QC Development
PO Box 916
Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

April 5, 2019

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1130
27 Siemon Company Drive, Watertown, CT 06795
N 41.60333333
W 73.11166667

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 135-foot level of the existing 140-foot Smokestack at 27 Siemon Company Drive, Watertown, CT. The structure and property are owned by Siemon Realty Company. AT&T now intends to remove three (3) Andrew antennas and (3) KMW antennas and replace them with (3) CCI antennas and (3) Kathrein antennas. AT&T will also remove (3) Ericsson RRUS-11 Remote Radio Units (RRU) and install three (3) Ericsson 4449 B5/B12 and (3) 4415 B30 RRUs. The new antennas and RRUs would be installed at the 135-foot level of the tower.

AT&T's use of this facility was approved by the Watertown Planning and Zoning Commission on September 7, 2011. This approval included no condition(s) that could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Thomas L. Wynn, Town Council Chair for the Town of Watertown, as well as the local Land Use Department

and the property and structure owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Thomas L. Wynn - Elected Official
Mark Massoud – Planning & Zoning Staff
Siemon Realty Company - Property & Structure Owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							1.26%
AT&T UMTS	2	293	135	0.0127	850	0.5667	0.22%
AT&T UMTS	1	573	135	0.0124	1900	1.0000	0.12%
AT&T LTE	1	1476	135	0.0319	700	0.4667	0.68%
AT&T LTE	1	889	135	0.0192	850	0.5667	0.34%
AT&T LTE	1	2421	135	0.0523	1900	1.0000	0.52%
AT&T LTE	1	2535	135	0.0548	2100	1.0000	0.55%
AT&T LTE	1	1227	135	0.0265	2300	1.0000	0.27%
Site Total							3.96%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							1.26%
AT&T UMTS	1	380	135	0.0082	850	0.5667	0.14%
AT&T LTE	2	2951	135	0.1275	700	0.4667	2.73%
AT&T LTE	1	1000	135	0.0216	850	0.5667	0.38%
AT&T 5G	1	1000	135	0.0216	850	0.5667	0.38%
AT&T LTE	2	3664	135	0.1584	1900	1.0000	1.58%
AT&T LTE	1	1286	135	0.0278	2300	1.0000	0.28%
Site Total							6.76%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

PROJECT INFORMATION

SCOPE OF WORK: ITEMS TO BE MOUNTED ON THE EXISTING SMOKE STACK:
- PROPOSED NEW 12' HD V-BOOM SECTOR MOUNT (SABRE PART# C10857001C) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- PROPOSED 2" STD (2.38" O.D.) 8'-0" LONG PIPE MAST (TYP. OF 3 PER SECTOR, TOTAL OF 9)
- NEW AT&T ANTENNAS: (800-10965) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: (HPA-65R-BU6AA) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4415 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B5/B12 4449 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: DC6-48-60-18-8C (TOTAL OF 1) WITH (2) DC POWER, (1) RET HOME RUN CABLE & (1) FIBER CABLE.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- NEW AT&T RRUS: B14 4478 (700) (TOTAL OF 2).
- SWAP DUS WITH 6630.
- ADD 5G RBS 6630.
- ADD (1) XMU.
- PROPOSED AT&T SURGE ARRESTORS (TSXDC-4310FM) (TOTAL OF 8)

SITE ADDRESS:	76 WESTBURY PARK ROAD WATERTOWN, CT 06795
LATITUDE:	41.603325 N, 41° 36' 11.97" N
LONGITUDE:	73.111666 W, 73° 06' 42.00" W
TYPE OF SITE:	SMOKE STACK / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	140'-0"±
RAD CENTER:	135'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

SITE NUMBER: CT1130

SITE NAME: WATERTOWN

FA CODE: 10035384

PACE ID: MRCTB035259, MRCTB035176, MRCTB035139

PROJECT: LTE 3C_4C_5C 2019 UPGRADE

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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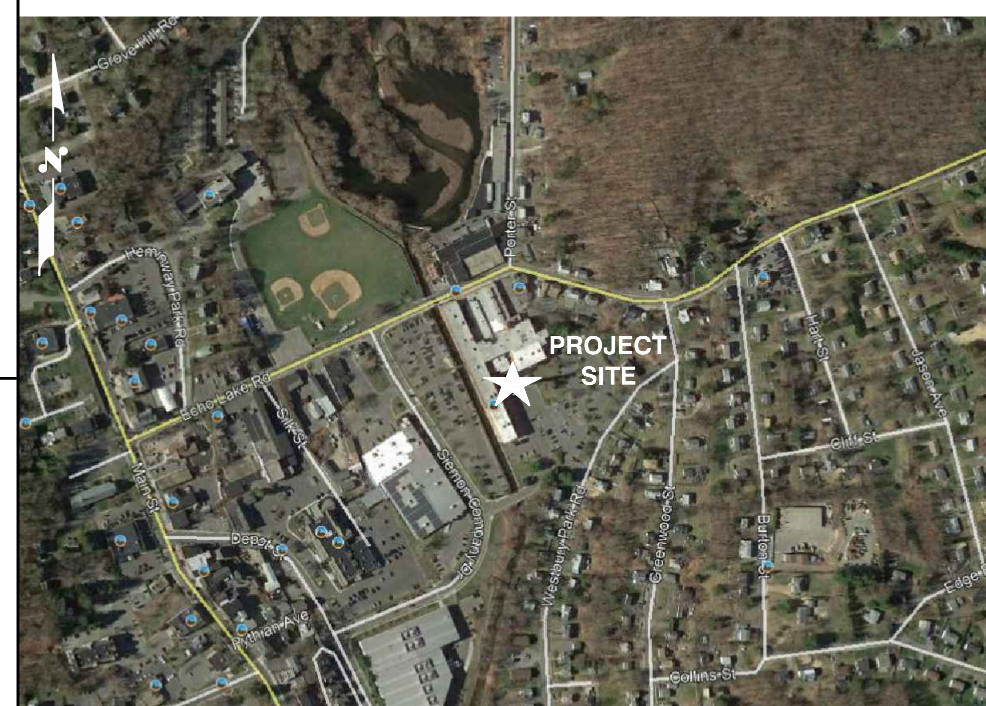
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1
G-1	GROUNDING DETAILS	1

VICINITY MAP

DIRECTION TO SITE:

HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. 0.3 MILES. TURN LEFT AT CAPITAL BLVD. 0.3 MILES. TURN LEFT AT WEST ST. 0.3 MILES. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN. 9.1 MILES. TAKE EXIT 18 TO MERGE ONTO I-691 W TOWARD MERIDEN/WATERBURY. 8.0 MILES. TAKE EXIT 1 TO MERGE ONTO I-84 W TOWARD WATERBURY/DANBURY. 8.7 MILES. TAKE EXIT 20 TO MERGE ONTO CT-8 N TOWARD TORRINGTON. 1.1 MILES. TAKE EXIT 35 ON THE LEFT FOR CT-73 TOWARD OAKVILLE/WATERTOWN. 0.5 MILES. SLIGHT LEFT AT E AURORA ST. 62 FT. CONTINUE STRAIGHT ONTO RUDY AVE. 0.2 MILES. CONTINUE ONTO WATERTOWN AVE. 1.5 MILES. CONTINUE ONTO MAIN ST. 2.4 MILES. TURN RIGHT AT ECHO LAKE RD. 0.2 MILES. TAKE THE 2ND RIGHT ONTO PRINCETON RD. DESTINATION WILL BE ON THE LEFT. 0.1 MILES. END AT PRINCETON RD, WATERTOWN, CT 06795



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 MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG

CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT

HDG HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

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12 INDUSTRIAL WAY
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500 ENTERPRISE DRIVE, SUITE 3A
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A	01/21/19	ISSUED FOR REVIEW	AM	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT REGISTERED PROFESSIONAL ENGINEER LICENSED

AT&T

TITLE SHEET
(LTE 3C_4C_5C)

SITE NUMBER	DRAWING NUMBER	REV
CT1130	T-1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

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 TO 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 SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

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.

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. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. 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.

9. 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.

10. 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.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF 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.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

14. 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.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. 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.

18. 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 SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS 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 ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    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.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    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, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

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.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1130
SITE NAME: WATERTOWN

76 WESTBURY PARK ROAD
WATERTOWN, CT 06795
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at&t
500 ENTERPRISE DRIVE, SUITE 3A
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A	01/21/19	ISSUED FOR REVIEW	AM	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT
DEREK J. CREASY
NO. 28554
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 3C_4C_5C)

SITE NUMBER	DRAWING NUMBER	REV
CT1130	GN-1	1

NOTE:

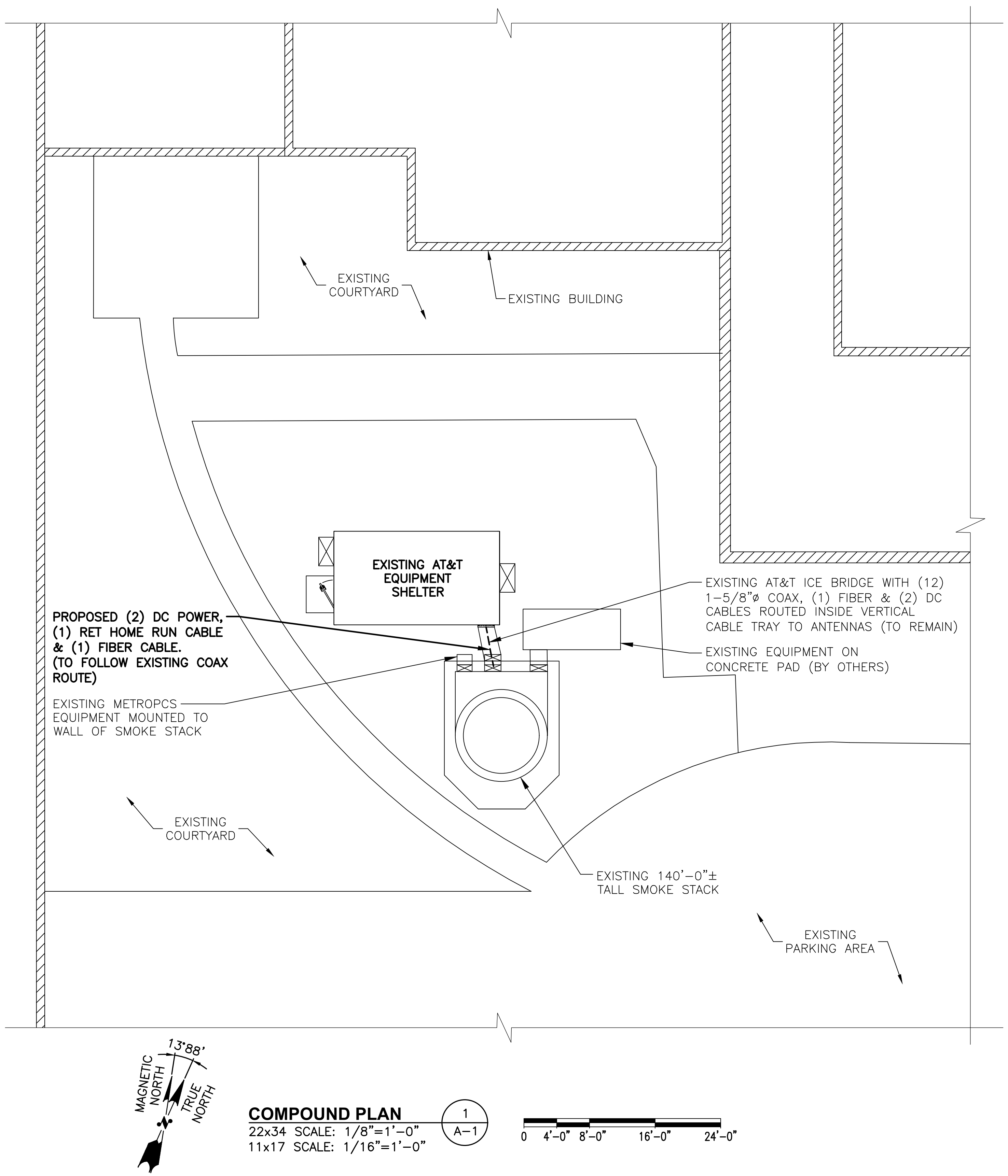
REFER TO **STRUCTURAL ANALYSIS** BY: DEWBERRY ENGINEERS INC, DATED: MARCH 6, 2019, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

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

NOTE:

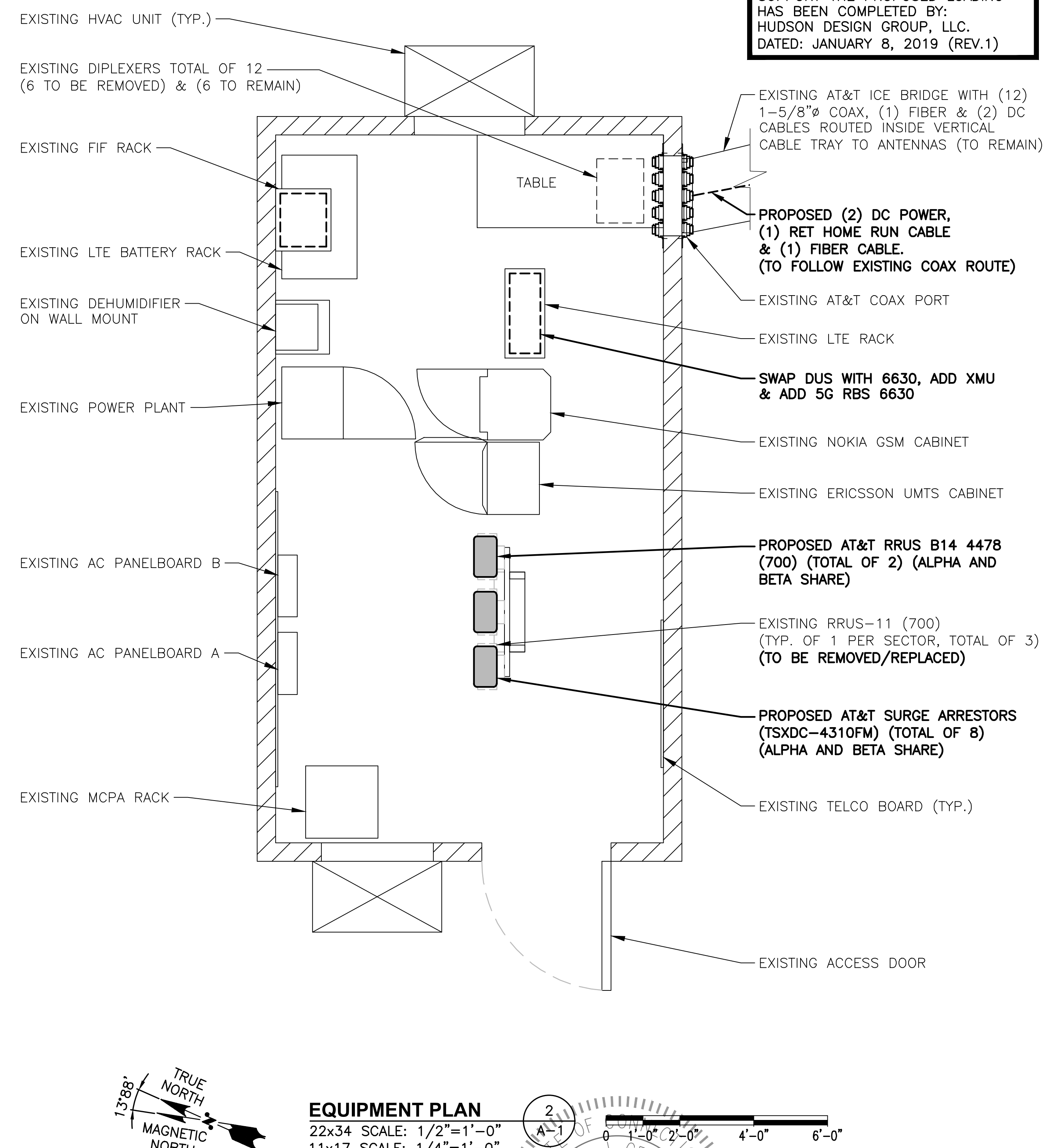
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 8, 2019 (REV.1)



COMPOUND PLAN (1 / A-1)

22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"



EQUIPMENT PLAN (2 / A-1)

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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

HUDSON Design Group LLC
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STATE OF CONNECTICUT · DEREK J. CREASER · LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN
(LTE 3C_4C_5C)

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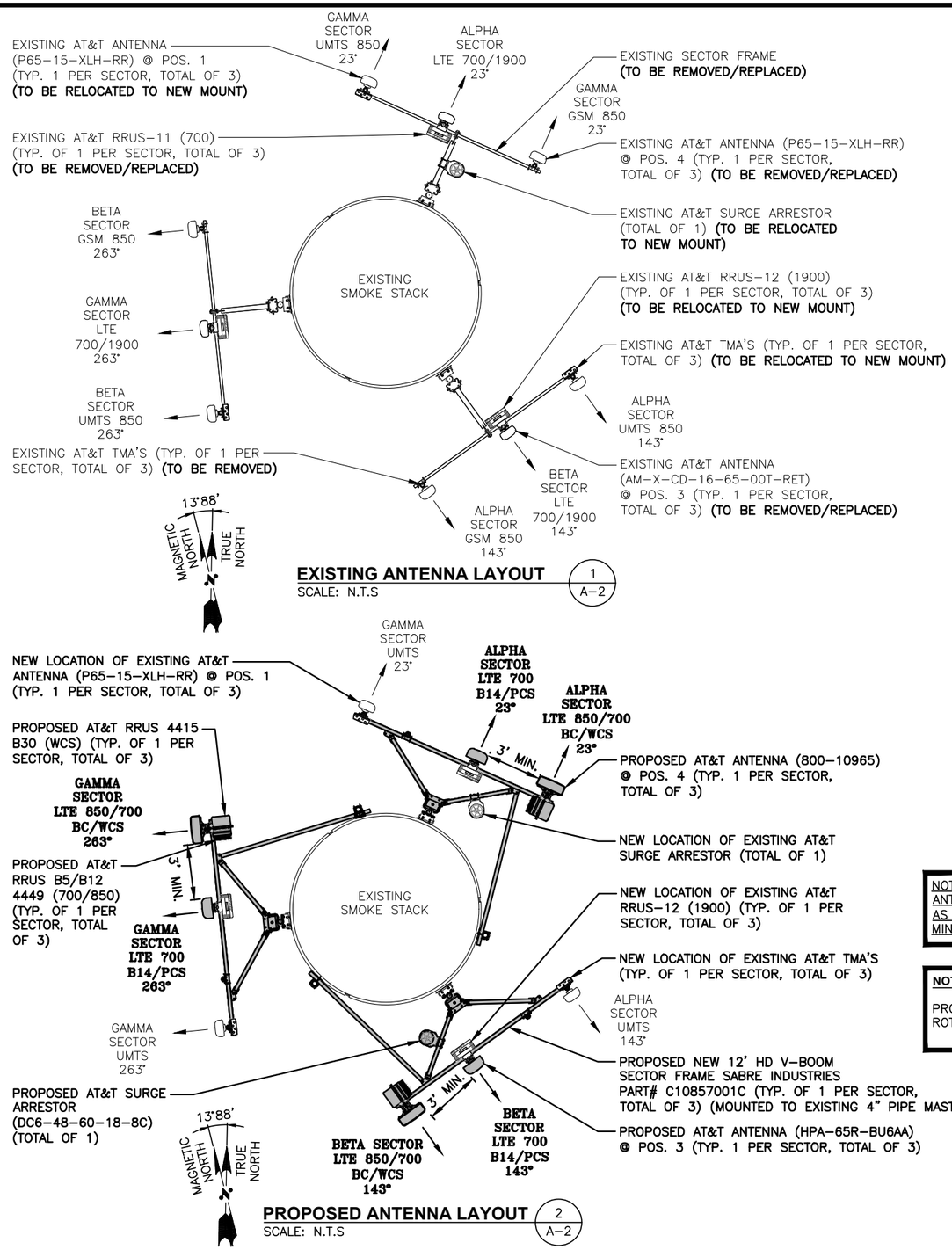
CT1130	A-1	1



NOTE:
ANTENNAS AND MOUNTS TO BE ADJUSTED AS REQUIRED TO ACHIEVE A 3'-0" MINIMUM SEPARATION BETWEEN ANTENNAS

NOTE:
PROPOSED ANTENNA MOUNT TO BE ROTATED TO MATCH LTE AZIMUTHS

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
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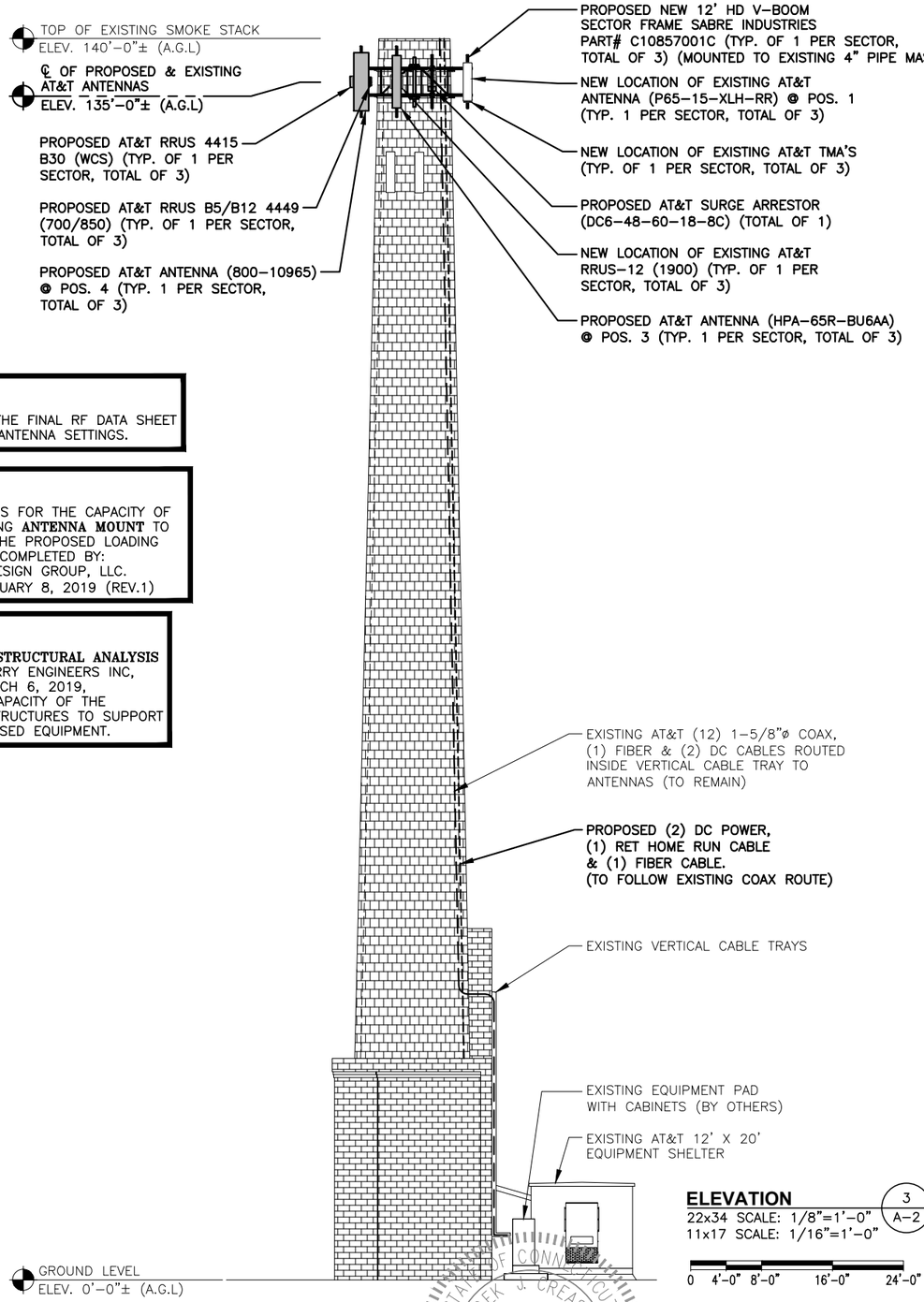


ELEVATION 3 A-2
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1130
SITE NAME: WATERTOWN

76 WESTBURY PARK ROAD
WATERTOWN, CT 06795
LITCHFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/25/19	ISSUED FOR CONSTRUCTION	AM	AT	DJC
A	01/21/19	ISSUED FOR REVIEW	AM	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT — DEREK J. CREASEY — No. 25857 — LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
(LTE 3C_4C_5C)

SITE NUMBER	DRAWING NUMBER	REV
CT1130	A-2	1

NOTE:

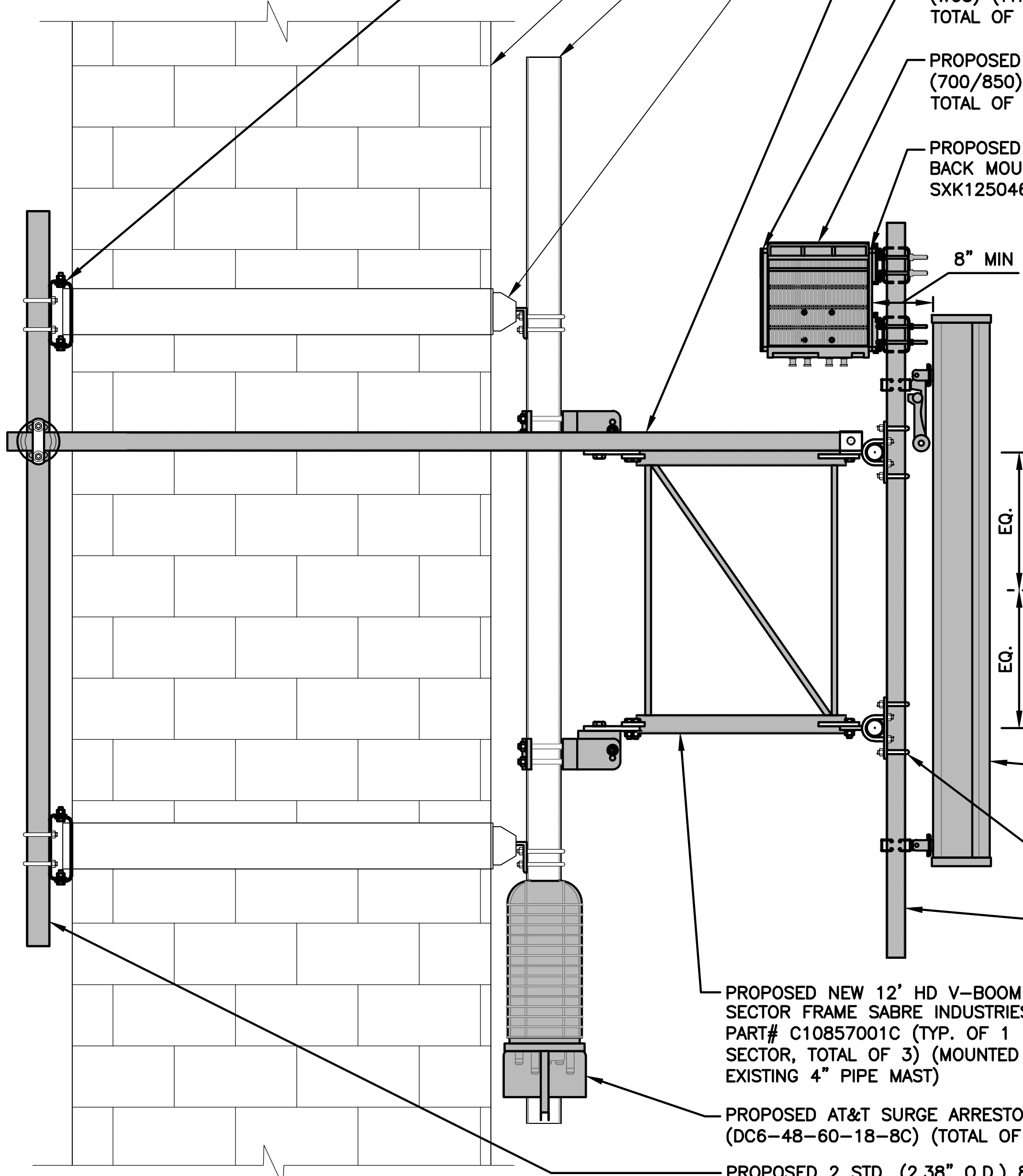
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 8, 2019 (REV.1)

NOTE:

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

NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: DEWBERRY ENGINEERS INC, DATED: MARCH 6, 2019, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED LTE ANTENNA, RRH, & SURGE ARRESTOR MOUNTING DETAIL (2 / A-3)

22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS	P65-15-XLH-RR	51X12X6	±135'	143°	(2) POWERWAVE CM1007-DBPXBC-003 (1) POWERWAVE TT19-08BP111-001 TWIN 1900 W/ 850BP (850)	--	--	(2) 1-5/8" COAX (180'±)	(E) (1) RAYCAP DC6-48-60-18-8C
A2	–	–	–	–	–	–	--	--	--	--	
A3	**PROPOSED**	**LTE 700 B14/PCS**	**HPA-65R-BU6AA**	**71X11.7X7.6**	**±135'**	**23°**	--	(E)(1) RRUS 12 (1900)	20.4X18.5X7.5	(2) 1-5/8" COAX (180'±)	
A4	**PROPOSED**	**LTE 850/700 BC/WCS**	**800-10965**	**78.7x20x6.9**	**±135'**	**23°**	--	**(P)(1) B5/B12 4449 (850/700) (P)(1) 4415 B30 (WCS)**	**15X13.2X5.4 15X13.2X5.4**	--	
B1	EXISTING	UMTS	P65-15-XLH-RR	51X12X6	±135'	263°	(2) POWERWAVE CM1007-DBPXBC-003 (1) POWERWAVE TT19-08BP111-001 TWIN 1900 W/ 850BP (850)	--	--	(2) 1-5/8" COAX (180'±)	(P) (1) RAYCAP DC6-48-60-18-8C
B2	–	–	–	–	–	–	--	--	--	--	
B3	**PROPOSED**	**LTE 700 B14/PCS**	**HPA-65R-BU6AA**	**71X11.7X7.6**	**±135'**	**143°**	--	(E)(1) RRUS 12 (1900) **(P)(G)(1) B14 4478 (700)**	20.4X18.5X7.5 **18.1X13.4X8.26**	(2) 1-5/8" COAX (180'±)	
B4	**PROPOSED**	**LTE 850/700 BC/WCS**	**800-10965**	**78.7x20x6.9**	**±135'**	**143°**	--	**(P)(1) B5/B12 4449 (850/700) (P)(1) 4415 B30 (WCS)**	**15X13.2X5.4 15X13.2X5.4**	--	
C1	EXISTING	UMTS	P65-15-XLH-RR	51X12X6	±135'	23°	(2) POWERWAVE CM1007-DBPXBC-003 (1) POWERWAVE TT19-08BP111-001 TWIN 1900 W/ 850BP (850)	--	--	(2) 1-5/8" COAX (180'±)	**SHARED**
C2	–	–	–	–	–	–	--	--	--	--	
C3	**PROPOSED**	**LTE 700 B14/PCS**	**HPA-65R-BU6AA**	**71X11.7X7.6**	**±135'**	**263°**	--	(E)(1) RRUS 12 (1900) **(P)(G)(1) B14 4478 (700)**	20.4X18.5X7.5 **18.1X13.4X8.26**	(2) 1-5/8" COAX (180'±)	
C4	**PROPOSED**	**LTE 850/700 BC/WCS**	**800-10965**	**78.7x20x6.9**	**±135'**	**263°**	--	**(P)(1) B5/B12 4449 (850/700) (P)(1) 4415 B30 (WCS)**	**15X13.2X5.4 15X13.2X5.4**	--	

FINAL ANTENNA SCHEDULE (1 / A-3)

SCALE: N.T.S

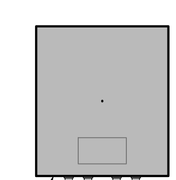
RRU CHART

QUANTITY	MODEL	L	W	D
2(P)(G)	B14 4478 (700)	18.1"	13.4"	8.3"
3(P)	4415 B30 (WCS)	15"	13.2"	5.4"
3(P)	B5/B12 4449 (700/850)	15"	13.2"	5.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

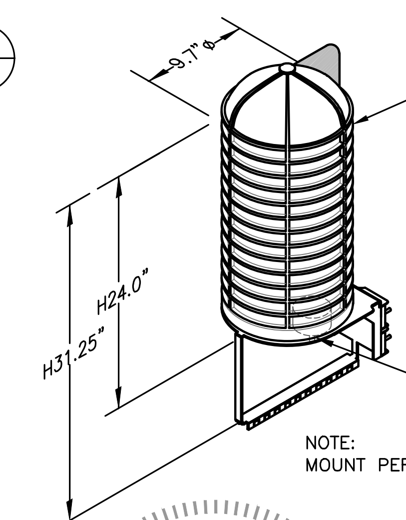


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (3 / A-3)

SCALE: N.T.S



PROPOSED SURGE SUPPRESSOR MODEL NUMBERS: DC6-48-60-18-8C DIMENSIONS: H24.0"x9.7"ø WITH BRACKET: H31.25"X9.7"ø

STRIKESORB 30-V1 SURGE PROTECTIVE DEVICE

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)

SCALE: N.T.S

HUDSON Design Group LLC
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
TEL: (978) 557-5553 FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY SALEM, NH 03079

SITE NUMBER: CT1130
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at&t
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	01/21/19	ISSUED FOR REVIEW	AM	AT	DJC

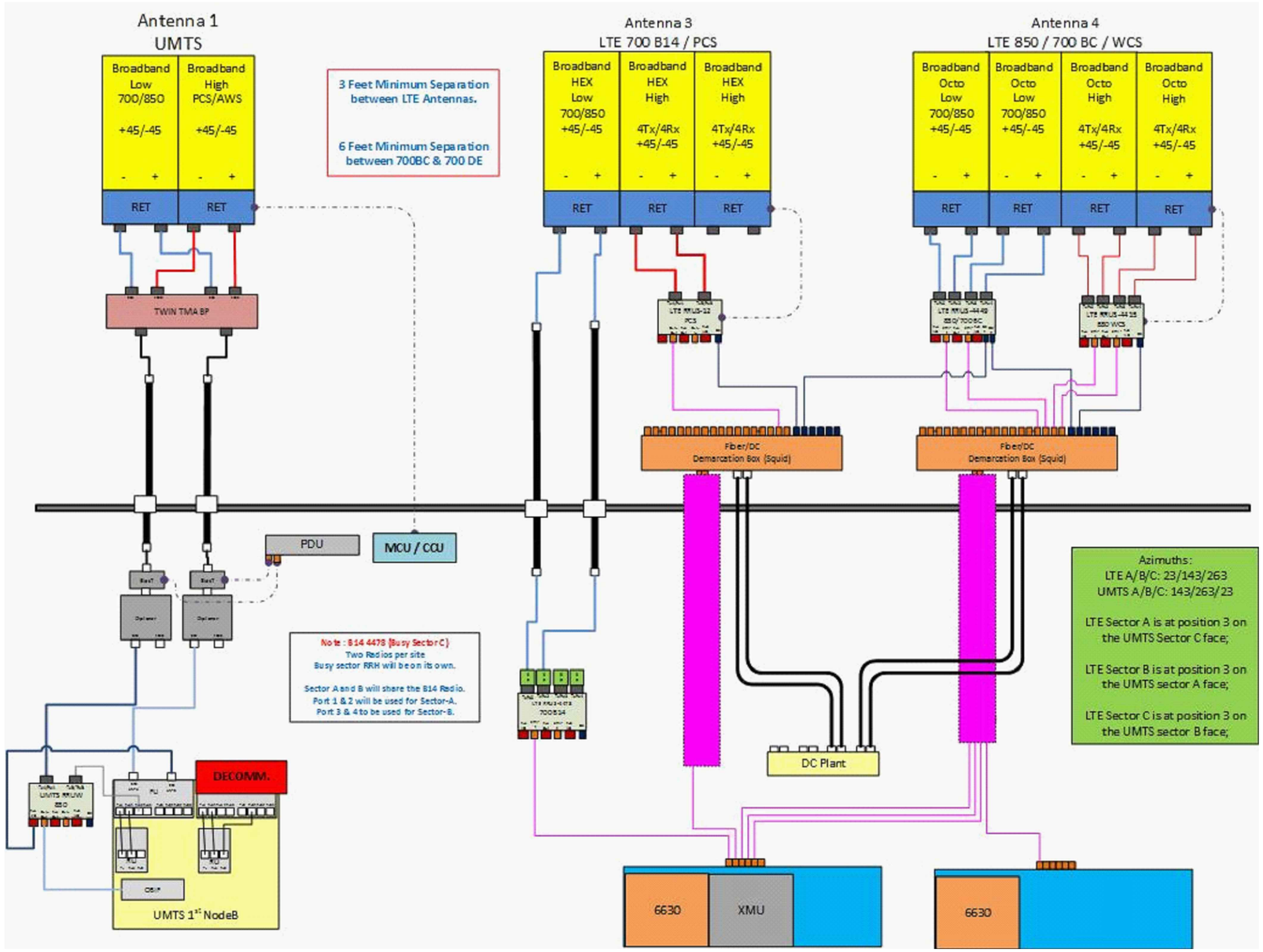
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT DEREK J. CREASER LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 3C_4C_5C)

SITE NUMBER	DRAWING NUMBER	REV
CT1130	A-3	1



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

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

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
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TEL: (978) 557-5553
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12 INDUSTRIAL WAY
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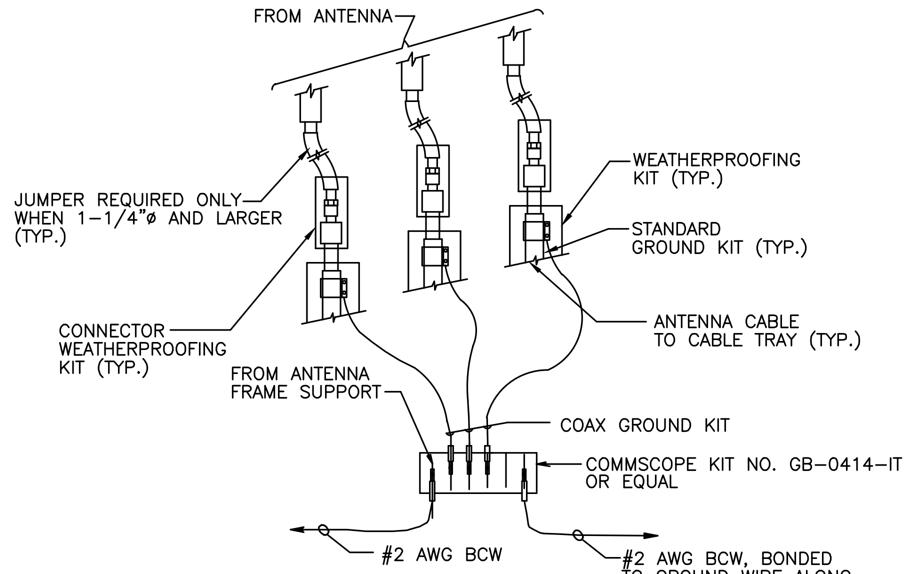
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT · DEREK J. CREASER · NO. 25056 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE 3C_4C_5C)

SITE NUMBER	DRAWING NUMBER	REV
CT1130	RF–1	1

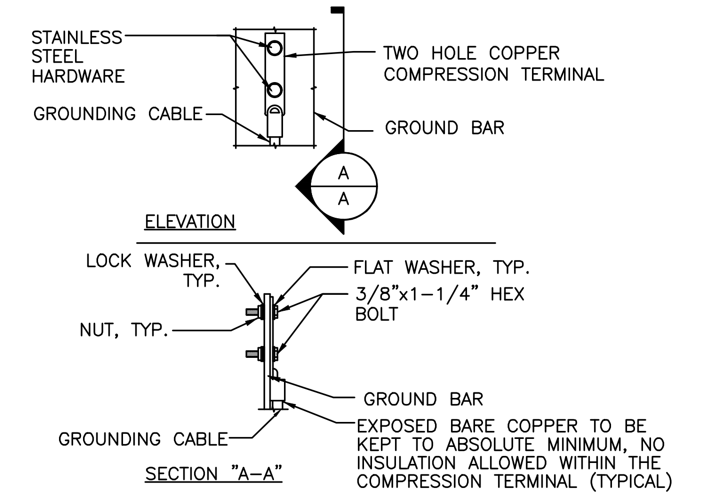


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S

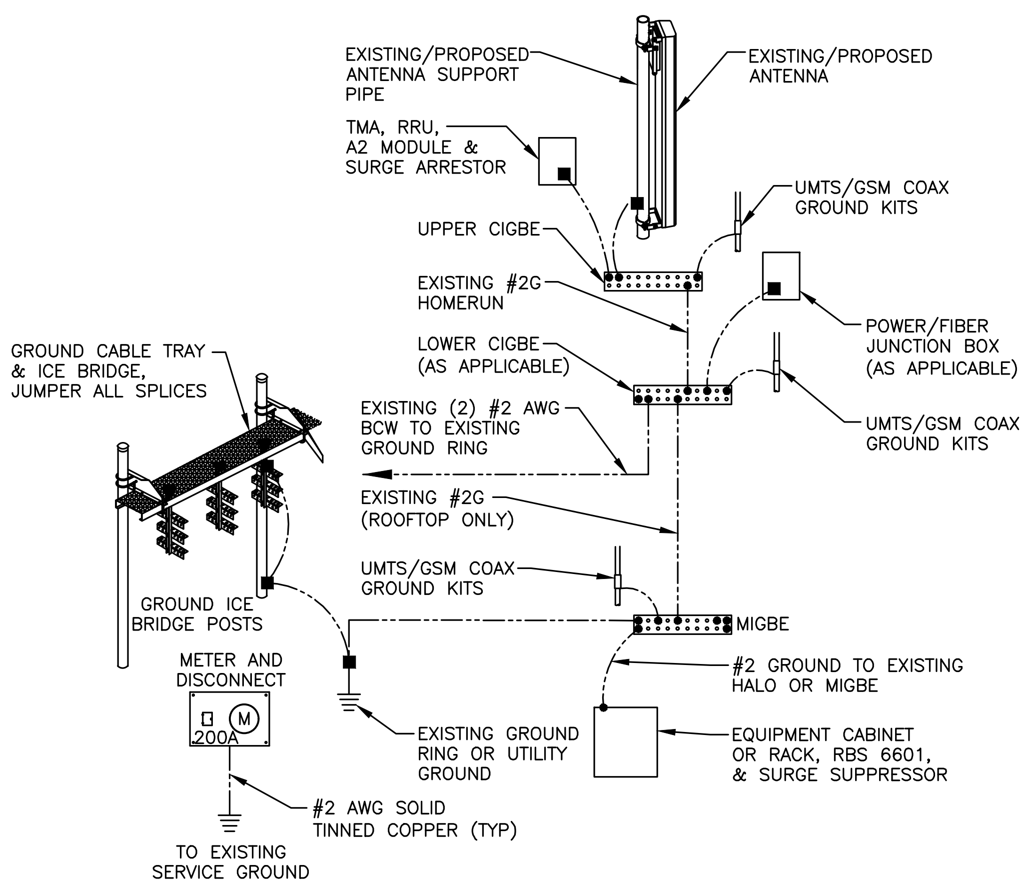


NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S

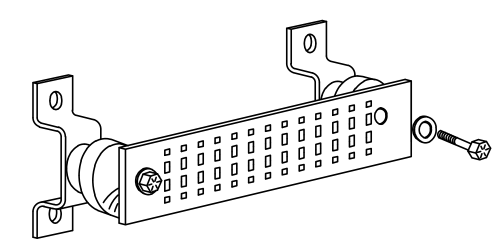
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
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SITE NUMBER: CT1130
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500 ENTERPRISE DRIVE, SUITE 3A
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A	01/21/19	ISSUED FOR REVIEW	AM	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

AT&T

GROUNDING DETAILS (LTE 3C_4C_5C)

SITE NUMBER	DRAWING NUMBER	REV
CT1130	G-1	1

Dewberry

Dewberry Engineers Inc.
600 Parsippany Road, Suite 301
Parsippany, NJ 07054

973.739.9400
973.739.9710 fax
www.dewberry.com

March 6, 2019

Angie Bruce
SAI Communications, Inc.
12 Industrial Way
Salem, NH 03079

Re: Site ID: CT1130
Site Name: Watertown
FA#: 10035384
Dewberry No.: 50093844
Site Address: 76 Westbury Park Road
Watertown, CT 06795

Dear Ms. Bruce,

Dewberry Engineers Inc. (Dewberry) has assessed the structural integrity of the existing masonry smokestack for the proposed telecommunications upgrade at the above mentioned site. The telecommunications upgrade consists of removing and replacing six (6) existing panel antennas with six (6) proposed panel antennas, and removing and replacing three (3) existing RRHs with eight (8) proposed RRHs. Also included is the installation of one (1) squid surge arrestor. Proposed equipment is to be mounted on proposed antenna frames (Sabre Industries C10857001C) attached to smokestack at a centerline elevation of 135'-0"± A.G.L. The telecommunications upgrade is proposed by AT&T and managed by SAI Communications. Proposed installation is summarized below.

Existing (To Be Removed)		**Proposed**		
Equipment	*Quantity*	*Equipment*	*Quantity*	*Specification*
Antenna	**6 Total (2 per sector)**	**Antenna (HPA-65R-BU6AA)**	**3 Total (1 per sector)**	71"H x 11.7"W x 7.6"D (51 lb)
		Antenna (800-10965)	**3 Total (1 per sector)**	78.7"H x 20.0"W x 6.9"D (108.6 lb)
RRH	**3 Total (1 per sector)**	**RRH (B14 4478)**	**2 Total (1 per Beta & Gamma sector)**	18.1"H x 13.4"W x 8.3"D (60 lb)
-	-	**RRH (B5/B12 4449)**	**3 Total (1 per sector)**	17.9"H x 13.2"W x 9.4"D (71 lb)
-	-	**RRH (4415 B30)**	**3 Total (1 per sector)**	15.0"H x 13.2"W x 5.4"D (44 lb)
-	-	**DC Squid**	**1 Total (Alpha Sector)**	24.0"H x 9.7"W x 9.7"D (33 lb)

The assessment is based on the following information:

1. Photographs, field notes, visual observation of existing antenna installation and other relevant information acquired on a site visit conducted by Dewberry Engineers on November 29, 2018.
2. RFDS for proposed antenna configuration dated October 16, 2018.
3. Mount Analysis Rev. 1 by Hudson Design Group LLC dated January 8, 2019.
4. Chimney Design Calculations by International Chimney Corporation dated May 16, 2011.
5. 2018 Connecticut State Building Code, Amendments to the 2015 International Building Code.

Based on previous field notes and photographs (12.01.16) in comparison to current field notes and photographs (11.29.18), it has been determined that there are no significant changes to the existing conditions of the masonry smokestack when the last chimney structural analysis and chimney inspection were performed. The load of the proposed AT&T equipment is a very minor increase in load on the existing smokestack. However, the increase in loading is much less than a 5% increase from the currently installed configuration and supporting structure. Therefore, per EIA/TIA-H, Section 15.5 "Evaluation of Changed Conditions," we have determined that the existing masonry smokestack is **structurally adequate** for the proposed upgrade. No structural analysis for the existing smokestack was performed at the time this letter was written. All antennas and associated equipment are to be installed in accordance with configuration in the latest Construction Drawings by Dewberry. Dewberry recommends that the existing masonry smokestack be inspected and maintained for general decay and that any additional installations require a similar evaluation.

This assessment was based on the following limitations and assumptions:

1. No antennas and associated accessories shall deviate from the Construction Drawings without prior written approval of the Engineer.
2. Dewberry is not responsible for any modifications completed prior to and hereafter where Dewberry is not the Engineer of Record.
3. All components supporting the AT&T equipment are assumed to be designed to all applicable codes and designed for loads equal to or larger than the current proposed loads.

If you have any questions, please do not hesitate to call me at 973.739.9400.

Sincerely,

Dewberry Engineers Inc.

Jiang Yu, PE
CT Professional Engineer License No. 23222

January 3, 2019
January 8, 2019 (Rev.1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT1130 (LTE 3C/4C/5C)
	FA Number:	10035384
	PACE Number:	MRCTB035259
	Site Name:	Watertown
	Site Address:	76 Westbury Park Road Watertown, CT 06795

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (3) P65-15-XLH-RR Antennas (51.0"x12.0"x6.0" – Wt. = 30 lbs. /each)
- (3) RRUS-12 RRH's (20.4"x18.5"x7.5" – Wt. = 58 lbs. /each)
- (3) TT19-08BP111-001 TMA's (9.9"x6.7"x5.4" – Wt. = 16 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)
- **(3) 800-10965 Antennas (78.7"x20.0"x6.9" – Wt. = 109 lbs. /each)**
- **(3) HPA-65R-BU6AA Antennas (71.1"x11.7"x7.6" – Wt. = 42 lbs. /each)**
- **(2) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 71 lbs. /each)**
- **(3) 4415 B30 RRH's (15.0"x13.2"x5.4" – Wt. = 44 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

**Proposed equipment shown in bold*

Mount mapping data of the existing AT&T antennas was provided by SAI Communications dated December 18, 2018. Mount fabrication drawings prepared by Sabre Industries Towers & Poles (P/N C10857001C) dated December 22, 2015 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R11.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 100 mph with a max basic wind speed with ice of 40 mph and a max ice thickness of 1.0 in. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 120 mph converted to a nominal wind speed of 93 mph and an escalated ice thickness of 2.30 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing smokestack with a ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the new Sabre Industries C10857001C mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed (LTE 3C/4C/5C) Mount Rating	13	LC36	76%	**PASS**

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. 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.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:
(Existing mount to be removed)

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 01/08/2019
Project Name: Watertown
Project No.: CT1130
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

	z=	135 (ft)
	z_g=	1200 (ft)
K_z= 1.077	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

(If Category 1 then K_{zt}=1.0)

Category= **1**

K_h=	#DIV/0!	
K_e=	0.9	(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	135	
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	
K_{iz} =	1.15	(from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness =	t_i =	1.00 in
Importance Factor, I_{ice} =	I_{ice}=	1.00 (from Table 2-3)
$t_{iz} = 2.0*t_i*I_{ice}*K_{iz}*(Kzt)^{0.35}$	t_{iz} =	2.30 in

Date: 01/08/2019
Project Name: Watertown
Project No.: CT1130
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	140	Gh=	0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh=	1.35	**Gh=**	**1.35**

2.6.9.2 Design Wind Force on Appurtenances

State Code Ultimate Design Wind Speed: V_{ult} = 120 mph

Nomial Design Wind Speed, $V_{asd} = V_{ult}\sqrt{(0.6)}$ V_{asd} = 93 mph

V_{asd} per the AT&T Mount Technical Directive and Connecticut State Building Code, Latest Edition.

Per TIA-222-G, V_{min} = 90 mph V_{max} = 100 mph

$$F = q_z * Gh * (EPA)_A$$

$$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$$

q_z=	**22.62**	K_z=	1.077
$q_{z\,(ice)}$=	**4.19**	K_{zt}=	1.0
$q_{z\,(30)}$=	**2.36**	K_d=	0.95 (from Table 2-2)
		V_{asd}=	93 mph
		$V_{max\,(ice)}$=	40 mph
		V_{30}=	30 mph
		I=	1.0 (from Table 2-3)
		I_{wice}=	1.0 (from Table 2-3)

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

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Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **2.30 in** | **Angle = 0 (deg)** | **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	422	102	44
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	6.08	1.36	240	66	25
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	4.25	1.28	166	46	17
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.90	1.20	43	15	4
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	22	10	2
4415 B30 RRH	15.0	5.4	13.2	0.56	2.78	1.21	21	9	2
4415 B30 RRH (Shielded)	15.0	2.7	13.2	0.28	5.56	1.34	11	8	1
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.10	1.20	96	27	10
RRUS-12 RRH (Shielded)	20.4	6.8	7.5	0.96	3.00	1.22	36	14	4
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	1.48	1.20	17	8	2

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HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	2.30	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	422	178	361
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	240	169	222
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	166	94	148
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	60	47
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	22	60	32
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	21	50	28
4415 B30 RRH (Shielded)	15.0	2.7	13.2	0.28	1.38	5.56	1.14	1.34	1.20	11	50	21
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	96	39	82
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	48	39	46
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	17	14	16

WIND LOADS WITH ICE:

800-10965 Antenna	83.3	24.6	11.5	14.23	6.66	3.39	7.24	1.24	1.41	100	53	88
HPA-65R-BU6AA Antenna	75.7	16.3	12.2	8.57	6.42	4.64	6.20	1.30	1.36	63	50	59
P65-15-XLH-RR Antenna	55.6	16.6	10.6	6.41	4.10	3.35	5.24	1.24	1.32	45	31	41
B5/B12 4449 RRH	22.5	14.0	17.8	2.19	2.78	1.61	1.26	1.20	1.20	15	19	16
B5/B12 4449 RRH (Shielded)	22.5	7.0	17.8	1.09	2.78	3.21	1.26	1.23	1.20	8	19	10
4415 B30 RRH	19.6	10.0	17.8	1.36	2.42	1.96	1.10	1.20	1.20	9	16	11
4415 B30 RRH (Shielded)	19.6	5.0	17.8	0.68	2.42	3.92	1.10	1.26	1.20	5	16	8
RRUS-12 RRH	25.0	23.1	12.1	4.01	2.10	1.08	2.07	1.20	1.20	27	14	24
RRUS-12 RRH (Shielded)	25.0	11.6	12.1	2.01	2.10	2.16	2.07	1.20	1.20	14	14	14
TT19-08BP111-001 TMA	14.5	11.3	10.0	1.14	1.01	1.28	1.45	1.20	1.20	8	7	8

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	19	38
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	25	18	23
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	17	10	15
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	6	3
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	2	5	3
4415 B30 RRH (Shielded)	15.0	2.7	13.2	0.28	1.38	5.56	1.14	1.34	1.20	1	5	2
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	10	4	9
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	5	4	5
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	2	1	2

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Project No.: CT1130
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	2.30	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	422	178	239
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	240	169	187
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	166	94	112
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	60	56
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	32	60	53
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	21	50	43
4415 B30 RRH (Shielded)	15.0	4.1	13.2	0.42	1.38	3.70	1.14	1.25	1.20	16	50	42
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	96	39	53
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	72	39	47
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	17	14	14

WIND LOADS WITH ICE:

800-10965 Antenna	83.3	24.6	11.5	14.23	6.66	3.39	7.24	1.24	1.41	100	53	65
HPA-65R-BU6AA Antenna	75.7	16.3	12.2	8.57	6.42	4.64	6.20	1.30	1.36	63	50	53
P65-15-XLH-RR Antenna	55.6	16.6	10.6	6.41	4.10	3.35	5.24	1.24	1.32	45	31	34
B5/B12 4449 RRH	22.5	14.0	17.8	2.19	2.78	1.61	1.26	1.20	1.20	15	19	18
B5/B12 4449 RRH (Shielded)	22.5	10.5	17.8	1.64	2.78	2.14	1.26	1.20	1.20	11	19	17
4415 B30 RRH	19.6	10.0	17.8	1.36	2.42	1.96	1.10	1.20	1.20	9	16	15
4415 B30 RRH (Shielded)	19.6	7.5	17.8	1.02	2.42	2.61	1.10	1.21	1.20	7	16	14
RRUS-12 RRH	25.0	23.1	12.1	4.01	2.10	1.08	2.07	1.20	1.20	27	14	18
RRUS-12 RRH (Shielded)	25.0	17.3	12.1	3.01	2.10	1.44	2.07	1.20	1.20	20	14	16
TT19-08BP111-001 TMA	14.5	11.3	10.0	1.14	1.01	1.28	1.45	1.20	1.20	8	7	7

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	19	25
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	25	18	19
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	17	10	12
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	3	6	6
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	2	5	4
4415 B30 RRH (Shielded)	15.0	4.1	13.2	0.42	1.38	3.70	1.14	1.25	1.20	2	5	4
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	10	4	6
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	8	4	5
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	2	1	2

Date: 01/08/2019
Project Name: Watertown
Project No.: CT1130
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	2.30	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	422	178	178
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	240	169	169
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	166	94	94
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	60	60
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	22	60	60
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	21	50	50
4415 B30 RRH (Shielded)	15.0	2.7	13.2	0.28	1.38	5.56	1.14	1.34	1.20	11	50	50
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	96	39	39
RRUS-12 RRH (Shielded)	20.4	6.8	7.5	0.96	1.06	3.00	2.72	1.22	1.21	36	39	39
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	17	14	14

WIND LOADS WITH ICE:

800-10965 Antenna	83.3	24.6	11.5	14.23	6.66	3.39	7.24	1.24	1.41	100	53	53
HPA-65R-BU6AA Antenna	75.7	16.3	12.2	8.57	6.42	4.64	6.20	1.30	1.36	63	50	50
P65-15-XLH-RR Antenna	55.6	16.6	10.6	6.41	4.10	3.35	5.24	1.24	1.32	45	31	31
B5/B12 4449 RRH	22.5	14.0	17.8	2.19	2.78	1.61	1.26	1.20	1.20	15	19	19
B5/B12 4449 RRH (Shielded)	22.5	9.3	17.8	1.45	2.78	2.42	1.26	1.20	1.20	10	19	19
4415 B30 RRH	19.6	10.0	17.8	1.36	2.42	1.96	1.10	1.20	1.20	9	16	16
4415 B30 RRH (Shielded)	19.6	7.3	17.8	0.99	2.42	2.68	1.10	1.21	1.20	7	16	16
RRUS-12 RRH	25.0	23.1	12.1	4.01	2.10	1.08	2.07	1.20	1.20	27	14	14
RRUS-12 RRH (Shielded)	25.0	11.4	12.1	1.98	2.10	2.19	2.07	1.20	1.20	13	14	14
TT19-08BP111-001 TMA	14.5	11.3	10.0	1.14	1.01	1.28	1.45	1.20	1.20	8	7	7

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	19	19
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	25	18	18
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	17	10	10
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	6	6
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	2	5	5
4415 B30 RRH (Shielded)	15.0	2.7	13.2	0.28	1.38	5.56	1.14	1.34	1.20	1	5	5
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	10	4	4
RRUS-12 RRH (Shielded)	20.4	6.8	7.5	0.96	1.06	3.00	2.72	1.22	1.21	4	4	4
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	2	1	1

Date: 01/08/2019
Project Name: Watertown
Project No.: CT1130
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	2.30	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	422	178	239
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	240	169	187
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	166	94	112
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	60	56
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	32	60	53
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	21	50	43
4415 B30 RRH (Shielded)	15.0	4.1	13.2	0.42	1.38	3.70	1.14	1.25	1.20	16	50	42
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	96	39	53
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	72	39	47
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	17	14	14

WIND LOADS WITH ICE:

800-10965 Antenna	83.3	24.6	11.5	14.23	6.66	3.39	7.24	1.24	1.41	100	53	65
HPA-65R-BU6AA Antenna	75.7	16.3	12.2	8.57	6.42	4.64	6.20	1.30	1.36	63	50	53
P65-15-XLH-RR Antenna	55.6	16.6	10.6	6.41	4.10	3.35	5.24	1.24	1.32	45	31	34
B5/B12 4449 RRH	22.5	14.0	17.8	2.19	2.78	1.61	1.26	1.20	1.20	15	19	18
B5/B12 4449 RRH (Shielded)	22.5	10.5	17.8	1.64	2.78	2.14	1.26	1.20	1.20	11	19	17
4415 B30 RRH	19.6	10.0	17.8	1.36	2.42	1.96	1.10	1.20	1.20	9	16	15
4415 B30 RRH (Shielded)	19.6	7.5	17.8	1.02	2.42	2.61	1.10	1.21	1.20	7	16	14
RRUS-12 RRH	25.0	23.1	12.1	4.01	2.10	1.08	2.07	1.20	1.20	27	14	18
RRUS-12 RRH (Shielded)	25.0	17.3	12.1	3.01	2.10	1.44	2.07	1.20	1.20	20	14	16
TT19-08BP111-001 TMA	14.5	11.3	10.0	1.14	1.01	1.28	1.45	1.20	1.20	8	7	7

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	19	25
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	25	18	19
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	17	10	12
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	3	6	6
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	2	5	4
4415 B30 RRH (Shielded)	15.0	4.1	13.2	0.42	1.38	3.70	1.14	1.25	1.20	2	5	4
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	10	4	6
RRUS-12 RRH (Shielded)	20.4	13.9	7.5	1.97	1.06	1.47	2.72	1.20	1.21	8	4	5
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	2	1	2

Date: 01/08/2019
Project Name: Watertown
Project No.: CT1130
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	2.30	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	422	178	361
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	240	169	222
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	166	94	148
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	60	47
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	22	60	32
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	21	50	28
4415 B30 RRH (Shielded)	15.0	2.7	13.2	0.28	1.38	5.56	1.14	1.34	1.20	11	50	21
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	96	39	82
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	48	39	46
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	17	14	16

WIND LOADS WITH ICE:

800-10965 Antenna	83.3	24.6	11.5	14.23	6.66	3.39	7.24	1.24	1.41	100	53	88
HPA-65R-BU6AA Antenna	75.7	16.3	12.2	8.57	6.42	4.64	6.20	1.30	1.36	63	50	59
P65-15-XLH-RR Antenna	55.6	16.6	10.6	6.41	4.10	3.35	5.24	1.24	1.32	45	31	41
B5/B12 4449 RRH	22.5	14.0	17.8	2.19	2.78	1.61	1.26	1.20	1.20	15	19	16
B5/B12 4449 RRH (Shielded)	22.5	7.0	17.8	1.09	2.78	3.21	1.26	1.23	1.20	8	19	10
4415 B30 RRH	19.6	10.0	17.8	1.36	2.42	1.96	1.10	1.20	1.20	9	16	11
4415 B30 RRH (Shielded)	19.6	5.0	17.8	0.68	2.42	3.92	1.10	1.26	1.20	5	16	8
RRUS-12 RRH	25.0	23.1	12.1	4.01	2.10	1.08	2.07	1.20	1.20	27	14	24
RRUS-12 RRH (Shielded)	25.0	11.6	12.1	2.01	2.10	2.16	2.07	1.20	1.20	14	14	14
TT19-08BP111-001 TMA	14.5	11.3	10.0	1.14	1.01	1.28	1.45	1.20	1.20	8	7	8

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	44	19	38
HPA-65R-BU6AA Antenna	71.1	11.7	7.6	5.78	3.75	6.08	9.36	1.36	1.48	25	18	23
P65-15-XLH-RR Antenna	51.0	12.0	6.0	4.25	2.13	4.25	8.50	1.28	1.45	17	10	15
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	6	3
4415 B30 RRH	15.0	5.4	13.2	0.56	1.38	2.78	1.14	1.21	1.20	2	5	3
4415 B30 RRH (Shielded)	15.0	2.7	13.2	0.28	1.38	5.56	1.14	1.34	1.20	1	5	2
RRUS-12 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	10	4	9
RRUS-12 RRH (Shielded)	20.4	9.3	7.5	1.31	1.06	2.21	2.72	1.20	1.21	5	4	5
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	0.37	1.48	1.83	1.20	1.20	2	1	2

Date: 01/03/2019
Project Name: Watertown
Project No.: CT1130
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 2.30 in.
Density of ice: 56 pcf

P65-15-XLH-RR Antenna

Weight of ice based on total radial SF area:

Height (in):	51.0	
Width (in):	12.0	
Depth (in):	6.0	
Total weight of ice on object:		188 lbs
Weight of object:	30 lbs	
Combined weight of ice and object:		218 lbs

800-10965 Antenna

Weight of ice based on total radial SF area:

Height (in):	78.7	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		432 lbs
Weight of object:	109 lbs	
Combined weight of ice and object:		541 lbs

HPA-65R-BU6AA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.1	
Width (in):	11.7	
Depth (in):	7.6	
Total weight of ice on object:		271 lbs
Weight of object:	42 lbs	
Combined weight of ice and object:		313 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.4	
Total weight of ice on object:		78 lbs
Weight of object:	71 lbs	
Combined weight of ice and object:		149 lbs

4415 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	13.2	
Depth (in):	5.4	
Total weight of ice on object:		58 lbs
Weight of object:	44 lbs	
Combined weight of ice and object:		102 lbs

RRUS-12 RRH

Weight of ice based on total radial SF area:

Height (in):	20.4	
Width (in):	18.5	
Depth (in):	7.5	
Total weight of ice on object:		106 lbs
Weight of object:	58 lbs	
Combined weight of ice and object:		164 lbs

TT19-08BP111-001 TMA

Weight of ice based on total radial SF area:

Height (in):	9.9	
Width (in):	6.7	
Depth (in):	5.4	
Total weight of ice on object:		25 lbs
Weight of object:	16 lbs	
Combined weight of ice and object:		41 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		67 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		100 lbs

3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		9 plf

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		13 plf

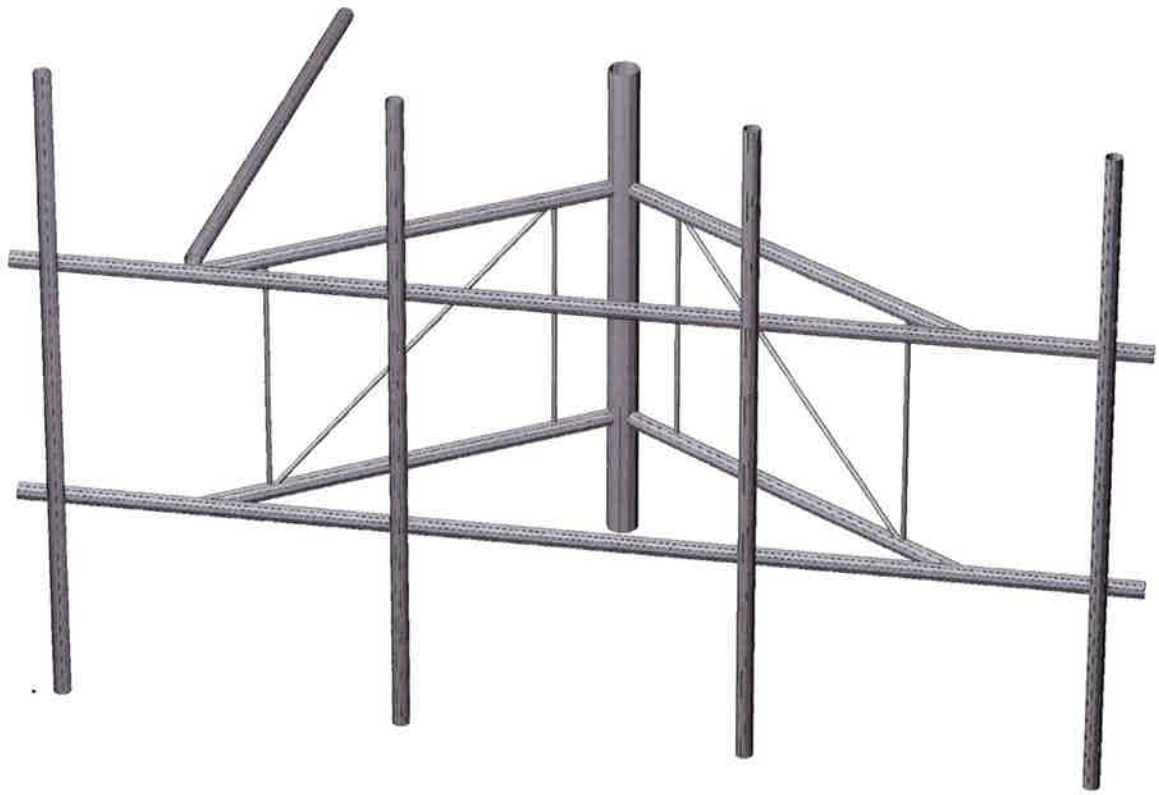
4" Pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		19 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)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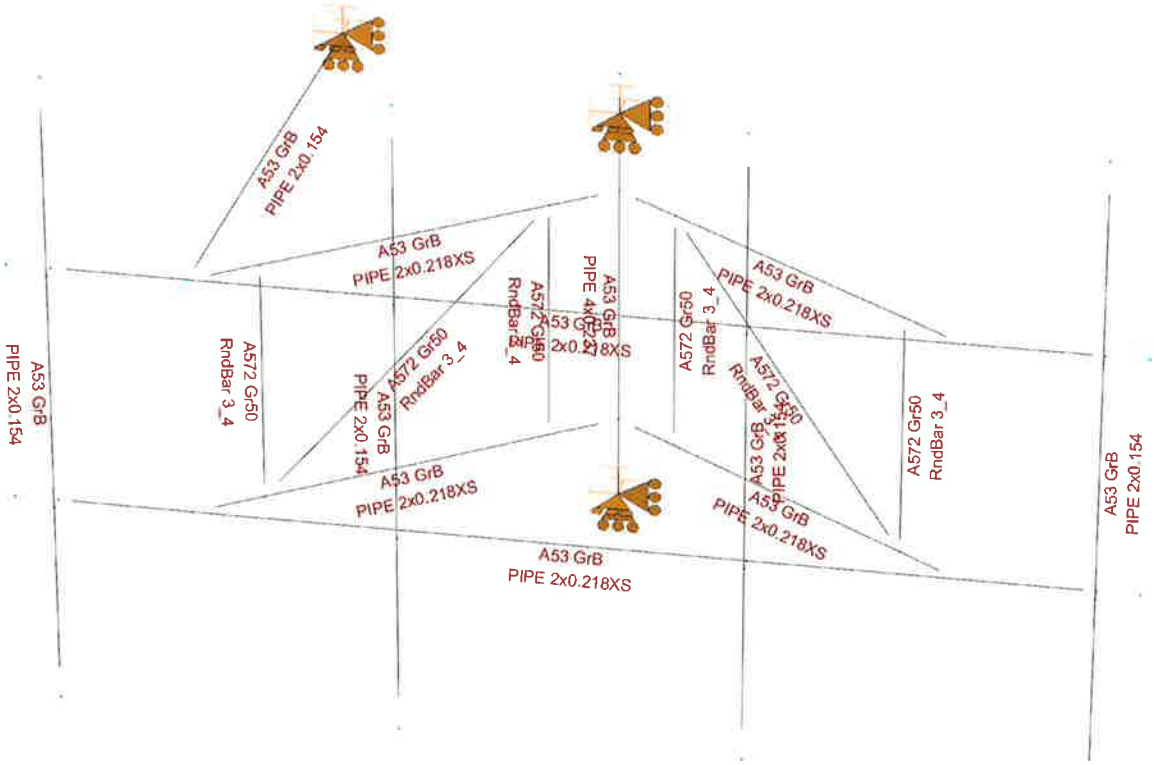
X
Z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PIPE 2x0.154
A53 GrB
PIPE 2x0.218XS
A572 Gr50
RndBar 3_4
A53 GrB
PIPE 4x0.237
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.218XS
A572 Gr50
RndBar 3_4
A53 GrB
PIPE 2x0.154
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PIPE 2x0.218XS
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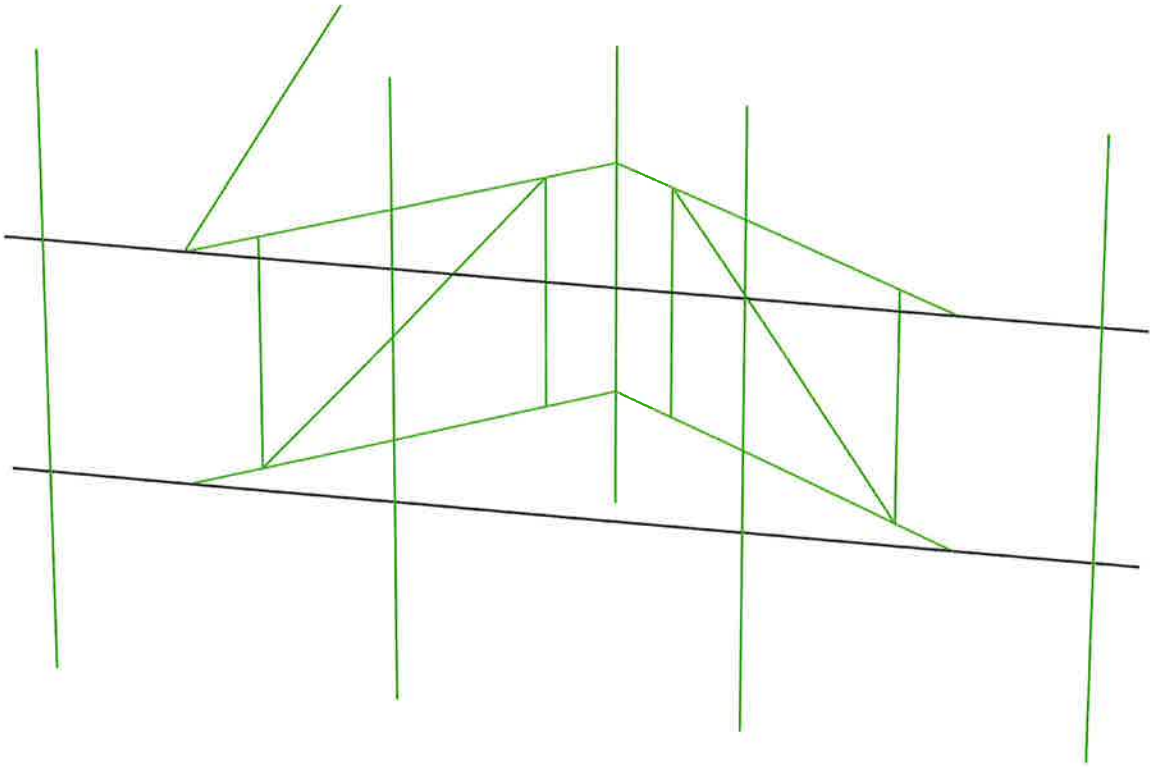
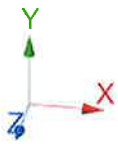
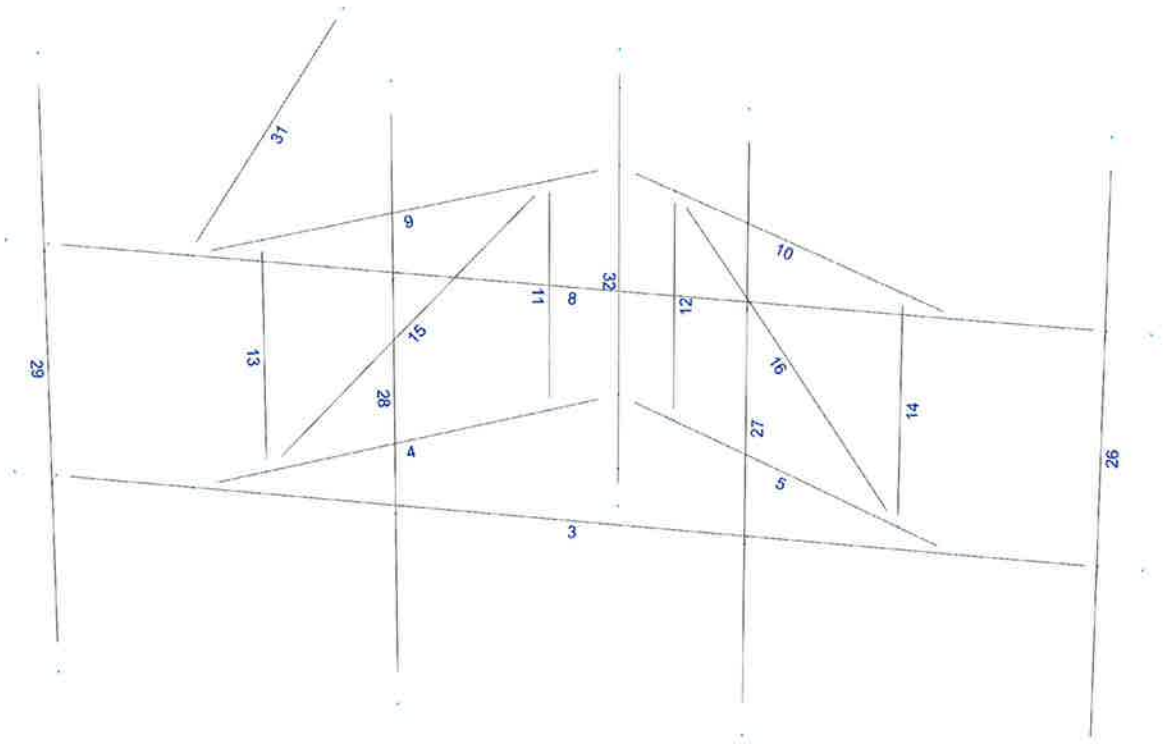
RndBar 3_4
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
Y
X
Z

Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



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Bentley Hewlett-Packard Company

Current Date: 1/8/2019 2:58 PM
Units system: English
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Load data

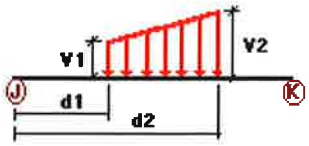
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load on Left End	No	LL
LL2	250 lb Live Load on Center	No	LL
LL3	250 lb Live Load on Right End	No	LL
LLa1	250 lb Live Load on Antenna 1	No	LL
LLa2	250 lb Live Load on Antenna 2	No	LL
LLa3	250 lb Live Load on Antenna 3	No	LL

Distributed force on members

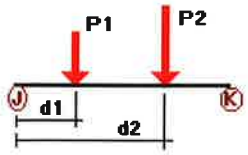


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	3	z	-0.007	0.00	0.00	No	0.00	No
	4	z	-0.007	0.00	0.00	No	0.00	No
	5	z	-0.007	0.00	0.00	No	0.00	No
	8	z	-0.007	0.00	0.00	No	0.00	No
	9	z	-0.007	0.00	0.00	No	0.00	No
	10	z	-0.007	0.00	0.00	No	0.00	No
	11	z	-0.002	0.00	0.00	No	0.00	No
	12	z	-0.002	0.00	0.00	No	0.00	No
	13	z	-0.002	0.00	0.00	No	0.00	No
	14	z	-0.002	0.00	0.00	No	0.00	No
	15	z	-0.002	0.00	0.00	No	0.00	No
	16	z	-0.002	0.00	0.00	No	0.00	No
	27	z	-0.007	0.00	0.00	No	0.00	No
	31	z	-0.007	0.00	0.00	No	0.00	No
	32	z	-0.014	0.00	0.00	No	0.00	No
W30	3	z	-0.007	0.00	0.00	No	0.00	No
	4	z	-0.007	0.00	0.00	No	0.00	No
	5	z	-0.007	0.00	0.00	No	0.00	No
	8	z	-0.007	0.00	0.00	No	0.00	No
	9	z	-0.007	0.00	0.00	No	0.00	No
	10	z	-0.007	0.00	0.00	No	0.00	No
	11	z	-0.002	0.00	0.00	No	0.00	No
	12	z	-0.002	0.00	0.00	No	0.00	No
	13	z	-0.002	0.00	0.00	No	0.00	No
	14	z	-0.002	0.00	0.00	No	0.00	No
	15	z	-0.002	0.00	0.00	No	0.00	No
	16	z	-0.002	0.00	0.00	No	0.00	No
	26	z	-0.007	0.00	0.00	No	0.00	No
	27	z	-0.007	0.00	0.00	No	0.00	No
	28	z	-0.007	0.00	0.00	No	0.00	No
	29	z	-0.007	0.00	0.00	No	0.00	No
	31	z	-0.007	0.00	0.00	No	0.00	No
	32	z	-0.014	0.00	0.00	No	0.00	No
W60	3	x	-0.007	0.00	0.00	No	0.00	No
	4	x	-0.007	0.00	0.00	No	0.00	No
	5	x	-0.007	0.00	0.00	No	0.00	No
	8	x	-0.007	0.00	0.00	No	0.00	No
	9	x	-0.007	0.00	0.00	No	0.00	No
	10	x	-0.007	0.00	0.00	No	0.00	No
	11	x	-0.002	0.00	0.00	No	0.00	No
	12	x	-0.002	0.00	0.00	No	0.00	No
	13	x	-0.002	0.00	0.00	No	0.00	No
	14	x	-0.002	0.00	0.00	No	0.00	No
	15	x	-0.002	0.00	0.00	No	0.00	No
	16	x	-0.002	0.00	0.00	No	0.00	No
	26	x	-0.007	0.00	0.00	No	0.00	No
	27	x	-0.007	0.00	0.00	No	0.00	No
	28	x	-0.007	0.00	0.00	No	0.00	No
	29	x	-0.007	0.00	0.00	No	0.00	No
	31	x	-0.007	0.00	0.00	No	0.00	No
	32	x	-0.014	0.00	0.00	No	0.00	No
W90	4	x	-0.007	0.00	0.00	No	0.00	No
	5	x	-0.007	0.00	0.00	No	0.00	No
	9	x	-0.007	0.00	0.00	No	0.00	No
	10	x	-0.007	0.00	0.00	No	0.00	No
	11	x	-0.002	0.00	0.00	No	0.00	No
	12	x	-0.002	0.00	0.00	No	0.00	No
	13	x	-0.002	0.00	0.00	No	0.00	No
	14	x	-0.002	0.00	0.00	No	0.00	No
	15	x	-0.002	0.00	0.00	No	0.00	No

	16	x	-0.002	0.00	0.00	No	0.00	No
	26	x	-0.007	0.00	0.00	No	0.00	No
	27	x	-0.007	0.00	0.00	No	0.00	No
	28	x	-0.007	0.00	0.00	No	0.00	No
	29	x	-0.007	0.00	0.00	No	0.00	No
	31	x	-0.007	0.00	0.00	No	0.00	No
	32	x	-0.014	0.00	0.00	No	0.00	No
W120	3	x	-0.007	0.00	0.00	No	0.00	No
	4	x	-0.007	0.00	0.00	No	0.00	No
	5	x	-0.007	0.00	0.00	No	0.00	No
	8	x	-0.007	0.00	0.00	No	0.00	No
	9	x	-0.007	0.00	0.00	No	0.00	No
	10	x	-0.007	0.00	0.00	No	0.00	No
	11	x	-0.002	0.00	0.00	No	0.00	No
	12	x	-0.002	0.00	0.00	No	0.00	No
	13	x	-0.002	0.00	0.00	No	0.00	No
	14	x	-0.002	0.00	0.00	No	0.00	No
	15	x	-0.002	0.00	0.00	No	0.00	No
	16	x	-0.002	0.00	0.00	No	0.00	No
	26	x	-0.007	0.00	0.00	No	0.00	No
	27	x	-0.007	0.00	0.00	No	0.00	No
	28	x	-0.007	0.00	0.00	No	0.00	No
	29	x	-0.007	0.00	0.00	No	0.00	No
	31	x	-0.007	0.00	0.00	No	0.00	No
	32	x	-0.014	0.00	0.00	No	0.00	No
W150	3	z	0.007	0.00	0.00	No	0.00	No
	4	z	0.007	0.00	0.00	No	0.00	No
	5	z	0.007	0.00	0.00	No	0.00	No
	8	z	0.007	0.00	0.00	No	0.00	No
	9	z	0.007	0.00	0.00	No	0.00	No
	10	z	0.007	0.00	0.00	No	0.00	No
	11	z	0.002	0.00	0.00	No	0.00	No
	12	z	0.002	0.00	0.00	No	0.00	No
	13	z	0.002	0.00	0.00	No	0.00	No
	14	z	0.002	0.00	0.00	No	0.00	No
	15	z	0.002	0.00	0.00	No	0.00	No
	16	z	0.002	0.00	0.00	No	0.00	No
	26	z	0.007	0.00	0.00	No	0.00	No
	27	z	0.007	0.00	0.00	No	0.00	No
	28	z	0.007	0.00	0.00	No	0.00	No
	29	z	0.007	0.00	0.00	No	0.00	No
	31	z	0.007	0.00	0.00	No	0.00	No
	32	z	0.014	0.00	0.00	No	0.00	No
Di	3	y	-0.013	0.00	0.00	No	0.00	No
	4	y	-0.013	0.00	0.00	No	0.00	No
	5	y	-0.013	0.00	0.00	No	0.00	No
	8	y	-0.013	0.00	0.00	No	0.00	No
	9	y	-0.013	0.00	0.00	No	0.00	No
	10	y	-0.013	0.00	0.00	No	0.00	No
	11	y	-0.009	0.00	0.00	No	0.00	No
	12	y	-0.009	0.00	0.00	No	0.00	No
	13	y	-0.009	0.00	0.00	No	0.00	No
	14	y	-0.009	0.00	0.00	No	0.00	No
	15	y	-0.009	0.00	0.00	No	0.00	No
	16	y	-0.009	0.00	0.00	No	0.00	No
	26	y	-0.013	0.00	0.00	No	0.00	No
	27	y	-0.013	0.00	0.00	No	0.00	No
	28	y	-0.013	0.00	0.00	No	0.00	No
	29	y	-0.013	0.00	0.00	No	0.00	No
	31	y	-0.013	0.00	0.00	No	0.00	No

	32	y	-0.019	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	26	y	-0.015	2.00	No
		y	-0.015	6.00	No
		y	-0.016	4.50	No
	28	y	-0.021	1.50	No
		y	-0.021	6.50	No
		y	-0.058	4.00	No
	29	y	-0.055	1.50	No
		y	-0.055	6.50	No
		y	-0.071	1.25	No
		y	-0.044	1.75	No
Wo	26	z	-0.083	2.00	No
		z	-0.083	6.00	No
	28	z	-0.12	1.50	No
		z	-0.12	6.50	No
		z	-0.036	4.00	No
	29	z	-0.211	1.50	No
		z	-0.211	6.50	No
		z	-0.022	1.25	No
		z	-0.011	1.75	No
W30	26	2	-0.074	2.00	No
		2	-0.074	6.00	No
		2	-0.016	4.50	No
	28	2	-0.112	1.50	No
		2	-0.112	6.50	No
		2	-0.046	4.00	No
	29	2	-0.181	1.50	No
		2	-0.181	6.50	No
		2	-0.032	1.25	No
W60	26	2	-0.057	2.00	No
		2	-0.057	6.00	No
		2	-0.014	4.50	No
	28	2	-0.094	1.50	No
		2	-0.094	6.50	No
		2	-0.047	4.00	No
	29	2	-0.12	1.50	No
		2	-0.12	6.50	No
		2	-0.053	1.25	No
W90	26	x	-0.048	2.00	No
		x	-0.048	6.00	No
		x	-0.014	4.50	No
	28	x	-0.085	1.50	No
		x	-0.085	6.50	No
		x	-0.039	4.00	No
	29	x	-0.09	1.50	No

		x	-0.09	6.50	No
		x	-0.06	1.25	No
W120	26	3	0.057	2.00	No
		3	0.057	6.00	No
		3	0.014	4.50	No
	28	3	0.094	1.50	No
		3	0.094	6.50	No
		3	0.047	4.00	No
	29	3	0.12	1.50	No
		3	0.12	6.50	No
		3	0.053	1.25	No
W150	26	3	0.074	2.00	No
		3	0.074	6.00	No
		3	0.016	4.50	No
	28	3	0.112	1.50	No
		3	0.112	6.50	No
		3	0.046	4.00	No
	29	3	0.181	1.50	No
		3	0.181	6.50	No
		3	0.032	1.25	No
Di	26	y	-0.094	2.00	No
		y	-0.094	6.00	No
		y	-0.025	4.50	No
	28	y	-0.136	1.50	No
		y	-0.136	6.50	No
		y	-0.106	4.00	No
	29	y	-0.216	1.50	No
		y	-0.216	6.50	No
		y	-0.078	1.25	No
		y	-0.058	1.75	No
WI0	26	z	-0.024	2.00	No
		z	-0.024	6.00	No
		z	-0.008	4.50	No
	28	z	-0.033	1.50	No
		z	-0.033	6.50	No
		z	-0.027	4.00	No
	29	z	-0.051	1.50	No
		z	-0.051	6.50	No
		z	-0.015	1.25	No
		z	-0.009	1.75	No
WI30	26	2	-0.021	2.00	No
		2	-0.021	6.00	No
		2	-0.008	4.50	No
	28	2	-0.03	1.50	No
		2	-0.03	6.50	No
		2	-0.024	4.00	No
	29	2	-0.045	1.50	No
		2	-0.045	6.50	No
		2	-0.016	1.25	No
WI60	26	2	-0.018	2.00	No
		2	-0.018	6.00	No
		2	-0.007	4.50	No
	28	2	-0.027	1.50	No
		2	-0.027	6.50	No
		2	-0.018	4.00	No
	29	2	-0.033	1.50	No
		2	-0.033	6.50	No
		2	-0.018	1.25	No
WI90	26	x	-0.016	2.00	No
		x	-0.016	6.00	No

		x	-0.007	4.50	No
	28	x	-0.025	1.50	No
		x	-0.025	6.50	No
		x	-0.014	4.00	No
	29	x	-0.027	1.50	No
		x	-0.027	6.50	No
		x	-0.019	1.25	No
WI120	26	3	0.018	2.00	No
		3	0.018	6.00	No
		3	0.007	4.50	No
	28	3	0.027	1.50	No
		3	0.027	6.50	No
		3	0.018	4.00	No
	29	3	0.033	1.50	No
		3	0.033	6.50	No
		3	0.018	1.25	No
WI150	26	3	0.021	2.00	No
		3	0.021	6.00	No
		3	0.008	4.50	No
	28	3	0.03	1.50	No
		3	0.03	6.50	No
		3	0.024	4.00	No
	29	3	0.045	1.50	No
		3	0.045	6.50	No
		3	0.016	1.25	No
WL0	26	z	-0.009	2.00	No
		z	-0.009	6.00	No
		z	-0.002	4.50	No
	28	z	-0.013	1.50	No
		z	-0.013	6.50	No
		z	-0.011	4.00	No
	29	z	-0.022	1.50	No
		z	-0.022	6.50	No
		z	-0.005	1.25	No
		z	-0.003	1.75	No
WL30	26	2	-0.008	2.00	No
		2	-0.008	6.00	No
		2	-0.002	4.50	No
	28	2	-0.012	1.50	No
		2	-0.012	6.50	No
		2	-0.009	4.00	No
	29	2	-0.019	1.50	No
		2	-0.019	6.50	No
		2	-0.005	1.25	No
WL60	26	2	-0.006	2.00	No
		2	-0.006	6.00	No
		2	-0.002	4.50	No
	28	2	-0.01	1.50	No
		2	-0.01	6.50	No
		2	-0.006	4.00	No
	29	2	-0.013	1.50	No
		2	-0.013	6.50	No
		2	-0.006	1.25	No
WL90	26	x	-0.005	2.00	No
		x	-0.005	6.00	No
		x	-0.002	4.50	No
	28	x	-0.009	1.50	No
		x	-0.009	6.50	No
		x	-0.005	4.00	No
	29	x	-0.01	1.50	No

		x	-0.01	6.50	No
		x	-0.007	1.25	No
WL120	26	3	0.006	2.00	No
		3	0.006	6.00	No
		3	0.002	4.50	No
	28	3	0.01	1.50	No
		3	0.01	6.50	No
		3	0.006	4.00	No
	29	3	0.013	1.50	No
		3	0.013	6.50	No
		3	0.006	1.25	No
WL150	26	3	0.008	2.00	No
		3	0.008	6.00	No
		3	0.002	4.50	No
	28	3	0.012	1.50	No
		3	0.012	6.50	No
		3	0.009	4.00	No
	29	3	0.019	1.50	No
		3	0.019	6.50	No
		3	0.005	1.25	No
LL1	8	y	-0.25	0.00	Yes
LL2	8	y	-0.25	50.00	Yes
LL3	8	y	-0.25	100.00	Yes
LLa1	26	y	-0.25	50.00	Yes
LLa2	28	y	-0.25	50.00	Yes
LLa3	29	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load on Left End	No	0.00	0.00	0.00
LL2	250 lb Live Load on Center	No	0.00	0.00	0.00
LL3	250 lb Live Load on Right End	No	0.00	0.00	0.00
LLa1	250 lb Live Load on Antenna 1	No	0.00	0.00	0.00

LLa2	250 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load on Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

Current Date: 1/8/2019 2:58 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1130\LTE 3C-4C-5C\Rev.1\CT1130 (3C-4C-5C) (Rev.1).etz\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+1.6Wo
LC2=1.2D+1.6W30
LC3=1.2D+1.6W60
LC4=1.2D+1.6W90
LC5=1.2D+1.6W120
LC6=1.2D+1.6W150
LC7=1.2D-1.6Wo
LC8=1.2D-1.6W30
LC9=1.2D-1.6W60
LC10=1.2D-1.6W90
LC11=1.2D-1.6W120
LC12=1.2D-1.6W150
LC13=0.9D+1.6Wo
LC14=0.9D+1.6W30
LC15=0.9D+1.6W60
LC16=0.9D+1.6W90
LC17=0.9D+1.6W120
LC18=0.9D+1.6W150
LC19=0.9D-1.6Wo
LC20=0.9D-1.6W30
LC21=0.9D-1.6W60
LC22=0.9D-1.6W90
LC23=0.9D-1.6W120
LC24=0.9D-1.6W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=0.9D
LC38=1.2D+1.6LL1
LC39=1.2D+1.6LL2
LC40=1.2D+1.6LL3
LC41=1.2D+WL0+LLa1
LC42=1.2D+WL30+LLa1
LC43=1.2D+WL60+LLa1
LC44=1.2D+WL90+LLa1
LC45=1.2D+WL120+LLa1
LC46=1.2D+WL150+LLa1
LC47=1.2D-WL0+LLa1
LC48=1.2D-WL30+LLa1
LC49=1.2D-WL60+LLa1
LC50=1.2D-WL90+LLa1
LC51=1.2D-WL120+LLa1
LC52=1.2D-WL150+LLa1

LC53=1.2D+WL0+LLa2
LC54=1.2D+WL30+LLa2
LC55=1.2D+WL60+LLa2
LC56=1.2D+WL90+LLa2
LC57=1.2D+WL120+LLa2
LC58=1.2D+WL150+LLa2
LC59=1.2D-WL0+LLa2
LC60=1.2D-WL30+LLa2
LC61=1.2D-WL60+LLa2
LC62=1.2D-WL90+LLa2
LC63=1.2D-WL120+LLa2
LC64=1.2D-WL150+LLa2
LC65=1.2D+WL0+LLa3
LC66=1.2D+WL30+LLa3
LC67=1.2D+WL60+LLa3
LC68=1.2D+WL90+LLa3
LC69=1.2D+WL120+LLa3
LC70=1.2D+WL150+LLa3
LC71=1.2D-WL0+LLa3
LC72=1.2D-WL30+LLa3
LC73=1.2D-WL60+LLa3
LC74=1.2D-WL90+LLa3
LC75=1.2D-WL120+LLa3
LC76=1.2D-WL150+LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	**26**	LC40 at 31.25%	0.35	OK	Eq. H1-1b
		27	LC3 at 31.25%	0.24	OK	Eq. H1-1b
		28	LC9 at 31.25%	0.30	OK	Eq. H1-1b
		29	LC38 at 31.25%	**0.44**	**OK**	Eq. H1-1b
		31	LC3 at 0.00%	0.22	OK	Eq. H1-1b
	PIPE 2x0.218XS	**3**	LC7 at 16.96%	0.51	With warnings	Eq. H1-1b
		4	LC36 at 100.00%	0.41	OK	Eq. H1-1b
		5	LC3 at 100.00%	0.26	OK	Eq. H1-1b
		8	LC7 at 15.97%	**0.53**	**With warnings**	Eq. H1-1b
		9	LC31 at 100.00%	0.47	OK	Eq. H1-1b
		10	LC26 at 100.00%	0.23	OK	Eq. H1-1b
	PIPE 4x0.237	**32**	LC4 at 8.75%	**0.25**	**OK**	Eq. H1-1b
	RndBar 3_4	**11**	LC32 at 0.00%	0.58	OK	Eq. H1-1a
		12	LC26 at 100.00%	0.26	OK	Eq. H1-1a
		13	LC36 at 100.00%	**0.76**	**OK**	Eq. H1-1a
		14	LC26 at 0.00%	0.31	OK	Eq. H1-1a
		15	LC25 at 100.00%	0.36	OK	Eq. H1-1a
		16	LC25 at 100.00%	0.15	OK	Eq. H1-1b

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	6.50	0.00	0.00	0
3	-6.50	0.00	0.00	0
8	-4.40	0.00	0.00	0
9	4.40	0.00	0.00	0
10	0.00	0.00	-3.00	0
11	-3.6667	0.00	-0.50	0
12	3.6667	0.00	-0.50	0
13	0.7333	0.00	-2.50	0
14	-0.7333	0.00	-2.50	0
16	6.50	3.00	0.00	0
17	-6.50	3.00	0.00	0
22	-4.40	3.00	0.00	0
23	4.40	3.00	0.00	0
24	0.00	3.00	-3.00	0
25	-3.6667	3.00	-0.50	0
26	3.6667	3.00	-0.50	0
27	0.7333	3.00	-2.50	0
28	-0.7333	3.00	-2.50	0
33	-6.00	5.50	0.20	0
34	6.00	5.50	0.20	0
35	-6.00	-2.50	0.20	0

36	6.00	-2.50	0.20	0
42	2.00	5.50	0.20	0
43	2.00	-2.50	0.20	0
48	-2.00	5.50	0.20	0
49	-2.00	-2.50	0.20	0
51	-4.00	3.00	-6.50	0
52	-3.60	3.00	0.00	0
53	-2.80	3.00	0.00	0
54	0.00	4.50	-3.00	0
55	0.00	-1.50	-3.00	0
56	0.00	4.00	-3.00	0
57	0.00	-1.00	-3.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
51	1	1	1	1	1	1
56	1	1	1	1	1	1
57	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
3	3	2		PIPE 2x0.218XS	A53 GrB	0.00	0.00	0.00
4	8	10		PIPE 2x0.218XS	A53 GrB	0.00	0.00	0.00
5	9	10		PIPE 2x0.218XS	A53 GrB	0.00	0.00	0.00
8	17	16		PIPE 2x0.218XS	A53 GrB	0.00	0.00	0.00
9	22	24		PIPE 2x0.218XS	A53 GrB	0.00	0.00	0.00
10	23	24		PIPE 2x0.218XS	A53 GrB	0.00	0.00	0.00
11	14	28		RndBar 3_4	A572 Gr50	0.00	0.00	0.00
12	27	13		RndBar 3_4	A572 Gr50	0.00	0.00	0.00
13	25	11		RndBar 3_4	A572 Gr50	0.00	0.00	0.00
14	12	26		RndBar 3_4	A572 Gr50	0.00	0.00	0.00
15	28	11		RndBar 3_4	A572 Gr50	0.00	0.00	0.00
16	27	12		RndBar 3_4	A572 Gr50	0.00	0.00	0.00
26	34	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
27	42	43		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
28	48	49		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	33	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
31	22	51		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
32	54	55		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
26	45.00	0	0.00	0.00	0.00
27	45.00	0	0.00	0.00	0.00
28	45.00	0	0.00	0.00	0.00
29	45.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
31	0.00	2.00	0.00	0.00	2.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	0	0	0	0	0	0	0	0	0	0	Tension only

27 SIEMON COMPANY DR

Location	27 SIEMON COMPANY DR	**Mblu**	110/ 78B/ 32/ /
Acct#	7322	**Owner**	SIEMON REALTY COMPANY
PBN		**Assessment**	$4,576,200
Appraisal	$6,537,400	**PID**	7322
Building Count	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$5,460,400	$1,077,000	$6,537,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$3,822,300	$753,900	$4,576,200

Owner of Record

Owner	SIEMON REALTY COMPANY	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	27 SIEMON COMPANY DR WATERTOWN, CT 06795	**Book & Page**	1358/ 124
		Sale Date	12/27/2004

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
SIEMON REALTY COMPANY	$0		1358/ 124	12/27/2004
SIEMON COMPANY THE	$0		363/ 199	

Building Information

Building 1 : Section 1

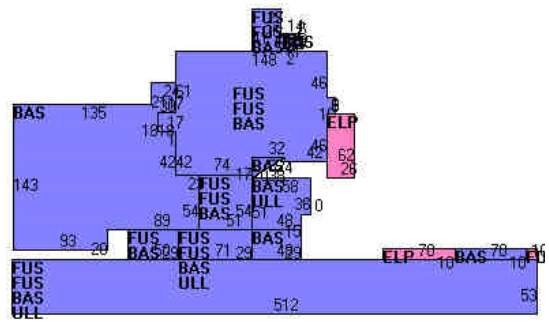
Year Built:	1900
Living Area:	182,765
Replacement Cost:	$18,307,911
Building Percent Good:	28
Replacement Cost Less Depreciation:	$5,126,200

Building Attributes	
Field	**Description**
STYLE	Office Bldg
MODEL	Comm/Ind
Grade	C-
Stories:	3
Occupancy	91
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Industrial MDL-94
Total Rooms	
Total Bedrms	None
Total Baths	0
Fixtures	
1st Floor Use:	400C
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Walls
Rooms/Prtns	Average

Building Photo

(http://images.vgsi.com/photos/WatertownCTPhotos//\00\00\28/69.JPG)

Building Layout



(http://images.vgsi.com/photos/WatertownCTPhotos//Sketche

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
FUS	Upper Story, Finished	102,618	102,618
BAS	First Floor	80,147	80,147
ELP	Enclosed Loading Platform	2,312	0
FOP	Porch, Open	100	0
ULL	Unfinished Lower Level	32,003	0
		217,180	182,765

Wall Height	10
% Comn Wall	

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
SPR1	Sprinkler-Wet	214068 S.F.	$48,000	1
ELV3	Elevator Com 2	1 UNITS	$25,400	1
LDL1	Load Lv Power	3 UNITS	$2,400	1
ELV4	Elevator Com 3	1 UNITS	$27,200	1
ELV5	Elevator Com 4	2 UNITS	$57,900	1

Land

Land Use

Use Code	400C
Description	Industrial MDL-94
Zone	IG20F
Neighborhood	120
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	9.08
Frontage	
Depth	
Assessed Value	$753,900
Appraised Value	$1,077,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Asphalt Paving			160000 S.F.	$160,000	1
LT1	Lights 1			5 UNITS	$2,800	1
CAN1	Canopy			192 S.F.	$1,500	1
LT2	Lights 2			6 UNITS	$3,700	1
LT3	Lights 3			2 UNITS	$1,300	1
OP	OpenPorchFrm			504 S.F.	$4,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$4,923,000	$1,077,000	$6,000,000
2015	$4,923,000	$1,077,000	$6,000,000
2014	$7,590,000	$1,077,000	$8,667,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$3,446,100	$753,900	$4,200,000
2015	$3,446,100	$753,900	$4,200,000
2014	$5,313,100	$753,900	$6,067,000

Town of Watertown			
Parcel: 7322 Acres: 9.08			
Name:	SIEMON REALTY COMPANY	Land Value:	1077000
Site:	27 SIEMON COMPANY DR	Improvement Value:	4441000
Sale:	$0 on 2004-12-27 Reason= Qual=U	Accessory Value:	312700
Mail:	27 SIEMON COMPANY DR WATERTOWN, CT 06795	Total Value:	6000000

Date printed: 01/27/17 : 14:46:38

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PRIORITY MAIL 1-DAY™

Expected Delivery Date: 04/08/19

MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

0024

Carrier -- Leave if No Response

C007

SHIP TO:

SIEMON REALTY COMPANY
27 SIEMON COMPANY DR
WATERTOWN CT 06795-2654

USPS TRACKING #

9405 5036 9930 0469 6582 78

Electronic Rate Approved #038555749

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Instructions

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Ship Date:	04/06/2019
Expected Delivery Date:	04/08/2019

Priority Mail® Postage:	**$7.35**
Total	**$7.35**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: SIEMON REALTY COMPANY
27 SIEMON COMPANY DR
WATERTOWN CT 06795-2654

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PRIORITY MAIL 1-DAY™

Expected Delivery Date: 04/08/19

MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

0024

Carrier -- Leave if No Response

C007

SHIP TO: MR. THOMAS WINN
TOWN OF WATERTOWN
424 MAIN ST
CC: MARK MASSOUD, PLANNING DEPT
WATERTOWN CT 06795-2231

USPS TRACKING #

9405 5036 9930 0469 6582 92

Electronic Rate Approved #038555749

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0469 6582 92

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Print Date:	04/05/2019
Ship Date:	04/06/2019
Expected Delivery Date:	04/08/2019

Priority Mail® Postage:	**$7.35**
Total	**$7.35**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: MR. THOMAS WINN
TOWN OF WATERTOWN
424 MAIN ST
CC: MARK MASSOUD, PLANNING DEPT
WATERTOWN CT 06795-2231

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