22	2935.57		0.48	-0.09	0.027
60.00	-16.96	-1.10	0.00	-57.54	0.00	57.54	3420.81	1710.41	5567.90	2764.14		0.57	-0.09	0.026
64.83	-16.07	-1.10	0.00	-52.22	0.00	52.22	3335.96	1667.98	5239.76	2601.24		0.67	-0.10	0.025
65.00	-16.02	-1.10	0.00	-52.03	0.00	52.03	3332.99	1666.49	5228.55	2595.67		0.68	-0.10	0.025
69.50	-14.59	-1.10	0.00	-47.09	0.00	47.09	3299.78	1649.89	5104.40	2534.04		0.78	-0.11	0.023
70.00	-14.50	-1.10	0.00	-46.54	0.00	46.54	3290.76	1645.38	5071.06	2517.49		0.79	-0.11	0.023
75.00	-13.62	-1.10	0.00	-41.06	0.00	41.06	3199.12	1599.56	4741.34	2353.80		0.91	-0.12	0.022
80.00	-12.77	-1.10	0.00	-35.57	0.00	35.57	3073.61	1536.80	4374.21	2171.54		1.03	-0.13	0.021
85.00	-11.94	-1.10	0.00	-30.08	0.00	30.08	2947.70	1473.85	4021.34	1996.36		1.17	-0.13	0.019
87.00	-8.47	-1.09	0.00	-27.89	0.00	27.89	2897.34	1448.67	3884.35	1928.35		1.23	-0.14	0.017
90.00	-8.04	-1.09	0.00	-24.62	0.00	24.62	2821.79	1410.90	3683.31	1828.55		1.31	-0.14	0.016
95.00	-7.35	-1.07	0.00	-19.18	0.00	19.18	2695.89	1347.94	3360.11	1668.10		1.47	-0.15	0.014
98.50	-6.88	-1.06	0.00	-15.42	0.00	15.42	2607.75	1303.88	3142.71	1560.17		1.58	-0.15	0.013
100.00	-6.55	-1.04	0.00	-13.84	0.00	13.84	2569.98	1284.99	3051.76	1515.02		1.62	-0.15	0.012
102.33	-6.04	-1.01	0.00	-11.41	0.00	11.41	2143.60	1071.80	2553.25	1267.54		1.70	-0.16	0.012
105.00	-5.74	-0.98	0.00	-8.73	0.00	8.73	2087.65	1043.82	2420.99	1201.88		1.79	-0.16	0.010
107.00	-3.24	-0.70	0.00	-6.77	0.00	6.77	2045.68	1022.84	2324.11	1153.79		1.85	-0.16	0.007
110.00	-2.95	-0.66	0.00	-4.67	0.00	4.67	1982.72	991.36	2182.49	1083.48		1.95	-0.16	0.006
115.00	-2.50	-0.58	0.00	-1.35	0.00	1.35	1877.80	938.90	1956.35	971.22		2.12	-0.16	0.003
117.00	-0.22	-0.06	0.00	-0.18	0.00	0.18	1835.83	917.92	1869.36	928.03		2.19	-0.16	0.000
120.00	0.00	-0.06	0.00	0.00	0.00	0.00	1772.88	886.44	1742.58	865.09		2.29	-0.16	0.000

Wind Loading - Shaft

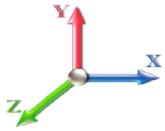
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	263.79	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	257.13	0.750	0.000	5.00	23.543	17.66	144.5	0.0	1120.3
10.00		1.00	0.85	7.442	8.19	250.48	0.750	0.000	5.00	22.941	17.21	140.8	0.0	1091.4
15.00		1.00	0.85	7.442	8.19	243.82	0.750	0.000	5.00	22.339	16.75	137.2	0.0	1062.6
20.00		1.00	0.90	7.896	8.69	244.29	0.750	0.000	5.00	21.737	16.30	141.6	0.0	1033.8
25.00		1.00	0.95	8.276	9.10	243.07	0.750	0.000	5.00	21.135	15.85	144.3	0.0	1004.9
30.00		1.00	0.98	8.600	9.46	240.63	0.750	0.000	5.00	20.533	15.40	145.7	0.0	976.1
32.00	Bot - Section 2	1.00	1.00	8.717	9.59	239.38	0.750	0.000	2.00	8.045	6.03	57.9	0.0	382.4
35.00		1.00	1.01	8.883	9.77	237.29	0.750	0.000	3.00	12.078	9.06	88.5	0.0	1138.9
37.50	Top - Section 1	1.00	1.03	9.013	9.91	235.35	0.750	0.000	2.50	9.899	7.42	73.6	0.0	933.3
40.00		1.00	1.04	9.137	10.05	237.17	0.750	0.000	2.50	9.749	7.31	73.5	0.0	463.2
45.00		1.00	1.07	9.366	10.30	232.66	0.750	0.000	5.00	19.047	14.28	147.2	0.0	904.9
50.00		1.00	1.09	9.576	10.53	227.71	0.750	0.000	5.00	18.445	13.83	145.7	0.0	876.0
55.00		1.00	1.12	9.770	10.75	222.37	0.750	0.000	5.00	17.843	13.38	143.8	0.0	847.2
60.00		1.00	1.14	9.951	10.95	216.72	0.750	0.000	5.00	17.241	12.93	141.5	0.0	818.4
64.83	Bot - Section 3	1.00	1.16	10.115	11.13	210.99	0.750	0.000	4.83	16.094	12.07	134.3	0.0	763.7
65.00		1.00	1.16	10.120	11.13	210.79	0.750	0.000	0.17	0.556	0.42	4.6	0.0	52.2
69.50	Top - Section 2	1.00	1.17	10.264	11.29	205.24	0.750	0.000	4.50	14.747	11.06	124.9	0.0	1385.6
70.00		1.00	1.17	10.279	11.31	208.76	0.750	0.000	0.50	1.609	1.21	13.6	0.0	76.3
75.00		1.00	1.19	10.430	11.47	202.39	0.750	0.000	5.00	15.754	11.82	135.6	0.0	747.1
80.00		1.00	1.21	10.572	11.63	195.84	0.750	0.000	5.00	15.152	11.36	132.2	0.0	718.3
85.00		1.00	1.22	10.708	11.78	189.10	0.750	0.000	5.00	14.550	10.91	128.5	0.0	689.5
87.00	Appurtenance(s)	1.00	1.23	10.761	11.84	186.37	0.750	0.000	2.00	5.652	4.24	50.2	0.0	267.7
90.00		1.00	1.24	10.838	11.92	182.21	0.750	0.000	3.00	8.297	6.22	74.2	0.0	392.9
95.00		1.00	1.25	10.962	12.06	175.17	0.750	0.000	5.00	13.347	10.01	120.7	0.0	631.8
98.50	Bot - Section 4	1.00	1.26	11.046	12.15	170.16	0.750	0.000	3.50	8.985	6.74	81.9	0.0	425.1
100.00		1.00	1.27	11.081	12.19	167.99	0.750	0.000	1.50	3.840	2.88	35.1	0.0	329.6
102.33	Top - Section 3	1.00	1.27	11.135	12.25	164.60	0.750	0.000	2.33	5.866	4.40	53.9	0.0	503.2
105.00		1.00	1.28	11.195	12.31	164.29	0.750	0.000	2.67	6.543	4.91	60.4	0.0	258.4
107.00	Appurtenance(s)	1.00	1.28	11.240	12.36	161.35	0.750	0.000	2.00	4.795	3.60	44.5	0.0	189.3
110.00		1.00	1.29	11.305	12.44	156.89	0.750	0.000	3.00	7.012	5.26	65.4	0.0	276.8
115.00		1.00	1.30	11.412	12.55	149.38	0.750	0.000	5.00	11.205	8.40	105.5	0.0	442.0
117.00	Appurtenance(s)	1.00	1.31	11.453	12.60	146.35	0.750	0.000	2.00	4.313	3.24	40.8	0.0	170.1
120.00		1.00	1.32	11.514	12.67	141.77	0.750	0.000	3.00	6.290	4.72	59.7	0.0	247.9
								Totals:	**120.00**			**3,191.8**		**21,220.7**

Discrete Appurtenance Forces

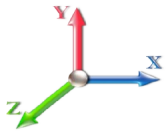
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	117.00	GPS	1	11.453	12.598	0.50	1.00	0.50	10.00	0.000	0.000	6.30	0.00	0.00
2	117.00	HBXX-6517DS-VTM	6	11.453	12.598	0.77	1.00	39.50	244.20	0.000	0.000	497.65	0.00	0.00
3	117.00	LNX-6514DS-VTM (72.7"	3	11.453	12.598	0.83	1.00	20.34	116.40	0.000	0.000	256.29	0.00	0.00
4	117.00	LPA-80080/4CF ___	6	11.453	12.598	1.70	1.00	26.62	72.00	0.000	0.000	335.40	0.00	0.00
5	117.00	Low Profile	1	11.453	12.598	1.00	1.00	22.00	1500.00	0.000	0.000	277.17	0.00	0.00
6	117.00	FD9R6004/2C-3L 3.1#	6	11.453	12.598	1.00	1.00	2.16	18.60	0.000	0.000	27.21	0.00	0.00
7	117.00	RRH2X60-AWS	3	11.453	12.598	0.76	1.00	7.98	165.00	0.000	0.000	100.54	0.00	0.00
8	117.00	RRH2X60-PCS	3	11.453	12.598	0.89	1.00	5.87	165.00	0.000	0.000	74.00	0.00	0.00
9	117.00	DB-T1-6Z-8AB-0Z	2	11.453	12.598	0.71	1.00	6.82	37.80	0.000	0.000	85.87	0.00	0.00
10	107.00	MS-KI22-5 (Kickers w/o	1	11.240	12.364	1.00	1.00	5.33	146.00	0.000	0.000	65.90	0.00	0.00
11	107.00	4449	3	11.240	12.364	0.50	0.75	2.49	210.00	0.000	0.000	30.75	0.00	0.00
12	107.00	KRY 112 489/2	6	11.240	12.364	0.50	0.75	0.03	0.60	0.000	0.000	0.37	0.00	0.00
13	107.00	KRY 112 144/1	3	11.240	12.364	0.50	0.75	0.62	33.00	0.000	0.000	7.64	0.00	0.00
14	107.00	HRK12 (Handrail Kit)	1	11.240	12.364	1.00	1.00	6.75	261.72	0.000	0.000	83.45	0.00	0.00
15	107.00	APXVAARR24_43-U-NA2	3	11.240	12.364	0.52	0.75	31.88	384.00	0.000	0.000	394.13	0.00	0.00
16	107.00	Low Profile	1	11.240	12.364	1.00	1.00	22.00	1500.00	0.000	0.000	272.00	0.00	0.00
17	87.00	HRK12 (Handrail Kit)	1	10.761	11.837	1.00	1.00	6.75	261.72	0.000	0.000	79.90	0.00	0.00
18	87.00	7770.00	3	10.761	11.837	0.55	0.75	9.03	105.00	0.000	0.000	106.93	0.00	0.00
19	87.00	HPA-65R-BUU-H8	3	10.761	11.837	0.59	0.75	23.07	204.00	0.000	0.000	273.09	0.00	0.00
20	87.00	800 10966	3	10.761	11.837	0.54	0.75	28.12	377.10	0.000	0.000	332.88	0.00	0.00
21	87.00	Low Profile	1	10.761	11.837	1.00	1.00	22.00	1500.00	0.000	0.000	260.41	0.00	0.00
22	87.00	PRK-1245 (kicker kit)	1	10.761	11.837	1.00	1.00	9.50	464.91	0.000	0.000	112.45	0.00	0.00
23	87.00	TT19-08BP111-001	6	10.761	11.837	0.68	0.75	2.59	96.00	0.000	0.000	30.68	0.00	0.00
24	87.00	LGP21903	6	10.761	11.837	0.63	0.75	1.02	33.00	0.000	0.000	12.08	0.00	0.00
25	87.00	B2 B66A 8843	3	10.761	11.837	0.64	0.75	3.14	210.00	0.000	0.000	37.13	0.00	0.00
26	87.00	4449 B5/B12	3	10.761	11.837	0.65	0.75	3.81	213.00	0.000	0.000	45.12	0.00	0.00
27	87.00	DC6-48-60-18-8F(23.5"	1	10.761	11.837	1.00	1.00	1.26	20.00	0.000	0.000	14.91	0.00	0.00
28	87.00	DC6-48-60-18-8C	1	10.761	11.837	1.00	1.00	1.26	20.00	0.000	0.000	14.91	0.00	0.00
							Totals:		**8,369.05**			**3,835.17**		

Total Applied Force Summary

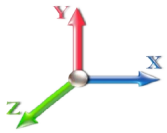
Structure:	CT03801-S-SBA		**Code:**	EIA/TIA-222-G	7/5/2019
Site Name:	East Granby		**Exposure:**	C	
Height:	120.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		144.54	1347.61	0.00	0.00
10.00		140.85	1318.77	0.00	0.00
15.00		137.15	1289.94	0.00	0.00
20.00		141.60	1261.11	0.00	0.00
25.00		144.30	1232.27	0.00	0.00
30.00		145.68	1203.44	0.00	0.00
32.00		57.86	473.30	0.00	0.00
35.00		88.52	1275.36	0.00	0.00
37.50		73.61	1046.94	0.00	0.00
40.00		73.49	576.91	0.00	0.00
45.00		147.17	1132.20	0.00	0.00
50.00		145.72	1103.37	0.00	0.00
55.00		143.82	1074.54	0.00	0.00
60.00		141.54	1045.70	0.00	0.00
64.83		134.30	983.44	0.00	0.00
65.00		4.64	59.79	0.00	0.00
69.50		124.87	1590.19	0.00	0.00
70.00		13.64	99.03	0.00	0.00
75.00		135.55	974.47	0.00	0.00
80.00		132.16	945.64	0.00	0.00
85.00		128.54	916.80	0.00	0.00
87.00	(32) attachments	1370.67	3863.38	0.00	0.00
90.00		74.18	474.39	0.00	0.00
95.00		120.70	767.59	0.00	0.00
98.50		81.87	520.16	0.00	0.00
100.00		35.10	370.31	0.00	0.00
102.33		53.88	566.59	0.00	0.00
105.00		60.43	330.82	0.00	0.00
107.00	(18) attachments	898.71	2778.95	0.00	0.00
110.00		65.40	317.68	0.00	0.00
115.00		105.49	510.24	0.00	0.00
117.00	(31) attachments	1701.18	2526.37	0.00	0.00
120.00		59.75	247.92	0.00	0.00
	Totals:	**7,026.94**	**34,225.21**	**0.00**	**0.00**

Calculated Forces

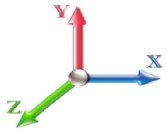
Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

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	-34.22	-7.04	0.00	-599.33	0.00	599.33	4242.75	2121.37	9773.47	4851.96	0.00	0.000	0.000	0.132
5.00	-32.87	-6.91	0.00	-564.15	0.00	564.15	4184.67	2092.33	9393.09	4663.13	0.02	-0.032	0.000	0.129
10.00	-31.55	-6.79	0.00	-529.60	0.00	529.60	4124.00	2062.00	9013.89	4474.88	0.07	-0.064	0.000	0.126
15.00	-30.26	-6.66	0.00	-495.68	0.00	495.68	4060.73	2030.37	8636.33	4287.44	0.15	-0.096	0.000	0.123
20.00	-28.99	-6.54	0.00	-462.36	0.00	462.36	3994.87	1997.44	8260.86	4101.04	0.27	-0.129	0.000	0.120
25.00	-27.76	-6.41	0.00	-429.68	0.00	429.68	3926.42	1963.21	7887.94	3915.90	0.42	-0.163	0.000	0.117
30.00	-26.55	-6.27	0.00	-397.65	0.00	397.65	3855.38	1927.69	7518.03	3732.27	0.61	-0.196	0.000	0.113
32.00	-26.07	-6.22	0.00	-385.11	0.00	385.11	3826.23	1913.12	7371.01	3659.28	0.70	-0.210	0.000	0.112
35.00	-24.80	-6.13	0.00	-366.47	0.00	366.47	3781.74	1890.87	7151.59	3550.35	0.84	-0.231	0.000	0.110
37.50	-23.75	-6.06	0.00	-351.14	0.00	351.14	3783.94	1891.97	7162.31	3555.67	0.96	-0.249	0.000	0.105
40.00	-23.17	-5.99	0.00	-335.99	0.00	335.99	3746.19	1873.09	6980.48	3465.40	1.10	-0.266	0.000	0.103
45.00	-22.04	-5.85	0.00	-306.03	0.00	306.03	3668.73	1834.37	6619.97	3286.43	1.40	-0.299	0.000	0.099
50.00	-20.93	-5.71	0.00	-276.76	0.00	276.76	3588.69	1794.34	6264.07	3109.75	1.73	-0.332	0.000	0.095
55.00	-19.85	-5.57	0.00	-248.19	0.00	248.19	3506.05	1753.02	5913.22	2935.57	2.09	-0.365	0.000	0.090
60.00	-18.81	-5.44	0.00	-220.32	0.00	220.32	3420.81	1710.41	5567.90	2764.14	2.49	-0.397	0.000	0.085
64.83	-17.82	-5.30	0.00	-194.04	0.00	194.04	3335.96	1667.98	5239.76	2601.24	2.91	-0.427	0.000	0.080
65.00	-17.76	-5.30	0.00	-193.16	0.00	193.16	3332.99	1666.49	5228.55	2595.67	2.92	-0.428	0.000	0.080
69.50	-16.17	-5.17	0.00	-169.31	0.00	169.31	3299.78	1649.89	5104.40	2534.04	3.34	-0.456	0.000	0.072
70.00	-16.07	-5.16	0.00	-166.73	0.00	166.73	3290.76	1645.38	5071.06	2517.49	3.39	-0.459	0.000	0.071
75.00	-15.09	-5.02	0.00	-140.95	0.00	140.95	3199.12	1599.56	4741.34	2353.80	3.89	-0.487	0.000	0.065
80.00	-14.15	-4.89	0.00	-115.85	0.00	115.85	3073.61	1536.80	4374.21	2171.54	4.41	-0.513	0.000	0.058
85.00	-13.23	-4.75	0.00	-91.42	0.00	91.42	2947.70	1473.85	4021.34	1996.36	4.96	-0.537	0.000	0.050
87.00	-9.38	-3.35	0.00	-81.92	0.00	81.92	2897.34	1448.67	3884.35	1928.35	5.19	-0.545	0.000	0.046
90.00	-8.90	-3.27	0.00	-71.88	0.00	71.88	2821.79	1410.90	3683.31	1828.55	5.54	-0.558	0.000	0.042
95.00	-8.14	-3.14	0.00	-55.52	0.00	55.52	2695.89	1347.94	3360.11	1668.10	6.13	-0.577	0.000	0.036
98.50	-7.62	-3.06	0.00	-44.52	0.00	44.52	2607.75	1303.88	3142.71	1560.17	6.56	-0.589	0.000	0.031
100.00	-7.25	-3.02	0.00	-39.93	0.00	39.93	2569.98	1284.99	3051.76	1515.02	6.74	-0.593	0.000	0.029
102.33	-6.68	-2.96	0.00	-32.88	0.00	32.88	2143.60	1071.80	2553.25	1267.54	7.04	-0.600	0.000	0.029
105.00	-6.35	-2.90	0.00	-24.98	0.00	24.98	2087.65	1043.82	2420.99	1201.88	7.37	-0.606	0.000	0.024
107.00	-3.58	-1.97	0.00	-19.19	0.00	19.19	2045.68	1022.84	2324.11	1153.79	7.63	-0.611	0.000	0.018
110.00	-3.26	-1.90	0.00	-13.28	0.00	13.28	1982.72	991.36	2182.49	1083.48	8.01	-0.616	0.000	0.014
115.00	-2.76	-1.79	0.00	-3.77	0.00	3.77	1877.80	938.90	1956.35	971.22	8.66	-0.621	0.000	0.005
117.00	-0.25	-0.06	0.00	-0.19	0.00	0.19	1835.83	917.92	1869.36	928.03	8.92	-0.622	0.000	0.000
120.00	0.00	-0.06	0.00	0.00	0.00	0.00	1772.88	886.44	1742.58	865.09	9.31	-0.622	0.000	0.000

Final Analysis Summary

Structure:	CT03801-S-SBA	**Code:**	EIA/TIA-222-G	7/5/2019	
Site Name:	East Granby	**Exposure:**	C		
Height:	120.00 (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

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 93 mph Wind	27.1	0.00	41.04	0.00	0.00	2311.66
0.9D + 1.6W 93 mph Wind	27.0	0.00	30.77	0.00	0.00	2299.16
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.2	0.00	69.47	0.00	0.00	705.42
1.2D + 1.0E	1.4	0.00	41.07	0.00	0.00	133.83
0.9D + 1.0E	1.4	0.00	30.80	0.00	0.00	133.05
1.0D + 1.0W 60 mph Wind	7.0	0.00	34.22	0.00	0.00	599.33

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 93 mph Wind	-41.04	-27.06	0.00	-2311.6	0.00	-2311.6	4242.75	2121.3	9773.47	4851.96	0.00	0.486
0.9D + 1.6W 93 mph Wind	-30.77	-27.05	0.00	-2299.1	0.00	-2299.1	4242.75	2121.3	9773.47	4851.96	0.00	0.481
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-69.47	-8.17	0.00	-705.42	0.00	-705.42	4242.75	2121.3	9773.47	4851.96	0.00	0.162
1.2D + 1.0E	-41.07	-1.39	0.00	-133.83	0.00	-133.83	4242.75	2121.3	9773.47	4851.96	0.00	0.037
0.9D + 1.0E	-30.80	-1.39	0.00	-133.05	0.00	-133.05	4242.75	2121.3	9773.47	4851.96	0.00	0.035
1.0D + 1.0W 60 mph Wind	-34.22	-7.04	0.00	-599.33	0.00	-599.33	4242.75	2121.3	9773.47	4851.96	0.00	0.132

Monopole Mat Foundation Design

			Date: 7/5/2019
Customer Name:	T-Mobile	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	120
Site Number:	CT03801-S-SBA	**Engineer Name:**	J. Chen
Engr. Number:	77999	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

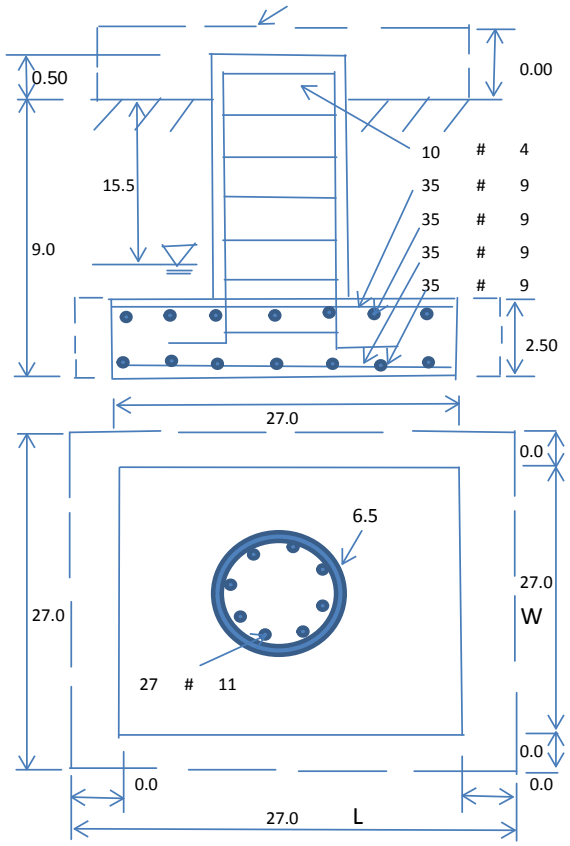
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	69.5	Shear Force (Kips):	27.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2311.7
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	6.5	Depth of Base BG (ft.):	9.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	27	Width of Pad (ft.):	27
Final Length of pad (ft)	27.0	Final width of pad (ft):	27.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	27	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
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):	35	Qty. of Rebar in Pad (W):	35

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	35	Qty. of Rebar in Pad (W):	35
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	37.6	Pcf		
Water Table B.G.S. (ft):	15.5	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	5000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	Yes		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	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.):	4522.81	Total Dry Soil Weight (Kips):	497.51
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	497.51	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2054.78	Total Dry Concrete Weight (Kips):	308.22
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	308.22	Total Vertical Load on Base (Kips):	875.23

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1603	<	Allowable Factored Soil Bearing (psf):	3750	0.43	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	10727.8	>	Design Factored Momont (kips-ft):	2261	0.21	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	4.75	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):	1.56		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	6114.3	>	Design Factored Moment (Mu, Kips-F	2501.4	0.41	OK!
Calculated Shear Capacity (Kips):	517.4	>	Design Factored Shear (Kips):	27.1	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	2274.5	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	6280.3	>	Design Factored Axial Load (Pu Kips):	69.5	0.01	OK!
Moment & Axial Strength Combination:	0.41	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.009		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	703.7	>	One-Way Factored Shear (L-D. Kips):	210.4	0.30	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	703.7	>	One-Way Factored Shear (W-D., Kips)	210.4	0.30	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	711.0	>	One-Way Factored Shear (C-C, Kips):	183.4	0.26	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0041	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0041		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3963.7	>	Moment at Bottom (L-Dir. K-Ft):	1240.6	0.31	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3963.7	>	Moment at Bottom (W-Dir. K-Ft):	1240.6	0.31	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	5547.5	>	Moment at Bottom (C-C Dir. K-Ft):	1754.4	0.32	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0041	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0041		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	3963.7	>	Moment at the top (L-Dir K-Ft):	390.9	0.10	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	3963.7	>	Moment at the top (W-Dir K-Ft):	390.9	0.10	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	5547.5	>	Moment at the top (C-C Dir. K-Ft):	365.3	0.07	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	924.7	k-ft.	Max. factored shear stress v_{u_CD}:		0.2	Psi
Max. factored shear stress v_{u_AB}:	12.6	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	12.6	Psi	Check Usage of Punching Shear Capacity:		0.08	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 121-Ft Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT03801-S-SBA / East Granby

Customer Site Name: East Granby

Carrier Name: T-Mobile (App#: 117019, V1)

Carrier Site ID / Name: CT11386G / Simsbury North

Site Location: 56 Floydville Road

East Granby, Connecticut

Hartford County

Latitude: 41.928649

Longitude: -72.776099

Analysis Result:

Max Structural Usage: 65.1% [Pass]

Report Prepared By: Sital Shrestha

Introduction

The purpose of this report is to summarize the analysis results on the [MOUNTTYPE] at 110.00' 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 done by Full Metal Tower Services, drawing no. 1234202, dated 4/28/19.
Antenna Loading	Antenna loading by SBA Application # 117019, v1, dated 6/3/19.
Existing Modification	N/A
Proposed Modification	TES Project No. 80043

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 120.0 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 93 mph (3-Sec. Gust)
Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed: 60 mph +0" Radial ice
Standard/Codes: ANSI/TIA/EIA 222-G / 2015 IBC
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 2012 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

Low profile platform at 110.00' elevation.

Final Antenna Configuration

3	RFS APXVAARR24_43-U-NA20
3	Ericsson KRY 112 144/1
6	Ericsson KRY 112 489/2
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 65.1%, which occurs in the connection. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

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

Standard Conditions

1. The loading configuration as analyzed in this report is as provided from the customer. Any deviation from this design shall be communicated to TES to verify deviation will not adversely impact the analysis.

2. The analysis is based on the presumption that the antenna mount members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion. The mount analysis is not a condition assessment of the mount.

4. The mount analysis was performed in accordance with the loading provided, and if applicable the modification required to support the additional loading.

5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.

6. The modification drawings are not intended to convey means or methods. These are the responsibility of the installing contractor.

7. Rigging plan review is available if the contractor requires for a construction class IV or other if required. Review fee would apply.

8. The mount modification package was created based upon information provided for the mount loading. The underlying tower is assumed to provide support and sufficient rigidity to support the mount loads as a tower analysis was not part of the mount analysis.

9. TES is not responsible for modifications to climbing facilities unless communicated to TES in writing.


04.28.2019 08:47


04.28.2019 09:02

Structure: CT03801-S-SBA - East Granby

Sector: A

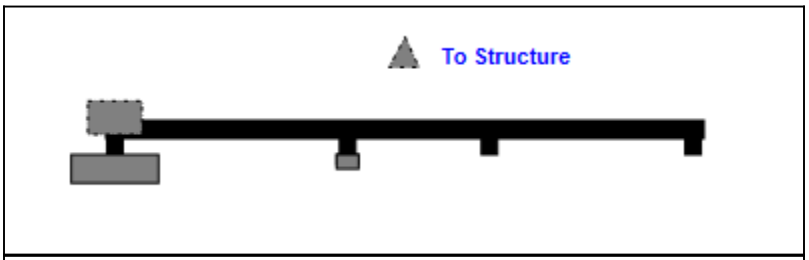
Structure Type: Monopole

Mount Elev: 110.00

6/28/2019

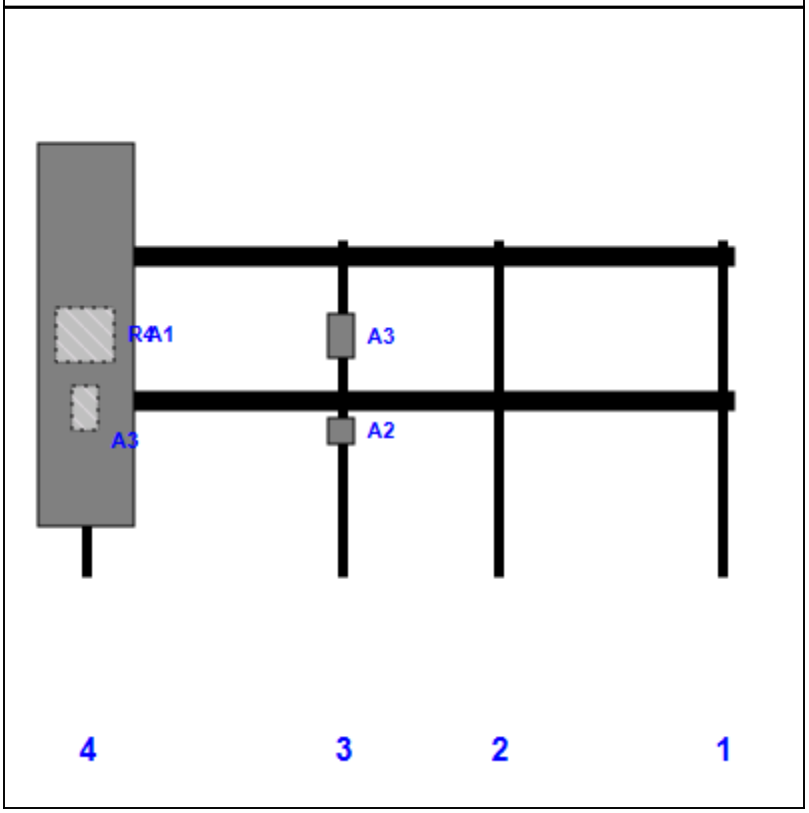
Tower Engineering Solutions

Plan View



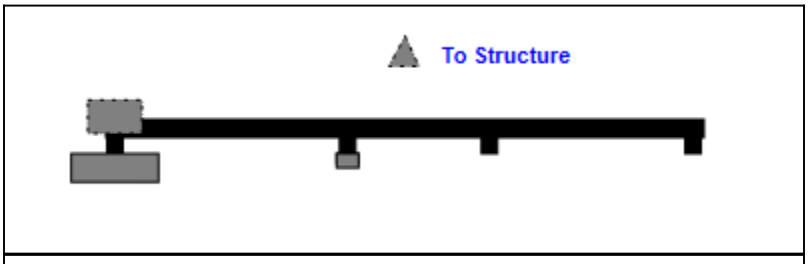
Front View

Looking Toward Structure



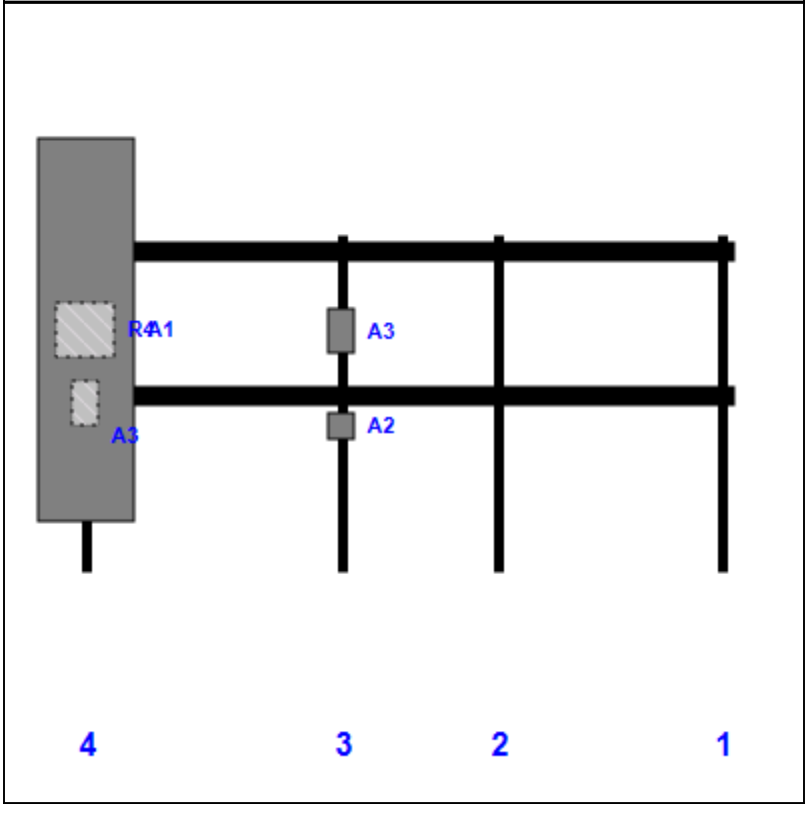
Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A2	KRY 112 144/1	6.90	6.10	67.00	3	a	Front	48.00	0.00
A3	KRY 112 489/2	11.00	6.10	67.00	3	a	Front	24.00	0.00
A1	APXVAARR24_43-U-NA20	95.90	24.00	3.00	4	a	Front	24.00	0.00
A3	KRY 112 489/2	11.00	6.10	3.00	4	a	Behind	42.00	0.00
R4	Radio 4449 B71+B12	13.10	14.90	3.00	4	a	Behind	24.00	0.00

Plan View



Front View

Looking Toward Structure



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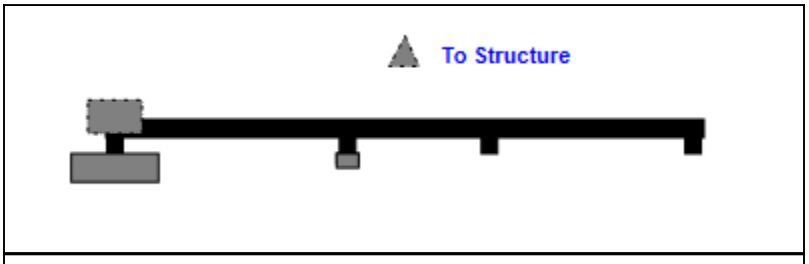
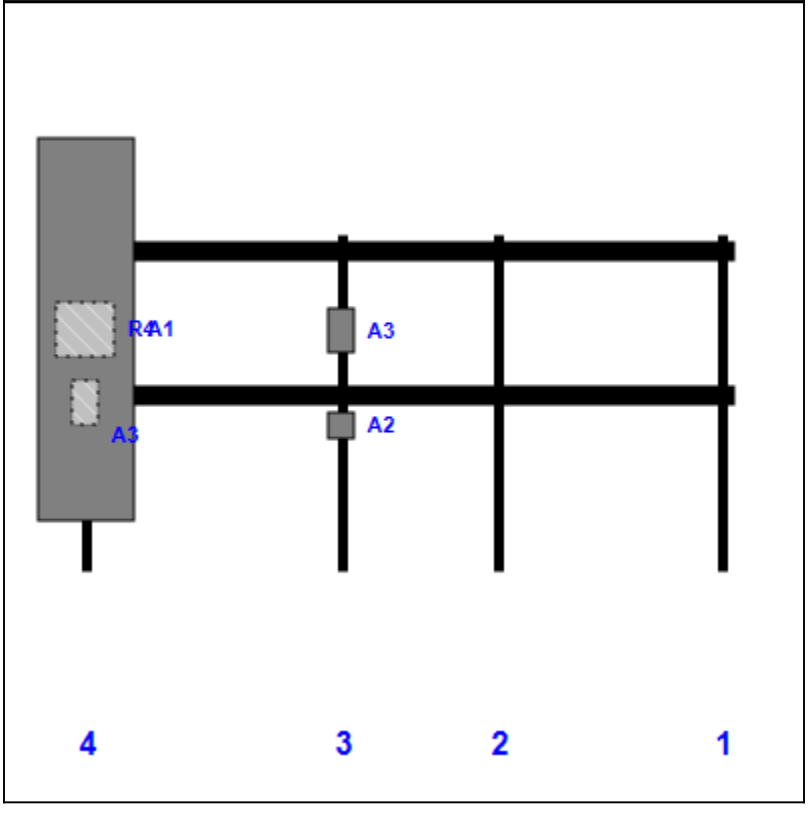
A1	APXVAARR24_43-U-NA20	95.90	24.00	3.00	4	a	Front	24.00	0.00
A3	KRY 112 489/2	11.00	6.10	3.00	4	a	Behind	42.00	0.00
R4	Radio 4449 B71+B12	13.10	14.90	3.00	4	a	Behind	24.00	0.00

Plan View



Front View

Looking Toward Structure



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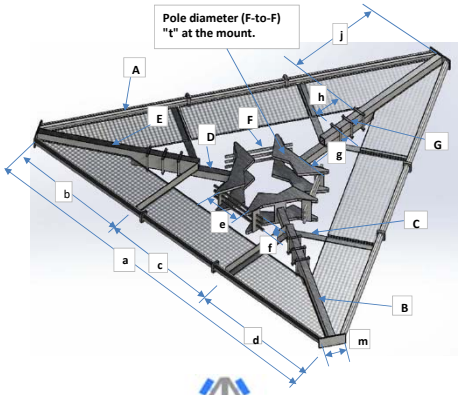
R4	Radio 4449 B71+B12	13.10	14.90	3.00	4	a	Behind	24.00	0.00

Updated on 10-5-2018

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

FCC # 1234202

Tower Owner:	SBA Communications	**Mapping Date:**	4/28/19
Site Name:	East Granby	**Structure Type:**	Monopole
Site Number or ID:	CT03801-S-SBA	**Structure Height (Ft.):**	121
Mapping Contractor:	Full Metal Tower Services	**Mount Height (Ft.):**	110.2



Geometries (Unit: inches)

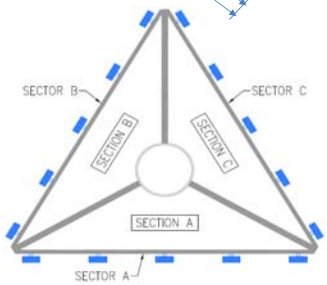
a	165	**e**	36	**j**	46	**o**	N/A	**s**	N/A
b	53	**f**	9	**k**	N/A	**p**	N/A	**t**	26
c	59	**g**	24	**m**	16	**q**	N/A	**u ***	40
d	53	**h**	12	**n**	N/A	**r**	N/A	**v ***	84

(b+c+d+e+f) does not equal to the a value **Members/Bolts (Unit: inches)- See Antenna Layout for "u", "v" and member "K" (pip**

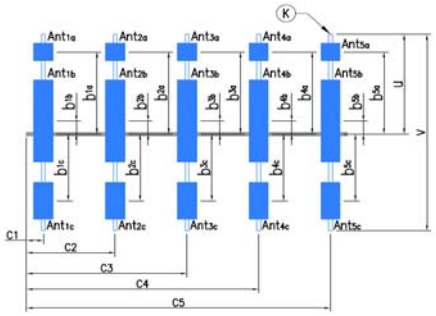
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	3.5 OD x 0.216 Pipe	3.5	3.068	0.216	**F**	3/4" Bolt	36		
B	Tubing 4x4x5/16	4	4	0.3125	**G**	1/2" U-Bolt	Not U-Bolts		
C	L2x2x1/4	2	2	0.25	**H**				
D	Tubing 4x4x5/16	4	4	0.3125	**J**				
E	Tubing 4x4x5/16	4	4	0.3125	**K* (pipe)**	2.375 OD x 0.154 Pipe	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.)	N/A
Distance from top of main platform member to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)	N/A

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



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



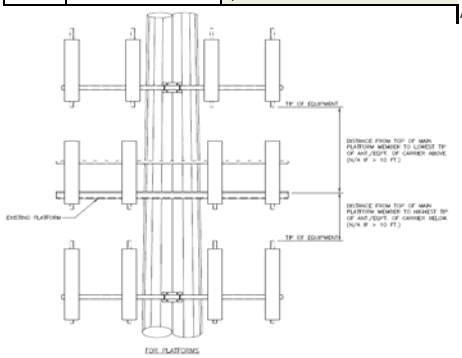
Antenna Layout

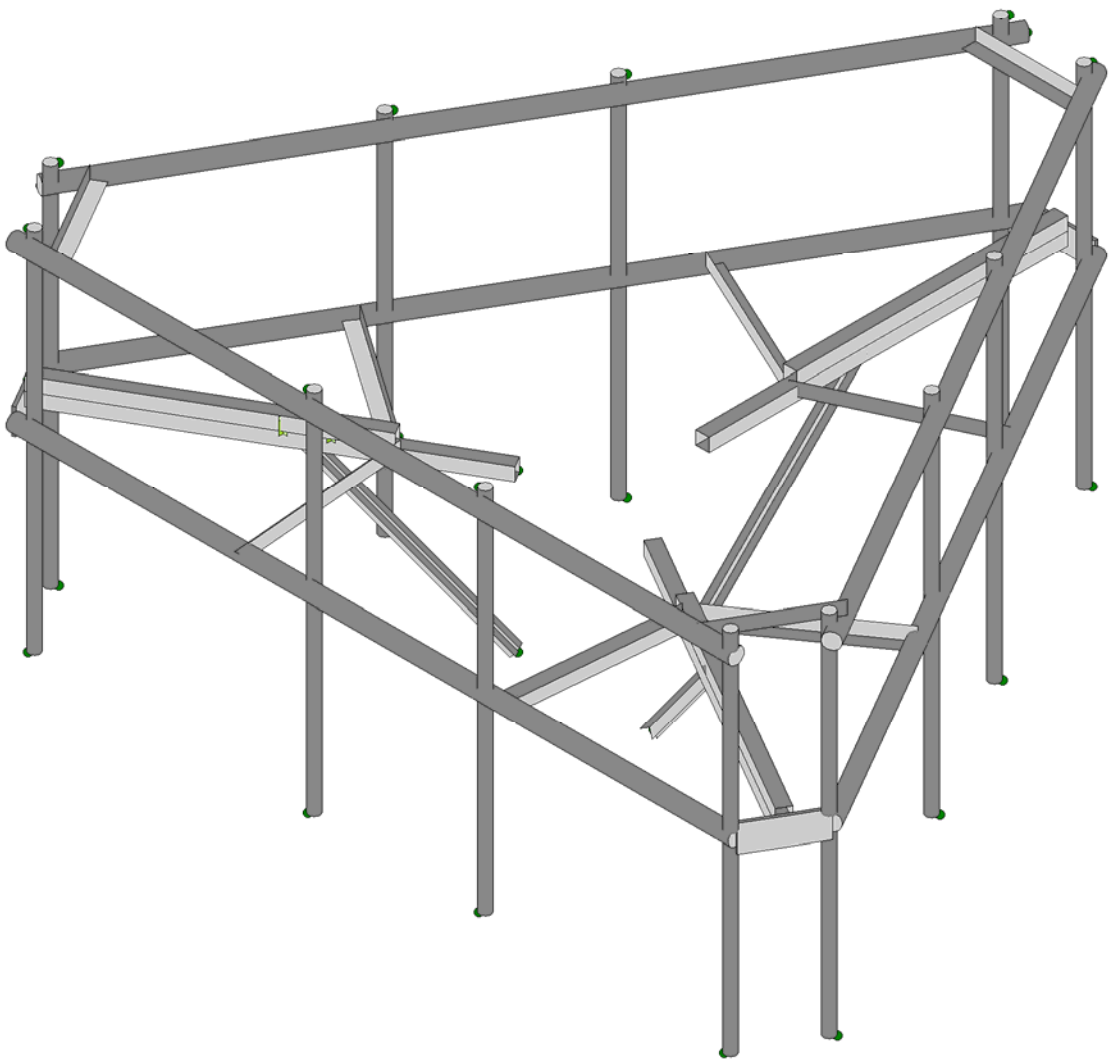
Ants. Items	Enter antenna model. If not labled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector.	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Mounting Locations (Unit: inches) Vertical 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.)	Photos of antennas Photo Numbers
	Sector A								
Ant_{1a}	APXVAARR24_43-U-N	24	8.7	95.6	N/A	N/A	N/A	162	
Ant_{1b}									
Ant_{1c}									
Ant_{2a}	Empty Mast	N/A	N/A	N/A	N/A	N/A	N/A	106	
Ant_{2b}									
Ant_{2c}									
Ant_{3a}	Empty Mast	N/A	N/A	N/A	N/A	N/A	N/A	67	
Ant_{3b}									
Ant_{3c}									
Ant_{4a}	Empty Mast	N/A	N/A	N/A	N/A	N/A	N/A	3	
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

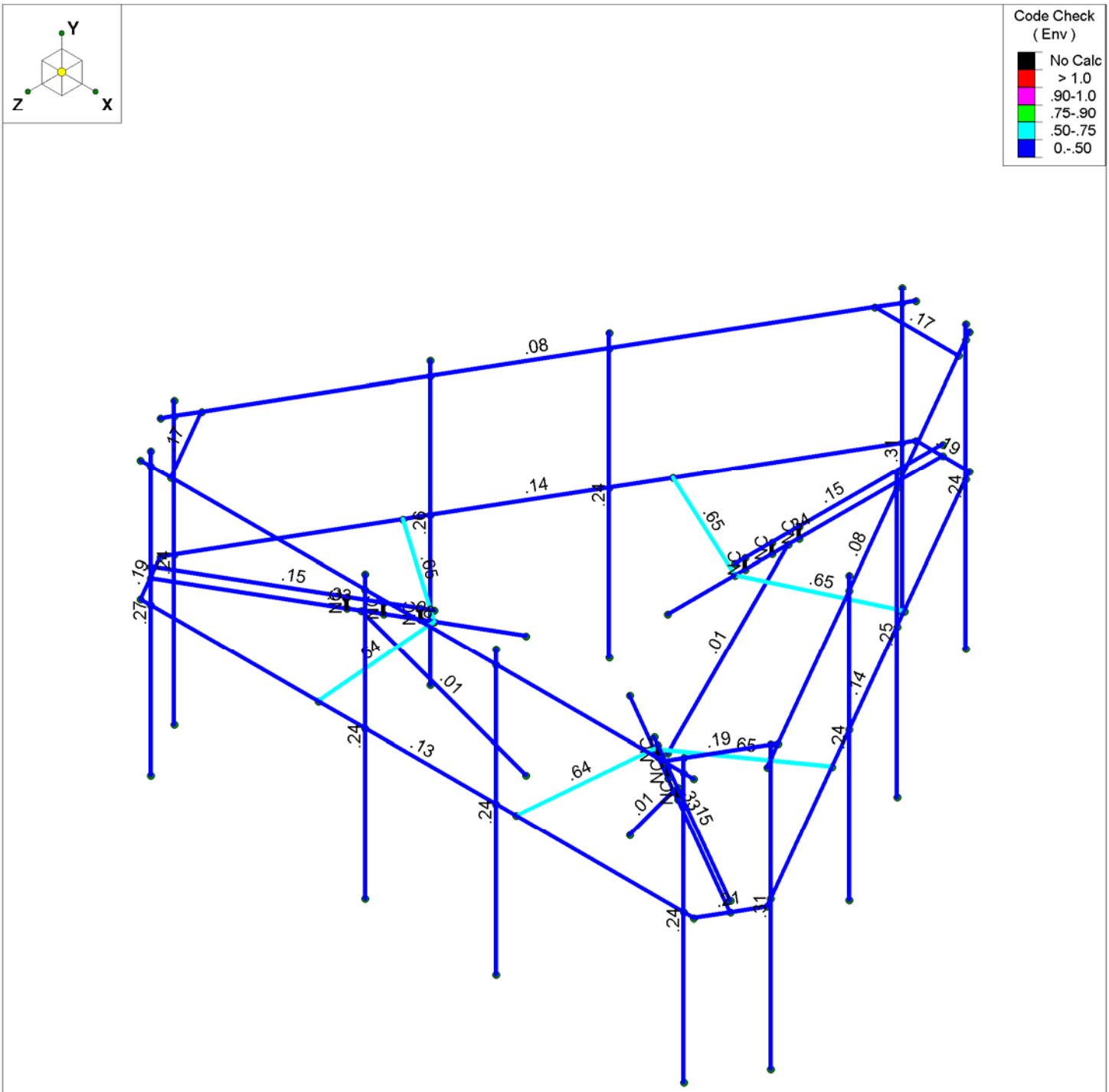
Sector A:	75°	Deg	
Sector B:	205°	Deg	
Sector C:	320°	Deg	
Climbing	90°	Deg	Located at Section A
Climbing Facility	Corrosion Type:		No corrosion observed
	Access:		Climbing path was unobstructed.
	Condition:		N/A

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



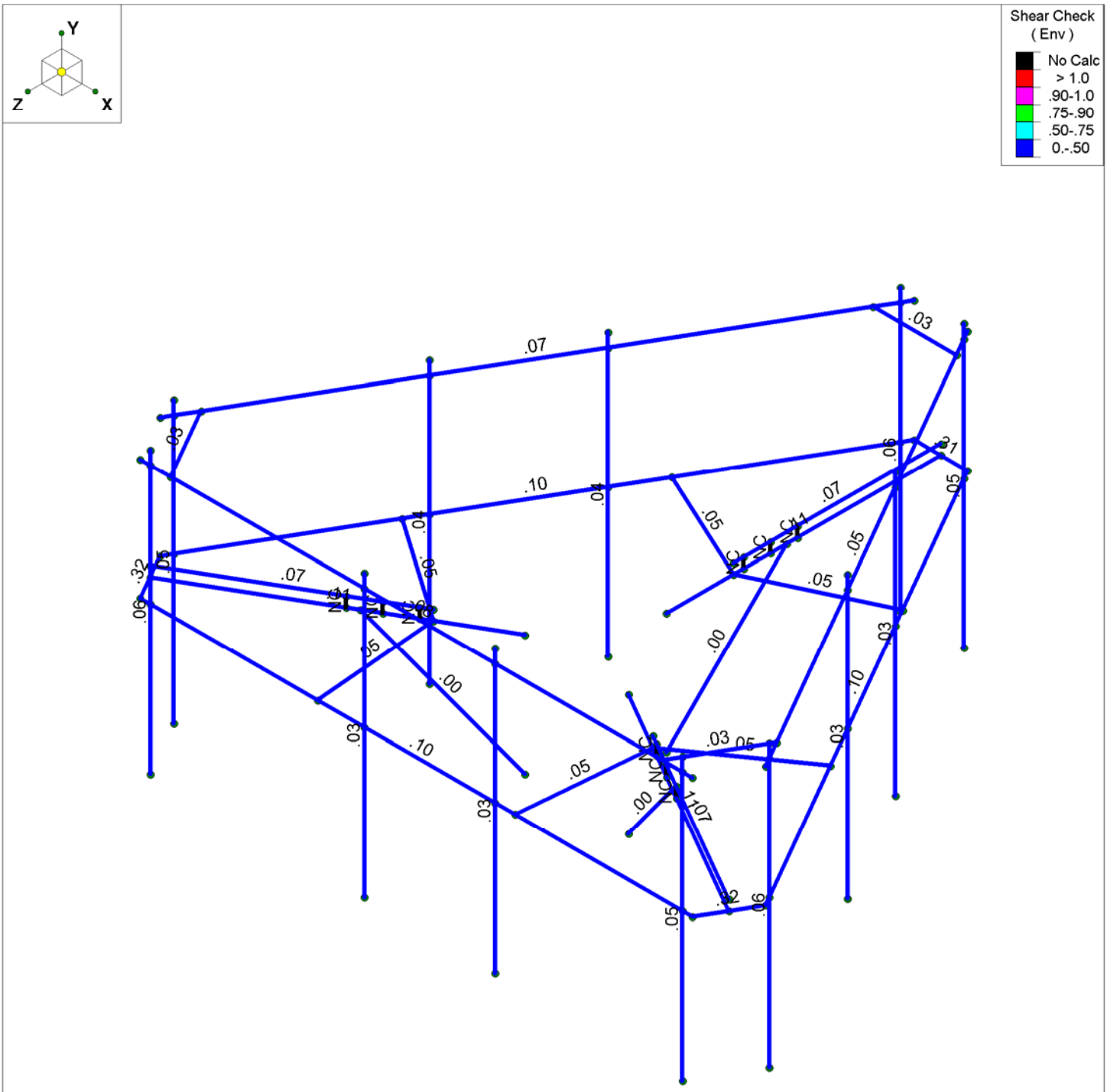


Tower Engineering Solutio...	CT03801-S-SBA_MT-C_Loads Only_G	SK - 1
		June 28, 2019 at 9:49 AM
TES Project No. 77895		MOD.r3d



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

Tower Engineering Solutio...	CT03801-S-SBA_MT-C_Loads Only_G	SK - 2
		June 28, 2019 at 9:49 AM
TES Project No. 77895		MOD.r3d



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

Tower Engineering Solutio...	CT03801-S-SBA_MT-C_Loads Only_G	SK - 3
		June 28, 2019 at 9:49 AM
TES Project No. 77895		MOD.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					18			
2	Antenna Di	None					18			
3	Antenna W Front	None					18			
4	Antenna Wi Front	None					18			
5	Antenna W Side	None					18			
6	Antenna Wi Side	None					18			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1						
10	Structure Di	None						33		
11	Structure W Front	None						33		
12	Structure Wi Front	None						33		
13	Structure W Side	None						33		
14	Structure Wi Side	None						33		

Load Combinations

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6												
2	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6												
3	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6												
4	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6												
5	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12	1								
6	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12	-1								
7	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14	1								
8	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14	-1								
9	1.2D+1.5L..	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16										
10	1.2D+1.5L..	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	N4	-6.875	0	4.739083	0	
2	N5	6.875	0	4.739083	0	
3	N6	7.541667	0	3.584383	0	
4	N7	0.666667	0	-8.323466	0	
5	N8	-0.666667	0	-8.323466	0	
6	N9	-7.541667	0	3.584383	0	
7	N10	-7.208333	0	4.161733	0	
8	N11	7.208333	0	4.161733	0	
9	N12	0	0	-8.323466	0	
10	NP1	6.625	3.333333	4.739083	0	
11	NP2	6.625	-3.666667	4.739083	0	
12	NP3	1.958333	3.333333	4.739083	0	
13	NP4	1.958333	-3.666667	4.739083	0	
14	NP5	-1.291667	3.333333	4.739083	0	
15	NP6	-1.291667	-3.666667	4.739083	0	
16	NP7	-6.625	3.333333	4.739083	0	
17	NP8	-6.625	-3.666667	4.739083	0	
18	NP11	-7.416667	3.333333	3.367877	0	
19	NP12	-7.416667	-3.666667	3.367877	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
20	NP13	-5.083333	3.333333	-0.673575	0	
21	NP14	-5.083333	-3.666667	-0.673575	0	
22	NP15	-3.458333	3.333333	-3.488158	0	
23	NP16	-3.458333	-3.666667	-3.488158	0	
24	NP17	-0.791667	3.333333	-8.10696	0	
25	NP18	-0.791667	-3.666667	-8.10696	0	
26	NP21	0.791667	3.333333	-8.10696	0	
27	NP22	0.791667	-3.666667	-8.10696	0	
28	NP23	3.125	3.333333	-4.065508	0	
29	NP24	3.125	-3.666667	-4.065508	0	
30	NP25	4.75	3.333333	-1.250926	0	
31	NP26	4.75	-3.666667	-1.250926	0	
32	NP27	7.416667	3.333333	3.367877	0	
33	NP28	7.416667	-3.666667	3.367877	0	
34	N3	0	0	-1.490133	0	
35	N1	-1.290493	0	0.745067	0	
36	N2	1.290493	0	0.745066	0	
37	N37	0	0	-3.160133	0	
38	N38	-2.736755	0	1.580067	0	
39	N39	2.736755	0	1.580066	0	
40	N40	6.625	0	4.739083	0	
41	N41	1.958333	0	4.739083	0	
42	N42	-1.291667	0	4.739083	0	
43	N43	-6.625	0	4.739083	0	
44	N44	0.791667	0	-8.10696	0	
45	N45	3.125	0	-4.065508	0	
46	N46	4.75	0	-1.250926	0	
47	N47	7.416667	0	3.367877	0	
48	N48	-7.416667	0	3.367877	0	
49	N49	-5.083333	0	-0.673575	0	
50	N50	-3.458333	0	-3.488158	0	
51	N51	-0.791667	0	-8.10696	0	
52	N52	-2.458	0	4.739083	0	
53	N53	5.333167	0	-0.240851	0	
54	N54	-2.875167	0	-4.498232	0	
55	N55	2.458	0	4.739083	0	
56	N56	2.875167	0	-4.498232	0	
57	N57	-5.333167	0	-0.240851	0	
58	N58	-7.208333	.25	4.161733	0	
59	N59	-2.736755	.25	1.580067	0	
60	N60	7.208333	.25	4.161733	0	
61	N61	2.736756	.25	1.580066	0	
62	N62	-0.	.25	-8.323466	0	
63	N63	-0.000001	.25	-3.160133	0	
64	N64	0	0	-3.410133	0	
65	N65	0	0	-4.080133	0	
66	N66	0	0	-4.750133	0	
67	N67	-0.000001	.25	-3.410133	0	
68	N68	-0.000001	.25	-4.080133	0	
69	N69	-0.000001	.25	-4.750133	0	
70	N70	-2.953261	0	1.705067	0	
71	N71	-3.533498	0	2.040067	0	
72	N72	-4.113735	0	2.375066	0	
73	N73	-2.953261	.25	1.705067	0	
74	N74	-3.533498	.25	2.040067	0	
75	N75	-4.113735	.25	2.375066	0	
76	N76	2.953262	0	1.705067	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
77	N77	3.533499	0	2.040067	0	
78	N78	4.113736	0	2.375066	0	
79	N79	2.953263	.25	1.705067	0	
80	N80	3.5335	.25	2.040067	0	
81	N81	4.113737	.25	2.375066	0	
82	N82	0	0	-4.490133	0	
83	N83	0	-3	-1.490133	0	
84	N84	-3.888569	0	2.245067	0	
85	N85	-1.290493	-3	0.745066	0	
86	N86	3.88857	0	2.245067	0	
87	N87	1.290493	-3	0.745066	0	
88	N88	-0.666667	3	-8.323466	0	
89	N89	-7.541667	3	3.584383	0	
90	N90	-7.416667	3	3.367877	0	
91	N91	-5.083333	3	-0.673575	0	
92	N92	-3.458333	3	-3.488158	0	
93	N93	-0.791667	3	-8.10696	0	
94	N94	-6.875	3	4.739083	0	
95	N95	6.875	3	4.739084	0	
96	N96	6.625	3	4.739083	0	
97	N97	1.958333	3	4.739083	0	
98	N98	-1.291667	3	4.739083	0	
99	N99	-6.625	3	4.739083	0	
100	N100	7.541667	3	3.584383	0	
101	N101	0.666667	3	-8.323467	0	
102	N102	0.791667	3	-8.10696	0	
103	N103	3.125	3	-4.065508	0	
104	N104	4.75	3	-1.250926	0	
105	N105	7.416667	3	3.367877	0	
106	N106	-6.125	3	4.739083	0	
107	N107	6.125	3	4.739083	0	
108	N108	7.166667	3	2.934864	0	
109	N109	1.041667	3	-7.673947	0	
110	N110	-1.041667	3	-7.673947	0	
111	N111	-7.166667	3	2.934864	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	M6	N3	N12			HSS3x3x5	Beam	None	A500 Gr.B...	DR1
5	MP1A	NP1	NP2			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
6	MP2A	NP3	NP4			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
7	MP3A	NP5	NP6			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
8	MP4A	NP7	NP8			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
9	MP1B	NP11	NP12		300	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
10	MP2B	NP13	NP14		300	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
11	MP3B	NP15	NP16		300	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
12	MP4B	NP17	NP18		300	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
13	MP1C	NP21	NP22		60	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
14	MP2C	NP23	NP24		60	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
15	MP3C	NP25	NP26		60	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
16	MP4C	NP27	NP28		60	PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
17	M19	N9	N4			PL3/4x6	Beam	Wide Flange	A53 Gr.B	Typical
18	M20	N8	N7			PL3/4x6	Beam	Wide Flange	A53 Gr.B	Typical
19	M21	N5	N6			PL3/4x6	Beam	Wide Flange	A53 Gr.B	Typical
20	M20A	N1	N10			HSS3x3x5	Beam	None	A500 Gr.B...	DR1
21	M21A	N2	N11			HSS3x3x5	Beam	None	A500 Gr.B...	DR1
22	M22	N38	N52			L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
23	M23	N38	N57		270	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
24	M24	N39	N55		270	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
25	M25	N39	N53			L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
26	M26	N37	N54			L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
27	M27	N37	N56		270	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
28	M28	N59	N58			HSS3x3x5	Beam	HSS Pipe	A53 Gr.B	Typical
29	M29	N61	N60			HSS3x3x5	Beam	HSS Pipe	A53 Gr.B	Typical
30	M30	N63	N62			HSS3x3x5	Beam	HSS Pipe	A53 Gr.B	Typical
31	M31	N67	N64			RIGID	Beam	None	RIGID	DR1
32	M32	N68	N65			RIGID	Beam	None	RIGID	DR1
33	M33	N69	N66			RIGID	Beam	None	RIGID	DR1
34	M34	N73	N70			RIGID	Beam	None	RIGID	DR1
35	M35	N74	N71			RIGID	Beam	None	RIGID	DR1
36	M36	N75	N72			RIGID	Beam	None	RIGID	DR1
37	M37	N79	N76			RIGID	Beam	None	RIGID	DR1
38	M38	N80	N77			RIGID	Beam	None	RIGID	DR1
39	M39	N81	N78			RIGID	Beam	None	RIGID	DR1
40	M40	N82	N83			LL2x2x4x0	Beam	Double Angle (...	A36 Gr.36	Typical
41	M41	N84	N85			LL2x2x4x0	Beam	Double Angle (...	A36 Gr.36	Typical
42	M42	N86	N87			LL2x2x4x0	Beam	Double Angle (...	A36 Gr.36	Typical
43	M43	N88	N89			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
44	M44	N94	N95			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
45	M45	N100	N101			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
46	M46	N111	N106		270	L3x3x4	Beam	None	A36 Gr.36	DR1
47	M47	N107	N108		270	L3x3x4	Beam	None	A36 Gr.36	DR1
48	M48	N110	N109			L3x3x4	Beam	None	A36 Gr.36	DR1

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	M6						Yes			None
5	MP1A						Yes	-z		None
6	MP2A						Yes	-z		None
7	MP3A						Yes	-z		None
8	MP4A						Yes	-z		None
9	MP1B						Yes	+z		None
10	MP2B						Yes	+z		None
11	MP3B						Yes	+z		None
12	MP4B						Yes	+z		None
13	MP1C						Yes	+z		None
14	MP2C						Yes	+z		None
15	MP3C						Yes	+z		None
16	MP4C						Yes	+z		None
17	M19						Yes			None
18	M20						Yes			None
19	M21						Yes			None
20	M20A						Yes			None
21	M21A						Yes			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						Yes			None
29	M29						Yes			None
30	M30						Yes			None
31	M31						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 ...
32	M32						Yes			None
33	M33						Yes			None
34	M34						Yes			None
35	M35						Yes			None
36	M36						Yes			None
37	M37						Yes			None
38	M38						Yes			None
39	M39						Yes			None
40	M40						Yes			None
41	M41						Yes			None
42	M42						Yes			None
43	M43						Yes			None
44	M44						Yes			None
45	M45						Yes			None
46	M46						Yes			None
47	M47						Yes			None
48	M48						Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	PIPE_3.0	13.75			Lbyy						Gravity
2	M2	PIPE_3.0	13.75			Lbyy						Gravity
3	M3	PIPE_3.0	13.75			Lbyy						Gravity
4	M6	HSS3x3x5	6.833			Lbyy						Lateral
5	MP1A	PIPE_2.0	7			Lbyy						Gravity
6	MP2A	PIPE_2.0	7			Lbyy						Gravity
7	MP3A	PIPE_2.0	7			Lbyy						Gravity
8	MP4A	PIPE_2.0	7			Lbyy						Lateral
9	MP1B	PIPE_2.0	7			Lbyy						Gravity
10	MP2B	PIPE_2.0	7			Lbyy						Gravity
11	MP3B	PIPE_2.0	7			Lbyy						Gravity
12	MP4B	PIPE_2.0	7			Lbyy						Gravity
13	MP1C	PIPE_2.0	7			Lbyy						Gravity
14	MP2C	PIPE_2.0	7			Lbyy						Gravity
15	MP3C	PIPE_2.0	7			Lbyy						Gravity
16	MP4C	PIPE_2.0	7			Lbyy						Gravity
17	M19	PL3/4x6	1.333			Lbyy						Lateral
18	M20	PL3/4x6	1.333			Lbyy						Lateral
19	M21	PL3/4x6	1.333			Lbyy						Lateral
20	M20A	HSS3x3x5	6.833			Lbyy						Lateral
21	M21A	HSS3x3x5	6.833			Lbyy						Lateral
22	M22	L3x3x4	3.171			Lbyy						Lateral
23	M23	L3x3x4	3.171			Lbyy						Lateral
24	M24	L3x3x4	3.171			Lbyy						Lateral
25	M25	L3x3x4	3.171			Lbyy						Lateral
26	M26	L3x3x4	3.171			Lbyy						Lateral
27	M27	L3x3x4	3.171			Lbyy						Lateral
28	M28	HSS3x3x5	5.163			Lbyy						Lateral
29	M29	HSS3x3x5	5.163			Lbyy						Lateral
30	M30	HSS3x3x5	5.163			Lbyy						Lateral
31	M40	LL2x2x4x0	4.243			Lbyy						Lateral
32	M41	LL2x2x4x0	4.243			Lbyy						Lateral
33	M42	LL2x2x4x0	4.243			Lbyy						Lateral
34	M43	PIPE_3.0	13.75			Lbyy						Gravity
35	M44	PIPE_3.0	13.75			Lbyy						Gravity

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
36	M45	PIPE_3.0	13.75			Lbyy						Gravity
37	M46	L3x3x4	2.083			Lbyy						Lateral
38	M47	L3x3x4	2.083			Lbyy						Lateral
39	M48	L3x3x4	2.083			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-torq...	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	MP4A	Y	-64	0
2	MP4A	Y	-64	4
3	MP4B	Y	-64	0
4	MP4B	Y	-64	4
5	MP4C	Y	-64	0
6	MP4C	Y	-64	4
7	MP3A	Y	-11	4
8	MP3B	Y	-11	4
9	MP3C	Y	-11	4
10	MP3A	Y	-15.4	2
11	MP3B	Y	-15.4	2
12	MP3C	Y	-15.4	2
13	MP4A	Y	-15.4	3.5
14	MP4B	Y	-15.4	3.5
15	MP4C	Y	-15.4	3.5
16	MP4A	Y	-71	2
17	MP4B	Y	-71	2
18	MP4C	Y	-71	2

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	Y	-280.245	0
2	MP4A	Y	-280.245	4
3	MP4B	Y	-280.245	0
4	MP4B	Y	-280.245	4
5	MP4C	Y	-280.245	0
6	MP4C	Y	-280.245	4
7	MP3A	Y	-24.62	4
8	MP3B	Y	-24.62	4
9	MP3C	Y	-24.62	4
10	MP3A	Y	-36.392	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP3B	Y	-36.392	2
12	MP3C	Y	-36.392	2
13	MP4A	Y	-36.392	3.5
14	MP4B	Y	-36.392	3.5
15	MP4C	Y	-36.392	3.5
16	MP4A	Y	-93.722	2
17	MP4B	Y	-93.722	2
18	MP4C	Y	-93.722	2

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	Z	-302.357	0
2	MP4A	Z	-302.357	4
3	MP4B	Z	-167.341	0
4	MP4B	Z	-167.341	4
5	MP4C	Z	-167.341	0
6	MP4C	Z	-167.341	4
7	MP3A	Z	-12.25	4
8	MP3B	Z	-6.548	4
9	MP3C	Z	-6.548	4
10	MP3A	Z	-19.42	2
11	MP3B	Z	-12.961	2
12	MP3C	Z	-12.961	2
13	MP4A	Z	-14.565	3.5
14	MP4B	Z	-9.721	3.5
15	MP4C	Z	-9.721	3.5
16	MP4A	Z	-44.144	2
17	MP4B	Z	-27.915	2
18	MP4C	Z	-27.915	2

Member Point Loads (BLC 4 : Antenna Wi Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	Z	-98.118	0
2	MP4A	Z	-98.118	4
3	MP4B	Z	-57.795	0
4	MP4B	Z	-57.795	4
5	MP4C	Z	-57.795	0
6	MP4C	Z	-57.795	4
7	MP3A	Z	-6.346	4
8	MP3B	Z	-4.597	4
9	MP3C	Z	-4.597	4
10	MP3A	Z	-8.922	2
11	MP3B	Z	-7.304	2
12	MP3C	Z	-7.304	2
13	MP4A	Z	-6.692	3.5
14	MP4B	Z	-5.478	3.5
15	MP4C	Z	-5.478	3.5
16	MP4A	Z	-15.154	2
17	MP4B	Z	-11.524	2
18	MP4C	Z	-11.524	2

Member Point Loads (BLC 5 : Antenna W Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	X	122.336	0
2	MP4A	X	122.336	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
3	MP4B	X	257.352	0
4	MP4B	X	257.352	4
5	MP4C	X	257.352	0
6	MP4C	X	257.352	4
7	MP3A	X	4.648	4
8	MP3B	X	10.349	4
9	MP3C	X	10.349	4
10	MP3A	X	10.808	2
11	MP3B	X	17.267	2
12	MP3C	X	17.267	2
13	MP4A	X	10.808	3.5
14	MP4B	X	17.267	3.5
15	MP4C	X	17.267	3.5
16	MP4A	X	30.007	2
17	MP4B	X	51.645	2
18	MP4C	X	51.645	2

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	X	44.355	0
2	MP4A	X	44.355	4
3	MP4B	X	84.677	0
4	MP4B	X	84.677	4
5	MP4C	X	84.677	0
6	MP4C	X	84.677	4
7	MP3A	X	4.014	4
8	MP3B	X	5.763	4
9	MP3C	X	5.763	4
10	MP3A	X	6.764	2
11	MP3B	X	8.383	2
12	MP3C	X	8.383	2
13	MP4A	X	6.764	3.5
14	MP4B	X	8.383	3.5
15	MP4C	X	8.383	3.5
16	MP4A	X	13.752	2
17	MP4B	X	18.592	2
18	MP4C	X	18.592	2

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,...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-15.864	-15.864	0	%100
2	M2	Y	-15.864	-15.864	0	%100
3	M3	Y	-15.864	-15.864	0	%100
4	M6	Y	-18.444	-18.444	0	%100
5	MP1A	Y	-12.763	-12.763	0	%100
6	MP2A	Y	-12.763	-12.763	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
7	MP3A	Y	-12.763	-12.763	0	%100
8	MP4A	Y	-12.763	-12.763	0	%100
9	MP1B	Y	-12.763	-12.763	0	%100
10	MP2B	Y	-12.763	-12.763	0	%100
11	MP3B	Y	-12.763	-12.763	0	%100
12	MP4B	Y	-12.763	-12.763	0	%100
13	MP1C	Y	-12.763	-12.763	0	%100
14	MP2C	Y	-12.763	-12.763	0	%100
15	MP3C	Y	-12.763	-12.763	0	%100
16	MP4C	Y	-12.763	-12.763	0	%100
17	M19	Y	-19.76	-19.76	0	%100
18	M20	Y	-19.76	-19.76	0	%100
19	M21	Y	-19.76	-19.76	0	%100
20	M20A	Y	-18.444	-18.444	0	%100
21	M21A	Y	-18.444	-18.444	0	%100
22	M22	Y	-14.486	-14.486	0	%100
23	M23	Y	-14.486	-14.486	0	%100
24	M24	Y	-14.486	-14.486	0	%100
25	M25	Y	-14.486	-14.486	0	%100
26	M26	Y	-14.486	-14.486	0	%100
27	M27	Y	-14.486	-14.486	0	%100
28	M28	Y	-18.444	-18.444	0	%100
29	M29	Y	-18.444	-18.444	0	%100
30	M30	Y	-18.444	-18.444	0	%100
31	M43	Y	-15.864	-15.864	0	%100
32	M44	Y	-15.864	-15.864	0	%100
33	M45	Y	-15.864	-15.864	0	%100

Member Distributed Loads (BLC 11 : Structure W Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-10.457	-10.457	0	%100
2	M2	PZ	-10.457	-10.457	0	%100
3	M3	PZ	-10.457	-10.457	0	%100
4	M6	PZ	-14.939	-14.939	0	%100
5	MP1A	PZ	-7.096	-7.096	0	%100
6	MP2A	PZ	-7.096	-7.096	0	%100
7	MP3A	PZ	-7.096	-7.096	0	%100
8	MP4A	PZ	-7.096	-7.096	0	%100
9	MP1B	PZ	-7.096	-7.096	0	%100
10	MP2B	PZ	-7.096	-7.096	0	%100
11	MP3B	PZ	-7.096	-7.096	0	%100
12	MP4B	PZ	-7.096	-7.096	0	%100
13	MP1C	PZ	-7.096	-7.096	0	%100
14	MP2C	PZ	-7.096	-7.096	0	%100
15	MP3C	PZ	-7.096	-7.096	0	%100
16	MP4C	PZ	-7.096	-7.096	0	%100
17	M19	PZ	-29.877	-29.877	0	%100
18	M20	PZ	-29.877	-29.877	0	%100
19	M21	PZ	-29.877	-29.877	0	%100
20	M20A	PZ	-14.939	-14.939	0	%100
21	M21A	PZ	-14.939	-14.939	0	%100
22	M22	PZ	-14.939	-14.939	0	%100
23	M23	PZ	-14.939	-14.939	0	%100
24	M24	PZ	-14.939	-14.939	0	%100
25	M25	PZ	-14.939	-14.939	0	%100
26	M26	PZ	-14.939	-14.939	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
27	M27	PZ	-14.939	-14.939	0	%100
28	M28	PZ	-14.939	-14.939	0	%100
29	M29	PZ	-14.939	-14.939	0	%100
30	M30	PZ	-14.939	-14.939	0	%100
31	M43	PZ	-10.457	-10.457	0	%100
32	M44	PZ	-10.457	-10.457	0	%100
33	M45	PZ	-10.457	-10.457	0	%100

Member Distributed Loads (BLC 12 : Structure Wi Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-6.919	-6.919	0	%100
2	M2	PZ	-6.919	-6.919	0	%100
3	M3	PZ	-6.919	-6.919	0	%100
4	M6	PZ	-8.214	-8.214	0	%100
5	MP1A	PZ	-5.947	-5.947	0	%100
6	MP2A	PZ	-5.947	-5.947	0	%100
7	MP3A	PZ	-5.947	-5.947	0	%100
8	MP4A	PZ	-5.947	-5.947	0	%100
9	MP1B	PZ	-5.947	-5.947	0	%100
10	MP2B	PZ	-5.947	-5.947	0	%100
11	MP3B	PZ	-5.947	-5.947	0	%100
12	MP4B	PZ	-5.947	-5.947	0	%100
13	MP1C	PZ	-5.947	-5.947	0	%100
14	MP2C	PZ	-5.947	-5.947	0	%100
15	MP3C	PZ	-5.947	-5.947	0	%100
16	MP4C	PZ	-5.947	-5.947	0	%100
17	M19	PZ	-12.532	-12.532	0	%100
18	M20	PZ	-12.532	-12.532	0	%100
19	M21	PZ	-12.532	-12.532	0	%100
20	M20A	PZ	-8.214	-8.214	0	%100
21	M21A	PZ	-8.214	-8.214	0	%100
22	M22	PZ	-8.214	-8.214	0	%100
23	M23	PZ	-8.214	-8.214	0	%100
24	M24	PZ	-8.214	-8.214	0	%100
25	M25	PZ	-8.214	-8.214	0	%100
26	M26	PZ	-8.214	-8.214	0	%100
27	M27	PZ	-8.214	-8.214	0	%100
28	M28	PZ	-8.214	-8.214	0	%100
29	M29	PZ	-8.214	-8.214	0	%100
30	M30	PZ	-8.214	-8.214	0	%100
31	M43	PZ	-6.919	-6.919	0	%100
32	M44	PZ	-6.919	-6.919	0	%100
33	M45	PZ	-6.919	-6.919	0	%100

Member Distributed Loads (BLC 13 : Structure W Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	10.457	10.457	0	%100
2	M2	PX	10.457	10.457	0	%100
3	M3	PX	10.457	10.457	0	%100
4	M6	PX	14.939	14.939	0	%100
5	MP1A	PX	7.096	7.096	0	%100
6	MP2A	PX	7.096	7.096	0	%100
7	MP3A	PX	7.096	7.096	0	%100
8	MP4A	PX	7.096	7.096	0	%100
9	MP1B	PX	7.096	7.096	0	%100
10	MP2B	PX	7.096	7.096	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
11	MP3B	PX	7.096	7.096	0	%100
12	MP4B	PX	7.096	7.096	0	%100
13	MP1C	PX	7.096	7.096	0	%100
14	MP2C	PX	7.096	7.096	0	%100
15	MP3C	PX	7.096	7.096	0	%100
16	MP4C	PX	7.096	7.096	0	%100
17	M19	PX	29.877	29.877	0	%100
18	M20	PX	29.877	29.877	0	%100
19	M21	PX	29.877	29.877	0	%100
20	M20A	PX	14.939	14.939	0	%100
21	M21A	PX	14.939	14.939	0	%100
22	M22	PX	14.939	14.939	0	%100
23	M23	PX	14.939	14.939	0	%100
24	M24	PX	14.939	14.939	0	%100
25	M25	PX	14.939	14.939	0	%100
26	M26	PX	14.939	14.939	0	%100
27	M27	PX	14.939	14.939	0	%100
28	M28	PX	14.939	14.939	0	%100
29	M29	PX	14.939	14.939	0	%100
30	M30	PX	14.939	14.939	0	%100
31	M43	PX	10.457	10.457	0	%100
32	M44	PX	10.457	10.457	0	%100
33	M45	PX	10.457	10.457	0	%100

Member Distributed Loads (BLC 14 : Structure Wi Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	6.919	6.919	0	%100
2	M2	PX	6.919	6.919	0	%100
3	M3	PX	6.919	6.919	0	%100
4	M6	PX	8.214	8.214	0	%100
5	MP1A	PX	5.947	5.947	0	%100
6	MP2A	PX	5.947	5.947	0	%100
7	MP3A	PX	5.947	5.947	0	%100
8	MP4A	PX	5.947	5.947	0	%100
9	MP1B	PX	5.947	5.947	0	%100
10	MP2B	PX	5.947	5.947	0	%100
11	MP3B	PX	5.947	5.947	0	%100
12	MP4B	PX	5.947	5.947	0	%100
13	MP1C	PX	5.947	5.947	0	%100
14	MP2C	PX	5.947	5.947	0	%100
15	MP3C	PX	5.947	5.947	0	%100
16	MP4C	PX	5.947	5.947	0	%100
17	M19	PX	12.532	12.532	0	%100
18	M20	PX	12.532	12.532	0	%100
19	M21	PX	12.532	12.532	0	%100
20	M20A	PX	8.214	8.214	0	%100
21	M21A	PX	8.214	8.214	0	%100
22	M22	PX	8.214	8.214	0	%100
23	M23	PX	8.214	8.214	0	%100
24	M24	PX	8.214	8.214	0	%100
25	M25	PX	8.214	8.214	0	%100
26	M26	PX	8.214	8.214	0	%100
27	M27	PX	8.214	8.214	0	%100
28	M28	PX	8.214	8.214	0	%100
29	M29	PX	8.214	8.214	0	%100
30	M30	PX	8.214	8.214	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[ft,%]	End Location[ft,%]
31	M43	PX	6.919	6.919	0	%100
32	M44	PX	6.919	6.919	0	%100
33	M45	PX	6.919	6.919	0	%100

Member Area Loads

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

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N3	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N37						
5	N38						
6	N39						
7	N59						
8	N61						
9	N63						
10	N64						
11	N65						
12	N66						
13	N67						
14	N68						
15	N69						
16	N70						
17	N71						
18	N72						
19	N73						
20	N74						
21	N75						
22	N76						
23	N77						
24	N78						
25	N79						
26	N80						
27	N81						
28	N82	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
29	N83	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
30	N84	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
31	N85	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
32	N86	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
33	N87	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	257.695	4	-8.707	2	1423.605	5	0	2	.201	3	.027	2
2		min	-252.457	3	-434.471	5	-12.888	2	-.267	5	-.205	4	-.03	1
3	N1	max	1243.277	8	-24.27	3	137.386	1	.136	8	.195	1	.23	8
4		min	-19.207	3	-433.029	8	-771.392	6	-.047	10	-.199	2	.019	3
5	N2	max	79.918	4	-25.69	4	81.536	1	.148	7	.137	2	-.017	1
6		min	-1260.872	7	-430.959	7	-744.01	6	-.047	10	-.142	1	-.224	6

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
7	N82	max	1122.86	4	3309.171	5	1639.69	1	1.997	5	.253	3	.205	3
8		min	-1121.443	3	474.758	2	-2087.562	2	.134	2	-.231	4	-.277	4
9	N83	max	0	3	19.1	11	0	1	.01	11	0	4	0	4
10		min	0	4	16.371	1	0	6	.008	5	0	3	0	3
11	N84	max	1203.997	4	3282.378	8	1509.975	1	.004	1	.212	1	-.115	3
12		min	-1598.527	3	564.77	3	-1288.188	2	-1.154	6	-.193	2	-1.674	8
13	N85	max	0	4	19.1	11	0	7	-.004	1	0	2	-.007	5
14		min	0	7	16.371	2	0	4	-.005	11	0	1	-.008	11
15	N86	max	1797.656	4	3287.004	7	958.544	1	.033	1	.058	7	1.816	7
16		min	-1406.656	3	548.875	4	-731.02	2	-.907	6	-.026	1	.085	4
17	N87	max	0	8	19.1	11	0	8	-.004	5	0	1	.008	11
18		min	0	3	16.371	2	0	3	-.005	11	0	10	.007	1
19	Totals:	max	5173.96	4	8339.245	5	5138.896	1						
20		min	-5173.961	3	2685.074	2	-5138.896	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 Mom...	LC
1	M1	1	max	849.848	2	918.754	6	605.479	1	.134	9	.29	1	.528	8
2			min	-791.661	1	-22.775	1	-499.897	2	-.137	1	-.295	2	.031	3
3		2	max	896.144	2	14.99	10	212.187	2	-.023	3	.161	2	.337	8
4			min	-733.527	1	-161.559	7	-197.339	1	-.279	8	-.095	1	.079	3
5		3	max	993.339	2	271.397	10	18.35	3	.095	9	-.005	2	.015	9
6			min	-578.07	1	-104.638	3	-29.836	4	-.03	3	-.084	6	-.682	10
7		4	max	865.772	2	75.316	4	95.94	1	.433	6	.155	7	.342	7
8			min	-658.435	1	-46.503	10	-125.129	2	.064	1	-.016	4	.072	4
9		5	max	801.798	2	102.171	1	11.957	2	.274	6	.206	1	.714	7
10			min	-704.744	1	-229.057	6	-157.907	5	-.019	1	-.227	2	.125	4
11	M2	1	max	1178.269	3	906.831	7	430.884	4	.054	1	.374	4	.527	6
12			min	-1122.272	4	-3.979	4	-320.767	3	-.076	2	-.377	3	.047	1
13		2	max	818.483	3	-5.908	2	200.421	3	.005	4	.126	7	.327	6
14			min	-648.349	4	-168.76	5	-186.18	4	-.304	7	-.007	4	.076	1
15		3	max	890.657	7	60.339	2	80.981	3	.04	3	.001	3	.01	3
16			min	-388.127	4	-97.339	1	-91.625	4	-.024	4	-.083	7	-.063	8
17		4	max	852.28	1	66.64	2	85.073	2	.428	5	.167	7	.344	5
18			min	-641.263	2	-32.876	1	-114.712	1	.088	2	-.041	4	.067	2
19		5	max	980.152	1	120.309	4	44.394	3	.278	7	.221	2	.719	5
20			min	-880.671	2	-229.2	7	-167.213	8	-.028	4	-.243	1	.098	2
21	M3	1	max	1156.127	1	898.945	8	547.588	3	.083	4	.318	2	.523	5
22			min	-1099.32	2	56.791	3	-434.543	4	-.103	3	-.322	1	.052	2
23		2	max	728.155	4	-13.471	3	142.491	1	.002	2	.147	8	.33	5
24			min	-558.086	3	-166.365	8	-128.002	2	-.303	5	-.078	3	.057	2
25		3	max	969.672	4	87.276	1	68.437	1	.041	1	0	1	.027	9
26			min	-549.718	3	-123.576	2	-79.174	2	-.051	9	-.086	8	-.062	6
27		4	max	964.689	4	77.465	1	98.683	3	.441	8	.151	5	.346	6
28			min	-756.651	3	-43.841	2	-128.068	4	.055	3	-.005	2	.07	3
29		5	max	1033.159	4	85.661	2	46.015	1	.28	8	.266	3	.723	8
30			min	-939.621	3	-217.124	8	-162.656	6	-.006	3	-.287	4	.117	3
31	M6	1	max	12.888	2	-8.707	2	257.646	4	.03	1	.201	3	0	2
32			min	-1423.605	5	-434.392	5	-252.414	3	-.027	2	-.205	4	-.267	5
33		2	max	-175.427	9	-246.623	2	672.503	3	.053	2	.36	4	-.113	2
34			min	-808.352	6	-1841.587	5	-681.938	4	-.049	1	-.355	3	-.581	5
35		3	max	1852.485	2	1236.082	5	276.513	4	.25	4	.511	3	3.113	5
36			min	-1892.162	1	128.476	2	-284.766	3	-.174	3	-.501	4	.227	2
37		4	max	1852.485	2	1182.517	5	235.681	4	.25	4	.073	1	1.047	5
38			min	-1892.162	1	106.418	2	-243.933	3	-.174	3	-.077	2	.026	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 Mom...	LC
39		5	max	1852.485	2	1128.952	5	194.848	4	.25	4	.304	4	-.137	2
40			min	-1892.162	1	84.361	2	-203.101	3	-.174	3	-.322	3	-.927	5
41	MP1A	1	max	0	1	0	4	.004	5	0	7	0	1	0	1
42			min	0	1	-.003	7	-.001	2	0	4	0	1	0	1
43		2	max	178.599	2	228.397	8	96.442	5	.02	3	.051	8	0	4
44			min	-137.464	1	-71.995	3	-19.876	2	-.04	8	-.008	3	-.061	7
45		3	max	-14.577	3	39.747	3	39.745	2	0	4	.07	1	.07	3
46			min	-59.248	5	-39.737	4	-39.743	1	0	6	-.07	2	-.07	4
47		4	max	-7.288	3	19.879	3	19.877	2	0	4	.017	1	.017	3
48			min	-29.623	5	-19.868	4	-19.874	1	0	6	-.017	2	-.017	4
49		5	max	0	6	.071	6	.02	6	0	4	0	7	0	2
50			min	0	4	0	4	-.006	1	0	6	0	4	0	1
51	MP2A	1	max	0	1	0	4	.004	5	0	7	0	1	0	1
52			min	0	1	-.002	7	-.002	2	0	4	0	1	0	1
53		2	max	326.801	7	214.99	4	151.555	5	.012	1	.187	5	.036	8
54			min	36.68	10	-217.671	3	-59.666	2	-.027	6	.026	2	-.01	3
55		3	max	-14.577	10	39.737	3	39.759	2	0	10	.07	1	.07	3
56			min	-59.248	5	-39.738	4	-39.74	1	0	3	-.07	2	-.07	4
57		4	max	-7.288	10	19.869	3	19.891	2	0	10	.017	1	.017	3
58			min	-29.624	5	-19.869	4	-19.872	1	0	3	-.017	2	-.017	4
59		5	max	0	6	0	3	.139	6	0	10	0	6	0	2
60			min	0	1	-.009	10	-.003	1	0	3	0	1	0	1
61	MP3A	1	max	0	1	.003	8	.003	5	0	3	0	1	0	1
62			min	0	1	0	3	-.003	6	0	8	0	1	0	1
63		2	max	218.986	8	199.205	4	153.432	1	.013	1	.18	5	.015	4
64			min	-65.597	10	-253.514	3	-88.69	2	-.01	2	.033	2	-.049	7
65		3	max	-27.777	10	47.173	3	59.382	2	0	9	.079	1	.073	3
66			min	-97.068	5	-47.173	4	-59.344	1	0	10	-.08	2	-.073	4
67		4	max	-7.288	10	19.868	3	19.914	2	0	9	.017	1	.017	3
68			min	-29.624	5	-19.868	4	-19.877	1	0	10	-.017	2	-.017	4
69		5	max	0	6	.013	10	.238	6	0	9	0	6	0	2
70			min	0	1	-.012	9	-.008	1	0	10	0	1	0	1
71	MP4A	1	max	357.045	8	195.837	4	483.99	1	.019	3	.035	8	0	1
72			min	76.8	2	-195.815	3	-484.004	2	-.019	4	.008	2	0	1
73		2	max	337.519	2	69.909	4	173.727	5	.028	6	.071	7	.039	10
74			min	-236.128	1	-216.606	7	-17.679	2	-.002	1	.009	4	-.012	3
75		3	max	-103.138	3	246.432	3	538.382	2	0	7	.311	1	.167	3
76			min	-451.212	6	-246.493	4	-538.293	1	0	10	-.312	2	-.168	4
77		4	max	-7.289	3	19.822	3	19.912	2	0	7	.017	1	.017	3
78			min	-29.624	6	-19.883	4	-19.824	1	0	10	-.017	2	-.017	4
79		5	max	0	1	-.009	10	.68	5	0	7	0	1	0	1
80			min	0	6	-.498	7	.04	3	0	10	0	6	0	2
81	MP1B	1	max	0	1	.002	6	0	4	0	6	0	1	0	1
82			min	0	1	0	1	-.003	7	0	1	0	1	0	1
83		2	max	220.865	1	89.924	2	47.979	1	.026	2	0	4	.062	6
84			min	-180.167	2	-239.847	5	-100.318	6	-.046	1	-.047	7	0	1
85		3	max	-14.578	3	34.413	1	34.416	3	0	1	.06	4	.06	1
86			min	-59.249	8	-34.423	2	-34.419	4	0	6	-.06	3	-.06	2
87		4	max	-7.289	3	17.206	1	17.21	3	0	1	.015	4	.015	1
88			min	-29.625	8	-17.216	2	-17.212	4	0	6	-.015	3	-.015	2
89		5	max	0	3	0	1	.006	2	0	1	0	1	0	1
90			min	0	8	-.072	6	-.021	5	0	6	0	2	0	2
91	MP2B	1	max	0	1	.002	6	.002	4	0	6	0	1	0	1
92			min	0	1	0	1	-.003	7	0	1	0	1	0	1
93		2	max	332.635	6	240.689	2	76.629	1	.012	3	-.035	1	.011	2
94			min	50.586	1	-241.536	1	-145.237	6	-.027	8	-.184	7	-.037	5
95		3	max	-14.578	3	34.414	1	34.413	3	0	6	.06	4	.06	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 Mom...	LC
96			min	-59.249	8	-34.413	2	-34.433	4	0	9	-.06	3	-.06	2
97		4	max	-7.289	3	17.207	1	17.207	3	0	6	.015	4	.015	1
98			min	-29.625	8	-17.206	2	-17.226	4	0	9	-.015	3	-.015	2
99		5	max	0	3	.008	6	0	3	0	6	0	5	0	1
100			min	0	8	-.007	9	-.136	8	0	9	0	2	0	2
101	MP3B	1	max	0	1	0	9	.003	8	0	9	0	1	0	1
102			min	0	1	-.003	5	-.002	7	0	5	0	1	0	1
103		2	max	219.291	5	270.645	2	75.726	4	.018	3	-.033	4	.049	6
104			min	33.382	2	-220.632	1	-143.871	7	-.014	4	-.18	7	-.016	1
105		3	max	-27.778	2	43.487	1	48.754	3	0	6	.068	4	.065	1
106			min	-97.069	5	-43.487	2	-48.792	4	0	9	-.067	3	-.065	2
107		4	max	-7.289	2	17.206	1	17.207	3	0	6	.015	4	.015	1
108			min	-29.625	5	-17.207	2	-17.245	4	0	9	-.015	3	-.015	2
109		5	max	0	2	.008	6	0	3	0	6	0	5	0	1
110			min	0	5	-.009	9	-.231	5	0	9	0	2	0	2
111	MP4B	1	max	357.045	8	231.968	2	356.789	4	.023	2	-.008	1	0	1
112			min	76.8	1	-231.985	1	-356.779	3	-.023	1	-.035	7	0	1
113		2	max	301.638	8	240.898	6	21.06	4	.029	8	-.016	1	.004	4
114			min	-161.055	3	-96.957	1	-191.175	7	-.004	3	-.086	6	-.042	7
115		3	max	-103.138	2	274.886	1	406.226	3	0	6	.239	4	.176	1
116			min	-451.213	5	-274.829	2	-406.31	4	0	9	-.239	3	-.176	2
117		4	max	-7.289	2	17.233	1	17.198	3	0	6	.015	4	.015	1
118			min	-29.625	5	-17.177	2	-17.281	4	0	9	-.015	3	-.015	2
119		5	max	0	2	.433	6	-.009	3	0	6	0	4	0	1
120			min	0	5	-.006	9	-.633	8	0	9	0	3	0	2
121	MP1C	1	max	0	1	.002	5	.001	3	0	5	0	1	0	1
122			min	0	1	0	2	-.004	8	0	2	0	1	0	1
123		2	max	232.727	3	51.427	1	53.467	3	.023	4	.003	1	.06	5
124			min	-192.066	4	-228.421	6	-104.035	8	-.042	3	-.049	6	.001	2
125		3	max	-14.577	1	34.413	2	34.421	4	0	2	.06	3	.06	2
126			min	-59.248	6	-34.423	1	-34.424	3	0	5	-.06	4	-.06	1
127		4	max	-7.288	1	17.206	2	17.215	4	0	2	.015	3	.015	2
128			min	-29.624	6	-17.217	1	-17.218	3	0	5	-.015	4	-.015	1
129		5	max	0	5	0	2	.008	4	0	2	0	3	0	3
130			min	0	2	-.071	5	-.024	7	0	5	0	4	0	4
131	MP2C	1	max	0	1	.002	5	.002	3	0	5	0	1	0	1
132			min	0	1	0	2	-.004	8	0	2	0	1	0	1
133		2	max	329.205	5	189.477	1	101.322	3	-.003	10	-.024	3	.007	1
134			min	54.02	2	-188.905	2	-169.909	4	-.023	5	-.187	8	-.036	6
135		3	max	-14.577	3	34.414	2	34.416	4	0	5	.06	3	.06	2
136			min	-59.248	8	-34.413	1	-34.435	3	0	1	-.06	4	-.06	1
137		4	max	-7.288	3	17.208	2	17.21	4	0	5	.015	3	.015	2
138			min	-29.624	8	-17.207	1	-17.229	3	0	1	-.015	4	-.015	1
139		5	max	0	7	.008	5	.003	4	0	5	0	4	0	3
140			min	0	4	0	1	-.139	7	0	1	0	3	0	4
141	MP3C	1	max	0	1	0	1	.003	7	0	1	0	1	0	1
142			min	0	1	-.003	6	-.002	8	0	6	0	1	0	1
143		2	max	218.47	6	227.122	1	46.045	3	.011	3	-.04	1	.048	5
144			min	44.701	1	-175.967	2	-134.156	8	-.008	4	-.178	8	-.013	2
145		3	max	-27.777	3	43.486	2	48.761	4	0	5	.068	3	.065	2
146			min	-97.068	8	-43.486	1	-48.799	3	0	6	-.067	4	-.065	1
147		4	max	-7.288	3	17.206	2	17.214	4	0	5	.015	3	.015	2
148			min	-29.624	8	-17.206	1	-17.252	3	0	6	-.015	4	-.015	1
149		5	max	0	7	.008	5	.008	4	0	5	0	5	0	3
150			min	0	4	-.007	6	-.237	7	0	6	0	2	0	4
151	MP4C	1	max	357.045	6	231.951	1	356.772	3	.023	1	-.008	4	0	1
152			min	76.8	4	-231.969	2	-356.76	4	-.023	2	-.035	6	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 Mom...	LC
153		2	max	302.006	7	236.435	5	-8.618	1	.026	5	-.015	2	.003	1
154			min	-189.703	4	-70.556	2	-182.317	6	0	2	-.086	5	-.042	6
155		3	max	-103.137	3	274.88	2	406.207	4	0	5	.239	3	.176	2
156			min	-451.212	8	-274.823	1	-406.291	3	0	3	-.239	4	-.176	1
157		4	max	-7.288	3	17.228	2	17.178	4	0	5	.015	3	.015	2
158			min	-29.623	8	-17.171	1	-17.262	3	0	3	-.015	4	-.015	1
159		5	max	0	7	.437	5	0	9	0	5	0	3	0	3
160			min	0	4	.015	3	-.631	5	0	3	0	6	0	4
161	M19	1	max	542.284	4	85.782	2	880.808	4	-.087	1	.266	3	.604	8
162			min	-427.982	3	-218.029	8	-837.175	3	-.491	6	-.287	4	.053	3
163		2	max	535.384	4	79.657	2	892.759	4	-.087	1	.009	4	.679	8
164			min	-421.082	3	-230.741	8	-849.125	3	-.491	6	-.015	3	.028	3
165		3	max	528.484	4	945.18	6	996.56	1	.197	4	.365	2	.889	8
166			min	-414.182	3	-200.244	4	-993.822	2	-.491	6	-.371	1	.099	3
167		4	max	506.36	4	932.468	6	992.576	1	.43	8	.034	2	.597	8
168			min	-386.077	3	-17.397	1	-989.839	2	.05	3	-.04	1	.036	3
169		5	max	499.46	4	919.757	6	988.593	1	.43	8	.29	1	.311	5
170			min	-379.177	3	-23.522	1	-985.855	2	.05	3	-.295	2	-.038	2
171	M20	1	max	559.204	1	-56.049	3	1018.764	2	.441	5	.322	1	.295	7
172			min	-432.647	2	-899.455	8	-1013.156	1	.054	2	-.318	2	-.041	4
173		2	max	559.204	1	-62.174	3	1034.699	2	.441	5	.029	3	.579	5
174			min	-432.647	2	-912.167	8	-1029.09	1	.054	2	-.023	4	.037	2
175		3	max	559.204	1	-68.299	3	1050.633	2	.2	1	.372	2	.88	5
176			min	-432.647	2	-924.878	8	-1045.025	1	-.486	5	-.364	1	.065	2
177		4	max	546.429	1	242.383	7	832.639	1	-.083	2	.038	2	.666	7
178			min	-429.135	2	-114.508	4	-784.772	2	-.486	5	-.032	1	.029	4
179		5	max	546.429	1	229.671	7	816.705	1	-.083	2	.243	1	.596	5
180			min	-429.135	2	-120.633	4	-768.837	2	-.486	5	-.221	2	.053	2
181	M21	1	max	390.825	2	102.213	1	700.642	2	-.078	4	.206	1	.589	6
182			min	-273.876	1	-229.833	6	-655.336	1	-.487	7	-.227	2	.054	1
183		2	max	383.925	2	96.088	1	704.625	2	-.078	4	.031	3	.668	6
184			min	-266.977	1	-242.544	6	-659.32	1	-.487	7	-.037	4	.021	1
185		3	max	429.8	2	933.517	7	1211.507	4	.187	2	.418	3	.873	7
186			min	-304.669	1	-224.916	2	-1204.766	3	-.487	7	-.426	4	.167	1
187		4	max	422.9	2	920.805	7	1199.556	4	.439	6	.018	3	.571	6
188			min	-297.769	1	2.086	4	-1192.815	3	.068	1	-.024	4	.071	1
189		5	max	416	2	908.094	7	1187.605	4	.439	6	.374	4	.295	6
190			min	-290.869	1	-4.039	4	-1180.864	3	.068	1	-.377	3	-.024	1
191	M20A	1	max	-41.673	3	-24.27	3	256.507	2	.109	10	.195	1	-.011	3
192			min	-1413.63	8	-432.95	8	-252.398	1	-.018	4	-.199	2	-.267	8
193		2	max	-240.115	3	-295.617	3	571.813	1	.033	4	.29	2	-.121	3
194			min	-815.152	7	-1824.098	8	-582.31	2	-.21	10	-.285	1	-.573	8
195		3	max	1511.759	3	1227.553	8	262.804	2	.235	2	.452	1	3.095	8
196			min	-1550.992	4	169.773	3	-269.9	1	-.154	1	-.442	2	.35	3
197		4	max	1494.078	3	1173.988	8	232.18	2	.235	2	.09	3	1.044	8
198			min	-1533.311	4	147.716	3	-239.276	1	-.154	1	-.093	4	.079	3
199		5	max	1476.397	3	1120.423	8	201.556	2	.235	2	.351	2	-.155	3
200			min	-1515.63	4	125.659	3	-208.652	1	-.154	1	-.366	1	-.916	8
201	M21A	1	max	-20.433	4	-25.69	4	203.101	1	.047	3	.137	2	-.011	4
202			min	-1413.921	7	-430.882	7	-197.08	2	-.108	10	-.142	1	-.265	7
203		2	max	-197.616	9	-286.845	4	213.616	2	.218	10	.112	10	-.122	4
204			min	-810.686	8	-1828.192	7	-222.715	1	-.085	3	-.079	2	-.576	7
205		3	max	1646.968	4	1227.932	7	105.868	1	.181	5	.094	2	3.089	7
206			min	-1684.622	3	162.674	4	-113.985	2	-.1	2	-.084	1	.33	4
207		4	max	1629.287	4	1174.367	7	75.244	1	.181	5	.126	3	1.037	7
208			min	-1666.942	3	140.617	4	-83.361	2	-.1	2	-.129	4	.071	4
209		5	max	1611.606	4	1120.801	7	62.319	3	.181	5	.241	3	-.15	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 Mom...	LC
210			min	-1649.261	3	118.56	4	-70.304	4	-.1	2	-.258	4	-.923	7
211	M22	1	max	549.541	1	651.738	8	-12.837	3	0	10	-.077	1	1.479	8
212			min	-492.717	2	116.433	3	-345.566	8	-.001	9	-.42	6	.244	3
213		2	max	547.882	1	635.591	8	-31.64	3	0	10	-.026	1	.934	6
214			min	-491.058	2	111.772	3	-339.104	8	-.001	9	-.25	6	.154	1
215		3	max	546.223	1	619.445	8	-50.443	3	0	10	.022	1	.412	6
216			min	-489.399	2	107.11	3	-332.642	8	-.001	9	-.089	6	.003	1
217		4	max	544.563	1	603.299	8	-69.247	3	0	10	.088	5	.064	2
218			min	-487.74	2	102.448	3	-326.18	8	-.001	9	-.02	2	-.161	5
219		5	max	542.904	1	587.152	8	-88.05	3	0	10	.233	5	-.095	2
220			min	-486.081	2	97.786	3	-321.295	6	-.001	9	.025	2	-.661	5
221	M23	1	max	337.375	2	29.309	1	692.916	6	0	9	-.072	2	-.114	3
222			min	-269.543	1	-375.983	6	109.679	1	0	3	-.429	5	-1.529	8
223		2	max	328.467	2	20.656	3	676.769	6	0	9	-.036	2	-.054	3
224			min	-260.635	1	-373.712	8	105.017	1	0	3	-.243	5	-.939	8
225		3	max	319.559	2	14.409	3	660.623	6	0	9	.013	3	.007	3
226			min	-251.726	1	-371.564	8	100.355	1	0	3	-.071	8	-.359	8
227		4	max	310.65	2	8.161	3	644.477	6	0	9	.117	7	.257	6
228			min	-242.818	1	-369.417	8	95.693	1	0	3	-.027	4	-.105	1
229		5	max	301.742	2	1.913	3	628.33	6	0	9	.277	7	.816	6
230			min	-233.91	1	-367.27	8	91.032	1	0	3	-.002	4	-.044	1
231	M24	1	max	339.233	1	-27.985	4	683.499	7	0	3	-.105	4	-.234	1
232			min	-270.191	2	-361.69	7	131.629	4	0	10	-.415	7	-1.486	6
233		2	max	337.574	1	-46.788	4	667.352	7	0	3	-.052	1	-.103	1
234			min	-268.531	2	-355.228	7	126.968	4	0	10	-.239	6	-.921	6
235		3	max	335.914	1	-50.469	1	651.206	7	0	3	.02	1	.025	1
236			min	-266.872	2	-348.766	7	122.306	4	0	10	-.074	6	-.365	6
237		4	max	334.255	1	-50.616	1	635.06	7	0	3	.114	5	.239	5
238			min	-265.213	2	-348.255	6	117.644	4	0	10	-.029	2	-.023	2
239		5	max	332.596	1	-50.762	1	618.913	7	0	3	.271	5	.769	7
240			min	-263.554	2	-348.205	6	112.982	4	0	10	-.002	2	.116	4
241	M25	1	max	371.17	4	660.471	7	56.181	4	0	4	-.097	3	1.541	7
242			min	-314.997	3	107.722	4	-364.097	7	0	7	-.423	8	.052	4
243		2	max	362.262	4	644.324	7	49.934	4	0	4	-.061	9	.971	7
244			min	-306.089	3	103.06	4	-361.949	7	0	7	-.242	5	.023	4
245		3	max	353.354	4	628.178	7	43.686	4	0	4	.019	4	.412	7
246			min	-297.18	3	98.398	4	-359.802	7	0	7	-.087	7	-.007	4
247		4	max	344.445	4	612.032	7	37.439	4	0	4	.098	8	.036	1
248			min	-288.272	3	93.736	4	-357.655	7	0	7	-.047	3	-.163	6
249		5	max	335.537	4	595.885	7	31.191	4	0	4	.252	8	-.07	4
250			min	-279.364	3	89.074	4	-355.508	7	0	7	-.029	3	-.685	6
251	M26	1	max	487.054	3	666.268	5	77.76	2	0	2	-.064	3	1.539	5
252			min	-430.216	4	86.195	2	-369.782	5	0	5	-.432	8	.047	2
253		2	max	479.805	3	650.122	5	62.184	2	0	2	-.026	3	.964	5
254			min	-422.967	4	81.533	2	-364.429	5	0	5	-.254	8	.039	2
255		3	max	472.556	3	633.975	5	46.608	2	0	2	.01	3	.402	5
256			min	-415.718	4	76.872	2	-359.076	5	0	5	-.085	5	.025	2
257		4	max	465.307	3	617.829	5	31.032	2	0	2	.092	6	.106	4
258			min	-408.468	4	72.21	2	-353.723	5	0	5	-.026	1	-.191	3
259		5	max	458.058	3	601.683	5	15.455	2	0	2	.239	6	.021	4
260			min	-401.219	4	67.548	2	-348.37	5	0	5	.011	1	-.71	7
261	M27	1	max	476.981	4	-8.722	3	687.565	5	0	1	-.057	4	-.217	2
262			min	-408.34	3	-370.348	5	130.001	2	0	2	-.434	7	-1.507	5
263		2	max	469.732	4	-12.096	3	671.419	5	0	1	-.017	4	-.135	2
264			min	-401.09	3	-366.109	8	125.339	2	0	2	-.249	7	-.92	5
265		3	max	462.483	4	-15.47	3	655.272	5	0	1	.022	4	.004	4
266			min	-393.841	3	-364.949	8	120.677	2	0	2	-.074	7	-.359	7

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 Mom...	LC
267		4	max	455.234	4	-18.843	3	639.126	5	0	1	.106	8	.265	8
268			min	-386.592	3	-363.79	8	116.015	2	0	2	0	3	-.126	3
269		5	max	447.985	4	-22.217	3	622.98	5	0	1	.256	8	.822	8
270			min	-379.343	3	-362.63	8	111.353	2	0	2	.055	3	-.048	3
271	M28	1	max	0	1	0	4	0	3	0	1	0	1	0	1
272			min	0	1	0	5	0	2	0	1	0	1	0	1
273		2	max	-757.617	3	-184.248	3	162.432	1	.057	2	.242	1	.433	8
274			min	-6181.876	8	-1479.079	8	-126.741	2	-.043	1	-.24	2	.07	3
275		3	max	26.72	1	78.615	5	46.273	2	0	1	.06	1	.101	5
276			min	-26.72	4	30.985	4	-46.286	1	0	1	-.06	2	.04	4
277		4	max	13.36	1	39.31	5	23.133	2	0	1	.015	1	.025	5
278			min	-13.36	4	15.488	4	-23.147	1	0	1	-.015	2	.01	4
279		5	max	0	1	.006	5	0	4	0	1	0	1	0	1
280			min	0	1	-.008	4	-.007	1	0	1	0	1	0	1
281	M29	1	max	0	1	0	3	0	1	0	1	0	1	0	1
282			min	0	1	0	5	0	3	0	1	0	1	0	1
283		2	max	-709.358	4	-177.357	4	73.429	6	.046	10	.103	2	.432	7
284			min	-6179.384	7	-1476.095	7	-13.304	1	-.014	2	-.102	1	.068	4
285		3	max	26.72	1	78.615	5	46.284	1	0	1	.06	2	.101	5
286			min	-26.72	2	30.985	3	-46.275	2	0	1	-.06	1	.04	3
287		4	max	13.36	1	39.31	5	23.144	1	0	1	.015	2	.025	5
288			min	-13.36	2	15.488	3	-23.135	2	0	1	-.015	1	.01	3
289		5	max	0	1	.006	5	.005	2	0	1	0	1	0	1
290			min	0	1	-.008	3	-.001	4	0	1	0	1	0	1
291	M30	1	max	0	1	0	1	0	1	0	1	0	1	0	1
292			min	0	1	0	1	0	1	0	1	0	1	0	1
293		2	max	-529.597	2	-135.724	2	181.522	3	.071	4	.277	3	.435	5
294			min	-6224.258	5	-1484.988	5	-148.877	4	-.059	3	-.275	4	.058	2
295		3	max	0	1	78.609	8	61.706	4	0	1	.08	3	.101	5
296			min	0	1	30.993	1	-61.706	3	0	1	-.08	4	.04	1
297		4	max	0	1	39.304	8	30.853	4	0	1	.02	3	.025	5
298			min	0	1	15.496	1	-30.853	3	0	1	-.02	4	.01	3
299		5	max	0	1	0	1	0	1	0	1	0	1	0	1
300			min	0	1	0	1	0	1	0	1	0	1	0	1
301	M31	1	max	-123.329	2	265.433	3	1280.197	5	.083	4	-.044	2	.033	3
302			min	-920.366	5	-265.869	4	110.441	2	-.083	3	-.256	5	-.035	4
303		2	max	-123.329	2	265.433	3	1280.197	5	.083	4	-.037	2	.025	1
304			min	-920.366	5	-265.869	4	110.441	2	-.083	3	-.176	5	-.027	2
305		3	max	-123.329	2	265.433	3	1280.197	5	.083	4	-.027	1	.025	1
306			min	-920.366	5	-265.869	4	110.441	2	-.083	3	-.096	7	-.026	2
307		4	max	-123.329	2	265.433	3	1280.197	5	.083	4	.013	1	.024	1
308			min	-920.366	5	-265.869	4	110.441	2	-.083	3	-.024	6	-.026	2
309		5	max	-123.329	2	265.433	3	1280.197	5	.083	4	.064	5	.031	4
310			min	-920.366	5	-265.869	4	110.441	2	-.083	3	-.016	2	-.033	3
311	M32	1	max	3.108	2	147.894	4	4943.82	5	.106	3	-.035	2	.025	3
312			min	-523.753	5	-114.811	3	419.156	2	-.116	4	-.488	5	-.035	4
313		2	max	3.108	2	147.894	4	4943.82	5	.106	3	-.009	2	.033	3
314			min	-523.753	5	-114.811	3	419.156	2	-.116	4	-.179	5	-.045	4
315		3	max	3.108	2	147.894	4	4943.82	5	.106	3	.13	5	.04	3
316			min	-523.753	5	-114.811	3	419.156	2	-.116	4	.017	2	-.054	4
317		4	max	3.108	2	147.894	4	4943.82	5	.106	3	.439	5	.047	3
318			min	-523.753	5	-114.811	3	419.156	2	-.116	4	.043	2	-.063	4
319		5	max	3.108	2	147.894	4	4943.82	5	.106	3	.748	5	.054	3
320			min	-523.753	5	-114.811	3	419.156	2	-.116	4	.07	2	-.072	4
321	M33	1	max	1601.337	5	241.454	4	-529.586	2	.168	4	-.022	2	.071	4
322			min	182.207	2	-274.088	3	-6223.182	5	-.18	3	-.686	5	-.059	3
323		2	max	1601.337	5	241.454	4	-529.586	2	.168	4	-.055	2	.055	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 Mom...	LC
324			min	182.207	2	-274.088	3	-6223.182	5	-.18	3	-1.075	5	-.042	3
325		3	max	1601.337	5	241.454	4	-529.586	2	.168	4	-.089	2	.04	4
326			min	182.207	2	-274.088	3	-6223.182	5	-.18	3	-1.464	5	-.024	3
327		4	max	1601.337	5	241.454	4	-529.586	2	.168	4	-.122	2	.036	8
328			min	182.207	2	-274.088	3	-6223.182	5	-.18	3	-1.853	5	-.007	3
329		5	max	1601.337	5	241.454	4	-529.586	2	.168	4	-.155	2	.038	6
330			min	182.207	2	-274.088	3	-6223.182	5	-.18	3	-2.242	5	.001	1
331	M34	1	max	-147.826	3	1132.668	6	-49.407	2	.069	2	.142	10	.224	8
332			min	-911.621	8	75.115	1	-666.015	5	-.07	1	.028	2	.038	3
333		2	max	-147.826	3	1132.668	6	-49.407	2	.069	2	.135	10	.155	8
334			min	-911.621	8	75.115	1	-666.015	5	-.07	1	.019	4	.028	3
335		3	max	-147.826	3	1132.668	6	-49.407	2	.069	2	.128	10	.087	5
336			min	-911.621	8	75.115	1	-666.015	5	-.07	1	0	4	.002	9
337		4	max	-147.826	3	1132.668	6	-49.407	2	.069	2	.122	10	.029	1
338			min	-911.621	8	75.115	1	-666.015	5	-.07	1	-.029	9	-.055	9
339		5	max	-147.826	3	1132.668	6	-49.407	2	.069	2	.115	10	.024	1
340			min	-911.621	8	75.115	1	-666.015	5	-.07	1	-.064	9	-.112	9
341	M35	1	max	-20.909	3	4235.017	8	-351.202	1	.097	10	.227	8	.428	8
342			min	-526.602	8	461.663	3	-2508.369	6	-.09	2	.015	3	.052	3
343		2	max	-20.909	3	4235.017	8	-351.202	1	.097	10	.072	8	.167	6
344			min	-526.602	8	461.663	3	-2508.369	6	-.09	2	-.015	10	.008	1
345		3	max	-20.909	3	4235.017	8	-351.202	1	.097	10	.021	1	-.006	3
346			min	-526.602	8	461.663	3	-2508.369	6	-.09	2	-.098	6	-.102	8
347		4	max	-20.909	3	4235.017	8	-351.202	1	.097	10	0	1	-.035	3
348			min	-526.602	8	461.663	3	-2508.369	6	-.09	2	-.254	6	-.366	8
349		5	max	-20.909	3	4235.017	8	-351.202	1	.097	10	-.023	1	-.063	3
350			min	-526.602	8	461.663	3	-2508.369	6	-.09	2	-.411	6	-.631	8
351	M36	1	max	1595.44	8	-671.776	3	3135.415	8	.165	2	.368	6	.578	8
352			min	230.721	3	-5310.844	8	431.804	3	-.177	1	.013	1	.041	3
353		2	max	1595.44	8	-671.776	3	3135.415	8	.165	2	.559	8	.91	8
354			min	230.721	3	-5310.844	8	431.804	3	-.177	1	.054	3	.083	3
355		3	max	1595.44	8	-671.776	3	3135.415	8	.165	2	.755	8	1.242	8
356			min	230.721	3	-5310.844	8	431.804	3	-.177	1	.081	3	.125	3
357		4	max	1595.44	8	-671.776	3	3135.415	8	.165	2	.951	8	1.574	8
358			min	230.721	3	-5310.844	8	431.804	3	-.177	1	.108	3	.167	3
359		5	max	1595.44	8	-671.776	3	3135.415	8	.165	2	1.147	8	1.906	8
360			min	230.721	3	-5310.844	8	431.804	3	-.177	1	.135	3	.209	3
361	M37	1	max	-143.44	4	-152.867	1	13.499	4	.022	1	.145	10	-.027	4
362			min	-913.669	7	-1110.685	6	-668.801	7	-.024	10	.025	3	-.222	7
363		2	max	-143.44	4	-152.867	1	13.499	4	.022	1	.139	10	-.016	4
364			min	-913.669	7	-1110.685	6	-668.801	7	-.024	10	0	3	-.154	7
365		3	max	-143.44	4	-152.867	1	13.499	4	.022	1	.133	10	-.005	4
366			min	-913.669	7	-1110.685	6	-668.801	7	-.024	10	-.024	3	-.086	7
367		4	max	-143.44	4	-152.867	1	13.499	4	.022	1	.127	10	.018	2
368			min	-913.669	7	-1110.685	6	-668.801	7	-.024	10	-.048	3	-.026	1
369		5	max	-143.44	4	-152.867	1	13.499	4	.022	1	.122	10	.06	6
370			min	-913.669	7	-1110.685	6	-668.801	7	-.024	10	-.072	3	-.017	1
371	M38	1	max	-18.406	4	-432.145	4	-354.446	1	.022	2	.263	7	-.053	4
372			min	-521.578	7	-4299.275	7	-2394.515	6	-.104	10	.006	4	-.407	7
373		2	max	-18.406	4	-432.145	4	-354.446	1	.022	2	.115	7	-.007	1
374			min	-521.578	7	-4299.275	7	-2394.515	6	-.104	10	-.016	4	-.143	6
375		3	max	-18.406	4	-432.145	4	-354.446	1	.022	2	.026	1	.131	7
376			min	-521.578	7	-4299.275	7	-2394.515	6	-.104	10	-.075	10	.001	4
377		4	max	-18.406	4	-432.145	4	-354.446	1	.022	2	.004	1	.399	7
378			min	-521.578	7	-4299.275	7	-2394.515	6	-.104	10	-.2	6	.028	4
379		5	max	-18.406	4	-432.145	4	-354.446	1	.022	2	-.018	1	.668	7
380			min	-521.578	7	-4299.275	7	-2394.515	6	-.104	10	-.35	6	.055	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 Mom...	LC
381	M39	1	max	1592.465	7	5364.555	7	3037.41	7	.003	3	.323	7	-.044	4
382			min	223.832	4	667.493	4	342.707	4	-.031	6	.014	4	-.6	7
383		2	max	1592.465	7	5364.555	7	3037.41	7	.003	3	.513	7	-.086	4
384			min	223.832	4	667.493	4	342.707	4	-.031	6	.036	4	-.935	7
385		3	max	1592.465	7	5364.555	7	3037.41	7	.003	3	.703	7	-.128	4
386			min	223.832	4	667.493	4	342.707	4	-.031	6	.057	4	-1.27	7
387		4	max	1592.465	7	5364.555	7	3037.41	7	.003	3	.893	7	-.169	4
388			min	223.832	4	667.493	4	342.707	4	-.031	6	.078	4	-1.606	7
389		5	max	1592.465	7	5364.555	7	3037.41	7	.003	3	1.082	7	-.211	4
390			min	223.832	4	667.493	4	342.707	4	-.031	6	.1	4	-1.941	7
391	M40	1	max	-11.576	6	13.506	11	0	1	0	1	0	1	.01	11
392			min	-13.506	11	11.576	1	0	1	0	1	0	1	.008	2
393		2	max	-5.788	6	6.753	11	0	1	0	1	0	1	-.001	5
394			min	-6.753	11	5.788	1	0	1	0	1	0	1	-.001	11
395		3	max	0	1	0	1	0	1	0	1	0	1	-.004	5
396			min	0	1	0	1	0	1	0	1	0	1	-.005	11
397		4	max	6.753	11	-5.788	1	0	1	0	1	0	1	-.001	5
398			min	5.788	1	-6.753	11	0	1	0	1	0	1	-.001	11
399		5	max	13.506	11	-11.576	1	0	1	0	1	0	1	.01	11
400			min	11.576	1	-13.506	11	0	1	0	1	0	1	.008	1
401	M41	1	max	-11.576	5	13.506	11	0	1	0	1	0	1	.01	11
402			min	-13.506	11	11.576	1	0	1	0	1	0	1	.008	1
403		2	max	-5.788	5	6.753	11	0	1	0	1	0	1	-.001	5
404			min	-6.753	11	5.788	1	0	1	0	1	0	1	-.001	11
405		3	max	0	1	0	1	0	1	0	1	0	1	-.004	5
406			min	0	1	0	1	0	1	0	1	0	1	-.005	11
407		4	max	6.753	11	-5.788	1	0	1	0	1	0	1	-.001	5
408			min	5.788	4	-6.753	11	0	1	0	1	0	1	-.001	11
409		5	max	13.506	11	-11.576	1	0	1	0	1	0	1	.01	11
410			min	11.576	4	-13.506	11	0	1	0	1	0	1	.008	1
411	M42	1	max	-11.576	5	13.506	11	0	1	0	1	0	1	.01	11
412			min	-13.506	11	11.576	1	0	1	0	1	0	1	.008	1
413		2	max	-5.788	5	6.753	11	0	1	0	1	0	1	-.001	5
414			min	-6.753	11	5.788	1	0	1	0	1	0	1	-.001	11
415		3	max	0	1	0	1	0	1	0	1	0	1	-.004	5
416			min	0	1	0	1	0	1	0	1	0	1	-.005	11
417		4	max	6.753	11	-5.788	1	0	1	0	1	0	1	-.001	5
418			min	5.788	3	-6.753	11	0	1	0	1	0	1	-.001	11
419		5	max	13.506	11	-11.576	1	0	1	0	1	0	1	.01	11
420			min	11.576	3	-13.506	11	0	1	0	1	0	1	.008	1
421	M43	1	max	0	1	.001	1	0	1	0	1	0	1	0	1
422			min	0	1	0	8	0	8	0	1	0	1	0	1
423		2	max	164.378	4	54.841	1	8.927	4	.082	3	.053	3	.023	1
424			min	-344.38	7	-163.06	6	-102.592	7	-.06	4	-.082	4	-.034	2
425		3	max	42.99	1	115.417	1	14.219	7	.068	4	-.062	3	.22	5
426			min	-407.684	7	-139.034	2	-6.285	4	-.042	3	-.253	8	.035	2
427		4	max	242.314	1	186.688	5	145.534	6	.117	1	.069	2	.121	9
428			min	-457.459	2	-30.331	2	-48.093	1	-.098	2	-.104	1	.015	3
429		5	max	0	1	0	7	0	1	0	1	0	1	0	1
430			min	0	1	-.001	2	0	4	0	1	0	1	0	1
431	M44	1	max	0	1	0	1	0	1	0	1	0	1	0	1
432			min	0	1	0	1	0	1	0	1	0	1	0	1
433		2	max	43.512	3	57.547	10	9.235	2	.113	1	.096	1	.052	9
434			min	-310.379	8	-160.057	7	-102.119	5	-.088	2	-.124	2	-.134	10
435		3	max	128.344	10	101.773	4	22.705	3	.057	6	-.05	1	.219	8
436			min	-396.621	5	-125.22	3	-15.857	4	-.029	1	-.261	6	-.098	10
437		4	max	170.752	4	180.872	8	140.119	7	.145	2	.092	3	.106	6

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 Mom...	LC
438			min	-437.63	7	-44.093	10	-19.44	4	-.125	1	-.126	4	-.093	10
439		5	max	0	1	0	1	0	1	0	1	0	1	0	1
440			min	0	1	0	1	0	1	0	1	0	1	0	1
441	M45	1	max	0	1	.001	2	.001	3	0	1	0	1	0	1
442			min	0	1	0	8	0	1	0	1	0	1	0	1
443		2	max	129.796	1	40.232	2	-.795	3	.119	4	.115	4	.025	3
444			min	-344.286	6	-160.507	5	-101.794	6	-.096	3	-.143	3	-.035	4
445		3	max	11.465	3	89.985	2	14.45	7	.054	8	-.058	4	.216	7
446			min	-410.636	8	-113.547	1	-7.077	4	-.01	10	-.252	7	.044	4
447		4	max	135.869	3	180.598	6	141.532	8	.145	3	.05	4	.106	7
448			min	-439.715	8	-9.664	1	-26.903	3	-.126	4	-.082	3	.013	4
449		5	max	0	1	0	7	0	3	0	1	0	1	0	1
450			min	0	1	-.001	1	0	5	0	1	0	1	0	1
451	M46	1	max	263.681	1	339.974	2	313.894	1	.001	1	.041	3	.425	2
452			min	-421.646	2	-313.996	1	-247.158	2	-.002	2	-.151	8	-.312	1
453		2	max	263.681	1	339.974	2	310.831	1	.001	1	.041	3	.254	6
454			min	-421.646	2	-313.996	1	-250.22	2	-.002	2	-.09	8	-.081	1
455		3	max	263.681	1	339.974	2	307.769	1	.001	1	.039	3	.246	5
456			min	-421.646	2	-313.996	1	-253.283	2	-.002	2	-.049	4	-.009	2
457		4	max	263.681	1	339.974	2	304.706	1	.001	1	.058	9	.377	1
458			min	-421.646	2	-313.996	1	-256.345	2	-.002	2	-.017	4	-.228	2
459		5	max	263.681	1	339.974	2	301.644	1	.001	1	.107	9	.604	1
460			min	-421.646	2	-313.996	1	-259.408	2	-.002	2	.001	1	-.449	2
461	M47	1	max	168.803	4	316.522	3	204.383	4	0	2	.088	4	.325	3
462			min	-332.636	7	-286.486	4	-138.755	3	-.001	1	-.163	3	-.209	4
463		2	max	168.803	4	316.522	3	201.32	4	0	2	.057	4	.24	5
464			min	-332.636	7	-286.486	4	-141.817	3	-.001	1	-.098	3	-.029	4
465		3	max	168.803	4	316.522	3	198.258	4	0	2	.03	1	.246	8
466			min	-332.636	7	-286.486	4	-144.88	3	-.001	1	-.039	2	-.013	3
467		4	max	168.803	4	316.522	3	195.195	4	0	2	.044	5	.328	4
468			min	-332.636	7	-286.486	4	-147.942	3	-.001	1	-.034	10	-.183	3
469		5	max	168.803	4	316.522	3	192.133	4	0	2	.103	7	.505	4
470			min	-332.636	7	-286.486	4	-151.005	3	-.001	1	-.045	10	-.355	3
471	M48	1	max	144.737	3	245.093	4	211.632	3	.001	3	.109	7	.341	4
472			min	-319.085	8	-286.247	3	-242.88	4	-.002	4	-.011	9	-.491	3
473		2	max	144.737	3	242.031	4	211.632	3	.001	3	.046	6	.162	4
474			min	-319.085	8	-289.31	3	-242.88	4	-.002	4	-.008	9	-.307	3
475		3	max	144.737	3	238.968	4	211.632	3	.001	3	.032	2	-.007	1
476			min	-319.085	8	-292.372	3	-242.88	4	-.002	4	-.041	1	-.246	6
477		4	max	144.737	3	235.906	4	211.632	3	.001	3	.05	2	.065	3
478			min	-319.085	8	-295.435	3	-242.88	4	-.002	4	-.093	5	-.253	8
479		5	max	144.737	3	232.843	4	211.632	3	.001	3	.067	2	.252	3
480			min	-319.085	8	-298.497	3	-242.88	4	-.002	4	-.16	5	-.369	4

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	M26	L3x3x4	.651	0	5	.048	0	y	5	37338.3...	46656	1.688	3.756	2...	H2-1
2	M25	L3x3x4	.650	0	7	.048	0	y	7	37338.3...	46656	1.688	3.756	2...	H2-1
3	M27	L3x3x4	.647	0	5	.048	0	z	5	37338.3...	46656	1.688	3.756	2.2	H2-1
4	M23	L3x3x4	.646	0	8	.048	0	z	6	37338.3...	46656	1.688	3.756	2...	H2-1
5	M24	L3x3x4	.641	0	6	.048	0	z	7	37338.3...	46656	1.688	3.756	2...	H2-1
6	M22	L3x3x4	.641	0	8	.047	0	y	8	37338.3...	46656	1.688	3.756	2...	H2-1
7	M6	HSS3x3x5	.335	3.274	5	.107	3.061	y	8	82784.7...	121716	10.005	10.005	1...	H1-1b
8	M20A	HSS3x3x5	.334	3.274	6	.109	3.061	y	6	82784.7...	121716	10.005	10.005	1...	H1-1b
9	M21A	HSS3x3x5	.330	3.274	7	.108	3.061	y	7	82784.7...	121716	10.005	10.005	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
10	MP4B	PIPE_2.0	.308	3.281	6	.055	.292		3	17855.0...	32130	1.872	1.872	3...	H1-1b
11	MP4C	PIPE_2.0	.305	3.281	8	.055	.292		3	17855.0...	32130	1.872	1.872	3...	H1-1b
12	MP4A	PIPE_2.0	.272	3.281	7	.057	3.354		2	17855.0...	32130	1.872	1.872	3...	H1-1b
13	MP2B	PIPE_2.0	.259	3.281	2	.038	3.281		2	17855.0...	32130	1.872	1.872	3...	H1-1b
14	MP2C	PIPE_2.0	.249	3.281	8	.031	3.281		8	17855.0...	32130	1.872	1.872	2...	H1-1b
15	MP3A	PIPE_2.0	.244	3.281	5	.031	3.281		3	17855.0...	32130	1.872	1.872	3...	H1-1b
16	MP1C	PIPE_2.0	.242	3.281	6	.049	3.281		7	17855.0...	32130	1.872	1.872	3...	H1-1b
17	MP1B	PIPE_2.0	.241	3.281	5	.052	3.281		5	17855.0...	32130	1.872	1.872	3...	H1-1b
18	MP3C	PIPE_2.0	.240	3.281	8	.031	3.281		4	17855.0...	32130	1.872	1.872	3...	H1-1b
19	MP3B	PIPE_2.0	.239	3.281	2	.039	3.281		2	17855.0...	32130	1.872	1.872	3...	H1-1b
20	MP1A	PIPE_2.0	.239	3.281	8	.050	3.281		8	17855.0...	32130	1.872	1.872	3...	H1-1b
21	MP2A	PIPE_2.0	.238	3.281	5	.029	3.281		3	17855.0...	32130	1.872	1.872	2...	H1-1b
22	M21	PL3/4x6	.212	.667	3	.315	.667	y	7	107183....	141750	2.215	17.719	1...	H1-1b
23	M20	PL3/4x6	.191	.667	1	.314	.667	y	5	107183....	141750	2.215	17.719	1...	H1-1b
24	M47	L3x3x4	.190	0	3	.025	0	y	3	42379.2...	46656	1.688	3.756	2...	H2-1
25	M19	PL3/4x6	.189	.667	1	.318	.667	y	6	107183....	141750	2.215	17.719	1...	H1-1b
26	M46	L3x3x4	.172	0	2	.030	.109	y	2	42379.2...	46656	1.688	3.756	2...	H2-1
27	M48	L3x3x4	.167	0	7	.026	2.083	y	3	42379.2...	46656	1.688	3.756	1...	H2-1
28	M30	HSS3x3x5	.152	1.56	7	.067	1.56	y	8	78331.7...	92610	7.613	7.613	2...	H1-1b
29	M29	HSS3x3x5	.149	1.56	6	.066	1.56	y	7	78331.7...	92610	7.613	7.613	2...	H1-1b
30	M28	HSS3x3x5	.149	1.56	6	.068	1.56	y	6	78331.7...	92610	7.613	7.613	2...	H1-1b
31	M3	PIPE_3.0	.138	13.75	8	.097	4.44		7	23649.2...	65205	5.749	5.749	2...	H1-1b
32	M2	PIPE_3.0	.137	13.75	5	.098	9.31		8	23649.22	65205	5.749	5.749	2...	H1-1b
33	M1	PIPE_3.0	.132	13.75	6	.096	4.44		5	23649.22	65205	5.749	5.749	2...	H1-1b
34	M43	PIPE_3.0	.082	8.88	5	.066	.716		3	23649.2...	65205	5.749	5.749	2...	H1-1b
35	M44	PIPE_3.0	.082	8.88	8	.077	.716		1	23649.2...	65205	5.749	5.749	2...	H1-1b
36	M45	PIPE_3.0	.081	8.88	6	.053	.716		4	23649.2...	65205	5.749	5.749	2...	H1-1b
37	M42	LL2x2x4x0	.007	4.243	11	.001	4.243	y	11	42184.3...	61236	2.894	1.321	1	H1-1b
38	M40	LL2x2x4x0	.007	4.243	11	.001	0	y	11	42184.3...	61236	2.894	1.321	1	H1-1b
39	M41	LL2x2x4x0	.007	4.243	11	.001	4.243	y	11	42184.3...	61236	2.894	1.321	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 #: CT03801-S

CARRIER SITE #/NAME: CT11386G / SIMSBURY NORTH

COORDINATES (LATITUDE: 41.928649°, LONGITUDE: -72.776099°)

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 WITH END CONNECTION KIT	
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. **77895**, DATED **06/05/2019**.

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: 80043

CUSTOMER SITE NO: CT03801-S-SBA

CUSTOMER SITE NAME: EAST GRANBY

56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

STATE OF CONNECTICUT
HANMING YOU
28931
LICENSED PROFESSIONAL ENGINEER

7/3/19

DRAWN BY: BS | CHECKED BY: SS/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BS	07/03/19

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	D-1, MS-1436	87.0	87.0	Galvanized
1	1	MS-KI22-5	METROSITE KICKER SUPPORT	D-1, MS-KI22-5	146.0	146.0	Galvanized
			FOLLOWING ITEMS ARE "CUSTOM" PARTS				
12	13	---	THREADED ROD 5/8" DIA. X 12" A36	D-1	0.00	0.0	(2) HHN & LKW-EA 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) =		**747.0**	

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(800)-487-SITE

TES JOB NO:
80043

CUSTOMER SITE NO:
CT03801-S-SBA

CUSTOMER SITE NAME:
EAST GRANBY

56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

DRAWN BY: BS | CHECKED BY: SS/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BS	07/03/19

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, 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.

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

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

TES JOB NO:
80043

CUSTOMER SITE NO:
CT03801-S-SBA
CUSTOMER SITE NAME:
EAST GRANBY
56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

DRAWN BY: BS | CHECKED BY: SS/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BS	07/03/19

SHEET TITLE:
GENERAL NOTES

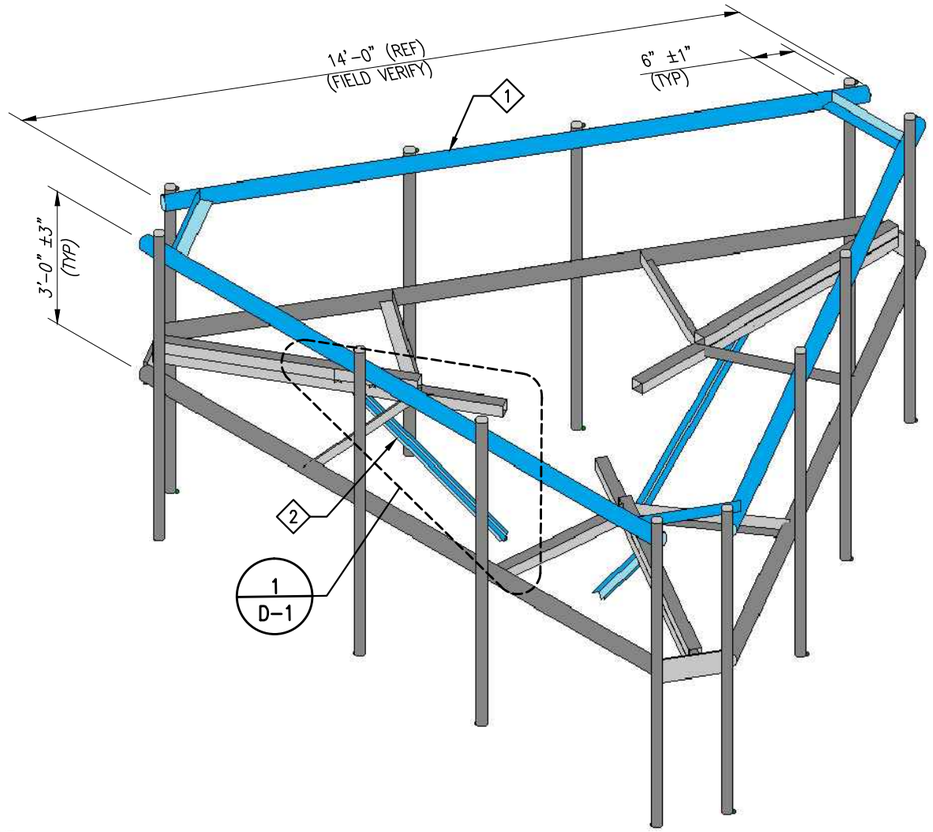
SHEET NUMBER: GN-1
REV #: 0

SCOPE OF WORK

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

EXISTING ANTENNA MOUNT @ 110' ELEV

PHOTO 1



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 110' 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

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

TES JOB NO: 80043
CUSTOMER SITE NO: CT03801-S-SBA
CUSTOMER SITE NAME: EAST GRANBY
56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

DRAWN BY: BS | CHECKED BY: SS/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BS	07/03/19

SHEET TITLE:
ANTENNA MOUNT MODIFICATION DETAILS

SHEET NUMBER: A-1
REV #: 0

PHOTO 1

PHOTO 2

PHOTO 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:
80043

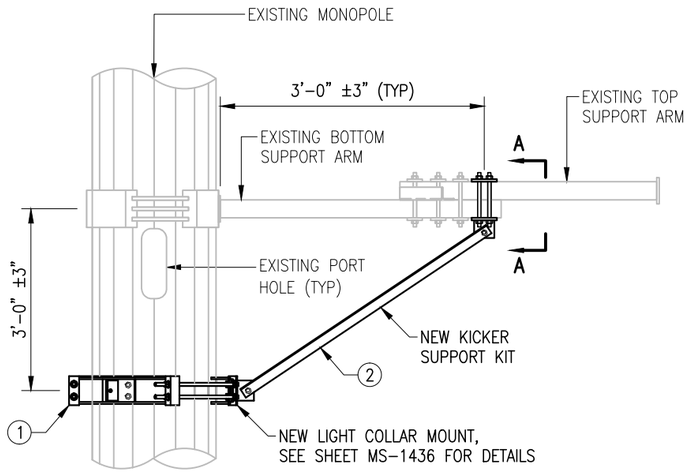
CUSTOMER SITE NO:
CT03801-S-SBA
CUSTOMER SITE NAME:
EAST GRANBY
56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

DRAWN BY: BS | CHECKED BY: SS/HMA

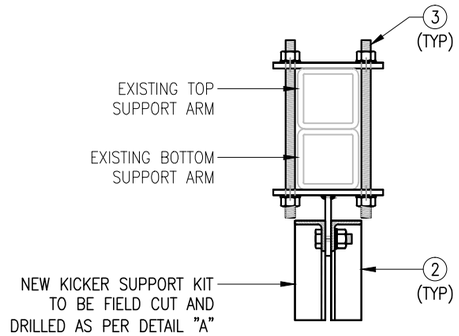
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BS	07/03/19

SHEET TITLE:
ANTENNA MOUNT PHOTOS

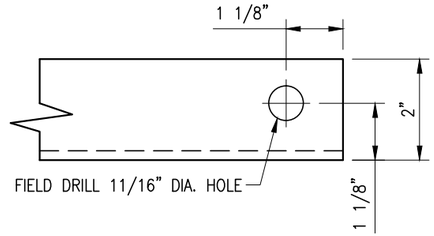
SHEET NUMBER: A-2
REV #: 0



1/D-1 DETAIL



SECTION A-A



DETAIL "A"

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

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	1	MS-1436	METROSITE LIGHT COLLAR MOUNT ASSEMBLY
2	1	MS-KI22-5	METROSITE KICKER SUPPORT
3	12	---	THREADED ROD 5/8" DIA. X 12" A36

TES
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IRVING, TX 75038
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BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO: 80043

CUSTOMER SITE NO: CT03801-S-SBA

CUSTOMER SITE NAME: EAST GRANBY

56 FLOYDVILLE ROAD
EAST GRANBY, CT 06026

DRAWN BY: BS | CHECKED BY: SS/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BS	07/03/19

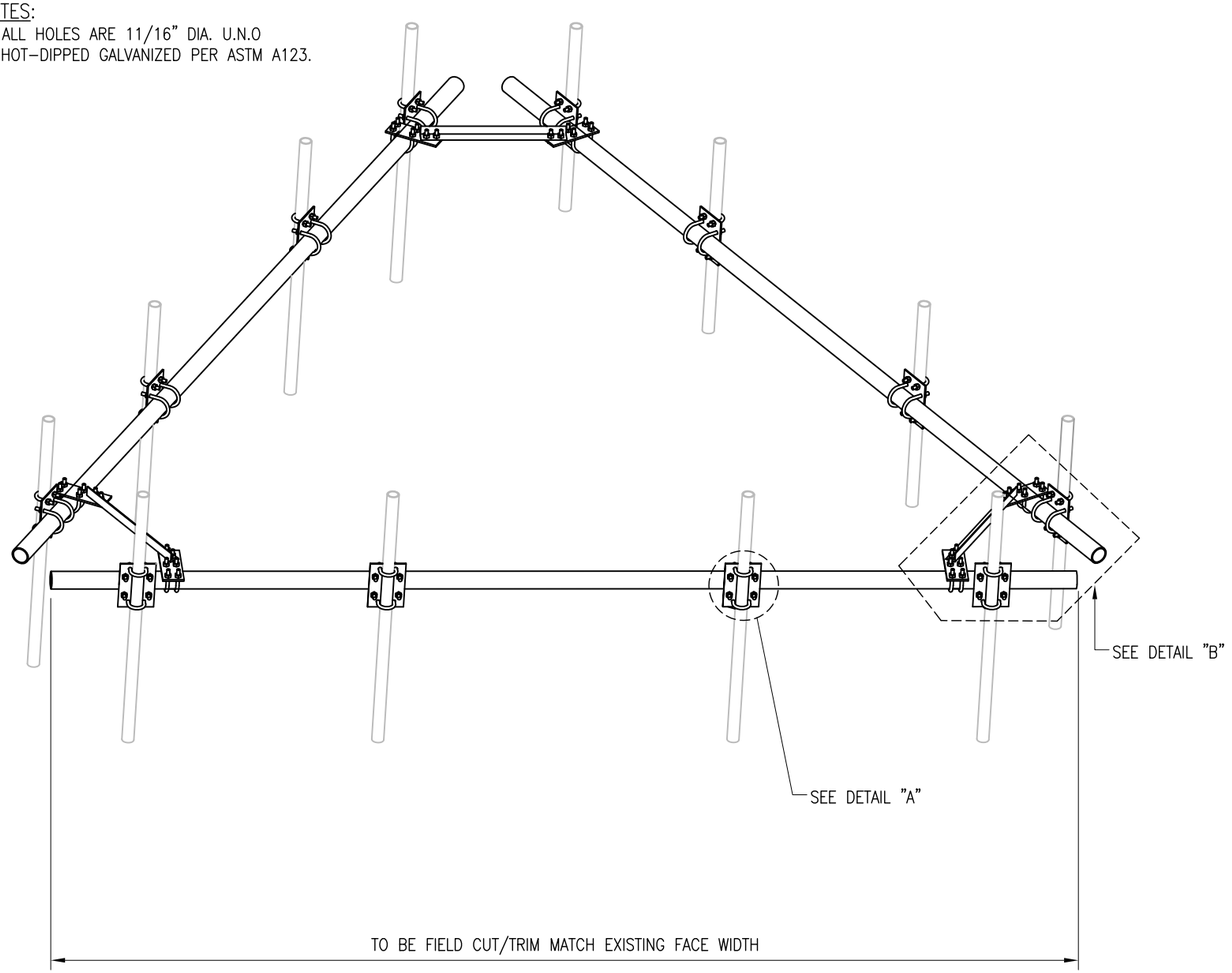
SHEET TITLE: STANDARD DETAILS

SHEET NUMBER: D-1

REV #: 0

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

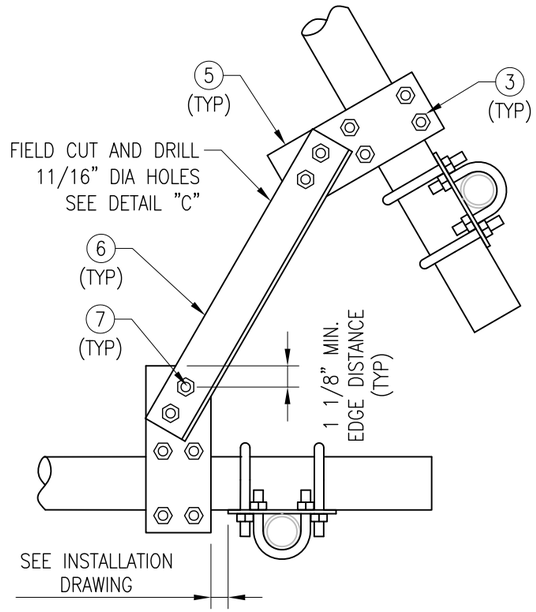
NOTES:
1. ALL HOLES ARE 11/16" DIA. U.N.O
2. HOT-DIPPED GALVANIZED PER ASTM A123.



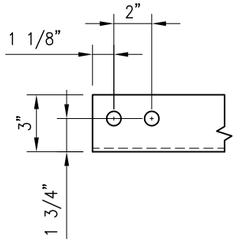
ELEVATION VIEW

MS-HRECP-35

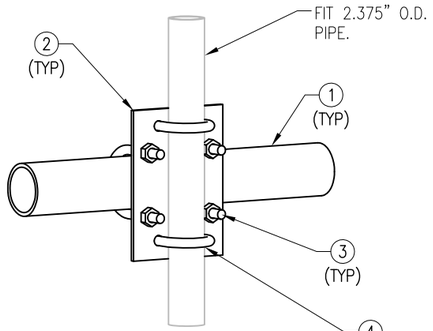
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	3PST-140	3" PST (3.50" O.D X .216" THICK) X 14'-0"	A53 GR-B	TAF-1	337.2
2	12	PL375-10	PL 3/8" X 7 1/8" X 10"	A36	TAF-1	92.4
3	36	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
4	24	MS02-625-250-400	RU-BOLT 5/8"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



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

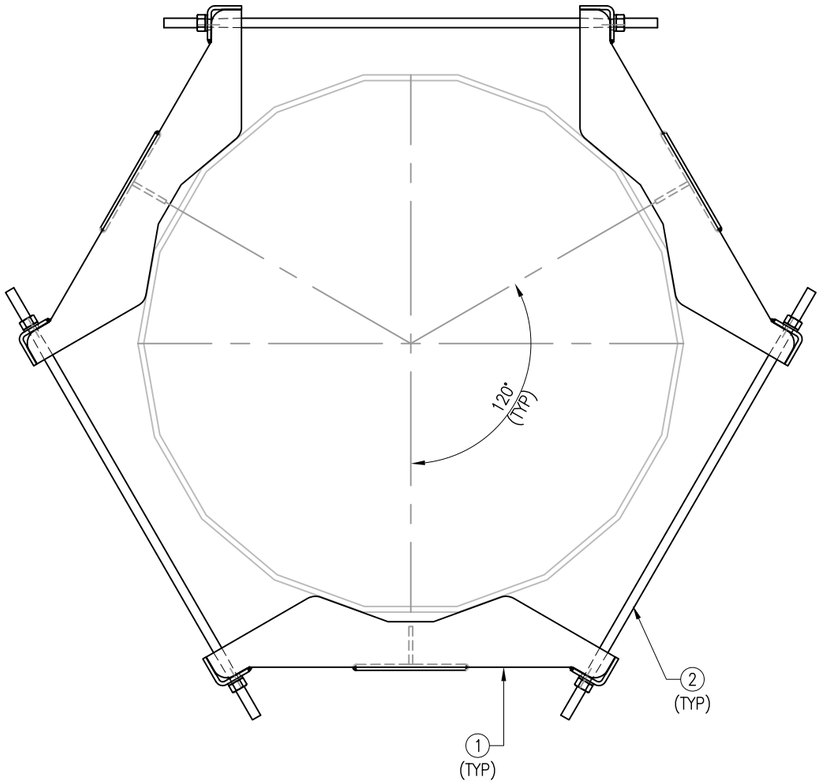
SIZE	DWG NO	REV
B	MS-HRECP-35	1

SCALE: -
SHEET 1 OF 1

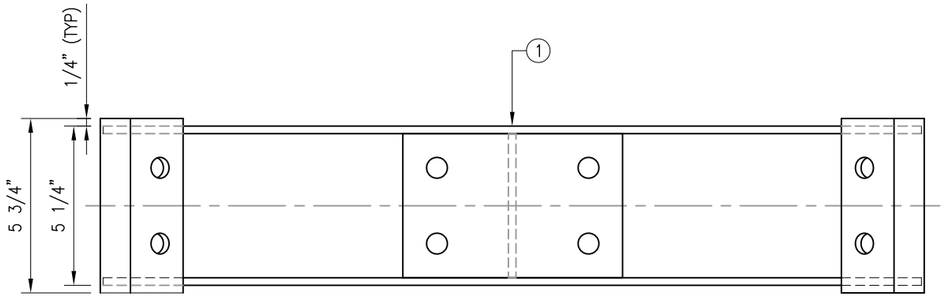
NOTE:
1) FITS 12" DIA TO 32" DIA.

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

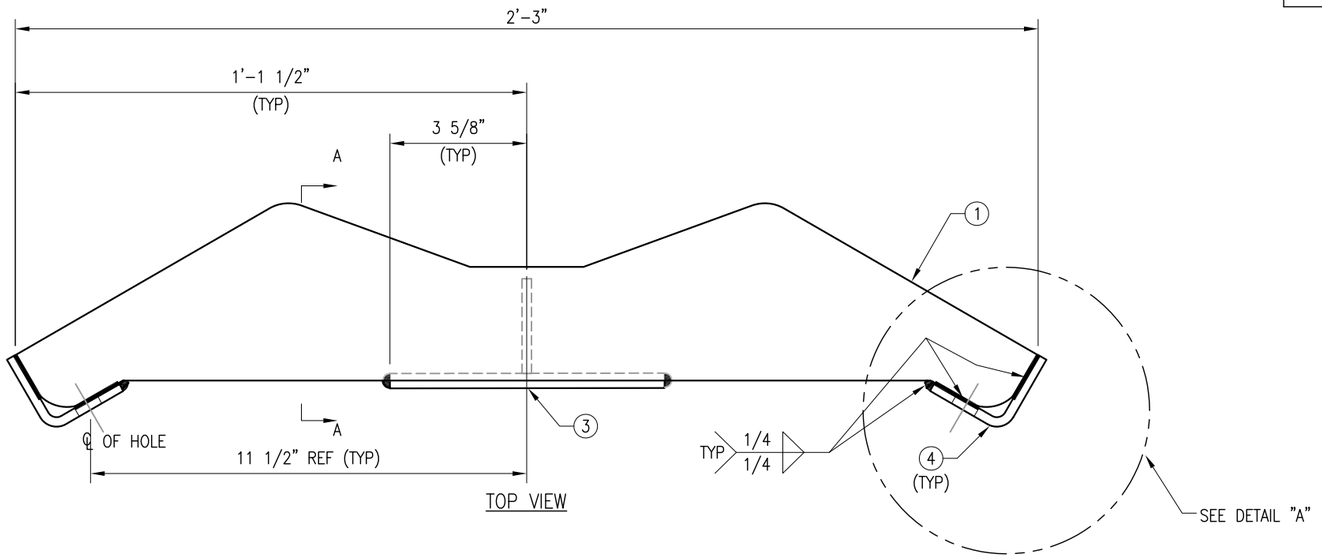
TITLE
LIGHT COLLAR MOUNT PLATE
ASSEMBLY DETAIL MS-1436

SIZE	DWG NO	REV
B	MS-1436	1

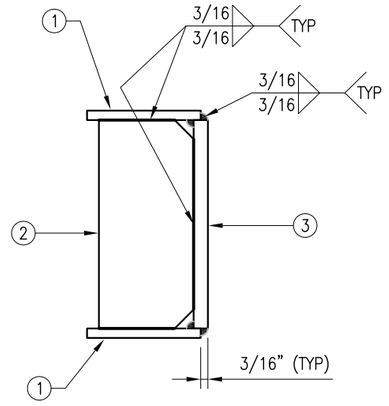
SCALE -
SHEET 1 OF 1

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

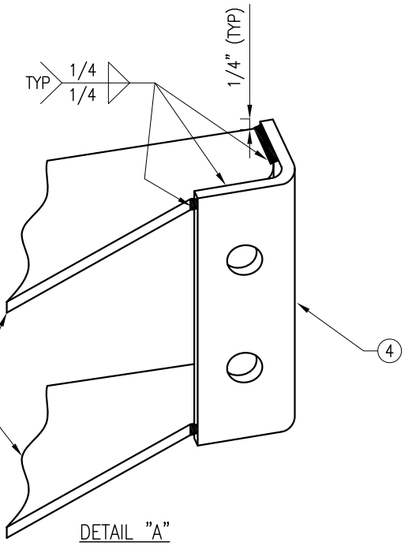
MPW-1 WELDMENT						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	2	PL-1	PL 1/4" X 5 3/8" X 2'-3"	A36	F-2	12.6
2	1	PL-2	PL 1/4" X 2 1/2" X 0'-4 3/4"	A36	F-2	.83
3	1	PL-3	PL 3/8" X 4 3/4" X 0'-7 1/4"	A36	F-2	3.7
4	2	PL-8	PL 1/4" x 4 1/8" x 5 3/4"	A36	F-2	3.2
					BLACK WT	20.3
					GALVANIZED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



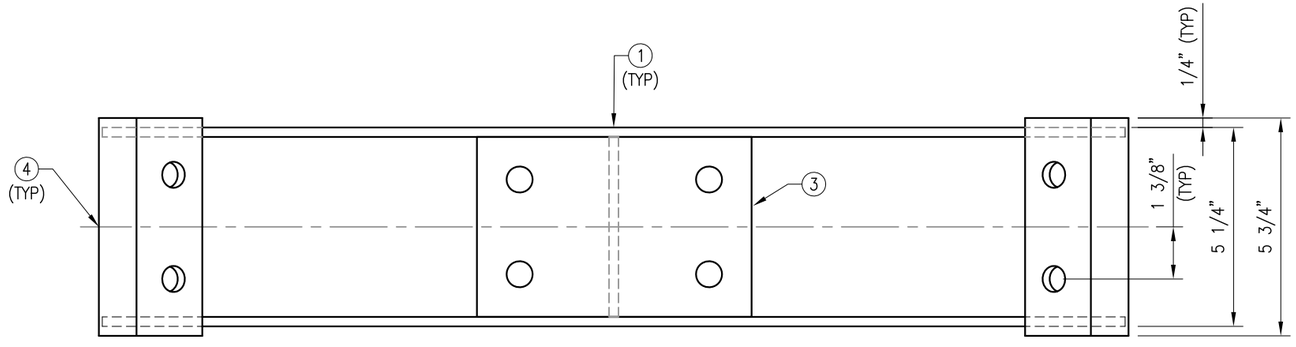
TOP VIEW



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

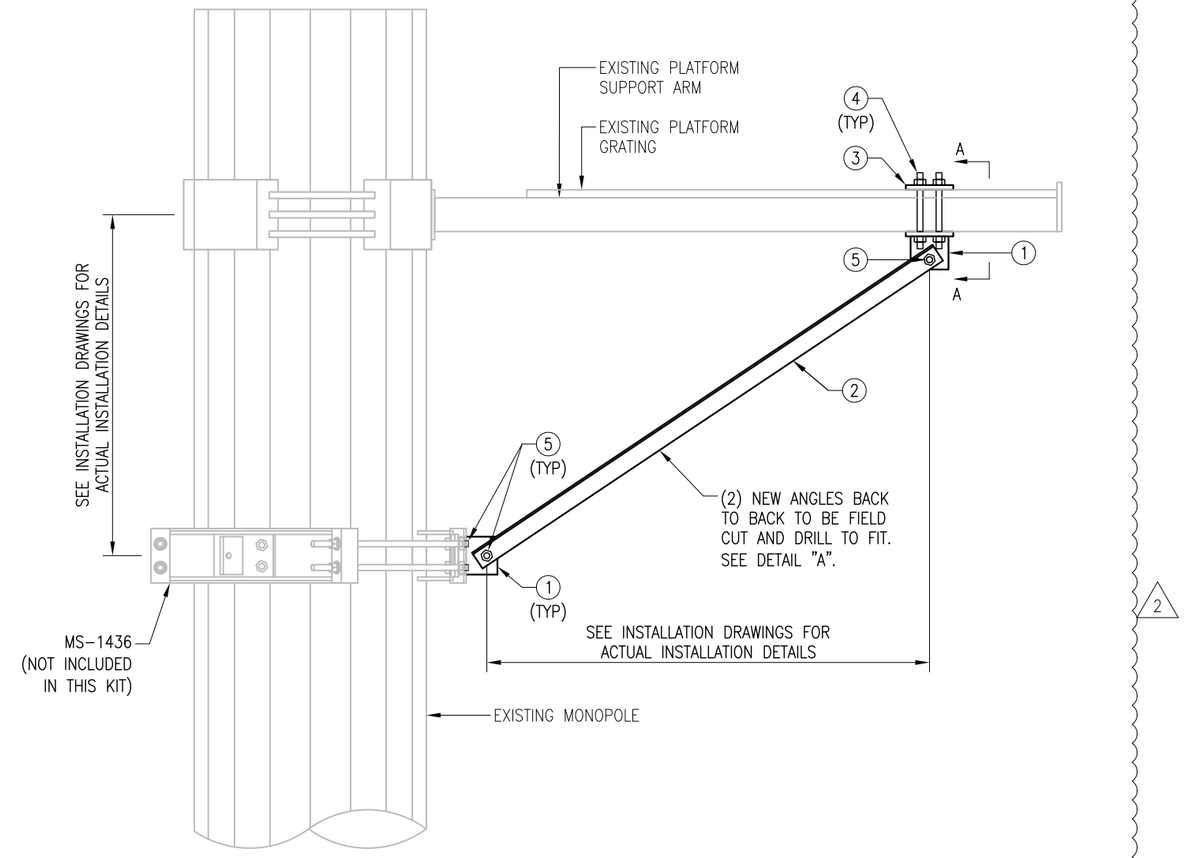
APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

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.

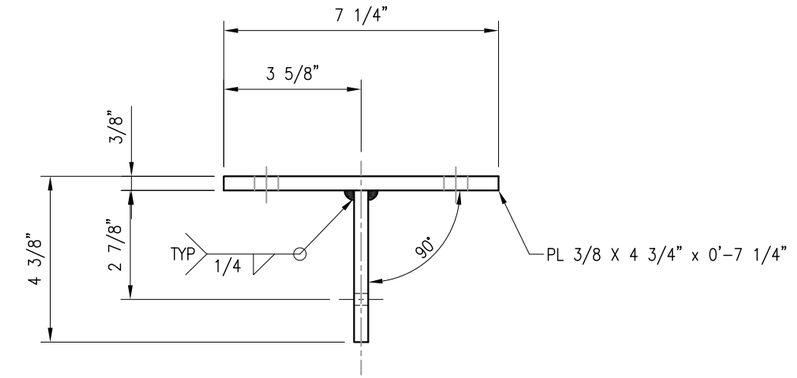


ELEVATION

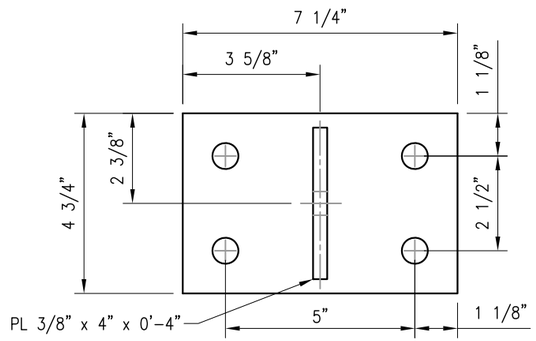
2

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

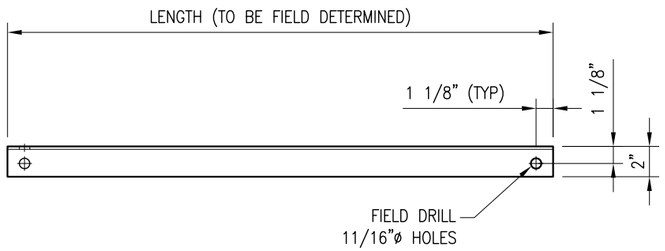


TOP VIEW

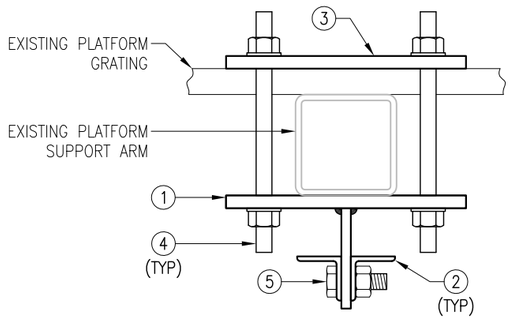


FRONT VIEW

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

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11386G

Simsbury North/RT 10
56 Floydville Road
East Granby, CT 06035

June 10, 2019

Transcom Engineering Project Number: 737001-0081

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**21.76 %**

June 10, 2019

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

Emissions Analysis for Site: **CT11386G – Simsbury North/RT 10**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **56 Floydville Road, East Granby, 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 **56 Floydville Road, East Granby, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	2	60
GSM	1900 MHz (PCS)	1	15
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	RFS APXVAARR24_43-U-NA20	107
B	1	RFS APXVAARR24_43-U-NA20	107
C	1	RFS APXVAARR24_43-U-NA20	107

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz (PCS)** & **2100 MHz (AWS)** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **1.65 dB** of cable loss calculated into the system gains / losses for this site. For each ground mounted **2100 MHz (AWS)** radio there was **1.70 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **160 feet** of **1-5/8"** coax.

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,339.74	4.82
						Sector A Composite MPE%	**4.82**
Antenna B1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,339.74	4.82
						Sector B Composite MPE%	**4.82**
Antenna C1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,339.74	4.82
						Sector C Composite MPE%	**4.82**

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	**4.82 %**
Verizon Wireless	5.50 %
MetroPCS	0.82 %
AT&T	10.62 %
Site Total MPE %:	**21.76 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	4.82 %
T-MOBILE Sector B Total:	4.82 %
T-MOBILE Sector C Total:	4.82 %
Site Total:	21.76 %

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) LTE	4	1,004.75	107	14.16	1900 MHz (PCS)	1000	1.42%
T-Mobile 2100 MHz (AWS) LTE	2	1,750.46	107	12.34	2100 MHz (AWS)	1000	1.23%
T-Mobile 1900 MHz (PCS) GSM	1	376.78	107	1.33	1900 MHz (PCS)	1000	0.13%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	107	5.56	600 MHz	400	1.39%
T-Mobile 700 MHz LTE	2	432.54	107	3.05	700 MHz	467	0.65%
						Total:	**4.82%**

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:	4.82 %
Sector B:	4.82 %
Sector C:	4.82 %
T-MOBILE Maximum Total (per sector):	4.82 %
Site Total:	21.76 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **21.76 %** 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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