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October 14, 2016

**VIA EMAIL AND OVERNIGHT DELIVERY**

Hon. Robert Stein, Chairman  
and Members of the Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

Re: New Cingular Wireless PCS, LLC ("AT&T")  
Petition for a Declaratory Ruling  
1389 West Main Street, Waterbury, Connecticut

Dear Chairman Stein and Members of the Council:

On behalf of New Cingular Wireless PCS, LLC (AT&T), we respectfully enclose an original and fifteen (15) copies of a Petition for a Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need is required to modify and upgrade an existing rooftop tower facility in the City of Waterbury. Please also find enclosed check number 9336 representing the filing fee for this petition.

Should the Council or Staff have any questions about this matter please do not hesitate to contact me.

Very truly yours,



Daniel M. Laub

cc: Mayor Neil M. O'Leary, Waterbury  
City Planner James A. Sequin, AICP, Waterbury  
AT&T



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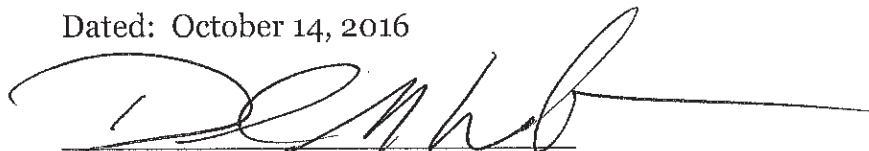
## CERTIFICATE OF SERVICE

I hereby certify that on October 14, 2016, an original and 15 copies of the Petition submission was sent by overnight delivery as well as by email to the Connecticut Siting Council with copy to:

Mayor Neil M. O'Leary  
City Hall Building  
235 Grand Street, 2nd floor  
Waterbury, CT 06702

James A. Sequin, AICP  
City Planning Department  
185 South Main Street, 5th floor  
(1 Jefferson Square)  
Waterbury, CT 06706

Dated: October 14, 2016



Daniel M. Laub, Esq.

## CONNECTICUT SITING COUNCIL

PETITION OF NEW CINGULAR WIRELESS )  
PCS, LLC ("AT&T") TO THE CONNECTICUT )  
SITING COUNCIL FOR A DECLARATORY ) PETITION NO. \_\_\_\_\_  
RULING THAT NO CERTIFICATE OF )  
ENVIRONMENTAL COMPATIBILITY AND ) OCTOBER 14, 2016  
PUBLIC NEED IS REQUIRED TO REPLACE )  
AN EXISTING STEALTH ROOFTOP )  
WIRELESS TELECOMMUNICATIONS )  
TOWER AND INSTALL A NEW STEALTH )  
CHIMNEY ON THE EXISTING BUILDING )  
LOCATED AT 1389 WEST MAIN STREET, )  
WATERBURY, CONNECTICUT )

### PETITION FOR DECLARATORY RULING TO MODIFY AND UPGRADE A STEALTH ROOFTOP WIRELESS TELECOMMUNICATIONS FACILITY ON AN EXISTING BUILDING 1389 WEST MAIN STREET, WATERBURY, CONNECTICUT

#### **I. Introduction**

New Cingular Wireless PCS, LLC ("AT&T"), the "Petitioner", hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required pursuant to Section 16-50k of the Connecticut General Statutes ("C.G.S.") to replace a stealth flagpole tower on the rooftop of the existing building located at 1389 West Main Street, Waterbury, Connecticut (the "Site").

#### **II. Existing Building**

The Site is improved with an existing medical office building and associated parking areas. The surrounding area is characterized by I-84 to the south, some residential properties and the campus of Naugatuck Valley Community College to the west and an undeveloped parcel to the north. An aerial photo is provided in Attachment 1.

#### **III. AT&T's Proposed Modification**

AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut. AT&T currently operates a 15.33' stealth flagpole tower on the southern corner of the existing rooftop and proposes to replace same with a 17.33' tall stealth tower and also add a stealth chimney approximately 8.5' in height on the northern corner of the rooftop.

Within the new stealth flagpole AT&T will mount a total of four (4) panel antennas at centerline heights of approximately 50' AGL and 42' AGL inside the stealth tower enclosure, along with four (4) Tower Mounted Amplifiers ("TMA") units concealed inside the replacement stealth tower. Associated remote radiohead units will remain on the roof and be augmented with two new remote radio head units. An associated equipment platform will remain. AT&T also proposes a new 4'x4'x8.5' stealth chimney which will enclose two additional antennas at a centerline height of 42' as well as two associated TMAs with remote radio head units installed external to the chimney nearby on the roof. AT&T will continue to maintain an existing equipment platform for facility operation.

AT&T's proposed facility is detailed in the drawings included as Attachment 2 prepared by Com Ex Consultants last revised on August 31, 2016. Also, annexed hereto as Attachment 3 is a structural analysis dated June 20, 2016, prepared by Com Ex Consultants concluding that the existing building can support AT&T's proposed modifications including the new tower.

#### **IV. The Proposal Will Not Have A Substantial Adverse Environmental Effect**

A comparison of the existing and proposed conditions reveals no substantial or significant environmental impacts associated with AT&T's proposed replacement of the existing tower or the installation of the new stealth chimney.

##### **A. Minimal Physical Impact On Building Site**

AT&T's proposed modifications will not result in any additional disturbance to the site as it will be located on the rooftop of the existing building. Existing access to the site will continue to be utilized and no tree removal or ground disturbance is necessary for these modifications. The facility is unmanned and requires no water or wastewater connections and generates no waste.

##### **B. Compliance With MPE Limits**

The operation of AT&T's antennas will not increase the total radio frequency electromagnetic power density at the site to a level at or above applicable standards. A power density report is included in Attachment 4. The total radio frequency power density will be 30.84% of the allowable FCC established general public limit at ground level and well within standards adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes.

##### **C. Visibility**

As demonstrated in the photo simulations included in Attachment 5, AT&T's replacement flag pole and new chimney/tower installation will not materially change the

overall character of existing views of the building or create a visual impact on the surrounding area. The proposed replacement flagpole provides only a de minimus difference with the from the existing flagpole and the stealth chimney enclosure will be designed and painted to match the existing building. No FAA lighting or marking AT&T's installation is required. As such, AT&T respectfully submits that the visibility of the proposed facility is neither significant nor adverse for purposes of the Council's regulatory considerations in ruling on this petition for a declaratory ruling.

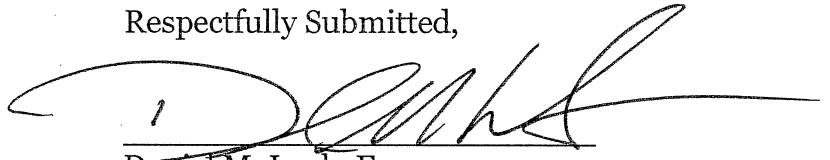
#### **V. Notice of Petition Filing**

Pursuant to R.C.S.A. Section 16-50j-40(a), notice of AT&T's intent to file this Petition was sent to each person appearing of record as an owner of property that abuts the site, as well as the appropriate municipal officials and government agencies as listed in Section 16-50e of the C.G.S. Certification of such notice, a copy of the notice and the list of property owners and municipal officials and government agencies to whom the notice was sent are included in Attachment 6. A map with a corresponding list of abutting property owners is also included in Attachment 6.

#### **VII. Conclusion**

As set forth herein, AT&T's proposed stealth rooftop tower facility and associated equipment are wholly consistent with legislative findings outlined in Section 16-50g and 16-50aa of the General Statutes of Connecticut that seek to avoid the unnecessary proliferation of towers in the State. It is respectfully submitted that AT&T's facility does not present any significant adverse environmental effects as listed in Section 16-50p of the General Statutes. Therefore and for all the foregoing reasons, AT&T petitions the Connecticut Siting Council for a determination that the proposed wireless telecommunications facility does not require a Certificate of Environmental Compatibility and Public Need and that the Council issue an order approving same.

Respectfully Submitted,



Daniel M. Laub, Esq.  
On behalf of the Petitioner, AT&T  
Cuddy & Feder, LLP  
445 Hamilton Avenue, 14<sup>th</sup> Floor  
White Plains, New York 10601  
(914) 761-1300

cc: Mayor Neil M. O'Leary, Waterbury  
City Planner James A. Sequin, AICP, Waterbury  
AT&T

# ATTACHMENT 1



## ATTACHMENT 2



#### GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OFF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3P5-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

#### GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR – EMPIRE TELECOM  
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
OWNER – AT&T MOBILITY  
OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (F<sub>y</sub>=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED, TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPOSITE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-AOOZ-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
  - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
  - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
  - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
  - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
  - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
  - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
  - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
  - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
  - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.
22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY DEWEERRY ENGINEERS, INC. FOR A RECENT UPGRADE DATED 06/13/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

**COM-EX**  
Consultants

115 ROUTE 46  
SUITE E3  
MOUNTAIN LAKES, NJ 07046  
PHONE: 908.208.4300  
FAX: 908.208.4301

**EMPIRE**  
**telecom**

16 ESQUIRE ROAD  
BILLERICA, MA 01821

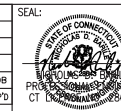
**SITE NUMBER: CT5440**  
**SITE NAME: WATERBURY WEST**

1389 WEST MAIN ST.  
WATERBURY, CT 06708  
NEW HAVEN COUNTY

**at&t**  
**MOBILITY**

550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

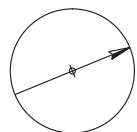
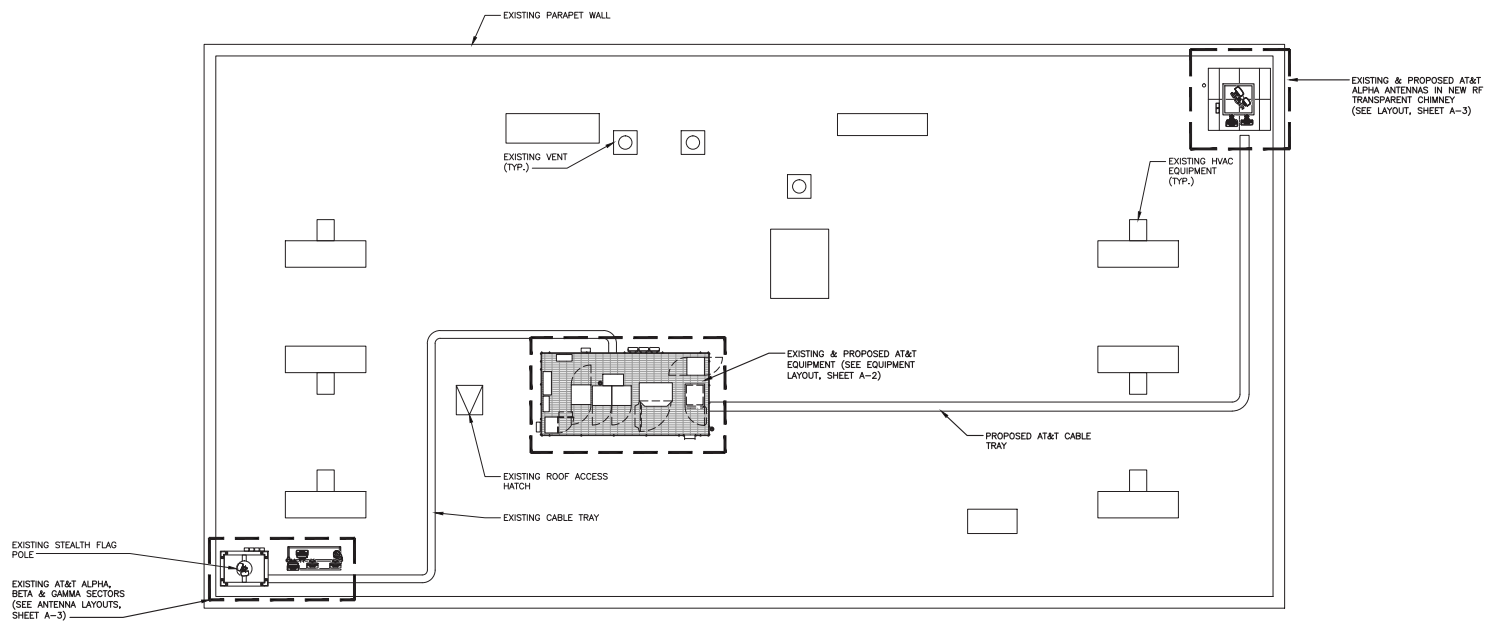
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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**AT&T**

DRAWING TITLE:  
**GROUNDING & GENERAL NOTES**

JOB NUMBER	DRAWING NUMBER	REV
15167-EMP	GN-1	0



NORTH

**ROOFTOP LAYOUT**  
 SCALE: 1/8" = 1'-0"

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

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

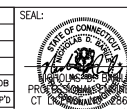
**COM-EX**  
 Consultants  
 115 ROUTE 46  
 SUITE E39  
 MOUNTAIN LAKES, NJ 07046  
 PHONE: 908.209.4300  
 FAX: 908.209.4301

**EMPIRE**  
 telecom  
 16 ESQUIRE ROAD  
 BILLERICA, MA 01821

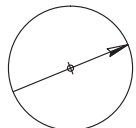
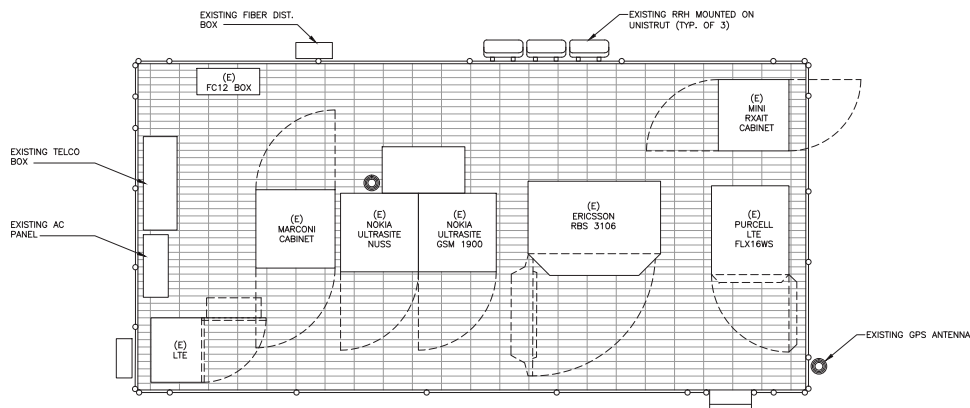
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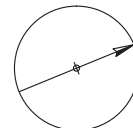
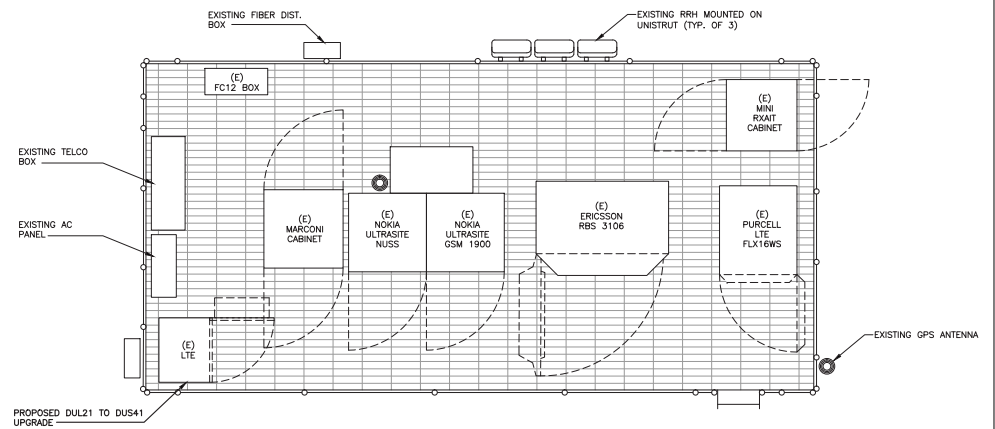
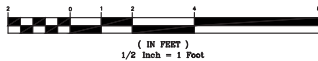
AT&T		
DRAWING TITLE: ROOFTOP LAYOUT		
JOB NUMBER	DRAWING NUMBER	REV
15167-EMP	A-1	0



NORTH

### EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"



NORTH

### PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"



**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 908.209.4300  
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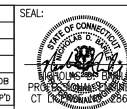
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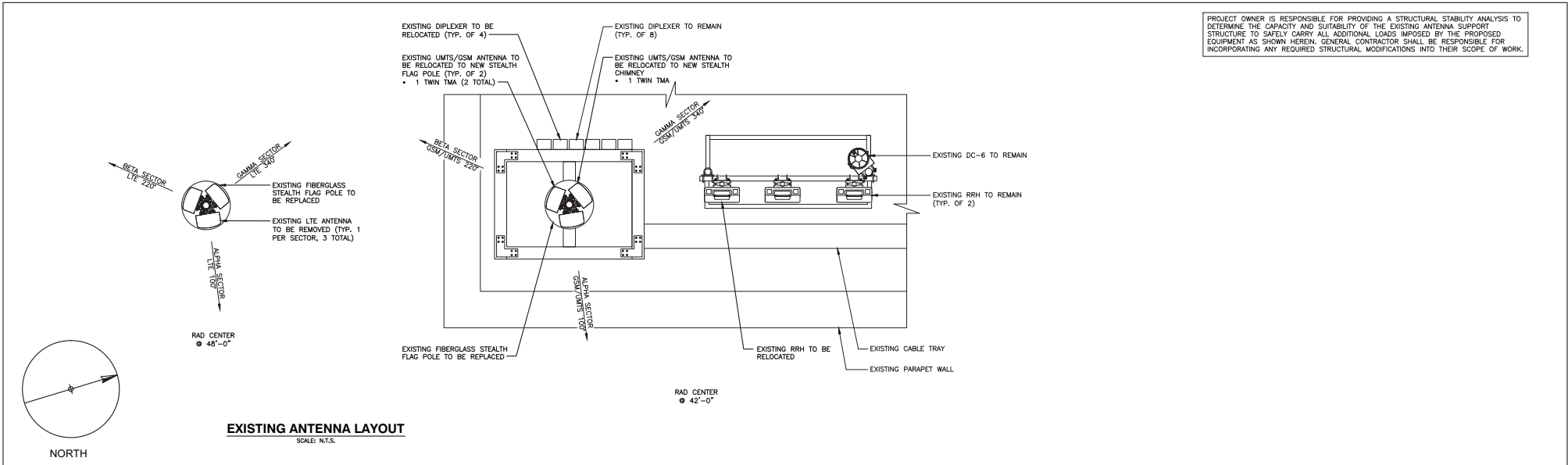
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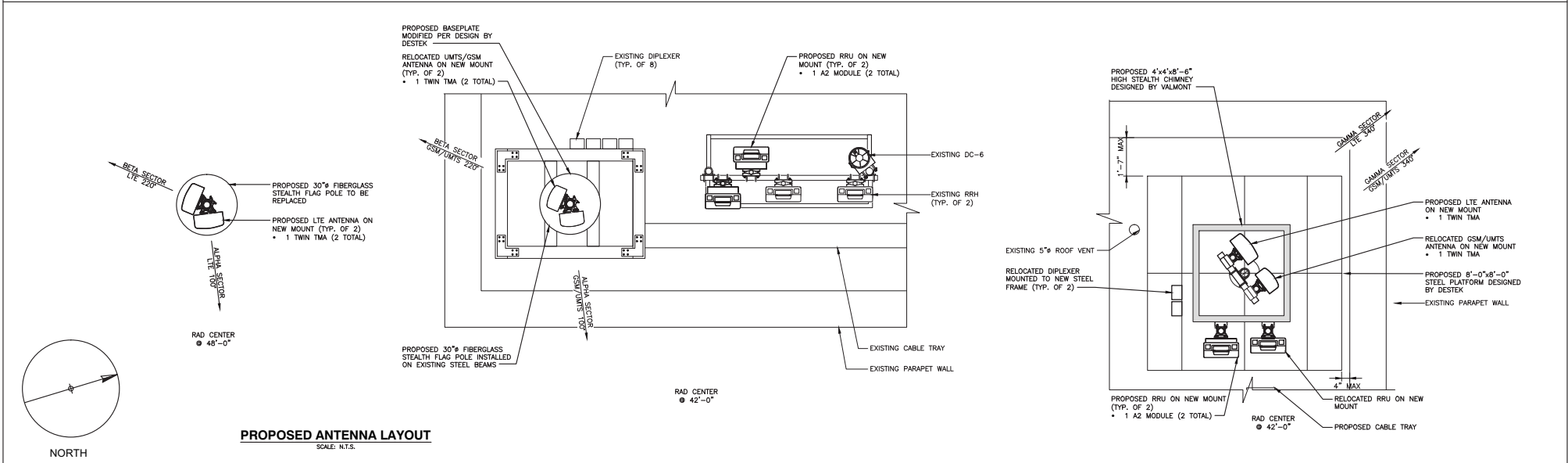
**AT&T**

DRAWING TITLE:  
**EQUIPMENT LAYOUT**

JOB NUMBER	DRAWING NUMBER	REV
15167-EMP	A-2	0



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



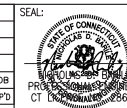
**COM-EX Consultants**  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 908.209.4300  
FAX: 908.209.4301

**EMPIRE telecom**  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

**SITE NUMBER: CT5440**  
**SITE NAME: WATERBURY WEST**  
1389 WEST MAIN ST.  
WATERBURY, CT 06708  
NEW HAVEN COUNTY

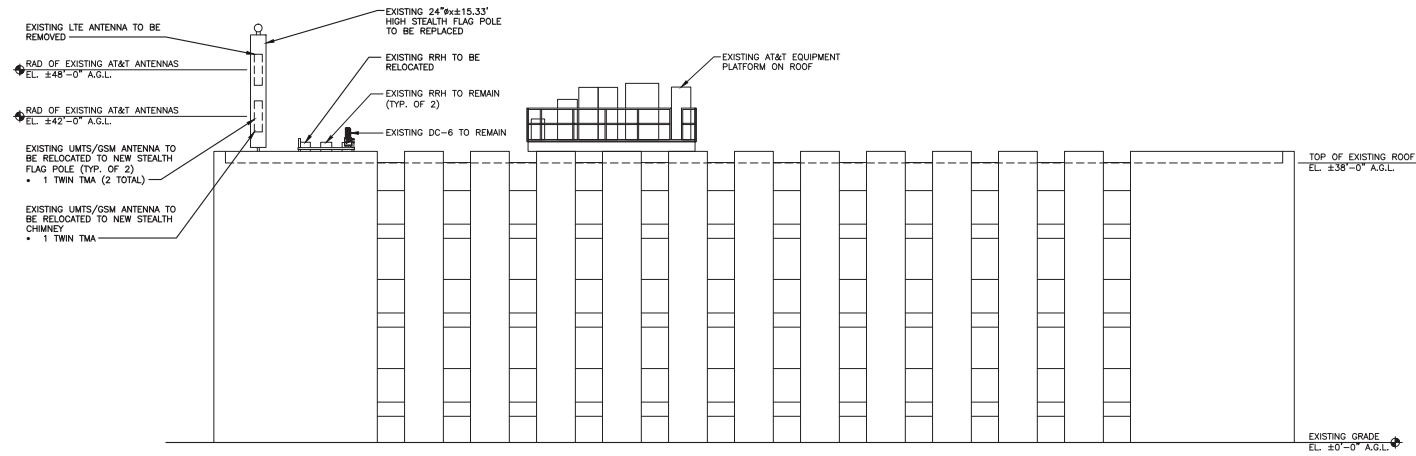
**at&t MOBILITY**  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

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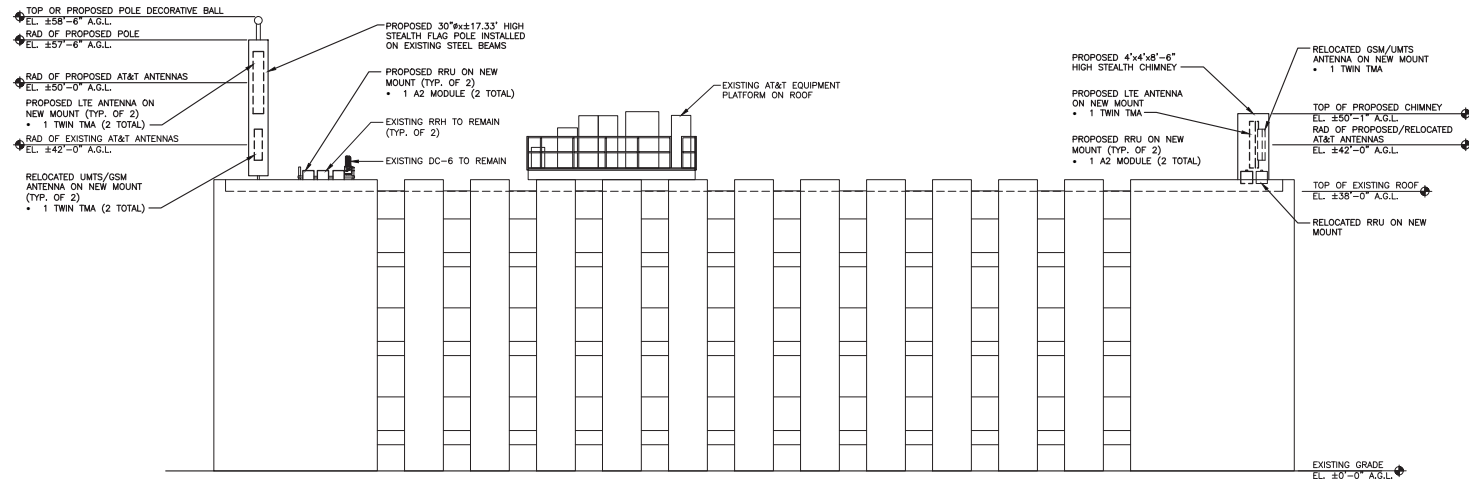
AT&T		
DRAWING TITLE: <b>ANTENNA LAYOUTS</b>		
JOB NUMBER 15167-EMP	DRAWING NUMBER <b>A-3</b>	REV 0

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



**EXISTING TOWER ELEVATION**

SCALE: NTS



**PROPOSED TOWER ELEVATION**

SCALE: NTS

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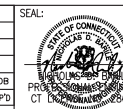
**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

**SITE NUMBER: CT5440**  
**SITE NAME: WATERBURY WEST**

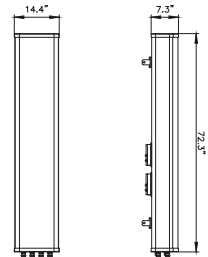
1389 WEST MAIN ST.  
WATERBURY, CT 06708  
NEW HAVEN COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

0	08/31/16	ISSUED AS FINAL	JW	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
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AT&T		
DRAWING TITLE: <b>ELEVATIONS</b>		
JOB NUMBER 15167-EMP	DRAWING NUMBER <b>A-4</b>	REV 0



FRONT VIEW

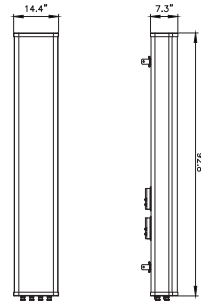
SIDE VIEW



BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	42.9 LBS

**LTE ANTENNA DETAIL**  
SCALE: N.T.S.



FRONT VIEW

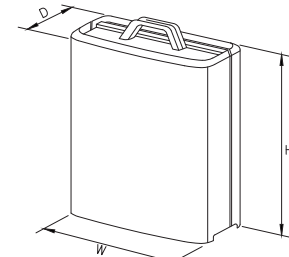
SIDE VIEW



BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-LCUU-H8
WEIGHT	53 LBS

**LTE ANTENNA DETAIL**  
SCALE: N.T.S.



MODEL	H x W x D	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS

\* DENOTES EXISTING

**RRUS DETAIL**  
SCALE: N.T.S.

#### EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A2	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
BETA	B1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	B2	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
GAMMA	G1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	G2	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"

#### FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	A2	CCI	HPA-65R-BUU-H8	92.4"x14.8"x7.4"
BETA	B1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	B2	CCI	HPA-65R-BUU-H8	72"x14.8"x9"
GAMMA	G1	KMW	AM-X-CD-14-65-00T-RET	48"x11.8"x5.9"
	G2	CCI	HPA-65R-BUU-H6	72"x14.8"x9"

#### PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-12	20.4"x18.5"x7.5"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
BETA	ERICSSON	RRUS-11	19.7"x16.9"x7.2"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-12 (EXISTING)	20.4"x18.5"x9.5"	-	-
GAMMA	ERICSSON	RRUS-11	19.7"x16.9"x7.2"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-12 (EXISTING)	20.4"x18.5"x9.5"	-	-

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

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Consultants  
115 ROUTE 46  
SUITE E39  
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PHONE: 908.209.4300  
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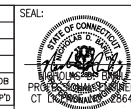
**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

**SITE NUMBER: CT5440**  
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1389 WEST MAIN ST.  
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NEW HAVEN COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

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

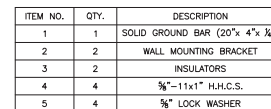


**AT&T**

DRAWING TITLE:

**DETAILS**

JOB NUMBER	DRAWING NUMBER	REV
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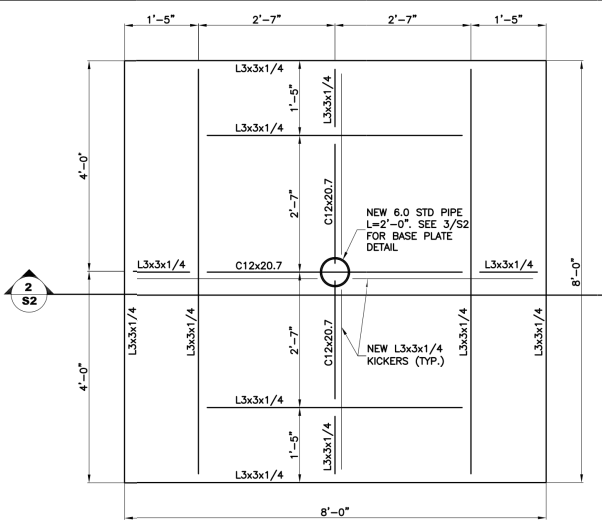
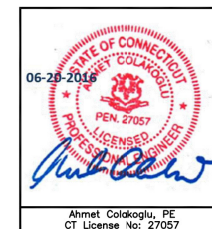




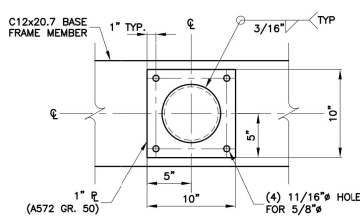
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CT5440 - WATERBURY WEST
1389 WEST MAIN STREET WATERBURY, CT 06708 FA CODE: 10071305

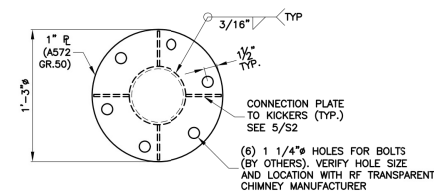
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DRAWN: SA
CHECKED: AC
JOB #: 1629072
<b>S2</b> GAMMA MOUNT DETAILS



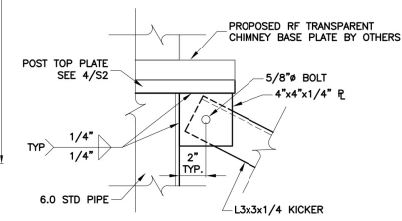
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1/2" = 1'-0"



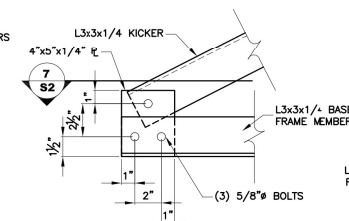
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1" = 1'-0"



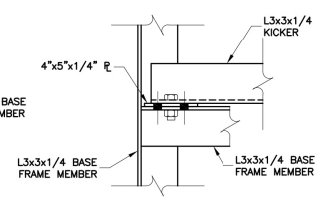
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1" = 1'-0"



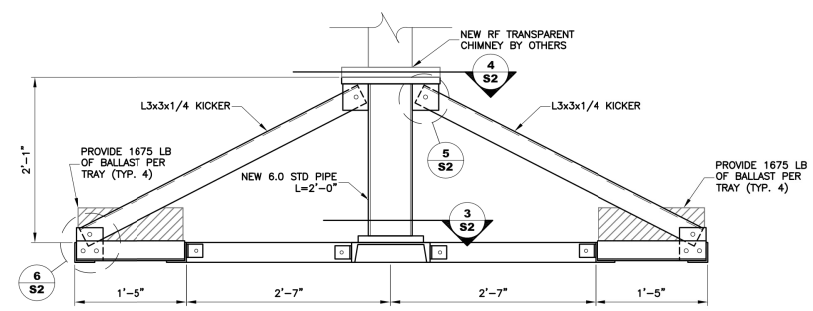
**5 S2**  
1 1/2" = 1'-0"



**6 S2**  
1 1/2" = 1'-0"

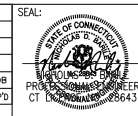


**7 S2**  
1 1/2" = 1'-0"

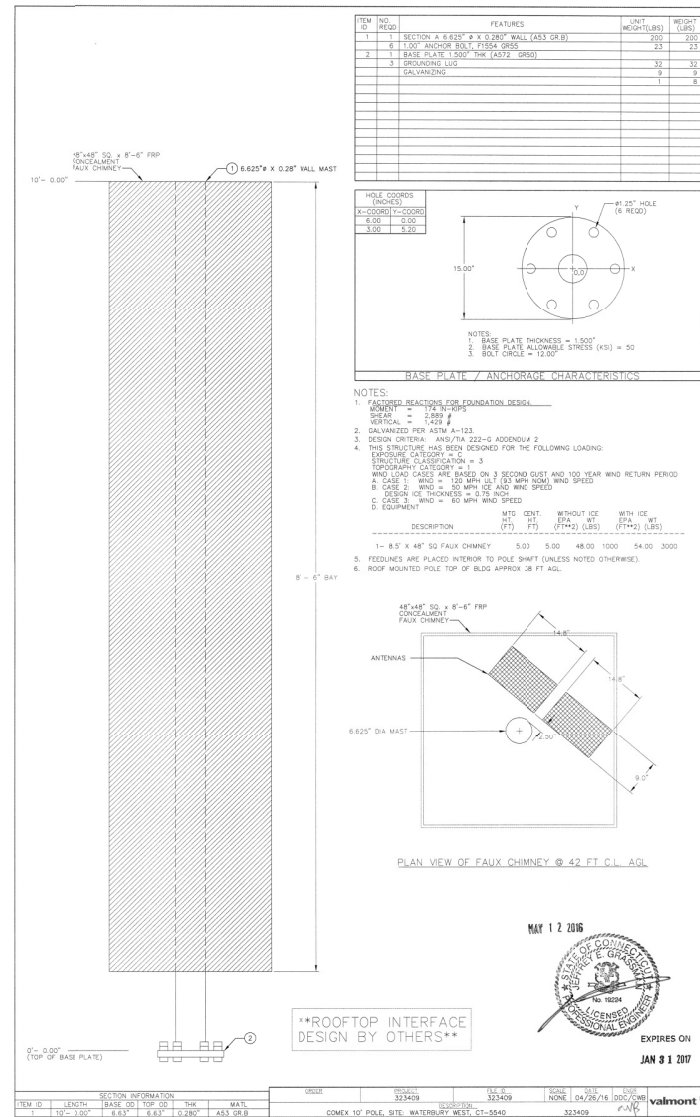
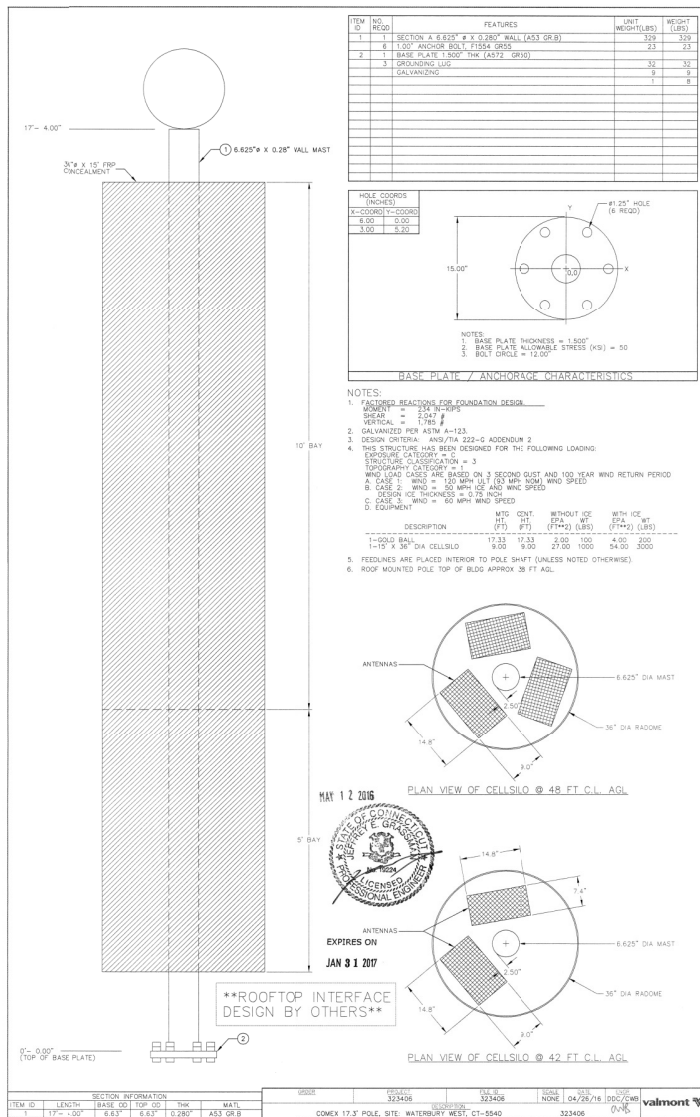


**2 S2**  
3/4" = 1'-0"

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	08/31/16	ISSUED AS FINAL	JW	NDB	NDB
SCALE: AS SHOWN					
DESIGNED BY: NJM					
DRAWN BY: JW					



<b>AT&amp;T</b>
DRAWING TITLE: <b>STRUCTURAL DETAILS</b>
JOB NUMBER 15167-EMP
DRAWING NUMBER S-2
REV 0



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**SITE NUMBER: CT5440**  
**SITE NAME: WATERBURY WEST**  
1389 WEST MAIN ST.  
WATERBURY, CT 06708  
NEW HAVEN COUNTY

**at&t**  
**MOBILITY**  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

0 08/31/16				ISSUED AS FINAL				JW NDB NDB			
NO. DATE				REVISIONS				BY CHK APPD			
SCALE: AS SHOWN				DESIGNED BY: NJM				DRAWN BY: JW			

SEAL:

STATE OF CONNECTICUT  
REGISTERED PROFESSIONAL ENGINEER  
CT LICENSE NUMBER 26643

AT&T			
DRAWING TITLE: POLE DRAWINGS BY MANUFACTURER			
JOB NUMBER 15167-EMP		DRAWING NUMBER S-3	
		REV 0	

# ATTACHMENT 3

# STRUCTURAL ANALYSIS REPORT ROOFTOP



Prepared For:  
**Com-Ex Consultants, LLC**  
**115 Route 46 – Suite E39**  
**Mountain Lakes, NJ 07046**



## Structure Rating:

Support Platform:	Pass
Custom Sled:	Pass
Building Roof:	Pass

Sincerely,  
Destek Engineering, LLC

06-20-2016



Ahmet Colakoglu, PE  
Connecticut Professional Engineer  
License No: 27057

**Site ID: CT5440**  
**FA Location Code: 10071305**  
**Site Name: WATERBURY WEST**  
**1389 West Main Street**  
**Waterbury, CT 06708**

## **CONTENTS**

1.0 – SUBJECT AND REFERENCES

1.1 – STRUCTURE AND EXISTING EQUIPMENT

2.0 – APPURTENANCES

3.0 – CODES AND LOADING

4.0 – STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

5.0 – ANALYSIS AND ASSUMPTIONS

6.0 – RESULTS AND CONCLUSION

APPENDIX

A – PICTURES AND CALCULATIONS

## 1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing telecommunication installation on the building located at 1389 West Main Street, Waterbury, CT 06708, for the additions and alterations proposed by AT&T Mobility (AT&T).

The structural analysis is based on a site visit performed by Destek Engineering, LLC (Destek), personnel on May 19, 2016, and on the following information provided to Destek:

- Construction Drawings prepared by Com-Ex Consultants and Empire Telecom, Job Number 15167-EMP dated 02/12/2016.
- Communication Pole Design Calculations and Permit Drawings prepared by Valmont Microflect, Valmont order number 323406, dated 04/26/2016.
- Communication Pole Design Calculations and Permit Drawings prepared by Valmont Microflect, Valmont order number 323409, dated 04/26/2016.
- As-Built Construction Drawings prepared by Dewberry Engineers, Inc., and Nexlink Global Services, Dewberry number 50048347/50048409, dated 09/20/2012.
- Structural Analysis Report prepared by Hudson Design Group, LLC, dated 07/16/2010.
- RFDS provided by AT&T, dated 12/10/2015.

## 1.1 STRUCTURE AND EXISTING EQUIPMENT

The structure is a three-story medical center building where the structural system is comprised of standard steel framing. The elevation of the main roof is approximately 38 feet above ground level (AGL). AT&T currently has equipment cabinets located at the rooftop level and supported on a steel platform anchored to the roof structure. AT&T also currently has (6) panel antennas on the roof of the building at RAD centers of 48' and 42' AGL (per CDs), (2) per sector. The panel antennas for all sectors are mounted to a pipe mast and covered with a 2' diameter RF transparent canister. The pipe mast and canister are supported on structural steel platform anchored to the building roof structure. Please refer to the calculations in Appendix A for details.

## 2.0 APPURTENANCES

This analysis is based on the following existing and proposed appurtenances:

### Existing Configuration of AT&T Appurtenances:

Rad. Center (ft)	Antenna & TMA	Mount
48' & 42'	(6) KMW AM-X-CD-14-65-00T-RET (3) TT19-08BP111-001 TMA's* (3) DTMABP7819VG12A TMA's* (3) RRUS-11**	(1) RF transparent canister

\* Equipment installed at steel platform level

\*\* Equipment installed in a non-penetrating sled

**Proposed and Final Configuration of AT&T Appurtenances:**

<b>Rad. Center (ft)</b>	<b>Antenna &amp; TMA</b>	<b>Mount</b>
50' and 42' Alpha and Beta	(2) KMW AM-X-CD-14-65-00T-RET (2) CCI HPA-65R-BUU-H8 (2) TT19-08BP111-001 TMA's* (4) TMA2093F00V1-1 TMA's* (2) RRUS-11** (2) RRUS-12+RRUS-A2**	(1) RF transparent canister
42' Gamma	(1) KMW AM-X-CD-14-65-00T-RET (1) CCI HPA-65R-BUU-H6 (1) TT19-08BP111-001 TMA's* (2) TMA2093F00V1-1 TMA's* (1) RRUS-11* (1) RRUS-12+RRUS-A2*	(1) RF transparent chimney

\* Equipment installed at steel platform level

\*\* Equipment installed in a non-penetrating sled

**3.0 CODES AND LOADING**

The analysis is in accordance with the following codes and loading as adopted in Connecticut:

- 2005 State Building Code with all of the adopted Supplements and Amendments.
- Minimum Design Loads for Buildings and Other Structures SEI/ASCE 7-02, American Society of Civil Engineers
- Specifications for Structural Steel Buildings – Allowable Stress ANSI/AISC 335-89s1, American National Standards Institute/American Institute for Steel Construction
- Basic Wind Speed: 95 mph
- Exposure: B

**4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES**

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects, and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc., or lack of maintenance.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require Destek to generate an additional structural analysis. Additionally, the proposed linear appurtenances should be placed per any recommendations specified in this report.

## **5.0 ANALYSIS and ASSUMPTIONS**

The structure is considered to have adequate strength for the proposed loading if the existing structural members that will be used to support the proposed equipment are structurally adequate per the applicable code criteria, or that the additions or alterations to the existing structure do not increase the force in any structural element by more than 5%.

The analysis was performed by utilizing Risa 3-D, a commercially available structural engineering software package developed by Risa Technologies, as applicable.

## 6.0 RESULTS AND CONCLUSION

**Mount Steel Platform:** The existing steel platform supporting the existing RF transparent canister is found to have **adequate** structural capacity for the proposed installation by AT&T. For the code specified load combinations and the proposed loading configuration, the existing platform W8x24 beams are stressed to **31%** of their structural capacity as a maximum. See attached drawings for additional connection details.

**New Sled Mount for RF Transparent Chimney:** The proposed custom non-penetrating roof sled is found to have **adequate** structural capacity for the proposed installation by AT&T, once it is built per the Sled Mount Details prepared by Destek Engineering, LLC, dated 06/20/2016. For the code specified load combinations and the proposed loading configuration, the new sled members will be stressed to **78%** of their structural capacity as a maximum. To prevent overturning of the sled, a ballast weight of **1675 lbs** should be placed per tray, for a total of **6700 lbs per sled**. This amount of ballast is only valid if the top of the RF transparent chimney is not higher than 12'-0" above the roofline, which appears to be consistent with the proposed configuration.

**RRH Sled:** The existing RRH non-penetrating roof sled is found to have **adequate** structural capacity for the proposed installation by AT&T. To prevent overturning of the sled, a ballast weight of **235 lbs** should be placed per tray, for a total of **470 lbs for the sled**.

**Building Roof:** The existing building roof structure is found to have **adequate** strength for the proposed configuration and roof sled addition. For the code specified load combinations and the proposed loading configuration, the existing roof beams will be stressed to **90%** of their structural capacity as a maximum.

Therefore, the proposed additions and alterations by AT&T **can** be implemented as intended with the conditions outlined in this report.

Should you need any clarifications or have any questions about this report, please contact Destek at (770) 693-0835 or [acolakoglu@destekengineering.com](mailto:acolakoglu@destekengineering.com).

## APPENDIX A PICTURES AND CALCULATIONS



EXISTING RF TRANSPARENT CANISTER AND SUPPORTING STEEL PLATFORM ON ROOF



PROPOSED LOCATION OF RF TRANSPARENT CHIMNEY ON CUSTOM NON-PENETRATING SLED

## CALCULATION SHEET



### PURPOSE

The purpose of this analysis is to evaluate the structural capacity of the existing installation located in the roof of the building at 1389 West Main Street, Waterbury, CT 06708, to support the existing monopole with the proposed additions and alterations proposed by AT&T Mobility.

All calculations in accordance with 2005 Connecticut Building Code with all adopted addendums and supplements.

### Wind Load

(reference ASCE 7-02 section 6.5.15 & Appendix K in 2009 Amendment)

[ASCE 7 Reference](#)

#### Input:

Location: Waterbury, CT - New Haven County

Classification:

II

Table 1-1 pg 4

Antenna RAD Center (AGL):

$z := 50$  ft

Exposure category:

Exp := "B"

Section 6.5.6.2 pg 28

$$z_g := \begin{cases} 1200 & \text{if Exp} = \text{"B"} \\ 900 & \text{if Exp} = \text{"C"} \\ 700 & \text{if Exp} = \text{"D"} \end{cases} = 1200 \quad \alpha := \begin{cases} 7.0 & \text{if Exp} = \text{"B"} \\ 9.5 & \text{if Exp} = \text{"C"} \\ 11.5 & \text{if Exp} = \text{"D"} \end{cases} = 7$$

Velocity pressure exposure coefficient:

$$K_z := 2.01 \cdot \left( \frac{z}{z_g} \right)^{\frac{2}{\alpha}} = 0.811$$

Table 6-3 pg 75

Topographic factor:

$K_{zt} := 1.0$

Section 6.5.7.2 pg 30

Wind directional factor:

$K_d := 0.85$

Table 6-4 pg 76

Basic wind speed:

$V := 95$  mph

Appendix K of 2009 Amendment

Importance factor:

$I := 1.00$

Table 6-1 pg 73

Gust response factor:

$G := 0.85$

Section 6.5.8 pg 30

Velocity Pressure:

$$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot \text{psf}$$

$$q_z = 15.92 \cdot \text{psf}$$

Equation (6-15) pg 31

Force Coefficients:

$$C_{F\_flat} := \begin{pmatrix} 1 & 1.3 \\ 7 & 1.4 \\ 25 & 2 \end{pmatrix} \quad C_{F\_round} := \begin{pmatrix} 1 & 0.7 \\ 7 & 0.8 \\ 25 & 1.2 \end{pmatrix}$$

Figure (6-21), pg 69

### Loads on Antenna RF Transparent Canister

Dimensions : H := 15ft Diam := 36in

Per Drawings:  $F_{\text{Canister}} := 2047\text{ lbf}$   
 $P_{\text{Canister}} := 1785\text{ lbf}$   
 $M_{\text{Canister}} := 234\text{ kip}\cdot\text{in} = 19.5\cdot\text{kip}\cdot\text{ft}$

### Loads on Antenna RF Transparent Chimney

Dimensions : H := 8.5ft W := 48in D := 48in

Per Drawings:  $F_{\text{Chimney}} := 2889\text{ lbf}$   
 $P_{\text{Chimney}} := 1429\text{ lbf}$   
 $M_{\text{Chimney}} := 174\text{ kip}\cdot\text{in} = 14.5\cdot\text{kip}\cdot\text{ft}$

### Loads on RRUS-11

Dimensions : H := 19.69in W := 16.97in D := 7.17in  $W_{\text{rru1}} := 50.7\text{ lbf}$   $r_{\text{rru1\_sled}} := 24\text{ in}$   $r_{\text{rru1\_plat2}} := 18\text{ in}$

Front:  $\text{Area} := H \cdot W = 2.32\text{ ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{W}\right) = 1.303$$

Figure (6-19), Pg 69

$$F_{\text{rru1\_front}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 40.905\text{ lbf}$$

Equation (6-15) Pg 31

Side:  $\text{Area} := H \cdot D = 0.98\text{ ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{D}\right) = 1.329$$

Figure (6-19), Pg 69

$$F_{\text{rru1\_side}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 17.633\text{ lbf}$$

Equation (6-15) Pg 31

### Loads on RRUS-12 + RRUS-A2

Dimensions : H := 20.4in W := 18.5in D := 10.9in  $W_{\text{rru2}} := 80\text{ lbf}$   $r_{\text{rru2\_sled}} := 24\text{ in}$   $r_{\text{rru2\_plat2}} := 18\text{ in}$

Front:  $\text{Area} := H \cdot W = 2.621\text{ ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{W}\right) = 1.302$$

Figure (6-19), Pg 69

$$F_{\text{rru2\_front}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 46.167\text{ lbf}$$

Equation (6-15) Pg 31

Side:  $\text{Area} := H \cdot D = 1.544\text{ ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{D}\right) = 1.315$$

Figure (6-19), Pg 69

$$F_{\text{rru2\_side}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 27.469\text{ lbf}$$

Equation (6-15) Pg 31

**Loads on TT19-08BP111-001 TMA**

Dimensions:  $H := 9.9\text{in}$   $W := 6.7\text{in}$   $D := 5.4\text{in}$   $W_{\text{tma1}} := 16\text{lbf}$

$r_{\text{tma1\_plat2}} := 18\text{in}$

Front:  $\text{Area} := H \cdot W = 0.461\text{ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{W}\right) = 1.308$$

Figure (6-19), Pg 69

$$F_{\text{tma1\_front}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 8.153\text{ lbf}$$

Equation (6-15) Pg 31

Side:  $\text{Area} := H \cdot D = 0.371\text{ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{D}\right) = 1.314$$

Figure (6-19), Pg 69

$$F_{\text{tma1\_side}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 6.601\text{ lbf}$$

Equation (6-15) Pg 31

**Loads on TMA2093F00V1-1 TMA**

Dimensions:  $H := 11.8\text{in}$   $W := 9.8\text{in}$   $D := 3.7\text{in}$   $W_{\text{tma2}} := 23.1\text{lbf}$

$r_{\text{tma2\_plat2}} := 18\text{in}$

Front:  $\text{Area} := H \cdot W = 0.803\text{ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{W}\right) = 1.303$$

Figure (6-19), Pg 69

$$F_{\text{tma2\_front}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 14.164\text{ lbf}$$

Equation (6-15) Pg 31

Side:  $\text{Area} := H \cdot D = 0.303\text{ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{D}\right) = 1.336$$

Figure (6-19), Pg 69

$$F_{\text{tma2\_side}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 5.484\text{ lbf}$$

Equation (6-15) Pg 31

**Loads on DC6**

Dimensions:  $H := 24\text{in}$   $W := 11\text{in}$   $D := 11\text{in}$   $W_{\text{DC6}} := 18.9\text{lbf}$

$r_{\text{DC6\_sled}} := 36\text{in}$

Front:  $\text{Area} := H \cdot W = 1.833\text{ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{W}\right) = 1.32$$

Figure (6-19), Pg 69

$$F_{\text{DC6\_front}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 32.741\text{ lbf}$$

Equation (6-15) Pg 31

Side:  $\text{Area} := H \cdot D = 1.833\text{ft}^2$

$$C_f := \text{interp}\left(C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{H}{D}\right) = 1.32$$

Figure (6-19), Pg 69

$$F_{\text{DC6\_side}} := q_z \cdot G \cdot C_f \cdot \text{Area} = 32.741\text{ lbf}$$

Equation (6-15) Pg 31

**Loads on HSS4x4x1/4:**

**W := 4in**

**Length := 24in**

$$C_f := \min \left[ \left( \text{interp} \left( C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{\text{Length}}{W} \right) \right), 2.0 \right] = 1.383$$

Figure (6-19), Pg 69

$$F_{HSS4} := q_z \cdot G \cdot C_f \cdot W = 6.24 \cdot \text{plf}$$

Equation (6-15)

**Loads on W8x15:**

**H := 8in**

**Length := 69in**

$$C_f := \min \left[ \left( \text{interp} \left( C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{\text{Length}}{H} \right) \right), 2.0 \right] = 1.454$$

Figure (6-19), Pg 69

$$F_{W8} := q_z \cdot G \cdot C_f \cdot H = 13.119 \cdot \text{plf}$$

Equation (6-15)

**Loads on W8x24:**

**H := 8in**

**Length := 69in**

$$C_f := \min \left[ \left( \text{interp} \left( C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{\text{Length}}{H} \right) \right), 2.0 \right] = 1.454$$

Figure (6-19), Pg 69

$$F_{W8} := q_z \cdot G \cdot C_f \cdot H = 13.119 \cdot \text{plf}$$

Equation (6-15)

**Loads on RF Transparent Chimney Support Sled Kickers:**

**W := 3in**

**Length := 54in**

**r\_kicks\_plat2 := 12in**

$$C_f := \min \left[ \left( \text{interp} \left( C_{F\_flat}^{(0)}, C_{F\_flat}^{(1)}, \frac{\text{Length}}{W} \right) \right), 2.0 \right] = 1.767$$

Figure (6-19), Pg 69

$$F_{kicks} := q_z \cdot G \cdot C_f \cdot H = 15.938 \cdot \text{plf}$$

Equation (6-15)

$$F_{kicks\_plat2} := F_{kicks} \cdot \text{Length} = 71.722 \cdot \text{lbf}$$

**Loads on RF Transparent Chimney Support Sled Post:**

**Diam := 6.625in**

**Length := 2ft**

**r\_post\_plat2 := 12in**

$$C_f := \min \left[ \left( \text{interp} \left( C_{F\_round}^{(0)}, C_{F\_round}^{(1)}, \frac{\text{Length}}{\text{Diam}} \right) \right), 1.2 \right] = 0.744$$

Figure (6-19), Pg 69

$$F_{post} := q_z \cdot G \cdot C_f \cdot H = 6.709 \cdot \text{plf}$$

Equation (6-15)

$$F_{post\_plat2} := F_{post} \cdot \text{Length} = 13.419 \cdot \text{lbf}$$

**Loads on RRH Sled Post:**

**Diam := 2.375in**

**Length := 3ft**

**r\_posts\_sled := 18in**

$$C_f := \min \left[ \left( \text{interp} \left( C_{F\_round}^{(0)}, C_{F\_round}^{(1)}, \frac{\text{Length}}{\text{Diam}} \right) \right), 1.2 \right] = 0.981$$

Figure (6-19), Pg 69

$$F_{posts} := q_z \cdot G \cdot C_f \cdot H = 8.853 \cdot \text{plf}$$

Equation (6-15)

$$F_{posts\_sled} := F_{posts} \cdot \text{Length} = 26.558 \cdot \text{lbf}$$

Loads on RRH Sled Horizontal:

Diam := 2.375in

Length := 7.5ft

r<sub>hor\_sled</sub> := 21in

$$C_f := \min \left[ \left( \text{linterp} \left( C_{F\_round}^{(0)}, C_{F\_round}^{(1)}, \frac{\text{Length}}{\text{Diam}} \right) \right), 1.2 \right] = 1.2$$

Figure (6-19), Pg 69

$$F_{hor} := q_z \cdot G \cdot C_f \cdot H = 10.826 \cdot \text{plf}$$

Equation (6-15)

$$F_{hor\_sled} := F_{hor} \cdot \text{Length} = 81.194 \cdot \text{lbf}$$

Loads on RRH Sled Kickers:

W := 2.5in

Length := 34in

r<sub>kicks\_sled</sub> := 15in

$$C_f := \min \left[ \left( \text{linterp} \left( C_{F\_round}^{(0)}, C_{F\_round}^{(1)}, \frac{\text{Length}}{\text{Diam}} \right) \right), 1.2 \right] = 0.963$$

Figure (6-19), Pg 69

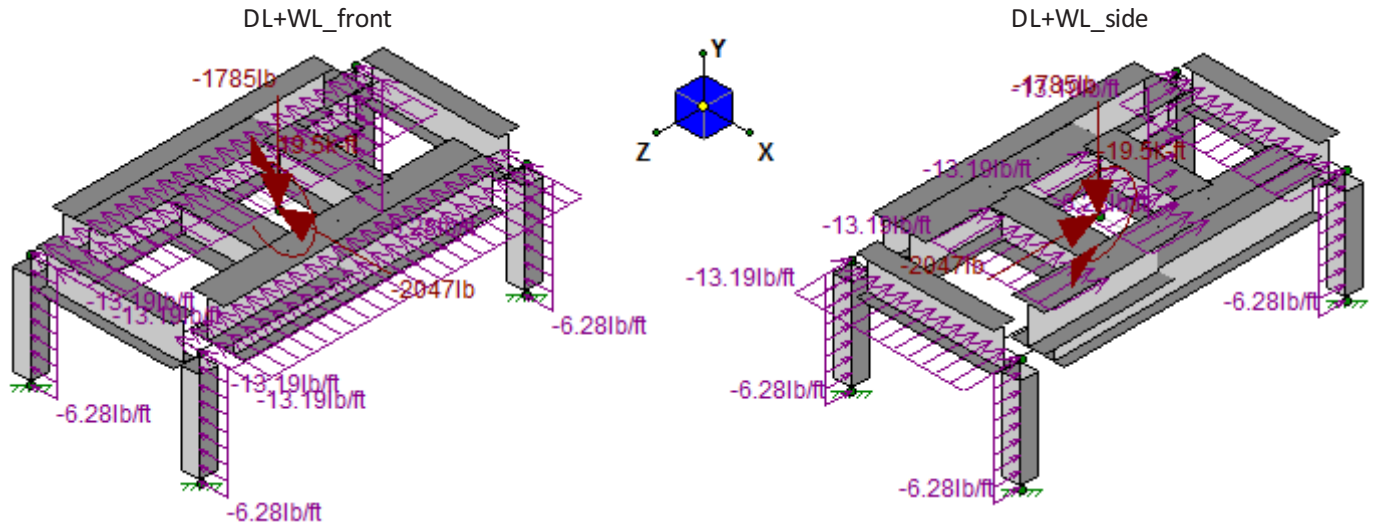
$$F_{kicks} := q_z \cdot G \cdot C_f \cdot H = 8.684 \cdot \text{plf}$$

Equation (6-15)

$$F_{kicks\_sled} := F_{kicks} \cdot \text{Length} = 24.605 \cdot \text{lbf}$$

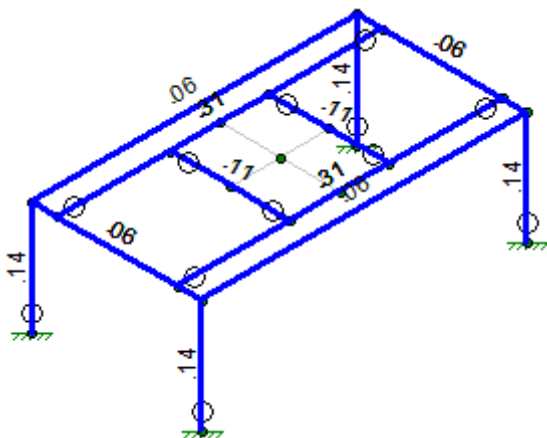
**Check RF Transparent Canister Support Platform:**

### Load Configuration:

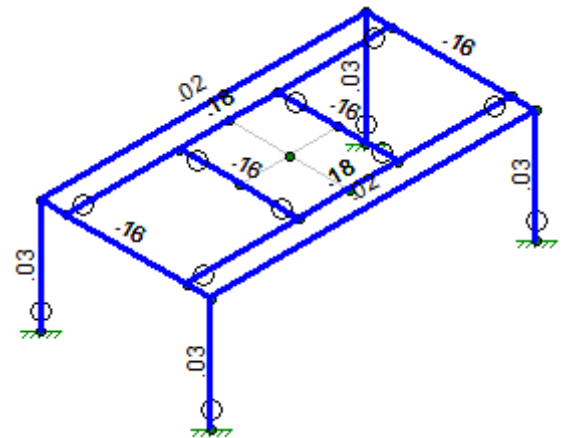


### Capacity Checks:

Axial & Bending:



Shear:



Code Check

Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50

## CALCULATION SHEET



### CHECK ROOF STRUCTURE UNDER MOUNTS

#### Load Combinations (reference ASCE 7-02)

- 1) DL
- 2) DL + LLr
- 3) DL+ SL

#### Roof Dead Load

For Roof:

3.5" Slab on 1 1/2" 22 Gauge Deck - 51 psf  
 Roofing - 2 psf  
 Insulation - 3 psf  
 Mech & Misc - 5psf

Roof Dead Load:

$$DL_R := 61\text{psf}$$

#### Ceiling Dead Load

For Dropped Ceiling:

Ceiling Tile - 1.0 psf  
 Framing - 1.5 psf

Ceiling Dead Load:

$$DL_C := 2.5\text{psf}$$

#### Roof Live Load

Per ASCE7-05:

$$LL_R := 20\text{psf}$$

ASCE 7-02 Table 4-1

#### Snow Load

Ground Snow Loads:

$$p_g := 35\text{psf}$$

ASCE 7-02: Figure 7-1

Thermal factor

$$C_t := 1.0$$

ASCE 7-02: Table 7-3

Exposure Factor

$$C_e := 0.9$$

ASCE 7-02: Table 7-2  
 Upper Level, Fully exposed

Importance factor:

$$I := 1.0$$

ASCE 7-02: Table 1-1  
 Occupancy Category II  
 Table 7-4

Flat Roof Snow Loads:

$$P_f := 0.7 \cdot C_e \cdot C_t \cdot I \cdot p_g$$

$$P_f = 22.05 \cdot \text{psf}$$

ASCE 7-02: Eq 7-1

Rain on Snow Surcharge:

$$P_{fr} := P_f + 0\text{psf}$$

$$P_f = 22.05 \cdot \text{psf}$$

ASCE 7-02: 7.10

Minimum Roof Snow Load:

$$P_{f\_min} := 20 \cdot I \text{psf}$$

$$P_f := \max(P_f, P_{f\_min})$$

$$P_f = 22.05 \cdot \text{psf}$$

ASCE 7-02: Section 7.3

## CALCULATION SHEET

### Check Roof Beams W16x26 & W16x31

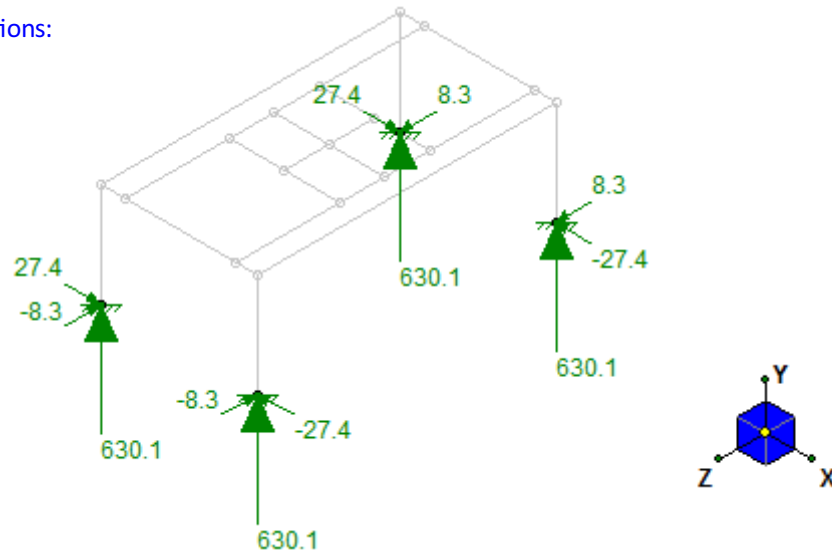
Beam Tributary Width:  $W_{Trib} := 6\text{ft} + 9.5\text{in}$

Beam Dead Load:  $w_{DLr} := (DL_R + DL_C) \cdot W_{Trib} = 431.271 \cdot \text{plf}$

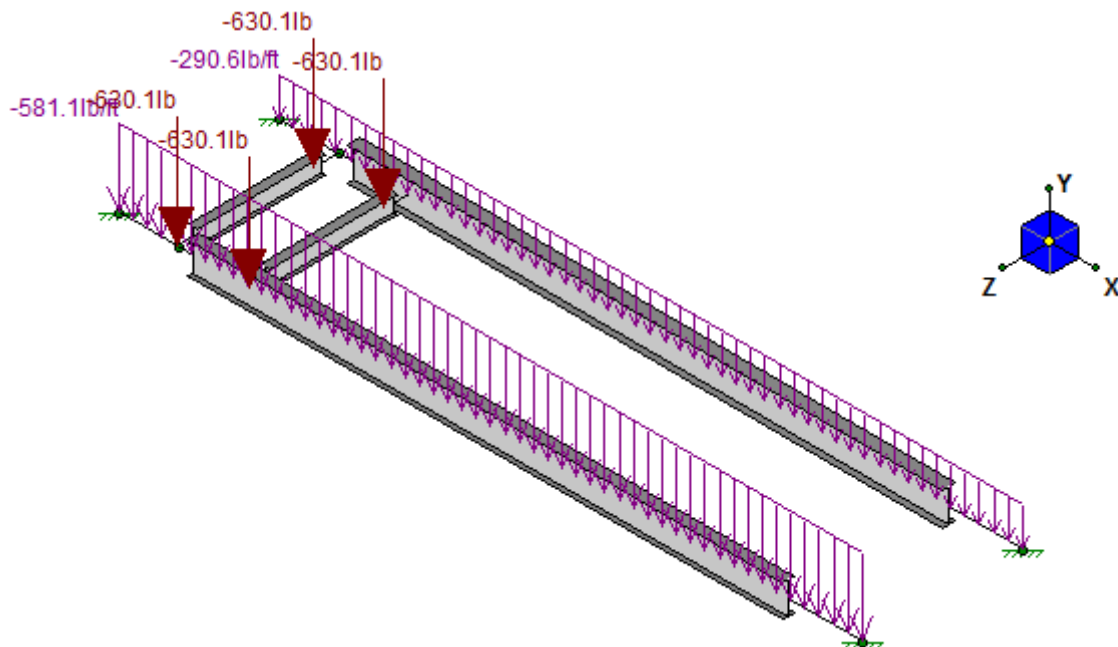
Beam Live Load:  $w_{LL} := LL_r \cdot W_{Trib} = 135.833 \cdot \text{plf}$

Beam Snow Load:  $w_{SL} := P_f \cdot W_{Trib} = 149.756 \cdot \text{plf}$

Beam Mount Support Reactions:



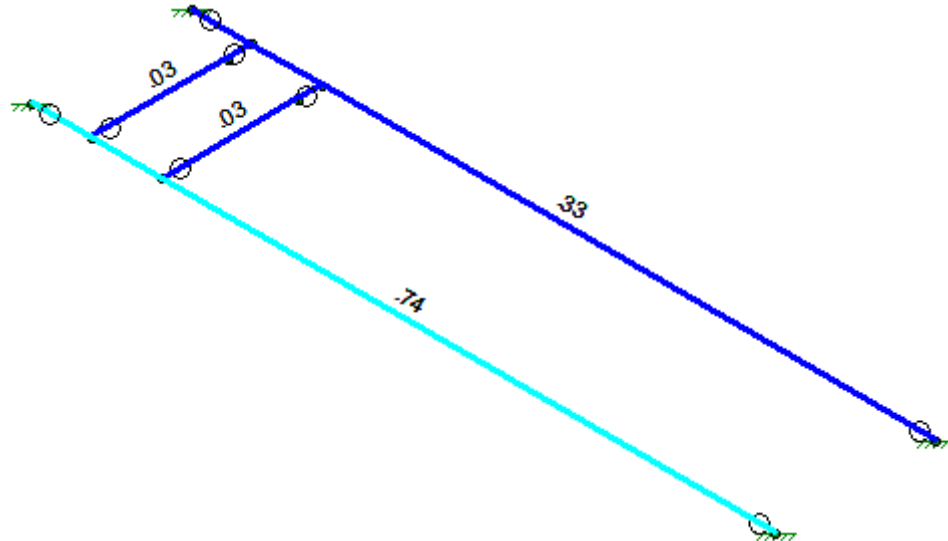
Load Configuration: (shown for DL+Mount+SL)



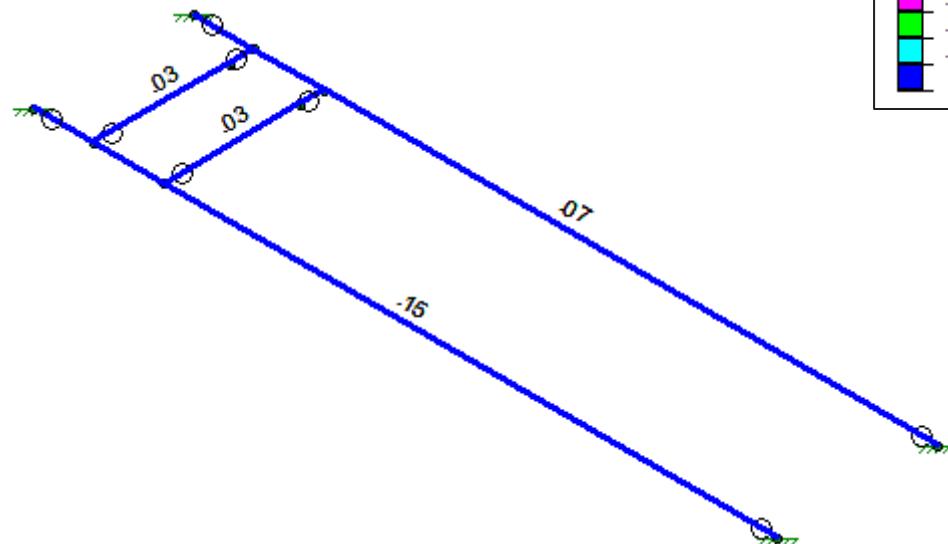
## CALCULATION SHEET



Bending Check:



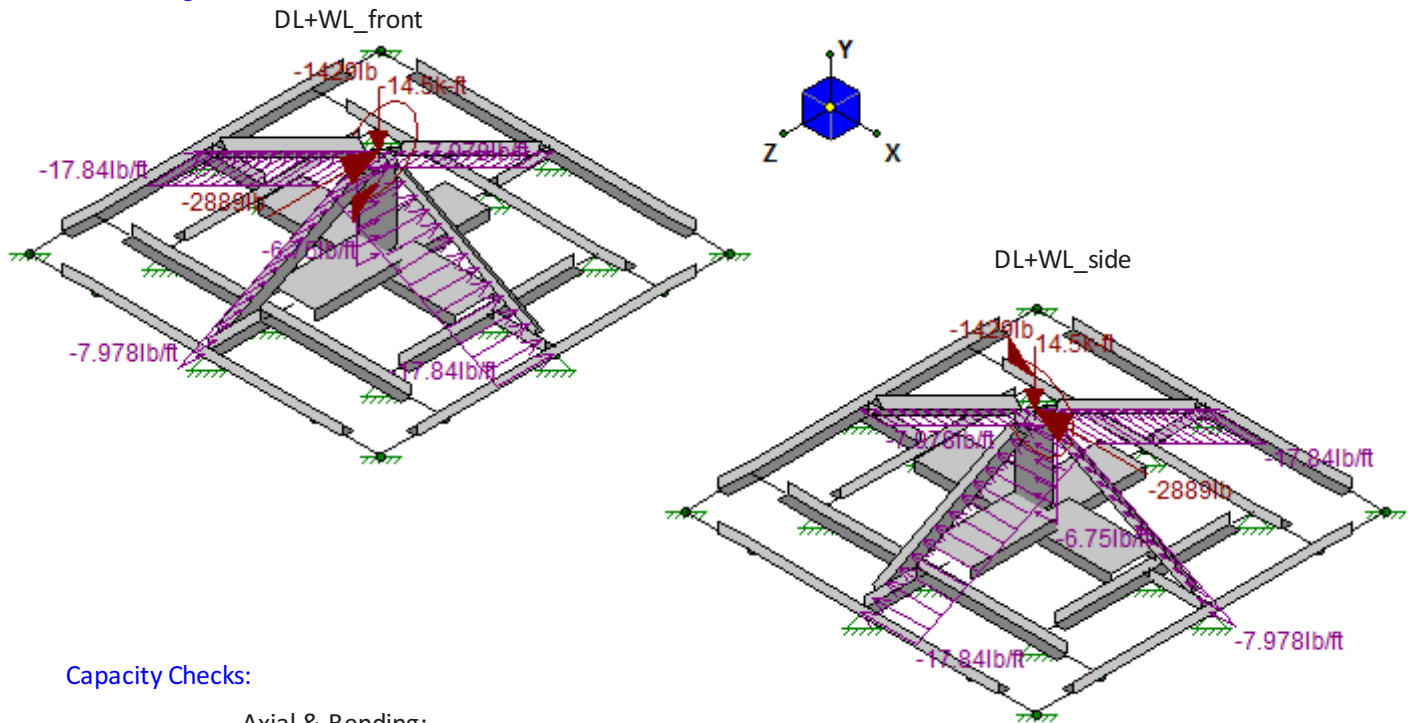
Shear Check:



Code Check	
No Calc	
> 1.0	
.90-1.0	
.75-.90	
.50-.75	
0-.50	

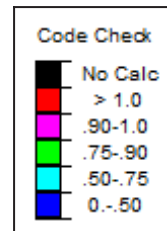
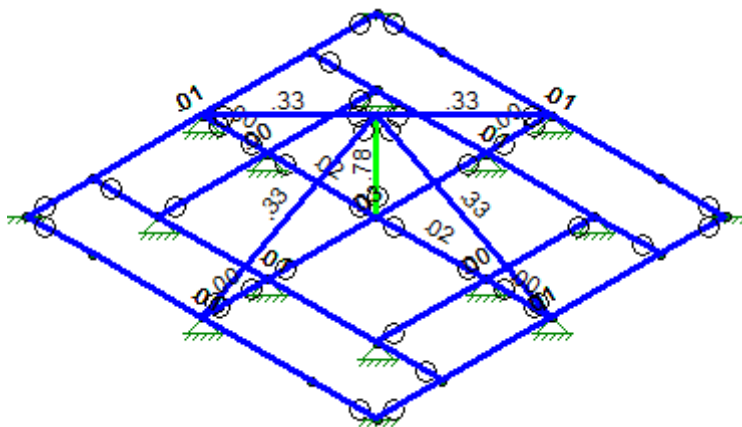
**Check RF Transparent Chimney Support Sled:**

### Load Configuration:

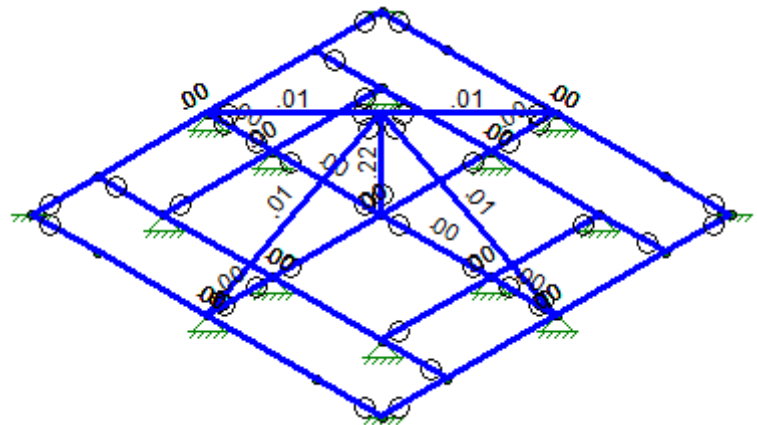


### Capacity Checks:

Axial & Bending:



Shear:



**DETERMINE REQUIRED COUNTER WEIGHT FOR RF TRANSPARENT CHIMNEY SUPPORT SLED**

$$M_{\text{equip\_plat2}} := (M_{\text{Chimney}} + F_{\text{Chimney}} \cdot 24\text{in}) + F_{\text{rru1\_front}} \cdot r_{\text{rru1\_plat2}} + F_{\text{rru2\_front}} \cdot r_{\text{rru2\_plat2}} + F_{\text{tma1\_front}} \cdot r_{\text{tma1\_plat2}} + 2 \cdot F_{\text{tma2\_front}} \cdot r_{\text{tma2\_plat2}} \dots = 20.463 \cdot \text{kip} \cdot \text{ft}$$

$$M_{\text{kicks\_plat2}} := 4F_{\text{kicks\_plat2}} \cdot r_{\text{kicks\_plat2}} = 286.887 \cdot \text{ft} \cdot \text{lbf}$$

$$M_{\text{post\_plat2}} := F_{\text{post\_plat2}} \cdot r_{\text{post\_plat2}} = 13.419 \cdot \text{ft} \cdot \text{lbf}$$

$$M_{\text{over\_plat2}} := M_{\text{equip\_plat2}} + M_{\text{kicks\_plat2}} + M_{\text{post\_plat2}}$$

$$M_{\text{over\_plat2}} = 20764 \cdot \text{ft} \cdot \text{lbf}$$

$$FS := 1.666 \quad \text{Factor of safety for Overturning}$$

(Weight of the frame is approx. 645 lbs and the center of gravity is 4'-0" away from the rotation point. The moment arm for the ballast weights are (2) @ 4'-0" and (1) @ 7'-3")

$$W_{\text{plat2}} := 645\text{lbf}$$

$$W := P_{\text{Chimney}} + W_{\text{rru1}} + W_{\text{rru2}} + W_{\text{tma1}} + 2W_{\text{tma2}} + W_{\text{plat2}} = 2266.9 \text{ lbf}$$

$$W_{\text{ballast\_per\_tray}} := \frac{(M_{\text{over\_plat2}} \cdot FS - W \cdot 4\text{ft})}{(2 \cdot 48\text{in}) + 87\text{in}}$$

$$W_{\text{ballast\_per\_tray}} = 1674 \text{ lbf}$$

**To resist overturning, each tray should contain a ballast weight of 1675 lbs**

$$W_{\text{ballast\_tray}} := 1675\text{lbf}$$

$$W_{\text{total\_plat2}} := W + 4 \cdot W_{\text{ballast\_tray}} = 8966.9 \text{ lbf}$$

## CALCULATION SHEET



### Check Roof Structure under Gamma RF Transparent Chimney

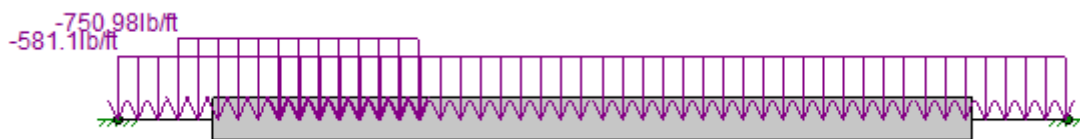
#### Check Loads on Slab & Deck

Slab Span:	$L_{\text{slab}} := 6\text{ft} + 9.5\text{in}$	
Allowable Maximum Load on Slab:	$w_{\text{allow\_slab}} := 311\text{psf} + 51\text{psf}$	Per Vulcraft Catalog
Slab Dead Load:	$w_{\text{DLr}} := (DL_R + DL_C) = 63.5\cdot\text{psf}$	
Slab Live Load:	$w_{\text{LL}} := LL_r = 20\cdot\text{psf}$	
Slab Snow Load:	$w_{\text{SL}} := P_f = 22.05\cdot\text{psf}$	
Slab Mount Support Load:	$w_{\text{Plat2DL}} := \frac{W_{\text{total\_plat2}}}{[(8\text{ft}\cdot 8\text{ft}) - (5\text{ft}\cdot 5\text{ft})]} = 229.92\cdot\text{psf}$	
Maximum Total Load on Slab:	$w_{\text{slab}} := w_{\text{DLr}} + w_{\text{Plat2DL}} + w_{\text{SL}} = 315.47\cdot\text{psf}$	
Comparison:	$\frac{w_{\text{slab}}}{w_{\text{allow\_slab}}} = 87.15\cdot\%$	<b>==&gt; OK, Slab &amp; deck are adequate</b>

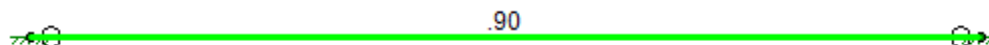
#### Check Roof Beams W16x31

Beam Tributary Width:	$W_{\text{Trib}} := 6\text{ft} + 9.5\text{in}$
Beam Dead Load:	$w_{\text{DLr}} := (DL_R + DL_C) \cdot W_{\text{Trib}} = 431.271\cdot\text{plf}$
Beam Live Load:	$w_{\text{LL}} := LL_r \cdot W_{\text{Trib}} = 135.833\cdot\text{plf}$
Beam Snow Load:	$w_{\text{SL}} := P_f \cdot W_{\text{Trib}} = 149.756\cdot\text{plf}$
Beam Mount Support Load:	$w_{\text{Plat2dl}} := \left( \frac{0.67 W_{\text{total\_plat2}}}{8\text{ft}} \right) = 750.98\cdot\text{plf}$

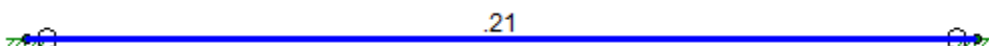
Load Configuration: (shown for DL+Mount+SL)



Bending Check:



Shear Check:



Code Check	
No Calc	
> 1.0	
.90-1.0	
.75-.90	
.50-.75	
0-.50	

**DETERMINE REQUIRED COUNTER WEIGHT FOR RRU SUPPORT SLED**

$$M_{rru\_sled} := 2 \cdot F_{rru1\_front} \cdot r_{rru1\_sled} + 2 \cdot F_{rru2\_front} \cdot r_{rru2\_sled} + F_{DC6\_front} \cdot r_{DC6\_sled} = 0.447 \cdot \text{kip} \cdot \text{ft}$$

$$M_{kicks\_rru\_sled} := 2F_{kicks\_sled} \cdot r_{kicks\_sled} = 61.511 \cdot \text{ft} \cdot \text{lbf}$$

$$M_{posts\_rru\_sled} := 2F_{posts\_sled} \cdot r_{posts\_sled} = 79.675 \cdot \text{ft} \cdot \text{lbf}$$

$$M_{hor\_rru\_sled} := F_{hor\_sled} \cdot r_{hor\_sled} = 142.09 \cdot \text{ft} \cdot \text{lbf}$$

$$M_{over\_rru\_sled} := M_{rru\_sled} + M_{kicks\_rru\_sled} + M_{posts\_rru\_sled} + M_{hor\_rru\_sled}$$

$$M_{over\_rru\_sled} = 730 \cdot \text{ft} \cdot \text{lbf}$$

$$FS := 1.666 \quad \text{Factor of safety for Overturning}$$

(Weight of the frame is approx. 140 lbs and the center of gravity is 1'-4.5" away from the rotation point. The moment arm for the ballast weights are 24" and 9")

$$W_{rru\_sled} := 140 \text{ lbf}$$

$$W := 2W_{rru1} + 2W_{rru2} + W_{DC6} + W_{rru\_sled} = 420.3 \text{ lbf}$$

$$W_{ballast\_per\_tray} := \frac{(M_{over\_rru\_sled} \cdot FS - W \cdot 16.5 \text{ in})}{24 \text{ in} + 9 \text{ in}}$$

$$W \cdot 16.5 \text{ in} = 577.9 \cdot \text{lbf} \cdot \text{ft}$$

$$W_{ballast\_per\_tray} = 232 \text{ lbf}$$

**To resist overturning, each tray should contain a ballast weight of 235 lbs**

1.0 DESIGN INFORMATION AND GENERAL REQUIREMENTS

1.0 GENERAL  
ALL DIMENSIONS ARE APPROXIMATE, CONTRACTOR SHOULD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK.

- 1.1 CODES  
a. 2005 CONNECTICUT BUILDING CODE WITH ALL ADOPTED AMENDMENTS AND SUPPLEMENTS  
b. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-02, AMERICAN SOCIETY OF CIVIL ENGINEERS  
c. STEEL CONSTRUCTION MANUAL, 9TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION

- 1.2 LOADS AND DESIGN CRITERIA  
a. WIND LOADING: V: 95 MPH, EXPOSURE B, OCCUPANCY CATEGORY II  
b. EQUIPMENTS AS LISTED IN CONSTRUCTION DRAWINGS PREPARED BY DESTEX ENGINEERING, LLC, 17/20/2016, FOR THE PROJECT, DESTEX ENGINEERING, LLC, DATED 06/20/2016.

- 1.3 NOTES  
a. PRIOR TO PURCHASE OR FABRICATION OF MATERIAL, THE CONTRACTOR SHALL VERIFY THE MATERIALS AND DIMENSIONS OF THE MEMBER OR THE MEMBER OR BOLT SIZES DO NOT MATCH THOSE LISTED, DESTEX SHALL BE NOTIFIED IMMEDIATELY.  
b. CONTRACTOR TO REPLACE ALL BOLTS REMOVED WITH NEW BOLTS OF SAME TYPE, UNLESS NOTED OTHERWISE.

2.0 STRUCTURAL STEEL

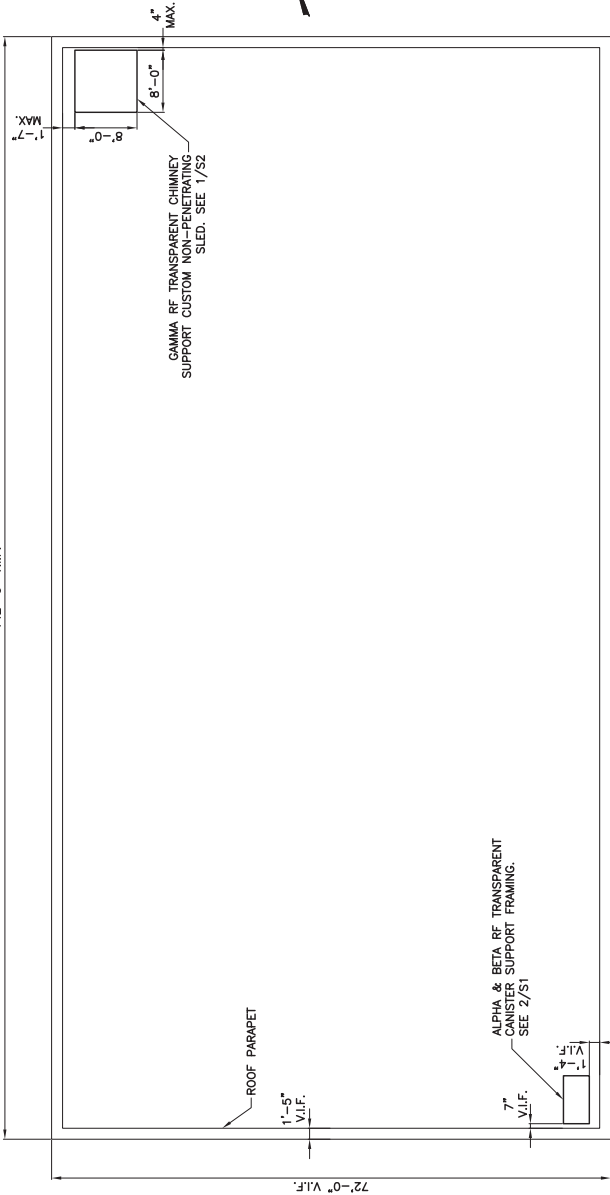
- 2.1 MATERIALS  
a. STRUCTURAL STEEL ..... ASTM A992  
b. PIPE ..... ASTM A53 GR. B  
c. BOLTS ..... ASTM A572-50 (MINIMUM)  
d. WELDING ..... AWS D1.1/D1.7 AS APPLICABLE  
e. THE FABRICATOR SHALL FURNISH CHECKED SHOP AND ERECTION DRAWINGS TO THE ENGINEER, AND OBTAIN APPROVAL PRIOR TO FABRICATING ANY STRUCTURAL STEEL. SHOP DRAWINGS SHALL CONFORM TO THE REQUIREMENTS OF THE CONNECTICUT BUILDING CODE, AND THE NEXT LARGER SIZE. WELDING FOR REDRILLING WILL NOT BE PERMITTED.

- 2.2 CONNECTIONS  
a. SHOP CONNECTIONS MAY BE BOLTED OR WELDED  
b. FIELD CONNECTIONS SHALL BE DESIGNED TO DEVELOP 1/2 OF THE MAXIMUM TOTAL UNIFORM LOAD CAPACITY OF THE BEAM.  
c. FIELD CONNECTIONS SHALL BE MADE WITH A325 BOLTS AND HARDENED WASHERS EXCEPT AS INDICATED ON THE DESIGN DRAWINGS  
d. CONNECTIONS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED BY THE FABRICATOR AND SHALL CONFORM TO THE REQUIREMENTS OF THE CONNECTICUT BUILDING CODE AND "AISC SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AND "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".  
e. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER.  
f. BOLT HOLES SHALL BE CUT, DRILLED OR PUNCHED AT RIGHT ANGLES TO THE BEAM. BURNING SHALL BE CLEAN CUT WITHOUT TORN OR RAGGED EDGES. OUTSIDE BURRS RESULTING FROM DRILLING OR REAMING OPERATION SHALL BE REMOVED WITH A TOOL MAKING A 1/16 INCH BEVEL. BOLT HOLES SHALL BE 1/16 INCH OVERSIZE.

- 2.3 FINISHES  
a. STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123  
b. BOLTS AND NUTS SHALL BE HOT DIP GALVANIZED PER ASTM A153.  
c. ALL SURFACES DAMAGED BY FIELD WELDING OR CUTTING SHALL BE REPAIRED WITH GALVANIZING METAL OR EQUIVALENT. THE FINISH SHOULD BE AT LEAST 93% PURE ZINC. RUST-OLEUM PROFESSIONAL (MODEL# 7565838) OR SIMILAR.

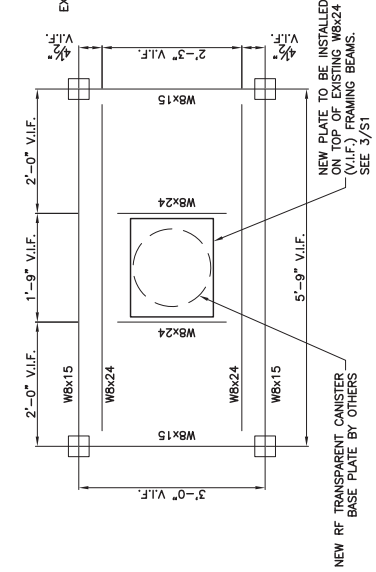
- 2.4 WELDING  
a. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS: INSTALLING 3000 (NTPA 701) ANTI-SPRINKLER SYSTEMS TO PROTECT THE COAXIAL COAXIAL IS FLAMMABLE AND SHALL CATCH FIRE IF NOT PROTECTED. WATER SHALL BE ON SITE OF ADEQUATE AMOUNT AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. CONTRACTOR SHOULD BE ABLE TO WELD ON GALVANIZED SURFACE. WELDING ON GALVANIZED SURFACE SHOULD BE DONE WITH EXTREME CAUTION. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC, IT DOES NOT PROVIDE A STRUCTURAL WELD. GROUND GALVANIZING BEFORE WELDING.  
b. WELDING SHALL BE PROVIDED PRIOR TO WELDING. ALL WELDING SHALL BE PERFORMED BY ANS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES.

142'-0" V.I.F.



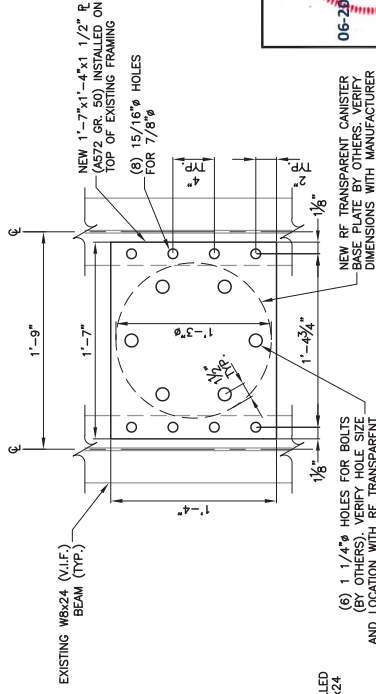
SITE PLAN

1 S1 118' x 140'



ALPHA & BETA SUPPORT FRAMING PLAN

2 S1 12' x 140'



3 S1 1' x 140'

PLATE ADDITION DETAIL

1' x 140'

NUM	DATE	DESCRIPTION:
A	06/20/16	ISSUED FOR CONSTRUCTION

1389 WEST MAIN STREET,  
WATERBURY, CT 06708  
FA CODE: 10071305

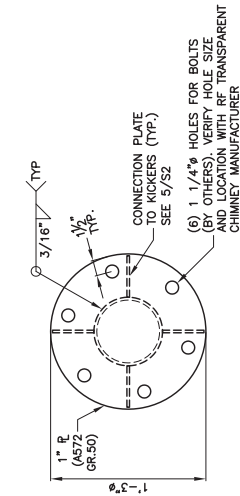
ADDRESS:

DESIGNED: SA  
DRAWN: SA  
CHECKED: AC

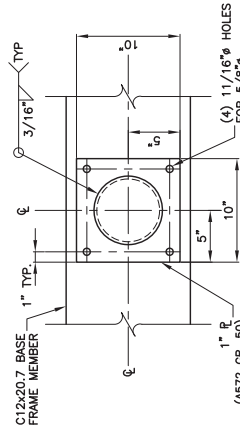
JOB #: 1629072

## S2 GAMMA MOUNT DETAILS

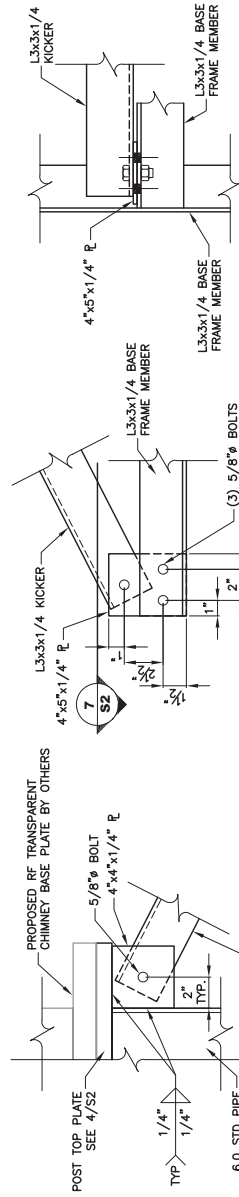
Ahmet Colakoglu, PE  
CT License No: 27057



## POST TOP PLATE DETAIL



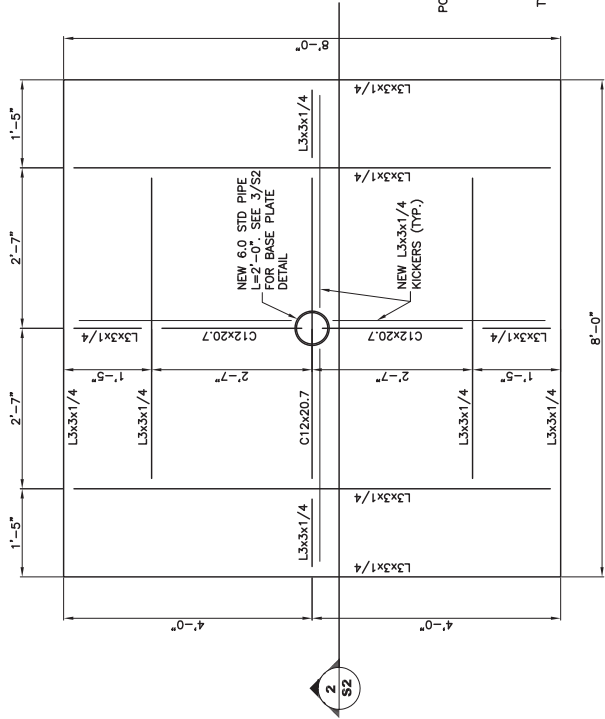
## POST BASE PLATE DETAIL



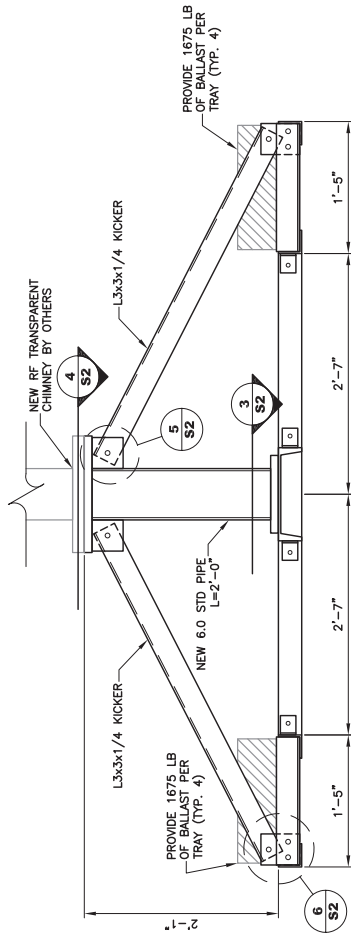
## SECTION

## POST-KICKER CONNECTION

## POST-KICKER CONNECTION



## SLED BASE FRAMING PLAN



## SLED ELEVATION

## ATTACHMENT 4



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

AT&T Existing Facility

Site ID: CT5440

Waterbury West  
1389 West Main Street  
Waterbury, CT 06708

**August 24, 2016**

**EBI Project Number: 6216003659**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>30.84 %</b>



August 24, 2016

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

## Emissions Analysis for Site: **CT5440 – Waterbury West**

EBI Consulting was directed to analyze the proposed AT&T facility located at **1389 West Main Street, Waterbury, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits at surrounding ground levels.

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

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

General population/uncontrolled exposure limits apply to situations in which the general 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 facility that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier



will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **1389 West Main Street, Waterbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the building. For this report the sample point is the top of a 6-foot person standing at ground level at the base of the building.

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

- 1) 2 UMTS channels (850 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 (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 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 6-foot person standing at ground level at the base of the building. 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 **KMW AM-X-CD-14-65-00T-RET, CCI HPA-65R-BUU-H8 and CCI HPA-65R-BUU-H6** for transmission in the 700 MHz, 850 MHz, and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antenna mounting height centerlines of the proposed antennas are **42 feet & 50 feet** above ground level (AGL) for **Sector A**, **42 feet & 50 feet** above ground level (AGL) for **Sector B** and **42 feet** above ground level (AGL) for Sector C. The Sector A & B antennas are located in a faux flagpole on the southern end of the building with the antennas with azimuths of 100 & 220 degrees from true north. The Sector C antennas are located in a faux chimney at the northern end of the building with an azimuth of 340 degrees from true north.
- 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. Per the Connecticut Siting Council active database there are no additional carriers on this building.

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



## AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET	Make / Model:	KMW AM-X-CD-14-65-00T-RET
Gain:	12.65 / 14.15 dBd	Gain:	12.65 / 14.15 dBd	Gain:	12.65 / 14.15 dBd
Height (AGL):	42 feet	Height (AGL):	42 feet	Height (AGL):	42 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,664.56	ERP (W):	2,664.56	ERP (W):	2,664.56
Antenna A1 MPE%	9.73 %	Antenna B1 MPE%	9.73 %	Antenna C1 MPE%	9.73 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	50 feet	Height (AGL):	50 feet	Height (AGL):	42 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	6,229.75	ERP (W):	6,229.75	ERP (W):	5,462.56
Antenna A2 MPE%	16.82 %	Antenna B2 MPE%	16.82 %	Antenna C2 MPE%	21.11 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	30.84 %
No Additional Carriers On Site	NA
Site Total MPE %:	30.84 %

AT&T Sector A Total:	26.55 %
AT&T Sector B Total:	26.55 %
AT&T Sector C Total:	30.84 %
Site Total:	30.84 %

AT&T _ Max Values Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	552.23	42	30.64	850 MHz	567	5.40%
AT&T 1900 MHz (PCS) UMTS	2	780.05	42	43.28	1900 MHz (PCS)	1000	4.33%
AT&T 700 MHz LTE	2	940.05	42	52.15	700 MHz	467	11.17%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	42	99.38	1900 MHz (PCS)	1000	9.94%
						Total:	30.84%



## 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 AT&T 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:

AT&T Sector	Power Density Value (%)
Sector A:	26.55 %
Sector B:	26.55 %
Sector C:	30.84 %
AT&T Maximum Total (per sector):	30.84 %
Site Total:	30.84 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **30.84 %** 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.

# ATTACHMENT 5



115 ROUTE 46 SUITE E39, MOUNTAIN LAKES, NJ 07046  
OFFICE: 862-209-4300 | FAX: 862-209-4301

## **Photo Simulations**

For

**1389 West Main Street  
Waterbury, CT 06708**

Site ID: **CT5440**

FA#: **10071305**

Site Name: **Waterbury West**

Com-Ex Number: **15167-EMP**

Prepared for:

AT&T Mobility  
550 Cochituate Road,  
Framingham, MA 01701

Prepared by:



## 1 – Photos

View 1 - Existing



View 1 - Proposed



View 2 – Existing



View 2 – Proposed



View 3 – Existing

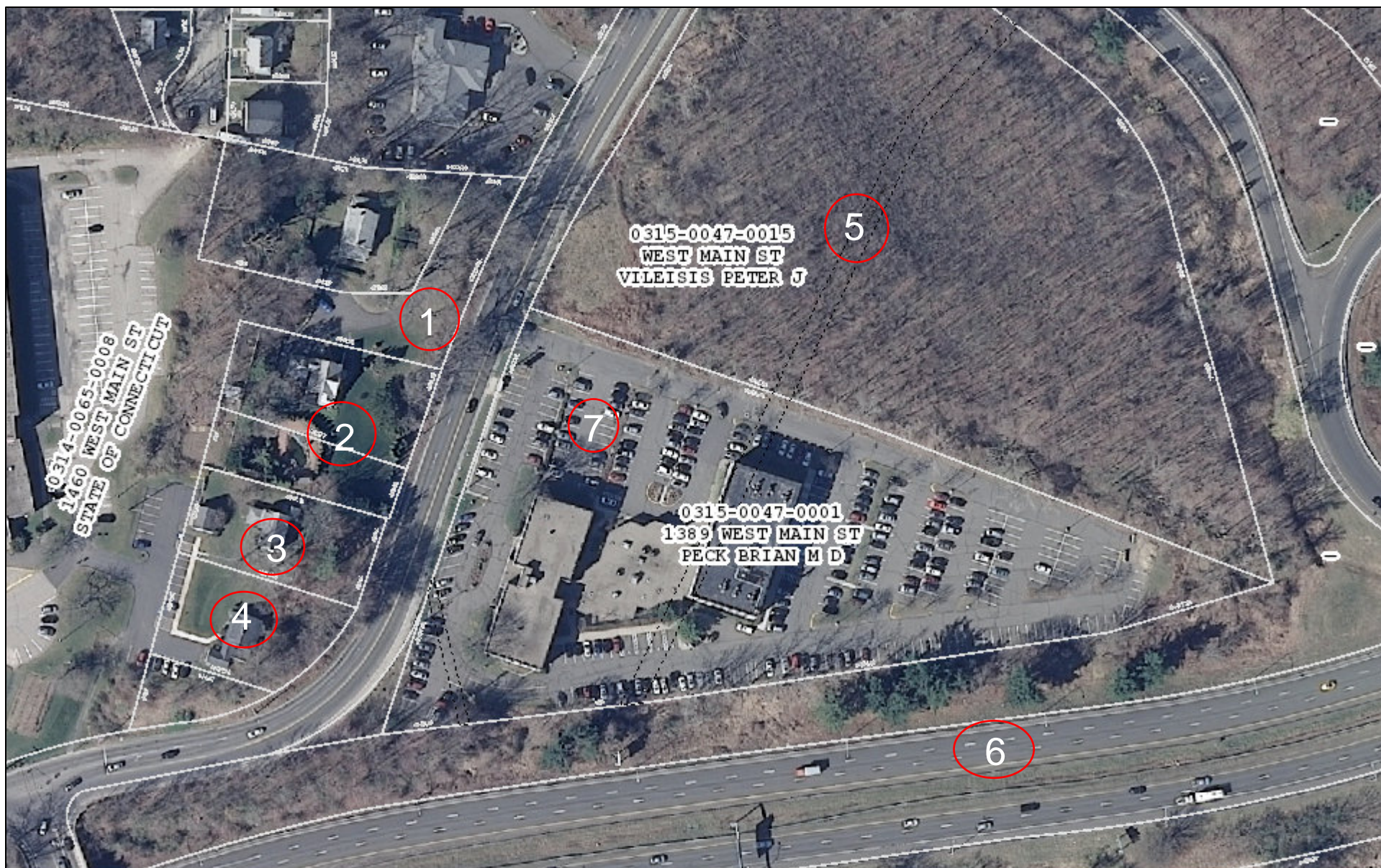


View 3 – Proposed

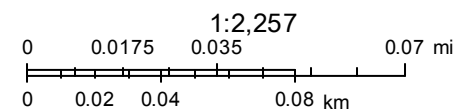


# ATTACHMENT 6

# Abutting Properties



October 13, 2016



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

## ABUTTING PROPERTY OWNERS

1. 1460 WEST MAIN STREET  
STATE OF CONNECTICUT  
NAUGATUCK VALLEY COMMUNITY COLLEGE  
1460 WEST MAIN ST  
WATERBURY CT 06708

2. 1376 WEST MAIN ST  
THE RITA C FRANCISCO TRUST  
CLARA F STEVENS TRUSTEE  
PO BOX 906  
MIDDLEBURY CT 06762

3. 1392 & 1404 WEST MAIN STREET  
DIMI LLC  
68 HIGHMEADOW RD  
WATERTOWN, CT 06795

4. 1404 WEST MAIN STREET  
DIMI LLC  
68 HIGHMEADOW RD  
WATERTOWN, CT 06795

5. PETER J VILEISIS  
370 WATERTOWN RD  
MIDDLEBURY, CT 06762

6. I-84  
STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
2800 BERLIN TURNPIKE  
NEWINGTON, CT 06111

7. 1389 WEST MAIN STREET (OWNER)  
M & P REALTY CO  
1389 WEST MAIN ST  
C/O ARTHRITIS CENTER  
WATERBURY CT 06708-3104

October 13, 2016

**VIA CERTIFIED MAIL/**  
**RETURN RECEIPT REQUESTED**  
ADDRESSEE  
ADDRESS

Re: New Cingular Wireless PCS, LLC ("AT&T")  
Proposed Modification of Existing Facility  
1389 West Main Street, Waterbury, Connecticut

Dear Sir or Madam\_\_\_\_\_:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and our client's intent to file a petition with the State of Connecticut Siting Council for approval of a modification of an existing wireless communications tower facility (the "Facility") on the rooftop of the captioned property.

State law requires that record owners of property abutting a parcel on which a facility is proposed be sent notice of an applicant's intent to file a petition with the Siting Council.

Included with this letter please find a Notice of this submission and details the proposal. Of note, the location, height and other features of the Facility are subject to review and potential change by the Connecticut Siting Council under the provisions of Connecticut General Statutes §16-50g et seq.

If you have any questions concerning this petition, please contact the Connecticut Siting Council or the undersigned after October 17, 2016, the date that the petition is expected to be on file.

Very truly yours,

Daniel M. Laub  
Enclosure

## NOTICE

Notice is hereby given, pursuant to Section 16-50j-40(a) of the Regulations of Connecticut State Agencies of a Petition being filed with the Connecticut Siting Council ("Siting Council") on or after October 14, 2016 by New Cingular Wireless PCS, LLC ("AT&T"). AT&T seeks a declaratory ruling that modification of an existing rooftop wireless facility does not have significant adverse environmental effects that might otherwise require a certificate of environmental compatibility and public need ("Certificate").

AT&T currently maintains an operational facility on the rooftop of a building at 1389 West Main Street in Waterbury. The facility includes antennas concealed in a 24" diameter, +/- 15.33' tall flagpole style enclosure on the southern corner of the rooftop and associated equipment used to operate the antennas. In order to upgrade its existing facility AT&T proposes to replace this flagpole style enclosure with a new 30" diameter, +/-17.33' stealth flagpole of similar design to accommodate new antennas. AT&T also proposes to add antennas to the north corner of the same rooftop inside a new 4' x 4' enclosure that will be approximately 8.5' tall and designed to appear as a chimney matching the color of the existing building. This upgrade also includes additional existing equipment on the rooftop used to operate the antennas.

The Petition will provide additional details of the proposal and explain why AT&T submits that this modification presents no significant adverse environmental effects. The location, height and other features of the facility are subject to review and potential change under provisions Connecticut General Statutes Sections 16-50g et. seq.

Copies of the Petition will be available for review during normal business hours on or after October 17, 2016 at the following:

Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

City of Waterbury  
City Clerk – Michael J. Dalton  
235 Grand Street  
Courtyard Level  
Waterbury, CT 06702

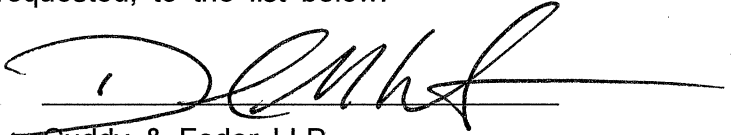
or the offices of the undersigned. All inquiries should be addressed to the Connecticut Siting Council or to the undersigned.

Daniel M. Laub, Esq.  
Cuddy & Feder LLP  
445 Hamilton Ave, 14th Floor  
White Plains, New York 10601  
(914) 761-1300  
Attorneys for the Petitioner

## CERTIFICATION OF SERVICE

I hereby certify that on the 13<sup>th</sup> day of October 2016, a copy of the foregoing notice of the filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested, to the list below:

Dated: 10/13/16



Cuddy & Feder LLP

45 Hamilton Avenue, 14<sup>th</sup> Floor

White Plains, New York 10601

Attorneys for:

New Cingular Wireless PCS, LLC (AT&T)

### State and Regional

The Honorable George Jepsen Attorney General Office of the Attorney General 55 Elm Street Hartford, CT 06106	Department of Economic and Community Development Catherine Smith, Commissioner 505 Hudson Street Hartford, CT 06106
Department of Public Health Dr. Raul Pino, Commissioner 410 Capitol Avenue P.O. Box 340308 Hartford, CT 06134	Department of Energy and Environmental Protection Public Utilities Regulatory Authority Chairman Arthur House Ten Franklin Square New Britain, CT 06051
Council on Environmental Quality Karl J. Wagener, Executive Director 79 Elm Street Hartford, CT 06106	Department of Transportation James P. Redeker, Commissioner 2800 Berlin Turnpike Newington, CT 06111

Department of Energy & Environmental Protection Rob Klee, Commissioner 79 Elm Street Hartford, CT 06106	Department of Agriculture Steven K. Reviczky, Commissioner 165 Capitol Avenue Hartford, CT 06106
Office of Policy and Management Benjamin Barnes, Secretary 450 Capitol Avenue Hartford, CT 06106	State House Representative - 73 <sup>rd</sup> Jeffrey J. Berger Gail Lavielle Legislative Office Building Room 3704 Hartford, CT 06106
Department of Emergency Services & Public Protection Division of Emergency Management and Homeland Security William Shea, Deputy Commissioner 25 Sigourney Street, 6 <sup>th</sup> Floor Hartford, CT 06106-5042	State Senator - 15 <sup>th</sup> District Joan V. Hartley Legislative Office Building Room 3100 Hartford, CT 06106
Department of Economic and Community Development-Offices of Culture and Tourism Todd Levine, State Historic Preservation Officer, Historian/Environmental Reviewer One Constitution Plaza, 2 <sup>nd</sup> Floor Hartford, CT 06103	Naugatuck Valley Council of Governments Rick Dunne, Executive Director 49 Leavenworth Street, Suite 303 Waterbury, Connecticut 06702

### Federal

Federal Communications Commission 445 12 <sup>th</sup> Street SW Washington, D.C. 20554	Federal Aviation Administration 800 Independence Avenue, SW Washington, DC 20591
U.S. Congresswoman Elizabeth Esty 1 Grove St. Suite 600 New Britain, CT 06053	U.S. Senator Richard Blumenthal 90 State House Square, 10th Floor Hartford, CT 06103
U.S. Senator Christopher Murphy One Constitution Plaza, 7 <sup>th</sup> Floor Hartford, CT 06103	

### City of Waterbury

Mayor Neil M. O'Leary Town Hall City Hall Building 235 Grand Street, 2nd floor Waterbury, CT 06702	City Plan Commission Raymond Work, Chair 185 South Main Street, 5th floor (1 Jefferson Square) Waterbury, CT 06706
Inland Wetlands Commission Samuel Leisring 185 South Main Street, 5th floor (1 Jefferson Square) Waterbury, CT 06706	Zoning Commission John Tedesco, Chair 185 South Main Street, 5th floor (1 Jefferson Square) Waterbury, CT 06706
James A. Sequin, AICP City Planning Department 185 South Main Street, 5th floor (1 Jefferson Square) Waterbury, CT 06706	