Filed by:
G. Scott Shepherd, Site Development Specialist 2 - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - GShepherd@sbasite.com

March 24, 2020

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

Notice of Exempt Modification
1 Hartford Square, New Britain, CT 06052
41.6663919 N
-72.8127989 W
T-Mobile #: CT11351C_L600

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 152-foot level of the existing 176-foot Self-Support Tower at 1 Hartford Square. The tower is owned by SBA Towers. The property is owned by Hartford Square Associates. T-Mobile now intends to replace three (3) 600/700 MHz antennas with three (3) new 600/700 MHZ antennas. The new antennas would be installed at the 152-foot level of the tower.

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

Planned Modifications:

TOWER

Remove:
- N/A

Remove and Replace:
- (3) Commscope LNX-6515DS-A1M 600/700 MHz (Remove) – (3) RFS APXVAARR24_U-NA20 600/700 MHz (Replace)
- (3) Ericsson RRUS 11 B12 (Remove) – (3) Ericsson Radio 4449 B71+B12 (Replace)

Install New:

- (2) 1-5/8 Fiber

Existing Equipment to Remain:

- (3) Ericsson Air21 KRC118023-1 B2A/B4P 1900/2100 MHz antenna
- (3) Ericsson Air32 KRD901146-1 B66A/B2A 1900/2100 MHz antenna
- (10) 1-5/8" Coax
- (3) t-frames
- (3) Ericsson KRY 112 144/1 TMAs

Entitlements:

- (1) 1-5/8" Fiber
- (1) 1-1/4" Fiber

GROUND

Install New:

- Equipment inside existing 6131 BTS cabinet

This facility was approved by the Department of Municipal Development for the City of New Britain on July 17, 2000. Approval was given for a 175' lattice type communication tower. Building/Zoning Permit 1414 was issued for the tower on August 1, 2000, and Building/Zoning Permit 1680 was issued for a site shelter on October 25, 2000. There do not appear to have been any post-construction stipulations set per inquiry with the City. 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 Honorable Erin Stewart, Mayor of the City of New Britain, and David Zajac, Zoning Enforcement Officer for the City of New Britain, as well as the property owner Hartford Square Associates, LLC. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

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

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

Sincerely,

G. Scott Shepherd
Site Development Specialist 2
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 / T 508.366.2610 / F
508.868.6000 + C
GShepherd@sbasite.com

Attachments
cc: The Honorable Erin Stewart, Mayor of the City of New Britain–w/attachments
City Hall Room 204, 27 West Main St., New Britain, CT 06051
David Zajac, Zoning Enforcement Officer—w/attachments
City Hall Room 404, 27 West Main St., New Britain, CT 06051
Hartford Square Associates, LLC– w/attachments
1 Hartford Square Door #19, New Britain, CT 06052 (SBA address on file)
1 Hartford Square West Box #15, New Britain, CT 06052 (Town address on file)

Exhibit List

Exhibit 1	Check Copy	X
Exhibit 2	Notification Receipts	Filed electronically due to COVID-19
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	Not available (See Email)
Exhibit 6	Construction Drawings	Chappell 7/30/19
Exhibit 7	Structural Analysis	TES 7/8/19
Exhibit 8	Mount Analysis	TES 7/25/19
Exhibit 9	EME Report	Transcom 5/22/19

EXHIBIT 1

EXHIBIT 2

Normally, Exhibit 2 would contain the FedEx labels of the recipients of the enclosed filing.

EXHIBIT 3

1 HARTFORD SQ

Location	1 HARTFORD SQ	**Mblu**	F4A/ 2/ / /
Acct#	44950001	**Owner**	HARTFORD SQUARE ASSOCIATES LLC
Assessment	$4,116,000	**Appraisal**	$5,880,000
PID	764	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$3,710,700	$2,169,300	$5,880,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$2,597,490	$1,518,510	$4,116,000

Owner of Record

Owner	HARTFORD SQUARE ASSOCIATES LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	1 HARTFORD SQ WEST BOX #15 NEW BRITAIN, CT 06052	**Book & Page**	1903/1103
		Sale Date	12/03/2014

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
HARTFORD SQUARE ASSOCIATES LLC	$0		1903/1103	12/03/2014
HARTFORD SQUARE ASSOCIATES LLC	$0		1895/0267	07/22/2014
HARTFORD SQUARE ASSOCIATES LLC	$0		1895/0157	07/22/2014
HARTFORD SQUARE ASSOCIATES LLC	$0	1	1830/0539	12/06/2011
HARTFORD SQUARE ASSOCIATES LLC	$3,500,000		1813/0022	02/14/2011

Building Information

Building 1 : Section 1

Year Built:	1940
Living Area:	542,561
Replacement Cost:	$18,387,603

Building Percent Good: 20

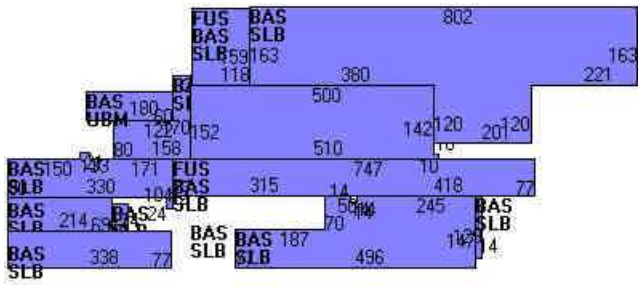
Replacement Cost Less Depreciation: $3,677,500

Building Attributes	
Field	**Description**
STYLE	Warehouse
MODEL	Ind/Comm
Grade	C
Stories:	2
Occupancy	31.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Metal/Tin
Interior Wall 1	Minimum/Masonr
Interior Wall 2	
Interior Floor 1	Finished Concr
Interior Floor 2	
Central Heat	Yes
Usrfld 208	99
AC Type	Partial
Struct Class	
Bldg Use	Ind Whse MDL-96
Apt Units	
Total Bedrms	00
Total Baths	0
Comm Units	
Ind Units	
1st Floor Use:	4010
Heat/AC	Unit Heat
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Min WL
Rooms/Prtns	Average
Wall Height	18.00
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/NewBritainCTPhotos//\00\03\49

Building Layout



(http://images.vgsi.com/photos/NewBritainCTPhotos//Sketches/7

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	466,084	466,084
FUS	Finished Upper Story	76,477	76,477
SLB	Slab	455,284	0
UBM	Basement	10,800	0
		1,008,645	542,561

Building 2 : Section 1

Year Built:

Living Area: 0

Replacement Cost: $0

Building Percent Good:

Replacement Cost Less Depreciation: $0

Building Attributes : Bldg 2 of 2	
Field	**Description**
Style	Outbuildings
Model	
Grade	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Central Heat Sys	
Heat Type	
AC Type	
Total Bedrooms	
Total Full Baths	
Total Half Baths	
Total Xtra Fixtrs	
Total Rooms	
Bath Style	
Kitchen Style	
Num Kitchens	
Whirlpool Tub	
Fireplaces	
Usrfld 104	
Rec Room Finish	
Rec Room Qual	
Usrfld 107	
Bsmt Garages	
Fireplaces	
Usrfld 108	
Usrfld 101	
Usrfld 102	
Bldg Nbhd	

Building Photo

(http://images.vgsi.com/photos/NewBritainCTPhotos//default.jpg

Building Layout

Building Layout
(http://images.vgsi.com/photos/NewBritainCTPhotos//Sketches/7

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

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
A/C	Central A/C	18000.00 S.F.	$11,700	1
LDL2	Load Lv Manual	8.00 Units	$1,900	1

Land

Land Use

Use Code	4010
Description	Ind Whse MDL-96
Zone	I2
Neighborhood	101G
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	31.10
Depth	
Assessed Value	$1,518,510
Appraised Value	$2,169,300

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV5	Conc Pad			1836.00 S.F.	$22,000	2
UST2	Utility Metal			3036.00 S.F.	$21,900	1
CB4	PreCastConcCel			200.00 S.F.	$33,000	2
UST3	Utility Masonr			484.00 S.F.	$4,600	1
CB3	PreCastConcCel			240.00 S.F.	$55,400	2
UST2	Utility Metal			320.00 S.F.	$2,300	1
CB3	PreCastConcCel			360.00 S.F.	$83,200	2
UST1	Utility Frame			320.00 S.F.	$2,800	1
FN4	Fence-8' Chain			272.00 L.F.	$3,500	2
UST2	Utility Metal			2000.00 S.F.	$14,400	1
SCL1	Scales-Mech			60.00 Tons	$37,800	2
TNK2	Tank Bulk			300000.00 Gal	$1,200	1
PAV1	Paving Asphalt			50000.00 S.F.	$48,000	1
BLB2	Billboard 2 Side			2.00 Units	$0	1

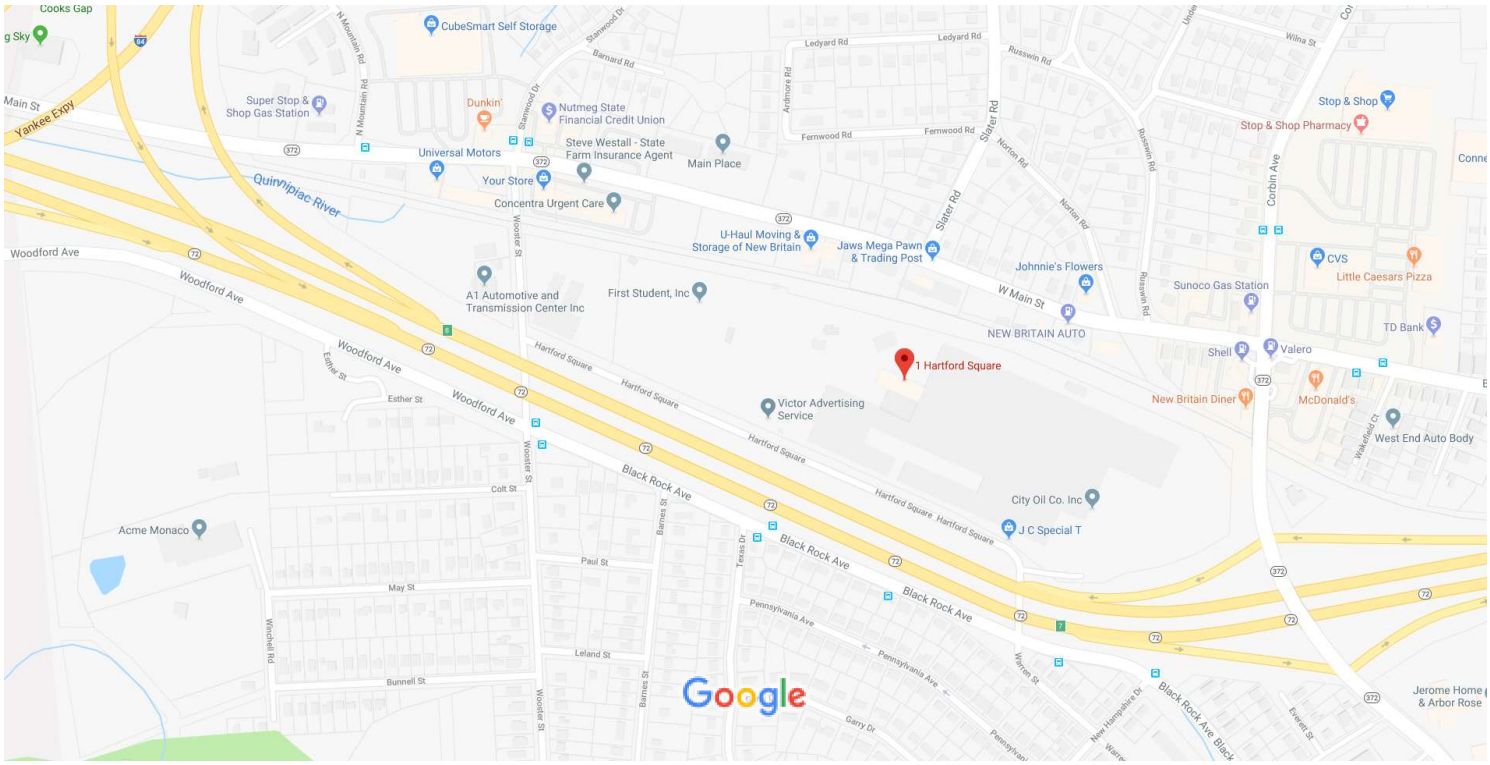
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$3,710,700	$2,169,300	$5,880,000
2017	$4,021,200	$2,169,300	$6,190,500
2016	$4,466,700	$2,076,000	$6,542,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$2,597,490	$1,518,510	$4,116,000
2017	$2,814,840	$1,518,510	$4,333,350
2016	$3,126,690	$1,453,200	$4,579,890

EXHIBIT 4

Google Maps 1 Hartford Square



Map data ©2019 Google 200 ft

1 Hartford Square

New Britain, CT 06052

Directions Save Nearby Send to your phone Share

Photos

EXHIBIT 5

Kri Pelletier

From: Dave Zajac <Dave.Zajac@newbritainct.gov>
Sent: Friday, June 21, 2019 1:53 PM
To: Kri Pelletier
Subject: RE: [External] RE: Existing Cell tower - One Hartford Square (SBA/T-Mobile CT11351C)

Categories: CAUTION: This email originated from outside of the organization. Do NOT click or open attachments unless you recognize the sender and know the content is safe.

Nothing I found
Dave

David D. Zajac
Building & Zoning Enforcement
27 West Main Street Suite 404
New Britain, CT 06051
Office: 860-826-3384
Desk: 860-612-5014
City Web: www.newbritainct.gov
Zoning Ordinance: https://library.municode.com/ct/new_Britain/codes/zoning_ordinances
G.I.S. Map: http://newbritain.mapxpress.net/

From: Kri Pelletier [mailto:KPelletier@sbasite.com]
Sent: Friday, June 21, 2019 1:40 PM
To: Dave Zajac; Donna L. Boga; Sergio Lupo
Cc: Steven Schiller
Subject: RE: [External] RE: Existing Cell tower - One Hartford Square (SBA/T-Mobile CT11351C)

Hi Dave, and thank you.

So just to confirm, there don't appear to be any ZBA or P&Z approval documents calling out any stipulations on the tower?

(We'll only be applying for upgrades, so they would likely not apply anyway, but it is our responsibility to provide if available.)

Thanks again,

Kri Pelletier
Prop Spec - Svcs

508.251.0720 x3804 + **T**
508.366.2610 + **F**
203.446.7700 + **C**

From: Dave Zajac [mailto:Dave.Zajac@newbritainct.gov]
Sent: Friday, June 21, 2019 12:39 PM
To: Kri Pelletier <KPelletier@sbasite.com>; Donna L. Boga <Donna.Boga@newbritainct.gov>; Sergio Lupo <Sergio.Lupo@newbritainct.gov>
Cc: Steven Schiller <Steven.Schiller@newbritainct.gov>
Subject: RE: [External] RE: Existing Cell tower - One Hartford Square (SBA/T-Mobile CT11351C)

Hi
Hope this helps
Copies of the permits to put up the tower
Which is the approval of building and zoning
Anything else, e-mail or call
Thanks
Dave

David D. Zajac
Building & Zoning Enforcement
27 West Main Street Suite 404
New Britain, CT 06051
Office: 860-826-3384
Desk: 860-612-5014
City Web: www.newbritainct.gov
Zoning Ordinance: https://library.municode.com/ct/new_Britain/codes/zoning_ordinances
G.I.S. Map: http://newbritain.mapxpress.net/

From: Kri Pelletier [mailto:KPelletier@sbasite.com]
Sent: Thursday, June 20, 2019 3:31 PM
To: Donna L. Boga; Sergio Lupo; Dave Zajac
Cc: Steven Schiller
Subject: RE: [External] RE: Existing Cell tower - One Hartford Square (SBA/T-Mobile CT11351C)
Importance: High

Good Afternoon All,

Just following up on the below.

Please note that in some cases, as many years have gone by, the original zoning approval documents do not exist. If you believe this to be the case, we will simply need confirmation – a reply email stating same would be just fine.

Thank you,

Kri Pelletier
Prop Spec - Svcs

508.251.0720 x3804 + **T**
508.366.2610 + **F**
203.446.7700 + **C**

From: Kri Pelletier
Sent: Wednesday, June 12, 2019 4:59 PM
To: Donna L. Boga <Donna.Boga@newbritainct.gov>; Sergio Lupo <Sergio.Lupo@newbritainct.gov>; Dave Zajac <Dave.Zajac@newbritainct.gov>
Cc: Steven Schiller <Steven.Schiller@newbritainct.gov>
Subject: RE: [External] RE: Existing Cell tower - One Hartford Square (SBA/T-Mobile CT11351C)

Thank you, Steven and all.

Please let me know if you need any further information to assist with the tracking of the original approval.

Thank you,

Kri Pelletier
Prop Spec - Svcs

508.251.0720 x3804 + **T**
508.366.2610 + **F**
203.446.7700 + **C**

From: Steven Schiller [mailto:Steven.Schiller@newbritainct.gov]
Sent: Monday, June 10, 2019 4:02 PM
To: Kri Pelletier <KPelletier@sbasite.com>
Cc: Donna L. Boga <Donna.Boga@newbritainct.gov>; Sergio Lupo <Sergio.Lupo@newbritainct.gov>; Dave Zajac <Dave.Zajac@newbritainct.gov>
Subject: [External] RE: Existing Cell tower - One Hartford Square (SBA/T-Mobile CT11351C)

Kri-

Any formal approval, probably a building permit, would have come from a zoning official in the Building dept. I've cc'd the individuals above, that would most likely be able to assist you.

Steven P. Schiller, AICP
City Planner
City of New Britain
Suite 208, City Hall
27 West Main Street
New Britain, Connecticut 06051
860-826-3430
Steven.Schiller@NewBritainCT.gov

From: Kri Pelletier [mailto:KPelletier@sbasite.com]
Sent: Monday, June 10, 2019 3:36 PM

To: Steven Schiller <Steven.Schiller@newbritainct.gov>
Subject: Existing Cell tower - One Hartford Square (SBA/T-Mobile CT11351C)

Hi Steven,

On behalf of T-Mobile, we're readying materials for antenna upgrades at the existing cell site at One Hartford Square in New Britain.

As you are likely aware, prior to applying for building permits for existing cell tower upgrades, we must get CT Siting Council Approval. The Council now requires us to provide copies of the original zoning approval for the towers in order to show any post-construction stipulations.

Looks like the tower at One Hartford Square was approved before the CSC had jurisdiction. I have the attached City of New Britain's Memorandum regarding Site Plan approval, but not the actual approval itself.

Might you be able to provide a scanned copy or direct me to another department that could help locate?

Thank you for your assistance,

Kri Pelletier
Prop Spec - Svcs

SBA Communications Corporation
134 Flanders Road
Suite 125
Westborough, MA 01581

508.251.0720 x3804 + **T**
508.366.2610 + **F**
203.446.7700 + **C**
KPelletier@sbasite.com

Your Signal Starts Here.

LOCATION DATE Aug 1, 2000 ZONE I2 CODE YR 99 **APPLICATION BUILDING/ZONING**

1 HARTFORD SQUARE **NEW BRITAIN, CT**

CK# 80378 CK# 80378

B 1414 COST $84,000 FEE $1290.00 CO. FEE 15.00

1. OWNER Dixwell Associates. ADDRESS 1 Hartford Sq. N.B. CT.

2. APPLICANT SBA ADDRESS 80 Eastern Blvd Glastonbury

3. ~~ARCHITECT~~ Thomas W. Schepke P.E. ADDRESS 6718 W. Plank Rd, Peoria, Ill.

REMODELING ☐ ACCESSORY ☑ DEMOLITION ☐ SIGNAGE ☐ SITE PLAN REVIEW ☐ OTHER ☐

NEW CONTST ☐ NO. BEDROOMS _____ NO. BATHS _____ NO. GARAGES _____ FLOOD ZONE Y/N/NA _____

Construct 175' Lattice Type Communication Tower per plans/specs.

CO 11/7/03

DIMENSIONS	NO. OF STORIES	HEIGHT	TOTAL SQ. FT. FLR AREA
LOT SIZE	TOTAL LAND AREA SQ. FT.	BUILDING TYPE	USE GROUP

I hereby agree to conform to all of the requirements of the Laws of the State of Connecticut and the Ordinance of the City of New Britain and to notify the Building Commission of any alteration in the plans or specifications of the Building for which this permit is asked.

Applicant _____ (signature) X Edward G. Dupont (print) X 860 659-9101 (telephone no.)

Owner _____ (signature) _____ (print) _____ (telephone no.)

B 1414

CITY OF NEW BRITAIN
DEPARTMENT OF LICENSES, PERMITS
AND INSPECTIONS
TELEPHONE: 826-3383

BUILDING/ZONING PERMIT

DATE 8/14/00

COST 84,000.

FEE 1,290.

APPLICANT SBA TEL. NO. 860 659-9101

ADDRESS 80 Eastern Bld. Glastonbury, CT

PERMIT FOR: Construct 175' Lattice Type Communication Tower per plans and specs.

LOCATION ONE HARTFORD SQUARE CO 11/7/03

BUILDING DIMENSIONS _____ FT. WIDE BY _____ FT. LONG AND _____ FT. IN HEIGHT

BUILDING TYPE _____ USE GROUP _____ LOT SIZE _____ ZONE I2

OWNER Dixwell Associates

ADDRESS 1 Hartford Sq. NB, CT

CERT. OF OCCUPANCY REQUIRED YES ✓ NO ___

AS-BUILT SURVEY REQUIRED YES ✓ NO ___

THE MATCHING APPLICATION IS PART AND PARCEL OF THIS BUILDING PERMIT.

WHERE APPLICABLE SEPARATE PERMITS ARE REQUIRED FOR ELECTRICAL, PLUMBING AND MECHANICAL INSTALLATIONS.

OFFICE COPY

_____ BUILDING OFFICIAL

MANDATORY INSPECTIONS REQUIRED

POST PERMIT FOR DURATION OF WORK

LOCATION 1 HARTFORD Square DATE October 25, 2000 ZONE I2 CODE YR 99 **APPLICATION BUILDING/ZONING NEW BRITAIN, CT**

CK# 22775 CK# 22775.

B 1680

COST $80,000 FEE $ 1,230 CO. FEE 15.00

1. OWNER Dixwell Associates. ADDRESS 1 Hartford Sq, N.B. CT.
2. APPLICANT Nelson Communication Services Inc. ADDRESS ~~Route 16, Albany, New Hampshire~~ PO Box 1936, Conway, NH
3. ARCHITECT Murali D. Atluru P.E. ADDRESS 556 Washington Ave, N. Haven, CT.

REMODELING ☐ ACCESSORY ☐ DEMOLITION ☐ SIGNAGE ☐ SITE PLAN REVIEW ☐ OTHER ☒

NEW CONTST ☒ NO. BEDROOMS _____ NO. BATHS _____ NO. GARAGES _____ FLOOD ZONE Y/N/NA _____

Install 10' x 20' Pre-Engineered Steel Frame Shelter on existing Concrete Pad. (See Permit # B1414, for Lattice Tower.)

C.O. ISSUED 2/1/01

DIMENSIONS	NO. OF STORIES	HEIGHT	TOTAL SQ. FT. FLR AREA
LOT SIZE	TOTAL LAND AREA SQ. FT.	BUILDING TYPE	USE GROUP

I hereby agree to conform to all of the requirements of the Laws of the State of Connecticut and the Ordinance of the City of New Britain and to notify the Building Commission of any alteration in the plans or specifications of the Building for which this permit is asked.

Applicant x J.H. Nelson Jr. (signature) x John H. Nelson Jr (print) x603-447-8879 (telephone no.)

Owner _____ (signature) _____ (print) _____ (telephone no.)

B 1680

CITY OF NEW BRITAIN
DEPARTMENT OF LICENSES, PERMITS
AND INSPECTIONS
TELEPHONE: 826-3383

BUILDING/ZONING PERMIT

DATE 11/20/00
COST 80,000.
FEE 1,230.

APPLICANT Nelson Communication Services, Inc. TEL. NO. 603 447-8879

ADDRESS Route 16, Albany, New Hampshire

PERMIT FOR: Install 10'x20' pre-engineered steel frame shelter on existing pad (see Permit #B1414 for lattice tower issued 8/14/00)

LOCATION 1 HARTFORD SQUARE

BUILDING DIMENSIONS	FT. WIDE BY	FT. LONG AND	FT. IN HEIGHT
BUILDING TYPE	USE GROUP	LOT SIZE	ZONE
OWNER	Dixwell Associates	CERT. OF OCCUPANCY REQUIRED	YES ✓ NO ___
ADDRESS	1 Hartford Sq. NB, CT	AS-BUILT SURVEY REQUIRED	YES ___ NO ✓

THE MATCHING APPLICATION IS PART AND PARCEL OF THIS BUILDING PERMIT.

WHERE APPLICABLE SEPARATE PERMITS ARE REQUIRED FOR ELECTRICAL, PLUMBING AND MECHANICAL INSTALLATIONS.

OFFICE COPY

BUILDING OFFICIAL

MANDATORY INSPECTIONS REQUIRED

POST PERMIT FOR DURATION OF WORK

HC 8-1-00

City of New Britain

New Britain, Connecticut 06051

DEPT. OF MUNICIPAL DEVELOPMENT

"New Britain: A City for All People"

27 West Main Street – Room 311

(860) 826-3330
FAX: (860) 826-2682

MEMORANDUM

TO: Frank M. Wiatr, Director of Licenses and Permits

FROM: Steven P. Schiller, Planner II

DATE: July 27, 2000

SUBJECT: Site Plan Review for:

RECEIVED
JUL 31 2000
BUILDING DEPARTMENT
CITY OF NEW BRITAIN

ONE HARTFORD SQUARE
SBA CELL TOWER, AMODIO PROPERTY
PLAN DATED: 7/17/00

As requested, a review of the above Site Plan was made and we recommend that the Site Plan be APPROVED as submitted. City Plan approval indicates that the Site Plan and/or Landscaping Plan appears to conform to professional planning standards, but in no way shall be construed as confirmation of the accuracy or adequacy of the contents of the plans and shall not relieve the owner of the obligation to construct facilities which function safely and conform to all applicable statutes, ordinances and regulations.

NOTE: APPROVAL IS CONTINGENT UPON ZONING ENFORCEMENT OFFICIAL'S CONCURRENCE THAT THE PROPOSED USE IS PERMISSIBLE IN THE I-2 DISTRICT AND THAT THE 135 FOOT TOWER IS EXEMPTED FROM THE 125 FOOT MAXIMUM HEIGHT RESTRICTION, PURSUANT TO SECTION 230-30.

cc: Clarence Corbin, City Engineer

Kenneth A. Malinowski, Director
Department of Municipal Development

SITE # 10125-077
FILE TYPE Const
SECTION Permitting

EXHIBIT 6

NEW BRITAIN/RT-72
WOOSTER

1 HARTFORD SQUARE
NEW BRITAIN, CT 06052
HARTFORD COUNTY

SITE NO.: CT11351C

SITE TYPE: 176'± SELF-SUPPORT TOWER

RF DESIGN GUIDELINE: 67D92DB

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.

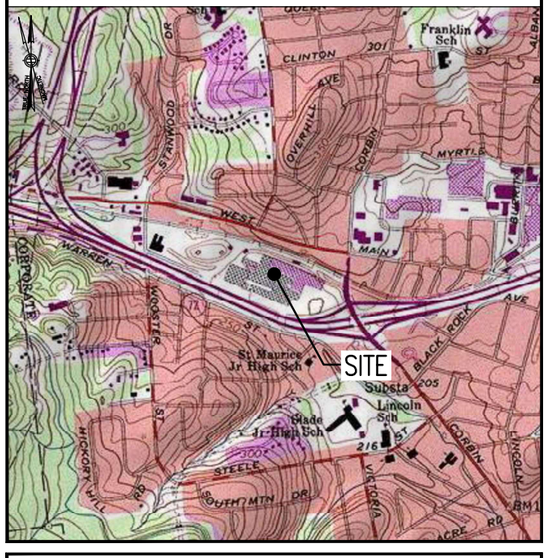
GENERAL NOTES

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:	CT11351C
SBA SITE NUMBER:	CT04382-S
SBA SITE NAME:	NEW BRITAIN 2, CT
SITE ADDRESS:	1 HARTFORD SQUARE NEW BRITAIN, CT 06052
PROPERTY OWNER:	HARTFORD SQUARE ASSOCIATES LLC. 1 HARTFORD SQUARE, WEST BOX #15 NEW BRITAIN, CT 06052
TOWER OWNER:	SBA TOWERS, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	HARTFORD COUNTY
ZONING DISTRICT:	I2 (GENERAL INDUSTRY)
STRUCTURE TYPE:	SELF-SUPPORT TOWER
STRUCTURE HEIGHT:	176'±
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.666400° N41°39'59.04" LONGITUDE W.72.812800° W72°48'46.08"

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

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

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

STATE OF CONNECTICUT
CLEMENT J. SALEK
No. 25876
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	07/30/19	ISSUED FOR CONSTRUCTION	MAM
0	05/06/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11351C

SITE ADDRESS:
1 HARTFORD SQUARE
NEW BRITAIN, CT 06052

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.078

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
CLEMENT J. SALEK
No. 25876
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	07/30/19	ISSUED FOR CONSTRUCTION	MAM
0	05/06/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11351C

SITE ADDRESS:
1 HARTFORD SQUARE
NEW BRITAIN, CT 06052

SHEET TITLE
GENERAL NOTES

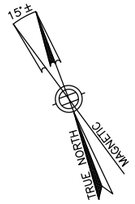
SHEET NUMBER
GN-1

1815.078

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:* (10) 1-5/8" COAX CABLES (1) 1-5/8" HCS FIBER CABLES (1) 1-1/4" HCS FIBER CABLES *EXISTING TO BE REMOVED:* (2) 1-5/8" COAX CABLES	ROUTED PER TOWER STRUCTURAL ANALYSIS
B	**PROPOSED:** **(2) 1-5/8" HCS FIBER CABLES**	

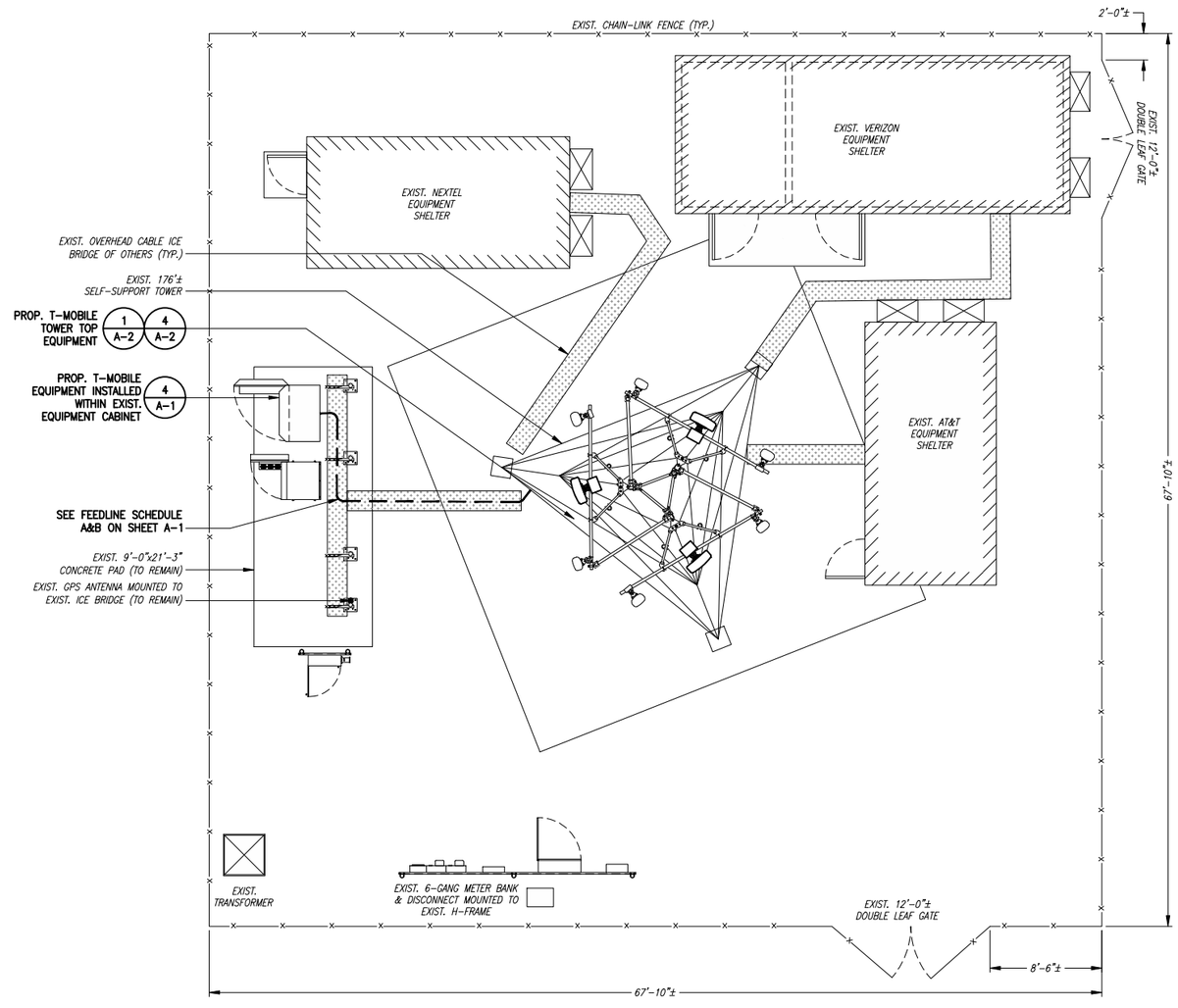
NOTE:
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.



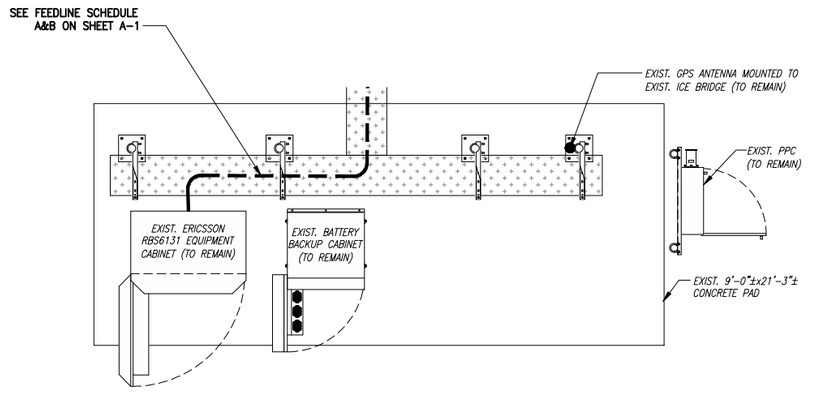
EXIST. EQUIPMENT AREA (4/A-1)

SOURCE: CEA SITE VISIT 04.19.19

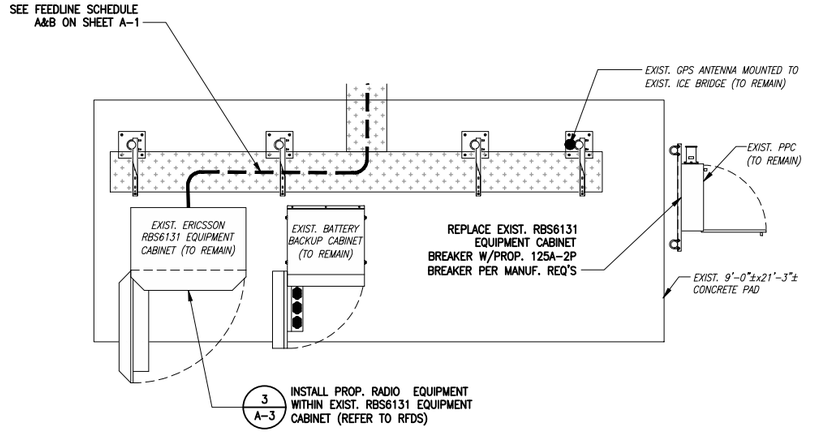
EQUIPMENT AREA PHOTO (2/A-1)
SCALE: N.T.S.



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



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



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

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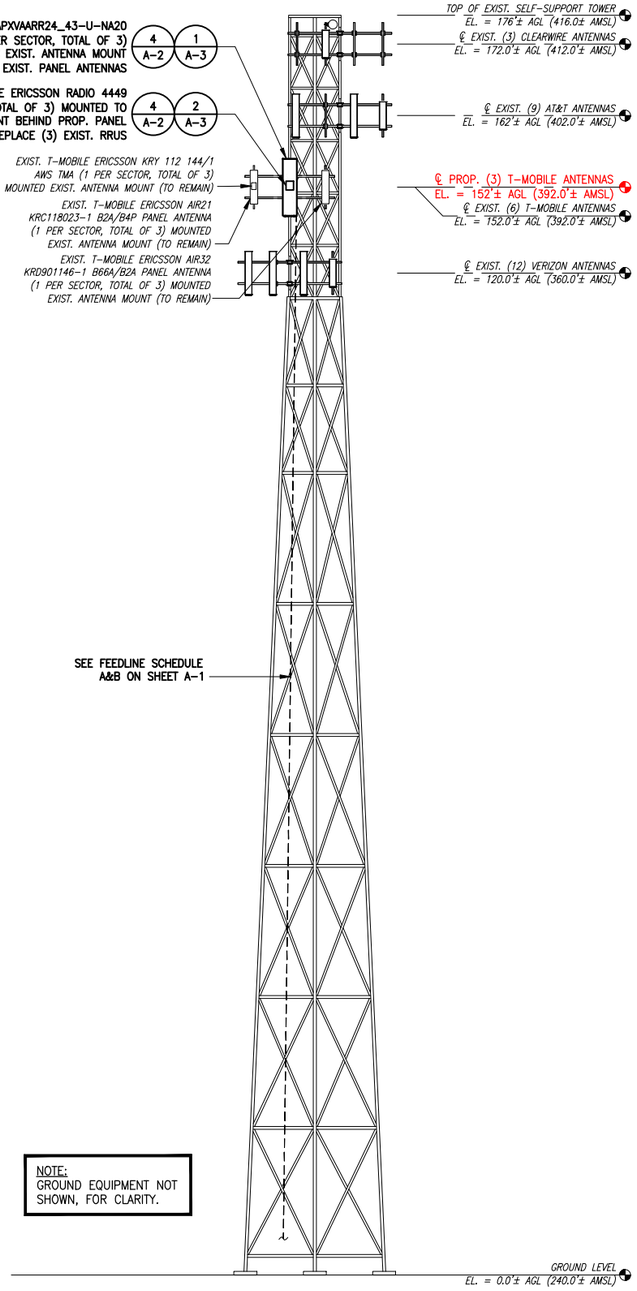
SHEET TITLE
COMPOUND & EQUIPMENT PLAN

SHEET NUMBER
A-1

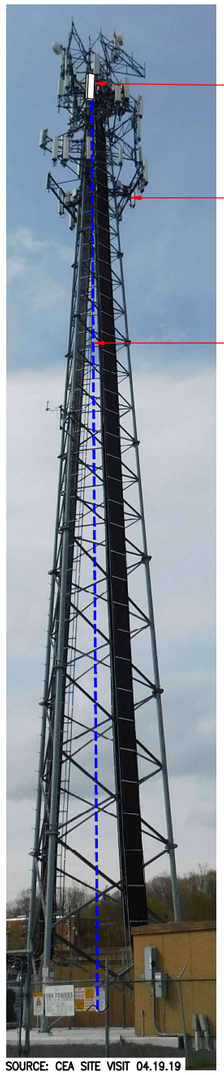
1815.078

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.



NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

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

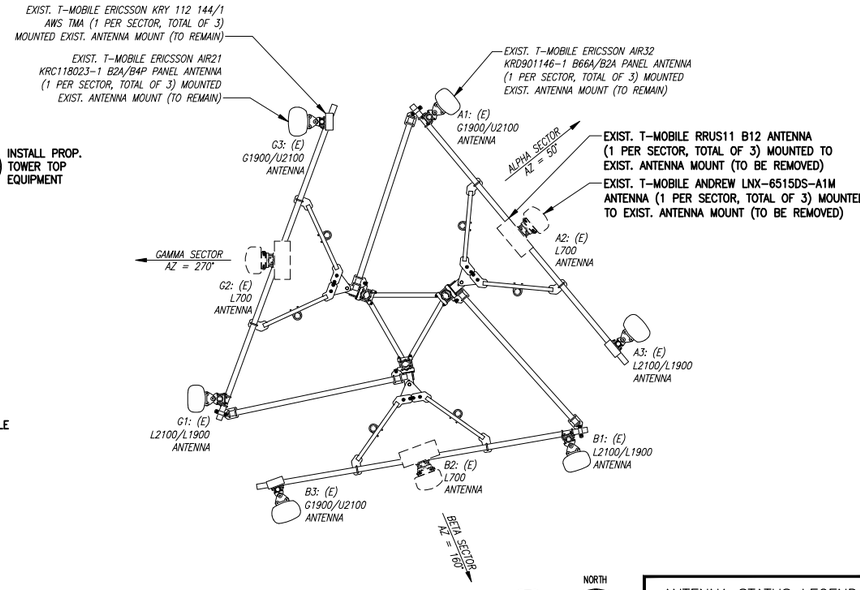


SOURCE: CEA SITE VISIT 04.19.19

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

NOTE: ONE SECTOR SHOWN FOR CLARITY

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



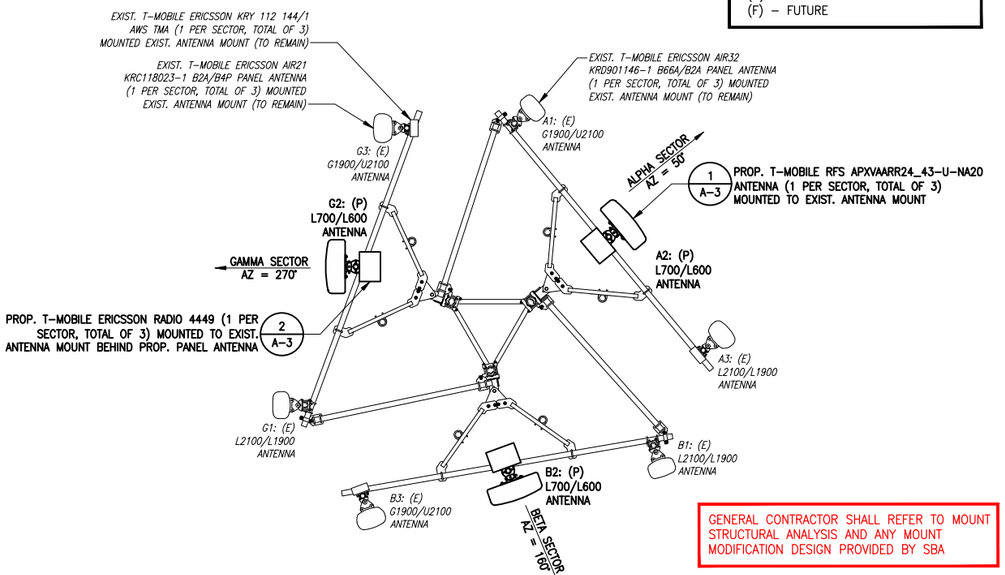
EXISTING ANTENNA PLAN 3/A-2
SCALE: N.T.S.

NORTH

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

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



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

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

NORTH

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

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SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLAN

SHEET NUMBER
A-2

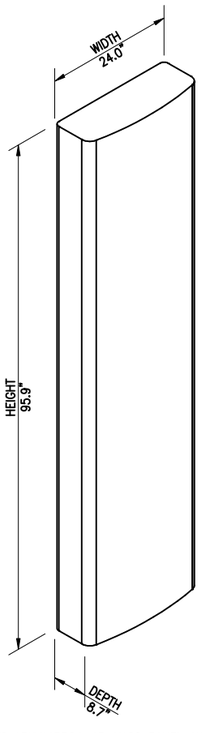
1815.078

FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	RADIOS/TMAS	CABLES
ALPHA	*ERICSSON AIR32 KRD901146-1 B66A/B2A*	*152'± AGL*	*50°*	*0°*	*7°*	*L2100/L1900*	–	(10) (E) 1-5/8" COAX (1) (E) 1-5/8" HCS FIBER (1) (E) 1-1/4" HCS FIBER **(2) (P) 1-5/8" HCS FIBER**
	RFS APXVAARR24_43-U-NA20	**152'± AGL**	**50°**	**0°**	**7°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	
	ERICSSON AIR21 KRC118023-1 B2A/B4P	*152'± AGL*	*50°*	*0°*	*7°*	*G1900*	–	
						U2100	*KRY 112 144/1 AWS TMA*	
BETA	*ERICSSON AIR32 KRD901146-1 B66A/B2A*	*152'± AGL*	*160°*	*0°*	*7°*	*L2100/L1900*	–	
	RFS APXVAARR24_43-U-NA20	**152'± AGL**	**160°**	**0°**	**7°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	
	ERICSSON AIR21 KRC118023-1 B2A/B4P	*152'± AGL*	*160°*	*0°*	*7°*	*G1900*	–	
						U2100	*KRY 112 144/1 AWS TMA*	
GAMMA	*ERICSSON AIR32 KRD901146-1 B66A/B2A*	*152'± AGL*	*270°*	*0°*	*7°*	*L2100/L1900*	–	
	RFS APXVAARR24_43-U-NA20	**152'± AGL**	**270°**	**0°**	**7°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	
	ERICSSON AIR21 KRC118023-1 B2A/B4P	*152'± AGL*	*270°*	*0°*	*7°*	*G1900*	–	
						U2100	*KRY 112 144/1 AWS TMA*	

CABLE NOTE: EXISTING (2) 1-5/8" COAX CABLES TO BE REMOVED. EXISTING (4) 1-5/8" COAX CABLE TO REMAIN DISCONNECTED. (SEE FEEDLINE SCHEDULE A&B ON SHEET A-1)

NOTE: RFDS REV7.1 – 07/01/19



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

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

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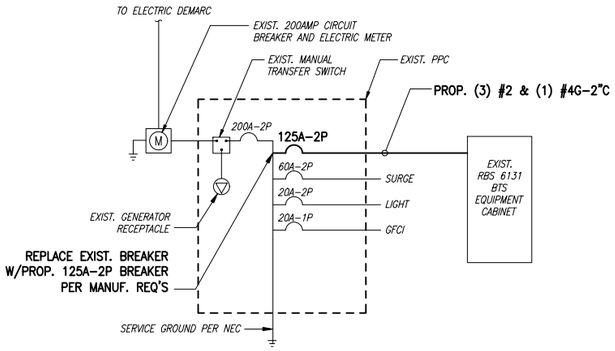
SHEET TITLE
SITE DETAILS

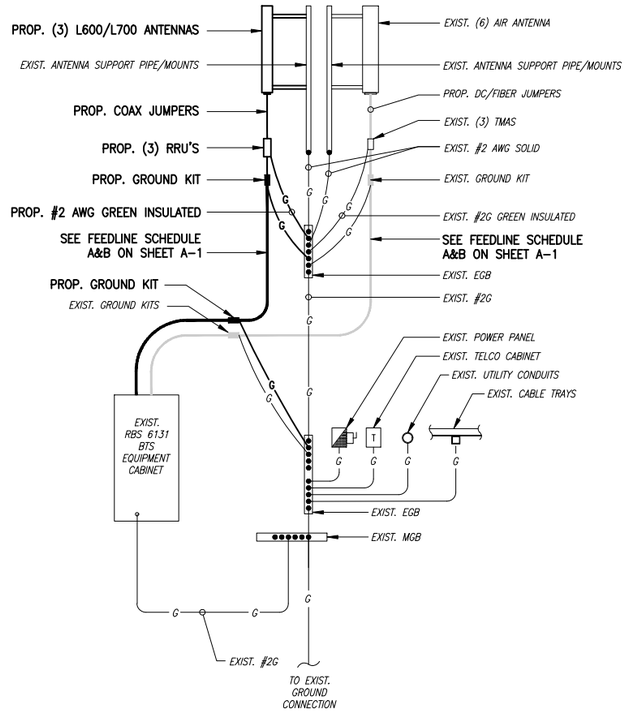
SHEET NUMBER
A-3

1815.078



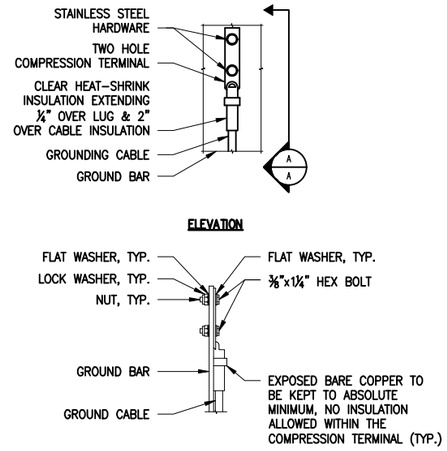
ONE LINE DIAGRAM

SCALE: NOT TO SCALE — 1 / E-1



GROUNDING RISER DIAGRAM

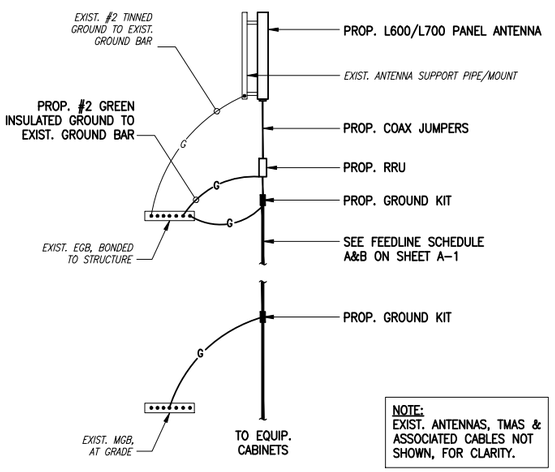
SCALE: NOT TO SCALE — 2 / E-1



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

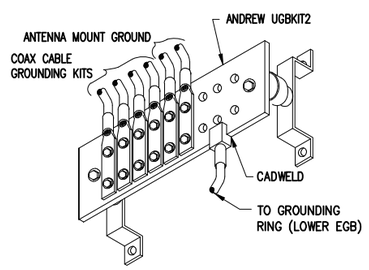
SCALE: NOT TO SCALE — 3 / E-1



L600/L700

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

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Civil Structural Land Surveying
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STATE OF CONNECTICUT
CLEMENT J. SALEK
No. 25876
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	07/30/19	ISSUED FOR CONSTRUCTION	MAM
0	05/06/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11351C

SITE ADDRESS:
1 HARTFORD SQUARE
NEW BRITAIN, CT 06052

SHEET TITLE
ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.078

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 176 ft Rohn Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT04382-S

Customer Site Name: New Britain 2, CT

Carrier Name: T-Mobile (App#: 116670, v1)

Carrier Site ID / Name: CT11351C / New Britain/RT 72 Wooster

Site Location: 1 Hartford Square

New Britain, Connecticut

Hartford County

Latitude: 41.666411

Longitude: -72.812803

7/8/19

Analysis Result:

Max Structural Usage: 80.3% [Pass]

Max Foundation Usage: 51.0% [Pass]

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

Report Prepared by: Matthew Baker

Introduction

The purpose of this report is to summarize the analysis results on the 176 ft Rohn Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Rohn Eng. File # 44545AE, Dwg. # C000882, dated 08/21/2000
Foundation Drawing	Rohn Eng. File # 44545AE, Dwg. # A001473, dated 07/26/2000
Geotechnical Report	Jaworski Geotech Project # 00309G, dated 07/05/2000
Modification Drawings	Allpro Consulting Group Job # 17-0378 rev.1, dated 02/21/2017

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.183, S_1 = 0.064

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	172.0	3	KMW - ETCR-654L12H6 - Panel	(3) Sector Frames w/ (3) VBrace Kits (SitePro SFSV-L); (6) 2-3/8"x6" Pipe Masts (SitePro BBPM-K1)	(4) 1-1/4" Fiber (4) 1/2" Fiber	Sprint Nextel
2		4	Andrew - VHLP2-18 - Dish			
3		3	Dragonwave - Horizon Duo - ODU			
4		3	ALU - 1900 Mhz RRU			
5		6	ALU - 800 Mhz RRU			
6		3	ALU - TD-RRH8x20-25 - RRU			
7	162.0	3	Kathrein - 800 10121 - Panel	(3) Sector Frames w/ V-Stablilizer Reinforcement Kits	(12) 1 5/8" (2) 1/2" Fiber* (4) 3/4" DC*	AT&T
8		3	Quintel Technology - QS66512-2 - Panel			
9		3	KMW - AM-X-CD-16-65-00T - Panel			
10		3	CCI - HPA-65R-BUU-H-6 - Panel			
11		6	Powerwave - LGP 21401 - TMA			
12		6	CCI - TPX-070821 - Triplexer			
13		3	Ericsson - RRUS-32 - RRU			
14		3	Ericsson - RRUS-11 - RRU			
15		3	Ericsson - RRUS-32 B2 - RRU			
16		3	Ericsson - RRUS-32 B66 - RRU			
17		2	Raycap - DC6-48-60-18-8F - SP			
18		6	Kathrein - 860-10025 - RET			
-	152.0	3	Ericsson - Air 21 B2A/B4P - Panel	(3) Sector Frames	(12) 1 5/8" (1) 1 5/8" Hybrid (1) 1-1/4" Hybrid	T-Mobile
-		3	Ericsson - Air 32 - Panel			
-		3	Commscope - LNX-6515DS-A1M - Panel			
-		3	Ericsson - KRY 112 144/1 - TMA			
-		3	Ericsson - RRUS 11 (Band 12) - RRU			
24	140.0	6	Andrew - SBNHH-1D65B - Panel	(3) T-Frames	(12) 1 5/8" (2) 1 5/8" Hybrid	Verizon
25		3	Kathrein - 800 10735v01 - Panel			
26		3	Antel - BXA-80080/4CF - Panel			
27		3	Alcatel Lucent - RRH-2x60-AWS - RRU			
28		3	Alcatel Lucent - RRH-2x60-PCS - RRU			
29		3	Alcatel Lucent - RRH-2X60W-700U - RRU			
30		1	RFS - DB-T1-6Z-8AB-0Z - SP			

*Inside (1) 3" Flex Conduit

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
19	152.0	3	Ericsson - Air21 B2A/B4P - Panel	(3) Sector Frames	(10) 1 5/8" (3) 1 5/8" Fiber (1) 1-1/4" Fiber	T-Mobile
20		3	Ericsson - AIR 32 - Panel			
21		3	RFS - APXVAARR24_43-U-NA20 - Panel			
22		3	Ericsson - KRY 112 144/1 - TMA			
23		3	Ericsson - Radio 4449 B71+B12 - RRU			

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

Analysis Results

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

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	**51.4%**	**80.3%**	**8.3%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Original Design Reactions	364.9	312.3	34.3
Analysis Reactions	272.5	231.9	26.7
Factored Reactions*	492.6	421.6	46.3
% of Design Reactions	55.3%	55.0%	57.6%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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

Operational Condition (Rigidity):

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

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
172.0	Andrew - VHLP2-18 - Dish	Sprint Nextel	0.006	0.167

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

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Structure: CT04382-S-SBA

Site Name:	New Britain 2, CT			**Code:**	EIA/TIA-222-G	7/8/2019
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	176.00 (ft)	**Base Width:**	21.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.69	**Operational WS:**	60.00	Page: 1

IES Tower Engineering Solutions

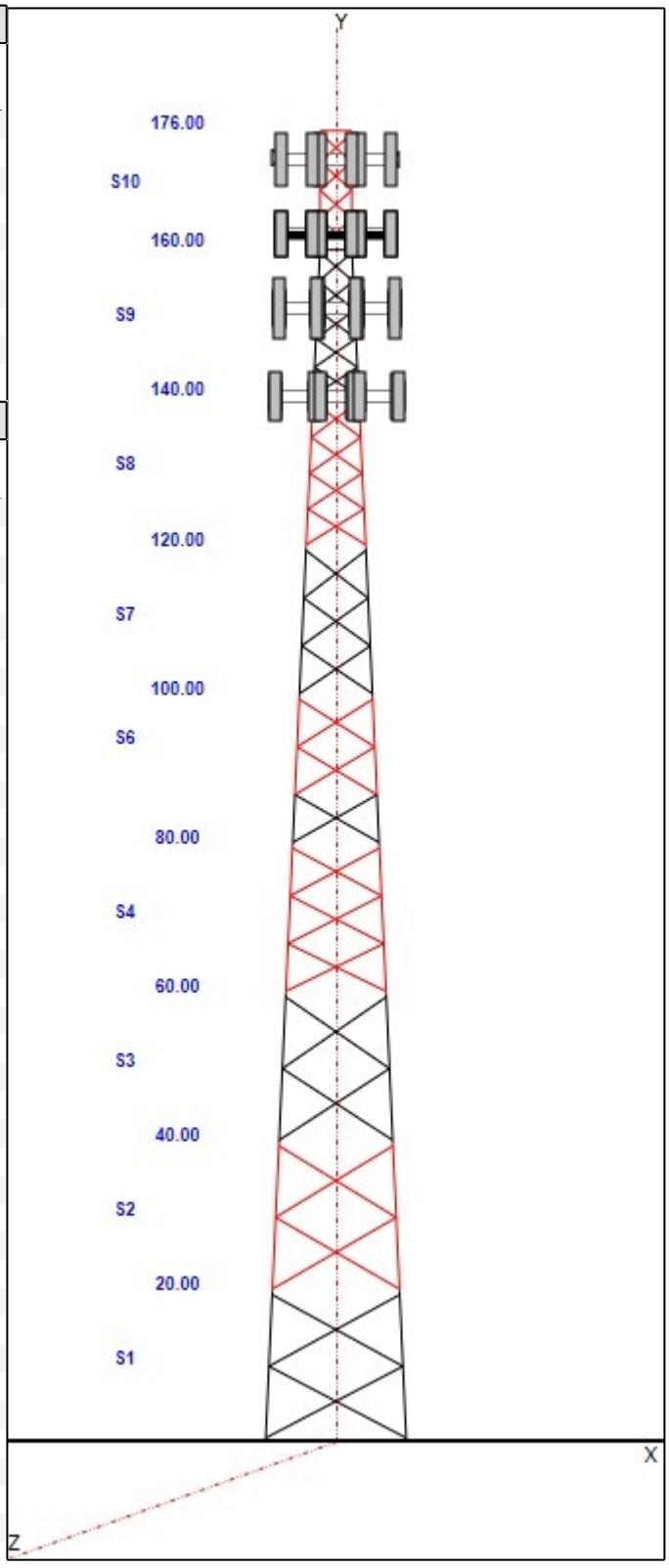
Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1	PX 8" DIA PIPE	SAE 4X4X0.25	
2	PX 8" DIA PIPE	SAE 3.5X3.5X0.25	
3	PSP ROHN 8 EHS	SAE 3.5X3.5X0.25	
4	PX 6" DIA PIPE	SAE 3X3X0.25	
5	PX 6" DIA PIPE	MOD 2L2.5x2.5x3/16_S	
6	PX 6" DIA PIPE	SAE 2.5X2.5X0.1875	
7	PSP ROHN 6 EHS	SAE 2.5X2.5X0.1875	
8	PX 5" DIA PIPE	SAE 2X2X0.1875	
9	PX 4" DIA PIPE	SAE 2X2X0.1875	SAE 2X2X0.1875
10	PX 3" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
176.00	176.00	1	Lightning Rod
176.00	176.00	1	Beacon
172.00	172.00	3	Light Sector Frame-Flat
172.00	172.00	1	(3) SFS-H-L (V-Braces)
172.00	172.00	3	ETCR-654L12H6
172.00	172.00	4	VHLP2-18
172.00	172.00	3	Horizon Compact
172.00	172.00	3	1900MHz RRH
172.00	172.00	6	800 MHz RRH
172.00	172.00	3	TD-RRH8x20-25
162.00	162.00	3	Light Sector Frame-Flat
162.00	162.00	1	(3) VSR-MS-B w/ 2" hztl pipes
162.00	162.00	3	800 10121
162.00	162.00	3	QS66512-2
162.00	162.00	3	AM-X-CD-16-65-00T-RET
162.00	162.00	3	HPA-65R-BUU-H6
162.00	162.00	6	LGP21401
162.00	162.00	6	KMW KASCTPR82008 Bias-T
162.00	162.00	3	RRUS-32
162.00	162.00	3	RRUS-11
162.00	162.00	3	RRUS-32
162.00	162.00	3	RRUS 32 B66
162.00	162.00	2	DC6-48-60-18-8F
162.00	162.00	6	860-10025
152.00	152.00	3	Sector Frame-Pipe/Rod
152.00	152.00	3	AIR 21, 1.3M, B2A B4P
152.00	152.00	3	AIR32
152.00	152.00	3	APXVAARR24_43-U-NA20
152.00	152.00	3	KRY 112 144/1
152.00	152.00	3	4449
140.00	140.00	3	Sector Frame-Pipe/Rod
140.00	140.00	6	SBNHH-1D65B
140.00	140.00	3	800 10735
140.00	140.00	3	BXA-80080/4CF
140.00	140.00	3	RRH2X60-AWS
140.00	140.00	3	RRH2X60-PCS
140.00	140.00	3	RRH2x60-1900
140.00	140.00	1	DB-T1-6Z-8AB-0Z

Linear Appurtenances



Elev From (ft)	Elev To (ft)	Qty	Description
152.00	172.00	4	1-1/4" Fiber
152.00	172.00	4	1/2" Fiber
152.00	172.00	1	W/G Ladder
0.00	162.00	12	1 5/8" Coax
0.00	162.00	2	1/2" Fiber
0.00	162.00	1	3" Flex Conduit
0.00	162.00	4	3/4" DC
0.00	162.00	1	W/G Ladder
0.00	152.00	10	1 5/8" Coax
0.00	152.00	3	1 5/8" Fiber
0.00	152.00	1	1-1/4" Fiber
0.00	152.00	4	1-1/4" Fiber
0.00	152.00	4	1/2" Fiber
0.00	152.00	1	W/G Ladder
0.00	140.00	12	1 5/8" Coax
0.00	140.00	2	1 5/8" Hybrid

Base Reactions

Leg			Overturning		
Max Uplift:	-231.86	(kips	Moment:	4628.85	(ft-kips)
Max Down:	272.49	(kips	Total Down:	53.91	(kips)
Max Shear:	26.68	(kips	Total Shear:	42.82	(kips)

Structure: CT04382-S-SBA

Site Name:	New Britain 2, CT			**Code:**	EIA/TIA-222-G	7/8/2019
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	176.00 (ft)	**Base Width:**	21.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.69	**Operational WS:**	60.00	Page: 3

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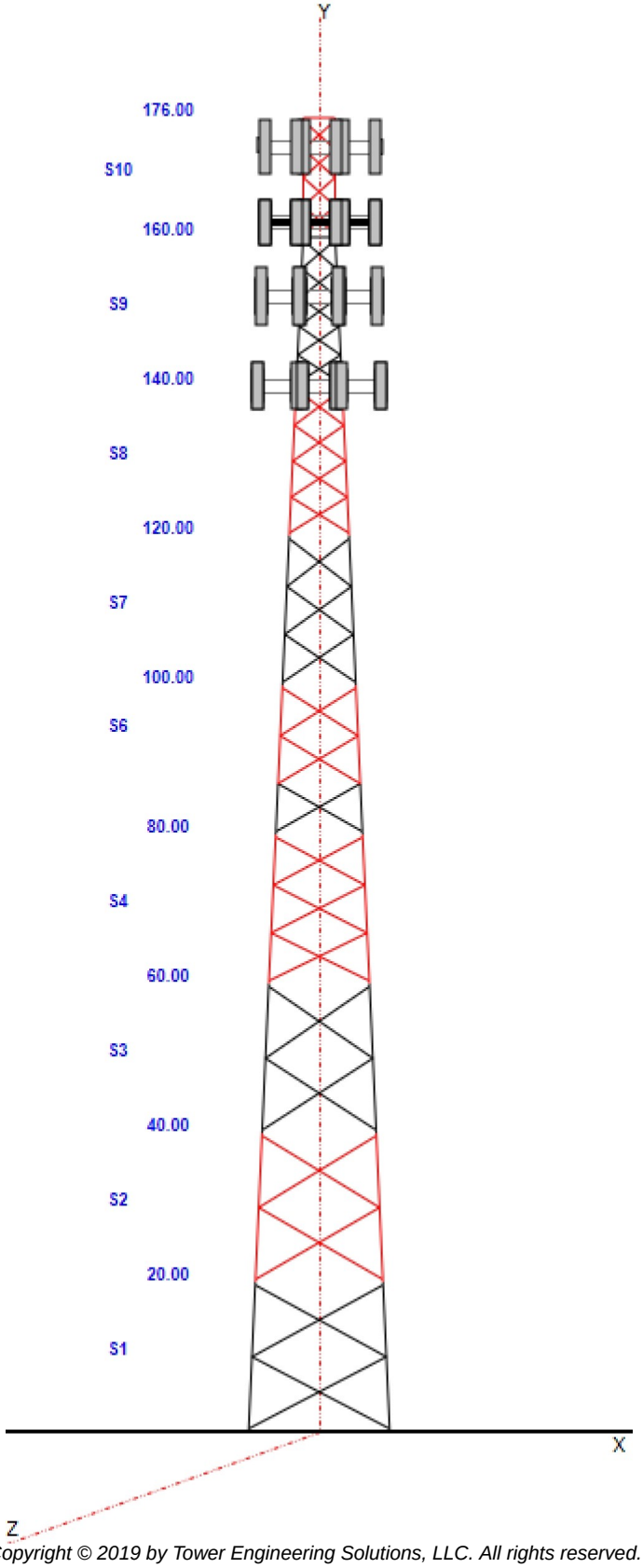
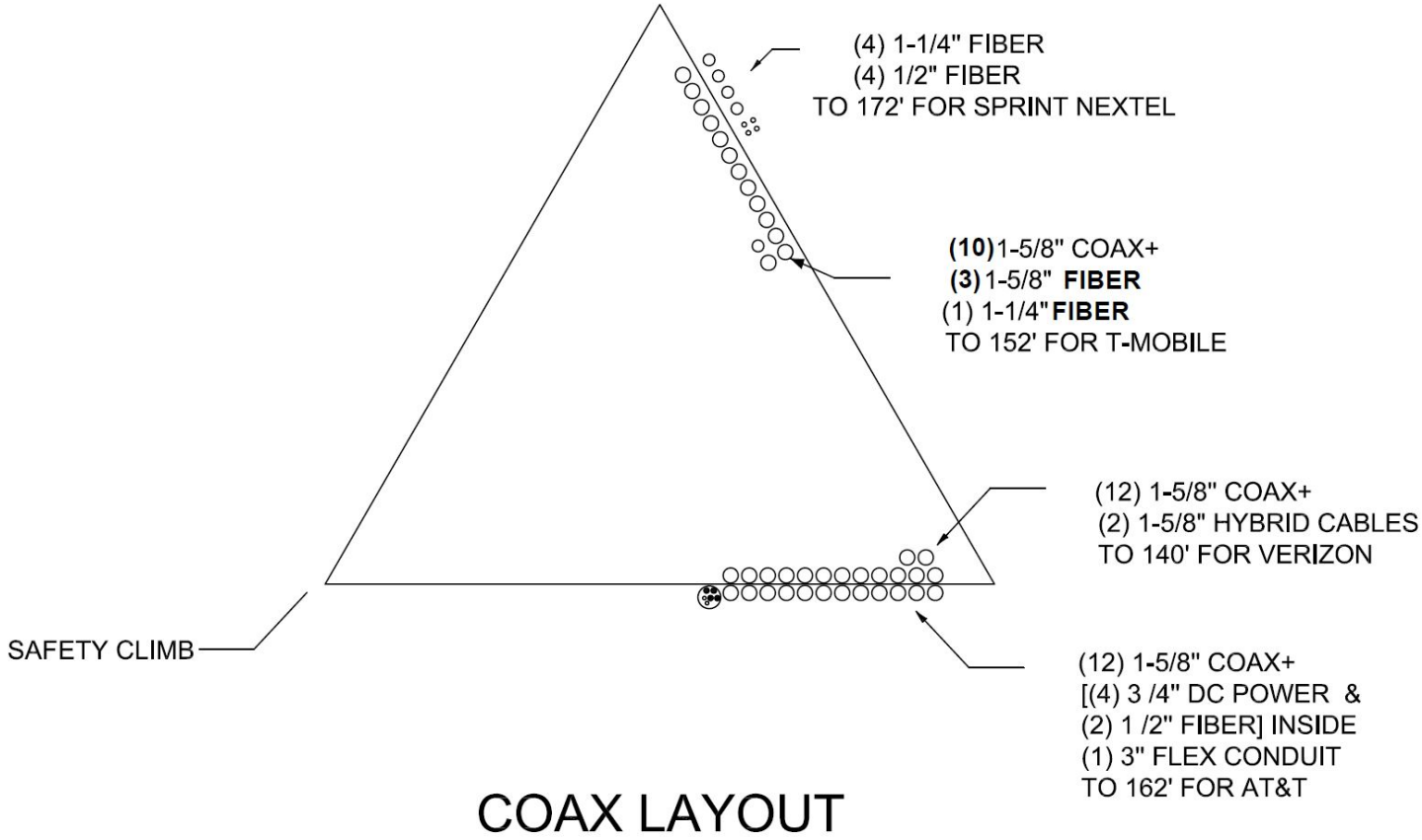


Structure: CT04382-S-SBA - Coax Line Placement

Type: Self Support
Site Name: New Britain 2, CT
Height: 176.00 (ft)

7/8/2019

Tower Engineering Solutions



COAX LAYOUT

Loading Summary

Structure:	CT04382-S-SBA		**Code:**	EIA/TIA-222-G	7/8/2019
Site Name:	New Britain 2, CT		**Exposure:**	B	
Height:	176.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 5

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Discrete Appurtenances Properties

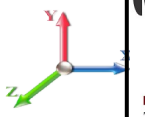
Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
176.00	Lightning Rod	1	5.00	0.500	33.24	2.853	72.000	1.000	1.000	1.00	1.00	0.000
176.00	Beacon	1	36.00	2.720	215.62	4.000	28.000	17.500	17.500	1.00	1.00	0.000
172.00	Light Sector Frame-Flat	3	500.00	17.500	1441.39	36.281	0.000	0.000	0.000	0.75	0.75	0.000
172.00	(3) SFS-H-L (V-Braces)	1	230.00	6.700	663.04	16.161	0.000	0.000	0.000	0.75	1.00	0.000
172.00	ETCR-654L12H6	3	99.00	15.710	593.13	18.017	84.900	21.000	6.300	0.80	0.69	0.000
172.00	VHLP2-18	4	27.00	4.680	158.97	6.398	26.100	26.100	13.200	1.00	1.00	0.000
172.00	Horizon Compact	3	10.60	0.430	40.99	1.119	4.700	9.300	9.300	0.80	0.50	0.000
172.00	1900MHz RRH	3	44.00	3.800	191.21	5.675	23.000	13.000	17.000	0.80	0.67	0.000
172.00	800 MHz RRH	6	53.00	2.490	152.74	4.032	19.700	13.000	10.800	0.80	0.67	0.000
172.00	TD-RRH8x20-25	3	70.00	4.050	201.79	5.956	26.100	18.600	6.700	0.80	0.67	0.000
162.00	Light Sector Frame-Flat	3	500.00	17.500	1441.39	36.281	0.000	0.000	0.000	0.75	0.75	0.000
162.00	(3) VSR-MS-B w/ 2" hztl pipes	1	650.00	18.500	1567.86	35.916	0.000	0.000	0.000	0.75	1.00	0.000
162.00	800 10121	3	46.30	5.150	201.21	7.991	54.500	10.300	5.900	0.80	0.82	0.000
162.00	QS66512-2	3	111.00	8.130	416.54	9.921	72.000	12.000	9.600	0.80	0.92	0.000
162.00	AM-X-CD-16-65-00T-RET	3	48.50	8.020	267.34	11.787	72.000	11.800	5.900	0.80	0.79	0.000
162.00	HPA-65R-BUU-H6	3	51.00	9.660	390.29	11.542	72.000	14.800	9.000	0.80	0.83	0.000
162.00	LGP21401	6	14.10	1.290	47.81	2.417	14.400	9.200	2.600	0.80	0.50	0.000
162.00	KMW KASCTPR82008 Bias-T	6	1.30	0.220	3.75	0.324	5.200	4.300	1.600	0.80	0.50	0.000
162.00	RRUS-32	3	77.00	3.870	221.97	5.692	29.900	13.300	9.500	0.80	0.67	0.000
162.00	RRUS-11	3	51.00	2.520	148.46	3.374	17.000	17.800	7.200	0.80	0.67	0.000
162.00	RRUS-32	3	77.00	3.870	221.97	5.692	29.900	13.300	9.500	0.80	0.67	0.000
162.00	RRUS 32 B66	3	53.00	2.740	152.79	4.030	27.200	12.100	7.000	0.80	0.67	0.000
162.00	DC6-48-60-18-8F	2	31.80	0.920	115.17	1.511	24.000	11.000	11.000	0.80	1.00	0.000
162.00	860-10025	6	1.10	0.160	8.34	0.628	6.900	2.400	2.000	0.80	0.50	0.000
152.00	Sector Frame-Pipe/Rod	3	450.00	14.000	919.11	23.382	0.000	0.000	0.000	0.75	0.75	0.000
152.00	AIR 21, 1.3M, B2A B4P	3	91.50	6.090	314.13	7.581	56.000	12.100	7.900	0.80	0.85	0.000
152.00	AIR32	3	132.20	6.510	373.75	8.031	57.000	12.900	8.700	0.80	0.86	0.000
152.00	APXVAARR24_43-U-NA20	3	128.00	20.240	754.32	22.802	95.900	24.000	7.800	0.80	0.70	0.000
152.00	KRY 112 144/1	3	11.00	0.410	25.38	1.044	6.900	6.100	2.700	0.80	0.50	0.000
152.00	4449	3	70.00	1.650	200.31	2.418	15.000	13.200	9.300	0.80	0.67	0.000
140.00	Sector Frame-Pipe/Rod	3	450.00	14.000	912.45	23.249	0.000	0.000	0.000	0.75	0.75	0.000
140.00	SBNHH-1D65B	6	40.00	8.160	314.13	9.905	72.600	11.900	7.100	0.80	0.83	0.000
140.00	800 10735	3	28.70	8.620	230.29	12.504	76.100	11.900	3.900	0.80	0.72	0.000
140.00	BXA-80080/4CF	3	14.30	4.800	156.52	7.262	48.200	11.200	5.900	0.80	0.80	0.000
140.00	RRH2X60-AWS	3	55.00	3.500	160.17	4.537	37.000	11.000	6.000	0.80	0.67	0.000
140.00	RRH2X60-PCS	3	55.00	2.200	145.64	3.209	22.000	12.000	9.400	0.80	0.67	0.000
140.00	RRH2x60-1900	3	19.50	1.510	78.90	2.203	20.100	9.000	7.200	0.80	0.67	0.000
140.00	DB-T1-6Z-8AB-0Z	1	18.90	4.800	178.05	7.002	24.000	24.000	10.000	0.80	0.50	0.000
	Totals:	**119**	**11,499.30**		**37,288.91**						**Number of Appurtenances :**	**38**

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
152.00	172.00	1-1/4" Fiber	4	1.25	0.95	100.00	3	Individual IR		N	0.50	0.64	
152.00	172.00	1/2" Fiber	4	0.50	0.16	50.00	3	Block		N	0.50	0.94	
152.00	172.00	W/G Ladder	1	2.00	6.00	100.00	3	Individual NR		N	0.50	1.00	
0.00	162.00	1 5/8" Coax	12	1.98	1.04	100.00	1	Individual IR		N	0.50	1.00	
0.00	162.00	1/2" Fiber	2	0.50	0.16	100.00	1	Individual IR		N	0.50	1.00	0
0.00	162.00	3" Flex Conduit	1	3.02	1.78	100.00	1	Individual NR		N	0.50	1.00	
0.00	162.00	3/4" DC	4	0.75	0.40	50.00	1	Block		N	0.50	1.00	0
0.00	162.00	W/G Ladder	1	0.25	6.00	100.00	1	Individual NR		N	0.50	1.00	
0.00	152.00	1 5/8" Coax	10	1.98	1.04	100.00	3	Individual IR		N	0.50	0.42	
0.00	152.00	1 5/8" Fiber	3	2.00	1.10	50.00	3	Block		N	0.50	0.96	
0.00	152.00	1-1/4" Fiber	1	1.25	0.95	100.00	3	Individual NR		N	0.50	1.00	0
0.00	152.00	1-1/4" Fiber	4	1.25	0.95	100.00	3	Individual IR		N	0.50	1.00	0
0.00	152.00	1/2" Fiber	4	0.50	0.16	50.00	3	Block		N	0.50	1.00	0
0.00	152.00	W/G Ladder	1	0.25	6.00	100.00	3	Individual NR		N	0.50	1.00	
0.00	140.00	1 5/8" Coax	12	1.98	1.04	100.00	1	Individual IR		N	0.50	1.00	0
0.00	140.00	1 5/8" Hybrid	2	2.00	1.10	100.00	1	Individual IR		N	0.50	1.00	0

Section Forces

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	



Tower Engineering Solutions

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

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

Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.32	150.15	0.00	6,729.2	0.0	2265.98	1250.63	3,516.61
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	150.15	0.00	6,324.2	0.0	1957.29	1251.69	3,208.97
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	33.15	150.15	0.00	5,432.1	0.0	2076.81	1448.37	3,525.19
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	32.88	150.15	0.00	5,173.8	0.0	2255.93	1594.53	3,850.45
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	9.80	50.99	0.00	1,834.1	0.0	663.12	569.28	1,232.40
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	17.51	99.16	0.00	2,928.9	0.0	1296.87	1143.45	2,440.33
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	24.58	150.15	0.00	3,918.1	0.0	1868.66	1814.33	3,682.99
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	21.17	150.15	0.00	3,635.1	0.0	1669.70	1903.02	3,572.72
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.03	88.02	0.00	2,728.5	0.0	1573.00	1733.10	3,306.11
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	13.51	0.00	1,405.8	0.0	1115.49	336.36	1,451.84
														40,109.7	**0.0**			**29,787.61**

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

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

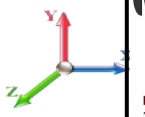
Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.80	1.00	0.00	35.59	150.15	0.00	6,729.2	0.0	1951.84	1250.63	3,202.46
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.80	1.00	0.00	31.05	150.15	0.00	6,324.2	0.0	1704.98	1251.69	2,956.66
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.80	1.00	0.00	28.96	150.15	0.00	5,432.1	0.0	1814.40	1448.37	3,262.78
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.80	1.00	0.00	28.43	150.15	0.00	5,173.8	0.0	1951.08	1594.53	3,545.61
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.80	1.00	0.00	9.80	50.99	0.00	1,834.1	0.0	663.12	569.28	1,232.40
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	15.39	99.16	0.00	2,928.9	0.0	1140.05	1143.45	2,283.50
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.80	1.00	0.00	21.76	150.15	0.00	3,918.1	0.0	1654.53	1814.33	3,468.86
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.80	1.00	0.00	18.83	150.15	0.00	3,635.1	0.0	1485.25	1903.02	3,388.27
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.80	1.00	0.00	17.69	88.02	0.00	2,728.5	0.0	1389.01	1733.10	3,122.11
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	13.51	0.00	1,405.8	0.0	979.45	336.36	1,315.80
														40,109.7	**0.0**			**27,778.46**

Section Forces

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	



Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.85	1.00	0.00	37.02	150.15	0.00	6,729.2	0.0	2030.37	1250.63	3,281.00
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.85	1.00	0.00	32.20	150.15	0.00	6,324.2	0.0	1768.05	1251.69	3,019.74
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.85	1.00	0.00	30.00	150.15	0.00	5,432.1	0.0	1880.01	1448.37	3,328.38
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.85	1.00	0.00	29.55	150.15	0.00	5,173.8	0.0	2027.29	1594.53	3,621.82
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.85	1.00	0.00	9.80	50.99	0.00	1,834.1	0.0	663.12	569.28	1,232.40
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.85	1.00	0.00	15.92	99.16	0.00	2,928.9	0.0	1179.25	1143.45	2,322.71
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.85	1.00	0.00	22.46	150.15	0.00	3,918.1	0.0	1708.07	1814.33	3,522.39
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.85	1.00	0.00	19.42	150.15	0.00	3,635.1	0.0	1531.36	1903.02	3,434.38
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.85	1.00	0.00	18.28	88.02	0.00	2,728.5	0.0	1435.01	1733.10	3,168.11
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.85	1.00	0.00	12.57	13.51	0.00	1,405.8	0.0	1013.46	336.36	1,349.81
														40,109.7	**0.0**			**28,280.75**

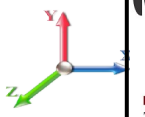
Load Case: 0.9D + 1.6W Normal Wind — 0.9D + 1.6W 97 mph Wind at Normal To Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.32	150.15	0.00	5,046.9	0.0	2265.98	1250.63	3,516.61
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	150.15	0.00	4,743.1	0.0	1957.29	1251.69	3,208.97
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	33.15	150.15	0.00	4,074.1	0.0	2076.81	1448.37	3,525.19
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	32.88	150.15	0.00	3,880.4	0.0	2255.93	1594.53	3,850.45
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	9.80	50.99	0.00	1,375.6	0.0	663.12	569.28	1,232.40
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	17.51	99.16	0.00	2,196.7	0.0	1296.87	1143.45	2,440.33
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	24.58	150.15	0.00	2,938.6	0.0	1868.66	1814.33	3,682.99
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	21.17	150.15	0.00	2,726.3	0.0	1669.70	1903.02	3,572.72
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.03	88.02	0.00	2,046.4	0.0	1573.00	1733.10	3,306.11
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	13.51	0.00	1,054.3	0.0	1115.49	336.36	1,451.84
														30,082.3	**0.0**			**29,787.61**

Section Forces

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	



Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.80	1.00	0.00	35.59	150.15	0.00	5,046.9	0.0	1951.84	1250.63	3,202.46
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.80	1.00	0.00	31.05	150.15	0.00	4,743.1	0.0	1704.98	1251.69	2,956.66
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.80	1.00	0.00	28.96	150.15	0.00	4,074.1	0.0	1814.40	1448.37	3,262.78
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.80	1.00	0.00	28.43	150.15	0.00	3,880.4	0.0	1951.08	1594.53	3,545.61
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.80	1.00	0.00	9.80	50.99	0.00	1,375.6	0.0	663.12	569.28	1,232.40
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	15.39	99.16	0.00	2,196.7	0.0	1140.05	1143.45	2,283.50
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.80	1.00	0.00	21.76	150.15	0.00	2,938.6	0.0	1654.53	1814.33	3,468.86
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.80	1.00	0.00	18.83	150.15	0.00	2,726.3	0.0	1485.25	1903.02	3,388.27
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.80	1.00	0.00	17.69	88.02	0.00	2,046.4	0.0	1389.01	1733.10	3,122.11
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	13.51	0.00	1,054.3	0.0	979.45	336.36	1,315.80
														30,082.3	**0.0**			**27,778.46**

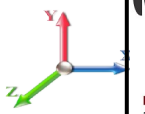
Load Case: 0.9D + 1.6W 90° Wind — 0.9D + 1.6W 97 mph Wind at 90° From Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.85	1.00	0.00	37.02	150.15	0.00	5,046.9	0.0	2030.37	1250.63	3,281.00
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.85	1.00	0.00	32.20	150.15	0.00	4,743.1	0.0	1768.05	1251.69	3,019.74
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.85	1.00	0.00	30.00	150.15	0.00	4,074.1	0.0	1880.01	1448.37	3,328.38
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.85	1.00	0.00	29.55	150.15	0.00	3,880.4	0.0	2027.29	1594.53	3,621.82
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.85	1.00	0.00	9.80	50.99	0.00	1,375.6	0.0	663.12	569.28	1,232.40
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.85	1.00	0.00	15.92	99.16	0.00	2,196.7	0.0	1179.25	1143.45	2,322.71
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.85	1.00	0.00	22.46	150.15	0.00	2,938.6	0.0	1708.07	1814.33	3,522.39
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.85	1.00	0.00	19.42	150.15	0.00	2,726.3	0.0	1531.36	1903.02	3,434.38
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.85	1.00	0.00	18.28	88.02	0.00	2,046.4	0.0	1435.01	1733.10	3,168.11
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.85	1.00	0.00	12.57	13.51	0.00	1,054.3	0.0	1013.46	336.36	1,349.81
														30,082.3	**0.0**			**28,280.75**

Section Forces

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	



Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.639	66.92	38.12	0.23	2.51	1.00	1.00	1.77	67.44	245.23	11.83	16,842.	10113.2	547.27	341.36	888.64
2	30.0	3.81	22.974	68.98	40.18	0.24	2.46	1.00	1.00	1.98	63.19	252.79	13.21	17,112.	10788.5	504.26	353.42	857.68
3	50.0	4.41	20.940	68.67	39.87	0.26	2.40	1.00	1.00	2.08	61.33	256.59	13.90	16,589.	11157.2	551.76	415.01	966.78
4	70.0	4.86	22.213	69.64	47.52	0.31	2.27	1.00	1.00	2.16	64.12	259.21	14.37	16,817.	11643.3	601.34	459.51	1,060.85
5	83.4	5.10	0.000	33.28	15.29	0.36	2.14	1.00	1.00	2.19	20.93	88.50	4.97	6,110.6	4276.5	194.52	163.90	358.42
6	93.4	5.27	10.586	44.01	29.40	0.33	2.22	1.00	1.00	2.22	37.39	172.71	9.77	10,286.	7357.1	371.55	331.97	703.52
7	110.0	5.52	14.081	63.84	41.72	0.36	2.15	1.00	1.00	2.26	53.64	262.87	15.04	14,927.	11009.8	541.57	527.84	1,069.41
8	130.0	5.79	11.695	62.14	43.57	0.42	2.02	1.00	1.00	2.29	51.88	264.26	15.29	14,417.	10782.4	516.06	532.79	1,048.85
9	150.0	6.04	11.717	59.43	44.41	0.54	1.85	1.00	1.00	2.33	53.84	168.62	12.41	10,953.	8224.5	511.33	424.84	936.17
10	168.0	6.23	8.438	42.77	33.44	0.59	1.81	1.00	1.00	2.35	40.03	33.26	0.78	4,921.7	3515.9	383.85	96.67	480.52
														128,978.1	**88868.4**			**8,370.84**

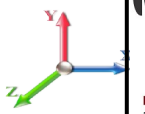
Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.639	66.92	38.12	0.23	2.51	0.80	1.00	1.77	61.71	245.23	11.83	16,842.	10113.2	500.79	341.36	842.16
2	30.0	3.81	22.974	68.98	40.18	0.24	2.46	0.80	1.00	1.98	58.59	252.79	13.21	17,112.	10788.5	467.60	353.42	821.01
3	50.0	4.41	20.940	68.67	39.87	0.26	2.40	0.80	1.00	2.08	57.14	256.59	13.90	16,589.	11157.2	514.09	415.01	929.10
4	70.0	4.86	22.213	69.64	47.52	0.31	2.27	0.80	1.00	2.16	59.68	259.21	14.37	16,817.	11643.3	559.67	459.51	1,019.19
5	83.4	5.10	0.000	33.28	15.29	0.36	2.14	0.80	1.00	2.19	20.93	88.50	4.97	6,110.6	4276.5	194.52	163.90	358.42
6	93.4	5.27	10.586	44.01	29.40	0.33	2.22	0.80	1.00	2.22	35.27	172.71	9.77	10,286.	7357.1	350.51	331.97	682.48
7	110.0	5.52	14.081	63.84	41.72	0.36	2.15	0.80	1.00	2.26	50.82	262.87	15.04	14,927.	11009.8	513.14	527.84	1,040.98
8	130.0	5.79	11.695	62.14	43.57	0.42	2.02	0.80	1.00	2.29	49.54	264.26	15.29	14,417.	10782.4	492.79	532.79	1,025.59
9	150.0	6.04	11.717	59.43	44.41	0.54	1.85	0.80	1.00	2.33	51.50	168.62	12.41	10,953.	8224.5	489.07	424.84	913.91
10	168.0	6.23	8.438	42.77	33.44	0.59	1.81	0.80	1.00	2.35	38.34	33.26	0.78	4,921.7	3515.9	367.67	96.67	464.34
														128,978.1	**88868.4**			**8,097.17**

Section Forces

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	



Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.639	66.92	38.12	0.23	2.51	0.85	1.00	1.77	63.14	245.23	11.83	16,842.	10113.2	512.41	341.36	853.78
2	30.0	3.81	22.974	68.98	40.18	0.24	2.46	0.85	1.00	1.98	59.74	252.79	13.21	17,112.	10788.5	476.76	353.42	830.18
3	50.0	4.41	20.940	68.67	39.87	0.26	2.40	0.85	1.00	2.08	58.19	256.59	13.90	16,589.	11157.2	523.51	415.01	938.52
4	70.0	4.86	22.213	69.64	47.52	0.31	2.27	0.85	1.00	2.16	60.79	259.21	14.37	16,817.	11643.3	570.09	459.51	1,029.60
5	83.4	5.10	0.000	33.28	15.29	0.36	2.14	0.85	1.00	2.19	20.93	88.50	4.97	6,110.6	4276.5	194.52	163.90	358.42
6	93.4	5.27	10.586	44.01	29.40	0.33	2.22	0.85	1.00	2.22	35.80	172.71	9.77	10,286.	7357.1	355.77	331.97	687.74
7	110.0	5.52	14.081	63.84	41.72	0.36	2.15	0.85	1.00	2.26	51.52	262.87	15.04	14,927.	11009.8	520.25	527.84	1,048.09
8	130.0	5.79	11.695	62.14	43.57	0.42	2.02	0.85	1.00	2.29	50.12	264.26	15.29	14,417.	10782.4	498.61	532.79	1,031.40
9	150.0	6.04	11.717	59.43	44.41	0.54	1.85	0.85	1.00	2.33	52.08	168.62	12.41	10,953.	8224.5	494.64	424.84	919.48
10	168.0	6.23	8.438	42.77	33.44	0.59	1.81	0.85	1.00	2.35	38.77	33.26	0.78	4,921.7	3515.9	371.71	96.67	468.38
														128,978.1	**88868.4**			**8,165.59**

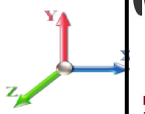
Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	44.39	150.15	0.00	5,607.6	0.0	582.18	299.07	881.24
2	30.0	5.49	22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	38.72	150.15	0.00	5,270.2	0.0	508.45	299.32	807.77
3	50.0	6.35	20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	36.36	150.15	0.00	4,526.7	0.0	544.84	346.35	891.20
4	70.0	6.99	22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	34.78	150.15	0.00	4,311.5	0.0	570.61	381.30	951.92
5	83.4	7.35	0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	10.58	50.99	0.00	1,528.4	0.0	171.24	136.13	307.38
6	93.4	7.59	10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	18.85	99.16	0.00	2,440.8	0.0	333.85	273.44	607.29
7	110.0	7.96	14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	26.56	150.15	0.00	3,265.1	0.0	482.97	433.87	916.83
8	130.0	8.34	11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	22.31	150.15	0.00	3,029.2	0.0	420.75	455.08	875.83
9	150.0	8.69	11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.40	88.02	0.00	2,273.8	0.0	382.96	414.44	797.40
10	168.0	8.98	8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	13.51	0.00	1,171.5	0.0	266.75	80.43	347.18
														33,424.8	**0.0**			**7,384.04**

Section Forces

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	



Tower Engineering Solutions

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

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

Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	28.639	28.80	0.00	0.14	2.81	0.80	1.00	0.00	38.66	150.15	0.00	5,607.6	0.0	507.05	299.07	806.12
2	30.0	5.49	22.974	28.80	0.00	0.14	2.81	0.80	1.00	0.00	34.13	150.15	0.00	5,270.2	0.0	448.12	299.32	747.44
3	50.0	6.35	20.940	28.80	0.00	0.15	2.78	0.80	1.00	0.00	32.17	150.15	0.00	4,526.7	0.0	482.09	346.35	828.45
4	70.0	6.99	22.213	22.12	0.00	0.15	2.76	0.80	1.00	0.00	30.33	150.15	0.00	4,311.5	0.0	497.72	381.30	879.02
5	83.4	7.35	0.000	17.99	0.00	0.20	2.59	0.80	1.00	0.00	10.58	50.99	0.00	1,528.4	0.0	171.24	136.13	307.38
6	93.4	7.59	10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	16.73	99.16	0.00	2,440.8	0.0	296.35	273.44	569.78
7	110.0	7.96	14.081	22.12	0.00	0.17	2.69	0.80	1.00	0.00	23.75	150.15	0.00	3,265.1	0.0	431.76	433.87	865.63
8	130.0	8.34	11.695	18.58	0.00	0.18	2.66	0.80	1.00	0.00	19.97	150.15	0.00	3,029.2	0.0	376.64	455.08	831.72
9	150.0	8.69	11.717	15.03	0.00	0.22	2.54	0.80	1.00	0.00	18.05	88.02	0.00	2,273.8	0.0	338.96	414.44	753.40
10	168.0	8.98	8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	13.51	0.00	1,171.5	0.0	234.22	80.43	314.65
														33,424.8	**0.0**			**6,903.58**

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

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

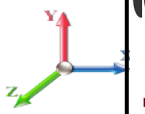
Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	5.48	28.639	28.80	0.00	0.14	2.81	0.85	1.00	0.00	40.09	150.15	0.00	5,607.6	0.0	525.83	299.07	824.90
2	30.0	5.49	22.974	28.80	0.00	0.14	2.81	0.85	1.00	0.00	35.27	150.15	0.00	5,270.2	0.0	463.20	299.32	762.52
3	50.0	6.35	20.940	28.80	0.00	0.15	2.78	0.85	1.00	0.00	33.22	150.15	0.00	4,526.7	0.0	497.78	346.35	844.13
4	70.0	6.99	22.213	22.12	0.00	0.15	2.76	0.85	1.00	0.00	31.44	150.15	0.00	4,311.5	0.0	515.94	381.30	897.24
5	83.4	7.35	0.000	17.99	0.00	0.20	2.59	0.85	1.00	0.00	10.58	50.99	0.00	1,528.4	0.0	171.24	136.13	307.38
6	93.4	7.59	10.586	14.61	0.00	0.16	2.74	0.85	1.00	0.00	17.26	99.16	0.00	2,440.8	0.0	305.72	273.44	579.16
7	110.0	7.96	14.081	22.12	0.00	0.17	2.69	0.85	1.00	0.00	24.45	150.15	0.00	3,265.1	0.0	444.57	433.87	878.43
8	130.0	8.34	11.695	18.58	0.00	0.18	2.66	0.85	1.00	0.00	20.56	150.15	0.00	3,029.2	0.0	387.67	455.08	842.74
9	150.0	8.69	11.717	15.03	0.00	0.22	2.54	0.85	1.00	0.00	18.64	88.02	0.00	2,273.8	0.0	349.96	414.44	764.40
10	168.0	8.98	8.438	9.33	0.00	0.22	2.53	0.85	1.00	0.00	12.57	13.51	0.00	1,171.5	0.0	242.35	80.43	322.78
														33,424.8	**0.0**			**7,023.70**

Force/Stress Compression Summary

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	



IES Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	-266.40	1.2D + 1.6W Normal Wind	9.64	49	49	49	19.70	50.00	558.14	47.7	Member X
2	40	PX - 8" DIA PIPE	-248.76	1.2D + 1.6W Normal Wind	0.38	49	49	49	0.77	50.00	574.18	43.3	Member X
3	60	PSP - ROHN 8 EHS	-222.09	1.2D + 1.6W Normal Wind	0.38	48	48	48	0.74	50.00	437.38	50.8	Member X
4	80	PX - 6" DIA PIPE	-194.14	1.2D + 1.6W Normal Wind	0.38	48	48	48	0.99	50.00	377.97	51.4	Member X
5	86.79	PX - 6" DIA PIPE	-165.89	1.2D + 1.6W Normal Wind	0.38	48	48	48	0.99	50.00	377.97	43.9	Member X
6	100	PX - 6" DIA PIPE	-150.29	1.2D + 1.6W Normal Wind	6.43	48	48	48	16.90	50.00	370.18	40.6	Member X
7	120	PSP - ROHN 6 EHS	-134.16	1.2D + 1.6W Normal Wind	0.38	48	48	48	0.97	50.00	302.06	44.4	Member X
8	140	PX - 5" DIA PIPE	-99.24	1.2D + 1.6W Normal Wind	0.38	47	47	47	1.15	50.00	274.92	36.1	Member X
9	160	PX - 4" DIA PIPE	-57.36	1.2D + 1.6W Normal Wind	0.38	47	47	47	1.43	50.00	198.42	28.9	Member X
10	176	PX - 3" DIA PIPE	-16.34	1.2D + 1.6W Normal Wind	0.38	44	44	44	1.74	50.00	135.87	12.0	Member X

Splices

		Top Splice					Bottom Splice				
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	1.2D + 1.6W Normal Wind	249.21	0.00	0.0			1.2D + 1.6W Normal Wind	273.12	0.00			
2	40	1.2D + 1.6W Normal Wind	222.63	0.00	0.0			1.2D + 1.6W Normal Wind	249.21	0.00		1 A325	8
3	60	1.2D + 1.6W Normal Wind	194.59	0.00	0.0			1.2D + 1.6W Normal Wind	222.63	0.00		1 A325	8
4	80	1.2D + 1.6W Normal Wind	166.27	0.00	0.0			1.2D + 1.6W Normal Wind	194.59	0.00		1 A325	8
5	86.79	1.2D + 1.6W Normal Wind	154.71	0.00	0.0			1.2D + 1.6W Normal Wind	166.27	0.00		1 A325	6
6	100	1.2D + 1.6W Normal Wind	134.50	0.00	0.0			1.2D + 1.6W Normal Wind	154.71	0.00		1 A325	6
7	120	1.2D + 1.6W Normal Wind	99.50	0.00	0.0			1.2D + 1.6W Normal Wind	134.50	0.00		1 A325	6
8	140	1.2D + 1.6W Normal Wind	58.47	0.00	0.0			1.2D + 1.6W Normal Wind	99.50	0.00		1 A325	6
9	160	1.2D + 1.6W Normal Wind	16.75	0.00	0.0			1.2D + 1.6W Normal Wind	58.47	0.00		1 A325	4
10	176	1.2D + 1.0E	0.53	0.00	0.0			1.2D + 1.6W Normal Wind	16.75	0.00		7/8 A325	4

HORIZONTAL MEMBERS

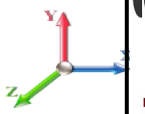
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20										0.00	0	0				
2	40										0.00	0	0				
3	60										0.00	0	0				
4	80										0.00	0	0				
5	86.7										0.00	0	0				
6	100										0.00	0	0				
7	120										0.00	0	0				
8	140										0.00	0	0				
9	160	SAE - 2X2X0.1875	-0.63	1.2D + 1.6W 60° Wind	4.76	100	100	100	144.97	36.00	7.63	1	1	12.43	7.84	8	Member Z
10	176	SAE - 2X2X0.25	-0.19	1.2D + 1.6W Normal Wind	4.69	100	100	100	143.88	36.00	10.26	1	1	12.43	10.45	2	Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	-7.58	0.9D + 1.6W 90° Wind	21.76	50	50	50	164.26	36.00	16.24	1	1	17.89	12.6	60	Bolt Bear
2	40	SAE - 3.5X3.5X0.25	-7.19	1.2D + 1.6W 90° Wind	20.84	50	50	50	180.15	36.00	11.76	1	1	17.89	12.6	61	Member Z
3	60	SAE - 3.5X3.5X0.25	-7.21	1.2D + 1.6W 90° Wind	18.25	50	50	50	157.82	36.00	15.33	1	1	17.89	12.6	57	Bolt Bear
4	80	SAE - 3X3X0.25	-6.19	1.2D + 1.6W 90° Wind	14.76	50	50	50	149.57	36.00	14.54	1	1	17.89	12.6	49	Bolt Bear
5	86.7	MOD - 2L2.5x2.5x3/16_s	-6.19	1.2D + 1.6W 90° Wind	14.10	50	50	50	113.59	36.00	29.91	1	1	12.43		50	Bolt Shear
6	100	SAE - 2.5X2.5X0.1875	-6.30	1.2D + 1.6W 90° Wind	12.97	50	50	50	157.27	36.00	8.24	1	1	12.43	7.84	80	Bolt Bear

Force/Stress Compression Summary

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	



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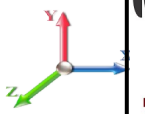
DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
7	120	SAE - 2.5X2.5X0.1875	-6.29	1.2D + 1.6W 90° Wind	11.28	50	50	50	136.73	36.00	10.90	1	1	12.43	7.84	80	Bolt Bear
8	140	SAE - 2X2X0.1875	-6.05	1.2D + 1.6W 90° Wind	8.60	50	50	50	130.93	36.00	9.33	1	1	12.43	7.84	77	Bolt Bear
9	160	SAE - 2X2X0.1875	-4.43	1.2D + 1.6W 90° Wind	7.64	50	50	50	117.23	36.00	11.16	1	1	12.43	7.84	57	Bolt Bear
10	176	SAE - 2X2X0.25	-2.30	1.2D + 1.6W 90° Wind	6.09	50	50	50	100.10	36.00	17.97	1	1	12.43	10.4	22	Bolt Bear

Force/Stress Tension Summary

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	



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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	233.16	0.9D + 1.6W 60° Wind	50	574.20	40.6	Member
2	40	PX - 8" DIA PIPE	213.29	0.9D + 1.6W 60° Wind	50	574.20	37.1	Member
3	60	PSP - ROHN 8 EHS	191.62	0.9D + 1.6W 60° Wind	50	437.40	43.8	Member
4	80	PX - 6" DIA PIPE	168.10	0.9D + 1.6W 60° Wind	50	378.00	44.5	Member
5	86.792	PX - 6" DIA PIPE	143.99	0.9D + 1.6W 60° Wind	50	378.00	38.1	Member
6	100	PX - 6" DIA PIPE	130.07	0.9D + 1.6W 60° Wind	50	378.00	34.4	Member
7	120	PSP - ROHN 6 EHS	116.19	0.9D + 1.6W 60° Wind	50	302.09	38.5	Member
8	140	PX - 5" DIA PIPE	84.62	0.9D + 1.6W 60° Wind	50	274.95	30.8	Member
9	160	PX - 4" DIA PIPE	47.29	0.9D + 1.6W 60° Wind	50	198.45	23.8	Member
10	176	PX - 3" DIA PIPE	10.54	0.9D + 1.6W 60° Wind	50	135.90	7.8	Member

Splices

		Top Splice					Bottom Splice				
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	0.9D + 1.6W 60° Wind	212.97	0.00	0.0			0.9D + 1.6W 60° Wind	233.1	0.00			
2	40	0.9D + 1.6W 60° Wind	191.24	0.00	0.0			0.9D + 1.6W 60° Wind	212.9	424.08	50.2	1 A325	8
3	60	0.9D + 1.6W 60° Wind	167.77	0.00	0.0			0.9D + 1.6W 60° Wind	191.2	424.08	45.1	1 A325	8
4	80	0.9D + 1.6W 60° Wind	143.76	0.00	0.0			0.9D + 1.6W 60° Wind	167.7	424.08	39.6	1 A325	8
5	86.792	0.9D + 1.6W 60° Wind	133.72	0.00	0.0			0.9D + 1.6W 60° Wind	143.7	318.06	45.2	1 A325	6
6	100	0.9D + 1.6W 60° Wind	115.96	0.00	0.0			0.9D + 1.6W 60° Wind	133.7	318.06	42.0	1 A325	6
7	120	0.9D + 1.6W 60° Wind	84.43	0.00	0.0			0.9D + 1.6W 60° Wind	115.9	318.06	36.5	1 A325	6
8	140	0.9D + 1.6W 60° Wind	46.59	0.00	0.0			0.9D + 1.6W 60° Wind	84.43	318.06	26.5	1 A325	6
9	160	0.9D + 1.6W 60° Wind	10.71	0.00	0.0			0.9D + 1.6W 60° Wind	46.59	212.04	22.0	1 A325	4
10	176		0.00	0.00	0.0			0.9D + 1.6W 60° Wind	10.71	166.24	6.4	7/8 A325	4

HORIZONTAL MEMBERS

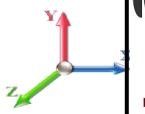
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			36	0.00	0	0					
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
4	80	-			36	0.00	0	0					
5	86.792	-			36	0.00	0	0					
6	100	-			36	0.00	0	0					
7	120	-			36	0.00	0	0					
8	140	-			36	0.00	0	0					
9	160	SAE - 2X2X0.1875	0.57	0.9D + 1.6W Normal Wi	36	23.00	1	1	12.43	7.84	7.85	7.3	Bolt Bear
10	176	SAE - 2X2X0.25	0.19	0.9D + 1.6W 60° Wind	36	30.46	1	1	12.43	10.45	10.47	1.8	Bolt Bear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	7.45	0.9D + 1.6W 90° Wind	36	62.86	1	1	17.89	12.62	26.92	59.0	Bolt Bear
2	40	SAE - 3.5X3.5X0.25	7.20	0.9D + 1.6W 90° Wind	36	54.76	1	1	17.89	12.62	21.48	57.1	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	7.01	0.9D + 1.6W 90° Wind	36	54.76	1	1	17.89	12.62	21.48	55.5	Bolt Bear
4	80	SAE - 3X3X0.25	6.06	0.9D + 1.6W 90° Wind	36	46.66	1	1	17.89	12.62	16.04	48.1	Bolt Bear
5	86.792	MOD - 2L2.5x2.5x3/16_Spec	6.07	1.2D + 1.6W 90° Wind	36	59.00	1	1	12.43			48.8	Bolt Shear
6	100	SAE - 2.5X2.5X0.1875	6.19	1.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	7.84	9.89	79.0	Bolt Bear
7	120	SAE - 2.5X2.5X0.1875	6.15	1.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	7.84	9.89	78.6	Bolt Bear

Force/Stress Tension Summary

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	



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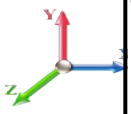
DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
8	140	SAE - 2X2X0.1875	5.96	1.2D + 1.6W 90° Wind	36	23.00	1	1	12.43	7.84	7.85	76.1	Bolt Bear
9	160	SAE - 2X2X0.1875	4.39	1.2D + 1.6W 90° Wind	36	23.00	1	1	12.43	7.84	7.85	56.0	Bolt Bear
10	176	SAE - 2X2X0.25	2.22	0.9D + 1.6W 90° Wind	36	30.46	1	1	12.43	10.45	10.47	21.2	Bolt Bear

Seismic Section Forces

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	



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Load Case: 1.2D + 1.0E

Dead Load Factor	1.20	**Sds**	0.146	**Ss**	0.1830	**Fa**	1.2000	**Ke**	0.0000
Seismic Load Factor	1.00	**Sd1**	0.072	**S1**	0.0640	**Fv**	1.7000	**Kg**	0.0000
Seismic Importance Factor	1.00	**SA**	0.120	**R**	3.0000	**Vs**	2.1648	**f1**	1.6601

Sect #	Elev (ft)	Wz (lb)	a	b	c	Lateral Fsz (lb)
1	10.00	5607.6	0.01	0.05	0.03	16.87
2	30.00	5270.1	0.05	0.07	0.04	32.96
3	50.00	4526.7	0.15	0.07	0.03	44.94
4	70.00	4311.5	0.30	0.05	0.01	62.84
5	83.40	1528.4	0.42	0.01	0.01	26.86
6	93.40	2440.7	0.53	-0.03	0.01	47.81
7	110.00	3265.0	0.74	-0.10	0.04	75.74
8	130.00	5155.6	1.03	-0.10	0.15	165.50
9	150.00	4921.8	1.37	0.23	0.40	268.86
10	168.00	7896.2	1.72	1.21	0.85	740.65

Load Case: 0.9D + 1.0E

Dead Load Factor	0.90	**Sds**	0.146	**Ss**	0.1830	**Fa**	1.2000	**Ke**	0.0000
Seismic Load Factor	1.00	**Sd1**	0.072	**S1**	0.0640	**Fv**	1.7000	**Kg**	0.0000
Seismic Importance Factor	1.00	**SA**	0.120	**R**	3.0000	**Vs**	2.1648	**f1**	1.6601

Sect #	Elev (ft)	Wz (lb)	a	b	c	Lateral Fsz (lb)
1	10.00	5607.6	0.01	0.05	0.03	16.87
2	30.00	5270.1	0.05	0.07	0.04	32.96
3	50.00	4526.7	0.15	0.07	0.03	44.94
4	70.00	4311.5	0.30	0.05	0.01	62.84
5	83.40	1528.4	0.42	0.01	0.01	26.86
6	93.40	2440.7	0.53	-0.03	0.01	47.81
7	110.00	3265.0	0.74	-0.10	0.04	75.74
8	130.00	5155.6	1.03	-0.10	0.15	165.50
9	150.00	4921.8	1.37	0.23	0.40	268.86
10	168.00	7896.2	1.72	1.21	0.85	740.65

Support Forces Summary

Structure:	CT04382-S-SBA	**Code:**	EIA/TIA-222-G	7/8/2019	
Site Name:	New Britain 2, CT	**Exposure:**	B		
Height:	176.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 18	

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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	-0.01	272.49	-26.68	
	1a	8.88	-109.30	-8.06	
	1b	-8.87	-109.29	-8.07	
1.2D + 1.6W 60° Wind	1	-2.33	140.80	-13.35	
	1a	-12.72	140.80	4.66	
	1b	-20.30	-227.68	-11.72	
1.2D + 1.6W 90° Wind	1	-2.76	17.97	-1.11	
	1a	-20.19	232.63	10.09	
	1b	-18.36	-196.69	-8.98	
0.9D + 1.6W Normal Wind	1	-0.01	267.67	-26.39	
	1a	9.12	-113.62	-8.21	
	1b	-9.11	-113.61	-8.22	
0.9D + 1.6W 60° Wind	1	-2.33	136.14	-13.06	
	1a	-12.47	136.14	4.51	
	1b	-20.54	-231.86	-11.86	
0.9D + 1.6W 90° Wind	1	-2.77	13.48	-0.83	
	1a	-19.94	227.86	9.94	
	1b	-18.61	-200.91	-9.11	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	124.52	-7.20	
	1a	2.51	19.48	-2.21	
	1b	-2.51	19.52	-2.21	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.63	88.84	-3.63	
	1a	-3.46	88.83	1.27	
	1b	-5.72	-14.15	-3.31	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.74	54.50	-0.22	
	1a	-5.52	114.37	2.76	
	1b	-5.16	-5.35	-2.55	
1.2D + 1.0E	1	0.00	29.40	5.03	
	1a	5.55	12.25	-3.24	
	1b	-5.55	12.25	-3.24	
0.9D + 1.0E	1	0.00	24.89	5.32	
	1a	5.80	7.77	-3.38	
	1b	-5.80	7.77	-3.38	
1.0D + 1.0W Normal Wind	1	0.00	76.52	-7.20	
	1a	1.57	-15.80	-1.63	
	1b	-1.57	-15.79	-1.64	
1.0D + 1.0W 60° Wind	1	-0.59	44.69	-3.94	
	1a	-3.71	44.69	1.46	
	1b	-4.36	-44.45	-2.52	
1.0D + 1.0W 90° Wind	1	-0.69	14.97	-0.95	
	1a	-5.53	66.90	2.80	
	1b	-3.89	-36.95	-1.84	

Max Reactions

Leg			Overturning		
Max Uplift:	-231.86	(kips)	Moment:	4628.85	(ft-kips)
Max Down:	272.49	(kips)	Total Down:	53.91	(kips)
Max Shear:	26.68	(kips)	Total Shear:	42.82	(kips)

Analysis Summary

Structure:	CT04382-S-SBA		**Code:**	EIA/TIA-222-G	7/8/2019
Site Name:	New Britain 2, CT		**Exposure:**	B	
Height:	176.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 20

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Max Reactions

Leg			Overturning		
Max Uplift:	-231.86	(kips)	Moment:	4628.85	(ft-kips)
Max Down:	272.49	(kips)	Total Down:	53.91	(kips)
Max Shear:	26.68	(kips)	Total Shear:	42.82	(kips)

Anchor Bolts

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

Interaction Ratio: 0.46

Max Usages

Max Leg: 51.4% (1.2D + 1.6W Normal Wind - Sect 4)
Max Diag: 80.3% (1.2D + 1.6W 90° Wind - Sect 6)
Max Horiz: 8.3% (1.2D + 1.6W 60° Wind - Sect 9)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0E - Normal To Face	140.00	0.0381	-0.0012	0.0389
	151.93	0.0460	-0.0010	0.0413
	160.38	0.0522	-0.0011	0.0500
	171.81	0.0610	-0.0011	0.0444
	176.00	0.0643	-0.0011	0.0465
0.9D + 1.6W 97 mph Wind at 60° From Face	140.00	0.7076	0.0242	0.6722
	151.93	0.8403	0.0210	0.6603
	160.38	0.9398	0.0221	0.7467
	171.81	1.0747	0.0218	0.6774
	176.00	1.1241	-0.0217	0.6760
0.9D + 1.6W 97 mph Wind at 90° From Face	140.00	0.7128	-0.0281	0.6689
	151.93	0.8463	-0.0246	0.6631
	160.38	0.9464	-0.0257	0.7440
	171.81	1.0822	-0.0256	0.6820
	176.00	1.1318	-0.0256	0.6798
0.9D + 1.6W 97 mph Wind at Normal To Face	140.00	0.7286	0.0241	0.6893
	151.93	0.8647	0.0213	0.6770
	160.38	0.9666	0.0221	0.7653
	171.81	1.1053	0.0222	0.6948
	176.00	1.1557	-0.0214	0.6943
1.0D + 1.0W 60 mph Wind at 60° From Face	140.00	0.1704	0.0058	0.1616
	151.93	0.2022	0.0050	0.1582
	160.38	0.2261	0.0052	0.1789
	171.81	0.2584	0.0052	0.1623
	176.00	0.2702	-0.0051	0.1620

1.0D + 1.0W 60 mph Wind at 90° From Face	140.00	0.1717	-0.0067	0.1608
	151.93	0.2037	-0.0059	0.1590
	160.38	0.2277	-0.0061	0.1782
	171.81	0.2602	-0.0061	0.1634
	176.00	0.2721	-0.0060	0.1628
1.0D + 1.0W 60 mph Wind at Normal To Face	140.00	0.1755	0.0058	0.1649
	151.93	0.2081	0.0051	0.1624
	160.38	0.2326	0.0053	0.1833
	171.81	0.2658	0.0052	0.1666
	176.00	0.2779	-0.0051	0.1664
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	140.00	0.1982	0.0066	0.1884
	151.93	0.2351	0.0057	0.1843
	160.38	0.2630	0.0060	0.2097
	171.81	0.3006	0.0059	0.1898
	176.00	0.3145	-0.0058	0.1899
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	140.00	0.1994	-0.0076	0.1872
	151.93	0.2365	-0.0066	0.1854
	160.38	0.2645	-0.0069	0.2087
	171.81	0.3024	-0.0069	0.1910
	176.00	0.3164	-0.0069	0.1905
1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	140.00	0.2013	0.0065	0.1883
	151.93	0.2388	0.0057	0.1877
	160.38	0.2671	0.0059	0.2127
	171.81	0.3055	0.0059	0.1931
	176.00	0.3196	-0.0058	0.1938
1.2D + 1.0E - Normal To Face	140.00	0.0382	0.0012	0.0389
	151.93	0.0461	0.0010	0.0414
	160.38	0.0523	0.0012	0.0502
	171.81	0.0611	0.0011	0.0445
	176.00	0.0645	-0.0011	0.0465
1.2D + 1.6W 97 mph Wind at 60° From Face	140.00	0.7089	0.0243	0.6739
	151.93	0.8420	0.0211	0.6618
	160.38	0.9417	0.0221	0.7485
	171.81	1.0769	0.0219	0.6789
	176.00	1.1264	-0.0217	0.6776
1.2D + 1.6W 97 mph Wind at 90° From Face	140.00	0.7141	-0.0281	0.6705
	151.93	0.8479	-0.0247	0.6646
	160.38	0.9483	-0.0258	0.7458
	171.81	1.0843	-0.0257	0.6836
	176.00	1.1341	-0.0257	0.6813
1.2D + 1.6W 97 mph Wind at Normal To Face	140.00	0.7299	0.0242	0.6908
	151.93	0.8664	0.0214	0.6786
	160.38	0.9686	0.0222	0.7672
	171.81	1.1075	0.0222	0.6965
	176.00	1.1581	-0.0215	0.6959

Last revised on March 27, 2019

Mat Foundation Design for Self Supporting Tower

			Date: 7/8/2019
Customer Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	176
Site Nmber:	CT04382-S-SBA	Engineer Name:	M. Baker
Engr. Number:	77944	Engineer Login ID:	

Foundation Info Obtained from: Drawings/Calculations

Analysis or Design? Analysis

Number of Tower Legs: 3 Legs

Base Reactions (Factored):

(1). Individual Leg:

Axial Load (Kips):	272.5	Uplift Force (Kips):	231.9
Shear Force (Kips):	26.7		

(2). Tower Base:

Total Vertical Load (Kips):	53.9	Total Shear Force (Kips):	42.8
Moment (Kips-ft):	4628.9		

Foundation Geometries:

Leg distance (Center-to-Center ft.):		21.0	Mods required -Yes/No ?:	No	
Diameter of Pier (ft.):	Round	1.5	Pier Height A. G. (ft.):	0.00	
Tower center to mat center (ft):		0.00	Depth of Base BG (ft.):	3.5	
Length of Pad (ft.):		31.5	Width of Pad (ft.):	31.5	
Thickness of Pad (ft):		4.00			

Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)		Tie steel yield (ksi):	60	
Vertical Rebar Size #:		Tie / Stirrup Size #:		
Qty. of Vertical Rebars:		Tie Spacing (in):		
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:

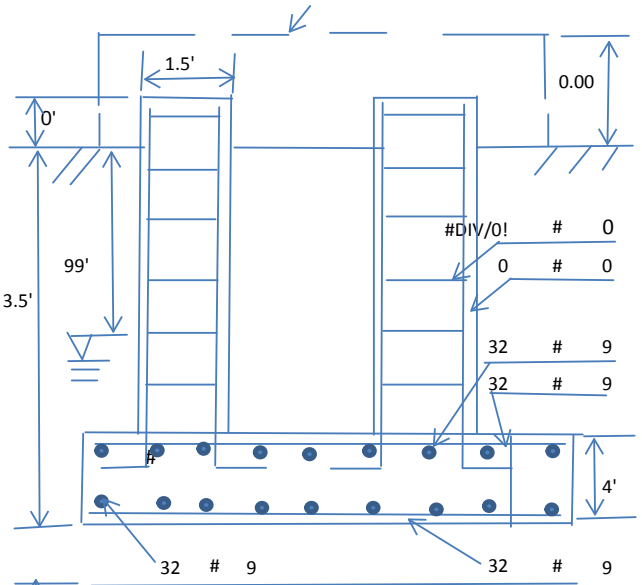
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32

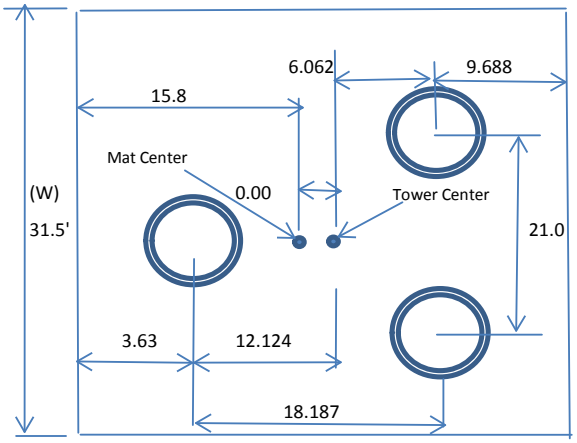
Rebar at the top of the concrete pad:

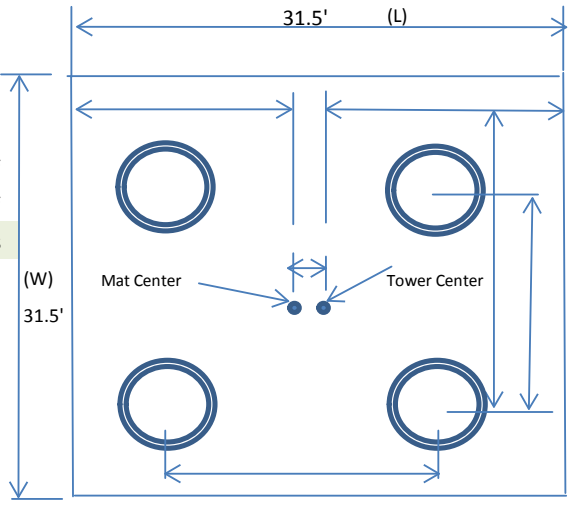
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32

Soil Design Parameters:

Soil Unit Weight (pcf):	115.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	10000	Consider ties in concrete shear strength:	Yes	







Allowable overstress %: 5.00% **TES Engr. Number:** 77944 Page 2/2 Date: 7/8/2019

Apply 1.35 for e/w per G/H: 1

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

Total Dry Soil Volume (cu. Ft.):	1.97	Total Dry Soil Weight (Kips):	0.23
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.23	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3969.04	Total Dry Concrete Weight (Kips):	595.36
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	595.36	Total Vertical Load on Base (Kips):	649.49

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf): Allowable	1608.19	<	Allowable Factored Soil Bearing (psf):	7500	0.21	OK!
Foundation Overturning Resistance (kips-ft.):	9291.4	>	Design Factored Momont (kips-ft):	4771	0.51	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.95	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

(1).Concrete Pad:

					Load/ Capacity Ratio	
One-Way Design Shear Capacity (L or W Direction, Kips):	1380.0	>	One-Way Factored Shear (L/W-Dir Kips	298.5	0.22	OK!
One-Way Design Shear Capacity (Diagonal Dir., Kips):	1143.0	>	One-Way Factored Shear (Dia. Dir, Kips	273.0	0.24	OK!
Lower Steel Pad Reinforcement Ratio (L or W-Direct.):	0.0019		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0017		
Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):	6255.6	>	Moment at Bottom (L-Direct. K-Ft):	1776.6	0.28	OK!
Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):	6122.4	>	Moment at Bottom (Dia. Dir. K-Ft):	1429.5	0.23	OK!
Upper Steel Pad Reinforcement Ratio (L or W -Direction):	0.0019		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0017		
Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):	6255.6	>	Moment at the top (L-Dir Kips-Ft):	998.2	0.16	OK!
Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):	6122.4	>	Moment at the top (Dia. Dir., K-Ft):	601.8	0.10	OK!
Punching Failure Capacity (Kips):	1351.5	>	Punch. Failure Factored Shear (K):	272.5	0.20	OK!

EXHIBIT 8

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

Antenna Mount Analysis Report

Existing 176-Ft Self Support Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT04382-S-SBA / New Britain 2, CT

Customer Site Name: New Britain 2, CT

Carrier Name: T-Mobile (App#: 116670, V1)

Carrier Site ID / Name: CT11351C / New Britain/RT 72 Wooster

Site Location: 1 Hartford Square

New Britain, Connecticut

Hartford County

Latitude: 41.666411

Longitude: -72.812803

Analysis Result:

Max Structural Usage: 76.3% [Pass]

Report Prepared By: Dayne Colahan

7/25/19

Introduction

The purpose of this report is to summarize the analysis results on the (3) Sector Frame at 152.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Mount Drawings	Mapping by Full Metal Tower Services, Dated 4/27/2019
Antenna Loading	Provided by SBA, Application #: 116670, v1
Modification Drawings	N/A

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 125 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 97 mph (3-Sec. Gust)
Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed: 60 mph +0" Radial ice
Standard/Codes: ANSI/TIA/EIA 222-G / 2015 IBC / 2018 CSBC
Exposure Category: C
Structure Class: II
Topographic Category: 1
Crest Height (Ft): 0

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

Mount Information

(3) Sector Frame at 152.00' elevation

Final Antenna Configuration

3	Ericsson Air21 B2A/B4P
3	Ericsson AIR 32
3	RFS APXVAARR24_43-U-NA20
3	Ericsson KRY 112 144/1
3	Ericsson Radio 4449 B71+B12

Any proposed antennas not currently installed should be mounted such that the centers of the antennas do not exceed 0.5 ft vertically from the center of the (3) Sector Frame.

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

Analysis Results

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 76.3%, which occurs in the top face horizontal. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

1. Mount Photos
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.


04.27.2019 07:50


04.27.2019 08:16

Structure: CT04382-S-SBA - New Britain 2, CT

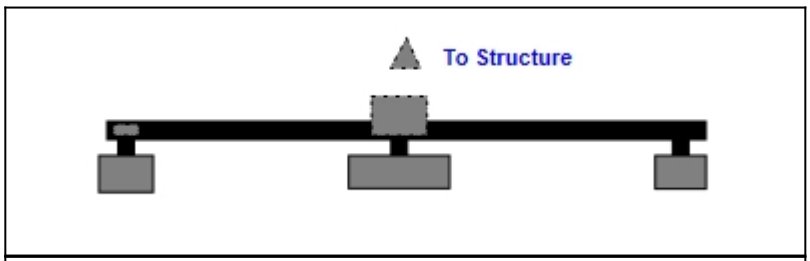
Sector: A

Structure Type: Self Support

Mount Elev: 152.00

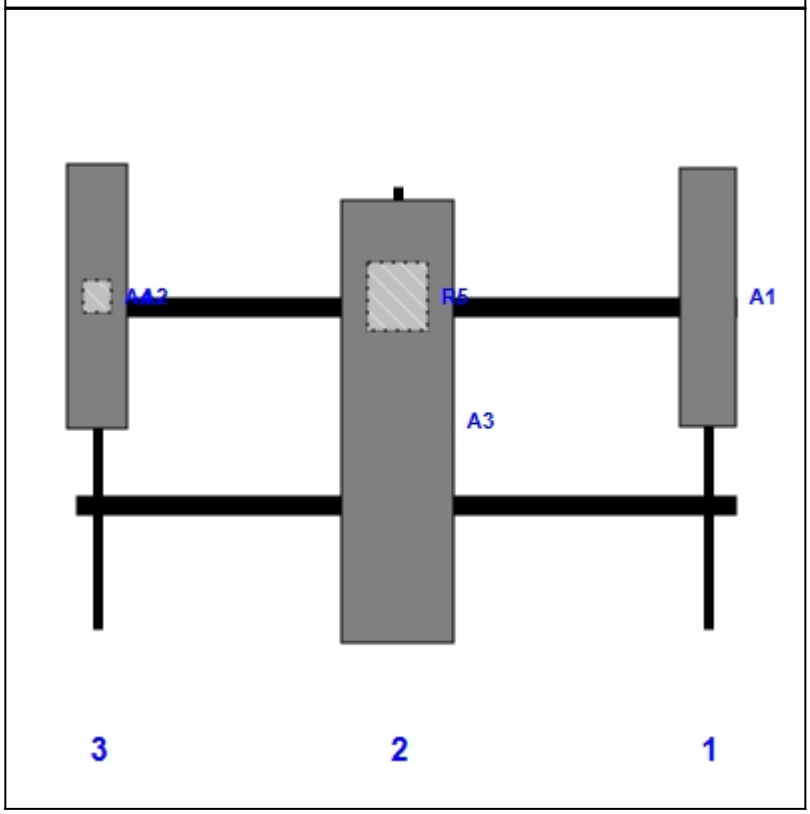
6/18/2019

Plan View



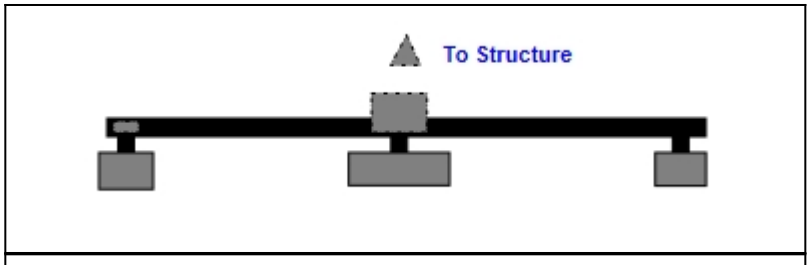
Front View

Looking Toward Structure



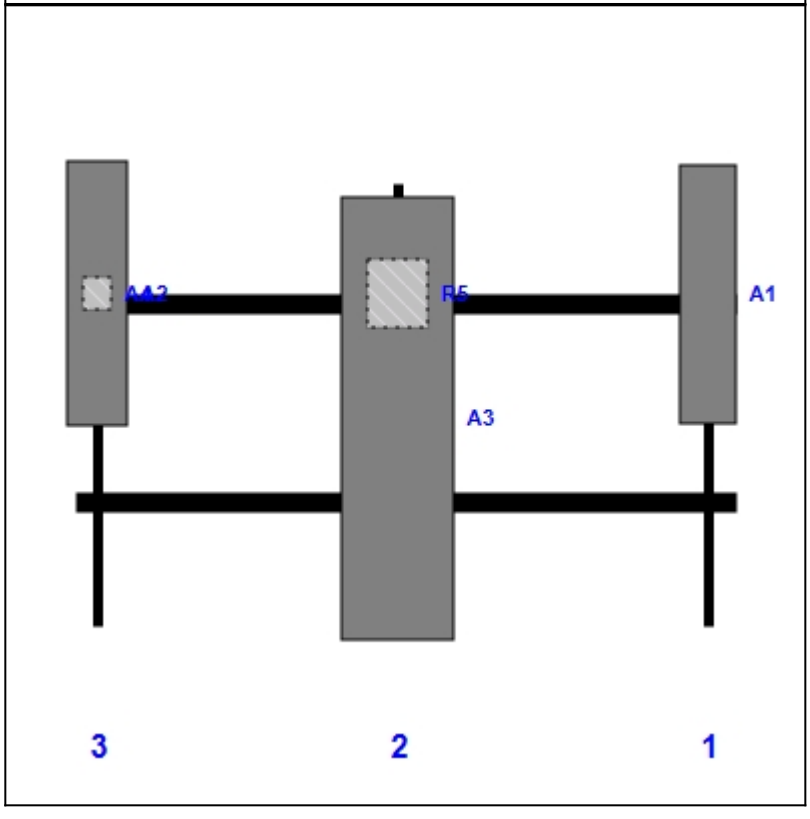
Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air21 B2A/B4P	56.00	12.10	137.00	1	a	Front	24.00	0.00
A3	APXVAARR24_43-U-NA20	95.90	24.00	70.00	2	a	Front	51.00	0.00
R5	Radio 4449 B71+B12	15.00	13.20	70.00	2	a	Behind	24.00	0.00
A2	AIR 32	57.00	12.90	5.00	3	a	Front	24.00	0.00
A4	KRY 112 144/1	6.90	6.10	5.00	3	a	Behind	24.00	0.00

Plan View



Front View

Looking Toward Structure



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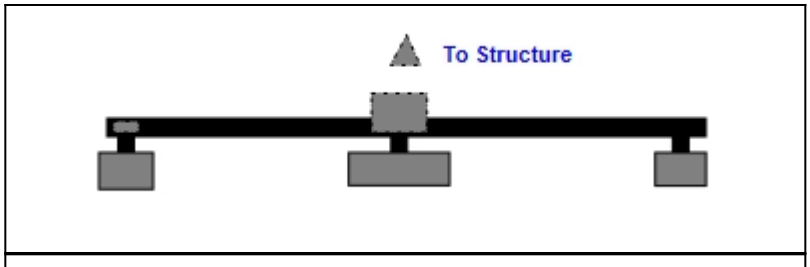
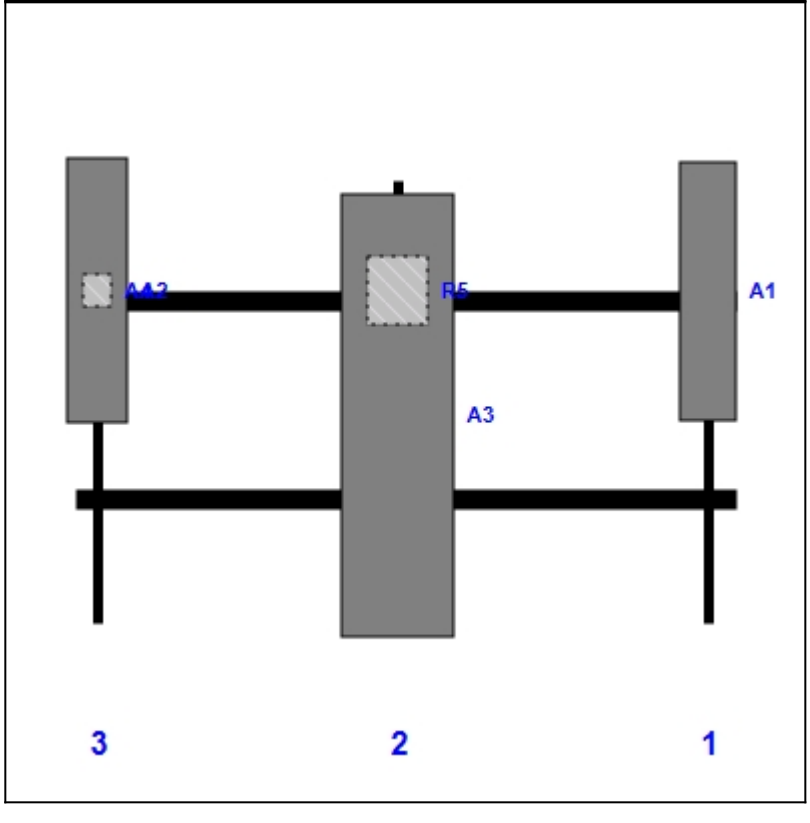
Plan View



Front View

Looking Toward Structure



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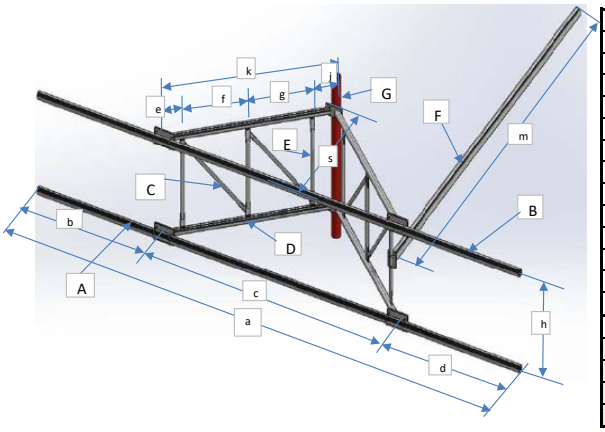
A4	KRY 112 144/1	6.90	6.10	5.00	3	a	Behind	24.00	0.00

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

FCC # 1220790

Tower Owner:	SBA Communications	**Mapping Date:**	4/27/19
Site Name:	New Britain 2, CT	**Structure Type:**	3-Sided S.S. Tower
Site Number or ID:	CT04382-S-SBA	**Structure Height (Ft.):**	175
Mapping Contractor:	Full Metal Tower Services	**Mount Height (Ft.):**	152.4



Geometries (Unit: inches)									
a	143	e	6	j	10	o		s	55
b	20	f	30	k	74	p		t	
c	103	g	28	m	126	q		u *	69
d	20	h	43	n		r		v *	96

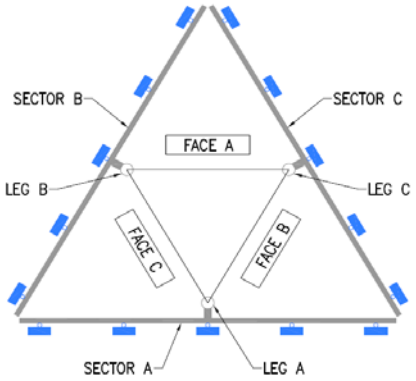
Members (Unit: inches)					* - See Ant. Layout for "u", "v" and member "K" (pipe)				
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	F	3.5 OD x 0.216 Pipe	3.5	3.068	0.216
B	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	G	4.5 OD x 0.237 Pipe	4.5	4.026	0.237
C	1.66 OD x 0.140 Pipe	1.66	1.38	0.14	H				
D	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	J				
E	1.66 OD x 0.140 Pipe	1.66	1.38	0.14	K (pipe)*	2.375 OD x 0.154 Pipe	2.375	2.067	0.154

Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)	3.5'
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)	N/A

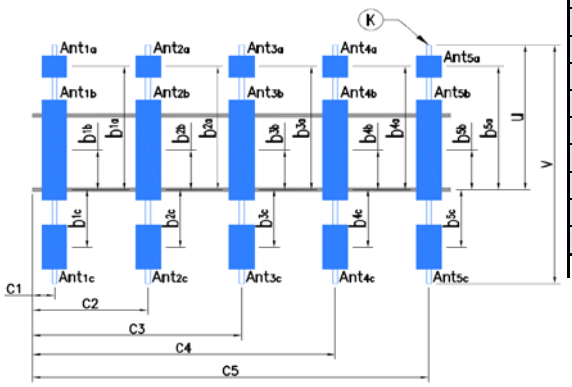
Please enter the infomation below if members can't be found from the drop down lists

MP2 Pipe 2.875 V:110, U:108

Tower Face Width at the mount (ft.):	6'	Tower Leg Size at the mount (in.):	4.5" OD x 0.237" Pipe



Climbing facility is On Leg C, at 180° Degree Azimuth

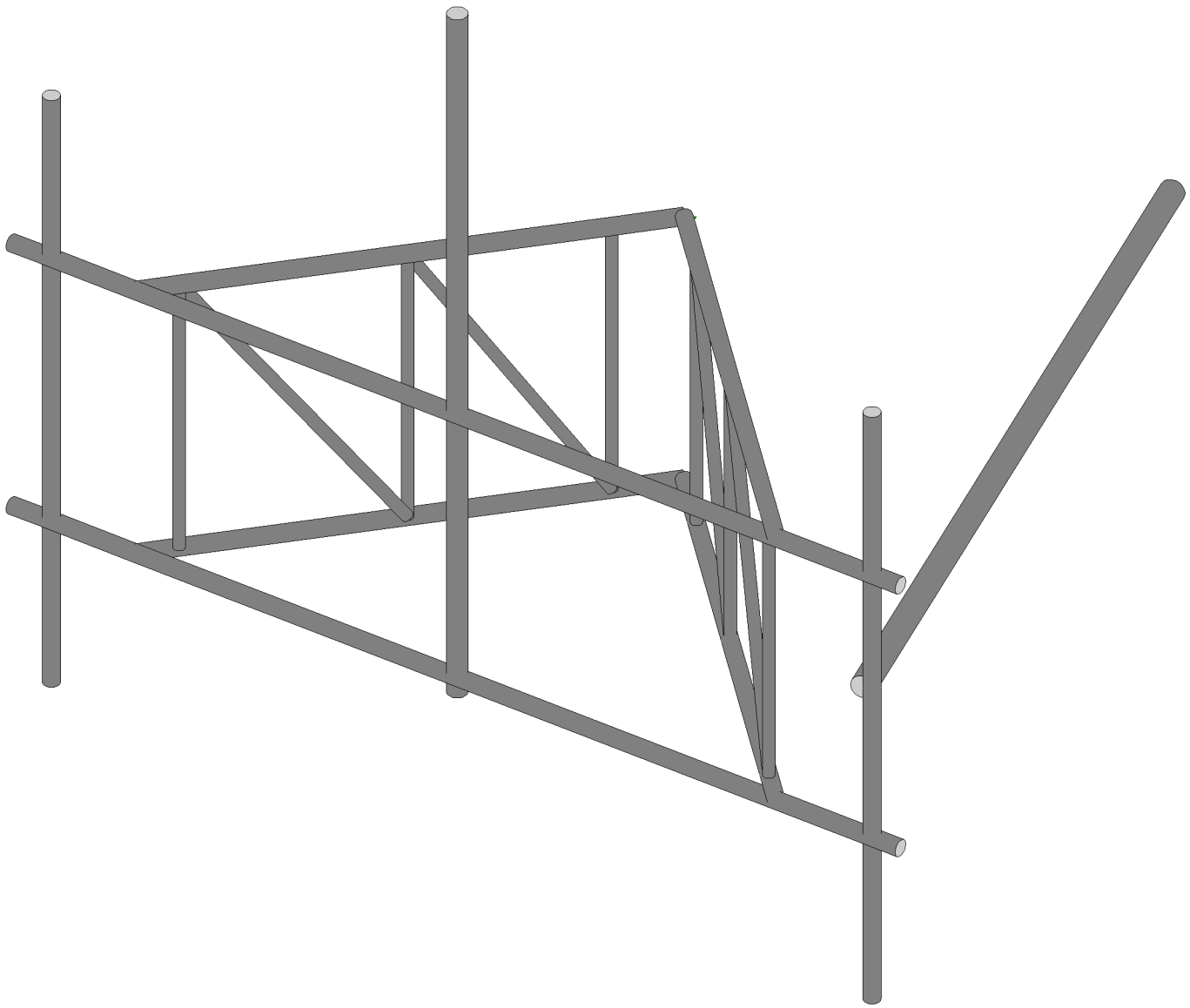


Antenna Layout

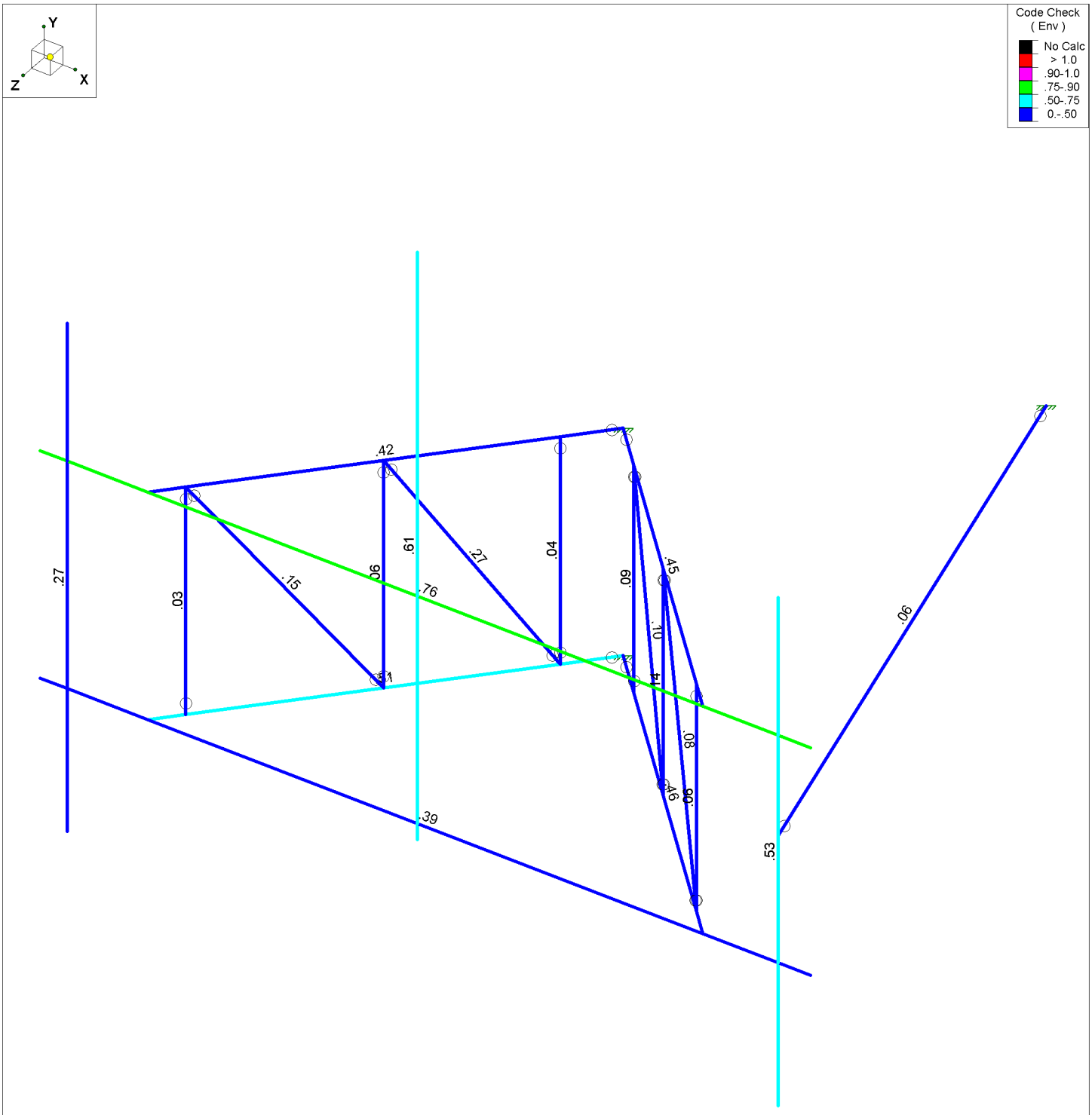
Ants. Items	Enter antenna model. If not labled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector.	Mounting Locations (Unit: inches)							Photos of antennas
	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (In.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C_1, C_2, C_3, C_4, C_5" (in.)	Photo Numbers
Sector A									
Ant_{1a}									
Ant_{1b}	Antenna A	13	9	56	N/A	+42"	8	5	
Ant_{1c}									
Ant_{2a}									
Ant_{2b}	Antenna B	12	7.5	96.5	1/2" (2)	+58"	7	70	
Ant_{2c}	RRH A	17	7	20	1/2" (2)	+76"	N/A	70	
Ant_{3a}									
Ant_{3b}	Antenna C	12	8	56	1/2" (2)	+48"	7	137	
Ant_{3c}	TMA A	6	3	8	1/2" (2)	+52"	N/A	137	
Ant_{4a}									
Ant_{4b}									
Ant_{4c}									
Ant_{5a}									
Ant_{5b}									
Ant_{5c}									
Are Ant same as sector A?	Yes	**Antennas on Sector B are the same as Sector A**							

Azimuth (Degree) of Each Sector and Climbing Information

Sector A:	70°	Deg	
Sector B:	160°	Deg	
Sector C:	285°	Deg	
Climbing	180°	Deg	On Leg C
Climbing Facility	Corrosion Type:		No corrosion observed
	Access:		Climbing path was unobstructed.
	Condition:		N/A

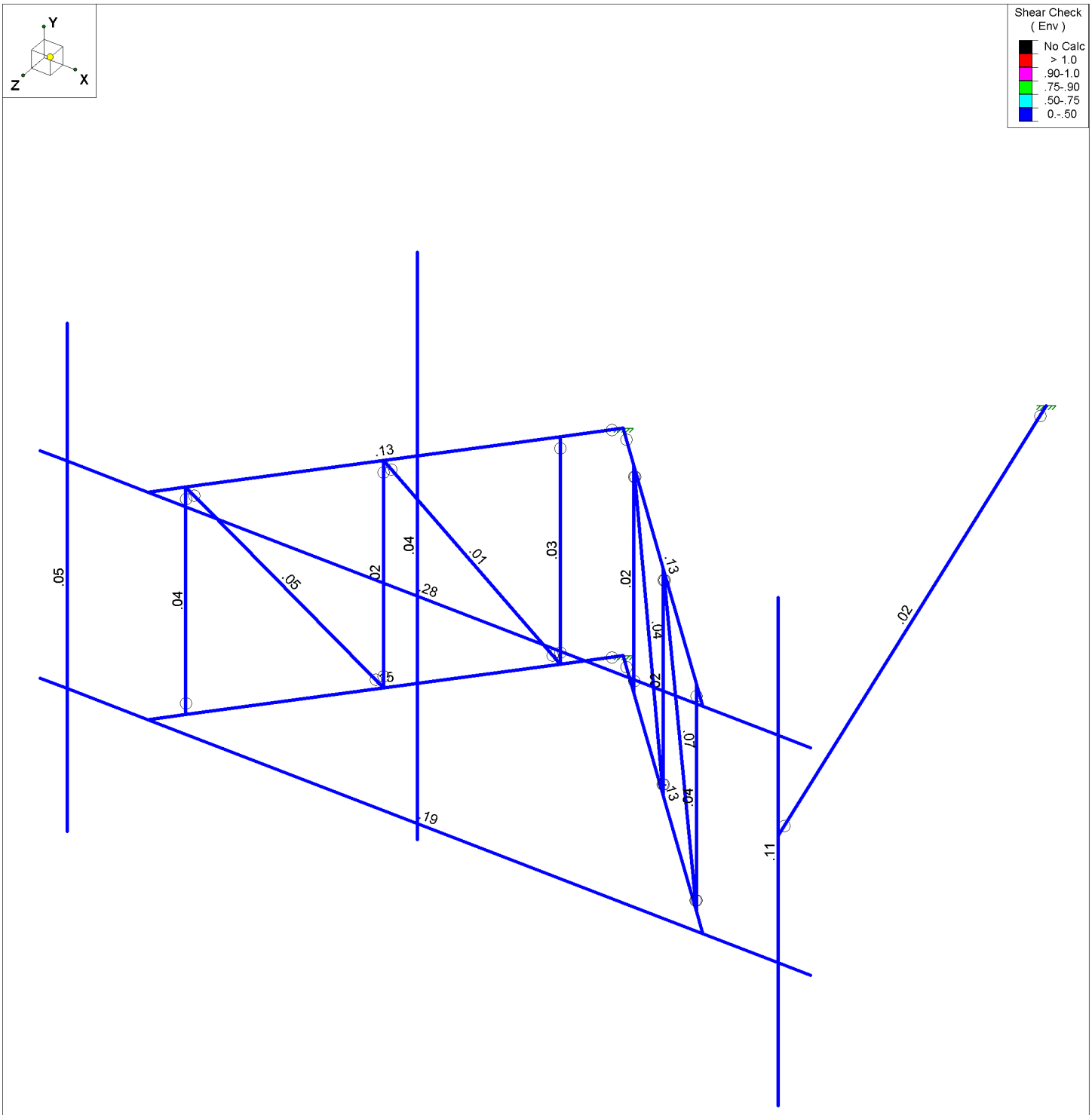


Tower Engineering Solutio...	CT04382-S-SBA_MT-MT_Loads Only_Sector A_G	SK - 1
		June 18, 2019 at 8:55 AM
TES Project No. 77628		CT04382-S-SBA_77628_G_RISA_L...



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

Tower Engineering Solutio...	CT04382-S-SBA_MT-MT_Loads Only_Sector A_G	SK - 4
		June 18, 2019 at 8:56 AM
TES Project No. 77628		CT04382-S-SBA_77628_G_RISA_L...



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

Tower Engineering Solutio...	CT04382-S-SBA_MT-MT_Loads Only_Sector A_G	SK - 5
		June 18, 2019 at 8:56 AM
TES Project No. 77628		CT04382-S-SBA_77628_G_RISA_L...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					8			
2	Antenna Di	None					8			
3	Antenna W Front	None					8			
4	Antenna Wi Front	None					8			
5	Antenna W Side	None					8			
6	Antenna Wi Side	None					8			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1						
10	Structure Di	None						20		
11	Structure W Front	None						20		
12	Structure Wi Front	None						20		
13	Structure W Side	None						20		
14	Structure Wi Side	None						20		

Load Combinations

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

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	3.583333	0	0	
2	N2	0	0	0	0	
3	N3	-5.958333	3.583333	4.583333	0	
4	N4	-5.958333	0	4.583333	0	
5	N5	-4.291667	3.583333	4.583333	0	
6	N6	-4.291667	0	4.583333	0	
7	N7	4.291667	3.583333	4.583333	0	
8	N8	4.291667	0	4.583333	0	
9	N9	5.958333	3.583333	4.583333	0	
10	N10	5.958333	0	4.583333	0	
11	N11	-0.569583	3.583333	0.608292	0	
12	N12	-0.569583	0	0.608292	0	
13	N13	-2.164415	3.583333	2.311511	0	
14	N14	-2.164415	0	2.311511	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
15	N15	-3.949917	3.583333	4.218358	0	
16	N16	-3.949917	0	4.218358	0	
17	N17	0.569583	3.583333	0.608292	0	
18	N18	0.569583	0	0.608292	0	
19	N19	2.164415	3.583333	2.311511	0	
20	N20	2.164415	0	2.311511	0	
21	N21	3.949917	3.583333	4.218358	0	
22	N22	3.949917	0	4.218358	0	
23	NP1	5.458333	5.75	4.583333	0	
24	NP2	5.458333	-2.25	4.583333	0	
25	NP3	-.125	9	4.583333	0	
26	NP4	-.125	-.25	4.583333	0	
27	NP5	-5.541667	5.75	4.583333	0	
28	NP6	-5.541667	-2.25	4.583333	0	
29	N29	5.458333	3.583333	4.583333	0	
30	N30	-.125	3.583333	4.583333	0	
31	N31	-5.541667	3.583333	4.583333	0	
32	N32	5.458333	0	4.583333	0	
33	N33	-.125	0	4.583333	0	
34	N34	-5.541667	0	4.583333	0	
35	N35	5.458333	2	4.583333	0	
36	N36	3	2	-5.3	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	xxxxx	HSS16x0....	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	N3	N9			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
2	M2	N4	N10			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
3	M3	N1	N5			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
4	M4	N2	N6			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
5	M5	N1	N7			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
6	M6	N2	N8			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
7	M7	N11	N12			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
8	M8	N12	N13			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
9	M9	N13	N14			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
10	M10	N14	N15			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
11	M11	N15	N16			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
12	M12	N17	N18			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
13	M13	N17	N20			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
14	M14	N19	N20			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
15	M15	N19	N22			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
16	M16	N21	N22			PIPE_1.25	Beam	Pipe	A53 Gr.B	DR1
17	MP1A	NP1	NP2			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
18	MP2A	NP3	NP4			PIPE_2.5	Beam	Pipe	A53 Gr.B	DR1
19	MP3A	NP5	NP6			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
20	M20	N35	N36			PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M1						Yes			None
2	M2						Yes			None
3	M3	BenPIN					Yes			None
4	M4	BenPIN					Yes			None
5	M5	BenPIN					Yes			None
6	M6	BenPIN					Yes			None
7	M7	BenPIN	BenPIN				Yes			None
8	M8	BenPIN	BenPIN				Yes			None
9	M9	BenPIN	BenPIN				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 ...
10	M10	BenPIN	BenPIN				Yes			None
11	M11	BenPIN	BenPIN				Yes			None
12	M12	BenPIN	BenPIN				Yes			None
13	M13	BenPIN	BenPIN				Yes			None
14	M14	BenPIN	BenPIN				Yes			None
15	M15	BenPIN	BenPIN				Yes			None
16	M16	BenPIN	BenPIN				Yes			None
17	MP1A						Yes	-z		None
18	MP2A						Yes	-z		None
19	MP3A						Yes	-z		None
20	M20	BenPIN	BenPIN				Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	PIPE_2.0	11.917			Lbyy			1	1		Gravity
2	M2	PIPE_2.0	11.917			Lbyy			1	1		Gravity
3	M3	PIPE_2.0	6.279			Lbyy			.8	.8		Lateral
4	M4	PIPE_2.0	6.279			Lbyy			.8	.8		Gravity
5	M5	PIPE_2.0	6.279			Lbyy			.8	.8		Gravity
6	M6	PIPE_2.0	6.279			Lbyy			.8	.8		Gravity
7	M7	PIPE_1.25	3.583			Lbyy			1	1		Gravity
8	M8	PIPE_1.25	4.276			Lbyy			1	1		Gravity
9	M9	PIPE_1.25	3.583			Lbyy			1	1		Gravity
10	M10	PIPE_1.25	4.434			Lbyy			1	1		Gravity
11	M11	PIPE_1.25	3.583			Lbyy			1	1		Gravity
12	M12	PIPE_1.25	3.583			Lbyy			1	1		Gravity
13	M13	PIPE_1.25	4.276			Lbyy			1	1		Lateral
14	M14	PIPE_1.25	3.583			Lbyy			1	1		Gravity
15	M15	PIPE_1.25	4.434			Lbyy			1	1		Lateral
16	M16	PIPE_1.25	3.583			Lbyy			1	1		Gravity
17	MP1A	PIPE_2.0	8			Lbyy			1	1		Gravity
18	MP2A	PIPE_2.5	9.25			Lbyy			1	1		Gravity
19	MP3A	PIPE_2.0	8			Lbyy			1	1		Gravity
20	M20	PIPE_3.0	10.184			Lbyy			1	1		Lateral

Cold Formed Steel Design Parameters

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

Aluminum Design Parameters

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

Joint Loads and Enforced Displacements

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

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-45.75	.5
2	MP1A	Y	-45.75	3.5
3	MP3A	Y	-66.1	.5
4	MP3A	Y	-66.1	3.5
5	MP2A	Y	-64	.5
6	MP2A	Y	-64	8
7	MP3A	Y	-11	2
8	MP2A	Y	-70	2

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-120.173	.5
2	MP1A	Y	-120.173	3.5
3	MP3A	Y	-130.741	.5
4	MP3A	Y	-130.741	3.5
5	MP2A	Y	-290.989	.5
6	MP2A	Y	-290.989	8
7	MP3A	Y	-25.986	2
8	MP2A	Y	-99.18	2

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-73.248	.5
2	MP1A	Z	-73.248	3.5
3	MP3A	Z	-78.299	.5
4	MP3A	Z	-78.299	3.5
5	MP2A	Z	-243.438	.5
6	MP2A	Z	-243.438	8
7	MP3A	Z	-4.931	2
8	MP2A	Z	-19.845	2

Member Point Loads (BLC 4 : Antenna Wi Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-24.248	.5
2	MP1A	Z	-24.248	3.5
3	MP3A	Z	-25.887	.5
4	MP3A	Z	-25.887	3.5
5	MP2A	Z	-72.891	.5
6	MP2A	Z	-72.891	8
7	MP3A	Z	-2.399	2
8	MP2A	Z	-7.652	2

Member Point Loads (BLC 5 : Antenna W Side)

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	51.841	.5
2	MP1A	X	51.841	3.5
3	MP3A	X	57.163	.5
4	MP3A	X	57.163	3.5
5	MP2A	X	98.496	.5
6	MP2A	X	98.496	8
7	MP3A	X	3.742	2
8	MP2A	X	27.964	2

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	18.129	.5
2	MP1A	X	18.129	3.5
3	MP3A	X	19.677	.5
4	MP3A	X	19.677	3.5
5	MP2A	X	33.065	.5
6	MP2A	X	33.065	8
7	MP3A	X	3.057	2
8	MP2A	X	11.623	2

Member Point Loads (BLC 7 : Service Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M2	Y	-500	0

Member Point Loads (BLC 8 : Service Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M2	Y	-500	%50

Member Distributed Loads (BLC 10 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-13.394	-13.394	0	%100
2	M2	Y	-13.394	-13.394	0	%100
3	M3	Y	-13.394	-13.394	0	%100
4	M4	Y	-13.394	-13.394	0	%100
5	M5	Y	-13.394	-13.394	0	%100
6	M6	Y	-13.394	-13.394	0	%100
7	M7	Y	-11.358	-11.358	0	%100
8	M8	Y	-11.358	-11.358	0	%100
9	M9	Y	-11.358	-11.358	0	%100
10	M10	Y	-11.358	-11.358	0	%100
11	M11	Y	-11.358	-11.358	0	%100
12	M12	Y	-11.358	-11.358	0	%100
13	M13	Y	-11.358	-11.358	0	%100
14	M14	Y	-11.358	-11.358	0	%100
15	M15	Y	-11.358	-11.358	0	%100
16	M16	Y	-11.358	-11.358	0	%100
17	MP1A	Y	-13.394	-13.394	0	%100
18	MP2A	Y	-14.817	-14.817	0	%100
19	MP3A	Y	-13.394	-13.394	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
20	M20	Y	-16.596	-16.596	0	%100

Member Distributed Loads (BLC 11 : Structure W Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-5.713	-5.713	0	%100
2	M2	PZ	-5.713	-5.713	0	%100
3	M3	PZ	-5.713	-5.713	0	%100
4	M4	PZ	-5.713	-5.713	0	%100
5	M5	PZ	-5.713	-5.713	0	%100
6	M6	PZ	-5.713	-5.713	0	%100
7	M7	PZ	-3.993	-3.993	0	%100
8	M8	PZ	-3.993	-3.993	0	%100
9	M9	PZ	-3.993	-3.993	0	%100
10	M10	PZ	-3.993	-3.993	0	%100
11	M11	PZ	-3.993	-3.993	0	%100
12	M12	PZ	-3.993	-3.993	0	%100
13	M13	PZ	-3.993	-3.993	0	%100
14	M14	PZ	-3.993	-3.993	0	%100
15	M15	PZ	-3.993	-3.993	0	%100
16	M16	PZ	-3.993	-3.993	0	%100
17	MP1A	PZ	-5.713	-5.713	0	%100
18	MP2A	PZ	-6.916	-6.916	0	%100
19	MP3A	PZ	-5.713	-5.713	0	%100
20	M20	PZ	-8.419	-8.419	0	%100

Member Distributed Loads (BLC 12 : Structure Wi Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-4.496	-4.496	0	%100
2	M2	PZ	-4.496	-4.496	0	%100
3	M3	PZ	-4.496	-4.496	0	%100
4	M4	PZ	-4.496	-4.496	0	%100
5	M5	PZ	-4.496	-4.496	0	%100
6	M6	PZ	-4.496	-4.496	0	%100
7	M7	PZ	-4.039	-4.039	0	%100
8	M8	PZ	-4.039	-4.039	0	%100
9	M9	PZ	-4.039	-4.039	0	%100
10	M10	PZ	-4.039	-4.039	0	%100
11	M11	PZ	-4.039	-4.039	0	%100
12	M12	PZ	-4.039	-4.039	0	%100
13	M13	PZ	-4.039	-4.039	0	%100
14	M14	PZ	-4.039	-4.039	0	%100
15	M15	PZ	-4.039	-4.039	0	%100
16	M16	PZ	-4.039	-4.039	0	%100
17	MP1A	PZ	-4.496	-4.496	0	%100
18	MP2A	PZ	-4.816	-4.816	0	%100
19	MP3A	PZ	-4.496	-4.496	0	%100
20	M20	PZ	-5.216	-5.216	0	%100

Member Distributed Loads (BLC 13 : Structure W Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	5.713	5.713	0	%100
2	M2	PX	5.713	5.713	0	%100
3	M3	PX	5.713	5.713	0	%100
4	M4	PX	5.713	5.713	0	%100
5	M5	PX	5.713	5.713	0	%100
6	M6	PX	5.713	5.713	0	%100
7	M7	PX	3.993	3.993	0	%100
8	M8	PX	3.993	3.993	0	%100
9	M9	PX	3.993	3.993	0	%100
10	M10	PX	3.993	3.993	0	%100
11	M11	PX	3.993	3.993	0	%100
12	M12	PX	3.993	3.993	0	%100
13	M13	PX	3.993	3.993	0	%100
14	M14	PX	3.993	3.993	0	%100
15	M15	PX	3.993	3.993	0	%100
16	M16	PX	3.993	3.993	0	%100
17	MP1A	PX	5.713	5.713	0	%100
18	MP2A	PX	6.916	6.916	0	%100
19	MP3A	PX	5.713	5.713	0	%100
20	M20	PX	8.419	8.419	0	%100

Member Distributed Loads (BLC 14 : Structure Wi Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	4.496	4.496	0	%100
2	M2	PX	4.496	4.496	0	%100
3	M3	PX	4.496	4.496	0	%100
4	M4	PX	4.496	4.496	0	%100
5	M5	PX	4.496	4.496	0	%100
6	M6	PX	4.496	4.496	0	%100
7	M7	PX	4.039	4.039	0	%100
8	M8	PX	4.039	4.039	0	%100
9	M9	PX	4.039	4.039	0	%100
10	M10	PX	4.039	4.039	0	%100
11	M11	PX	4.039	4.039	0	%100
12	M12	PX	4.039	4.039	0	%100
13	M13	PX	4.039	4.039	0	%100
14	M14	PX	4.039	4.039	0	%100
15	M15	PX	4.039	4.039	0	%100
16	M16	PX	4.039	4.039	0	%100
17	MP1A	PX	4.496	4.496	0	%100
18	MP2A	PX	4.816	4.816	0	%100
19	MP3A	PX	4.496	4.496	0	%100
20	M20	PX	5.216	5.216	0	%100

Member Area Loads

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

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N36	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	1518.397	4	1817.863	7	979.632	1	.026	1	0	4	.02	3
2		min	-1432.808	3	452.757	4	-4767.672	6	-.087	6	0	3	-.032	9
3	N2	max	249.931	4	1929.33	8	4389.229	8	.012	1	0	4	.01	6
4		min	-1253.156	9	499.599	3	562.722	3	-.085	6	0	3	-.039	9
5	N36	max	268.282	3	127.938	8	1334.091	3	.021	3	0	1	.084	3
6		min	-264.336	4	42.457	3	-1342.801	4	-.021	4	0	1	-.085	4
7	Totals:	max	1503.992	4	3863.02	5	2198.737	1						
8		min	-1503.992	3	1035.978	3	-2198.737	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
1	M1	1	max	0	1	0	1	0	1	0	1	0	1	0	1
2			min	0	1	0	1	0	1	0	1	0	1	0	1
3		2	max	889.708	2	373.575	8	508.087	1	.325	1	.206	2	.197	5
4			min	-846.041	1	-33.28	3	-545.079	2	-.308	2	-.179	1	.014	2
5		3	max	873.047	2	91.837	4	486.971	2	.305	2	1.167	1	.22	4
6			min	-821.254	1	-309.047	7	-453.33	1	-.317	1	-1.239	2	-.769	7
7		4	max	873.047	2	79.429	4	514.204	2	.305	2	.343	3	.23	7
8			min	-821.254	1	-361.357	7	-480.562	1	-.317	1	-.335	4	-.035	4
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1
11	M2	1	max	0	1	0	1	0	1	0	1	0	1	0	1
12			min	0	1	-750	9	0	1	0	1	0	1	0	1
13		2	max	166.188	9	351.986	8	56.111	7	.156	1	.057	1	.189	8
14			min	-198.041	4	45.407	3	-27.575	4	-.14	2	-.076	2	.025	3
15		3	max	231.505	3	-16.345	9	23.085	3	.137	2	.182	3	-.041	9
16			min	-287.905	4	-276.527	6	-53.296	8	-.15	1	-.146	4	-.689	6
17		4	max	231.505	3	-28.753	9	23.085	3	.137	2	.251	3	.22	8
18			min	-287.905	4	-328.837	6	-53.296	8	-.15	1	-.278	4	.027	9
19		5	max	0	1	0	1	0	1	0	1	0	1	0	1
20			min	0	1	0	1	0	1	0	1	0	1	0	1
21	M3	1	max	551.69	1	846.71	8	75.404	2	.066	6	0	1	0	1
22			min	-3256.758	6	151.68	3	-81.929	1	-.028	9	0	1	0	1
23		2	max	536.175	1	-61.652	3	63.785	2	.066	6	.091	2	-.081	3
24			min	-3248.015	6	-360.437	8	-66.837	1	-.028	9	-.098	1	-.439	8
25		3	max	529.016	1	-68.19	3	57.082	2	.066	6	.186	2	.153	5
26			min	-3244.493	6	-388	8	-60.133	1	-.028	9	-.198	1	.002	2
27		4	max	987.872	1	71.73	1	42.573	2	.07	6	.256	2	.154	9
28			min	-1710.426	2	-62.571	2	-32.883	1	-.029	1	-.252	1	-.041	1
29		5	max	1220.41	1	724.11	8	53.402	4	.077	2	.368	2	.098	2
30			min	-1317.28	2	89.815	3	-53.826	3	-.048	1	-.343	1	-.338	5
31	M4	1	max	2973.117	5	1075.285	8	47.78	2	.069	6	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
32			min	561.096	3	192.158	3	-46.325	1	-.034	9	0	1	0	1
33		2	max	1294.285	5	-77.476	3	25.122	2	.066	6	.07	2	-.103	3
34			min	241.136	3	-453.981	8	-23.767	1	-.035	9	-.07	1	-.56	8
35		3	max	1290.763	5	-84.014	3	24.254	4	.066	6	.105	2	.174	8
36			min	233.977	3	-481.544	8	-23.14	3	-.035	9	-.102	1	.024	3
37		4	max	233.28	5	61.084	10	49.149	4	.062	7	.081	2	.145	9
38			min	5.376	3	-36.814	9	-48.472	3	-.035	9	-.078	1	.005	1
39		5	max	224.598	5	706.422	8	65.504	4	.062	7	.152	4	-.036	3
40			min	-9.602	3	150.244	1	-64.917	3	-.035	9	-.147	3	-.305	8
41	M5	1	max	804.212	4	961.776	7	116.039	3	.012	1	0	1	0	1
42			min	-3348.186	7	148.489	4	-127.37	4	-.061	6	0	1	0	1
43		2	max	1042.589	4	-48.888	4	95.497	3	.021	1	.129	3	-.087	4
44			min	-1706.898	3	-406.402	7	-101.213	4	-.063	8	-.142	4	-.501	7
45		3	max	1035.43	4	-55.426	4	87.852	3	.021	1	.273	3	.159	7
46			min	-1699.739	3	-433.965	7	-93.568	4	-.063	8	-.295	4	-.006	4
47		4	max	1200.463	1	75.194	1	70.905	3	.044	3	.345	3	.097	2
48			min	-1293.632	2	-62.96	2	-62.674	4	-.071	4	-.355	4	-.048	1
49		5	max	1184.944	1	778.835	7	59.665	3	.044	3	.446	3	.195	4
50			min	-1278.091	2	-149.308	4	-41.378	4	-.071	4	-.439	4	-.371	7
51	M6	1	max	3099.511	8	926.455	7	73.111	3	.004	1	0	1	0	1
52			min	149.328	3	161.392	4	-79.051	4	-.056	7	0	1	0	1
53		2	max	3090.99	8	-73.606	4	57.198	3	.004	1	.117	3	-.08	4
54			min	164.303	3	-390.424	7	-61.257	4	-.056	7	-.126	4	-.483	7
55		3	max	3087.469	8	-80.144	4	49.553	3	.004	1	.201	3	.157	8
56			min	171.461	3	-417.987	7	-53.611	4	-.056	7	-.216	4	.026	9
57		4	max	1483.02	8	58.493	10	26.903	3	.011	4	.283	3	.095	7
58			min	-390.423	3	-16.771	3	-23.727	4	-.063	7	-.293	4	-.011	4
59		5	max	852.367	4	746.229	8	35.672	2	.036	4	.349	3	.069	3
60			min	-754.384	3	21.767	3	-36.853	1	-.075	7	-.35	4	-.348	8
61	M7	1	max	-207.292	3	11.447	3	11.447	2	.019	1	0	1	0	1
62			min	-1200.647	8	-11.447	4	-11.447	1	-.018	2	0	1	0	1
63		2	max	-205.006	3	5.724	3	5.724	2	.019	1	.008	2	.008	4
64			min	-1188.185	8	-5.724	4	-5.724	1	-.018	2	-.008	1	-.008	3
65		3	max	-202.72	3	0	1	0	1	.019	1	.01	2	.01	4
66			min	-1175.724	8	0	1	0	1	-.018	2	-.01	1	-.01	3
67		4	max	-200.433	3	5.724	4	5.724	1	.019	1	.008	2	.008	4
68			min	-1163.263	8	-5.724	3	-5.724	2	-.018	2	-.008	1	-.008	3
69		5	max	-198.147	3	11.447	4	11.447	1	.019	1	0	1	0	1
70			min	-1150.801	8	-11.447	3	-11.447	2	-.018	2	0	1	0	1
71	M8	1	max	3125.672	8	21.075	6	9.252	3	.007	2	0	1	0	1
72			min	552.295	3	-4.687	1	-9.252	4	-.005	1	0	1	0	1
73		2	max	3114.705	8	10.537	6	4.626	3	.007	2	.007	3	.004	1
74			min	547.645	3	-2.343	1	-4.626	4	-.005	1	-.007	4	-.017	6
75		3	max	3103.738	8	0	1	0	1	.007	2	.01	3	.005	1
76			min	542.995	3	0	1	0	1	-.005	1	-.01	4	-.023	6
77		4	max	3092.771	8	2.343	1	4.626	4	.007	2	.007	3	.004	1
78			min	538.345	3	-10.537	6	-4.626	3	-.005	1	-.007	4	-.017	6
79		5	max	3081.804	8	4.687	1	9.252	4	.007	2	0	1	0	1
80			min	533.696	3	-21.075	6	-9.252	3	-.005	1	0	1	0	1
81	M9	1	max	-379.666	3	11.447	3	11.447	2	.01	4	0	1	0	1
82			min	-2118.466	8	-11.447	4	-11.447	1	-.011	3	0	1	0	1
83		2	max	-377.38	3	5.724	3	5.724	2	.01	4	.008	2	.008	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
84			min	-2106.005	8	-5.724	4	-5.724	1	-.011	3	-.008	1	-.008	3
85		3	max	-375.094	3	0	1	0	1	.01	4	.01	2	.01	4
86			min	-2093.543	8	0	1	0	1	-.011	3	-.01	1	-.01	3
87		4	max	-372.807	3	5.724	4	5.724	1	.01	4	.008	2	.008	4
88			min	-2081.082	8	-5.724	3	-5.724	2	-.011	3	-.008	1	-.008	3
89		5	max	-370.521	3	11.447	4	11.447	1	.01	4	0	1	0	1
90			min	-2068.62	8	-11.447	3	-11.447	2	-.011	3	0	1	0	1
91	M10	1	max	1853.316	8	22.939	6	9.465	3	.035	2	0	1	0	1
92			min	357.366	3	-4.21	1	-9.465	4	-.033	1	0	1	0	1
93		2	max	1842.506	8	11.469	6	4.733	3	.035	2	.008	3	.004	1
94			min	352.47	3	-2.105	1	-4.733	4	-.033	1	-.008	4	-.019	6
95		3	max	1831.695	8	0	1	0	1	.035	2	.01	3	.005	1
96			min	347.573	3	0	1	0	1	-.033	1	-.01	4	-.025	6
97		4	max	1820.884	8	2.105	1	4.733	4	.035	2	.008	3	.004	1
98			min	342.676	3	-11.469	6	-4.733	3	-.033	1	-.008	4	-.019	6
99		5	max	1810.073	8	4.21	1	9.465	4	.035	2	0	1	0	1
100			min	337.779	3	-22.939	6	-9.465	3	-.033	1	0	1	0	1
101	M11	1	max	-135.776	1	11.447	3	11.447	2	.028	2	0	1	0	1
102			min	-741.454	6	-11.447	4	-11.447	1	-.03	1	0	1	0	1
103		2	max	-133.49	1	5.724	3	5.724	2	.028	2	.008	2	.008	4
104			min	-728.993	6	-5.724	4	-5.724	1	-.03	1	-.008	1	-.008	3
105		3	max	-131.204	1	0	1	0	1	.028	2	.01	2	.01	4
106			min	-716.531	6	0	1	0	1	-.03	1	-.01	1	-.01	3
107		4	max	-128.918	1	5.724	4	5.724	1	.028	2	.008	2	.008	4
108			min	-704.07	6	-5.724	3	-5.724	2	-.03	1	-.008	1	-.008	3
109		5	max	-126.631	1	11.447	4	11.447	1	.028	2	0	1	0	1
110			min	-691.608	6	-11.447	3	-11.447	2	-.03	1	0	1	0	1
111	M12	1	max	1223.372	7	11.447	3	11.447	2	.015	4	0	1	0	1
112			min	217.898	4	-11.447	4	-11.447	1	-.015	1	0	1	0	1
113		2	max	1235.833	7	5.724	3	5.724	2	.015	4	.008	2	.008	4
114			min	220.184	4	-5.724	4	-5.724	1	-.015	1	-.008	1	-.008	3
115		3	max	1248.295	7	0	1	0	1	.015	4	.01	2	.01	4
116			min	222.47	4	0	1	0	1	-.015	1	-.01	1	-.01	3
117		4	max	1260.756	7	5.724	4	5.724	1	.015	4	.008	2	.008	4
118			min	224.756	4	-5.724	3	-5.724	2	-.015	1	-.008	1	-.008	3
119		5	max	1273.217	7	11.447	4	11.447	1	.015	4	0	1	0	1
120			min	227.043	4	-11.447	3	-11.447	2	-.015	1	0	1	0	1
121	M13	1	max	-480.068	4	21.075	5	9.252	3	.027	4	0	1	0	1
122			min	-3078.741	7	-4.687	2	-9.252	4	-.027	3	0	1	0	1
123		2	max	-480.146	4	10.537	5	4.626	3	.027	4	.007	3	.004	2
124			min	-3064.785	7	-2.343	2	-4.626	4	-.027	3	-.007	4	-.017	5
125		3	max	-480.223	4	0	1	0	1	.027	4	.01	3	.005	2
126			min	-3050.829	7	0	1	0	1	-.027	3	-.01	4	-.023	5
127		4	max	-480.3	4	2.343	2	4.626	4	.027	4	.007	3	.004	2
128			min	-3036.873	7	-10.537	5	-4.626	3	-.027	3	-.007	4	-.017	5
129		5	max	-480.378	4	4.687	2	9.252	4	.027	4	0	1	0	1
130			min	-3022.918	7	-21.075	5	-9.252	3	-.027	3	0	1	0	1
131	M14	1	max	2000.258	7	11.447	3	11.447	2	.01	4	0	1	0	1
132			min	269.189	4	-11.447	4	-11.447	1	-.01	3	0	1	0	1
133		2	max	2012.72	7	5.724	3	5.724	2	.01	4	.008	2	.008	4
134			min	271.475	4	-5.724	4	-5.724	1	-.01	3	-.008	1	-.008	3
135		3	max	2025.181	7	0	1	0	1	.01	4	.01	2	.01	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
136			min	273.761	4	0	1	0	1	-.01	3	-.01	1	-.01	3
137		4	max	2037.642	7	5.724	4	5.724	1	.01	4	.008	2	.008	4
138			min	276.047	4	-5.724	3	-5.724	2	-.01	3	-.008	1	-.008	3
139		5	max	2050.104	7	11.447	4	11.447	1	.01	4	0	1	0	1
140			min	278.334	4	-11.447	3	-11.447	2	-.01	3	0	1	0	1
141	M15	1	max	-309.078	4	22.939	5	9.465	3	.043	4	0	1	0	1
142			min	-1829.244	7	-4.21	2	-9.465	4	-.044	3	0	1	0	1
143		2	max	-309.402	4	11.469	5	4.733	3	.043	4	.008	3	.004	2
144			min	-1815.132	7	-2.105	2	-4.733	4	-.044	3	-.008	4	-.019	5
145		3	max	-309.727	4	0	1	0	1	.043	4	.01	3	.005	2
146			min	-1801.02	7	0	1	0	1	-.044	3	-.01	4	-.025	5
147		4	max	-310.051	4	2.105	2	4.733	4	.043	4	.008	3	.004	2
148			min	-1786.908	7	-11.469	5	-4.733	3	-.044	3	-.008	4	-.019	5
149		5	max	-310.375	4	4.21	2	9.465	4	.043	4	0	1	0	1
150			min	-1772.796	7	-22.939	5	-9.465	3	-.044	3	0	1	0	1
151	M16	1	max	753.488	7	11.447	3	11.447	2	.029	1	0	1	0	1
152			min	-95.258	4	-11.447	4	-11.447	1	-.028	2	0	1	0	1
153		2	max	765.949	7	5.724	3	5.724	2	.029	1	.008	2	.008	4
154			min	-92.972	4	-5.724	4	-5.724	1	-.028	2	-.008	1	-.008	3
155		3	max	778.411	7	0	1	0	1	.029	1	.01	2	.01	4
156			min	-90.685	4	0	1	0	1	-.028	2	-.01	1	-.01	3
157		4	max	790.872	7	5.724	4	5.724	1	.029	1	.008	2	.008	4
158			min	-88.399	4	-5.724	3	-5.724	2	-.028	2	-.008	1	-.008	3
159		5	max	803.334	7	11.447	4	11.447	1	.029	1	0	1	0	1
160			min	-86.113	4	-11.447	3	-11.447	2	-.028	2	0	1	0	1
161	MP1A	1	max	0	1	.079	4	.188	3	0	3	0	1	0	1
162			min	0	1	-.08	3	-.336	8	0	4	0	1	0	1
163		2	max	210.19	6	101.307	4	135.528	1	0	3	.194	1	.143	3
164			min	63.23	2	-101.308	3	-135.549	2	0	4	-.194	2	-.143	4
165		3	max	299.424	8	255.917	4	580.516	4	.05	1	.78	3	.172	4
166			min	-99.749	3	-249.513	3	-525.709	3	-.04	2	-.78	4	-.175	3
167		4	max	-8.33	3	18.287	3	18.28	2	0	4	.018	1	.018	3
168			min	-35.117	8	-18.287	4	-18.277	1	0	3	-.018	2	-.018	4
169		5	max	0	7	.005	3	.05	7	0	4	0	7	0	4
170			min	0	1	-.005	4	-.015	4	0	3	0	4	0	3
171	MP2A	1	max	0	1	.897	4	2.855	1	0	3	0	1	0	1
172			min	0	1	-.903	3	-2.958	2	0	4	0	1	0	1
173		2	max	600.436	8	228.822	4	449.697	1	0	3	.752	1	.331	3
174			min	176.003	10	-228.828	3	-449.799	2	0	4	-.752	2	-.331	4
175		3	max	649.904	8	254.411	4	475.285	1	0	3	1.822	1	.89	3
176			min	191.206	10	-254.417	3	-475.388	2	0	4	-1.822	2	-.89	4
177		4	max	154.792	8	102.369	3	487.831	2	.076	4	.836	1	.18	3
178			min	-318.542	10	-93.086	4	-451.313	1	-.075	3	-.846	2	-.176	4
179		5	max	.001	6	.001	3	.009	6	0	4	0	6	0	4
180			min	0	1	-.001	4	-.006	1	0	7	0	1	0	3
181	MP3A	1	max	0	1	.141	9	.111	1	0	3	0	1	0	1
182			min	0	1	-.126	3	-.306	6	0	9	0	1	0	1
183		2	max	269.293	6	113.562	4	148.527	1	0	3	.206	1	.156	3
184			min	95.773	2	-113.553	3	-148.568	2	0	9	-.207	2	-.156	4
185		3	max	235.649	6	85.14	10	114.163	2	.038	2	.032	1	.051	9
186			min	-370.883	9	-247.426	9	-60.414	1	-.051	1	-.035	9	-.018	1
187		4	max	-8.33	9	18.288	3	18.281	2	0	9	.018	1	.018	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
188			min	-35.117	7	-18.288	4	-18.277	1	0	7	-.018	2	-.018	4
189		5	max	0	9	.009	7	.037	7	0	9	0	9	0	4
190			min	0	1	-.018	9	-.005	4	0	7	0	3	0	3
191	M20	1	max	1391.537	3	127.554	5	64.6	4	.086	3	0	1	0	1
192			min	-1399.038	4	43.042	2	-64.6	3	-.088	4	0	1	0	1
193		2	max	1383.503	3	63.777	5	32.3	4	.086	3	.123	4	-.082	2
194			min	-1391.004	4	21.521	2	-32.3	3	-.088	4	-.123	3	-.244	5
195		3	max	1375.469	3	0	1	0	1	.086	3	.164	4	-.11	2
196			min	-1382.969	4	0	1	0	1	-.088	4	-.164	3	-.325	5
197		4	max	1367.434	3	-21.521	1	32.3	3	.086	3	.123	4	-.082	2
198			min	-1374.935	4	-63.777	5	-32.3	4	-.088	4	-.123	3	-.244	5
199		5	max	1359.4	3	-43.042	1	64.6	3	.086	3	0	1	0	1
200			min	-1366.901	4	-127.554	5	-64.6	4	-.088	4	0	1	0	1

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
1	M1	PIPE_...	.763	5.834	2	.282	10.303		3	6926...	32130	1.872	1.872	...	H1-...
2	MP2A	PIPE_...	.613	5.396	2	.038	5.492		2	2517...	50715	3.596	3.596	...	H1-...
3	MP1A	PIPE_...	.532	3.75	4	.113	3.75		3	1491...	32130	1.872	1.872	...	H1-...
4	M4	PIPE_...	.510	.785	8	.150	0		6	2374...	32130	1.872	1.872	...	H1-...
5	M6	PIPE_...	.461	.85	7	.130	0		7	2374...	32130	1.872	1.872	...	H1-...
6	M5	PIPE_...	.453	.785	7	.134	0		6	2374...	32130	1.872	1.872	...	H1-...
7	M3	PIPE_...	.417	.85	8	.125	0		6	2374...	32130	1.872	1.872	...	H1-...
8	M2	PIPE_...	.390	5.834	6	.192	10.303		4	6926...	32130	1.872	1.872	...	H1-...
9	M8	PIPE_...	.275	2.049	8	.013	0		6	1245...	1968...	.801	.801	...	H1-...
10	MP3A	PIPE_...	.266	5.75	9	.051	2.167		1	1491...	32130	1.872	1.872	...	H1-...
11	M10	PIPE_...	.154	0	8	.052	0		2	1203...	1968...	.801	.801	...	H1-...
12	M14	PIPE_...	.144	3.583	7	.017	0		4	1427...	1968...	.801	.801	...	H1-...
13	M13	PIPE_...	.105	2.138	5	.041	4.276		3	1245...	1968...	.801	.801	...	H1-...
14	M12	PIPE_...	.089	3.583	7	.024	0		4	1427...	1968...	.801	.801	...	H1-...
15	M15	PIPE_...	.077	2.217	5	.065	0		3	1203...	1968...	.801	.801	...	H1-...
16	M20	PIPE_...	.064	5.092	7	.021	0		4	3742...	65205	5.749	5.749	...	H1-...
17	M9	PIPE_...	.061	1.717	8	.017	0		3	1427...	1968...	.801	.801	...	H1-...
18	M16	PIPE_...	.056	3.583	7	.043	0		1	1427...	1968...	.801	.801	...	H1-...
19	M7	PIPE_...	.038	1.717	8	.029	0		1	1427...	1968...	.801	.801	...	H1-...
20	M11	PIPE_...	.026	1.717	6	.044	0		1	1427...	1968...	.801	.801	1	H1-...

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc.....	L...	phi*P...	phi*T...	phi*M...	phi*M...	Cb	CmyyCmzz	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

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11351C

New Britain/Rt 72 Wooster
1 Hartford Square Street
New Britain, CT 06052

May 22, 2019

Transcom Engineering Project Number: 737001-0055

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**13.56 %**

May 22, 2019

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

Emissions Analysis for Site: **CT11351C – New Britain/Rt 72 Wooster**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **1 Hartford Square Street, New Britain, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) 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 **1 Hartford Square Street, New Britain, 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
UMTS	2100 MHz (AWS)	1	40
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Ericsson AIR32 B66A / B2A	152
A	2	Ericsson AIR21 B2A/B4P	152
A	3	RFS APXVAARR24_43-U-NA20	152
B	1	Ericsson AIR32 B66A / B2A	152
B	2	Ericsson AIR21 B2A/B4P	152
B	3	RFS APXVAARR24_43-U-NA20	152
C	1	Ericsson AIR32 B66A / B2A	152
C	2	Ericsson AIR21 B2A/B4P	152
C	3	RFS APXVAARR24_43-U-NA20	152

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **2100 MHz (AWS) UMTS** radios are ground mounted the following cable loss values were used. For each ground mounted **2100 MHz (AWS) UMTS** radio there was **1.61 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **152 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	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85	6	280	10,768.57	1.82
Antenna A2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	2	55	1,657.71	0.28
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.98
						Sector A Composite MPE%	**3.08**
Antenna B1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85	6	280	10,768.57	1.82
Antenna B2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	2	55	1,657.71	0.28
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.98
						Sector B Composite MPE%	**3.08**
Antenna C1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85	6	280	10,768.57	1.82
Antenna C2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	2	55	1,657.71	0.28
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.98
						Sector C Composite MPE%	**3.08**

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	**3.08 %**
Sprint	1.67 %
Clearwire	0.07 %
MetroPCS	0.79 %
Verizon Wireless	3.69 %
AT&T	4.26 %
Site Total MPE %:	**13.56 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	3.08 %
T-MOBILE Sector B Total:	3.08 %
T-MOBILE Sector C Total:	3.08 %
Site Total:	13.56 %

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	1,538.37	152	10.38	1900 MHz (PCS)	1000	1.04%
T-Mobile 2100 MHz (AWS) LTE	2	2,307.55	152	7.78	2100 MHz (AWS)	1000	0.78%
T-Mobile 1900 MHz (PCS) GSM	1	583.57	152	0.98	1900 MHz (PCS)	1000	0.10%
T-Mobile 2100 MHz (AWS) UMTS	1	1,074.14	152	1.81	2100 MHz (AWS)	1000	0.18%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	152	2.66	600 MHz	400	0.67%
T-Mobile 700 MHz LTE	2	432.54	152	1.46	700 MHz	467	0.31%
						Total:	**3.08%**

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:	3.08 %
Sector B:	3.08 %
Sector C:	3.08 %
T-MOBILE Maximum Total (per sector):	3.08 %
Site Total:	13.56 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.56 %** 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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