

July 31, 2020

- TO: Melanie A. Bachman Executive Director Connecticut Siting Council 10 Franklin Square New Britain, CT 06051
- RE: Notice of Exempt Modification **1 Hartford Square, New Britain, CT 06052** Lat: 41.6663919 Long: -72.8127989

Dear Ms. Bachman:

AT&T Wireless currently maintains equipment at the 166' level of an existing 176' Self-Support Tower located at 1 Hartford Square, in New Britain, CT. The tower is owned by SBA Towers and the property is owned by Hartford Square Associates.

AT&T desires to modify its existing telecommunications facility by swapping (3) OPA65RBU6DA antennas, (3) DMP65RBU6DA antennas, adding, (3) 4478 B14 remote radio units, (3) 8843 B2/B66A remote radio units, (3) 4449 B5/B12 remote radio units, (3) SDARS remote unit, (3) CBC23SR-43(1) combiners, (2) DC squids and ancillary equipment and cables as well as removing (3) RRUS-11 remote radio units and (3) 800-10121 antennas. The centerline height of the existing antennas and ancillary tower-mounted equipment is and will remain at 166 feet.

The facility was approved by the Department of Municipal Development for the City of New Britain on 7/17/00. Associated construction drawings state tenants are to have a maximum of four panel antennas per sector. This modification complies with the aforementioned condition.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with RCSA section 16-SOj-73, a copy of this letter and attachments is being sent to the Honorable Erin Stewart, Mayor of New Britain; David Zajac, Zoning Enforcement Officer; as well as to Hartford Square Associates and SBA Communications Corp., the tower and property owners.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

- 1. The planned modification will not result in an increase in the height of the existing structure.
- 2. The proposed modifications will not involve any changes to AT&T's ground-space footprint, and therefore and therefore will not require an extension of the site boundary.

- 3. The proposed modification will not increase the noise level at the facility by six decibels or more, or to levels that exceed state and local criteria.
- 4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (enclosed) for AT&T's modified facility is herein provided.
- 5. The proposed modifications 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 AT&T's proposed modifications. Please see enclosed structural analysis completed by completed by Tower Engineering Solutions dated and stamped June 29, 2020.

For the foregoing reasons, AT&T respectfully requests that the proposed installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Nicole Caplan-Mason

Nicole Caplan-Mason Site Acquisition Supervisor Empire Telecom USA LLC 16 Esquire Road | Billerica, MA 01862 Mobile: 978-284-3906 ncaplan@empiretelecomm.com

Enclosures: Exhibit 1 – Field Card and GIS Map Exhibit 2 – Construction Drawings Exhibit 3 – Structural Analysis Exhibit 4 – RF Emissions Analysis Report Evaluation

cc:

City of New Britain 27 West Main St, Rm 204 New Britain, CT 06051 Attn: Erin Stewart - Mayor

City of New Britain 27 West Main St, Room 404 New Britain, CT 06051 Attn: David Zajac Zoning Enforcement Officer Hartford Square Associates 1 Hartford Sq., Door 19 New Britain, CT 06052

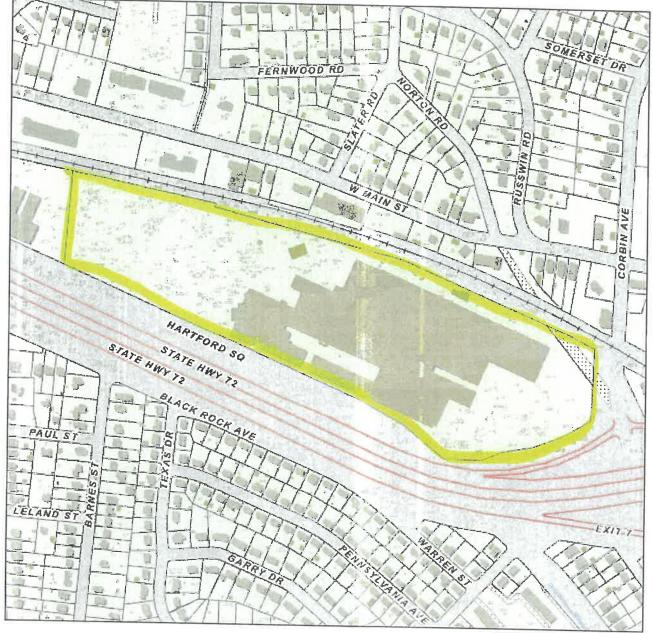
SBA Communications Corp. 8051 Congress Ave Boca Raton, FL 33487 Attn: Carla Shorter

City of New Britain

Geographic Information System (GIS)

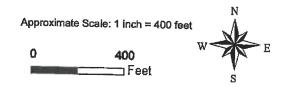


Date Printed: 7/17/2018



Print Map

MAP DISCLAIMER - NOTICE OF LIABILITY This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The City of New Britain and its mapping contractors assume no legal responsibility for the information contained herein.



1 HARTFORD SQ

Location	1 HARTFORD SQ	Mblu	F4A/ 2/ / /
Acct#	44950001	Owner	HARTFORD SQUARE ASSOCIATES LLC
Assessment	\$4,333,350	Appraisal	\$6,190,500
PID	764	Building Count	1

Current Value

	Appraisal			
Valuation Year	Improvements	Land	Total	
2017	\$4,021,200	\$2,169,300	\$6,190,500	
	Assessment			
Valuation Year	Improvements	Land	Total	
2017	\$2,814,840	\$1,518,510	\$4,333,350	

Owner of Record

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

Ownership History

Ownership History						
Оwлег	Sale Price	Certificate	Book & Page	Sale Date		
HARTFORD SQUARE ASSOCIATES LLC	\$0		1903/1103	12/03/2014		
ARTFORD SQUARE ASSOCIATES LLC	\$0		1895/ 267	07/22/2014		
IARTFORD SQUARE ASSOCIATES LLC	\$0		1895/ 157	07/22/2014		
ARTFORD SQUARE ASSOCIATES LLC	\$0	1	1830/ 539	12/06/2011		
ARTFORD SQUARE ASSOCIATES LLC	\$3,500,000		1813/ 22	02/14/2011		

Building Information

Building 1 : Section 1

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

Building Percent 20 Good: Replacement Cost Less Depreciation:

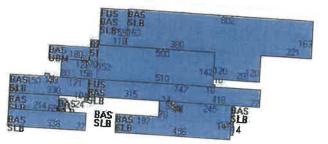
\$3,677,500

	Build	ding Attributes
Field		Description
STYLE		Warehouse
MODEL		Ind/Comm
Grade		C
Stories:		2
Occupancy		
Exterior Wall 1		31
Exterior Wall 2		Brick/Masonry
Roof Structure		
Roof Cover		Gable
Interior Wall 1		Metal/Tin
Interior Wall 2		Minimum/Masonr
Interior Floor 1		
		Finished Concr
Interior Floor 2		
Central Heat		Yes
АС Туре		Partial
Bldg Use		Ind Whse MDL-96
Apt Units		
Total Bedrms	1	00
Total Baths	(0
Comm Units		
Ind Units		
1st Floor Use:	4	010
Heat/AC	U	nit Heat
Frame Type		teel
Baths/Plumbing		/erage
Ceiling/Wall		ii & Min WL
ooms/Prtns		erage
/all Height	18	
Comn Wall		

Building Photo



Building Layout



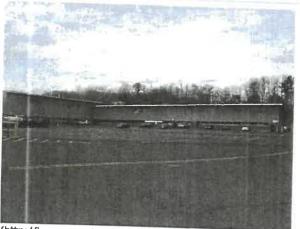
	Building Sub-Areas	(sq ft)	Legend	
Code	Description			
BAS	First Floor			
FUS	Finished Upper Story	76,477	466,084	
SLB	Slab	0	76,477	
UBM	Basement	10,800	0	
		553,361	0 542,561	

Building 1 : Section 1

10.40
1940 0
\$18,387,603 20
\$3,677,500

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 Fir 2	
Central Heat Sys	
АС Туре	
Total Bedrooms	
Fotal Full Baths	
Total Half Baths	
Total Xtra Fixtrs	
otal Rooms	
Bath Style	
litchen Style	
Vhiripool Tub	
ireplaces	
ec Room Finish	
ec Room Qual	
smt Garages	

Building Photo



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

Building Layout

Building Layout

(sq ft)	Legend
g Sub-Areas	

Extra Features

	E	ktra Features		Legenc
Code	Description	Size	Value	
A/C	Central A/C	18000 S.F.		Bidg #
LDL2	Load Ly Manual	10000 3.1,	\$11,700	
		8 Units	\$1,900	

Land

Land Use

Land Line Valuation

 Use Code
 4010

 Description
 Ind Whse MDL-96

 Zone
 I2

 Neighborhood
 101G

 Alt Land Appr
 No

 Category
 Keighborhood

 Size (Acres)
 31.10

 Depth
 \$1,518,510

 Assessed Value
 \$1,518,510

 Appraised Value
 \$2,169,300

Outbuildings

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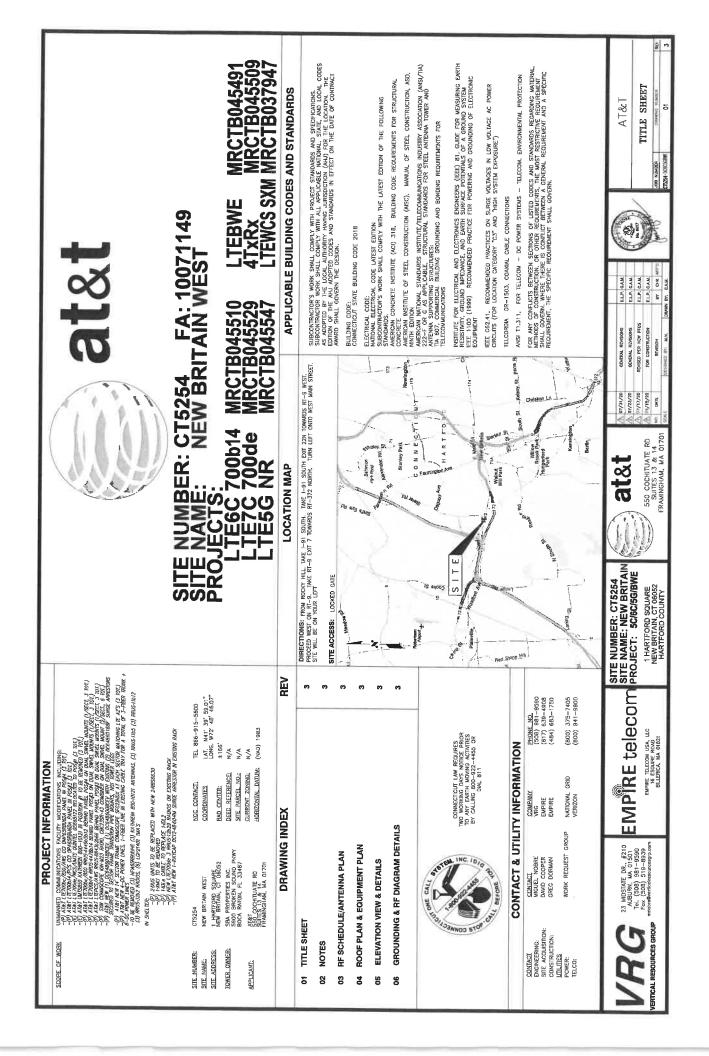
	Outbuildings Leg					
Code	Description	Sub Code	Sub Description	Size	Value	Bidg #
PAV5	Conc Pad			1836 S.F.	\$22,000	
UST2	Utility Metal			3036 S.F.		1
CB4	PreCastConcCel				\$21,900	1
UST3	Utility Masonr			200 S.F.	\$33,000	1
			-/	484 S.F.	\$4,600	1
CB3	PreCastConcCel			240 S.F.	\$55,400	1
UST2	Utility Metal			320 S.F.	\$2,300	1
СВЗ	PreCastConcCel			360 S.F.	\$83,200	
UST1	Utility Frame					1
FN4	Fence-8' Chain			320 S.F.	\$2,800	1
UST2				272 L.F.	\$3,500	1
	Utility Metal			2000 S.F.	\$14,400	1
SCL1	Scales-Mech			60 Tons	\$37,800	1
TNK2	Tank Bulk			300000 Gal	\$1,200	
PAV1	Paving Asphalt					1
BLB2	Billboard 2 Side			50000 S.F.	\$48,000	1
	Since a conte			2 Units	\$0	1

Valuation History

	Appraisal		
Valuation Year	Improvements	Land	Total
2017	\$4,021,200	\$2,169,300	\$6,190,500
2016	\$4,466,700	\$2,076,000	\$6,542,700
2015	\$4,466,700	\$2,076,000	\$6,542,700

Assessment					
Valuation Year	Improvements	Land	Total		
2017	\$2,814,840	\$1,518,510	\$4,333,350		
2016	\$3,126,690	\$1,453,200	\$4,579,890		
2015	\$3,126,690	\$1,453,200	\$4,579,890		

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FOR THE PURPOSE OF CONSTRUCTION DRAWNO, THE FOLLOWING DEFINITION'S SHALL AFPLY. CONTRACTOR - PRIME CONTRACTOR

SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION) OWNER - ATAT WRELESS OEW - ORIGANAL EQUIPAGENT MANUFACTURER

3. All ulterals furgeed and installed shall be in Strict Accordance with all layer dependence codes receilations, and dedwardes stadomartica shall used in appropriate under shall be compared with all layer dependences relies receilations, and layer degres of with press Junions treasandence for famples. The ways of the ways.

all work carrier out stall comply with all applicable municipal. And utuity coupany specifications and local anredictional codes, drows and accurations.

. DRAWAGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERMISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWSE, THE WORK SHALL INCLUDE FLIRMISHING WATERIALS, EQUIPUENT, APPURTEMANCES, AND LABOR MECESSARY TO COURTERE ALL WISTALLATIONS AS INDICATED ON THE DRAWNES.

e. The sheichthactor shall instanl all equencit and vaterals in accordance with munifracturer's recommendations unless Specifically stated othermise.

7. If the systemed coupling connot be nativited as shown on these drawnos, the subcontractor shall propose an alternative installation for approval by the contractor.

3. Sircontractor suml determine activue of conduit, pomer and th carefs arounding carefs as shown on the pomer, Brounding and theorem activity of conduit for pomer and tecco stall be approved by others of ste.

9. The subsymptotic small protect easing infronguents, pandlepits, curbs, landscapting and structures. Any damaged part shall de repared at slocontractor's edgings to the satisfaction of owigh.

io. Subcontractire shall eecally and properly orfocs of all stand waterials slok as conval carees and other itans revords from the existing faculty. Anternals removed shall be returned to the owner's descriptolic location.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

SITE WORK GENERAL NOTES

. THE SUBCONTRACTOR SHALL CONTACT UTLITY LOCATING SERVICES PRICE TO THE START OF CONSTRUCTION

1. ALL STATING AFTRE STATES, WHICH GAR, ELLERME, AND ONEN UTURIST WHICE ROUGHTERDD. IN THE WORK, SOLUL DE PROTECTED AT INTERS, AND MERTING STATES, MARINE, CONTINUE OF MENN, SOLUL STATE, SUBJECTE AT SUBJECT, DE ADMINISTOR ETTINGE CUMUNA SNALL DE EVERS TO THE REMENCION WHICH DEVENDING OF MENN, THE SAMENDAL DE ADMINISTOR SML TRADIES STATES THROW OF REMENCION WHICH DEVENDING OF MENN, PROVIDE STATES, SUBJECT, DE ADMINISTOR SML TRADIES STATES THROW OF REMENCION WHICH DEVENDING TO THE SAMENDALIST SML TRADIES STATES THROW OF REMENCION OF REMENTING TO ATTACH THE ADMINISTIC STATES SML TRADIES STATES THROW OF REMENCION OF REMENTING TO ATTACH THE ADMINISTICATION SML TRADIES STATES THROW OF REMENCION OF REMENTING TO ATTACH THE ADMINISTICATION SML TRADIES STATES THROW OF REMENCION OF REMENTING TO ATTACH THROW OF REMENTING SML TRADIES STATES THROW OF REMENTING THAT AND A THAT RE ATTACH THROW OF REMENTING SML TRADIES STATES THROW OF REMENCION OF REMENTING TO ATTACH THROW OF REMENTING SML TRADIES STATES THROW OF REMENTING THAT AND A THROW OF REMENTING TO ATTACH THROW OF REMENTING SML TRADIES STATES ADMINISTRY.

3. ALL STE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROLECT SPECIFICATIONS

a, if neccessing register, stundes, defines, stance, stance, top soil, and other refuse shall be readed from the site and definest of legally,

6. Subcontractor shall kinning disturbance to existing ste during construction.

7. The subcontractor shall provide ste signage in accordance with the owner specification for ste signage.

8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMESSION EQUIPACENT AND TOWER AREAS.

10. The sub grade shall be compacted and bracifyit to a sudoth uniform grade proof to finished suffice application, see Detail, 303.

11. The areas of the owners property distinged by the work and hot confred by the tower, excipation of oriveway, shall be graded to a luniform slope, and stabilized to prevent groson.

12. Broson control measures. If recarred during construction, shall be in conformance with the local jurisdiction's Galoelines for eroson and sedment control.

is. All earth work shall be performed in accordance with technical spectration for ocnstruction of radio access network Stes.

STRUCTURAL STEEL NOTES:

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3. BOLTED COMPECTIONS SHALL BE ASTW AJZS BEARING TYPE (2),4°0, CONNECTIONS AND SHALL HAVE MIXMAM OF TWO BOLTS UNLESS NOTED OTHERWISE. STEEL FASTRIVER HARDWARE SHALL BE GALVANTED IN ACCORDINACE WITH ASTW ATS (HOT-DAP)

4. NOW-STRUGTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS LAMESS NOTED OTHERMISE

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e. All structural. Steel shall be suppled in accordance with technical. Specification for construction of radio access network Steel

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REVISED PER NEW RFDS FOR CONSTRUCTION CENERAL REVISIONS SENERAL REVISIONS

04/15/20 07/31/20 A 01/23/20 02/11/10 BM

550 COCHITUATE RD SUITES 13 & 14 FRAMINGHAM, MA 01701

1 HARTFORD SQUARE NEW BRITAIN, CT 06052 HARTFORD COUNTY

at&t

1

SITE NUMBER: CT5254 SITE NAME: NEW BRITAIN PROJECT: SC/8C/5G/BWE

EMPIRE telecom

23 MIDSTATE DR., #210 AUBURN, MA 01501 Tel. (508) 981-9590 Fax (508) 519-8939

5

ERTICAL RESOURCES GROUP C

EMPIRE TELECOM USA, LLC 16 ESQUIRE ROAD BILLERICA, MA 01821

REVISION THE CONCISION

AT&T NOTES 8

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	ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTIV A185 AND THE DESIGN AND
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CONCRETE AND REINFORCING STEEL NOTES:	REF
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all concrete shall have a minimu compressive strength of 4000 PSI at 28 Davs, unless noted otherwise. A midner Strength (4000 PS) uay be used. CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE. 2

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4. THE FOLLOWING MINIMUM CONSIGER CONSIR SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWNESS.

\$5 AND SUALLER & WIE 1/2 INCH

CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND;

5. A 3/4" CHANTER SHALL BE PROMDED AT ALL EXPOSED EDGES OF CONCRETE, UND, IN ACCORDANCE WITH ACI 30' SECTION 4.2.4.

EVALUATION FOR CONCETE EXAMPACE, RANGE ON ALL DE FER VALIFICATES TERTIN EXAMPACE TO ALL DE AL ALL DE ALL

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ELECTRICAL INSTALLATION NOTES (cont.) 15. ELECTRIFICIA, METALIC TUBING (EMT) OR RIAD NAMETALIC CONDUIT (I.E., RIAD PVC SCHEDILE, 40, OR RIAD PVC SCHEDULE B0 FOR LOCAT SUBJECT OPHYSICAL DIMMER) SHALL BE USED FOR EXPOSED IMOOR LOCATIONS. ELECTRICAL INSTALLATION NOTES 1. ALL ELEGTRICAL WORK SAUL BE REFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOOL ODES. 3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDA. 2. CONDUT ROUTINGS ARE SCHEMMIC, SUBCONTRACTOR SHALL INSTALL CONDUTS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

ONS

16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (EMT), OR RIGID NONMETALLIC COMDUIT (RIGID PAC, SCHEDULE 40) SIMLL BE USED FOR CONCERLED INDOOR LOCATIONS.

17. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHAUL BE USED FOR OLIDIOOR LOCATIONS ABOVE GRADE.

19. UOUDD-TIGHT REVALLE CONDUT (UAUD-TITE FLEY) SAUL DE ULGED INDORS AND OUTDOORS, WHERE VIERANDAN OCCURS OR FLEXIBILITY IS VERED. 5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STALE CABLE TRAY RUNGS.

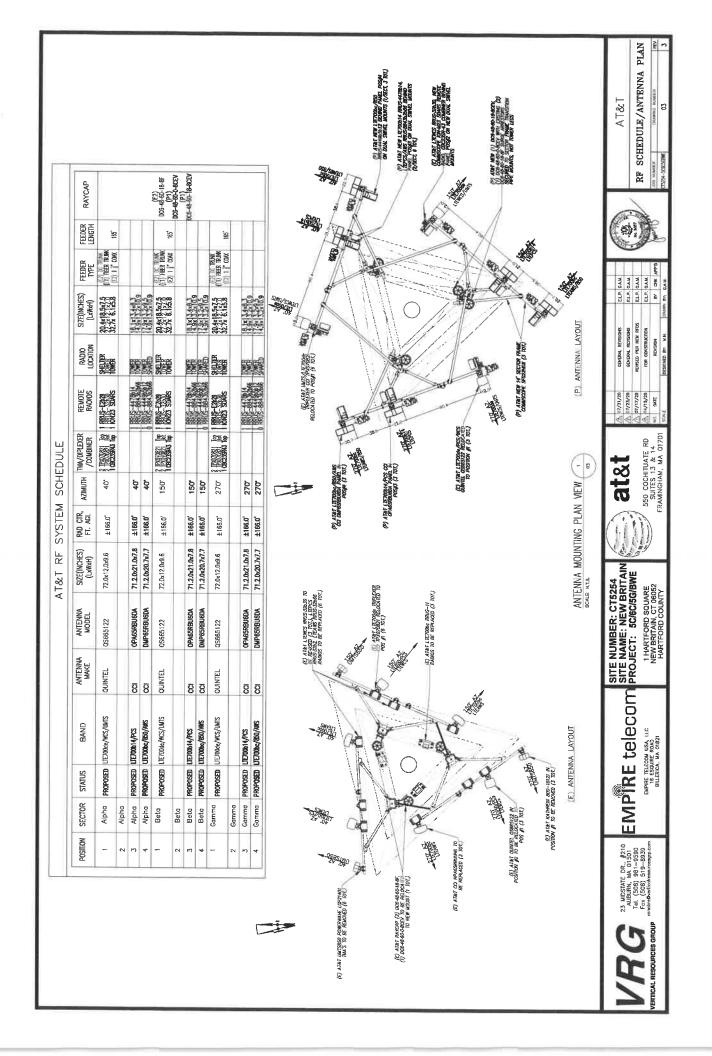
4. ALL CIRCUITS SHALL BE SECREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.

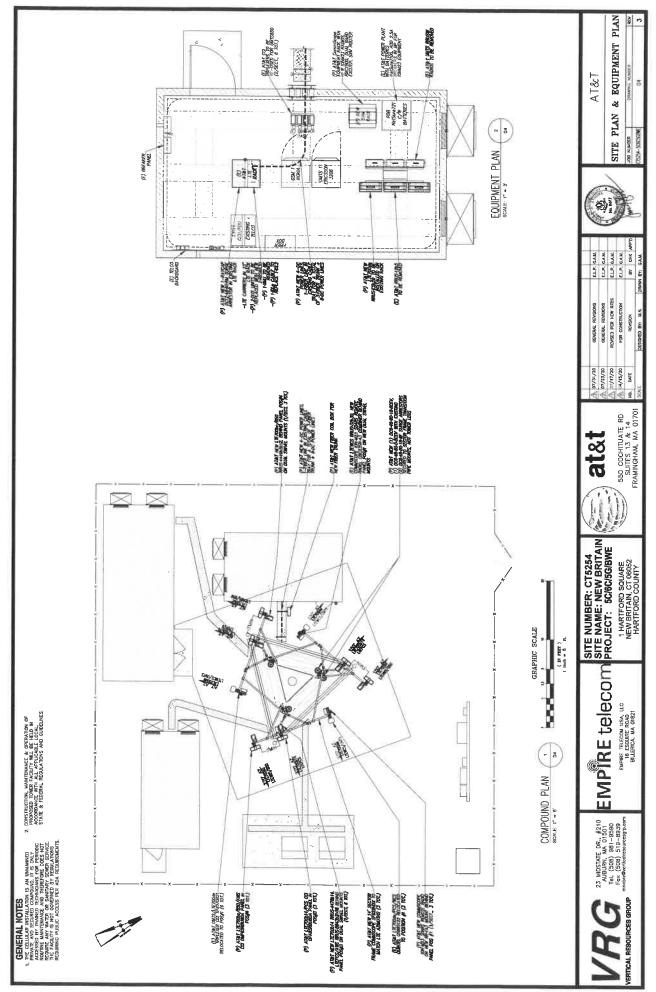
6. EGH EDD OF ENERY FONER, ROWER PANSE CONDUCTOR (16, HOTS) AROUNDING, AND TT CONDUCTOR AND ONLE SALL BE LUBERS WITH CONST-OCORD BISLUMON VIA BALETRYCL, INSE (AN BANG), 172 NOV PASITE ELETINGAL WITH UN FORCEMAN, OR EONL, INE DEMIFICATION METHOD SAULL CONFIDAN WITH NEC & GNAL.

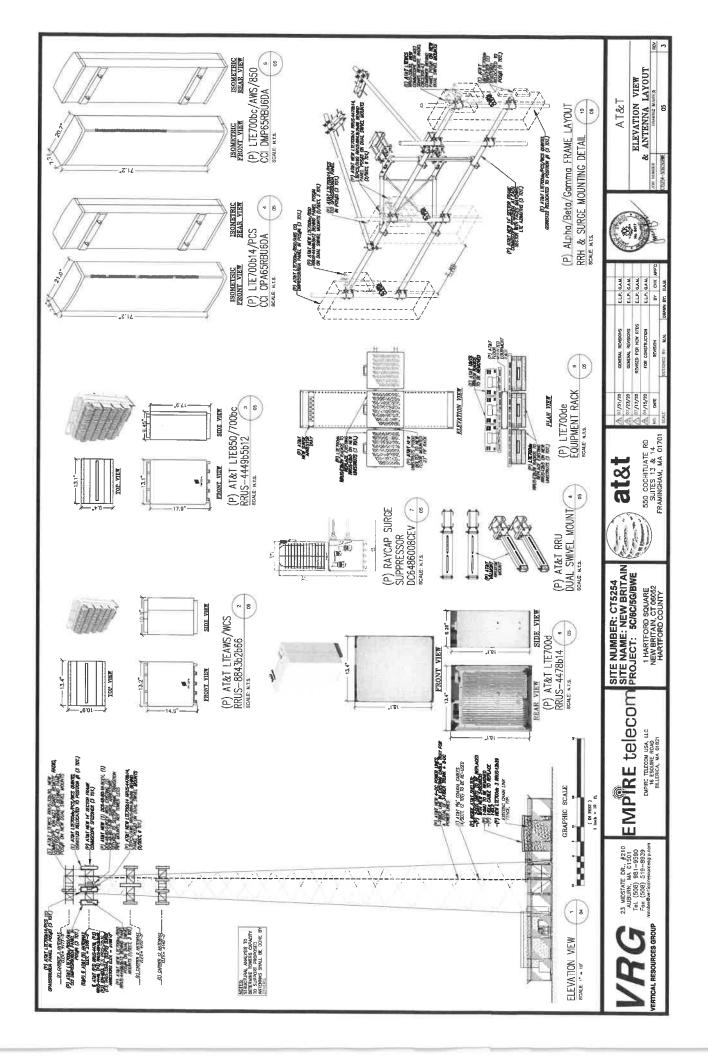
20. CONDUT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSGREW THINGS ARE NOT ACCEPTABLE.

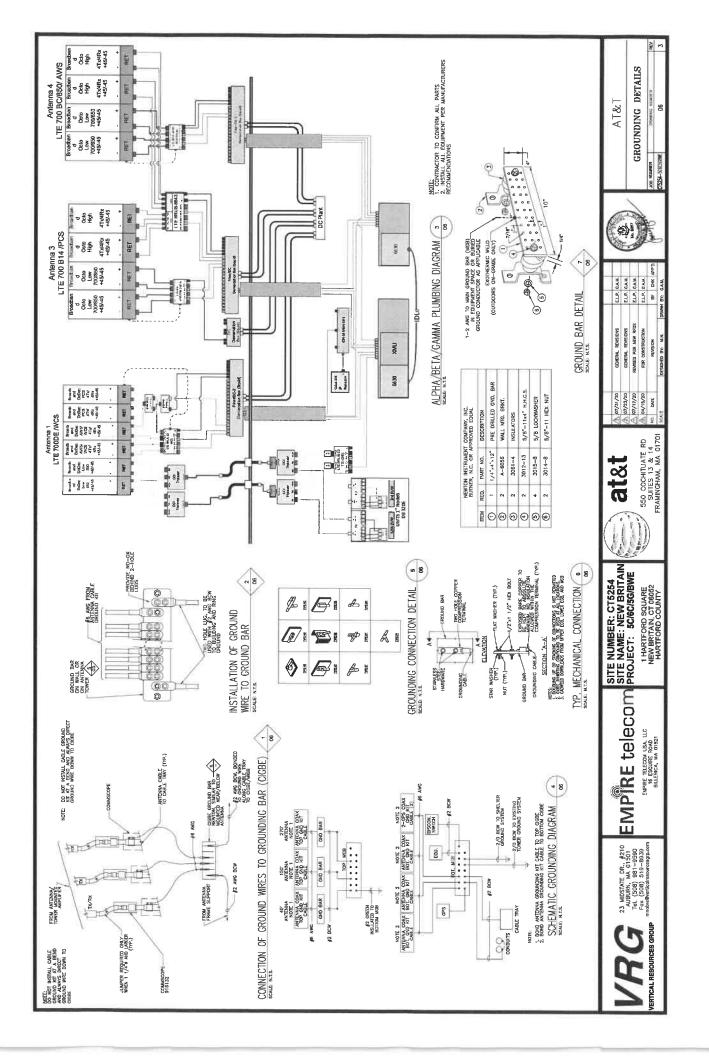
CLEARLY LABELED COMPONENTS SHALL BE . ALL ELECTRICAL

	THE DRAWNESS NO REDART SMALL BU GUT WITHOUT PRICH CONTRACTOR APPROVAL WHEN DRALING HOLES IN CONCRETE S			
_	INSTERTINGS, RECIMENT RECONSTRUCTIONS, SAULT BE EFFORENCE IN DROVEN TO MANTANA MANUKACITARIENT AVAILUME ALLOWALE ROUGS, ALL SANNERS/MENCE ANAIONIS SAULT BE ESTINICISS STEE, ON HOT DIPPED GALVANZED, EDVANDIN HOLTS SAULL BE PROVED BY RANGET/PREDIFLAD NEITI OR APPROVED EQUAL		IER 21. CHEINETS, BOXES, AND WIREMAYS SHALL BE LISTED OR LABELED FOR ELECTROAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/TEEE, AND NEC.	
	 CONDRETE CILINDER TEST IS NOT REQUIRED FOR SLAJE ON GRADE WIEN CONDRETE IN LESS THAN 50 CHBIC YRDS (IBC 1905/6.2.3) IN TAXI FORTINE CILLIDMIA RECORDS SHALL REFORMED STIFE CONDRETE SLAFLUR; (A) REGULT OF CONDRETE TAXING TRATISTIS FERROMED AT THE CURPLICIP. 			
	(B) CERTIPICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE COMPRETE CRAAGE SUPPLIED.	B. PANELEDARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED. NO HAND	COR EQUAL); AND PATED NEWA 1 (OR BETTER) INDOORS, OR NEWA 3R (OR BETTER) OUTDOORS.	
	FOR GREATER THAN 50 QUBIC YARDS THE OC SHALL PERFORM THE CONCRETE CYLUNDER TEST.	WRITTEN LABELS ALLOWED.	23. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL	
æ	3. As an alternative to ited 7, test chancers small be taken initially and thereafter for easily so varies of concrete from each different batch plant.	2. ALL THE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.		
er.	 Coupment Small Not be placed on New Pade For sever days after pad is poured, umees if is verside by tests that compressive strength has been attained. 	STS THAT 10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUCT SHALL BE SINGLE CONDUCTOR (STZE 14 AMC OR		
-	10. All concerts shall be suppled in accompanies with trongely secondary for construction of Radio Access Network			
47	SOIL COMPACTION NOTES FOR SLAB ON GRADE:	SYSTEM USED, UNLESS OTHERWISE SPECIFIED.		
65	 DICANVIE AS REQUIRED TO REMOVE VEGETATION AND TEPSINL, EXPOSE UNDISTURBED HATURAL SUBGRADE AND PLACE CRUSHED STORE AS REQUIRED. 	11. SUPPLANENTIAL EQUIPABING GROUND WIRNE LOCATED INDOORS SMALL BE SINGLE CONDUCTOR (SIZE & ANG OR LARGER), 6004, OIL RESISTANT THHN OR THAN-2 CREEN INSULATION, CLASS B		
61	 CONFACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A CUMURTED SEDIECHNICAL TECHNICAL DE DIGINEER IS ACCEPTIBLE. 	STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION: LUEED OR LABELED FOR THE LOCATION AND ENCEMAY SYSTEM LISEN INN ESS CONTENDER ENFORCE	28. THE SUBCONTRACTOR SHALL NOTEY AND OBTAIN NECESSARY AUTHORIZZION FROM THE CONFRACTOR BEFORE COMMENCING WORK ON THE AC POWER INFERIATION PARTICLE	
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•	A SECTION OF A DESCRIPTION OF A DOMAIN AN IN TELEVISIOL SPECIFICITION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITE.	14. RACEMAY AND CARLE TRAY SHALL BE LISTED OR LABELED FOR RECTRICAL USE IN ACCORDANCE WITH NEMA, UIL, ANS/PEEE, MND NEC.	ŝ	
9	COMPACTION EQUIPMENT:			
Ŧ	HAND OF SATED DOUBLE DRUM, MERATORY ROLLER, VIERATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.			











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: AT&T (App#: 133186, v2) Carrier Site ID / Name: CT5254 / New Britain West Site Location: 1 Hartford Square New Britain, Connecticut Hartford County Latitude: 41.666411



Analysis Result: Max Structural Usage: 69.0% [Pass] Max Foundation Usage: 45.0% [Pass] Additional Usage Caused by New Mount/Mount Modification: +0.2%

Report Prepared By: Cesar Rojas

TES Project Number: 94967



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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 TIA-222-G-2. 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} = 125.0mph (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:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	В
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.

ltems	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1		3	Kathrein 840 10054 Panel	(3) Sector Frames w/		
2	177.0 4 Andrew VHLP2.5 Dish (3) VBrac		(3) VBrace Kits (SitePro	(4) 1/2" Fiber	Sprint	
3	1/7.0	3	Samsung U-RAS Flexible FRH	SFSV- L) & (6) 2-3/8"x6"	(6) 5/16" Fiber	Nextel
4		3	Dragonwave Horizon Duo	Pipe Masts (BBPM-K1)	(1) 5/16" RET	
-		3	Kathrein 800-10121 Panel			
- 3 Quintel QS66512-2 Panel - 3 CCI HPA-65\$-BUU-H-6						
-		6	Powerwave LGP 21401 TMA			AT&T
-		6	CCI TPX-070821	(3) Sector Frames w/	(12) 1 5/8" (4) 3/4" DC	
-	166.0	6	Kathrein 860-10025 RET	V-Stablilizer		
-		3	Ericsson RRUS-11 RRU	Reinforcement Kit	(2) 1/2" Fiber	
-		6	Ericsson RRUS-32 B2s RRU			
-		3	Ericsson RRUS-32 B66 RRU			
-		3	Ericsson RRUS-32 RRU			
-		2	Raycap DC6-48-60-18-8F OVP			
18		3	Ericsson Air21 B2A/B4P Panel			
19		3	Ericsson AIR 21 B4A/B2P Panel		(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
20	155.0	3	Commscope LNX-6515DS-A1M Panel	(3) Sector Frames		
21		3	Ericsson KRY 112 144/1 TMA			
22		3	Ericsson RRUS-11 (Band 12)			
23		3	Kathrein 800 10735v01 Panel			
24		3	Antel BXA-80080/4CF Panel			
25		6	Andrew SBNHH-1D65B Panel		(1.0) · - (-1)	
26	140.0	3	ALU RRH-2x60-AWS	(2) T F	(12) 1 5/8" (2) 1 5/8" Hybrid	
27	140.0	3	ALU RRH-2x60-PCS	(3) T-Frames		Verizon
28		3	ALU RRH-2X60W-700U		(1) 1/2"	
29		1	RFS DB-T1-6Z-8AB-0Z Box			
30		1	GPS			
31	82.0	1	GPS	Pipe	(2) 1/2"	Sprint Nextel

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
5		3	Cci Antennas DMP65R-BU6DA Panel			
6		3	Cci Antennas OPA65R-BU6DA Panel			
7		3	Quintel QS66512-2 Panel			
8		3	Ericsson 8843 B2/B66A RRU		(6) 1 5/8"	
9] [6	CCI TPX-070821 Diplexer		(4) 3/4" DC	
10] [3	Ericsson RRUS-32 RRU		(2) 1/2" Fiber	
11	166.0	3	Ericsson 4449 B5/B12 RRU	(3) Commscope	(1) 3" Conduit	AT&T
12] [3	Ericsson 4478 B14 RRU	SFG22HDX Mount	((4) existing DC &	
13] [3	Commscope ION23 SDARS RRU		(2) existing fiber in	
14		3	Commscope CBC23SR-43 Combiners		(1) 3" conduit]	
15		2	Raycap DC6-48-60-18-8F OVP			
16		1	Raycap DC6-48-60-0-8C-EV OVP			
17		1	Raycap DC6-48-60-18-8C-EV OVP			

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:	44.9%	69.0%	4.0%	
Pass/Fail	Pass	Pass	Pass	

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	239.8	202.2	23.7

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)
176.0	Andrew - VHLP2.5 - Dish	Sprint Nextel	0.005	0.170

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.

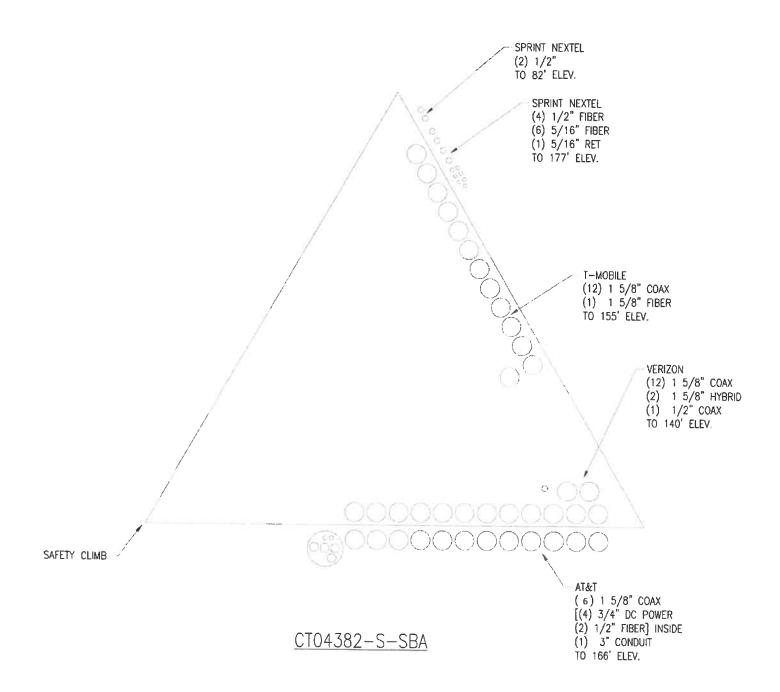
Site Name:	New Britain 2, (СТ		Code: EIA/TIA-22	2-G	6/29/2020	Add BALLAD
Туре:	Self Support	Base Shape:	Triangle	Basic WS:	97.00	012012020	((da //)
Height:	176.00 (ft)	Base Width:	21.00	Basic Ice WS:	50.00		IFS
Base Elev:	0.00 (ft)	Top Width:	4.69	Operational WS:	60.00	Page: 1	Tower Engineering Soluti

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Linear Appurtenances						Ζ	
			LIN	ear Appurtenances			

		S	tructure:	CT04382-S-SBA			
Site Name:	New Britain 2, 0	т		Code: EIA/TIA-2	22-G	6/29/2020	((HI)))
Туре:	Self Support	Base Shape:	Triangle	Basic WS:	97.00		
Height:	176.00 (ft)	Base Width:	21.00	Basic Ice WS:	50.00		IES
Base Elev:	0.00 (ft)	Top Width:	4.69	Operational WS:	60.00	Page: 2	Tower Engineering Solut

Elev	Elev				
From (ft)	To (ft)	Qty	Description	n	
152.00	176.00	4	1/2" Fiber		
152.00	176.00	6	5/16" Fiber		
152.00	176.00	1	5/16" RET		
152.00	176.00	1	W/G Ladder		
0.00	166.00	6	1 5/8" Coax		
0.00	166.00	2	1/2" Fiber		
0.00	166.00	1	3" Conduit		
0.00	166.00	4	3/4" DC		
0.00	162.00	1	W/G Ladder		
0.00	155.00	12	1 5/8" Coax		
0.00	155.00	1	1 5/8" 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	1	
0.00	140.00	1	1/2" Coax		
0.00	82.00	1	1/2" Coax		
			Base Rea	ctions	
L	eg		Over	turning	
Max Uplift:	-202.17	(kips	Moment:	4064.48	(ft-kips)
Max Down:	239.85	(kips	Total Down:	49.09	(kips)
Max Shear:	23.69	(kips	Total Shear:	38.07	(kips)

Site Name: Type: Height: Base Elev:	New Britain 2, CT Self Support 176.00 (ft) 0.00 (ft)	Base Shape: Base Width: Top Width:	Triangle 21.00 4.69	Code: EIA/TIA-22 Basic WS: Basic Ice WS: Operational WS:	2-G 97.00 50.00 60.00	6/29/2020 Page: 3	((The particular parti
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			Loa	ading Summa	ry		
Structure:	CT04382-S-SB/	4		Code:	EIA/TIA-222-G	6/29/2020	
Site Name:	New Britain 2, C	т		Exposure:	В		((HD))
Height:	176.00 (ft)			Crest Height:	0.00		
Base Elev:	0.000 (ft)			Site Class:	C - Very Dense Soil		IES
Gh:	0.85	Topography:	1	Struct Class:	1	Page: 5	Tower Engineering Solution

Discrete Appurtenances Properties

			N	lo Ice	lo	е						
Attach Elev												Vert
(ft)	Description	Qty	Weight (lb)	CaAa (sf)	Weight (lb)	CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation	
176.00	Lightning Rod	1	5.00	0.500	33.24		72.000	1.000	1.000	1.00	Factor 1.00	(ft) 3.000
176.00	Beacon	1	36.00	2.720	215.62		28.000	17.500	17.500	1.00	1.00	0.000
176.00	Light Sector Frame	3	500.00	17.500	1441.39	36.281	0.000	0.000	0.000	0.75	0.75	0.000
176.00	(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
176.00	VHLP2.5	4	27.00	4.680	158.97	6.398	26.100	26.100	13.200	1.00	1.00	1.000
176.00	Horizon Duo	3	10.60	0.430	40.99	1.119	4.700	7.500	7.500	0.80	0.67	1.000
176.00	840 10054	3	30.00	4.590	143.64	6.846	42.000	12,700	2.800	0.80	0.68	1.000
	U-RAS Flexible FRH	3	33.00	1.820	89.17	3.134	16.000	11.600	5.000	0.80	0.67	1.000
166.00	CCI TPX-070821 Diplexer	6	7.50	0.720	31.18	1.550	9.650	5.830	2.050	0.80	0.50	0.000
166.00	Ericsson 4449 B5/B12	3	71.00	1.970	142.99	2.708	17.900	13.200	9.400	0.80	0.67	0.000
166.00	Ericsson 4478 B14	3	60.00	1.650	116.48	2.349	18.100	13.400	8.300	0.80	0.67	0.000
166.00	CBC23SR-43 Combiners	3	4.90	0.420	19.92	0.802	8.000	6.300	2.100	0.80	0.67	0.000
166.00	ION23 SDARS	3	48.00	1.730	116.82	2.466	32.700	6.100	5.800	0.80	0.67	0.000
166.00	DC6-48-60-0-8C-EV	1	26.20	4.780	299.43	5.973	31.400	10.240	10.240	1.00	1.00	0.000
166.00	DC6-48-60-18-8C-EV	1	26.20	4.780	299.43	5.973	31.400	18.300	10.240	1.00	1.00	0.000
166.00	DMP65R-BU6DA	3	79.40	12.710	476.60	14.684	71.200	20.700	7,700	0.80	0.72	0.000
166.00	OPA65R-BU6DA	3	60.20	12.810	473.16	14.918	71.200	21.000	7.800	0.80	0.73	0.000
166.00	SFG22HDX Mount	3	661.00	19.000	1532.16	51.196	0.000	0.000	0.000	0.75	0.75	0.000
166.00	QS66512-2	3	111.00	8.130	416.54	9.921	72.000	12.000	9.600	0.80	0.92	0.000
166.00	Ericsson RRUS-32	3	77.00	3.870	221.97	5.692	20.900	9.500	3.300	0.80	0.67	0.000
166.00	Raycap DC6-48-60-18-8F	2	32.80	0.920	118.79	1.511	24.000	11.000	18.500	0.90	0.75	0.000
166.00	8843 B25/B66A	3	72.00	1.640	135.17	2.310	14.900	13.200	10.900	0.80	0.67	0.000
155.00	LNX-6515DS-A1M	3	49.80	11.470	355.87	15.826	96.400	11.900	7.100	0.80	0.80	0.000
155.00	AIR 21 B2A/B4P	3	91.50	6.090	314.13	7.581	55.900	12.000	7.800	0.80	0.86	0.000
155.00	KRY 112 144/1	3	11.00	0.410	25.38	1.044	6.900	6.100	2.700	0.80	0.67	0.000
155.00	AIR 21 B4A/B2P	3	90.40	6.090	330.35	7.585	56.000	12.100	7.900	0.80		0.000
155.00	RRUS-11	3	51.00	2.520	147.36	3.364	17.800	17.000	7.200	0.80	0.67	0.000
140.00	GPS	1	10.00	1.000	48.54	1.936	12.000	9.000	6.000	1.00	1.00	0.000
140.00	Sector Frame-Pipe	3	450.00	14.000	912.45	23.249	0.000	0.000	0.000	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		0.000
140.00	800 10735	3	28.70	8.620	230.29	12.504	76.100	11.900	3.900	0.80		0.000
	BXA-80080-4CF	3	48.20	4.800	527.57	7.262	48.200	11.200	5.900	0.80		0.000
	RRH-2X60-AWS	3	55.00	3.500	160.17	4.537	21.000	11.500	7.000	0.80		0.000
140.00	RRH-2X60-PCS	3	55.00	2.200	145.64	3.209	21.000	12.000	7.000	0.80		0.000
140.00	RRH-2x60-700U	3	19.50	1.510	78.90	2.203	21.600	12.000	9.000	0.80		0.000
	DB-T1-6Z-8AB-0Z Box	1	18.90	4.800	178.05	7.002	24.000	24.000	10.000	1.00		0.000
82.00	GPS	1	10.00	1.000	46.86	1.895	12.000	9.000	6.000	1.00		0.000
	Totals:	101	9,125.50		30,514.83						urtenances :	37

			Loa	iding Summa	ry	2 24 24	
Structure:	CT04382-S-SBA	\ \		Code:	EIA/TIA-222-G	6/29/2020	
Site Name:	New Britain 2, C	т		Exposure:	B		
Height:	176.00 (ft)			Crest Height:	0.00		Ind
Base Elev:	0.000 (ft)			-	C - Very Dense Soil		
Gh:	0.85	Topography:	1	Struct Class:	•	Page: 6	Tower Engineering Solution

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)			Orientation Factor	Ka Override
152.00	176.00	1/2" Fiber	4	0.50	0.16	50.00	3	Block		N	0.50	0.94	
152.00	176.00	5/16" Fiber	6	0.32	0.95	100.00	3	Individual IR		N	0.50	0.64	
152.00	176.00	5/16" RET	1	0.32	0.08	100.00	3	Individual NR		N	1.00	1.00	
152.00	176.00	W/G Ladder	1	2.00	6.00	100.00	3	Individual NR		N	0.50	1.00	
0.00	166.00	1 5/8" Coax	6	1.98	1.04	100.00	1	Individual IR		N	0.50	1.00	
0.00	166.00	1/2" Fiber	2	0.50	0.16	100.00	1	Individual IR		N	0.50	1.00	0
0.00	166.00	3" Conduit	1	3.02	1.78	100.00	1	Individual NR		N	0.50	1.00	U
0.00	166.00	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
0.00	155.00	1 5/8" Coax	12	1.98	1.04	100.00	3	Individual IR		N	0.50	0.42	
0.00	155.00	1 5/8" Fiber	1	2.00	1.10	50.00	3	Block		N	0.50	0.96	
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
0.00	140.00	1/2" Coax	1	0.65		100.00	1	Individual NR		N	1.00	1.00	U
0.00	82.00	1/2" Coax	1	0.65		100.00	1	Individual NR		N	1.00	1.00	

1.00			÷B			12			Sect	tion	Force	s				12/1		
Stru	cture:	СТ	04382	2-S-SBA	1				C	ode:		EIA	TIA-22	22-G	6/2	9/2020		
Site	Name	: Ne	w Brita	ain 2, C	т				E	xpos	ure:	в				¥.	((明))	
Heig	iht:	170	6.00 (f	t)						-	Heigh	t: 0.00	1			1		
-	é Elev:)00 (ft)	•							lass:				9	3 x		
			• • •		_								very D	ense So				
Gh:		0.8	15		Торо	grapł	י אי:	1		struct	Class	: 11			F	Page: 7	lower Eng	ineering Solution
Load	d Case	: 1.	2D + 1	.6W No	rmal W	/ind							1 20	+ 1 6W	97 mph	Wind a	t Norma	I To Face
		Wind	Load Fa	actor:	1.60													
		Dead	Load Fa	actor:	1.20										wina i	mportan	ce Factor	: 1.00
	lce	Dead	Load Fa	actor:	0.00										Ice i	mportan	ce Factor	: 1.00
Sect Seq	Wind Height (ft)		Total Flat Area (sqft)	Total Round Area (sqft)	lce 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 (Ib)	Linear Force (Ib)	Total Force (Ib)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.32	122.03	0.00	6.454.4	0.0	2265.98	1013 10	3,279.08
2	30.0		22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	122.03	0.00	6,049.4		1957.29		2.971.24
3	50.0		20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	33.15	122.03	0.00	5,157.3	0.0	2076.81	1173.29	3,250.10
4	70.0		22.213	22.12	0.00		2.76		1.00	0.00	32.88	122.03	0.00	4,899.0	0.0	2255.93	1291.68	3,547.61
5	83.4		0.000	17.99	0.00		2.59		1.00		9.80	41.18	0.00	1,739.8	0.0	663.12	456.28	1,119.39
-	93.4		10.586	14.61	0.00		2.74		1.00	0.00	17.51	79.88	0.00	2,744.9	0.0	1296.87	912.38	2,209.25
6				22.12	0.00	0 17	2.69	1.00	1.00	0.00	24.58	120.95	0.00	3,639.5	0.0	1868.66	1447.68	3,316.34
6 7		20.79																
6 7 8	130.0	21.81	11.695	18.58	0.00	0.18				0.00	21.17	120.95	0.00	3,356.5				3,188.15
6 7 8 9	130.0 150.0	21.81 22.72	11.695 11.717	18.58 15.03	0.00 0.00	0.18 0.22	2.54	1.00	1.00	0.00	20.03	66.53	0.00	2,567.1	0.0	1573.00	1404.41	2,977.42
6 7 8	130.0 150.0	21.81 22.72	11.695	18.58	0.00	0.18	2.54	1.00					0.00 0.00	2,567.1 1,526.8	0.0 0.0	1573.00 1115.49	1404.41	2,977.42 1,513.68
6 7 8 9	130.0 150.0	21.81 22.72	11.695 11.717	18.58 15.03	0.00 0.00	0.18 0.22	2.54	1.00	1.00	0.00	20.03	66.53	0.00 0.00	2,567.1	0.0	1573.00 1115.49	1404.41	2,977.42

Loa	d Case	: 1.2D + 1	.6W 60	° Wind								1.21) + 1.6V	V 97 mpt	Wind a	at 60° F	rom Face
1		Wind Load F	actor:	1.60													
		Dead Load F	actor:	1.20										wind i	mportan	ce Factor	: 1.00
	lce	Dead Load F	actor:	0.00										Ice I	mportan	ce Factor	: 1.00
Sect Seq	Wind Height (ft)	Total Flat qz Area (psf) (sqft)	Total Round Area (sqft)	lce Round Area (sqft)	Sol Ratio	Cf	Df	Dr	lce Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (Ib)	Weight Ice (lb)	Struct Force (Ib)	Linear Force (!b)	Total Force (Ib)
1	10.0	14.33 28.639		0.00	0.14	2.81	0.80	1.00	0.00	35.59	122.03	0.00	6,454.4	0.0	1951.84	1013.10	2,964.93
2	30.0	14.34 22.974		0.00	0.14	2.81	0.80	1.00	0.00	31.05	122.03	0.00	6,049.4	0.0	1704.98	1013.96	2,718.93
3	50.0	16.60 20.940		0.00	0.15	2.78	0.80	1.00	0.00	28.96	122.03	0.00	5,157.3	0.0	1814.40	1173.29	2,987.69
4	70.0	18.27 22.213		0.00	0.15	2.76	0.80	1.00	0.00	28.43	122.03	0.00	4,899.0	0.0	1951.08	1291.68	3,242.76
5	83.4	19.21 0.000	17.99	0.00	0.20	2.59	0.80	1.00	0.00	9.80	41.18	0.00	1,739.8	0.0	663.12	456.28	1,119.39
6	93.4	19.84 10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	15.39	79.88	0.00	2,744.9	0.0	1140.05	912.38	2,052.43
7	110.0	20.79 14.081	22.12	0.00	0.17	2.69	0.80	1.00	0.00	21.76	120.95	0.00	3,639.5	0.0	1654.53	1447.68	3,102,21
8	130.0	21.81 11.695	18.58	0.00	0.18	2.66	0.80	1.00	0.00	18.83	120.95	0.00	3,356.5	0.0	1485.25	1518.45	3,003.70
9	150.0	22.72 11.717	15.03	0.00	0.22	2.54	0.80	1.00	0.00	17.69	66.53	0.00	2,567.1	0.0			2,793,42
10	168.0	23.47 8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	16. 64	0.00	1,526.8	0.0	979.45	398.20	1,377.64
													38,134.7	0.0	0		25,363.12

	1.2					No.	No.		Sect	tion	Force	es		T and			M. T	
Stru	icture:	СТ	04382	2-S-SBA	1				C	code:		EIA/	TIA-22	2-G	6/2	9/2020		
Site	Name	: Ne	w Brita	ain 2, C	т				F	xpos	ure:	В					((開))	
Heig			6.00 (f							-		_				¥4		
	-			·							Height					L_x		-2
Bas	e Elev	: 0.0)00 (ft)						S	bite C	lass:	C - \	Very D	ense So	oil z			<u>_0</u> _
Gh:		0.8	35		Торо	grapl	hy:	1	S	Struct	Class	: 11		_	F	Page: 8	Tower Engi	ineering Solutions
Loa	d Case	: 1.	2D + 1	.6W 90	° Wind								1.20	D + 1.6V	V 97 mpl	h Wind a	at 90° Fi	rom Face
		Wind	Load F	actor:	1.60										Wind I	mnortan	ce Factor	: 1.00
		Dead	Load Fa	actor:	1.20										, and a	mportan	of ractor	. 1.00
	lce	Dead	Load F	actor:	0.00										Ice I	mportan	ce Factor	1.00
	Wind		Total Flat	Total Round	Ice								Ice					
Sect Seq	Height (ft)		Area (sqft)	Area (sqft)	Round Area (sqft)	Sol Ratio	Cf	Df	Dr	lce Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (Ib)	Struct Force (lb)	Linear Force (lb)	Total Force (Ib)
		(psf)	Area	Area (sqft)	Area		_	Df		Thick (in)	Area	Area	Area (sqft)	Weight (lb)	Ice (Ib)	Force (lb)	Force (lb)	Force (lb)
Seq	(ft)	(psf)	Area (sqft)	Area (sqft) 28.80	Area (sqft)	Ratio		_	Dr	Thick (in) 0.00	Area (sqft)	Area (sqft)	Area	Weight	lce (lb) 0.0	Force (lb) 2030.37	Force (lb) 1013.10	Force (lb) 3,043.47
Seq 1	(ft) 10.0	(psf) 14.33 14.34	Area (sqft) 28.639	Area (sqft) 28.80 28.80	Area (sqft) 0.00	Ratio	2.81	0.85 0.85	Dr 1.00 1.00	Thick (in) 0.00 0.00	Area (sqft) 37.02	Area (sqft) 122.03	Area (sqft) 0.00	Weight (lb) 6,454.4	lce (lb) 0.0 0.0	Force (lb)	Force (Ib) 1013.10 1013.96	Force (lb)
Seq 1 2 3 4	(ft) 10.0 30.0 50.0 70.0	(psf) 14.33 14.34 16.60 18.27	Area (sqft) 28.639 22.974 20.940 22.213	Area (sqft) 28.80 28.80 28.80 22.12	Area (sqft) 0.00 0.00	Ratio 0.14 0.14	2.81 2.81	0.85 0.85 0.85	Dr 1.00 1.00 1.00	Thick (in) 0.00 0.00 0.00	Area (sqft) 37.02 32.20	Area (sqft) 122.03 122.03	Area (sqft) 0.00 0.00	Weight (lb) 6,454.4 6,049.4	lce (lb) 0.0 0.0 0.0	Force (lb) 2030.37 1768.05	Force (Ib) 1013.10 1013.96 1173.29	Force (lb) 3,043.47 2,782.01
Seq 1 2 3 4 5	(ft) 10.0 30.0 50.0 70.0 83.4	(psf) 14.33 14.34 16.60 18.27 19.21	Area (sqft) 228.639 22.974 20.940 22.213 0.000	Area (sqft) 28.80 28.80 28.80 22.12 17.99	Area (sqft) 0.00 0.00 0.00 0.00 0.00	Ratio 0.14 0.14 0.15 0.15 0.20	2.81 2.81 2.78 2.76 2.59	0.85 0.85 0.85 0.85 0.85	Dr 1.00 1.00 1.00 1.00 1.00	Thick (in) 0.00 0.00 0.00 0.00 0.00	Area (sqft) 37.02 32.20 30.00	Area (sqft) 122.03 122.03 122.03	Area (sqft) 0.00 0.00 0.00	Weight (lb) 6,454.4 6,049.4 5,157.3	lce (lb) 0.0 0.0 0.0	Force (lb) 2030.37 1768.05 1880.01 2027.29	Force (Ib) 1013.10 1013.96 1173.29	Force (lb) 3,043.47 2,782.01 3,053.29
Seq 1 2 3 4 5 6	(ft) 10.0 30.0 50.0 70.0 83.4 93.4	(psf) 14.33 14.34 16.60 18.27 19.21 19.84	Area (sqft) 228.639 22.974 20.940 22.213 0.000 10.586	Area (sqft) 28.80 28.80 28.80 22.12 17.99 14.61	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00	Ratio 0.14 0.14 0.15 0.15 0.20 0.16	2.81 2.81 2.78 2.76 2.59 2.74	0.85 0.85 0.85 0.85 0.85 0.85	Dr 1.00 1.00 1.00 1.00 1.00	Thick (in) 0.00 0.00 0.00 0.00 0.00 0.00	Area (sqft) 37.02 32.20 30.00 29.55 9.80 15.92	Area (sqft) 122.03 122.03 122.03 122.03 41.18 79.88	Area (sqft) 0.00 0.00 0.00 0.00	Weight (lb) 6,454.4 6,049.4 5,157.3 4,899.0 1,739.8 2,744.9	lce (lb) 0.0 0.0 0.0 0.0	Force (lb) 2030.37 1768.05 1880.01 2027.29 663.12	Force (lb) 1013.10 1013.96 1173.29 1291.68	Force (lb) 3,043.47 2,782.01 3,053.29 3,318.97
Seq 1 2 3 4 5 6 7	(ft) 10.0 30.0 50.0 70.0 83.4 93.4 110.0	(psf) 14.33 14.34 16.60 18.27 19.21 19.84 20.79	Area (sqft) 228.639 22.974 20.940 22.213 0.000 10.586 14.081	Area (sqft) 28.80 28.80 28.80 22.12 17.99 14.61 22.12	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Ratio 0.14 0.14 0.15 0.15 0.20 0.16 0.17	2.81 2.81 2.78 2.76 2.59 2.74 2.69	0.85 0.85 0.85 0.85 0.85 0.85 0.85	Dr 1.00 1.00 1.00 1.00 1.00 1.00	Thick (in) 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Area (sqft) 37.02 32.20 30.00 29.55 9.80 15.92 22.46	Area (sqft) 122.03 122.03 122.03 122.03 41.18 79.88 120.95	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Weight (lb) 6,454.4 6,049.4 5,157.3 4,899.0 1,739.8 2,744.9 3,639.5	Ice (Ib) 0.0 0.0 0.0 0.0 0.0 0.0	Force (lb) 2030.37 1768.05 1880.01 2027.29 663.12	Force (lb) 1013.10 1013.96 1173.29 1291.68 456.28 912.38	Force (lb) 3,043.47 2,782.01 3,053.29 3,318.97 1,119.39
Seq 1 2 3 4 5 6 7 8	(ft) 10.0 30.0 50.0 70.0 83.4 93.4 110.0 130.0	(psf) 14.33 14.34 16.60 18.27 19.21 19.84 20.79 21.81	Area (sqft) 28.639 22.974 20.940 22.213 0.000 10.586 14.081 11.695	Area (sqft) 28.80 28.80 22.12 17.99 14.61 22.12 18.58	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Ratio 0.14 0.14 0.15 0.15 0.20 0.16 0.17 0.18	2.81 2.81 2.78 2.76 2.59 2.74 2.69 2.66	0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Dr 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Thick (in) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Area (sqft) 37.02 32.20 30.00 29.55 9.80 15.92 22.46 19.42	Area (sqft) 122.03 122.03 122.03 122.03 41.18 79.88 120.95 120.95	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Weight (Ib) 6,454.4 6,049.4 5,157.3 4,899.0 1,739.8 2,744.9 3,639.5 3,356.5	Ice (Ib) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Force (lb) 2030.37 1768.05 1880.01 2027.29 663.12 1179.25 1708.07 1531.36	Force (lb) 1013.10 1013.96 1173.29 1291.68 456.28 912.38 1447.68 1518.45	Force (lb) 3,043.47 2,782.01 3,053.29 3,318.97 1,119.39 2,091.63
Seq 1 2 3 4 5 6 7 8 9	(ft) 10.0 30.0 50.0 70.0 83.4 93.4 110.0 130.0 150.0	(psf) 14.33 14.34 16.60 18.27 19.21 19.84 20.79 21.81 22.72	Area (sqft) 228.639 22.974 20.940 22.213 0.000 10.586 14.081 11.695 11.717	Area (sqft) 28.80 28.80 22.12 17.99 14.61 22.12 18.58 15.03	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Ratio 0.14 0.15 0.15 0.20 0.16 0.17 0.18 0.22	2.81 2.81 2.78 2.76 2.59 2.74 2.69 2.66 2.54	0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Dr 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Thick (in) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Area (sqft) 37.02 32.20 30.00 29.55 9.80 15.92 22.46 19.42 18.28	Area (sqft) 122.03 122.03 122.03 122.03 122.03 41.18 79.88 120.95 120.95 66.53	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Weight (Ib) 6,454.4 6,049.4 5,157.3 4,899.0 1,739.8 2,744.9 3,639.5 3,356.5 2,567.1	Ice (Ib) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Force (lb) 2030.37 1768.05 1880.01 2027.29 663.12 1179.25 1708.07 1531.36 1435.01	Force (lb) 1013.10 1013.96 1173.29 1291.68 456.28 912.38 1447.68 1518.45 1404.41	Force (lb) 3,043.47 2,782.01 3,053.29 3,318.97 1,119.39 2,091.63 3,155.75 3,049.81 2,839.42
Seq 1 2 3 4 5 6 7 8	(ft) 10.0 30.0 50.0 70.0 83.4 93.4 110.0 130.0	(psf) 14.33 14.34 16.60 18.27 19.21 19.84 20.79 21.81 22.72	Area (sqft) 28.639 22.974 20.940 22.213 0.000 10.586 14.081 11.695	Area (sqft) 28.80 28.80 22.12 17.99 14.61 22.12 18.58	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Ratio 0.14 0.14 0.15 0.15 0.20 0.16 0.17 0.18	2.81 2.81 2.78 2.76 2.59 2.74 2.69 2.66 2.54	0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Dr 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Thick (in) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Area (sqft) 37.02 32.20 30.00 29.55 9.80 15.92 22.46 19.42	Area (sqft) 122.03 122.03 122.03 122.03 41.18 79.88 120.95 120.95	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Weight (lb) 6,454.4 6,049.4 5,157.3 4,899.0 1,739.8 2,744.9 3,639.5 3,356.5 2,567.1 1,526.8	Ice (Ib) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Force (lb) 2030.37 1768.05 1880.01 2027.29 663.12 1179.25 1708.07 1531.36 1435.01 1013.46	Force (lb) 1013.10 1013.96 1173.29 1291.68 456.28 912.38 1447.68 1518.45	Force (lb) 3,043.47 2,782.01 3,053.29 3,318.97 1,119.39 2,091.63 3,155.75 3,049.81
Seq 1 2 3 4 5 6 7 8 9	(ft) 10.0 30.0 50.0 70.0 83.4 93.4 110.0 130.0 150.0	(psf) 14.33 14.34 16.60 18.27 19.21 19.84 20.79 21.81 22.72	Area (sqft) 228.639 22.974 20.940 22.213 0.000 10.586 14.081 11.695 11.717	Area (sqft) 28.80 28.80 22.12 17.99 14.61 22.12 18.58 15.03	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Ratio 0.14 0.15 0.15 0.20 0.16 0.17 0.18 0.22	2.81 2.81 2.78 2.76 2.59 2.74 2.69 2.66 2.54	0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Dr 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Thick (in) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Area (sqft) 37.02 32.20 30.00 29.55 9.80 15.92 22.46 19.42 18.28	Area (sqft) 122.03 122.03 122.03 122.03 122.03 41.18 79.88 120.95 120.95 66.53	Area (sqft) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Weight (Ib) 6,454.4 6,049.4 5,157.3 4,899.0 1,739.8 2,744.9 3,639.5 3,356.5 2,567.1	Ice (Ib) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Force (lb) 2030.37 1768.05 1880.01 2027.29 663.12 1179.25 1708.07 1531.36 1435.01 1013.46	Force (lb) 1013.10 1013.96 1173.29 1291.68 456.28 912.38 1447.68 1518.45 1404.41	Force (lb) 3,043.47 2,782.01 3,053.29 3,318.97 1,119.39 2,091.63 3,155.75 3,049.81 2,839.42

Loa	d Case	: 0.9D + 1	.6W No	ormal W	/ind							0.9D) + 1.6W	97 mph	Wind a	t Norma	I To Face
		Wind Load Fa	actor:	1.60										Wind I	mnortan	e Factor	: 1.00
		Dead Load Fa	actor:	0.90											inportant	e racioi	. 1.00
	lce	Dead Load Fa	actor:	0.00										ice i	mportanc	e Factor	1.00
Sect Seq	Wind Height (ft)	Total Flat qz Area (psf) (sqft)	Total Round Area (sqft)	lce Round Area (sqft)	Sol Ratio	Cf	Df	Dr	lce Thick (in)	Eff Area (sqft)	Linear Area (sqft)	ice Linear Area (sqft)	Totai Weight (ib)	Weight Ice (Ib)	Struct Force (Ib)	Linear Force (Ib)	Total Force (Ib)
1	10.0	14.33 28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.32	122.03	0.00	4,840.8	0.0	2265.98	1013.10	3,279.08
2	30.0	14.34 22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	122.03	0.00	4,537.0	0.0	1957.29	1013.96	2,971.24
3	50.0	16.60 20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	33.15	122.03	0.00	3,868.0	0.0	2076.81	1173.29	3,250.10
4	70.0	18.27 22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	32.88	122.03	0.00	3,674.3	0.0	2255.93	1291.68	3,547.61
5	83.4	19.21 0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	9.80	41.18	0.00	1,304.9	0.0	663.12	456.28	1,119.39
6	93.4	19.84 10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	17.51	79.88	0.00	2,058.7	0.0	1296.87	912.38	2,209.25
7	110.0	20.79 14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	24.58	120.95	0.00	2,729.6	0.0	1868.66	1447.68	3.316.34
8	130.0	21.81 11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	21.17	120.95	0.00	2,517.3	0.0	1669.70	1518.45	3,188.15
9	150.0	22.72 11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.03	66.53	0.00	1,925.3	0.0	1573.00	1404.41	2,977.42
10	168.0	23.47 8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	16.64	0.00	1,145.1	0.0	1115.49	398.20	1,513.68
													28,601.0	0.	0	10	27,372.27

	G					No. of Lot, No. of	13	Sec	tion	Forc	es			1977			ST.
Stru	icture:	CT0438	2-S-SB/	4				(Code:		EIA	/TIA-2	22-G	6/2	29/2020		
Site	Name	: New Brit	ain 2, C	т				E	Expos	sure:	В					((曜))	ł
Heig	ght:	176.00 (ft)					0	Crest	Heigh	it: 0.00	n			Ϋ́		
Bas	e Elev	: 0.000 (ft	Ń							lass:				-:1	<u>s</u>		-1 N
Gh:		0.85	/	Tone		I 4						very L	ense So				
		0.05		Торс	grap	ny:	1		struct	t Class	s: II				Page: 9	Tower Engi	neering Solutions
Loa	d Case	e: 0.9D + 1	1.6W 60	° Wind								0.9	D + 1.6\	N 97 mp	h Wind	at 60° Fi	rom Face
		Wind Load F	actor:	1.60	1												
		Dead Load F	actor:	0.90)									willd	importan	ce Factor	: 1.00
	lce	Dead Load F	actor:	0.00)									Ice	Importan	ce Factor:	: 1.00
		Total	Total	Ice								lce					_
Sect	Wind Height	Fiat qz Area	Round Area	Round Area	Sol				ice	Eff		r Linear	Total		Struct	Linear	Total
Seq	(ft)	(psf) (sqft)	(sqft)	(sqft)	Ratio	Cf	Df	Dr	Thick (in)	Area (sqft)	Area (sqft)	Area (sqft)	Weight (lb)	Weight Ice (Ib)	Force	Force	Force
1	10.0	14.33 28.639	_	0.00	_	2.81	0.80	_			_	-	. ,		(lb)	(lb)	(lb)
2	30.0	14.34 22.974		0.00	0.14		0.80			35.59 31.05	122.03 122.03	0.00 0.00	4,840.8 4,537.0			1013.10	2,964.93
3	50.0	16.60 20.940		0.00	0.15			1.00		28.96	122.03	0.00	3.868.0			1013.96	2,718.93
4	70.0	18.27 22.213	22.12	0.00		2.76		1.00		28.43	122.03	0.00	3,674.3) 1951.08		2,987.69 3,242.76
5	83.4	19.21 0.000	17.99	0.00	0.20	2.59	0.80	1.00		9.80	41.18	0.00	1,304.9	0.0		456.28	1,119.39
6	93.4	19.84 10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	15.39	79.88	0.00	2.058.7		1140.05		2,052.43
7	110.0	20.79 14.081		0.00	0.17	2.69	0.80	1.00	0.00	21.76	120.95	0.00	2,729.6		1654.53		3,102.21
8	130.0	21.81 11.695		0.00		2.66		1.00		18.83	120.95	0.00	2,517.3		1485.25		3,003.70
9 10	150.0	22.72 11.717		0.00	0.22		0.80			17.69	66.53	0.00	1,925.3	0.0	1389.01	1404.41	2,793.42
10	168.0	23.47 8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	16.64	0.00	1,145.1	0.0	979.45	398.20	1,377.64
													28,601.0	0.	0		25,363.12
Load	d Case	: 0.9D + 1	.6W 90	° Wind				-				0.9[D + 1.6V	V 97 mpl	n Wind :	at 90° Er	om Face
		Wind Load Fa	actor:	1.60										-			
		Dead Load Fa	actor:	0.90										wind i	тропал	ce Factor:	1.00
	lce	Dead Load Fa	actor:	0.00										Ice I	mportan	ce Factor:	1.00
		Total	Total	Ice								Ice					
Sact	Wind Height	Flat	Round	Round	0.1				lce	Eff		Linear	Total		Struct	Linear	Total
Seq	(ft)	qz Area (psf) (sqft)	Area (sqft)	Area (sqft)	Sol Ratio	Cf	Df	Dr	Thick (in)	Area (sqft)	Area	Area	_	Weight	Force	Force	Force
1	10.0	14.33 28.639	28.80	0.00		_			· ·	_	(sqft)	(sqft)	(lb)	Ice (Ib)	(lb)	(ib)	(lb)
2	30.0	14.33 20.039	28.80 28.80	0.00	0.14 0.14				0.00	37.02	122.03	0.00	4,840.8		2030.37		3,043.47
3	50.0	16.60 20.940	28.80	0.00	0.14		0.85	1.00	0.00 0.00	32.20 30.00	122.03 122.03	0.00	4,537.0		1768.05		2,782.01
4	70.0	18.27 22.213	22.12	0.00	0.15		0.85		0.00	30.00 29.55	122.03	0.00 0.00	3,868.0		1880.01		3,053.29
5	83.4	19.21 0.000	17.99	0.00	0.20	-	0.85		0.00	29.55 9.80	41.18	0.00	3,674.3 1,304.9	0.0	2027.29		3,318.97
6	93.4	19.84 10.586	14.61	0.00	0.16				0.00	15.92	79.88	0.00	2.058.7		663.12 1179.25		1,119.39
7	110.0	20.79 14.081	22.12	0.00	0.17				0.00		120.05	0.00	2,000.7	0.0	11/9.20	312.30	2,091.63

0.17 2.69 0.85 1.00 0.00 22.46 120.95 0.00 2,729.6

0.18 2.66 0.85 1.00 0.00 19.42 120.95 0.00 2,517.3

0.22 2.54 0.85 1.00 0.00 18.28 66.53 0.00 1,925.3

0.22 2.53 0.85 1.00 0.00 12.57 16.64 0.00 1,145.1

28,601.0

0.0 1708.07 1447.68 3,155.75

0.0 1531.36 1518.45 3,049.81

0.0 1435.01 1404.41 2,839.42

0.0 1013.46 398.20 1,411.65

25,865.41

0.0

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110.0 20.79 14.081 22.12 0.00

130.0 21.81 11.695 18.58 0.00

150.0 22.72 11.717 15.03 0.00

10 168.0 23.47 8.438 9.33 0.00

	16th	Ser. 4	The second					Sec	tion	Forc	es	1			5.4		-347
Site Heig	ucture: Name ght: se Elev	: New Br 176.00	` '	т	ograp	hy:	1		Site C		B it: 0.00 C -		22-G Vense So	oil z	19/2020		ES neering Solutions
Loa		: 1.2D + Wind Load Dead Load Dead Load	Factor: Factor:	1.0Wi N 1.00 1.20 1.00)	l Wir	nd			1.:	2D + 1.	0Di + 1	1.0Wi 50	Wind I	mportan	ormal Fr ce Factor: ce Factor:	
Sect Seq	Wind Height (ft)	Tota Flat qz Area (psf) (sqft	Round Area	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	lce Thick (in)	Eff Area (sqft)	Linea Area (sqft)			Weight ice (lb)	Struct Force (Ib)	Linear Force (lb)	Totai Force (ib)
1 2 3 4 5 6 7 8 9 10	10.0 30.0 50.0 70.0 83.4 93.4 110.0 130.0 150.0 168.0	3.81 28.63 3.81 22.97 4.41 20.94 4.86 22.22 5.10 0.00 5.27 10.58 5.52 14.08 5.79 11.69 6.04 11.7 6.23 8.43	74 68.98 10 68.67 13 69.64 10 33.28 36 44.01 31 63.84 35 62.14 17 59.43	40.18 39.87 47.52 15.29 29.40 41.72 43.57 44.41	0.24 0.26 0.31 0.36 0.33 0.36	2.14 2.22 2.15 2.02 1.85	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.98 2.08 2.16 2.19 2.22 2.26 2.29	67.44 63.19 61.33 64.12 20.93 37.39 53.64 51.88 53.84 40.03	205.63 201.80 203.70 69.26 134.92 205.27	19.81 27.80 28.75 8.18 14.66 22.56 22.94 16.68 8.63	15,747. 15,915. 15,340. 15,531. 5,629.8 9,310.0 13,426. 12,891. 9,955.8 5,543.8 19,291.6	9292.8 9866.5 10182.8 10632.3 3890.0 6565.1 9787.0 9534.8 7388.7 4017.0 81156.5	504.26 551.76 601.34 194.52 371.55 541.57 516.06 511.33 383.85	323.28 381.71 418.36 140.21 281.15 444.47 444.47	855.34 827.54 933.47 1,019.70 334.72 652.71 986.05 960.53 865.71 535.52 7,971.28
Loa		: 1.2D + Wind Load Dead Load Dead Load	Factor: Factor:	1.0Wi 6 1.00 1.20 1.00	0° Wi	nd					1.2D	+ 1.0D	i + 1.0W		nportanc	at 60° Fr ce Factor: ce Factor:	om Face 1.00 1.00
Seq	Wind Height (ft)	Total Flat qz Area (psf) (sqft)	Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	_	Df	Dr	lce Thick (in)	Eff Area (sqft)	Linear Area (sqft)	ice Linear Area (sqft)	Total Weight (Ib)	Weight Ice (Ib)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1 2 3 4 5 6	10.0 30.0 50.0 70.0 83.4 93.4	3.81 28.63 3.81 22.97 4.41 20.94 4.86 22.21 5.10 0.00 5.27 10 58	4 68.98 0 68.67 3 69.64 0 33.28	38.12 40.18 39.87 47.52 15.29 29.40	0.23 0.24 0.26 0.31 0.36	2.46 2.40 2.27 2.14		1.00 1.00 1.00	1.77 1.98 2.08 2.16 2.19	61.71 58.59 57.14 59.68 20.93	199.45 205.63 201.80 203.70 69.26	19.81 27.80 28.75 8.18	15,747. 15,915. 15,340. 15,531. 5,629.8	9292.8 9866.5 10182.8 10632.3 3890.0	500.79 467.60 514.09 559.67 194.52	308.06 323.28 381.71 418.36 140.21	808.85 790.87 895.80 978.04 334.72

0.33 2.22 0.80 1.00 2.22 35.27 134.92 14.66 9,310.0

0.36 2.15 0.80 1.00 2.26 50.82 205.27 22.56 13,426.

0.42 2.02 0.80 1.00 2.29 49.54 206.29 22.94 12,891.

0.54 1.85 0.80 1.00 2.33 51.50 130.87 16.68 9,955.8

0.59 1.81 0.80 1.00 2.35 38.34 48.15 8.63 5,543.8

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93.4

110.0

130.0

150.0

10 168.0

5.27 10.586 44.01 29.40

5.52 14.081 63.84 41.72

5.79 11.695 62.14 43.57

6.04 11.717 59.43 44.41

6.23 8.438 42.77 33.44

631.67

957.61

937.26

843.45

519.34

7,697.61

6565.1 350.51 281.15

9787.0 513.14 444.47

9534.8 492.79 444.47

7388.7 489.07 354.37

4017.0 367.67 151.67

81156.9

119,291.6

Stru	icture:	СТ	04382	-S-SBA	1				C	ode:		FIA	TIA-22	2-G	6/2	9/2020		
Site	Name:			ain 2, C						xpos		B		.2-0	0/2	5/2020	((開))	
Heig			5.00 (f							•						4		- ~
	-		•	·							Height					J.J.		1 Q
	e Elev:	0.0	00 (ft)						S	Site C	lass:	C - Y	Very D	ense So	1.1			20
Gh:		0.8	5		Торо	grapl	ny:	1	S	struct	Class	: 11			Pa	age: 11	Tower Engin	eering Solutio
Loa	d Case	: 1.3	2D + 1	.0Di + 1	1.0Wi 9	0° Wi	nd					1.2D	+ 1.0D	i + 1.0W	/i 50 mph	Wind a	at 90° Fro	om Fac
	1	Wind	Load Fa	actor:	1.00										-		e Factor:	1.0
	1	Dead	Load Fa	actor:	1.20										with a	nportant	e racior.	1.0
	Ice I	Dead	Load Fa	actor:	1.00										ice ir	nportano	e Factor:	1.0
	14/2		Total	Total	lce								lce					
Sect	Wind Height	qz	Flat Area	Round Area	Round Area	Sol				lce Thick	Eff Area	Linear Area	Linear Area	Total	Mainht	Struct	Linear	Total
Seq	(ft)		(sqft)	(sqft)	(sqft)	Ratio	Cf	Df	Dr	(in)	(sqft)	(sqft)	(sqft)	(lb)	Weight Ice (Ib)	Force (lb)	Force (lb)	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	199.45	17.75	15,747.	9292.8	512.41	308.06	820.47
2	30.0		22.974	68.98	40.18	0.24	2.46	0.85	1.00	1.98	59.74	205.63	19.81	15,915.	9866.5	476.76	323.28	800.04
3	50.0		20.940	68.67	39.87	0.26	2.40		1.00	2.08	58.19	201.80	27.80	15,340.	10182.8	523.51	381.71	905.22
4	70.0		22.213	69.64	47.52		2.27	0.85			60.79	203.70	28.75	15,531.	10632.3	570.09	418.36	988.45
5	83.4		0.000	33.28	15.29		2.14		1.00	2.19	20.93	69.26	8.18	5,629.8	3890.0	194.52	140.21	334.72
6	93.4		10.586	44.01	29.40	0.33	2.22		1.00		35.80	134.92		9,310.0	6565.1	355.77	281.15	636.93
7	110.0		14.081	63.84	41.72	0.36	2.15		1.00	2.26	51.52	205.27	22.56	13,426.	9787.0	520.25	444.47	964.72
8 9	130.0 150.0		11.695	62.14	43.57	0.42				2.29	50.12	206.29		12,891.	9534.8	498.61	444.47	943.08
9 10	168.0		11.717 8.438	59.43	44.41	0.54	1.85			2.33	52.08	130.87	16.68	9,955.8	7388.7	494.64	354.37	849.01
	100.0	0.23	0.438	42.77	33.44	0.59	1.81	0.85	1.00	2.35	38.77	48.15	8.63	5,543.8 1 9,291.6	4017.0 81156.9	-	151.67	523.39
10																		7,766.03

Loa	d Case	: 1.0D + 1	.0W No	ormal W	lind							1.0D	+ 1.0W	60 mph	Wind a	t Normal	To Face
	1	Wind Load Fa	actor:	1.00												e Factor:	1.00
	I	Dead Load Fa	actor:	1.00										WING N	nportan	B Factor.	1.00
	lce i	Dead Load Fa	actor:	0.00										ice in	nportan	e Factor:	1.00
Sect Seq	Wind Height (ft)	Total Flat qz Area (psf) (sqft)	Total Round Area (sqft)	lce Round Area (sqft)	Sol Ratio	Cf	Df	Dr	lce Thick (in)	Eff Area (sqft)	Linear Area (sqft)	lce Linear Area (sqft)	Total Weight (Ib)	Weight Ice (Ib)	Struct Force (Ib)	Linear Force (Ib)	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	122.03	0.00	5,378.6	0.0	582.18	242.27	824.44
2	30.0	5.49 22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	38.72	122.03	0.00	5,041.2	0.0	508.45	242.47	750.92
3	50.0	6.35 20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	36.36	122.03	0.00	4,297.7	0.0	544.84	280.57	825.41
4	70.0	6.99 22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	34.78	122.03	0.00	4,082.5	0.0	570.61	308.88	879.50
5	83.4	7.35 0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	10.58	41.18	0.00	1,449.9	0.0	171.24	109.11	280.35
6	93.4	7.59 10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	18.85	79.88	0.00	2,287.4	0.0	333.85	218.18	552.03
7	110.0	7.96 14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	26.56	120.95	0.00	3,032.9	0.0	482.97	346.19	829.16
8	130.0	8.34 11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	22.31	120.95	0.00	2,797.0	0.0	420.75	363.11	783.86
9	150.0	8.69 11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.40	66.53	0.00	2,139.3	0.0	382.96	335.84	718.80
10	168.0	8.98 8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	16.64	0.00	1,272.4	0.0	266.75	95.22	361.97
													31,778.9	0.0)		6,806.45

Section Forces Structure: CT04382-S-SBA Code: EIA/TIA-222-G 6/29/2020 Site Name: New Britain 2, CT Exposure: B Image: Crest Height: 0.00 Height: 176.00 (ft) Crest Height: 0.00 Image: Crest Height: 0.00 Base Elev: 0.000 (ft) Site Class: C - Very Dense Soil Image: Crest Height: Dage: 12	DIN ES r Engineering Solutions
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	ES
Height: 176.00 (ft) Crest Height: 0.00 Base Elev: 0.000 (ft) Site Class: C - Very Dense Soil	ES
Base Elev: 0.000 (ft) Site Class: C - Very Dense Soil	ES r Engineering Solutions
Base Elev: 0.000 (ft) Site Class: C - Very Dense Soil	ES r Engineering Solutions
	r Engineering Solutions
Gii: 0.85 Topography: 1 Struct Class: II Page: 12	r rughtering 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 Fac	ctor: 1.00
Dead Load Factor: 1.00	1.00
Ice Dead Load Factor: 0.00 Ice Importance Fac	ctor: 1.00
Total Total Ice Ice	
Wind Flat Round Round Ice Eff Linear Total Struct Linear Sect Height gz Area Area Area Sol Thick Area Area Meight Weight Force Force	
Sect Height qz Area Area Area Sol Thick Area Area Area Weight Weight Force Forc Seq (ft) (psf) (sqft) (sqft) (sqft) Ratio Cf Df Dr (in) (sqft) (sqft) (sqft) (lb) ice (lb) (lb) (lb)	
2 30.0 5.49 22.974 28.80 0.00 0.14 2.81 0.80 1.00 0.00 34.13 122.03 0.00 5,041.2 0.0 448.12 242 3 50.0 6.35 20.940 28.80 0.00 0.15 2.78 0.80 1.00 0.00 32.17 122.03 0.00 4,297.7 0.0 482.09 280	
4 70.0 6.99 22.213 22.12 0.00 0.15 2.76 0.80 1.00 0.00 30.33 122.03 0.00 4,082.5 0.0 497.72 308	
5 83.4 7.35 0.000 17.99 0.00 0.20 2.59 0.80 1.00 0.00 10.58 41.18 0.00 1,449.9 0.0 171.24 109	
6 93.4 7.59 10.586 14.61 0.00 0.16 2.74 0.80 1.00 0.00 16.73 79.88 0.00 2,287.4 0.0 296.35 218	
7 110.0 7.96 14.081 22.12 0.00 0.17 2.69 0.80 1.00 0.00 23.75 120.95 0.00 3.032.9 0.0 431.76 346	
8 130.0 8.34 11.695 18.58 0.00 0.18 2.66 0.80 1.00 0.00 19.97 120.95 0.00 2,797.0 0.0 376.64 363	.11 739.75
9 150.0 8.69 11.717 15.03 0.00 0.22 2.54 0.80 1.00 0.00 18.05 66.53 0.00 2,139.3 0.0 338.96 335.	.84 674.80
10 168.0 8.98 8.438 9.33 0.00 0.22 2.53 0.80 1.00 0.00 12.15 16.64 0.00 1,272.4 0.0 234.22 95.	.22 329.44
31,778.9 0.0	6,326.00
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 Fac	tor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00 Ice Importance Fac Total Total Ice Ice	tor: 1.00
Total Total Ice Ice Ice Wind Flat Round Round Ice Eff Linear Linear Total Struct Linear	ar Total
Sect Height qz Area Area Area Sol Thick Area Area Area Weight Weight Force Force	
Seq (ft) (psf) (sqft) (sqft) (sqft) Ratio Cf Df Dr (in) (sqft) (sqft) (lb) Ice (lb) (lb) (lb)	
1 10.0 5.48 28.639 28.80 0.00 0.14 2.81 0.85 1.00 0.00 40.09 122.03 0.00 5,378.6 0.0 525.83 242.	27 768.10
2 30.0 5.49 22.974 28.80 0.00 0.14 2.81 0.85 1.00 0.00 35.27 122.03 0.00 5,041.2 0.0 463.20 242.	
3 50.0 6.35 20.940 28.80 0.00 0.15 2.78 0.85 1.00 0.00 33.22 122.03 0.00 4,297.7 0.0 497.78 280.	
4 70.0 6.99 22.213 22.12 0.00 0.15 2.76 0.85 1.00 0.00 31.44 122.03 0.00 4,082.5 0.0 515.94 308.	.88 824.82

 $0.20 \hspace{0.1in} 2.59 \hspace{0.1in} 0.85 \hspace{0.1in} 1.00 \hspace{0.1in} 0.00 \hspace{0.1in} 10.58 \hspace{0.1in} 41.18 \hspace{0.1in} 0.00$

0.85 1.00 0.00 18.64

0.85 1.00 0.00 24.45 120.95 0.00

0.85 1.00 0.00 20.56 120.95

0.16 2.74 0.85 1.00 0.00 17.26

0.22 2.53 0.85 1.00 0.00 12.57

5

6

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8

9

83.4

93.4

110.0

130.0

150.0

10 168.0

7.35 0.000

7.59 10.586

7.96 14.081

8.34 11.695

8.69 11.717

8.98 8.438

17.99

14.61

22.12

18.58

15.03

9.33

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0.00

0.00

0.17 2.69

0.18 2.66

0.22 2.54

1,449.9

2,287.4

3,032.9

2,797.0

1,272.4

31,778.9

0.00 2,139.3

79.88 0.00

66.53

16.64

0.00

0.00

0.0 305.72 218.18

0.0 444.57 346.19

0.0 387.67 363.11

0.0 349.96 335.84

109.11

95.22

0.0 171.24

0.0 242.35

0.0

280.35

523.90

790.75

750.78

685.80

337.57

6,446.11

			Force/	Stress (Compressio	n Si	ımm	ary	1		The second	The second		
St	ructure:	CT04382-S-SBA			Code:	EIA	TIA-	222-	G		6/29/2	020		
Sit	e Name:	New Britain 2, CT			Exposure:	В					YA		(甲))	
Не	ight:	176.00 (ft)			Crest Height:	0.00)				1	x	Т	70
Ba	se Elev:	0.000 (ft)			Site Class:	C - 1	Very	Den	se So	oil	7.		11	10
Gh	1:	0.85	Topography:	1	Struct Class:						Page	: 13	Tower Engi	neering Solutions
				LE	EG MEMBERS									
	T		_				_					Mem		
Sect	Top Elev	Member	Force (kips)	Lo		Len (ft)	Bra X	acing Y	ι% Ζ	KL/R	Fy (ksi)	Cap (kips)	Leg Use %	Controls
Sect	Elev	Member 8" DIA PIPE		Loa 1.2D + 1.6W	ad Case			-		KL/R			Use %	Controls Member X
	20 PX - 8		(kips)		ad Case	(ft)	Х	Y	z	_	(ksi)	(kips)	Use %	
1	20 PX - 8 40 PX - 8 60 PSP -	B" DIA PIPE B" DIA PIPE - ROHN 8 EHS	(kips) -234.33	1.2D + 1.6W	ad Case Normal Wind Normal Wind	(ft) 9.64	X 49	Y	Z 49	19.70	(ksi) 50.00	(kips) 558.14	Use % 42.0 38.0	Member X
1 2 3 4	20 PX - 8 40 PX - 8 60 PSP - 80 PX - 6	B" DIA PIPE B" DIA PIPE - ROHN 8 EHS S" DIA PIPE	(kips) -234.33 -218.42 -194.50 -169.65	1.2D + 1.6W 1.2D + 1.6W	ad Case Normal Wind Normal Wind Normal Wind	(ft) 9.64 0.38	X 49 49	Y 49 49	Z 49 49	19.70 0.77	(ksi) 50.00 50.00	(kips) 558.14 574.18	Use % 42.0 38.0 44.5	Member X Member X
1 2 3 4 5	20 PX - 8 40 PX - 8 60 PSP - 80 PX - 6 86.79 PX - 6	B" DIA PIPE B" DIA PIPE - ROHN 8 EHS S" DIA PIPE S" DIA PIPE	(kips) -234.33 -218.42 -194.50 -169.65 -144.77	1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W	Ad Case Normal Wind Normal Wind Normal Wind Normal Wind Normal Wind	(ft) 9.64 0.38 0.38 0.38 0.38	X 49 49 48 48 48	Y 49 49 48	Z 49 49 48	19.70 0.77 0.74	(ksi) 50.00 50.00 50.00	(kips) 558.14 574.18 437.38	Use % 42.0 38.0 44.5 44.9	Member X Member X Member X
1 2 3 4 5 6	20 PX - 8 40 PX - 8 60 PSP - 80 PX - 6 86.79 PX - 6 100 PX - 6	B" DIA PIPE B" DIA PIPE - ROHN 8 EHS S" DIA PIPE S" DIA PIPE S" DIA PIPE	(kips) -234.33 -218.42 -194.50 -169.65 -144.77 -131.22	1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W	ad Case Normal Wind Normal Wind Normal Wind Normal Wind Normal Wind	(ft) 9.64 0.38 0.38 0.38 0.38 6.43	X 49 48 48 48 48 48	Y 49 49 48 48 48 48 48	Z 49 49 48 48 48 48	19.70 0.77 0.74 0.99 0.99 16.90	(ksi) 50.00 50.00 50.00 50.00 50.00 50.00	(kips) 558.14 574.18 437.38 377.97 377.97 370.18	Use % 42.0 38.0 44.5 44.9 38.3 35.4	Member X Member X Member X Member X Member X Member X
1 2 3 4 5 6 7	20 PX - 8 40 PX - 8 60 PSP - 80 PX - 6 86.79 PX - 6 100 PX - 6 120 PSP -	B" DIA PIPE B" DIA PIPE - ROHN 8 EHS S" DIA PIPE S" DIA PIPE S" DIA PIPE - ROHN 6 EHS	(kips) -234.33 -218.42 -194.50 -169.65 -144.77 -131.22 -117.24	1.2D + 1.6W 1.2D + 1.6W	ad Case Normal Wind Normal Wind Normal Wind Normal Wind Normal Wind Normal Wind	(ft) 9.64 0.38 0.38 0.38 0.38 6.43 0.38	X 49 48 48 48 48 48 48	Y 49 48 48 48 48 48 48 48	Z 49 48 48 48 48 48 48	19.70 0.77 0.74 0.99 0.99 16.90 0.97	(ksi) 50.00 50.00 50.00 50.00 50.00 50.00 50.00	(kips) 558.14 574.18 437.38 377.97 377.97 370.18 302.06	Use % 42.0 38.0 44.5 44.9 38.3 35.4 38.8	Member X Member X Member X Member X Member X Member X Member X
1 2 3 4 5 6	20 PX - 8 40 PX - 8 60 PSP - 80 PX - 6 86.79 PX - 6 100 PX - 6 120 PSP - 140 PX - 5	B" DIA PIPE B" DIA PIPE - ROHN 8 EHS S" DIA PIPE S" DIA PIPE S" DIA PIPE	(kips) -234.33 -218.42 -194.50 -169.65 -144.77 -131.22	1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W 1.2D + 1.6W	ad Case Normal Wind Normal Wind Normal Wind Normal Wind Normal Wind Normal Wind Normal Wind	(ft) 9.64 0.38 0.38 0.38 0.38 6.43	X 49 48 48 48 48 48	Y 49 49 48 48 48 48 48	Z 49 49 48 48 48 48	19.70 0.77 0.74 0.99 0.99 16.90	(ksi) 50.00 50.00 50.00 50.00 50.00 50.00	(kips) 558.14 574.18 437.38 377.97 377.97 370.18	Use % 42.0 38.0 44.5 44.9 38.3 35.4 38.8 31.8	Member X Member X Member X Member X Member X Member X

Splices

			Top Splic	e					Bottom Sp	lice			
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	218.85	0.00	0.0			1.2D + 1.6W Normal Wind	240.38	0.00			
2	40	1.2D + 1.6W Normal Wind	195.01	0.00	0.0			1.2D + 1.6W Normal Wind	218.85	0.00		1 A325	8
3	60	1.2D + 1.6W Normal Wind	170.07	0.00	0.0			1.2D + 1.6W Normal Wind	195.01	0.00		1 A325	8
4	80	1.2D + 1.6W Normal Wind	145.13	0.00	0.0			1.2D + 1.6W Normal Wind	170.07	0.00		1 A325	8
5	86.79	1.2D + 1.6W Normal Wind	135.06	0.00	0.0			1.2D + 1.6W Normal Wind	145.13	0.00		1 A325	6
6	100	1.2D + 1.6W Normal Wind	117.56	0.00	0.0			1.2D + 1.6W Normal Wind	135.06	0.00		1 A325	6
7	120	1.2D + 1.6W Normal Wind	87.65	0.00	0.0			1.2D + 1.6W Normal Wind	117.56	0.00		1 A325	6
8	140	1.2D + 1.6W Normal Wind	53.27	0.00	0.0			1.2D + 1.6W Normal Wind	87.65	0.00		1 A325	6
9	160	1.2D + 1.6W Normal Wind	19.25	0.00	0.0			1.2D + 1.6W Normal Wind	53.27	0.00		1 A325	4
10	176	1.2D + 1.0Di + 1.0Wi Normal Wi	2.46	0.00	0.0			1.2D + 1.6W Normal Wind	19.25	0.00		7/8 A325	4
				_					_				

_	_			Н	ORIZO	NTA	L ME	MBE	RS								
Sect	Top Elev	Member	Force (kips)		Len (ft)	Br X	racinų Y	1 % Z	KL/R	Fy (ksi)		Num Bolts		Сар	Bear Cap (kips)	Use %	
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	-0.28	0.9D + 1.6W Normal Wind	4.76	100	100	100	144.97	36.00	7.63	1	1	12.43	7.84	4	Member Z
10	176	SAE - 2X2X0.25	-0.28	1.2D + 1.6W 60° Wind	4.69	100	100	100	143.88	36.00	10.26	1	1	12.43			Member Z
					DIAGO	MAI	MEN	DED	<u> </u>					_		_	

					DIAGO	NAL	MEMI	BER	S								
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Br X	acing Y	% Z	KL/R	Fy (ksi)		Num Bolts	Num Holes		Cap		Controls
1	20	SAE - 4X4X0.25	-6.76	0.9D + 1.6W 90° Wind	21.76	50	50	50	164.26	36.00	16.24	1	1	17.89	12.6	54	Bolt Bear
2	40	SAE - 3.5X3.5X0.25	-6.39	1.2D + 1.6W 90° Wind	20.84	50	50	50	180.15	36.00	11.76	1	1	17.89	12.6	54	Member Z
3	60	SAE - 3.5X3.5X0.25	-6.34	1.2D + 1.6W 90° Wind	18.25	50	50	50	157.82	36.00	15.33	1	1	17.89	12.6	50	Bolt Bear
4	80	SAE - 3X3X0.25	-5.39	1.2D + 1.6W 90° Wind	14.76	50	50	50	149.57	36.00	14.54	1	1	17.89	12.6	43	Bolt Bear
5	86.7	MOD - 2L2.5x2.5x3/16	÷5.35	1.2D + 1.6W 90° Wind	14.10	50	50	50	113.59	36.00	29.91	1	1	12.43		43	Bolt Shear
6	100	SAE - 2.5X2.5X0.1875	-5.41	1.2D + 1.6W 90° Wind	12.97	50	50	50	157.27	36.00	8.24	1	1	12.43	7.84	69	Bolt Bear

					Force/Stre	ss Co	mp	ress	sio	n Su	nma	ry		100				11.53
Str	uctu	re:	CT04382-S	S-SBA		Co	de:			EIA/1	TIA-22	2-G		6/29/	2020			
Sit	e Na	me:	New Britair	1 2, CT	-	Ex	pos	ure:		В				VA		化聯	[0]	
He	ight:		176.00 (ft)			Cr	est l	Heig	ht:	0.00				-4			Т	n
Ba	se El	lev:	0.000 (ft)					lass			ery De	ense S	Soil	1	X		E	S
Gh	:		0.85		Topography: 1	Sti	uct	Clas	s:					Pag	e: 14	Tower	Engine	ering Solutions
						DIAGO	NAL	MEM	BER	S								
Sect	Top Elev		Member	Force (kips)	Load Case	Len (ft)	Bi X	racing Y	% Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts		Shear Cap (kips)	Cap		Controls
7	120	SAE	- 2.5X2.5X0.1875	-5.32	1.2D + 1.6W 90° Wind	11.28	50	50	50	136.73	36.00	10.90	1	1	12.43	7.84	68	Bolt Bear
8	140	SAE ·	2X2X0.1875	-5.02	1.2D + 1.6W 90° Wind	8.60	50	50	50	130.93	36.00	9.33	1	1	12.43	7.84	64	Bolt Bear
9	160	SAE -	- 2X2X0.1875	-3.44	1.2D + 1.6W 90° Wind	7.64	50	50	50	117.23	36.00	11.16	1	1	12.43	7.84	44	Bolt Bear
3 10			2X2X0.25															

		Force/	Stress Tension S	Summary		
Structure:	CT04382-S-SBA	A	Code:	EIA/TIA-222-G	6/29/2020	
Site Name:	New Britain 2, C	т	Exposure:	В	Va	(((H)))
Height:	176.00 (ft)		Crest Height:	0.00	x	TC
Base Elev:	0.000 (ft)		Site Class:	C - Very Dense Soil	7.	IES
Gh:	0.85	Topography: 1	Struct Class:	II	Page: 15	Tower Engineering Solutions
			LEG MEMBERS			
Тор		Force			Mem Ev Can	l en

	IAA		FOICE		Fy	Cap	Leg	
Sect	Elev	Member	(kips)	Load Case	(ksi)	(kips)	Use %	Controls
1	20	PX - 8" DIA PIPE	203.35	0.9D + 1.6W 60° Wind	50		35.4	Member
2	40	PX - 8" DIA PIPE	185.72	0.9D + 1.6W 60° Wind	50	574.20	32.3	Member
3	60	PSP - ROHN 8 EHS	166.62	0.9D + 1.6W 60° Wind	50	437.40	38.1	Member
4	80	PX - 6" DIA PIPE	146.00	0.9D + 1.6W 60° Wind	50	378.00	38.6	Member
5	86.792	PX - 6" DIA PIPE	125.07	0.9D + 1.6W 60° Wind	50	378.00	33.1	Member
6	100	PX - 6" DIA PIPE	113.10	0.9D + 1.6W 60° Wind	50	378.00	29.9	Member
7	120	PSP - ROHN 6 EHS	101.25	0.9D + 1.6W 60° Wind	50	302.09	33.5	Member
8	140	PX - 5" DIA PIPE	74.53	0.9D + 1.6W 60° Wind	50	274.95	27.1	Member
9	160	PX - 4" DIA PIPE	43.61	0.9D + 1.6W 60° Wind	50	198.45	22.0	Member
10	176	PX - 3" DIA PIPE	13.20	0.9D + 1.6W 60° Wind	50	135.90	9.7	Member

<u>Splices</u>

		Top Splice						Bottom Splice							
Sect	Top Elev	Load Case	Force (kips)		Use %		lum olts	Load Case	Force Ca (kips) (kip		Use %		Num Bolts		
1	20	0.9D + 1.6W 60° Wind	185.41	0.00	0.0			0.9D + 1.6W 60° Wind	203.3	0.00					
2	40	0.9D + 1.6W 60° Wind	166.25	0.00	0.0			0.9D + 1.6W 60° Wind	185.4	424.08	43.7	1 A325	5 8		
3	60	0.9D + 1.6W 60° Wind	145.68	0.00	0.0			0.9D + 1.6W 60° Wind	166.2	424.08	39.2	1 A325	58		
4	80	0.9D + 1.6W 60° Wind	124.85	0.00	0.0			0.9D + 1.6W 60° Wind	145.6	424.08	34.4	1 A325	58		
5	86.792	0.9D + 1.6W 60° Wind	116.23	0.00	0.0			0.9D + 1.6W 60° Wind	124.8	318.06	39.3	1 A325	56		
6	100	0.9D + 1.6W 60° Wind	101.04	0.00	0.0			0.9D + 1.6W 60° Wind	116.2	318.06	36.5	1 A325	56		
7	120	0.9D + 1.6W 60° Wind	74.35	0.00	0.0			0.9D + 1.6W 60° Wind	101.0	318.06	31.8	1 A325	56		
8	140	0.9D + 1.6W 60° Wind	42.88	0.00	0.0			0.9D + 1.6W 60° Wind	74.35	318.06	23.4	1 A325	56		
9	160	0.9D + 1.6W 60° Wind	13.29	0.00	0.0			0.9D + 1.6W 60° Wind	42.88	212.04	20.2	1 A325	54		
10	176		0.00	0.00	0.0			0.9D + 1.6W 60° Wind	13.29	166.24	8.0	7/8 A325	5 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
l	20	-			36	0.00	0	0				_	
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
1	80	-			36	0.00	0	0					
5	86.792	-			36	0.00	0	0					
3	100	-			36	0.00	0	0					
7	120	-			36	0.00	0	0					
3	140	-			36	0.00	0	0					
)	160	SAE - 2X2X0.1875	0.30 1.2	D + 1.6W 60° Wind	36	23.00	1	1	12.43	7.84	7.85	3.9	Bolt Bear
0	176	SAE - 2X2X0.25	0.42 0.9	D + 1.6W Normal W	36	30.46	1	1	12.43	10.45	10.47	4.0	

	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 %	
1	20	SAE - 4X4X0.25	6.66 0	.9D + 1.6W 90° Wind	36	62.86	1	1	17.89	12.62	26.92	52.8	Bolt Bear
2	40	SAE - 3.5X3.5X0.25	6.39 0	.9D + 1.6W 90° Wind	36	54.76	1	1	17.89	12.62	21.48	50.7	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	6.18 0	.9D + 1.6W 90° Wind	36	54.76	1	1	17.89	12.62	21.48	49.0	Bolt Bear
4	80	SAE - 3X3X0.25	5.29 0	.9D + 1.6W 90° Wind	36	46.66	1	1	17.89	12.62	16.04	41.9	Bolt Bear
5	86.792	MOD - 2L2.5x2.5x3/16_Spec	5.25 0	.9D + 1.6W 90° Wind	36	59.00	1	1	12.43			42.2	Bolt Shear
6	100	SAE - 2.5X2.5X0.1875	5.32 1	.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	7.84	9.89	67.9	
7	120	SAE - 2.5X2.5X0.1875	5.22 1	.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	7.84	9.89	66.6	

	34		For	ce/Stres	s Tensi	on S	umma	ary			1	1.7	ALC: NO
Structure: CT04382-S Site Name: New Britain		CT04382-S-SBA			Code:		EIA/TI	A-222-	G	6/29	/2020		
		New Britain 2, CT			Exposure:								
Height:		176.00 (ft)			Crest He	ight:	0.00						DT
Base Elev:		0.000 (ft)			Site Class:		C - Very Dense Soil			2			15
Gh:		0.85	Topography:	1	Struct Class:		•			Page: 16		Tower Engineering Solution	
				DIAGO	NAL MEM	BERS							
Sect	Top Elev	Member	Force (kips)	Load Case	Fy e (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	4.93 1.2	2D + 1.6W 90° \	Wind 36	23.00) 1	1	12.43	7.84	7.85	63.0	Bolt Bear
9		SAE - 2X2X0.1875	3.40 1.2	2D + 1.6W 90° \	Mind 36	23.00	1	1	12.43	7.84	7.85	43.4	Bolt Bear
10	176	SAE - 2X2X0.25	3.32 0.9	D + 1.6W 90° \	Nind 36	30.46	; 1	1	12.43	10.45	10.47	31.8	Bolt Bear

				Ales.	1		Seisr	nic S	Section	For	ces				
Struct	ure:	CT0438	2-S-SB	4				Co	de:	E	A/TIA-22	2-G		6/29/2020	-
Site N	ame:	New Bri	itain 2, C	т				Ex	posure:	В					(((昭)))
Height		176.00							est Heigh		00			`1	Inc
Base I		0.000 (fi							e Class:		- Very D		Seil	, s-x	IES
Gh:		0.85	-)	Tom			4				- very D	ense	5011	1	Tower Engineering Solutions
Gh: 0.85 Topography: 1 Struct Class: II Page: 17 Tower Engineering Solution															
Load Case: 1.2D + 1.0E															
	Dea	d Load	Factor	1.2	0	Sds	0.146	Ss	0.1830	Fa	1.2000	Ke	0.0000		
	Seismi	c Load	Factor	1.0	0	Sd1	0.072	S 1	0.0640	Fv	1.7000	Ka	0.0000		
Seismi	c impo	rtance	Factor	1.0	0		0.121				1.9886	-	1.6748		
		-		1.0	0		ateral	R	3.0000	v5	1.9000	TI	1.0748		
Sect #	Elev (ft)	Wz (ib)	а	ь	C		Fsz (lb)								
1	10.00		0.01	0.05	0.03		16.06								
2	30.00		0.05	0.07	0.04		31.46								
3		4297.7	0.15	0.07	0.03		42.76								
4	70.00		0.30	0.05	0.01		59.85								
5 6	83.40		0.42	0.01	0.01		25.87								
7		2287.4 3032.8	0.53 0.74	-0.03	0.01		45.27								
8		5032.8	1.03	-0.10 -0.10	0.04		71.31								
9		3020.3	1.03	0.23	0.15 0.40		63.81 66.41								
10		7268.6	1.72	1.21	0.85		85.04								
Load		0.9D + ′ d Load I		0.9	0	Sds	0.146	Ss	0.1830	Fa	1.2000	Ke	0.0000		
S	Seismic	: Load I	Factor	1.0	n	Sd1	0.072	S1	0.0640	Ev	1.7000		0.0000		
Seismic	: Impoi	rtance F	Factor	1.0			0.121		3.0000		1.9886	-	1.6748		
_				1.00	0		U. 12 I	ĸ	3.0000	42	1.9000		1.0740		
Sect #	Elev (ft)	Wz (Ib)	а	b	с	F	Fsz (Ib)								
1		5378.6	0.01	0.05	0.03	1	16.06								
2		5041.1	0.05	0.07	0.04		31.46								
3		4297.7	0.15	0.07	0.03		12.76								
4		4082.5	0.30	0.05	0.01		59.85								
5		1459.8	0.42	0.01	0.01		25.87								
6		2287.4		-0.03	0.01		45.27								
7		3032.8	0.74	-0.10	0.04		71.31								
8 9		5035.1 3020.3	1.03	-0.10	0.15		53.81								
9 10		3020.3 7268.6	1.37 1.72	0.23 1.21	0.40		6.41								
10	100.00	1200.0	1.72	1.21	0.85	02	35.04								

这.HEW!//	Su	ipport F	orces Sur	nmary			
Structure: CT04382-S-		С	ode:	EIA/TI/	A-222-G	6/29/2020	decimie an
Site Name: New Britain	2, CT	E	xposure:	В		Y	(((単))
Height: 176.00 (ft)		С	rest Height:	0.00		X	
Base Elev: 0.000 (ft)		S	ite Class:	C - Ver	y Dense Soil	2.1	IES
Gh: 0.85	Topography:	l Si	truct Class:		-	Page: 18	Tower Engineering Solutions
Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (
1.2D + 1.6W Normal Wind	1	-0.01		-23.69	() opint (Contraction of the second seco	
	1a	7.81	-95.39	-7.18			
	1b	-7.81	-95.38	-7.19			
1.2D + 1.6W 60° Wind	1	-2.11	123.75	-11.80			
	1a	-11.27	123.67	4.08			
	1b	-17.86	-198.33	-10.31			
1.2D + 1.6W 90° Wind	1	-2.50	16.36	-1.01			
	1a	-17.88	204.15	8.89			
	1b 	-16.19	-171.42	-7.88			
0.9D + 1.6W Normal Wind	1	-0.01	235.50	-23.42			
	1a	8.04	-99.35	-7.32			
	1b	-8.03	-99.34	-7.33			
0.9D + 1.6W 60° Wind	1	-2.11	119.54	-11.54			
	1a	-11.05	119.45	3.94			
	1b	-18.08	-202.17	-10.44			
0.9D + 1.6W 90° Wind	1	-2.51	12.27	-0.75			
	1a	-17.65	199.84	8.76			
	1b 	-16:42	-175.30	-8.01			
1.2D + 1.0Di + 1.0Wi Normal Wir		0.00	113.24	-6.31			
	1a	2.58	17.40	-2.21			
	1b	-2.58	17.44	-2.21			
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.60	80.72	-3.02			
	1a 1b	-2.91 -5.55	80.68	0.99			
		-5.55	-13.32	-3.20			
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.70	49.35	0.12			
	1a 1b	-4.80 -5.02	103.89	2.37			
120+105			-5.16	-2.50			
1.2D + 1.0E	1	0.00	26.36	5.25			
	1a 1b	5.60 -5.60	11.36 11.36	-3.26 -3.26			
0.9D + 1.0E							
	1 1a	0.00 5.83	22.26 7.28	5.51 -3.40			
	1b	-5.83	7.28	-3.40 -3.40			
1.0D + 1.0W Normal Wind							
	1 1a	0.00 1.37	67.82 -13.46	-6.42 -1.46			
	1b	-1.37	-13.45	-1.46			
1.0D + 1.0W 60° Wind	·	-0.53					
	ו 1a	-0.53 -3.31	39.67 39.65	-3.51 1.29			
	1b	-3.83	-38.42	-2.21			
1.0D + 1.0W 90° Wind	·	-0.63	13.63	-0.87			
	1a	-0.63 -4.92	59.17	-0.87 2.48			
	1b	-3.43		-1.61			

Max Reactions

	Leg		Over	Overturning		
Max Uplift:	-202.17	(kips)	Moment:	4064.48	(ft-kips)	
Max Down:	239.85	(kips)	Total Down:	49.09	(kips)	
Max Shear:	23.69	(kips)	Total Shear:	38.07	(kips)	

,

		A	nalysis Summa	iry		
Structure:	CT04382-S-SB/	4	Code:	EIA/TIA-222-G	6/29/2020	
Site Name:	New Britain 2, C	т	Exposure:	В		(((騨))
Height:	176.00 (ft)		Crest Height:	0.00		TO
Base Elev:	0.000 (ft)		Site Class:	C - Very Dense Soil		IES
Gh:	0.85	Topography: 1	Struct Class:	-	Page: 20	Tower Engineering Solut

Max Reactions

	Leg			erturning	
Max Uplift:	-202.17	(kips)	Moment:	4064.48	(ft-kips)
Max Down:	239.85	(kips)	Total Down:	49.09	(kips)
Max Shear:	23.69	(kips)	Total Shear:	38.07	(kips)

Anchor Bolts

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

Interaction Ratio: 0.38

Max Usages

Max Leg: 44.9% (1.2D + 1.6W Normal Wind - Sect 4) Max Diag: 69.0% (1.2D + 1.6W 90° Wind - Sect 6) Max Horiz: 4.0% (0.9D + 1.6W Normal Wind - Sect 10)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0E - Normal To Face	80.38	0.0108	-0.0005	0.0151
	140.00	0.0333	-0.0010	0.0337
	155.78	0.0425	-0.0008	0.0366
	164.19	0.0482	-0.0009	0.0379
	176.00	0.0563	-0.0009	0.0411
0.9D + 1.6W 97 mph Wind at 60° From Face	80.38	0.1903	0.0127	0.3027
	140.00	0.6162	0.0224	0.5822
	155.78	0.7718	0.0202	0.5862
	164.19	0.8609	0.0227	0.5961
	176.00	0.9865	0.0259	0.6336
0.9D + 1.6W 97 mph Wind at 90° From Face	80.38	0.1918	-0.0137	0.3017
	140.00	0.6211	-0.0231	0.5799
	155.78	0.7776	-0.0194	0.5927
	164.19	0.8673	-0.0208	0.6025
	176.00	0.9934	-0.0219	0.6136
0.9D + 1.6W 97 mph Wind at Normal To Face	80.38	0.1976	0.0113	0.3139
	140.00	0.6373	0.0184	0.5993
	155.78	0.7973	0.0146	0.6041
	164.19	0.8895	0.0149	0.6147
	176.00	1.0194	0.0140	0.7123
1.0D + 1.0W 60 mph Wind at 60° From Face	80.38	0.0461	0.0028	0.0733
	140.00	0.1486	0.0047	0.1401
	155.78	0.1859	0.0039	0.1404
	164.19	0.2073	0.0042	0.1428
	176.00	0.2374	0.0044	0.1521

1.0D + 1.0W 60 mph Wind at 90° From Face	00.00	0.0405		0.0700
neg a nev comprising at so troint ace	80.38	0.0465	-0.0033	0.0729
	140.00	0.1498	-0.0055	0.1395
	155.78	0.1874	-0.0046	0.1422
	164.19	0.2089	-0.0050	0.1445
	176.00	0.2391	-0.0052	0.1474
1.0D + 1.0W 60 mph Wind at Normal To Face	80.38	0.0479	0.0028	0.0758
	140.00	0.1538	0.0045	0.1436
	155.78	0.1923	0.0035	0.1452
	164.19	0.2143	0.0036	0.1477
	176.00	0.2455	0.0034	0.1705
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	80.38	0.0568	0.0034	0.0890
	140.00	0.1806	0.0058	0.1711
	155.78	0.2259	0.0049	0.1714
	164.19	0.2520	0.0053	0.1750
	176.00	0.2892	0.0055	0.1896
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	80.38			
	140.00	0.0568	-0.0040	0.0881
	155.78	0.1811	-0.0067	0.1697
	164.19	0.2266 0.2528	-0.0057	0.1734
	176.00	0.2900	-0.0062	0.1768
		0.2900	-0.0065	0.1837
1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	80.38	0.0570	0.0033	0.0897
	140.00	0.1832	0.0053	0.1708
	155.78	0.2293	0.0043	0.1756
	164.19	0.2560	0.0044	0.1789
	176.00	0.2939	0.0042	0.2080
1.2D + 1.0E - Normal To Face	80.38	0.0108	-0.0005	0.0151
	140.00	0.0334	-0.0010	0.0337
	155.78	0.0426	0.0008	0.0367
	164.19	0.0482	-0.0009	0.0380
	176.00	0.0564	-0.0009	0.0410
1.2D + 1.6W 97 mph Wind at 60° From Face	80.38	0.1905	0.0127	0.3032
	140.00	0.6172	0.0224	0.5835
	155.78	0.7731	0.0203	0.5873
	164.19	0.8624	0.0227	0.5973
	176.00	0.9882	0.0260	0.6352
1.2D + 1.6W 97 mph Wind at 90° From Face	80.38	0.1920	-0.0137	
	140.00	0.6222	-0.0231	0.3021
	155.78	0.7789	-0.0231	0.5812 0.5940
	164.19	0.8688		
	176.00	0.9952	-0.0208 -0.0219	0.6038 0.6151
1 2D + 1 610/07 mph 106 d + Normal To To				
1.2D + 1.6W 97 mph Wind at Normal To Face	80.38	0.1978	0.0113	0.3143
	140.00	0.6384	0.0184	0.6004
	155.78	0.7987	0.0146	0.6054
	164.19	0.8910	0.0149	0.6160
	176.00	1.0213	0.0140	0.7136

(((用)))		Mat Foundat	ion Design for Self Su	pporting Tower	Date
		Customer Name:			6/29/2020
IFC		Site Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-0
		Site Nmber:	CT04382-S-SBA	Structure Height (Ft.):	176
Tower Engineering Solutions		Engr. Number:	94967	Engineer Name:	J. Tibbetts
		Engr. Nomber.	94907	Engineer Login ID:	
Foundation Info Obtained from:		Drawings/Calculations			
Analysis or Design?		Analysis			
Number of Tower Legs:		3 Legs	1	K	
Base Reactions (Factored):			<1.5'	1	1
(1). Individual Leg:					0.00
Axial Load (Kips):	239.8	Uplift Force (Kips):	202.2		V.
Shear Force (Kips):	23.7	opinitionee (hilps)i			111
(2). Tower Base:	2017				
Total Vertical Load (Kips):	49.1	Total Shear Force (Kips):	38.1 99'	#01V/0!	
Moment (Kips-ft);	4064.5	rotal shear rorce (kips).	38.1 99'		# 0
Foundation Geometries:	1004.5		5.5	¥	
Leg distance (Center-to-Center ft.):	21.0	Mods required -Yes/No ?:		32	
Diameter of Pier (ft.): Round	1.5	Pier Height A. G. (ft.):	No	32	# 9
Tower center to mat center (ft):	0.00	Depth of Base BG (ft.):	0.00		
Length of Pad (ft.):	31.5	Width of Pad (ft.):	3.5		•
Thickness of Pad (ft):	4.00	width of Fau (It.).	31.5	0 0 0 0 0	• 14
Material Properties and Reabr Info:			- 15.8	\square	<u>_</u>
Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000 ksi (W)		
/ertical bar yield (ksi)		Tie steel yield (ksi):	29000 ksi (W) 60 31.5'	0.00 Tower Center	
/ertical Rebar Size #:		Tie / Stirrup Size #:	51.5		21.0
Qty. of Vertical Rebars:		Tie Spacing (in):			
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9 3.63		V
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0 pcf		
Rebar at the bottom of the concrete		and the give of obtained etc.	100.0 pci	18.187	
Ity. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32		
Rebar at the top of the concrete pad:			C	31.5' (L)	1
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32		1
oil Design Parameters:					
oil Unit Weight (pcf):	115.0	Soil Buoyant Weight:	50.0 Pcf		
Vater Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4 pcf		个
Ultimate Bearing Pressure (psf):	10000	Consider ties in concrete shear s	trength: Yes		
			(W) Mat Center	Tower Center	J
			31.5'	> .	

TES Engr. Numbe	r: 94967	Page 2/2 Date:	6/29/2020		
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	• • • •	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):	644.67		
Check Soil Capacities:				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1414.16	< Allowable Factored Soil Bearing (psf):	7500	0.19	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9215.5	> Design Factored Momont (kips-ft):	4188	0.45	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.20	OKI			••••
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		

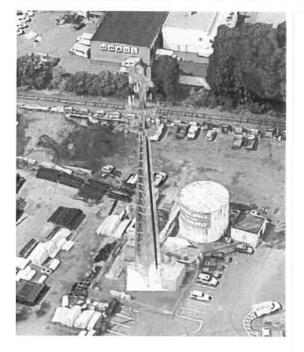
(2).Concrete Pad:

One-Way Design Shear Capacity (L or W Direction, Kips): One-Way Design Shear Capacity (Diagonal Dir., Kips): Lower Steel Pad Reinforcement Ratio (L or W-Direct.): Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft): Lower Steel Pad Moment Capacity (Dia. Direction,K-ft): Upper Steel Pad Reinforcement Ratio (L or W -Direction): Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft): Upper Steel Pad Moment Capacity (Dia. Direction, K-ft): Upper Steel Pad Moment Capacity (Dia. Direction, K-ft): Punching Failure Capacity (Kips):

1380.0	>	One-Way Factored Shear (L/W-Dir Kips	298.5	0.22	OK!
1142.0					
1143.0	>	One-Way Factored Shear (Dia. Dir, Kips	273.0	0.24	OK!
0.0019		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0017		
6255.6	>	Moment at Bottom (L-Direct. K-Ft):	1562.8	0.25	OK!
6122.4	>	Moment at Bottom (Dia. Dir. K-Ft):	1273.4	0.21	OK!
0.0019		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0017		
6255.6	>	Moment at the top (L-Dir Kips-Ft):	883.4	0.14	OK!
6122.4	>	Moment at the top (Dia. Dir., K-Ft):	532.6	0.09	OK!
1351.5	>	Punch. Failure Factored Shear (K):	239.8	0.18	OK!



8618 Westwood Center Drive, Suite 315, Vienna, VA 22182 703.276.1100 • 703.276.1169 fax info@sitesafe.com • www.sitesafe.com



Empire Telecom on behalf of AT&T Mobility, LLC Site FA – 10071149 Site ID – CTL05254 USID – 15210 Site Name – NEW BRITIAN WEST (MRCTB045529)

1 Hartford Square New Britain, CT 06052

Latitude: N41-39-59.01 Longitude: W72-48-46.08 Structure Type: Self-Support

Report generated date: July 29, 2020 Report by: Nick Kutzke Customer Contact: Nicole Caplan-Mason

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

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1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Max Cumulative Simulated RFE Level on the Ground	<1% General Public Limit
Compliant per FCC Rules and Regulations?	Will Be Compliant
Compliant per AT&T Mobility, LLC's Policy?	No

The following documents were provided by the client and were utilized to create this report:

RFDS: 10071149.PM201._15210_11-23-2019_As-Built-In-Progress_v3.00

CD's: 10071149.CT5254.CD.LTE6C7C5G.Rev2.07.23.2020

RF Powers Used: Max RRH Powers

1.2 Fall Arrest Anchor Point Summary

Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	N	N/A	N



1.3 Signage Summary

a. Pre-Site Visit AT&T Signage (Existing Signage)

AT&T Signage Locations		HICHAILON	Nedca	Netter	CAUTOR	CALIFICAN	MANNING:	WARRING	
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2	Warning	Warning 2	Barriers
Access									
Point(s)									
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

b. Proposed AT&T Signage

AT&T Signage Locations		INFORMATION	Notes	Notice	CAUTOR	CAUMEN	VCARHINGS	WADDINGS	
- Aliment	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2B	Warning	Warning 2	Barriers
Access Point(s)						1			
Alpha									
Beta									
Gamma									
Delta									
Epsilon				,					

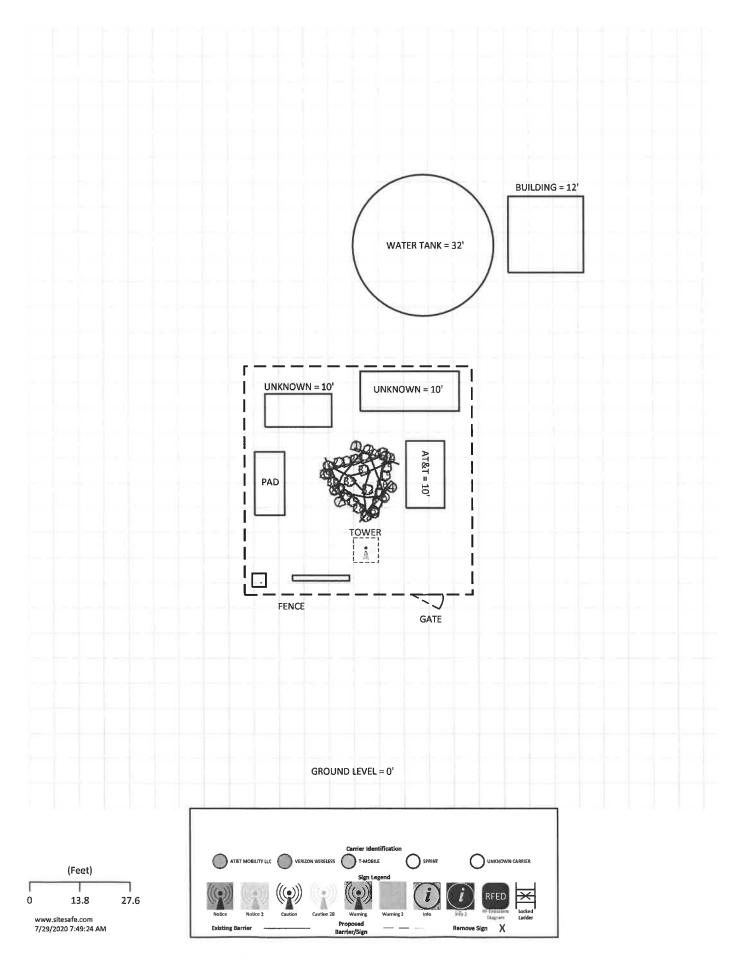


Scale Maps of Site 2

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- RF Exposure Diagram Elevation View
 AT&T Mobility, LLC Contribution







Antenna Inventory

ω

The following antenna inventory was obtained by the customer and was utilized to create the site model diagrams:

		Ant				,		Ant							_			
Ant ID	Operator	Antenna Make & Model	Туре	TX Freq (MHz)	Technology	Az (Deg)	(Deg)	(ft)	Power	Power Type	Power Unit	Misc	TX Count	(Watts)	S R	s) (dBd)	-	Ant Gain (dBd)
	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	850	UMTS	40	63.0	6	40	TPO	Watt	0	_	499		10.96	10.96 163'	-
_	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	722	LTE	40	69.0	6	80	TPO	Watt	0	_	1119.7		11.46		11.46
	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	2300	LTE	40	64.0	6	100	TPO	Watt	0	_	2857.6		14.56	14.56 163'	_
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA65R-BU6D	Panel	763	LTE	40	61.1	5.9	160	IPO	Watt	0		2455.4		11.86	11.86 163'	
N	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA65R-BU6D	Panel	1900	LTE	40	66.3	5.9	160	TPO	Watt	0	-	4468.1		14.46	14.46 163'	
ω	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	737	LTE	40	65.7	5.9	160	TPO	Watt	0	_	2399.5		11.76	11.76 163	
ω	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	850	LTE	40	70.9	5.9	80	IPO	Watt	0	_	1119.7		11.46	11.46 163'	
ω	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	2100	LTE	40	68.0	5.9	160	TPO	Watt	0		4787.6	_	14.76	4.76 163'	
ω	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	850	5G	40	70.9	5.9	80	IPO	Watt	0	1	1119.7	_	11.46	1.46 163'	
4	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	722	LTE	150	69.0	6	80	TPO	Watt	0	1	1119.7		11.46	1.46 163'	
4	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	2300	LTE	150	64.0	6	100	TPO	Watt	0	_	2857.6	1	14.56	1.56 163'	_
4	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	850	UMTS	150	63.0	6	40	TPO	Watt	0	1	499	1	10.96	163'	
ъ	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA65R-BU6D	Panel	763	LTE	150	61.1	5.9	160	TPO	Watt	0	_	2455.4	=	11.86	1.86 163'	
ഗ	AT&T MOBILITY LLC (Proposed)	CCI Antennas OPA65R-BU6D	Panel	1900	LTE	150	[`] 66.3	5.9	09 L	TPO	Watt	0		4468.1	-	14.46	4.46 163'	
6	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	2100	LTE	150	68.0	5.9	160	TPO	Watt	0	_	4787.6	-	14.76	4.76 163'	
6	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	850	LTE	150	70.9	5.9	80	TPO	Watt	0		1119.7		11.46	1.46 163	
6	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	737	LTE	150	65.7	5.9	160	TPO	Watt	0		2399.5	=	11,76	1.76 163'	
6	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU6D	Panel	850	5G	150	70.9	5.9	8	TPO	Watt	0	_	1119.7	=	11.46	1,46 163'	
7	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	722	LTE	270	69.0	٥,	80	TPO	Watt	0		1119.7	=	11.46	.46 163'	
7	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	2300	LTE	270	64.0	6	100	TPO	Watt	0	_	2857.6	-	14.56	1.56 163'	-
7	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	850	UMTS	270	63.0	6	40	TPO	Watt	0		499	ī	20(10.96 163' 0°

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MDT	ô	စီ	စိ	စီ	ô	õ	ô	ô	õ	ô	ô	ô	ဗီ	ô	ô	ô	ô	ô	ô	ô
z	163'	163'	163'	163'	163'	163'	136.9'	136.9'	136.9'	136.9'	136.9'	136.9'	136.9'	136.9'	136.9'	136.9'	136.9'	136.9'	147.9'	147'
Ant Gain (dBd)	11.86	14.46	14.76	11.46	11.76	11.46	12.56	16.26	15.53	13.43	12.56	16.26	15.53	13.43	12.56	16.26	15.53	13.43	16.26	15.76
Total ERP (Watts)	2455.4	4468.1	4787.6	1119.7	2399.5	1119.7	2884.8	6762.7	5716.4	3524.7	2884.8	6762.7	5716.4	3524.7	2884.8	6762.7	5716.4	3524.7	6762.7	6027.3
TX Count	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc Loss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Unit	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt	Watt
Power Type	IPO	TPO	TPO	TPO	IPO	IPO	IPO	TPO	IPO	TPO	TPO	TPO	TPO	TPO	TPO	IPO	IPO	IPO	OdI	TPO
Power	160	160	160	80	160	80	160	160	160	160	160	160	160	160	160	160	160	160	160	160
Ant Len (#)	5.9	5.9	5.9	5.9	5.9	5.9	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	∞
Hor BW (Deg)	61.1	66.3	68.0	70.9	65.7	70.9	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Az (Deg)	270	270	270	270	270	270	0	0	0	0	120	120	120	120	240	240	240	240	0	0
Technology	LTE	LTE	LTE	LTE	LTE	5G														
TX Freq (MHz)	763	1900	2100	850	737	850	700	1900	2100	850	700	1900	2100	850	700	1900	2100	850	1900	2100
Type	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel	Panel
Antenna Make & Model	CCI Antennas OPA65R-BU6D	CCI Antennas OPA65R-BU6D	Cci DMP65R-BU6D	Cci DMP65R-BU6D	Cci DMP65R-BU6D	Cci DMP65R-BU6D	Generic													
Operator	AT&T MOBILITY LLC (Proposed)	UNKNOWN CARRIER																		
Ant ID	ω	œ	6	6	6	6	10	1	12	13	14	15	16	17	18	61	20	21	22	23

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MDT	°	00	00	°	°	°	°	00	°0	00
N	147.9'	147.9'	147	147.9'	147.9'	147	147.9'	169.9'	169.9'	169.9'
Ant Gain (dBd)	16.26	16.26	15.76	16.26	16.26	15.76	16.26	16.26	16.26	16.26
Total ERP (Watts)	6762.7	6762.7	6027.3	6762.7	6762.7	6027.3	6762.7	6762.7	6762.7	6762.7
TX Count	-	-	-	-	-	-	-	-	-	-
Misc Loss	0	0	0	0	0	0	0	0	0	0
Power Unit	Watt									
Power Type	Odl	TPO	IPO	IPO	IPO	TPO	TPO	TPO	TPO	TPO
Power	160	160	160	160	160	160	160	160	160	160
Ant (ff)	6.3	6.3	œ	6.3	6.3	œ	6.3	6.3	6.3	6.3
Hor BW (Deg)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Az (Deg)	0	120	120	120	240	240	240	0	120	240
Technology										
TX Freq (MHz)	1900	0061	2100	1900	1900	2100	1900	1900	1900	1900
Type	Panel									
Antenna Make & Model	Generic									
Operator	UNKNOWN CARRIER									
Ant ID	24	25	26	27	28	29	ß	31	32	33

"Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience. Proposed equipment is tagged as (Proposed) under Operator or Antenna Make & Model. Note: The Z reference indicates the bottom of the antenna height **above ground level (AGL).** Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of



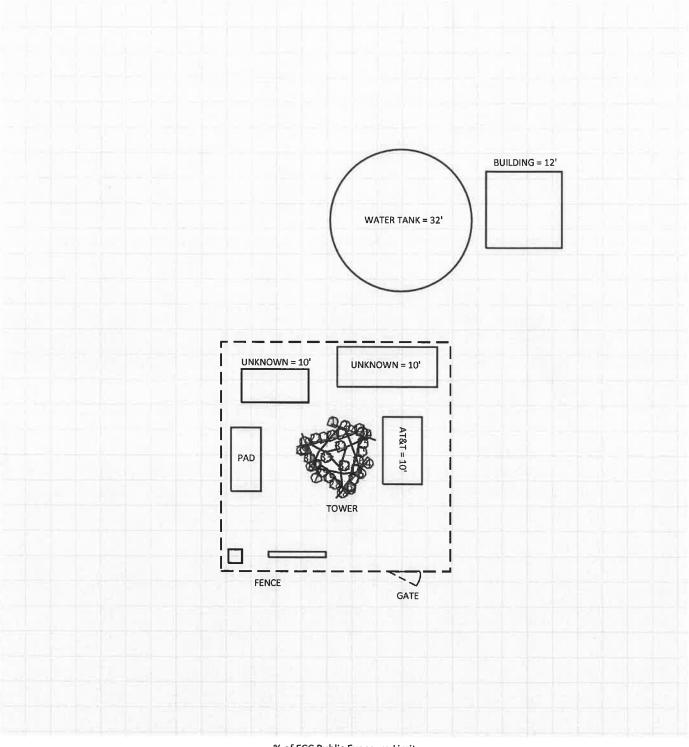
4 **Emission Predictions**

In the RF Exposure Simulations below, all heights are reflected with respect to ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas. The total analyzed elevations in the below RF Exposure Simulations are listed below.

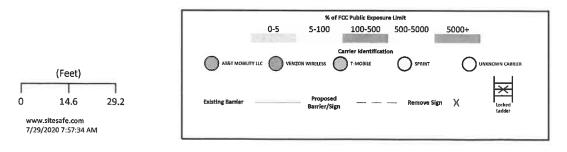
- GROUND= 0'
- AT&T = 10'
- UNKNOWN = 10'
- BULDING= 12'
- WATER TANK = 32'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: NEW BRITIAN WEST Composite Diagram



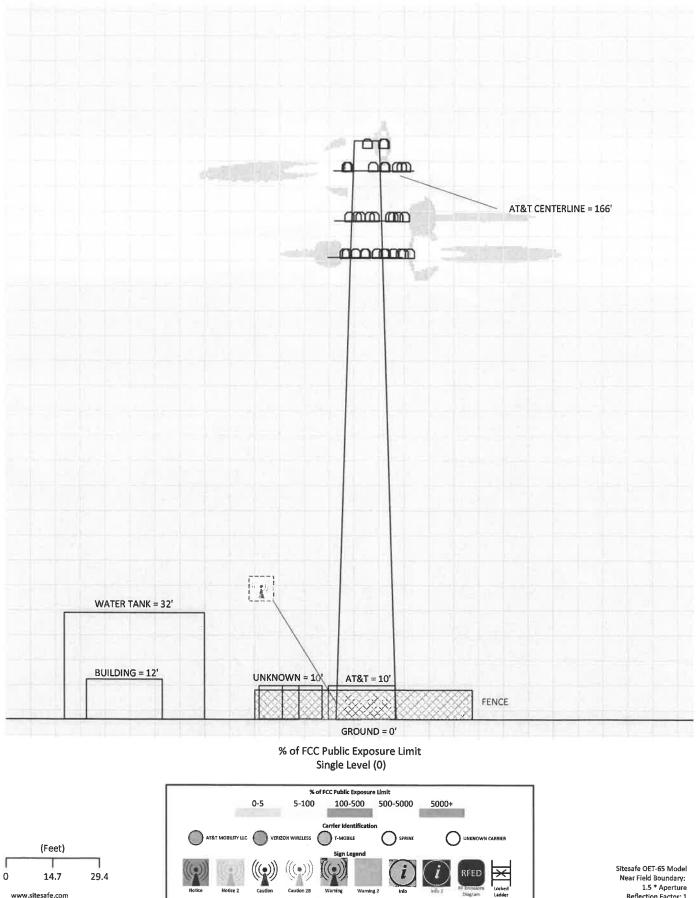
% of FCC Public Exposure Limit Spatially Averaged



Sitesafe OET-65 Model Near Field Boundary: 1.5 * Aperture Reflection Factor: 1 Spatially Averaged

4-27

RF Exposure Simulation For: NEW BRITIAN WEST Elevation View



Warning 2

Proposed Barrier/Sign

Existing Barrier

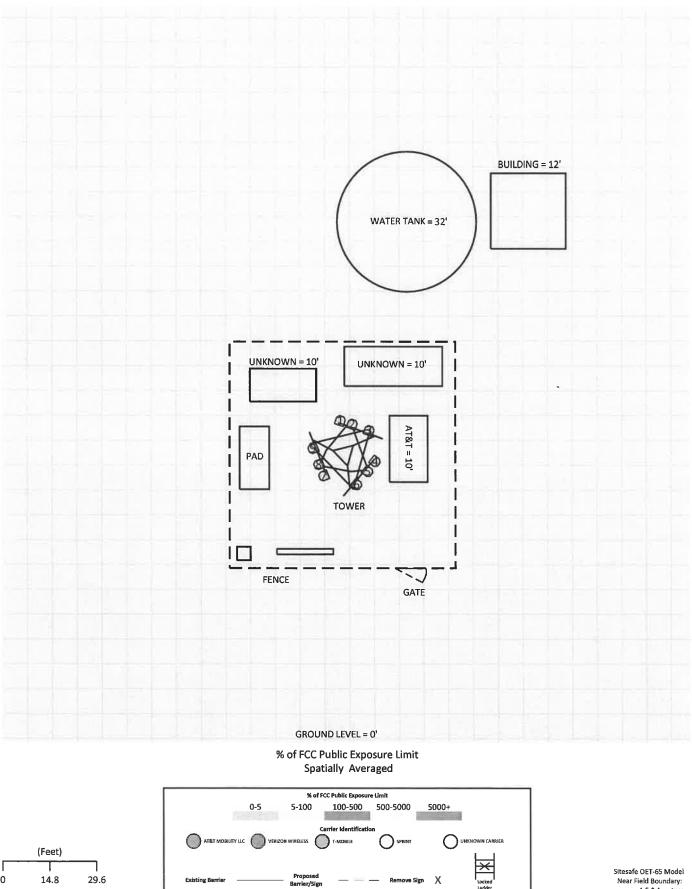
into 2

Remove Sign X

www.sitesafe.com 7/29/2020 8:04:57 AM

1.5 * Aperture Reflection Factor: 1 Single Level (0)

RF Exposure Simulation For: NEW BRITIAN WEST AT&T Mobility, LLC Contribution



Remove Sign X

0

14.8

www.sitesafe.com 7/29/2020 7:58:26 AM

29.6

Existing Barrier

Near Field Boundary: 1.5 * Aperture Reflection Factor: 1 Spatially Averaged

And and



5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the proposed AT&T Mobility, LLC deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC's RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Site Access Location

(1) Yellow Caution 2B sign(s) required.

Notes:

- If additional sets of climbing pegs are present, (1) Yellow Caution 2B sign will be required at each set of pegs for the site to be in compliance.
- Signage may already be in place. Sitesafe does not have record of any existing signage because there were no previous visits or data supplied regarding them. All remediation is based on a worst-case scenario.



6 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Site Safe, LLC, in Vienna, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Nick Kutzke.

July 29, 2020

Anthony Handley



Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.



Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for evaluating the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, Edition 97-01, published August 1997. Since 1996, the FCC periodically reviews these rules and regulations as per their congressional mandate.

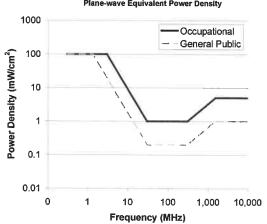
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to accessible areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:



FCC Limits for Maximum Permissible Exposure (MPE)



Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E)	Magnetic Field Strength	Power Density (S) (mW/cm²)	Averaging Time E ² , H ² or S (minutes)
	(V/m)	(H) (A/m)		
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f²)*	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-			5	6
100,000				

Limits for General Population/Uncontrolled Exposure (MPE)

Electric	Magnetic	Power	Averaging Time E ² ,
Field	Field		H ² or S (minutes)
Strength (E)	Strength	(mW/cm ²)	1.11 0.0 (
(V/m)	(H) (A/m)		
614	1.63	(100)*	30
824/f	2.19/f	(180/f ²)*	30
27.5	0.073	0.2	30
		f/1500	30
		1.0	30
	Field Strength (E) (V/m) 614 824/f 27.5	Field Field Strength (E) Strength (V/m) (H) (A/m) 614 1.63 824/f 2.19/f 27.5 0.073	Field Field Density (S) Strength (E) Strength (mW/cm²) (V/m) (H) (A/m) (100)* 614 1.63 (100)* 824/f 2.19/f (180/f²)* 27.5 0.073 0.2 f/1500

f = frequency in MHz

*Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer -

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.
- (b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lockout/Tagout procedure aimed to control the unexpected energization or startup of machines when maintenance or service is being performed.



Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a worker's understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet-based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

<u>RF Signage</u>: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

<u>Maintain a 3-foot clearance from all antennas</u>: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram(s): Section 4 of this report contains RF Diagram(s) that outline various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst-case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access to the antenna locations.



Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. Gray represents areas more than 20 times below the most conservative exposure limit. Gray areas are accessible to anyone.
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. Green areas are accessible to anyone.
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. Blue areas should be accessible only to RF trained workers.
- Yellow represents areas predicted to exceed Occupational MPE limits. Yellow areas should be accessible only to RF trained workers able to assess current exposure levels.
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. Red indicates that the RF levels must be reduced prior to access. An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

If trained occupational personnel require access to areas that are delineated as above 100% of the limit, Sitesafe recommends that they utilize the proper personal protection equipment (RF monitors), coordinate with the carriers to reduce or shutdown power, or make real-time power density measurements with the appropriate power density meter to determine real-time MPE levels. This will allow the personnel to ensure that their work area is within exposure limits.



Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.



Appendix F – Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible for taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site complies with FCC standards with regards to Human Exposure to Radio Frequency Electromagnetic Fields from transmitting antennas.

Decibel (dB) - A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to a half-wave dipole antenna.

Gain (of an antenna) – The ratio of the maximum power in a given direction to the maximum power in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antenna as compared to an omnidirectional antenna.

General Population/Uncontrolled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **unaware** of the potential for exposure and who have no control over their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use its industry specific knowledge of antenna models to select a worst-case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.



Occupational/Controlled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **aware** of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of RF exposure on humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit <u>www.osha.gov</u>.

Radio Frequency Exposure or Electromagnetic Fields – Electromagnetic waves that are propagated from antennas through space.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy a 6-foot tall human body will absorb while present in an electromagnetic field of energy.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.



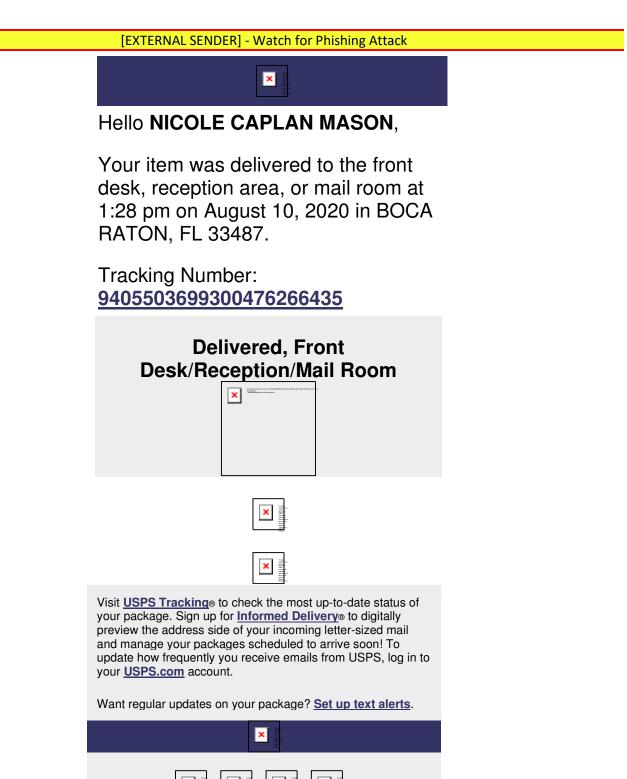
Appendix G – References

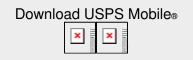
The following references can be followed for further information about RF Health and Safety.

Site Safe, LLC http://www.sitesafe.com FCC Radio Frequency Safety http://www.fcc.gov/encyclopedia/radio-frequency-safety National Council on Radiation Protection and Measurements (NCRP) http://www.ncrponline.org Institute of Electrical and Electronics Engineers, Inc., (IEEE) http://www.ieee.org American National Standards Institute (ANSI) http://www.ansi.org Environmental Protection Agency (EPA) http://www.epa.gov/radtown/wireless-tech.html National Institutes of Health (NIH) http://www.niehs.nih.gov/health/topics/agents/emf/ Occupational Safety and Health Agency (OSHA) http://www.osha.gov/SLTC/radiofrequencyradiation/ International Commission on Non-Ionizing Radiation Protection (ICNIRP) http://www.icnirp.org World Health Organization (WHO) http://www.who.int/peh-emf/en/ National Cancer Institute http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones American Cancer Society (ACS) http://www.cancer.org/docroot/PED/content/PED 1 3X Cellular Phone Towers.asp?sit earea=PED European Commission Scientific Committee on Emerging and Newly Identified Health Risks http://ec.europa.eu/health/ph risk/committees/04 scenihr/docs/scenihr o 022.pdf Fairfax County, Virginia Public School Survey http://www.fcps.edu/fts/safety-security/RFEESurvey/ UK Health Protection Agency Advisory Group on Non-Ionizing Radiation http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb C/1317133826368 Norwegian Institute of Public Health http://www.fhi.no/dokumenter/545eea7147.pdf

Nicole Caplan

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