NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

September 3, 2015

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
555 E. Main Street, Stamford CT 06901
Longitude: -73 32 8.08
Latitude: 41 3 12.73
T-Mobile Site#: CT11410A_L700

Members of the Siting Council:

On behalf of T-Mobile, Northeast Site Solutions (NSS) is submitting an exempt modification application to the Connecticut Siting Council for modification of existing equipment at a tower facility located at 555 E. Main Street, Stamford CT 06901.

The 555 E. Main Street, Stamford, CT facility consists of a 125' Self Support Tower on a 106'-5" Rooftop. Both are owned and operated by Frontier Communications Corporation. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

As part of T-Mobile's L700 Project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of $625.

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The changes to the facility do not constitute modifications as defined in Connecticut General Statutes significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, Northeast Site Solutions (NSS) on behalf of T-Mobile, respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 860.209.4690 with any questions you may have concerning this matter.

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

CC. City of Stamford- Zoning Enforcement Attn. David Klein, Structure owner- Frontier Communications Corp

T-Mobile

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

3050114
2/23/2015
2000011160

Invoice Number	Inv. Date	Description	Deductions	Voucher	Amount Paid
CT11410A-1	2/19/2015	Exempt Mod Filing Fees	0.00	1100314080	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

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

3050114
2/23/2015
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

⑈000 3050 114⑈ ⑆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

T-MOBILE NORTHEAST LLC

SITE #: CT11410A

SITE NAME: STAMFORD / DWTN

SITE ADDRESS:
555 E MAIN STREET
STAMFORD, CT, 06901
WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(702CU CONFIGURATION)

VICINITY MAP

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL BEFORE YOU DIG:

WWW.CBYD.COM

CALL 800 922 4455, OR 811

CALL THREE WORKING DAYS PRIOR TO DIGGING

SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC	**– RED**	**SEWER**	**– GREEN**
GAS/OIL	– YELLOW	**SURVEY**	**– PINK**
TEL/CATV	– ORANGE	PROPOSED EXCAVATION	– WHITE
WATER	– BLUE	RECLAIMED WATER	– PURPLE

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T–MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. THE CONTRACTOR SHALL NOTIFY THE T–MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T–MOBILE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
17. REFER TO STRUCTURAL ANALYSIS AND TOWER MODIFICATION DESIGN DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT " PREPARED BY MALOUF ENGINEERING INTL., INC. (MEI PROJECT ID:CT02768S–15V2) "T–MOBILE SITE ID CT11410A", DATED JUNE 24, 2015.

SITE INFORMATION

SITE NUMBER:	CT11410A
SITE NAME:	STAMFORD / DWTN
SITE ADDRESS:	555 E MAIN STREET STAMFORD, CT, 06901
LAT./LONG.:	N 41.053535 / W –73.535579
JURISDICTION:	FAIRFIELD COUNTY
PROPERTY OWNER:	FRONTIER COMMUNICATIONS 805 CENTRAL EXPRESSWAY SOUTH ALLEN, TX 75013 972–908–4165 (O) 214–437–8156 (C) KELLEY.STEWART@FTR.COM

CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT
2011 NATIONAL ELECTRICAL CODE

CONSTRUCTION TYPE: 2B USE GROUP: N/A

PROJECT SUB–CONTRACTORS

APPLICANT:	T–MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692–7100
PROJECT MANAGER	LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434–5237
ARCHITECT/ENGINEER:	ATLANTIS GROUP INC. 1340 CENTRE STREET SUITE 212 NEWTON CENTER, MA 02459 (617) 965–0789

SHEET INDEX

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A–2	ELEVATION AND DETAILS
E–1	GROUNDING DIAGRAM
E–2	GROUNDING DETAILS

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617–965–0789
Fax: 617–213–5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
07/15/15	ISSUED FOR REVIEW	A

DEPT.	DATE	APP'D	REVISIONS
RFE.			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11410A
DRAWN BY:	MB
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11410A
SITE NAME
STAMFORD / DWTN
SITE ADDRESS
555 E MAIN STREET
STAMFORD, CT, 06901

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

ELECTRICAL NOTES:

WORK INCLUDED

1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
   B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
   C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
   D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
   E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
   F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
   A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
   B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
   A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALLY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
   B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
   C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
   D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
   E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:
   A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
   A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
   B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
   A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
   B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
   C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
   D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
   E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
   F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
   G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
   H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
   I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
   J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
   K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.
   L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
   M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
   N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
   O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
   P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN WIRE SIZE
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8

8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

DISCONNECT SWITCHES AND FUSES

1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
   A. GENERAL ELECTRIC COMPANY
   B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
   A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
   B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
   A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
   A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

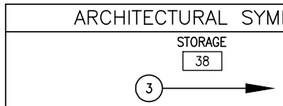
ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

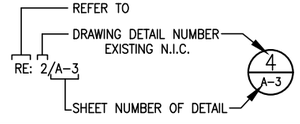
INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ARCHITECTURAL SYMBOLS



DETAIL REFERENCE KEY



ABBREVIATIONS

ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
@	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR ø	DIAMETER
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

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SUBMITTALS

DATE	DESCRIPTION	REVISION
07/15/15	ISSUED FOR REVIEW	A

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11410A
DRAWN BY:	MB
CHECKED BY:	SM

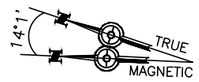
PROFESSIONAL SEAL

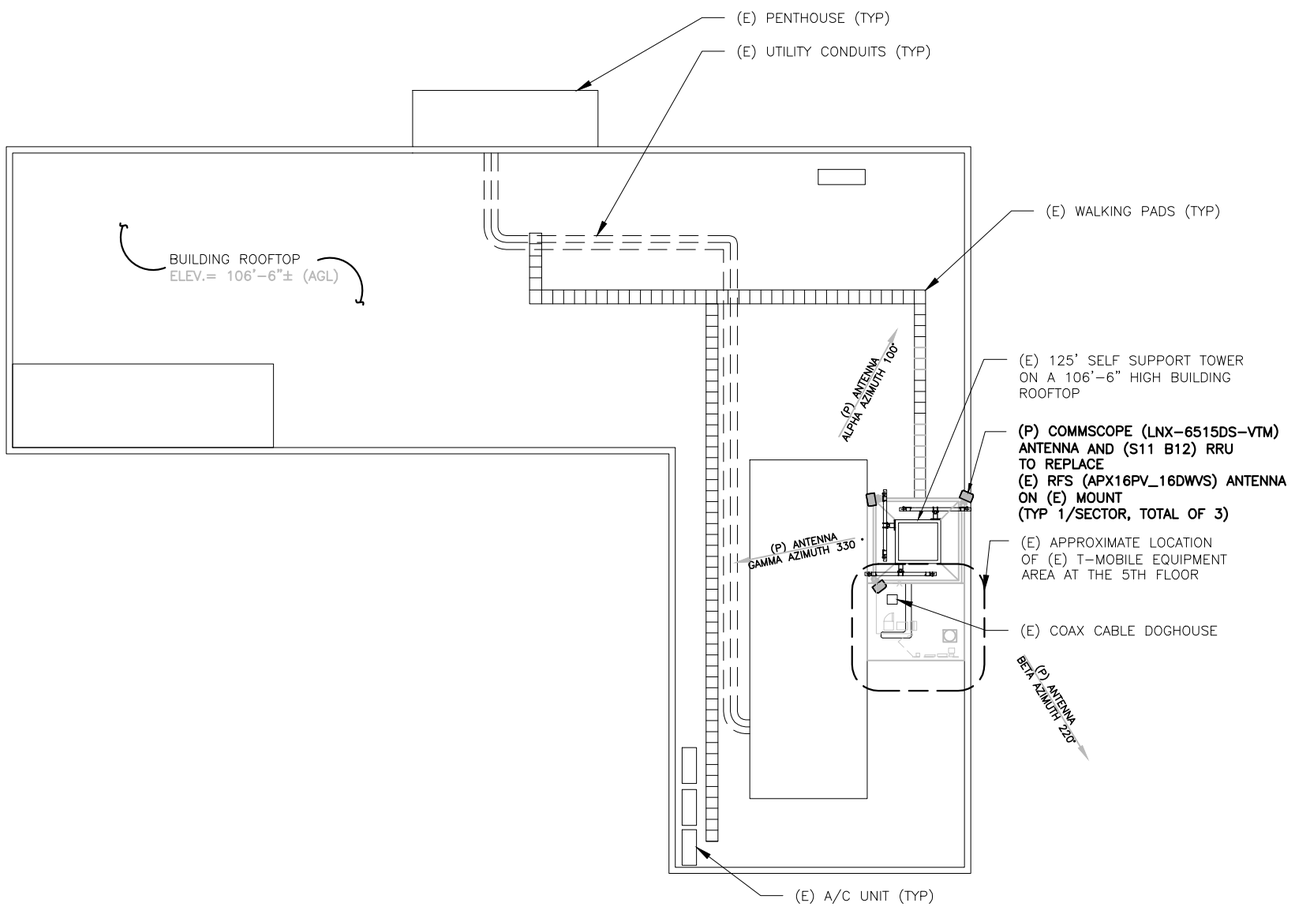
SITE NAME
CT11410A
SITE NAME
STAMFORD / DWTN
SITE ADDRESS
555 E MAIN STREET
STAMFORD, CT, 06901

SHEET TITLE
GENERAL AND ELECTRICAL NOTES

SHEET NUMBER
N-1

REFER TO STRUCTURAL ANALYSIS AND TOWER MODIFICATION DESIGN DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT " PREPARED BY MALOUF ENGINEERING INTL., INC.
(MEI PROJECT ID:CT02768S-15V2)
"T-MOBILE SITE ID CT11410A", DATED JUNE 24, 2015.





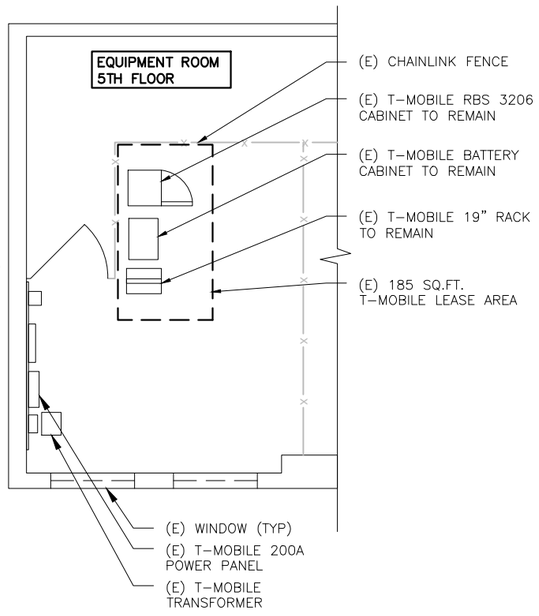
SITE PLAN

1 / A-1

SCALE: 1" = 30'-0" (11x17)
1" = 15'-0" (24x36)

0 30 60 90

SCALE 1"=30' (11x17)
1"=15' (24x36)



EQUIPMENT PLAN AT THE 5th FLOOR

2 / A-1

SCALE: 1/8" = 1'-0" (11x17)
1/4" = 1'-0" (24x36)

0 8 16 24

SCALE 1/8"=1' (11x17)
1/4"=1' (24x36)

GENERAL SITE NOTES

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.

2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.

3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.

4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS SHOWN.

5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.

6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.

7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

SITE LEGEND

- SITE PROPERTY LINE
- STREET OR ROAD
- CHAIN LINK FENCE
- OPAQUE WOODEN FENCE
- BOARD ON BOARD FENCE
- DECIDUOUS TREES/SHRUBS
- EVERGREEN TREES/SHRUBS
- TREE LINE
- UTILITY POLE
- (E) EXISTING
- (N) NEW
- (P) PROPOSED
- (F) FUTURE
- PROP. LTE ANTENNA
- PROP. UMTS/GSM ANTENNA
- EX. GSM ANTENNA
- EX. UMTS ANTENNA

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Fax: 617-213-5056

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DATE	DESCRIPTION	REVISION
07/15/15	ISSUED FOR REVIEW	A

DEPT.	DATE	APP'D	REVISIONS
RFE.			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

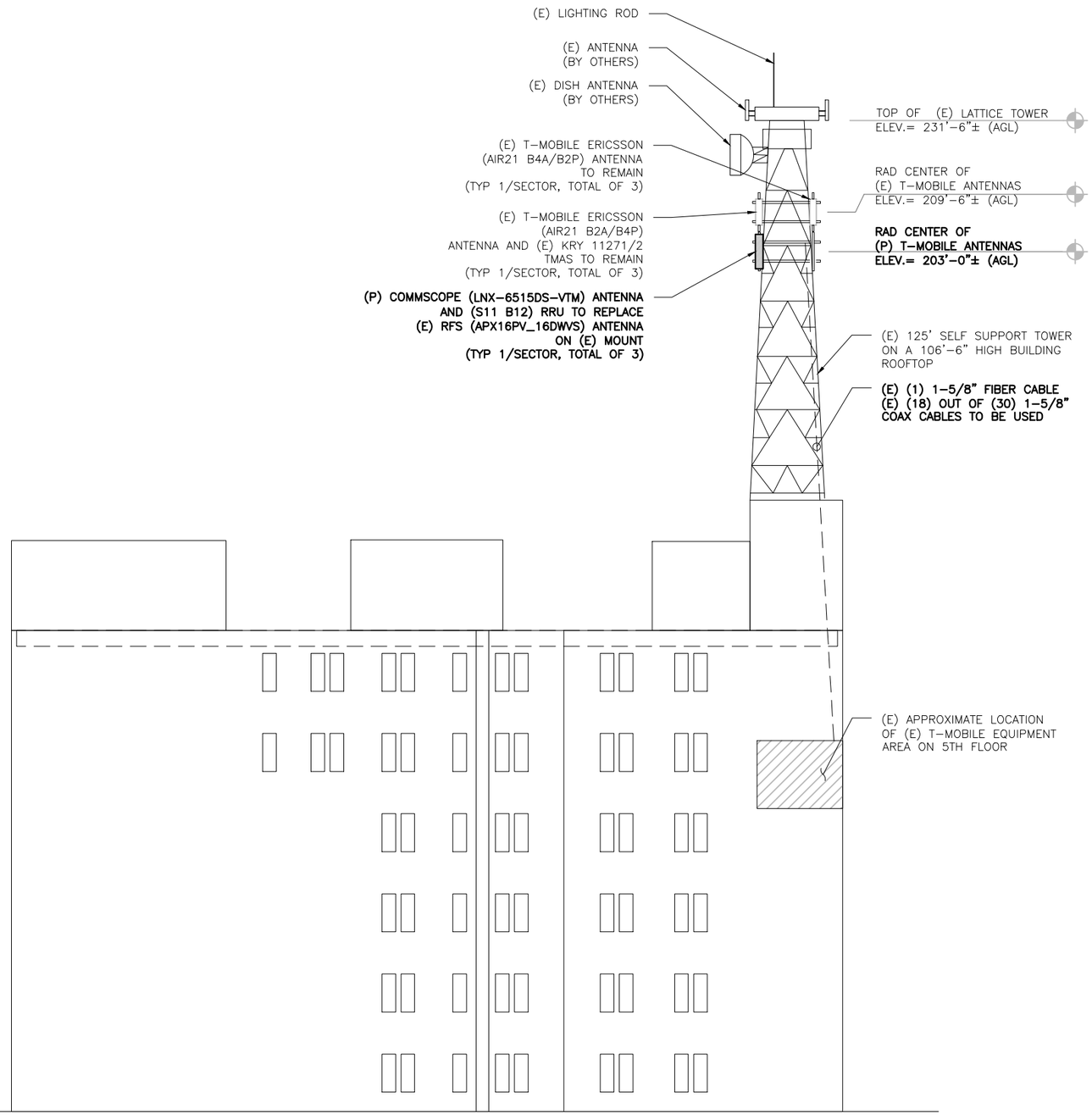
PROJECT NO:	CT11410A
DRAWN BY:	MB
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11410A
SITE NAME
STAMFORD / DWTN
SITE ADDRESS
555 E MAIN STREET
STAMFORD, CT, 06901

SHEET TITLE
SITE PLAN
AND
EQUIPMENT PLAN

SHEET NUMBER
A-1



ELEVATION VIEW (1 / A-2)

SCALE: 1" = 30'-0" (11x17)
1" = 15'-0" (24x36)

0 30 60 90

SCALE 1"=30' (11x17)
1"=15' (24x36)

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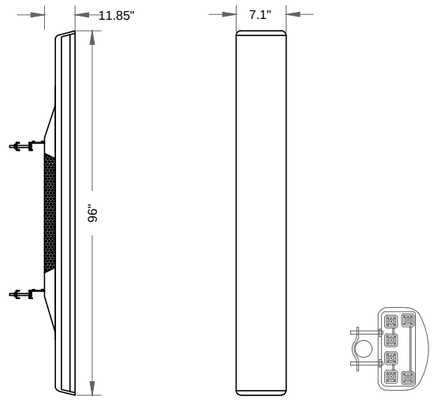
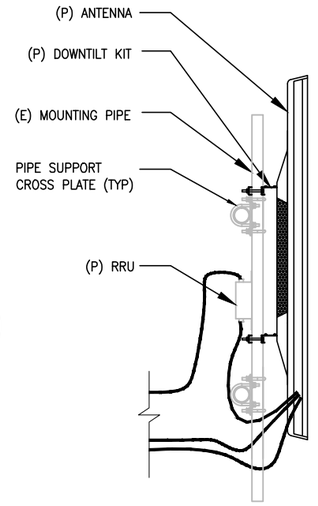
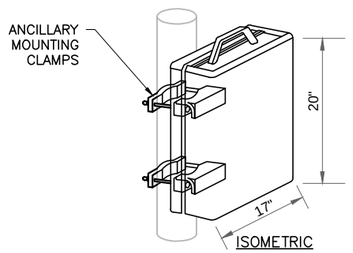


SIDEVIEW FRONT VIEW TOPVIEW



MANUFACTURER: COMMSCOPE
MODEL NO.: LNX-6515DS-VTM
DIMENSIONS - HxWxD, (IN) 96x11.85x7.1

COMMSCOPE ANTENNA DETAIL (2 / A-2)
SCALE: N.T.S



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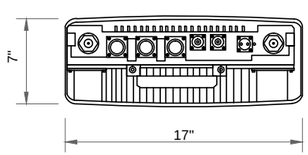

TOP

RRU S11 B12 DETAILS (3 / A-2)
SCALE: N.T.S

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RF MAN.			
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OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11410A
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CHECKED BY:	SM

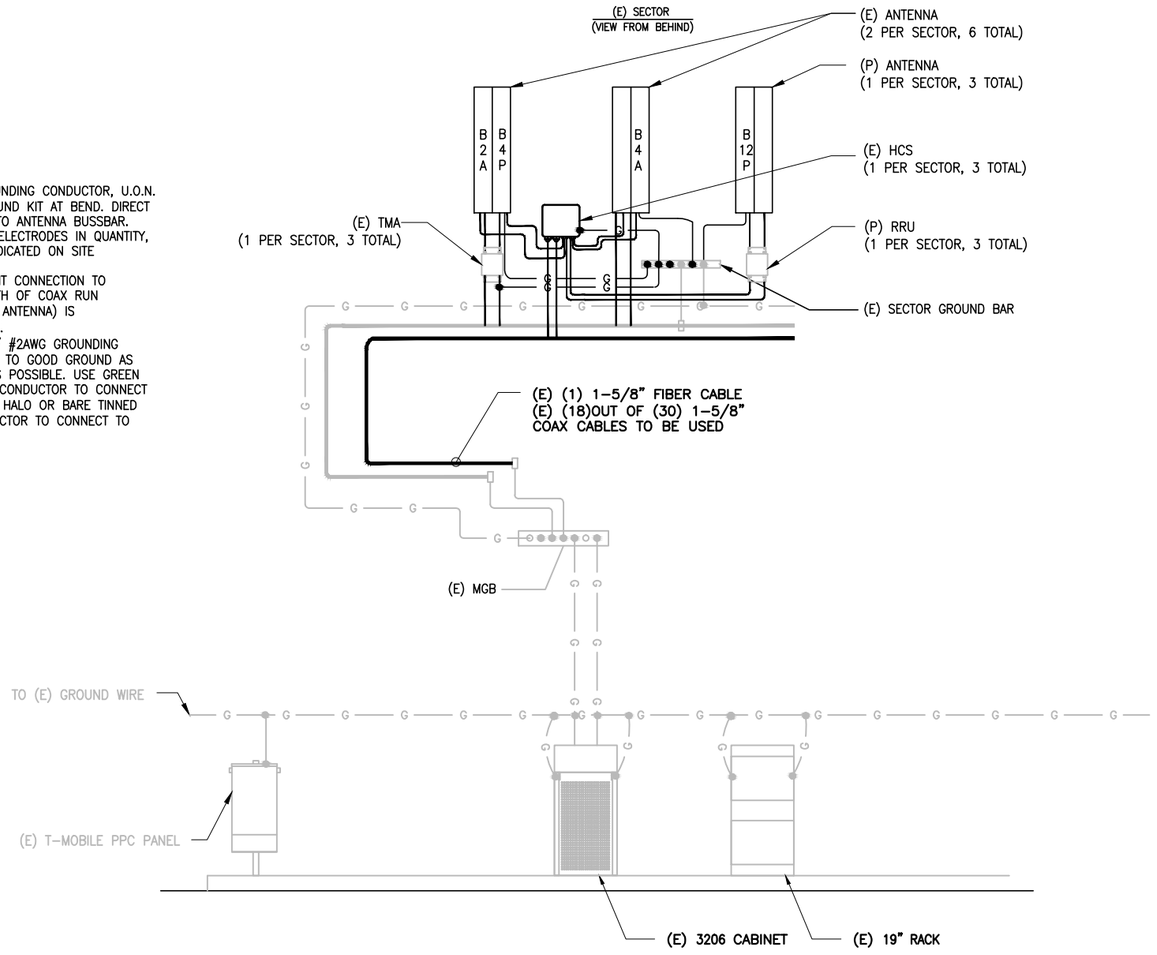
PROFESSIONAL SEAL

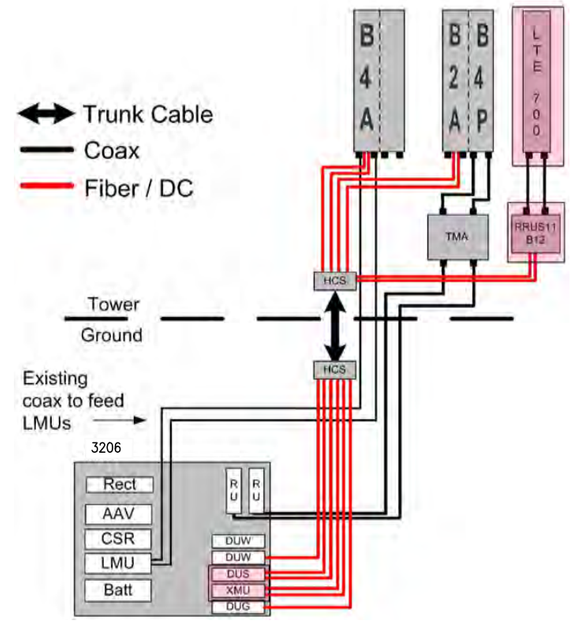
SITE NAME
CT11410A
SITE NAME
STAMFORD / DWTN
SITE ADDRESS
555 E MAIN STREET
STAMFORD, CT, 06901

SHEET TITLE
ELEVATION AND DETAILS

SHEET NUMBER
A-2

NOTES:
A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
C. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
D. ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT TO ANTENNA) IS GREATER THAN 20'-0".
E. GROUND HCS BOX W/ #2AWG GROUNDING CONDUCTOR ATTACHED TO GOOD GROUND AS DIRECT AND SHORT AS POSSIBLE. USE GREEN STRANDED INSULATED CONDUCTOR TO CONNECT TO BUSSBAR/GROUND HALO OR BARE TINNED SOLID COPPER CONDUCTOR TO CONNECT TO GROUND RING.





TRUNK FIBER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO ⅞" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
2. THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.
3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN ¾" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.
10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS.
11. MAXIMUM HANGER SPACING 3FT (0.9 M).

HYBRID FIBER/POWER JUMPER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A ⅜" COAXIAL CABLE.
2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN ¾" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

702CU CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM

2
E-1

SCALE: N.T.S

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SUBMITTALS

DATE	DESCRIPTION	REVISION
07/15/15	ISSUED FOR REVIEW	A

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

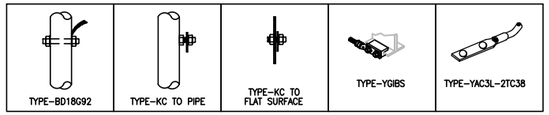
PROJECT NO: CT11410A
DRAWN BY: MB
CHECKED BY: SM

PROFESSIONAL SEAL

SITE NAME
CT11410A
SITE NAME
STAMFORD / DWTN
SITE ADDRESS
555 E MAIN STREET
STAMFORD, CT, 06901

SHEET TITLE
GROUNDING DIAGRAM AND POWER ONE LINE DIAGRAM

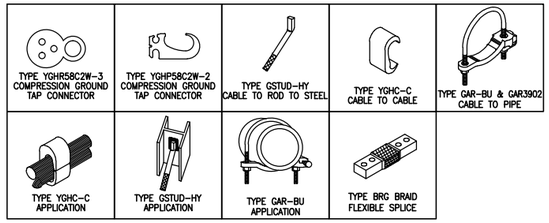
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

1 / E-2

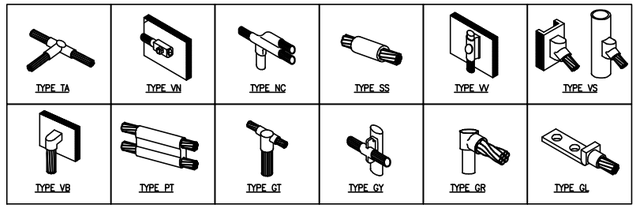
SCALE: N.T.S



BURNDY GROUNDING PRODUCTS

2 / E-2

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS

3 / E-2

SCALE: N.T.S

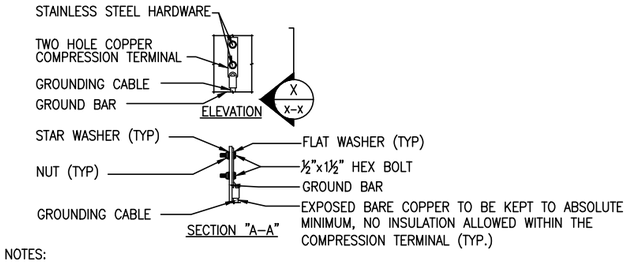
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GRND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GRND RING	GROUND ROD
SOLID #2 TINNED COPPER	B OR C	B OR C		C	A, C, OR D		C
#6 GROUND LEAD	B OR C			A	A, C, OR D		
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A	A, C, OR D	A	
MASTER GROUND BAR	C	A	A				
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D				
GROUND RING	C		C				C

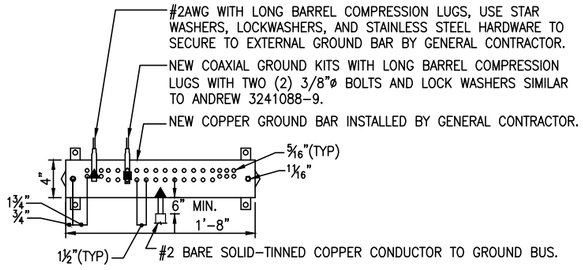
GROUNDING TERMINATION MATRIX

7 / E-2

SCALE: N.T.S



NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

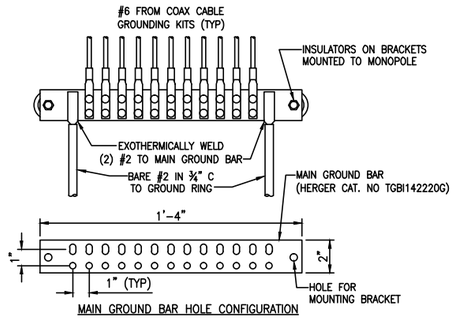


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

4 / E-2

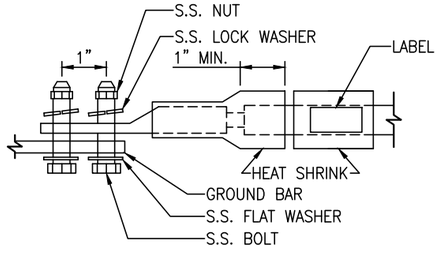
SCALE: N.T.S



GROUND BAR DETAIL

5 / E-2

SCALE: N.T.S



LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
2. ALL HARDWARE SHALL BE S.S. ⅜"ø OR LARGER.
3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

GROUND BAR DETAIL

6 / E-2

SCALE: N.T.S

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555 E MAIN STREET
STAMFORD, CT, 06901

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit B

Structural Analysis Report

AT&T – Stamford Central SBC CO #CT2118 / FA #10034983
Owner: Frontier Communications - Stamford #1 Co Site
Stamford, Connecticut

June 24, 2015

MEI PROJECT ID: CT02768S-15V2

MALOUF ENGINEERING INTL., INC.

STRUCTURAL CONSULTANTS

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

MALOUF ENGINEERING INTL., INC.

STRUCTURAL CONSULTANTS

June 24, 2015

Mr. Miguel Nobre
Vertical Resources
Auburn, MA 01501

STRUCTURAL ANALYSIS

Structure/Make/Model:	125 ft **Self-Supporting Tower** (onto 106.5ft Rooftop)		Not Known / Not Known	
Client/Site Name/#:	**Vertical Resources / AT&T**		**Stamford Central SBC CO #CT2118 FA #10034983**	
Owner/Site Name/#:	Frontier Communications		Stamford #1 Co	
MEI Project ID:	**CT02768S-15V2**			
Location:	555 Main St Stamford, CT 06901		Fairfield County FCC #1046319	
	LAT	41-03-12.47 N	LON	73-32-8.4 W

EXECUTIVE SUMMARY:

Malouf Engineering Int'l (MEI), as requested, has performed a structural analysis and modification design 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-F** Standard for the loading considered under the criteria listed and referenced in the report sections **after proper installation of the recommended structural strengthening modifications outlined** – tower rated at 93.7% - Legs.

The addition of the proposed changed condition as noted in Table 1 is structurally acceptable after proper installation of the proposed strengthening modifications. Please refer to modification drawings for details.

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:

Luan Nguyen, PE
Sr. Project Engineer

Reviewed & Approved by:

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

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Separate Attachment:

Modification Design Drawings

1. INTRODUCTION & SCOPE

A structural analysis and modification design were performed by Malouf Engineering Int'l (MEI), as requested and authorized by Mr. Miguel Nobre, Vertical Resources, on behalf of AT&T, to determine the acceptance of the proposed changed conditions in conformance with the IBC / ANSI/TIA-222-F Standard, "*Structural Standards for Steel Antenna Towers and Antenna Supporting Structures*".

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 Records	Previous Structural Analysis	ID CT02768S-15V0 Dated 04/27/2015
Base Support	Tower is on a building rooftop – building members to be reviewed by others.		
Material Grade	Not available from supplied documents-Assumed based on typical towers of this type-refer to Appendix		
CURRENT APPURTENANCES			
	MEI Records	Previous Structural Analysis	ID CT02768S-15V0 Dated 04/27/2015
CHANGED CONDITION			
	Vertical Resources / Mr. Miguel Nobre	E-mail Instructions	Dated 06/10/2015
		AT&T Collo Application	Dated 03/31/2015

Background Information:

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

DESIGNER / FABRICATOR	Not Known / Not Known
ORIGINAL DESIGN CRITERIA	TIA/EIA 222-Unknown
PRIOR STRUCTURAL MODIFICATIONS	Mods as per MEI CT02768S-11V1

3. ANALYSIS CRITERIA

The structural analysis performed used the following criteria:

CODE / STANDARD	2005 CT State Building Code / 2003 Int'l Building Code / ANSI/TIA-222-F-96 Standard	
LOADING CASES	*Full Wind*:	85 Mph (fastest-mile) – with No Radial Ice
	Iced Case:	73.61 Mph (fastest-mile) + 0.5" Radial Ice
	Service:	50 Mph

Appurtenances Configuration

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

Table 1: Proposed Changed Condition Appurtenances

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
235	**AT&T**	6	OPA-65R-LCUU-H4 Panel Antennas	[Existing Mounts]	2	0.75" DC Power Trunk Cables
		3	RRUS-12 w/ A2 Backpacks			
		3	RRUS-32 Boxes		1	0.625" Fiber Trunk Cable-(FZ)
		1	Raycap DC6-48-60-18-8F DC Surge Box			
203	*T-Mobile*	*3*	*LNX-6515DS-VTM Panel Antennas*	*[Existing Mounts]*		*No New Lines*
		3	*RRUS-11 B12 Boxes*			
To Be Removed (See Below)						
235	**AT&T**	3	P65-15-XLH-RR Panel Antennas			
		3	AM-X-CD-14-65-00T-RET Panel Ants.			
		6	LGP21401 TMAs			
		3	RRUS-11 Boxes			
203	*T-Mobile*	*3*	*APX16DWV-16DWVS Panel Antennas*			
		3	*10"T x 9.5"W x 3.5"D TMAs*			

Table 2: Current and Reserved/Future Appurtenances

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
245.17		2	Top Small Beacons	13ft T-Beam Mount	1	1-1/4" R.C.
244.5		1	Top Lightning Rod			
235	AT&T	3	P65-15-XLH-RR Panel Antennas	Top Square Platform Mount	12	1-5/8"
		6	LGP21401 TMAs		2	0.75" DCPower Trunk Cables
		3	RRUS-11 Boxes			
233	AT&T	1	Raycap DC6-48-60-18-8F DC Surge Box		1	0.625" Fiber Trunk Cable
					1	RET Cable-(FZ)
231.5				Unused I-Beam Mount		
229	AT&T	1	1.5ft (2-Elem) Yagi Antenna	[Onto Platform]	1	1/2"-(FZ)
223.5		1	10ft Dia. HP Dish (Az. 210°±)	Dish Pipe Mount-DA Face	2	EW90-(FZ)
221.5	[Unused]				2	3/8"-(FZ)
221		1	1ft Dia. HP Dish (Windstar 43029) (Az. 210°±)	Dish Pipe Mount-BC Face	1	3/8"-(FZ)
216.5				(2) 4'Lx6'W Rest Platforms		
209.5	T-Mobile	6	AIR21 B2A B4P Panel Antennas	(3) Sector Frame Mounts	12	1-5/8"
		6	KRY 112 71/2 TMAs		1	Huber-Suhner 1.25" TC-OF Cable-(FZ)
203	T-Mobile			(3) Sector Frame Mounts		
201.5	T-Mobile [Unused]				18	1-5/8"-(FZ)
132	AT&T	1	4ft (7-Elem) Yagi Antenna	2ft Sidearm Mount	1	1/2"-(FZ)

Notes:

1. **Tower Base elevation is at 106.5ft Above Ground Level - All above elevations are measured from AGL.**
2. Please note appurtenances not listed above are to be removed/not present as per data supplied.
3. (I) = Internal; (E) = External; (FZ) = Within Face Zone; (OFZ) = Outside Face Zone - as per TIA-222.
4. 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, tnxTower (ver. 6.1.3.1), 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.

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 invalided, MEI should be contacted to review any contradictory information to determine its effect.

5. ANALYSIS RESULTS

The structure will require structural strengthening as follows: (Refer to the attached drawings for details.)

STRUCTURAL STRENGTHENING REQUIRED	
1	Add new Internal Hip Bracing angle members bolted onto existing members from Elevations: 6.25' – 12.5' and 30' – 35' (2 bays total). Lengths to be field determined.
2	Add new Sub-bracing angle members bolted onto existing members from Elevations: 0' – 6.25' and 25' – 30' (2 bays total). Lengths to be field determined.
3	Perform Maintenance work as required & applicable to bring the structure into good operational condition.
4	*Field determination/verification and/or field adaptation is recommended.*

Prior to implementation of the changed conditions and modifications, the data designated on the design documents requiring field verification shall be validated. 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.

Table 3: Stress Analysis Results – AFTER PROPER INSTALLATION OF MODS

Component Type	Maximum Stress Ratio	Controlling Elev. (ft) / Component	Pass/Fail	Comment
LEGS	**93.7%**	**131.5 - 119**	**Pass**	
DIAGONALS	84.8%	161.5 - 151.5	**Pass**	
HORIZONTALS / GIRTS	52.2%	141.5 - 131.5	**Pass**	
SECONDARY HORIZONTALS	79.3%	151.5 - 141.5	**Pass**	
BRACINGS	67.7%	131.5 - 119	**Pass**	
BASE SUPPORT	N/A	-	**-**	Tower is on top of building. Scope is limited to tower. Building members to be reviewed by others.

Table 4: Serviceability Requirements

	Maximum Value	TIA Requirement (10dB)	Pass/Fail	Comment
TWIST/SWAY	0.1764 Deg.	4.425 Deg.	**Pass**	1ft HP Dish (Windstar 43029) Elev. 221.00ft
	0.1783 Deg.	0.2957 Deg.	**Pass**	10 FT HP DISH Elev. 223.50ft

Notes:
1. 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.
2. Refer to the Appendix 1 for more details on the member loads.
3. A maximum stress ratio between 100% and 105% may be considered as *Acceptable* according to industry standard practice.

6. FINDINGS & RECOMMENDATIONS

- Based on the stress analysis results, the subject structure is **rated at 93.7%** of its support capacity (controlling component: Leg) with the proposed changed condition considered after strengthening. Please refer to Table 3 and to Appendix 1 for more details of the analysis results.

- Based on the stress analysis performed, the existing structure **is in conformance** with the IBC / ANSI/TIA **222-F** Standard for the loading considered under the criteria listed and referenced in the report sections **after proper installation of the recommended structural strengthening modifications outlined**.

- Please note that the tower is mounted on top of a building rooftop. Building rooftop is to be evaluated by others to determine its adequacy for the new base loads (not within scope). Refer to Appendix for tower base reactions.

- ***The addition of the proposed changed condition as noted in Table 1 is structurally acceptable after proper installation of the proposed strengthening modifications.*** Please refer to modification drawings for details.

- This structure would be near its maximum support capacity for the appurtenances and loading criteria considered, after its modification. Therefore, 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 **M**alouf **E**ngineering **I**nternational, 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.

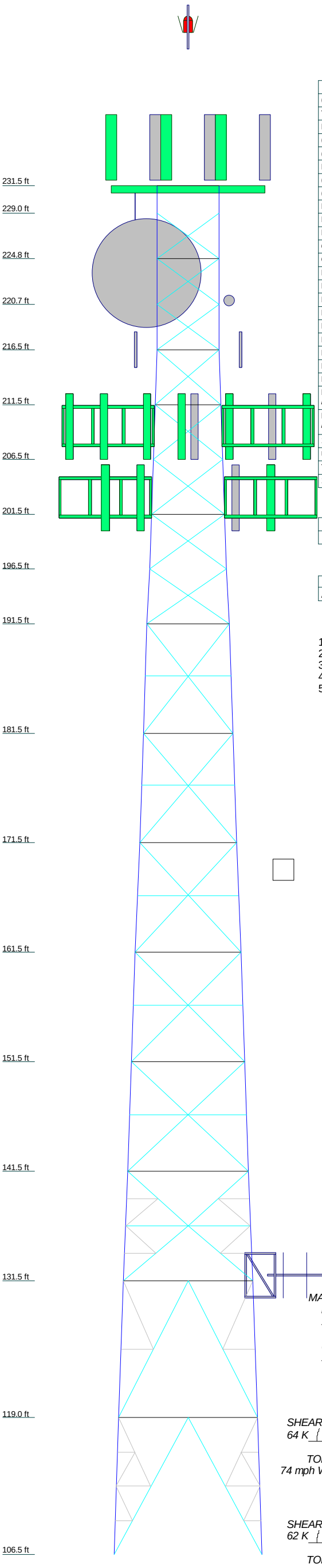
Customer has requested MALOUF ENGINEERING INTERNATIONAL, INC. to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested MALOUF ENGINEERING INTERNATIONAL, INC. to make appropriate recommendations regarding suggested structural modifications and 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 - ANALYSIS PRINTOUT & GRAPHICS

AFTER NOTED MODIFICATIONS

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17		
Legs			L4x4x3/8				L5x5x1/2					L6x6x5/8				L6x6x7/8			
Leg Grade												A36							
Diagonals	N.A.			2L2 1/2x2x1/4x3/8			L2 1/2x2x1/4					L3x3x1/4				2L2 1/2x2 1/2x1/4x3/8			
Diagonal Grade												A36							
Top Girts												L2 1/2x2 1/2x1/4				2L2 1/2x2 1/2x1/4x3/8			
Horizontals	N.A.	N.A.	A		C7x9.8	L2 1/2x2x1/4	N.A.	B	N.A.	N.A.		L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x1/4	L2 1/2x2x1/4		N.A.	L2 1/2x2x1/4		
Sec. Horizontals																N.A.			
Red. Horizontals																L2 1/2x2x3/16			
Red. Diagonals																L2 1/2x2x3/16			
Red. Sub-Horizs																	L2 1/2x2x3/16		
Red. Sub-Diags																	L2 1/2x2x3/16		
Inner Bracing																L3x3x3/16			
Face Width (ft)	13.5833	12.6766	11.7699	10.8632	9.9565	9.0498	8.1431	7.2364	6.3297	5.423	4.5163	3.6096	2.7029	1.7962	0.8895				
# Panels @ (ft)	1 @ 12.4999		1 @ 12.5		2 @ 5							5 @ 10				3 @ 4.1667		1 @ 2.5	
Weight (K)	25.4	4.0	3.5	2.6	1.8	1.9	1.9	1.9	2.3	1.9	1.8	1.9	1.9	2.3	2.6	3.5	4.0		



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) TOP SMALL BEACONS (E)	245.17	PIPE DISH MOUNT (E)	223.5
TOP LIGHTNING ROD (E)	244.5	10 FT HP DISH (E)	223.5
P65-15-XLH-RR w/ Pipe Mount (ATI / E)	235	PIPE DISH MOUNT (E)	221
(2) LGP21401 TMA'S (ATI / E)	235	1 FT HP DISH (WINDSTAR 43029) (E)	221
(2) OPA-65R-LCUU-H4 w/ Pipe Mounts (ATI / P)	235	4'Lx6'W REST PLATFORM (E)	216.5
P65-15-XLH-RR w/ Pipe Mount (ATI / E)	235	4'Lx6'W REST PLATFORM (E)	216.5
(2) OPA-65R-LCUU-H4 w/ Pipe Mounts (ATI / P)	235	(2) AIR21 B2A B4P w/ pipe Mount (T-MOBILE / E)	209.5
(2) LGP21401 TMA'S (ATI / E)	235	(2) KRY 112 71/2 (T-MOBILE / E)	209.5
RRUS-11 (ATI / E)	235	(2) KRY 112 71/2 (T-MOBILE / E)	209.5
RRUS-11 (ATI / E)	235	(2) KRY 112 71/2 (T-MOBILE / E)	209.5
P65-15-XLH-RR w/ Pipe Mount (ATI / E)	235	SECTOR FRAME MOUNT (T-MOBILE / E)	209.5
OPA-65R-LCUU-H4 w/ Pipe Mounts (ATI / P)	235	SECTOR FRAME MOUNT (T-MOBILE / E)	209.5
OPA-65R-LCUU-H4 w/ Pipe Mounts (ATI / P)	235	SECTOR FRAME MOUNT (T-MOBILE / E)	209.5
LGP21401 TMA'S (ATI / E)	235	(2) AIR21 B2A B4P w/ pipe Mount (T-MOBILE / E)	209.5
LGP21401 TMA'S (ATI / E)	235	(2) AIR21 B2A B4P w/ pipe Mount (T-MOBILE / E)	209.5
RRUS-11 (ATI / E)	235	10"T x 9.5"W x 3.5"D TMA's (T-MOBILE / E)	203
RRUS-12 w/ A2 Backpack (ATI / P)	235	LNX-6515DS-VTM w/ Pipe Mnt. (T-MOBILE / P)	203
RRUS-12 w/ A2 Backpack (ATI / P)	235	LNX-6515DS-VTM w/ Pipe Mnt. (T-MOBILE / P)	203
RRUS-12 w/ A2 Backpack (ATI / P)	235	LNX-6515DS-VTM w/ Pipe Mnt. (T-MOBILE / P)	203
RRUS-32 (ATI / P)	235	RRUS-11 B12 (T-MOBILE / P)	203
RRUS-32 (ATI / P)	235	RRUS-11 B12 (T-MOBILE / P)	203
RRUS-32 (ATI / P)	235	RRUS-11 B12 (T-MOBILE / P)	203
RAYCAP DC6-48-60-18-8F DC SURGE BOX (ATI / E)	233	SECTOR FRAME MOUNT (T-MOBILE / E)	203
RAYCAP DC6-48-60-18-8F DC SURGE BOX (ATI / P)	233	SECTOR FRAME MOUNT (T-MOBILE / E)	203
13' T BEAM MOUNT (E)	231.5	SECTOR FRAME MOUNT (T-MOBILE / E)	203
UNUSED I-BEAM MOUNT (ATI / E)	231.5	10"T x 9.5"W x 3.5"D TMA's (T-MOBILE / E)	203
TOP SQUARE PLATFORM MOUNT (ATI / E)	231.5	10"T x 9.5"W x 3.5"D TMA's (T-MOBILE / E)	203
1.5'x2-ELEMENT YAGI AND MOUNT (ATI / E)	229	4'x7-ELEMENT YAGI (ATI / E)	132
		2FT SIDEARM MOUNT (ATI / E)	132

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	C8x11.5	B	L2 1/2x2 1/2x1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.7%

MAX. CORNER REACTIONS AT BASE:
DOWN: 262 K
SHEAR: 24 K

UPLIFT: -232 K
SHEAR: 22 K

AXIAL
75 K

SHEAR 64 K *MOMENT 4677 kip-ft*

TORQUE 21 kip-ft
74 mph WIND - 0.5000 in ICE

AXIAL
48 K

SHEAR 62 K *MOMENT 4686 kip-ft*

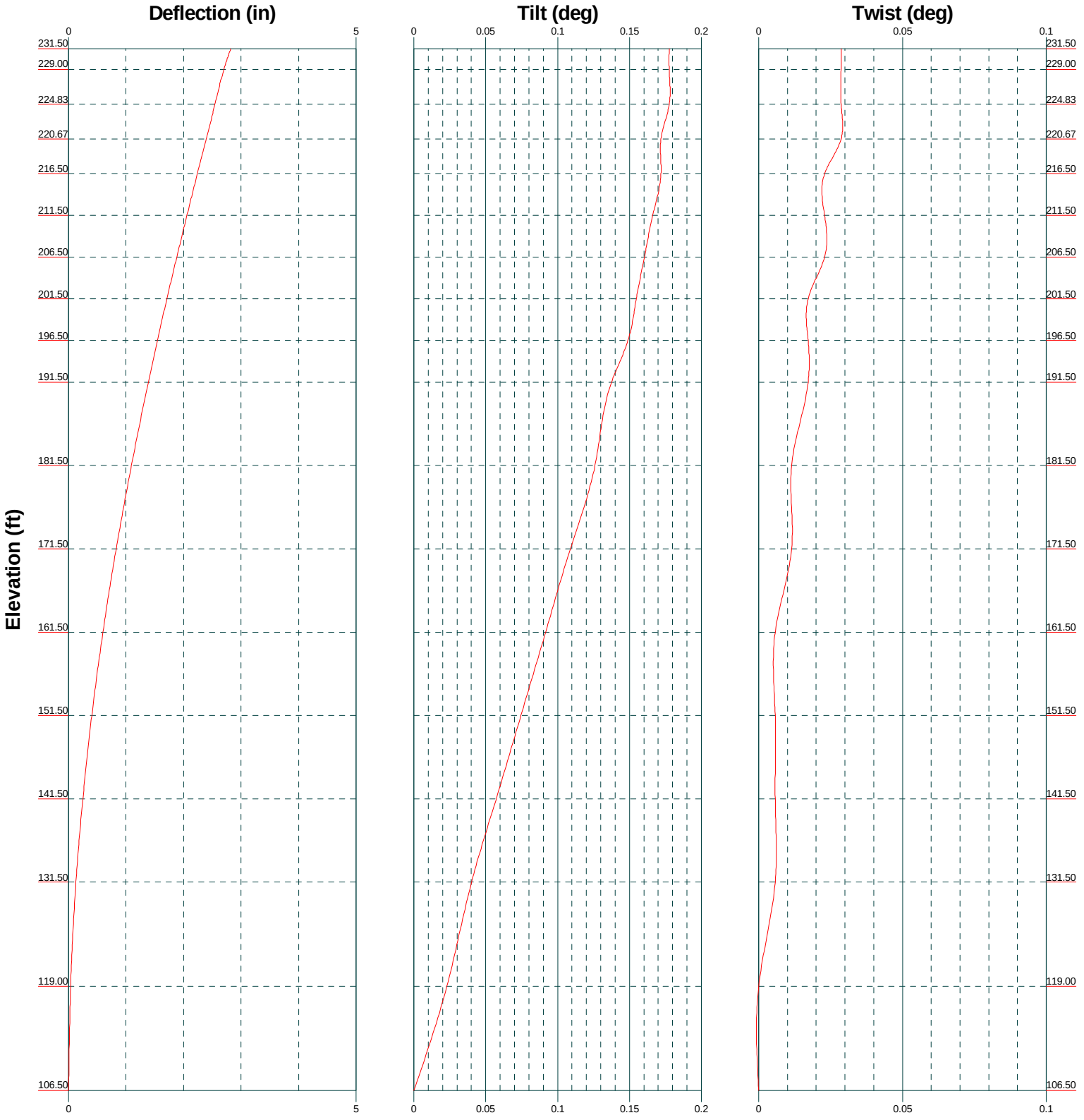
TORQUE 24 kip-ft
REACTIONS - 85 mph WIND

MALOUF ENGINEERING INTL., INC. STRUCTURAL CONSULTANTS
maloufengineering.com
Malouf Engineering Int'l, Inc.
17950 Preston Road, Suite #720
Dallas, TX 75252
Phone: (972) 783-2578
FAX: (972) 783-2583

Job:	***125 FT SST, STAMFORD CENTRAL SITE #CT2118***		
Project:	***CT02768S-15V2***		
Client: VERTICAL RESOURCES GROUP / AT&T	Drawn by: LNguyen	App'd:	
Code: TIA/EIA-222-F	Date: 06/25/15	Scale: NTS	
Path: D:\MEIProjects\15 DATA\SS\CT02768S-15V2\CT02768S-15V2-M3-UPDATED.eri		Dwg No. E-1	

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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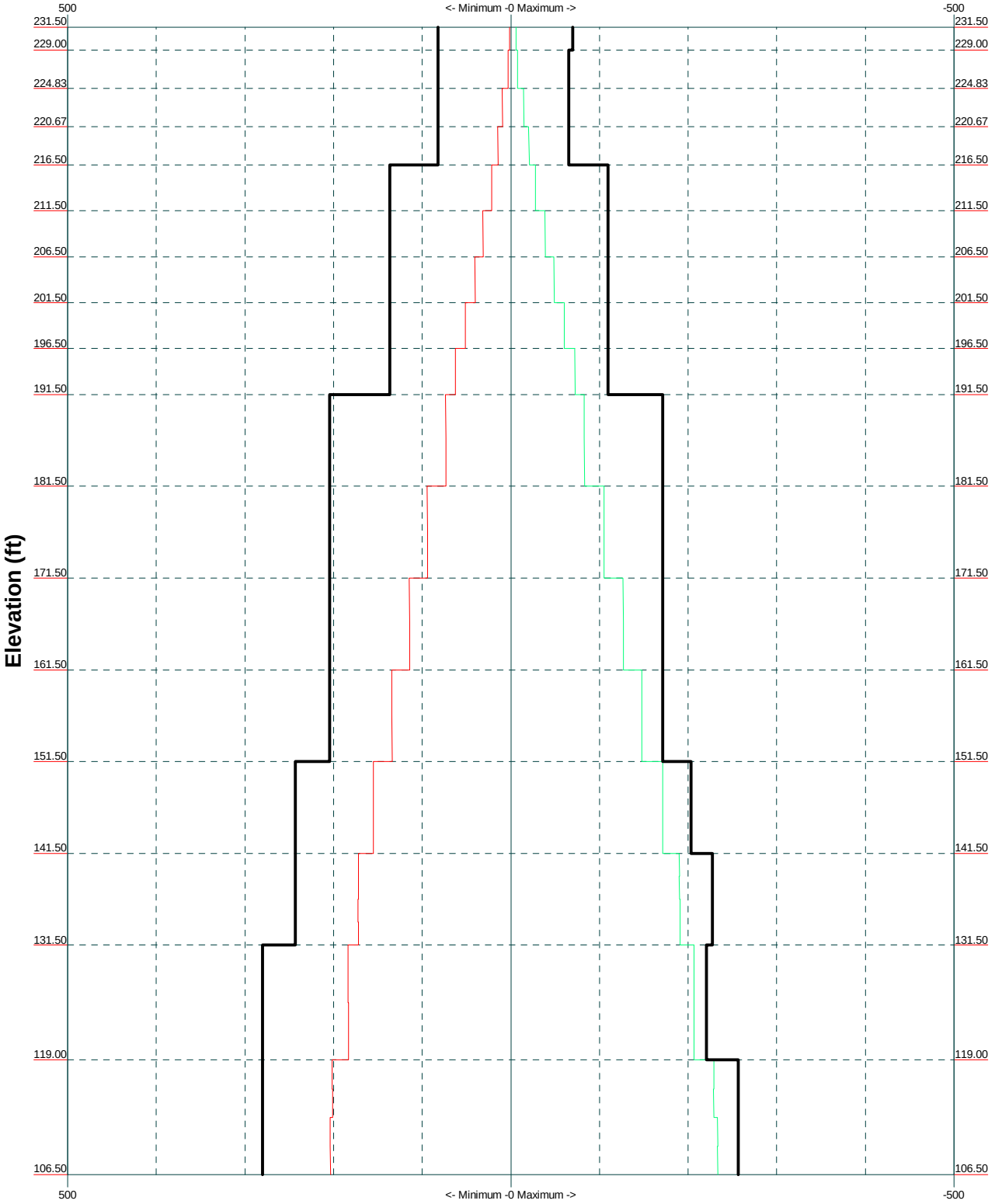
Path: D:\MEIProjects\15 DATA\SS\CT02768S-15V2\CT02768S-15V2-M3-UPDATED.eri		Dwg No. E-5	

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Leg Capacity ——— **Leg Compression (K)**



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Job: ***125 FT SST, STAMFORD CENTRAL SITE #CT2118***			
Project: ***CT02768S-15V2***			
Client: VERTICAL RESOURCES GROUP / AT&T	Drawn by: LNguyen	App'd:	
Code: TIA/EIA-222-F	Date: 06/25/15	Scale: NTS	
Path: D:\MEIProjects\15 DATA\SS\CT02768S-15V2\CT02768S-15V2-M3-UPDATED.eri		Dwg No. E-3	

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 231.50 ft above the ground line.
The base of the tower is set at an elevation of 106.50 ft above the ground line.
The face width of the tower is 5.60 ft at the top and 13.58 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Placement ft	Total Number
Safety Line 3/8 (E)	231.50 - 106.50	1
Climbing Ladder (E)	231.50 - 106.50	1
W/G LADDER "A" (E)	212.50 - 106.50	1
W/G LADDER "B" (E)	206.50 - 106.50	1
W/G LADDER "C" (E)	200.50 - 106.50	1
1 1/4" Rigid Conduit (E)	231.50 - 106.50	1
0.625" Fiber Trunk Cable (AT&T / E+P)	231.50 - 106.50	2
0.75" DC Power Trunk Cable (AT&T / E+P)	231.50 - 106.50	4
1 5/8 (AT&T / E)	231.50 - 106.50	12
0.30 (AT&T / E)	231.50 - 106.50	1
1/2 (E)	229.00 - 106.50	1
EW90 (E)	223.50 - 106.50	2
3/8 (E (UNUSED))	221.50 - 106.50	2
3/8 (E)	221.00 - 106.50	1
1 5/8 (T-MOBILE / E)	209.50 - 106.50	12
Huber-Suhner 1.25" TC-OF Cable (T-MOBILE / E)	209.50 - 106.50	1
1 5/8 (T-MOBILE / E (UNUSED))	201.50 - 106.50	6
1 5/8 (T-MOBILE / E (UNUSED))	201.50 - 106.50	12
1/2 (E)	132.00 - 106.50	1

Feed Line/Linear Appurtenances - Entered As Area

Description	Placement ft	Total Number
MISCELLANEOUS (E)	231.50 - 106.50	2
MISCELLANEOUS	231.50 - 106.50	1
WEIGHT (E)		

Discrete Tower Loads

Description	Placement	Weight
	ft	K
(2) TOP SMALL BEACONS	245.17	0.06
(E)		0.09
TOP LIGHTNING ROD	244.50	0.05
(E)		0.07
13' T BEAM MOUNT	231.50	0.10
(E)		0.15
P65-15-XLH-RR w/ Pipe	235.00	0.07
Mount		0.12
(AT&T / E)		
(2) LGP21401 TMA'S	235.00	0.02
(AT&T / E)		0.03
(2) OPA-65R-LCUU-H4 w/	235.00	0.08
Pipe Mounts		0.13
(AT&T / P)		
P65-15-XLH-RR w/ Pipe	235.00	0.07
Mount		0.12
(AT&T / E)		
(2) OPA-65R-LCUU-H4 w/	235.00	0.08
Pipe Mounts		0.13
(AT&T / P)		
(2) LGP21401 TMA'S	235.00	0.02
(AT&T / E)		0.03
RRUS-11	235.00	0.05
(AT&T / E)		0.07
RRUS-11	235.00	0.05
(AT&T / E)		0.07
RAYCAP DC6-48-60-18-8F	233.00	0.03
DC SURGE BOX		0.06
(AT&T / E)		
P65-15-XLH-RR w/ Pipe	235.00	0.07
Mount		0.12
(AT&T / E)		
OPA-65R-LCUU-H4 w/ Pipe	235.00	0.08
Mounts		0.13
(AT&T / P)		
OPA-65R-LCUU-H4 w/ Pipe	235.00	0.08
Mounts		0.13
(AT&T / P)		
LGP21401 TMA'S	235.00	0.02
(AT&T / E)		0.03
LGP21401 TMA'S	235.00	0.02
(AT&T / E)		0.03
RRUS-11	235.00	0.05
(AT&T / E)		0.07
RRUS-12 w/ A2 Backpack	235.00	0.08
(AT&T / P)		0.11
RRUS-12 w/ A2 Backpack	235.00	0.08
(AT&T / P)		0.11
RRUS-12 w/ A2 Backpack	235.00	0.08
(AT&T / P)		0.11
RAYCAP DC6-48-60-18-8F	233.00	0.03
DC SURGE BOX		0.06
(AT&T / P)		
RRUS-32	235.00	0.08
(AT&T / P)		0.10
RRUS-32	235.00	0.08

Description	Placement	Weight
	ft	K
(AT&T / P)		0.10
RRUS-32	235.00	0.08
(AT&T / P)		0.10
UNUSED I-BEAM MOUNT	231.50	0.10
(AT&T / E)		0.15
1.5'x2-ELEMENT YAGI	229.00	0.07
AND MOUNT		0.13
(AT&T / E)		
TOP SQUARE PLATFORM	231.50	5.50
MOUNT		7.50
(AT&T / E)		
PIPE DISH MOUNT	223.50	0.15
(E)		0.23
PIPE DISH MOUNT	221.00	0.07
(E)		0.10
4'Lx6'W REST PLATFORM	216.50	0.75
(E)		1.25
4'Lx6'W REST PLATFORM	216.50	0.75
(E)		1.25
(2) AIR21 B2A B4P w/ pipe	209.50	0.13
Mount		0.18
(T-MOBILE / E)		
(2) AIR21 B2A B4P w/ pipe	209.50	0.13
Mount		0.18
(T-MOBILE / E)		
(2) AIR21 B2A B4P w/ pipe	209.50	0.13
Mount		0.18
(T-MOBILE / E)		
(2) KRY 112 71/2	209.50	0.01
(T-MOBILE / E)		0.02
(2) KRY 112 71/2	209.50	0.01
(T-MOBILE / E)		0.02
(2) KRY 112 71/2	209.50	0.01
(T-MOBILE / E)		0.02
SECTOR FRAME MOUNT	209.50	0.40
(T-MOBILE / E)		0.60
SECTOR FRAME MOUNT	209.50	0.40
(T-MOBILE / E)		0.60
SECTOR FRAME MOUNT	209.50	0.40
(T-MOBILE / E)		0.60
10"T x 9.5"W x 3.5"D TMA's	203.00	0.02
(T-MOBILE / E)		0.03
10"T x 9.5"W x 3.5"D TMA's	203.00	0.02
(T-MOBILE / E)		0.03
10"T x 9.5"W x 3.5"D TMA's	203.00	0.02
(T-MOBILE / E)		0.03
LNX-6515DS-VTM w/ Pipe	203.00	0.09
Mnt.		0.18
(T-MOBILE / P)		
LNX-6515DS-VTM w/ Pipe	203.00	0.09
Mnt.		0.18
(T-MOBILE / P)		
LNX-6515DS-VTM w/ Pipe	203.00	0.09
Mnt.		0.18
(T-MOBILE / P)		
RRUS-11 B12	203.00	0.05

Description	Placement	Weight
	ft	K
(T-MOBILE / P)		0.07
RRUS-11 B12	203.00	0.05
(T-MOBILE / P)		0.07
RRUS-11 B12	203.00	0.05
(T-MOBILE / P)		0.07
SECTOR FRAME MOUNT	203.00	0.40
(T-MOBILE / E)		0.60
SECTOR FRAME MOUNT	203.00	0.40
(T-MOBILE / E)		0.60
SECTOR FRAME MOUNT	203.00	0.40

Description	Placement	Weight
	ft	K
(T-MOBILE / E)		0.60
4'x7-ELEMENT YAGI	132.00	0.03
(AT&T / E)		0.04
2FT SIDEARM MOUNT	132.00	0.10
(AT&T / E)		0.15

Dishes

Description	Dish Type	Elevation	Outside Diameter	Weight
		ft	ft	K
10 FT HP DISH (E)	Paraboloid w/Shroud (HP)	223.50	10.00	0.40 0.81
1 FT HP DISH (WINDSTAR 43029) (E)	Paraboloid w/Shroud (HP)	221.00	1.00	0.03 0.04

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg D	Max. Vert	16	258.49	16.24	-16.93
	Max. H_x	16	258.49	16.24	-16.93
	Max. H_z	3	-232.29	-14.84	15.81
	Min. Vert	3	-232.29	-14.84	15.81
	Min. H_x	12	-225.17	-14.98	15.79
	Min. H_z	16	258.49	16.24	-16.93
Leg C	Max. Vert	14	249.47	-16.30	-16.05
	Max. H_x	18	-214.31	14.89	14.74
	Max. H_z	18	-214.31	14.89	14.74
	Min. Vert	9	-217.13	14.66	14.45
	Min. H_x	14	249.47	-16.30	-16.05
	Min. H_z	14	249.47	-16.30	-16.05
Leg B	Max. Vert	12	261.71	-17.13	16.38
	Max. H_x	16	-221.93	15.49	-14.94
	Max. H_z	12	261.71	-17.13	16.38
	Min. Vert	7	-227.77	15.42	-14.78
	Min. H_x	12	261.71	-17.13	16.38
	Min. H_z	16	-221.93	15.49	-14.94
Leg A	Max. Vert	18	250.92	16.02	16.36
	Max. H_x	18	250.92	16.02	16.36
	Max. H_z	18	250.92	16.02	16.36
	Min. Vert	5	-216.43	-14.29	-14.82
	Min. H_x	14	-212.84	-14.60	-14.99
	Min. H_z	14	-212.84	-14.60	-14.99

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	231.5 - 229	2.821	20	0.1784	0.0306
T2	229 - 224.833	2.700	20	0.1780	0.0270
T3	224.833 - 220.667	2.545	20	0.1770	0.0268
T4	220.667 - 216.5	2.392	20	0.1742	0.0261
T5	216.5 - 211.5	2.240	20	0.1701	0.0251
T6	211.5 - 206.5	2.059	20	0.1661	0.0231
T7	206.5 - 201.5	1.882	20	0.1606	0.0210
T8	201.5 - 196.5	1.710	20	0.1542	0.0189
T9	196.5 - 191.5	1.545	20	0.1462	0.0167
T10	191.5 - 181.5	1.388	20	0.1372	0.0149
T11	181.5 - 171.5	1.094	20	0.1244	0.0117
T12	171.5 - 161.5	0.829	20	0.1093	0.0093
T13	161.5 - 151.5	0.598	20	0.0922	0.0073
T14	151.5 - 141.5	0.405	20	0.0736	0.0057
T15	141.5 - 131.5	0.249	20	0.0568	0.0043
T16	131.5 - 119	0.128	20	0.0393	0.0033
T17	119 - 106.5	0.037	20	0.0201	0.0015

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
245.17	(2) TOP SMALL BEACONS	20	2.821	0.1784	0.0306	8111
244.50	TOP LIGHTNING ROD	20	2.821	0.1784	0.0306	8111
235.00	P65-15-XLH-RR w/ Pipe Mount	20	2.821	0.1784	0.0306	8111
233.00	RAYCAP DC6-48-60-18-8F DC SURGE BOX	20	2.821	0.1784	0.0306	8111
231.50	13' T BEAM MOUNT	20	2.821	0.1784	0.0306	8111
229.00	1.5'x2-ELEMENT YAGI AND MOUNT	20	2.700	0.1780	0.0270	8111
223.50	10 FT HP DISH	20	2.497	0.1763 (3 dB) 0.2957	0.0267 (3 dB) 0.2957	114717
221.00	1 FT HP DISH (WINDSTAR 43029)	20	2.404	0.1745	0.0261	284636
216.50	4'Lx6'W REST PLATFORM	20	2.240	0.1701	0.0251	174663
209.50	(2) AIR21 B2A B4P w/ pipe Mount	20	1.988	0.1641	0.0222	56628
203.00	10"T x 9.5"W x 3.5"D TMA's	20	1.761	0.1562	0.0195	48308
132.00	4'x7-ELEMENT YAGI	20	0.133	0.0402	0.0033	28077

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	231.5 - 229	Leg	L4x4x3/8	4	-4.54	69.70	87.6	Pass
T2	229 - 224.833	Leg	L4x4x3/8	12	-7.58	65.17	11.6	Pass
T3	224.833 - 220.667	Leg	L4x4x3/8	21	-14.95	65.17	22.9	Pass
T4	220.667 - 216.5	Leg	L4x4x3/8	37	-20.76	65.17	31.9	Pass
T5	216.5 - 211.5	Leg	L5x5x1/2	51	-27.66	109.68	25.2	Pass
T6	211.5 - 206.5	Leg	L5x5x1/2	67	-38.91	109.68	35.5	Pass
T7	206.5 - 201.5	Leg	L5x5x1/2	83	-49.26	109.68	44.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T8	201.5 - 196.5	Leg	L5x5x1/2	95	-60.49	109.68	55.2	Pass
T9	196.5 - 191.5	Leg	L5x5x1/2	111	-72.39	109.68	66.0	Pass
T10	191.5 - 181.5	Leg	L6x6x5/8	123	-83.06	171.13	48.5	Pass
T11	181.5 - 171.5	Leg	L6x6x5/8	148	-105.30	171.31	61.5	Pass
T12	171.5 - 161.5	Leg	L6x6x5/8	168	-126.92	171.45	74.0	Pass
T13	161.5 - 151.5	Leg	L6x6x5/8	193	-147.98	171.58	86.2	Pass
T14	151.5 - 141.5	Leg	L6x6x3/4	213	-171.56	203.35	84.4	Pass
T15	141.5 - 131.5	Leg	L6x6x3/4	238	-190.92	227.69	83.9	Pass
T16	131.5 - 119	Leg	L6x6x7/8	306	-206.87	220.76	93.7	Pass
T17	119 - 106.5	Leg	L6x6x7/8	347	-233.39	256.70	90.9	Pass
T2	229 - 224.833	Diagonal	2L2 1/2x2x1/4x3/8	20	-3.50	47.46	7.4	Pass
T3	224.833 - 220.667	Diagonal	2L2 1/2x2x1/4x3/8	35	-4.18	47.46	8.8	Pass
T4	220.667 - 216.5	Diagonal	2L2 1/2x2x1/4x3/8	47	-5.41	42.32	12.8	Pass
T5	216.5 - 211.5	Diagonal	L2 1/2x2x1/4	63	-5.65	16.13	35.0	Pass
T6	211.5 - 206.5	Diagonal	L2 1/2x2x1/4	79	-5.90	15.52	38.0	Pass
T7	206.5 - 201.5	Diagonal	L2 1/2x2x1/4	91	-6.78	14.88	45.5	Pass
T8	201.5 - 196.5	Diagonal	L2 1/2x2x1/4	107	-7.34	14.20	51.7	Pass
T9	196.5 - 191.5	Diagonal	L2 1/2x2x1/4	119	-7.35	13.49	54.5	Pass
T10	191.5 - 181.5	Diagonal	L3x3x1/4	138	-12.23	18.16	67.3	Pass
T11	181.5 - 171.5	Diagonal	L3x3x1/4	158	-12.34	17.25	71.5	Pass
T12	171.5 - 161.5	Diagonal	L3x3x1/4	183	-12.73	16.34	77.9	Pass
T13	161.5 - 151.5	Diagonal	L3x3x1/4	203	-13.11	15.46	84.8	Pass
T14	151.5 - 141.5	Diagonal	L3x3x1/4	228	-12.33	14.61	84.4	Pass
T15	141.5 - 131.5	Diagonal	L3x3x1/4	260	-14.72	25.96	56.7 59.5 (b)	Pass
T16	131.5 - 119	Diagonal	2L2 1/2x2 1/2x1/4x3/8	340	-18.69	36.15	51.7	Pass
T17	119 - 106.5	Diagonal	2L2 1/2x2 1/2x1/4x3/8	407	-18.60	49.40	37.6	Pass
T15	141.5 - 131.5	Horizontal	L2 1/2x2x1/4	251	-2.87	6.80	42.1	Pass
T10	191.5 - 181.5	Secondary Horizontal	L2 1/2x2x1/4	143	-1.25	5.74	21.7	Pass
T11	181.5 - 171.5	Secondary Horizontal	L2 1/2x2x1/4	164	-1.58	4.88	32.4	Pass
T12	171.5 - 161.5	Secondary Horizontal	L2 1/2x2x3/16	188	-1.91	3.26	58.5	Pass
T13	161.5 - 151.5	Secondary Horizontal	L2 1/2x2 1/2x1/4	208	-2.22	5.51	40.3	Pass
T14	151.5 - 141.5	Secondary Horizontal	L2 1/2x2x1/4	233	-2.58	3.25	79.3	Pass
T1	231.5 - 229	Top Girt	C8x11.5	8	-0.55	45.47	18.0	Pass
T3	224.833 - 220.667	Top Girt	L2 1/2x2 1/2x1/4	25	-0.94	16.58	5.7	Pass
T5	216.5 - 211.5	Top Girt	C7x9.8	53	-1.01	44.01	2.3 3.7 (b)	Pass
T6	211.5 - 206.5	Top Girt	L2 1/2x2x1/4	69	-0.84	11.61	7.2	Pass
T8	201.5 - 196.5	Top Girt	L2 1/2x2 1/2x1/4	97	-0.72	13.26	5.5	Pass
T10	191.5 - 181.5	Top Girt	L2 1/2x2 1/2x1/4	127	3.51	28.16	12.5 14.2 (b)	Pass
T11	181.5 - 171.5	Top Girt	L2 1/2x2 1/2x1/4	150	-5.12	17.20	29.8	Pass
T12	171.5 - 161.5	Top Girt	L2 1/2x2 1/2x1/4	172	7.22	28.16	25.6 29.2 (b)	Pass
T13	161.5 - 151.5	Top Girt	L2 1/2x2 1/2x1/4	195	-6.23	14.22	43.8	Pass
T14	151.5 - 141.5	Top Girt	L2 1/2x2 1/2x1/4	215	-5.73	21.28	26.9 30.0 (b)	Pass
T15	141.5 - 131.5	Top Girt	L2 1/2x2 1/2x1/4	240	-6.04	11.58	52.2	Pass
T16	131.5 - 119	Top Girt	2L2 1/2x2 1/2x1/4x3/8	311	-9.34	40.29	23.2	Pass
T17	119 - 106.5	Top Girt	2L2 1/2x2 1/2x1/4x3/8	352	-8.73	36.94	23.6	Pass
T15	141.5 - 131.5	Redund Horz 1 Bracing	L2 1/2x2x3/16	286	-2.87	14.46	19.8	Pass
T16	131.5 - 119	Redund Horz 1 Bracing	L2 1/2x2x3/16	327	-3.11	14.29	21.7	Pass
T17	119 - 106.5	Redund Horz 1 Bracing	L2 1/2x2x3/16	389	-3.50	13.76	25.5	Pass
T15	141.5 - 131.5	Redund Diag 1 Bracing	L2 1/2x2x3/16	291	-1.94	12.65	15.3	Pass
T16	131.5 - 119	Redund Diag 1	L2 1/2x2x3/16	328	-3.60	5.32	67.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T17	119 - 106.5	Bracing Redund Diag 1 Bracing	L2 1/2x2x3/16	360	5.23	23.29	22.4	Pass
T15	141.5 - 131.5	Redund Hip 1 Bracing	L2x2x1/4	303	-0.03	12.17	0.2	Pass
T16	131.5 - 119	Redund Hip 1 Bracing	L2x2x1/4	344	-0.14	11.45	1.2	Pass
T17	119 - 106.5	Redund Hip 1 Bracing	L2x2x1/4	402	-0.18	9.87	1.9	Pass
T17	119 - 106.5	Redund Hip Diagonal Bracing	L2x2x1/4	419	-0.12	2.18	5.3	Pass
T17	119 - 106.5	Redund Sub Horz Bracing	L2 1/2x2x3/16	365	-3.90	20.91	18.6	Pass
T17	119 - 106.5	Redund Sub Diagonal Bracing	L2 1/2x2x3/16	394	-4.64	15.91	29.2	Pass
T10	191.5 - 181.5	Inner Bracing	L2 1/2x2 1/2x3/16	133	-0.04	5.55	0.7	Pass
T12	171.5 - 161.5	Inner Bracing	L2 1/2x2 1/2x3/16	178	-0.08	3.88	2.2	Pass
T14	151.5 - 141.5	Inner Bracing	L2x2 1/2x3/16	223	-0.09	1.91	4.5	Pass
T16	131.5 - 119	Inner Bracing	L3x3x3/16	316	-0.14	3.86	3.5	Pass
T17	119 - 106.5	Inner Bracing	L3x3x3/16	357	-0.13	3.33	3.9	Pass
						Summary		
						Leg (T16)	93.7	Pass
						Diagonal (T13)	84.8	Pass
						Horizontal (T15)	42.1	Pass
						Secondary Horizontal (T14)	79.3	Pass
						Top Girt (T15)	52.2	Pass
						Redund Horz 1 Bracing (T17)	25.5	Pass
						Redund Diag 1 Bracing (T16)	67.7	Pass
						Redund Hip 1 Bracing (T17)	1.9	Pass
						Redund Hip Diagonal Bracing (T17)	5.3	Pass
						Redund Sub Horz Bracing (T17)	18.6	Pass
						Redund Sub Diagonal Bracing (T17)	29.2	Pass
						Inner Bracing (T14)	4.5	Pass
						Bolt Checks	64.5	Pass
						RATING =	**93.7**	**Pass**

APPENDIX 2 – SOURCE / CHANGED CONDITION

From: Vertical Resources Group [mailto:mnobre@verticalresourcesgrp.com]
Sent: Wednesday, June 10, 2015 1:00 PM
To: 'Mark Malouf'
Subject: New Analysis Request site CT2118

Mark Empire would want to pass the analysis of this tower through us.
Here is the scoop.
Previous MEI analysis: MEI Project CT02768S-15V1 dated May 12, 2015
Existing AT&T Loading:
60' (3) KMW AMXCD146500TRET panels
60' (6) Powerwave P6515XLHRR panels
60' (12) Powerwave LGP21401 TMA
60' (6) Ericsson RRUS-11 Remote Radio Heads
60' (1) Raycap DC6-48-60-18-8F

Proposed Final Loading Configuration:
60' (3) Powerwave P6515XLHRR panels
60' (6) CCI OPA-65R-LCUU-H4 panels
60' (6) Powerwave LGP21401 TMA
60' (3) Ericsson RRUS-11 Remote Radio Heads
60' (3) Ericsson RRUS-12 Remote Radio Heads
60' (3) Ericsson A2 modules attached to back of RRUS-12
60' (3) Ericsson RRUS-32 Remote Radio Heads
60' (1) Raycap DC6-48-60-18-8F existing
60' (1) Raycap DC6-48-60-18-8F proposed

…

Thanks Mark

Miguel Nobre
Vertical Resources Group
489 Washington Street
Auburn, MA 01501
P: 508-981-9590
F: 508-519-8939

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

A	Call Sign	WPWV368
	Class of Station	LTE 700 Mhz
	Emission Type	
	Transmit Frequency	734-746
	Output Power (watts)	250
	Transmitter ERP (dBm)	53.98
	Receive Frequency	716-728

B	Call Sign	KNLG502
	Class of Station	LTE 1900 Mhz
	Emission Type	
	Transmit Frequency	1985-1990, 1905-1910
	Output Power (watts)	250
	Transmitter ERP (dBm)	53.98
	Receive Frequency	1930-1945, 1850-1865

C	Call Sign	KNKA259
	Class of Station	800Mhz UMTS
	Emission Type	
	Transmit Frequency	890-891, 845-846
	Output Power (watts)	250
	Transmitter ERP (dBm)	53.98
	Receive Frequency	869-879, 824,834

Please attach frequency coordination data (PCN)

D	Call Sign	KNLB297
	Class of Station	LTE 2300
	Emission Type	
	Transmit Frequency	2345-2360,
	Output Power (watts)	250
	Transmitter ERP (dBm)	53.98
	Receive Frequency	2305-2320

E	Call Sign	KNLB312
	Class of Station	
	Emission Type	
	Transmit Frequency	2350-2355
	Output Power (watts)	250
	Transmitter ERP (dBm)	53.98
	Receive Frequency	2305-2310

F	Call Sign	KNLB204
	Class of Station	
	Emission Type	
	Transmit Frequency	2310-2315
	Output Power (watts)	250
	Transmitter ERP (dBm)	53.98
	Receive Frequency	2355-2360

Coax / Waveguide / Cable Information	
Type:	andrew
Size:	1 5/8"
Length:	275
# of runs:	12
Type:	DC Trunk line
Size:	3/4"
Length:	275
# of runs:	4
Type:	Fiber trunk
Size:	5/8"
Length:	275
# of runs:	2
Type:	
Size:	
Length:	
# of runs:	

	Antenna & Ancillary Equipment Information		**Check one**					**Heights** - Above Ground Level (feet)			**Notes:** (including removals, ice shields, etc.)
#	Make	Model	Existing	Proposed	Size / Dimensions	Weight	Azimuth	RAD Center	Attachment	Tip	
A	CCI Products	OPA-65R-LCUU-H4		x	48 x 14.4 x 7.3	57	60	235	235	238	
B	CCI Products	OPA-65R-LCUU-H4		x	48 x 14.4 x 7.3	57	60	235	235	238	
C	CCI Products	OPA-65R-LCUU-H4		x	48 x 14.4 x 7.3	57	180	235	235	238	
D	CCI Products	OPA-65R-LCUU-H4		x	48 x 14.4 x 7.3	57	180	235	235	238	
E	CCI Products	OPA-65R-LCUU-H4		x	48 x 14.4 x 7.3	57	300	235	235	238	
F	CCI Products	OPA-65R-LCUU-H4		x	48 x 14.4 x 7.3	57	300	235	235	238	
	Power wave	P65-15-XLH-RR	x		51 x 12 x6	51	110	235	235	238	
	Power wave	P65-15-XLH-RR	x		52 x 12 x6	51	280	235	235	238	
	Power wave	P65-15-XLH-RR	x		53 x 12 x6	51	0	235	235	238	
	Power wave	P65-15-XLH-RR	x		54 x 12 x6	51	110	235	235	238	removing
	Power wave	P65-15-XLH-RR	x		55 x 12 x6	51	280	235	235	238	removing
	Power wave	P65-15-XLH-RR	x		56 x 12 x6	51	0	235	235	238	removing
	KMW	AM-X-CD-14-65-OOT-RET	x		48 x 11.8 x 5.9	36.4	60	235	235	238	removing
	KMW	AM-X-CD-14-65-OOT-RET	x		48 x 11.8 x 5.9	36.4	180	235	235	238	removing
	KMW	AM-X-CD-14-65-OOT-RET	x		48 x 11.8 x 5.9	36.4	300	235	235	238	removing
	Power wave	LGP 21401	x		6 x8 x2	7.7lbs					12 total 4 per sector (TMA)
	Ericsson	RRUS-11	x		17 x 17 x 6	50 lbs ea	60/180/300	235	235		3 radio heads 1 per sector
	Ericsson	RRUS-12	x		17 x 17 x 6	50 lbs ea	60/180/300	235	235		3 radio heads being removed
	Ericsson	RRUS-12		x	17 x 17 x 6	50 lbs ea	60/180/300	235	235		3 new radio heads
	Ericsson	A-2 module		x	12 x 12 x 4	20lbs ea	60/180/300	235	235		attached to back of RRUS-12
	Ericsson	RRUS-32		x	17 x 17 x 6	77 lbs ea	60/180/300	235	235		3 new radio heads
	RAYCAP	Squid	x			25lbs		232	232		fiber and DC junction box
	RAYCAP	Squid		x		25lbs		232	232		new fiber and DC junction box

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: CT11410A

Stamford/ Dwtn
555 E. Main Street
Stamford, CT 06901

August 31, 2015

EBI Project Number: 6215004565

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	12.18 %

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

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August 31, 2015

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

Emissions Analysis for Site: **CT11410A – Stamford/ Dwtn**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **555 E. Main Street, Stamford, 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 approximately 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **555 E. Main Street, Stamford, 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 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

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

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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 **Ericsson AIR21 (B4A/B2P** & **B2A/B4P)** for 1900 MHz (PCS) and 2100 MHz (AWS) 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 **Ericsson AIR21 B4A/B2P** & **B2A/B4P)** have a maximum gain of **15.9 dBd** at their main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. 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 centerlines of the proposed antennas are **203 & 209.5 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:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	209.5	Height (AGL):	209.5	Height (AGL):	209.5
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	0.41	Antenna B1 MPE%	0.41	Antenna C1 MPE%	0.41
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	209.5	Height (AGL):	209.5	Height (AGL):	209.5
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	0.41	Antenna B2 MPE%	0.41	Antenna C2 MPE%	0.41
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
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):	203	Height (AGL):	203	Height (AGL):	203
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):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.17	Antenna B3 MPE%	0.17	Antenna C3 MPE%	0.17

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**0.98 %**
AT&T	4.75 %
WinStar Wireless	0.71 %
PageNet	1.44 %
Broadcast Video	4.30 %
Site Total MPE %:	**12.18 %**

T-Mobile Sector 1 Total:	0.98 %
T-Mobile Sector 2 Total:	0.98 %
T-Mobile Sector 3 Total:	0.98 %
Site Total:	12.18 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**209.5**	**4.05**	**2100**	**1000**	**0.41%**
T-Mobile 700 MHz LTE	**1**	**865.21**	**203**	**0.80**	**700**	**467**	**0.17 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**1167.14**	**209.5**	**2.03**	**1900**	**1000**	**0.20 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.14**	**209.5**	**2.03**	**2100**	**1000**	**0.20 %**
						Total:	**0.98%**

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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:	0.98 %
Sector 2:	0.98 %
Sector 3 :	0.98 %
T-Mobile Per Sector Maximum:	0.98 %
Site Total:	12.18 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.18%** 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.

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

EBI Consulting
21 B Street
Burlington, MA 01803