COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

January 30, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: Notice of Exempt Modification
Lin Television Corporation/T-Mobile co-location
Site ID: CT11474A
101 Talmadge Road, Hamden, CT

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, the Lin Television Corporation owns the existing guyed G-12 telecommunications tower and related facility at 101 Talmadge Road, Hamden, Connecticut (41.6062/-72.7497). T-Mobile intends to add three (3) antennas and related equipment at this existing telecommunications facility in Hamden ("Hamden Facility"). Please accept this letter as notification, pursuant to R.C.S.A. §16-50j-73, of construction which 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, Scott D. Jackson, and the property owner, Lin Television Corporation.

The existing Hamden Facility consists of a 907-foot guyed G-12 tower.[1] T-Mobile plans to add three (3) antennas mounted to the existing pipe mast at a centerline of 315 feet. T-Mobile will also replace the existing S8000 cabinet on a concrete slab with a 6102 cabinet; install three remote radio units (RRUs) on proposed unistrut mounted to canopy posts; reuse coax cables routed in an existing ice bridge routed up the guyed tower; install coax cables; and extend a support conduit from the 200-foot centerline to the 315-foot centerline (See the plans revised to December 17, 2014 attached hereto as **Exhibit A**). The existing Hamden Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated December 2, 2014 and signed January 29, 2015, and attached hereto as **Exhibit B**.

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for approval of this structure, it does reference this structure in connection with a notice of intent captioned EM-SPRINT-062-13050.

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

1. The proposed modification will not increase the height of the tower. T-Mobile's existing antennas are at a centerline of 315 feet; the additional antennas will be installed at the same 315-foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The proposed modifications will not require an extension on the site boundaries or lease area, as depicted on Sheet 2 of Exhibit A. T-Mobile's equipment will be located entirely within the existing compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the additional antennas and equipment will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated December 17, 2014, T-Mobile's operations would add 0.96% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 3.43% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as **Exhibit C.**

For the foregoing reasons, T-Mobile respectfully submits that the proposed additional antennas and equipment at the Hamden Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement of this exempt modification, T-Mobile shall commence construction approximately sixty days from the receipt of the Council's decision.

Sincerely,

Rachel A. Schwartzman, Esq.

cc: Scott D. Jackson, Mayor
Lin Television Corporation
Sheldon Freincle, Northeast Site Solutions

T-MOBILE USA, INC.
12920 SE 38TH STREET
BELLEVUE, WA 98006
(425) 378-4000

2919731
8/19/2014
2000011160

Invoice Number	Inv. Date	Description	Deductions	Voucher	Amount Paid
CT11474A-1	8/14/2014	Exempt Mod Filing Fees	0.00	1101616602	625.00

DO NOT ACCEPT THIS CHECK UNLESS THE FACE FADES FROM BLACK TO RED WITH LOGO IN BACKGROUND. THE BACK OF THIS DOCUMENT HAS HEAT-SENSITIVE INK THAT CHANGES FROM ORANGE TO YELLOW.

COPYBAN CAPTURE ANTI-FRAUD PROTECTION

T-MOBILE USA, INC.
12920 SE 38th Street
Bellevue, WA 98006
(425) 378-4000

The Bank of New York Mellon
Pittsburgh, PA
60-160/433

2919731
8/19/2014
VID 2000011160

PAY $625 00
SIX TWO FIVE CTS CTS

*$625.00

Six Hundred Twenty Five Dollars Only*******

To The Order Of
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN, CT 06051

VOID AFTER 180 DAYS
THIS CHECK CLEARS THROUGH POSITIVE PAY

⑈000291973 1⑈ ⑆043301601⑆ 013⑈8430⑈

THE ORIGINAL DOCUMENT HAS A REFLECTIVE WATERMARK ON THE BACK. HOLD AT AN ANGLE TO VIEW, DO NOT CASH IF MISSING.

EXHIBIT A

ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

KEY PLAN
SCALE: N.T.S

1
LE-1

PROJECT : L700
CONFIGURATION
704G

SUBMITTALS	
LE REV A	08.15.14
LE REV 0	08.18.14
LE REV 1	12.17.14

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

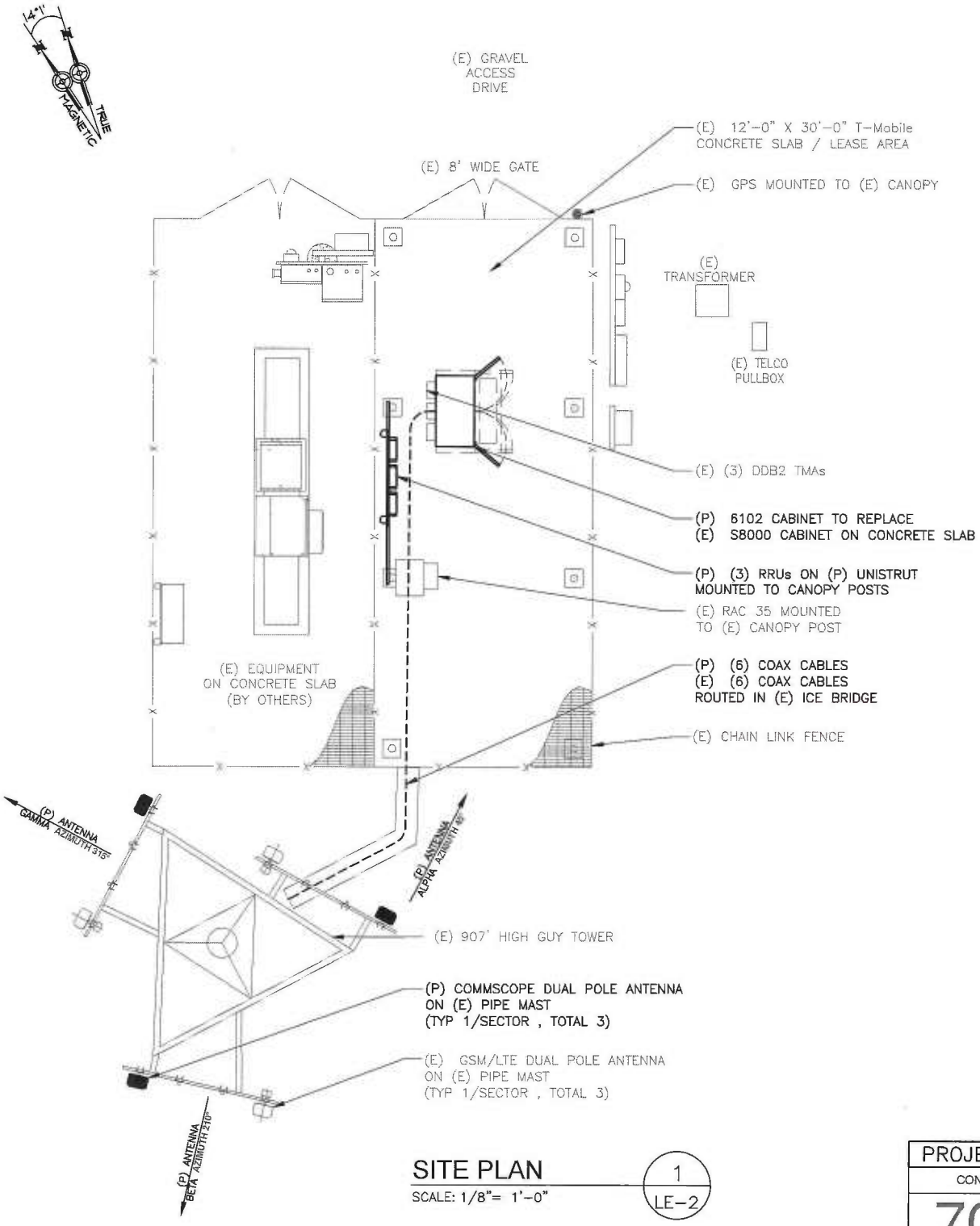
SITE NUMBER:
CT11474A

SITE NAME:
WTNH HAMDEN

SITE ADDRESS:
101 TALMADGE ROAD
HAMDEN, CT, 06518

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237
FOR
T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: FG | CHECKED BY: SM



SITE PLAN

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

1 / LE-2

PROJECT : L700

CONFIGURATION

704G

SUBMITTALS	
LE REV A	08.15.14
LE REV 0	08.18.14
LE REV 1	12.17.14

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
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HAMDEN, CT, 06518

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(508) 434-5237

FOR

T-MOBILE NORTHEAST, LLC
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BLOOMFIELD, CT 06002
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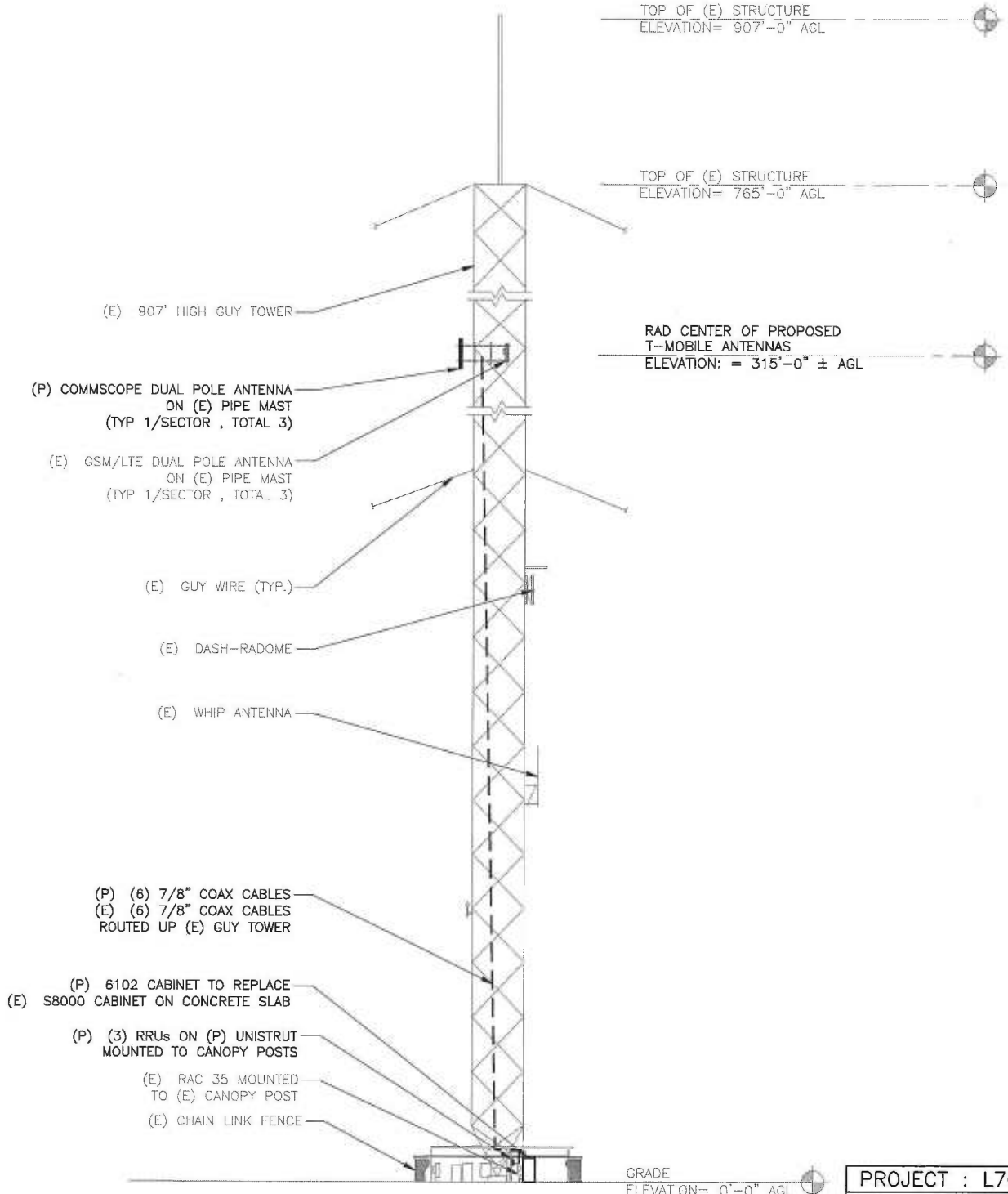
FAX: (860) 692-7159

DRAWN BY: FG | CHECKED BY: SM



ELEVATION 1 / LE-3

SCALE: N.T.S.

PROJECT : L700

CONFIGURATION

704G

SUBMITTALS	
LE REV A	08.15.14
LE REV 0	08.18.14
LE REV 1	12.17.14

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11474A

SITE NAME:
WTNH HAMDEN

SITE ADDRESS:
101 TALMADGE ROAD
HAMDEN, CT, 06518

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237
FOR
T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: FG | CHECKED BY: SM

EXHIBIT B

Stainless LLC

REPORT 362014

Site ID: CT11474A

Address: 101 Talmadge Road, Hamden, CT

DATE: 12/2/2014

PROFESSIONAL ENGINEER
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut
Print Name: Gregg A Fehrman
Signature:
Date 1/26/15 License # 27523

STRUCTURAL ANALYSIS

FOR A 907' G-12 GUYED TOWER

HAMDEN, CONNECTICUT

PREPARED BY: PCC

CHECKED BY: AP

APPROVED: AP 12/08/2014

Rev A: AP 12/11/2014

Rev B: AP 12/17/2014

Rev C: AP 1/26/15

STATE OF CONNECTICUT GREGG A FEHRMAN No. 27523 LICENSED PROFESSIONAL ENGINEER 1/27/15

Date	Pages	Remarks
12/9/14	4,5	Rev A: Upgrade tower rating to 100% maximum
12/17/14	2,3,4,5	Rev B: Update Proposed Elevation and Line Size
1/23/15	Cover, 3	Rev C: Changed city name and added address

Rev.	Date	Description
A	12/09/14	Upgrade tower rating to 100% maximum
B	12/17/14	Update Proposed Elevation and Line Size
C	1/23/15	Changed city name and added address

SECTION PAGE

APPENDIX

Rev.	Date	Description
A	12/09/14	Upgrade tower rating to 100% maximum
B	12/17/14	Update Proposed Elevation and Line Size
C	1/23/15	Changed city name and added address

A. AUTHORIZATION/PURPOSE

As authorized by Sheldon Freincle of Northeast Site Solutions, a structural analysis was performed to investigate the adequacy of a 907' guyed G-12 tower located at 101 Talmadge Road in Hamden, Connecticut to support specified equipment.

B. TOWER HISTORY

The tower was originally designed and furnished in 1995 by Stainless, Inc. It was designed in accordance with TIA/EIA-222-E for a wind speed of 85 mph and 73.6 mph with 1/2" ice while supporting the following equipment:

1. One (1) top mounted Dielectric TCL-12A8(S) antenna, fed by two (2) 6-1/8" rigid lines.
2. One (1) top mounted HDTV antenna, fed by one (1) WR1150 waveguide (future).
3. One (1) Dielectric TFU-28JSM Ch. 59 antenna, at the 730' level, fed by one (1) WR1150 waveguide.
4. One (1) Dielectric TFU-28JSM HDTV Ch. 14 antenna, at the 670' level, fed by one (1) WR1150 waveguide (future).
5. Two (2) ENG Super Quad antennas at the 760' level, fed by one (1) 1-5/8" line and one (1) 1/2" control cable (one future).
6. One (1) ERI 6-bay panel type FM antenna at the 610' level, fed by one (1) 6-1/8" rigid line (future).
7. Two (2) Andrew MMDS wireless cable antennas at the 565' level, fed by one (1) EW20 waveguide (future).
8. One (1) ERI SHPX-3AE FM antenna at the 545' level, fed by one (1) 3" line.
9. One (1) ERI SHPX-3AE FM antenna at the 520' level, fed by one (1) 3" line.
10. Three (3) whip antennas at the 750' level, fed by one (1) 1-5/8" line to each.
11. Three (3) whip antennas at the 500' level, fed by one (1) 1-5/8" line to each.
12. Three (3) whip antennas at the 400' level, fed by one (1) 1-5/8" line to each.
13. Three (3) whip antennas at the 350' level, fed by one (1) 1-5/8" line to each (future).
14. Three (3) whip antennas at the 325' level, fed by one (1) 1-5/8" line to each (future).
15. Three (3) whip antennas at the 300' level, fed by one (1) 1-5/8" line to each (future).
16. One (1) Scala PR-450U antenna at the 339' level, fed by one (1) 7/8" line.
17. One (1) Scala PR-450U antenna at the 247' level, fed by one (1) 7/8" line.
18. One (1) 6' grid dish at the 400' level, fed by one (1) 1-5/8" line.
19. Two (2) 6' grid dishes at the 325' level, fed by one (1) 1-5/8" line to each (future).
20. Two (2) 6' grid dishes at the 225' level, fed by one (1) 1-5/8" line to each (future).

Rev.	Date	Description
A	12/09/14	Upgrade tower rating to 100% maximum
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C	1/23/15	Changed city name and added address

21. Two (2) 8' dishes with radomes at the 325' level, fed by one (1) EW63 waveguide to each (one future).
22. One (1) 8' dish with radome at the 166' level, fed by one (1) EW63 waveguide (future).
23. One (1) 8' dish with radome at the 150' level, fed by one (1) EW63 waveguide (future).
24. One (1) inside climbing ladder with cable type safety device for the full height of the tower.
25. One (1) single car elevator with guide rails, cables, motor and elevator equipment.
26. Ice shields for all side mounted antennas, except the whip antennas.
27. One (1) red lighting system with circuits in rigid conduit for the full height of the tower.

In 1998, the bottom stack Dielectric THP-O-2-1 antenna of the top mounted stack system was installed per Stainless, Inc. Report 362006. The guy wires of all the four levels were also re-tensioned.

The tower was analyzed per Stainless LLC Report 362013, dated 09/25/2014. The proposed antennas are assumed to have been installed, and the tower top plate and top K-bracing members strengthened to remove the reported overstresses for the purpose of this analysis.

C. CONDITIONS INVESTIGATED

The analysis was performed for the tower supporting the following equipment based upon the following sources:

- Stainless LLC Report 362013 dated 09/25/2014.
- Email from Sheldon Freincle, dated 12/17/2014, with Final T-Mobile Network Modernization RFDS_CT11474_700_V3_20141216 containing details of existing and proposed equipment.

1. One (1) top mounted stacked antenna system consisting of one (1) top Dielectric TCL-12A8(S) antenna, Ch. 8, fed by one (1) 6-1/8" rigid coax, on top of one (1) bottom Dielectric THP-O-2-1 antenna, Ch. 10 DTV, fed by one (1) 3-1/8" rigid coax. (NB: The remaining one of the two (2) 6-1/8" coaxes that originally fed the top stacked TCL antenna is now used to feed the Shively 6810-2R antenna, see below)
2. One (1) 10' whip antenna at the 758' level, fed by one (1) 1-5/8" heliax shared with Items 4 and 5.
3. One (1) 5' omni antenna at the 750' level, fed by one (1) 7/8" heliax.
4. One (1) ENG Super Quad antenna at the 744' level, fed by one (1) 1-5/8" line shared with Items 2 and 5 and by one (1) 1/2" control cable.

Rev.	Date	Description
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5. One (1) Allen Telcom DB408 antenna at the 742' level, fed by one (1) 1-5/8" line shared with Items 2 and 4.
6. One (1) Dielectric TFU-31E/V-R(S) antenna, Ch. 59, at the 715' level, fed by one (1) WR1150 waveguide.
7. One (1) ice shield at the 681' level.
8. One (1) Andrew PL6-65 6' diameter dish antenna with radome at the 678' level, fed by one (1) EW63 and one (1) 1/2" control cable.
9. One (1) Dielectric TFU 16DSB-B(C) antenna, Ch. 39 DTV, at the 652' level, fed by one (1) 4-1/16" rigid coax.
10. One (1) Andrew PL6-65 6' diameter dish antenna with radome at the 630' level, fed by one (1) EW63 and one (1) 1/2" control cable.
11. One (1) Shively 6015-2/3R FM antenna at the 591' level, fed by one (1) 4-1/16" line.
12. Two (2) Allen Telcom DB408 antennas at the 529' level, fed by one (1) 7/8" line to each.
13. One (1) Allen Telcom DB408 antenna at the 510' level, fed by one (1) 7/8" line.
14. One (1) Shively 6810-2R 2-bay FM antenna at the 458' level, fed by one (1) existing 6-1/8" rigid coax. (NB: This coax was cut at the 440' – 480' level and a 20' length of 3" heliax was used to connect the 6-1/8" rigid coax to the antenna. The remaining length of the 6-1/8" coax from 480' to the top of tower was left in place)
15. One (1) unused 15' whip antenna at the 420' level, fed by one (1) 1/2" line.
16. One (1) unused 10' whip antenna at the 420' level, fed by one (1) 1-5/8" line.
17. One (1) 5' omni antenna at the 348' level, fed by one (1) 7/8" heliax.
18. One (1) ice shield at the 346' level.
19. One (1) 6' grid dish at the 339' level, fed by one (1) 7/8" line.
20. Three (3) EMS FR90-17-02-DP antennas, three (3) **proposed** LNX-6515DS-VTM antennas and three (3) DDB2 TMA units on sector mounts at the 315' level, fed by six (6) 7/8" lines and six (6) 7/8" **proposed** lines.
21. Three (3) RFS APXVSPP18-C-A20 panel antennas, three (3) RFS APXVTM14-C-120 panel antennas, three (3) TD-RRH8x20 RRU units and six (6) RRHs on three (3) sector mounts at the 200' level, fed by three (3) 1-1/4" Hybriflex cables and one (1) fiber cable.
22. One (1) ice shield at the 166' level.
23. One (1) Andrew 8' dish with radome at the 160' level, fed by two (2) EW63 waveguides.
24. One (1) unused 15' whip antenna at the 102' level, fed by one (1) 1/2" line.
25. One (1) unused ASPG952 antenna at the 100' level, fed by one (1) 2-1/4" line.
26. One (1) GPS antenna at the 75' level, fed by one (1) 1/2" line.
27. One (1) 1-1/2" support conduit each to the 348', 2 x 420', 529', 758' levels, and to top of tower.
28. One (1) 1-1/4" support conduits to the 315' level **(proposed extended from the 200' level)** and one (1) 1-1/4" conduit to 200'.

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29. One (1) inside climbing ladder with cable type safety device for the full height of the tower.
30. One (1) single car elevator with guide rails, cables, motor and elevator equipment.
31. One (1) red lighting system with circuits within one (1) 1" conduit to the 45' level, and one (1) 1-1/2" conduit for the full height of the tower.

The locations of the transmission lines have been based upon the cross section from Stainless Report 362013 dated 09/25/2014 and shown on Page A-2 of this Report. Proposed transmission lines have been located to minimize the wind load on the tower. Deviating from the line arrangement as shown may invalidate the results of this analysis.

D. LOADS AND STRESSES

The basic design wind speed for the tower per ANSI/TIA/EIA Standard 222-F is 85 mph with no ice. However the 222-F Code does not provide specific ice thicknesses but recommends a minimum of 1/2" uniform radial ice concurrent with 75% of the no ice design wind load which is equivalent to 73.6 mph.

Research however has shown that tower icing is associated with lower wind speeds, and the thickness also increases with height of the tower. These findings are reflected in the latest Revision 222-G of the Code which also now provides specific design ice thicknesses to be used depending on the tower location. Therefore for this analysis, Revision 222-G has been used to determine the ice case loading condition for the tower. The basic design wind speed for the ice case is 39 mph with 3/4" of uniform ice thickness. Due to escalation of ice thickness with height, a uniform ice thickness of 1" was used in the analysis.

The tower was analyzed for a basic wind speed of 85 mph with no ice, and 39 mph with 1" uniform ice per ANSI/TIA/EIA Standard 222-F. Allowable unit stresses and minimum safety factors used to evaluate the adequacy of the structure were in accordance with ANSI/EIA/TIA Standard 222-F.

E. METHOD OF ANALYSIS

The analysis was performed using Stainless, Inc's Beam-Column Analysis Program, a computer operation which idealizes the tower as a continuous beam-column on non-linear, elastic supports (guys) subject to simultaneous transverse (wind) and axial (dead, ice and vertical components of guy tensions) loads.

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F. RESULTS

The results of the analysis show the following overstresses:

LOCATION	TOWER COMPONENT	% RATING (Before Modifications)	% RATING (After Modifications)
Span 4 (Top)	Vertical Members	**103.8**	90.6
	Diagonal Members	**101.0**	76.8
	Horizontal Members	64.0	64.0
	Guy Wires	87.8	87.8
Span 3	Vertical Members	94.2	94.8
	Diagonal Members	76.1	78.9
	Horizontal Members	66.1	66.1
	Guy Wires	83.1	83.4
Span 2	Vertical Members	80.0	80.1
	Diagonal Members	57.3	57.2
	Horizontal Members	45.8	47.1
	Guy Wires	77.8	77.9
Span 1	Vertical Members	80.8	81.0
	Diagonal Members	73.2	73.3
	Horizontal Members	52.0	51.9
	Guy Wires	77.1	77.1
	Foundations	81.4	81.6

Ratings are not to exceed 100% after modifications as requested by Northeast Site Solutions.

G. CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding results, the following conclusions may be drawn:

1. The tower supporting equipment as specified in Section C of this Report is not adequate to achieve a basic wind speed rating of 85 mph with no ice and 39 mph with 1" uniform ice in accordance with ANSI/EIA/TIA Standard 222-F.
2. In order to achieve a basic wind speed of 85 mph with no ice and 39 mph with 1" uniform ice in accordance with ANSI/EIA/TIA Standard 222-F, the following modifications are required:
   a. Install additional horizontal sub-braces at the midpoint of the following bay:

Location	No. of bays
583.8' – 591.3'	1

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b. Replace existing diagonal bracing members with new, higher capacity diagonal bracing members at the following bay:

Location	No. of bays
613.8' – 621.3'	1

H. PROVISIONS OF ANALYSIS

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.
3. Correct bolt tightness.
4. No significant deterioration or damage to any component.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-arts" engineering and analysis procedures and formulae, and Stainless LLC assumes no obligations 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 Stainless LLC 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 Stainless LLC, if any, pursuant to this Report shall be limited to the total funds actually received by Stainless LLC for preparation of this Report.

Customer has requested Stainless LLC to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested Stainless LLC to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of Stainless LLC, Customer has informed Stainless LLC that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by Stainless LLC and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice.

Customer hereby agrees and acknowledges that Stainless LLC shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than Stainless LLC in connection with the implementation of any structural changes or modifications recommended by Stainless LLC including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer

Rev.	Date	Description
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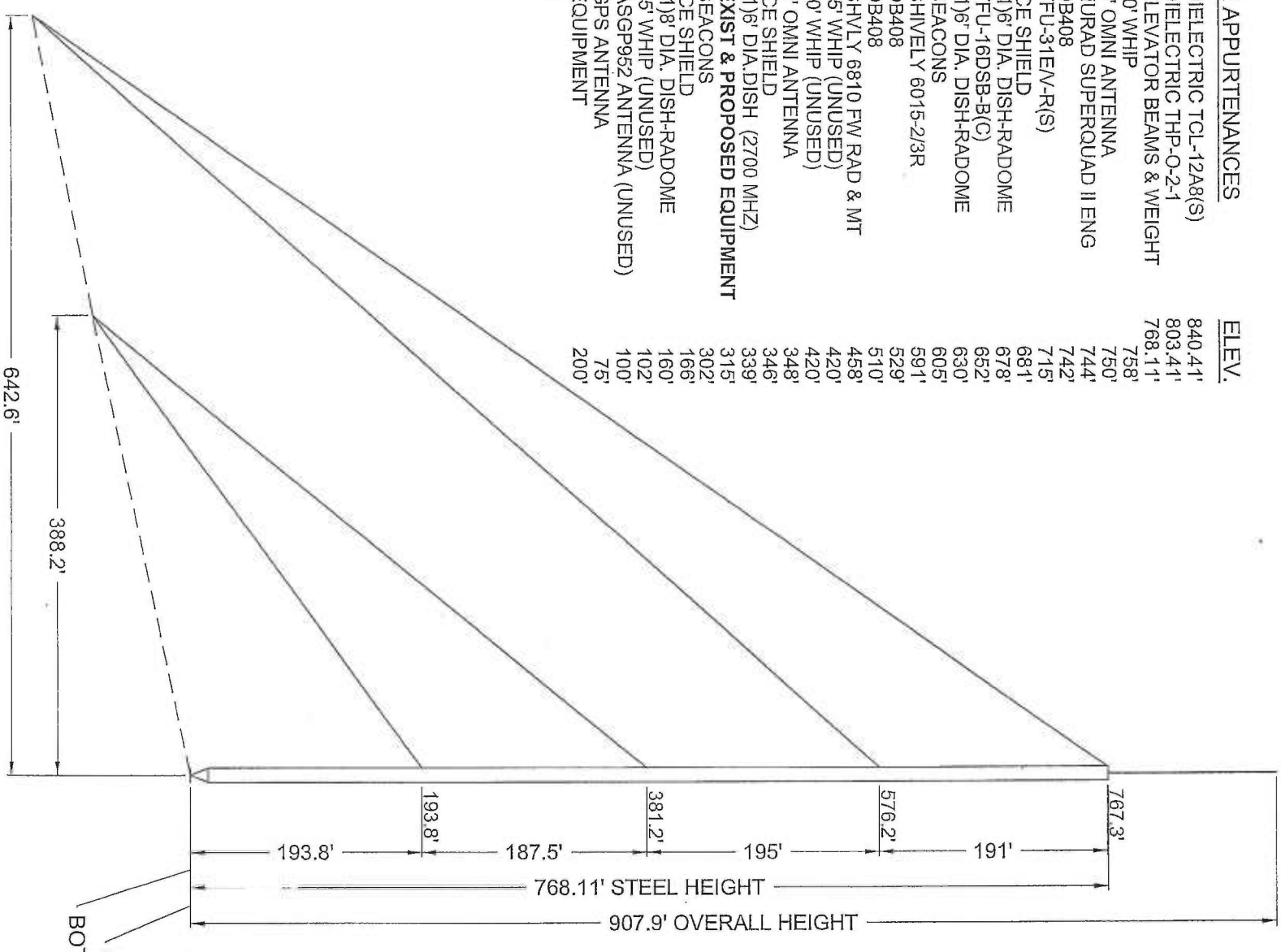
acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that Stainless LLC shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor.

DISCRETE APPURTENANCES

			ELEV.
1.	1	DIELECTRIC TCL-12A8(S)	840.41'
2.	1	DIELECTRIC THP-Q-2-1	803.41'
3.	1	ELEVATOR BEAMS & WEIGHT	768.11'
4.	1	10' WHIP	758'
5.	1	5' OMNI ANTENNA	750'
6.	1	NURAD SUPERQUAD II ENG	744'
		DB408	742'
7.	1	TFU-31E/V-R(S)	715'
8.	1	ICE SHIELD	681'
9.	1	(1)6' DIA. DISH-RADOME	678'
10.	1	TFU-16DSB-B(C)	652'
11.	1	(1)6' DIA. DISH-RADOME	630'
12.	1	BEACONS	605'
13.	2	SHIVELY 6015-2/3R	591'
14.	1	DB408	529'
15.	2	DB408	510'
16.	1	SHVLY 6810 FW RAD & MT	458'
17.	1	15' WHIP (UNUSED)	420'
18.	1	10' WHIP (UNUSED)	420'
19.	1	5' OMNI ANTENNA	348'
20.	1	ICE SHIELD	346'
21.	1	(1)6' DIA.DISH (2700 MHZ)	339'
22.	1	**EXIST & PROPOSED EQUIPMENT**	315'
23.	2	BEACONS	302'
24.	1	ICE SHIELD	166'
25.	1	(1)8' DIA. DISH-RADOME	160'
26.	1	15' WHIP (UNUSED)	102'
27.	1	ASGP952 ANTENNA (UNUSED)	100'
28.	1	GPS ANTENNA	75'
29.	1	EQUIPMENT	200'
30.			



LINEAR APPURTENANCES

(1) ELEV.RAILS,CABLES,COND.
(1) 16-3/4"LADDER-3/4"VERTICAL
(1) CABLE TYPE SAFETY DEVICE
(1) 1-1/2 CONDUIT
(1) 7/8" AIR HELIAX
(2) 7/8" AIR HELIAX
(1) 1-1/2 CONDUIT
(1) 6-1/8 COAX
(1) 1-1/2 CONDUIT
(1) 1" CONDUIT
(1) WR1150
(2) 1-1/2 CONDUIT
(1) 1-5/8" AIR HELIAX
(1) 4-1/16" COAX
(1) 7/8" AIR HELIAX
(1) 3-1/8 COAX
(1) 1-5/8" AIR HELIAX
(1) 1/2" AIR HELIAX
(1) 1-1/2 CONDUIT
(1) 1/2" AIR HELIAX
(1) 1/2" AIR HELIAX
(1) 1-1/2 CONDUIT
(2) EW63
(1) 7/8" AIR HELIAX
(2) 1-1/4 CONDUIT
(1) 4-1/16" COAX
(1) EW63
(1) EW63
(1) 1/2" CONTROL CABLE
(1) 1/2" CONTROL CABLE
(1) 7/8" AIR HELIAX
(1) 2-1/4" AIR HELIAX
(1) 1/2" AIR HELIAX
(1) 1" CONDUIT
(3) 1-1/4" HYBRIFLEX
(1) FIBER CABLE
(6) 1-5/8" AIR HELIAX
(6) 7/8" AIR HELIAX (PROPOSED)

TOWER TYPE: G-12
STD: EIA/TIA-222-F
LOAD CASE(S)
85 MPH BASIC WIND SPEED WITH NO ICE
39 MPH BASIC WIND SPEED WITH 1" BASIC RADIAL ICE THICKNESS

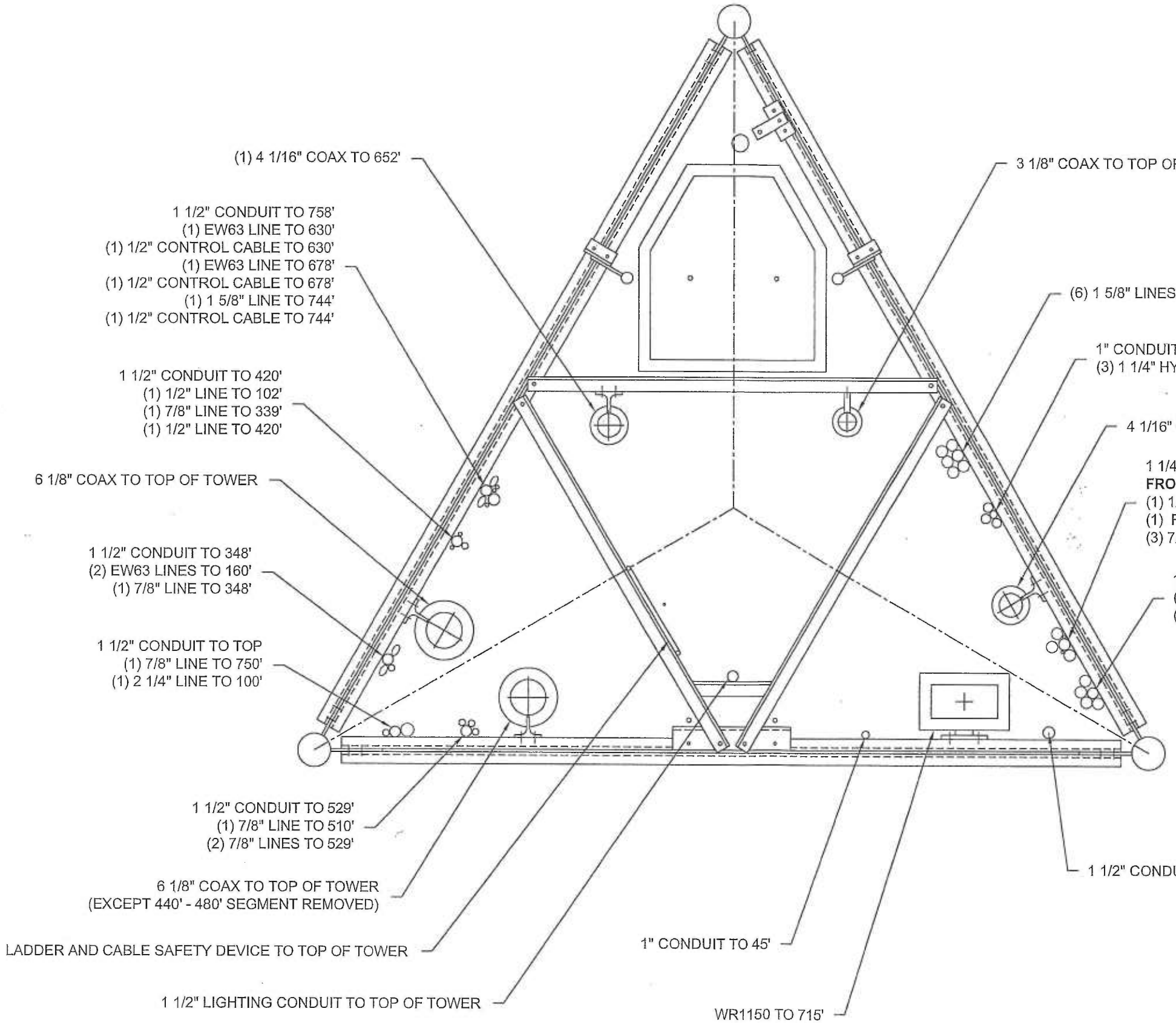
Stainless LLC
100 West Main Street, Suite 400
Lansdale, PA 19446

GENERAL ARRANGEMENT

HAMDEN, CT

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
*							
*							
*							
*							
B	AP	1/23/15	CHANGED CITY NAME TO HAMDEN				
A	PCC	12/17/14	UPDATE PROPOSED ELEVATION AND LINE SIZE				

PREPARED BY	PCC	11/25/2014
CHECKED BY		
ENGINEER REVIEW		
PROJECT NUMBER	362014	
DRAWING NUMBER	A-1	



PREPARED BY	PCC
CHECKED BY	
ENGINEER REVIEW	
PROJECT NUMBER	362014
DRAWING NUMBER	A-2

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
*	*	*	*				
B	AP	1/23/15	CHANGED CITY NAME TO HAMDEN				
A	PCC	12/17/14	UPDATE PROPOSED ELEVATION AND LINE SIZE				
		DATE					

11/21/2014

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100 West Main Street, Suite 400
Lansdale, PA 19446

LINEAR APPURTENANCES
HAMDEN, CT

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11474A

WTNH Hamden
101 Talmadge Road
Hamden, CT 06518

December 17, 2014

EBI Project Number: 62146615

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	3.43 %

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

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December 17, 2014

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

Emissions Analysis for Site: **CT11474A – WTNH Hamden**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **101 Talmadge Road, Hamden, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general public 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 public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **101 Talmadge Road, Hamden, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

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

3) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

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

6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **RFS RR90_17_02DP** for 1900 MHz (PCS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS RR90_17_02DP** has a maximum gain of **14.4 dBd** at its main lobe at 1900 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. 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.

8) The antenna mounting height centerline of the proposed antennas is **315 feet** above ground level (AGL).

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

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS RR90_17_02DP	Make / Model:	RFS RR90_17_02DP	Make / Model:	RFS RR90_17_02DP
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	315	Height (AGL):	315	Height (AGL):	315
Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	3,505.81	ERP (W):	3,505.81	ERP (W):	3,505.81
Antenna A1 MPE%	0.25	Antenna B1 MPE%	0.25	Antenna C1 MPE%	0.25
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	315	Height (AGL):	315	Height (AGL):	315
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A2 MPE%	0.07	Antenna B2 MPE%	0.07	Antenna C2 MPE%	0.07

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**0.96**
Sprint	2.47 %
Site Total MPE %:	**3.43 %**

T-Mobile Sector 1 Total:	0.32 %
T-Mobile Sector 2 Total:	0.32 %
T-Mobile Sector 3 Total:	0.32 %
Site Total:	3.43 %

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Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	0.32 %
Sector 2:	0.32 %
Sector 3 :	0.32 %
T-Mobile Total:	0.96 %
Site Total:	3.43 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.43%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions. There was only one additional carrier 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.

Scott Heffernan
RF Engineering Director

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