EM-AT&T-106-130429

ORIGINAL

April 26, 2013

VIA OVERNIGHT DELIVERY

Ms. Linda Roberts, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: AT&T Mobility – Notice of Exempt Modification
Route 9 Middlesex Turnpike, Old Saybrook, CT

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of AT&T Mobility ("AT&T"). AT&T is enhancing the capabilities of its wireless system in Connecticut by implementing LTE technology. In order to do so, AT&T will modify antenna and equipment configurations at a number of existing 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 First Selectwoman of the Town of Old Saybrook.

AT&T plans to modify the existing facility at Route 9 Middlesex Turnpike, Old Saybrook, owned by Crossroads Communications (coordinates 41°19'41.2"N, -72°23'19.3"W). Attached are: (1) a compound plan and elevation depicting the planned changes, and (2) documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration subject to reinforcements detailed in the structural report and tower modification drawings. Also included is a power density calculation reflecting the modification to AT&T's operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. 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 height of the overall structure will be unaffected. AT&T proposes to replace three (3) existing antennas and three (3) existing TMA's. Additionally, AT&T will install one (1) fiber cable and two (2) DC control cables within a 3" flex conduit which will follow existing coax.

2. The proposed changes will not extend the site boundaries. AT&T will install six (6) RRU's, one (1) surge arrestor, one (1) Commscope DC power plant cabinet and two (2) stacked Purcell cabinets at grade within the existing fenced equipment area. Thus, 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. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility 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. As indicated in the attached power density calculations, AT&T's operations at the site will result in a power density of 1.69%; the combined site operations will result in a total power density of 11.88%.

Please feel free to call me with any questions or concerns regarding this matter. Thank you for your consideration.

Respectfully submitted,
AT&T Mobility

By: _____

Eric Dahl, Consultant
edahl@comcast.net
860-227-1975

cc: Honorable Carl P. Fortuna, Jr., First Selectman, Town of Old Saybrook

Attachments

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY UPGRADE (LTE): 1. INSTALL (3) NEW LTE ANTENNAS, (6) RRH'S, (1) SURGE ARRESTOR, (1) FIBER LINE, (2) DC POWER LINES & (1) GPS ANTENNA 2. INSTALL (1) LTE 6601 CABINET
SITE ADDRESS:	ROUTE 9 MIDDLESEX TURNPIKE OLD SAYBROOK, CT 06475 MIDDLESEX COUNTY
LATITUDE:	41.32810 N 41° 19' 41.2" N
LONGITUDE:	72.38870 W 72° 23' 19.3" W
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

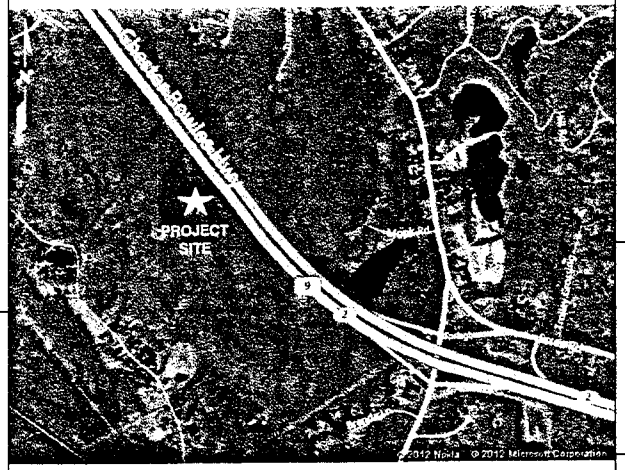
SITE NUMBER: CT5394
SITE NAME: AWE-NORTH OLD SAYBROOK

DRAWING INDEX

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI TURN LEFT ONTO CAPITOL BLVD. 0.2 MI TURN LEFT ONTO WEST ST. 0.3 MI TAKE RAMP LEFT FOR I-91 S. 1.4 MI AT EXIT 22S, TAKE RAMP LEFT FOR CT-9 SOUTH TOWARD OLD SAYBROOK / MIDDLETOWN. 5.5 MI KEEP STRAIGHT ONTO CT-9 S / CT-17 S. 0.8 MI KEEP STRAIGHT ONTO CT-9 S. 22.9 MI TAKE RAMP RIGHT FOR I-95 SOUTH / US-1 SOUTH TOWARD N.Y. CITY / NEW HAVEN. 0.4 MI AT EXIT 68, TAKE RAMP RIGHT FOR US-1 TOWARD OLD SAYBROOK. 422 FT KEEP STRAIGHT ONTO US-1 S. 428 FT KEEP STRAIGHT ONTO US-1 / SPRINGBROOK RD. 0.2 MI TURN LEFT TO STAY ON US-1 / BOSTON POST RD. 0.3 MI TAKE RAMP LEFT FOR US-1 NORTH / I-95 NORTH TOWARD NEW LONDON. 0.4 MI AT EXIT 69, TAKE RAMP RIGHT TOWARD HARTFORD / ESSEX. 0.6 MI KEEP STRAIGHT ONTO CT-9 N / CHESTER BOWLES HWY. 1.0 MI ARRIVE AT CHESTER BOWLES HWY & MIDDLESEX TPKE, OLD SAYBROOK, CT 06475.



GENERAL NOTES

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

CALL

BEFORE YOU DIG

CALL TOLL FREE 1-800-922-4455 OR DIAL 811

UNDERGROUND SERVICE ALERT

Hudson Design Group LLC
1400 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

Pinnacle Wireless
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

SITE NUMBER: CT5394
SITE NAME: AWE-NORTH OLD SAYBROOK
ROUTE 9 MIDDLESEX TURNPIKE
OLD SAYBROOK, CT 06475
MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	04/23/13	ISSUED FOR CONSTRUCTION	KJB	DC	DPH
1	11/28/12	ISSUED FOR PERMITTING	RS	DC	DPH
0	08/23/12	ISSUED FOR REVIEW	RS	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

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TITLE SHEET (LTE)

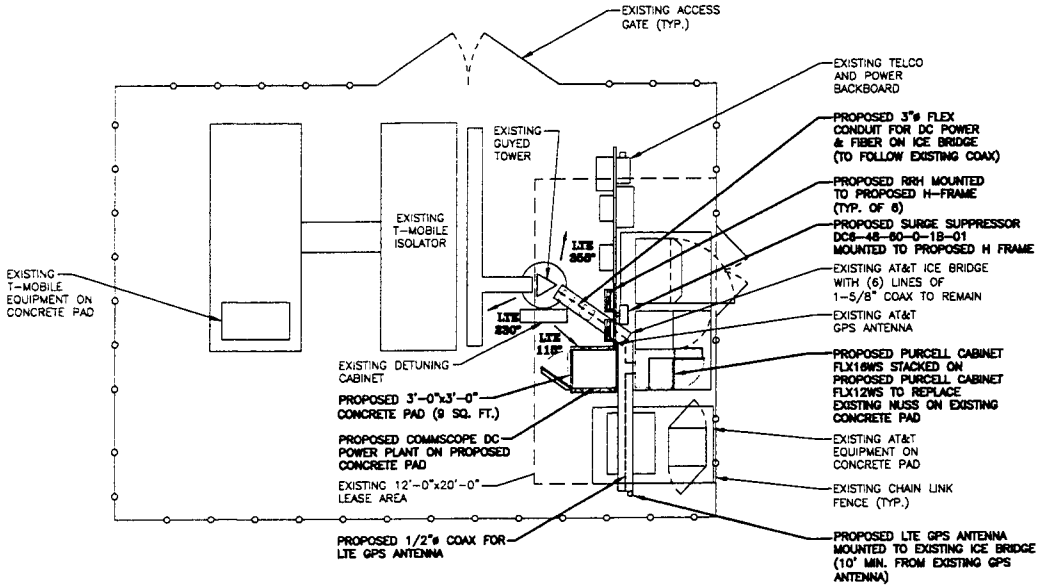
JOB NUMBER	DRAWING NUMBER	REV
5394.01	T-1	2

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC DATED: APRIL 17, 2013 (REV1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



COMPOUND PLAN

SCALE: 1/4"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"

NOTE:

A RADIAL AM GROUNDING SYSTEM EXISTS AT THE BASE OF THIS TOWER. RADIALS ARE APPROXIMATELY 10 DEGREES APART JUST BELOW THE SOIL SURFACE AND TRANSMIT FOR APPROXIMATELY 150' FROM THE BASE OF THE TOWER. THE GENERAL CONTRACTOR IS TO REPAIR ALL AM GROUND GRID SPLICES USING CAD WELDS AS A RESULT OF THIS FOUNDATION MODIFICATION. IN ADDITION, THE CONTRACTOR IS TO REPAIR APPROXIMATELY (10) CRIMPED SPLICES LOCATED ON THE NORTH SIDE OF THE TOWER PIER USING CAD WELDS.

EQUIPMENT PLAN

SCALE: 1/2"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

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1000 DISCOVERY STREET
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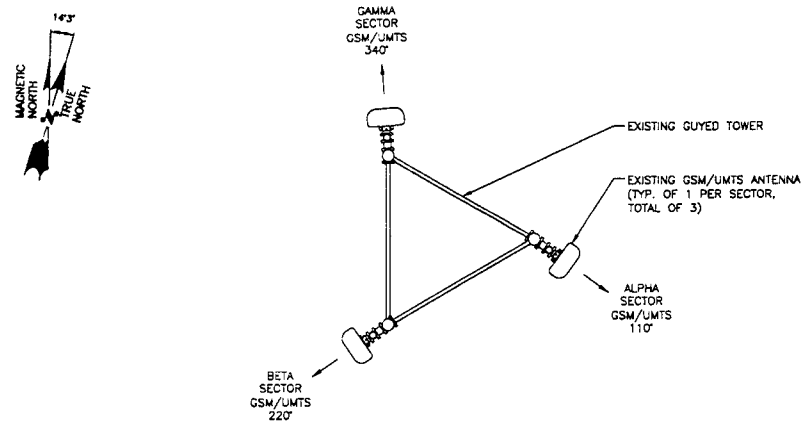
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

STATE OF CONNECTICUT — BRIAN P. HAMMER — No. 21175 — LICENSED PROFESSIONAL ENGINEER

AT&T

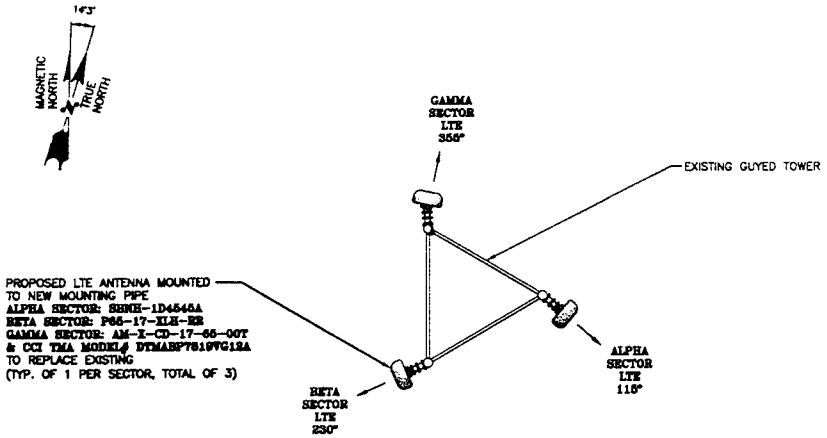
COMPOUND PLAN & EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
5394.01	A-1	2



EXISTING GSM/UMTS ANTENNA PLAN

SCALE: N.T.S.



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.

NOTE:

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NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

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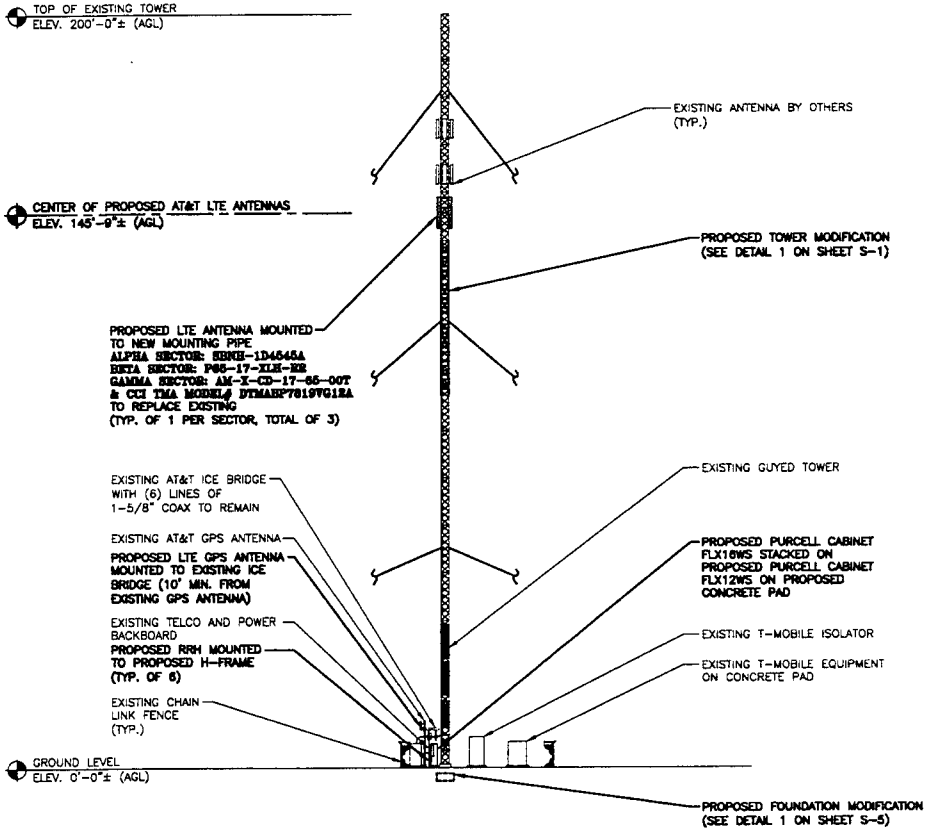

NORTH ELEVATION

SCALE: 1/16"=1'-0"

0' 8'-0" 16'-0" 32'-0" 48'-0"

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SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

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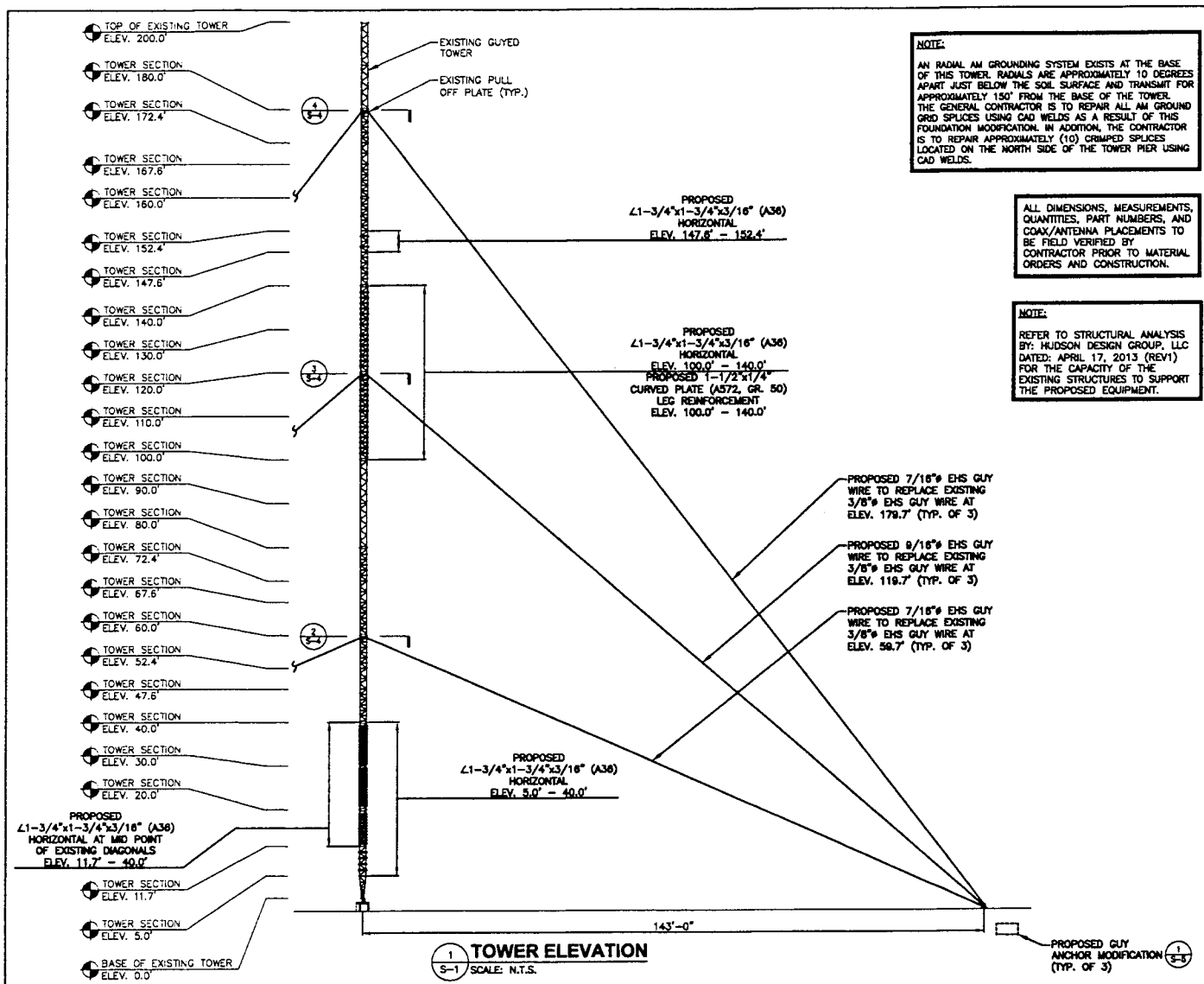
ANTENNA PLAN & ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
5394.01	A-2	2



1 S-1 **TOWER ELEVATION**
SCALE: N.T.S.

NOTE:

AN RADIAL AM GROUNDING SYSTEM EXISTS AT THE BASE OF THIS TOWER. RADIALS ARE APPROXIMATELY 10 DEGREES APART JUST BELOW THE SOIL SURFACE AND TRANSMIT FOR APPROXIMATELY 150' FROM THE BASE OF THE TOWER. THE GENERAL CONTRACTOR IS TO REPAIR ALL AM GROUND GRID SPLICES USING CAD WELDS AS A RESULT OF THIS FOUNDATION MODIFICATION. IN ADDITION, THE CONTRACTOR IS TO REPAIR APPROXIMATELY (10) CRIMPED SPLICES LOCATED ON THE NORTH SIDE OF THE TOWER PIER USING CAD WELDS.

ALL DIMENSIONS, MEASUREMENTS, QUANTITIES, PART NUMBERS, AND COAX/ANTENNA PLACEMENTS TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO MATERIAL ORDERS AND CONSTRUCTION.

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC DATED: APRIL 17, 2013 (REV1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS 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 HUDSON DESIGN GROUP FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREA.
3. INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO HUDSON DESIGN GROUP PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE HUDSON DESIGN GROUP, LLC APPROVAL.
4. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER COMPLETION OF THE PROJECT.
5. CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRE-CONSTRUCTION CONDITION.

STEEL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
2. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE UNLESS OTHERWISE NOTED.
3. ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 6.1, UNLESS OTHERWISE NOTED.
4. ALL STEEL (EXCEPT A490 BOLTS), AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH 2 COATS OF ZRC COLD GALVANIZING COMPOUND.
5. ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED.
6. STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.
7. NEW STEEL MEMBERS AND CONNECTIONS SHALL BE PAINTED TO MATCH EXISTING TOWER.

MISC. NOTES:

1. ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

FABRICATION NOTES:

1. ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
2. NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.

CONTRACTOR QUALIFICATION NOTES:

1. ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM OF 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE ANSI/TIA-222-G "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS".
2. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, HUDSON DESIGN GROUP, LLC IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
3. ALL SUBMITTAL INFORMATION MUST BE SENT TO HUDSON DESIGN GROUP, LLC 1800 OSGOOD ST. BUILDING 20N, SUITE 3080, NORTH ANDOVER, MA 01845 TEL: (978)557-5553, FAX: (978)336-5586. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM HUDSON DESIGN GROUP WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS HUDSON DESIGN GROUP, LLC.

JOB SITE SAFETY AND NOTES:

NEITHER THE PROFESSIONAL ACTIVITIES OF HUDSON DESIGN GROUP, LLC NOR THE PRESENCE OF HUDSON DESIGN GROUP, LLC OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND/OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES, OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE GENERAL CONTRACTOR AND/OR SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTS THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

SUBSTITUTES AND/OR EQUALS:

IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL MAKE WRITTEN APPLICATION TO ENGINEER FOR ACCEPTANCE THEREOF, CERTIFYING THAT THE PROPOSED SUBSTITUTE WILL ADEQUATELY PERFORM THE FUNCTIONS AND ACHIEVE THE RESULTS CALLED FOR BY THE GENERAL DESIGN, BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED, AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION AND AVAILABLE MAINTENANCE, REPAIR, AND REPLACEMENT SERVICE WILL BE INDICATED. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE, INCLUDING COSTS OF REDESIGN AND CLAIMS OF OTHER CONTRACTORS AFFECTED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY ENGINEER IN EVALUATION OF THE PROPOSED SUBSTITUTE. ENGINEER MAY REQUIRE CONTRACTOR TO FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

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SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

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TOWER MODIFICATION ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
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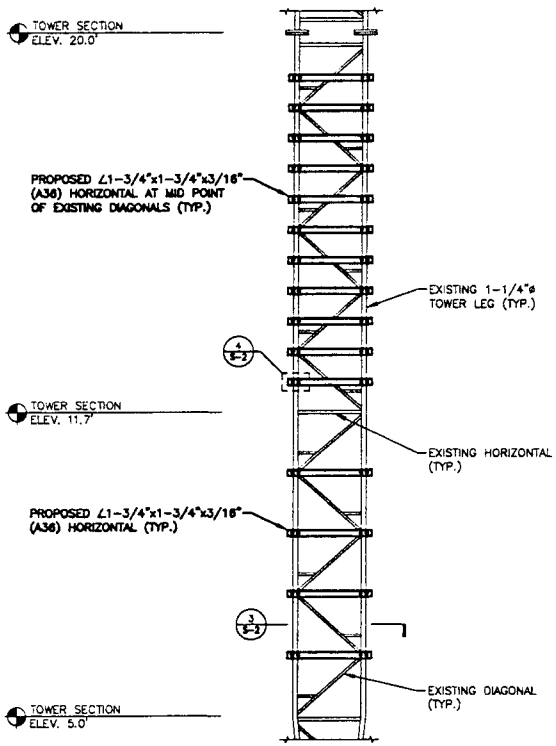
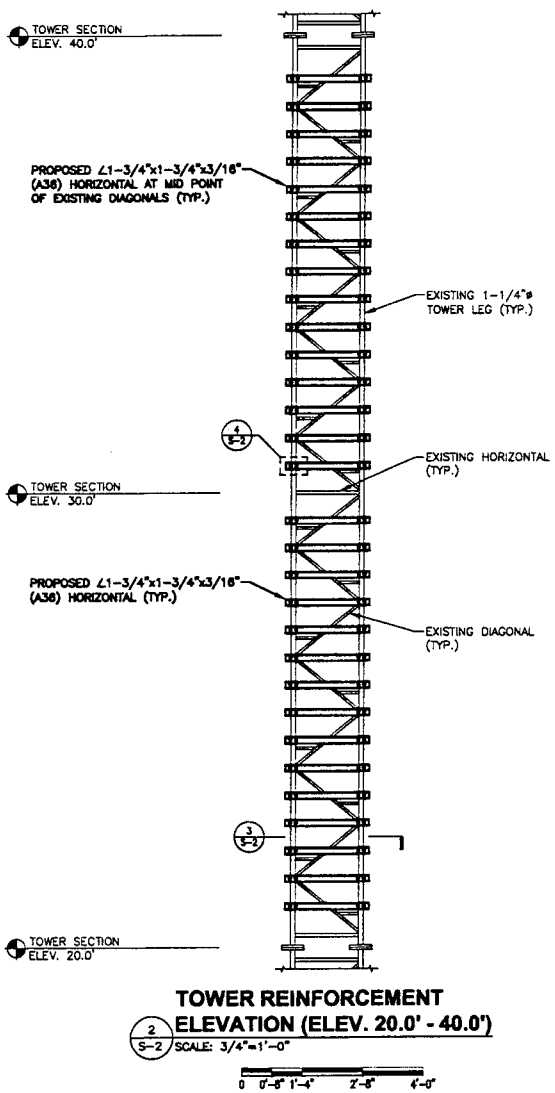


TOWER REINFORCEMENT ELEVATION (ELEV. 5.0' - 20.0')

1 / S-2 SCALE: 3/4"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"



TOWER REINFORCEMENT ELEVATION (ELEV. 20.0' - 40.0')

2 / S-2 SCALE: 3/4"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"

NOTE:

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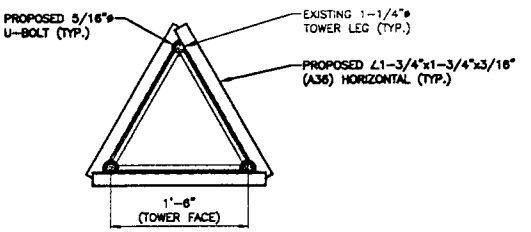
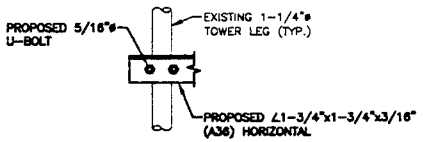


TOWER REINFORCEMENT PLAN

3 / S-2 SCALE: 3/4"=1'-0"

0 0'-4" 0'-8" 1'-4" 2'-0"



CONNECTION DETAIL

4 / S-2 SCALE: 3"=1'-0"

0 0'-2" 0'-4" 0'-8" 1'-0"

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0	08/23/12	ISSUED FOR REVIEW	RS	DC	DPH

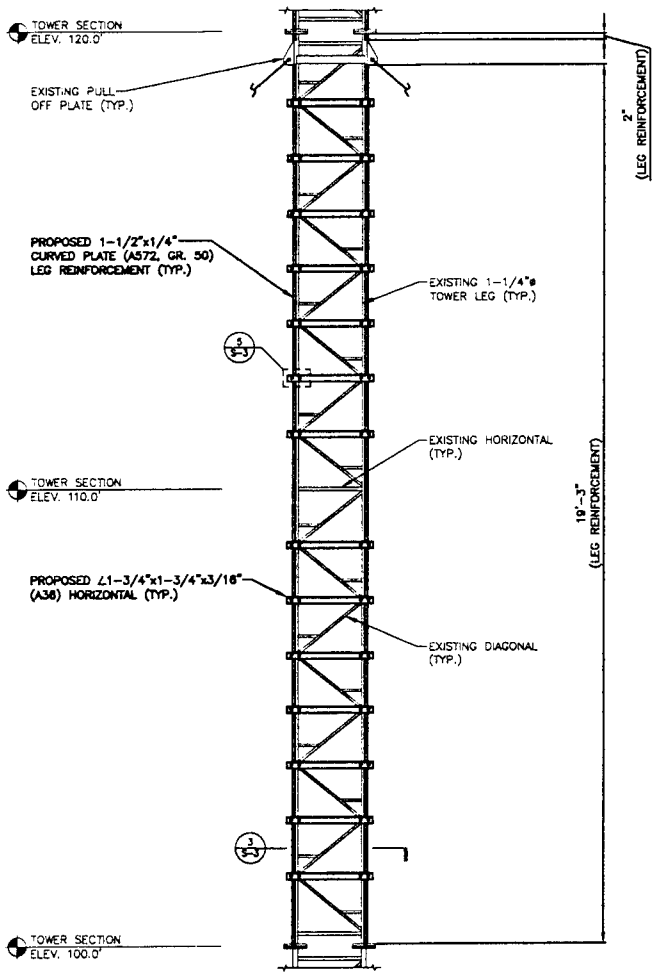
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

STATE OF CONNECTICUT — RICHARD P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

TOWER MODIFICATION DETAILS (LTE)

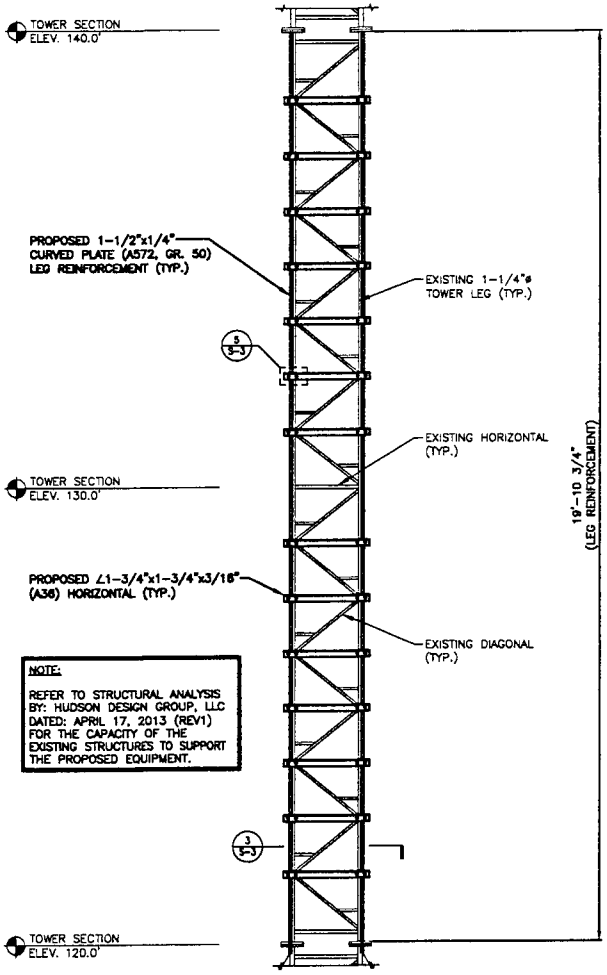
JOB NUMBER	DRAWING NUMBER	REV
5394.01	S-2	2



TOWER REINFORCEMENT ELEVATION (ELEV. 100.0' - 120.0')

1 S-3 SCALE: 3/4"=1'-0"

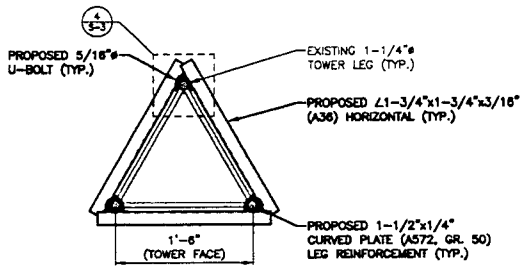
0 0'-6" 1'-4" 2'-8" 4'-0"



TOWER REINFORCEMENT ELEVATION (ELEV. 120.0' - 140.0')

2 S-3 SCALE: 3/4"=1'-0"

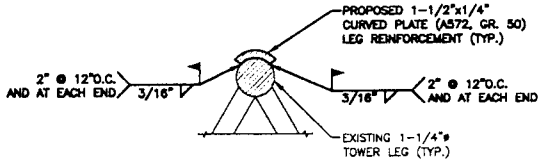
0 0'-6" 1'-4" 2'-8" 4'-0"



TOWER REINFORCEMENT PLAN

3 S-3 SCALE: 3/4"=1'-0"

0 0'-4" 0'-8" 1'-4" 2'-0"

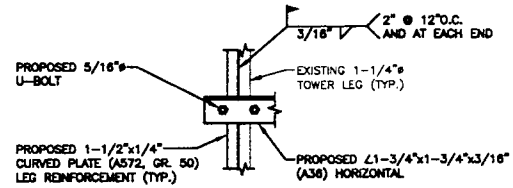


TOWER LEG REINFORCEMENT DETAIL

4 S-3 SCALE: 6"=1'-0"

NOTE: PROPOSED HORIZONTAL REINFORCEMENT NOT SHOWN FOR CLARITY

0 0'-1" 0'-2" 0'-4" 0'-6"



CONNECTION DETAIL

5 S-3 SCALE: 3"=1'-0"

0 0'-2" 0'-4" 0'-8" 1'-0"

Hudson Design Group LLC
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FAX: (978) 336-5586

Pinnacle Wireless
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

SITE NUMBER: CT5394
SITE NAME: AWE-NORTH OLD SAYBROOK
ROUTE 9 MIDDLESEX TURNPIKE
OLD SAYBROOK, CT 06475
MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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0	08/23/12	ISSUED FOR REVIEW	RS	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

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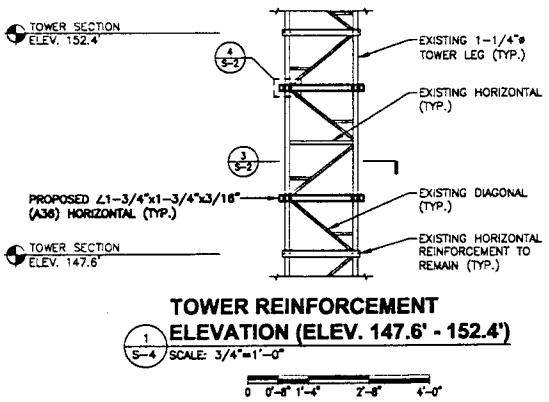
TOWER MODIFICATION DETAILS (LTE)

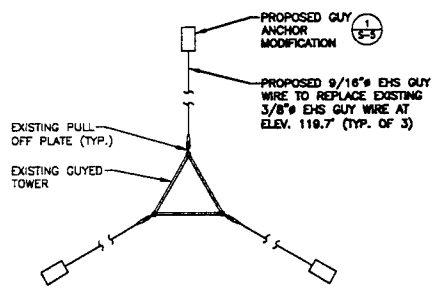
JOB NUMBER	DRAWING NUMBER	REV
CT394.01	S-3	2



TOWER REINFORCEMENT ELEVATION (ELEV. 147.6' - 152.4')

1 / S-4 SCALE: 3/4"=1'-0"

0 0'-6" 1'-4" 2'-8" 4'-0"



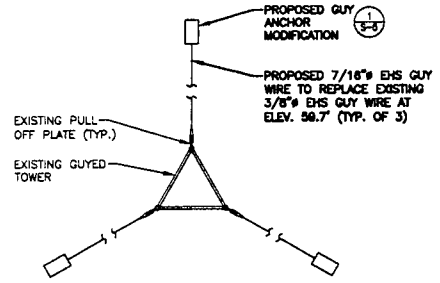
GUY WIRE REPLACEMENT PLAN (ELEV. 119.7')

3 / S-4 SCALE: N.T.S.

GUY TENSION TABLE				
ELEVATION	ANCHOR DIRECTION	GUY GRADE	GUY SIZE	10% INITIAL TENSION (LBS)
119.7'	A	(P) EHS	9/16"	3,500
119.7'	B	(P) EHS	9/16"	3,500
119.7'	C	(P) EHS	9/16"	3,500

NOTE:

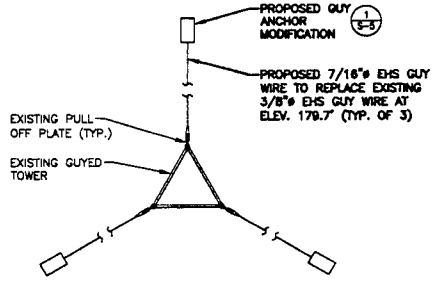
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC DATED: APRIL 17, 2013 (REV1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



GUY WIRE REPLACEMENT PLAN (ELEV. 59.7')

2 / S-4 SCALE: N.T.S.

GUY TENSION TABLE				
ELEVATION	ANCHOR DIRECTION	GUY GRADE	GUY SIZE	10% INITIAL TENSION (LBS)
59.7'	A	(P) EHS	7/16"	2,080
59.7'	B	(P) EHS	7/16"	2,080
59.7'	C	(P) EHS	7/16"	2,080



GUY WIRE REPLACEMENT PLAN (ELEV. 179.7')

4 / S-4 SCALE: N.T.S.

GUY TENSION TABLE				
ELEVATION	ANCHOR DIRECTION	GUY GRADE	GUY SIZE	10% INITIAL TENSION (LBS)
179.7'	A	(P) EHS	7/16"	2,080
179.7'	B	(P) EHS	7/16"	2,080
179.7'	C	(P) EHS	7/16"	2,080

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500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

TOWER MODIFICATION DETAILS & GUY WIRE PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
5394.01	S-4	2

CONCRETE NOTES:

1. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

2. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

3. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

4. USE HILTI HIT-RE500 EPOXY ADHESIVE ANCHORING SYSTEM PER MANUFACTURER'S SPECIFICATION FOR #5 STEEL REINFORCING BAR.

5. CONTRACTOR TO SCARIFY EXISTING CONCRETE SURFACE AND APPLY A BONDING ADHESIVE SUCH AS WELDCRETE. (OR APPROVED EQUAL)

6. SOIL REPORT SHOULD BE CONSULTED PRIOR TO CONSTRUCTION. STEEL CASING OR SLURRY METHOD MAY BE REQUIRED TO PREVENT SOIL FROM CAVING DURING CONSTRUCTION. THE CASING SHOULD REMOVED AFTER COMPLETION OF CONCRETING OR, IF LEFT IN THE GROUND, ALL VOIDS AROUND THE CASING SHALL BE FILLED WITH PRESSURIZED GROUT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES.

7. SPECIAL INSPECTION OF REINFORCEMENT, AND CONCRETE IS REQUIRED PER IBC. FOUNDATION REINFORCEMENT SHALL BE INSPECTED PRIOR TO PLACEMENT.

8. REINFORCING STEEL SHALL CONFORM TO ASTM A615-87, Fy=60 ksi. REINFORCEMENT SHALL BE ASSEMBLED USING STEEL WIRE. WELDING IS NOT PERMITTED. MINIMUM SPLICE LENGTH: FOR No. 6 BARS AND SMALLER - 44 x ⌀bar; FOR No. 7 BARS AND LARGER - 55 x ⌀bar. HORIZONTAL TIES SHALL BE STAGGERED WITH NO MORE THAN 50% OF SPLICES IN ONE PLACE.

9. CONCRETE MIX DESIGN AND CONSTRUCTION PROCEDURE SHALL BE IN COMPLIANCE WITH ACI 318, ACI 336.3R, AND ALL APPLICABLE STATE AND LOCAL CODES.

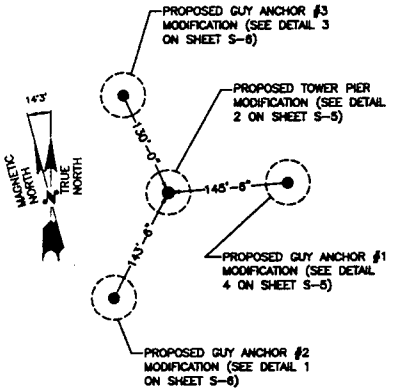
a. MINIMUM COMPRESSIVE STRENGTH - AS NOTED
b. CONCRETE MIX SHOULD HAVE A SLUMP OF 3" (±1") FOR MAT FOUNDATIONS.

NOTE:

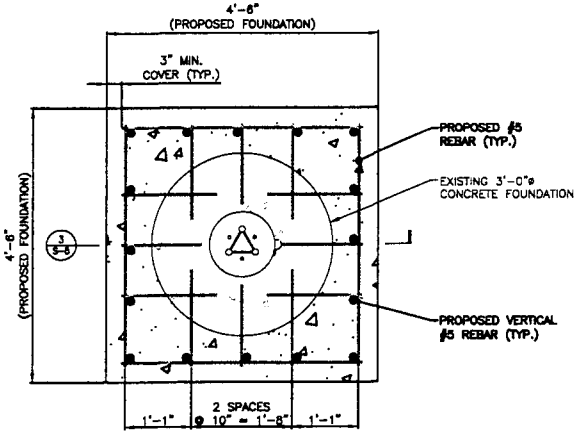
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC DATED: APRIL 17, 2013 (REV1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

A RADIAL AM GROUNDING SYSTEM EXISTS AT THE BASE OF THIS TOWER. RADIALS ARE APPROXIMATELY 10 DEGREES APART JUST BELOW THE SOIL SURFACE AND TRANSMIT FOR APPROXIMATELY 150' FROM THE BASE OF THE TOWER. THE GENERAL CONTRACTOR IS TO REPAIR ALL AM GROUND GRID SPLICES USING CAD WELDS AS A RESULT OF THIS FOUNDATION MODIFICATION. IN ADDITION, THE CONTRACTOR IS TO REPAIR APPROXIMATELY (10) CRIMPED SPLICES LOCATED ON THE NORTH SIDE OF THE TOWER PIER USING CAD WELDS.

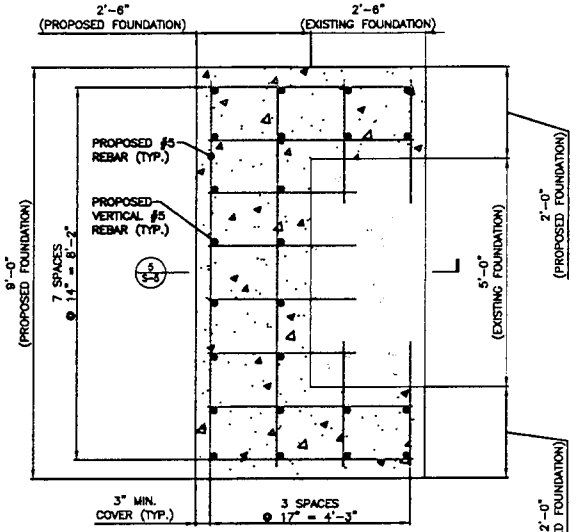


1 S-5 **LOCATION PLAN**
SCALE: N.T.S.



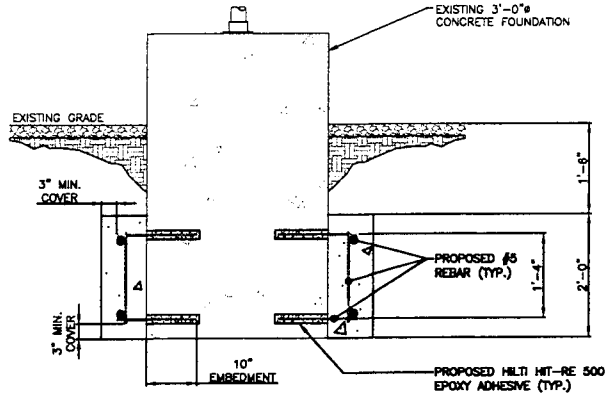
2 S-5 **FOUNDATION MODIFICATION PLAN - TOWER PIER**
SCALE: 1"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



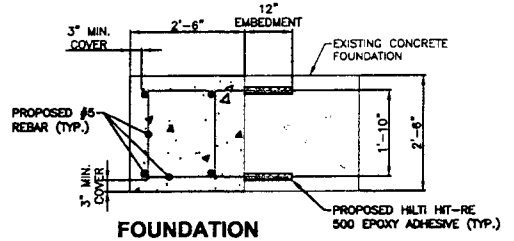
4 S-5 **FOUNDATION MODIFICATION PLAN - GUY ANCHOR 1**
SCALE: 3/4"=1'-0"

0 0'-6" 1'-4" 2'-8" 4'-0"



3 S-5 **FOUNDATION MODIFICATION SECTION**
SCALE: 1"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



5 S-5 **FOUNDATION MODIFICATION SECTION**
SCALE: 3/4"=1'-0"

0 0'-6" 1'-4" 2'-8" 4'-0"

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at&t
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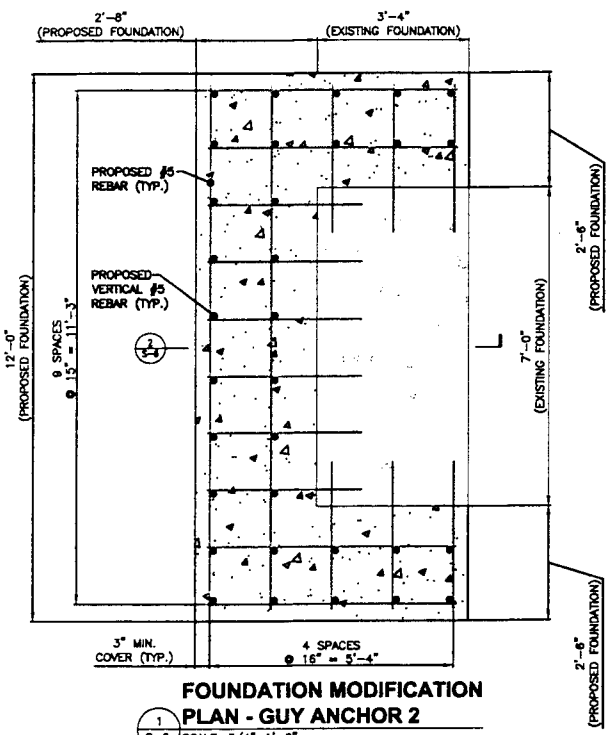
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

AT&T

60' ANCHOR MODIFICATION PLAN & DETAILS (LTE)

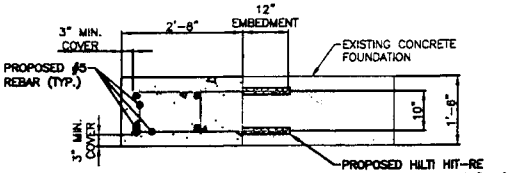
JOB NUMBER	DRAWING NUMBER	REV
5394.01	S-5	2



FOUNDATION MODIFICATION PLAN - GUY ANCHOR 2

1 S-6 SCALE: 3/4"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"



FOUNDATION MODIFICATION SECTION

2 S-6 SCALE: 3/4"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"

NOTE:

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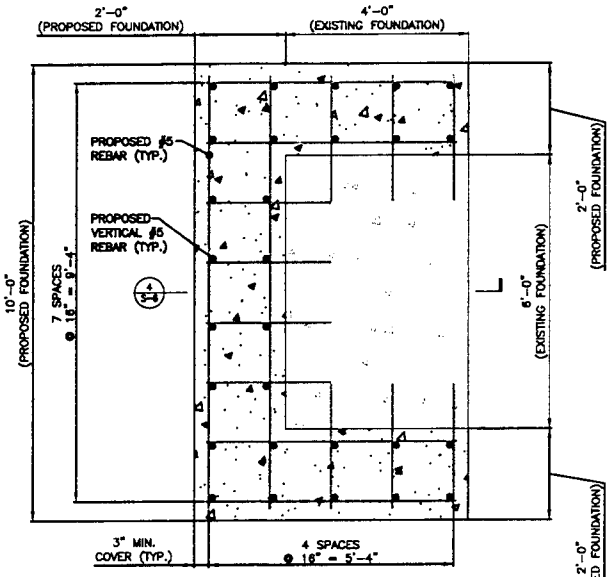
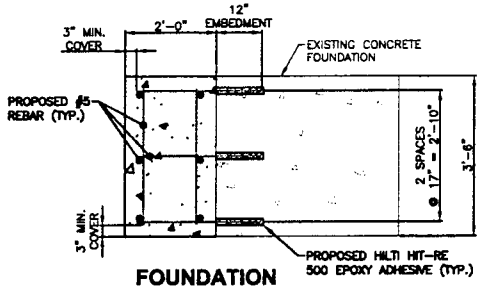


FOUNDATION MODIFICATION PLAN - GUY ANCHOR 3

3 S-6 SCALE: 3/4"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"



FOUNDATION MODIFICATION SECTION

4 S-6 SCALE: 3/4"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"

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SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

GUY ANCHOR MODIFICATION PLAN & DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
2394.01	S-6	2

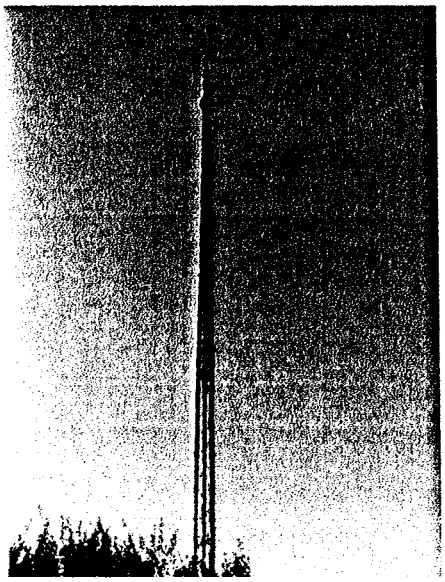
(Revised)
STRUCTURAL ANALYSIS REPORT

For

CT5394
AWE-NORTH OLD SAYBROOK

ROUTE 9 MIDDLESEX TURNPIKE
OLD SAYBROOK, CT 06475

Antennas Mounted to the Tower



Prepared for:

Pinnacle Wireless

at&t

Dated: April 17, 2013

Prepared by:

Hudson Design Group LLC

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STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED
PROFESSIONAL ENGINEER

4/17/2013

Hudson Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 200' guyed tower supporting the proposed AT&T antennas located at elevation 145' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

Record drawings of the existing tower were not available for our use. The previous structural analysis report prepared by Paul J. Ford and Company, dated June 28, 2007 was available and obtained for our use. This office conducted an on-site visual survey and tower mapping on November 9, 2012 to record dimensional properties of the existing tower and its appurtenances. Attendees included Nick Bestor (HDG - Associate) and Nick Marshall (HDG - Associate).

Existing foundation and soil information are based on Foundation Investigation Report and Geotechnical Evaluation of Subsurface Conditions report prepared by this office, dated April, 2013.

CONCLUSION SUMMARY:

HDG performed structural analysis of the existing tower with the following proposed modifications:

1. **Add horizontals from El.5' to El.40', from El.100' to El.140' and from El.147.6' to El.152.4'.**
2. **Add 1 1/2"x1/4" steel reinforcing plate to the existing tower legs from El.100' to El.140'.**
3. **Replace guy wires at El.179.7', at El.119.7' and at El.59.7'.**
4. **Modify existing tower mast and guy anchor foundations.**

Based on our evaluation, we have determined that the existing tower and foundation with modifications **are in conformance** with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **98.9%** - (Legs at Tower Section T17 from EL.20' to EL.40' Controlling).

Hudson Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(3) APXV18-209014 Antennas	168'	Tower Leg
	(3) MHA Amplifiers	168'	Tower Leg
	(3) APXV18-209014 Antennas	156'	Tower Leg
	(3) MHA Amplifiers	156'	Tower Leg
AT&T	***SBNH-1D4545A Antenna***	145'	Tower Leg
AT&T	***P65-17-XLH-RR Antenna***	145'	Tower Leg
AT&T	***AM-X-CD-17-65 Antenna***	145'	Tower Leg
AT&T	***(3) DTMABP7819 TMAs***	145'	Tower Leg

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(6) 1 1/4" Cables	145'	Tower Leg
AT&T	***Fiber Cable***	145'	Tower Leg
AT&T	***(2) DC Power Cables***	145'	Tower Leg

Proposed AT&T Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	**98.9 %**	20 – 40	PASS	**Controlling**
Diagonals	93.2 %	120 – 140	PASS	
Horizontals	6.4 %	120 – 140	PASS	
Top Girt	9.9 %	0 – 5	PASS	
Bottom Girt	15.9 %	120 – 140	PASS	
Mid Girt	1.2 %	20 - 40	PASS	
Guy	93.8 %	179.7	PASS	
Top Guy Pull-Off	45.4 %	119.7	PASS	

Hudson Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   City/Town: Old Saybrook
   County: Middlesex
   Wind Load: 95 mph (fastest mile)
   115 mph (3 second gust)
   Nominal Ice Thickness: 1/2 inch

2. Approximate height above grade to proposed antennas: 145'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. Material strength of the existing tower was not available for structural analysis, and was assumed as follows:

   Solid Rods: Fy=50 ksi
   Angles and Plates: Fy=36 ksi

2. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.

3. The tower and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas and TMAs be mounted on the tower legs.

Reference HDG's Latest Construction Drawings for all component and connection requirements (attached).

Hudson Design Group LLC

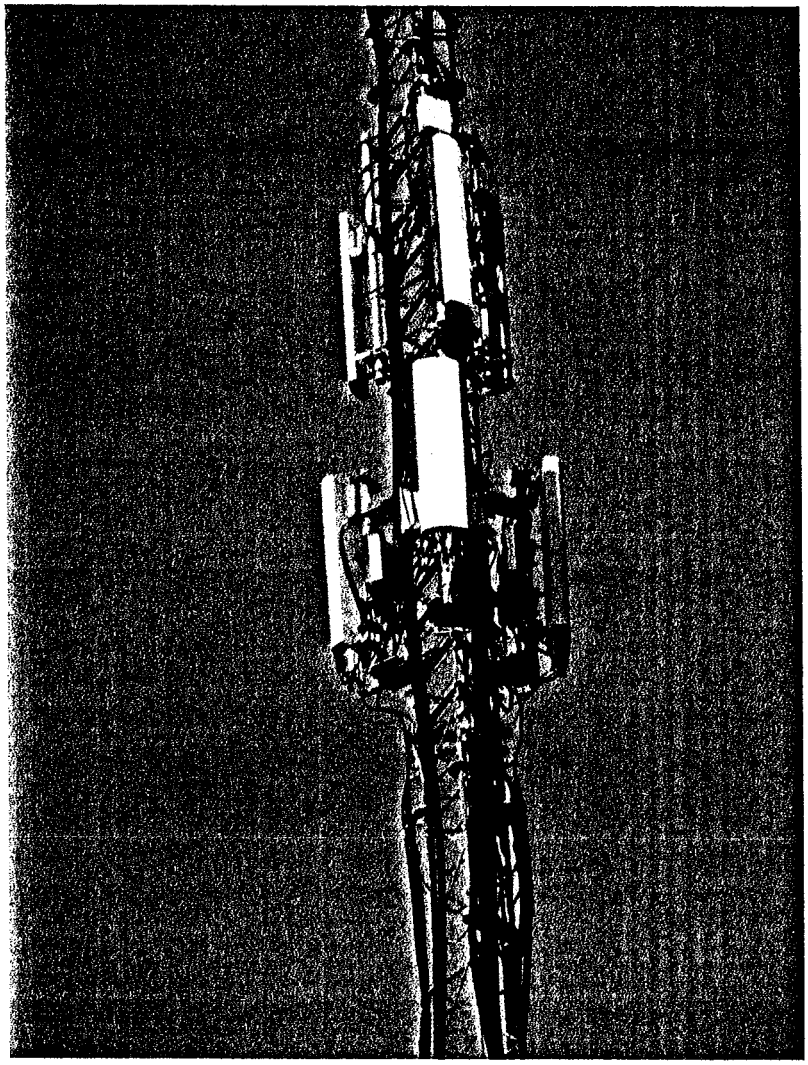
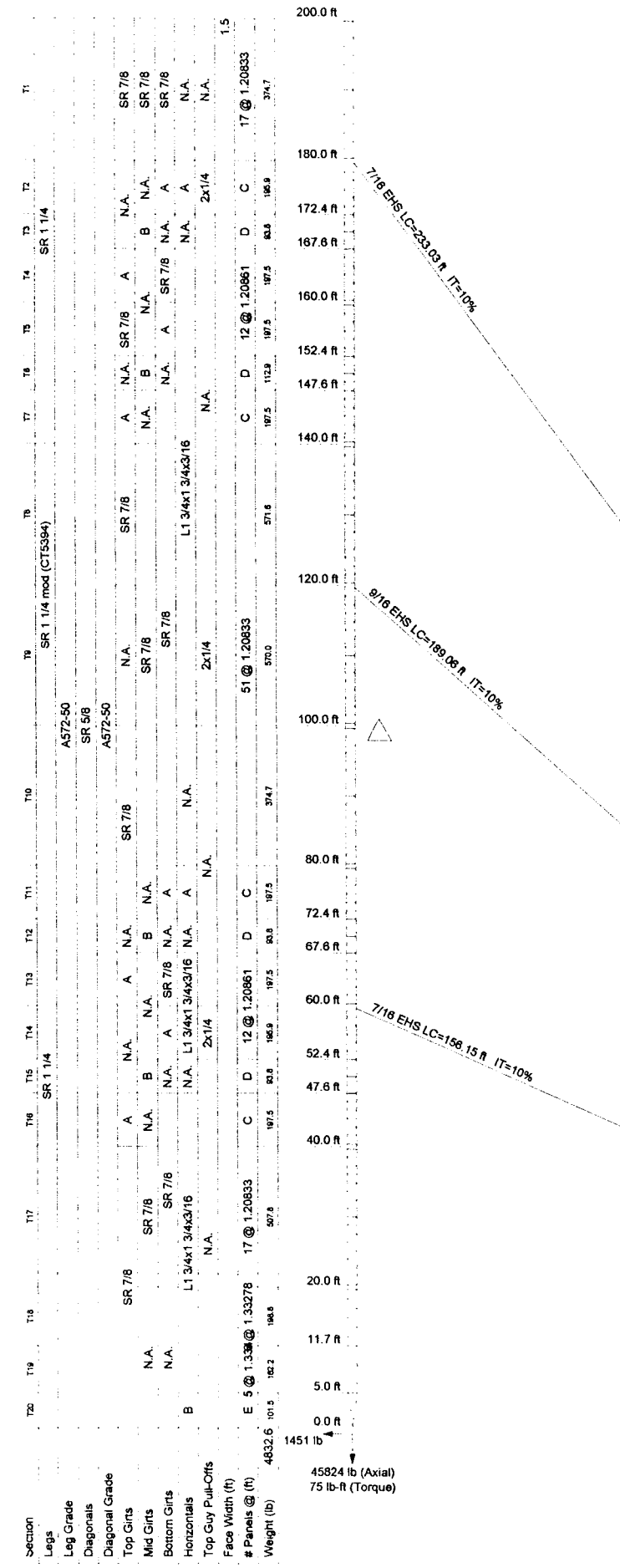
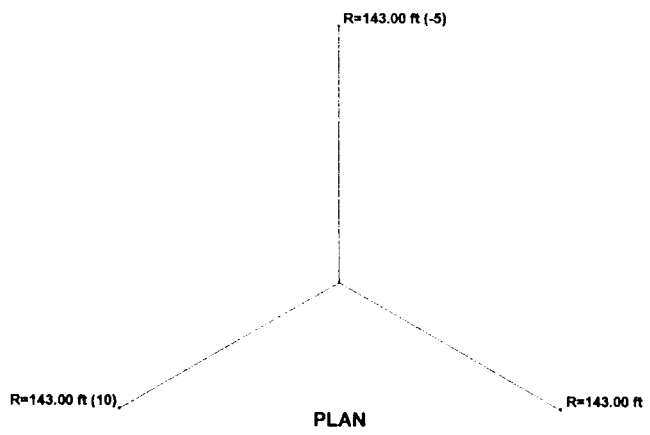


Photo 1: Photo illustrating the Tower with Appurtenances shown.

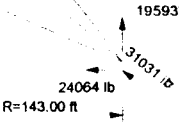
Hudson Design Group LLC

CALCULATIONS





PLAN



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXV18-209014-C w/mount pipe	168	SBNH-1D4545A w/mount pipe (ATT - Proposed)	145
APXV18-209014-C w/mount pipe	168	Powerwave P65-17-XLH-RR w/mount pipe (ATT - Proposed)	145
APXV18-209014-C w/mount pipe	168	KMW AM-X-CD-17-65-00T-RET w/mount pipe (ATT - Proposed)	145
MHA Amplifier	168	TMA DTMABP7819VG12A (ATT - Proposed)	145
MHA Amplifier	168	TMA DTMABP7819VG12A (ATT - Proposed)	145
MHA Amplifier	168	TMA DTMABP7819VG12A (ATT - Proposed)	145
APXV18-209014-C w/mount pipe	156		
APXV18-209014-C w/mount pipe	156		
APXV18-209014-C w/mount pipe	156		
MHA Amplifier	156		
MHA Amplifier	156		
MHA Amplifier	156		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 3/4x1 3/4x3/16	D	4 @ 1.2075
B	SR 7/8	E	4 @ 1.25
C	6 @ 1.20861		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 95 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 82 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.9%

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Phone: (978) 557-5553
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Job:	*CT 5394 Old Saybrook, CT*		
Project:	*200 ft Guyed Tower*		
Client:	AT&T	Drawn by: kw	App'd:
Code:	TIA/EIA-222-F	Date: 04/17/13	Scale: N
Path:			Dwg No E

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 200.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 1.50 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Middlesex County, Connecticut.
Basic wind speed of 95 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 82 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 2.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	200.00-180.00			1.50	1	20.00
T2	180.00-172.42			1.50	1	7.59
T3	172.42-167.59			1.50	1	4.83
T4	167.59-160.00			1.50	1	7.59
T5	160.00-152.42			1.50	1	7.59
T6	152.42-147.59			1.50	1	4.83
T7	147.59-140.00			1.50	1	7.59
T8	140.00-120.00			1.50	1	20.00
T9	120.00-100.00			1.50	1	20.00
T10	100.00-80.00			1.50	1	20.00
T11	80.00-72.42			1.50	1	7.59
T12	72.42-67.59			1.50	1	4.83
T13	67.59-60.00			1.50	1	7.59
T14	60.00-52.42			1.50	1	7.59
T15	52.42-47.59			1.50	1	4.83
T16	47.59-40.00			1.50	1	7.59
T17	40.00-20.00			1.50	1	20.00
T18	20.00-11.67			1.50	1	8.33
T19	11.67-5.00			1.50	1	6.67
T20	5.00-0.00			1.50	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	200.00-180.00	1.21	K Brace Right	No	No	4.0000	4.0000
T2	180.00-172.42	1.21	K Brace Right	No	Yes	4.0000	0.0000
T3	172.42-167.59	1.21	K Brace Right	No	No	0.0000	0.0000
T4	167.59-160.00	1.21	K Brace Right	No	Yes	0.0000	4.0000
T5	160.00-152.42	1.21	K Brace Right	No	Yes	4.0000	0.0000
T6	152.42-147.59	1.21	K Brace Right	No	Yes	0.0000	0.0000
T7	147.59-140.00	1.21	K Brace Right	No	Yes	0.0000	4.0000
T8	140.00-120.00	1.21	K Brace Right	No	Yes	4.0000	4.0000
T9	120.00-100.00	1.21	K Brace Right	No	Yes	4.0000	4.0000
T10	100.00-80.00	1.21	K Brace Right	No	No	4.0000	4.0000
T11	80.00-72.42	1.21	K Brace Right	No	Yes	4.0000	0.0000
T12	72.42-67.59	1.21	K Brace Right	No	No	0.0000	0.0000
T13	67.59-60.00	1.21	K Brace Right	No	Yes	0.0000	4.0000
T14	60.00-52.42	1.21	K Brace Right	No	Yes	4.0000	0.0000
T15	52.42-47.59	1.21	K Brace Right	No	No	0.0000	0.0000
T16	47.59-40.00	1.21	K Brace Right	No	Yes	0.0000	4.0000
T17	40.00-20.00	1.21	K Brace Right	No	Yes	4.0000	4.0000
T18	20.00-11.67	1.33	K Brace Right	No	Yes	4.0000	0.0000
T19	11.67-5.00	1.33	K Brace Left	No	Yes	0.0000	0.0000
T20	5.00-0.00	1.25	K Brace Left	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 200.00-180.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T2 180.00-172.42	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T3 172.42-167.59	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T4 167.59-160.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T5 160.00-152.42	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T6 152.42-147.59	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T7 147.59-140.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T8 140.00-120.00	Solid Round	1 1/4 mod (CT5394)	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T9 120.00-100.00	Solid Round	1 1/4 mod (CT5394)	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T10 100.00-80.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T11 80.00-72.42	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T12 72.42-67.59	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T13 67.59-60.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T14 60.00-52.42	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T15 52.42-47.59	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T16 47.59-40.00	Solid Round	1 1/4	A572-50	Solid Round	5/8	A572-50

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
			(50 ksi)			(50 ksi)
T17 40.00-20.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T18 20.00-11.67	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T19 11.67-5.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T20 5.00-0.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 200.00-180.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 180.00-172.42	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 167.59-160.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 160.00-152.42	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T7 147.59-140.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T8 140.00-120.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T9 120.00-100.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T10 100.00-80.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T11 80.00-72.42	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T13 67.59-60.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T14 60.00-52.42	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T16 47.59-40.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T17 40.00-20.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T18 20.00-11.67	Solid Round	7/8	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T19 11.67-5.00	Solid Round	7/8	A572-50 (50 ksi)	Flat Bar		A36 (36 ksi)
T20 5.00-0.00	Solid Round	7/8	A572-50 (50 ksi)	Flat Bar	3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 200.00-180.00	1	Solid Round	7/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T2 180.00-172.42	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 172.42-167.59	1	Solid Round	7/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T4 167.59-160.00	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5 160.00-152.42	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T6 152.42-147.59	1	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T7 147.59-140.00	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T8 140.00-120.00	1	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T9 120.00-100.00	1	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T10 100.00-80.00	1	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle		A36 (36 ksi)
T11 80.00-72.42	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T12 72.42-67.59	1	Solid Round	7/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T13 67.59-60.00	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T14 60.00-52.42	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T15 52.42-47.59	1	Solid Round	7/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T16 47.59-40.00	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T17 40.00-20.00	1	Solid Round	7/8	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T18 20.00-11.67	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T19 11.67-5.00	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T20 5.00-0.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
179.667	EHS	A	7/16	2080.00	10%	21000	0.399	232.84	143.00	0.0000	-5.00	100%
		B	7/16	2080.00	10%	21000	0.399	228.90	143.00	0.0000	0.00	100%
		C	7/16	2080.00	10%	21000	0.399	221.15	143.00	0.0000	10.00	100%
119.667	EHS	A	9/16	3500.00	10%	21000	0.671	188.90	143.00	0.0000	-5.00	100%
		B	9/16	3500.00	10%	21000	0.671	185.65	143.00	0.0000	0.00	100%
		C	9/16	3500.00	10%	21000	0.671	179.37	143.00	0.0000	10.00	100%
59.6667	EHS	A	7/16	2080.00	10%	21000	0.399	156.02	143.00	0.0000	-5.00	100%
		B	7/16	2080.00	10%	21000	0.399	154.02	143.00	0.0000	0.00	100%
		C	7/16	2080.00	10%	21000	0.399	150.44	143.00	0.0000	10.00	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
179.667	Corner						
119.667	Corner						
59.6667	Corner						

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8	A	No	Ar (Leg)	168.00 - 6.00	2	2	0.0000 1.1100	1.1100		0.54
7/8	B	No	Ar (Leg)	168.00 - 6.00	2	2	0.0000 1.1100	1.1100		0.54
7/8	C	No	Ar (Leg)	168.00 - 6.00	2	2	0.0000 1.1100	1.1100		0.54
7/8	A	No	Ar (Leg)	156.00 - 6.00	2	2	0.0000 1.1100	1.1100		0.54
7/8	B	No	Ar (Leg)	156.00 - 6.00	2	2	0.0000 1.1100	1.1100		0.54
7/8	C	No	Ar (Leg)	156.00 - 6.00	2	2	0.0000 1.1100	1.1100		0.54
1 1/4 (AT&T - Existing)	A	No	Ar (Leg)	145.00 - 6.00	2	2	0.0000 1.5500	1.5500		0.66
1 1/4 (AT&T - Existing)	B	No	Ar (Leg)	145.00 - 6.00	2	2	0.0000 1.5500	1.5500		0.66
1 1/4 (AT&T - Existing) **********	C	No	Ar (Leg)	145.00 - 6.00	2	2	0.0000 1.5500	1.5500		0.66
FB-L98B-002 (AT&T - proposed)	C	No	Ar (Leg)	145.00 - 6.00	1	1	0.0000 0.4000	0.4000		0.25
WR-VG122ST-BRDA (AT&T - proposed)	C	No	Ar (Leg)	145.00 - 6.00	2	2	0.0000 0.4000	0.4000		0.25

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
APXV18-209014-C w/mount pipe	A	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	3.67 4.04	3.21 3.84	37.25 68.27
APXV18-209014-C w/mount pipe	B	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	3.67 4.04	3.21 3.84	37.25 68.27
APXV18-209014-C w/mount	C	From Leg	1.00	0.0000	168.00	No Ice	3.67	3.21	37.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
pipe			0.00 0.00			1/2" Ice	4.04	3.84	68.27
MHA Amplifier	A	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	1.01 1.15	0.36 0.47	18.00 24.12
MHA Amplifier	B	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	1.01 1.15	0.36 0.47	18.00 24.12
MHA Amplifier	C	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	1.01 1.15	0.36 0.47	18.00 24.12
**********									
APXV18-209014-C w/mount pipe	A	From Leg	1.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice	3.67 4.04	3.21 3.84	37.25 68.27
APXV18-209014-C w/mount pipe	B	From Leg	1.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice	3.67 4.04	3.21 3.84	37.25 68.27
APXV18-209014-C w/mount pipe	C	From Leg	1.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice	3.67 4.04	3.21 3.84	37.25 68.27
MHA Amplifier	A	From Leg	1.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice	1.01 1.15	0.36 0.47	18.00 24.12
MHA Amplifier	B	From Leg	1.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice	1.01 1.15	0.36 0.47	18.00 24.12
MHA Amplifier	C	From Leg	1.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice	1.01 1.15	0.36 0.47	18.00 24.12
**********									
SBNH-1D4545A w/mount pipe (AT&T - Proposed)	A	From Leg	1.50 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	9.23 9.82	5.43 6.30	61.90 124.53
Powerwave P65-17-XLH-RR w/mount pipe (AT&T - Proposed)	B	From Leg	1.50 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	11.75 12.47	9.39 10.90	122.11 209.23
KMW AM-X-CD-17-65-00T-RET w/mount pipe (AT&T - Proposed)	C	From Leg	1.50 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	11.60 12.32	9.39 10.90	111.61 198.07
TMA DTMABP7819VG12A (AT&T - Proposed)	A	From Leg	0.50 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	1.14 1.28	0.39 0.49	19.20 26.50
TMA DTMABP7819VG12A (AT&T - Proposed)	B	From Leg	0.50 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	1.14 1.28	0.39 0.49	19.20 26.50
TMA DTMABP7819VG12A (AT&T - Proposed)	C	From Leg	0.50 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	1.14 1.28	0.39 0.49	19.20 26.50

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy
17	Dead+Wind 60 deg+Ice+Temp+Guy
18	Dead+Wind 90 deg+Ice+Temp+Guy
19	Dead+Wind 120 deg+Ice+Temp+Guy
20	Dead+Wind 150 deg+Ice+Temp+Guy
21	Dead+Wind 180 deg+Ice+Temp+Guy
22	Dead+Wind 210 deg+Ice+Temp+Guy
23	Dead+Wind 240 deg+Ice+Temp+Guy
24	Dead+Wind 270 deg+Ice+Temp+Guy
25	Dead+Wind 300 deg+Ice+Temp+Guy
26	Dead+Wind 330 deg+Ice+Temp+Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	23	45823.86	865.85	-495.75
	Max. H_x	11	35638.88	1288.00	81.07
	Max. H_z	2	36832.47	-8.61	1239.39
	Max. M_x	1	0.00	-0.67	0.45
	Max. M_z	1	0.00	-0.67	0.45
	Max. Torsion	12	60.01	1239.40	711.75
	Min. Vert	1	21688.04	-0.67	0.45
	Min. H_x	5	34416.08	-1326.68	78.34
	Min. H_z	8	30920.92	0.95	-1417.71
	Min. M_x	1	0.00	-0.67	0.45
	Min. M_z	1	0.00	-0.67	0.45

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. Torsion	7	-74.66	-583.72	-1147.91
Guy C @ 143 ft Elev 10 ft Azimuth 240 deg	Max. Vert	10	-504.89	-370.10	213.62
	Max. H_x	10	-504.89	-370.10	213.62
	Max. H_z	17	-17400.10	-21059.81	12158.46
	Min. Vert	17	-17400.10	-21059.81	12158.46
	Min. H_x	17	-17400.10	-21059.81	12158.46
	Min. H_z	10	-504.89	-370.10	213.62
Guy B @ 143 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-627.95	411.60	237.43
	Max. H_x	25	-18872.31	20919.72	12077.64
	Max. H_z	25	-18872.31	20919.72	12077.64
	Min. Vert	25	-18872.31	20919.72	12077.64
	Min. H_x	6	-627.95	411.60	237.43
	Min. H_z	6	-627.95	411.60	237.43
Guy A @ 143 ft Elev -5 ft Azimuth 0 deg	Max. Vert	2	-694.17	0.13	-499.29
	Max. H_x	24	-10571.92	1037.54	-12581.72
	Max. H_z	2	-694.17	0.13	-499.29
	Min. Vert	21	-19592.60	-0.22	-24063.51
	Min. H_x	18	-10778.19	-1034.07	-12792.93
	Min. H_z	21	-19592.60	-0.22	-24063.51

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	21688.04	0.67	-0.45	0.00	0.00	4.03
Dead+Wind 0 deg - No Ice+Guy	36832.47	8.61	-1239.39	0.00	0.00	-24.40
Dead+Wind 30 deg - No Ice+Guy	34157.72	728.63	-1117.15	0.00	0.00	12.84
Dead+Wind 60 deg - No Ice+Guy	29664.77	1257.09	-725.10	0.00	0.00	31.79
Dead+Wind 90 deg - No Ice+Guy	34416.08	1326.68	-78.34	0.00	0.00	38.08
Dead+Wind 120 deg - No Ice+Guy	37369.75	1066.21	597.53	0.00	0.00	60.30
Dead+Wind 150 deg - No Ice+Guy	35439.89	583.72	1147.91	0.00	0.00	74.66
Dead+Wind 180 deg - No Ice+Guy	30920.92	-0.95	1417.71	0.00	0.00	48.72
Dead+Wind 210 deg - No Ice+Guy	35984.70	-567.53	1143.06	0.00	0.00	4.22
Dead+Wind 240 deg - No Ice+Guy	38454.13	-1029.95	589.76	0.00	0.00	-8.46
Dead+Wind 270 deg - No Ice+Guy	35638.88	-1288.00	-81.07	0.00	0.00	-21.69
Dead+Wind 300 deg - No Ice+Guy	30505.17	-1239.40	-711.75	0.00	0.00	-60.01
Dead+Wind 330 deg - No Ice+Guy	34836.48	-712.05	-1096.92	0.00	0.00	-57.88

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Ice+Temp+Guy	30937.45	2.05	-1.58	0.00	0.00	6.21
Dead+Wind 0 deg+Ice+Temp+Guy	44696.25	8.46	-1034.28	0.00	0.00	-15.28
Dead+Wind 30 deg+Ice+Temp+Guy	43871.10	564.21	-909.23	0.00	0.00	29.61
Dead+Wind 60 deg+Ice+Temp+Guy	42889.52	960.00	-553.96	0.00	0.00	24.31
Dead+Wind 90 deg+Ice+Temp+Guy	43994.95	1067.80	-37.80	0.00	0.00	14.93
Dead+Wind 120 deg+Ice+Temp+Guy	45072.75	892.81	499.02	0.00	0.00	49.83
Dead+Wind 150 deg+Ice+Temp+Guy	44819.61	496.99	907.32	0.00	0.00	74.49
Dead+Wind 180 deg+Ice+Temp+Guy	43869.71	1.12	1072.62	0.00	0.00	36.47
Dead+Wind 210 deg+Ice+Temp+Guy	45112.00	-485.00	906.52	0.00	0.00	-9.20
Dead+Wind 240 deg+Ice+Temp+Guy	45823.86	-865.85	495.75	0.00	0.00	-3.38
Dead+Wind 270 deg+Ice+Temp+Guy	44834.36	-1039.36	-35.28	0.00	0.00	5.16
Dead+Wind 300 deg+Ice+Temp+Guy	43553.56	-939.70	-541.05	0.00	0.00	-30.86
Dead+Wind 330 deg+Ice+Temp+Guy	44418.51	-546.12	-894.42	0.00	0.00	-53.68
Dead+Wind 0 deg - Service+Guy	22007.25	1.20	-422.92	0.00	0.00	-10.54
Dead+Wind 30 deg - Service+Guy	22018.86	212.94	-366.24	0.00	0.00	7.77
Dead+Wind 60 deg - Service+Guy	22065.61	367.06	-211.77	0.00	0.00	15.16
Dead+Wind 90 deg - Service+Guy	22031.31	423.98	-1.35	0.00	0.00	19.67
Dead+Wind 120 deg - Service+Guy	22033.82	367.23	209.95	0.00	0.00	30.22
Dead+Wind 150 deg - Service+Guy	22068.74	211.58	364.34	0.00	0.00	33.90
Dead+Wind 180 deg - Service+Guy	22134.55	0.18	420.44	0.00	0.00	19.44
Dead+Wind 210 deg - Service+Guy	22115.85	-210.83	364.84	0.00	0.00	0.70
Dead+Wind 240 deg - Service+Guy	22124.90	-365.59	210.80	0.00	0.00	-6.82
Dead+Wind 270 deg - Service+Guy	22107.57	-422.06	0.03	0.00	0.00	-11.32
Dead+Wind 300 deg - Service+Guy	22120.64	-364.92	-210.35	0.00	0.00	-21.69
Dead+Wind 330 deg - Service+Guy	22048.30	-210.58	-365.32	0.00	0.00	-25.01

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-8010.72	0.00	-0.47	8010.72	0.64	0.010%
2	-8.35	-8097.35	-20840.45	8.28	8097.32	20838.88	0.007%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
3	10381.08	-7990.05	-17990.15	-10381.34	7990.03	17988.62	0.007%
4	17968.17	-7886.45	-10378.26	-17968.31	7886.46	10379.50	0.006%
5	20762.14	-7996.71	3.28	-20760.96	7996.69	-2.28	0.007%
6	18037.74	-8109.47	10428.07	-18036.06	8109.43	-10426.95	0.009%
7	10393.17	-8017.38	18004.53	-10391.69	8017.35	-18003.80	0.007%
8	8.35	-7924.08	20766.82	-10.15	7924.09	-20767.12	0.008%
9	-10381.08	-8031.38	17990.15	10379.63	8031.35	-17989.51	0.007%
10	-18031.94	-8134.98	10415.08	18030.28	8134.94	-10414.07	0.009%
11	-20762.14	-8024.72	-3.28	20760.92	8024.69	4.24	0.007%
12	-17973.98	-7911.96	-10391.25	17973.37	7911.97	10392.64	0.007%
13	-10393.17	-8004.05	-18004.53	10393.31	8004.02	18002.91	0.007%
14	0.00	-14155.84	0.00	-0.87	14155.84	1.11	0.010%
15	-19.08	-14354.95	-20254.07	19.02	14354.91	20252.69	0.006%
16	10066.41	-14108.09	-17457.08	-10066.70	14108.07	17455.89	0.005%
17	17427.41	-13869.81	-10071.53	-17427.31	13869.82	10072.87	0.006%
18	20132.66	-14123.55	7.42	-20131.77	14123.52	-6.55	0.005%
19	17516.55	-14383.05	10145.03	-17515.36	14383.01	-10144.24	0.006%
20	10093.96	-14171.30	17489.95	-10092.50	14171.26	-17489.39	0.006%
21	19.08	-13956.74	20166.26	-20.42	13956.74	-20166.35	0.005%
22	-10066.41	-14203.59	17457.08	10064.94	14203.56	-17456.58	0.006%
23	-17503.45	-14441.88	10115.43	17502.21	14441.84	-10114.68	0.006%
24	-20132.66	-14188.14	-7.42	20131.74	14188.11	8.28	0.005%
25	-17440.50	-13928.64	-10101.12	17439.90	13928.64	10102.34	0.006%
26	-10093.96	-14140.39	-17489.95	10094.22	14140.35	17488.44	0.006%
27	-2.31	-8034.71	-5772.98	2.35	8034.71	5772.66	0.003%
28	2875.65	-8004.99	-4983.42	-2875.74	8004.99	4983.10	0.003%
29	4977.33	-7976.29	-2874.86	-4977.17	7976.29	2874.76	0.002%
30	5751.28	-8006.84	0.91	-5751.03	8006.83	-0.68	0.003%
31	4996.60	-8038.07	2888.66	-4996.25	8038.07	-2888.54	0.004%
32	2879.00	-8012.56	4987.40	-2878.63	8012.56	-4987.31	0.004%
33	2.31	-7986.72	5752.58	-2.35	7986.71	-5752.39	0.002%
34	-2875.65	-8016.44	4983.42	2875.22	8016.44	-4983.31	0.004%
35	-4995.00	-8045.14	2885.06	4994.54	8045.13	-2884.84	0.005%
36	-5751.28	-8014.59	-0.91	5750.98	8014.59	1.17	0.004%
37	-4978.94	-7983.36	-2878.46	4978.81	7983.36	2878.41	0.001%
38	-2879.00	-8008.87	-4987.40	2879.11	8008.87	4987.08	0.004%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	0.844	33	0.2913	0.3450
T2	180 - 172.415	1.928	33	0.3015	0.3453
T3	172.415 - 167.585	2.351	33	0.2780	0.3445
T4	167.585 - 160	2.586	33	0.2363	0.3469
T5	160 - 152.415	2.847	33	0.1404	0.3510
T6	152.415 - 147.585	2.936	33	0.0219	0.3570
T7	147.585 - 140	2.890	33	0.0843	0.3595
T8	140 - 120	2.652	33	0.1883	0.3559
T9	120 - 100	1.745	33	0.1293	0.3396
T10	100 - 80	1.600	33	0.0096	0.3247
T11	80 - 72.415	1.463	35	0.0716	0.3179
T12	72.415 - 67.585	1.338	35	0.0794	0.3181
T13	67.585 - 60	1.262	35	0.0654	0.3151
T14	60 - 52.415	1.184	35	0.0065	0.3053
T15	52.415 - 47.585	1.245	35	0.0646	0.2960

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T16	47.585 - 40	1.313	35	0.0695	0.2947
T17	40 - 20	1.401	35	0.0380	0.2885
T18	20 - 11.67	1.123	35	0.1776	0.2759
T19	11.67 - 5	0.733	35	0.2583	0.2730
T20	5 - 0	0.334	35	0.2987	0.2881

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
179.67	Guy	33	1.947	0.3012	0.3452	33435
168.00	APXV18-209014-C w/mount pipe	33	2.567	0.2403	0.3466	5620
156.00	APXV18-209014-C w/mount pipe	33	2.918	0.0635	0.3541	3564
145.00	SBNH-1D4545A w/mount pipe	33	2.829	0.1300	0.3590	3561
119.67	Guy	33	1.735	0.1264	0.3394	3742
59.67	Guy	35	1.184	0.0070	0.3048	4340

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	200 - 180	Leg	1 1/4	3	-4127.54	26712.12	15.5	Pass
T2	180 - 172.415	Leg	1 1/4	63	-16550.00	36906.64	44.8	Pass
T3	172.415 - 167.585	Leg	1 1/4	105	-24973.70	26410.06	94.6	Pass
T4	167.585 - 160	Leg	1 1/4	123	-33873.50	38555.56	87.9	Pass
T5	160 - 152.415	Leg	1 1/4	165	-36601.40	38597.68	94.8	Pass
T6	152.415 - 147.585	Leg	1 1/4	207	-36273.60	38559.82	94.1	Pass
T7	147.585 - 140	Leg	1 1/4	231	-34059.30	38354.94	88.8	Pass
T8	140 - 120	Leg	1 1/4 mod (CT5394)	271	-46179.70	49463.49	93.4	Pass
T9	120 - 100	Leg	1 1/4 mod (CT5394)	374	-45846.00	47370.29	96.8	Pass
T10	100 - 80	Leg	1 1/4	476	-17649.20	25491.09	69.2	Pass
T11	80 - 72.415	Leg	1 1/4	535	-16798.30	30845.88	54.5	Pass
T12	72.415 - 67.585	Leg	1 1/4	579	-21641.10	25652.25	84.4	Pass
T13	67.585 - 60	Leg	1 1/4	595	-34165.00	36379.83	93.9	Pass
T14	60 - 52.415	Leg	1 1/4	637	-34165.60	36462.61	93.7	Pass
T15	52.415 - 47.585	Leg	1 1/4	680	-18116.00	25322.73	71.5	Pass
T16	47.585 - 40	Leg	1 1/4	699	-28356.30	33030.41	85.8	Pass
T17	40 - 20	Leg	1 1/4	741	-36435.90	36833.59	98.9	Pass
T18	20 - 11.67	Leg	1 1/4	843	-35587.60	36319.72	98.0	Pass
T19	11.67 - 5	Leg	1 1/4	882	-29145.50	32370.84	90.0	Pass
T20	5 - 0	Leg	1 1/4	915	-22361.40	30610.34	73.1	Pass
T1	200 - 180	Diagonal	5/8	14	-524.36	6354.25	8.3	Pass
T2	180 - 172.415	Diagonal	5/8	94	-2406.67	6353.44	37.9	Pass
T3	172.415 - 167.585	Diagonal	5/8	118	-2117.10	6356.65	33.3	Pass
T4	167.585 - 160	Diagonal	5/8	130	-1516.08	6353.44	23.9	Pass
T5	160 - 152.415	Diagonal	5/8	202	-1425.49	6353.44	22.4	Pass
T6	152.415 - 147.585	Diagonal	5/8	212	-791.33	6356.65	12.4	Pass
T7	147.585 - 140	Diagonal	5/8	238	-3240.69	6353.44	51.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T8	140 - 120	Diagonal	5/8	283	-5998.17	6433.52	93.2	Pass
T9	120 - 100	Diagonal	5/8	468	-3454.10	6433.52	53.7	Pass
T10	100 - 80	Diagonal	5/8	534	-1452.90	6354.25	22.9	Pass
T11	80 - 72.415	Diagonal	5/8	544	-1596.74	6353.44	25.1	Pass
T12	72.415 - 67.585	Diagonal	5/8	583	-1958.97	6356.65	30.8	Pass
T13	67.585 - 60	Diagonal	5/8	604	-3437.12	6353.44	54.1	Pass
T14	60 - 52.415	Diagonal	5/8	670	-3234.41	6353.44	50.9	Pass
T15	52.415 - 47.585	Diagonal	5/8	696	-2473.60	6356.65	38.9	Pass
T16	47.585 - 40	Diagonal	5/8	738	-2150.03	6353.44	33.8	Pass
T17	40 - 20	Diagonal	5/8	840	-2004.61	6354.25	31.5	Pass
T18	20 - 11.67	Diagonal	5/8	847	-1438.37	5978.00	24.1	Pass
T19	11.67 - 5	Diagonal	5/8	886	-2039.20	5974.15	34.1	Pass
T20	5 - 0	Diagonal	5/8	924	-1461.07	6969.95	21.0	Pass
T2	180 - 172.415	Horizontal	L1 3/4x1 3/4x3/16	97	119.34	17882.99	0.7	Pass
T4	167.585 - 160	Horizontal	L1 3/4x1 3/4x3/16	133	-192.27	12302.91	1.6	Pass
T5	160 - 152.415	Horizontal	L1 3/4x1 3/4x3/16	189	344.40	17882.99	1.9	Pass
T6	152.415 - 147.585	Horizontal	L1 3/4x1 3/4x3/16	225	219.87	17882.99	1.2	Pass
T7	147.585 - 140	Horizontal	L1 3/4x1 3/4x3/16	259	-604.24	12302.91	4.9	Pass
T8	140 - 120	Horizontal	L1 3/4x1 3/4x3/16	286	-792.63	12323.61	6.4	Pass
T9	120 - 100	Horizontal	L1 3/4x1 3/4x3/16	469	-784.11	12323.61	6.4	Pass
T11	80 - 72.415	Horizontal	L1 3/4x1 3/4x3/16	571	237.39	17882.99	1.3	Pass
T13	67.585 - 60	Horizontal	L1 3/4x1 3/4x3/16	607	-402.45	12302.91	3.3	Pass
T14	60 - 52.415	Horizontal	L1 3/4x1 3/4x3/16	673	615.29	17882.99	3.4	Pass
T16	47.585 - 40	Horizontal	L1 3/4x1 3/4x3/16	710	369.17	17882.99	2.1	Pass
T17	40 - 20	Horizontal	L1 3/4x1 3/4x3/16	836	442.01	17882.99	2.5	Pass
T18	20 - 11.67	Horizontal	L1 3/4x1 3/4x3/16	869	264.41	17882.99	1.5	Pass
T19	11.67 - 5	Horizontal	L1 3/4x1 3/4x3/16	889	257.53	17882.99	1.4	Pass
T20	5 - 0	Horizontal	7/8	919	384.89	24046.79	1.6	Pass
T1	200 - 180	Top Girt	7/8	4	-6.53	14551.29	0.0	Pass
T4	167.585 - 160	Top Girt	L1 3/4x1 3/4x3/16	126	-219.22	12302.91	1.8	Pass
T5	160 - 152.415	Top Girt	7/8	166	-612.30	14551.29	4.2	Pass
T7	147.585 - 140	Top Girt	L1 3/4x1 3/4x3/16	233	215.69	17882.99	1.2	Pass
T8	140 - 120	Top Girt	7/8	274	-1446.09	14675.66	9.9	Pass
T10	100 - 80	Top Girt	7/8	480	-715.30	14551.29	4.9	Pass
T11	80 - 72.415	Top Girt	7/8	538	-566.61	14551.29	3.9	Pass
T13	67.585 - 60	Top Girt	L1 3/4x1 3/4x3/16	598	145.51	17882.99	0.8	Pass
T16	47.585 - 40	Top Girt	L1 3/4x1 3/4x3/16	701	182.11	17882.99	1.0	Pass
T17	40 - 20	Top Girt	7/8	744	-753.23	14551.29	5.2	Pass
T18	20 - 11.67	Top Girt	7/8	844	-292.82	14551.29	2.0	Pass
T19	11.67 - 5	Top Girt	7/8	884	248.24	24046.79	1.0	Pass
T20	5 - 0	Top Girt	7/8	916	2388.49	24046.79	9.9	Pass
T1	200 - 180	Bottom Girt	7/8	8	-232.09	14551.29	1.6	Pass
T2	180 - 172.415	Bottom Girt	L1 3/4x1 3/4x3/16	68	109.60	17882.99	0.6	Pass
T4	167.585 - 160	Bottom Girt	7/8	127	-589.99	14551.29	4.1	Pass
T5	160 - 152.415	Bottom Girt	L1 3/4x1 3/4x3/16	171	221.34	17882.99	1.2	Pass
T7	147.585 - 140	Bottom Girt	7/8	235	-1368.64	14551.29	9.4	Pass
T8	140 - 120	Bottom Girt	7/8	277	-2327.31	14675.66	15.9	Pass
T9	120 - 100	Bottom Girt	7/8	381	-833.96	14675.66	5.7	Pass
T10	100 - 80	Bottom Girt	7/8	481	-494.60	14551.29	3.4	Pass
T11	80 - 72.415	Bottom Girt	L1 3/4x1 3/4x3/16	541	148.74	17882.99	0.8	Pass
T13	67.585 - 60	Bottom Girt	7/8	601	-1304.29	14551.29	9.0	Pass
T14	60 - 52.415	Bottom Girt	L1 3/4x1 3/4x3/16	643	166.32	17882.99	0.9	Pass
T16	47.585 - 40	Bottom Girt	7/8	705	-785.58	14551.29	5.4	Pass
T17	40 - 20	Bottom Girt	7/8	745	-226.81	14551.29	1.6	Pass
T1	200 - 180	Mid Girt	7/8	10	-6.26	14551.29	0.0	Pass
T3	172.415 - 167.585	Mid Girt	7/8	107	140.27	24046.79	0.6	Pass
T6	152.415 - 147.585	Mid Girt	7/8	210	218.18	24046.79	0.9	Pass
T8	140 - 120	Mid Girt	7/8	280	137.71	24046.79	0.6	Pass

tnxTower	Job: CT 5394 Old Saybrook, CT	Page: 13 of 13
Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Project: 200 ft Guyed Tower	Date: 08:41:57 04/17/13
	Client: AT&T	Designed by: kw

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T9	120 - 100	Mid Girt	7/8	382	248.19	24046.79	1.0	Pass
T10	100 - 80	Mid Girt	7/8	485	83.50	24046.79	0.3	Pass
T12	72.415 - 67.585	Mid Girt	7/8	580	105.20	24046.79	0.4	Pass
T15	52.415 - 47.585	Mid Girt	7/8	683	134.20	24046.79	0.6	Pass
T17	40 - 20	Mid Girt	7/8	749	282.73	24046.79	1.2	Pass
T2	180 - 172.415	Guy A@179.667	7/16	939	9751.15	10400.00	93.8	Pass
T9	120 - 100	Guy A@119.667	9/16	942	14440.50	17500.00	82.5	Pass
T14	60 - 52.415	Guy A@59.6667	7/16	945	8373.65	10400.00	80.5	Pass
T2	180 - 172.415	Guy B@179.667	7/16	938	9630.61	10400.00	92.6	Pass
T9	120 - 100	Guy B@119.667	9/16	941	14234.20	17500.00	81.3	Pass
T14	60 - 52.415	Guy B@59.6667	7/16	944	8249.06	10400.00	79.3	Pass
T2	180 - 172.415	Guy C@179.667	7/16	937	9401.31	10400.00	90.4	Pass
T9	120 - 100	Guy C@119.667	9/16	940	13801.40	17500.00	78.9	Pass
T14	60 - 52.415	Guy C@59.6667	7/16	943	8012.51	10400.00	77.0	Pass
T2	180 - 172.415	Top Guy Pull-Off@179.667	2x1/4	64	3316.07	14396.40	23.0	Pass
T9	120 - 100	Top Guy Pull-Off@119.667	2x1/4	377	6535.40	14396.40	45.4	Pass
T14	60 - 52.415	Top Guy Pull-Off@59.6667	2x1/4	641	4565.31	14396.40	31.7	Pass

Summary		
Leg (T17)	98.9	Pass
Diagonal (T8)	93.2	Pass
Horizontal (T8)	6.4	Pass
Top Girt (T20)	9.9	Pass
Bottom Girt (T8)	15.9	Pass
Mid Girt (T17)	1.2	Pass
Guy A (T2)	93.8	Pass
Guy B (T2)	92.6	Pass
Guy C (T2)	90.4	Pass
Top Guy Pull-Off (T9)	45.4	Pass
RATING =	**98.9**	**Pass**

DATE: 4/17/2013
Project Name: CT5394
Project No.:
Design By: KW Chk'd By: Page 1 of 5

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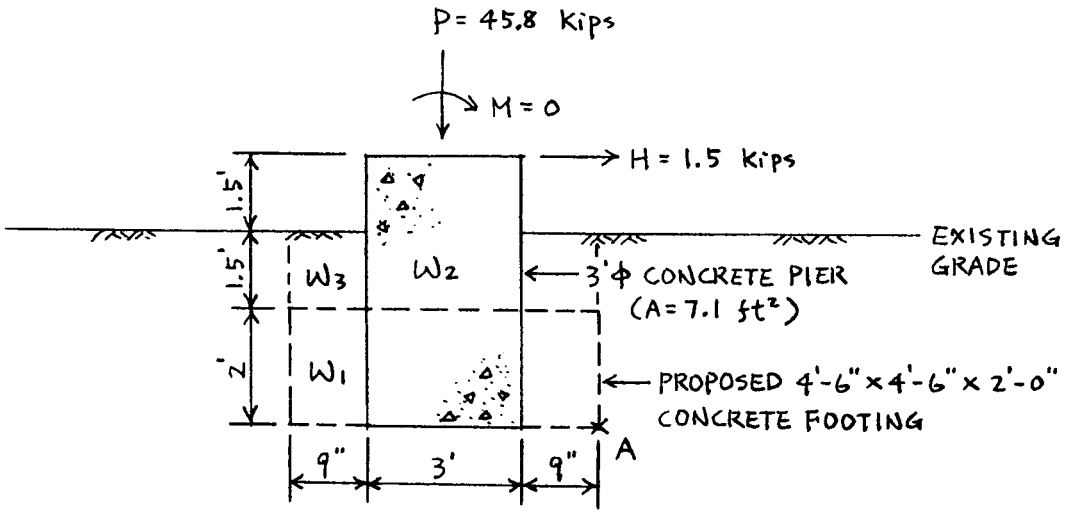
FOUNDATION ANALYSIS (TOWER MAST)



MAXIMUM REACTIONS

P = 45.8 kips

H = 1.5 kips

M = 0 ft-k

BEARING PRESSURE AT CONCRETE PIER DUE TO VERTICAL LOAD

$45.8/7.1 = 6.45$ ksf > 4 ksf NG!

ADD 4'-6" x 4'-6" x 2'-0" CONCRETE FOOTING

$W_1 = 0.15 \times 4.5 \times 4.5 \times 2 = 6.1$ kips

$W_2 = 0.15 \times 7.1 \times 3 = 3.2$ kips

$W_3 = 0.103 \times (4.5 \times 4.5 - 7.1) \times 1.5 = 2.0$ kips

$\Sigma W = 11.3$ kips

$M_R(@A) = (45.8 + 11.3) \times 2.25 = 128.5$ ft-k

$M_{OT}(@A) = 1.5 \times 5 = 7.5$ ft-k

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F.S. (OVERTURNING) = $\frac{128.5}{7.5}$ = 17.1 OK

F.S. (SLIDING) = $\frac{0.5 \times 57.1}{1.5}$ = 19.0 OK

CALCULATE BEARING PRESSURE

$a = \frac{128.5 - 7.5}{57.1} = 2.12$ ft

$e = 2.25 - 2.12 = 0.13 < 4.5/6 = 0.75$

$q = \frac{57.1}{4.5 \times 4.5} \pm \frac{57.1 \times 0.13}{\frac{1}{6} \times 4.5^3}$

$= 2.82 \pm 0.49 = \begin{matrix} 3.31 \\ 2.33 \end{matrix}$ ksf $<$ 4.0 ksf OK

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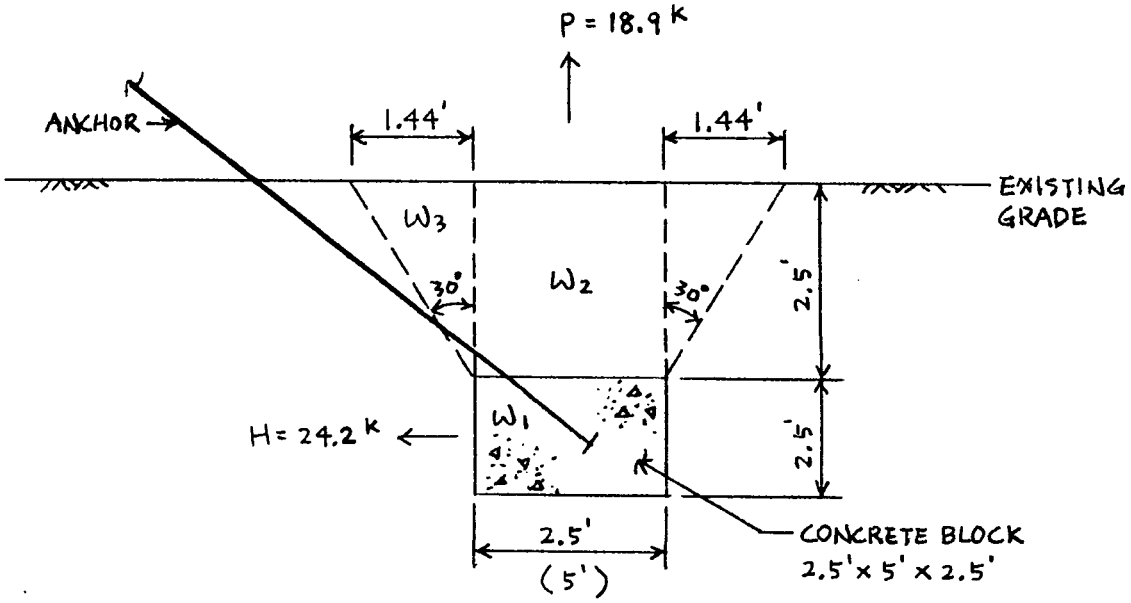
GUY ANCHOR 1



MAXIMUM REACTIONS

$P = 18.9$ kips

$H = 24.2$ kips

$W_1 = 0.15 \times 2.5 \times 5 \times 2.5 = 4.7$ kips

$W_2 = 0.103 \times 2.5 \times 5 \times 2.5 = 3.2$ kips

$W_3 = 0.103 \times (3.94 \times 6.44 - 2.5 \times 5) \times 2.5 = 3.3$ kips

CHECK UPLIFT

$$\frac{W_R}{2.0} + \frac{W_c}{1.25} = \frac{6.5}{2.0} + \frac{4.7}{1.25} = 7.0 \text{ kips} < 18.9 \text{ kips} \quad \text{NG!}$$

PROPOSED CONCRETE BLOCK 5' x 9' x 2.5'

$W_1 = 0.15 \times 5 \times 9 \times 2.5 = 16.9$

$W_2 = 0.103 \times 5 \times 9 \times 2.5 = 11.6$

$W_3 = 0.103 \times (6.44 \times 10.44 - 5 \times 9) \times 2.5 = 5.7$

CHECK UPLIFT

$$\frac{W_R}{2.0} + \frac{W_c}{1.25} = \frac{17.3}{2.0} + \frac{16.9}{1.25} = 22.2 \text{ kips} > 18.9 \text{ kips} \quad \text{OK}$$

$$\frac{W_R + W_c}{1.5} = \frac{34.2}{1.5} = 22.8 \text{ kips} > 18.9 \text{ kips} \quad \text{OK}$$

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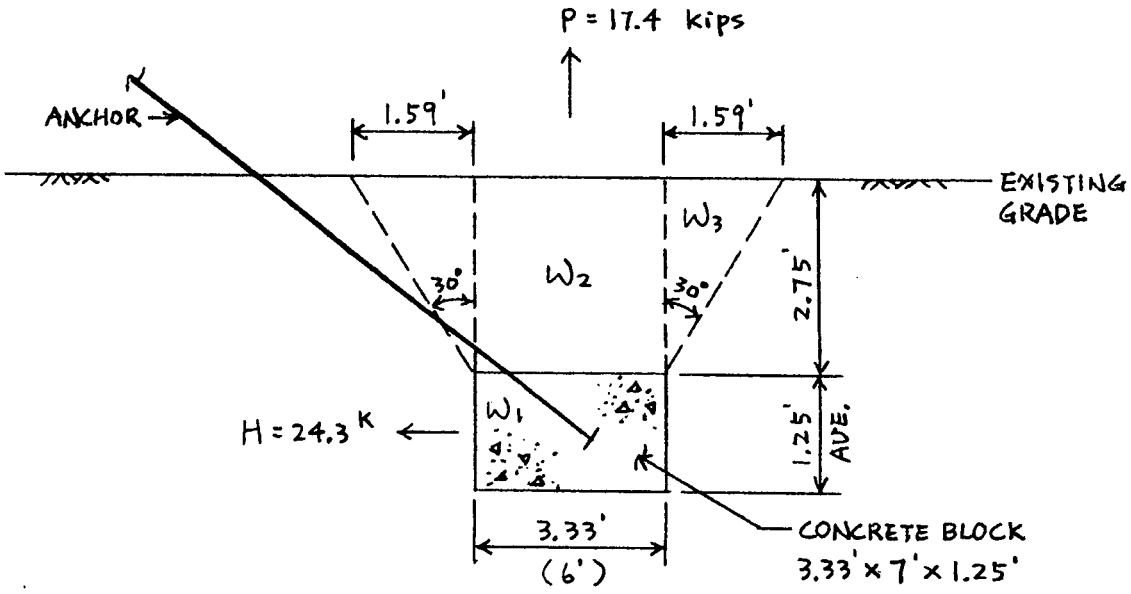
GUY ANCHOR 2



MAXIMUM REACTIONS

$P = 17.4$ kips

$H = 24.3$ kips

$W_1 = 0.15 \times 3.33 \times 7 \times 1.25 = 4.4$ kips

$W_2 = 0.103 \times 3.33 \times 7 \times 2.75 = 6.6$ kips

$W_3 = 0.103 \times (4.92 \times 8.59 - 3.33 \times 7) \times 2.75 = 5.4$ kips

CHECK UPLIFT

$$\frac{12.0}{2} + \frac{4.4}{1.25} = 9.52 \text{ kips} < 17.4 \text{ kips} \quad \text{NG!}$$

PROPOSED CONCRETE BLOCK $6' \times 12' \times 1.25'$

$W_1 = 0.15 \times 6 \times 12 \times 1.25 = 13.5$

$W_2 = 0.103 \times 6 \times 12 \times 2.75 = 20.4$

$W_3 = 0.103 \times (7.59 \times 13.59 - 6 \times 12) \times 2.75 = 8.8$

CHECK UPLIFT

$$\frac{29.2}{2.0} + \frac{13.5}{1.25} = 25.4 \text{ kips} > 17.4 \text{ kips} \quad \text{OK}$$

$$\frac{42.7}{1.5} = 28.5 \text{ kips} > 17.4 \text{ kips} \quad \text{OK}$$

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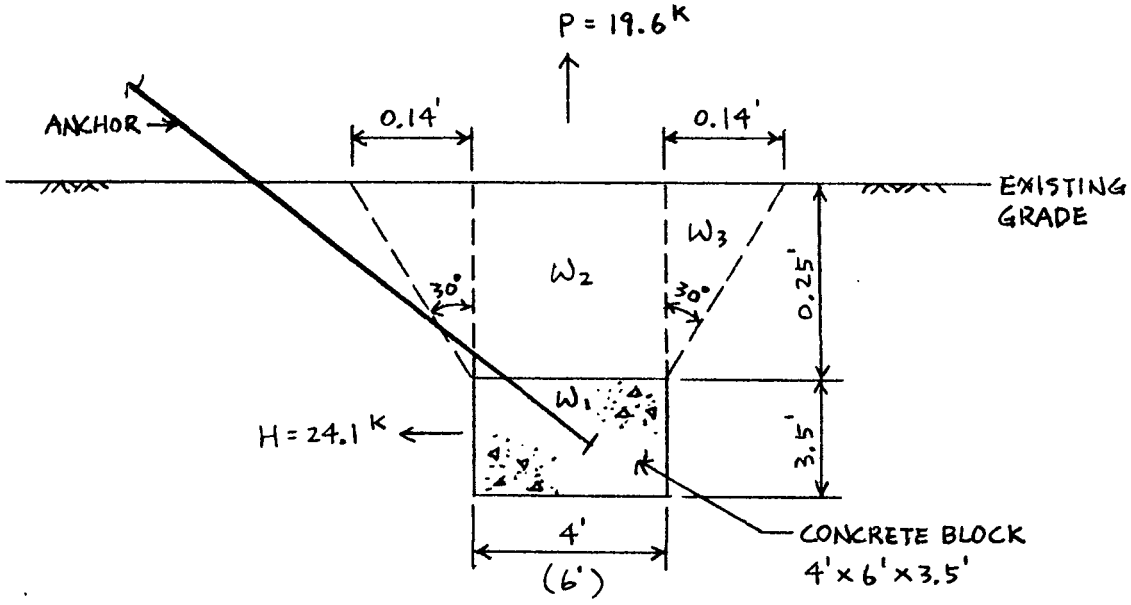
GUY ANCHOR 3



MAXIMUM REACTIONS

P = 19.6 kips

H = 24.1 kips

PROPOSED CONCRETE BLOCK 6'x10'x3.5'

$W_1 = 0.15 \times 4 \times 6 \times 3.5 = 12.6$ kips

$W_2 = 0.103 \times 4 \times 6 \times 0.25 = 0.6$ kips

$W_3 = 0.103 \times (4.14 \times 6.14 - 4 \times 6) \times 0.25 = 0$

CHECK UPLIFT

$\frac{0.6}{2} + \frac{12.6}{1.25} = 10.4$ kips $<$ 19.6 kips NG!

PROPOSED CONCRETE BLOCK 6'x10'x3.5'

$W_1 = 0.15 \times 6 \times 10 \times 3.5 = 31.5$

$W_2 = 0.103 \times 6 \times 10 \times 0.25 = 1.5$

$W_3 = 0.103 \times (6.14 \times 10.14 - 6 \times 10) \times 0.25 = 0.1$

CHECK UPLIFT

$\frac{1.6}{2.0} + \frac{31.5}{1.25} = 26.0$ kips $>$ 19.6 kips OK

$\frac{33.1}{1.5} = 22.1$ kips $>$ 19.6 kips OK

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Calculated Radio Frequency Emissions

at&t

CT5394

(North Old Saybrook)

Route 9 Middlesex Turnpike, Old Saybrook, CT 06475

April 26, 2013

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the guide wire tower located at Route 9 Middlesex Turnpike in Old Saybrook, CT. The coordinates of the tower are 41° 19' 41.2" N, 72° 23' 19.3" W.

AT&T is proposing the following modifications:

1) Install three multi-band (700/850/1900/2100 MHz) antennas for their LTE network (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \cdot EIRP}{4\pi \cdot R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Cingular GSM	145	1900	2	427	0.0146	1.0000	1.46 %
Cingular UMTS	145	869	1	500	0.0086	0.5867	1.45 %
VoiceStream	170	1930	4	412.8	0.0205	1.0000	2.05%
Verizon	120	874.5	19	100	0.0474	0.5830	8.14%
AT&T UMTS	145	880	2	565	0.0019	0.5867	0.33%
AT&T UMTS	145	1900	2	875	0.0030	1.0000	0.30%
AT&T LTE	145	734	1	1771	0.0030	0.4893	0.62%
AT&T GSM	145	880	1	283	0.0005	0.5867	0.08%
AT&T GSM	145	1900	4	525	0.0036	1.0000	0.36%
						Total	**11.88%**

Table 1: Carrier Information[1] [2] [3]

[1] The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 1/14/2013. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[2] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

[3] Antenna height listed for AT&T is in reference to the Hudson Design Group Structural Analysis dated April 17, 2013.

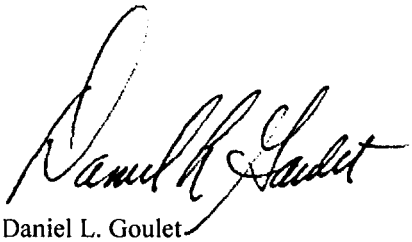
5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **11.88% of the FCC limit.**

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

April 26, 2013
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[4] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[5] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

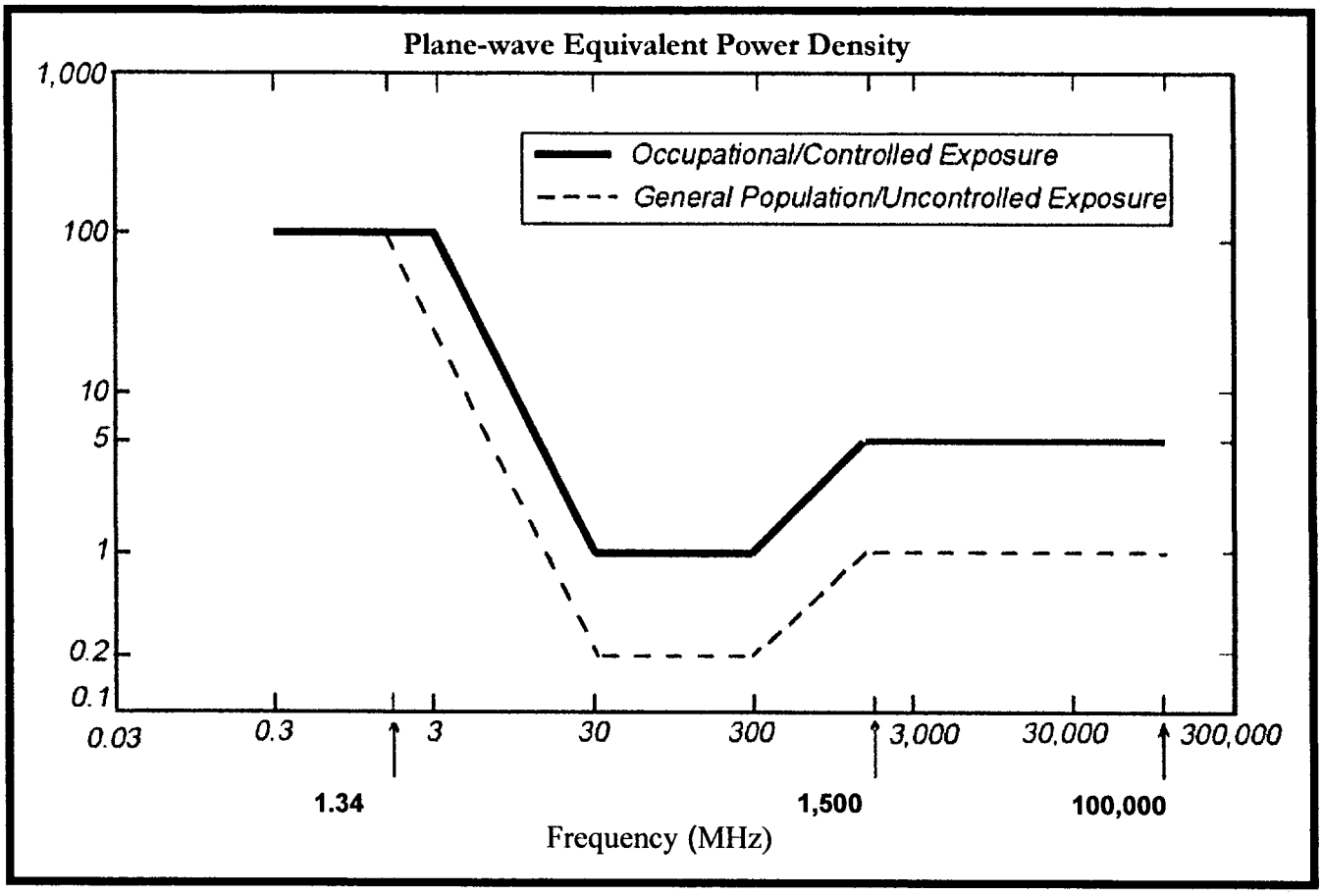
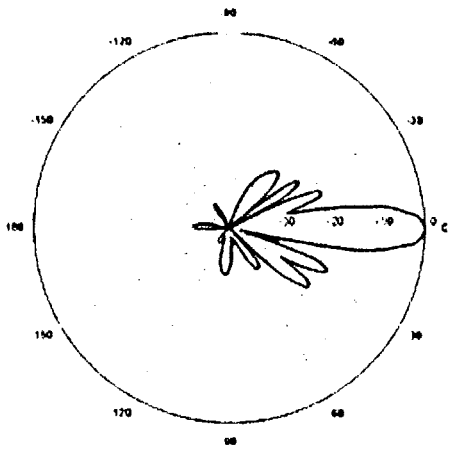


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

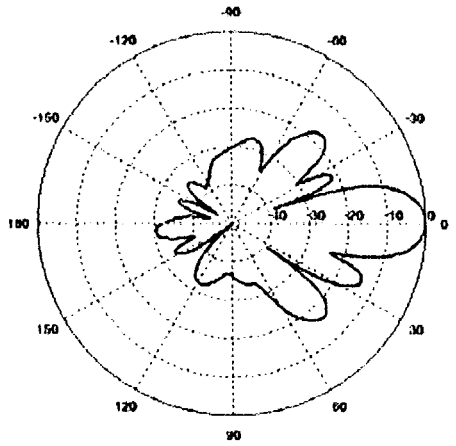
700 MHz

Manufacturer:	KMW Communications
Model #:	AM-X-CD17-65-00T-RET
Frequency Band:	698-806 MHz
Gain:	14.7 dBd
Vertical Beamwidth:	10°
Horizontal Beamwidth:	66°
Polarization:	Dual Slant ± 45°
Size L x W x D:	96.0" x 11.8" x 6.0"



850 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	82°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"