



September 5, 2017

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

Regarding: Notice of Exempt Modification – Swap of 3 Antennas and addition of 6 Remote Radios
Property Address: 52 East Center Street, Manchester, CT (the “Property”)
Applicant: AT&T Mobility (“AT&T”, Site # CT1070)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 65.5 foot Self Support tower (“tower”) at the above-referenced address, latitude 41.77583333, longitude - 72.52111111. AT&T’s facility consists of nine (9) wireless telecommunications antennas at 63 feet. The tower is controlled and owned by Frontier Communications. Assessor’s information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping (3) antennas and adding (3) remote radios. The centerline height of said antennas is and will remain at 102 feet.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor of the Town of Manchester, The Chief Building Inspector of the Town of Manchester and the Zoning Enforcement Officer of the Town of Manchester. A copy of this letter is also being sent to Frontier Communications, the owner of the structure that AT&T is located.

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

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T’s antennas and associated lines will be installed at the 63 foot level of the 65.5 foot Self Support tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.



4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Malouf Engineering Intl., Inc. dated August 23, 2017).

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

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Jay Moran, Mayor, Town of Manchester
Greg Smith, Chief Building Inspector, Town of Manchester
James Davis, Zoning Enforcement Officer, Town of Manchester
Frontier Communications, c/o Kelley Stewart

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@empiretelecomm.com

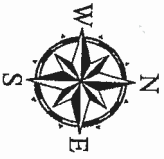
Town of Manchester, CT



Town of Manchester, CT
 DISCLAIMER: This map is compiled from other maps, deeds, dimensions and other sources of information. Not to be construed as accurate surveys and subject to final changes as a more accurate survey may disclose.
 NOTES: Original planimetric and topographic data were compiled by stereophotogrammetric methods from photography dated April 1999. In accordance with ASPR accuracy standards for 1 inch = 4.0 ft. large scale Class 1 mapping. The updating of the GIS data is performed by the GIS/Maps & Records Unit on a continual basis utilizing the best and most appropriated sources available.

1 inch = 100 feet

Author:



Date: 8/23/2017

Manchester GIS

52 EAST CENTER STREET

Location 52 EAST CENTER STREET

Mblu 78/ 1790/ 52/ /

Acct# 179000052

Owner SOUTHERN N ENGLAND
TELEPHONE C

Assessment \$1,221,900

Appraisal \$1,745,700

PID 4538

Building Count 2

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$1,512,900	\$232,800	\$1,745,700
Assessment			
Valuation Year	Improvements	Land	Total
2016	\$1,059,000	\$162,900	\$1,221,900

Owner of Record

Owner SOUTHERN N ENGLAND TELEPHONE C
C/O FRONTIER COMMUNICATIONS
Address 401 MERRITT 7- TAX DEPT
NORWALK, CT 06851

Sale Price \$0
Certificate C
Book & Page 374/ 162
Sale Date 12/06/1961

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
SOUTHERN N ENGLAND TELEPHONE C	\$0	C	374/ 162	12/06/1961

Building Information

Building 1 : Section 1

Year Built: 1929
Living Area: 19,072
Replacement Cost: \$3,324,123
Replacement Cost
Less Depreciation: \$432,100

Building Photo

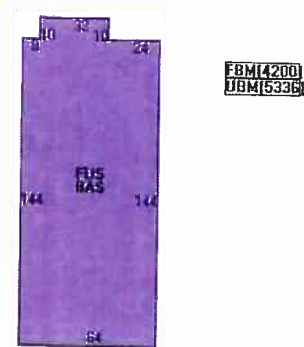
Building Attributes	
Field	Description
STYLE	Telephone Bldg
MODEL	Comm/Ind
Grade	Average

Stories:	2
Occupancy	1
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Pub Util. 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	400
Heat/AC	Heat AC Split
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceiling & Wall
Rooms/Prtns	Average
Wall Height	9
% Conn Wall	0



(http://images.vgsi.com/photos2/ManchesterCTPhotos//\00\02\98\91.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	9,536	9,536
FUS	Upper Story, Finished	9,536	9,536
FBM	Basement, Finished	4,200	0
UBM	Basement, Unfinished	5,336	0
		28,608	19,072

Building 2 : Section 1

Year Built: 1964
Living Area: 33,704
Replacement Cost: \$5,722,653
Replacement Cost
Less Depreciation: \$972,900

Building Attributes : Bldg 2 of 2	
Field	Description
STYLE	Telephone Bldg
MODEL	Comm/Ind
Grade	Average
Stories:	2
Occupancy	1

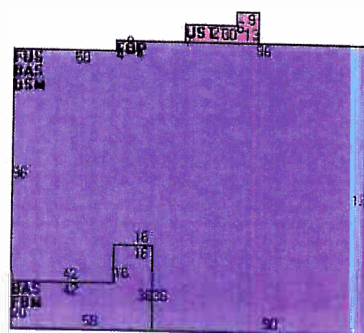
Building Photo

Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	Tile/Vinyl Cmp
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Pub Util. 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	400
Heat/AC	Heat AC Split
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceiling & Wall
Rooms/Prtns	Average
Wall Height	14
% Comn Wall	0



(<http://images.vgsi.com/photos2/ManchesterCTPhotos/\00\01\74\45.jpg>)

Building Layout



Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	17,560	17,560
FUS	Upper Story, Finished	16,144	16,144
BSM	Basement	16,144	0
FBM	Basement, Finished	1,416	0
FOP	Porch, Open	32	0
UST	Utility, Storage, Unfinished	264	0
		51,560	33,704

Extra Features

Extra Features		Legend
No Data for Extra Features		

Land

Land Use

Use Code	400
Description	Pub Util. 96

Land Line Valuation

Size (Acres)	1.93
Frontage	0

Zone B3
 Neighborhood 5000
 Alt Land Appr No
 Category

Depth 0
 Assessed Value \$162,900
 Appraised Value \$232,800

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asphalt			64000 S.F.	\$80,000	2
FN3	Fence 6' Chain			2230 L.F.	\$25,600	2
LT1	Lights 1Fix			2 UNITS	\$2,300	2

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$1,738,000	\$222,600	\$1,960,600
2010	\$1,893,200	\$356,700	\$2,249,900
2005	\$1,824,100	\$254,800	\$2,078,900

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$1,216,600	\$155,900	\$1,372,500
2010	\$1,325,200	\$249,700	\$1,574,900
2005	\$1,276,900	\$178,400	\$1,455,300

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Rigorous Structural Analysis Report



AT&T - Manchester CT Site #CT1070 / FA #10035030
Owner: Frontier Communications - Manchester CO Site
Manchester, Connecticut

August 23, 2017

MEI PROJECT ID: CT05236S-17V0

MALOUF ENGINEERING INTL., INC.



17950 PRESTON ROAD, SUITE 720 ■ DALLAS, TEXAS 75252 ■ TEL. 972-783-2578 FAX 972-783-2583
www.maloufengineering.com





August 23, 2017

Ms. Nicole Caplan
Empire Telecom
 Billerica, MA 01862

RIGOROUS STRUCTURAL ANALYSIS

Structure/Make/Model:	22.5ft Self-Supporting Tower	Not Known / Not Known	
Client/Site Name/#:	Empire Telecom/ AT&T	Manchester CT Site #CT1070 / FA #10035030	
Owner/Site Name/#:	Frontier Communications	Manchester CO	
MEI Project ID:	CT05236S-17V0		
Location:	52 East Center Street Manchester, Connecticut 06040	Hartford County FCC #N/A	
	LAT 41-46-33.6 N	LON 72-31-14.88 W	

EXECUTIVE SUMMARY:

Malouf Engineering Int'l (MEI), as requested, has performed a rigorous structural analysis of the above mentioned structure to assess the impact of the changed condition as noted in Table 1.

Based on the stress analysis performed, the existing structure **is in conformance** with the Int'l Building Code (IBC) / ANSI/TIA-222-G Standard for the loading considered under the criteria listed and referenced in the report sections – tower rated at 72.1% - Legs / 56.7% - Base Frame.

The installation of the proposed changed condition as noted in Table 1 is structurally acceptable. Please refer to Appendix 1 for Schematic Lines Layout.

MEI appreciates the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or other projects please contact us.

Respectfully submitted,

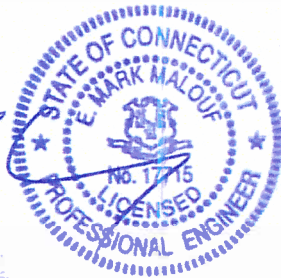
MALOUF ENGINEERING INT'L, INC.

Analysis performed by:

Krishna Manda, PE
 Sr. Project Engineer

Reviewed & Approved by:

E. Mark Malouf, PE
 Connecticut #17715
 972-783-2578 ext. 106
 mmalouf@maloufengineering.com



8/23/2017

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1. INTRODUCTION & SCOPE

A rigorous structural analysis was performed by Malouf Engineering Int'l (MEI), as requested and authorized by Ms. Nicole Caplan, Empire Telecom, on behalf of AT&T, to determine the acceptance of the proposed changed conditions in conformance with the IBC / ANSI/TIA-222-G Standard, "Structural Standard for Antenna Supporting Structures and Antennas".

The scope of this independent analysis is to determine the overall stability and the adequacy of structural members, foundations, and member connections, as available and stated. This analysis considers the structure to have been properly installed and maintained with no structural defects. Installation procedures and related loading are not within the scope of this analysis and should be performed and evaluated by a competent person of the erection contractor.

The different report sections detail the applicable information used in this evaluation, relating to the tower data, the appurtenances configuration and the wind and ice loading considered.

2. SOURCE OF DATA

The following information has been used in this evaluation as source data that accurately represent the existing structure and the related appurtenances:

	Source	Information	Reference
STRUCTURE			
Tower	MEI Mapping	Field Mapping [HTS] / No Original Design Data Available	Mapping Report dated 08/15/2017
Rooftop Base Support	MEI Mapping	Field Mapping [HTS]	Mapping Report dated 08/15/2017
Material Grade	Not available from supplied documents- Assumed based on typical towers of this type-refer to Appendix		
CURRENT APPURTENANCES			
	MEI Mapping	Field Mapping [HTS]	Mapping Report dated 08/15/2017
	Empire Telecom / Ms. Nicole Caplan	Frontier Collocation PDQ	PDQ Dated 07/12/2017
CHANGED CONDITION			
	Empire Telecom / Ms. Nicole Caplan	Frontier Collocation PDQ	PDQ Dated 07/12/2017

Background Information:

Based on available information, the following is known regarding this structure:

DESIGNER / FABRICATOR	Not Known
ORIGINAL DESIGN CRITERIA	Not Known
PRIOR STRUCTURAL MODIFICATIONS	Not Known



3. ANALYSIS CRITERIA

The structural analysis performed used the following criteria:

CODE / STANDARD	2016 CT Building Code / 2012 IBC / ANSI/TIA-222-G-2 Standard	
LOADING CASES	Full Wind:	124 Mph ultimate gust [equiv. 96 Mph (3-sec gust)] w/No Radial Ice**
	Iced Case:	40 Mph + 1" Radial Ice
	Service:	60 Mph
	Seismic:	$S_s = 0.178 / S_1 = 0.064$ / Site Class: D – Stiff Soil
STRUCTURE CRITERIA	Risk Category (Structural Class): Class II	
	Exposure Category: 'C' – Topographic Category: 1	

Appurtenances Configuration

The following appurtenances configuration is denoted by the *summation of Tables 1 & 2*:

Table 1: Changed Condition Appurtenances Configuration

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
63	AT&T	2	QS66512-2 Panel Antennas			
		1	TPA-65R-LCUUU-H8 Panel Antenna			
		3	RRUS-32 Boxes			
		3	RRUS-32 B2 Boxes			
		6	TPX-070821 Triplexer Boxes			
		1	Raycap Suppressor Box			
Current Appurtenances To Remain						
63.5	AT&T	1	SBNH-1D6565C Panel Antenna	Platform Mount with Rails and Knee Braces	12	7/8" ** Fiber Cable 2" Flex Conduit with DC Power Cables – (FZ)
63		2	AM-X-CD-16-65-00T-RET Panel Ants.		1	
		3	800 10121 Panel Antennas		1	
		3	RRUS-11 B12 Boxes			
		3	DTMABP7819VG12A Twin TMA Boxes			
		1	DC6-48-60-18-8F Suppressor Box			
Current Appurtenances To Be Removed *						
63	AT&T	3	800 10121 Panel Antennas			
		3	DTMABP7819VG12A TMA Boxes			
		6	CM1007-DBPXBC-003 Diplexer Boxes			

Table 2: Remaining Current and Reserved/Future Appurtenances

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
66.5		1	Lightning Rod	Pipe Mount		

Notes:

- Final Appurtenances as per the Frontier Communications PDQ.
- All elevations are measured from AGL – 22.5ft SST onto 37.5ft building rooftop/ frame base.
- *Antennas to be removed listed as per the PDQ. Existing antennas per field mapping differ and are (3) 800-10121 Panel antennas, (4) AM-X-CD-16-65-00T Panel Antennas and (2) SBNH-1D6565C Panel Antennas. Verify with RF Engineer prior to removal of antennas.
- **Feed line size updated as per field mapping..
- (I) = Internal; (E) = External; (FZ) = Within Face Zone; (OFZ) = Outside Face Zone - as per TIA-222-G.
- The above appurtenances represent MEI's understanding of the appurtenances configuration. If different than above, the analysis is invalid. Please contact MEI if any discrepancies are found.



4. ANALYSIS PROCEDURE

The subject structure is analyzed for feasibility of the installation of the proposed changed condition previously noted. The data records furnished were reviewed and a computer stress analysis was performed in accordance with the TIA-222 Standard provisions and with the agreed scope of work terms and the results of this analysis are reported.

Analysis Program

The computer program used to model the structure is a rigorous Finite Element Analysis program, InxTower (ver. 7.07), a commercially available program by Tower Numerics Inc. and RISA 3D (ver. 14.0.0). The latticed structures members are modeled using beam/truss and cable members and the pole members using tubular beam elements. The structural parameters and geometry of the members are included in the model. The dead and temperature loads and the wind loads are internally calculated by the program for the different wind directions and then applied as external loads on the structure. Any applicable exemptions, as per Section 15.6 of the TIA-222-G Standard for existing structures originally designed in accordance with a previous revision of the TIA-222 Standard, have been taken.

Assumptions

This engineering study is based on the theoretical capacity of the members and is not a condition assessment of the structure. This analysis is based on information supplied, and therefore, its results are based on and as accurate as that supplied data. MEI has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural stress analysis:

- This existing tower is assumed, for the purpose of this analysis, to have been properly maintained and to be in good condition with no structural defects and with no deterioration to its member capacities ('as-new' condition).
- The tower member sizes and configuration are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated.
- The appurtenances configuration is as supplied and/or as stated in the report. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
- Some assumptions are made regarding antennas and mounts sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type & industry practice.
- Mounts/Platforms are considered adequate to support the loading. No actual analysis of the platform/mount itself is performed, with the analysis being limited to analyzing the structure.
- The soil parameters are as per data supplied or as assumed and stated in the calculations. Refer to the Appendix. If no data is available, the foundation system is assumed to support the structure with its new reactions.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are assumed to be as per data supplied/available, and to have been properly installed and to be fully effective.

If any of the above assumptions are not valid or have been made in error, this analysis results may be invalidated, MEI should be contacted to review any contradictory information to determine its effect.



5. ANALYSIS RESULTS

The results of the structural stress analysis based on data available and with the previous listed criteria, indicated the following:

Note: The Wind loading controls over the Seismic loading as per TIA Section 2.7.

Table 3: Stress Analysis Results

Component Type	Maximum Stress Ratio	Controlling Elev. (ft) / Component	Pass/Fail	Comment
LEGS	72.1%	60 - 40	Pass	Bolts Control
DIAGONALS	64.0%	60 - 40	Pass	Bolts Control
HORIZONTALS	31.6%	60 - 40	Pass	Bolts Control
GIRTS	34.3%	40 - 37.5	Pass	Bolts Control
ROOFTOP BASE FRAME	56.7%	Main Support Beam	Pass	Tower is on top of building. Scope is limited to tower & base frame. Building members to be reviewed by others.

Table 4: Serviceability Requirements

	Maximum Value	TIA Requirement (10dB)	Pass/Fail	Comment
TWIST/SWAY	0.0627 Deg.	4 Deg. from Vert. or Horiz. Axis	Pass	
HORIZONTAL DISPLACEMENT	0.167 In./ 0.063% of Ht.	3.0% of Height	Pass	

Notes:

1. All elevations are measured from AGL **-22.5ft SST onto 37.5ft building rooftop**
2. The Maximum Stress Ratio is the percentage that the maximum load in the member is relative to the allowable load as determined by Code requirements.
3. Refer to the Appendix 1 for more details on the member loads.
4. A maximum stress ratio between 100% and 105% may be considered as *Acceptable* according to industry standard practice.



6. FINDINGS & RECOMMENDATIONS

- Based on the rigorous stress analysis results, the subject structure is **rated at 72.1% / 56.7%** of its support capacity (controlling component: Legs/Base Frame) with the proposed changed condition considered. Please refer to Table 3 and to Appendix 1 for more details of the analysis results.
- Based on the stress analysis performed, the existing structure **is in conformance** with the IBC / ANSI/TIA **222-G** Standard for the loading considered under the criteria listed and referenced in the report sections.
- Please note that the analysis was limited to the tower and supporting base frame. Existing Building to be evaluated by others for the new base reactions – Refer to Appendix 1 & 2 for detailed reactions.
- **The installation of the proposed changed condition as noted in Table 1 is structurally acceptable.** Please refer to Appendix 1 for Schematic Lines Layout.
- This structure (excluding building) has limited additional support capacity for the appurtenances and loading criteria considered. However, no changes to the configuration considered should be made without performing a new proper evaluation.

Rigging and temporary supports required for the erection/modification shall be determined, documented, furnished and installed by the erector/contractor accounting for the loads imposed on the structure due to the proposed construction method.

7. REPORT DISCLAIMER

The engineering services rendered by Malouf Engineering International, Inc. ('MEI') in connection with this Structural Analysis are limited to a computer analysis of the tower structure, size and capacity of its members. MEI does not analyze the fabrication, including welding and connection capacities, except as included in this Report.

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct guy tensions, as applicable.
3. Correct bolt tightness or slip jacking of sleeved connections.
4. No significant deterioration or damage to any structural component.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-art" engineering and analysis procedures and formulae. MALOUF ENGINEERING INTERNATIONAL, INC. assumes no obligation to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will MALOUF ENGINEERING INTERNATIONAL, INC. have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of MALOUF ENGINEERING INTERNATIONAL, INC., if any, pursuant to this Report shall be limited to the total funds actually received by MALOUF ENGINEERING INTERNATIONAL, INC. for preparation of this Report.

Customer has requested MALOUF ENGINEERING INTERNATIONAL, INC. to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested MALOUF ENGINEERING INTERNATIONAL, INC. to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of MALOUF ENGINEERING INTERNATIONAL, INC., Customer has informed MALOUF ENGINEERING INTERNATIONAL, INC. that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by MALOUF ENGINEERING INTERNATIONAL, INC. and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice. MALOUF ENGINEERING INTERNATIONAL, INC. shall have the right to rely upon the accuracy of the information supplied by the customer and shall not be held responsible for the Customer's misrepresentation or omission of relevant fact whether intentional or otherwise.

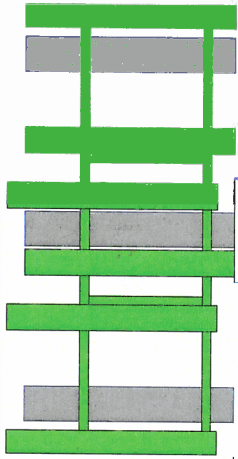
Customer hereby agrees and acknowledges that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than MALOUF ENGINEERING INTERNATIONAL, INC. in connection with the implementation of services including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor and that Customer and rigger, erector, or subcontractor will provide MALOUF ENGINEERING INTERNATIONAL, INC. with a Certificate of Insurance naming MALOUF ENGINEERING INTERNATIONAL, INC. as additional insured.

APPENDIX 1 – TOWER ANALYSIS PRINTOUT & GRAPHICS



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod (E)	66.5	QS66512-2 w/ Pipe Mount (ATT / P)	63
Pipe Mount (E)	63.5	QS66512-2 w/ Pipe Mount (ATT / P)	63
SBNH-1D6566C w/ pipe mount (ATT / E)	63.5	TPA-68R-LOUUU-H6 w/ Pipe Mount (ATT / P)	63
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (ATT / E)	63	RRUS-32 (ATT / P)	63
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (ATT / E)	63	RRUS-32 (ATT / P)	63
800-10121 w/ Pipe Mount (ATT / E)	63	RRUS-32 B2 (ATT / P)	63
800-10121 w/ Pipe Mount (ATT / E)	63	RRUS-32 B2 (ATT / P)	63
800-10121 w/ Pipe Mount (ATT / E)	63	RRUS-32 B2 (ATT / P)	63
RRUS-11 B12 (ATT / E)	63	Raycap D06-48-60-18-8F SUPPRESSOR (ATT / P)	63
RRUS-11 B12 (ATT / E)	63	(2) TPX-070821 Triplexer (ATT / P)	63
RRUS-11 B12 (ATT / E)	63	(2) TPX-070821 Triplexer (ATT / P)	63
DTMABP7819VG12A Twin TMA (ATT / E)	63	Platform w/ Rails and Knee Braces (ATT / E)	62.5
DTMABP7819VG12A Twin TMA (ATT / E)	63	Raycap D06-48-60-18-8F SUPPRESSOR (ATT / E)	62



60.0 ft

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Horizontal	Face Width (ft)	# Panels @ (ft)	Weight (K)
T1	L3x5/16	A36	L2 1/2x2 1/2x3/16	A36	L3x3x1/4	L2 1/2x2x3/16	3	4 @ 5	10
T2					A	N.A.		1 @ 2.5	1.2
T3									0.2

SYMBOL LIST

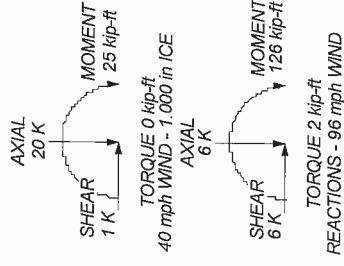
MARK	SIZE	MARK	SIZE
A	L2 1/2x2x3/16		

MATERIAL STRENGTH

GRADE	Fu	Fy	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

- Tower is located in Hartford County, Connecticut.
- ALL REACTION². Tower designed for Exposure C to the TIA-222-G Standard.
- ARE FACTORE³. Tower designed for a 96 mph basic wind in accordance with the TIA-222-G Standard.
- Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
- MAX. CORNER⁵. Deflections are based upon a 60 mph wind.
- DOWN: 31 K₆. Tower Structure Class II.
- SHEAR: 2 K₇. Topographic Category 1 with Crest Height of 0.000 ft.
- UPLIFT: -29.9. 2016 CT SBC / 2012 IBC / ULTIMATE WIND 124 MPH / RISK CAT. 2
- OWNER: FRONTIER COMMUNICATIONS - MANCHESTER CO SITE
- SHEAR: 2 K₁₀. TOWER RATING: 72.1%



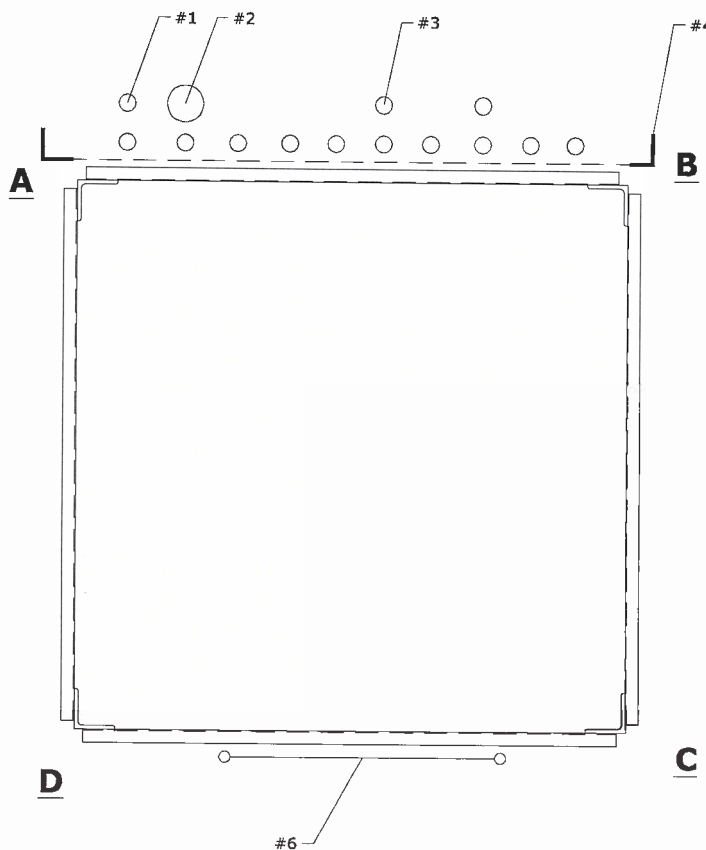
Malouf Engineering Int'l Inc.
 17950 Preston Road, STE 720
 Dallas, Texas 75252
 Phone: (972) 783 2578
 FAX: (972) 783 2583
 maloufengineering.com

Malouf Engineering Int'l Inc.
 PROJECT CONSULTANTS

Job#: **22.5 ft. SST / MANCHESTER CT #CT1070**
 Project: **CT052365-17V0**
 Client: **EMPIRE TELECOM / AT&T**
 Code: **TIA-222-G**
 Date: **08/22/17**
 Scale: **NTS**
 Drawn by: **KM**
 App'd:
 Path: **C:\Users\km\Documents\2017\08\22\20170822\22531700\05_2365-17V0\05_2365-17V0.dwg**
 Dwg No: **E-1**

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No.	QTY.	DESCRIPTION	ELEV.	TENANT
1	1	Fiber Cable	22'	AT&T / E
2	1	2" FLEX Conduit with DC Power Cables Inside	22'	AT&T / E
3	12	7/8	22'	AT&T / E
4	1	Feedline Ladder (Af)	22'	AT&T / E
5	1	Climbing Ladder	22'	E



LEGEND:

- E = EXISTING #X
- P = PROPOSED #X
- F = FUTURE #X
- R = REMOVE #X
- TO RELOCATE #X

CONTACT MEI IF LINE LAYOUT IS DIFFERENT FROM WHAT IS SHOWN BELOW.

101

PLAN: SCHEMATIC Tx-LINE LAYOUT

SCALE: NOT TO SCALE



NOTES:

1. Tx LINE LAYOUT IS SCHEMATIC ONLY, BASED UPON MEI MAPPING (SUB: HTS) DATED 8/15/2017 .
2. NEW BRACKET SUPPORT SPECIFICATION BY OTHERS.

08/22/2017

MALOUF ENGINEERING INTERNATIONAL, INC.

STRUCTURAL CONSULTANTS

17950 PRESTON ROAD SUITE 720
 DALLAS, TEXAS 75252-5635
 972-783-2578 (fax: 2583)
 www.maloufengineering.com

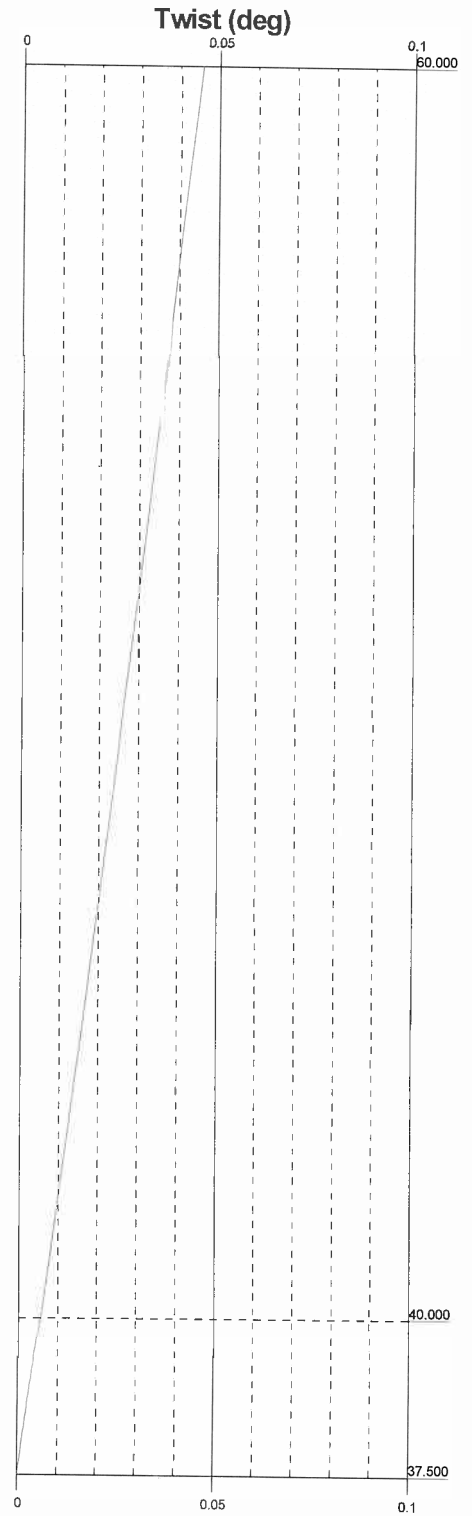
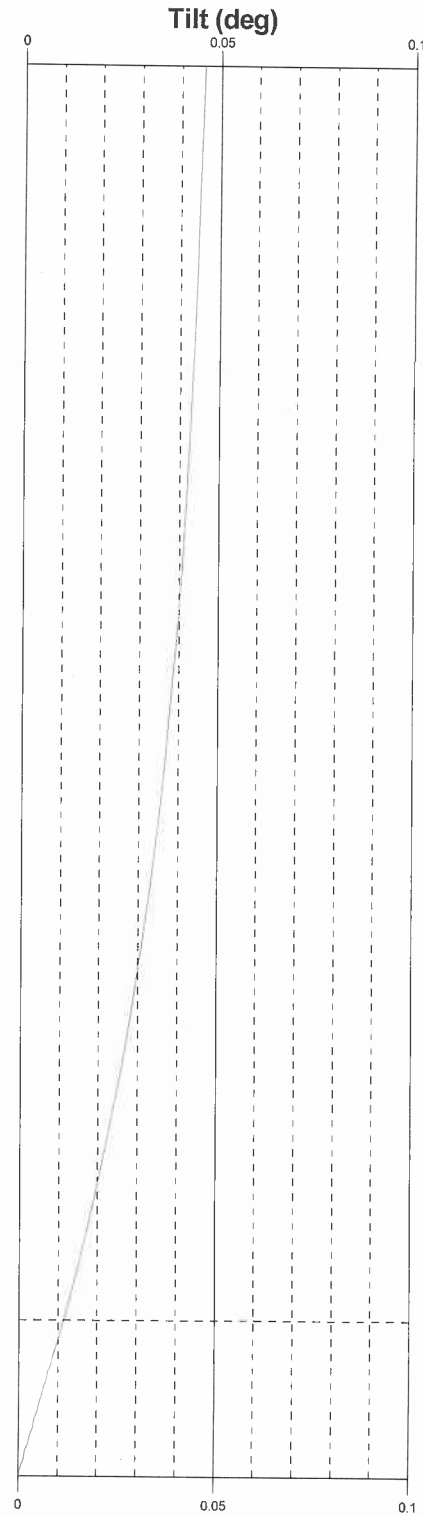
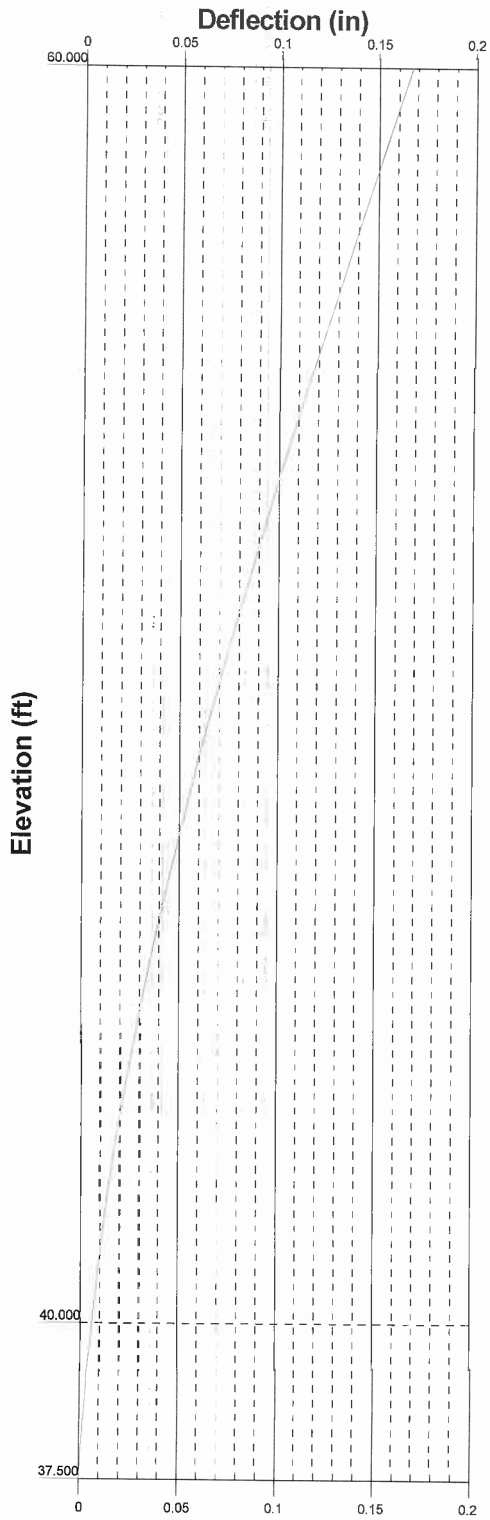
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22.5 FT. SST / MANCHESTER CT #CT1070

TOWER TxLINE LAYOUT

MEI PROJECT ID	SHEET NUMBER	REV.
CT05236S-17V0	L01	0

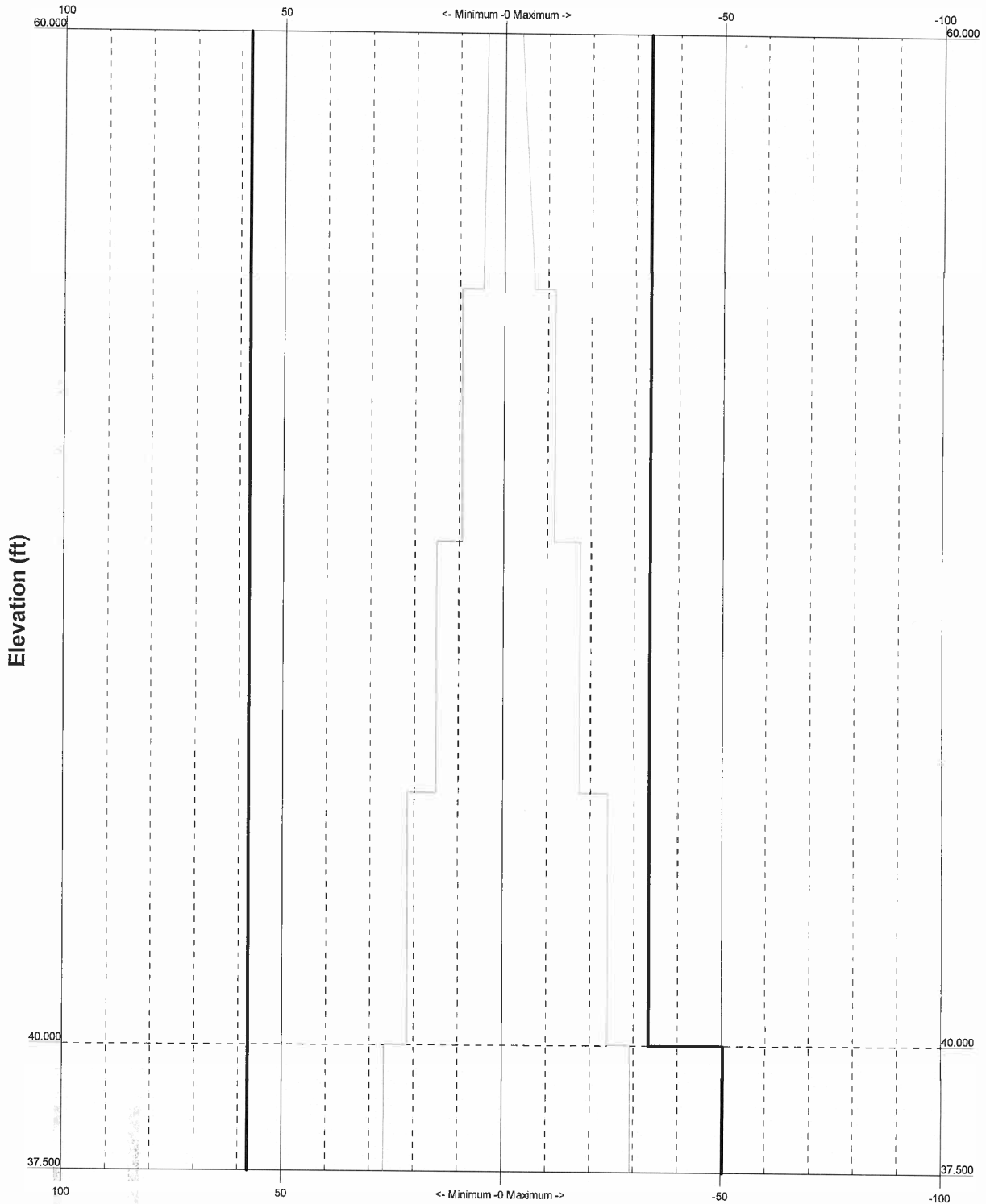



Malouf Engineering Int'l Inc.
 17950 Preston Road, STE 720
 Dallas, Texas 75252
 Phone: (972) 783 2578
 FAX: (972) 783 2583

Job: 22.5 ft. SST / MANCHESTER CT #CT1070	
Project: CT05236S-17V0	
Client: EMPIRE TELECOM / AT&T	Drawn by: KM
Code: TIA-222-G	Date: 08/22/17
Path:	Scale: NTS
Dwg No: E-5	

TIA-222-G - 96 mph/40 mph 1.000 in Ice Exposure C

Leg Capacity ——— Leg Compression (K)



 Malouf Engineering Int'l Inc. 17950 Preston Road, STE 720 Dallas, Texas 75252 Phone: (972) 783 2578 FAX: (972) 783 2583 maloufengineering.com	Job: 22.5 ft. SST / MANCHESTER CT #CT1070		
	Project: CT05236S-17V0		
	Client: EMPIRE TELECOM / AT&T	Drawn by: KM	App'd:
	Code: TIA-222-G	Date: 08/22/17	Scale: NTS
Path:		Dwg No. E-3	

APPENDIX 2 – BASE FRAME ANALYSIS PRINTOUT & GRAPHICS



tnxTower Malouf Engineering Int'l Inc. 17950 Preston Road, STE 720 Dallas, Texas 75252 Phone: (972) 783 2578 FAX: (972) 783 2583	Job 22.5 ft. SST / MANCHESTER CT #CT1070	Page 1 of 4
	Project CT05236S-17V0	Date 12:25:32 08/22/17
	Client EMPIRE TELECOM / AT&T	Designed by KM

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 60.000 ft above the ground line.

The base of the tower is set at an elevation of 37.500 ft above the ground line.

The face width of the tower is 3.000 ft at the top and 3.000 ft at the base.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).

Basic wind speed of 96 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.000 ft.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

OWNER: FRONTIER COMMUNICATIONS - MANCHESTER CO SITE.

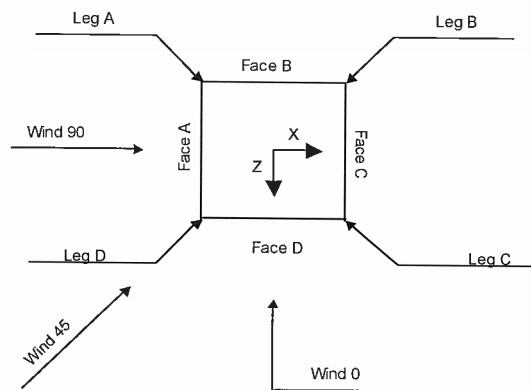
2016 CT SBC / 2012 IBC / ULTIMATE WIND 124 MPH / RISK CAT. 2.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Square Tower

tnxTower Malouf Engineering Int'l Inc. 17950 Preston Road, STE 720 Dallas, Texas 75252 Phone: (972) 783 2578 FAX: (972) 783 2583	Job 22.5 ft. SST / MANCHESTER CT #CT1070	Page 2 of 4
	Project CT05236S-17V0	Date 12:25:32 08/22/17
	Client EMPIRE TELECOM / AT&T	Designed by KM

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Placement	#	Weight	Description	Placement	#	Weight
	<i>ft</i>		<i>plf</i>		<i>ft</i>		<i>plf</i>
Fiber Cable (AT&T / E)	60.000 - 37.500	1	0.550	7/8 (AT&T / E)	60.000 - 37.500	12	0.540
2" FLEX Conduit (AT&T / E)	60.000 - 37.500	1	0.709	Feedline Ladder (Af) (AT&T / E)	60.000 - 42.000	1	8.400
3/4" DC Power Cable Inside Flex Conduit (AT&T / E)	60.000 - 37.500	2	0.800	Climbing Ladder (E)	60.000 - 39.167	1	6.750

Discrete Tower Loads

Description	Placement	Weight	Description	Placement	Weight
	<i>ft</i>	<i>K</i>		<i>ft</i>	<i>K</i>
Lightning Rod (E)	66.500	0.005	TMA (ATT / E)		0.029
Pipe Mount (E)	63.500	0.013	DTMABP7819VG12A Twin (ATT / E)	63.000	0.041
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (ATT / E)	63.000	0.018	TMA (ATT / E)	63.000	0.029
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (ATT / E)	63.000	0.030	DTMABP7819VG12A Twin (ATT / E)	63.000	0.041
SBNH-1D6565C w/ pipe mount (ATT / E)	63.500	0.042	TMA (ATT / E)	63.000	0.029
800 10121 w/ Pipe Mount (ATT / E)	63.000	0.074	QS66512-2 w/ Pipe Mount (ATT / P)	63.000	0.155
800 10121 w/ Pipe Mount (ATT / E)	63.000	0.139	QS66512-2 w/ Pipe Mount (ATT / P)	63.000	0.233
800 10121 w/ Pipe Mount (ATT / E)	63.000	0.139	TPA-65R-LCUUU-H8 w/ Pipe Mount (ATT / P)	63.000	0.104
Raycap DC6-48-60-18-8F SUPRESSOR (ATT / E)	62.000	0.020	RRUS-32 (ATT / P)	63.000	0.077
RRUS-11 B12 (ATT / E)	63.000	0.051	RRUS-32 (ATT / P)	63.000	0.105
RRUS-11 B12 (ATT / E)	63.000	0.071	RRUS-32 (ATT / P)	63.000	0.136
RRUS-11 B12 (ATT / E)	63.000	0.095	RRUS-32 (ATT / P)	63.000	0.077
RRUS-11 B12 (ATT / E)	63.000	0.051	RRUS-32 B2 (ATT / P)	63.000	0.053
RRUS-11 B12 (ATT / E)	63.000	0.071	RRUS-32 B2 (ATT / P)	63.000	0.074
RRUS-11 B12 (ATT / E)	63.000	0.095	RRUS-32 B2 (ATT / P)	63.000	0.098
RRUS-11 B12 (ATT / E)	63.000	0.051	RRUS-32 B2 (ATT / P)	63.000	0.053
RRUS-11 B12 (ATT / E)	63.000	0.071	RRUS-32 B2 (ATT / P)	63.000	0.074
RRUS-11 B12 (ATT / E)	63.000	0.095	RRUS-32 B2 (ATT / P)	63.000	0.098
DTMABP7819VG12A Twin	63.000	0.019	Raycap DC6-48-60-18-8F SUPRESSOR	63.000	0.020
					0.035

tnxTower Malouf Engineering Int'l Inc. 17950 Preston Road, STE 720 Dallas, Texas 75252 Phone: (972) 783 2578 FAX: (972) 783 2583	Job 22.5 ft. SST / MANCHESTER CT #CT1070	Page 3 of 4
	Project CT05236S-17V0	Date 12:25:32 08/22/17
	Client EMPIRE TELECOM / AT&T	Designed by KM

Description	Placement	Weight
	ft	K
(ATT / P)		0.053
(2) TPX-070821 Triplexer (ATT / P)	63.000	0.008
		0.011
		0.016
(2) TPX-070821 Triplexer (ATT / P)	63.000	0.008
		0.011
		0.016

Description	Placement	Weight
	ft	K
(2) TPX-070821 Triplexer (ATT / P)	63.000	0.008
		0.011
		0.016
Platform w/ Rails and Knee Braces (ATT / E)	62.500	1.950
		2.575
		3.200

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	60 - 40	0.167	30	0.0449	0.0437
T2	40 - 37.5	0.006	32	0.0090	0.0029

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
66.500	Lightning Rod	30	0.167	0.0449	0.0437	63228
63.500	Pipe Mount	30	0.167	0.0449	0.0437	63228
63.000	AM-X-CD-16-65-00T-RET w/ PIPE MOUNT	30	0.167	0.0449	0.0437	63228
62.500	Platform w/ Rails and Knee Braces	30	0.167	0.0449	0.0437	63228
62.000	Raycap DC6-48-60-18-8F SUPPRESSOR	30	0.167	0.0449	0.0437	63228

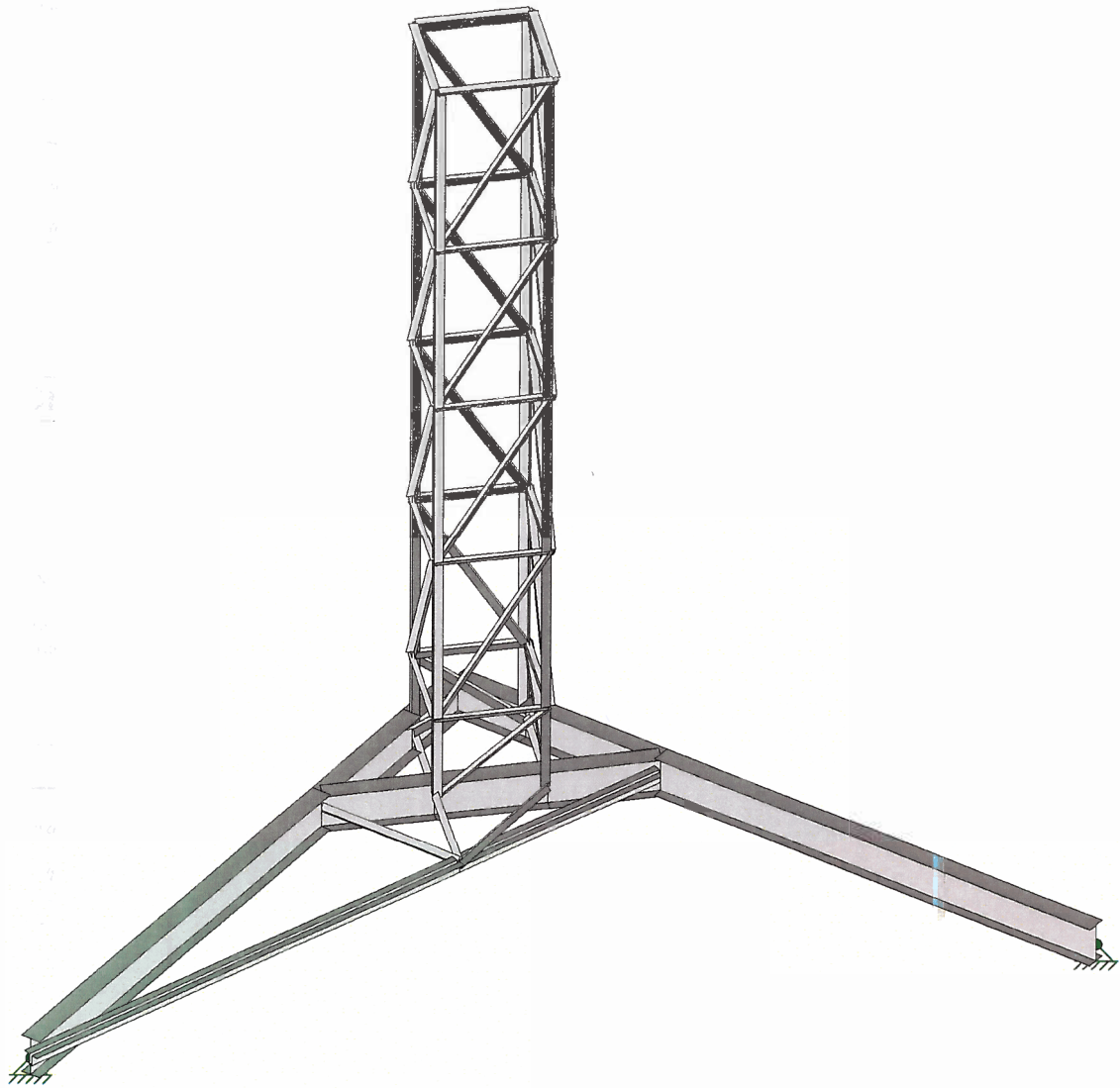
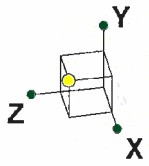
Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	60 - 40	0.677	12	0.1793	0.0970
T2	40 - 37.5	0.024	12	0.0365	0.0112

tnxTower Malouf Engineering Int'l Inc. 17950 Preston Road, STE 720 Dallas, Texas 75252 Phone: (972) 783 2578 FAX: (972) 783 2583	Job 22.5 ft. SST / MANCHESTER CT #CT1070	Page 4 of 4
	Project CT05236S-17V0	Date 12:25:32 08/22/17
	Client EMPIRE TELECOM / AT&T	Designed by KM

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	60 - 40	Leg	L3x3x5/16	2	-24.090	33.398	72.1	Pass
T2	40 - 37.5	Leg	L3x3x5/16	38	-29.256	50.310	58.2	Pass
T1	60 - 40	Diagonal	L2 1/2x2 1/2x3/16	9	-6.105	11.216	54.4	Pass
							64.0 (b)	
T2	40 - 37.5	Diagonal	L2 1/2x2 1/2x3/16	45	-4.518	16.528	27.3	Pass
							47.4 (b)	
T1	60 - 40	Horizontal	L2 1/2x2x3/16	13	-3.033	15.753	19.3	Pass
							31.6 (b)	
T1	60 - 40	Top Girt	L3x3x1/4	5	-1.152	31.133	3.7	Pass
							9.4 (b)	
T2	40 - 37.5	Top Girt	L2 1/2x2x3/16	41	-3.304	15.753	21.0	Pass
							34.3 (b)	
							Summary	
							Leg (T1)	Pass
							Diagonal (T1)	Pass
							Horizontal (T1)	Pass
							Top Girt (T2)	Pass
							Bolt Checks	Pass
							RATING = 72.1	Pass



Malouf Engineering Int'l Inc.

KM

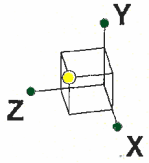
CT05236S-17V0

22.5 ft. SST / MANCHESTER CT #CT1070

SK - 1 2

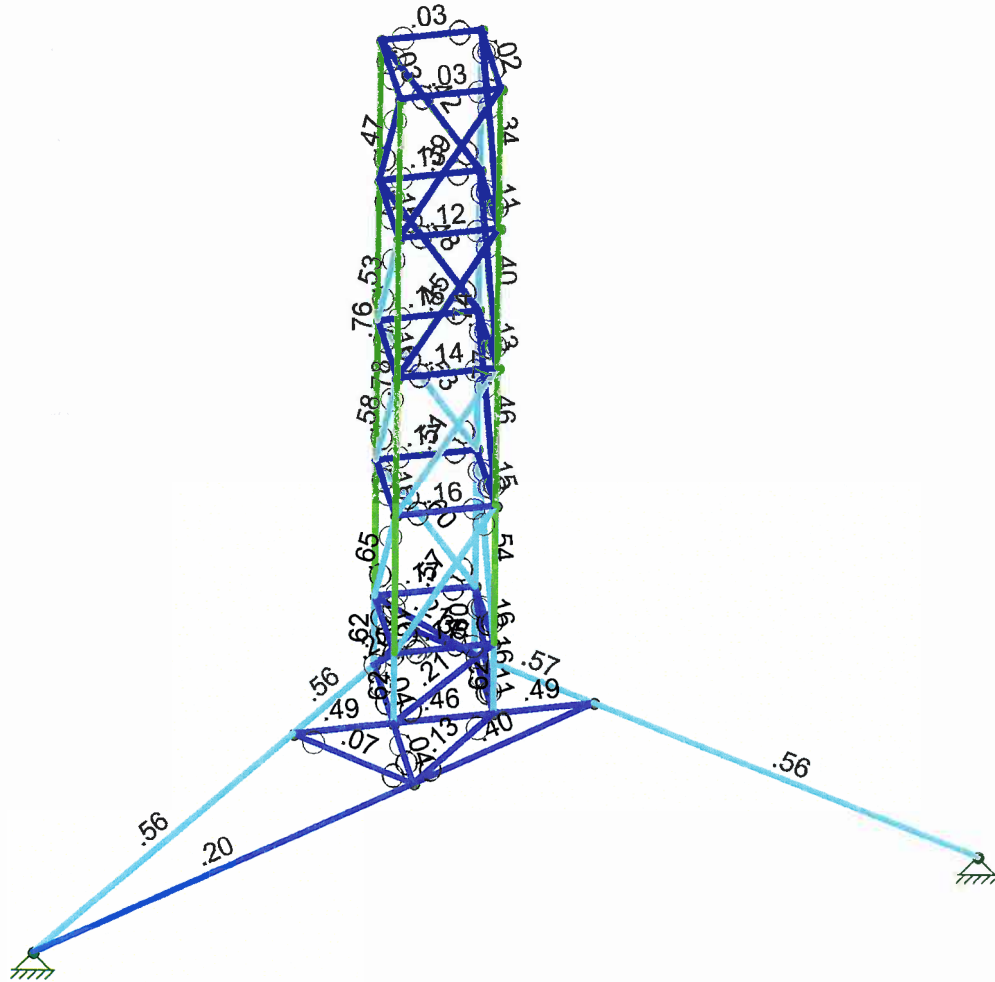
Aug 22, 2017 at 4:25 PM

CT05236S-17V0.r3



Code Check
(Env)

Black	No Calc
Red	> 1.0
Purple	.90-1.0
Green	.75-.90
Light Blue	.50-.75
Dark Blue	0-.50



Member Code Checks Displayed (Enveloped)
Results for LC 1, Dead Only

Malouf Engineering Int'l Inc.	22.5 ft. SST / MANCHESTER CT #CT1070	SK - 2 1
KM		Aug 22, 2017 at 4:22 PM
CT05236S-17V0		CT05236S-17V0.rt3



Company : Malouf Engineering Int'l Inc.
 Designer : KM
 Job Number : CT05236S-17V0
 Model Name : 22.5 ft. SST / MANCHESTER CT #CT1070

Aug 22, 2017
 4:35 PM
 Checked By: _____

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1E..	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36	29000	11200	.295	.65	.49	36	1.5	58	1.2
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
5	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
6	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
7	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
8	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	TWR_LEG_T1	L3x3x5/16	Column	Single Angle	A36	Typical	1.78	1.51	1.51	.061
2	TWR_TOP_GIR...	L3x3x1/4	Beam	Single Angle	A36	Typical	1.44	1.24	1.24	.032
3	TWR_DIAG_T1	L2 1/2x2 1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
4	TWR_HORZ_T1	L2 1/2x2x3/16	Beam	Single Angle	A36	Typical	.809	.291	.509	.01
5	TWR_LEG_T2	L3x3x5/16	Column	Single Angle	A36	Typical	1.78	1.51	1.51	.061
6	TWR_TOP_GIR...	L2 1/2x2x3/16	Beam	Single Angle	A36	Typical	.809	.291	.509	.01
7	TWR_DIAG_T2	L2 1/2x2 1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
8	HR1A	W8x10	Beam	Wide Flange	A36 Gr.36	Typical	2.96	2.09	30.8	.043

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N41	max	1.489	2	7.56	8	2.808	2	0	1	0	1	0	1
2		min	-1.499	10	-5.284	17	-2.82	10	0	1	0	1	0	1
3	N44	max	5.543	14	18.495	25	3.091	3	0	1	0	1	0	1
4		min	-5.566	6	-4.272	7	-3.088	11	0	1	0	1	0	1
5	N45	max	.602	13	7.448	4	.568	5	0	1	0	1	0	1
6		min	-.561	5	-5.494	13	-.612	13	0	1	0	1	0	1
7	Totals:	max	6.292	14	22.176	26	6.266	3						
8		min	-6.292	7	6.325	9	-6.266	11						

Envelope AISC 3rd: LRFD Steel Code Checks

	Member	Shape	Code...	Loc[ft]	LC	Shea...	Loc.....	L...	phi*Pnc [k]	phi*Pnt [k]	phi*M...	phi*M...	Cb	Eqn
1	M1	L3x3x5/16	.763	0	12	.004	5	y 14	31.542	57.672	- Code..			
2	M2	L3x3x5/16	.780	0	8	.003	5	y 8	31.542	57.672	- Code..			
3	M3	L3x3x5/16	.771	0	4	.003	5	y 4	31.542	57.672	- Code..			
4	M4	L3x3x5/16	.740	0	16	.003	5	z 14	31.542	57.672	- Code..			
5	M5	L3x3x1/4	.032	0	6	.002	0	z 22	36.269	46.656	- Code..			
6	M6	L3x3x1/4	.026	0	2	.002	0	z 19	36.269	46.656	- Code..			
7	M7	L3x3x1/4	.022	0	14	.002	3	z 20	36.269	46.656	- Code..			
8	M8	L3x3x1/4	.028	0	10	.002	0	z 22	36.269	46.656	- Code..			
9	M9	L2 1/2x2 1/2x3/16	.654	0	14	.003	5.8...	z 20	9.631	29.225	- Code..			
10	M10	L2 1/2x2 1/2x3/16	.571	0	10	.003	0	z 22	9.631	29.225	- Code..			
11	M11	L2 1/2x2 1/2x3/16	.538	0	6	.003	0	z 22	9.631	29.225	- Code..			



Company : Malouf Engineering Int'l Inc.
 Designer : KM
 Job Number : CT05236S-17V0
 Model Name : 22.5 ft. SST / MANCHESTER CT #CT1070

Aug 22, 2017
 4:35 PM
 Checked By: _____

Envelope AISC 3rd: LRFD Steel Code Checks (Continued)

Member	Shape	Code...	Loc[ft]	LC	Shea...	Loc.....	L...	phi*Pnc [k]	phi*Pnt [k]	phi*M...	phi*M...	Cb	Eqn
12	M12	L2 1/2x2 1/2x3/16	.600	0	2	.003	5.8... z 22	9.631	29.225	- Code..			
13	M13	L2 1/2x2x3/16	.185	0	6	.003	0 z 22	16.84	26.212	- Code..			
14	M14	L2 1/2x2x3/16	.160	0	2	.003	0 z 19	16.84	26.212	- Code..			
15	M15	L2 1/2x2x3/16	.146	0	14	.003	3 z 20	16.84	26.212	- Code..			
16	M16	L2 1/2x2x3/16	.168	0	10	.003	0 z 23	16.84	26.212	- Code..			
17	M17	L2 1/2x2 1/2x3/16	.584	0	14	.003	5.8... z 23	9.631	29.225	- Code..			
18	M18	L2 1/2x2 1/2x3/16	.509	0	10	.003	5.8... z 23	9.631	29.225	- Code..			
19	M19	L2 1/2x2 1/2x3/16	.462	0	6	.003	0 z 23	9.631	29.225	- Code..			
20	M20	L2 1/2x2 1/2x3/16	.535	0	2	.003	5.8... z 23	9.631	29.225	- Code..			
21	M21	L2 1/2x2x3/16	.164	0	6	.003	0 z 22	16.84	26.212	- Code..			
22	M22	L2 1/2x2x3/16	.141	0	2	.003	0 z 19	16.84	26.212	- Code..			
23	M23	L2 1/2x2x3/16	.127	0	14	.003	3 z 20	16.84	26.212	- Code..			
24	M24	L2 1/2x2x3/16	.149	0	10	.003	0 z 19	16.84	26.212	- Code..			
25	M25	L2 1/2x2 1/2x3/16	.532	0	14	.003	0 z 22	9.631	29.225	- Code..			
26	M26	L2 1/2x2 1/2x3/16	.452	0	10	.003	5.8... z 26	9.631	29.225	- Code..			
27	M27	L2 1/2x2 1/2x3/16	.404	0	6	.003	5.8... z 21	9.631	29.225	- Code..			
28	M28	L2 1/2x2 1/2x3/16	.478	0	2	.003	0 z 26	9.631	29.225	- Code..			
29	M29	L2 1/2x2x3/16	.148	0	6	.003	0 z 22	16.84	26.212	- Code..			
30	M30	L2 1/2x2x3/16	.124	0	2	.003	0 z 19	16.84	26.212	- Code..			
31	M31	L2 1/2x2x3/16	.109	0	14	.003	3 z 20	16.84	26.212	- Code..			
32	M32	L2 1/2x2x3/16	.131	0	10	.003	0 z 19	16.84	26.212	- Code..			
33	M33	L2 1/2x2 1/2x3/16	.473	0	14	.003	0 z 22	9.631	29.225	- Code..			
34	M34	L2 1/2x2 1/2x3/16	.391	0	10	.003	5.8... z 24	9.631	29.225	- Code..			
35	M35	L2 1/2x2 1/2x3/16	.338	0	6	.003	0 z 22	9.631	29.225	- Code..			
36	M36	L2 1/2x2 1/2x3/16	.415	0	2	.003	0 z 20	9.631	29.225	- Code..			
37	M37	L3x3x5/16	.621	0	12	.032	0 y 14	47.515	57.672	- Code..			
38	M38	L3x3x5/16	.616	0	8	.013	0 z 6	47.515	57.672	- Code..			
39	M39	L3x3x5/16	.621	0	4	.012	0 y 6	47.515	57.672	- Code..			
40	M40	L3x3x5/16	.603	0	16	.032	0 z 14	47.515	57.672	- Code..			
41	M41	L2 1/2x2x3/16	.164	0	6	.003	0 z 21	16.84	26.212	- Code..			
42	M42	L2 1/2x2x3/16	.167	0	2	.003	3 z 23	16.84	26.212	- Code..			
43	M43	L2 1/2x2x3/16	.157	0	14	.003	3 z 20	16.84	26.212	- Code..			
44	M44	L2 1/2x2x3/16	.172	0	10	.003	3 z 19	16.84	26.212	- Code..			
45	M45	L2 1/2x2 1/2x3/16	.205	0	14	.003	3.9... z 18	17.058	29.225	- Code..			
46	M46	L2 1/2x2 1/2x3/16	.215	0	10	.003	0 z 25	17.058	29.225	- Code..			
47	M47	L2 1/2x2 1/2x3/16	.161	0	6	.003	0 z 20	17.058	29.225	- Code..			
48	M48	L2 1/2x2 1/2x3/16	.214	0	2	.003	0 z 23	17.058	29.225	- Code..			
49	M21 1	W14x30	.555	13.636	8	.074	4.2... y 8	155.388	398.25	32.764	177.375	1.65	H1-1b
50	M22 1	W14x30	.560	0	8	.177	2.21 y 6	345.277	398.25	32.764	177.375	1.333	H1-1b
51	M23 1	W14x30	.344	0	12	.256	1.1... y 10	368.164	398.25	32.764	177.375	1.674	H1-1b
52	M24 1	W14x30	.558	13.636	4	.074	0 y 4	155.389	398.25	32.764	177.375	1.651	H1-1b
53	M25 1	W14x30	.567	0	4	.179	2.21 y 6	345.277	398.25	32.764	177.375	1.337	H1-1b
54	M26 1	W14x30	.354	0	2	.253	1.1... y 2	368.164	398.25	32.764	177.375	1.661	H1-1b
55	M27 1	L2.5x2.5x3	.041	0	4	.000	3 z 6	20.299	29.192	- Code..			
56	M28 1	L2.5x2.5x3	.108	0	13	.000	3 z 6	20.299	29.192	- Code..			
57	M29 1	W14x30	.485	3	8	.223	1.4... y 6	360.371	398.25	32.764	177.375	1.643	H1-1b
58	M30 1	W14x30	.461	3	4	.158	1.5... y 10	360.371	398.25	32.764	177.375	1.231	H1-1b
59	M31 1	W14x30	.485	0	4	.225	1.5... y 6	360.371	398.25	32.764	177.375	1.632	H1-1b
60	M32 1	L2.5x2.5x3	.068	0	17	.001	4.3... z 4	14.907	29.192	- Code..			
61	M33 1	L2.5x2.5x3	.126	0	8	.001	4.3... z 8	14.907	29.192	- Code..			
62	M34 1	LL4x3x5x0	.196	14.233	8	.012	14.... y 2	39.574	135.432	7.587	9.897	1.312	H1-1b
63	M35 1	LL4x3x5x0	.399	6.755	16	.015	6.7... y 2	89.515	135.432	7.587	6.598	1.413	H1-1b

Tower / Radio Information - Call Sign information needs to be tied to a specific antenna(s). Adjust letters as needed.

Call Sign	Radio Service	Emission Designator	Transmit Frequency	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency	
B KNLG429	Call Sign	Radio Service	Emission Designator	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency	
KLNG429	Call Sign	Radio Service	Emission Designator	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency	
5M00G7W	Radio Service	5M00G7W	1985-1970	80	55	1885-1890	
300-890, 891.5-894 MHz	Transmit Frequency	300-890, 891.5-894 MHz	Transmit Frequency	80	55	1885-1890	
23	Output Power (watts)	23	Output Power (watts)	80	55	1885-1890	
55	Transmitter ERP (dBm)	55	Transmitter ERP (dBm)	80	55	1885-1890	
335-845, 846.5-849 MHz	Receive Frequency	335-845, 846.5-849 MHz	Receive Frequency	80	55	1885-1890	
A WPSL626	Call Sign	Radio Service	Emission Designator	Transmit Frequency	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency
WPSL626	Call Sign	Radio Service	Emission Designator	Transmit Frequency	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency
5M00G7W	Radio Service	5M00G7W	1982-1945	80	55	1892-1910	
1930-1945	Transmit Frequency	1930-1945	Transmit Frequency	80	55	1892-1910	
80	Output Power (watts)	80	Output Power (watts)	80	55	1892-1910	
55	Transmitter ERP (dBm)	55	Transmitter ERP (dBm)	80	55	1892-1910	
1850-1855	Receive Frequency	1850-1855	Receive Frequency	80	55	1892-1910	
A WOXQ394 - #proposed	Call Sign	Radio Service	Emission Designator	Transmit Frequency	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency
WOXQ394 - #proposed	Call Sign	Radio Service	Emission Designator	Transmit Frequency	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency
5M00G7W	Radio Service	5M00G7W	740-748	80	57	710-716	
1930-1945	Transmit Frequency	1930-1945	Transmit Frequency	80	57	710-716	
80	Output Power (watts)	80	Output Power (watts)	80	57	710-716	
55	Transmitter ERP (dBm)	55	Transmitter ERP (dBm)	80	57	710-716	
1850-1855	Receive Frequency	1850-1855	Receive Frequency	80	57	710-716	
B WQJL451	Call Sign	Radio Service	Emission Designator	Transmit Frequency	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency
WQJL451	Call Sign	Radio Service	Emission Designator	Transmit Frequency	Output Power (watts)	Transmitter ERP (dBm)	Receive Frequency
5M00W7D	Radio Service	5M00W7D	734-740	80	57	704-710	
734-740	Transmit Frequency	734-740	Transmit Frequency	80	57	704-710	
80	Output Power (watts)	80	Output Power (watts)	80	57	704-710	
57	Transmitter ERP (dBm)	57	Transmitter ERP (dBm)	80	57	704-710	
704-710	Receive Frequency	704-710	Receive Frequency	80	57	704-710	

Please attach frequency coordination data (PCN)

Coax / Waveguide / Cable Feedline Information	Type	Size	Length	# of runs
Andrew	1.5/8"	235'	12 (E)	
DC Trunk Line	3/4"	235'	2 (E)	
Fiber Trunk	5/8"	235'	1 (E)	

Antenna & Ancillary Equipment Information	Check one	Size / Dimensions	Weight	Azimuth	Heights - Above Ground Level (feet)	Notes: (including removals, ice shields, etc.)
Make	Existing	Proposed				
Model						
Powerwave P65-16-XLH-RR	x	72" x 12" x 6"	64 lbs	28	63'	Not installed / to remove from agreement
Powerwave P65-16-XLH-RR	x	72" x 12" x 6"	64 lbs	148	66'	Not installed / to remove from agreement
Powerwave P65-16-XLH-RR	x	72" x 12" x 6"	64 lbs	268	66'	Not installed / to remove from agreement
KMW AM-X-CD-16-65-007-RET	x	72" x 12" x 6"	49 lbs	28	63'	Not installed / to remove from agreement
KMW AM-X-CD-16-65-007-RET	x	72" x 12" x 6"	49 lbs	148	66'	Not installed / to remove from agreement
KMW AM-X-CD-16-65-007-RET	x	72" x 12" x 6"	49 lbs	268	66'	Not installed / to remove from agreement
Andrew SBNH-1D6565C	x	97" x 12" x 7"	66 lbs	268	63'	Not installed / to remove from agreement
Kathrein 800-10121	x	55.4" x 10.3" x 5.9"	44.1 lbs	28	63'	To be Removed
Kathrein 800-10121	x	55.4" x 10.3" x 5.9"	44.1 lbs	148	66'	To be Removed
Kathrein 800-10121	x	55.4" x 10.3" x 5.9"	44.1 lbs	268	66'	To be Removed
KMW AM-X-CD-16-65-007-RET	x	72" x 12" x 6"	49 lbs	28	63'	
KMW AM-X-CD-16-65-007-RET	x	72" x 12" x 6"	49 lbs	148	66'	
KMW AM-X-CD-16-65-007-RET	x	72" x 12" x 6"	49 lbs	268	66'	
Kathrein 800-10121	x	55.4" x 10.3" x 5.9"	44.1 lbs	28	63'	
Kathrein 800-10121	x	55.4" x 10.3" x 5.9"	44.1 lbs	148	66'	
Kathrein 800-10121	x	55.4" x 10.3" x 5.9"	44.1 lbs	268	66'	
Andrew SBNH-1D6565C	x	97" x 12" x 7"	66 lbs	268	63'	
Raycap Squid	x	24" x 9.7"	20 lbs	28	63'	One (1) Surge Suppressor
RRUS-11	x	17" x 12" x 9.6"	111 lbs	28/148/268	63'	3 Radio Heads, 1 per sector
Powerwave DTMAFB7819VG12A	x	10.63" x 11.02" x 3.78"	19.18 lbs ea	28/148/268	63'	3 TMA, 1 per sector - to be removed
Powerwave DTMAFB7819VG12A	x	10.63" x 11.02" x 3.78"	19.18 lbs ea	28/148/268	63'	3 TMA, 1 per sector - to be removed
Powerwave CM1007-DBP/XBC-103	x	4.92" x 8.96" x 3.27"	6.5 lbs ea	28/148/268	63'	6 Diplexers, 2 per sector - to be removed
OS66512-2	x	72" x 12" x 9.6"	111 lbs	28	63'	
OS66512-2	x	72" x 12" x 9.6"	111 lbs	148	66'	
OS66512-2	x	72" x 12" x 9.6"	111 lbs	268	66'	
TPA-655-LCUUUH-18	x	96" x 14.4" x 8.6"	94.2 lbs	28/148/268	63'	3 Radio Heads, 1 per sector
RRUS-32	x	27.2" x 12.1" x 7.0"	53 lbs ea	28/148/268	63'	3 Radio Heads, 1 per sector
RRUS-32 B2	x	27.2" x 12.1" x 7.0"	53 lbs ea	28/148/268	63'	One (1) Surge Suppressor
Raycap Squid	x	24" x 9.7"	20 lbs	28	63'	
TPX-070821	x	5.83" x 9.65" x 2.05"	7.5 lbs ea	28/148/268	63'	6 Triplexers, 2 per sector



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1070

Manchester - East Center St
52 East Center Street
Manchester, CT 6040

August 29, 2017

Centerline Communications Project Number: 950006-066

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	16.88 %



August 29, 2017

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT1070 – Manchester - East Center St**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **52 East Center Street, Manchester, CT**, for the purpose of determining whether the emissions from the Proposed AT&T 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.



CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **52 East Center Street, Manchester, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the rooftop mounted tower. For this report the sample point is the top of a 6-foot person standing at the base of the rooftop mounted tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60
LTE	2300 MHz (WCS)	2	60

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10121	63
A	2	KMW AM-X-CD-16-65-00T-RET	63
A	3	Quintel QS66512-2	63
B	1	Kathrein 800-10121	63
B	2	KMW AM-X-CD-16-65-00T-RET	63
B	3	Quintel QS66512-2	63
C	1	Kathrein 800-10121	63
C	2	Commscope SBNH-1D6565C	63
C	3	CCI TPA-65R-LCUUUU-H8	63

Table 2: Antenna Data

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



RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	4	120	2,471.44	3.44
Antenna A2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	120	2,595.26	6.15
Antenna A3	Quintel QS66512-2	1900 MHz (PCS) / 2300 MHz (WCS)	13.85 / 14.85	4	240	6,577.84	7.28
Sector A Composite MPE%							16.87
Antenna B1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	4	120	2,471.44	3.44
Antenna B2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	120	2,595.26	6.15
Antenna B3	Quintel QS66512-2	1900 MHz (PCS) / 2300 MHz (WCS)	13.85 / 14.85	4	240	6,577.84	7.28
Sector B Composite MPE%							16.87
Antenna C1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	4	120	2,471.44	3.44
Antenna C2	Commscope SBNH-1D6565C	700 MHz	13.35	2	120	2,780.87	6.59
Antenna C3	CCI TPA-65R-LCUUUU-H8	1900 MHz (PCS) / 2300 MHz (WCS)	13.85 / 14.85	4	240	6,188.99	6.85
Sector C Composite MPE%							16.88

Table 3: AT&T Emissions Levels



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sector with the largest power density value is **Sector C**. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	16.88 %
No Additional Carriers	NA
Site Total MPE %:	16.88 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	16.87 %
AT&T Sector B Total:	16.87 %
AT&T Sector C Total:	16.88 %
Site Total:	16.88 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sector with the largest power density value is **Sector C**.

AT&T Frequency Band / Technology (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	418.91	63	9.27	850 MHz	567	1.64%
AT&T 1900 MHz (PCS) UMTS	2	816.81	63	18.08	1900 MHz (PCS)	1000	1.81%
AT&T 700 MHz LTE	2	1,390.44	63	30.77	700 MHz	467	6.59%
AT&T 1900 MHz (PCS) LTE	2	1,422.82	63	31.49	1900 MHz (PCS)	1000	3.15%
AT&T 2300 MHz (WCS) LTE	2	1,671.67	63	36.99	2300 MHz (WCS)	1000	3.70%
						Total:	16.88%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

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

The anticipated maximum composite contributions from the AT&T 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:

AT&T Sector	Power Density Value (%)
Sector A:	16.87 %
Sector B:	16.87 %
Sector C:	16.88 %
AT&T Maximum Total (per sector):	16.88 %
Site Total:	16.88 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **16.88 %** 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.

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is written over a horizontal line.

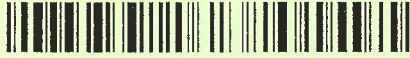
Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

SENDER: COMPLETE THIS SECTION

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

1. Article Addressed to:

The Honorable Jay Moran
 Mayor, Town of Manchester
 41 Center Street, P.O. Box 191
 Manchester, CT 06045-0191



9590 9402 1864 6104 9643 80

2. Article Number (Transfer from service label)

7016 2140 0000 9458 5873

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

[Handwritten Signature]

- Agent
- Addressee

B. Received by (Printed Name)

[Handwritten Name]

C. Date of Delivery

[Handwritten Date]

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

[Handwritten Address]

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

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

1. Article Addressed to:

Frontier Communications
 Attn: Kelley Stewart
 805 Central Expressway South
 Allen, TX 75013



9590 9402 1864 6104 9644 10

2. Article Number (Transfer from service label)

7016 2140 0000 9458 5903

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature

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[Handwritten Signature]

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

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

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY																
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>[Signature]</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>																
<p>1. Article Addressed to: James Davis, Zoning Enforcement Officer Town of Manchester Building Dept. P.O. Box 191 Manchester, CT 06045</p>	<p>B. Received by (Printed Name) <i>TD Root</i> C. Date of Delivery <i>9/11/17</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No <i>191</i></p>																
 9590 9402 1864 6104 9644 03	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input checked="" type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Insured Mail</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)</td> <td></td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input checked="" type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery	<input type="checkbox"/> Insured Mail		<input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)	
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<input type="checkbox"/> Insured Mail																	
<input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)																	
<p>Article Number (Transfer from service label) <i>016 2140 0000 9458 5897</i></p>	<p>Domestic Return Receipt</p>																

PS Form 3811, July 2015 PSN 7530-02-000-9053

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY																
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>[Signature]</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>																
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<p>Article Number (Transfer from service label) <i>016 2140 0000 9458 5880</i></p>	<p>Domestic Return Receipt</p>																

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