



QC Development

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Storrs, CT 06268

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March 25, 2016

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T)
48 Newtown Road, Danbury, CT 06810
N 41-24-12.00
W 73-25-29.53

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 100-foot level of the existing 110-foot Monopole at 48 Newtown Road, Danbury, CT. The tower is managed by Crown Castle (successor in interest to Wireless Capital Partners) and the tower and property are owned by 48 Newtown Road Corporation. AT&T now intends to replace three (3) of its existing antennas with one (1) new CCI and two (2) new Andrew antennas. These antennas would be installed at the 100-foot level of the tower. AT&T also intends to replace three (3) Ericsson RRUS-11 remote radio units with three (3) new Ericsson RRUS-32 B2s and add one Raycap surge arrester.

This facility was approved by the Connecticut Siting Council, Docket No. 917 on October 22, 2009. 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 Mark D.

Boughton, Mayor of the City of Danbury, as well as the tower and property 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,

A handwritten signature in black ink, appearing to be 'MR', with a large loop at the end.

Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Mark D. Boughton - as elected official (via e-mail)
48 Newtown Road Corporation - as tower and property owner (via e-mail)

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*							8.47%
AT&T LTE	1	500	100	0.0203	700	0.4667	0.44%
AT&T LTE	1	500	100	0.0203	1900	1.0000	0.20%
AT&T LTE	1	500	100	0.0203	2300	1.0000	0.20%
AT&T UMTS	2	500	100	0.0407	880	0.5867	0.69%
AT&T UMTS	1	500	100	0.0203	1900	1.0000	0.20%
AT&T GSM	1	296	100	0.0120	880	0.5867	0.21%
Site Total							9.98%

*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*							8.47%
AT&T LTE	2	1791	100	0.1458	700	0.4667	3.12%
AT&T LTE	2	1104	100	0.0899	1900	1.0000	0.90%
AT&T LTE	2	2203	100	0.1793	2300	1.0000	1.79%
AT&T UMTS	2	492	100	0.0400	880	0.5867	0.68%
AT&T UMTS	2	419	100	0.0341	1900	1.0000	0.34%
AT&T GSM	2	817	100	0.0665	880	0.5867	1.13%
Site Total							16.44%

*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

Note: Proposed Loading may also include corrections to certain Existing Loading values

PROJECT INFORMATION

SCOPE OF WORK: TELECOMMUNICATIONS FACILITY UPGRADE (LTE 4C & BWE UPGRADE)

SITE ADDRESS: 48 NEWTOWN ROAD
DANBURY, CT 06810

LATITUDE: 41.403403° N 41° 24' 12.27" N

LONGITUDE: 73.424431° W 73° 25' 27.99" W

TYPE OF SITE: MONOPOLE

TOWER HEIGHT: 110'±

RAD CENTER: 100'±

JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

NOC# 800-638-2822



SITE NUMBER: CT2157

SITE NAME: DANBURY EAST

PROJECT: LTE 4C & BWE 2016 UPGRADE

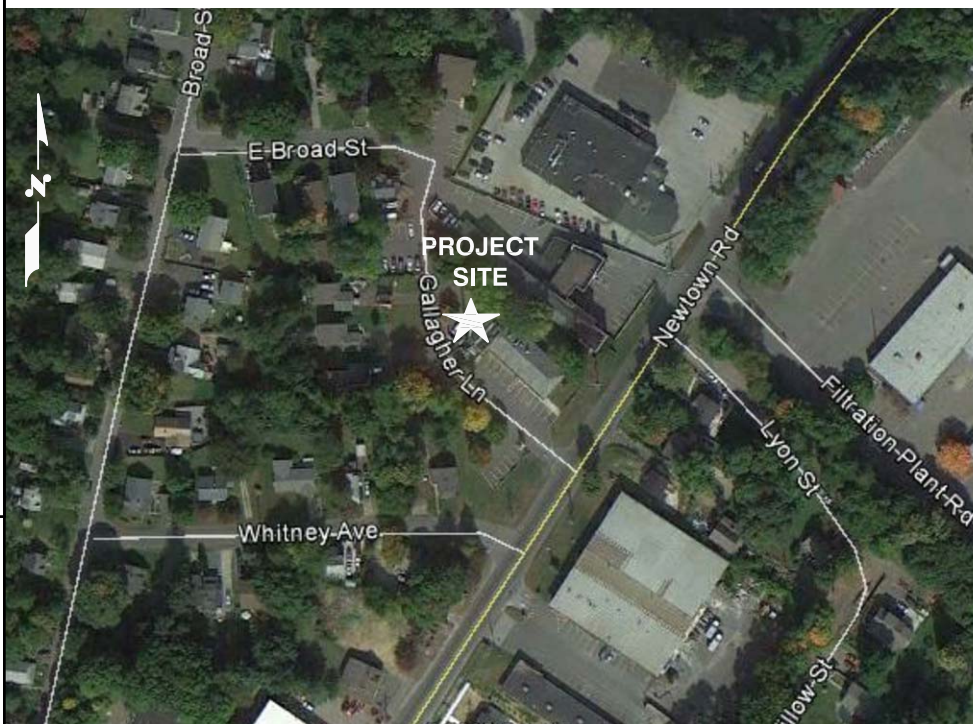
DRAWING INDEX

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VICINITY MAP

DIRECTIONS TO SITE:

FROM 550 COCHITUATE RD. FRAMINGHAM, MA 01701:
HEAD NORTHEAST. TURN RIGHT TOWARD SPEEN ST. TURN RIGHT ONTO COCHITUATE RD. TAKE RAMP TO I-90 MASSPIKE/SPRINGFIELD/BOSTON. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-90 E/I-95/MASSPIKE/BOSTON AND MERGE ONTO I-90 E/MASSPIKE. MERGE ONTO I-90 E/MASSACHUSETTS TURNPIKE. MERGE ONTO I-90 E/MASSPIKE. TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. CONTINUE ONTO I-84. TAKE EXIT 8 TO MERGE ONTO NEWTOWN RD. TOWARD BETHEL. MERGE ONTO NEWTOWN RD.



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.

CROWN CASTLE SITE ID: 852850

72 HOURS



CALL BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT



SITE NUMBER: CT2157
SITE NAME: DANBURY EAST
CCI SITE ID:852850
48 NEWTOWN ROAD
DANBURY, CT 06810
FAIRFIELD COUNTY



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

TITLE SHEET
(LTE 4C & BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2157	T-1	3

1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SCALE: AS SHOWN DESIGNED BY: SG DRAWN BY: VT

GROUNDING NOTES

GENERAL 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 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 SHALL BE 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. 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

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 MOBILITY 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: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 2013 CT AMENDMENTS
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
 LIGHTNING CODE: REFER TO ELECTRICAL DRAWINGS
- 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, 14TH EDITION;
 - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL
 - ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.
- 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	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE		
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED	TYP	TYPICAL



1600 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 3090
 N. ANDOVER, MA 01845
 TEL: (978) 557-5553
 FAX: (978) 336-5586



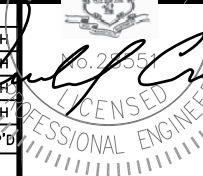
27 NORTHWESTERN DR.
 SALEM, NH 03079

SITE NUMBER: CT2157
SITE NAME: DANBURY EAST
 CCI SITE ID:852850
 48 NEWTOWN ROAD
 DANBURY, CT 06810
 FAIRFIELD COUNTY



550 COCHITUATE ROAD
 FRAMINGHAM, MA 01701

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AT&T

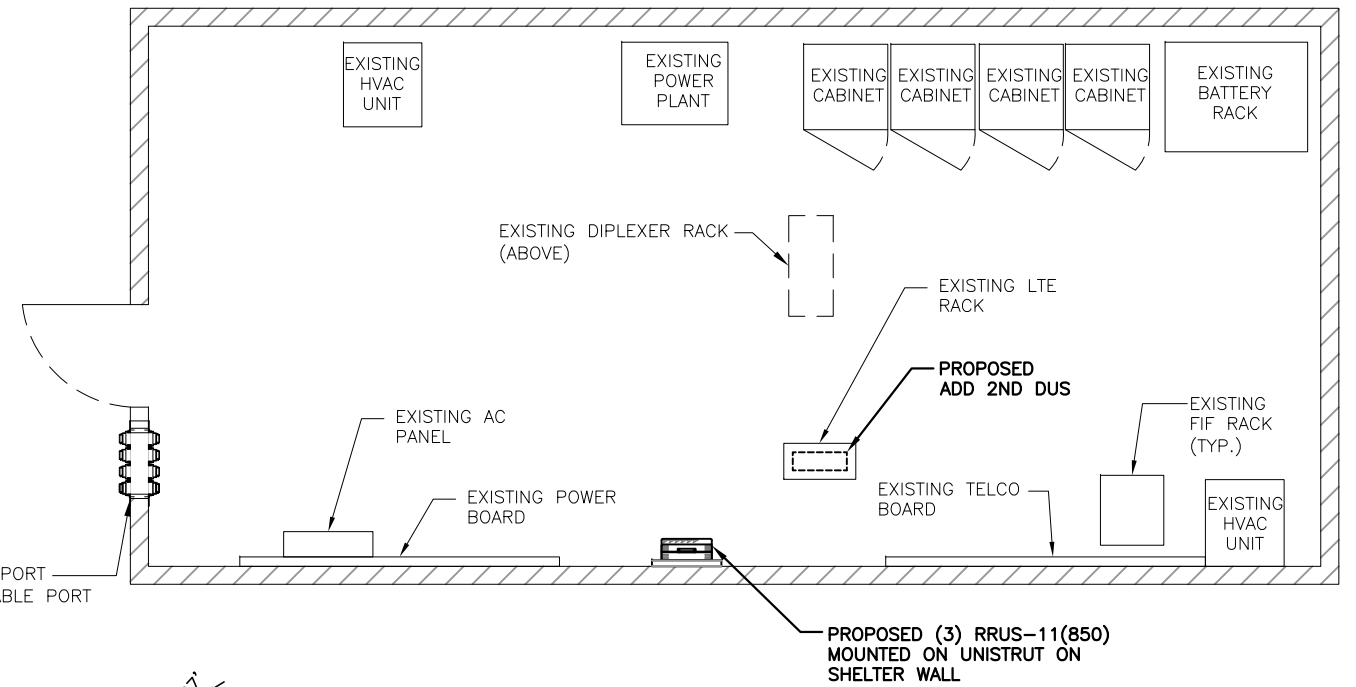
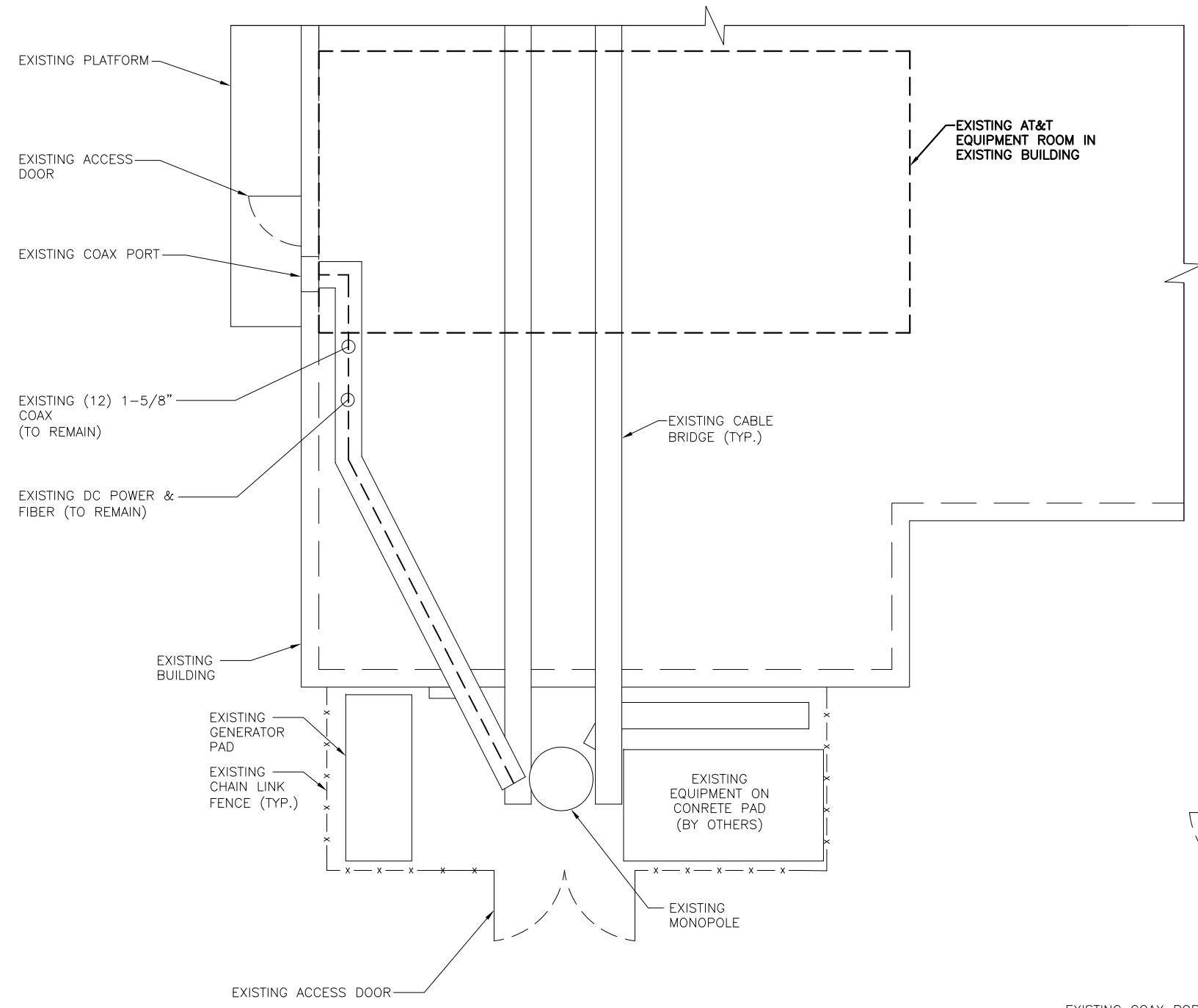
GENERAL NOTES
 (LTE 4C & BWE)

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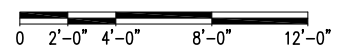
NOTE:
REFER TO STRUCTURAL ANALYSIS & TOWER MODIFICATION RECOMMENDATIONS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 29, 2016 (REV3), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:
AN ASSESSMENT FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC. DATED: MARCH 08, 2016

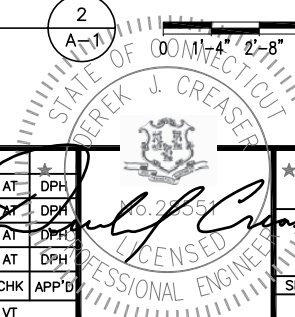
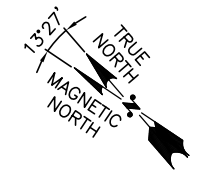
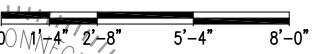
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



COMPOUND PLAN
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"



EQUIPMENT PLAN
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"



Hudson Design Group, LLC
1600 OSGOOD STREET
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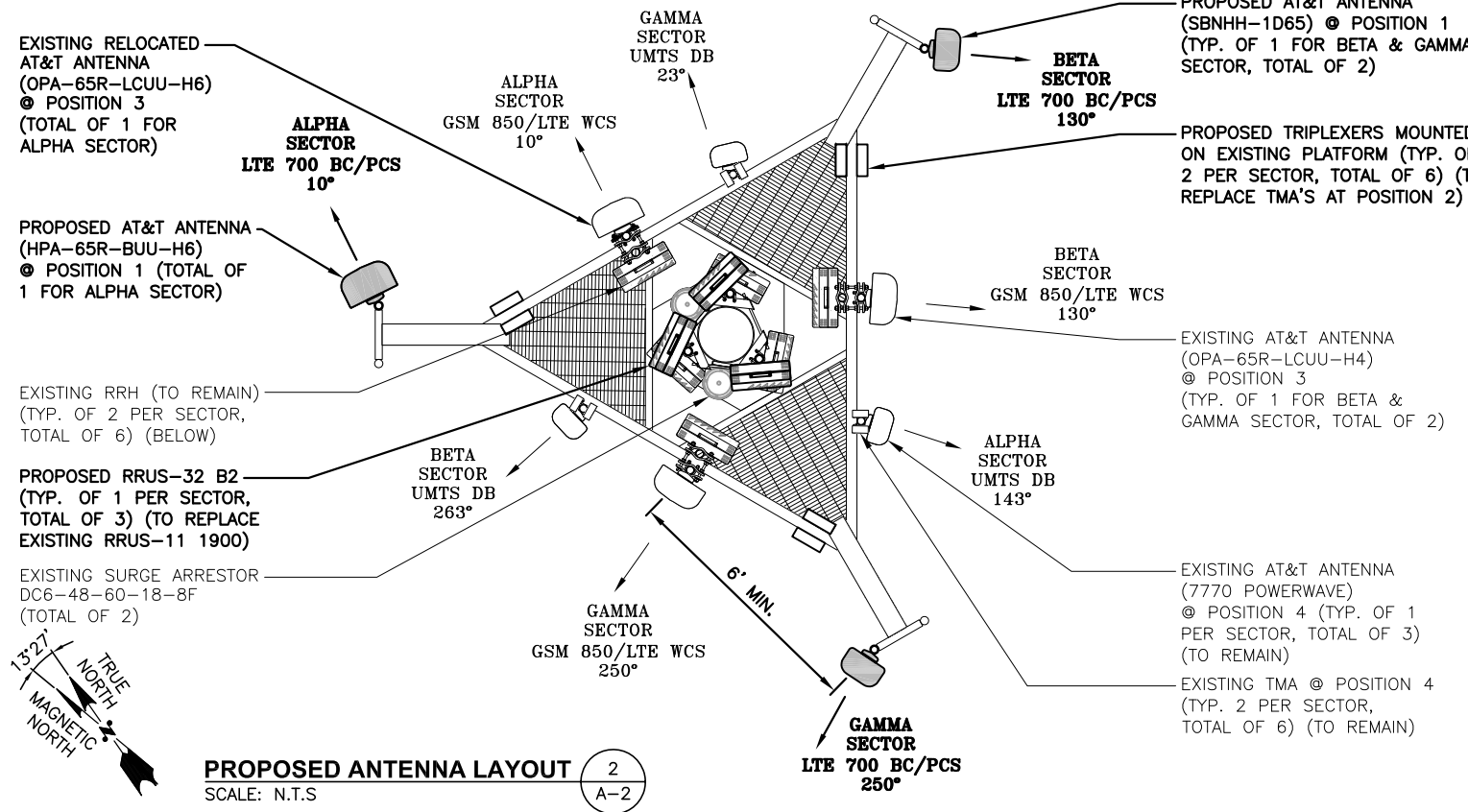
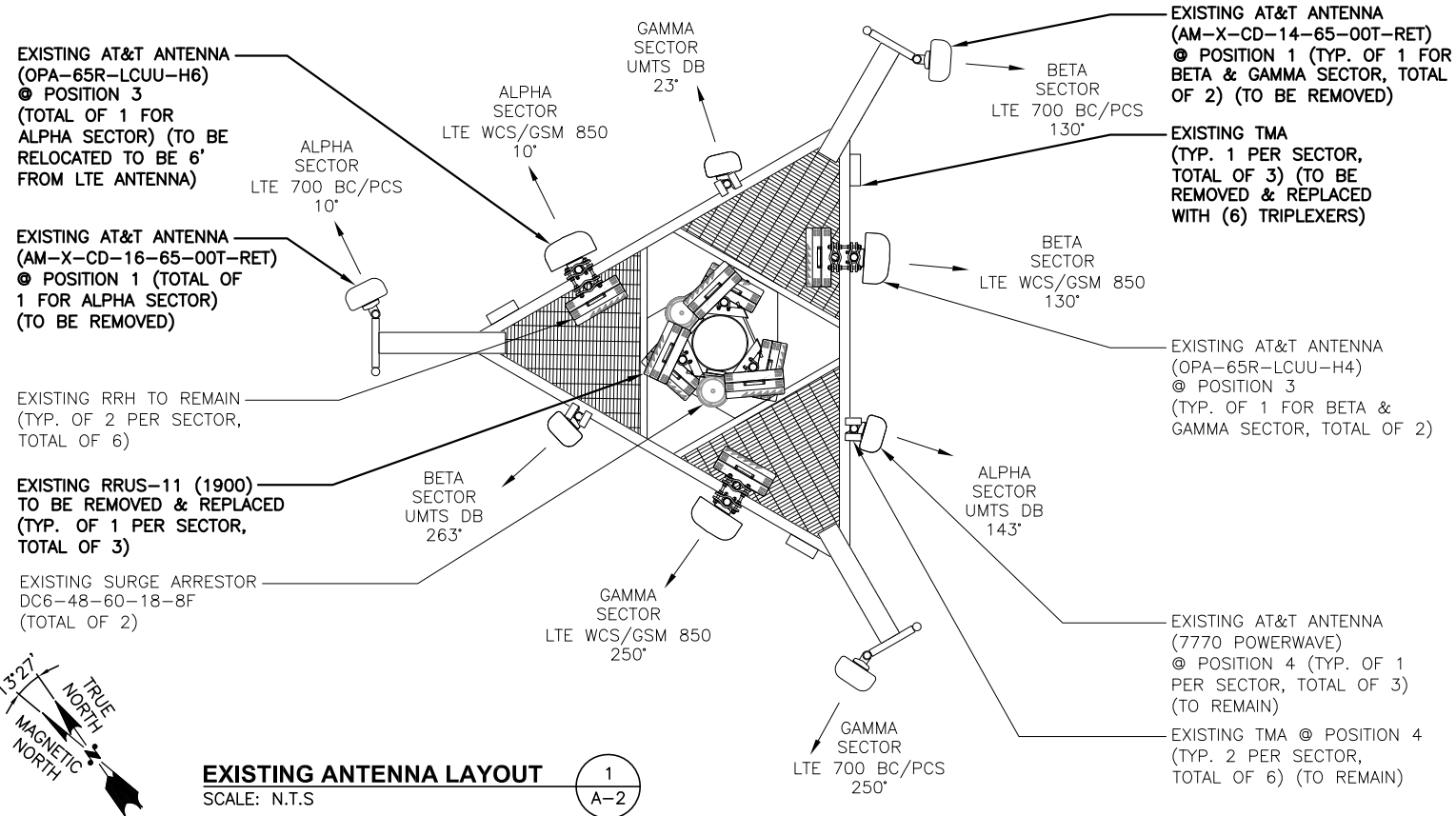
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AT&T
COMPOUND & EQUIPMENT PLANS
(LTE 4C & BWE)

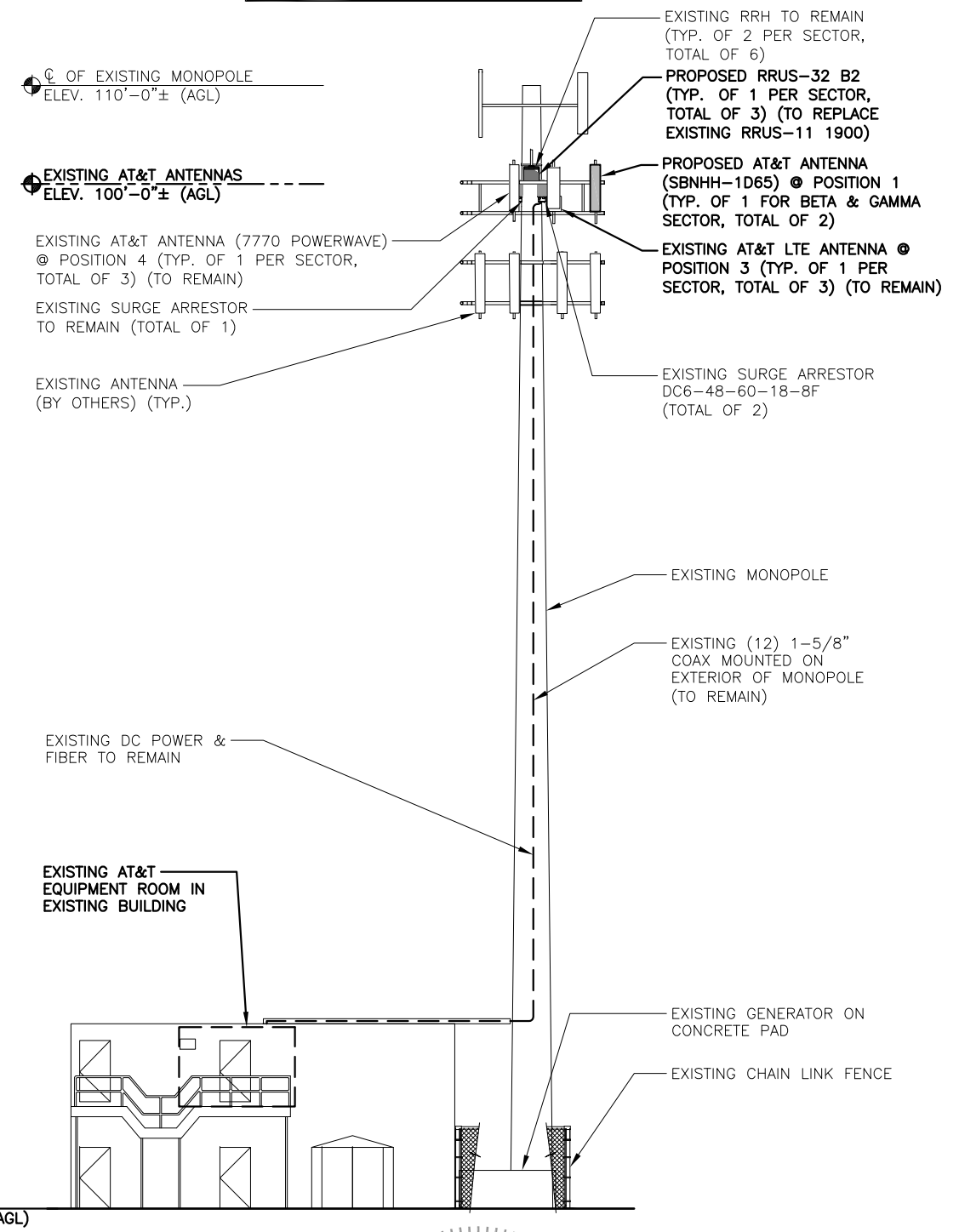
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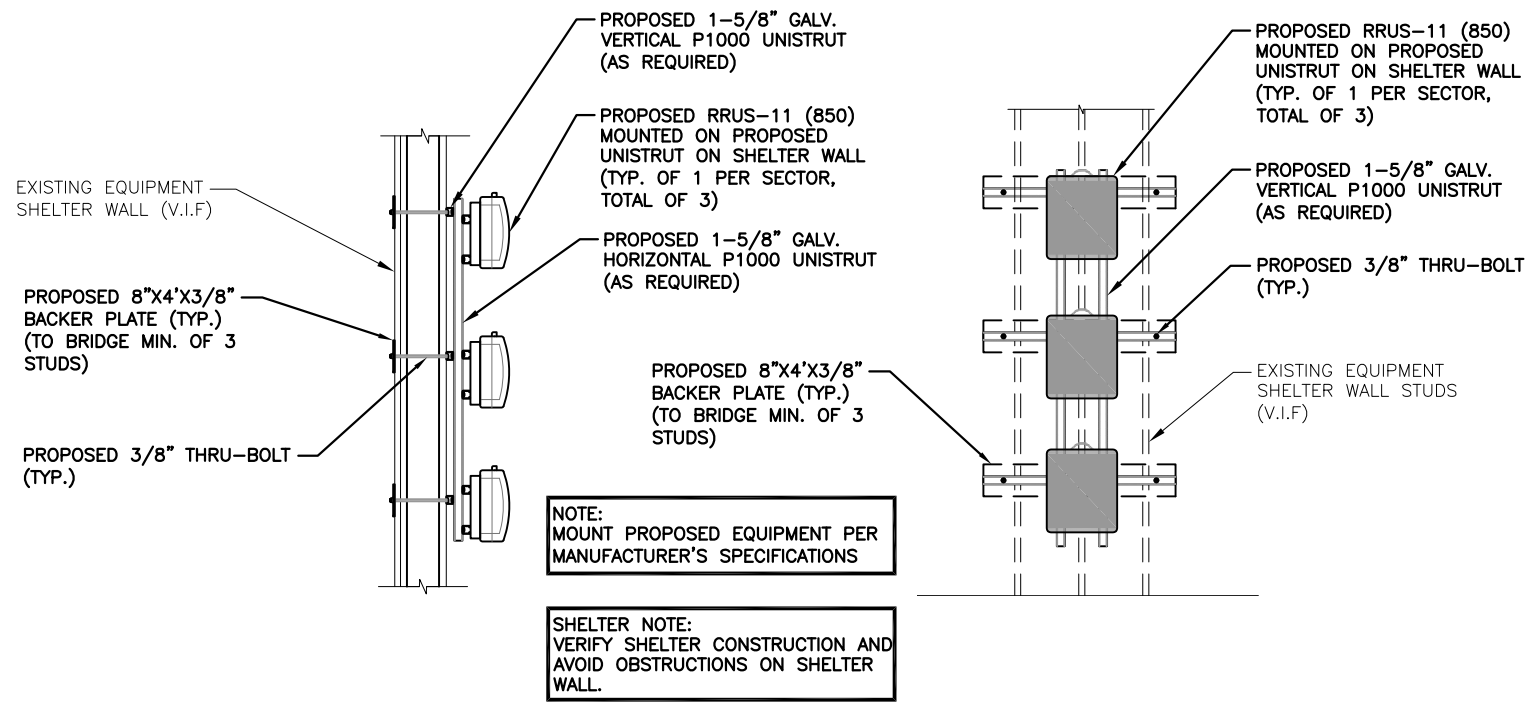
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1	01/18/16	ISSUED FOR CONSTRUCTION	RB	AT	DPH
A	12/28/15	ISSUED FOR REVIEW	SG	AT	DPH

SCALE: AS SHOWN DESIGNED BY: SG DRAWN BY: VT

STATE OF CONNECTICUT
REGISTERED PROFESSIONAL ENGINEER
No. 22555
Paul J. Crum

SITE NUMBER	DRAWING NUMBER	REV
CT2157	A-2	3

AT&T
ANTENNA LAYOUTS & ELEVATION
(LTE 4C & BWE)



PROPOSED RRU'S MOUNTING DETAIL

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

4
A-3

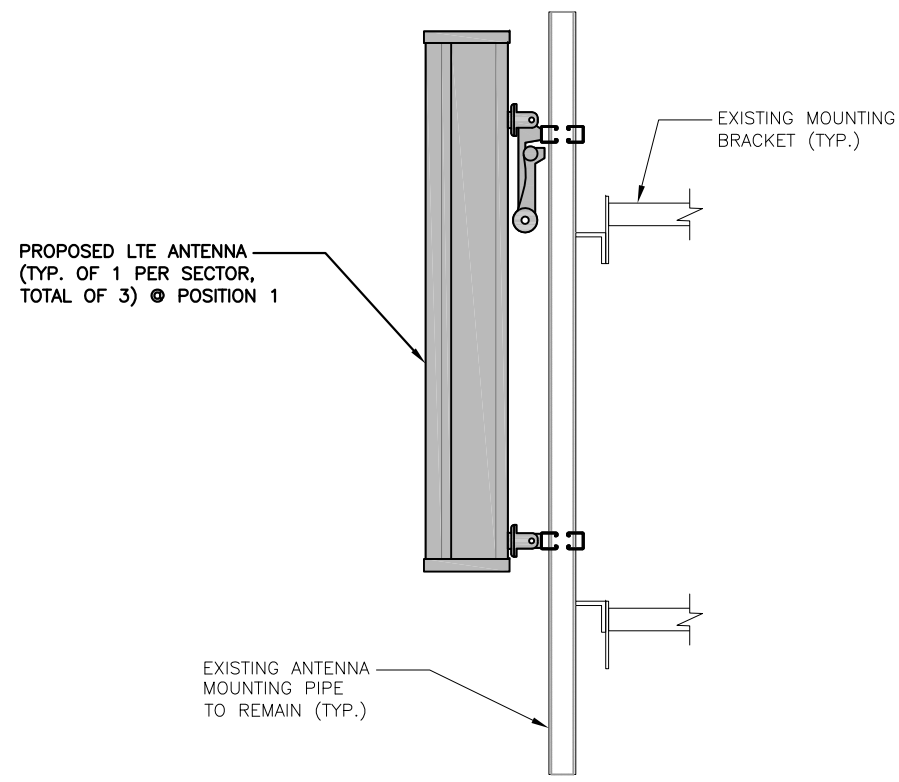
EXISTING ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	KMW	AM-X-CD-16-65-00T-RET	72.0X11.8X5.9
	CCI	OPA-65R-LCUU-H6	72.0X14.8X7.4
	POWERWAVE	7770	55.0X11.0X5.0
BETA:	KMW	AM-X-CD-14-65-00T-RET	48.0X11.8X5.9
	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
	POWERWAVE	7770	55.0X11.0X5.0
GAMMA:	KMW	AM-X-CD-14-65-00T-RET	48.0X11.8X5.9
	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
	POWERWAVE	7770	55.0X11.0X5.0

FINAL ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	CCI	HPA-65R-BUU-H6	72.0X14.8X9.0
	CCI	OPA-65R-LCUU-H6	72.0X14.8X7.4
	POWERWAVE	7770	55.0X11.0X5.0
BETA:	ANDREW	SBNHH-1D65A	55.0X11.9X7.1
	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
	POWERWAVE	7770	55.0X11.0X5.0
GAMMA:	ANDREW	SBNHH-1D65A	55.0X11.9X7.1
	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
	POWERWAVE	7770	55.0X11.0X5.0

NOTE:
AN ASSESSMENT FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC. DATED: MARCH 08, 2016

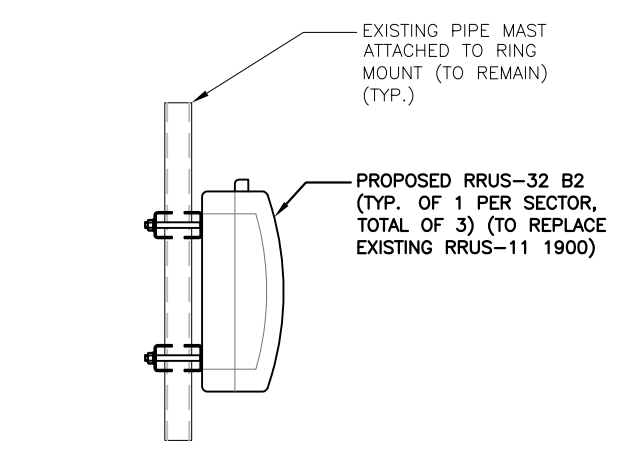
NOTE:
REFER TO STRUCTURAL ANALYSIS & TOWER MODIFICATION RECOMMENDATIONS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 29, 2016 (REV3), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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



PROPOSED LTE ANTENNA MOUNTING DETAIL

1
A-3

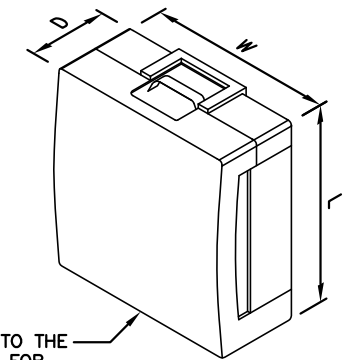


PROPOSED RRH MOUNTING DETAIL

2
A-3

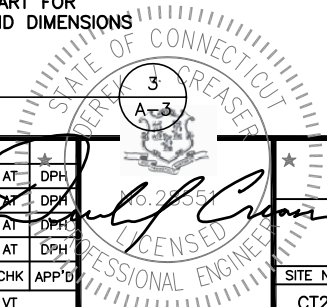
RRU CHART				
QUANTITY	MODEL	L	W	D
3(P)/3(E)	RRUS-11	19.7"	17.0"	7.2"
-	RRUS-12	20.4"	18.5"	7.5"
3(P)/3(E)	RRUS-32	27.2"	12.1"	7.0"
-	RRUS-E2	20.4"	18.5"	7.5"
-	LTE-A2	16.4"	15.2"	3.4"

NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS



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

RRU DETAIL



Hudson Design Group, Inc.
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2157
SITE NAME: DANBURY EAST
CCI SITE ID:852850
48 NEWTOWN ROAD
DANBURY, CT 06810
FAIRFIELD COUNTY

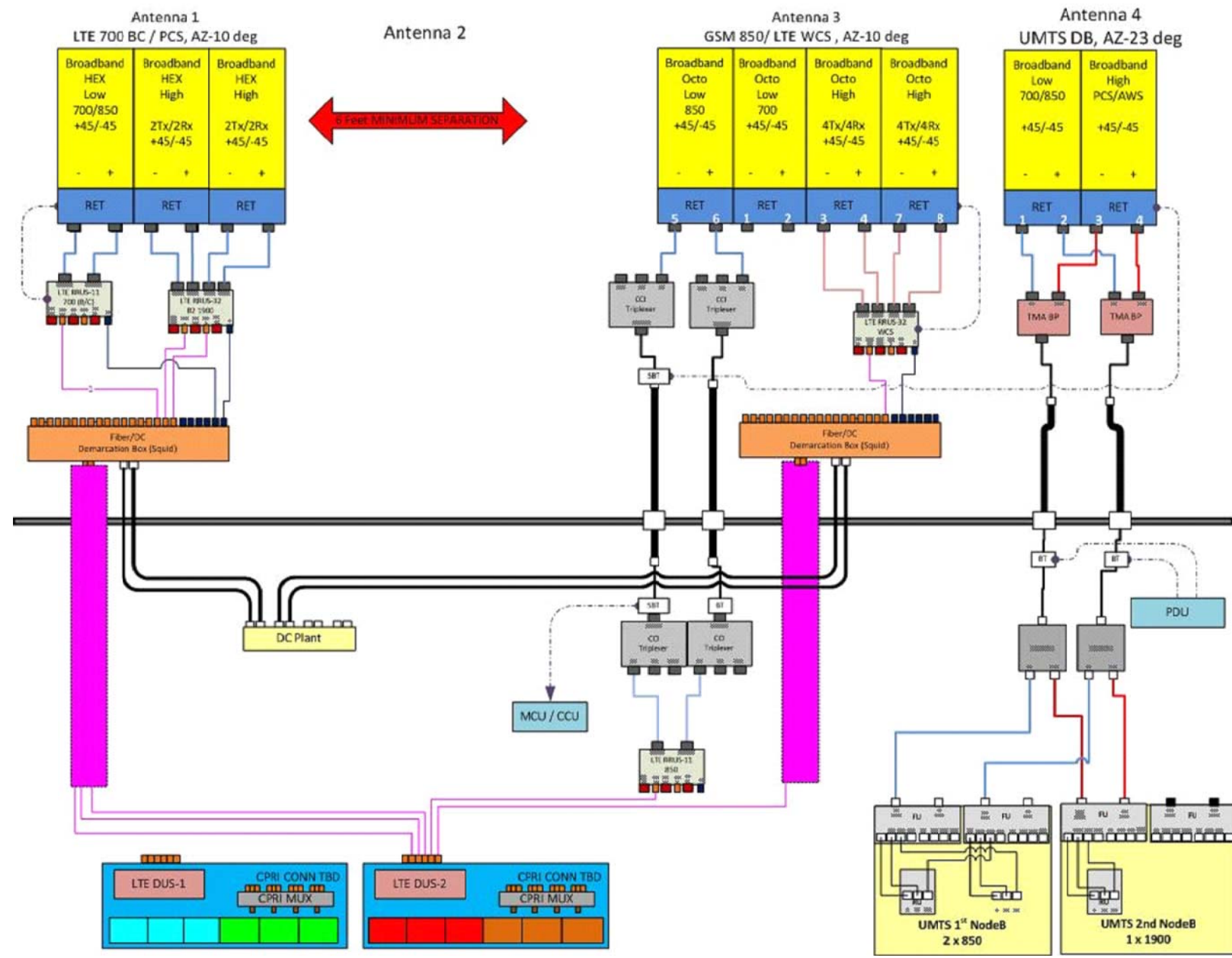
at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
3	03/08/16	REVISED FOR CONSTRUCTION	SG	AT	DPH
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1	01/18/16	ISSUED FOR CONSTRUCTION	RB	AT	DPH
A	12/28/15	ISSUED FOR REVIEW	SG	AT	DPH

SCALE: AS SHOWN DESIGNED BY: SG DRAWN BY: VT

AT&T
DETAILS
(LTE 4C & BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2157	A-3	3

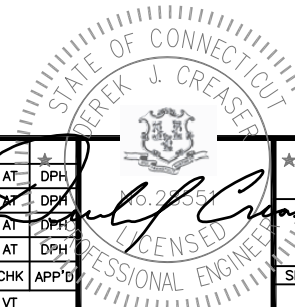


RF PLUMBING DIAGRAM
SCALE: N.T.S.

1
RF-1

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, Inc.
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N. ANDOVER, MA 01845
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SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

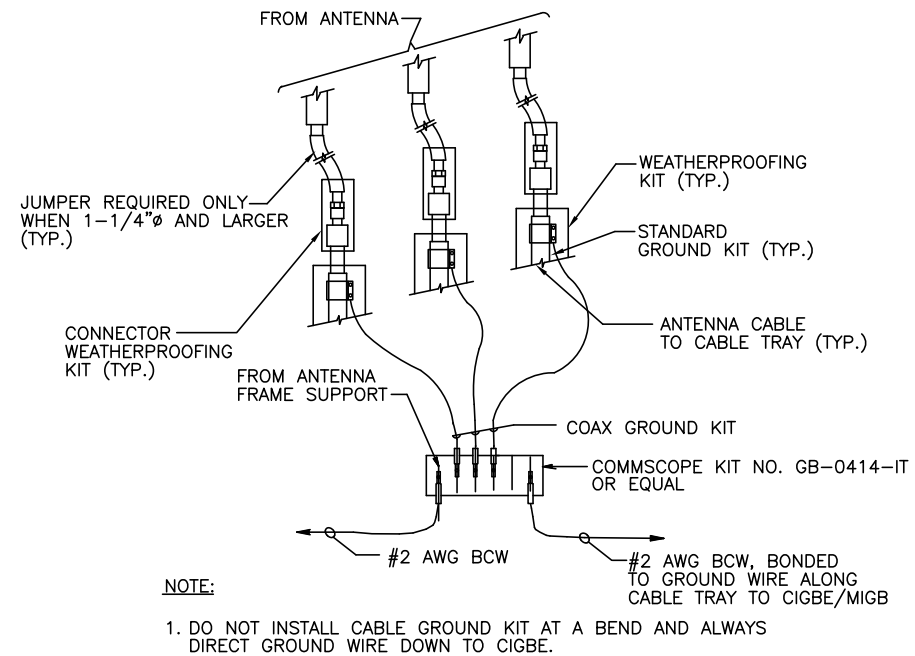
SITE NUMBER: CT2157
SITE NAME: DANBURY EAST
CCI SITE ID:852850
48 NEWTOWN ROAD
DANBURY, CT 06810
FAIRFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

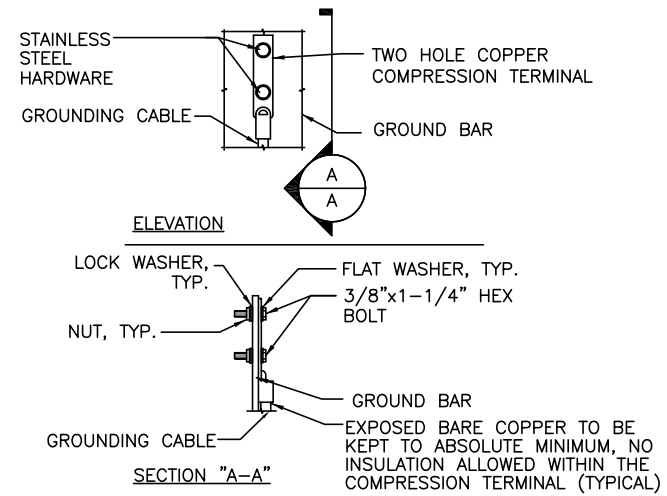
3	03/08/16	REVISED FOR CONSTRUCTION	SG	AT	DPH
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: SG	DRAWN BY: VT		

AT&T
RF PLUMBING DIAGRAM
(LTE 4C & BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2157	RF-1	3

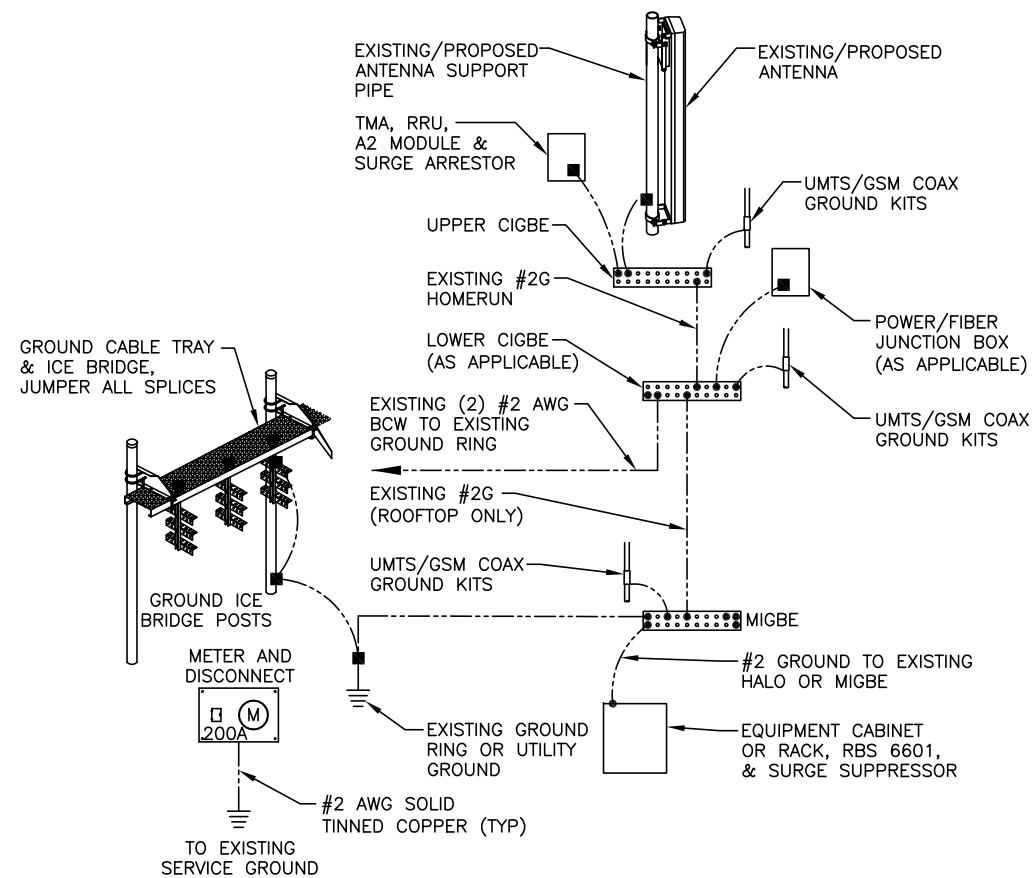


GROUND WIRE TO GROUND BAR CONNECTION DETAIL 2
SCALE: N.T.S. G-1



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
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 1
SCALE: N.T.S. G-1

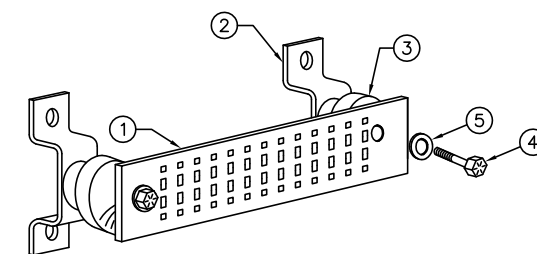
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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
SCALE: N.T.S. G-1



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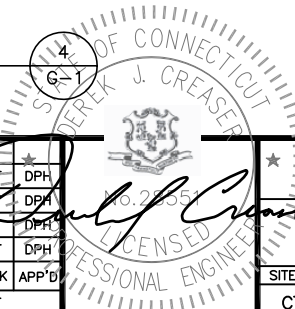
SITE NUMBER: CT2157
SITE NAME: DANBURY EAST
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48 NEWTOWN ROAD
DANBURY, CT 06810
FAIRFIELD COUNTY



550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN DESIGNED BY: SG DRAWN BY: VT



AT&T		
GROUNDING DETAILS (LTE 4C & BWE)		
SITE NUMBER	DRAWING NUMBER	REV
CT2157	G-1	3

TOP OF EXISTING TOWER
ELEV. 110'-0"

CENTER OF PROPOSED AT&T ANTENNAS
ELEV. 100'-0"

PROPOSED (3) 4"x1/2"
STEEL PLATE REINFORCEMENT
ELEV. 47'-0" - 72'-0"

PROPOSED (3) 4-1/2"x1/2"
STEEL PLATE REINFORCEMENT
ELEV. 21'-0" - 47'-0"

BASE OF EXISTING TOWER
ELEV. 1'-0"

SPLICE JOINT
ELEV. 51'-0"

PROPOSED 4"x1/2"x25'-0"
STEEL PLATE REINFORCEMENT
(TYP. OF 3)
A572, GR65
(Fy=65 ksi)

TOP PROPOSED (3) 4-1/2"x1/2"
STEEL PLATE REINFORCEMENT
ELEV. 47'-0"

PROPOSED 4"x1/2"x19" STEEL
SPICE PLATE
(TYP. OF 3)

PROPOSED LINDAPTER HB20-3
HOLLO-BOLT
(TYP. OF 6 PER SPLICE PLATE)

PROPOSED LINDAPTER HB12-2
HOLLO-BOLT
(TYP. 12" O.C.)

PROPOSED 4-1/2"x1/2"x26'-0"
STEEL PLATE REINFORCEMENT
(TYP. OF 3)
A572, GR65
(Fy=65 ksi)

BOTTOM PROPOSED (3) 4-1/2"x1/2"
STEEL PLATE REINFORCEMENT
ELEV. 21'-0"

1 TOWER ELEVATION
S-1 SCALE: 1/8"=1'-0"



2 REINFORCEMENT ELEVATION
ELEV. 21'-0" - 47'-0"
S-1 SCALE: 1/2"=1'-0"



NOTE:
REFER TO STRUCTURAL ANALYSIS
BY: HUDSON DESIGN GROUP, LLC,
DATED: AUGUST 26, 2015, (REV1)
FOR THE CAPACITY OF THE
EXISTING STRUCTURES TO SUPPORT
THE PROPOSED EQUIPMENT.

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

PROPOSED LINDAPTER
HB12-2 HOLLO-BOLT
(TYP. 12" O.C.)

PROPOSED
4-1/2"x1/2"x26'-0"
STEEL PLATE REINFORCEMENT
(TYP. OF 3)
A572, GR65
(Fy=65 ksi)

EXISTING MONOPOLE

REINFORCEMENT PLAN

ELEV. 21'-0" - 47'-0"

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



PROPOSED
4"x1/2"x25'-0" STEEL
PLATE REINFORCEMENT
(TYP. OF 3)

PROPOSED LINDAPTER
HB20-3 HOLLO-BOLT
(TYP. OF 6 PER SPLICE
PLATE)

PROPOSED 1/4" STEEL
SHIM (TYP. OF 3)

PROPOSED 4"x1/2"x19"
STEEL SPLICE PLATE
(TYP. OF 3)

PROPOSED
4-1/2"x1/2"x26'-0"
STEEL PLATE
REINFORCEMENT
(TYP. OF 3)
A572, GR65
(Fy=65 ksi)

EXISTING MONOPOLE
(THICKNESS=0.25")

EXISTING MONOPOLE
(THICKNESS=0.3125")

SPLICE DETAIL

ELEV. 47'-0"

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



GENERAL NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO HUDSON DESIGN GROUP FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREA.
- INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO HUDSON DESIGN GROUP PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE HUDSON DESIGN GROUP, LLC APPROVAL.
- IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER COMPLETION OF THE PROJECT.
- CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRE-CONSTRUCTION CONDITION.

STEEL:

- ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
- ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE UNLESS OTHERWISE NOTED.
- ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2. "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE NOTED.
- ALL STEEL (EXCEPT A490 BOLTS), AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH 2 COATS OF ZRC COLD GALVANIZING COMPOUND.
- ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED.
- STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.
- NEW STEEL MEMBERS AND CONNECTIONS SHALL BE PAINTED TO MATCH EXISTING TOWER.

MISC. NOTES:

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

FABRICATION NOTES:

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

CONTRACTOR QUALIFICATION NOTES:

- ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM OF 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE ANSI/TIA-222-G "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS".
- CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, HUDSON DESIGN GROUP, LLC IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
- ALL SUBMITTAL INFORMATION MUST BE SENT TO HUDSON DESIGN GROUP, LLC 1600 OSGOOD ST. BUILDING 20N, SUITE 3090, NORTH ANDOVER, MA 01845 TEL: (978)557-5553, FAX: (978)336-5586. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM HUDSON DESIGN GROUP WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS HUDSON DESIGN GROUP, LLC.

JOB SITE SAFETY AND NOTES:

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

SUBSTITUTES AND/OR EQUALS:

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



1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
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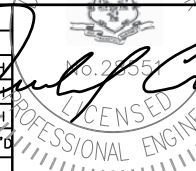
SITE NUMBER: CT2157
SITE NAME: DANBURY
CCI SITE #:852850
WCP #:69910
48 NEWTOWN RD.
DANBURY, CT 06810
FAIRFIELD COUNTY



550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	02/08/16	ISSUED FOR CONSTRUCTION	SG	AT	DPH
1	09/03/15	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	08/31/15	ISSUED FOR REVIEW	SG	AT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: SG

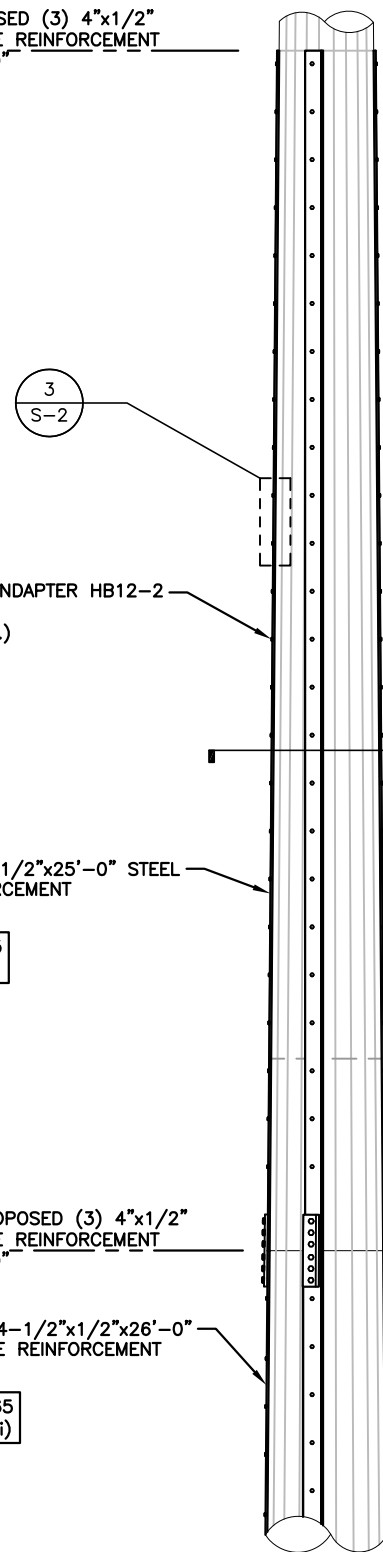


AT&T

TOWER MODIFICATION DETAILS
(MOD)

JOB NUMBER	DRAWING NUMBER	REV
6157.00	S-1	2

TOP PROPOSED (3) 4"x1/2"
STEEL PLATE REINFORCEMENT
ELEV. 72'-0"



PROPOSED LINDAPTER HB12-2
HOLLO-BOLT
(TYP. 12" O.C.)

PROPOSED 4"x1/2"x25'-0" STEEL
PLATE REINFORCEMENT
(TYP. OF 3)

A572, GR65
(Fy=65 ksi)

BOTTOM PROPOSED (3) 4"x1/2"
STEEL PLATE REINFORCEMENT
ELEV. 47'-0"

PROPOSED 4-1/2"x1/2"x26'-0"
STEEL PLATE REINFORCEMENT
(TYP. OF 3)

A572, GR65
(Fy=65 ksi)

REINFORCEMENT ELEVATION

ELEV. 47'-0" - 72'-0"

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



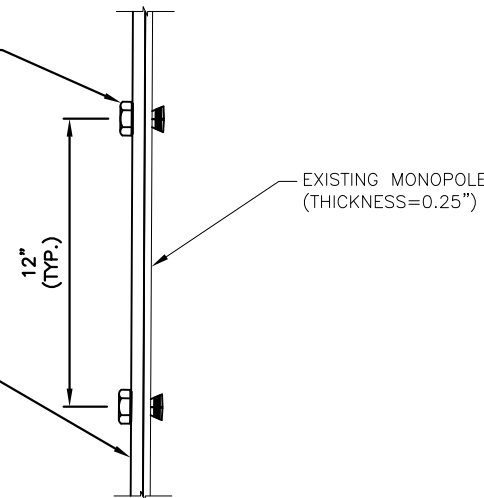
NOTE:
REFER TO STRUCTURAL ANALYSIS
BY: HUDSON DESIGN GROUP, LLC,
DATED: AUGUST 26, 2015, (REV1)
FOR THE CAPACITY OF THE
EXISTING STRUCTURES TO SUPPORT
THE PROPOSED EQUIPMENT.

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

PROPOSED LINDAPTER
HB12-2 HOLLO-BOLT
(TYP. 12" O.C.)

PROPOSED
4"x1/2"x25'-0" STEEL
PLATE REINFORCEMENT
(TYP. OF 3)

A572, GR65
(Fy=65 ksi)



CONNECTION DETAIL

ELEV. 47'-0" - 72'-0"

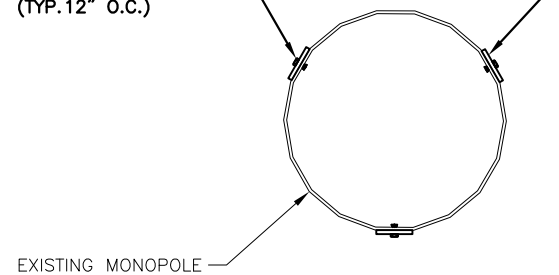
4
S-1 SCALE: 3"=1'-0"



PROPOSED LINDAPTER
HB12-2 HOLLO-BOLT
(TYP. 12" O.C.)

PROPOSED
4"x1/2"x25'-0" STEEL
PLATE REINFORCEMENT
(TYP. OF 3)

A572, GR65
(Fy=65 ksi)



REINFORCEMENT PLAN

ELEV. 47'-0" - 72'-0"

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



SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
REQUIRED	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
REQUIRED	PACKING SLIPS ³
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
REQUIRED	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS
REQUIRED	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
REQUIRED	POST INSTALLED ANCHOR ROD VERIFICATION
REQUIRED	BASE PLATE GROUT VERIFICATION
REQUIRED	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
N/A	STEEL & FRP INSPECTION
REQUIRED	FINAL INSPECTION
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁴
REQUIRED	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	



1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586



27 NORTHWESTERN DR.
SALEM, NH 03079

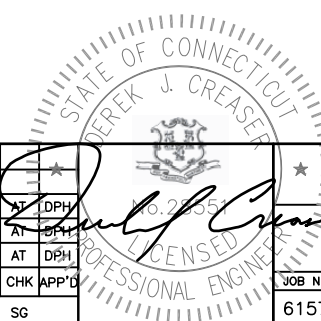
SITE NUMBER: CT2157
SITE NAME: DANBURY
CCI SITE #:852850
WCP #:69910
48 NEWTOWN RD.
DANBURY, CT 06810
FAIRFIELD COUNTY



550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	02/08/16	ISSUED FOR CONSTRUCTION	SG	AT	DPH
1	09/03/15	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	08/31/15	ISSUED FOR REVIEW	SG	AT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: SG



AT&T

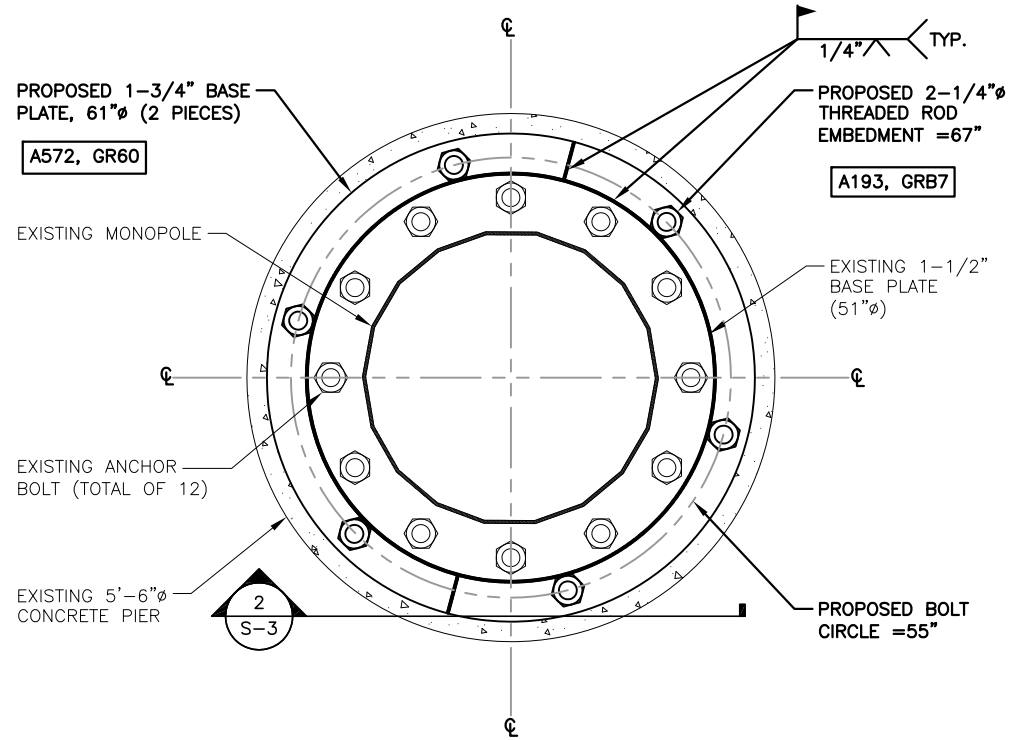
TOWER MODIFICATION DETAILS
(MOD)

JOB NUMBER	DRAWING NUMBER	REV
6157.00	S-2	2

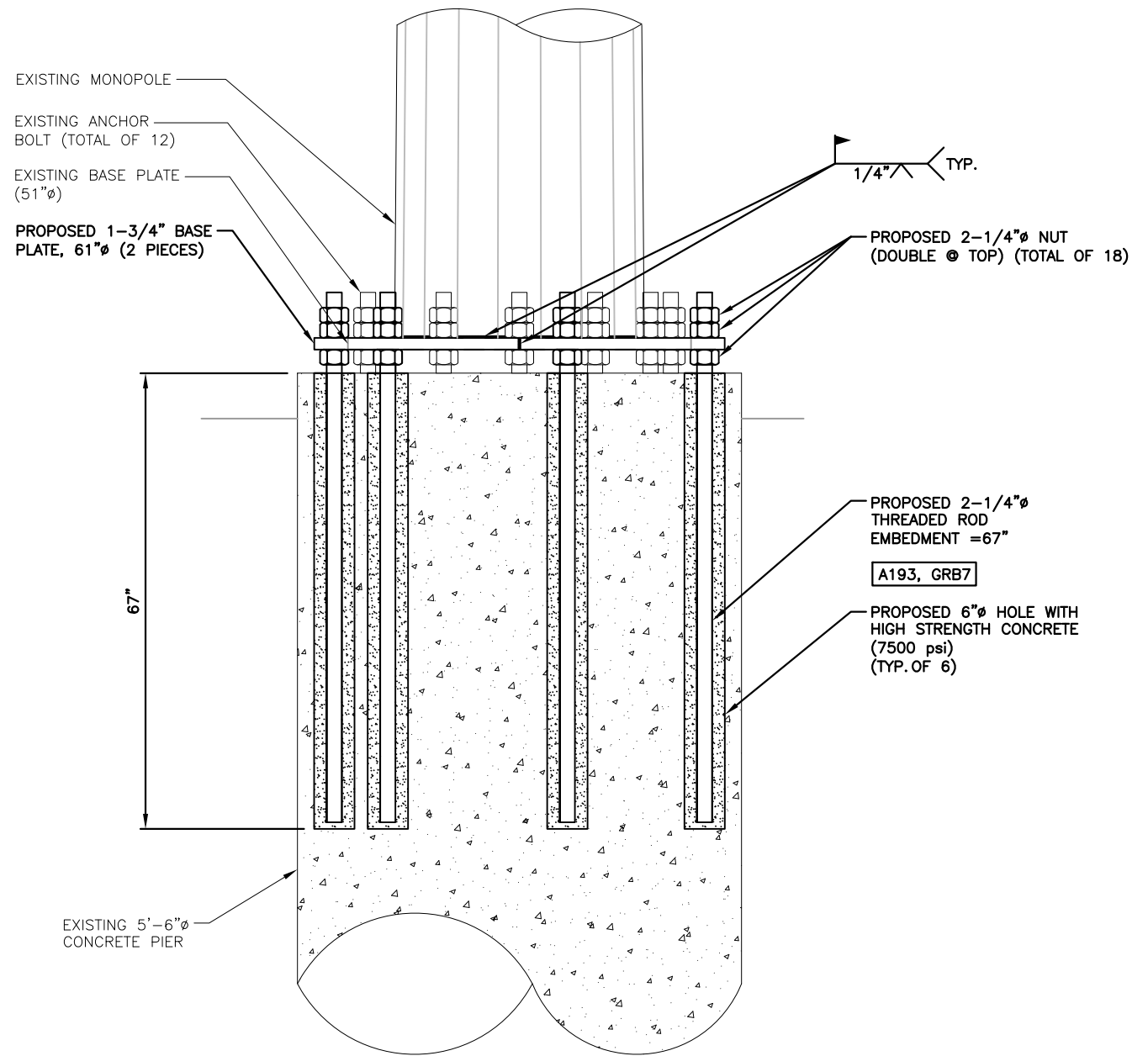
NOTE:
 REFER TO STRUCTURAL ANALYSIS
 BY: HUDSON DESIGN GROUP, LLC,
 DATED: AUGUST 26, 2015, (REV1)
 FOR THE CAPACITY OF THE
 EXISTING STRUCTURES TO SUPPORT
 THE PROPOSED EQUIPMENT.

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

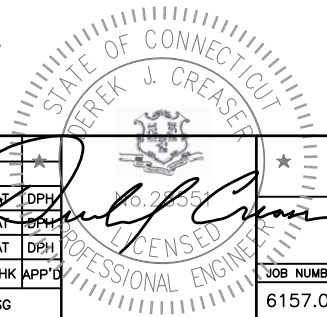
NOTES:
 1. CONTRACTOR TO TEMPORARILY
 RELOCATE ANY EXISTING EQUIPMENT AS
 NECESSARY TO ACCOMMODATE THE
 PROPOSED FOUNDATION MODIFICATION.
 REPLACE RELOCATED EQUIPMENT AFTER
 COMPLETION OF PROPOSED FOUNDATION
 MODIFICATION.
 2. CONTRACTOR TO REPLACE ANY
 GROUNDING MATERIAL THAT IS DAMAGED
 OR REMOVED DURING INSTALLATION.
 3. CONTRACTOR TO INSTALL TEMPORARY
 SUPPORT FOR THE EXISTING TOWER
 FOUNDATION DURING INSTALLATION.



1 BASE PLATE MODIFICATION PLAN
 S-3 SCALE: 1"=1'-0"



2 BASE PLATE MODIFICATION SECTION
 S-3 SCALE: 1"=1'-0"



SITE NUMBER: CT2157
SITE NAME: DANBURY
CCI SITE #:852850
WCP #:69910
 48 NEWTOWN RD.
 DANBURY, CT 06810
 FAIRFIELD COUNTY

at&t
 550 COCHITUATE ROAD
 FRAMINGHAM, MA 01701

2	02/08/16	ISSUED FOR CONSTRUCTION	SG	AT	DPH
1	09/03/15	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	08/31/15	ISSUED FOR REVIEW	SG	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: SG		

AT&T

BASE PLATE MODIFICATION PLAN (MOD)

JOB NUMBER	DRAWING NUMBER	REV
6157.00	S-3	2

Hudson Design Group LLC
 1600 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 3090
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 FAX: (978) 336-5586



27 NORTHWESTERN DR.
 SALEM, NH 03079

(Revised)
STRUCTURAL ANALYSIS REPORT

For

CT2157
DANBURY

48 NEWTOWN ROAD
DANBURY, CT 06810

Antennas Mounted to the Monopole



Prepared for:



at&t

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

Dated: February 29, 2016 (Rev 3)

Dated: February 5, 2016 (Rev 2)

Dated: August 26, 2015 (Rev 1)

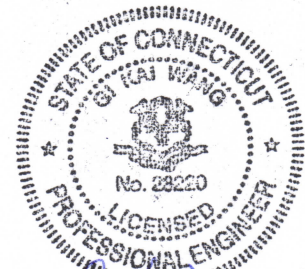
Dated: August 12, 2015

Prepared by:

Hudson
Design Group LLC



1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
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www.hudsondesigngroupllc.com



Su Kai Wang 2/29/2016



SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 110' monopole supporting the existing and proposed AT&T's antennas located at elevation 100' above the ground level.

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

Record drawings of the existing monopole were not available for our use. The previous structural analysis report prepared by Centek Engineering, dated December 18, 2014, was available and obtained for our use.

CONCLUSION SUMMARY:

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

1. **Add steel reinforcing plates to the existing monopole from El.21' to El.72'.**
2. **Add base plate and anchor bolts.**

Based on our evaluation, we have determined that the existing monopole with proposed modifications and foundation are in conformance with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at 97.2% - (Pole Section L4 from El.47' to El.72' Controlling).



APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
METRO PCS	(3) 800-10504 Antennas	108'	T-Frame
METRO PCS	(3) 742 351 Antennas	108'	T-Frame
<i>AT&T</i>	(3) Powerwave 7770 Antennas	100'	Low Profile Platform
<i>AT&T</i>	(1) OPA-65R-LCUU-H6 Antenna	100'	Low Profile Platform
<i>AT&T</i>	(2) OPA-65R-LCUU-H4 Antennas	100'	Low Profile Platform
<i>AT&T</i>	(3) TT19-08BP111 TMA	100'	Low Profile Platform
<i>AT&T</i>	(6) LGP21401	100'	Low Profile Platform
<i>AT&T</i>	(3) RRUS-11	100'	Low Profile Platform
<i>AT&T</i>	(3) RRUS-32	100'	Low Profile Platform
<i>AT&T</i>	(1) Surge Arrestor DC6-48-60-18-8F	100'	Low Profile Platform
<i>AT&T</i>	(1) HPA-65R-BUU-H6 Antenna	100'	Low Profile Platform
<i>AT&T</i>	(2) SBNHH-1D65A Antennas	100'	Low Profile Platform
<i>AT&T</i>	(3) RRUS-32 B2	100'	Low Profile Platform
<i>AT&T</i>	(1) Surge Arrestor DC6-48-60-18-8F	100'	Low Profile Platform
VERIZON	(3) BXA-80080-6CF Antennas	90'	Low Profile Platform
VERIZON	(6) HBXX-6516DS-VTM Antennas	90'	Low Profile Platform
VERIZON	(3) X7C-FRO-660 Antennas	90'	Low Profile Platform
VERIZON	(3) RRH2X40-07-U	90'	Low Profile Platform
VERIZON	(3) RRH2X40 AWS	90'	Low Profile Platform
VERIZON	(3) RRH2X60 PCS	90'	Low Profile Platform
VERIZON	(2) DB-T1-6Z-8AB-0Z	90'	Low Profile Platform

**Proposed AT&T Appurtenances shown in Bold.*

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
<i>AT&T</i>	(12) 1 5/8" Cables	100'	Outside Monopole
<i>AT&T</i>	(2) DC Power Cables	100'	Outside Monopole
<i>AT&T</i>	(1) Fiber Cable	100'	Outside Monopole
<i>AT&T</i>	(2) DC Power Cables	100'	Outside Monopole
<i>AT&T</i>	(1) Fiber Cable	100'	Outside Monopole

**Proposed AT&T Coax Cables shown in Bold.*



ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	20.4 %	97.5 – 111	PASS	
Pole Section-L2	20.4 %	97 – 97.5	PASS	
Pole Section-L3	85.8 %	72 – 97	PASS	
Pole Section-L4	97.2 %	47 – 72	PASS	Controlling
Pole Section-L5	93.4 %	21 – 47	PASS	
Pole Section-L6	93.6 %	1 – 21	PASS	



DESIGN CRITERIA:

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

City/Town: Danbury

County: Fairfield

Wind Load: 85 mph (fastest mile)

105 mph (3 second gust)

Nominal Ice Thickness: 1/2 inch

2. Approximate height above grade to proposed antennas: 100'

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

ASSUMPTIONS:

1. The monopole dimensions, member sizes, material strength and foundation are as indicated in the previous structural analysis report prepared by Centek Engineering, dated December 18, 2014.
2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Centek Engineering, dated December 18, 2014. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
3. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.
5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.



SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas be mounted on the existing steel platform supported by the monopole; the proposed RRHs and surge arrestor be mounted on the mount pipes.

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

ONGOING AND PERIODIC INSPECTION AND MAINTENANCE:

After the Contractor has successfully completed the installation and the work has been accepted, the Owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

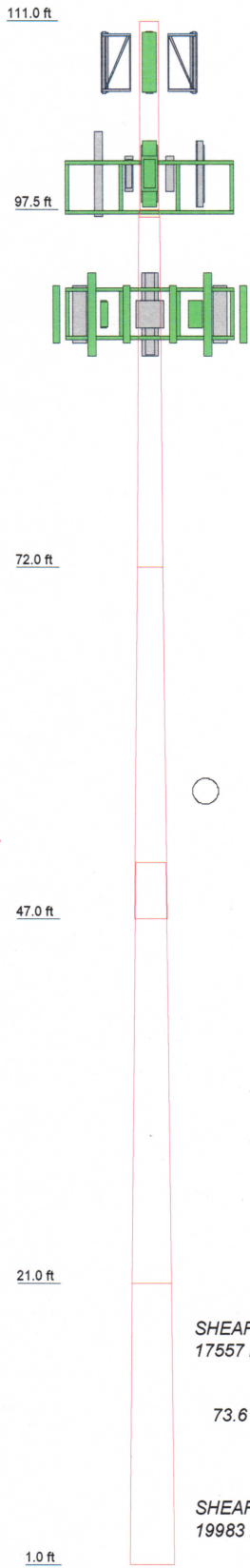


Photo 1: Photo illustrating the monopole with Appurtenances shown.



CALCULATIONS

Section	1	2	3	4	5	6
Length (ft)	13.50	0.50	25.00	25.00	30.00	20.00
Number of Sides	1	1	18	18	18	18
Thickness (in)	0.3750	0.3750	0.2500	0.3000	0.3650	0.3890
Socket Length (ft)				4.00		
Top Dia (in)	16.0000	16.0000	17.4900	22.7350	26.5408	33.3920
Bot Dia (in)	16.0000	17.4900	22.7350	27.9800	33.3920	37.0000
Grade		A36			A572-65	
Weight (lb)	845.6	32.8	1340.8	2029.7	3500.8	2924.7



DESIGNED APPURTENANCE LOADING

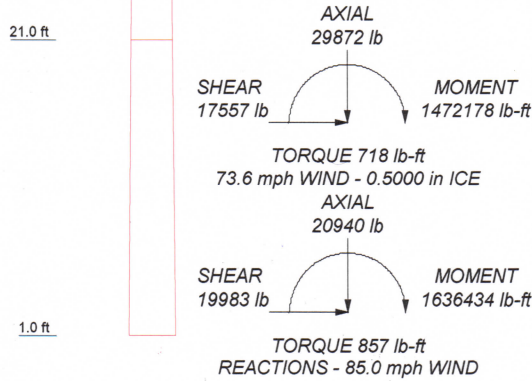
TYPE	ELEVATION	TYPE	ELEVATION
2' Standoff T-Arm (10' face width) (Metro)	108	SBNHH-1D65A w/ Mount Pipe	100
2' Standoff T-Arm (10' face width)	108	Ericsson RRUS-32	100
2' Standoff T-Arm (10' face width)	108	Ericsson RRUS-32	100
Kathrein 800 10504 w/mount pipe	108	Surge Arrestor DC6-48-60-18-8F	100
Kathrein 800 10504 w/mount pipe	108	PIROD 13' Platform w/handrail (ATI - existing)	99
Kathrein 800 10504 w/mount pipe	108	PIROD 13' Platform w/handrail (Verizon)	90
Kathrein 742 351 w/mount pipe	108	BXA-80080-6CF-EDIN w/mount pipe	90
Kathrein 742 351 w/mount pipe	108	BXA-80080-6CF-EDIN w/mount pipe	90
Powerwave 7770 w/mount pipe	100	BXA-80080-6CF-EDIN w/mount pipe	90
Powerwave 7770 w/mount pipe	100	(2) HBXX-6516DS-VTM w/mount pipe	90
Powerwave 7770 w/mount pipe	100	(2) HBXX-6516DS-VTM w/mount pipe	90
OPA-65R-LCUU-H6 w/mount pipe	100	(2) HBXX-6516DS-VTM w/mount pipe	90
OPA-65R-LCUU-H4 w/mount pipe	100	CSS X7C FRO-660 w/mount pipe	90
OPA-65R-LCUU-H4 w/mount pipe	100	CSS X7C FRO-660 w/mount pipe	90
(2) Powerwave TMA LGP21401	100	CSS X7C FRO-660 w/mount pipe	90
(2) Powerwave TMA LGP21401	100	RRH2X40-07-U	90
(2) Powerwave TMA LGP21401	100	RRH2X40-07-U	90
Powerwave TT19-08BP111-001	100	RRH2X40-07-U	90
Powerwave TT19-08BP111-001	100	RRH2X40 AWS	90
Powerwave TT19-08BP111-001	100	RRH2X40 AWS	90
Powerwave TT19-08BP111-001	100	RRH2X40 AWS	90
Ericsson RRUS-11	100	RRH2x60 PCS	90
Ericsson RRUS-11	100	RRH2x60 PCS	90
Ericsson RRUS-32	100	RRH2x60 PCS	90
Ericsson RRUS-32	100	RRH2x60 PCS	90
Ericsson RRUS-32	100	RFS DB-T1-6Z-8AB-0Z	90
Surge Arrestor DC6-48-60-18-8F	100	RFS DB-T1-6Z-8AB-0Z	90
HPA-65R-BUU-H6 w/mount pipe (ATI - proposed)	100		
SBNHH-1D65A w/ Mount Pipe	100		


MATERIAL STRENGTH


GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 73.6 mph basic wind with 0.5000 in ice.
4. Deflections are based upon a 50.0 mph wind.
5. TOWER RATING: 97.2%



 Hudson Design Group LLC 1600 Osgood Street Bldg. 20N Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job: CT2157 Modifications Danbury, CT Project: 110 ft Monopole								
	<table border="1"> <tr> <td>Client: AT&T</td> <td>Drawn by: kw</td> <td>App'd:</td> </tr> <tr> <td>Code: TIA/EIA-222-F</td> <td>Date: 02/29/16</td> <td>Scale: NTS</td> </tr> <tr> <td>Path:</td> <td></td> <td>Dwg No. E-1</td> </tr> </table>	Client: AT&T	Drawn by: kw	App'd:	Code: TIA/EIA-222-F	Date: 02/29/16	Scale: NTS	Path:	
Client: AT&T	Drawn by: kw	App'd:							
Code: TIA/EIA-222-F	Date: 02/29/16	Scale: NTS							
Path:		Dwg No. E-1							

 Hudson Design Group LLC 1600 Osgood Street Bldg. 20N Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job CT2157 Modifications Danbury, CT	Page 1 of 8
	Project 110 ft Monopole	Date 13:16:02 02/29/16
	Client AT&T	Designed by kw

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Basic wind speed of 85.0 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56.0 pcf.

A wind speed of 73.6 mph is used in combination with ice.

Temperature drop of 50.0 °F.

Deflections calculated using a wind speed of 50.0 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	111.00-97.50	13.50	0.00	Round	16.0000	16.0000	0.3750		A36 (36 ksi)
L2	97.50-97.00	0.50	0.00	Round	16.0000	17.4900	0.3750		A36 (36 ksi)
L3	97.00-72.00	25.00	0.00	18	17.4900	22.7350	0.2500	1.0000	A572-65 (65 ksi)
L4	72.00-47.00	25.00	4.00	18	22.7350	27.9800	0.3000	1.2000	A572-65 (65 ksi)
L5	47.00-21.00	30.00	0.00	18	26.5408	33.3920	0.3650	1.4600	A572-65 (65 ksi)
L6	21.00-1.00	20.00		18	33.3920	37.0000	0.3890	1.5560	A572-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
1 5/8 (Metro)	C	No	CaAa (Out Of Face)	109.00 - 16.00	2	No Ice	0.20	1.04
1 5/8 (Metro)	C	No	CaAa (Out Of Face)	109.00 - 16.00	10	1/2" Ice	0.30	2.55
1 5/8 (Metro)	C	No	CaAa (Out Of Face)	109.00 - 16.00	10	No Ice	0.00	1.04
1 5/8 (Metro)	C	No	CaAa (Out Of Face)	109.00 - 16.00	10	1/2" Ice	0.00	2.55

1 5/8 (AT&T - existing)	B	No	CaAa (Out Of Face)	100.00 - 16.00	2	No Ice	0.20	1.04
1 5/8 (AT&T - existing)	B	No	CaAa (Out Of Face)	100.00 - 16.00	10	1/2" Ice	0.30	2.55
1 5/8 (AT&T - existing)	B	No	CaAa (Out Of Face)	100.00 - 16.00	10	No Ice	0.00	1.04
1 5/8 (AT&T - existing)	B	No	CaAa (Out Of Face)	100.00 - 16.00	10	1/2" Ice	0.00	2.55
WR-VG122ST-BRDA	B	No	CaAa (Out Of Face)	100.00 - 16.00	2	No Ice	0.00	0.25
WR-VG122ST-BRDA	B	No	CaAa (Out Of Face)	100.00 - 16.00	2	1/2" Ice	0.00	0.91
FB-L98B-002	B	No	CaAa (Out Of Face)	100.00 - 16.00	1	No Ice	0.00	0.25



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 North Andover, MA 01845
 Phone: (978) 557-5553
 FAX: (978) 336-5586

Job	CT2157 Modifications Danbury, CT	Page	2 of 8
Project	110 ft Monopole	Date	13:16:02 02/29/16
Client	AT&T	Designed by	kw

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
			Face)			1/2" Ice	0.00	0.91

FB-L98B-002 (AT&T - proposed)	B	No	CaAa (Out Of Face)	100.00 - 16.00	1	No Ice	0.00	0.25
						1/2" Ice	0.00	0.91
WR-VG122ST-BRDA	B	No	CaAa (Out Of Face)	100.00 - 16.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.91

1 5/8 (Verizon)	C	No	Inside Pole	90.00 - 16.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1 5/8 Fiber Cable	C	No	CaAa (Out Of Face)	90.00 - 16.00	2	No Ice	0.00	1.04
						1/2" Ice	0.00	2.55

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
2' Standoff T-Arm (10' face width) (Metro)	A	From Face	2.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	5.50 6.90	5.50 6.90	129.00 170.00
2' Standoff T-Arm (10' face width)	B	From Face	2.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	5.50 6.90	5.50 6.90	129.00 170.00
2' Standoff T-Arm (10' face width)	C	From Face	2.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	5.50 6.90	5.50 6.90	129.00 170.00
Kathrein 800 10504 w/mount pipe	A	From Face	3.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	3.71 4.18	3.29 4.11	41.90 75.82
Kathrein 800 10504 w/mount pipe	B	From Face	3.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	3.71 4.18	3.29 4.11	41.90 75.82
Kathrein 800 10504 w/mount pipe	C	From Face	3.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	3.71 4.18	3.29 4.11	41.90 75.82
Kathrein 742 351 w/mount pipe	A	From Face	3.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	6.18 6.68	3.04 3.75	49.88 91.76
Kathrein 742 351 w/mount pipe	B	From Face	3.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	6.18 6.68	3.04 3.75	49.88 91.76
Kathrein 742 351 w/mount pipe	C	From Face	3.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	6.18 6.68	3.04 3.75	49.88 91.76

PIROD 13' Platform w/handrail (AT&T - existing)	A	None		0.0000	99.00	No Ice 1/2" Ice	31.30 40.20	31.30 40.20	1822.00 2452.00
Powerwave 7770 w/mount pipe	A	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 103.17
Powerwave 7770 w/mount pipe	B	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 103.17



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Project	110 ft Monopole	Date	13:16:02 02/29/16
Client	AT&T	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	lb	
Powerwave 7770 w/mount pipe	C	From Face	0.00	3.50	0.0000	100.00	No Ice	6.02	4.10	57.25
			0.00	0.00			1/2" Ice	6.47	4.75	103.17
			0.00							
OPA-65R-LCUU-H6 w/mount pipe	A	From Face	3.50	0.0000	100.00	100.00	No Ice	10.65	7.53	112.53
			0.00				1/2" Ice	11.30	8.56	192.76
			0.00							
OPA-65R-LCUU-H4 w/mount pipe	B	From Face	3.50	0.0000	100.00	100.00	No Ice	6.96	4.59	68.25
			0.00				1/2" Ice	7.43	5.26	120.98
			0.00							
OPA-65R-LCUU-H4 w/mount pipe	C	From Face	3.50	0.0000	100.00	100.00	No Ice	6.96	4.59	68.25
			0.00				1/2" Ice	7.43	5.26	120.98
			0.00							
(2) Powerwave TMA LGP21401	A	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	0.41	14.10
			0.00				1/2" Ice	0.00	0.52	21.29
			0.00							
(2) Powerwave TMA LGP21401	B	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	0.41	14.10
			0.00				1/2" Ice	0.00	0.52	21.29
			0.00							
(2) Powerwave TMA LGP21401	C	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	0.41	14.10
			0.00				1/2" Ice	0.00	0.52	21.29
			0.00							
Powerwave TT19-08BP111-001	A	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	0.52	16.00
			0.00				1/2" Ice	0.00	0.62	21.80
			0.00							
Powerwave TT19-08BP111-001	B	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	0.52	16.00
			0.00				1/2" Ice	0.00	0.62	21.80
			0.00							
Powerwave TT19-08BP111-001	C	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	0.52	16.00
			0.00				1/2" Ice	0.00	0.62	21.80
			0.00							
Ericsson RRUS-11	A	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	1.38	50.70
			0.00				1/2" Ice	0.00	1.56	71.57
			0.00							
Ericsson RRUS-11	B	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	1.38	50.70
			0.00				1/2" Ice	0.00	1.56	71.57
			0.00							
Ericsson RRUS-11	C	From Face	2.50	0.0000	100.00	100.00	No Ice	0.00	1.38	50.70
			0.00				1/2" Ice	0.00	1.56	71.57
			0.00							
Ericsson RRUS-32	A	From Face	1.00	0.0000	100.00	100.00	No Ice	0.00	2.76	77.00
			0.00				1/2" Ice	0.00	3.02	104.93
			0.00							
Ericsson RRUS-32	B	From Face	1.00	0.0000	100.00	100.00	No Ice	0.00	2.76	77.00
			0.00				1/2" Ice	0.00	3.02	104.93
			0.00							
Ericsson RRUS-32	C	From Face	1.00	0.0000	100.00	100.00	No Ice	0.00	2.76	77.00
			0.00				1/2" Ice	0.00	3.02	104.93
			0.00							
Surge Arrestor DC6-48-60-18-8F	A	From Face	1.00	0.0000	100.00	100.00	No Ice	1.27	1.27	20.00
			0.00				1/2" Ice	1.46	1.46	35.12
			0.00							

HPA-65R-BUU-H6 w/mount pipe (AT&T - proposed)	A	From Face	3.50	0.0000	100.00	100.00	No Ice	10.60	8.11	76.55
			0.00				1/2" Ice	11.27	9.30	158.03
			0.00							
SBNHH-1D65A w/ Mount	B	From Face	3.50	0.0000	100.00	100.00	No Ice	6.76	5.34	55.90



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Client	AT&T	Designed by	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb	
Pipe			0.00		1/2" Ice	7.31	6.20	111.21	
SBNHH-1D65A w/ Mount Pipe	C	From Face	3.50	0.0000	100.00	No Ice 1/2" Ice	6.76 7.31	5.34 6.20	55.90 111.21
Ericsson RRUS-32	A	From Face	1.00	0.0000	100.00	No Ice 1/2" Ice	3.87 4.15	2.76 3.02	77.00 104.93
Ericsson RRUS-32	B	From Face	1.00	0.0000	100.00	No Ice 1/2" Ice	3.87 4.15	2.76 3.02	77.00 104.93
Ericsson RRUS-32	C	From Face	1.00	0.0000	100.00	No Ice 1/2" Ice	3.87 4.15	2.76 3.02	77.00 104.93
Surge Arrestor DC6-48-60-18-8F	C	From Face	1.00	0.0000	100.00	No Ice 1/2" Ice	1.27 1.46	1.27 1.46	20.00 35.12

PIROD 13' Platform w/handrail (Verizon)	A	None		0.0000	90.00	No Ice 1/2" Ice	31.30 40.20	31.30 40.20	1822.00 2452.00
BXA-80080-6CF-EDIN w/mount pipe	A	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	6.26 6.93	6.46 7.73	47.20 104.60
BXA-80080-6CF-EDIN w/mount pipe	B	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	6.26 6.93	6.46 7.73	47.20 104.60
BXA-80080-6CF-EDIN w/mount pipe	C	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	6.26 6.93	6.46 7.73	47.20 104.60
(2) HBXX-6516DS-VTM w/mount pipe	A	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	6.12 6.58	4.47 5.11	48.85 97.46
(2) HBXX-6516DS-VTM w/mount pipe	B	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	6.12 6.58	4.47 5.11	48.85 97.46
(2) HBXX-6516DS-VTM w/mount pipe	C	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	6.12 6.58	4.47 5.11	48.85 97.46
CSS X7C FRO-660 w/mount pipe	A	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	10.46 11.13	7.53 8.72	60.55 138.66
CSS X7C FRO-660 w/mount pipe	B	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	10.46 11.13	7.53 8.72	60.55 138.66
CSS X7C FRO-660 w/mount pipe	C	From Leg	4.00	0.0000	90.00	No Ice 1/2" Ice	10.46 11.13	7.53 8.72	60.55 138.66
RRH2X40-07-U	A	From Leg	3.00	0.0000	90.00	No Ice 1/2" Ice	0.00 0.00	1.21 1.36	50.00 66.78
RRH2X40-07-U	B	From Leg	3.00	0.0000	90.00	No Ice 1/2" Ice	0.00 0.00	1.21 1.36	50.00 66.78
RRH2X40-07-U	C	From Leg	3.00	0.0000	90.00	No Ice 1/2" Ice	0.00 0.00	1.21 1.36	50.00 66.78



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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	lb	
RRH2X40 AWS	A	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.52 2.75	1.59 1.80	44.00 61.40
RRH2X40 AWS	B	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.52 2.75	1.59 1.80	44.00 61.40
RRH2X40 AWS	C	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.52 2.75	1.59 1.80	44.00 61.40
RRH2x60 PCS	A	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.51 2.73	1.55 1.74	55.00 72.75
RRH2x60 PCS	B	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.51 2.73	1.55 1.74	55.00 72.75
RRH2x60 PCS	C	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.51 2.73	1.55 1.74	55.00 72.75
RFS DB-T1-6Z-8AB-0Z	A	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	5.60 5.92	2.33 2.56	44.00 80.13
RFS DB-T1-6Z-8AB-0Z	B	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	5.60 5.92	2.33 2.56	44.00 80.13

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp



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Comb. No.	Description
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	15	29872.06	65.23	17507.54
	Max. H _x	11	20940.42	19881.28	92.74
	Max. H _z	2	20940.42	92.74	19910.20
	Max. M _x	2	1629255.16	92.74	19910.20
	Max. M _z	5	1626669.18	-19881.28	-92.74
	Max. Torsion	4	857.29	-17171.32	9874.78
	Min. Vert	1	20940.42	0.00	0.00
	Min. H _x	5	20940.42	-19881.28	-92.74
	Min. H _z	8	20940.42	-92.74	-19910.20
	Min. M _x	8	-1628826.35	-92.74	-19910.20
	Min. M _z	11	-1626921.90	19881.28	92.74
	Min. Torsion	10	-857.40	17171.32	-9874.78

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	20940.42	0.00	0.00	-201.98	118.75	0.00
Dead+Wind 0 deg - No Ice	20940.42	-92.74	-19910.20	-1629255.16	9051.90	-626.10
Dead+Wind 30 deg - No Ice	20940.42	9860.32	-17196.37	-1406565.56	-805557.28	-856.53
Dead+Wind 60 deg - No Ice	20940.42	17171.32	-9874.78	-807011.95	-1404285.32	-857.29
Dead+Wind 90 deg - No Ice	20940.42	19881.28	92.74	8722.92	-1626669.18	-628.27
Dead+Wind 120 deg - No Ice	20940.42	17264.06	10035.41	822028.43	-1413154.99	-231.11
Dead+Wind 150 deg - No Ice	20940.42	10020.95	17289.11	1415013.59	-820989.96	227.78
Dead+Wind 180 deg - No Ice	20940.42	92.74	19910.20	1628826.35	-8811.94	625.80
Dead+Wind 210 deg - No Ice	20940.42	-9860.32	17196.37	1406144.83	805795.88	856.35
Dead+Wind 240 deg - No Ice	20940.42	-17171.32	9874.78	806596.59	1404530.31	857.40
Dead+Wind 270 deg - No Ice	20940.42	-19881.28	-92.74	-9140.99	1626921.90	628.58
Dead+Wind 300 deg - No Ice	20940.42	-17264.06	-10035.41	-822454.57	1413409.07	231.31
Dead+Wind 330 deg - No Ice	20940.42	-10020.95	-17289.11	-1415445.10	821237.65	-227.90
Dead+Ice+Temp	29872.06	-0.00	-0.00	-376.27	220.89	0.04
Dead+Wind 0 deg+Ice+Temp	29872.06	-65.23	-17507.54	-1467239.84	6606.80	-530.52
Dead+Wind 30 deg+Ice+Temp	29872.06	8682.49	-15129.31	-1267551.28	-726410.82	-718.26



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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead+Wind 60 deg+Ice+Temp	29872.06	15103.75	-8697.25	-728311.66	-1264724.26	-713.47
Dead+Wind 90 deg+Ice+Temp	29872.06	17478.02	65.23	5969.48	-1464070.25	-517.44
Dead+Wind 120 deg+Ice+Temp	29872.06	15168.98	8810.23	738520.36	-1271059.30	-182.87
Dead+Wind 150 deg+Ice+Temp	29872.06	8795.47	15194.54	1273074.31	-737426.26	200.56
Dead+Wind 180 deg+Ice+Temp	29872.06	65.23	17507.54	1466420.88	-6140.67	530.34
Dead+Wind 210 deg+Ice+Temp	29872.06	-8682.49	15129.31	1266740.80	726876.01	718.15
Dead+Wind 240 deg+Ice+Temp	29872.06	-15103.75	8697.25	727506.38	1265196.41	713.50
Dead+Wind 270 deg+Ice+Temp	29872.06	-17478.02	-65.23	-6778.06	1464550.30	517.64
Dead+Wind 300 deg+Ice+Temp	29872.06	-15168.98	-8810.23	-739337.40	1271540.28	183.04
Dead+Wind 330 deg+Ice+Temp	29872.06	-8795.47	-15194.54	-1273896.56	737900.27	-200.61
Dead+Wind 0 deg - Service	20940.42	-32.09	-6889.35	-564922.60	3224.46	-219.95
Dead+Wind 30 deg - Service	20940.42	3411.88	-5950.30	-487721.39	-279154.86	-300.82
Dead+Wind 60 deg - Service	20940.42	5941.63	-3416.88	-279889.92	-486700.28	-301.08
Dead+Wind 90 deg - Service	20940.42	6879.34	32.09	2879.27	-563796.18	-220.65
Dead+Wind 120 deg - Service	20940.42	5973.72	3472.46	284817.04	-489793.88	-81.11
Dead+Wind 150 deg - Service	20940.42	3467.46	5982.39	490379.99	-284516.33	80.14
Dead+Wind 180 deg - Service	20940.42	32.09	6889.35	564486.73	-2968.65	219.92
Dead+Wind 210 deg - Service	20940.42	-3411.88	5950.30	487286.50	279410.50	300.79
Dead+Wind 240 deg - Service	20940.42	-5941.63	3416.88	279455.68	486956.69	301.07
Dead+Wind 270 deg - Service	20940.42	-6879.34	-32.09	-3313.84	564053.53	220.68
Dead+Wind 300 deg - Service	20940.42	-5973.72	-3472.46	-285252.59	490051.39	81.15
Dead+Wind 330 deg - Service	20940.42	-3467.46	-5982.39	-490816.19	284773.07	-80.14

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-20940.42	0.00	0.00	20940.42	0.00	0.000%
2	-92.74	-20940.42	-19910.20	92.74	20940.42	19910.20	0.000%
3	9860.32	-20940.42	-17196.37	-9860.32	20940.42	17196.37	0.000%
4	17171.32	-20940.42	-9874.78	-17171.32	20940.42	9874.78	0.000%
5	19881.28	-20940.42	92.74	-19881.28	20940.42	-92.74	0.000%
6	17264.06	-20940.42	10035.41	-17264.06	20940.42	-10035.41	0.000%
7	10020.95	-20940.42	17289.11	-10020.95	20940.42	-17289.11	0.000%
8	92.74	-20940.42	19910.20	-92.74	20940.42	-19910.20	0.000%
9	-9860.32	-20940.42	17196.37	9860.32	20940.42	-17196.37	0.000%
10	-17171.32	-20940.42	9874.78	17171.32	20940.42	-9874.78	0.000%
11	-19881.28	-20940.42	-92.74	19881.28	20940.42	92.74	0.000%
12	-17264.06	-20940.42	-10035.41	17264.06	20940.42	10035.41	0.000%
13	-10020.95	-20940.42	-17289.11	10020.95	20940.42	17289.11	0.000%
14	0.00	-29872.06	0.00	0.00	29872.06	0.00	0.000%
15	-65.23	-29872.06	-17507.48	65.23	29872.06	17507.54	0.000%
16	8682.49	-29872.06	-15129.31	-8682.49	29872.06	15129.31	0.000%
17	15103.74	-29872.06	-8697.25	-15103.75	29872.06	8697.25	0.000%
18	17477.96	-29872.06	65.23	-17478.02	29872.06	-65.23	0.000%
19	15168.97	-29872.06	8810.23	-15168.98	29872.06	-8810.23	0.000%
20	8795.47	-29872.06	15194.54	-8795.47	29872.06	-15194.54	0.000%
21	65.23	-29872.06	17507.48	-65.23	29872.06	-17507.54	0.000%
22	-8682.49	-29872.06	15129.31	8682.49	29872.06	-15129.31	0.000%
23	-15103.74	-29872.06	8697.25	15103.75	29872.06	-8697.25	0.000%
24	-17477.96	-29872.06	-65.23	17478.02	29872.06	65.23	0.000%
25	-15168.97	-29872.06	-8810.23	15168.98	29872.06	8810.23	0.000%
26	-8795.47	-29872.06	-15194.54	8795.47	29872.06	15194.54	0.000%
27	-32.09	-20940.42	-6889.34	32.09	20940.42	6889.35	0.000%
28	3411.88	-20940.42	-5950.30	-3411.88	20940.42	5950.30	0.000%
29	5941.63	-20940.42	-3416.88	-5941.63	20940.42	3416.88	0.000%



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Job	CT2157 Modifications Danbury, CT	Page	8 of 8
Project	110 ft Monopole	Date	13:16:02 02/29/16
Client	AT&T	Designed by	kw

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
30	6879.33	-20940.42	32.09	-6879.34	20940.42	-32.09	0.000%
31	5973.72	-20940.42	3472.46	-5973.72	20940.42	-3472.46	0.000%
32	3467.46	-20940.42	5982.39	-3467.46	20940.42	-5982.39	0.000%
33	32.09	-20940.42	6889.34	-32.09	20940.42	-6889.35	0.000%
34	-3411.88	-20940.42	5950.30	3411.88	20940.42	-5950.30	0.000%
35	-5941.63	-20940.42	3416.88	5941.63	20940.42	-3416.88	0.000%
36	-6879.33	-20940.42	-32.09	6879.34	20940.42	32.09	0.000%
37	-5973.72	-20940.42	-3472.46	5973.72	20940.42	3472.46	0.000%
38	-3467.46	-20940.42	-5982.39	3467.46	20940.42	5982.39	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	111 - 97.5	29.7008	38	2.2928	0.0070
L2	97.5 - 97	23.2379	38	2.2679	0.0064
L3	97 - 72	23.0006	38	2.2653	0.0063
L4	72 - 47	12.2455	38	1.7394	0.0025
L5	51 - 21	5.9005	38	1.1346	0.0012
L6	21 - 1	0.8973	38	0.4312	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108.00	2' Standoff T-Arm (10' face width)	38	28.2590	2.2916	0.0071	37000
100.00	Powerwave 7770 w/mount pipe	38	24.4274	2.2782	0.0068	14596
99.00	PiROD 13' Platform w/handrail	38	23.9510	2.2745	0.0067	11842
90.00	PiROD 13' Platform w/handrail	38	19.7396	2.1860	0.0051	3688

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
L1	111 - 97.5	Pole	TP16x16x0.375	1	-4051.99	530011.44	20.4	Pass
L2	97.5 - 97	Pole	TP17.49x16x0.375	2	-4053.67	530011.44	20.4	Pass
L3	97 - 72	Pole	TP22.735x17.49x0.25	3	-8852.60	927544.02	85.8	Pass
L4	72 - 47	Pole	TP27.98x22.735x0.3	4	-11759.90	1328674.36	97.2	Pass
L5	47 - 21	Pole	TP33.392x26.5408x0.365	5	-17385.90	1989129.18	93.4	Pass
L6	21 - 1	Pole	TP37x33.392x0.389	6	-20929.80	2349972.26	93.6	Pass
Summary								
Pole (L4)							97.2	Pass
RATING =							97.2	Pass

Stiffened or Unstiffened, UngROUTED, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: <i>CT2157 Modifications</i>
Site Name: 0
App #: 0
Pole Manufacturer: <i>Other</i>

Anchor Rod Data

Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	45	in

Plate Data

Diam:	51	in
Thick:	1.5	in
Grade:	60	ksi
Single-Rod B-eff:	14.68	in

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	37	in
Thick:	0.389	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------

Reactions

Moment:	900	ft-kips
Axial:	14	kips
Shear:	14	kips

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension: 118.3 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 60.7% **Pass**

Non-Rigid

Service ASD
Fty*ASIF

Base Plate Results

Base Plate Stress: 53.6 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 89.4% **Pass**

Flexural Check

Non-Rigid

Service ASD
0.75*Fy*ASIF
Y.L. Length:
25.61

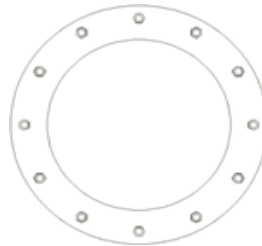
n/a

Stiffener Results

Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: <i>CT2157 Modifications</i>	
Site Name: <i>0</i>	
App #: <i>0</i>	
Pole Manufacturer:	<i>Other</i>

Anchor Rod Data

Qty:	6	
Diam:	2.25	in
Rod Material:	<i>Other</i>	
Strength (Fu):	125	ksi
Yield (Fy):	105	ksi
Bolt Circle:	55	in

Plate Data

Diam:	61	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	19.57	in

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	37	in
Thick:	0.389	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------

Reactions

Moment:	750	ft-kips
Axial:	7	kips
Shear:	6	kips

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension: 107.9 Kips
 Allowable Tension: 218.6 Kips
 Anchor Rod Stress Ratio: 49.4% **Pass**

Non-Rigid

Service ASD
F _t *ASIF

Base Plate Results

Base Plate Stress: 49.0 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 81.6% **Pass**

Flexural Check

Non-Rigid

Service ASD
0.75*F _y *ASIF
Y.L. Length: 40.69

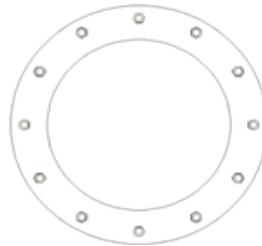
n/a

Stiffener Results

Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

BU: CT2157
 Site Name:
 App Number: N/A
 Work Order:

Monopole Drilled Pier

Input

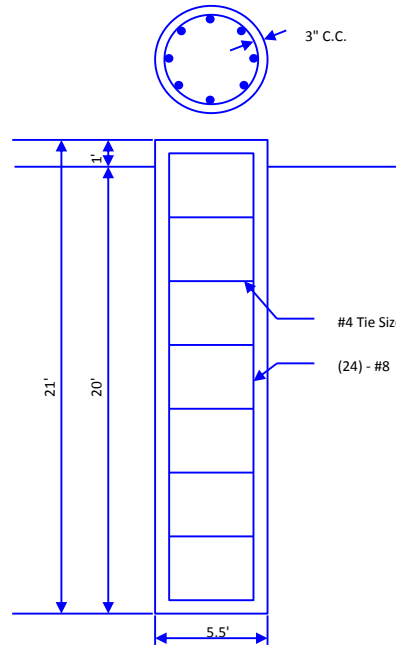
Criteria
 TIA Revision: F
 ACI 318 Revision: 2002
 Seismic Category: B

Forces
 Compression: 21 kips
 Shear: 20 kips
 Moment: 1636 k-ft
 Swelling Force: 0 kips

Foundation Dimensions
 Pier Diameter: 5.5 ft
 Ext. above grade: 1 ft
 Depth below grade: 20 ft

Material Properties
 Number of Rebar: 24
 Rebar Size: 8
 Tie Size: 4
 Rebar tensile strength: 60 ksi
 Concrete Strength: 3000 psi
 Ultimate Concrete Strain: 0.003 in/in
 Clear Cover to Ties: 3 in

Soil Profile: Profile 1



Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Friction (ksf)	Ultimate Comp. Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3	0	3	120	0	28				
2	10	3	13	78	0	38				
3	16	13	29	43	0	38				

Analysis Results

Soil Lateral Capacity
 Depth to Zero Shear: 3.37 ft
 Max Moment, Mu: 1731.29 k-ft
 Soil Safety Factor: 2.56
 Safety Factor Req'd: 2
RATING: 78.1%

Soil Axial Capacity
 Skin Friction (k): 79.86 kips
 End Bearing (k): 0.00 kips
 Comp. Capacity (k), φCn: 79.86 kips
 Comp. (k), Cu: 27.30 kips
RATING: 34.2%

Concrete/Steel Check
 Mu (from soil analysis): 2250.67 k-ft
 φMn: 2367.71 k-ft
RATING: 95.1%

rho provided: 0.55
 rho required: 0.33 OK

Rebar Spacing: 6.59
 Spacing required: 16.00 OK

Dev. Length required: 16.38
 Dev. Length provided: 43.82 OK

Overall Foundation Rating: 95.1%