



July 17, 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, Addition of 9 radios, and addition of 2 Squids
Property Address: 39 West Street, Danbury, CT (the “Property”)
Applicant: AT&T Mobility (“AT&T”, Site # CT2124)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 55 foot 6 Inch Monopole tower (“tower”) at the above-referenced address, latitude 41.39290556, longitude - 73.4541139. AT&T’s facility consists of six (6) wireless telecommunications antennas at 63 feet and 69 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, adding (9) remote radios, and adding (2) squids. The centerline height of said antennas is and will remain at 63 and 69 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 City of Danbury, The Building Inspector of the City of Danbury and the Director of Planning and Zoning of the City of Danbury. 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 and 69 foot level of the 55 foot 6 Inch Monopole 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 July 11, 2017).

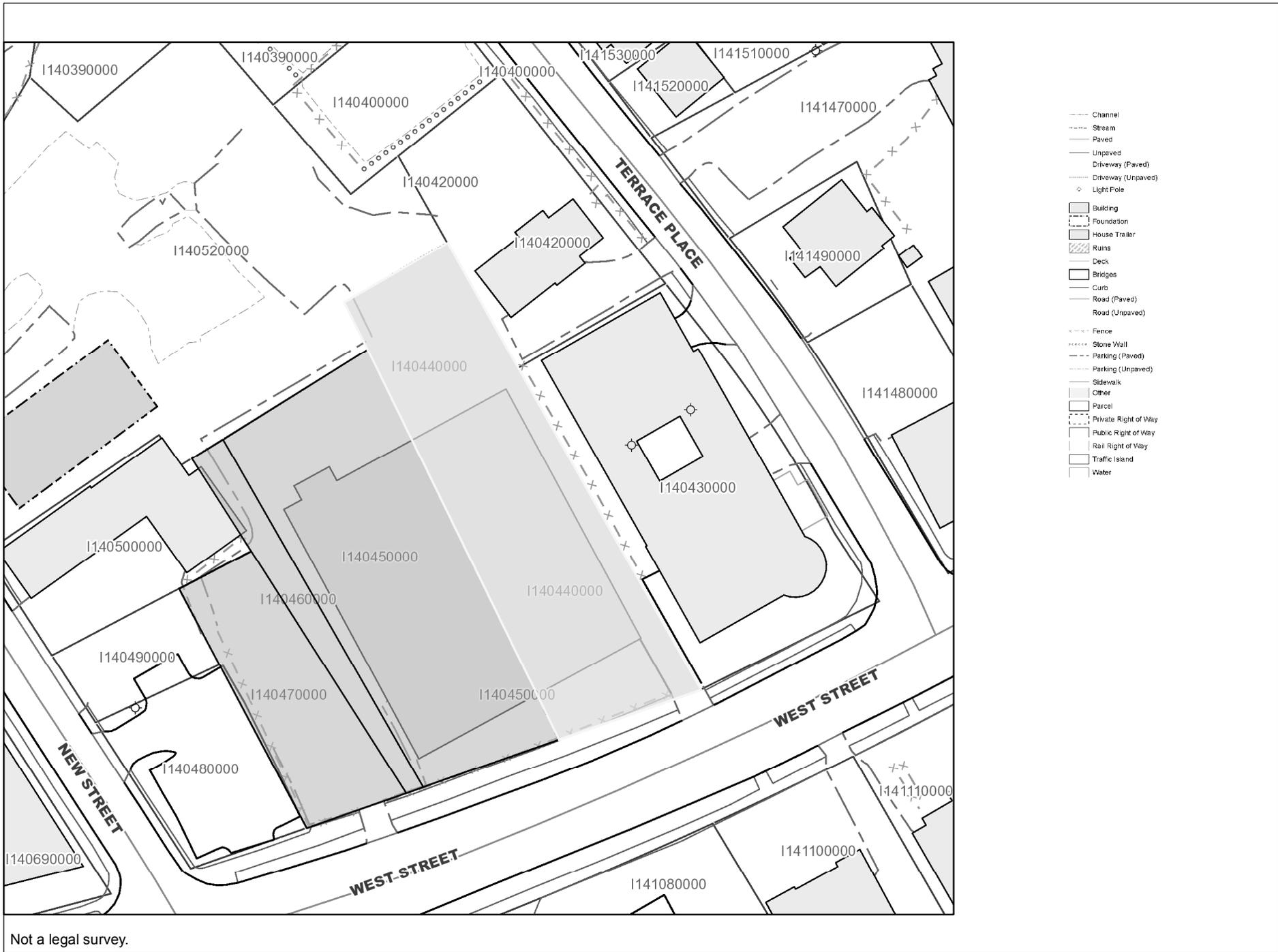
For the foregoing reasons AT&T respectfully requests that the proposed swap of antennas, addition of radios and addition of squids be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Mark Boughton, Mayor, City of Danbury
David Newland, Building Official, City of Danbury
Sharon B. Calitro, Director of Planning and Zoning, City of Danbury
Frontier Communications, c/o Mary Anne Kolb

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



Not a legal survey.

Rigorous Structural Analysis Report



AT&T - Danbury Center Site CT2124 / FA# 10034988
Owner: Frontier Communications - Danbury CO Site
Danbury, Connecticut

July 11, 2017

MEI PROJECT ID: CT05212S-17V0



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





July 11, 2017

Ms. Nicole Caplan
Empire Telecom
 Billerica, MA 01862

RIGOROUS STRUCTURAL ANALYSIS

Structure/Make/Model:	38.5 ft Self-Supporting Tower	Not Known / Not Known	
Client/Site Name/#:	Empire Telecom / AT&T	Danbury Center CT2124 / FA 10034988	
Owner/Site Name/#:	Frontier Communications	Danbury CO	
MEI Project ID:	CT05212S-17V0		
Location:	39 West Street Danbury, Connecticut 06810	Fairfield County FCC #N/A	
	LAT 41-23-34.4 N	LON	73-27-14.9 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 **52.9%** - legs / **27%** - 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:

Helder Lopez, PE
 Sr. Project Engineer

Reviewed & Approved by:

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



7/11/2017

TABLE OF CONTENTS

1.	INTRODUCTION & SCOPE	4
2.	SOURCE OF DATA	4
	Background Information:-----	4
3.	ANALYSIS CRITERIA	5
	Appurtenances Configuration-----	5
4.	ANALYSIS PROCEDURE	6
	Analysis Program-----	6
	Assumptions-----	6
5.	ANALYSIS RESULTS	7
6.	FINDINGS & RECOMMENDATIONS	8
7.	REPORT DISCLAIMER	9
	APPENDIX 1 – TOWER ANALYSIS PRINTOUT & GRAPHICS	10
	APPENDIX 2 – BASE FRAME ANALYSIS PRINTOUT & GRAPHICS	11
	APPENDIX 3 – SOURCE / CHANGED CONDITION	12



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 07/06/2017
Rooftop Base Support	MEI Mapping	Field Mapping [HTS]	Mapping Report dated 07/06/2017
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 07/06/2017
CHANGED CONDITION			
	Empire Telecom / Ms. Nicole Caplan	AT&T RF Data Sheet	RFDS dated 06/15/2016
	Frontier Comm. / Ms. Elissa McOmer	Frontier Collocation PDQ	PDQ Dated 04/26/2017

Background Information:

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

DESIGNER / FABRICATOR	Not Known / 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 / NDS / ANSI/TIA-222-G-2 Standard	
LOADING CASES	Full Wind:	120 Mph ultimate gust [equiv. 93 Mph (3-sec gust)] w/No Radial Ice**
	Iced Case:	50 Mph + 3/4" Radial Ice
	Service:	60 Mph
	Seismic:	$S_s = 0.217 / S_1 = 0.067$ / Site Class: ~Rigid structure
STRUCTURE CRITERIA	Risk Category (Structural Class): Class II	
	Exposure Category: 'B' – 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	3	QS66512-2 Panel Antennas	[Inside Lower Canister (4.08ft Dia. x 7.33ft Ht)]	1	3/8" Fiber Cable
55.6	AT&T	3	RRUS-32 Boxes	Leg Mounted	2	3/4" DC Power Cable
54	AT&T	6	RRUS-12 Boxes	Leg Mounted		
51.6	AT&T	1	DC6-48-60-18-8F Suppressor Box	Leg Mounted		
Current Appurtenances To Be Removed						
63	AT&T	3	AM-X-14-65-00T-RET Panel Ants			
55.6	AT&T	3	RRUS-11 Boxes	Leg Mounted		

Table 2: Remaining Current and Reserved/Future Appurtenances

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
71	AT&T	3	7770.00 Panels Antennas	Inside Top Canister (3ft Dia..x 8.5ft Ht)	6	7/8"
		6	LGP21401 TMA Boxes			
		6	7020 RET Boxes			
55.6	AT&T	3	RRUS-11 Boxes	Leg Mounted	1	3/8" Fiber Cable 3/4" DC Power Cable
					2	
51.6	AT&T / E	1	DC6-48-60-18-8F Suppressor Box	Leg Mounted		

Notes:

- *Elevations adjusted as per MEI Mapping Report
- All elevations are measured from AGL -38.5 ft SST onto 37 ft building rooftop/ frame base.
- Feed lines quantities are Final count as per PDQ & sizes have been updated as per field mapping.
- Please note appurtenances not listed above are to be removed/not present as per data supplied.
- (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. 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
TOP SUPPORT POLE	22.9%	67.5 - 57	Pass	
LEGS	52.9%	57 - 37	Pass	
DIAGONALS	30.4%	57 - 37	Pass	Bolts Control
HORIZONTALS	14.5%	57 - 37	Pass	Bolts Control
ROOFTOP BASE FRAME	27%	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	0.0392 Deg.	4 Deg. from Vert. or Horiz. Axis	Pass	
HORIZONTAL DISPLACEMENT	0.512 In./ 0.11% of Ht.	3.0% of Height	Pass	

Notes:

1. All elevations are measured from AGL -38 ft SST onto 37 ft 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 52.9% / 27%** of its support capacity (controlling component: Legs / Base Frame) with the proposed changed condition considered. Please refer to Table 3 and to Appendices 1 and 2 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 has 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.

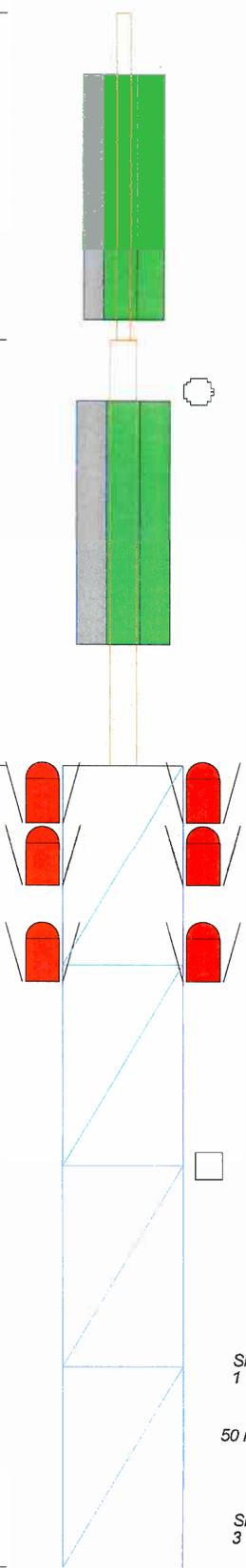
Customer hereby agrees and acknowledges that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than MALOUF ENGINEERING INTERNATIONAL, INC. in connection with the implementation of services including 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



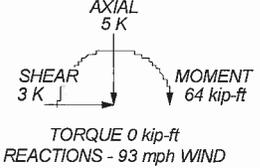
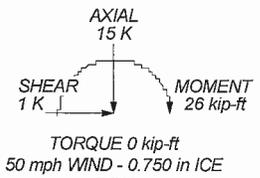
Section	T1	L1	75.5 ft
Legs	L3x3x1/4	P 4.500 OD x 0.337	
Leg Grade	A36	A53-B-35	
Diagonals	L2 1/2x2 1/2x3/16	N.A.	
Diagonal Grade	A36	N.A.	
Top Girts	L3x3x1/4	N.A.	
Horizontals	L2 1/2x2 1/2x3/16	N.A.	
Face Width (ft)	3	0.375	
# Panels @ (ft)	4 @ 5	N.A.	
Weight (K)	0.8	0.1	
			37.5 ft
			57.0 ft
			37.0 ft
			1.3



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 16 K
SHEAR: 1 K

UPLIFT: -14 K
SHEAR: 1 K



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Top Canister (3ft. Dia.x8.5ft) (E)	71	QS66512-2 w/ Pipe Mount (ATI / P)	63
7770.00 Panels w/ Pipe Mount (ATI / E)	71	QS66512-2 w/ Pipe Mount (ATI / P)	63
		RRUS-11 (ATT) (ATI / E)	55.6
7770.00 Panels w/ Pipe Mount (ATI / E)	71	RRUS-11 (ATT) (ATI / E)	55.6
		RRUS-11 (ATT) (ATI / E)	55.6
7770.00 Panels w/ Pipe Mount (ATI / E)	71	RRUS-32 (ATI / P)	55.6
		RRUS-32 (ATI / P)	55.6
(2) LGP21401 TMA'S (ATI / E)	71	RRUS-32 (ATI / P)	55.6
(2) LGP21401 TMA'S (ATI / E)	71	RRUS-12 (ATI / P)	54
(2) LGP21401 TMA'S (ATI / E)	71	(2) RRUS-12 (ATI / P)	54
(2) 7020 RET (ATI / E)	71	(2) RRUS-12 (ATI / P)	54
(2) 7020 RET (ATI / E)	71	Raycap DC6-48-60-18-8F SUPPRESSOR (ATI / E)	51.6
(2) 7020 RET (ATI / E)	71	Raycap DC6-48-60-18-8F SUPPRESSOR (ATI / P)	51.6
Lower Canister (4.0ft. Dia.x7.375ft) (E)	63		
QS66512-2 w/ Pipe Mount (ATI / P)	63		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. ASCE 7-10 = 120 Mph (Ultimate)
9. TOWER RATING: 52.9%

<p>MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583 maloufengineering.com</p>	<p>Job: 38.5 ft. SST / Danbury Center #CT2124</p>
	<p>Project: CT05212S-17V0</p>
	<p>Client: Empire / AT&T Drawn by: H Lopez App'd:</p>
	<p>Code: TIA-222-G Date: 07/11/17 Scale: NTS</p>
	<p>Path: C:\MEI\Projects\17files\SST\CT05212S-17V0\CT05212S-17V0.dwg Dwg No. E-1</p>

ALL RIGHTS RESERVED. THIS DRAWING SHALL REMAIN THE PROPERTY OF MALOUF ENGINEERING INTERNATIONAL, INC. NO PART THEREOF SHALL BE REPRODUCED, COPIED, ADAPTED, DISCLOSED, OR DISTRIBUTED TO OTHERS WITHOUT WRITTEN PERMISSION OF MEI, INC.

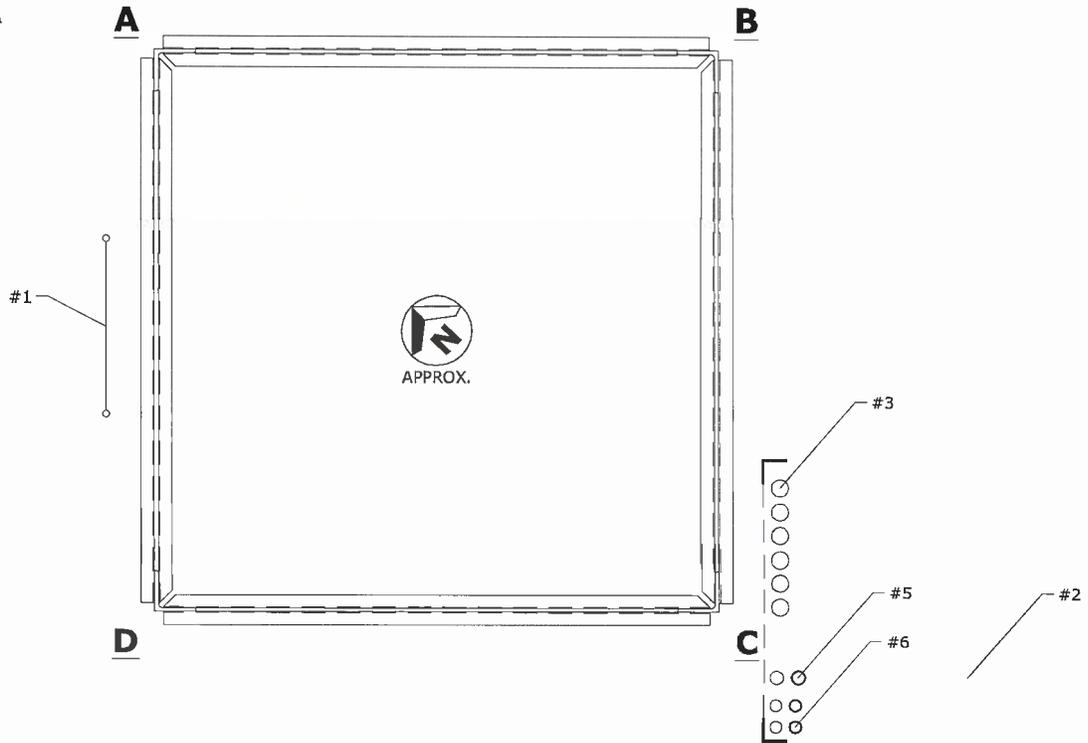
No.	QTY.	DESCRIPTION	ELEV.	TENANT
1	1	Climbing Ladder	20'	E
2	1	Feedline Ladder (Af)	20'	E
3	6	7/8	34'	E
4	-	-	-	-
5	2	3/8" Fiber Cable	20'	E+P
6	4	3/4" DC Power Cable	20'	E+P

NOTE: ELEVATION SHOWN IS FROM TOWER BASE.

LEGEND :

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

Note:
CONFIGURATION SHOWN IS FINAL
TRANSMISSION LINES TO BE REMOVED
NOT SHOWN FOR CLARITY.



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 7/6/2017 .
 2. NEW BRACKET SUPPORT SPECIFICATION BY OTHERS.

JUL 11, 2017



17950 PRESTON ROAD SUITE 720
DALLAS, TEXAS 75252-5635
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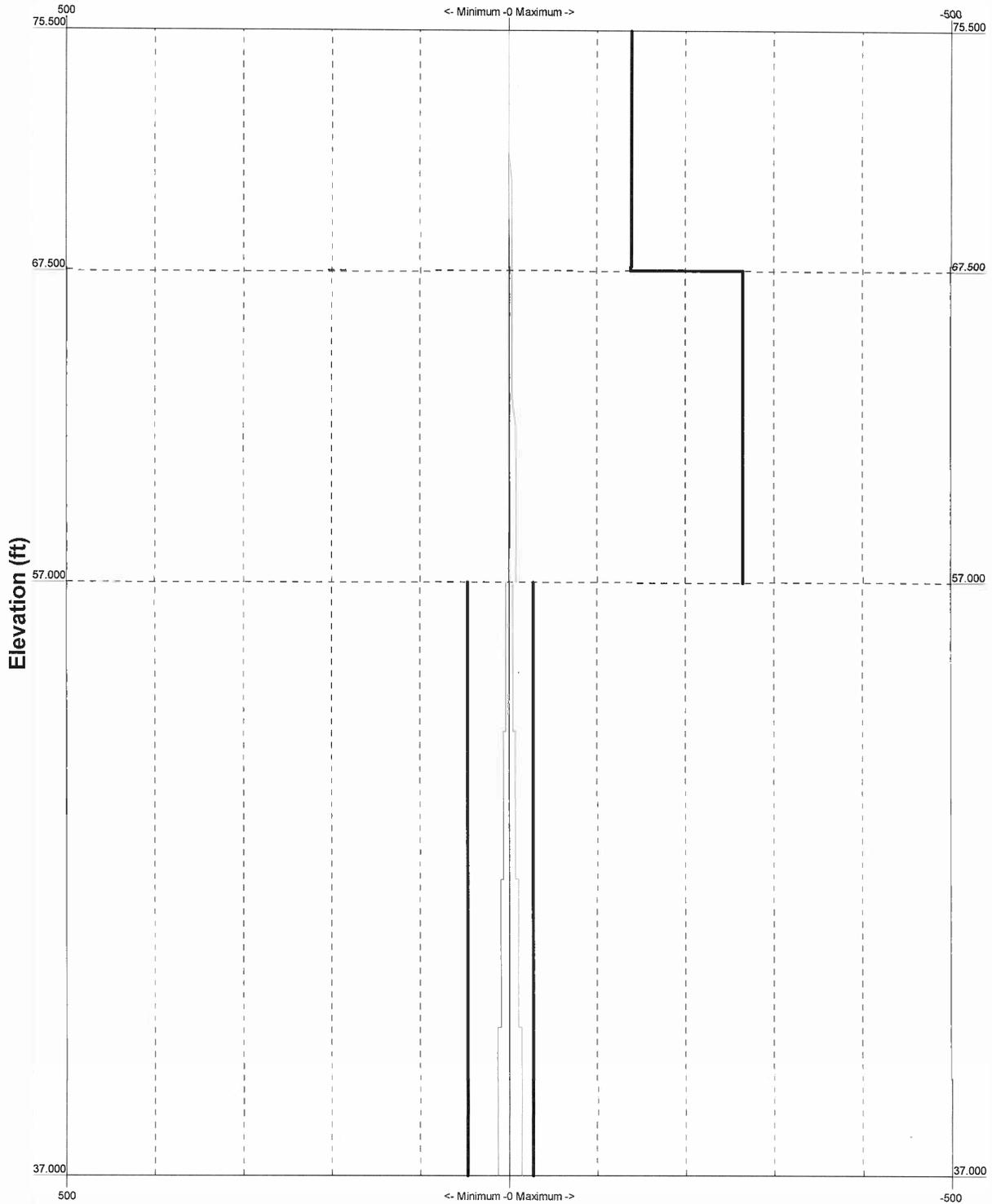
40 FT. SST / DANBURY CENTER #CT2124

TOWER TxLINE LAYOUT

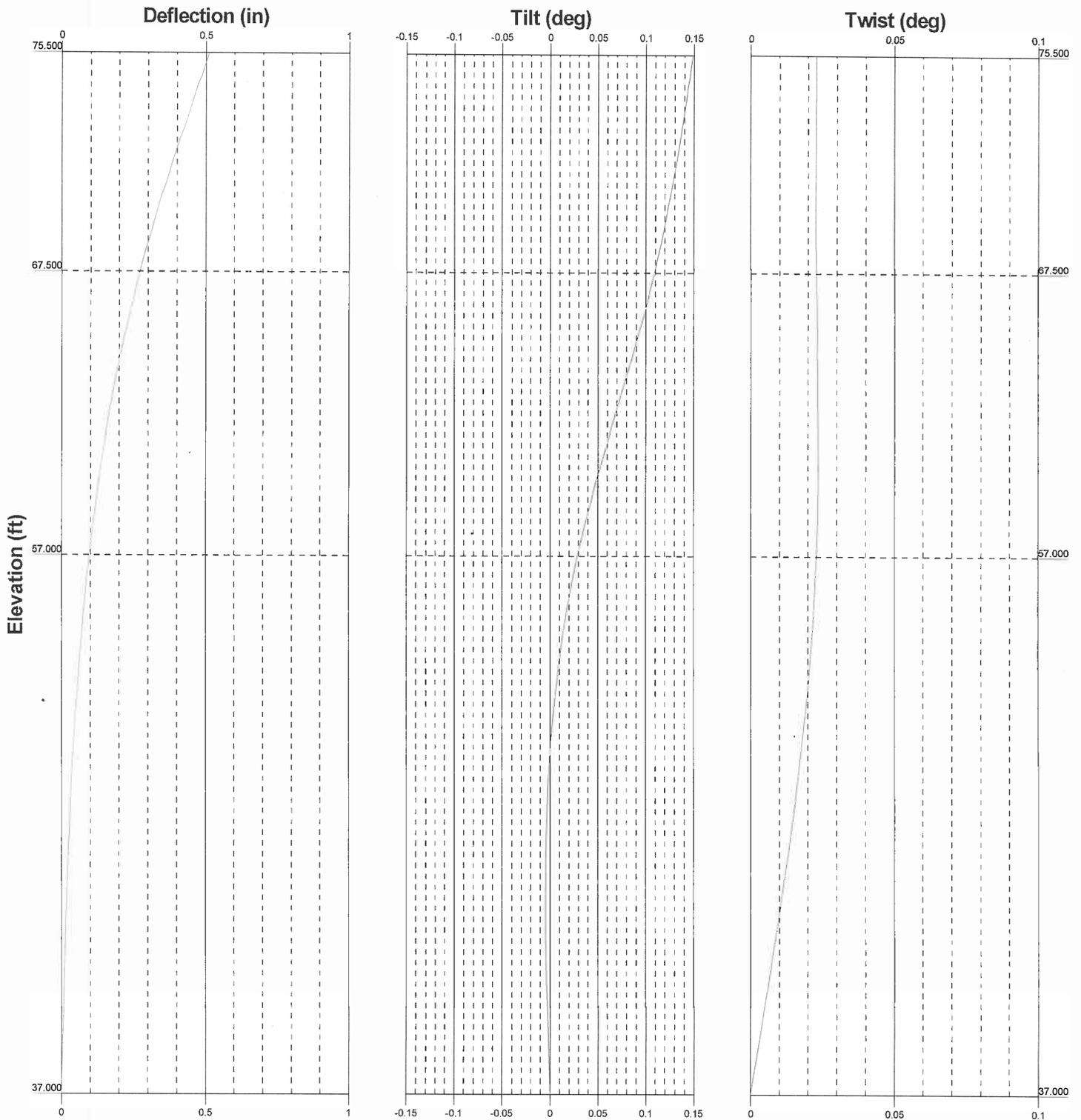
MEI PROJECT ID	SHEET NUMBER	REV.
CT05212S-17V0	L01	0

TIA-222-G - 93 mph/50 mph 0.750 in Ice Exposure B

Leg Capacity ——— Leg Compression (K)



 <p>MALOUF ENGINEERING INT'L. INC. MALOUF ENGINEERING CONSULTANTS maloufengineering.com</p>	<p>MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583</p>		<p>Job: 38.5 ft. SST / Danbury Center #CT2124</p>	
	<p>Project: CT05212S-17V0</p>		<p>Client: Empire / AT&T Drawn by: HLopez App'd:</p>	
	<p>Code: TIA-222-G</p>		<p>Date: 07/11/17 Scale: NTS</p>	
	<p>Path: C:\MEI\Projects\17files\SST\CT05212S-17V0\CT05212S-17V0.dwg</p>		<p>Dwg No: E-3</p>	
	<p>maloufengineering.com</p>		<p>Scale: NTS</p>	



 <p>MALOUF ENGINEERING INT'L, INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583 maloufengineering.com</p>	<p>Job: 38.5 ft. SST / Danbury Center #CT2124</p>		
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	<p>Path: C:\MEI\Projects\17files\SS\TCT05212S-17V0\TCT05212S-17V0.dwg</p>		<p>Dwg No. E-5</p>

tnxTower MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 38.5 ft. SST / Danbury Center #CT2124	Page 1 of 4
	Project CT05212S-17V0	Date 17:33:18 07/11/17
	Client Empire / AT&T	Designed by HLopez

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 75.500 ft above the ground line.

The base of the tower is set at an elevation of 37.000 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.

An index plate is provided at the 4x free standing -tower connection.

There is a pole section.

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

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

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

Basic wind speed of 93 mph. (Equiv. to 120 Mph Ultimate)

Structure Class II.

Exposure Category **B**.

Topographic Category 1.

Crest Height 0.000 ft.

Nominal ice thickness of 0.750 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

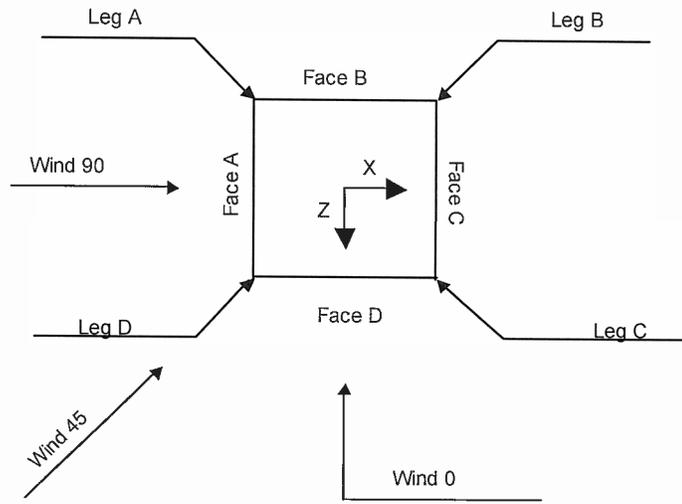
Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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.

tnxTower MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 38.5 ft. SST / Danbury Center #CT2124	Page 2 of 4
	Project CT05212S-17V0	Date 17:33:18 07/11/17
	Client Empire / AT&T	Designed by HLopez



Square Tower

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Placement ft	#	# Per Row
Climbing Ladder (E)	A	57.000 - 37.000	1	1
Feedline Ladder (Af) (E)	C	57.000 - 37.000	1	1
7/8 (E)	C	57.000 - 37.000	6	6
3/8" Fiber Cable (E)	C	57.000 - 37.000	2	1
3/4" DC Power Cable (E)	C	57.000 - 37.000	4	2

Feed Line/Linear Appurtenances - Entered As Area

Description	Component Type	Placement ft	Total Number
7/8 (E)	Inside Pole	71.000 - 57.000	6

tnxTower MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 38.5 ft. SST / Danbury Center #CT2124	Page 3 of 4
	Project CT05212S-17V0	Date 17:33:18 07/11/17
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Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Placement ft</i>
Top Canister (3ft. Dia.x8.5ft) (E)	A	71.000
Lower Canister (4.0ft. Dia.x7.375ft) (E)	A	63.000
7770.00 Panels w/ Pipe Mount (AT&T / E)	A	71.000
7770.00 Panels w/ Pipe Mount (AT&T / E)	B	71.000
7770.00 Panels w/ Pipe Mount (AT&T / E)	C	71.000
(2) LGP21401 TMA'S (AT&T / E)	A	71.000
(2) LGP21401 TMA'S (AT&T / E)	B	71.000
(2) LGP21401 TMA'S (AT&T / E)	C	71.000
(2) 7020 RET (AT&T / E)	A	71.000
(2) 7020 RET (AT&T / E)	B	71.000
(2) 7020 RET (AT&T / E)	C	71.000
QS66512-2 w/ Pipe Mount (AT&T / P)	A	63.000
QS66512-2 w/ Pipe Mount (AT&T / P)	B	63.000
QS66512-2 w/ Pipe Mount (AT&T / P)	C	63.000
RRUS-11 (AT&T) (AT&T / E)	A	55.600
RRUS-11 (AT&T) (AT&T / E)	B	55.600
RRUS-11 (AT&T) (AT&T / E)	D	55.600
RRUS-32 (AT&T / P)	A	55.600
RRUS-32 (AT&T / P)	B	55.600
RRUS-32 (AT&T / P)	D	55.600
(2) RRUS-12 (AT&T / P)	A	54.000
(2) RRUS-12 (AT&T / P)	B	54.000
(2) RRUS-12 (AT&T / P)	D	54.000
Raycap DC6-48-60-18-8F SUPPRESSOR (AT&T / E)	B	51.600
Raycap DC6-48-60-18-8F SUPPRESSOR (AT&T / P)	A	51.600

tnxTower MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 38.5 ft. SST / Danbury Center #CT2124	Page 4 of 4
	Project CT05212S-17V0	Date 17:33:18 07/11/17
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Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	75.5 - 67.5	0.512	28	0.1512	0.0250
L2	67.5 - 57	0.271	28	0.1096	0.0250
T1	57 - 37	0.095	28	0.0302	0.0250

Critical Deflections and Radius of Curvature - Service Wind

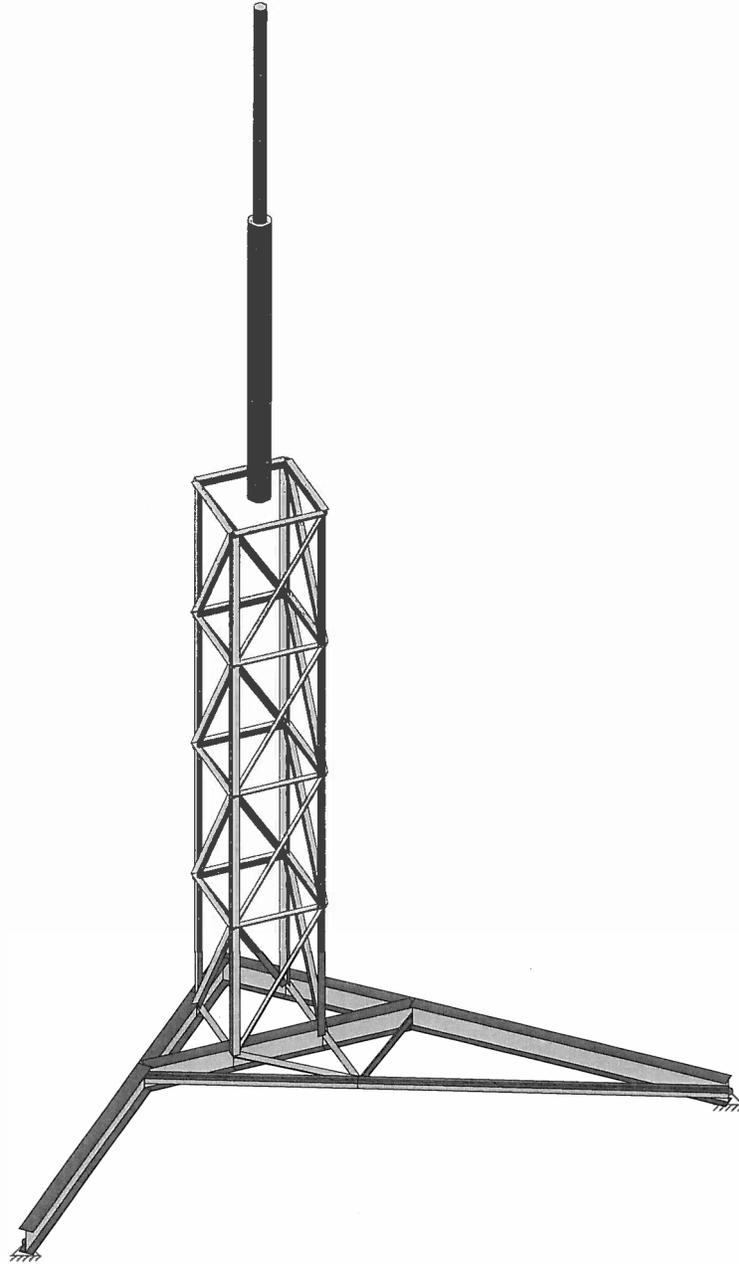
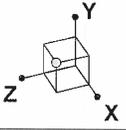
Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
71.000	Top Canister (3ft. Dia.x8.5ft)	28	0.369	0.1301	0.0248	10294
63.000	Lower Canister (4.0ft. Dia.x7.375ft)	28	0.177	0.0752	0.0255	8262
55.600	RRUS-11 (AT&T)	28	0.081	0.0226	0.0243	14611
54.000	(2) RRUS-12	28	0.067	0.0157	0.0232	16260
51.600	Raycap DC6-48-60-18-8F SUPPRESSOR	32	0.050	0.0082	0.0212	19008

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	75.5 - 67.5	Pole	P 4.500 OD x 0.337	1	-0.761	138.834	15.4	Pass	
L2	67.5 - 57	Pole	P 8.625 OD x 0.322	2	-2.081	264.577	22.9	Pass	
T1	57 - 37	Leg	L3x3x1/4	5	-14.370	27.168	52.9	Pass	
T1	57 - 37	Diagonal	L2 1/2x2 1/2x3/16	13	-3.012	12.075	24.9	Pass	
							30.4 (b)		
T1	57 - 37	Horizontal	L2 1/2x2 1/2x3/16	17	-1.453	23.128	6.3	Pass	
							14.5 (b)		
T1	57 - 37	Top Girt	L3x3x1/4	8	-0.000	39.615	0.2	Pass	
							Summary		
							Pole (L2)	22.9	Pass
							Leg (T1)	52.9	Pass
							Diagonal (T1)	30.4	Pass
							Horizontal (T1)	14.5	Pass
							Top Girt (T1)	0.2	Pass
							Bolt Checks	30.4	Pass
							RATING =	52.9	Pass

APPENDIX 2 – BASE FRAME ANALYSIS PRINTOUT & GRAPHICS





MALOUF ENGINEERING I..

HLopez

CT05212S-17V0

38.5 ft. SST / Danbury Center #CT2124

SK - 2

July 11, 2017 at 5:32 PM

CT05212S-17V0_Frame_Check.rt3



(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	5
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood	Yes?
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes?
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1/E4)	1.0
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Standard Solver

Hot Rolled Steel Code	AISC 3rd: LRFD
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-10: ASD - Building



(Global) Model Settings, Continued

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

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1...Density[k/...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A53-B-35	29000	11200	.295	.65	.49	35	1.5	58	1.2
2	A36	29000	11200	.295	.65	.49	36	1.5	58	1.2
3	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
4	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1



Hot Rolled Steel Properties (Continued)

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

Envelope AISC 3rd: LRFD Steel Code Checks

Mem...	Shape	Code Check	Loc...	LC	Sh...	Loc[ft]	LC	phi*Pn...	phi*Pnt ...	phi*Mn y-y [k-ft]	phi*Mn z-z ...Cb	Eqn
1	M1 P 4.50...	.154	0	8	.0...	0	8	131.121	138.834	15.365	15.365	1 HSS ...
2	M2 P 8.62...	.230	0	8	.0...	0	8	249.878	264.577	58.301	58.301	1 HSS ...
3	M3 L3x3x1...	.482	15	4	.0...	20	y 8	25.658	46.656	- Code check base...		
4	M4 L3x3x1...	.349	15	17	.0...	20	z 4	25.658	46.656	- Code check base...		
5	M5 L3x3x1...	.373	15	13	.0...	20	y 8	25.658	46.656	- Code check base...		
6	M6 L3x3x1...	.466	16...	8	.0...	20	y 12	25.658	46.656	- Code check base...		
7	M7 L3x3x1...	.291	0	18	.0...	0	z 18	36.269	46.656	- Code check base...		
8	M8 L3x3x1...	.291	0	18	.0...	0	z 18	36.269	46.656	- Code check base...		
9	M9 L3x3x1...	.291	0	18	.0...	0	z 18	36.269	46.656	- Code check base...		
10	M10 L3x3x1...	.291	0	18	.0...	0	z 18	36.269	46.656	- Code check base...		
11	M11 L2 1/2...	.313	0	14	.0...	5.831	z 18	9.631	29.225	- Code check base...		
12	M12 L2 1/2...	.338	0	10	.0...	5.831	z 26	9.631	29.225	- Code check base...		
13	M13 L2 1/2...	.334	0	6	.0...	0	z 20	9.631	29.225	- Code check base...		
14	M14 L2 1/2...	.307	0	2	.0...	5.831	z 21	9.631	29.225	- Code check base...		
15	M15 L2 1/2...	.064	0	7	.0...	0	z 21	20.628	29.225	- Code check base...		
16	M16 L2 1/2...	.068	0	3	.0...	0	z 19	20.628	29.225	- Code check base...		
17	M17 L2 1/2...	.068	0	15	.0...	3	z 21	20.628	29.225	- Code check base...		
18	M18 L2 1/2...	.060	0	11	.0...	3	z 19	20.628	29.225	- Code check base...		
19	M19 L2 1/2...	.316	0	14	.0...	0	z 26	9.631	29.225	- Code check base...		
20	M20 L2 1/2...	.337	0	10	.0...	5.831	z 22	9.631	29.225	- Code check base...		
21	M21 L2 1/2...	.324	0	6	.0...	5.831	z 18	9.631	29.225	- Code check base...		
22	M22 L2 1/2...	.306	0	2	.0...	5.831	z 26	9.631	29.225	- Code check base...		
23	M23 L2 1/2...	.047	0	7	.0...	0	z 21	20.628	29.225	- Code check base...		
24	M24 L2 1/2...	.052	0	3	.0...	0	z 19	20.628	29.225	- Code check base...		
25	M25 L2 1/2...	.050	0	15	.0...	3	z 21	20.628	29.225	- Code check base...		
26	M26 L2 1/2...	.045	0	11	.0...	0	z 23	20.628	29.225	- Code check base...		
27	M27 L2 1/2...	.180	0	14	.0...	0	z 21	9.631	29.225	- Code check base...		
28	M28 L2 1/2...	.200	0	10	.0...	0	z 19	9.631	29.225	- Code check base...		
29	M29 L2 1/2...	.193	0	6	.0...	5.831	z 18	9.631	29.225	- Code check base...		
30	M30 L2 1/2...	.176	0	2	.0...	5.831	z 21	9.631	29.225	- Code check base...		
31	M31 L2 1/2...	.072	0	7	.0...	0	z 21	20.628	29.225	- Code check base...		
32	M32 L2 1/2...	.076	0	3	.0...	0	z 19	20.628	29.225	- Code check base...		
33	M33 L2 1/2...	.076	0	13	.0...	3	z 20	20.628	29.225	- Code check base...		



Company : MALOUF ENGINEERING INT'L. INC.
 Designer : HLopez
 Job Number : CT05212S-17V0
 Model Name : 38.5 ft. SST / Danbury Center #CT2124

July 11, 2017
 5:31 PM
 Checked By: _____

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

Mem...	Shape	Code Check	Loc...	LC	Sh..	Loc[ft]	LC	phi*Pn...	phi*Pnt ...	phi*Mn y-y [k-ft]	phi*Mn z-z ...	Cb	Eqn
34	M34 L2 1/2...	.071	0	11	.0...	0	z23	20.628	29.225	- Code check base...			
35	M35 L2 1/2...	.517	0	14	.0...	0	z26	9.631	29.225	- Code check base...			
36	M36 L2 1/2...	.550	0	10	.0...	5.831	z24	9.631	29.225	- Code check base...			
37	M37 L2 1/2...	.539	0	6	.0...	5.831	z20	9.631	29.225	- Code check base...			
38	M38 L2 1/2...	.509	0	2	.0...	5.831	z22	9.631	29.225	- Code check base...			
39	M1_1 W10x22	.254	2.122	26	.1...	.928	y19	194.772	210.276	16.059	70.2	1...	H1-1b
40	M2_1 W10x22	.238	0	19	.0...	2.741	y25	183.739	210.276	16.059	70.2	1...	H1-1b
41	M3_1 W10x22	.174	0	20	.0...	6.203	y20	121.907	210.276	16.059	70.2	1...	H1-1b
42	M4_1 W10x22	.265	2.122	25	.1...	.973	y24	194.772	210.276	16.059	70.2	1...	H1-1b
43	M5_1 W10x22	.239	0	25	.0...	4.244	y26	183.739	210.276	16.059	70.2	1...	H1-1b
44	M6_1 W10x22	.172	0	22	.0...	9.634	y22	133.05	210.276	16.059	70.2	1...	H1-1b
45	M7_1 W10x22	.091	3.002	16	.0...	3.002	y16	191.02	210.276	16.059	70.2	1...	H1-1b
46	M9_1 W10x22	.093	0	16	.0...	1.75	y10	191.028	210.276	16.059	70.2	1...	H1-1b
47	M10... W10x22	.082	0	14	.0...	0	y14	191.02	210.276	16.059	70.2	1...	H1-1b
48	M11... LL3.5x...	.101	6.625	16	.0...	0	y12	54.917	93.96	4.244	6.109	1...	H1-1b
49	M12... LL3.5x...	.116	.841	2	.0...	11.5...	y12	27.811	93.96	4.244	6.109	1...	H1-1b
50	M13... L2.5x2...	.045	0	14	.0...	4.046	z12	16.027	29.192	- Code check base...			
51	M14... L2.5x2...	.038	0	8	.0...	2.745	z12	21.274	29.192	- Code check base...			
52	M15... L2.5x2...	.052	0	13	.0...	3	z21	20.299	29.192	- Code check base...			
53	M16... L2.5x2...	.046	0	5	.0...	4.087	z 4	15.856	29.192	- Code check base...			
54	M17... L2.5x2...	.026	0	5	.0...	3	z21	20.299	29.192	- Code check base...			

APPENDIX 3 – SOURCE / CHANGED CONDITION



PROJECT INFORMATION

SCOPE OF WORK:

- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR FOR A TOTAL OF 3 NEW ANTENNAS. (1) EXISTING ANTENNAS PER SECTOR FOR A TOTAL OF 3 EXISTING ANTENNAS TO BE REUSED. (1) EXISTING ANTENNAS PER SECTOR FOR A TOTAL OF 3 EXISTING ANTENNAS TO BE REMOVED.
- AT&T RRU'S: (3) NEW RRU'S PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (9) NEW RRU'S; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRU'S; (1) EXISTING RRU PER SECTOR TO BE REMOVED, FOR A TOTAL OF 3 EXISTING RRUS.

SOUTHERN NEW ENGLAND TELEPHONE CO
TELEPHONE CO
1 BELL CTR 36-M-01
ST LOUIS MO 63101

SITE ADDRESS: 39 WEST STREET
DANBURY CONNECTICUT 06810

LATITUDE: 41.39268600 41° 23' 33.67"N
LONGITUDE: -73.45405500 -73° 27' 14.598"W

USID: 60409

BUILDING OWNER: SOUTHERN NEW ENGLAND TELEPHONE CO
1 BELL CTR 36-M-01
ST LOUIS MO 63101

TYPE OF SITE: ROOFTOP

RAD CENTER: 63'-0"± LTE 69'-0"± UMS

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



at&t
MOBILITY

FA CODE: 10034988
SITE NUMBER: CT2124
SITE NAME: DANBURY CENTRAL
PROJECT: LTE 3C AND BWE

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

ZONING:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:

COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862-209-4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:

COMPANY: AT&T MOBILITY – NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD
SUITE 550 13 & 14
FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484-683-1750
EMAIL: gdorman@empiretelecomm.com

DRAWING INDEX

REV.

T-1	TITLE SHEET	0
GN-1	GROUNDING & GENERAL NOTES	0
A-1	COMPOUND LAYOUT	0
A-2	EQUIPMENT LAYOUTS	0
A-3	ANTENNA LAYOUTS	0
A-4	ELEVATION	0
A-5	DETAILS	0
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	0

VICINITY MAP

HEAD NORTHEAST. TURN RIGHT TOWARD SPEEN ST. TURN RIGHT ONTO COCHITUATE RD. TAKE THE RAMP TO I-90/MASSPIKE/SPRINGFIELD/BOSTON. TOLL ROAD. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS. TURNPIKE/WORCHESTER/SPRINGFIELD AND MERGE ONTO I-90 /MASSACHUSETTS TURNPIKE.PARTIAL TOLL ROAD.TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. TOLL ROAD. CONTINUE ONTO I-84. PARTIAL TOLL ROAD. ENTERING CONNECTICUT. CONTINUE ONTO US-202 W/US-6 W/US-7 S. CONTINUE ONTO I-84/US-202 W/US-6 W/US-7 S. TAKE EXIT 5 FOR CT-39 TOWARD CT-53/DOWNTOWN DANBURY/BETHEL. TURN RIGHT ONTO CT-39 S/N MAIN ST.CONTINUE TO FOLLOW N MAIN ST. TURN RIGHT ONTO WEST ST. DESTINATION WILL BE ON THE RIGHT.



GENERAL NOTES

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

APPROVALS

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

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		



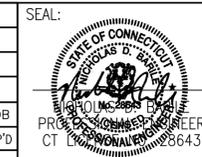
CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



SITE NUMBER: CT2124
SITE NAME: DANBURY CENTRAL
39 WEST STREET
DANBURY CONNECTICUT 06810
FAIRFIELD COUNTY



0	06/14/17	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: CJT		



AT&T		
DRAWING TITLE: TITLE SHEET		
JOB NUMBER 16046-EMP	DRAWING NUMBER T-1	REV 0

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR - EMPIRE TELECOM
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER - AT&T MOBILITY
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

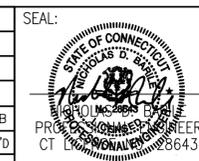
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
 - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
 - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
 - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
 - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
 - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
 - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
 - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
 - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
 - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
 - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.
22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CHA FOR A RECENT UPGRADE DATED 08/03/2011. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.



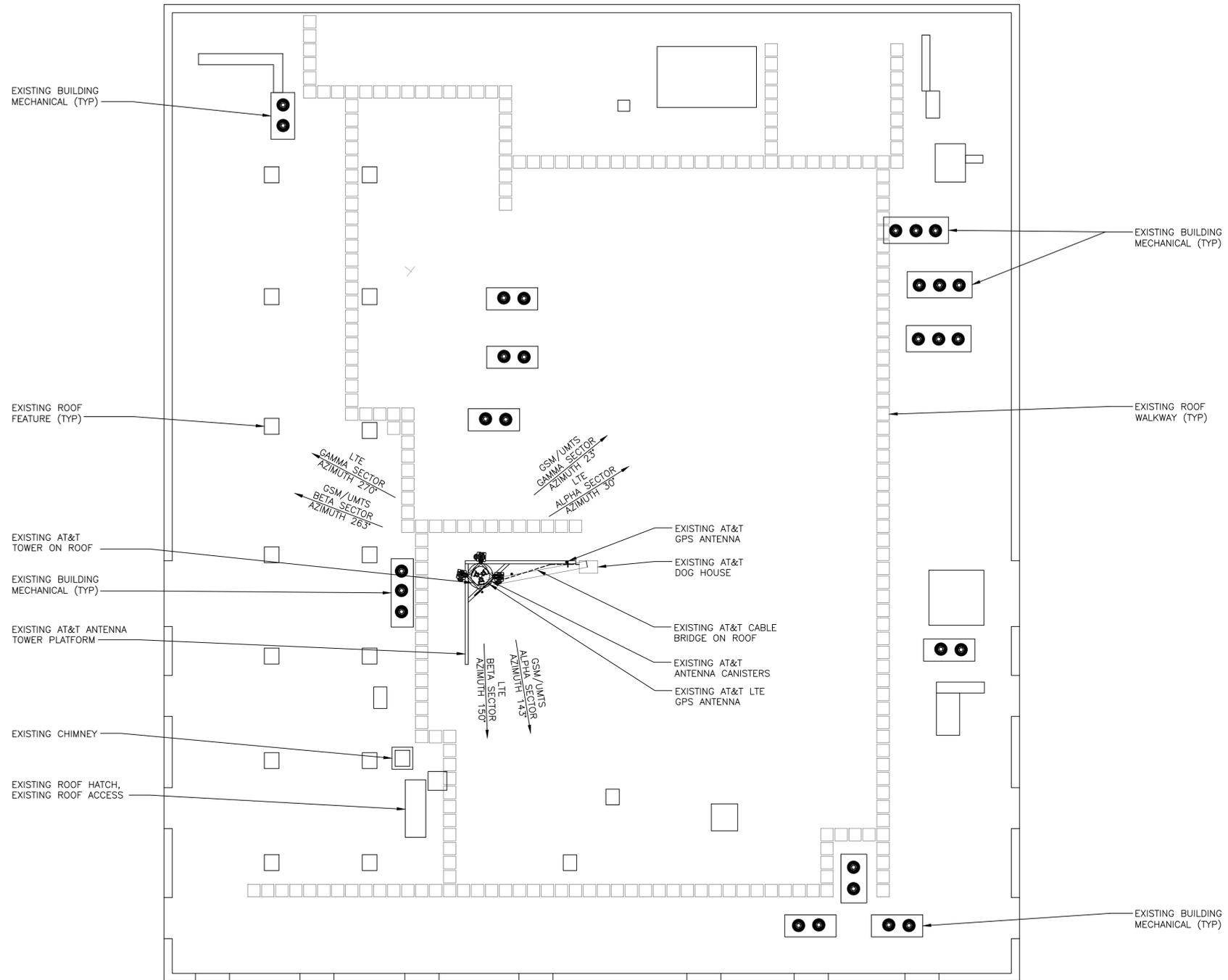
SITE NUMBER: CT2124
SITE NAME: DANBURY CENTRAL
 39 WEST STREET
 DANBURY CONNECTICUT 06810
 FAIRFIELD COUNTY



0	06/14/17	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: CJT		



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DRAWING TITLE: GROUNDING & GENERAL NOTES		
JOB NUMBER 16046-EMP	DRAWING NUMBER GN-1	REV 0

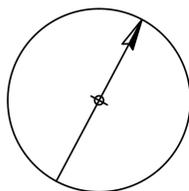


COMPOUND LAYOUT

SCALE: 3/32"=1'-0"



(IN FEET)
3/32 Inch = 1 Foot



NORTH

NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

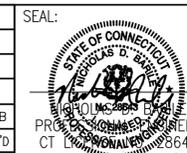
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SUITE E39
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PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

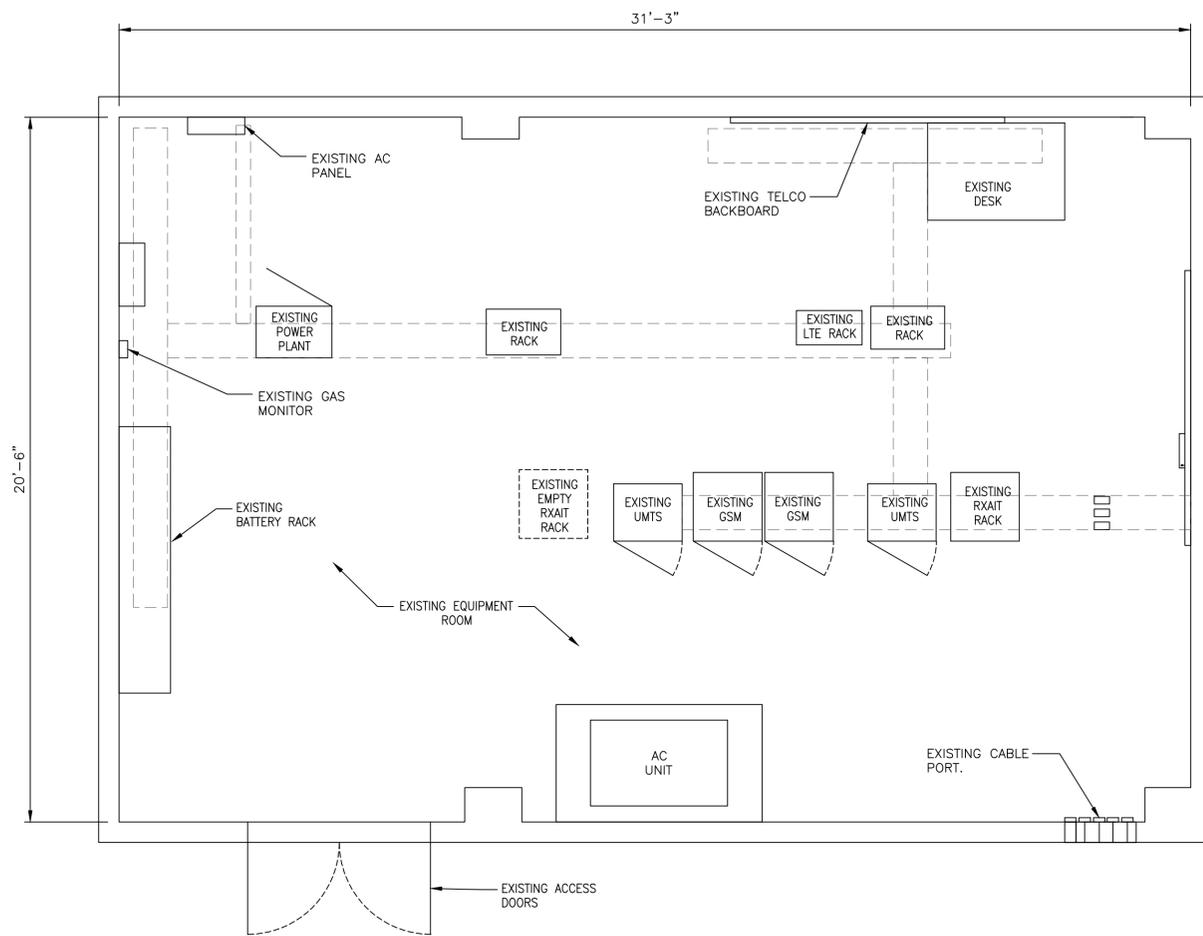
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SITE NAME: DANBURY CENTRAL
39 WEST STREET
DANBURY CONNECTICUT 06810
FAIRFIELD COUNTY

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MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

0	06/14/17	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: CJT		

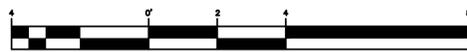


AT&T		
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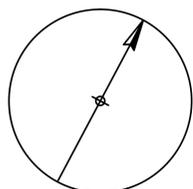


EXISTING EQUIPMENT LAYOUT

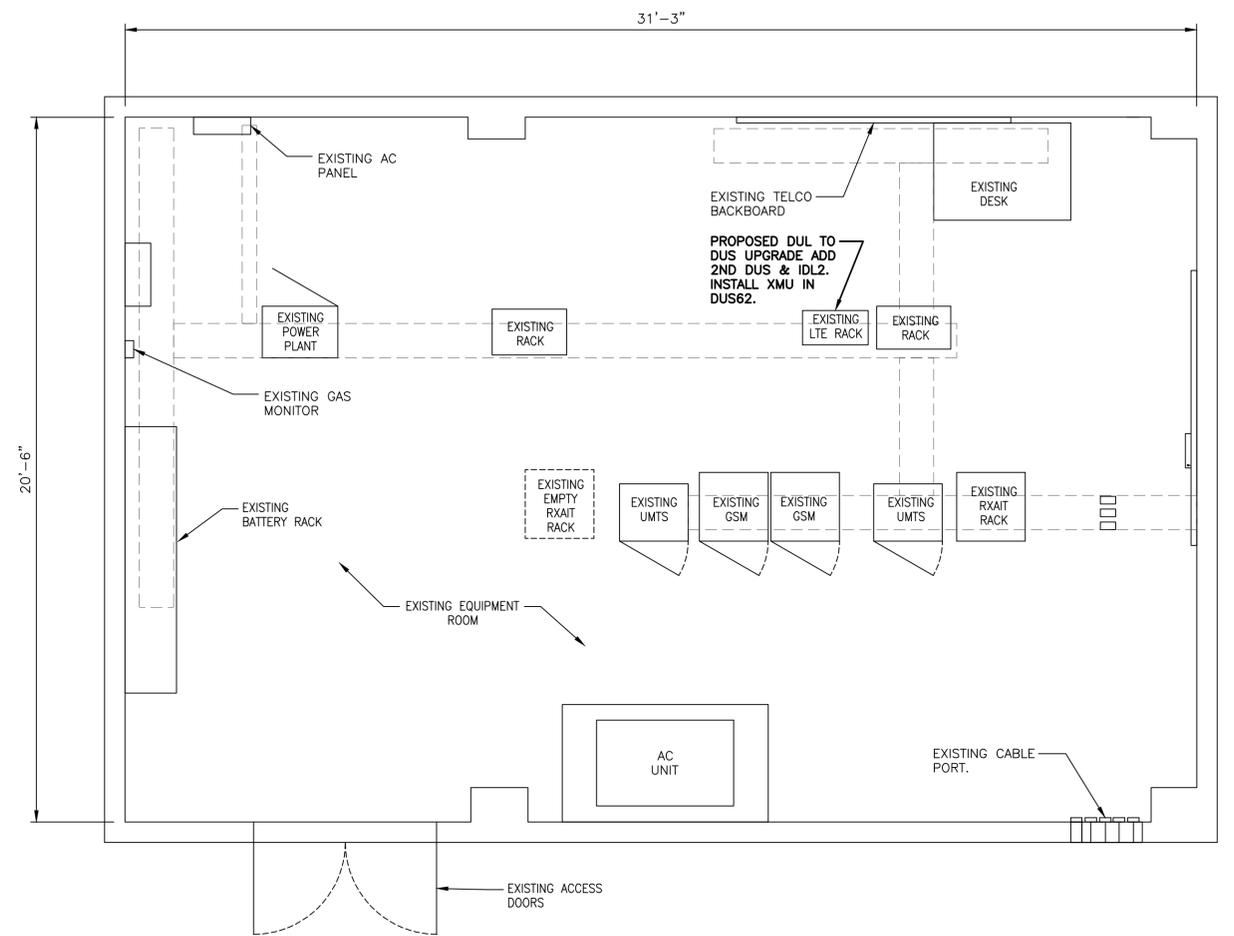
SCALE: 3/8" = 1'-0"



(IN FEET)
3/8 Inch = 1 Foot



NORTH

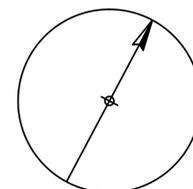


PROPOSED EQUIPMENT LAYOUT

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



(IN FEET)
3/8 Inch = 1 Foot



NORTH

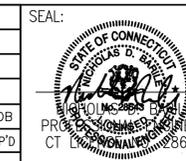
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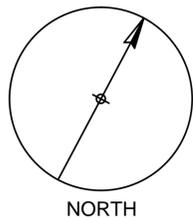
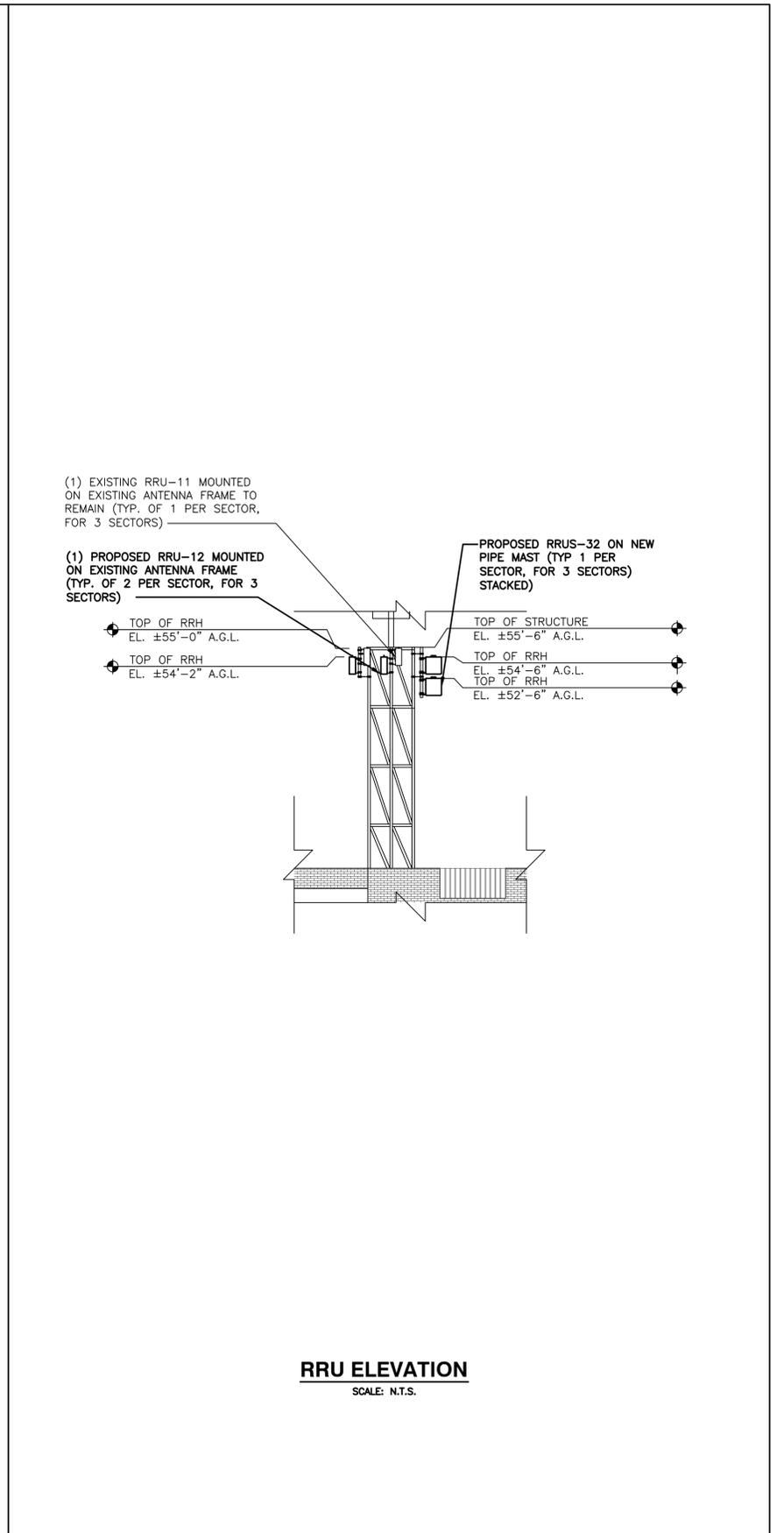
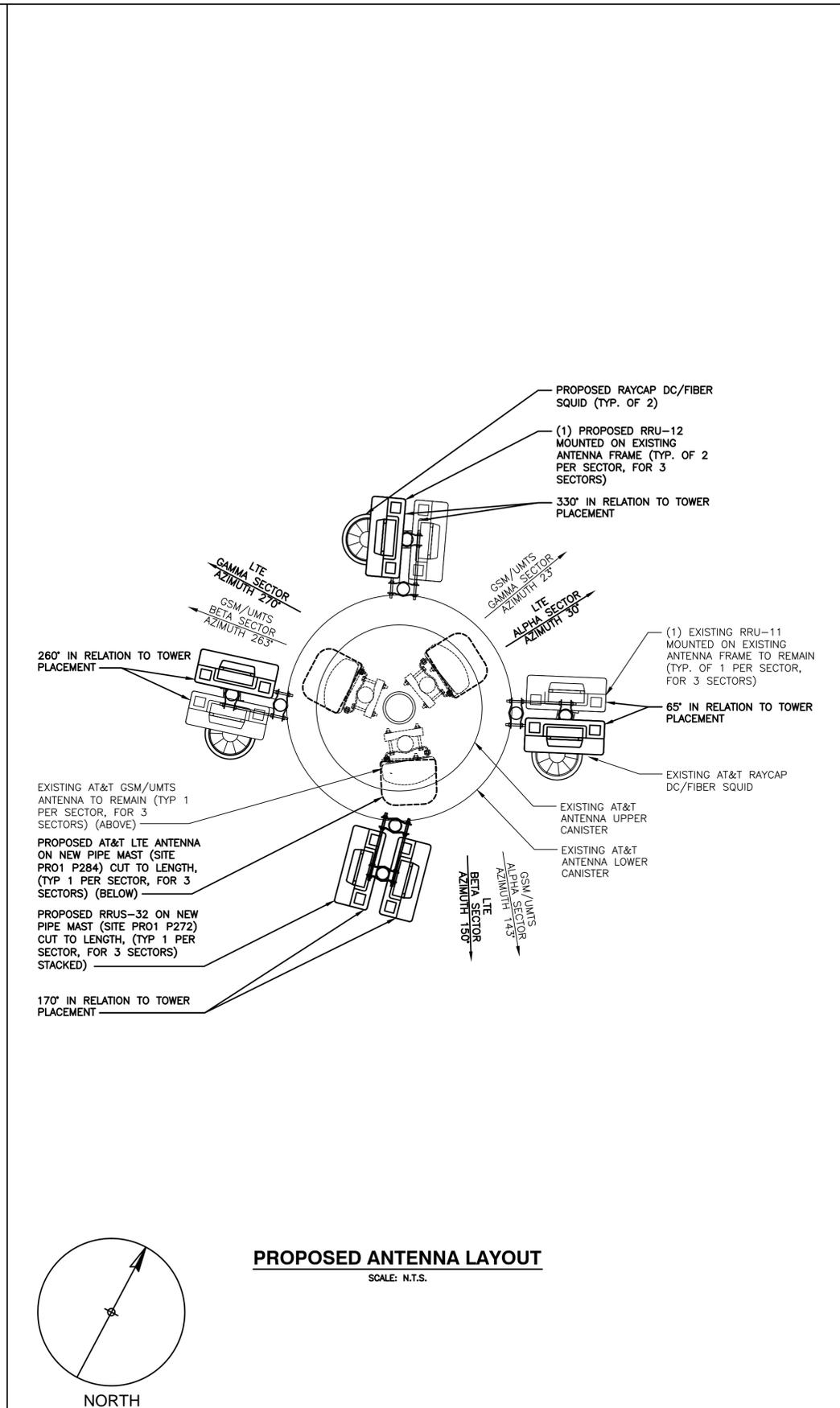
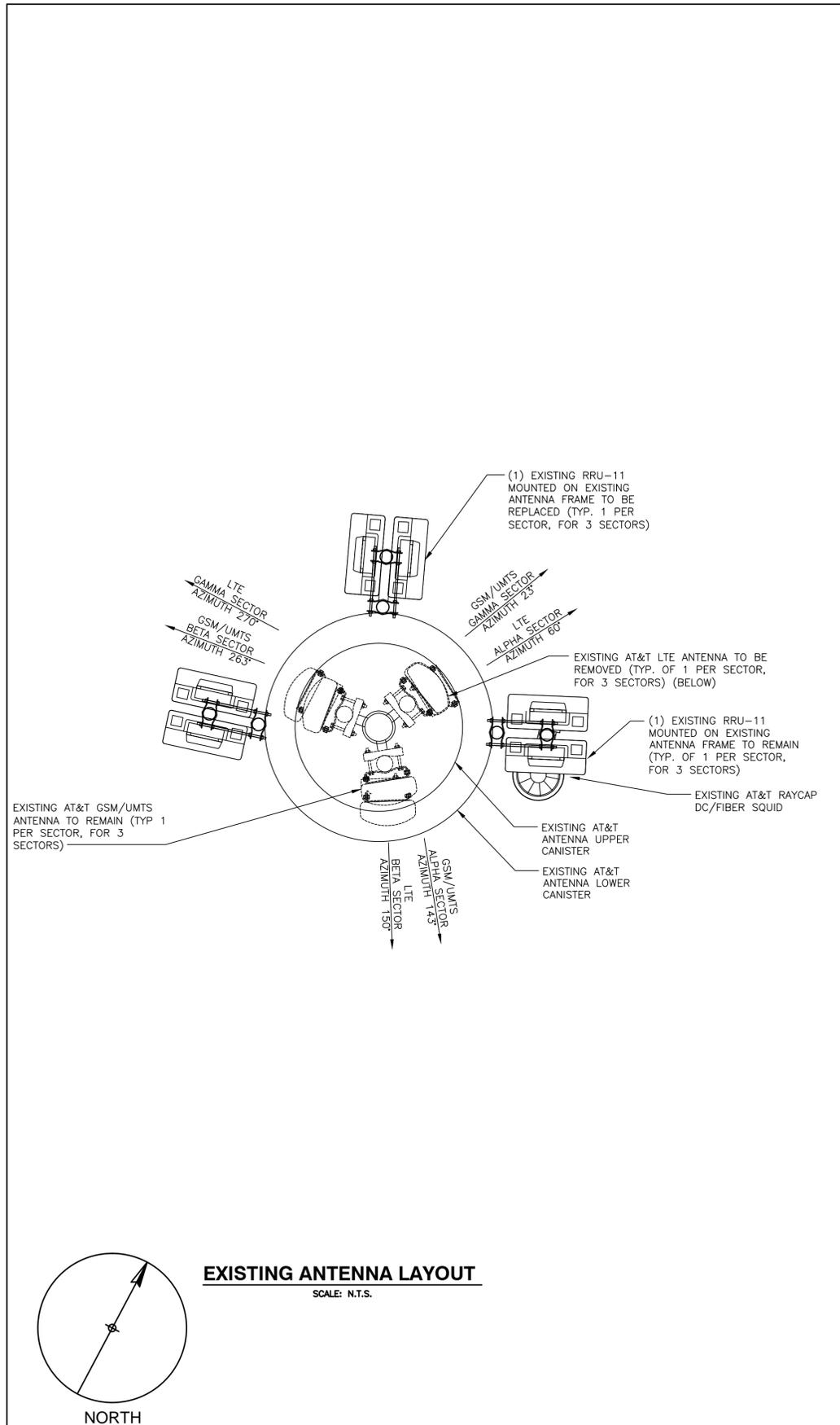
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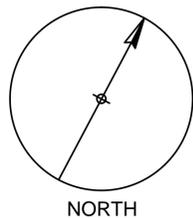
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JOB NUMBER 16046-EMP	DRAWING NUMBER A-2	REV 0



EXISTING ANTENNA LAYOUT
SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT
SCALE: N.T.S.

RRU ELEVATION
SCALE: N.T.S.

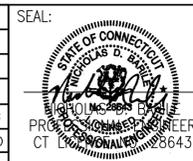
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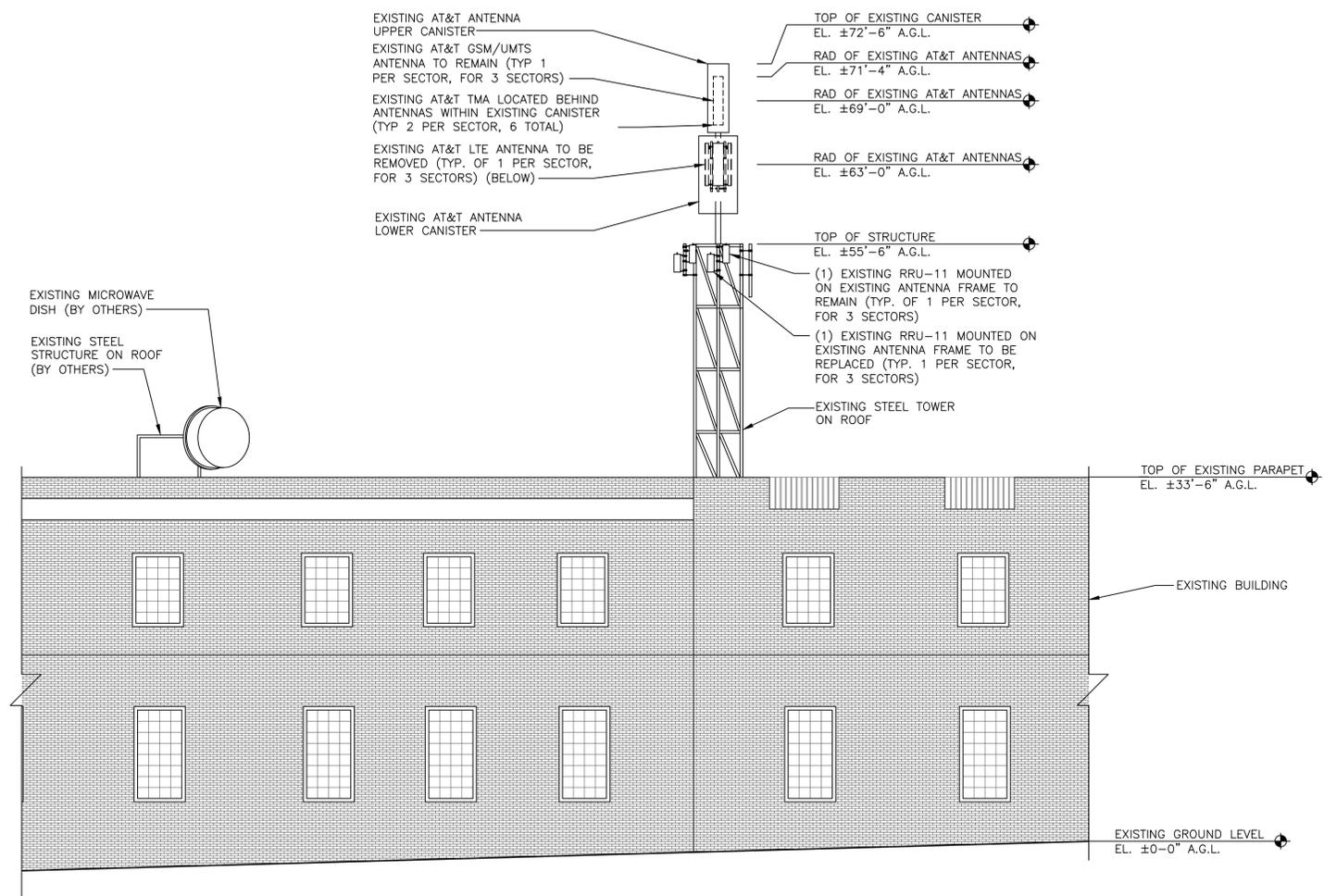
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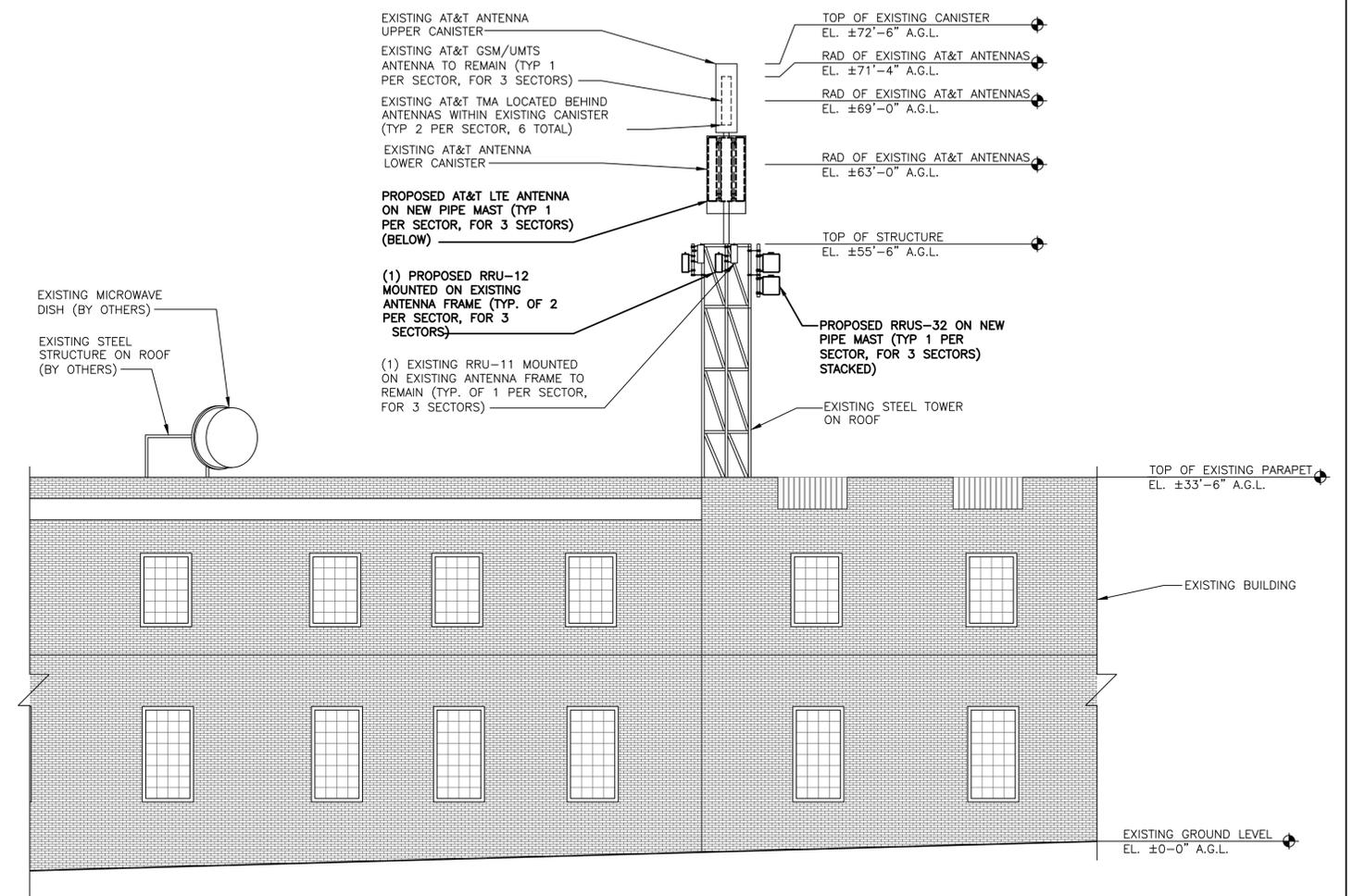
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: CJT		



AT&T		
DRAWING TITLE: ANTENNA LAYOUTS		
JOB NUMBER 16046-EMP	DRAWING NUMBER A-3	REV 0



EXISTING BUILDING ELEVATION
SCALE: NTS



PROPOSED BUILDING ELEVATION
SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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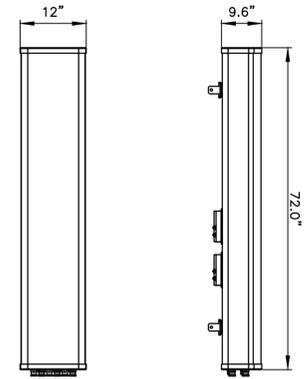
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SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: CJT		

SEAL:
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
28643

AT&T		
DRAWING TITLE: ELEVATION		
JOB NUMBER 16046-EMP	DRAWING NUMBER A-4	REV 0



FRONT VIEW

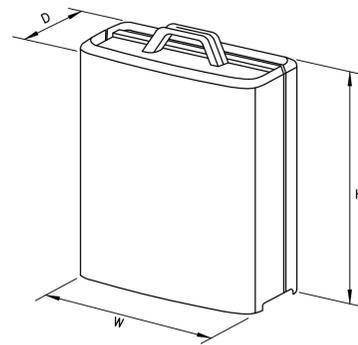
SIDE VIEW



BOTTOM VIEW

MANUFACTURER	QUINTEL
MODEL	QS66512-2
WEIGHT	111.0 LBS

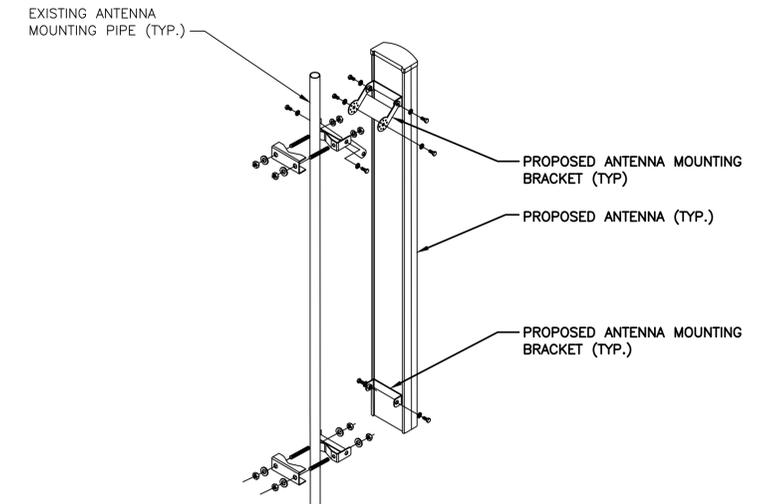
LTE ANTENNA DETAIL
SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
RRUS-32	29.9" x 13.3" x 9.5"	77 LBS

*DENOTES EXISTING.

RRU'S DETAIL
SCALE: N.T.S.



ANTENNA AND RRU MOUNTING DETAIL
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	-	-	-
	A3	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A4	-	-	-
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	-	-	-
	B3	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	B4	-	-	-
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	-	-	-
	G3	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	G4	-	-	-

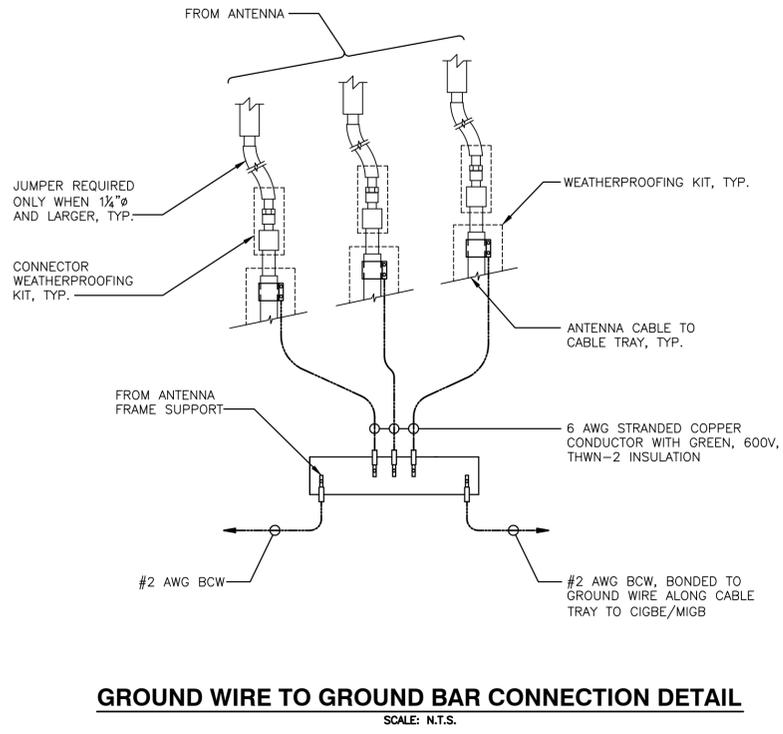
FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	-	-	-
	A3	QUINTEL	QS66512-2	72"x12"x9.6"
	A4	-	-	-
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	-	-	-
	B3	QUINTEL	QS66512-2	72"x12"x9.6"
	B4	-	-	-
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	-	-	-
	G3	QUINTEL	QS66512-2	72"x12"x9.6"
	G4	-	-	-

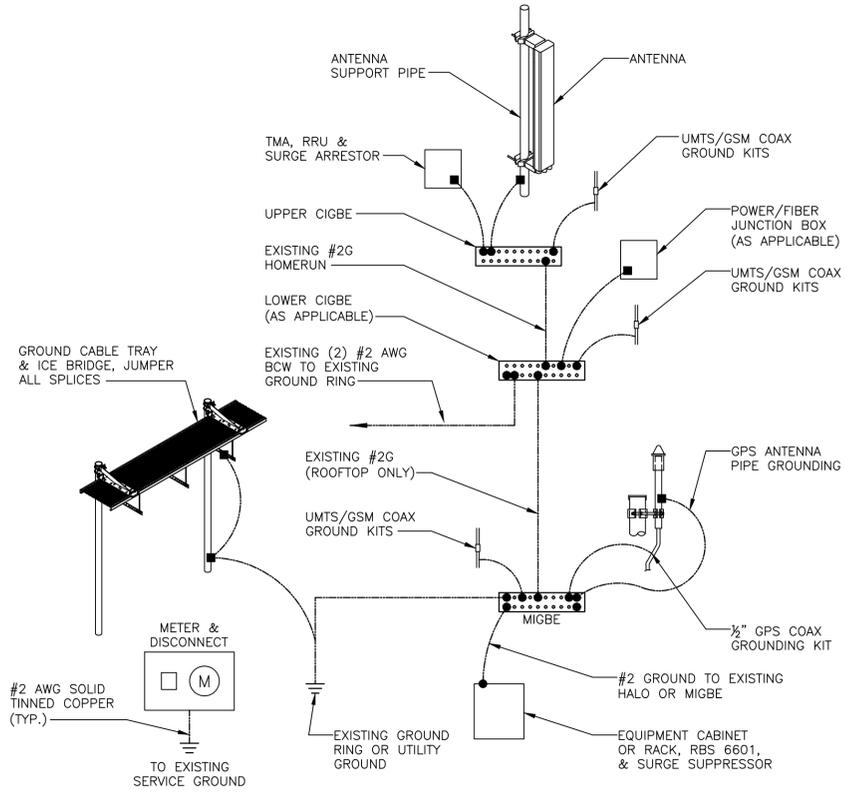
PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"		
	ERICSSON	RRUS-12	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-12	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
BETA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"		
	ERICSSON	RRUS-12	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-12	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
GAMMA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"		
	ERICSSON	RRUS-12	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-12	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		

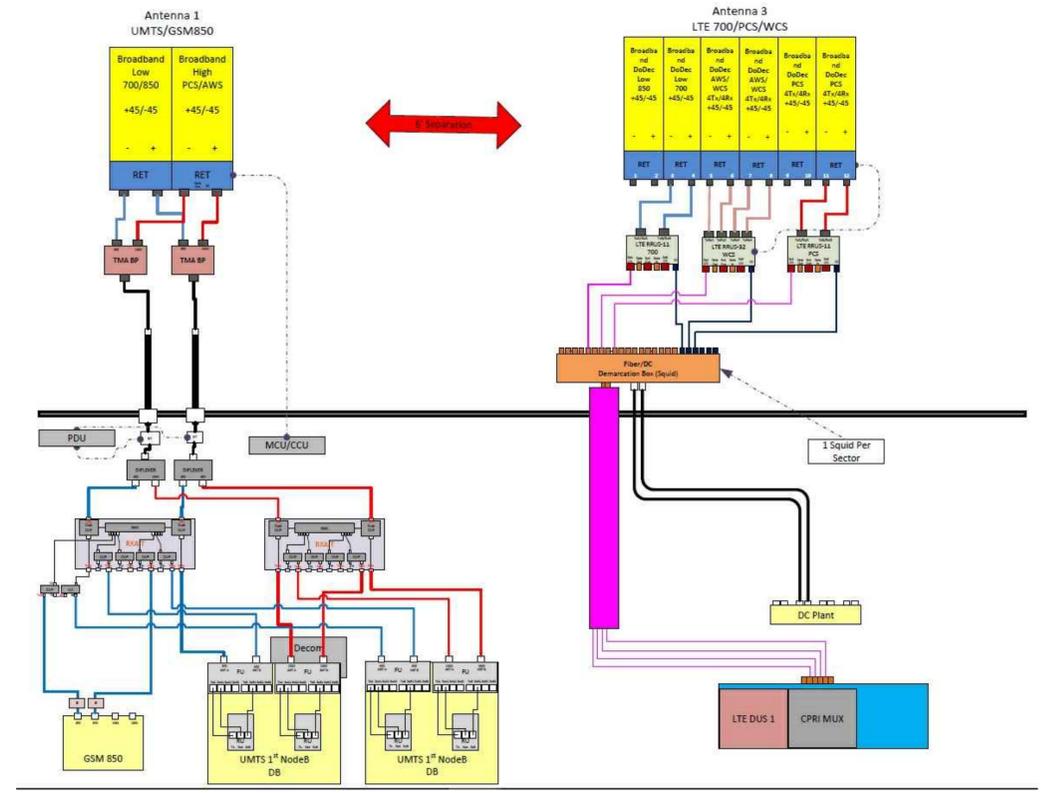
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



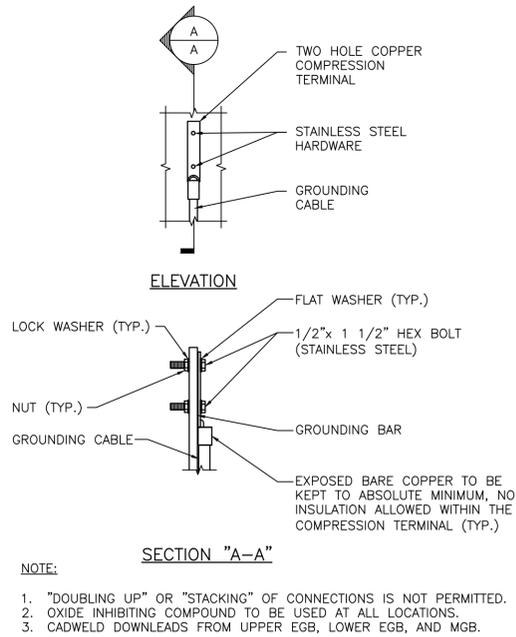
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



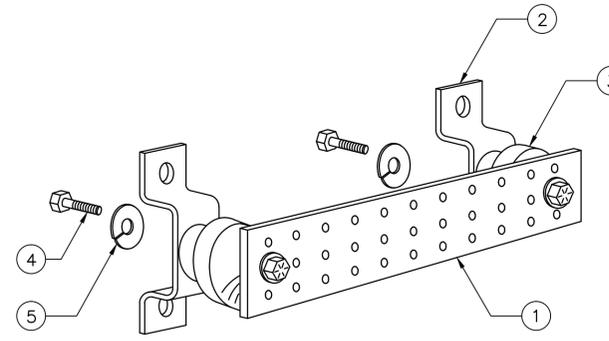
GROUNDING RISER DIAGRAM
SCALE: N.T.S.



TYPICAL PLUMBING DIAGRAM (PER SECTOR)
SCALE: N.T.S.



TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x 1/4")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	5/8"-11x1" H.H.C.S.
5	4	5/8" LOCK WASHER

GROUND BAR DETAIL
SCALE: N.T.S.

- NOTES:
- EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION
- SECTION "P" - SURGE PRODUCERS**
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
 - GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
 - TELCO GROUND BAR
 - COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
 - +24V POWER SUPPLY RETURN BAR (#2)
 - -48V POWER SUPPLY RETURN BAR (#2)
 - RECTIFIER FRAMES
- SECTION "A" - SURGE ABSORBERS**
- INTERIOR GROUND RING (#2)
 - EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
 - METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
 - BUILDING STEEL (IF AVAILABLE) (#2)



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2124

Danbury Central
39 West Street
Danbury, CT 6810

June 15, 2017

Centerline Communications Project Number: 950006-057

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	14.57 %



June 15, 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: **CT2124 – Danbury Central**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **39 West Street, Danbury, 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 facility 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 **39 West Street, Danbury, 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 facility. For this report the sample point is the top of a 6-foot person standing at the base of the facility.

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
GSM	850 MHz	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	Powerwave 7770	69
A	2	Quintel QS66512-2	63
B	1	Powerwave 7770	69
B	2	Quintel QS66512-2	63
C	1	Powerwave 7770	69
C	2	Quintel QS66512-2	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	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	6	180	2,969.12	3.84
Antenna A2	Quintel QS66512-2	700 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	10.85 / 13.85 / 14.85	6	360	8,037.26	10.74
Sector A Composite MPE%							14.57
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	6	180	2,969.12	3.84
Antenna B2	Quintel QS66512-2	700 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	10.85 / 13.85 / 14.85	6	360	8,037.26	10.74
Sector B Composite MPE%							14.57
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	6	180	2,969.12	3.84
Antenna C2	Quintel QS66512-2	700 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	10.85 / 13.85 / 14.85	6	360	8,037.26	10.74
Sector C Composite MPE%							14.57

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, all three sectors have the same configuration yielding the same results on all three sectors. *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	14.57 %
No Additional Carriers	NA
Site Total MPE %:	14.57 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	14.57 %
AT&T Sector B Total:	14.57 %
AT&T Sector C Total:	14.57 %
Site Total:	14.57 %

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, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology (All Sectors)	# 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	414.12	69	7.50	850 MHz	567	1.32%
AT&T 1900 MHz (PCS) UMTS	2	656.33	69	11.89	1900 MHz (PCS)	1000	1.19%
AT&T 850 MHz GSM	2	414.12	69	7.50	850 MHz	567	1.32%
AT&T 700 MHz LTE	2	729.71	63	16.15	700 MHz	467	3.46%
AT&T 1900 MHz (PCS) LTE	2	1,455.97	63	32.22	1900 MHz (PCS)	1000	3.22%
AT&T 2300 MHz (WCS) LTE	2	1,832.95	63	40.56	2300 MHz (WCS)	1000	4.06%
						Total:	14.57%

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:	14.57 %
Sector B:	14.57 %
Sector C:	14.57 %
AT&T Maximum Total (per sector):	14.57 %
Site Total:	14.57 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **14.57 %** 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 positioned above the printed name.

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

SENDER: COMPLETE THIS SECTION

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- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

*David Newland, Building Official
City of Danbury
155 Deer Hill Ave
Danbury, CT 06810*



9590 9402 1223 5246 6327 12

2. Article Number (Transfer from service label)

7016 1370 0000 4740 7384

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

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X

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- Addressee

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7-20-17

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- Insured Mail Restricted Delivery (over \$500)
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- Registered Mail™
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1. Article Addressed to:

*The Honorable Mark Boughton
Mayor, City of Danbury
155 Deer Hill Avenue
Danbury, CT 06810*



9590 9402 1223 5246 6327 29

2. Article Number (Transfer from service label)

7016 1370 0000 4740 7377

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

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7-24-17

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- 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
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- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Domestic Return Receipt

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