10 Industrial Avenue,
Suite 3
Mahwah, NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

July 16, 2019

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

Re:
Notice of Exempt Modification
50 Maple Street, Branford CT
Latitude 41.274244
Longitude -72.813566
T-Mobile site: CT11328F / L600

Dear Ms. Bachman:

T-Mobile currently maintains (6) antennas at the 96-foot level of the existing 100-foot smokestack. The smokestack and the property are owned by Marine Systems LLC. T-Mobile now intends to replace 3 of its existing antennas with (3) 600/700 MHz antennas. The new antennas would be installed at the 96 foot level of the tower.

Planned Modifications:

Tower:

Remove:
(6) coax

Remove and Replace:
(3) LNX 6515-A1M Antenna (REMOVE) - (3) RFS-APXVAARR24_43U-NA20 Antenna 600/700 MHz (REPLACE)
(3) Ericsson RRUS-11 B12 remote radio units (REMOVE) - Ericsson RADIO 4449 B71+B12 (REPLACE)

Install New:
(3) 6x12 hybrid lines

Existing to Remain:
(3) Ericsson AIR 21, 1.3M, B2P/B4A
(3) TMAs

Ground:

Remove and Replace:
(1) DUS41 and (1) XMU with (1) BB6630
Install New:
(1) BB6630

T-Mobile Previously received approvals from the Town of Branford on January 11, 2010 to install antennas and associated equipment on the existing brick chimney. A copy o the approval is attached, however the Siting Council indicated that brick chimney meets the regulatory definition of a "tower" as the chimney is no longer in use and here are cellular antennas affixed thereto. Accordingly, please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50ss, of T-Mobile's intent to share a telecommunications facility pursuant to R.C.SA. § 16-SOj-88.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16-SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to James B. Cosgrove, First Selectman of the Town of Branford, as well as Harry Smith, Town Planner for the Town of Branford and Marine Systems, Inc., property owner

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S;A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed 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 the proposed loading.

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

Sincerely,

Elizabeth Jamieson

Elizabeth Jamieson
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
860-605-7808
EJamieson@TranscendWireless.com

Cc:
James B. Cosgrove, First Selectman, Town of Branford
Harry Smith, Town Planner, Town of Branford
Maine Systems Inc, property and structure owner

Exhibit A

Original Facility Approval

PLANNING AND ZONING COMMISSION
TOWN OF BRANFORD TOWN HALL DRIVE P.O. BOX 150
Branford, Connecticut 06405
Telephone: (203) 488-1255 Fax: (203) 315-2188

NOTICE OF DECISION

January 11, 2010

Clearwire by Maxton Technology
Attention: Thomas F. Flynn III
1296 Blue Hills Avenue
Bloomfield, Connecticut 06002

SUBJECT: Site Plan

APPLICATION: #09-12.4 ADDRESS: 50 Maple Street

APPLICANT: Clearwire Wireless LLC d/b/a Clearwire

OWNER OF RECORD: Marine Systems, Inc.

Dear. Sir:

At a meeting of the Branford Planning & Zoning Commission held on Thursday, January 7, 2010 the Commission voted to:

X Approve your above subject application.

Very truly yours,

Shirley Rasmussen

Shirley Rasmussen
Town Planner

NOTE: Site Plan shall become null and void in the event the applicant fails to obtain a building permit within one (1) year of date of approval.
(Per Section 31.7 of the Branford Zoning Regulations)

PLANNING AND ZONING COMMISSION
TOWN OF BRANFORD TOWN HALL DRIVE P.O. BOX 150
Branford, Connecticut 06405
Telephone: (203) 488-1255 Fax: (203) 315-2188

NOTICE OF DECISION

January 11, 2010

Clearwire by Maxton Technology
Attention: Thomas F. Flynn III
1296 Blue Hills Avenue
Bloomfield, Connecticut 06002

SUBJECT: Site Plan

APPLICATION: #09-12.4 ADDRESS: 50 Maple Street

APPLICANT: Clearwire Wireless LLC d/b/a Clearwire

OWNER OF RECORD: Marine Systems, Inc.

Dear. Sir:

At a meeting of the Branford Planning & Zoning Commission held on Thursday, January 7, 2010 the Commission voted to:

X Approve your above subject application.

Very truly yours,

Shirley Rasmussen

Shirley Rasmussen
Town Planner

NOTE: Site Plan shall become null and void in the event the applicant fails to obtain a building permit within one (1) year of date of approval.
(Per Section 31.7 of the Branford Zoning Regulations)

Exhibit B

Property card

Property Location: 50 MAPLE ST **MAP ID:** D08/000 012/ 00003/ / **Bldg Name:** **State Use:** 3150

Vision ID: 801 **Account #** 000592 **Bldg #:** 1 of 2 **Sec #:** 1 of 1 **Card** 1 of 3 **Print Date:** 04/18/2019 13:41

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
MARINE SYSTEMS INCORPORATED	1 Level	1 All Public	1 Paved	7 Waterfront
		3 Public Sewer		
PO BOX 447				
BRANFORD, CT 06405				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID:	D08/000/012/00003/	HLDG TK	
CONDO BLDG		SEPTIC	
CONDO UNIT		SEWER	
CONDO FLOOI		DISTRICT	
		CENSUS TR	1841
PARCEL DESC			
GIS ID:	D08/000/012/00003	*ASSOC PID#*	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
COM LAND	2-1	737,400	516,200
COM BLDG	2-2	167,900	117,500
COM OUTBL	2-5	234,000	163,800
UTL LAND	4-1	200,000	140,000
	Total	1,339,300	937,500

6014
BRANFORD, CT

VISION

RECORD OF OWNERSHIP

	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
MARINE SYSTEMS INCORPORATED	0555/1008	09/07/1993				

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2018	2-1	516,200	2017	2-1	516,200	2016	2-1	516,200
2018	2-2	117,500	2017	2-2	117,500	2016	2-2	117,500
2018	2-5	163,800	2017	2-5	163,800	2016	2-5	163,800
2018	4-1	140,000	2017	4-1	140,000	2016	4-1	140,000
	Total:	937,500		*Total:*	937,500		*Total:*	937,500

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
350/A				

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	89,700
Appraised XF (B) Value (Bldg)	600
Appraised OB (L) Value (Bldg)	232,600
Appraised Land Value (Bldg)	937,400
Special Land Value	0
Total Appraised Parcel Value	1,339,300
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	**1,339,300**

NOTES

BRANFORD LANDING(MARINA) EXT-MKT IS FOR 12 SLIPS - LINEAR FOOTAGE OF
ERIKS BOATWORKS/B+E YATCH SVC BOTH DOCKS 1166FT/12 SLIPS HAVE WATER +
12 SALES SLIPS W/UTIL 2014 I&E PENALTY ELECTRICITY/3 ANTENNAS ON STACK
ONLY AOF HEATED FUNC-USE 1700SFUNUSABLE AREA WITHIN BLDG=FUNC
1BOAT LAUNCHER - 4507SF DCK3 ESMTS V1155/P583/LEASEV1155/P606
IS FOR MARINAS USE, 2804SF DCKS

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
12/19/2014			JG	41	Change
08/15/2014			JG	11	Field Review
03/24/2010			BA	40	No change
01/25/2010			DT	41	Change
10/29/2009			RT	16	Reval Review

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing		S Adj Fact	Adj. Unit Price	Land Value
1	3150	BOATYARD MDL96	IG-1				1.38	AC	229,200.00	0.8062	I	1.0000	1.75	350	0.85	WF/SHP/ROW			1.00		379,300
1	3150	BOATYARD MDL96	IG-1				3.21	AC	75,000.00	1.0000	0	1.0000	1.75	350	0.85				1.00		358,100
1	430V	TEL X STA MDL00	IG-1				1.00	BL	200,000.00	1.0000	0	1.0000	1.00		0.00	CELL SITE (GL09)			1.00		200,000

Total Card Land Units: 4.59 AC **Parcel Total Land Area:** 4.59 AC **Total Land Value:** 937,400

Property Location: 50 MAPLE ST **MAP ID:** D08/000 012/ 00003/ / **Bldg Name:** **State Use:** 3150

Vision ID: 801 **Account #** 000592 **Bldg #:** 1 of 2 **Sec #:** 1 of 1 **Card** 1 of 3 **Print Date:** 04/18/2019 13:41

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	48		Warehouse
Model	96		Ind/Comm
Grade	03		C
Stories	1		
Occupancy	3		
Exterior Wall 1	20		Brick
Exterior Wall 2			
Roof Structure	01		Flat
Roof Cover	04		T&G/Rubber
Interior Wall 1	01		Minim/Masonry
Interior Wall 2			
Interior Floor 1	03		Concr-Finished
Interior Floor 2			
Heating Fuel	01		None/Coal/Wd
Heating Type	01		None
AC Type	01		None
Bldg Use	3150		BOATYARD MDL96
Total Rooms			
Total Bedrms	00		
Total Baths	0		
Heat/AC	00		NONE
Frame Type	03		MASONRY
Baths/Plumbing	01		LIGHT
Ceiling/Wall	00		NONE
Rooms/Prtns	02		AVERAGE
Wall Height	22		
% Comn Wall			

CONSTRUCTION DETAIL (CONTINUED)

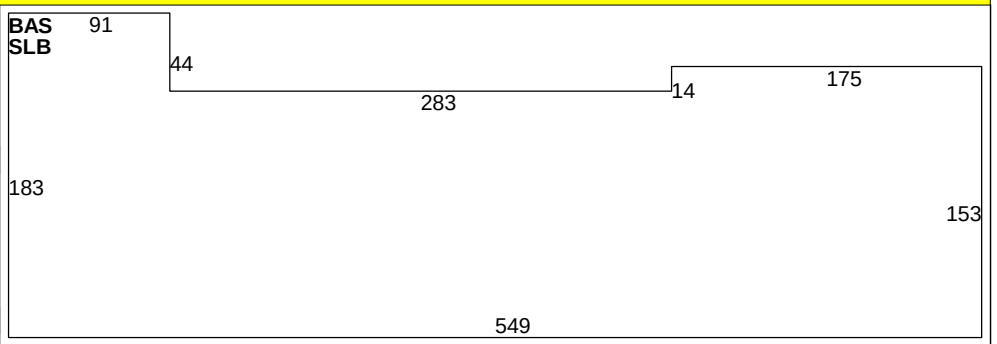
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
3150	BOATYARD MDL96	100

COST/MARKET VALUATION

Adj. Base Rate:	36.14
Replace Cost	2,991,127
AYB	1900
Dep Code	P
Remodel Rating	
Year Remodeled	
Dep %	50
Functional Obslnc	25
External Obslnc	22
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	3
Apprais Val	89,700
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
PAV1	PAVING-ASPH			L	36,976	1.65	2003		0		30	18,300
PAV2	PAVING-CON			L	3,204	3.30	2003		0		30	3,200
LT1	LIGHTS-IN W			L	1	760.00	2003		0		30	200
LT1	LIGHTS-IN W			L	1	760.00	2003		0		30	200
LT2	W/DOUBLE LI			L	2	1,200.00	2003		0		30	700
FN3	FENCE-6' CHA			L	510	9.90	2003		0		30	1,500
WDK	WOOD DECK			L	230	10.00	2003		0		30	700
DCK3	FLOATING			L	4,507	85.00	2003		0		30	114,900
DCK3	FLOATING			L	2,804	85.00	2003		0		30	71,500

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	82,765	82,765	82,765	36.14	2,991,127
SLB	Slab	0	82,765	0	0.00	0
	Ttl. Gross Liv/Lease Area:	82,765	165,530	82,765		2,991,127

Property Location: 50 MAPLE ST | **MAP ID:** D08/000 012/ 00003/ / | **Bldg Name:** | **State Use:** 3150

Vision ID: 801 | **Bldg #:** 1 of 2 | **Sec #:** 1 of 1 | **Card** 2 of 3 | **Print Date:** 04/18/2019 13:41

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
MARINE SYSTEMS INCORPORATED PO BOX 447 BRANFORD, CT 06405 Additional Owners:				

SUPPLEMENTAL DATA

Other ID: D08/000/012/00003/

GIS ID: D08/000/012/00003

ASSOC PID#

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
Total		1,339,300	937,500

6014
BRANFORD, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
	Total:			Total:			Total:	

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	89,700
Appraised XF (B) Value (Bldg)	600
Appraised OB (L) Value (Bldg)	232,600
Appraised Land Value (Bldg)	937,400
Special Land Value	0
Total Appraised Parcel Value	1,339,300
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	1,339,300

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
350/A				

NOTES

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units	Unit Price	I. Factor	S.A.	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing	S Adj Fact	Adj. Unit Price	Land Value

Total Card Land Units: 0.00 AC | Parcel Total Land Area: 4.59 AC | Total Land Value: 0

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
3150	BOATYARD MDL96	100

COST/MARKET VALUATION

Cost Trend Factor

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
STK1	CHIMNEY ST			L	100	500.00	1900		0		40	20,000
SHD5	SHED COM W			L	160	17.00	2009		0		50	1,400
MEZ1	MEZZANINE-			B	784	10.00	1964		1		100	200
GIR3	GIRDERS 19"-			B	80	64.00	1964		1		100	200
HT2	ELECTRIC			B	1,248	3.50	1964		1		100	100
HT3	FORCED AIR			B	840	5.00	1964		1		100	100
A/C	AIR CONDITI			B		2.20	1964		1		100	0

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
	Ttl. Gross Liv/Lease Area:	0	0	0		2,991,127

No Photo On Record

Property Location: 50 MAPLE ST **MAP ID:** D08/000 012/ 00003/ / **Bldg Name:** **State Use:** 3150

Vision ID: 801 **Account #** 000592 **Bldg #:** 2 of 2 **Sec #:** 1 of 1 **Card** 3 **of** 3 **Print Date:** 04/18/2019 13:41

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
MARINE SYSTEMS INCORPORATED	1 Level	1 All Public	1 Paved	7 Waterfront
		3 Public Sewer		
PO BOX 447				
BRANFORD, CT 06405				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID: D08/000/012/00003/	HLDG TK
CONDO BLDG	SEPTIC
CONDO UNIT	SEWER
CONDO FLOOI	DISTRICT
	CENSUS TR 1841
PARCEL DESC	
GIS ID: D08/000/012/00003	*ASSOC PID#*

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
COM LAND	2-1	737,400	516,200
COM BLDG	2-2	167,900	117,500
COM OUTBL	2-5	234,000	163,800
UTL LAND	4-1	200,000	140,000
	Total	1,339,300	937,500

6014
BRANFORD, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
MARINE SYSTEMS INCORPORATED	0555/1008	09/07/1993				

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2018	2-1	516,200	2017	2-1	516,200	2016	2-1	516,200
2018	2-2	117,500	2017	2-2	117,500	2016	2-2	117,500
2018	2-5	163,800	2017	2-5	163,800	2016	2-5	163,800
2018	4-1	140,000	2017	4-1	140,000	2016	4-1	140,000
	Total:	937,500		*Total:*	937,500		*Total:*	937,500

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	77,600
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	1,400
Appraised Land Value (Bldg)	0
Special Land Value	0
Total Appraised Parcel Value	1,339,300
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	1,339,300

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
350/A				

NOTES

NELLIE GREENS RESTAURANT
68 SEATS
ACCESS VIA ROW
ECO=MKT/LOC
MILL BLT 1890-1910,MILL BLD HAS NO DOORS
-OPENINGS CREATED TO STORE LG YACHTS
(1)STACK HAS A CELL ANTENNA
MILL HAS POOR ROOF + MANY STRUCTURAL
ISSUES
LOBSTER SHACK 6X14 KITCHEN
TRAILER SITS ON PROPERTY

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
12/19/2014			JG	41	Change
08/15/2014			JG	11	Field Review
03/24/2010			BA	40	No change
01/25/2010			DT	41	Change
10/29/2009			RT	16	Reval Review

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing		S Adj Fact	Adj. Unit Price	Land Value
2	3260	REST/CLUBS MDL94	IG-1				0.00	AC	0.00	1.0000	0	1.0000	1.00		0.00				.00		0

Total Card Land Units: 0.00 AC **Parcel Total Land Area:** 4.59 AC **Total Land Value:** 0

Property Location: 50 MAPLE ST | **MAP ID:** D08/000 012/ 00003/ / | **Bldg Name:** | **State Use:** 3150

Vision ID: 801 | **Account #** 000592 | **Bldg #:** 2 of 2 | **Sec #:** 1 of 1 | **Card** 3 of 3 | **Print Date:** 04/18/2019 13:41

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	30		Restaurant
Model	94		Comm/Ind
Grade	03		C
Stories	1		
Occupancy	1		
Exterior Wall 1	14		Wood Shingle
Exterior Wall 2			
Roof Structure	03		Gable/Hip
Roof Cover	03		Asphalt
Interior Wall 1	05		Drywall
Interior Wall 2			
Interior Floor 1	12		Hardwood
Interior Floor 2	11		Ceram Clay Til
Heating Fuel	03		Gas
Heating Type	04		Forced Air-Duc
AC Type	03		Central
Bldg Use	3260		REST/CLUBS MDL94
Total Rooms			
Total Bedrms	00		
Total Baths	0		
Heat/AC	02		HEAT/AC SPLIT
Frame Type	02		WOOD FRAME
Baths/Plumbing	02		AVERAGE
Ceiling/Wall	06		CEIL & WALLS
Rooms/Prtns	02		AVERAGE
Wall Height	8		
% Comn Wall			

CONSTRUCTION DETAIL (CONTINUED)

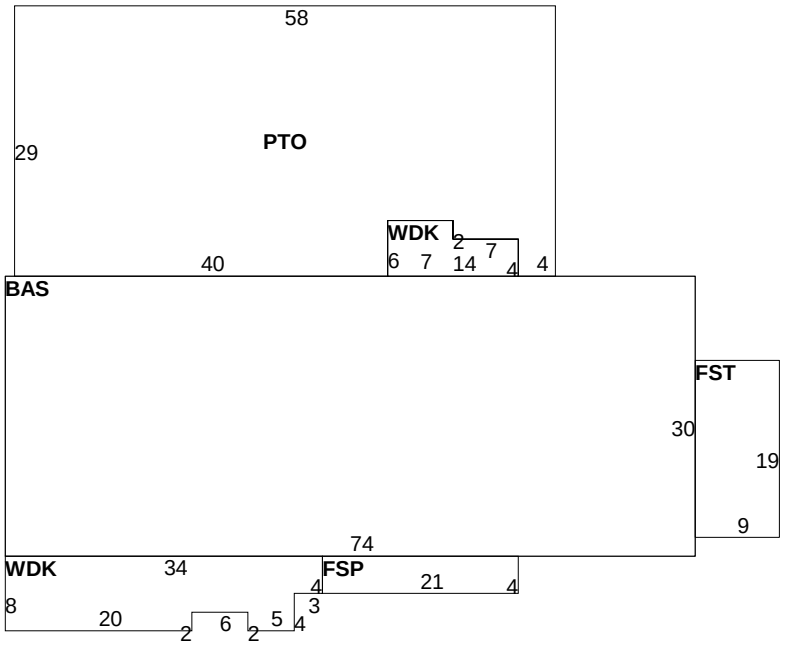
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
3260	REST/CLUBS MDL94	100

COST/MARKET VALUATION

Adj. Base Rate:	103.66
Replace Cost	258,528
AYB	1920
Dep Code	G
Remodel Rating	
Year Remodeled	
Dep %	35
Functional Obslnc	0
External Obslnc	35
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	30
Apprais Val	77,600
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

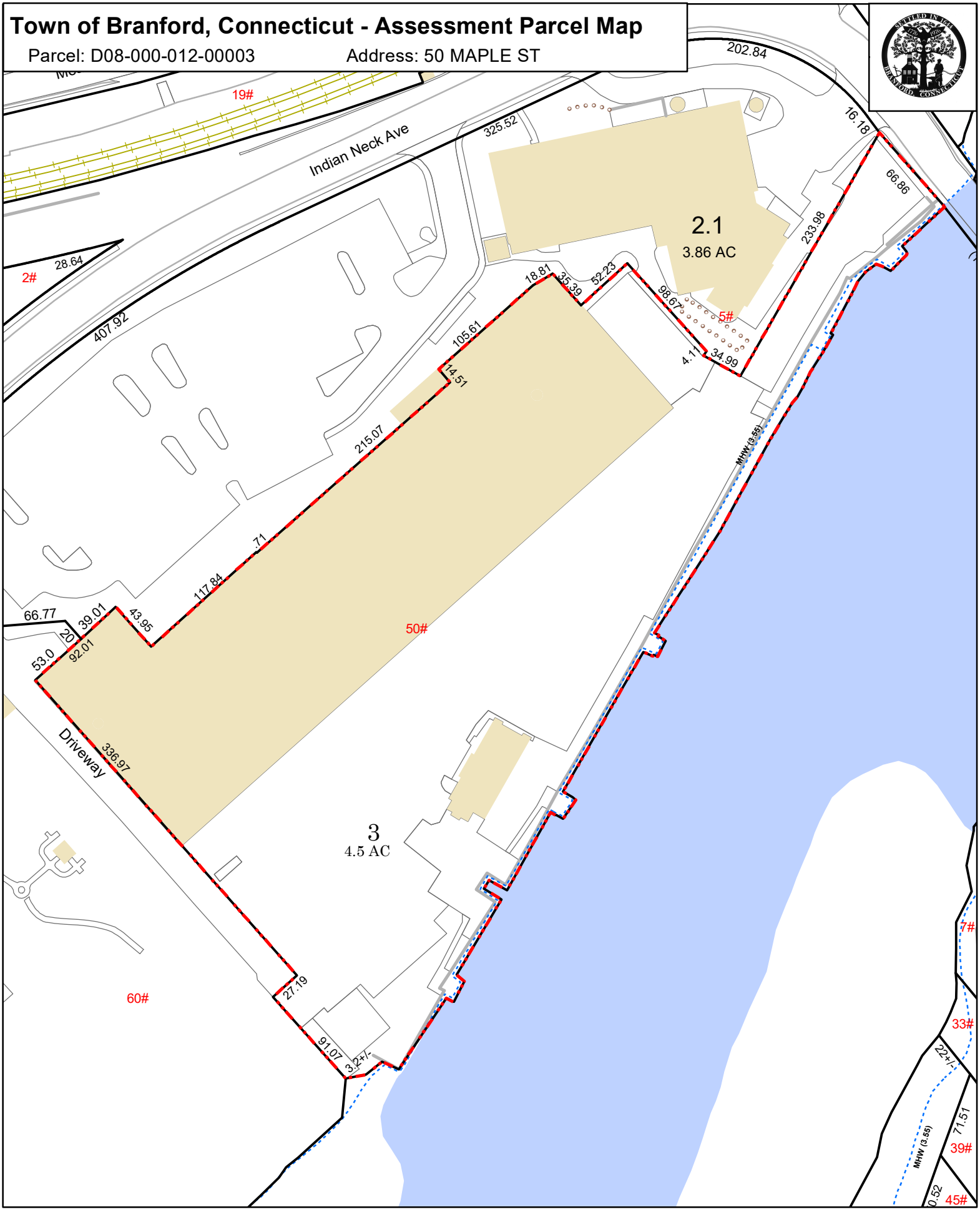
Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
SHD5	SHED COM W			L	168	17.00	2009		0		50	1,400

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	2,220	2,220	2,220	103.66	230,125
FSP	Porch, Screen	0	84	21	25.92	2,177
FST	Utility, Finished	0	171	60	36.37	6,220
PTO	Patio	0	1,612	161	10.35	16,689
WDK	Deck, Wood	0	318	32	10.43	3,317
	Ttl. Gross Liv/Lease Area:	2,220	4,405	2,494		258,528

Town of Branford, Connecticut - Assessment Parcel Map

Parcel: D08-000-012-00003 Address: 50 MAPLE ST



Approximate Scale: 1 inch : 100 feet

Grand List Date October 2018

Exhibit C

Construction Drawings

T-Mobile

WIRELESS COMMUNICATIONS FACILITY

MARINE SYS. SMOKE STACK

CT11328F

50 MAPLE STREET

BRANFORD, CT 06405

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, 2017 NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

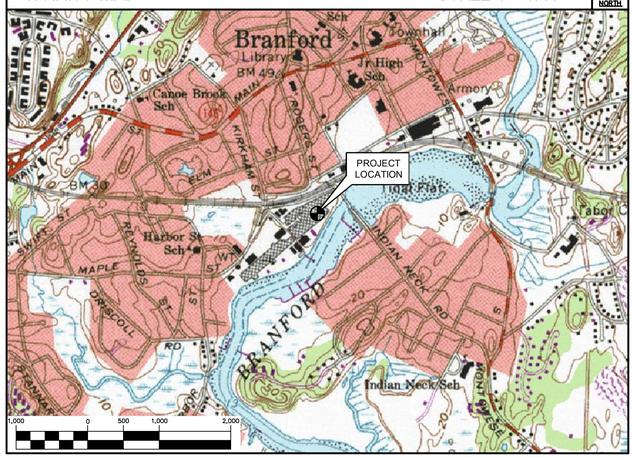
FROM: 35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

TO: 50 MAPLE STREET
BRANFORD, CT 06405

1.	HEAD NORTH ON GRIFFIN ROAD S. TOWARD HARTMAN RD.	0.30 MI.
2.	TAKE THE 2ND RIGHT ONTO DAY HILL RD.	3.64 MI.
3.	MERGE ONTO I-91 S TOWARD HARTFORD	14.42 MI.
4.	TAKE CT-99 EXIT, EXIT 24 TOWARD WETHERSFIELD/ROCKY HILL	0.28 MI.
5.	TURN LEFT ONTO SILAS DEANE HWY/CT-99	0.00 MI.
6.	MERGE ONTO I-91 S via THE RAMP ON THE LEFT TOWARD NEW HAVEN	31.32 MI.
7.	MERGE ONTO I-95 N via THE EXIT ON THE LEFT TOWARD NEW LONDON	4.55 MI.
8.	TAKE THE US-1 EXIT, EXIT 53, TOWARD SHORT BEACH/CT-142/CT-146	0.43 MI.
9.	MERGE ONTO BRANFORD CONN.	0.62 MI.
10.	TAKE THE 1ST RIGHT ONTO W MAIN ST/US-1 S	0.10 MI.
11.	TAKE THE 1ST LEFT ONTO SHORT BEACH RD/CT-142	0.22 MI.
12.	TURN LEFT ONTO MAPLE ST	0.72 MI.
13.	TURN RIGHT ONTO INDIAN NECK AVE.	0.17 MI.
14.	50 MAPLE ST BRANFORD, CT 06405-3511, 50 MAPLE ST	

VICINITY MAP

SCALE: 1" = 1000'



T-MOBILE RF CONFIGURATION

67D02C_2xAIR+1OP

PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

   A. REPLACE (1) DUS41 AND (1) XMU WITH (1) BB 6630
   B. INSTALL (1) ADDITIONAL BB 6630
   C. INSTALL (3) NEW 6X12 HYBRID CABLES
   D. REMOVE (6) COAX CABLES
   E. REPLACE (3) LB DUAL ANTENNA WITH (3) LB/MB OCTA 8' ANTENNA
   F. REMOVE (3) RRUS11 B12
   G. INSTALL (3) RADIO 4449 B71+B12

PROJECT INFORMATION

SITE NAME:	MARINE SYS. SMOKE STACK
SITE ID:	CT11328F
SITE ADDRESS:	50 MAPLE STREET BRANFORD, CT 06405
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	DAN REID (PROJECT MANAGER) TRANSCEND WIRELESS, LLC (203) 592-8291
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-16'-27.56" N LONGITUDE: 72°-48'-49.05" W GROUND ELEVATION: 08'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
N-1	DESIGN BASIS AND SITE NOTES	B
C-1	SITE LOCATION PLAN	B
C-2	COMPOUND PLAN AND ELEVATION	B
C-3	ANTENNA MOUNTING AND ELEVATIONS	B
E-1	TYPICAL ELECTRICAL DETAILS	B

PROFESSIONAL ENGINEER SEAL

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
B	06/26/19	KAM/JR	CAG	PRELIMINARY CDs - REVISED PER CLIENT COMMENTS
A	05/06/19	RTS	CAG	PRELIMINARY CDs - ISSUED FOR CLIENT REVIEW

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WIRELESS COMMUNICATIONS FACILITY
MARINE SYS. SMOKE STACK
SITE ID: CT11328F
50 MAPLE STREET
BRANFORD, CT 06405

DATE: 05/03/19
SCALE: AS NOTED
JOB NO. 19027.41

TITLE SHEET

T-1

Sheet No. 1 of 6

DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90-105 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- ULTIMATE DESIGN SPEED (OTHER STRUCTURE): 130 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2015 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PROFESSIONAL ENGINEER SEAL

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
B	06/26/19	KAWJR	CAG	PRELIMINARY CDs - REVISED PER CLIENT COMMENTS
A	05/06/19	RTS	CAG	PRELIMINARY CDs - ISSUED FOR CLIENT REVIEW

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T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY

MARINE SYS. SMOKE STACK
SITE ID: CT11328F
50 MAPLE STREET
BRANFORD, CT 06405

DATE:	05/03/19
SCALE:	AS NOTED
JOB NO.	19027.41

DESIGN BASIS AND SITE NOTES

N-1

Sheet No. 2 of 6

1 / C-1 SITE LOCATION PLAN
SCALE: 1" = 30'

APPROX. NORTH

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 50 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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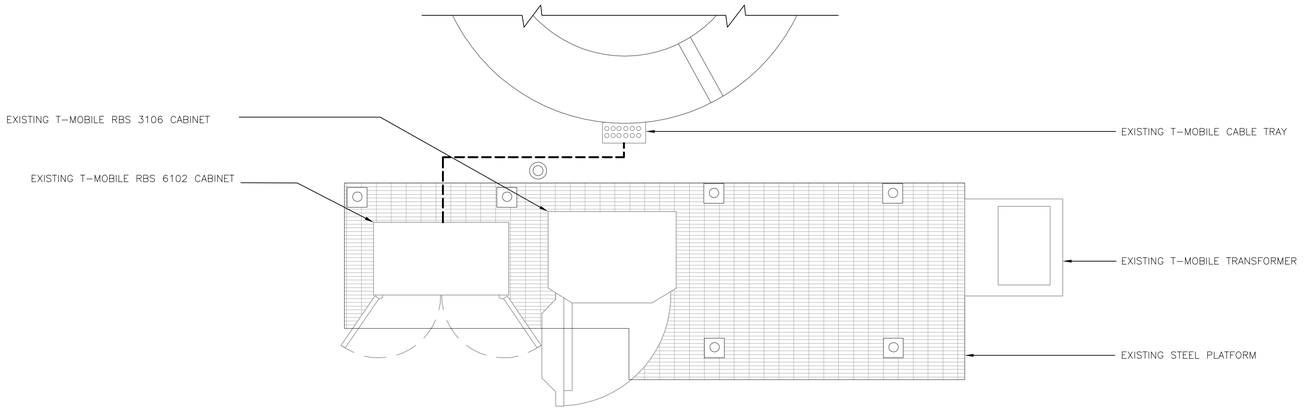
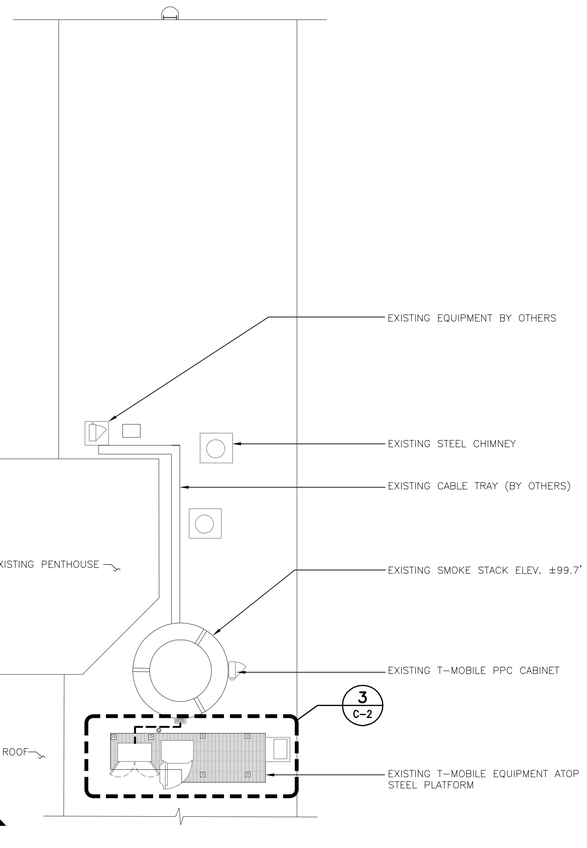
SITE LOCATION PLAN

C-1

Sheet No. 3 of 6

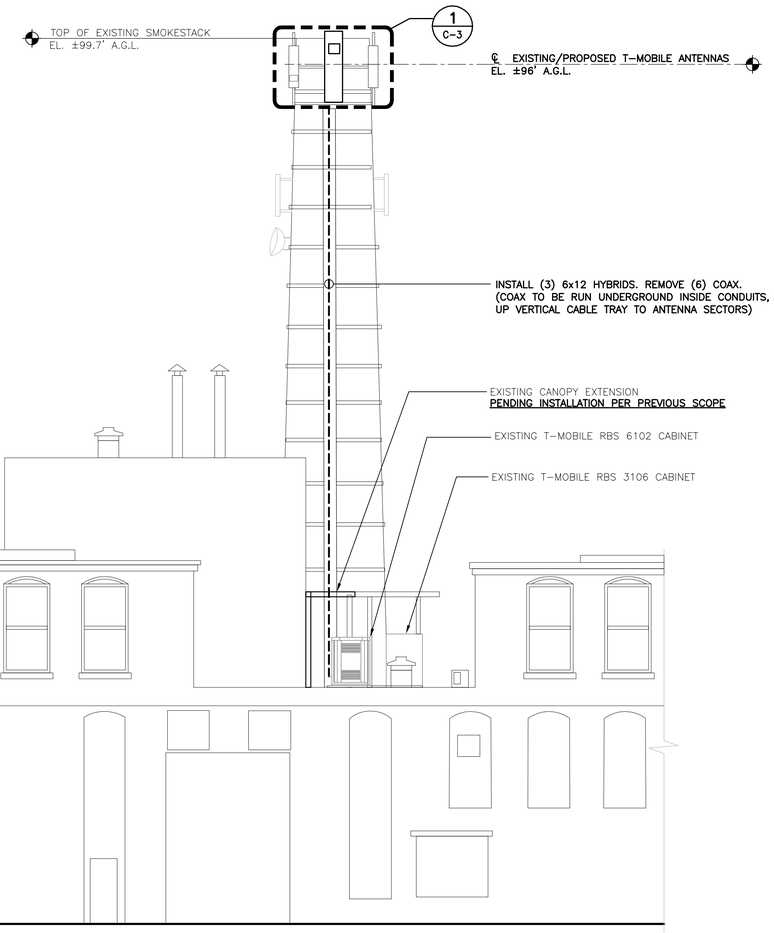


3 C-2 **EQUIPMENT PLAN**
SCALE: 3/8" = 1'
TRUE NORTH



1 C-2 **COMPOUND PLAN**
SCALE: 1" = 8'
TRUE NORTH

GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1 inch = 8 ft.



2 C-2 **SOUTH TOWER ELEVATION**
SCALE: 1" = 8'

8 0 4 8 16 32
(IN FEET)
1 inch = 8 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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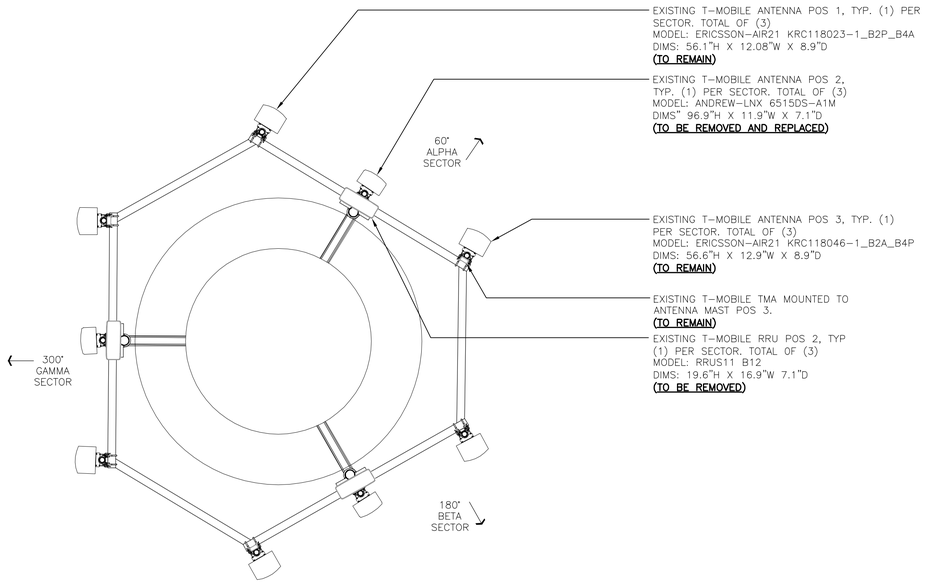
DATE: 05/03/19
SCALE: AS NOTED
JOB NO. 19027.41

COMPOUND PLAN, AND ELEVATION

C-2

Sheet No. 4 of 6

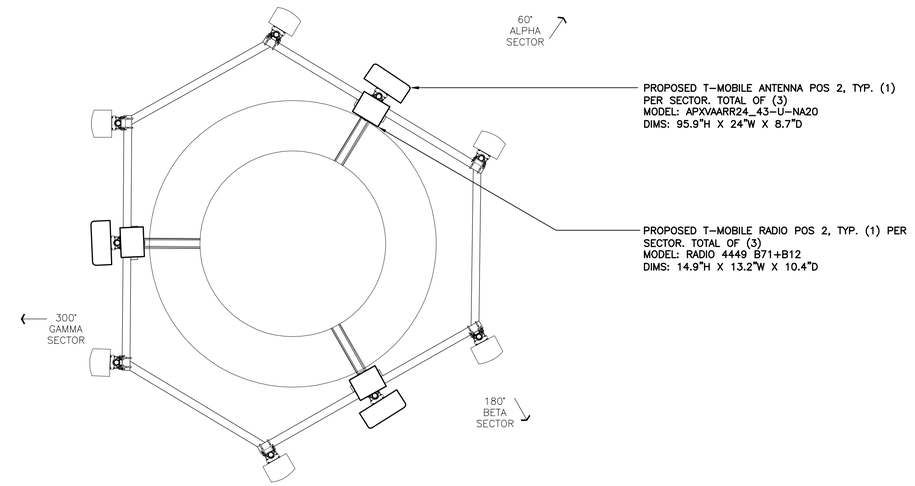


(ALPHA,BETA+GAMMA)

1 C-3 **EXISTING ANTENNA MOUNTING CONFIGURATION**

SCALE: 3/8" = 1'

TRUE NORTH

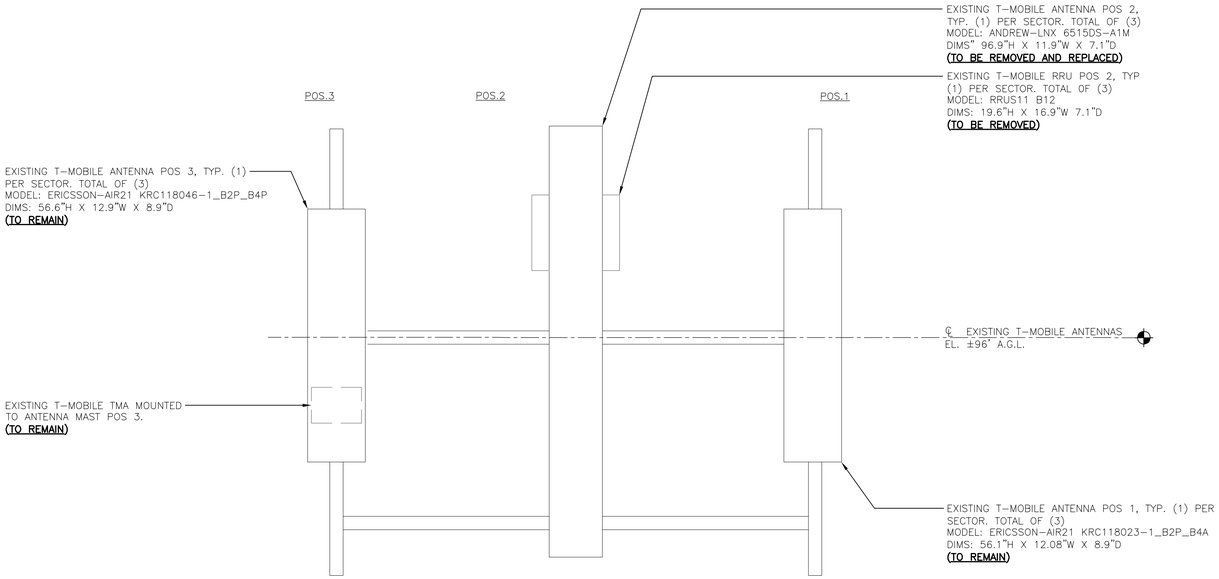


(ALPHA,BETA+GAMMA)

2 C-3 **PROPOSED ANTENNA MOUNTING CONFIGURATION**

SCALE: 3/8" = 1'

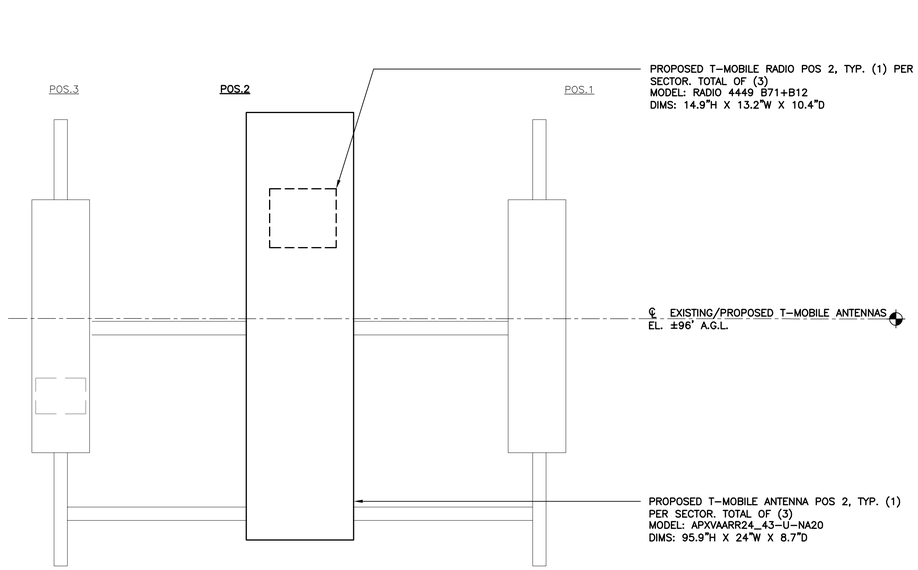
TRUE NORTH



(ALPHA,BETA+GAMMA)

3 C-3 **EXISTING ANTENNA ELEVATION**

SCALE: 3/4" = 1'



(ALPHA,BETA+GAMMA)

4 C-3 **PROPOSED ANTENNA ELEVATION**

SCALE: 3/4" = 1'

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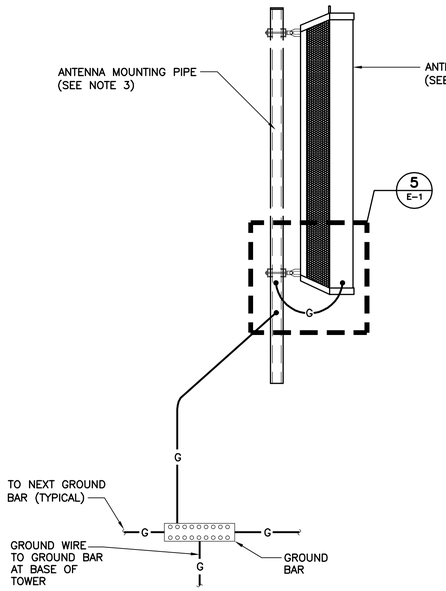
ANTENNA MOUNTING AND ELEVATIONS

C-3

Sheet No. 5 of 6

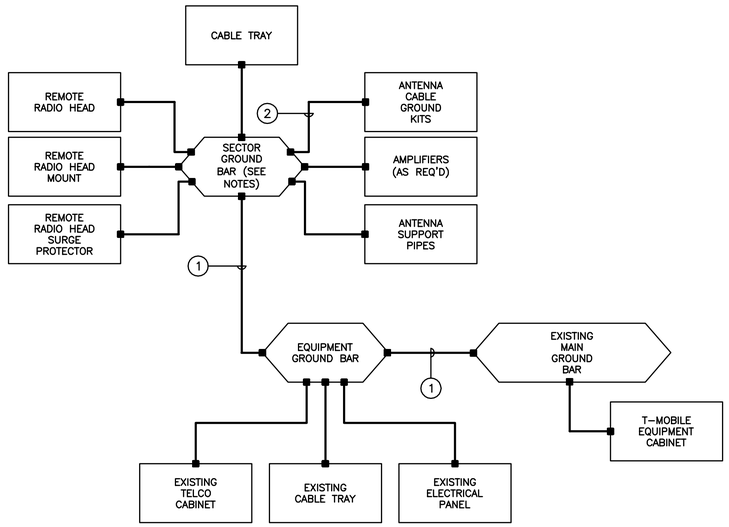


NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE



GROUNDING SCHEMATIC NOTES

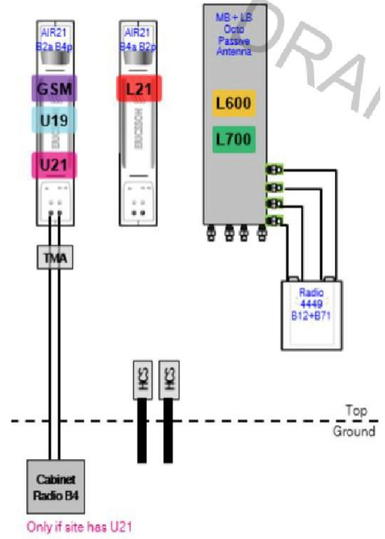
1. #2 AWG
2. #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
4. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
5. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
6. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
7. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

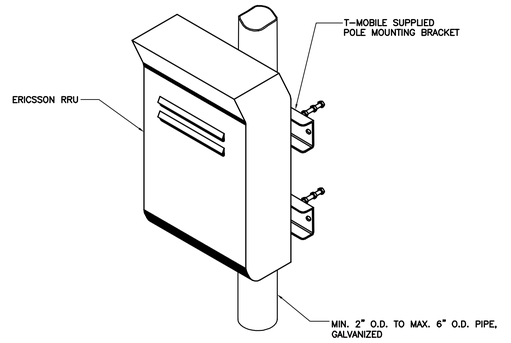
2 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE



3 E-1 PROPOSED PLUMBING DIAGRAM

SCALE: NOT TO SCALE



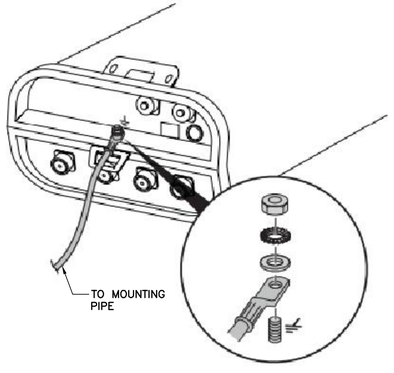
ISOMETRIC VIEW

NOTES:

1. T-MOBILE SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

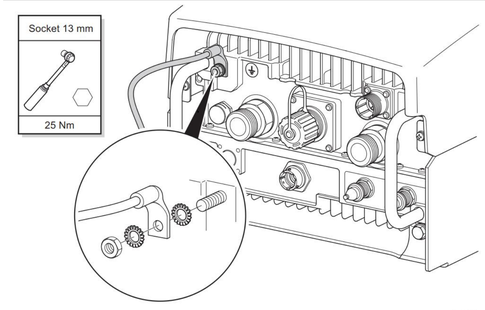
4 E-1 TYPICAL RRUS MOUNTING DETAILS

SCALE: NOT TO SCALE



5 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE



6 E-1 TYPICAL RRU GROUNDING DETAIL

SCALE: NOT TO SCALE

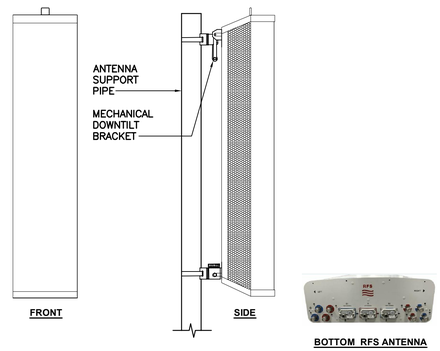
ISOMETRIC VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4449 B71B12	14.9"L x 13.2"W x 10.4"D	74 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

7 E-1 PROPOSED RRU DETAIL

SCALE: NOT TO SCALE



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXVAARR24_43-U-NA20	95.9"L x 24"W x 8.7"D	153 LBS.

8 E-1 PROPOSED ANTENNA DETAIL

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
A	05/06/19	RTS	CAG	PRELIMINARY CDs – ISSUED FOR CLIENT REVIEW
B	06/26/19	KAW/JR	CAG	PRELIMINARY CDs – REVISED PER CLIENT COMMENTS

PROFESSIONAL ENGINEER SEAL

T-Mobile

Transcend Wireless

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

WIRELESS COMMUNICATIONS FACILITY

MARINE SYS. SMOKE STACK

SITE ID: CT11328F

50 MAPLE STREET

BRANFORD, CT 06405

DATE: 05/03/19

SCALE: AS NOTED

JOB NO. 19027.41

TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 6 of 6

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

±99.7-ft Existing Masonry Smokestack

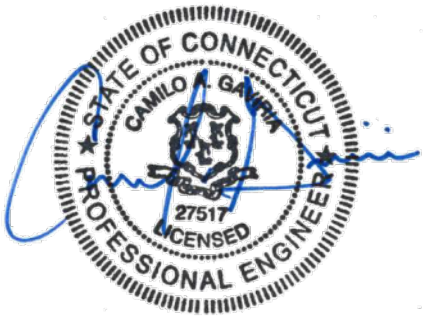
T-Mobile Site Ref: CT11328F

50 Maple Street
Branford, CT 06405

Centek Project No. 19027.41

~~Date: June 18, 2019~~

Rev 1: July 16, 2019



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

SECTION 1 - REPORT

- INTRODUCTION
- EQUIPMENT INSTALLATION SUMMARY
- DESIGN LOADING
- RESULTS
- CONCLUSION AND RECOMMENDATIONS

SECTION 2 – CONDITIONS & SOFTWARE

- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

SECTION 3 – CALCULATIONS

- WIND LOADING
- ANTENNA FRAME – RISA 3D OUTPUT REPORT
- SMOKESTACK ANALYSIS

SECTION 4 – REFERENCES (NOT ATTACHED)

- RF DATA SHEET, DATED 4/17/2019
- STRUCTURAL ANLAYSIS REPORT AS PREPARED BY INTERNATIONAL CHMINEY CORP., DATED 08/08/2016.

Introduction

The purpose of this report is to summarize the results of the structural analysis of the equipment installation proposed by T-Mobile on the existing host masonry smokestack located in Branford, CT.

The host structure is a ±99.7-ft tall masonry smokestack. The smokestack geometry and structural information was obtained from a field investigation and inspection report prepared by International Chimney Corporation dated August 8, 2016.

Equipment Installation Summary

- T-Mobile (Existing to Remove):
  Antennas: Three (3) Andrew LNX-6515DS-A1M panel antennas and three (3) Ericsson RRUS-11 B12 remote radio units mounted on custom sector mounts with RAD center elevations of ±96-ft AGL.
  Cables: Six (6) 1-5/8" ∅ coax cables inside cable tray on exterior of smokestack.
- **T-Mobile (Final):**
  Antennas: Three (3) RFS APXVAARR24_43-U-NA20 panel antennas mounted, three (3) Ericsson AIR21 KRC118023-1_B2A_B4P panel antennas, three (3) Ericsson AIR21 KRC118046-1_B2P_B4A panel antennas, three (3) Ericsson 4449 B71+B12 remote radio units and three (3) Ericsson KRY112 71 (TMAs) mounted on custom sector mounts with RAD center elevations of ±96-ft AGL.
  Cables: Three (3) 6x12 fiber cables inside cable tray on exterior of smokestack.

Design Loading

Loading was determined per the requirements of the 2015 International Building Code as amended by the 2018 CT Building Code and ASCE 7-10 "Minimum Design Loads for Buildings and Other Structures".

Wind Speed:	Vult = 140 mph	*[Appendix N of the 2018 CT Building Code]*
Exposure Category:	C	
Risk Category	III	*[ASCE 7-10, Table 1.5-1]*

Results

Smokestack:

Component	Stress Ratio (percentage of capacity)	Result
Compression	25.0%	**PASS**
Tension of Mortar	47.0%	**PASS**

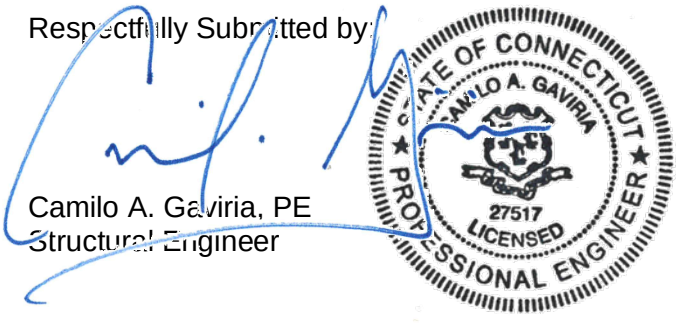
Conclusion and Recommendations

This analysis shows that the subject smokestack **is adequate** to support the proposed T-Mobile equipment installation.

The analysis is based, in part on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, CENTEK engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Camilo A. Gaviria, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

- RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features:

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids
- Versatile general truss generator
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking
- Saved selections to quickly recall desired selections
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets
- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files
- Export DXF, SDNF and ProSteel 3D files

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis
- Physical member modeling that does not require members to be broken up at intermediate joints
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress and design
- Automatic Top of Member offset modeling
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms
- Enforced joint displacements

- 1-Way members, for tension only bracing, slipping, etc.
- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape
- Inactive members, plates, and diaphragms allows you to quickly remove parts of structures from consideration
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary “true to scale” rendering, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamic scrolling stops right where you want
- Plot & print virtually everything with color coding & labeling
- Rotate, zoom, pan, scroll and snap views
- Saved views to quickly restore frequent or desired views
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete, hot rolled steel, cold formed steel and wood
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000,EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location
- Saved solutions quickly restore analysis and design results.

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Wind Load on Equipment per ASCE 7-10

Location: Branford, CT

Rev. 0: 6/10/2019

Prepared by: CAG Checked by: TJL
Job No. 19027.41

Design Wind Load on Other Structures: (Based on IBC 2012, CSBC 2016 and ASCE 7-10)

Wind Speed =	$V := 140$ mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := III$	(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := C$	(User Input)	
Structure Type =	$Structuretype := Round\_Chimney$	(User Input)	
Structure Height =	$Height := 99.7$ ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 12.99$ ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = (Table 26.9-1)

$$zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent = (Table 26.9-1)

$$\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 9.5$$

Integral Length Scale Factor = (Table 26.9-1)

$$l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 500$$

Integral Length Scale Power Law Exponent = (Table 26.9-1)

$$E := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.2$$

Turbulence Intensity Factor = (Table 26.9-1)

$$c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.2$$

Exposure Constant = (Table 26.9-1)

$$Z_{min} := \begin{cases} 30 & \text{if } Exp = B \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases} = 15$$

Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.95$	(Table 26.6-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)

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Equivalent Height of Structure = $z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{otherwise} \end{cases} = 59.82$ (Sec 26.9.4)

Intensity of Turbulence = $I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.181$ (Eq. 26.9-7)

Integral Length Scale of Turbulence = $L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 563.166$ (Eq. 26.9-9)

Background Response Factor = $Q := \sqrt{\frac{1}{1 + 0.63\left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.902$ (Eq. 26.9-8)

Gust Response Factor = $G := 0.925 \cdot \left[\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right] = 0.879$ (Eq. 26.9-6)

Velocity Pressure = $q_z := 0.00256 \cdot K_{zt} \cdot K_d \cdot V^2 = 47.67$ (Eq. 29.3-1)

Force Coefficient = $C_f = 0.804$ (Fig 29.5-1 - 29.5-3)

Ultimate Wind Pressure = $F := q_z \cdot G \cdot C_f = 33.7$ psf

HeightAbove Grade = $Z := 115$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.3 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.303$

HeightAbove Grade = $Z := 90$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.24 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.238$

HeightAbove Grade = $Z := 65$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.16 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.156$

HeightAbove Grade = $Z := 40$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.04 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.044$

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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Wind Load on Equipment per ASCE 7-10

Location: Branford, CT

Rev. 0: 6/10/2019

Prepared by: CAG Checked by: TJL
Job No. 19027.41

T-Mobile Loading:

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAA24_43-U-A20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 128$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 48$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 1614$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 17.4$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 585$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 384$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Ericsson AIR21 (KRC118023-1)		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.3$	in	(User Input)
Antenna Width =	$W_{ant} := 12.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 91.5$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 14.2$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 478$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 9.3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 312$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 275$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Ericsson 4449 B12/B71		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 15.0$	in	(User Input)
RRH Width =	$W_{RRH} := 13.2$	in	(User Input)
RRH Thickness =	$T_{RRH} := 10.4$	in	(User Input)
RRH Weight =	$WT_{RRH} := 75$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 3$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.4$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 4.1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 139$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.1$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 3.3$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 109$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 225$	lbs

Sprint Loading:

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Generic 6'Antenna		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 9.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 80$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 18$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 606$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 4.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 13.5$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 454$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 240$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Generic 4'Antenna		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 60.0$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 14$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 471$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 9.3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 314$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 180$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Generic 3' MW Antenna		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 36$	in	(User Input)
Antenna Width =	$W_{ant} := 32$	in	(User Input)
Antenna Thickness =	$T_{ant} := 12.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 60.0$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 8$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 269$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 101$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 60$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Generic RRH 1		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 20.9$	in	(User Input)
RRH Width =	$W_{RRH} := 12.2$	in	(User Input)
RRH Thickness =	$T_{RRH} := 10.8$	in	(User Input)
RRH Weight =	$WT_{RRH} := 50.7$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 9$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.8$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 15.9$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 537$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.6$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 14.1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 475$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 456$	lbs

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Job :	CT11328F	**Project No.**	19027.41	**Sheet**	1 of 2
Address:	50 Maple Street Branford, CT 06405	**Computed by**	LAA	**Date**	6/10/19
Description:	Smokestack Evaluation	**Checked by**	CAG	**Date**	

	Wind Force (lb)	Weight (lb)	Height Above Base (ft)	Height (in)
T-Mobile	2231	1200	96	1152
Sprint	1883	936	88	1056

Section	Top Dia (in)	Bot Dia (in)	Wall Thk (in)	Sect Height (in)	Area At Base (in^2)	Tot. Vol (ft^3)	Unit Weight (pcf)	Weight of Section (lb)	Total Weight (lb)	Axial Stress fa (psi)
1	114	135.67	8	356.4	3207.0704	604.97204	127	76831.4485	78967.4485	24.6
2	135.67	161.4	8.5	360	4080.901	778.2026	125	97275.3249	176242.7734	43.2
3	161.4	169.92	9.5	120	4785.3286	323.30268	125	40412.83516	216655.6086	45.3
4	169.92	175.68	10.5	80	5445.9846	247.58964	125	30948.70445	247604.313	45.5
5	175.68	177.96	13	76	6733.6672	293.93989	125	36742.48571	284346.7987	42.2

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Job :	CT11328F	**Project No.**	19027.41	**Sheet**	2 of 2
Address:	50 Maple Street Branford, CT 06405	**Computed by**	LAA	**Date**	6/10/19
Description:	Smokestack Evaluation	**Checked by**	CAG	**Date**	

Ultimate Wind Pressure (psf)	ASD Wind Pressure (psf)	KZ	Wind Area (sf)	Wind Force (lb)	Moment @ Base	Section Modulus @ Base	Bending Stress fb (psi)	Allowable Fa (psi)	Allowable Fb (psi)	fa/Fa+fb/Fb		ft	Ft	ft/Ft	
33.7	20.22	1.23	309.0	7684.2	3311377.828	96703.96897	34.2	375	500	0.13	OK	9.6	40	0.24	OK
33.7	20.22	1.11	371.3	8334.4	9058911.713	148233.9248	61.1	375	500	0.24	OK	17.9	40	0.45	OK
33.7	20.22	1.01	138.1	2819.3	11643975.81	181821.2694	64.0	375	500	0.25	OK	18.8	40	0.47	OK
33.7	20.22	0.95	96.0	1844.1	13553885.82	212305.0695	63.8	375	500	0.25	OK	18.4	40	0.46	OK
33.7	20.22	0	93.3	0.0	15438374.77	259009.3359	59.6	375	500	0.23	OK	17.4	40	0.43	OK

Exhibit E

Mount Analysis

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Structural Analysis Report

Antenna Mount Analysis

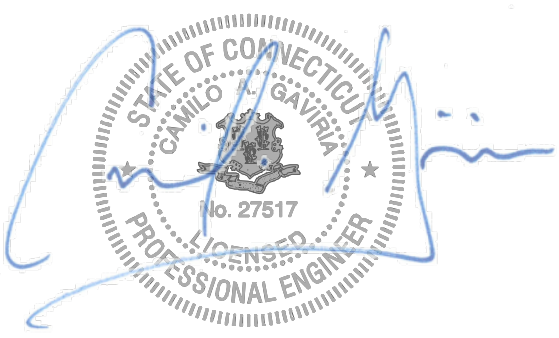
T-Mobile Site #: CT11328F

50 Maple Street
Branford, CT

Centek Project No. 19027.41

Date: June 19, 2019

Max Stress Ratio = 49.1%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

SECTION 1 – REPORT

- ANTENNA AND APPURTENANCE SUMMARY
- STRUCTURE LOADING
- CONCLUSION

SECTION 2 – CALCULATIONS

- WIND LOAD ON APPURTENANCES
- RISA3D OUTPUT REPORT

SECTION 3 – REFERENCE MATERIALS (NOT INCLUDED WITHIN REPORT)

- RF DATA SHEET, DATED 04/17/2019

CENTEK engineering

Centered on Solutions℠

June 19, 2019

Mr. Dan Reid
Transcend Wireless
10 Industrial Ave
Mahwah, NJ 07430

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11328F
50 Maple Street
Branford, CT 06405

Centek Project No. 19027.41

Dear Mr. Reid,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the existing mount, consisting three (3) T-frame sector to support the proposed/existing equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

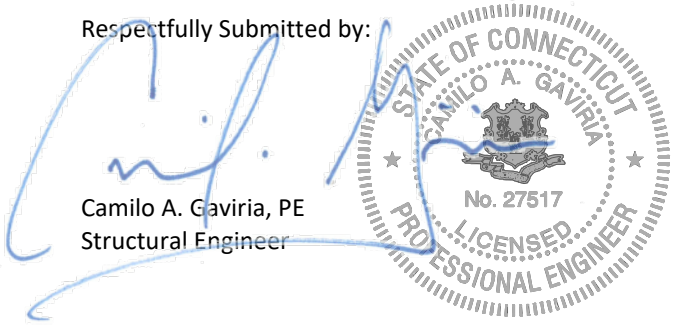
- **T-Mobile:**
  T-Frames: Three (3) RFS APXVAARR24_43-U-NA20 panel antennas, three (3) Ericsson AIR21 KRC118023-1_B2A_B4P panel antennas, three (3) Ericsson AIR21 KRC118046-1_B2P_B4A panel antennas, three (3) Ericsson 4449 B71+B12 remote radio units and three (3) Twin style AWS (TMAs) mounted on custom sector mounts with RAD center elevations of ±96-ft AGL

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering an ultimate design wind speed of 140 mph for Branford as required in Appendix N of the 2018 Connecticut State Building Code.

A structural analysis of tower and foundation needs to be completed prior to any work.

Based on our review of the installation, it is our opinion that the **subject antenna mount has sufficient capacity** to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:



Camilo A. Gaviria, PE
Structural Engineer

Prepared by:

Fernando J. Palacios
Engineer

Section 2 - Calculations

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Branford, CT 06405 F: (203) 488-8587

Subject: Wind Load on Equipment per ASCE 7-10

Location: Branford, CT

Rev. 0: 6/10/2019

Prepared by: CAG Checked by: TJL
Job No. 19027.41

Design Wind Load on Other Structures: (Based on IBC 2012, CSBC 2016 and ASCE 7-10)

Wind Speed =	$V := 140$ mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := III$	(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := C$	(User Input)	
Structure Type =	$Structuretype := Round\_Chimney$	(User Input)	
Structure Height =	$Height := 99.7$ ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 12.99$ ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = (Table 26.9-1)

$$zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent = (Table 26.9-1)

$$\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 9.5$$

Integral Length Scale Factor = (Table 26.9-1)

$$l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 500$$

Integral Length Scale Power Law Exponent = (Table 26.9-1)

$$E := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.2$$

Turbulence Intensity Factor = (Table 26.9-1)

$$c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.2$$

Exposure Constant = (Table 26.9-1)

$$Z_{min} := \begin{cases} 30 & \text{if } Exp = B \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases} = 15$$

Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.95$	(Table 26.6-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)

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Location: Branford, CT

Rev. 0: 6/10/2019

Prepared by: CAG Checked by: TJL
Job No. 19027.41

Equivalent Height of Structure = $z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{otherwise} \end{cases} = 59.82$ (Sec 26.9.4)

Intensity of Turbulence = $I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.181$ (Eq. 26.9-7)

Integral Length Scale of Turbulence = $L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 563.166$ (Eq. 26.9-9)

Background Response Factor = $Q := \sqrt{\frac{1}{1 + 0.63\left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.902$ (Eq. 26.9-8)

Gust Response Factor = $G := 0.925 \cdot \left[\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right] = 0.879$ (Eq. 26.9-6)

Velocity Pressure = $q_z := 0.00256 \cdot K_{zt} \cdot K_d \cdot V^2 = 47.67$ (Eq. 29.3-1)

Force Coefficient = $C_f = 0.804$ (Fig 29.5-1 - 29.5-3)

Ultimate Wind Pressure = $F := q_z \cdot G \cdot C_f = 33.7$ psf

HeightAbove Grade = $Z := 115$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.3 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.303$

HeightAbove Grade = $Z := 90$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.24 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.238$

HeightAbove Grade = $Z := 65$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.16 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.156$

HeightAbove Grade = $Z := 40$ ft (User Input)

Exposure Coefficient = $K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \quad = 1.04 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$ (Table 29.3-1)

$K_z = 1.044$

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Branford, CT

Rev. 0: 6/10/2019

Prepared by: CAG Checked by: TJL
Job No. 19027.41

T-Mobile Loading:

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAA24_43-U-A20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 128$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 48$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 1614$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 17.4$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 585$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 384$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Ericsson AIR21 (KRC118023-1)		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.3$	in	(User Input)
Antenna Width =	$W_{ant} := 12.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 91.5$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 14.2$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 478$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 9.3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 312$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 275$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Ericsson 4449 B12/B71		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 15.0$	in	(User Input)
RRH Width =	$W_{RRH} := 13.2$	in	(User Input)
RRH Thickness =	$T_{RRH} := 10.4$	in	(User Input)
RRH Weight =	$WT_{RRH} := 75$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 3$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.4$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 4.1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 139$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.1$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 3.3$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 109$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 225$	lbs

Sprint Loading:

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Generic 6'Antenna		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 72$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 9.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 80$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 6$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 18$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 606$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 4.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 13.5$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 454$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 240$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Generic 4'Antenna		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56$	in	(User Input)
Antenna Width =	$W_{ant} := 12$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 60.0$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 14$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 471$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 9.3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 314$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 180$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Generic 3' MW Antenna		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 36$	in	(User Input)
Antenna Width =	$W_{ant} := 32$	in	(User Input)
Antenna Thickness =	$T_{ant} := 12.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 60.0$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 8$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 269$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 101$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 60$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Generic RRH 1		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 20.9$	in	(User Input)
RRH Width =	$W_{RRH} := 12.2$	in	(User Input)
RRH Thickness =	$T_{RRH} := 10.8$	in	(User Input)
RRH Weight =	$WT_{RRH} := 50.7$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 9$		(User Input)

Wind Load (Front)

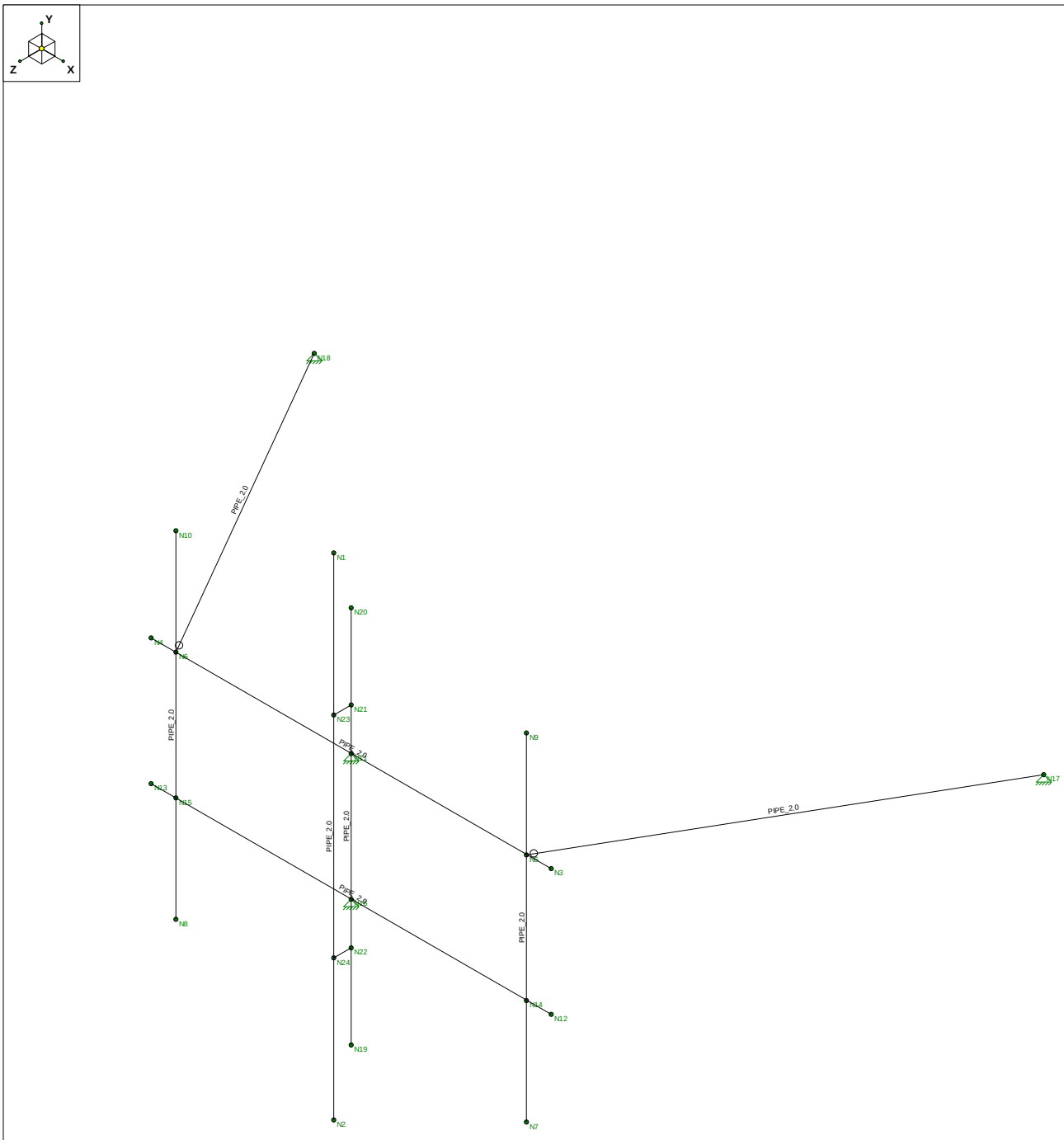
Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.8$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 15.9$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 537$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.6$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 14.1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 475$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 456$	lbs



Centek		
THC	CT11328F - Mount	June 19, 2019 at 9:24 AM
19027.41	Member Framing	CT11328F_AMA.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Antenna Mast	11.667			Lbyy		Segme...				Lateral
2	M2	Horizontal	9.5			Lbyy		6				Lateral
3	M3	Antenna Mast	8			Lbyy						Lateral
4	M4	Antenna Mast	8			Lbyy						Lateral
5	M5	Horizontal	9.5			Lbyy		6				Lateral
6	M6	Pipe 2.0	8.998			Lbyy						Lateral
7	M7	Pipe 2.0	8.998			Lbyy						Lateral
8	M8	Antenna Mast	9			Lbyy						Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Pipe 2.0	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
2	Antenna Mast	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
3	Horizontal	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N2			Antenna Mast	Column	Pipe	A53 Gra...	Typical
2	M2	N4	N3			Horizontal	Beam	Pipe	A53 Gra...	Typical
3	M3	N8	N10			Antenna Mast	Column	Pipe	A53 Gra...	Typical
4	M4	N7	N9			Antenna Mast	Column	Pipe	A53 Gra...	Typical
5	M5	N13	N12			Horizontal	Beam	Pipe	A53 Gra...	Typical
6	M6	N6	N18			Pipe 2.0	Beam	Pipe	A53 Gra...	Typical
7	M7	N5	N17			Pipe 2.0	Beam	Pipe	A53 Gra...	Typical
8	M8	N19	N20			Antenna Mast	Column	Pipe	A53 Gra...	Typical
9	M9	N21	N23			RIGID	None	None	RIGID	Typical
10	M10	N22	N24			RIGID	None	None	RIGID	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
1	N1	0	5.833333	3.416667	0	
2	N2	0	-5.8333...	3.416667	0	
3	N3	4.75	1.5	3	0	
4	N4	-4.75	1.5	3	0	
5	N5	4.166667	1.5	3	0	
6	N6	-4.166667	1.5	3	0	
7	N7	4.166667	-4	3	0	
8	N8	-4.166667	-4	3	0	
9	N9	4.166667	4	3	0	
10	N10	-4.166667	4	3	0	
11	N11	0	1.5	3	0	
12	N12	4.75	-1.5	3	0	
13	N13	-4.75	-1.5	3	0	
14	N14	4.166667	-1.5	3	0	
15	N15	-4.166667	-1.5	3	0	
16	N16	0	-1.5	3	0	
17	N17	8.666667	1.5	-4.791667	0	
18	N18	-8.666667	1.5	-4.791667	0	
19	N19	0.	-4.5	3	0	
20	N20	0.	4.5	3	0	
21	N21	0	2.5	3	0	
22	N22	0	-2.5	3	0	
23	N23	0	2.5	3.416667	0	
24	N24	0	-2.5	3.416667	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N11	Reaction	Reaction	Reaction			
2	N16	Reaction	Reaction	Reaction			
3	N18	Reaction	Reaction	Reaction			

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
4	N17	Reaction	Reaction	Reaction			
5	N21						
6	N22						
7	N23						
8	N24						

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M4	Y	-.046	%100
2	M4	Y	-.046	3.308
3	M3	Y	-.046	%100
4	M3	Y	-.046	3.308
5	M3	Y	-.075	1.042
6	M1	Y	-.064	0
7	M1	Y	-.064	8
8	M1	Y	-.075	1.25

Member Point Loads (BLC 3 : Wind Load X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M4	X	.052	3.308
2	M4	X	.052	%100
3	M3	X	.052	3.308
4	M3	X	.052	%100
5	M3	X	.011	1.042
6	M1	X	.098	0
7	M1	X	.098	8
8	M1	X	.036	1.25

Member Point Loads (BLC 4 : Wind Load Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M4	Z	.08	%100
2	M4	Z	.08	3.308
3	M3	Z	.08	%100
4	M3	Z	.08	3.308
5	M3	Z	.017	1.042
6	M1	Z	.269	0
7	M1	Z	.269	8
8	M1	Z	.046	1.25

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (i...
No Data to Print ...			

Member Distributed Loads (BLC 3 : Wind Load X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M6	X	.007	.007	0	0

Member Distributed Loads (BLC 3 : Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
2	M7	X	.007	.007	0	0
3	M1	X	.007	.007	0	0
4	M3	X	.007	.007	0	0
5	M4	X	.007	.007	0	0
6	M8	X	.007	.007	0	0

Member Distributed Loads (BLC 4 : Wind Load Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M2	Z	.007	.007	0	0
2	M5	Z	.007	.007	0	0
3	M3	Z	.007	.007	0	3.308
4	M4	Z	.007	.007	0	3.308
5	M1	Z	.007	.007	8	11.667

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Grav...	Joint	Point	Distribu...	Area(M...	Surface(Plate/Wall)
1	Self Weight	DL		-1						
2	Weight of Equipment	DL					8			
3	Wind Load X	WLX					8	6		
4	Wind Load Z	WLZ					8	5		

Load Combinations

	Description	Solve	PD...	SR...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																		
2	IBC 16-9	Yes	Y		DL	1	LL	1	L...	1														
3	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																
4	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																
5	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																
6	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																
7	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	L...	.75												
8	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	L...	.75												
9	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	L...	.75												
10	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	L...	.75												
11	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																
12	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																
13	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																
14	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N11	max	.511	5	1.324	6	.364	14	0	14	0	14	0	14
2		min	-.344	11	-.765	12	-.417	4	0	1	0	1	0	1
3	N16	max	-.018	13	1.314	4	.076	6	0	14	0	14	0	14
4		min	-.149	3	-.772	14	-.023	12	0	1	0	1	0	1
5	N18	max	.074	14	.016	4	.129	14	0	14	0	14	0	14
6		min	-.075	4	.009	14	-.13	4	0	1	0	1	0	1
7	N17	max	.069	4	.016	4	.119	14	0	14	0	14	0	14

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
8		min	-.069	14	.009	14	-.12	4	0	1	0	1	0	1
9	Totals:	max	.5	13	.717	10	.675	14						
10		min	-.5	3	.43	12	-.675	4						

Envelope Joint Displacements

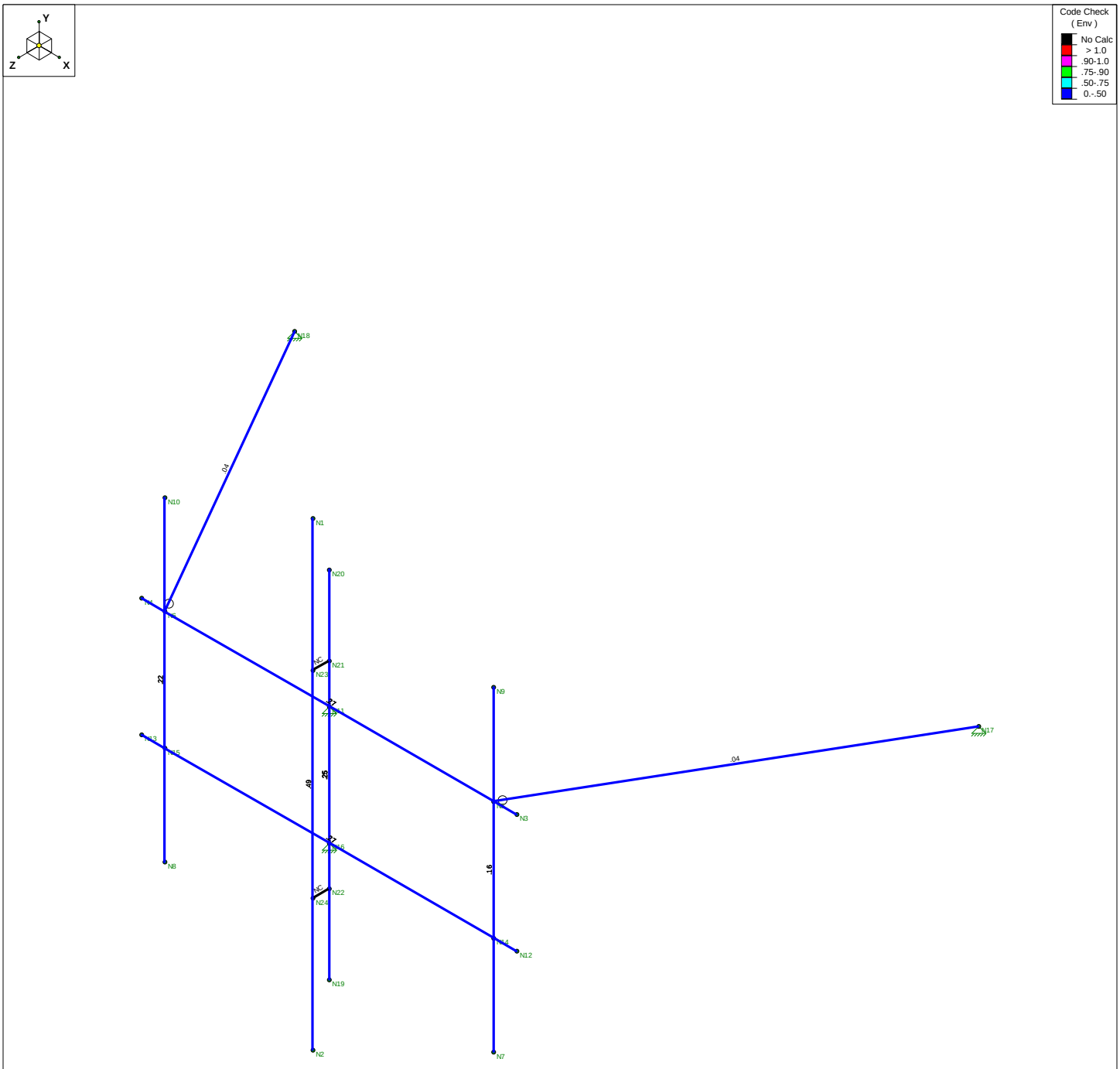
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	.244	11	.011	14	.412	4	1.26e-02	4	8.681e-04	11	7.046e-03	5
2		min	-.265	5	-.015	4	-.381	14	-1.194e-02	14	-8.986e-04	5	-6.649e-03	11
3	N2	max	.057	3	.009	14	.07	14	2.065e-03	4	6.093e-04	3	1.182e-03	3
4		min	-.037	13	-.012	4	-.099	4	-1.481e-03	14	-5.694e-04	13	-8.221e-04	13
5	N3	max	0	3	-.023	13	.001	4	9.089e-04	4	1.427e-04	5	-9.472e-05	13
6		min	0	13	-.087	3	-.001	14	-7.917e-04	14	-1.237e-04	11	-9.851e-04	3
7	N4	max	0	11	-.058	11	.002	4	3.123e-04	4	1.571e-04	12	1.421e-03	5
8		min	0	5	-.144	5	-.002	14	-2.177e-04	14	-1.639e-04	6	3.459e-04	11
9	N5	max	0	3	-.022	13	0	4	9.089e-04	4	1.427e-04	5	-9.404e-05	13
10		min	0	13	-.08	3	0	14	-7.917e-04	14	-1.237e-04	11	-9.839e-04	3
11	N6	max	0	11	-.055	11	.001	4	3.123e-04	4	1.558e-04	12	1.42e-03	5
12		min	0	5	-.134	5	0	14	-2.177e-04	14	-1.626e-04	6	3.453e-04	11
13	N7	max	-.009	13	-.022	13	.033	12	8.783e-04	6	3.827e-04	6	-3.351e-04	13
14		min	-.023	3	-.08	3	-.04	6	-7.676e-04	12	-3.09e-04	12	-7.412e-04	3
15	N8	max	.034	3	-.056	11	.084	12	1.711e-03	6	7.344e-04	12	1.152e-03	3
16		min	.02	13	-.134	5	-.089	6	-1.622e-03	12	-7.987e-04	6	6.082e-04	13
17	N9	max	.052	3	-.022	13	.058	4	2.392e-03	4	1.427e-04	5	9.804e-04	13
18		min	-.019	13	-.08	3	-.054	14	-2.273e-03	14	-1.237e-04	11	-2.062e-03	3
19	N10	max	.012	11	-.056	11	.04	4	1.794e-03	4	1.558e-04	12	2.498e-03	5
20		min	-.065	5	-.134	5	-.037	14	-1.698e-03	14	-1.626e-04	6	-7.288e-04	11
21	N11	max	0	14	0	14	0	14	1.667e-03	4	3.319e-04	11	1.344e-03	5
22		min	0	1	0	1	0	1	-1.45e-03	14	-3.399e-04	5	-8.163e-04	11
23	N12	max	0	11	-.024	13	.013	12	7.702e-04	6	3.841e-04	6	-2.276e-04	13
24		min	0	5	-.086	3	-.017	6	-6.594e-04	12	-3.104e-04	12	-8.507e-04	3
25	N13	max	0	3	-.059	11	.042	12	1.5e-03	6	7.358e-04	12	1.228e-03	5
26		min	0	13	-.143	5	-.045	6	-1.409e-03	12	-8.001e-04	6	5.371e-04	11
27	N14	max	0	11	-.022	13	.011	12	7.702e-04	6	3.827e-04	6	-2.269e-04	13
28		min	0	5	-.08	3	-.014	6	-6.594e-04	12	-3.09e-04	12	-8.496e-04	3
29	N15	max	0	3	-.056	11	.037	12	1.5e-03	6	7.344e-04	12	1.226e-03	5
30		min	0	13	-.134	5	-.039	6	-1.409e-03	12	-7.987e-04	6	5.364e-04	11
31	N16	max	0	14	0	14	0	14	1.354e-04	8	3.323e-04	3	5.313e-04	3
32		min	0	1	0	1	0	1	7.796e-05	14	-3.139e-04	13	-5.512e-06	13
33	N17	max	0	14	0	14	0	14	2.03e-03	3	1.097e-03	3	6.467e-04	6
34		min	0	1	0	1	0	1	7.363e-04	13	-1.094e-03	13	-1.926e-04	12
35	N18	max	0	14	0	14	0	14	2.646e-03	5	1.093e-03	11	9.947e-05	13
36		min	0	1	0	1	0	1	1.109e-03	11	-1.099e-03	5	-4.446e-04	3
37	N19	max	.033	3	0	14	.05	14	2.322e-03	4	6.093e-04	3	9.815e-04	3
38		min	-.019	13	0	4	-.069	4	-1.738e-03	14	-5.694e-04	13	-6.211e-04	13
39	N20	max	.088	11	0	12	.104	4	3.034e-03	4	8.681e-04	11	3.104e-03	5
40		min	-.102	5	0	6	-.084	14	-2.419e-03	14	-8.986e-04	5	-2.732e-03	11
41	N21	max	.023	11	0	12	.032	4	3.034e-03	4	8.681e-04	11	3.048e-03	5
42		min	-.028	5	0	6	-.026	14	-2.419e-03	14	-8.986e-04	5	-2.676e-03	11
43	N22	max	.009	3	0	14	.009	14	2.323e-03	4	6.093e-04	3	9.262e-04	3
44		min	-.004	13	0	4	-.014	4	-1.738e-03	14	-5.694e-04	13	-5.657e-04	13

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
45	N23	max	.027	11	.012	14	.032	4	3.034e-03	4	8.681e-04	11	3.048e-03	5
46		min	-.033	5	-.015	4	-.026	14	-2.419e-03	14	-8.986e-04	5	-2.676e-03	11
47	N24	max	.013	3	.009	14	.009	14	2.323e-03	4	6.093e-04	3	9.262e-04	3
48		min	-.007	13	-.012	4	-.014	4	-1.738e-03	14	-5.694e-04	13	-5.657e-04	13

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

	Me...	Shape	Code C...	Loc...	LC	Shear C...	Loc[ft]	Dir	LC	Pnc/o...	Pnt/o...	Mnyy/...	Mnzz...	Cb	Eqn
1	M1	PIPE_2.0	.491	3.2...	4	.030	1.337		4	4.808	21.377	1.245	1.245	4.919	H1-1b
2	M2	PIPE_2.0	.270	4.75	3	.047	4.75		4	7.252	21.377	1.245	1.245	1.876	H1-1b
3	M3	PIPE_2.0	.221	5.5	5	.043	3.333		6	9.924	21.377	1.245	1.245	3.601	H1-1b
4	M4	PIPE_2.0	.156	5.5	3	.025	3.333		6	9.924	21.377	1.245	1.245	3.325	H1-1b
5	M5	PIPE_2.0	.266	4.75	5	.051	4.75		4	7.252	21.377	1.245	1.245	1.872	H1-1b
6	M6	PIPE_2.0	.041	4.4...	5	.004	8.998		5	8.084	21.377	1.245	1.245	1.136	H1-1b
7	M7	PIPE_2.0	.041	4.4...	3	.004	8.998		5	8.084	21.377	1.245	1.245	1.136	H1-1b
8	M8	PIPE_2.0	.253	6	14	.074	6		5	8.08	21.377	1.245	1.245	3.384	H1-1b



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
THC	CT11328F - Mount	June 19, 2019 at 9:25 AM
19027.41	Member Unity Check	CT11328F_AMA.r3d

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11328F

Marine Sys. Smoke Stack
50 Maple Street
Branford, Connecticut 06405

May 29, 2019

EBI Project Number: 6219001861

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**12.81%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

May 29, 2019

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11328F - Marine Sys. Smoke Stack

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **50 Maple Street** in **Branford, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 50 Maple Street in Branford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 GSM/UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the Ericsson AIR21 B2A_B4P for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR21 B2P_B4A for the 2100 MHz channel(s) in Sector A, the Ericsson AIR21 B2A_B4P for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR21 B2P_B4A for the 2100 MHz channel(s) in Sector B, the Ericsson AIR21 B2A_B4P for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR21 B2P_B4A for the 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is 96 feet above ground level (AGL).

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR21 B2A_B4P	Make / Model:	Ericsson AIR21 B2A_B4P	Make / Model:	Ericsson AIR21 B2A_B4P
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd
Height (AGL):	96 feet	Height (AGL):	96 feet	Height (AGL):	96 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,113.21	ERP (W):	4,113.21	ERP (W):	4,113.21
Antenna A1 MPE %:	**1.60%**	Antenna B1 MPE %:	**1.60%**	Antenna C1 MPE %:	**1.60%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz
Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd
Height (AGL):	96 feet	Height (AGL):	96 feet	Height (AGL):	96 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	2,481.08	ERP (W):	2,481.08	ERP (W):	2,481.08
Antenna A2 MPE %:	**2.24%**	Antenna B2 MPE %:	**2.24%**	Antenna C2 MPE %:	**2.24%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR21 B2P_B4A	Make / Model:	Ericsson AIR21 B2P_B4A	Make / Model:	Ericsson AIR21 B2P_B4A
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.35 dBd	Gain:	15.35 dBd	Gain:	15.35 dBd
Height (AGL):	96 feet	Height (AGL):	96 feet	Height (AGL):	96 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,113.21	ERP (W):	4,113.21	ERP (W):	4,113.21
Antenna A3 MPE %:	**1.60%**	Antenna B3 MPE %:	**1.60%**	Antenna C3 MPE %:	**1.60%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	5.45%
Sprint	7.36%
Site Total MPE % :	12.81%

T-Mobile Sector A Total:	5.45%
T-Mobile Sector B Total:	5.45%
T-Mobile Sector C Total:	5.45%
Site Total:	12.81%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM/UMTS	2	1028.30	96.0	8.02	1900 MHz GSM/UMTS	1000	0.80%
T-Mobile 2100 MHz UMTS	2	1028.30	96.0	8.02	2100 MHz UMTS	1000	0.80%
T-Mobile 600 MHz LTE	2	591.73	96.0	4.62	600 MHz LTE	400	1.15%
T-Mobile 700 MHz LTE	2	648.82	96.0	5.06	700 MHz LTE	467	1.08%
T-Mobile 2100 MHz LTE AWS	2	2056.61	96.0	16.05	2100 MHz LTE AWS	1000	1.60%
						Total:	**5.45%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	5.45%
Sector B:	5.45%
Sector C:	5.45%
T-Mobile Maximum MPE % (Sector A):	5.45%
Site Total:	12.81%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.81%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Exhibit G

Mailing Receipts/Proof of Notice

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

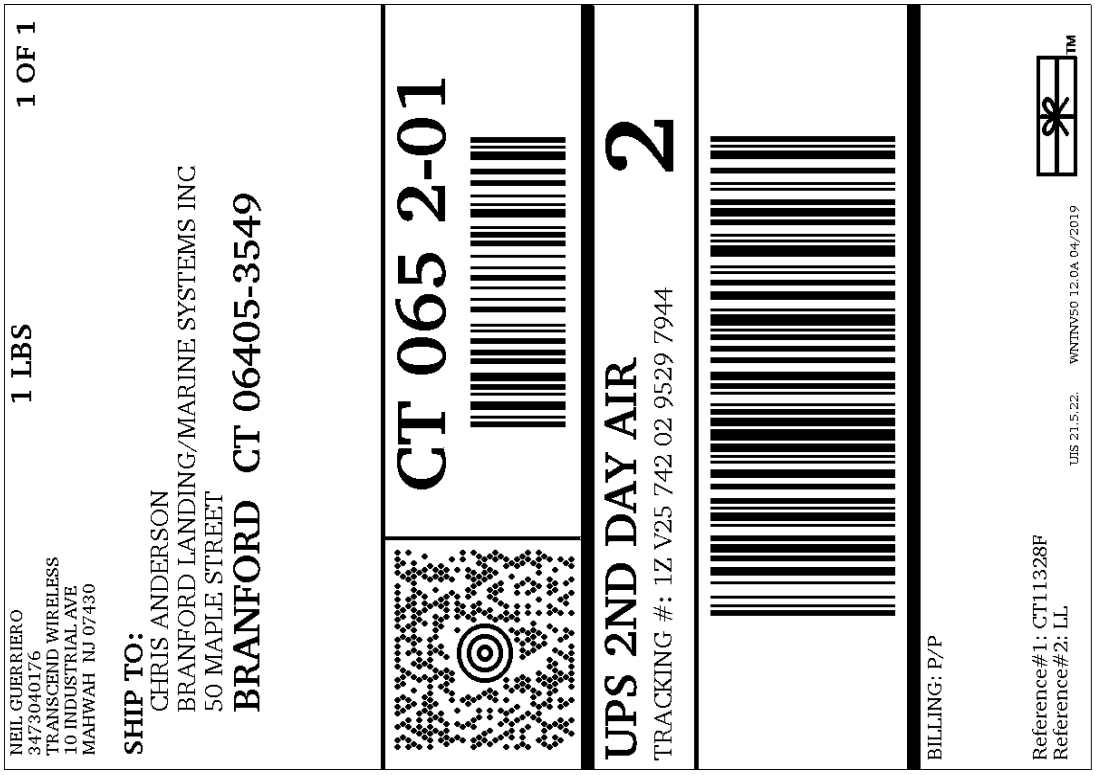
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

UPS Access Point™
POSTNET NY137
74 LAFAYETTE AVE
SUFFERN ,NY 10901

FOLD HERE



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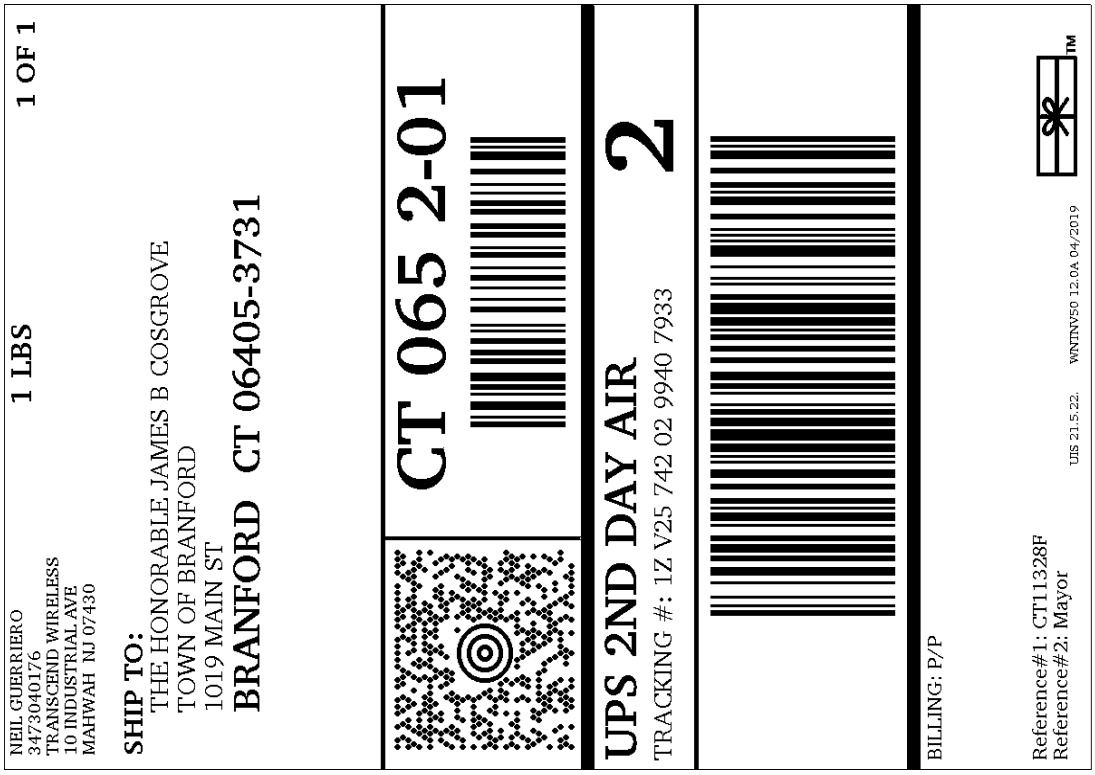
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

UPS Access Point™
POSTNET NY137
74 LAFAYETTE AVE
SUFFERN ,NY 10901

FOLD HERE



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   Customers without a Daily Pickup
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