Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

May 21, 2021

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

RE: **Notice of Exempt Modification for T-Mobile:**
842866 - T-Mobile Site ID: CTHA504A
575 Hillstown Road, Manchester, CT 06040
Latitude: 41° 44′ 49.00″ / Longitude: -72° 33′ 51.14″

Dear Attorney Bachman:

T-Mobile currently maintains three (3) antennas at the 60-foot mount on the existing 70-foot Wood Pole Tower, located at 575 Hillstown Road, Manchester, CT. The tower is owned by Crown Castle and the property is owned by the Residuary Trust FBO Richard Botticello. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700 MHz antennas which are capable of providing 5G services. The new antennas will be installed at the 60-ft level of the tower.

Planned Modifications:
Tower:

Remove:
(6) Diplexer
(6) 7/8" Coax

Remove and Replace:
(3) APXV18_206517S_C_A20 Antenna **(REMOVE)** - (3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz **(REPLACE)**

Install New:
(2) 1 1/4" Hybrid Fiber Line
(3) RADIO 4415 B66A
(3) RADIO 4449 B12/B71

Ground:

Remove and replace existing ground cabinet with new RBS 6160 MU AC.
Add (1) new B160 cabinet.

The facility was approved by the Connecticut Siting Council as a 70' telecommunications facility in Petition No. 633 on July 8, 2003. In Petition No. 776, the Council granted T-Mobile a ten-foot extension of the pole.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Scott Shanley, Town Manager for the Town of Manchester, Gary Anderson, Director of Planning, Crown Castle as the tower owner, and the property owner.

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

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

3. The proposed modification 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 Communication 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-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba
Project Manager - Site Acquisition
Agent for Applicant
(201) 236-9224
AnneMarie.Zsamba@crowncastle.com

Attachments

cc:

Scott Shanley, Town Manager (*via email only to sshanley@manchesterct.gov*)
Manchester Town Hall
41 Center Street
Manchester, CT 06040

Gary Anderson, Director of Planning (*via email only to ganderson@manchesterct.gov*)
Manchester Town Hall
41 Center Street
Manchester, CT 06040

Botticello Trust, Property Owner
234 Main Street, Suite 2
Manchester, CT 06042

Crown Castle, Tower Owner

ORIGIN ID:SCHA (201) 236-9224
ANNE MARIE ZSAMBA
CROWN CASTLE
21 HEATHER DRIVE
GANSEVOORT, NY 12831
UNITED STATES US

SHIP DATE: 21MAY21
ACTWGT: 0.50 LB
CAD: 104924194/INET4340

BILL SENDER

TO **BOTTICELLO TRUST**
234 MAIN STREET, SUITE 2
MANCHESTER CT 06042
(201) 236-9224 REF: 1734.7680
INV:
PO: DEPT:

FedEx Express

J211321033101uv

56DJ3/71DC/FE4A

TRK# 0201 **7737 8819 9916**

MON - 24 MAY 4:30P
STANDARD OVERNIGHT

SE QCWA

06042
CT-US **BDL**

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

From:	Zsamba, Anne Marie
To:	ganderson@manchesterct.gov
Subject:	T-Mobile - Exempt Modification - 575 Hillstown Road, Manchester - 842866
Date:	Friday, May 21, 2021 6:50:00 AM
Attachments:	EM-T-MOBILE-575 HILLSTOWN RD MANCHESTER-842866-CTHA504A-NOTICE.pdf

Dear Planning Director Anderson:

Attached please find T-Mobile's exempt modification application being submitted to the Connecticut Siting Council, today Friday, May 21, 2021. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie

ANNE MARIE ZSAMBA
Project Manager - Site Acquisition
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

From: Zsamba, Anne Marie
To: sshanley@manchesterct.gov
Subject: T-Mobile - Exempt Modification - 575 Hillstown Road, Manchester - 842866
Date: Friday, May 21, 2021 6:49:00 AM
Attachments: EM-T-MOBILE-575 HILLSTOWN RD MANCHESTER-842866-CTHA504A-NOTICE.pdf

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Dear Town Manager Shanley:

Attached please find T-Mobile's exempt modification application being submitted to the Connecticut Siting Council, today Friday, May 21, 2021. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie

ANNE MARIE ZSAMBA
Project Manager - Site Acquisition
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

Exhibit A

Original Facility Approval

Petition No. 633
AT&T Wireless PCS, LLC
Manchester, Connecticut
Staff Report
July 8, 2003

On June 12, 2003, Connecticut Siting Council (Council) member Colin Tait and Robert Mercier of Council staff met with AT&T Wireless PCS, Inc. (AT&T) representative Christopher Fisher at 575 Hillstown Road in Manchester to review this petition. AT&T proposes to replace an existing 22-foot private utility pole with a 70-foot wood laminate pole modified for telecommunications use. AT&T is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the utility pole replacement.

The utility pole is located in the center of a 23-acre parcel used for agricultural purposes. The pole is located along a road between two trees, one of which is 50 feet in height. AT&T intends to trim the trees to install the wood laminate pole. Two equipment cabinets would be placed on a concrete pad within a fenced compound at the base of the pole. The existing farm drive would provide access to the site. Underground utilities would be installed along the farm drive to the site.

AT&T would install three flush mounted antennas at a centerline height of 70 feet. The site would provide coverage to residential areas of southwest Manchester and Manchester Community College.

The 23-acre parcel is zoned residential and is surrounded by residential development. Existing bands of mature trees provide a visual screening of views from residential areas.

Petition No. 776
Omnipoint Communications, Inc.
Manchester, Connecticut
Staff Report
July 27, 2006

On July 19, 2006, Connecticut Siting Council (Council) member Daniel P. Lynch Jr. and Robert Mercier of Council staff met with Omnipoint Communications, Inc. (T-Mobile) representatives Erin Arcesi and Karina Fournier at 575 Hillstown Road in Manchester to review this petition. T-Mobile proposes to construct a ten-foot extension on an existing wood laminate pole telecommunications facility and install ground equipment at the site. T-Mobile is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications.

On July 8, 2003, the Council, in Petition No. 633, approved the construction of a 70-foot wood laminate pole facility at the site for use by AT&T Wireless PCS LLC (Cingular). The pole is located in a generally open area in the center of a 23-acre parcel used for agriculture. The pole supports three antennas mounted at a centerline height of 70 feet.

T-Mobile would place a 10-foot metal extension on the existing wood pole. T-Mobile would install three panels on metal brackets at a centerline height of 77 feet. The overall height of the facility would be 80 feet. No structural modifications of the pole would be necessary.

T-Mobile would install three equipment cabinets within a 15-foot by 15-foot fenced enclosure adjacent to the pole. The fenced enclosure would be separate from the existing Cingular fenced enclosure. The existing farm drive would provide access to the site.

The site would provide coverage to residential areas in southwest Manchester and Manchester Community College.

The 23-acre parcel is zoned residential and is surrounded by residential development. Existing bands of mature trees provide a visual screening of views from residential areas. A few trees, one fifty feet in height, are adjacent to the pole. The tower would be visible from a short section of Hillstown Road and an abutting residence; however, the visual background from these vantage points consists of woodland.

The City of Manchester and abutting property owners were notified by mail of the proposal. No comment was received.

Exhibit B

Property Card

575 HILLSTOWN ROAD

Location	575 HILLSTOWN ROAD	**Mblu**	23/ 2950/ 575/ /
Acct#	295000575	**Owner**	RESIDUARY TRUST FBO RICHARD BOTTICELLO
Assessment	$253,800	**Appraisal**	$362,500
PID	7773	**Building Count**	1
DISTRICT	T	**CONCRETE**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$299,500	$63,000	$362,500
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$209,700	$44,100	$253,800

Owner of Record

Owner RESIDUARY TRUST FBO RICHARD BOTTICELLO
ZUBROW DAVID P TR & BOTTICELLO DENIS TR

Address 243 MAIN ST SUITE 2
MANCHESTER, CT 06042

Sale Price $0
Certificate
Book & Page 4139/0319
Sale Date 01/07/2014
Instrument 31

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
RESIDUARY TRUST FBO RICHARD BOTTICELLO	$0		4139/0319	31	01/07/2014
BOTTICELLO ANTHONY MARITAL TRUST B	$0	C	2902/0236	25	07/02/2004
BOTTICELLO ANTHONY REV TRUST	$0		2902/0231	36	07/02/2004
BOTTICELLO ANTHONY EST	$0		2512/0004	35	10/29/2002
BOTTICELLO ANTHONY	$0		0263/0434		08/28/1953

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Whirlpool	
Fireplace	
Fin Basement	
Fin Bsmnt Qual	
Fin Bsmnt 2	
Fin Bsmnt2 Qual	
Bsmnt Garage	
Fndtn Level	
SFA Code	

Building Photo

(http://images.vgsi.com/photos2/ManchesterCTPhotos//\00\03\83/17.jpg)

Building Layout

Building Layout
(http://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/7773_77

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	100
Description	Vacant Land
Zone	RR
Neighborhood	50
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1
Frontage	0
Depth	0
Assessed Value	$44,100
Appraised Value	$63,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
BRN1	Barn 1ST			5560 S.F.	$58,400	1
BRN5	Barn 2 Story			6400 S.F.	$70,400	1
BRN1	Barn 1ST			6072 S.F.	$63,800	1
FGR5	Garage W Loft Gd			2400 S.F.	$50,400	1
SHD1	Shed			440 S.F.	$4,000	1
IMP	Implement Shed			1560 S.F.	$6,200	1
SHD3	Shed Metal			480 S.F.	$2,900	1
FN4	Fence 8' Chain			114 L.F.	$3,400	1
PAV2	Paving Concrete			208 S.F.	$900	1
PAV2	Paving Concrete			36 S.F.	$100	1
BRN1	Barn 1ST			3712 S.F.	$39,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
4000	$299,500	$63,000	$362,500
2015	$297,300	$78,000	$375,300
2010	$224,400	$92,600	$317,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
4000	$209,700	$44,100	$253,800
2015	$208,200	$54,600	$262,800
2010	$157,200	$64,800	$222,000

Exhibit C

Construction Drawings

T-MOBILE SITE NAME:

AT&T MANCHESTER ELAM

T-MOBILE SITE NUMBER:

CTHA504A

CROWN BU: 842866 / APP#: 494607

67D93D4 CONFIGURATION

575 HILLSTOWN ROAD
MANCHESTER, CT 06040

EXISTING 70'-0" WOODEN MONOPOLE

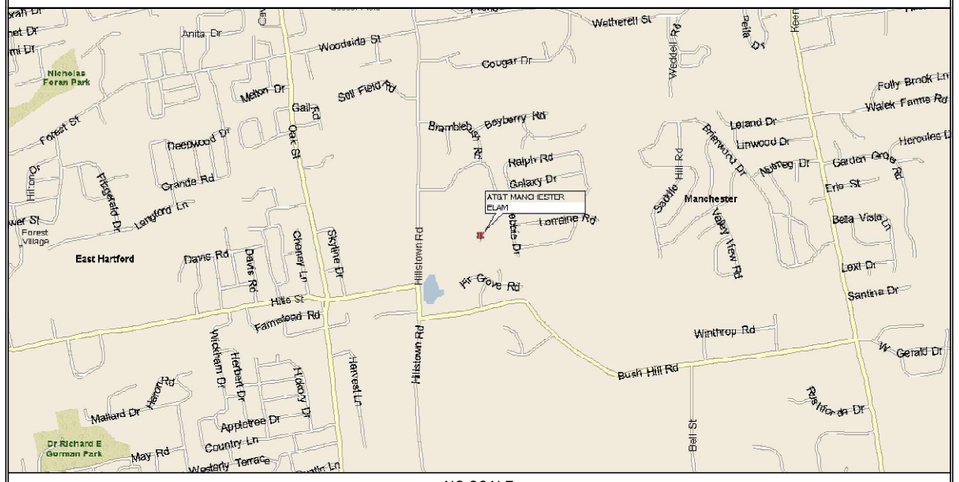
PROJECT SUMMARY

SITE TYPE:	EXISTING EQUIPMENT UPGRADE
SITE ADDRESS:	575 HILLSTOWN ROAD MANCHESTER, CT 06040
JURISDICTION:	HARTFORD COUNTY

NAD83

LATITUDE:	41.746900° N
LONGITUDE:	72.564200° W
TOWER OWNER:	CROWN CASTLE 3200 HORIZON DRIVE, SUITE 150 KING OF PRUSSIA, PA 19406 JASON SMITH (610) 635-3225
CUSTOMER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054 (973) 397-4800
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

LOCATION MAP



NO SCALE

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	1
A-1	OVERALL SITE PLAN	1
A-2	ANTENNA/CABLE SCHEDULE AND AZIMUTH PLANS	1
A-3	TOWER ELEVATION	1
A-4	ANTENNA AND RRU DETAILS	1
E-1	PANEL SCEHDULE AND ONE-LINE DIAGRAM	1

CONTACT INFORMATION

A&E FIRM:	B+T GROUP 1717 S. BOULDER, STE. 300 TULSA, OK 74119	ELECTRIC PROVIDER:	ATMOS ENERGY 866-322-8667
CONTACT:	MIKE OAKES	TELCO PROVIDER:	CLEARWIRE PHONE 888-253-2794
PHONE:	(918) 587-4630		

DRIVING DIRECTIONS

DEPART FROM BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20 [BRADLEY FIELD CONNECTOR]. TAKE RAMP (RIGHT) ONTO I-91 [RICHARD P HORAN MEMORIAL HWY]. AT EXIT 35A, TAKE RAMP (RIGHT) ONTO I-291. TURN OFF ONTO RAMP. KEEP STRAIGHT TO STAY ON RAMP. KEEP RIGHT TO STAY ON RAMP. BEAR LEFT ONTO SPENCER ST. TURN RIGHT ONTO HILLSTOWN RD. TURN LEFT ONTO BUSH HILL RD. TURN LEFT ONTO MILLER POND RD. TURN LEFT ONTO FIR GROVE RD. TURN RIGHT ONTO LOCAL ROAD(S) AND ARRIVE AT&T MANCHESTER ELAM.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
T-MOBILE PROP:		
T-MOBILE R.F. MGR.:		
T-MOBILE NetOps:		
T-MOBILE CONST. MGR.:		
INTERCONNECT:		
T-MOBILE SITE DEV. MGR.:		
PROPERTY OWNER:		
PLANNING:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING/DWELLING	2018 CONNECTICUT STATE BUILDING CODE
STRUCTURAL	2018 CONNECTICUT STATE BUILDING CODE
MECHANICAL	2018 CONNECTICUT STATE BUILDING CODE
ELECTRICAL	NEC 2017

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES:

- REMOVE (3) EXISTING ANTENNAS AT 60'-0".
- REMOVE (3) EXISTING DIPLEXERS AT 60'-0".
- REMOVE (1) RBS 6201 ENCLOSURE.
- REMOVE (1) DUS41
- REMOVE (9) RUS01 B4s.
- REMOVE (6) 7/8" COAX.
- INSTALL (3) NEW ANTENNAS AT 60'-0".
- INSTALL (6) NEW RRUS AT 60'-0".
- INSTALL (1) NEW RBS 6102 MU AC ENCLOSURE.
- INSTALL (2) NEW 6x12 HCS FIBER.
- INSTALL (2) BB 6630s.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!

811

B+T GRP

CROWN CASTLE

T-Mobile

CTHA504A
BU #: 842866
AT&T MANCHESTER ELAM
575 HILLSTOWN ROAD
MANCHESTER, CT 06040
EXISTING 70'-0" WOODEN MONOPOLE

PROJECT NO:	137228.001.01
CHECKED BY:	JTS

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	8/14/19	RFC	CONSTRUCTION
1	5/12/21	JJR	CONSTRUCTION

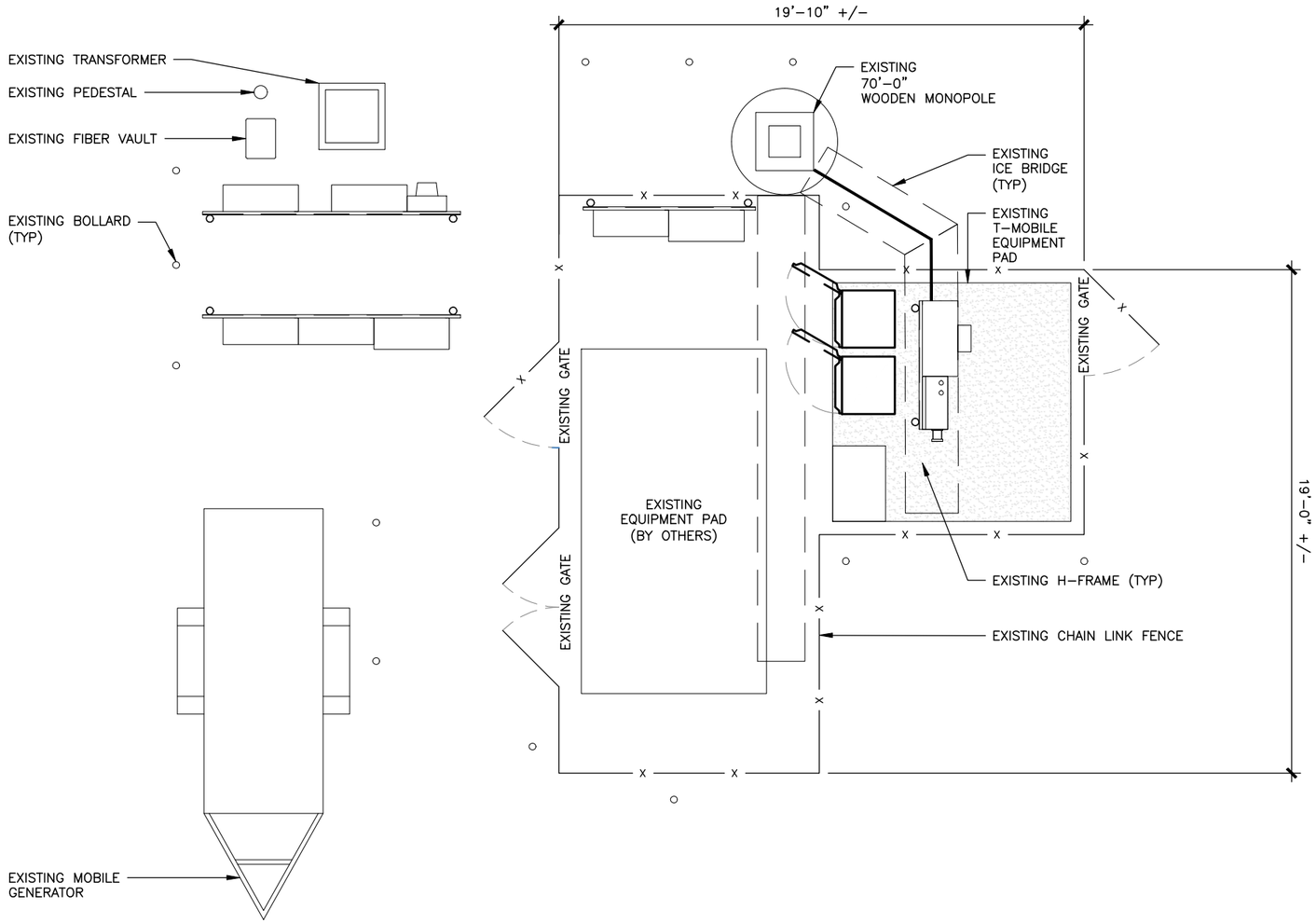
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

STATE OF CONNECTICUT
31627
LICENSED PROFESSIONAL ENGINEER

5/12/21

SHEET NUMBER: T-1

REVISION: 1



1 OVERALL SITE PLAN

SCALE: 0' 1' 4' 8' 16'

N

GENERAL NOTES:

1. SUBJECT PROPERTY IS SITUATED AT 575 HILLSTOWN ROAD, MANCHESTER, CT 06040.
2. APPLICANT: T-MOBILE
   A DELAWARE LIMITED LIABILITY COMPANY
   4 SYLVAN WAY
   PARSIPPANY, NEW JERSEY 07054
   (973) 397-4800

   TOWER OWNER: CROWN CASTLE INTERNATIONAL

- THE APPLICANT IS TO UPDATE THEIR NETWORK BY INSTALLING THREE (3) NEW PANEL ANTENNAS, SIX (6) RRUS, AND TWO (2) ADDITIONAL CABLES MOUNTED ON AN EXISTING WOODEN MONOPOLE.

3. THIS FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR MAINTENANCE AND SHALL BE MONITORED FROM A REMOTE FACILITY.
4. THE EXISTING SITE IS LOCATED AT LATITUDE OF 41.746900° N± AND LONGITUDE OF 72.564200° W±. THE HORIZONTAL DATUM ARE IN TERMS OF NORTH AMERICAN DATUM OF 1983 (NAD 83).
5. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATED "ISSUED FOR CONSTRUCTION"
6. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:

   6.A. CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
   6.B. CURRENT PREVAILING UTILITY COMPANY AUTHORITY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.

7. THE CONTRACTOR SHALL NOTIFY B+T GROUP, P.A. IMMEDIATELY IF ANY FIELD-CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON, AND/OR IF SUCH CONDITIONS WOULD OR COULD RENDER THE DESIGNS SHOWN HEREON INAPPROPRIATE AND/OR INEFFECTIVE.
8. THE CONTRACTOR IS RESPONSIBLE TO PROTECT, REPAIR AND/OR REPLACE ANY DAMAGED STRUCTURES, UTILITIES OR LANDSCAPED AREA WHICH MAY BE DISTURBED DURING THE CONSTRUCTION OF THIS FACILITY.
9. THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.
10. SITE INFORMATION SHOWN TAKEN FROM CROWN SITE PLANS AND FROM CROWN INSPECTION PHOTOS.
11. NO GUARANTEE IS MADE NOR SHOULD BE ASSUMED AS TO THE COMPLETENESS OR ACCURACY OF THE HORIZONTAL OR VERTICAL LOCATIONS. ALL PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN PRIOR TO CONSTRUCTION ACTIVITIES.
12. ALL IMPROVEMENTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE TOWNSHIP ENGINEER WHO WILL BE GIVEN PROPER NOTIFICATION PRIOR TO THE START OF ANY CONSTRUCTION.

B+T GRP

CROWN CASTLE

T···Mobile

CTHA504A
BU #: 842866
AT&T MANCHESTER
ELAM

575 HILLSTOWN ROAD
MANCHESTER, CT 06040

EXISTING 70'-0" WOODEN MONOPOLE

PROJECT NO:	137228.001.01
CHECKED BY:	JTS

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

STATE OF CONNECTICUT
31627
LICENSED PROFESSIONAL ENGINEER
5/12/21

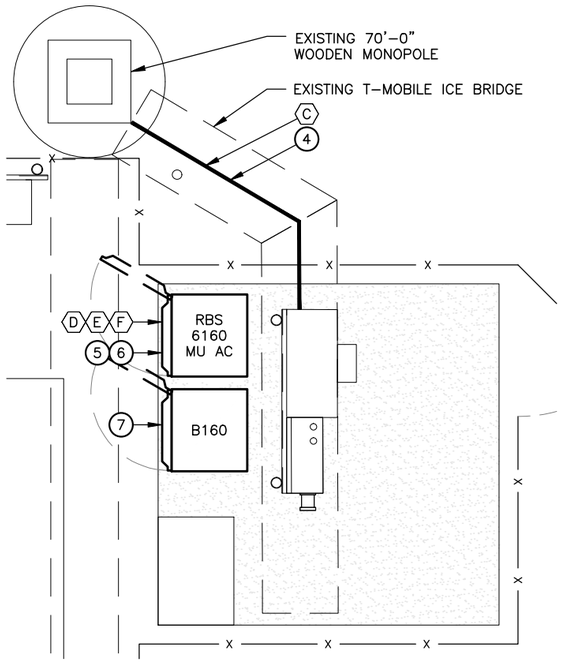
SHEET NUMBER:	REVISION:
A-1	1

LEGEND

EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING RFS APXV18_206517S-C-A20 ANTENNA TO BE REMOVED (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING DIPLEXER TO BE REMOVED (TOTAL OF 6)	2	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	REMOVE (6) 7/8" COAX	3	INSTALL RADIO 4415 B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3)
D	REMOVE (1) RBS 6102	4	INSTALL (2) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
E	REMOVE (1) DUS41	5	INSTALL NEW RBS 6160 MU AC
F	REMOVE (9) RUS01 B4 RADIOS	6	INSTALL (2) BB 6648
		7	INSTALL (1) B160 CABINET

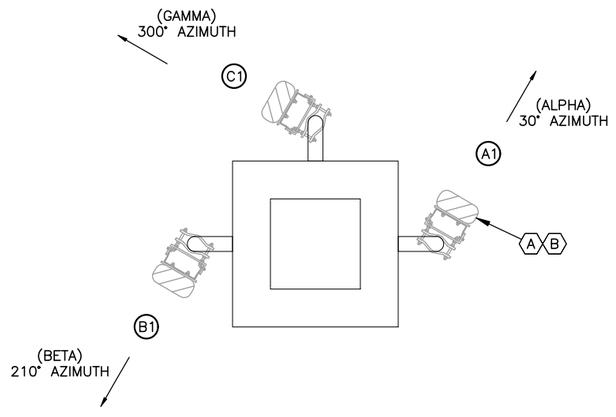
ANTENNA AND CABLE SCHEDULE

SECTOR	POSITION	EXISTING ANTENNAS	PROPOSED ANTENNA CONFIGURATION		E-TILT	M-TILT	ANTENNA CENTERLINE	TMA/RRU	CABLES	JUMPER TYPE	CABLE LENGTH
30° – ALPHA	A1	RFS APXVAARR24_43-U-NA20	LTE UMTS	B71+B12 B66A	2°/2°/2°/2°	0°	60'-0"	0/2	(1) 6x12 HCS FIBER	DC/FIBER & 1/2" COAX	110'-0"
210° – BETA	B1	RFS APXVAARR24_43-U-NA20	LTE UMTS	B71+B12 B66A	2°/2°/2°/2°	0°	60'-0"	0/2	(1) 6x12 HCS FIBER (SHARED)	DC/FIBER & 1/2" COAX	110'-0"
300° – GAMMA	C1	RFS APXVAARR24_43-U-NA20	LTE UMTS	B71+B12 B66A	2°/2°/2°/2°	0°	60'-0"	0/2	(1) 6x12 HCS FIBER	DC/FIBER & 1/2" COAX	110'-0"



1 ENLARGED AREA PLAN

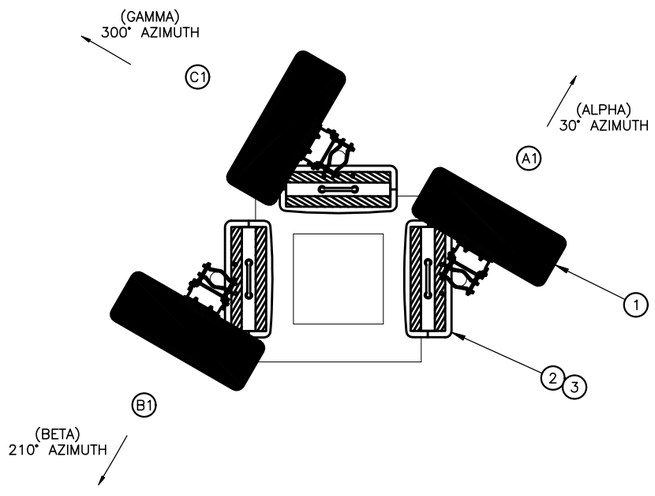
SCALE: 0' 1' 2' 4' 10'



2 EXISTING ANTENNA ORIENTATION

SCALE: 0' 1' 2' 3' 4' 5'

N



3 PROPOSED ANTENNA ORIENTATION

SCALE: 0' 1' 2' 3' 4' 5'

N

B+T GRP

CROWN CASTLE

T-Mobile

CTHA504A
BU #: 842866
AT&T MANCHESTER
ELAM

575 HILLSTOWN ROAD
MANCHESTER, CT 06040

EXISTING 70'-0" WOODEN MONOPOLE

PROJECT NO:	137228.001.01
CHECKED BY:	JTS

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	8/14/19	RFC	CONSTRUCTION
1	5/12/21	JJR	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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5/12/21

SHEET NUMBER:	REVISION:
A-2	1

LEGEND

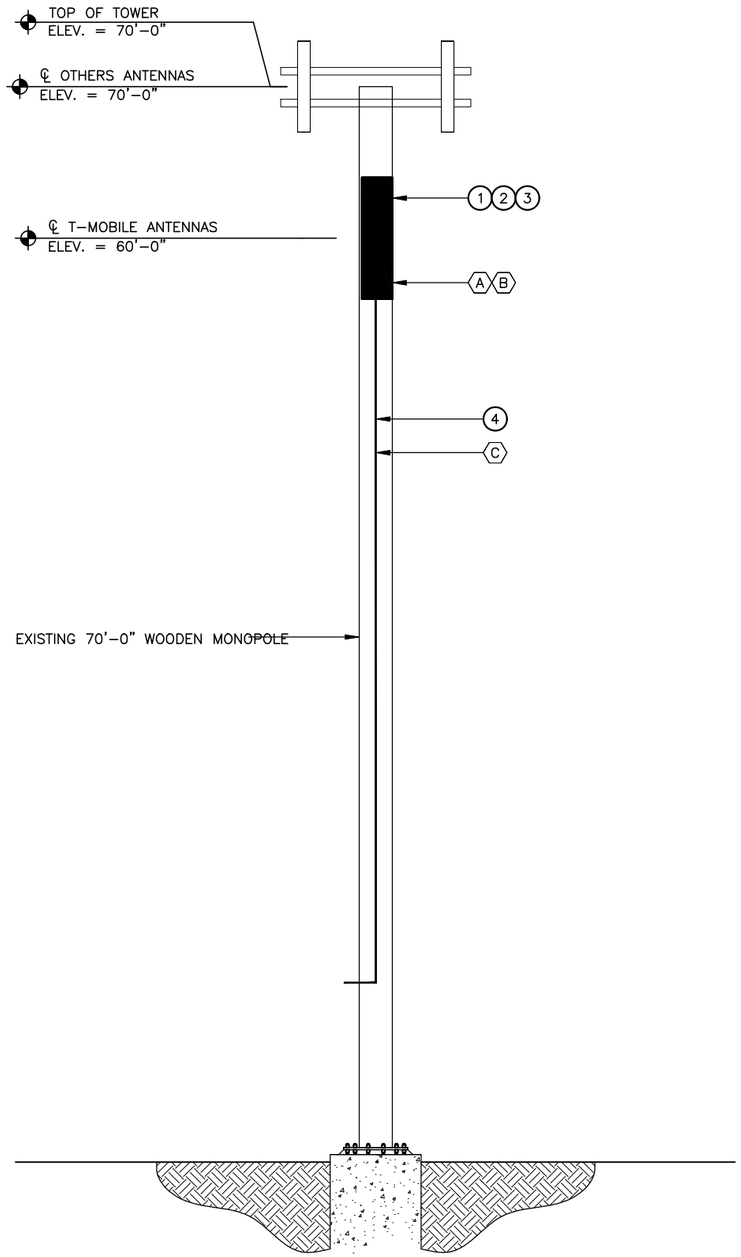
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING RFS APXV18_206517S-C-A20 ANTENNA TO BE REMOVED (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING DIPLEXER TO BE REMOVED (TOTAL OF 6)	2	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	REMOVE (6) 7/8" COAX	3	INSTALL RADIO 4415 B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3)
		4	INSTALL (2) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING

EXISTING TOWER IS SUFFICIENT PER STRUCTURAL ANALYSIS BY GPD ENGINEERNG & ARCHITECTURE PROFESSIONAL CORPORATION DATED 7/30/19.

EXISTING MOUNT IS SUFFICIENT PER MOUNT ANALYSIS BY TOWER ENGINEERNG PROFESSIONALS DATED 3/21/21.

LEGEND:

- **NEW**
- EXISTING
- FUTURE



1 TOWER ELEVATION

SCALE: 0' 5' 10' 15' 20' 1"=10'

B+T GRP

CROWN CASTLE

T···Mobile

CTHA504A
BU #: 842866
AT&T MANCHESTER
ELAM

575 HILLSTOWN ROAD
MANCHESTER, CT 06040

EXISTING 70'-0" WOODEN MONOPOLE

PROJECT NO:	137228.001.01
CHECKED BY:	JTS

ISSUED FOR:

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1	5/12/21	JJR	CONSTRUCTION

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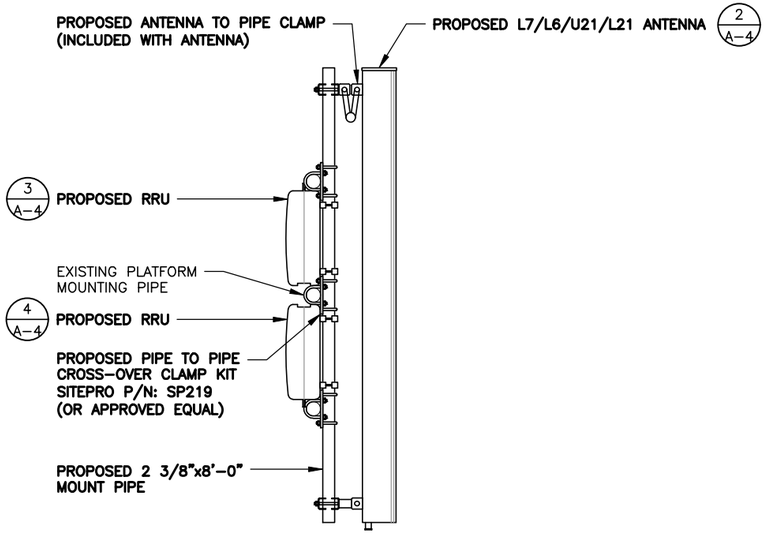
5/12/21

SHEET NUMBER: A-3

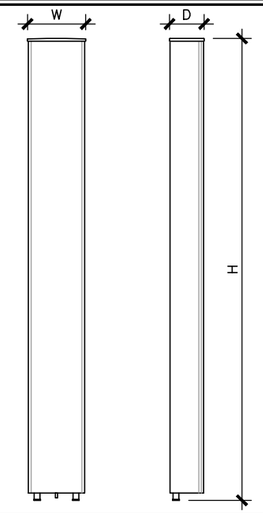
REVISION: 1



1 PROPOSED L7/L6/U21/L21 ANTENNA & RRU MOUNTING DETAIL

SCALE: 3/8" = 1'-0"

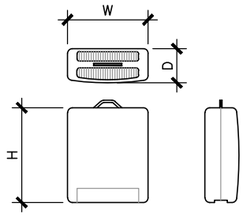
NOTES:
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS.
2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTHS.
3. REFER TO ANTENNA ORIENTATION ON SHEET A-2 FOR EXACT ANTENNA POSITIONING.



ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24.0"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128.0 LBS

2 L7/L6/U21/L21 ANTENNA DETAIL

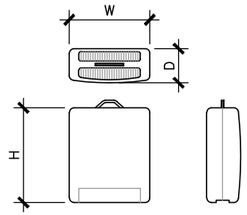
SCALE: 3/8" = 1'-0"



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449 B12/B71
WIDTH	13.2"
DEPTH	9.3"
HEIGHT	14.9"
WEIGHT	75 LBS

3 REMOTE RADIO UNIT (RRU)

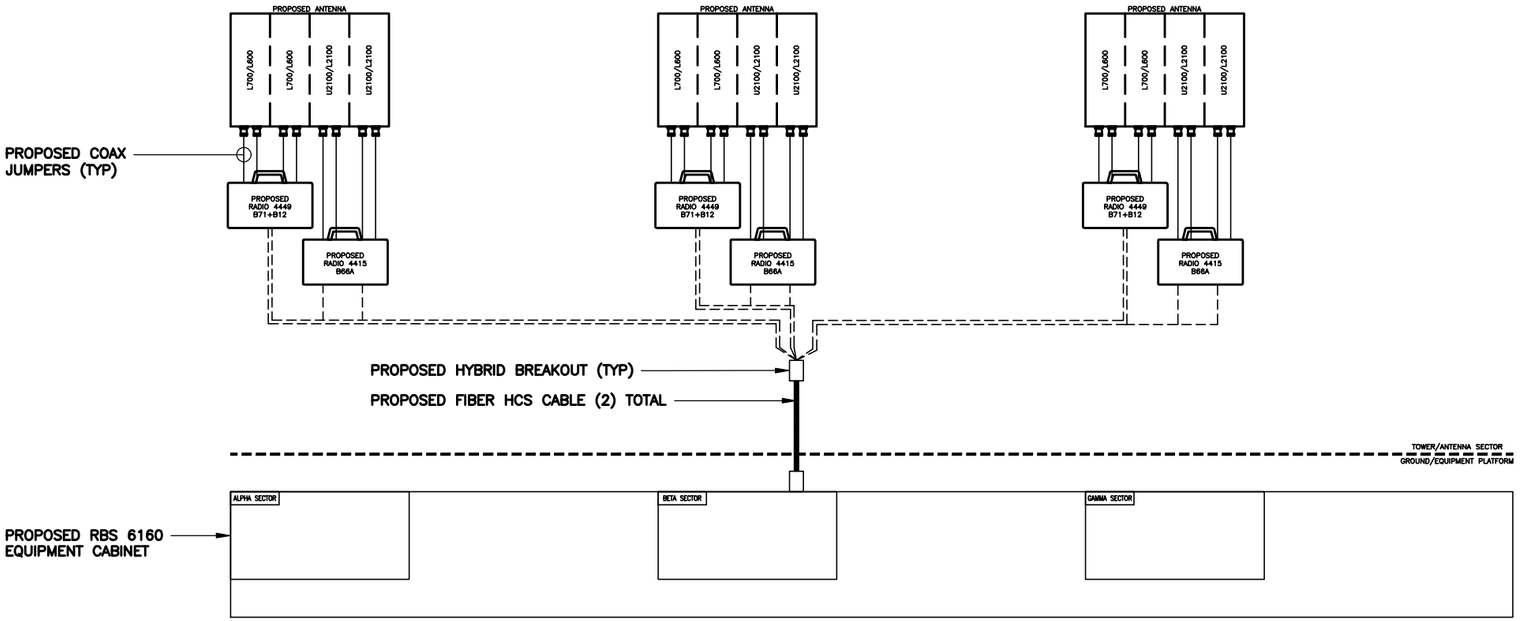
SCALE: 3/8" = 1'-0"



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4415 B66A
WIDTH	13.2"
DEPTH	5.4"
HEIGHT	14.9"
WEIGHT	46.3 LBS

4 REMOTE RADIO UNIT (RRU)

SCALE: 3/8" = 1'-0"



5 ANTENNA & CABLING SCHEMATIC

SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T-Mobile

CTHA504A
BU #: 842866
AT&T MANCHESTER
ELAM

575 HILLSTOWN ROAD
MANCHESTER, CT 06040

EXISTING 70'-0" WOODEN
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PROJECT NO:	137228.001.01
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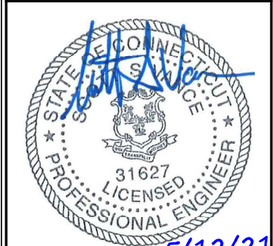


SHEET NUMBER: A-4

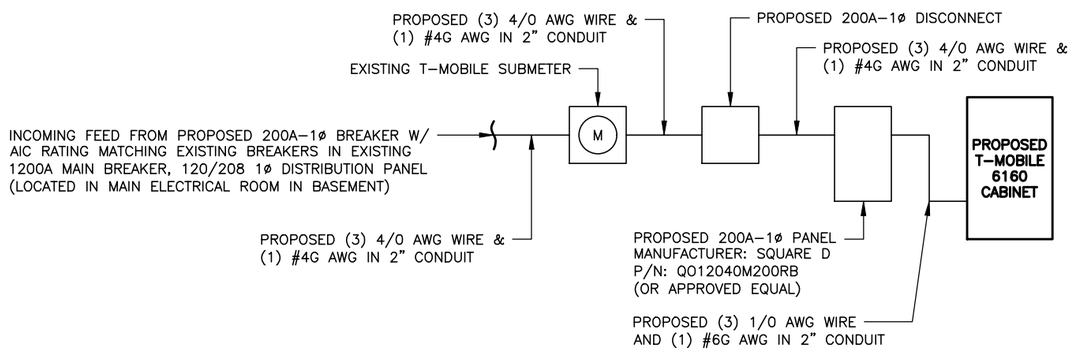
REVISION: 1

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
TVSS	2	30A	1	2	**125A**	**2**	**RBS 6102 MU AC**
			3	4			
			5	6	20A	1	FIBER
RATED VOLTAGE: ■120/240 ☐_____. 1 PHASE, 3 WIRE			BRANCH POLES: ☐12 ■24 ☐30 ☐42				APPROVED MF'RS
RATED AMPS: ☐100 ■200 ☐400 ☐_____.			CABINET: ■SURFACE ☐FLUSH				NEMA ☐1 ■3R ☐4X
☐MAIN LUGS ONLY	MAIN 200 AMPS ■BREAKER ☐FUSED SWITCH		■HINGED DOOR				■KEYED DOOR LATCH
☐FUSED ■CIRCUIT BREAKER BRANCH DEVICES			☐_____ TO BE GFCI BREAKERS				FULL NEUTRAL BUS / GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL							

EXISTING 100A BREAKER PANEL TO BE REPLACED W/ NEW 200A BREAKER PANEL. SQUARE D P/N: QO12040M200RB (OR APPROVED EQUAL)
REPLACE EXISTING BREAKERS W/ NEW BREAKERS OF SAME AMPERAGE INSIDE NEW PANEL
REPLACE EXISTING WIRES FOR PROPOSED 6160 CABINET WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG. MINIMUM CONDUIT SIZE TO BE 2"
UPGRADE FEEDER WIRES TO MEET AMPACITY.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

1 FINAL T-MOBILE PANEL DETAIL

SCALE: N.T.S.



2 ONE-LINE DIAGRAM

SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T···Mobile

CTHA504A
BU #: 842866
AT&T MANCHESTER
ELAM

575 HILLSTOWN ROAD
MANCHESTER, CT 06040

EXISTING 70'-0" WOODEN MONOPOLE

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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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5/12/21

SHEET NUMBER:	REVISION:
E-1	1

Exhibit D

Structural Analysis Report

Date: **April 28, 2021**

GPD Engineering and Architecture
Professional Corporation
520 South Main Street Suite 2531
Akron, Ohio 44311
(216) 927-8663

Subject:	**Structural Analysis Report**	
Carrier Designation:	***MetroPCS* Co-Locate**	
	Carrier Site Number:	CTHA504A
	Carrier Site Number:	ATT Manchester ELAM
Crown Castle Designation:	**BU Number:**	842866
	Site Name:	MANCHESTER SW
	JDE Job Number:	1948208
	Work Order Number:	576590
	Order Number:	494607 Rev. 0
Engineering Firm Designation:	**GPD Project Number:**	2021777.842866.03
Site Data:	**575 Hillstown Road, Manchester, Hartford County, CT 06040** **Latitude *41° 44' 49.00"*, Longitude *-72° 33' 51.10"*** **70 Foot – Wood Monopole Tower**	

We are pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration **Sufficient Capacity – 90.9%**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Krisli Mocka

Respectfully submitted by:

Christopher J. Scheks, P.E.
Connecticut #: 0030026

4/28/2021

TABLE OF CONTENTS

1) INTRODUCTION

The existing 70’ monopole is a laminated wood pole designed by LWS in August of 2003.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-H
Risk Category: II
Wind Speed: 125 mph
Exposure Category: C
Topographic Factor: 1
Ice Thickness: 2 in
Wind Speed with Ice: 50 mph
Service Wind Speed: 60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
60.0	60.0	3	RFS/Celwave	APXVAARR24_43-U-NA20	2	1-1/4
		3	Ericsson	RADIO 4415 B66A_CCIV3		
		3	Ericsson	RADIO 4449 B12/B71		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
70.0	70.0	3	Kathrein	800 10121	6 1 1	7/8 3/8 1/4
		6	Powerwave Technologies	LGP21401		
		1	-	T-Arm Mount [TA 702-3]		
		1	-	Pipe Mount [PM 601-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	4291665	CCISITES
Tower Manufacture Drawings	5168072	CCISITES

3.1) Analysis Method

CCIWoodPole Tool 3.3.2 a tool internally developed by Crown Castle, was used to calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following intent of the TIA-222 standard.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions or items in Table 3 are not valid or have been made in error. GPD should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Controlling Summary)

Section No.	Elevation (ft)	Breadth (in)	Depth (in)	P (k)	V (k)	M (k-ft)	f_b (psi)	f_c (psi)	F'_b (psi)	F'_c (psi)	% Capacity	Pass / Fail
1	70 - 65	26.25	12.00	0.988	1.552	0.000	581.62	9.34	3533.77	189.61	0.1%	Pass
2	65 - 60	26.25	12.91	1.528	2.596	7.762	855.70	10.38	3523.19	228.95	4.0%	Pass
3	60 - 55	26.25	13.82	3.002	5.056	20.740	1117.01	11.38	3513.23	281.84	9.7%	Pass
4	55 - 50	26.25	14.73	3.614	6.064	46.022	1363.99	12.36	3503.84	355.19	18.3%	Pass
5	50 - 45	26.25	15.64	4.261	7.051	76.340	1595.99	13.31	3494.94	460.82	26.4%	Pass
6	45 - 40	26.25	16.55	4.945	8.016	111.593	1812.88	14.24	3486.50	619.99	33.9%	Pass
7	40 - 35	26.25	17.46	5.664	8.958	151.674	2014.84	15.16	3478.47	872.20	40.9%	Pass
8	35 - 30	26.25	18.38	6.420	9.874	196.463	2202.21	16.07	3470.80	1282.87	47.3%	Pass
9	30 - 25	26.25	19.29	7.211	10.760	245.831	2375.35	16.96	3463.48	1832.45	53.3%	Pass
10	25 - 20	26.25	20.20	8.038	11.613	299.631	2534.60	17.81	3456.47	2158.04	58.9%	Pass
11	20 - 15	26.25	21.11	8.901	12.427	357.696	2594.77	18.18	3453.75	2214.54	64.1%	Pass
12	15 - 10	26.25	22.02	9.800	13.194	419.832	2737.20	18.97	3447.13	2277.99	69.0%	Pass
13	10 - 8	26.25	22.93	10.720	13.731	485.802	2817.22	19.44	3443.28	2286.16	73.5%	Pass
14	8 - 3	26.25	23.29	11.118	14.268	513.264	581.62	9.34	3533.77	189.61	75.2%	Pass
15	3 - 0	26.25	24.20	12.053	14.855	584.604	855.70	10.38	3523.19	228.95	79.4%	Pass
											Summary	
										Pole (15)	79.4%	Pass
										Rating	79.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Base Foundation Structural	0	90.9	Pass
1,2	Base Foundation Soil Interaction	0	53.1	Pass
Structure Rating (max from all components) =				**90.9%**

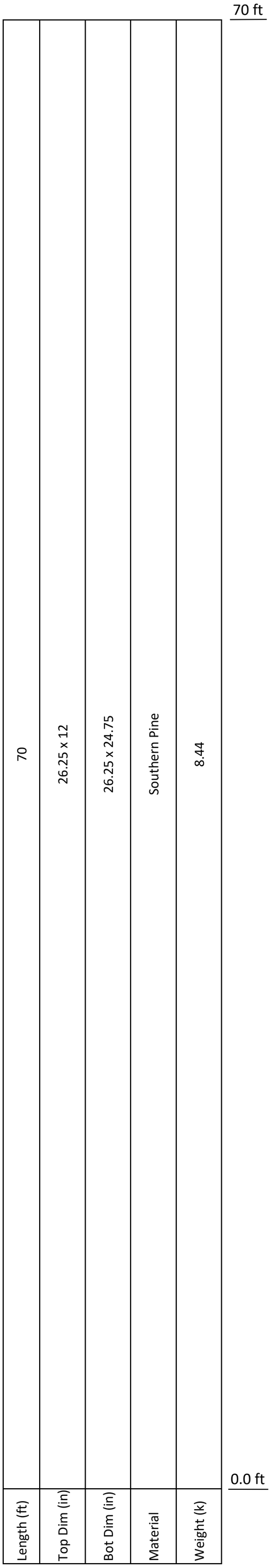
Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H, section 15.5

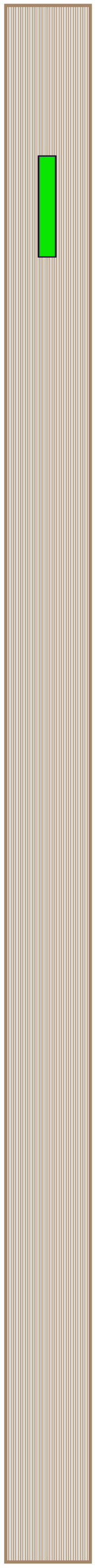
4.1) Recommendations

The tower has sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

CCI WOOD POLE TOOL OUTPUT





TOWER ANALYSIS NOTES

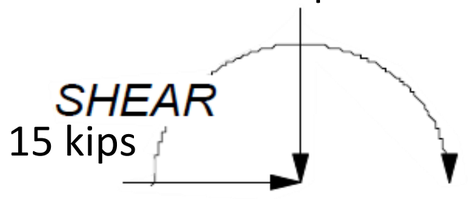
1. Tower is located in Hartford County, CT
2. Tower was analyzed for a 125 mph 3-second gust wind in accordance with ASCE 7-10
3. Exposure category C used in analysis
4. Topographic Kzt factor of 1 used in analaysis.

TOWER RATING: 81.8%

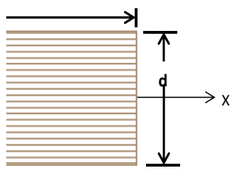
FACTORED REACTIONS

AXIAL

13 kips



125 mph Ultimate 3-sec Gust Wind Speed



CROWN CASTLE

The Pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000

Job:	***BU# 842866***				
Project:	2021777.842866.03				
Client:	CROWN CASTLE	Drawn by:	KM	App'd:	BK
Code:	2015 IBC	Date:	4/27/2021	Scale:	NTS
Path:	T:\Crown\842866\03\5_Structural\00_Structure\00_Rev 0\01_Calcs\[CCIwood			Dwg No.	E-1

Geometry

Pole Data:

Lumber Type:	Glulam	
Pole Length:	70	ft
Wood Species:	Southern Pine	
Wood Database:	24F-V5	
Design Interval:	5	ft

Pole Properties:

Eminy =	790000	psi
Fby =	1350	psi
Eminx =	900000	psi
Fbx =	2400	psi
Fc =	1450	psi

Wood Density:	0.036	kcf
Cond. Treatment:	Air Dried	
Temperature:	90	°F

Pole Geometry:

Diameter Top (in)	Diameter Bottom (in)	X-Axis Top Width "b" (in)	X-Axis Bottom Width "b" (in)	Raceway X-Axis Width (in)	Y-Axis Top Width "d" (in)	Y-Axis Bottom Width "d" (in)	Raceway Y-Axis Width (in)
		26.25	26.25	0	12	24.75	0

Discrete Loading

Mount CL Elev (ft)	Vertical Offset (ft)	Database	Model	Qty	Offset Type	Face	Azimuth	C_aA_a Front (ft^2)	C_aA_a Side (ft^2)	Weight (lb)
70	0	KATHREIN	800 10121	1	From Leg	A	0	3.60	2.95	54.50
70	0	KATHREIN	800 10121	1	From Leg	B	0	3.60	2.95	54.50
70	0	KATHREIN	800 10121	1	From Leg	C	0	3.60	2.95	54.50
70	0	POWERWAVE TECHNOLC	LGP21401	2	From Leg	A	0	0.82	0.35	17.50
70	0	POWERWAVE TECHNOLC	LGP21401	2	From Leg	B	0	0.82	0.35	17.50
70	0	POWERWAVE TECHNOLC	LGP21401	2	From Leg	C	0	0.82	0.35	17.50
60	0	RFS/CELWAVE	APXVAARR24_43-U-NA2(	1	From Leg	A	0	14.69	6.87	128.00
60	0	RFS/CELWAVE	APXVAARR24_43-U-NA2(	1	From Leg	B	0	14.69	6.87	128.00
60	0	RFS/CELWAVE	APXVAARR24_43-U-NA2(	1	From Leg	C	0	14.69	6.87	128.00
60	0	ERICSSON	RADIO 4415 B66A_CCIV3	1	From Leg	A	0	1.64	0.68	46.30
60	0	ERICSSON	RADIO 4415 B66A_CCIV3	1	From Leg	B	0	1.64	0.68	46.30
60	0	ERICSSON	RADIO 4415 B66A_CCIV3	1	From Leg	C	0	1.64	0.68	46.30
60	0	ERICSSON	RADIO 4449 B12/B71	1	From Leg	A	0	1.64	1.15	75.00
60	0	ERICSSON	RADIO 4449 B12/B71	1	From Leg	B	0	1.64	1.15	75.00
60	0	ERICSSON	RADIO 4449 B12/B71	1	From Leg	C	0	1.64	1.15	75.00
70		Tower Mounts	T-Arm Mount [TA 702-3]	1	None			5.64	5.64	339.00
70		Tower Mounts	Pipe Mount [PM 601-3]	1	None			4.39	4.39	195.00

Linear Loading

Start Height (ft)	End Height (ft)	Nominal Width (in)	Face	Total #	# Exposed	Diameter (in)	Weight (plf)
8	70	7/8	D	6	0	1.03	0.33
8	70	3/8	D	1	0	0.44	0.08
8	70	1/4	D	1	0	0.285	0.035
8	70	2	D	1	1	2	2.8
8	60	1-1/4	A	2	1	1.54	1.7

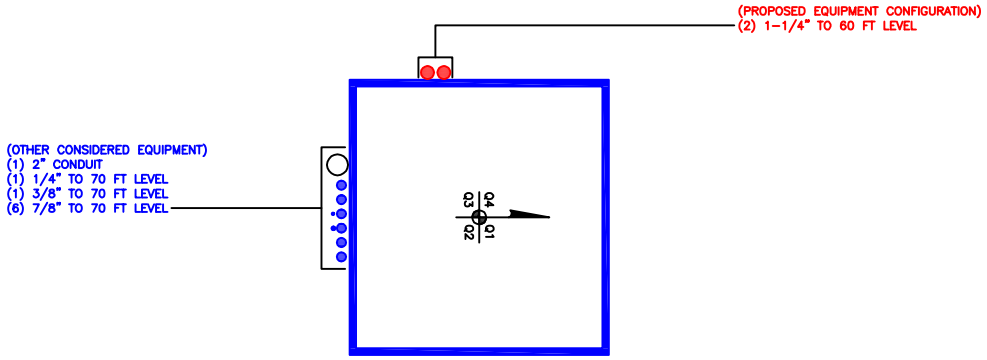
Results

Elevation (ft)	Breadth (in)	Depth (in)	Axial (k)	Shear (k)	Moment (k-ft)	f_b (psi)	f_c (psi)	F'_b (psi)	F'_c (psi)	% Capacity
70	26.25	12.00	0.988	1.552	0.000	0.00	3.14	3570.20	117.48	0.1%
65	26.25	12.91	1.528	2.596	7.762	127.73	4.51	3557.17	136.12	4.0%
60	26.25	13.82	3.002	5.056	20.740	297.79	8.27	3545.06	159.57	9.7%
55	26.25	14.73	3.614	6.064	46.022	581.62	9.34	3533.77	189.61	18.3%
50	26.25	15.64	4.261	7.051	76.340	855.70	10.38	3523.19	228.95	26.4%
45	26.25	16.55	4.945	8.016	111.593	1117.01	11.38	3513.23	281.84	33.9%
40	26.25	17.46	5.664	8.958	151.674	1363.99	12.36	3503.84	355.19	40.9%
35	26.25	18.38	6.420	9.874	196.463	1595.99	13.31	3494.94	460.82	47.3%
30	26.25	19.29	7.211	10.760	245.831	1812.88	14.24	3486.50	619.99	53.3%
25	26.25	20.20	8.038	11.613	299.631	2014.84	15.16	3478.47	872.20	58.9%
20	26.25	21.11	8.901	12.427	357.696	2202.21	16.07	3470.80	1282.87	64.1%
15	26.25	22.02	9.800	13.194	419.832	2375.35	16.96	3463.48	1832.45	69.0%
10	26.25	22.93	10.720	13.731	485.802	2534.60	17.81	3456.47	2158.04	73.5%
8	26.25	23.29	11.118	14.268	513.264	2594.77	18.18	3453.75	2214.54	75.2%
3	26.25	24.20	12.053	14.855	584.604	2737.20	18.97	3447.13	2277.99	79.4%
0	26.25	24.75	12.632	15.075	629.169	2817.22	19.44	3443.28	2286.16	81.8%

Elevation (ft)	Breadth (in)	Depth (in)	Axial (k)	Shear (k)	Moment (k-ft)	f_b (psi)	f_c (psi)	F'_b (psi)	F'_c (psi)	% Capacity
70	12.00	26.25	0.988	1.259	0.000	0.00	3.14	2182.31	103.19	0.1%
65	12.91	26.25	1.528	1.749	6.293	50.93	4.51	2217.87	119.58	2.5%
60	13.82	26.25	3.002	3.701	15.040	113.70	8.27	2241.54	140.20	5.6%
55	14.73	26.25	3.614	4.241	33.544	237.92	9.34	2258.16	166.63	11.2%
50	15.64	26.25	4.261	4.804	54.751	365.72	10.38	2270.35	201.26	16.9%
45	16.55	26.25	4.945	5.386	78.770	497.22	11.38	2279.60	247.86	22.6%
40	17.46	26.25	5.664	5.985	105.701	632.41	12.36	2286.82	312.56	28.4%
35	18.38	26.25	6.420	6.598	135.627	771.25	13.31	2292.58	405.94	34.4%
30	19.29	26.25	7.211	7.221	168.619	913.57	14.24	2297.27	547.24	40.4%
25	20.20	26.25	8.038	7.849	204.724	1059.18	15.16	2301.14	773.30	46.6%
20	21.11	26.25	8.901	8.475	243.967	1207.75	16.07	2304.38	1152.80	52.8%
15	22.02	26.25	9.800	9.090	286.340	1358.88	16.96	2307.13	1726.08	59.2%
10	22.93	26.25	10.720	9.536	331.789	1512.03	17.81	2309.48	2132.15	65.6%
8	23.29	26.25	11.118	9.994	350.861	1573.93	18.18	2310.32	2201.84	68.2%
3	24.20	26.25	12.053	10.533	400.831	1730.44	18.97	2312.24	2276.79	74.9%
0	24.75	26.25	12.632	10.739	432.430	1825.64	19.44	2313.27	2286.13	78.9%

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842866 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

A	01/07/14	UPDATED PER WORK ORDER # 708286	TDG
B	01/07/14	UPDATED PER WORK ORDER # 783315	TDG
C	15/09/14	UPDATED PER WORK ORDER #828767	SF
D	28/01/15	UPDATED PER WORK ORDER 1500868	GM
E	30/05/19	UPDATED PER WORK ORDER 1744483	LR

DRAWN BY: MSH
CHECKED BY: DSD
DRAWING DATE: 12/05/14

SITE NUMBER:
SITE NAME:

SITE NAME

MANCHESTER SW

BUSINESS UNIT NUMBER

842866

SITE ADDRESS

575 HILLSTOWN ROAD
MANCHESTER, CT 06040
HARTFORD COUNTY
USA

SHEET TITLE

BASE LEVEL DRAWING

SHEET NUMBER

N.T.S.

A1-0

PLOT DATE: 5/13/2015 FILE NAME: 842866_BASELEVEL.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

NDS Version	2015-LRFD

X-X Base Reactions

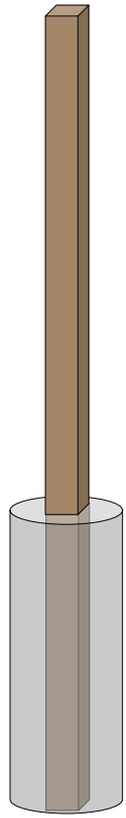
Moment (k-ft):	629.17
Axial (k):	12.63
Shear (k):	15.07

Y-Y Base Reactions

Moment (k-ft):	432.43
Axial (k):	12.63
Shear (k):	10.74

Pole Properties

Encased:	Yes	*Select*
Depth to check pole (ft):	5.01	



Foundation Dimensions

Caisson Diameter (ft):	4
Depth Below Existing Grade (ft):	16.5
Extension Above Grade (ft):	0

Soil Properties

Ultimate Gross Bearing (ksf):	9.94	
Neglect Top Layer:	Yes	*Select*
Groundwater:	No	*Select*

Layer Top Depth (ft)	Layer Bottom Depth (ft)	Layer Thickness (ft)	Effective Unit Weight of Soil (pcf)	Cohesion (ksf)	Internal Friction Angle (deg)	SPT Blow Count	Ultimate Skin Friction (ksf)
0	3.33	3.33	125	0			0.000
3.33	16.5	13.17	125	0	34	31	1.332

Soil Checks

	Available Capacity	Demand	Check	% Capacity
Pier-Soil Interaction (FOS):	2.50	1.33	Pass	53.1%
Bearing (kips):	259.04	49.95	Pass	19.3%

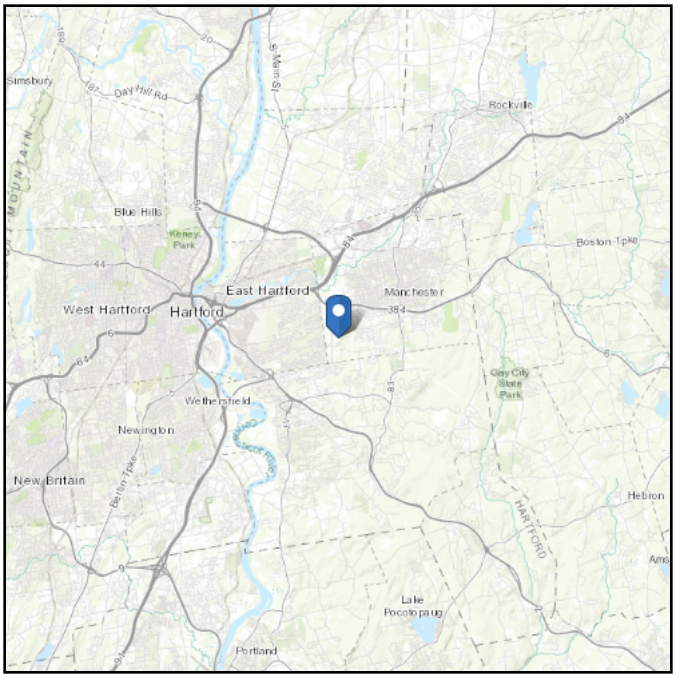
Structural Checks

	F'_b (psi)	F'_c (psi)	Bending (psi	Axial (psi)	Check	% Capacity
X-X Embedded Wood Capacity:	3443.28	2286.16	3129.32	20.69	Pass	90.9%
Y-Y Embedded Wood Capacity:	2313.27	2286.13	2035.14	20.69	Pass	88.0%

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	179.89 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.746944
Soil Class:	D - Stiff Soil	**Longitude:**	-72.564206



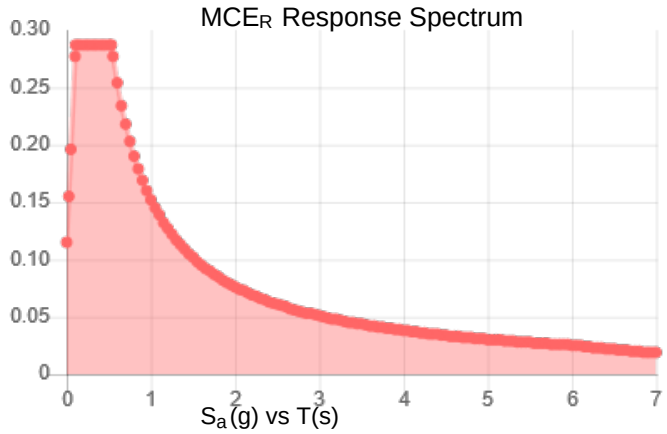
Seismic

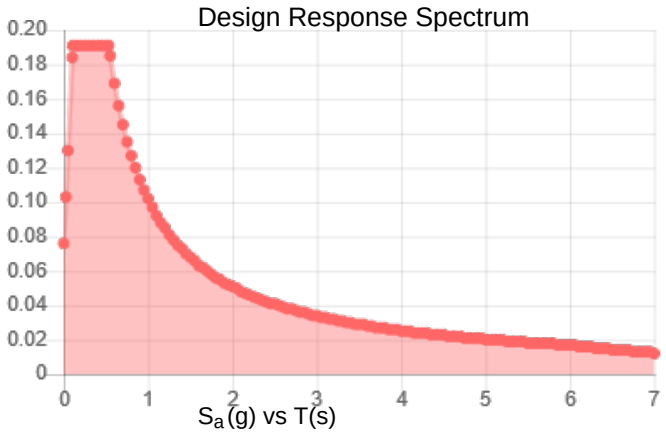
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.179	S_{DS} :	0.191
S_1 :	0.063	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.09
S_{MS} :	0.287	PGA_M :	0.144
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Jul 22 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Jul 22 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Exhibit E

Mount Analysis

March 21, 2021

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
CrownMA@tepgroup.net

Subject:	**Mount Analysis**	
Carrier Designation:	***Metro PCS* Reconfiguration**	
	Client Site Number:	CTHA504A
	Client Site Name:	ATT Manchester ELAM
Crown Castle Designation:	**Crown Castle BU Number:**	842866
	Crown Castle Site Name:	Manchester SW
	Crown Castle JDE Job Number:	576590
	Crown Castle Order Number:	494607 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	155775.514676
Site Data:	**575 Hillstown Road, Manchester, Hartford County, CT 06040** **Latitude *41° 44' 49.00"*, Longitude *-72° 33' 51.14"***	
Structure Information:	**Tower Height & Type:**	70± ft Wood Pole
	Mount Elevation:	60 ft
	Mount Width & Type:	Pipe Mount

Dear Darcy Tarr,

Tower Engineering Professionals is pleased to submit this **"Mount Analysis"** to determine the structural integrity of Metro PCS's antenna mounting system with proposed appurtenance and equipment addition on the above mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis, we have determined the mount stress level to be:

Pipe Mount **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph in accordance with the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Stephen E. Bunting

Respectfully submitted by:

Electronic Copy

03/21/2021

Aaron T. Rucker, P.E.
Structural Division Manager
919-661-6351
arucker@tepgroup.net

TABLE OF CONTENTS

1) INTRODUCTION

The mount is an existing Pipe mount. The mount is installed at the 60 ft elevation on the 70± ft Wood Pole.

2) ANALYSIS CRITERIA

Building Code:	2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Category at Base:	1.0
Topographic Category at Mount:	1.0
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Seismic Design Category:	B
Seismic S_s:	0.179
Seismic S_1:	0.063
Live Loading Wind Speed:	30 mph
Live Loading at Mid/End-Points:	500 lb
Man Live Loading at Mount Pipes:	250 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
60	60	3	RFS/Celwave	APXVAARR24_43-U-NA20	Pipe
		3	Ericsson	Radio 4415 B66A_CCIV3	
		3	Ericsson	Radio 4449 B12/B71	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Previous Mount Analysis	Tower Engineering Professionals	8508630	CCISites
Loading Application	Metro PCS	Order 494607 Rev. 0	CCIsites

3.1) Analysis Method

RISA-3D (Version 19.0.1), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A and Appendix C.

TEP Mount Analysis Tool, a tool internally developed by TEP using Microsoft Excel, was used to calculate member loading for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis (Revision C)*.

3.2) Assumptions

1) The mount was built in accordance with the manufacturer's specifications.
2) The mount has been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, mounts and other appurtenances are as specified in Table 1. All mount components have been assumed to be in sufficient condition to carry their full design capacity for this analysis. Refer to the issued mapping for any structural and/or maintenance issues found during our site visit if applicable.
4) All mount components are in sufficient condition to carry their full design capacity.
5) All material grades used for this analysis, unless verified by mount manufacturer design, were assumed per AISC Table 2-4, 15th Edition. See RISA-3D output for confirmation on grades used in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Pipe Mount)

Notes	Component	Critical Member	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Mount Pipe	MP-1	60	10.5	Pass

Structure Rating (max from all components) =	10.5%

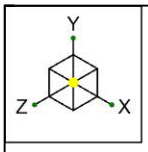
Notes:
1) See additional documentation in “Appendix C - Analysis Output” for calculations supporting the % capacity listed.
2) All sectors are typical.

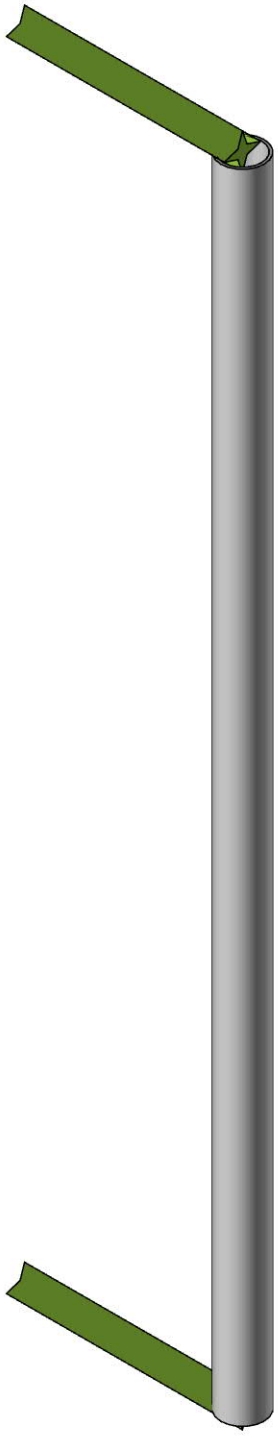
4.1) Recommendations

1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

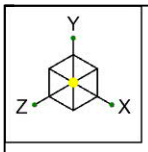
WIRE FRAME AND RENDERED MODELS

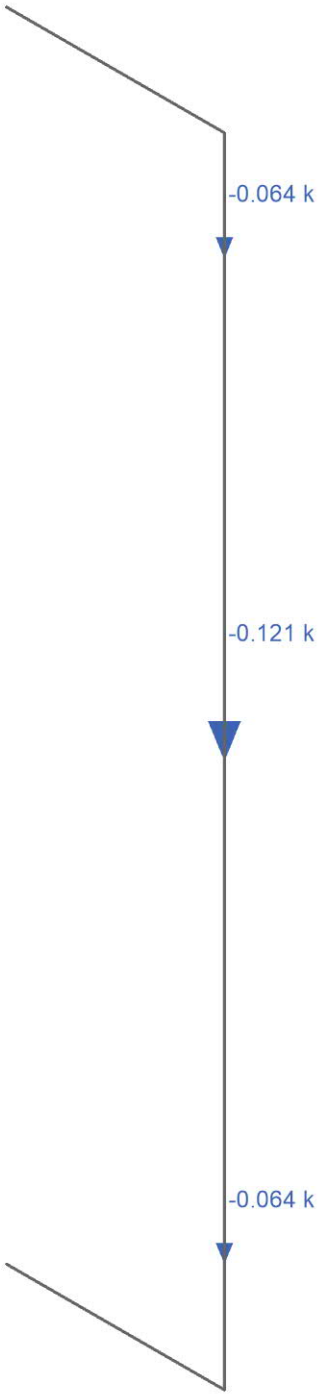




Envelope Only Solution

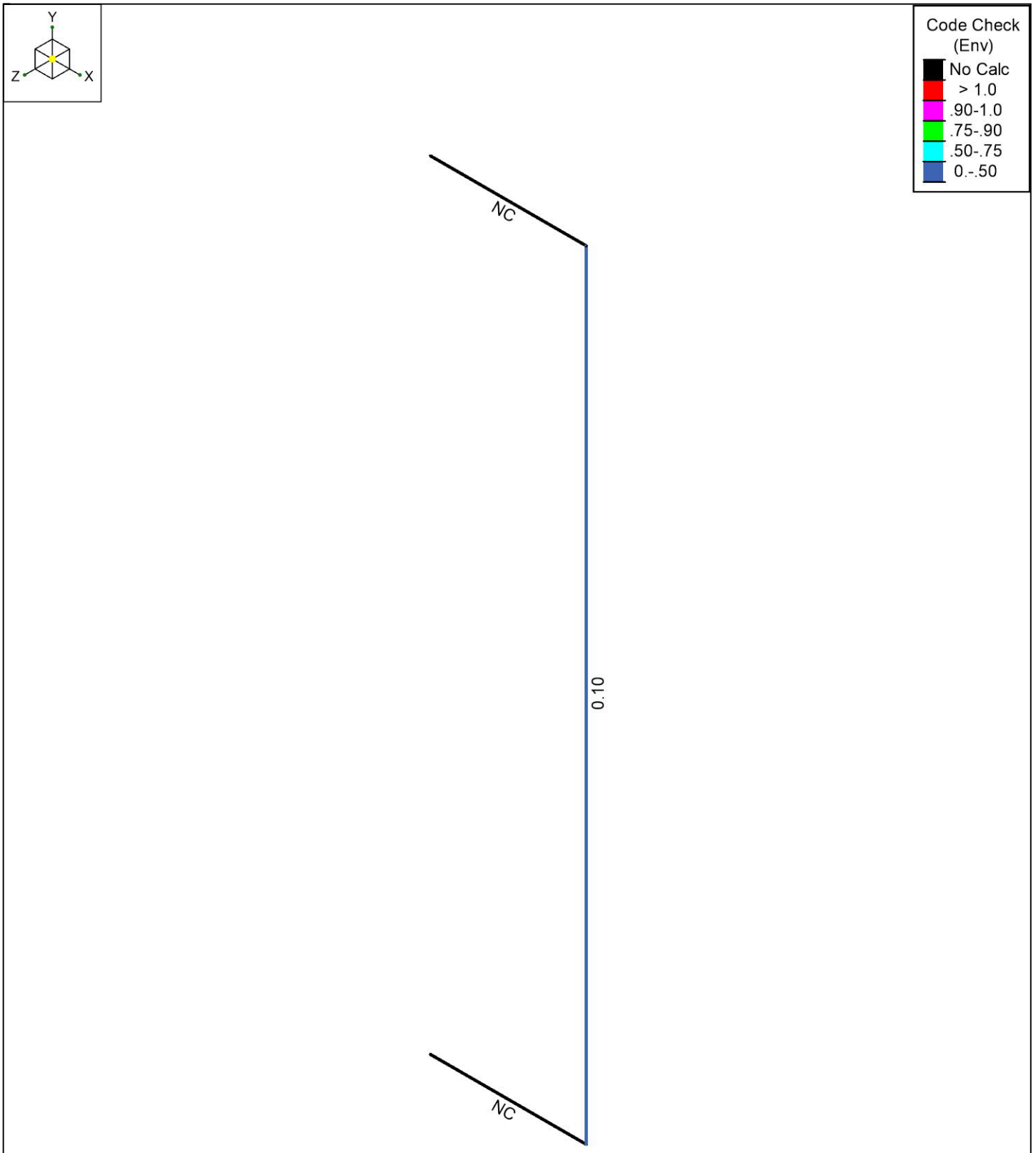
Tower Engineering Professionals, I…	CCI BU No. 842866	SK-1
SEB		Mar 21, 2021
TEP No. 155775.514676		Mount Rev H.r3d





Loads: BLC 1, Dead
Envelope Only Solution

Tower Engineering Professionals, I…	CCI BU No. 842866	SK-2
SEB		Mar 21, 2021
TEP No. 155775.514676		Mount Rev H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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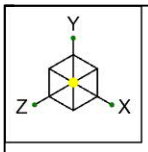
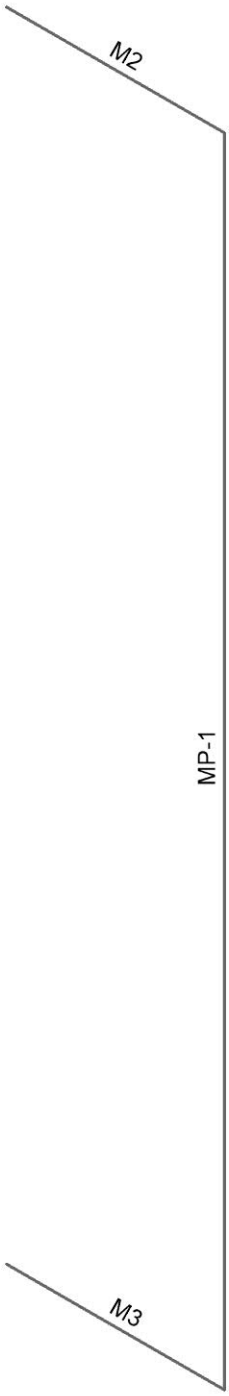
SEB		Mar 21, 2021
TEP No. 155775.514676		Mount Rev H.r3d





Envelope Only Solution

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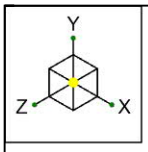
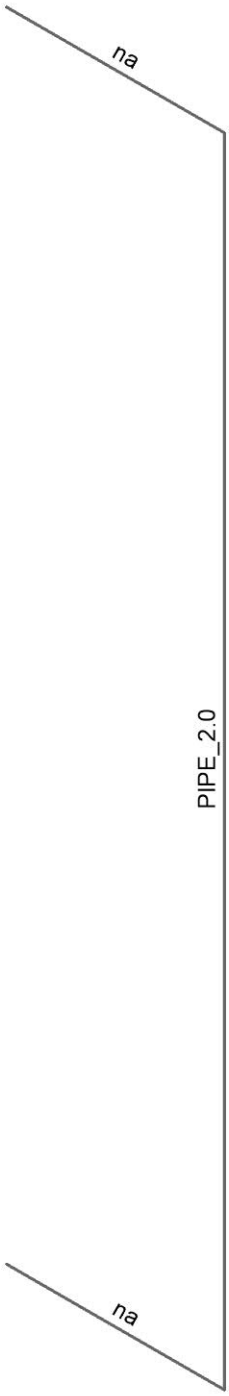




Envelope Only Solution

Tower Engineering Professionals, I…	CCI BU No. 842866	SK-5
SEB		Mar 21, 2021
TEP No. 155775.514676		Mount Rev H.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

TOWER ENGINEERING PROFESSIONALS

Sharonville (BU 875891)

TEP No.	263475.515327	
Analysis By:	SEB	3/21/2021
Checked By:	JWS	3/21/2021

Code Revisions:	TIA-222-H	IBC 2015
Tower Type:	Monopole	

Wind Inputs:

Ult. Wind Velocity:	125.0	mph
Live Load Velocity:	30.0	mph
Ice Wind Velocity:	50.0	mph
Base Ice Thickness:	2.00	inches
Mount Centerline:	60.0	ft
Antenna Centerline:	60.0	ft
Exposure Category:	C	
Topo Category:	1	
Risk Category:	II	
Ground Elevation:	180	ft

Wind Calculations:

K_{zt}:	1.000	Section 2.6.6
K_d:	0.950	
$K_{z\text{-Mount}}$:	1.137	Section 2.6.5.2
$K_{z\text{-Antenna}}$:	1.137	Section 2.6.5.2
K_{iz}:	1.062	Section 2.6.10
Ice Thickness:	2.123	inches - Section 2.6.10

Without Ice - (psf)		With Ice - (psf)	
$(q_z G_h)_{Mount}$:	42.91	$(q_z G_h)_{Mount}$:	6.87
$(q_z G_h)_{Antenna}$:	42.91	$(q_z G_h)_{Antenna}$:	6.87

Antenna Loads are Calculated in Accordance with TIA-222-H
Azimuth is the absolute angle measured clockwise from RISA-3D global X-axis.

										Distance from start node of the member		
MFR	Model	Height (in)	Width (in)	Depth (in)	Wt. (lbs)	Azimuth°	Qty	Shape	Member Label	Location #1 (ft,%)	Location #2 (ft,%)	Location #3 (ft,%)
RFS/Celwave	APXVAARR24_43-U-NA20	95.90	24.00	8.70	128.00	0.00	1	Flat	MP-1	0.50	4.50	
Ericsson	Radio 4415 B66A_CCIV3	14.90	13.20	5.40	46.30	90.00	1	Flat	MP-1	2.50		
Ericsson	Radio 4449 B12/B71	14.95	13.19	9.25	75.00	90.00	1	Flat	MP-1	2.50		

Member Forces are Calculated in Accordance with TIA-222-H

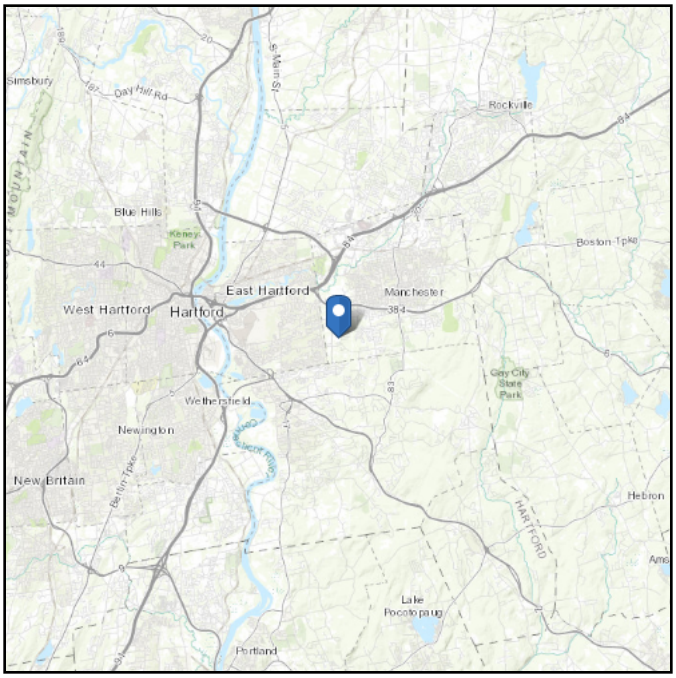
Member Name	Wind Proj. (in)	Length (in)	Shape	**θ** (°)	Perimeter (in)
MP-1	2.375	60.00	Round		7.46

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 179.89 ft (NAVD 88)
Latitude: 41.746944
Longitude: -72.564206



Wind

Results:

Wind Speed:	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	101 Vmph

Windspeed is 125 mph per Local Jurisdiction

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Jun 18 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

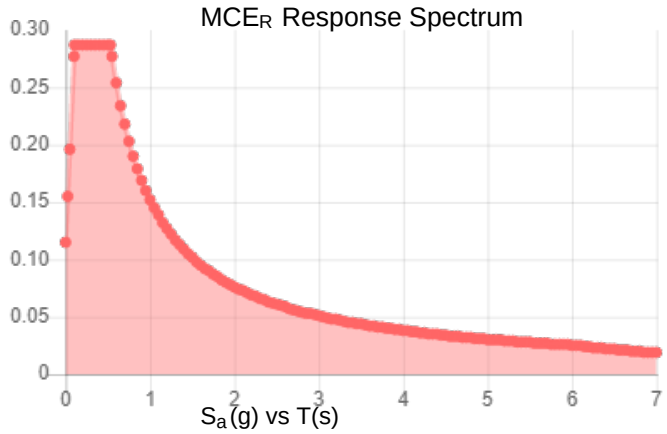
Seismic

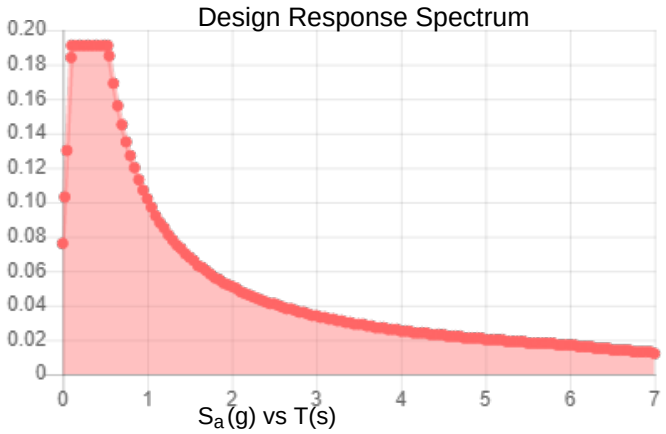
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.179	S_{DS} :	0.191
S_1 :	0.063	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.09
S_{MS} :	0.287	PGA_M :	0.144
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Jun 18 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Jun 18 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Nodal

Codes

Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	No
Notional Annex	None
Connections	None
Cold Formed Steel	None
Stiffness Adjustment	Yes (Iterative)
Wood	None
Temperature	< 100F
Concrete	None
Masonry	None
Aluminum	None
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	None
Stiffness Adjustment	Yes (Iterative)

Concrete

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Rebar

Column Min Steel	1

Model Settings (Continued)

Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-10
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_S (g)	1
T_L (sec)	5

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	1
C_dX	1
ρ Z	1
ρ X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Fu [ksi]
1	A653 SS Gr33	29500	11346	0.3	0.65	0.49	33	45
2	A653 SS Gr50/1	29500	11346	0.3	0.65	0.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Mount Pipe	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	0.581	0.057	4.41	0.00063

Material Take-Off

	Material	Size	Pieces	Length[ft]	Weight[K]
1	General Members				
2	RIGID		2	2	0
3	Total General		2	2	0
4					
5	Hot Rolled Steel				
6	A53 Gr.B	PIPE_2.0	1	5	0.017
7	Total HR Steel		1	5	0.017

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N3	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N4	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	MP-1	N1	N2	Mount Pipe	None	None	A53 Gr.B	Typical
2	M2	N3	N2	RIGID	None	None	RIGID	Typical
3	M3	N4	N1	RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	Physical	Deflection Ratio Options	Seismic DR
1	MP-1	Yes	** NA **	None
2	M2	Yes	** NA **	None
3	M3	Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	K y-y	K z-z	Function
1	MP-1	Mount Pipe	5	Segment	Segment	0.65	0.65	Lateral

Cold Formed Steel Design Parameters

No Data to Print...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	Dead	None		-1			4	
2	0 Wind - No Ice	None					4	1
3	30 Wind - No Ice	None					8	2
4	45 Wind - No Ice	None					8	2
5	60 Wind - No Ice	None					8	2
6	90 Wind - No Ice	None					4	1
7	120 Wind - No Ice	None					8	2
8	135 Wind - No Ice	None					8	2
9	150 Wind - No Ice	None					8	2
10	180 Wind - No Ice	None					4	1
11	210 Wind - No Ice	None					8	2
12	225 Wind - No Ice	None					8	2
13	240 Wind - No Ice	None					8	2
14	270 Wind - No Ice	None					4	1
15	300 Wind - No Ice	None					8	2
16	315 Wind - No Ice	None					8	2
17	330 Wind - No Ice	None					8	2
18	Ice Weight	None					4	1
19	0 Wind - Ice	None					4	1
20	30 Wind - Ice	None					8	2
21	45 Wind - Ice	None					8	2
22	60 Wind - Ice	None					8	2
23	90 Wind - Ice	None					4	1
24	120 Wind - Ice	None					8	2
25	135 Wind - Ice	None					8	2
26	150 Wind - Ice	None					8	2
27	180 Wind - Ice	None					4	1
28	210 Wind - Ice	None					8	2
29	225 Wind - Ice	None					8	2
30	240 Wind - Ice	None					8	2
31	270 Wind - Ice	None					4	1
32	300 Wind - Ice	None					8	2
33	315 Wind - Ice	None					8	2
34	330 Wind - Ice	None					8	2
35	Lm	None				1		
36	Lv	None				1		
37	Seismic Load X	ELX	-1				4	
38	Seismic Load Z	ELZ			-1		4	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	1	1.4				
2	0.9D+1.0 0-Wind	Yes	Y	1	0.9	2	1		
3	0.9D+1.0 30-Wind	Yes	Y	1	0.9	3	1		
4	0.9D+1.0 45-Wind	Yes	Y	1	0.9	4	1		
5	0.9D+1.0 60-Wind	Yes	Y	1	0.9	5	1		
6	0.9D+1.0 90-Wind	Yes	Y	1	0.9	6	1		
7	0.9D+1.0 120-Wind	Yes	Y	1	0.9	7	1		
8	0.9D+1.0 135-Wind	Yes	Y	1	0.9	8	1		
9	0.9D+1.0 150-Wind	Yes	Y	1	0.9	9	1		
10	0.9D+1.0 180-Wind	Yes	Y	1	0.9	10	1		
11	0.9D+1.0 210-Wind	Yes	Y	1	0.9	11	1		
12	0.9D+1.0 225-Wind	Yes	Y	1	0.9	12	1		
13	0.9D+1.0 240-Wind	Yes	Y	1	0.9	13	1		

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
13	0.9D+1.0 240-Wind	Yes	Y	1	0.9	13	1		
14	0.9D+1.0 270-Wind	Yes	Y	1	0.9	14	1		
15	0.9D+1.0 300-Wind	Yes	Y	1	0.9	15	1		
16	0.9D+1.0 315-Wind	Yes	Y	1	0.9	16	1		
17	0.9D+1.0 330-Wind	Yes	Y	1	0.9	17	1		
18	1.2D+1.0 0-Wind	Yes	Y	1	1.2	2	1		
19	1.2D+1.0 30-Wind	Yes	Y	1	1.2	3	1		
20	1.2D+1.0 45-Wind	Yes	Y	1	1.2	4	1		
21	1.2D+1.0 60-Wind	Yes	Y	1	1.2	5	1		
22	1.2D+1.0 90-Wind	Yes	Y	1	1.2	6	1		
23	1.2D+1.0 120-Wind	Yes	Y	1	1.2	7	1		
24	1.2D+1.0 135-Wind	Yes	Y	1	1.2	8	1		
25	1.2D+1.0 150-Wind	Yes	Y	1	1.2	9	1		
26	1.2D+1.0 180-Wind	Yes	Y	1	1.2	10	1		
27	1.2D+1.0 210-Wind	Yes	Y	1	1.2	11	1		
28	1.2D+1.0 225-Wind	Yes	Y	1	1.2	12	1		
29	1.2D+1.0 240-Wind	Yes	Y	1	1.2	13	1		
30	1.2D+1.0 270-Wind	Yes	Y	1	1.2	14	1		
31	1.2D+1.0 300-Wind	Yes	Y	1	1.2	15	1		
32	1.2D+1.0 315-Wind	Yes	Y	1	1.2	16	1		
33	1.2D+1.0 330-Wind	Yes	Y	1	1.2	17	1		
34	1.2D+1.0Di+1.0 0-Wind Ice	Yes	Y	1	1.2	18	1	19	1
35	1.2D+1.0Di+1.0 30-Wind Ice	Yes	Y	1	1.2	18	1	20	1
36	1.2D+1.0Di+1.0 45-Wind Ice	Yes	Y	1	1.2	18	1	21	1
37	1.2D+1.0Di+1.0 60-Wind Ice	Yes	Y	1	1.2	18	1	22	1
38	1.2D+1.0Di+1.0 90-Wind Ice	Yes	Y	1	1.2	18	1	23	1
39	1.2D+1.0Di+1.0 120-Wind Ice	Yes	Y	1	1.2	18	1	24	1
40	1.2D+1.0Di+1.0 135-Wind Ice	Yes	Y	1	1.2	18	1	25	1
41	1.2D+1.0Di+1.0 150-Wind Ice	Yes	Y	1	1.2	18	1	26	1
42	1.2D+1.0Di+1.0 180-Wind Ice	Yes	Y	1	1.2	18	1	27	1
43	1.2D+1.0Di+1.0 210-Wind Ice	Yes	Y	1	1.2	18	1	28	1
44	1.2D+1.0Di+1.0 225-Wind Ice	Yes	Y	1	1.2	18	1	29	1
45	1.2D+1.0Di+1.0 240-Wind Ice	Yes	Y	1	1.2	18	1	30	1
46	1.2D+1.0Di+1.0 270-Wind Ice	Yes	Y	1	1.2	18	1	31	1
47	1.2D+1.0Di+1.0 300-Wind Ice	Yes	Y	1	1.2	18	1	32	1
48	1.2D+1.0Di+1.0 315-Wind Ice	Yes	Y	1	1.2	18	1	33	1
49	1.2D+1.0Di+1.0 330-Wind Ice	Yes	Y	1	1.2	18	1	34	1
50	1.2D+1.5Lv	Yes	Y	36	1.5	1	1.2		
51	1.2D+1.5Lm+1.0 0-Wind	Yes	Y	1	1.2	2	0.058	35	1.5
52	1.2D+1.5Lm+1.0 30-Wind	Yes	Y	1	1.2	3	0.058	35	1.5
53	1.2D+1.5Lm+1.0 45-Wind	Yes	Y	1	1.2	4	0.058	35	1.5
54	1.2D+1.5Lm+1.0 60-Wind	Yes	Y	1	1.2	5	0.058	35	1.5
55	1.2D+1.5Lm+1.0 90-Wind	Yes	Y	1	1.2	6	0.058	35	1.5
56	1.2D+1.5Lm+1.0 120-Wind	Yes	Y	1	1.2	7	0.058	35	1.5
57	1.2D+1.5Lm+1.0 135-Wind	Yes	Y	1	1.2	8	0.058	35	1.5
58	1.2D+1.5Lm+1.0 150-Wind	Yes	Y	1	1.2	9	0.058	35	1.5
59	1.2D+1.5Lm+1.0 180-Wind	Yes	Y	1	1.2	10	0.058	35	1.5
60	1.2D+1.5Lm+1.0 210-Wind	Yes	Y	1	1.2	11	0.058	35	1.5
61	1.2D+1.5Lm+1.0 225-Wind	Yes	Y	1	1.2	12	0.058	35	1.5
62	1.2D+1.5Lm+1.0 240-Wind	Yes	Y	1	1.2	13	0.058	35	1.5
63	1.2D+1.5Lm+1.0 270-Wind	Yes	Y	1	1.2	14	0.058	35	1.5
64	1.2D+1.5Lm+1.0 300-Wind	Yes	Y	1	1.2	15	0.058	35	1.5
65	1.2D+1.5Lm+1.0 315-Wind	Yes	Y	1	1.2	16	0.058	35	1.5
66	1.2D+1.5Lm+1.0 330-Wind	Yes	Y	1	1.2	17	0.058	35	1.5
67	(1.2+0.2Sds)D+1.0 0 Seismic		Y	1	1.4	ELX	0.5	0	
68	(1.2+0.2Sds)D+1.0 30 Seismic		Y	1	1.4	ELX	0.433	ELZ	0.25
69	(1.2+0.2Sds)D+1.0 45 Seismic		Y	1	1.4	ELX	0.354	ELZ	0.354
70	(1.2+0.2Sds)D+1.0 60 Seismic		Y	1	1.4	ELX	0.25	ELZ	0.433

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
71	(1.2+0.2Sds)D+1.0 90 Seismic		Y	1	1.4	0		ELZ	0.5
72	(1.2+0.2Sds)D+1.0 120 Seismic		Y	1	1.4	ELX	-0.25	ELZ	0.433
73	(1.2+0.2Sds)D+1.0 135 Seismic		Y	1	1.4	ELX	-0.354	ELZ	0.354
74	(1.2+0.2Sds)D+1.0 150 Seismic		Y	1	1.4	ELX	-0.433	ELZ	0.25
75	(1.2+0.2Sds)D+1.0 180 Seismic		Y	1	1.4	ELX	-0.5	0	
76	(1.2+0.2Sds)D+1.0 210 Seismic		Y	1	1.4	ELX	-0.433	ELZ	-0.25
77	(1.2+0.2Sds)D+1.0 225 Seismic		Y	1	1.4	ELX	-0.354	ELZ	-0.354
78	(1.2+0.2Sds)D+1.0 240 Seismic		Y	1	1.4	ELX	-0.25	ELZ	-0.433
79	(1.2+0.2Sds)D+1.0 270 Seismic		Y	1	1.4	0		ELZ	-0.5
80	(1.2+0.2Sds)D+1.0 300 Seismic		Y	1	1.4	ELX	0.25	ELZ	-0.433
81	(1.2+0.2Sds)D+1.0 315 Seismic		Y	1	1.4	ELX	0.354	ELZ	-0.354
82	(1.2+0.2Sds)D+1.0 330 Seismic		Y	1	1.4	ELX	0.433	ELZ	-0.25
83	(0.9-0.2Sds)*DL+1.0 0 Seismic		Y	1	0.7	ELX	0.5	0	
84	(0.9-0.2Sds)*DL+1.0 30 Seismic		Y	1	0.7	ELX	0.433	ELZ	0.25
85	(0.9-0.2Sds)*DL+1.0 Seismic		Y	1	0.7	ELX	0.354	ELZ	0.354
86	(0.9-0.2Sds)*DL+1.0 60 Seismic		Y	1	0.7	ELX	0.25	ELZ	0.433
87	(0.9-0.2Sds)*DL+1.0 90 Seismic		Y	1	0.7	0		ELZ	0.5
88	(0.9-0.2Sds)*DL+1.0 120 Seismic		Y	1	0.7	ELX	-0.25	ELZ	0.433
89	(0.9-0.2Sds)*DL+1.0 135 Seismic		Y	1	0.7	ELX	-0.354	ELZ	0.354
90	(0.9-0.2Sds)*DL+1.0 150 Seismic		Y	1	0.7	ELX	-0.433	ELZ	0.25
91	(0.9-0.2Sds)*DL+1.0 180 Seismic		Y	1	0.7	ELX	-0.5	0	
92	(0.9-0.2Sds)*DL+1.0 210 Seismic		Y	1	0.7	ELX	-0.433	ELZ	-0.25
93	(0.9-0.2Sds)*DL+1.0 225 Seismic		Y	1	0.7	ELX	-0.354	ELZ	-0.354
94	(0.9-0.2Sds)*DL+1.0 240 Seismic		Y	1	0.7	ELX	-0.25	ELZ	-0.433
95	(0.9-0.2Sds)*DL+1.0 270 Seismic		Y	1	0.7	0		ELZ	-0.5
96	(0.9-0.2Sds)*DL+1.0 300 Seismic		Y	1	0.7	ELX	0.25	ELZ	-0.433
97	(0.9-0.2Sds)*DL+1.0 315 Seismic		Y	1	0.7	ELX	0.354	ELZ	-0.354
98	(0.9-0.2Sds)*DL+1.0 330 Seismic		Y	1	0.7	ELX	0.433	ELZ	-0.25

Node Loads and Enforced Displacements (BLC 35 : Lm)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N1	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 36 : Lv)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N1	L	Y	-0.25

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	Y	-0.064	0.5
2	MP-1	Y	-0.046	2.5
3	MP-1	Y	-0.075	2.5
4	MP-1	Y	-0.064	4.5

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.283	0.5
2	MP-1	X	-0.026	2.5
3	MP-1	X	-0.045	2.5
4	MP-1	X	-0.283	4.5

Member Point Loads (BLC 3 : 30 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.206	0.5
2	MP-1	X	-0.031	2.5
3	MP-1	X	-0.043	2.5

Member Point Loads (BLC 3 : 30 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
4	MP-1	X	-0.206	4.5
5	MP-1	Z	-0.119	0.5
6	MP-1	Z	-0.018	2.5
7	MP-1	Z	-0.025	2.5
8	MP-1	Z	-0.119	4.5

Member Point Loads (BLC 4 : 45 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.136	0.5
2	MP-1	X	-0.032	2.5
3	MP-1	X	-0.038	2.5
4	MP-1	X	-0.136	4.5
5	MP-1	Z	-0.136	0.5
6	MP-1	Z	-0.032	2.5
7	MP-1	Z	-0.038	2.5
8	MP-1	Z	-0.136	4.5

Member Point Loads (BLC 5 : 60 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.074	0.5
2	MP-1	X	-0.027	2.5
3	MP-1	X	-0.029	2.5
4	MP-1	X	-0.074	4.5
5	MP-1	Z	-0.128	0.5
6	MP-1	Z	-0.047	2.5
7	MP-1	Z	-0.051	2.5
8	MP-1	Z	-0.128	4.5

Member Point Loads (BLC 6 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	Z	-0.103	0.5
2	MP-1	Z	-0.063	2.5
3	MP-1	Z	-0.063	2.5
4	MP-1	Z	-0.103	4.5

Member Point Loads (BLC 7 : 120 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.074	0.5
2	MP-1	X	0.027	2.5
3	MP-1	X	0.029	2.5
4	MP-1	X	0.074	4.5
5	MP-1	Z	-0.128	0.5
6	MP-1	Z	-0.047	2.5
7	MP-1	Z	-0.051	2.5
8	MP-1	Z	-0.128	4.5

Member Point Loads (BLC 8 : 135 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.136	0.5
2	MP-1	X	0.032	2.5
3	MP-1	X	0.038	2.5
4	MP-1	X	0.136	4.5
5	MP-1	Z	-0.136	0.5
6	MP-1	Z	-0.032	2.5
7	MP-1	Z	-0.038	2.5
8	MP-1	Z	-0.136	4.5

Member Point Loads (BLC 9 : 150 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.206	0.5
2	MP-1	X	0.031	2.5
3	MP-1	X	0.043	2.5
4	MP-1	X	0.206	4.5
5	MP-1	Z	-0.119	0.5
6	MP-1	Z	-0.018	2.5
7	MP-1	Z	-0.025	2.5
8	MP-1	Z	-0.119	4.5

Member Point Loads (BLC 10 : 180 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.283	0.5
2	MP-1	X	0.026	2.5
3	MP-1	X	0.045	2.5
4	MP-1	X	0.283	4.5

Member Point Loads (BLC 11 : 210 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.206	0.5
2	MP-1	X	0.031	2.5
3	MP-1	X	0.043	2.5
4	MP-1	X	0.206	4.5
5	MP-1	Z	0.119	0.5
6	MP-1	Z	0.018	2.5
7	MP-1	Z	0.025	2.5
8	MP-1	Z	0.119	4.5

Member Point Loads (BLC 12 : 225 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.136	0.5
2	MP-1	X	0.032	2.5
3	MP-1	X	0.038	2.5
4	MP-1	X	0.136	4.5
5	MP-1	Z	0.136	0.5
6	MP-1	Z	0.032	2.5
7	MP-1	Z	0.038	2.5
8	MP-1	Z	0.136	4.5

Member Point Loads (BLC 13 : 240 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.074	0.5
2	MP-1	X	0.027	2.5
3	MP-1	X	0.029	2.5
4	MP-1	X	0.074	4.5
5	MP-1	Z	0.128	0.5
6	MP-1	Z	0.047	2.5
7	MP-1	Z	0.051	2.5
8	MP-1	Z	0.128	4.5

Member Point Loads (BLC 14 : 270 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	Z	0.103	0.5
2	MP-1	Z	0.063	2.5
3	MP-1	Z	0.063	2.5
4	MP-1	Z	0.103	4.5

Member Point Loads (BLC 15 : 300 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.074	0.5
2	MP-1	X	-0.027	2.5
3	MP-1	X	-0.029	2.5
4	MP-1	X	-0.074	4.5
5	MP-1	Z	0.128	0.5
6	MP-1	Z	0.047	2.5
7	MP-1	Z	0.051	2.5
8	MP-1	Z	0.128	4.5

Member Point Loads (BLC 16 : 315 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.136	0.5
2	MP-1	X	-0.032	2.5
3	MP-1	X	-0.038	2.5
4	MP-1	X	-0.136	4.5
5	MP-1	Z	0.136	0.5
6	MP-1	Z	0.032	2.5
7	MP-1	Z	0.038	2.5
8	MP-1	Z	0.136	4.5

Member Point Loads (BLC 17 : 330 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.206	0.5
2	MP-1	X	-0.031	2.5
3	MP-1	X	-0.043	2.5
4	MP-1	X	-0.206	4.5
5	MP-1	Z	0.119	0.5
6	MP-1	Z	0.018	2.5
7	MP-1	Z	0.025	2.5
8	MP-1	Z	0.119	4.5

Member Point Loads (BLC 18 : Ice Weight)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	Y	-0.269	0.5
2	MP-1	Y	-0.07	2.5
3	MP-1	Y	-0.087	2.5
4	MP-1	Y	-0.269	4.5

Member Point Loads (BLC 19 : 0 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.055	0.5
2	MP-1	X	-0.017	2.5
3	MP-1	X	-0.017	2.5
4	MP-1	X	-0.055	4.5

Member Point Loads (BLC 20 : 30 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.041	0.5
2	MP-1	X	-0.01	2.5
3	MP-1	X	-0.012	2.5
4	MP-1	X	-0.041	4.5
5	MP-1	Z	-0.024	0.5
6	MP-1	Z	-0.006	2.5
7	MP-1	Z	-0.007	2.5
8	MP-1	Z	-0.024	4.5

Member Point Loads (BLC 21 : 45 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.028	0.5
2	MP-1	X	-0.009	2.5
3	MP-1	X	-0.011	2.5
4	MP-1	X	-0.028	4.5
5	MP-1	Z	-0.028	0.5
6	MP-1	Z	-0.009	2.5
7	MP-1	Z	-0.011	2.5
8	MP-1	Z	-0.028	4.5

Member Point Loads (BLC 22 : 60 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.016	0.5
2	MP-1	X	-0.008	2.5
3	MP-1	X	-0.008	2.5
4	MP-1	X	-0.016	4.5
5	MP-1	Z	-0.028	0.5
6	MP-1	Z	-0.013	2.5
7	MP-1	Z	-0.014	2.5
8	MP-1	Z	-0.028	4.5

Member Point Loads (BLC 23 : 90 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	Z	-0.025	0.5
2	MP-1	Z	-0.01	2.5
3	MP-1	Z	-0.013	2.5
4	MP-1	Z	-0.025	4.5

Member Point Loads (BLC 24 : 120 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.016	0.5
2	MP-1	X	0.008	2.5
3	MP-1	X	0.008	2.5
4	MP-1	X	0.016	4.5
5	MP-1	Z	-0.028	0.5
6	MP-1	Z	-0.013	2.5
7	MP-1	Z	-0.014	2.5
8	MP-1	Z	-0.028	4.5

Member Point Loads (BLC 25 : 135 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.028	0.5
2	MP-1	X	0.009	2.5
3	MP-1	X	0.011	2.5
4	MP-1	X	0.028	4.5
5	MP-1	Z	-0.028	0.5
6	MP-1	Z	-0.009	2.5
7	MP-1	Z	-0.011	2.5
8	MP-1	Z	-0.028	4.5

Member Point Loads (BLC 26 : 150 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.041	0.5
2	MP-1	X	0.01	2.5
3	MP-1	X	0.012	2.5
4	MP-1	X	0.041	4.5
5	MP-1	Z	-0.024	0.5

Member Point Loads (BLC 26 : 150 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
6	MP-1	Z	-0.006	2.5
7	MP-1	Z	-0.007	2.5
8	MP-1	Z	-0.024	4.5

Member Point Loads (BLC 27 : 180 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.055	0.5
2	MP-1	X	0.017	2.5
3	MP-1	X	0.017	2.5
4	MP-1	X	0.055	4.5

Member Point Loads (BLC 28 : 210 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.041	0.5
2	MP-1	X	0.01	2.5
3	MP-1	X	0.012	2.5
4	MP-1	X	0.041	4.5
5	MP-1	Z	0.024	0.5
6	MP-1	Z	0.006	2.5
7	MP-1	Z	0.007	2.5
8	MP-1	Z	0.024	4.5

Member Point Loads (BLC 29 : 225 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.028	0.5
2	MP-1	X	0.009	2.5
3	MP-1	X	0.011	2.5
4	MP-1	X	0.028	4.5
5	MP-1	Z	0.028	0.5
6	MP-1	Z	0.009	2.5
7	MP-1	Z	0.011	2.5
8	MP-1	Z	0.028	4.5

Member Point Loads (BLC 30 : 240 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	0.016	0.5
2	MP-1	X	0.008	2.5
3	MP-1	X	0.008	2.5
4	MP-1	X	0.016	4.5
5	MP-1	Z	0.028	0.5
6	MP-1	Z	0.013	2.5
7	MP-1	Z	0.014	2.5
8	MP-1	Z	0.028	4.5

Member Point Loads (BLC 31 : 270 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	Z	0.025	0.5
2	MP-1	Z	0.01	2.5
3	MP-1	Z	0.013	2.5
4	MP-1	Z	0.025	4.5

Member Point Loads (BLC 32 : 300 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.016	0.5
2	MP-1	X	-0.008	2.5

Member Point Loads (BLC 32 : 300 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
3	MP-1	X	-0.008	2.5
4	MP-1	X	-0.016	4.5
5	MP-1	Z	0.028	0.5
6	MP-1	Z	0.013	2.5
7	MP-1	Z	0.014	2.5
8	MP-1	Z	0.028	4.5

Member Point Loads (BLC 33 : 315 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.028	0.5
2	MP-1	X	-0.009	2.5
3	MP-1	X	-0.011	2.5
4	MP-1	X	-0.028	4.5
5	MP-1	Z	0.028	0.5
6	MP-1	Z	0.009	2.5
7	MP-1	Z	0.011	2.5
8	MP-1	Z	0.028	4.5

Member Point Loads (BLC 34 : 330 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.041	0.5
2	MP-1	X	-0.01	2.5
3	MP-1	X	-0.012	2.5
4	MP-1	X	-0.041	4.5
5	MP-1	Z	0.024	0.5
6	MP-1	Z	0.006	2.5
7	MP-1	Z	0.007	2.5
8	MP-1	Z	0.024	4.5

Member Point Loads (BLC 37 : Seismic Load X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	X	-0.064	0.5
2	MP-1	X	-0.046	2.5
3	MP-1	X	-0.075	2.5
4	MP-1	X	-0.064	4.5

Member Point Loads (BLC 38 : Seismic Load Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	MP-1	Z	-0.064	0.5
2	MP-1	Z	-0.046	2.5
3	MP-1	Z	-0.075	2.5
4	MP-1	Z	-0.064	4.5

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.009	-0.009	0	%100

Member Distributed Loads (BLC 3 : 30 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.008	-0.008	0	%100
2	MP-1	Z	-0.005	-0.005	0	%100

Member Distributed Loads (BLC 4 : 45 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.006	-0.006	0	%100
2	MP-1	Z	-0.006	-0.006	0	%100

Member Distributed Loads (BLC 5 : 60 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.005	-0.005	0	%100
2	MP-1	Z	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 6 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	Z	-0.009	-0.009	0	%100

Member Distributed Loads (BLC 7 : 120 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.005	0.005	0	%100
2	MP-1	Z	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 8 : 135 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.006	0.006	0	%100
2	MP-1	Z	-0.006	-0.006	0	%100

Member Distributed Loads (BLC 9 : 150 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.008	0.008	0	%100
2	MP-1	Z	-0.005	-0.005	0	%100

Member Distributed Loads (BLC 10 : 180 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.009	0.009	0	%100

Member Distributed Loads (BLC 11 : 210 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.008	0.008	0	%100
2	MP-1	Z	0.005	0.005	0	%100

Member Distributed Loads (BLC 12 : 225 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.006	0.006	0	%100
2	MP-1	Z	0.006	0.006	0	%100

Member Distributed Loads (BLC 13 : 240 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.005	0.005	0	%100
2	MP-1	Z	0.008	0.008	0	%100

Member Distributed Loads (BLC 14 : 270 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	Z	0.009	0.009	0	%100

Member Distributed Loads (BLC 15 : 300 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.005	-0.005	0	%100
2	MP-1	Z	0.008	0.008	0	%100

Member Distributed Loads (BLC 16 : 315 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.006	-0.006	0	%100
2	MP-1	Z	0.006	0.006	0	%100

Member Distributed Loads (BLC 17 : 330 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.008	-0.008	0	%100
2	MP-1	Z	0.005	0.005	0	%100

Member Distributed Loads (BLC 18 : Ice Weight)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	Y	-0.012	-0.012	0	%100

Member Distributed Loads (BLC 19 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 20 : 30 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.002	-0.002	0	%100
2	MP-1	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 21 : 45 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.002	-0.002	0	%100
2	MP-1	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 22 : 60 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.001	-0.001	0	%100
2	MP-1	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 23 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 24 : 120 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.001	0.001	0	%100
2	MP-1	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 25 : 135 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.002	0.002	0	%100
2	MP-1	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 26 : 150 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.002	0.002	0	%100
2	MP-1	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 27 : 180 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.003	0.003	0	%100

Member Distributed Loads (BLC 28 : 210 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.002	0.002	0	%100
2	MP-1	Z	0.002	0.002	0	%100

Member Distributed Loads (BLC 29 : 225 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.002	0.002	0	%100
2	MP-1	Z	0.002	0.002	0	%100

Member Distributed Loads (BLC 30 : 240 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	0.001	0.001	0	%100
2	MP-1	Z	0.003	0.003	0	%100

Member Distributed Loads (BLC 31 : 270 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	Z	0.003	0.003	0	%100

Member Distributed Loads (BLC 32 : 300 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.001	-0.001	0	%100
2	MP-1	Z	0.003	0.003	0	%100

Member Distributed Loads (BLC 33 : 315 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.002	-0.002	0	%100
2	MP-1	Z	0.002	0.002	0	%100

Member Distributed Loads (BLC 34 : 330 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	MP-1	X	-0.002	-0.002	0	%100
2	MP-1	Z	0.002	0.002	0	%100

Member Area Loads

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Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	0.341	2	0.539	42	0.197	23	0.145	30	0.197	31	0.591	34
2		min	-0.341	26	0.12	2	-0.197	13	-0.145	6	-0.197	5	-0.071	10
3	N4	max	0.341	18	0.91	51	0.197	21	0.145	22	0.197	31	0.921	59
4		min	-0.341	10	0.12	10	-0.197	15	-0.145	14	-0.197	5	-0.071	2
5	Totals:	max	0.683	18	1.078	48	0.393	21						
6		min	-0.683	26	0.24	10	-0.393	15						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	MP-1	PIPE_2.0	0.105	0	18	0.035	5	26	28.308	32.13	1.872	1.872	2.813	H1-1b

Envelope NONE Member Cold Formed Steel Code Checks

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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: CTHA504A

AT&T Manchester Elam
575 Hillstown Road
Manchester, Connecticut 06040

May 9, 2021

EBI Project Number: 6221002195

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**28.60%**

May 9, 2021

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

Emissions Analysis for Site: CTHA504A - AT&T Manchester Elam

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **575 Hillstown Road** in **Manchester, 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 575 Hillstown Road in Manchester, 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 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.

4) 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.

5) 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.

6) 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.

7) The antennas used in this modeling are the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz / 2100 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz / 2100 MHz channel(s) in Sector B, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz / 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.

8) The antenna mounting height centerline of the proposed antennas is 60 feet above ground level (AGL).

9) 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.

10) 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:	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 / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 700 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 700 MHz / 2100 MHz / 2100 MHz
Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd / 16.35 dBd
Height (AGL):	60 feet	Height (AGL):	60 feet	Height (AGL):	60 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts
ERP (W):	10,248.43	ERP (W):	10,248.43	ERP (W):	10,248.43
Antenna A1 MPE %:	**16.65%**	Antenna B1 MPE %:	**16.65%**	Antenna C1 MPE %:	**16.65%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	16.65%
AT&T	9.62%
Metro PCS	2.33%
Site Total MPE % :	28.60%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	16.65%
T-Mobile Sector B Total:	16.65%
T-Mobile Sector C Total:	16.65%
Site Total MPE % :	28.60%

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 600 MHz LTE	2	591.73	60.0	14.59	600 MHz LTE	400	3.65%
T-Mobile 700 MHz LTE	2	648.82	60.0	16.00	700 MHz LTE	467	3.43%
T-Mobile 2100 MHz UMTS	2	1294.56	60.0	31.92	2100 MHz UMTS	1000	3.19%
T-Mobile 2100 MHz LTE	2	2589.11	60.0	63.84	2100 MHz LTE	1000	6.38%
						Total:	**16.65%**

• 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:	16.65%
Sector B:	16.65%
Sector C:	16.65%
T-Mobile Maximum MPE % (Sector A):	16.65%
Site Total:	28.60%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **28.60%** 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.