



445 Hamilton Avenue, 14th Floor  
White Plains, New York 10601  
T 914 761 1300  
F 914 761 5372  
cuddyfeder.com

Daniel Patrick  
[dpatrick@cuddyfeder.com](mailto:dpatrick@cuddyfeder.com)

July 20, 2022

**VIA EMAIL & OVERNIGHT DELIVERY**

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

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC  
Premises: 186 Black Rock Turnpike, Redding, Connecticut

Dear Members of the Siting Council:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa, New Cingular Wireless PCS, LLC ("AT&T" or "the Applicant") hereby requests an order from the Connecticut Siting Council (the "Council") approving the proposed shared use of a communications tower and associated compound at the parcel owned by the Redding Ridge Fire District #1 and identified as 186 Black Rock Turnpike in the Town of Redding (the "Black Rock Turnpike Facility"). The owner of the facility, Message Center Management ("MCM"), and AT&T have agreed to share the use of the Black Rock Turnpike Facility as detailed below. Additionally, annexed here as **Attachment 1** is the Letter of Authorization between AT&T and MCM, owner of the tower equipment, authorizing AT&T to prepare and file an application for shared use of the tower.

**The Black Rock Turnpike Facility**

On October 13, 2014, the Council granted approval to MCM and AT&T of its application in Docket No. 449 for a Certificate of Environmental Compatibility and Public Need to construct a 150' above ground level (AGL) monopole at 186 Black Rock Turnpike with the height to the top of AT&T's antennas not to exceed 154' AGL. Cellco Partnership ("Verizon") intervened in that proceeding and proposed collocation on the facility at the 140' AGL height. MCM thereafter began construction in June 2016. Construction was completed in 2017 with the installation of Verizon's equipment at the centerline height of 135' AGL. To date, AT&T's equipment has not been installed.

**AT&T's Wireless Facility**

As depicted on the plans annexed hereto as **Attachment 2** prepared by Hudson Design Group LLC last revised April 27, 2022, including a site plan, compound plan, and tower elevation, AT&T now proposes the shared use of the Black Rock Turnpike Facility in accordance with its approvals



July 20, 2022

Page 2

in Docket No. 449 to provide FCC licensed services as well as FirstNet services.<sup>1</sup> AT&T will install 6 antennas and 9 remote radiohead units on a sector frame mount attached to the existing tower at the centerline height of approximately 145' AGL, with the height to the top of AT&T's antennas at approximately 148' AGL. As also depicted on the drawings, AT&T will install its unmanned equipment within a proposed 6'-8" x 6'-8" walk-in equipment cabinet on a concrete pad within AT&T's 20' x 10' leased area located within the existing fenced compound. AT&T will not install a separate emergency back-up generator but will instead tie into the existing propane generator.

Connecticut General Statutes § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1)). Further, upon approval of such shared use, it is exclusive, and no local zoning or land use approvals are required. (C.G.S. § 16-50x). Shared use of the Black Rock Turnpike Facility satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

- A. Technical Feasibility: As evidenced in the structural analysis prepared by Hudson Design Group LLC dated March 18, 2022, annexed hereto as **Attachment 3**, and the mount analysis prepared by Hudson Design Group LLC, dated December 3, 2021, annexed hereto as **Attachment 4**, AT&T confirmed that the Black Rock Turnpike Facility is capable of supporting AT&T's antennas and tower mounted equipment in addition to the Town's proposed loading. The proposed shared use of this tower is therefore technically feasible.
- B. Legal Feasibility: Pursuant to C.G.S. § 16-50aa, the Council is authorized to issue an order approving shared use of the existing Black Rock Turnpike Facility. (C.G.S. § 16-50aa(c)(1)). Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of a tower would permit the Applicant to obtain a building permit for the proposed installation. Notably, this tower was previously approved by the Council in contemplation of AT&T's proposed installation no higher than 154' AGL in Docket No. 449, with which AT&T's proposed installation complies.
- C. Environmental Feasibility: The proposed shared use would have a minimal environmental effect, for the following reasons:
  - 1. Given the height of the existing tower and the Council's review of visibility in Docket 449, AT&T's proposed installation would have a *de minimis* visual impact and would not cause any significant change or alteration in the physical or environmental characteristics of the facility;

---

<sup>1</sup> FirstNet is a nationwide broadband public safety network dedicated to the needs of first responders. For more information, see [https://about.att.com/newsroom/2019/fn\\_purpose\\_built\\_cell\\_sites.html](https://about.att.com/newsroom/2019/fn_purpose_built_cell_sites.html) and [http://about.att.com/sites/first\\_net\\_powered\\_by\\_att](http://about.att.com/sites/first_net_powered_by_att).





July 20, 2022

Page 3

2. The installation by AT&T will not increase the height of the tower;
  3. The proposed installation will not increase the noise levels at the site boundaries by six decibels or more;
  4. Operation of AT&T's antennas at this site will not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. AT&T's proposed antenna installation along with the existing equipment is calculated to be within 18.86% of the FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure ("MPE"). Please see the assessment of RF power density dated March 30, 2022, prepared by C Squared Systems, LLC, annexed hereto as **Attachment 5**; and
  5. The proposed shared use of the Black Rock Turnpike Facility would not require any water or sanitary facilities or discharges into any waterbodies nor will there be any additional air emissions since the Applicant does not propose any new emergency back-up generator. Further, the installation will not generate any traffic other than for periodic maintenance visits.
- D. Economic Feasibility: The Applicant and the tower owner entered into a mutual agreement to share use of the Black Rock Turnpike Facility on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.
- E. Public Safety: As stated above and evidenced in attachments hereto the tower is structurally capable of supporting AT&T's installation and emissions are well within the maximum permitted by the FCC and the Connecticut Department of Health. Further, the addition of AT&T's telecommunications service and the provision of FirstNet service in the Redding area through shared use of the Black Rock Turnpike Facility will ensure that critical wireless services including emergency services are provided to the community. The installation of AT&T's equipment with shared use of the Black Rock Turnpike Facility will enhance the safety and welfare of local residents and travelers through the surrounding area resulting in an improvement to public safety in this area of the State.

### **Notice of Tower Share Filing**

Pursuant to R.C.S.A. Section 16-50j-88 and the August 2013 Tower Share Filing Guide, copies of AT&T's tower share filing request were sent to the tower owner, the property owner, as well as the Town of Redding chief elected official and Land Use Department. Copies of each notice and their respective FedEx labels are included in **Attachment 6**.



July 20, 2022

Page 4

### **Conclusion**

As explained above, the proposed shared use of the Black Rock Turnpike Facility satisfies the criteria set forth in C.G.S. §16-50aa and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in the State of Connecticut. AT&T therefore requests the Siting Council issue an order approving the proposed shared use of the Black Rock Turnpike Facility.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "DP", is written over a horizontal line.

Daniel Patrick  
On behalf of AT&T

### **Attachments**

cc: Redding Ridge Fire District #1, Property Owner  
Message Center Management (MCM), Tower Owner  
Julia Pemberton, First Selectwoman, Town of Redding  
Aimee Pardee, Land Use Director, Town of Redding  
AT&T  
Lucia Chiocchio, Esq.  
Riddar Nget



## **ATTACHMENT 1**

## Letter of Authorization

RE: Building Permits and Land Use Approvals

MCM Holdings, LLC ("**Owner**") the Owner of a tower and wireless antenna equipment compound located at 186 Black Rock Turnpike, Redding, CT (tower and wireless antenna equipment compound hereinafter referred to as the ("**Property**") does hereby appoint New Cingular Wireless PCS, LLC ("AT&T") and its representatives, as Owner's agent for the purpose of completing and/or filing any application, form, map drawing, site plan or any document, useful or necessary in obtaining any zoning approval, special permit or other land use approval or building permit (collectively, the "**Approvals**"), required to provide AT&T with lawful access to, and the ability to use the Property for the purposes of installing, erecting or otherwise placing antennas, support structures and related equipment of the Property. Owner shall fully cooperate with AT&T and its agents in obtaining any required Approvals. AT&T shall be responsible for all costs, filing fees, or any other expense incurred in connection with securing any Approvals.

Property: Tower and wireless antenna compound located at 186 Black Rock Turnpike, Redding, CT.

By: Virginia King  
Print Name: Virginia King  
Title: Project Manager

Authorized Signatory

STATE OF CONNECTICUT)

: ss. Hartford

July 12 2022

COUNTY OF HARTFORD)

Personally appeared, Virginia King, duly authorized signer and sealer of the foregoing instrument and acknowledged the same to be her free act and deed of said MCM Holdings, LLC, before me


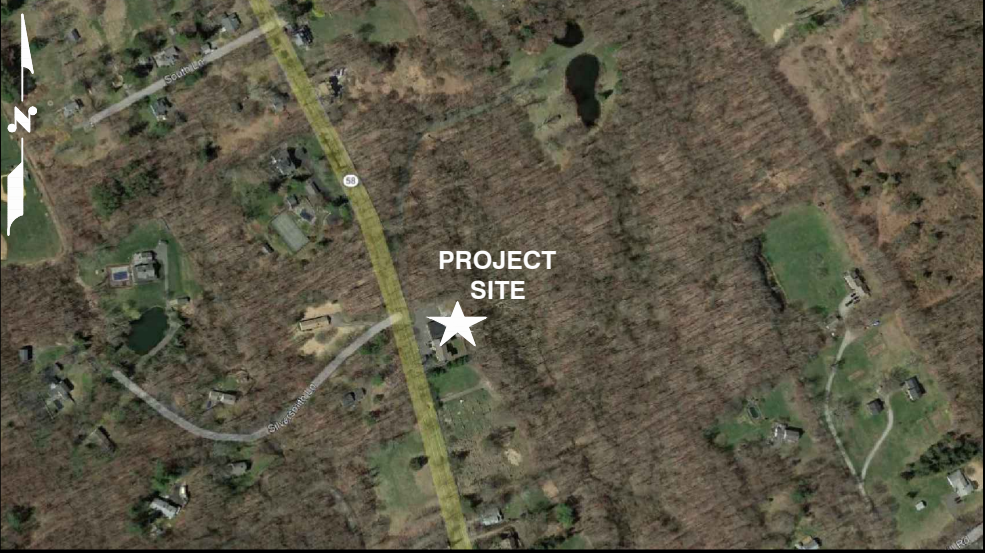





Holly H. Martino  
Notary Public

My Commission Expires: 06-30-2023

**HOLLY H. MARTINO**  
NOTARY PUBLIC  
State of Connecticut  
My Commission Expires  
June 30, 2023

## **ATTACHMENT 2**



PROJECT INFORMATION			<div><div></div><div><div>SITE NUMBER: CT1338</div><div>SITE NAME: REDDING BLACK ROCK TURNPIKE</div><div>FA CODE:10128142</div><div>PACE ID: MRCTB057522</div><div>PROJECT: NSB</div></div></div>																																																			
<div>SCOPE OF WORK: TELECOMMUNICATIONS FACILITY (NSB A EXISTING 150'-0" A.G.L. TALL MONOPOLE. PROPOSED WALK-IN CABINET WILL BE INSTALLED AT GRADE INSIDE A EXISTING FENCED-IN COMPOUND. PROPOSED SIX PANEL ANTENNAS AND ASSOCIATED EQUIPMENT WILL BE INSTALLED AT A HEIGHT OF 145''-0" A.G.L.):</div> <div>SITE ADDRESS: 186 BLACK ROCK TURNPIKE REDDING, CT 06896</div> <div>APPLICANT: AT&amp;T 550 COCHITUATE ROAD FRAMINGHAM, MA 01701</div> <div>SITE OWNER: REDDING FIRE DISTRICT 1 P.O. BOX 45 REDDING, CT 06875</div> <div>LATITUDE: 41.30994 N, 41° 18' 35.8" N</div> <div>LONGITUDE: 73.34759 W, 73° 20' 51.3" W</div> <div>TYPE OF SITE: MONOPOLE/ WALK-IN CABINET</div> <div>TOWER HEIGHT: 150'-0"±</div> <div>RAD CENTER: 145''-0"±</div>			VICINITY MAP					GENERAL NOTES																																														
DRAWING INDEX			<div>DIRECTIONS TO SITE:</div> <div>DEPART AND HEAD NORTHEAST. TURN RIGHT, THEN IMMEDIATELY TURN LEFT ONTO LEGGATT MCCALL CONNECTOR RD. BEAR LEFT ONTO BURR ST. TURN LEFT ONTO MA-30 / COCHITUATE RD. TAKE THE RAMP ON THE RIGHT FOR I-90 EAST / I-90 WEST AND HEAD TOWARD BOSTON / SPRINGFIELD. AT EXIT 78, HEAD RIGHT ON THE RAMP FOR I-84 TOWARD HARTFORD / NEW YORK CITY. KEEP LEFT TO STAY ON I-84 W. AT EXIT 10, HEAD RIGHT ON THE RAMP FOR US-6 WEST TOWARD NEWTOWN / SANDY HOOK. TURN RIGHT ONTO US-6 W / CT-34 / CHURCH HILL RD. TURN LEFT ONTO CT-25 / MAIN ST. TURN RIGHT ONTO CT-302 / SUGAR ST. TURN LEFT ONTO KEY ROCK RD. ROAD NAME CHANGES TO POVERTY HOLLOW RD. BEAR RIGHT ONTO CHURCH HILL RD. TURN LEFT ONTO CT-58 / BLACK ROCK TPKE. 186 BLACK ROCK TPKE, REDDING, CT1338 WILL BE ON THE LEFT.</div>					<div>1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&amp;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.</div> <div>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.</div> <div>3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&amp;T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.</div> <div>4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.</div>																																														
<table><tr><th>SHEET NO.</th><th>DESCRIPTION</th><th>REV.</th></tr><tr><td>T-1</td><td>TITLE SHEET</td><td>1</td></tr><tr><td>GN-1</td><td>GENERAL NOTES</td><td>1</td></tr><tr><td>SN-1</td><td>STRUCTURAL &amp; SPECIAL INSPECTION NOTES</td><td>1</td></tr><tr><td>C-1</td><td>PLOT PLAN</td><td>1</td></tr><tr><td>A-1</td><td>COMPOUND &amp; EQUIPMENT PLANS</td><td>1</td></tr><tr><td>A-2</td><td>ANTENNA LAYOUT &amp; ELEVATION</td><td>1</td></tr><tr><td>A-3</td><td>DETAILS</td><td>1</td></tr><tr><td>A-4</td><td>DETAILS</td><td>1</td></tr><tr><td>E-1</td><td>ELECTRICAL NOTES &amp; ONE-LINE DIAGRAM</td><td>1</td></tr><tr><td>G-1</td><td>GROUNDING DETAILS</td><td>1</td></tr><tr><td>RF-1</td><td>RF PLUMBING DIAGRAM</td><td>1</td></tr></table>			SHEET NO.	DESCRIPTION	REV.	T-1	TITLE SHEET	1	GN-1	GENERAL NOTES	1	SN-1	STRUCTURAL & SPECIAL INSPECTION NOTES	1	C-1	PLOT PLAN	1	A-1	COMPOUND & EQUIPMENT PLANS	1	A-2	ANTENNA LAYOUT & ELEVATION	1	A-3	DETAILS	1	A-4	DETAILS	1	E-1	ELECTRICAL NOTES & ONE-LINE DIAGRAM	1	G-1	GROUNDING DETAILS	1	RF-1	RF PLUMBING DIAGRAM	1	<div></div>					<div>72 HOURS</div> <div><div></div><div>CALL BEFORE YOU DIG</div><div></div></div> <div>CALL TOLL FREE 1-800-922-4455</div> <div>OR CALL 811</div> <div>UNDERGROUND SERVICE ALERT</div>										
SHEET NO.	DESCRIPTION	REV.																																																				
T-1	TITLE SHEET	1																																																				
GN-1	GENERAL NOTES	1																																																				
SN-1	STRUCTURAL & SPECIAL INSPECTION NOTES	1																																																				
C-1	PLOT PLAN	1																																																				
A-1	COMPOUND & EQUIPMENT PLANS	1																																																				
A-2	ANTENNA LAYOUT & ELEVATION	1																																																				
A-3	DETAILS	1																																																				
A-4	DETAILS	1																																																				
E-1	ELECTRICAL NOTES & ONE-LINE DIAGRAM	1																																																				
G-1	GROUNDING DETAILS	1																																																				
RF-1	RF PLUMBING DIAGRAM	1																																																				
<div><div>HUDSON Design Group LLC</div><div>45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845</div><div>TEL: (978) 557-5553 FAX: (978) 336-5586</div></div>		<div><div>12 INDUSTRIAL WAY SALEM, NH 03079</div></div>		<div>SITE NUMBER: CT1338 SITE NAME: REDDING BLACK ROCK TURNPIKE</div> <div>186 BLACK ROCK TURNPIKE REDDING, CT 06896 FAIRFIELD COUNTY</div>		<div><div>550 COCHITUATE ROAD FRAMINGHAM, MA 01701</div></div>		<table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>04/27/22</td><td>ISSUED FOR REVIEW</td><td></td><td>MJ</td><td>JC DPH</td></tr><tr><td>0</td><td>04/11/22</td><td>ISSUED FOR REVIEW</td><td></td><td>ES</td><td>JC DPH</td></tr><tr><td>NO.</td><td>DATE</td><td>REVISIONS</td><td></td><td>BY</td><td>CHK APP'D</td></tr><tr><td colspan="2">SCALE: AS SHOWN</td><td>DESIGNED BY: JC</td><td colspan="2">DRAWN BY: ES</td><td></td></tr></table>															1	04/27/22	ISSUED FOR REVIEW		MJ	JC DPH	0	04/11/22	ISSUED FOR REVIEW		ES	JC DPH	NO.	DATE	REVISIONS		BY	CHK APP'D	SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES			<div>AT&amp;T</div> <div>TITLE SHEET (NSB)</div> <table><tr><td>SITE NUMBER</td><td>DRAWING NUMBER</td><td>REV</td></tr><tr><td>CT1338</td><td>T-1</td><td>1</td></tr></table>		SITE NUMBER	DRAWING NUMBER	REV	CT1338	T-1	1
1	04/27/22	ISSUED FOR REVIEW		MJ	JC DPH																																																	
0	04/11/22	ISSUED FOR REVIEW		ES	JC DPH																																																	
NO.	DATE	REVISIONS		BY	CHK APP'D																																																	
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES																																																			
SITE NUMBER	DRAWING NUMBER	REV																																																				
CT1338	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 STANDARDS) 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 AND #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 AWG 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. TOUCH UP 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-H, 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		



45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845

TEL: (978) 557-5553  
FAX: (978) 336-5586



12 INDUSTRIAL WAY  
SALEM, NH 03079

SITE NUMBER: CT1338  
SITE NAME: REDDING BLACK ROCK TURNPIKE

186 BLACK ROCK  
TURNPIKE  
REDDING, CT 06896  
FAIRFIELD COUNTY



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

1	04/27/22	ISSUED FOR REVIEW		MJ	JC DPH
0	04/11/22	ISSUED FOR REVIEW		ES	JC DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES		

AT&T		
GENERAL NOTES (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1338	GN-1	1



STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL", 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

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:

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER; REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
- 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 <sup>1</sup>
REQUIRED	MATERIAL SPECIFICATIONS REPORT <sup>2</sup>
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS <sup>3</sup>

ADDITIONAL TESTING AND INSPECTIONS:

DURING CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS <sup>4</sup>
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION <sup>5</sup>
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT

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 <sup>6</sup>
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS

ADDITIONAL TESTING AND INSPECTIONS:



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



12 INDUSTRIAL WAY  
SALEM, NH 03079

SITE NUMBER: CT1338  
SITE NAME: REDDING BLACK ROCK TURNPIKE

186 BLACK ROCK  
TURNPIKE  
REDDING, CT 06896  
FAIRFIELD COUNTY



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

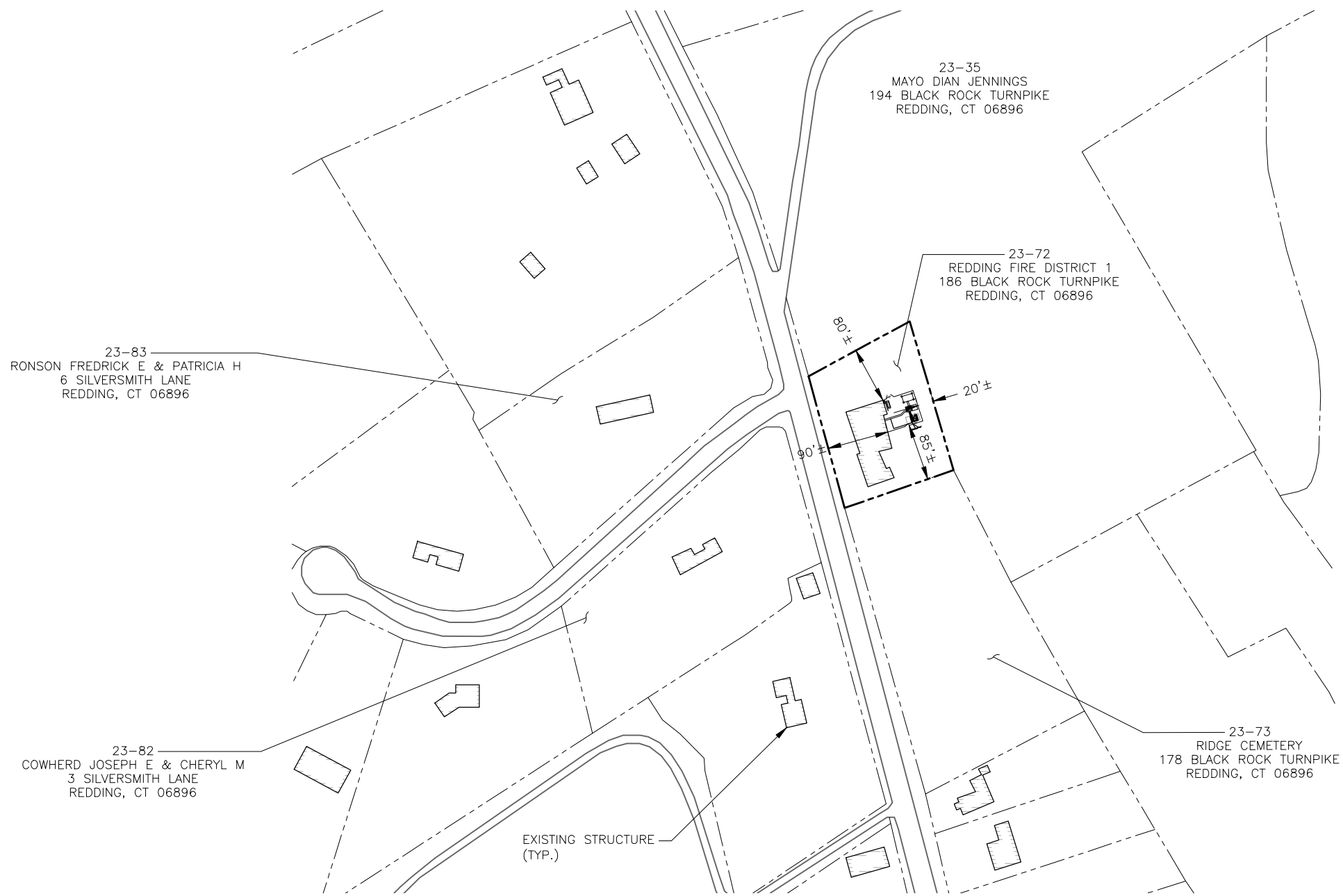
1	04/27/22	ISSUED FOR REVIEW		MJ	JC DPH
0	04/11/22	ISSUED FOR REVIEW		ES	JC DPH
NO.	DATE	REVISIONS		BY	CHK APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES		

AT&T

STRUCTURAL NOTES  
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1338	SN-1	1





INFORMATION TAKEN  
FROM PLANS BY REDDING  
CONNECTICUT GIS

DIMENSIONS REQUIREMENTS:	EXISTING	PROPOSED
ANTENNA SETBACKS		
FRONT YARD SETBACK:	90'±	NO CHANGE
SIDE YARD SETBACK:	80'±	NO CHANGE
SIDE YARD SETBACK:	85'±	NO CHANGE
REAR YARD SETBACK:	20'±	NO CHANGE

1. PROPERTY LINE INFORMATION (WHEN APPLICABLE) WAS PREPARED USING TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSTRUCTED AS A BOUNDARY SURVEY.
2. NO NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
3. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (THERE IS NO HANDICAP ACCESS REQUIRED).
4. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
5. CONNECTION TO ELECTRICAL & TELEPHONE UTILITIES TO BE DETERMINED BY THE APPROPRIATE UTILITY COMPANY.
6. SUBCONTRACTOR TO VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEER PRIOR TO INSTALLATION. SEE ANTENNA CONFIGURATION SHEETS FOR SITE SPECIFIC DETAILS.
7. SUBCONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
8. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION.



PLOT PLAN

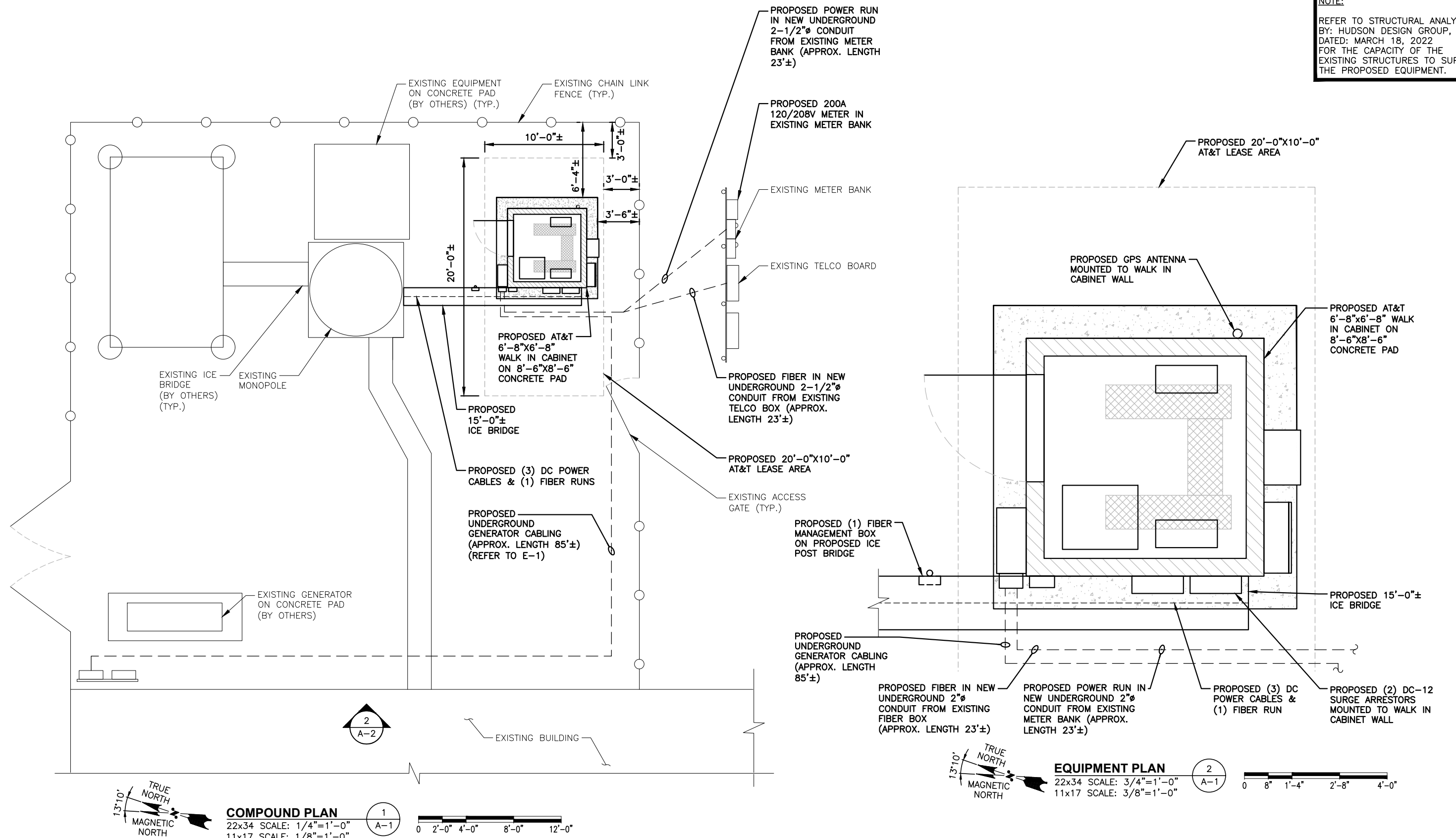
22x34 SCALE: 1"=100'  
11x17 SCALE: 1"=200'



1	04/27/22	ISSUED FOR REVIEW		MJ	JC DPH
0	04/11/22	ISSUED FOR REVIEW		ES	JC DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES		

AT&T		
PLOT PLAN (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1338	C-1	1

NOTE:  
REFER TO STRUCTURAL ANALYSIS  
BY: HUDSON DESIGN GROUP, LLC  
DATED: MARCH 18, 2022  
FOR THE CAPACITY OF THE  
EXISTING STRUCTURES TO SUPPORT  
THE PROPOSED EQUIPMENT.



NO.	DATE	REVISIONS	BY	CHK	APP'D
1	04/27/22	ISSUED FOR REVIEW	MJ	JC	DPH
0	04/11/22	ISSUED FOR REVIEW	ES	JC	DPH
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES		

AT&T		
COMPOUND & EQUIPMENT PLANS (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1338	A-1	1

**NOTE:**

REFER TO STRUCTURAL ANALYSIS  
BY: HUDSON DESIGN GROUP, LLC  
DATED: MARCH 18, 2022  
FOR THE CAPACITY OF THE  
EXISTING STRUCTURES TO SUPPORT  
THE PROPOSED EQUIPMENT.

**NOTE:**

AN ANALYSIS FOR THE CAPACITY  
OF THE PROPOSED **ANTENNA**  
**MOUNT** TO SUPPORT THE  
PROPOSED LOADING HAS BEEN  
COMPLETED BY:  
HUDSON DESIGN GROUP, LLC  
DATED: MARCH 21, 2022

PROPOSED AT&T ANTENNA  
(TYP. OF 2 PER SECTOR,  
TOTAL OF 6)

PROPOSED SECTOR FRAME VALMONT  
PART# VFA12-WLL-30120  
(TYP. OF 1 PER SECTOR, TOTAL OF 3)

**GAMMA SECTOR**  
270°

PROPOSED 8" STAND-OFF  
VALMONT PART# MM01  
(TYP. OF 2 SECTOR, TOTAL OF 6)

PROPOSED 3" STD. (3.5"O.D.)  
6'-0" LONG PIPE MAST  
(TYP. OF 1 PER SECTOR,  
TOTAL OF 3)

PROPOSED AT&T RRH'S  
(TYP. OF 3 PER SECTOR,  
TOTAL OF 9)

PROPOSED SURGE ARRESTOR  
(TOTAL OF 1)

EXISTING MONOPOLE

PROPOSED COLLAR  
MOUNT VALMONT PART#  
LWRM (TOTAL OF 2)

PROPOSED SURGE ARRESTOR  
(TOTAL OF 1)

PROPOSED AT&T RRH'S  
(TYP. OF 3 PER SECTOR,  
TOTAL OF 9)

TOP OF EXISTING MONOPOLE  
ELEV. = 150'-0" (AGL)

C OF PROPOSED AT&T ANTENNAS  
ELEV. = 145'-0" (AGL)

EXISTING DISH ANTENNA  
BY OTHERS

PROPOSED AT&T ANTENNA  
(TYP. OF 2 PER SECTOR,  
TOTAL OF 6)

PROPOSED SECTOR FRAME VALMONT  
PART# VFA12-WLL-30120  
(TYP. OF 1 PER SECTOR, TOTAL OF 3)

EXISTING ANTENNAS BY OTHERS  
(TYP.)

EXISTING WHIP ANTENNAS  
BY OTHERS (TYP.)

EXISTING MONOPOLE

PROPOSED AT&T  
(3) DC CABLES &  
(1) FIBER RUN IN  
(2) 2" CONDUITS  
WITHIN MONOPOLE

EXISTING EQUIPMENT  
(BY OTHERS)

EXISTING GENERATOR

PROPOSED AT&T  
6'-8"x6'-8" WALK  
IN CABINET ON  
8'-6"x8'-6" CONCRETE PAD

EXISTING CHAIN  
LINK FENCE (TYP.)

EXISTING GRADE  
ELEV. = 0'-0" (AGL)

**ELEVATION**

22x34 SCALE: 3/32"=1'-0"  
11x17 SCALE: 3/64"=1'-0"

**PROPOSED ANTENNA LAYOUT**

SCALE: N.T.S.

1  
A-2

**HDG** 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: CT1338  
SITE NAME: REDDING BLACK ROCK TURNPIKE

186 BLACK ROCK  
TURNPIKE  
REDDING, CT 06896  
FAIRFIELD COUNTY

**at&t**

550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	04/27/22	ISSUED FOR REVIEW	MJ	JC	DPH
0	04/11/22	ISSUED FOR REVIEW	ES	JC	DPH
SCALE: AS SHOWN DESIGNED BY: JC DRAWN BY: ES					

AT&T

ANTENNA LAYOUT & ELEVATION  
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1338	A-2	1



NOTE:

REFER TO STRUCTURAL ANALYSIS  
BY: HUDSON DESIGN GROUP, LLC  
DATED: MARCH 18, 2022  
FOR THE CAPACITY OF THE  
EXISTING STRUCTURES TO SUPPORT  
THE PROPOSED EQUIPMENT.

NOTE:

AN ANALYSIS FOR THE CAPACITY  
OF THE PROPOSED ANTENNA  
MOUNT TO SUPPORT THE  
PROPOSED LOADING HAS BEEN  
COMPLETED BY:  
HUDSON DESIGN GROUP, LLC  
DATED: MARCH 21, 2022

NOTE:

SEE RFDS FOR RRH  
FREQUENCY AND  
MODEL NUMBER

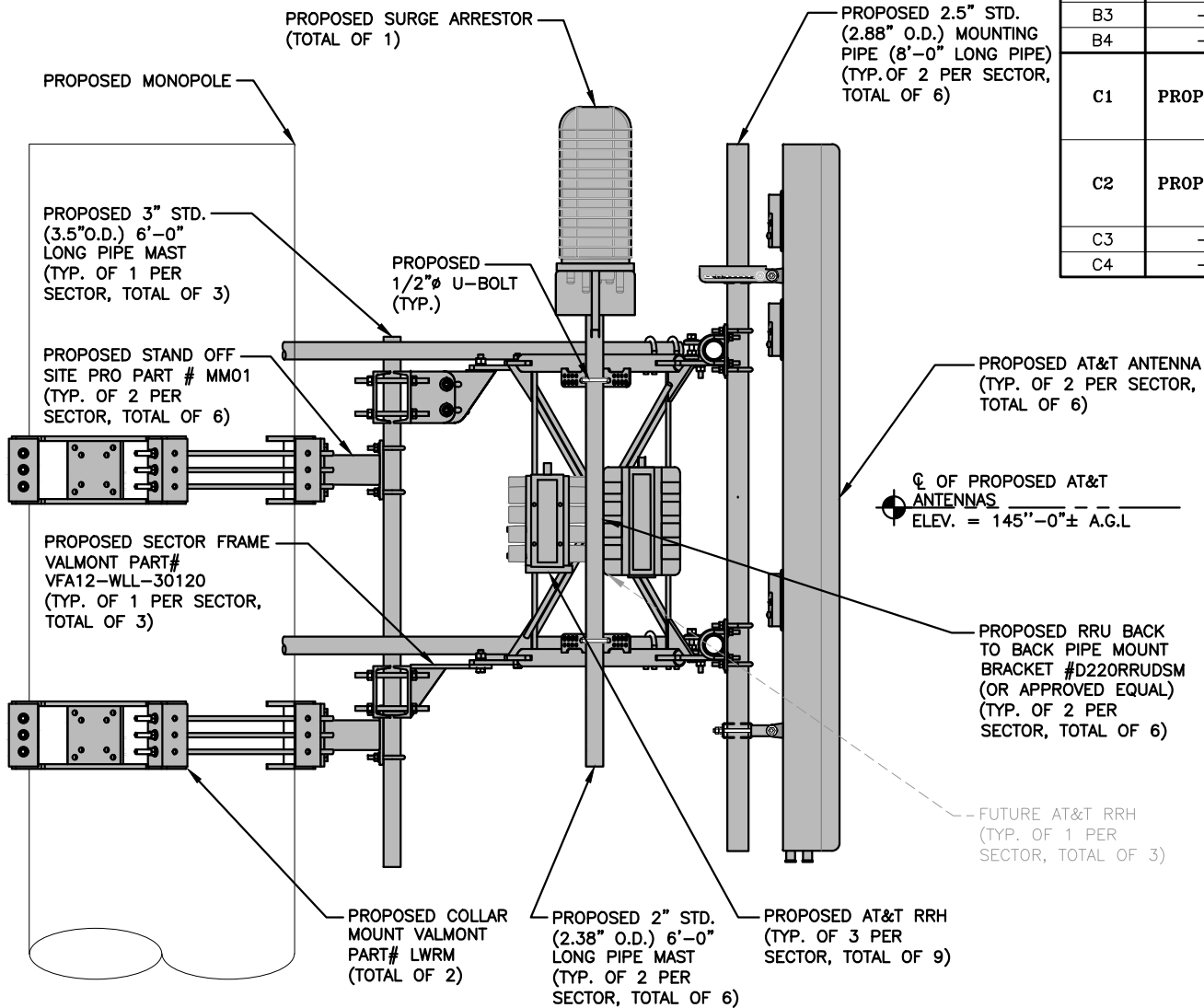
PROPOSED RRU REFER TO THE  
FINAL RFDS AND CHART FOR  
QUANTITY, MODEL AND DIMENSIONS

NOTE:  
MOUNT PER MANUFACTURER'S  
SPECIFICATIONS.

PROPOSED RRUS DETAIL

SCALE: N.T.S

1  
A-3



PROPOSED SECTOR FRAME,  
ANTENNA, SURGE SUPPRESSOR  
& RRH'S MOUNTING DETAIL

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

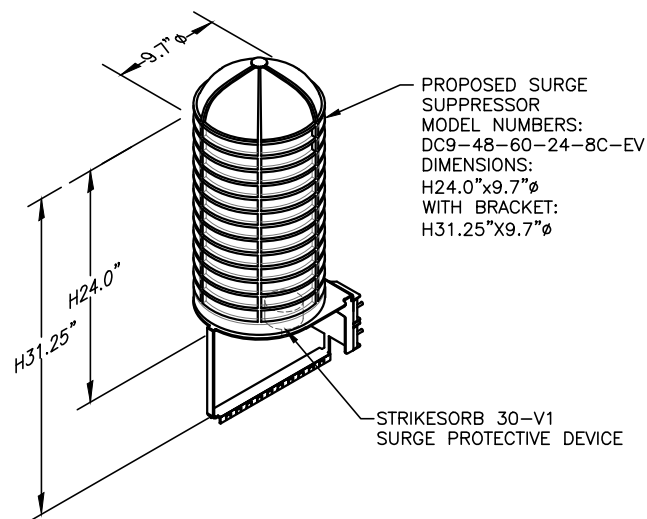
3  
A-3

ANTENNA SCHEDULE											
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE ( INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	LTE B14/PCS/WCS	TPA65R-BU6DA-K	71.2X21X7.8	145'-0"	30°	-	(P) (1) 4478 B14	18.1X13.4X8.3	(P) (3) POWER CABLES AND (1) FIBER RUN	(P) (1) RAYCAP DC9-48-60-24-8C-EV
A2	PROPOSED	LTE 700 BC/ 850/AWS	DMP65R-BU6DA-K	71.2X21X7.7	145'-0"	30°	-	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9		
A3	-	-	-	-	-	-	-	-	-		
A4	-	-	-	-	-	-	-	-	-		
B1	PROPOSED	LTE B14/PCS/WCS	TPA65R-BU6DA-K	71.2X21X7.8	145'-0"	150°	-	(P) (1) 4478 B14	18.1X13.4X8.3		
B2	PROPOSED	LTE 700 BC/ 850/AWS	DMP65R-BU6DA-K	71.2X21X7.7	145'-0"	150°	-	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9		
B3	-	-	-	-	-	-	-	-	-		
B4	-	-	-	-	-	-	-	-	-		
C1	PROPOSED	LTE B14/PCS/WCS	TPA65R-BU6DA-K	71.2X21X7.8	145'-0"	270°	-	(P) (1) 4478 B14	18.1X13.4X8.3		
C2	PROPOSED	LTE 700 BC/ 850/AWS	DMP65R-BU6DA-K	71.2X21X7.7	145'-0"	270°	-	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9		
C3	-	-	-	-	-	-	-	-	-		
C4	-	-	-	-	-	-	-	-	-		

FINAL ANTENNA SCHEDULE

SCALE: N.T.S

2  
A-3

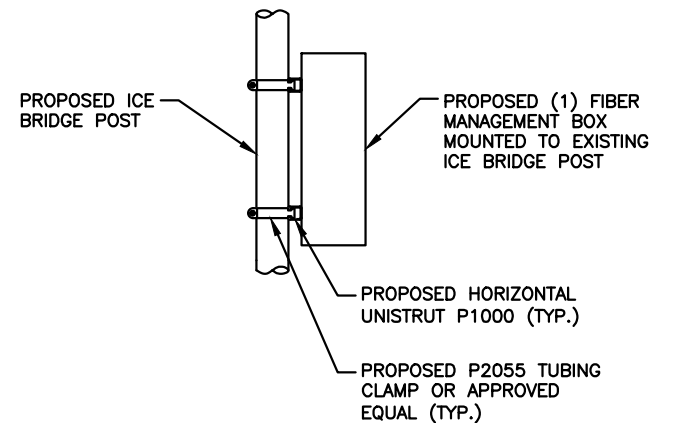


NOTE:  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

SCALE: N.T.S

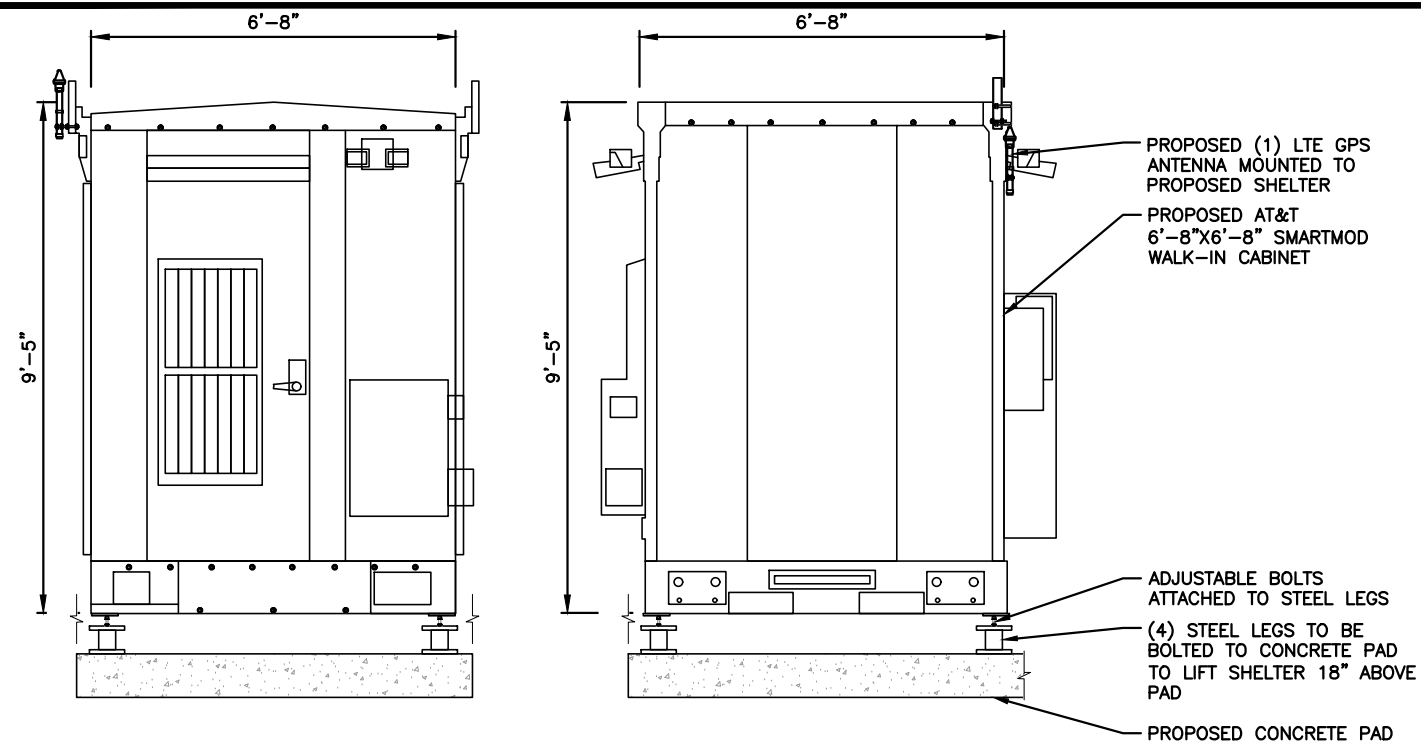
4  
A-3



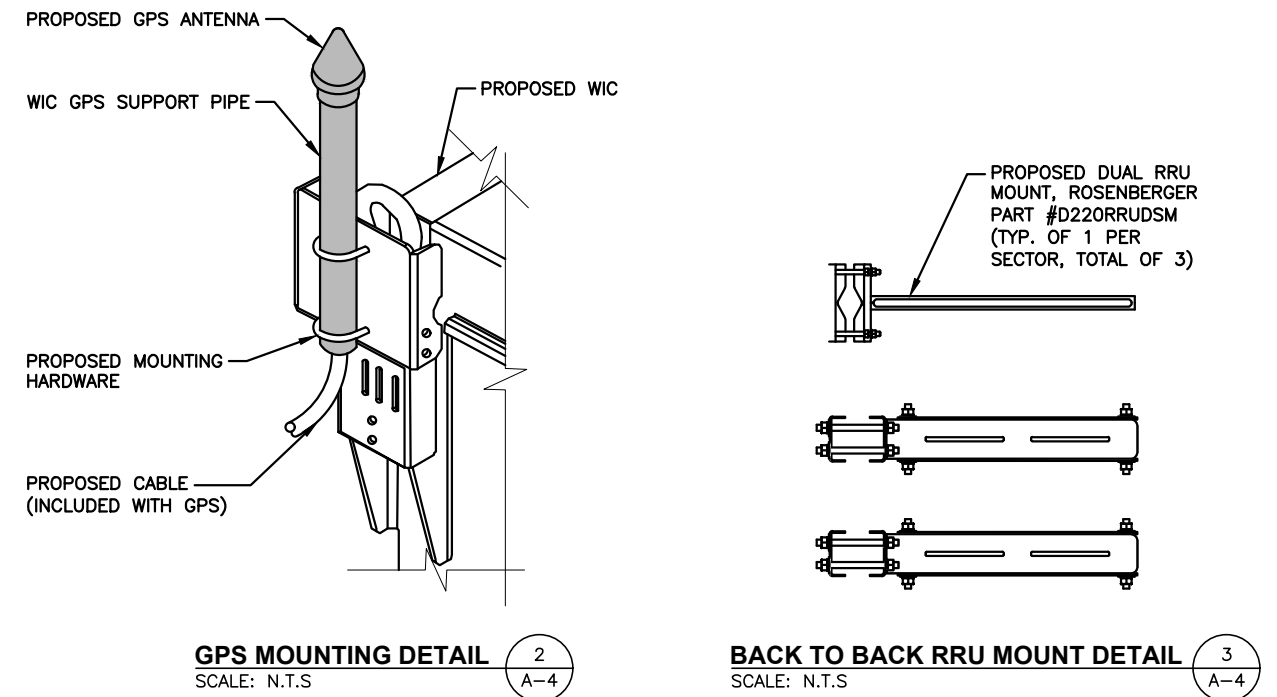
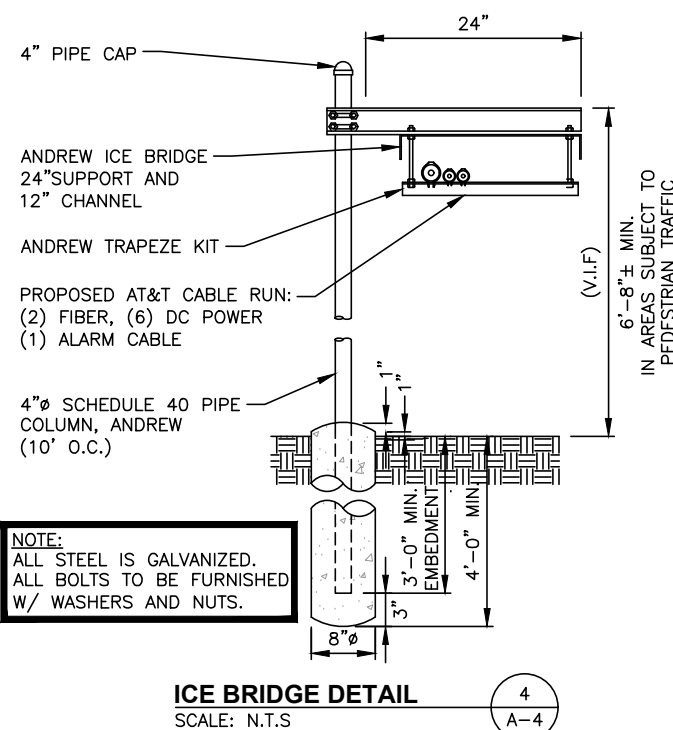
PROPOSED FIBER MANAGEMENT  
BOX MOUNTING DETAIL

SCALE: N.T.S

5  
A-3

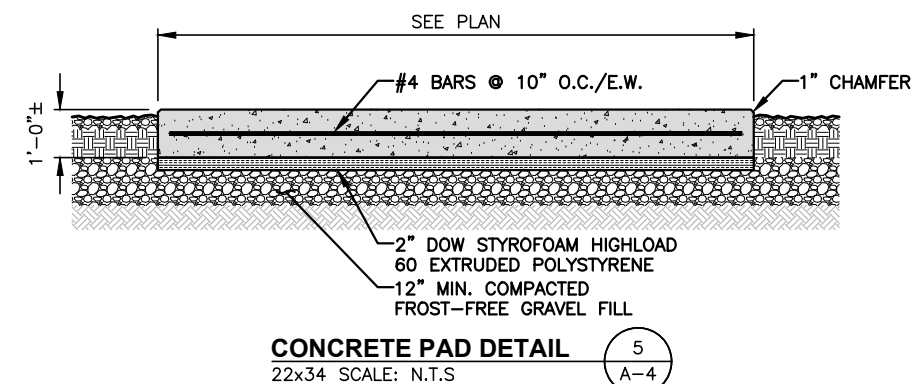


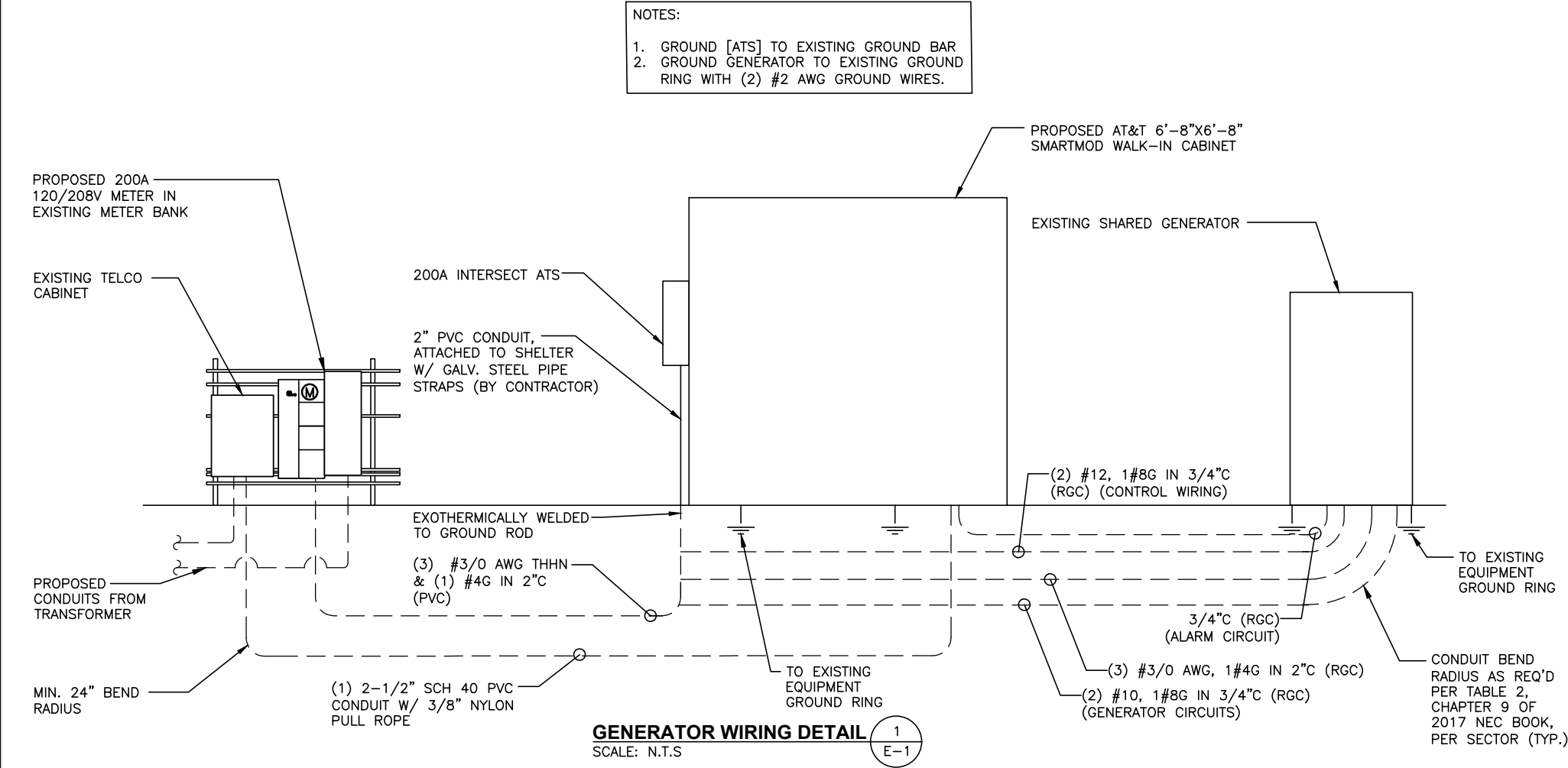
NOTE:  
SHELTER SHALL BE MOUNTED PER  
MANUFACTURER'S SPECIFICATIONS.



FOUNDATION NOTES & CONCRETE SPECIFICATIONS:

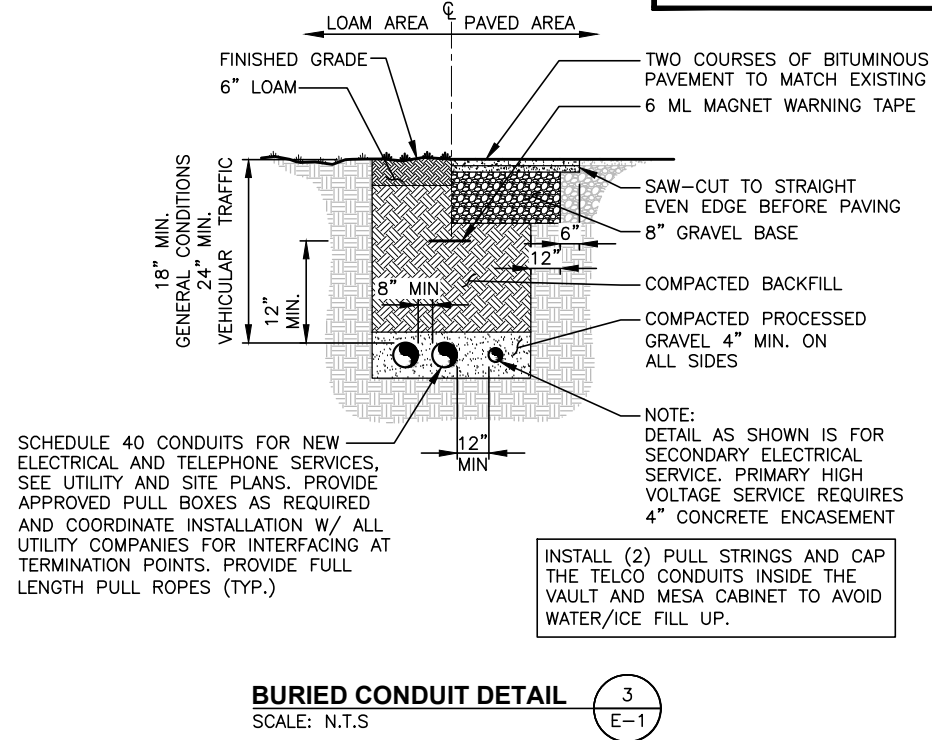
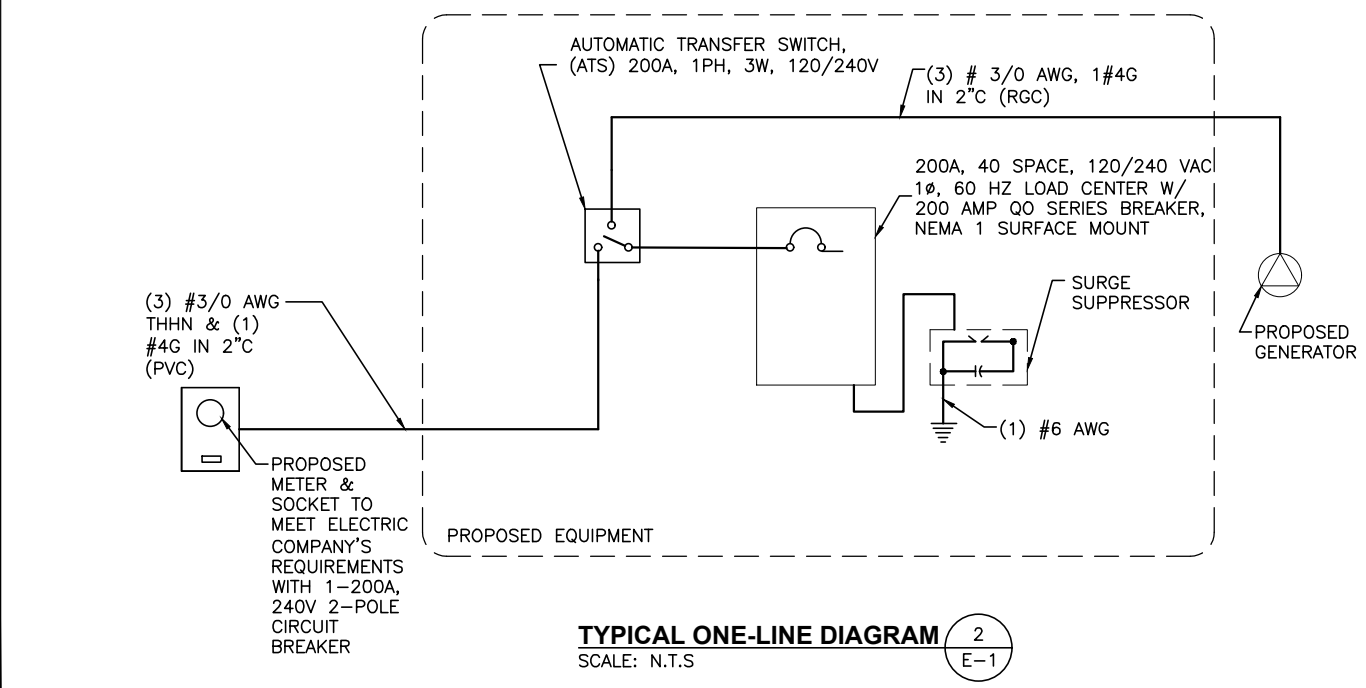
1. FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.
2. UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.
3. CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH ( $f'_c$ )=4000 psi. CONCRETE TO BE AIR ENTRAINED, DESIRED AIR CONTENT TO BE 6% (PLUS OR MINUS 2%)
4. REINFORCING BAR TO BE ASTM A615 GRADE 60.
5. WELDED WIRE FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A185. WIRES FOR FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A82.
6. COORDINATE WITH MANUFACTURER OF PREFABRICATED SHELTER FOR LOCATION OF ATTACHMENTS TO BASE SLAB.
7. ALL REINFORCING TO HAVE MINIMUM CONCRETE COVER PER ACI SPECIFICATIONS.
8. ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL CONFORM TO LATEST EDITION OF ACI 318 AND APPLICABLE STATE BUILDING CODE.





ELECTRICAL LEGEND & ABBREVIATIONS	
	NEW PANEL BOARD, SURFACE MOUNTED
	EXISTING PANEL BOARD, SURFACE MOUNTED
	DRY TYPE TRANSFORMER
	METER
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
	FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
	EXPOSED WIRING
	HOME RUNS, MINIMUM 2#10 + 1#8G IN 3/4" CONDUIT U.O.N.
A.F.F.	ABOVE FINISHED FLOOR
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER
A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
PVC	POLYVINYL CHLORIDE
HZ	HERTZ
PH, Ø	PHASE
W	WATTS
NEC	NATIONAL ELECTRIC CODE
PPC	POWER PROTECTION CABINET
UL	UNDERWRITER LABORATORIES
PTS	POWER TRANSFER SWITCH
QO	QUICK OPEN
GRC	GALVANIZED RIGID CONDUIT
G	GROUND
	GROUND
MGB	MASTER GROUND BAR
EGB	EQUIPMENT GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
EX	EXPOSED WIRING
COAX	COAXIAL CABLE
	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PF	POWER FACTOR

- ### ELECTRICAL AND GROUNDING NOTES
- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
  - ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
  - THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
  - GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
  - ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
  - BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
  - ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
  - RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
  - RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
  - WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
  - ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
  - PPC SUPPLIED BY PROJECT OWNER.
  - GROUNDING SHALL COMPLY WITH NEC ART. 250.
  - GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
  - USE #6 AWG COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 AWG SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
  - ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
  - ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 AWG WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
  - CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
  - APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
  - BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
  - BOND ANTENNA EGB'S AND MGB TO GROUND RING.
  - CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
  - CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
  - ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 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 BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.

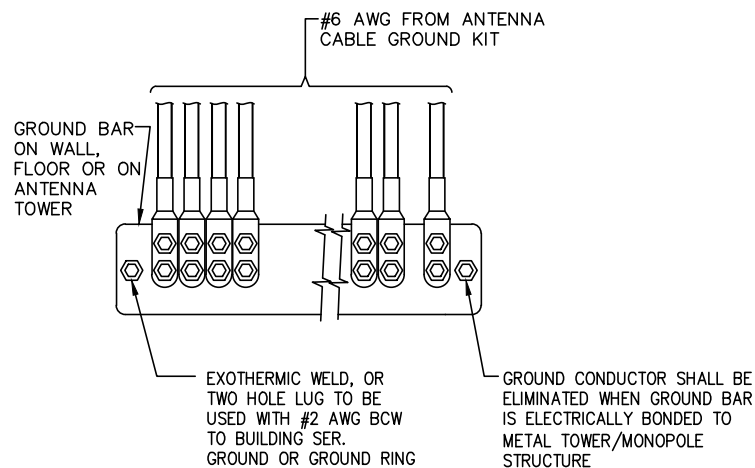
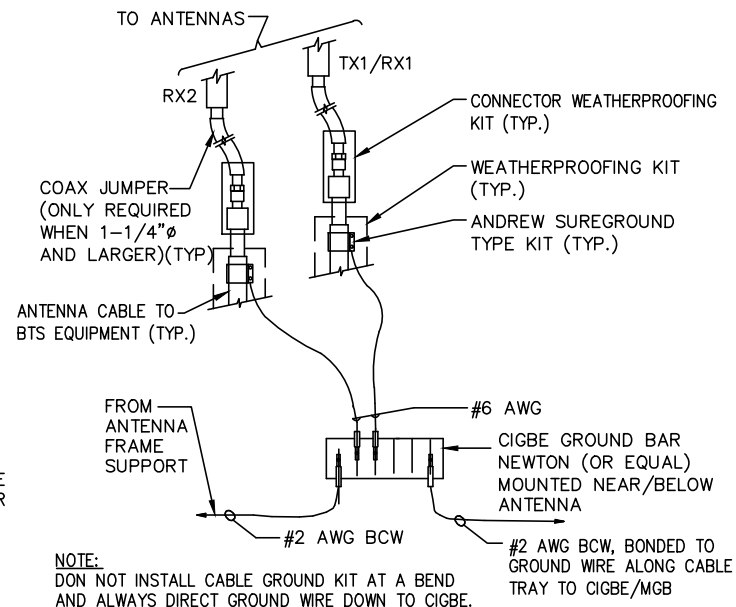


1	04/27/22	ISSUED FOR REVIEW	MJ	JC	DPH
0	04/11/22	ISSUED FOR REVIEW	ES	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES		

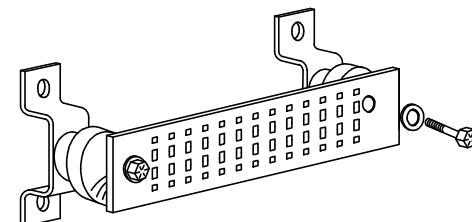
AT&T		
ELECTRICAL NOTES & ONE-LINE DIAGRAM (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1338	E-1	1



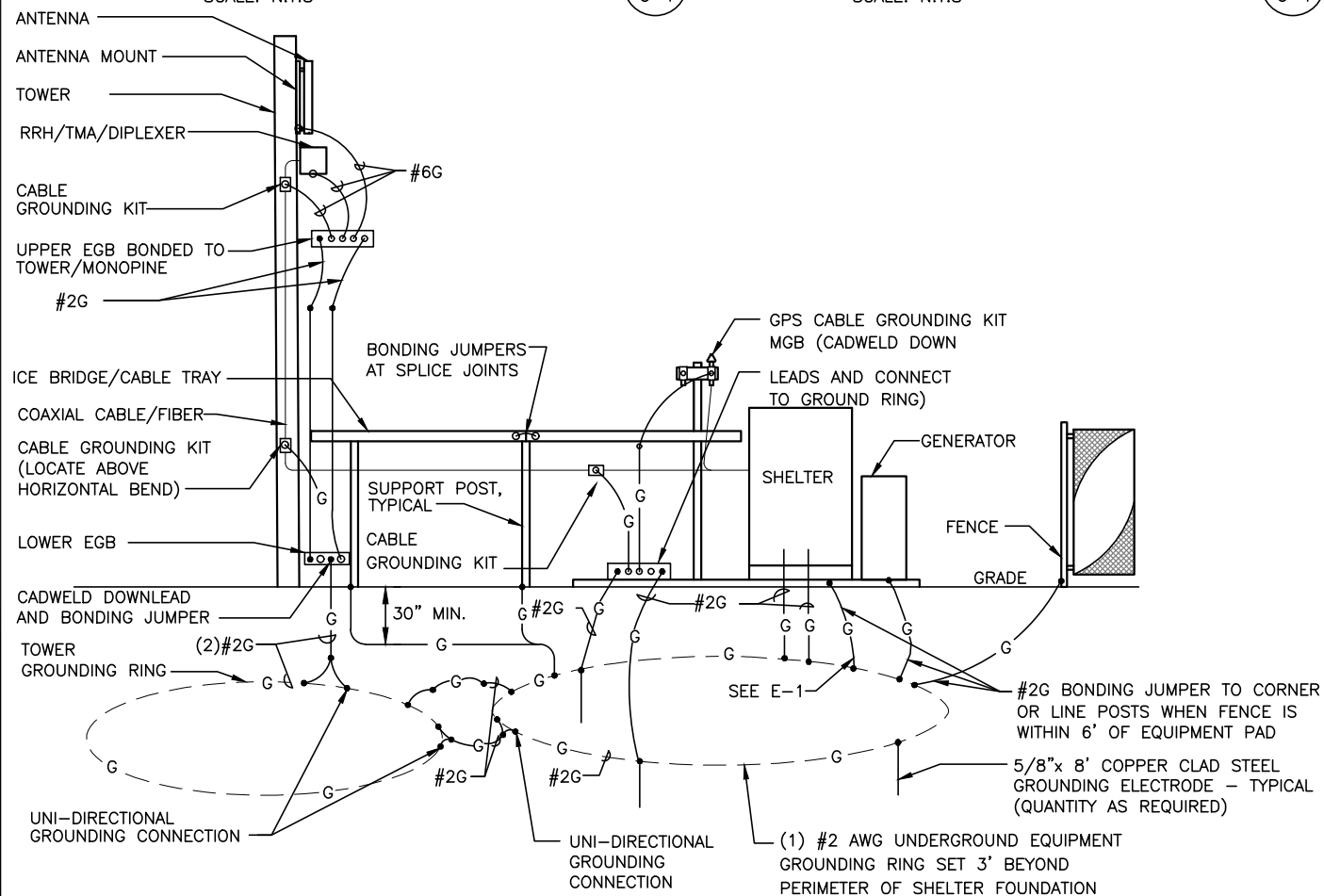
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOF SHALL BE TWO-PART TAPE SUPPLIED WITH KIT. COLD SHRINK SHALL NOT BE USED.


$$\frac{1}{G-1}$$
$$\frac{2}{G-1}$$


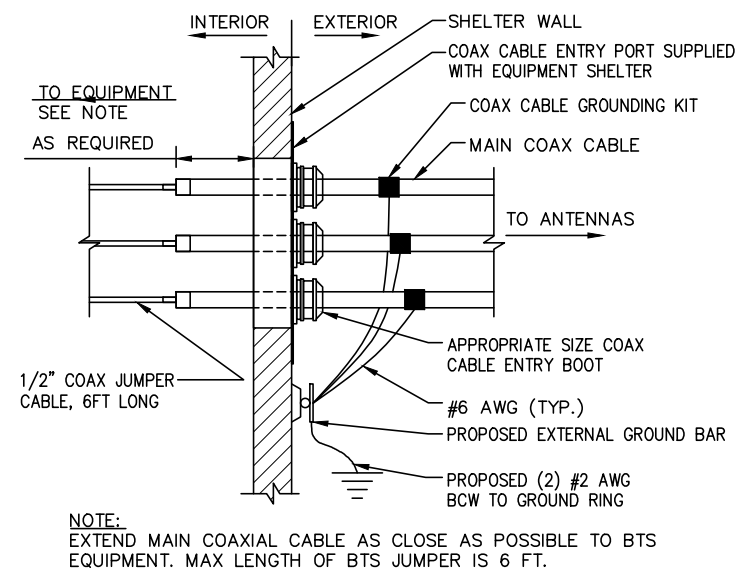
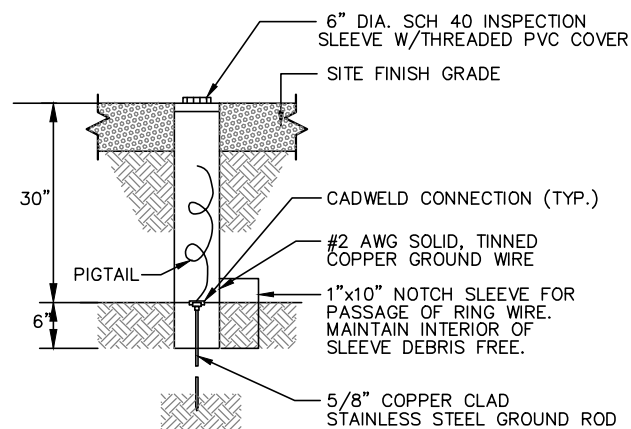
3  
G-1



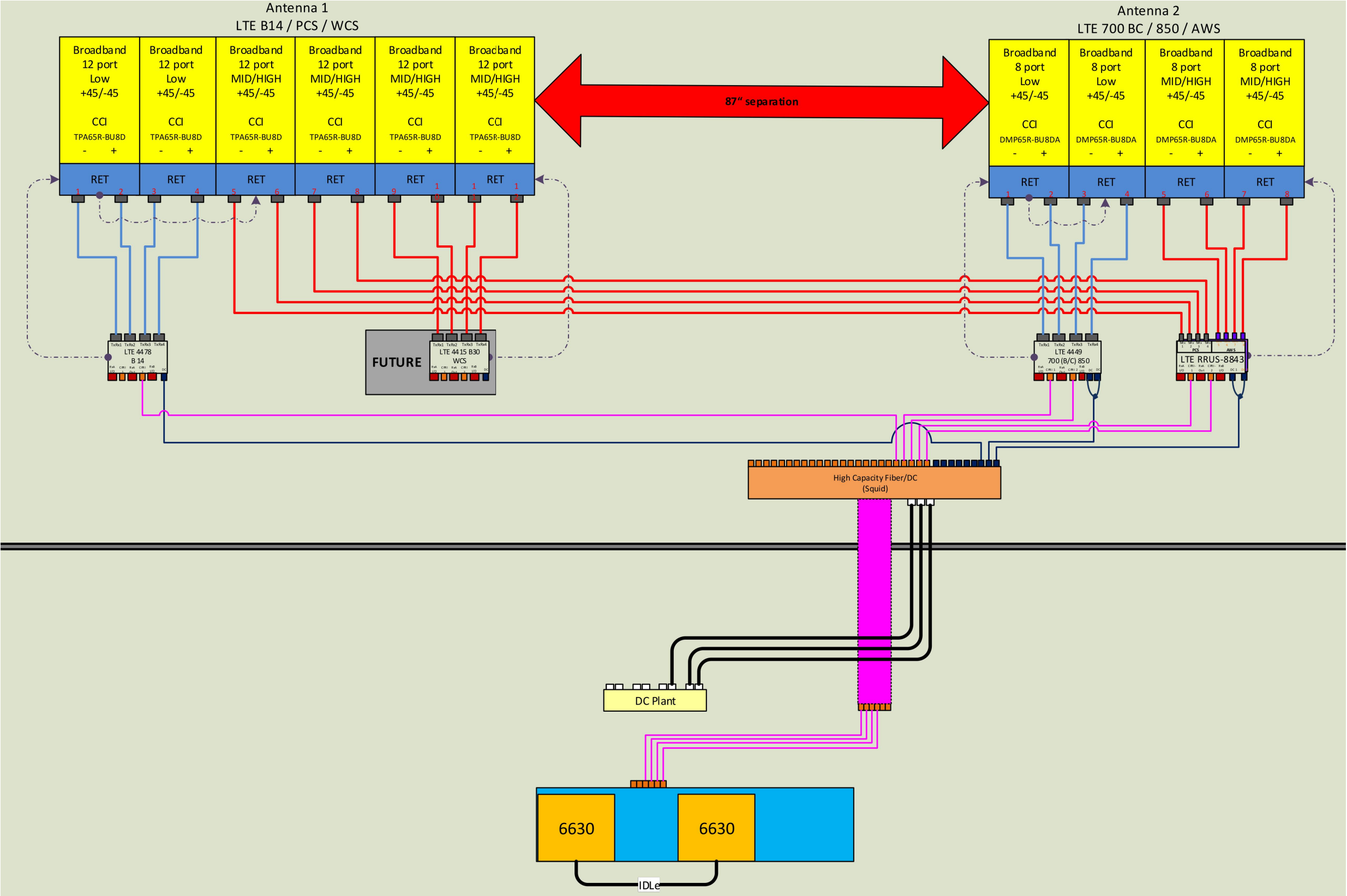
**GROUND BAR - DETAIL**  
SCALE: N.T.S



5  
G-1



7  
G-1



RF PLUMBING DIAGRAM 1  
SCALE: N.T.S. 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.

1	04/27/22	ISSUED FOR REVIEW	MJ	JC	DPH
0	04/11/22	ISSUED FOR REVIEW	ES	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: ES		

AT&T		
RF PLUMBING DIAGRAM (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1338	RF-1	1



## **ATTACHMENT 3**

# COMPREHENSIVE STRUCTURAL ANALYSIS REPORT

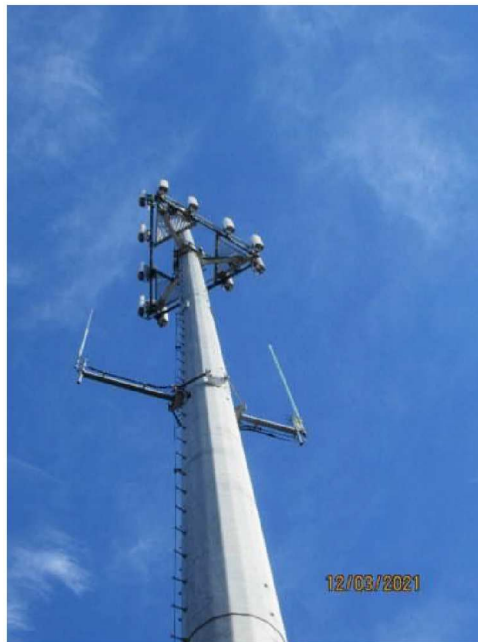
For

**SITE NUMBER: CT1338**

**SITE NAME: REDDING BLACK ROCK ROAD**

186 Black Rock Road  
Redding, CT 06896

## Antennas Mounted on the Monopole



Prepared for:



Dated: March 18, 2022

Prepared by:



45 Beechwood Drive  
North Andover, MA 01845  
(P) 978.557.5553 (F) 978.336.5586  
[www.hudsondesigngroupllc.com](http://www.hudsondesigngroupllc.com)



**HUDSON**  
Design Group LLC

## **SCOPE OF WORK:**

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 149' monopole supporting the proposed AT&T's antennas located at elevation 145' above the ground level.

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

The following documents were used for our reference:

- Geotechnical Report prepared by Terracon, dated November 15, 2013.
- Foundation Design Drawings prepared by Valmont dated November 13, 2015.
- Pole Design Drawings prepared by Valmont dated December 11, 2015.
- Tower Structural Analysis prepared by HDG dated July 21, 2021.

## **CONCLUSION SUMMARY:**

Based on our evaluation, we have determined that the existing monopole **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **43.4%** - (Pole Section L2 from EL.106.42' to EL.130.5' Controlling).

## **FOUNDATION SUMMARY:**

Based on our evaluation, we have determined that the proposed foundation **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The foundation is rated at **32.5%** - (Bearing (Controlling)).



**APPURTENANCES CONFIGURATION:**

Tenant	Appurtenances	Elev.	Mount
	(1) 2' Dish	153'	Side Mount Standoff
AT&T	<b>(3) TPA65R-BU6DA-K Antennas</b>	145'	<b>VFA12—WLL-30120</b>
AT&T	<b>(3) DMP65R-BU6DA-K Antennas</b>	145'	<b>VFA12—WLL-30120</b>
AT&T	<b>(3) 4478 B14 RRH's</b>	145'	<b>VFA12—WLL-30120</b>
AT&T	<b>(3) 4449 B5/B12 RRH's</b>	145'	<b>VFA12—WLL-30120</b>
AT&T	<b>(3) 8843 B2/B66A RRH's</b>	145'	<b>VFA12—WLL-30120</b>
AT&T	<b>(2) DC9-48-60-24-8C-EV Surge</b>	145'	<b>VFA12—WLL-30120</b>
	(3) SBNHH-1D65B Antennas	135'	Platform
	(6) JAHH-65B-R3B Antennas	135'	Platform
	(3) MT6407-77A Antennas	135'	Platform
	(3) B2-B66A RRH-BR049	135'	Platform
	(3) B5/B13 RRH-BR04C	135'	Platform
	(3) CBC78T-DS-43-2X	135'	Platform
	(2) OVP Boxes	135'	Platform
	(1) 10' Dipole Antenna	70.5'	Side Mount Standoff
	(1) 3" x 15' Omni Antenna	70.5'	Side Mount Standoff

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

**AT&T EXISTING/PROPOSED COAX CABLES:**

Tenant	Coax Cables	Elev.	Mount
AT&T	(4) 7/8" Cables	149'	Tower Face
AT&T	<b>(4) DC Power Cables</b>	145'	Tower Face
AT&T	<b>(1) Fiber Cable</b>	145'	Tower Face
AT&T	<b>(2) 2" Conduits</b>	145'	Tower Face

*\*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	35.2 %	130.5 – 149.0	PASS	
Pole Section L2	<b>43.4 %</b>	106.42 – 130.5	PASS	<b>Controlling</b>
Pole Section L3	35.5 %	79.59 – 106.42	PASS	
Pole Section L4	35.6 %	46.08 – 79.59	PASS	
Pole Section L5	34.7 %	0 – 46.08	PASS	
Base plate & Anchor Rods	31.8 %	0 -	PASS	

**FOUNDATION COMPARISON SUMMARY:**

	Stress Ratio	Pass/Fail	Comments
Bearing	<b>32.5 %</b>	PASS	<b>Controlling</b>
Overturning	27.3 %	PASS	
Shear	6.3 %	PASS	



**HUDSON**  
Design Group LLC

#### **DESIGN CRITERIA:**

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

County: Fairfield

Ultimate Wind Speed: 130 mph (3 second gust)

Structural Class: III

Exposure Category: B

Topographic Category: 1

Nominal Ice Thickness: 1 inch

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

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

#### **ASSUMPTIONS:**

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
2. 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.
3. 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.

#### **SUPPORT RECOMMENDATIONS:**

HDG recommends that the proposed antennas, RRH's, and surge arrestors be mounted on the proposed sector frame supported by the monopole.

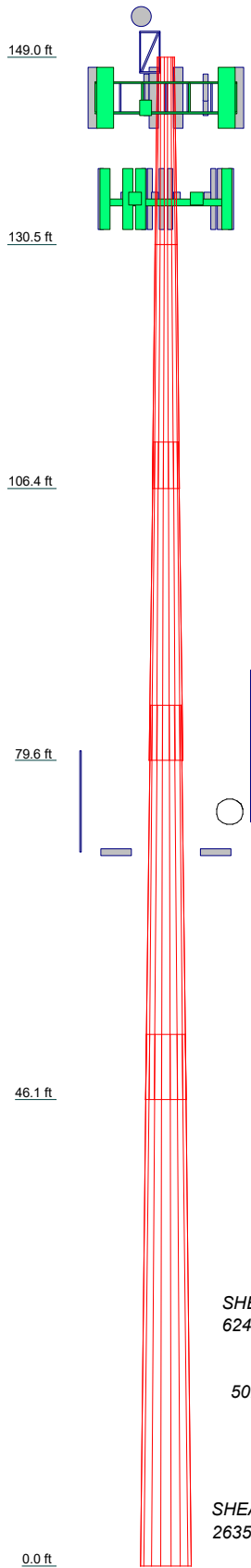




**HUDSON**  
Design Group LLC

## CALCULATIONS

Section	1	2	3	4	5	
Length (ft)	18.50	24.08	31.42	38.92	52.50	
Number of Sides	18	18	18	18	18	
Thickness (in)	0.1875	0.2500	0.3750	0.4375	0.5000	
Socket Length (ft)		4.58	5.42	6.42	45.2289	
Top Dia (in)	19.7500	25.0400	30.1195	36.8091	45.2289	
Bot Dia (in)	25.0400	31.9300	39.1100	47.9400	60.2500	
Grade			A572-65			
Weight (lb)	832.0	1835.8	4357.2	7712.4	14810.5	29548.0



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Andrew 2' w/Radome	153	JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	135
2' Side Mount Standoff (Dish Mount)	149.5		
VFA12-WLL-30120 (ATI)	145	MT6407-77A Antenna w/ Mounting Pipe (Verizon)	135
TPA65R-BU6DA-K Antenna w/ Mounting Pipe (ATI)	145	B2/B66A RRH-BR049 RRH (Verizon)	135
DMP65R-BU6DA-K Antenna w/ Mounting Pipe (ATI)	145	B5/B13 RRH-BR04C RRH (Verizon)	135
B14 4478 RRH (ATI)	145	CBC78T-DS-43-2X (Verizon)	135
4449 B5/B12 RRH w/Mount Pipe (ATI)	145	OVP Box (Verizon)	135
B2/B66A 8843 RRH (ATI)	145	SBNHH-1D65B w/ Mount Pipe (Verizon)	135
DC9-48-60-24-8C-EV Surge Arrestor (ATI)	145	JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	135
VFA12-WLL-30120 (ATI)	145	JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	135
TPA65R-BU6DA-K Antenna w/ Mounting Pipe (ATI)	145	MT6407-77A Antenna w/ Mounting Pipe (Verizon)	135
DMP65R-BU6DA-K Antenna w/ Mounting Pipe (ATI)	145	B2/B66A RRH-BR049 RRH (Verizon)	135
B14 4478 RRH (ATI)	145	B5/B13 RRH-BR04C RRH (Verizon)	135
4449 B5/B12 RRH w/Mount Pipe (ATI)	145	CBC78T-DS-43-2X (Verizon)	135
B2/B66A 8843 RRH (ATI)	145	SBNHH-1D65B w/ Mount Pipe (Verizon)	135
DC9-48-60-24-8C-EV Surge Arrestor (ATI)	145	JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	135
VFA12-WLL-30120 (ATI)	145	JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	135
TPA65R-BU6DA-K Antenna w/ Mounting Pipe (ATI)	145	MT6407-77A Antenna w/ Mounting Pipe (Verizon)	135
DMP65R-BU6DA-K Antenna w/ Mounting Pipe (ATI)	145	B2/B66A RRH-BR049 RRH (Verizon)	135
B14 4478 RRH (ATI)	145	B5/B13 RRH-BR04C RRH (Verizon)	135
4449 B5/B12 RRH w/Mount Pipe (ATI)	145	CBC78T-DS-43-2X (Verizon)	135
B2/B66A 8843 RRH (ATI)	145	Omni 3"x15' (OTHER)	70.5
SitePro1 LWRM Ring Mount	145	8' Stand off Arm (OTHER)	70.5
PIROD 13' Low Profile Platform (Verizon)	135	10' Dipole (OTHER)	70.5
SBNHH-1D65B w/ Mount Pipe (Verizon)	135	8' Stand off Arm (OTHER)	70.5
JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	135	SitePro1 UQB4 Ring Mount (OTHER)	70.5

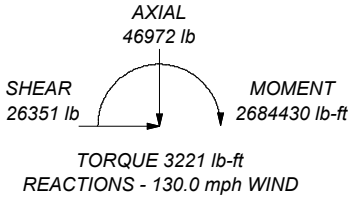
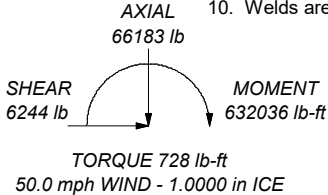
### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

### TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 130.0 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60.0 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Weld together tower sections have flange connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER-70S-6 electrodes.

ALL REACTIONS  
ARE FACTORED



### HUDSON Design Group LLC

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

Job:	Project: <b>CT1338</b>		
Client:	SAI / AT&T	Drawn by:	AM
Code:	TIA-222-H	Date:	03/17/22
Path:	W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\Tower\Tower\Projects\AT&T\CT1338\CT1338.dwg		
		App'd:	Scale: NTS
			Dwg No. E-1

<b><i>tnxTower</i></b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 1 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 0.00 ft.

Basic wind speed of 130.0 mph.

Risk Category III.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56.0 pcf.

A wind speed of 50.0 mph is used in combination with ice.

Temperature drop of 50.0 °F.

Deflections calculated using a wind speed of 60.0 mph.

Weld together tower sections have flange connections..

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

Welds are fabricated with ER-70S-6 electrodes..

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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	149.00-130.50	18.50	0.00	18	19.7500	25.0400	0.1875	0.7500	A572-65 (65 ksi)
L2	130.50-106.42	24.08	4.58	18	25.0400	31.9300	0.2500	1.0000	A572-65 (65 ksi)
L3	106.42-79.58	31.42	5.42	18	30.1195	39.1100	0.3750	1.5000	A572-65 (65 ksi)
L4	79.58-46.08	38.92	6.42	18	36.8091	47.9400	0.4375	1.7500	A572-65 (65 ksi)
L5	46.08-0.00	52.50		18	45.2289	60.2500	0.5000	2.0000	A572-65 (65 ksi)

## Tapered Pole Properties

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 2 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	20.0258	11.6421	562.8837	6.9447	10.0330	56.1032	1126.5082	5.8222	3.1460	16.779
	25.3974	14.7903	1154.1331	8.8226	12.7203	90.7315	2309.7848	7.3966	4.0770	21.744
L2	25.3877	19.6709	1527.2635	8.8004	12.7203	120.0649	3056.5365	9.8373	3.9670	15.868
	32.3840	25.1381	3187.4245	11.2464	16.2204	196.5067	6379.0430	12.5714	5.1797	20.719
L3	31.8571	35.4034	3957.2806	10.5593	15.3007	258.6336	7919.7682	17.7051	4.6410	12.376
	39.6555	46.1043	8739.4947	13.7509	19.8679	439.8806	17490.4890	23.0565	6.2234	16.596
L4	38.8835	50.5066	8441.3263	12.9119	18.6990	451.4311	16893.7599	25.2581	5.7084	13.048
	48.6121	65.9632	18804.9347	16.8634	24.3535	772.1650	37634.6134	32.9878	7.6674	17.526
L5	47.7147	70.9848	17942.3631	15.8788	22.9763	780.9077	35908.3353	35.4991	7.0803	14.161
	61.1023	94.8233	42768.9025	21.2113	30.6070	1397.3569	85594.0814	47.4206	9.7240	19.448

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
L1				1	1	1			
149.00-130.50									
L2				1	1	1			
130.50-106.42									
L3				1	1	1			
106.42-79.58									
L4 79.58-46.08				1	1	1			
L5 46.08-0.00				1	1	1			

## Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	24
Embedment length	54.0000 in
f <sub>c</sub>	4.0 ksi
Grout space	2.0000 in
Base plate grade	A572-50
Base plate thickness	3.5000 in
Bolt circle diameter	67.6800 in
Outer diameter	74.8200 in
Inner diameter	45.0000 in
Base plate type	Plain Plate

## Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***											

## Feed Line/Linear Appurtenances - Entered As Area



<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 3 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		$C_A A_A$ ft <sup>2</sup> /ft	Weight plf
7/8"	A	No	Yes	Inside Pole	149.00 - 8.00	2	No Ice	0.00	0.54
							1/2" Ice	0.00	0.54
							1" Ice	0.00	0.54
7/8"	A	No	Yes	Inside Pole	71.00 - 8.00	2	No Ice	0.00	0.54
							1/2" Ice	0.00	0.54
							1" Ice	0.00	0.54
1-5/8 (Verizon)	B	No	Yes	Inside Pole	135.00 - 8.00	6	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
1-5/8 Fiber Cable	B	No	Yes	Inside Pole	135.00 - 8.00	2	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
***									
DC Cable	A	No	Yes	Inside Pole	145.00 - 8.00	4	No Ice	0.00	0.88
							1/2" Ice	0.00	0.88
							1" Ice	0.00	0.88
Fiber	A	No	Yes	Inside Pole	145.00 - 8.00	1	No Ice	0.00	0.48
							1/2" Ice	0.00	0.48
							1" Ice	0.00	0.48
2" Conduit	A	No	Yes	Inside Pole	145.00 - 8.00	2	No Ice	0.00	1.00
							1/2" Ice	0.00	1.00
							1" Ice	0.00	1.00
***									

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight lb
L1	149.00-130.50	A	0.000	0.000	0.000	0.000	106.86
		B	0.000	0.000	0.000	0.000	37.44
		C	0.000	0.000	0.000	0.000	0.00
L2	130.50-106.42	A	0.000	0.000	0.000	0.000	170.29
		B	0.000	0.000	0.000	0.000	200.35
		C	0.000	0.000	0.000	0.000	0.00
L3	106.42-79.58	A	0.000	0.000	0.000	0.000	189.81
		B	0.000	0.000	0.000	0.000	223.31
		C	0.000	0.000	0.000	0.000	0.00
L4	79.58-46.08	A	0.000	0.000	0.000	0.000	263.83
		B	0.000	0.000	0.000	0.000	278.72
		C	0.000	0.000	0.000	0.000	0.00
L5	46.08-0.00	A	0.000	0.000	0.000	0.000	310.43
		B	0.000	0.000	0.000	0.000	316.83
		C	0.000	0.000	0.000	0.000	0.00

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight lb
------------------	--------------------------	-------------------	------------------------	--------------------------	--------------------------	---	--	--------------

<b><i>tnxTower</i></b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 4 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A<sub>R</sub></i> ft <sup>2</sup>	<i>A<sub>F</sub></i> ft <sup>2</sup>	<i>C<sub>A</sub>A<sub>A</sub></i> <i>In Face</i> ft <sup>2</sup>	<i>C<sub>A</sub>A<sub>A</sub></i> <i>Out Face</i> ft <sup>2</sup>	<i>Weight</i> lb
L1	149.00-130.50	A	1.328	0.000	0.000	0.000	0.000	106.86
		B		0.000	0.000	0.000	0.000	37.44
		C		0.000	0.000	0.000	0.000	0.00
L2	130.50-106.42	A	1.306	0.000	0.000	0.000	0.000	170.29
		B		0.000	0.000	0.000	0.000	200.35
		C		0.000	0.000	0.000	0.000	0.00
L3	106.42-79.58	A	1.275	0.000	0.000	0.000	0.000	189.81
		B		0.000	0.000	0.000	0.000	223.31
		C		0.000	0.000	0.000	0.000	0.00
L4	79.58-46.08	A	1.226	0.000	0.000	0.000	0.000	263.83
		B		0.000	0.000	0.000	0.000	278.72
		C		0.000	0.000	0.000	0.000	0.00
L5	46.08-0.00	A	1.106	0.000	0.000	0.000	0.000	310.43
		B		0.000	0.000	0.000	0.000	316.83
		C		0.000	0.000	0.000	0.000	0.00

## Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C<sub>A</sub>A<sub>A</sub> Front ft<sup>2</sup></i>	<i>C<sub>A</sub>A<sub>A</sub> Side ft<sup>2</sup></i>	<i>Weight lb</i>
2' Side Mount Standoff (Dish Mount)	A	From Face	1.00 0.00 0.00	0.0000	149.50	No Ice 1/2" Ice 1" Ice	1.00 1.50 2.00	1.00 1.50 2.00	30.00 50.00 70.00
SitePro1 LWRM Ring Mount	A	None		0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.40 0.00 0.00	265.00 344.50 424.00
*SECTOR A*									
VFA12-WLL-30120 (AT&T)	A	From Face	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 19.50	658.00 804.00 1015.00
TPA65R-BU6DA-K Antenna w/ Mounting Pipe (AT&T)	A	From Face	4.00 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.73	7.04 7.99 8.82	90.90 180.74 278.91
DMP65R-BU6DA-K Antenna w/ Mounting Pipe (AT&T)	A	From Face	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.73	7.04 7.99 8.82	101.90 191.74 289.91
B14 4478 RRH (AT&T)	A	From Face	2.50 -2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.56	60.00 77.66 98.08
4449 B5/B12 RRH w/Mount Pipe (AT&T)	A	From Face	2.50 2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.51 2.84 3.19	2.27 2.67 3.09	21.80 50.95 84.20
B2/B66A 8843 RRH (AT&T)	A	From Face	2.50 2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	72.00 89.60 109.91
DC9-48-60-24-8C-EV Surge Arrestor (AT&T)	A	From Face	2.50 2.00 1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	29.00 49.30 72.38
*SECTOR B*									
VFA12-WLL-30120 (AT&T)	B	From Face	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 19.50	658.00 804.00 1015.00

<b><i>tnxTower</i></b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 5 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C<sub>AA</sub> Front ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side ft<sup>2</sup></i>	<i>Weight lb</i>
TPA65R-BU6DA-K Antenna w/ Mounting Pipe (AT&T)	B	From Face	4.00 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.73	7.04 7.99 8.82	90.90 180.74 278.91
DMP65R-BU6DA-K Antenna w/ Mounting Pipe (AT&T)	B	From Face	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.73	7.04 7.99 8.82	101.90 191.74 289.91
B14 4478 RRH (AT&T)	B	From Face	2.50 -2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.56	60.00 77.66 98.08
4449 B5/B12 RRH w/Mount Pipe (AT&T)	B	From Face	2.50 2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.51 2.84 3.19	2.27 2.67 3.09	21.80 50.95 84.20
B2/B66A 8843 RRH (AT&T)	B	From Face	2.50 2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	72.00 89.60 109.91
DC9-48-60-24-8C-EV Surge Arrestor (AT&T)	B	From Face	2.50 2.00 1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	29.00 49.30 72.38
*SECTOR C*									
VFA12-WLL-30120 (AT&T)	C	From Face	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 19.50	658.00 804.00 1015.00
TPA65R-BU6DA-K Antenna w/ Mounting Pipe (AT&T)	C	From Face	4.00 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.73	7.04 7.99 8.82	90.90 180.74 278.91
DMP65R-BU6DA-K Antenna w/ Mounting Pipe (AT&T)	C	From Face	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.73	7.04 7.99 8.82	101.90 191.74 289.91
B14 4478 RRH (AT&T)	C	From Face	2.50 -2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.56	60.00 77.66 98.08
4449 B5/B12 RRH w/Mount Pipe (AT&T)	C	From Face	2.50 2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.51 2.84 3.19	2.27 2.67 3.09	21.80 50.95 84.20
B2/B66A 8843 RRH (AT&T)	C	From Face	2.50 2.00 -1.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	72.00 89.60 109.91
***									
SitePro1 UQB4 Ring Mount (OTHER)	C	None		0.0000	70.50	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.20 0.00 0.00	352.00 457.60 563.20
8' Stand off Arm (OTHER)	A	From Face	4.00 0.00 0.00	0.0000	70.50	No Ice 1/2" Ice 1" Ice	4.80 5.25 5.70	0.53 0.63 0.73	275.00 317.29 365.48
10' Dipole (OTHER)	A	From Face	8.00 0.00 5.00	0.0000	70.50	No Ice 1/2" Ice 1" Ice	6.67 7.82 8.65	6.67 7.82 8.65	25.00 60.81 105.11
8' Stand off Arm (OTHER)	B	From Face	4.00 0.00 0.00	0.0000	70.50	No Ice 1/2" Ice 1" Ice	4.80 5.25 5.70	0.53 0.63 0.73	275.00 317.29 365.48
Omni 3"x15' (OTHER)	B	From Face	8.00 0.00 10.50	0.0000	70.50	No Ice 1/2" Ice 1" Ice	4.50 6.03 7.58	4.50 6.03 7.58	50.00 82.48 124.58
*SECTOR A*									
PiROD 13' Low Profile Platform (Verizon)	A	None		0.0000	135.00	No Ice 1/2" Ice 1" Ice	15.70 20.10 24.50	15.70 20.10 24.50	1300.00 1765.00 2230.00

<b><i>tnxTower</i></b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 6 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C<sub>AA</sub> Front ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side ft<sup>2</sup></i>	<i>Weight lb</i>
SBNHH-1D65B w/ Mount Pipe (Verizon)	A	From Face	3.00 -6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	A	From Face	3.00 2.50 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	9.11 9.58 10.05	7.71 8.53 9.37	103.74 180.55 266.12
JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	A	From Face	3.00 3.75 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	9.11 9.58 10.05	7.71 8.53 9.37	103.74 180.55 266.12
MT6407-77A Antenna w/ Mounting Pipe (Verizon)	A	From Face	3.00 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	5.43 5.97 6.46	3.27 3.99 4.59	109.00 154.17 204.90
B2/B66A RRH-BR049 RRH (Verizon)	A	From Face	2.00 -3.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	98.00 116.34 137.47
B5/B13 RRH-BR04C RRH (Verizon)	A	From Face	2.00 3.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	82.00 98.43 117.53
CBC78T-DS-43-2X (Verizon)	A	From Leg	2.50 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	0.37 0.00 0.00	0.51 0.00 0.00	22.00 0.00 0.00
OVP Box (Verizon)	A	From Leg	2.50 5.50 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	29.00 49.30 72.38
<b>*SECTOR B*</b>									
SBNHH-1D65B w/ Mount Pipe (Verizon)	B	From Face	3.00 -6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	B	From Face	3.00 2.50 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	9.11 9.58 10.05	7.71 8.53 9.37	103.74 180.55 266.12
JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	B	From Face	3.00 3.75 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	9.11 9.58 10.05	7.71 8.53 9.37	103.74 180.55 266.12
MT6407-77A Antenna w/ Mounting Pipe (Verizon)	B	From Face	3.00 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	5.43 5.97 6.46	3.27 3.99 4.59	109.00 154.17 204.90
B2/B66A RRH-BR049 RRH (Verizon)	B	From Face	2.00 -3.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	98.00 116.34 137.47
B5/B13 RRH-BR04C RRH (Verizon)	B	From Face	2.00 3.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	82.00 98.43 117.53
CBC78T-DS-43-2X (Verizon)	A	From Leg	2.50 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	0.37 0.00 0.00	0.51 0.00 0.00	22.00 0.00 0.00
<b>*SECTOR C*</b>									
SBNHH-1D65B w/ Mount Pipe (Verizon)	C	From Face	3.00 -6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	8.42 8.98 9.50	7.09 8.27 9.17	66.55 135.68 212.84
JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	C	From Face	3.00 2.50 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	9.11 9.58 10.05	7.71 8.53 9.37	103.74 180.55 266.12
JAHH-65B-R3B Antenna w/ Mounting Pipe (Verizon)	C	From Face	3.00 3.75 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	9.11 9.58 10.05	7.71 8.53 9.37	103.74 180.55 266.12
MT6407-77A Antenna w/ Mounting Pipe (Verizon)	C	From Face	3.00 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	5.43 5.97 6.46	3.27 3.99 4.59	109.00 154.17 204.90



<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 7 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight lb
Mounting Pipe (Verizon)			6.00 0.00			1/2" Ice 1" Ice	5.97 6.46	3.99 4.59	154.17 204.90
B2/B66A RRH-BR049 RRH (Verizon)	C	From Face	2.00 -3.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	98.00 116.34 137.47
B5/B13 RRH-BR04C RRH (Verizon)	C	From Face	2.00 3.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	82.00 98.43 117.53
CBC78T-DS-43-2X (Verizon)	C	From Leg	2.50 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	0.37 0.00 0.00	0.51 0.00 0.00	22.00 0.00 0.00

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight lb
Andrew 2' w/Radome	A	Paraboloid w/Radome	From Face	2.00 0.00 0.00	0.0000		153.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68
***										

## Tower Pressures - No Ice

$$G_H = 1.100$$

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
L1 149.00-130.50	139.39	1.087	44.7	35.014	A	0.000	35.014	35.014	100.00	0.000	0.000
					B	0.000	35.014		100.00	0.000	0.000
					C	0.000	35.014		100.00	0.000	0.000
L2 130.50-106.42	117.97	1.036	42.6	57.964	A	0.000	57.964	57.964	100.00	0.000	0.000
					B	0.000	57.964		100.00	0.000	0.000
					C	0.000	57.964		100.00	0.000	0.000
L3 106.42-79.58	92.51	0.967	39.7	79.975	A	0.000	79.975	79.975	100.00	0.000	0.000
					B	0.000	79.975		100.00	0.000	0.000
					C	0.000	79.975		100.00	0.000	0.000
L4 79.58-46.08	62.53	0.864	35.4	122.129	A	0.000	122.129	122.129	100.00	0.000	0.000
					B	0.000	122.129		100.00	0.000	0.000
					C	0.000	122.129		100.00	0.000	0.000
L5 46.08-0.00	22.32	0.7	29.3	208.929	A	0.000	208.929	208.929	100.00	0.000	0.000
					B	0.000	208.929		100.00	0.000	0.000
					C	0.000	208.929		100.00	0.000	0.000

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 8 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

## Tower Pressure - With Ice

$$G_H = 1.100$$

Section Elevation	$z$	$K_Z$	$q_z$	$t_z$	$A_G$	$F_{ac}$	$A_F$	$A_R$	$A_{leg}$	Leg %	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>
ft	ft		psf	in	ft <sup>2</sup>	e	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			ft <sup>2</sup>
L1 149.00-130.50	139.39	1.087	6.6	1.3282	39.109	A	0.000	39.109	39.109	100.00	0.000	0.000
						B	0.000	39.109		100.00	0.000	0.000
						C	0.000	39.109		100.00	0.000	0.000
L2 130.50-106.42	117.97	1.036	6.3	1.3062	63.207	A	0.000	63.207	63.207	100.00	0.000	0.000
						B	0.000	63.207		100.00	0.000	0.000
						C	0.000	63.207		100.00	0.000	0.000
L3 106.42-79.58	92.51	0.967	5.9	1.2749	85.818	A	0.000	85.818	85.818	100.00	0.000	0.000
						B	0.000	85.818		100.00	0.000	0.000
						C	0.000	85.818		100.00	0.000	0.000
L4 79.58-46.08	62.53	0.864	5.2	1.2259	129.247	A	0.000	129.247	129.247	100.00	0.000	0.000
						B	0.000	129.247		100.00	0.000	0.000
						C	0.000	129.247		100.00	0.000	0.000
L5 46.08-0.00	22.32	0.7	4.3	1.1059	218.344	A	0.000	218.344	218.344	100.00	0.000	0.000
						B	0.000	218.344		100.00	0.000	0.000
						C	0.000	218.344		100.00	0.000	0.000

## Tower Pressure - Service

$$G_H = 1.100$$

Section Elevation	$z$	$K_Z$	$q_z$	$A_G$	$F_{ac}$	$A_F$	$A_R$	$A_{leg}$	Leg %	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>
ft	ft		psf	ft <sup>2</sup>	e	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			ft <sup>2</sup>
L1 149.00-130.50	139.39	1.087	8.5	35.014	A	0.000	35.014	35.014	100.00	0.000	0.000
					B	0.000	35.014		100.00	0.000	0.000
					C	0.000	35.014		100.00	0.000	0.000
L2 130.50-106.42	117.97	1.036	8.1	57.964	A	0.000	57.964	57.964	100.00	0.000	0.000
					B	0.000	57.964		100.00	0.000	0.000
					C	0.000	57.964		100.00	0.000	0.000
L3 106.42-79.58	92.51	0.967	7.6	79.975	A	0.000	79.975	79.975	100.00	0.000	0.000
					B	0.000	79.975		100.00	0.000	0.000
					C	0.000	79.975		100.00	0.000	0.000
L4 79.58-46.08	62.53	0.864	6.7	122.129	A	0.000	122.129	122.129	100.00	0.000	0.000
					B	0.000	122.129		100.00	0.000	0.000
					C	0.000	122.129		100.00	0.000	0.000
L5 46.08-0.00	22.32	0.7	5.6	208.929	A	0.000	208.929	208.929	100.00	0.000	0.000
					B	0.000	208.929		100.00	0.000	0.000
					C	0.000	208.929		100.00	0.000	0.000

## Tower Forces - No Ice - Wind Normal To Face

<b><i>tnxTower</i></b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 9 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 149.00-130.50	144.30	831.98	A	1	0.73	44.7	1	1	35.014	1255.65	67.87	C
			B	1	0.73		1	1	35.014			
			C	1	0.73		1	1	35.014			
L2 130.50-106.42	370.64	1835.81	A	1	0.73	42.6	1	1	57.964	1981.96	82.31	C
			B	1	0.73		1	1	57.964			
			C	1	0.73		1	1	57.964			
L3 106.42-79.58	413.12	4357.23	A	1	0.73	39.7	1	1	79.975	2551.06	95.05	C
			B	1	0.73		1	1	79.975			
			C	1	0.73		1	1	79.975			
L4 79.58-46.08	542.55	7712.43	A	1	0.73	35.4	1	1	122.129	3471.74	103.63	C
			B	1	0.73		1	1	122.129			
			C	1	0.73		1	1	122.129			
L5 46.08-0.00	627.25	14810.52	A	1	0.73	29.3	1	1	208.929	4917.34	106.71	C
			B	1	0.73		1	1	208.929			
			C	1	0.73		1	1	208.929			
Sum Weight:	2097.86	29547.97						OTM	971688.79 lb-ft	14177.75		

### Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 149.00-130.50	144.30	831.98	A	1	0.73	44.7	1	1	35.014	1255.65	67.87	C
			B	1	0.73		1	1	35.014			
			C	1	0.73		1	1	35.014			
L2 130.50-106.42	370.64	1835.81	A	1	0.73	42.6	1	1	57.964	1981.96	82.31	C
			B	1	0.73		1	1	57.964			
			C	1	0.73		1	1	57.964			
L3 106.42-79.58	413.12	4357.23	A	1	0.73	39.7	1	1	79.975	2551.06	95.05	C
			B	1	0.73		1	1	79.975			
			C	1	0.73		1	1	79.975			
L4 79.58-46.08	542.55	7712.43	A	1	0.73	35.4	1	1	122.129	3471.74	103.63	C
			B	1	0.73		1	1	122.129			
			C	1	0.73		1	1	122.129			
L5 46.08-0.00	627.25	14810.52	A	1	0.73	29.3	1	1	208.929	4917.34	106.71	C
			B	1	0.73		1	1	208.929			
			C	1	0.73		1	1	208.929			
Sum Weight:	2097.86	29547.97						OTM	971688.79 lb-ft	14177.75		

### Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1	144.30	831.98	A	1	0.73	44.7	1	1	35.014	1255.65	67.87	C

<b><i>tnxTower</i></b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 10 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	$C_F$	$q_z$ <i>psf</i>	$D_F$	$D_R$	$A_E$ <i>ft</i> <sup>2</sup>	$F$ <i>lb</i>	$w$ <i>plf</i>	Ctrl. Face
149.00-130.50			B	1	0.73		1	1	35.014			
			C	1	0.73		1	1	35.014			
L2	370.64	1835.81	A	1	0.73	42.6	1	1	57.964	1981.96	82.31	C
130.50-106.42			B	1	0.73		1	1	57.964			
			C	1	0.73		1	1	57.964			
L3	413.12	4357.23	A	1	0.73	39.7	1	1	79.975	2551.06	95.05	C
106.42-79.58			B	1	0.73		1	1	79.975			
			C	1	0.73		1	1	79.975			
L4	542.55	7712.43	A	1	0.73	35.4	1	1	122.129	3471.74	103.63	C
79.58-46.08			B	1	0.73		1	1	122.129			
			C	1	0.73		1	1	122.129			
L5 46.08-0.00	627.25	14810.52	A	1	0.73	29.3	1	1	208.929	4917.34	106.71	C
			B	1	0.73		1	1	208.929			
			C	1	0.73		1	1	208.929			
Sum Weight:	2097.86	29547.97						OTM	971688.79 lb-ft	14177.75		

### Tower Forces - With Ice - Wind Normal To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	$C_F$	$q_z$ <i>psf</i>	$D_F$	$D_R$	$A_E$ <i>ft</i> <sup>2</sup>	$F$ <i>lb</i>	$w$ <i>plf</i>	Ctrl. Face
L1	144.30	1551.51	A	1	1.2	6.6	1	1	39.109	341.05	18.44	C
149.00-130.50			B	1	1.2		1	1	39.109			
			C	1	1.2		1	1	39.109			
L2	370.64	2992.46	A	1	1.2	6.3	1	1	63.207	525.55	21.82	C
130.50-106.42			B	1	1.2		1	1	63.207			
			C	1	1.2		1	1	63.207			
L3	413.12	5900.74	A	1	1.2	5.9	1	1	85.678	664.58	24.76	C
106.42-79.58			B	1	1.2		1	1	85.678			
			C	1	1.2		1	1	85.678			
L4	542.55	9961.88	A	1	1.2	5.2	1	1	128.974	891.54	26.61	C
79.58-46.08			B	1	1.2		1	1	128.974			
			C	1	1.2		1	1	128.974			
L5 46.08-0.00	627.25	18255.24	A	1	1.2	4.3	1	1	217.422	1244.36	27.00	C
			B	1	1.2		1	1	217.422			
			C	1	1.2		1	1	217.422			
Sum Weight:	2097.86	38661.82						OTM	254542.72 lb-ft	3667.08		

### Tower Forces - With Ice - Wind 60 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	$C_F$	$q_z$ <i>psf</i>	$D_F$	$D_R$	$A_E$ <i>ft</i> <sup>2</sup>	$F$ <i>lb</i>	$w$ <i>plf</i>	Ctrl. Face
L1	144.30	1551.51	A	1	1.2	6.6	1	1	39.109	341.05	18.44	C
149.00-130.50			B	1	1.2		1	1	39.109			

<b><i>tnxTower</i></b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 11 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb										
L2 130.50-106.42	370.64	2992.46	C	1	1.2		1	1	39.109			
			A	1	1.2	6.3	1	1	63.207	525.55	21.82	C
			B	1	1.2		1	1	63.207			
			C	1	1.2		1	1	63.207			
L3 106.42-79.58	413.12	5900.74	A	1	1.2	5.9	1	1	85.678	664.58	24.76	C
			B	1	1.2		1	1	85.678			
			C	1	1.2		1	1	85.678			
L4 79.58-46.08	542.55	9961.88	A	1	1.2	5.2	1	1	128.974	891.54	26.61	C
			B	1	1.2		1	1	128.974			
			C	1	1.2		1	1	128.974			
L5 46.08-0.00	627.25	18255.24	A	1	1.2	4.3	1	1	217.422	1244.36	27.00	C
			B	1	1.2		1	1	217.422			
			C	1	1.2		1	1	217.422			
Sum Weight:	2097.86	38661.82						OTM	254542.72 lb-ft	3667.08		

### Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 149.00-130.50	144.30	1551.51	A	1	1.2	6.6	1	1	39.109	341.05	18.44	C
			B	1	1.2		1	1	39.109			
			C	1	1.2		1	1	39.109			
L2 130.50-106.42	370.64	2992.46	A	1	1.2	6.3	1	1	63.207	525.55	21.82	C
			B	1	1.2		1	1	63.207			
			C	1	1.2		1	1	63.207			
L3 106.42-79.58	413.12	5900.74	A	1	1.2	5.9	1	1	85.678	664.58	24.76	C
			B	1	1.2		1	1	85.678			
			C	1	1.2		1	1	85.678			
L4 79.58-46.08	542.55	9961.88	A	1	1.2	5.2	1	1	128.974	891.54	26.61	C
			B	1	1.2		1	1	128.974			
			C	1	1.2		1	1	128.974			
L5 46.08-0.00	627.25	18255.24	A	1	1.2	4.3	1	1	217.422	1244.36	27.00	C
			B	1	1.2		1	1	217.422			
			C	1	1.2		1	1	217.422			
Sum Weight:	2097.86	38661.82						OTM	254542.72 lb-ft	3667.08		

### Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 149.00-130.50	144.30	831.98	A	1	0.73	8.5	1	1	35.014	239.32	12.94	C
			B	1	0.73		1	1	35.014			
			C	1	0.73		1	1	35.014			



<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 12 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	$C_F$	$q_z$ <i>psf</i>	$D_F$	$D_R$	$A_E$ <i>ft<sup>2</sup></i>	$F$ <i>lb</i>	$w$ <i>plf</i>	Ctrl. Face
L2 130.50-106.42	370.64	1835.81	A	1	0.73	8.1	1	1	57.964	377.75	15.69	C
			B	1	0.73		1	1	57.964			
			C	1	0.73		1	1	57.964			
L3 106.42-79.58	413.12	4357.23	A	1	0.73	7.6	1	1	79.975	486.22	18.12	C
			B	1	0.73		1	1	79.975			
			C	1	0.73		1	1	79.975			
L4 79.58-46.08	542.55	7712.43	A	1	0.73	6.7	1	1	122.129	661.69	19.75	C
			B	1	0.73		1	1	122.129			
			C	1	0.73		1	1	122.129			
L5 46.08-0.00	627.25	14810.52	A	1	0.73	5.6	1	1	208.929	937.22	20.34	C
			B	1	0.73		1	1	208.929			
			C	1	0.73		1	1	208.929			
Sum Weight:	2097.86	29547.97						OTM	185198.86 lb-ft	2702.21		

### Tower Forces - Service - Wind 60 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	$C_F$	$q_z$ <i>psf</i>	$D_F$	$D_R$	$A_E$ <i>ft<sup>2</sup></i>	$F$ <i>lb</i>	$w$ <i>plf</i>	Ctrl. Face
L1 149.00-130.50	144.30	831.98	A	1	0.73	8.5	1	1	35.014	239.32	12.94	C
			B	1	0.73		1	1	35.014			
			C	1	0.73		1	1	35.014			
L2 130.50-106.42	370.64	1835.81	A	1	0.73	8.1	1	1	57.964	377.75	15.69	C
			B	1	0.73		1	1	57.964			
			C	1	0.73		1	1	57.964			
L3 106.42-79.58	413.12	4357.23	A	1	0.73	7.6	1	1	79.975	486.22	18.12	C
			B	1	0.73		1	1	79.975			
			C	1	0.73		1	1	79.975			
L4 79.58-46.08	542.55	7712.43	A	1	0.73	6.7	1	1	122.129	661.69	19.75	C
			B	1	0.73		1	1	122.129			
			C	1	0.73		1	1	122.129			
L5 46.08-0.00	627.25	14810.52	A	1	0.73	5.6	1	1	208.929	937.22	20.34	C
			B	1	0.73		1	1	208.929			
			C	1	0.73		1	1	208.929			
Sum Weight:	2097.86	29547.97						OTM	185198.86 lb-ft	2702.21		

### Tower Forces - Service - Wind 90 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	$C_F$	$q_z$ <i>psf</i>	$D_F$	$D_R$	$A_E$ <i>ft<sup>2</sup></i>	$F$ <i>lb</i>	$w$ <i>plf</i>	Ctrl. Face
L1 149.00-130.50	144.30	831.98	A	1	0.73	8.5	1	1	35.014	239.32	12.94	C
			B	1	0.73		1	1	35.014			
			C	1	0.73		1	1	35.014			
L2	370.64	1835.81	A	1	0.73	8.1	1	1	57.964	377.75	15.69	C

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 13 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
130.50-106.42			B	1	0.73		1	1	57.964			
			C	1	0.73		1	1	57.964			
L3	413.12	4357.23	A	1	0.73	7.6	1	1	79.975	486.22	18.12	C
106.42-79.58			B	1	0.73		1	1	79.975			
			C	1	0.73		1	1	79.975			
L4	542.55	7712.43	A	1	0.73	6.7	1	1	122.129	661.69	19.75	C
79.58-46.08			B	1	0.73		1	1	122.129			
			C	1	0.73		1	1	122.129			
L5 46.08-0.00	627.25	14810.52	A	1	0.73	5.6	1	1	208.929	937.22	20.34	C
			B	1	0.73		1	1	208.929			
			C	1	0.73		1	1	208.929			
Sum Weight:	2097.86	29547.97						OTM	185198.86 lb-ft	2702.21		

## Force Totals

Load Case	Vertical Forces	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M <sub>x</sub> lb-ft	Sum of Overturning Moments, M <sub>z</sub> lb-ft	Sum of Torques lb-ft
Leg Weight	29547.97					
Bracing Weight	0.00					
Total Member Self-Weight	29547.97					
Total Weight	39143.72			-2487.85	-340.67	
Wind 0 deg - No Ice		2.08	-26092.58	-2601937.77	-711.73	-497.86
Wind 30 deg - No Ice		13155.16	-22588.02	-2252354.50	-1309559.86	-1998.28
Wind 60 deg - No Ice		22798.00	-13048.88	-1302654.87	-2269850.01	-2993.81
Wind 90 deg - No Ice		26351.62	7.01	-1467.68	-2625006.37	-3179.38
Wind 120 deg - No Ice		22822.44	13086.88	1303401.24	-2273536.29	-2478.07
Wind 150 deg - No Ice		13181.88	22662.36	2258699.87	-1313557.01	-1112.76
Member Ice	9113.85					
Total Weight Ice	57246.80			-5133.03	663.76	
Wind 0 deg - Ice		0.89	-6199.97	-607239.02	527.18	29.61
Wind 30 deg - Ice		3118.94	-5368.03	-526372.62	-302019.43	-318.51
Wind 60 deg - Ice		5403.88	-3100.90	-306325.74	-523861.05	-586.72
Wind 90 deg - Ice		6244.31	0.72	-5022.66	-605685.54	-696.34
Wind 120 deg - Ice		5407.70	3106.74	296952.90	-524444.68	-613.16
Wind 150 deg - Ice		3122.78	5380.70	518045.42	-302606.47	-365.69
Total Weight	39143.72			-2487.85	-340.67	
Wind 0 deg - Service		0.40	-4977.38	-498552.88	-411.40	-90.62
Wind 30 deg - Service		2509.44	-4308.86	-431840.61	-250182.74	-380.76
Wind 60 deg - Service		4348.88	-2489.18	-250604.62	-433437.22	-574.70
Wind 90 deg - Service		5026.75	1.34	-2293.41	-501211.69	-613.17
Wind 120 deg - Service		4353.54	2496.43	246719.51	-434139.81	-480.67
Wind 150 deg - Service		2514.53	4323.03	429022.64	-250944.57	-219.38

## Load Combinations

Comb. No.	Description
--------------	-------------

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 14 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Ice+1.0 Temp
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
21	Dead+Wind 0 deg - Service
22	Dead+Wind 30 deg - Service
23	Dead+Wind 60 deg - Service
24	Dead+Wind 90 deg - Service
25	Dead+Wind 120 deg - Service
26	Dead+Wind 150 deg - Service

## Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	149 - 130.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-17994.44	824.38	1644.34
			Max. Mx	8	-8288.43	-125901.91	540.62
			Max. My	2	-8298.55	-249.12	124610.07
			Max. Vy	8	13090.96	-125901.91	540.62
			Max. Vx	2	-13000.88	-249.12	124610.07
			Max. Torque	8			803.65
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21033.83	837.89	1690.91
			Max. Mx	8	-10469.61	-395972.85	440.50
L2	130.5 - 106.42	Pole	Max. My	2	-10477.95	-294.29	392916.17
			Max. Vy	8	14653.71	-395972.85	440.50
			Max. Vx	2	-14563.46	-294.29	392916.17
			Max. Torque	8			803.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-27918.29	841.17	1722.46
			Max. Mx	8	-15745.07	-808237.55	300.54
			Max. My	2	-15751.54	-350.70	802815.36
			Max. Vy	8	17085.45	-808237.55	300.54
			Max. Vx	2	-16994.77	-350.70	802815.36
L3	106.42 - 79.58	Pole	Max. Torque	8			802.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-41481.11	615.44	5702.43
			Max. Mx	8	-26256.61	-1436044.0	2377.55
				9			
			Max. My	2	-26264.12	-691.07	1426611.43
			Max. Vy	8	21205.90	-1436044.0	2377.55
L4	79.58 - 46.08	Pole					

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 15 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L5	46.08 - 0	Pole	Max. Vx	2	-20942.34	-691.07	1426611.43
			Max. Torque	8			3222.69
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-66182.80	590.94	5622.42
			Max. Mx	8	-46962.39	-2684428.9	2027.34
						9	
			Max. My	2	-46962.54	-805.21	2661201.00
			Max. Vy	8	26368.74	-2684428.9	2027.34
						9	
			Max. Vx	2	-26108.28	-805.21	2661201.00
			Max. Torque	8			3221.47

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	14	66182.80	-0.44	-1.44
	Max. H <sub>x</sub>	1	39143.72	0.00	-0.01
	Max. H <sub>z</sub>	3	35229.31	-2.08	26091.12
	Max. M <sub>x</sub>	2	2661201.00	-2.08	26090.52
	Max. M <sub>z</sub>	8	2684428.99	-26350.82	-7.01
	Max. Torsion	8	3220.59	-26350.82	-7.01
	Min. Vert	9	35229.31	-26350.14	-7.01
	Min. H <sub>x</sub>	8	46972.44	-26350.82	-7.01
	Min. H <sub>z</sub>	13	35229.35	-13181.85	-22662.30
	Min. M <sub>x</sub>	12	-2309406.70	-13181.83	-22662.27
	Min. M <sub>z</sub>	14	-590.94	-0.44	-1.44
	Min. Torsion	15	-7.22	-0.89	6199.63

### Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
Dead Only	39143.72	-0.00	0.01	-2487.55	-340.65	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	46972.41	2.08	-26090.52	-2661201.00	-805.26	-513.19
0.9 Dead+1.0 Wind 0 deg - No Ice	35229.31	2.08	-26091.12	-2645184.19	-693.82	-508.93
1.2 Dead+1.0 Wind 30 deg - No Ice	46972.47	13155.10	-22587.93	-2303932.28	-1339279.07	-2029.16
0.9 Dead+1.0 Wind 30 deg - No Ice	35229.35	13155.12	-22587.96	-2289901.28	-1331473.09	-2019.32
1.2 Dead+1.0 Wind 60 deg - No Ice	46972.47	22797.91	-13048.83	-1332710.83	-2321307.65	-3034.79
0.9 Dead+1.0 Wind 60 deg - No Ice	35229.35	22797.94	-13048.84	-1324268.64	-2307853.74	-3021.96
1.2 Dead+1.0 Wind 90 deg - No Ice	46972.44	26350.82	7.01	-2026.97	-2684428.99	-3220.59
0.9 Dead+1.0 Wind 90 deg - No Ice	35229.31	26350.14	7.01	-1247.49	-2668794.25	-3208.20

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 16 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

<i>Load Combination</i>	<i>Vertical lb</i>	<i>Shear<sub>x</sub> lb</i>	<i>Shear<sub>z</sub> lb</i>	<i>Overturning Moment, M<sub>x</sub> lb-ft</i>	<i>Overturning Moment, M<sub>z</sub> lb-ft</i>	<i>Torque lb-ft</i>
1.2 Dead+1.0 Wind 120 deg - No Ice	46972.47	22822.35	13086.83	1332438.21	-2325088.64	-2506.15
0.9 Dead+1.0 Wind 120 deg - No Ice	35229.35	22822.38	13086.84	1325529.00	-2311608.69	-2497.54
1.2 Dead+1.0 Wind 150 deg - No Ice	46972.47	13181.83	22662.27	2309406.70	-1343378.18	-1120.40
0.9 Dead+1.0 Wind 150 deg - No Ice	35229.35	13181.85	22662.30	2296868.22	-1335544.09	-1117.88
1.2 Dead+1.0 Ice+1.0 Temp	66182.80	0.44	1.44	-5622.42	590.94	-0.31
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	66182.80	0.89	-6199.63	-632035.87	523.40	7.22
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	66182.80	3118.78	-5367.73	-547949.32	-314048.44	-353.20
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	66182.80	5403.59	-3100.73	-319149.76	-544711.55	-624.67
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	66182.80	6243.98	0.73	-5853.95	-629796.72	-727.52
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	66182.80	5407.41	3106.57	308148.57	-545324.82	-629.13
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	66182.80	3122.61	5380.41	538046.94	-314665.30	-362.26
Dead+Wind 0 deg - Service	39143.72	0.39	-4976.55	-507997.90	-423.11	-93.25
Dead+Wind 30 deg - Service	39143.72	2509.03	-4308.14	-440023.20	-254910.25	-386.75
Dead+Wind 60 deg - Service	39143.72	4348.16	-2488.77	-255362.10	-441626.41	-582.58
Dead+Wind 90 deg - Service	39143.72	5025.92	1.34	-2354.69	-510684.24	-620.87
Dead+Wind 120 deg - Service	39143.72	4352.82	2496.02	251370.95	-442345.27	-486.04
Dead+Wind 150 deg - Service	39143.72	2514.12	4322.32	437124.37	-255689.61	-220.99

## Solution Summary

<i>Load Comb.</i>	<i>Sum of Applied Forces</i>			<i>Sum of Reactions</i>			<i>% Error</i>
	<i>PX lb</i>	<i>PY lb</i>	<i>PZ lb</i>	<i>PX lb</i>	<i>PY lb</i>	<i>PZ lb</i>	
1	0.00	-39143.72	0.00	0.00	39143.72	-0.01	0.000%
2	2.08	-46972.47	-26092.58	-2.08	46972.41	26090.52	0.004%
3	2.08	-35229.35	-26092.58	-2.08	35229.31	26091.12	0.003%
4	13155.16	-46972.47	-22588.02	-13155.10	46972.47	22587.93	0.000%
5	13155.16	-35229.35	-22588.02	-13155.12	35229.35	22587.96	0.000%
6	22798.00	-46972.47	-13048.88	-22797.91	46972.47	13048.83	0.000%
7	22798.00	-35229.35	-13048.88	-22797.94	35229.35	13048.84	0.000%
8	26351.62	-46972.47	7.01	-26350.82	46972.44	-7.01	0.001%
9	26351.62	-35229.35	7.01	-26350.14	35229.31	-7.01	0.003%
10	22822.44	-46972.47	13086.88	-22822.35	46972.47	-13086.83	0.000%
11	22822.44	-35229.35	13086.88	-22822.38	35229.35	-13086.84	0.000%
12	13181.88	-46972.47	22662.36	-13181.83	46972.47	-22662.27	0.000%
13	13181.88	-35229.35	22662.36	-13181.85	35229.35	-22662.30	0.000%
14	0.00	-66182.80	0.00	-0.44	66182.80	-1.44	0.002%
15	0.89	-66182.80	-6199.97	-0.89	66182.80	6199.63	0.001%
16	3118.94	-66182.80	-5368.03	-3118.78	66182.80	5367.73	0.001%
17	5403.88	-66182.80	-3100.90	-5403.59	66182.80	3100.73	0.001%
18	6244.31	-66182.80	0.72	-6243.98	66182.80	-0.73	0.001%
19	5407.70	-66182.80	3106.74	-5407.41	66182.80	-3106.57	0.001%
20	3122.78	-66182.80	5380.70	-3122.61	66182.80	-5380.41	0.001%
21	0.40	-39143.72	-4977.38	-0.39	39143.72	4976.55	0.002%
22	2509.44	-39143.72	-4308.86	-2509.03	39143.72	4308.14	0.002%
23	4348.88	-39143.72	-2489.18	-4348.16	39143.72	2488.77	0.002%
24	5026.75	-39143.72	1.34	-5025.92	39143.72	-1.34	0.002%
25	4353.54	-39143.72	2496.43	-4352.82	39143.72	-2496.02	0.002%



<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 17 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
26	2514.53	-39143.72	4323.03	-2514.12	39143.72	-4322.32	0.002%

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 130.5	9.7335	24	0.6405	0.0000
L2	130.5 - 106.42	7.2975	24	0.5975	0.0001
L3	111 - 79.58	5.0934	24	0.4719	0.0000
L4	85 - 46.08	2.8690	24	0.3355	0.0000
L5	52.5 - 0	1.0566	24	0.1887	0.0000

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 130.5	51.1632	8	3.3684	0.0000
L2	130.5 - 106.42	38.3619	8	3.1408	0.0005
L3	111 - 79.58	26.7782	8	2.4816	0.0001
L4	85 - 46.08	15.0839	8	1.7642	0.0000
L5	52.5 - 0	5.5549	8	0.9922	0.0000

### Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Bolt Compression lb	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
in		in						
3.5000	24	2.2500	77397.62	81283.89	12.502		Bolt T	0.32
			243576.14	404336.40	45.000			✓
			0.32	0.20	0.28			

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>u</sub> / φP <sub>n</sub>
L1	149 - 130.5 (1)	TP25.04x19.75x0.1875	18.50	149.00	202.7	14.7903	-8288.43	81354.20	0.102

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 18 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
L2	130.5 - 106.42 (2)	TP31.93x25.04x0.25	24.08	149.00	165.8	24.0982	-10469.60	197935.00	0.053
L3	106.42 - 79.58 (3)	TP39.11x30.1195x0.375	31.42	149.00	135.5	44.2584	-15745.10	544970.00	0.029
L4	79.58 - 46.08 (4)	TP47.94x36.8091x0.4375	38.92	149.00	110.3	63.4135	-26256.60	1177710.00	0.022
L5	46.08 - 0 (5)	TP60.25x45.2289x0.5	52.50	149.00	84.3	94.8232	-46962.40	2823220.00	0.017

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> lb-ft	φM <sub>ux</sub> lb-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M <sub>uy</sub> lb-ft	φM <sub>uy</sub> lb-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	149 - 130.5 (1)	TP25.04x19.75x0.1875	125903.33	508939.17	0.247	0.00	508939.17	0.000
L2	130.5 - 106.42 (2)	TP31.93x25.04x0.25	395973.33	1043633.33	0.379	0.00	1043633.33	0.000
L3	106.42 - 79.58 (3)	TP39.11x30.1195x0.375	808237.50	2482925.00	0.326	0.00	2482925.00	0.000
L4	79.58 - 46.08 (4)	TP47.94x36.8091x0.4375	1436050.00	4313416.67	0.333	0.00	4313416.67	0.000
L5	46.08 - 0 (5)	TP60.25x45.2289x0.5	2684433.33	8121224.67	0.331	0.00	8121224.67	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V <sub>u</sub> lb	φV <sub>n</sub> lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T <sub>u</sub> lb-ft	φT <sub>n</sub> lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	149 - 130.5 (1)	TP25.04x19.75x0.1875	13091.00	259571.00	0.050	803.54	564944.17	0.001
L2	130.5 - 106.42 (2)	TP31.93x25.04x0.25	14653.70	422924.00	0.035	802.77	1124808.33	0.001
L3	106.42 - 79.58 (3)	TP39.11x30.1195x0.375	17085.40	776735.00	0.022	801.64	2529358.33	0.000
L4	79.58 - 46.08 (4)	TP47.94x36.8091x0.4375	21205.90	1112910.00	0.019	3221.71	4450783.33	0.001
L5	46.08 - 0 (5)	TP60.25x45.2289x0.5	26368.70	1664150.00	0.016	3220.58	8707833.33	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149 - 130.5 (1)	0.102	0.247	0.000	0.050	0.001	0.352	1.000	4.8.2 ✓
L2	130.5 - 106.42 (2)	0.053	0.379	0.000	0.035	0.001	0.434	1.000	4.8.2 ✓

<b>tnxTower</b>  <b>HUDSON Design Group LLC</b> 45 Beachwood Drive North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	<b>Job</b>	<b>Page</b> 19 of 19
	<b>Project</b> CT1338	<b>Date</b> 14:32:40 03/17/22
	<b>Client</b> SAI / AT&T	<b>Designed by</b> AM

Section No.	Elevation ft	Ratio $P_u$	Ratio $M_{ux}$	Ratio $M_{uy}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L3	106.42 - 79.58 (3)	0.029	0.326	0.000	0.022	0.000	0.355 ✓	1.000	4.8.2 ✓
L4	79.58 - 46.08 (4)	0.022	0.333	0.000	0.019	0.001	0.356 ✓	1.000	4.8.2 ✓
L5	46.08 - 0 (5)	0.017	0.331	0.000	0.016	0.000	0.347 ✓	1.000	4.8.2 ✓

## Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
L1	149 - 130.5	Pole	TP25.04x19.75x0.1875	1	-8288.43	81354.20	35.2	Pass
L2	130.5 - 106.42	Pole	TP31.93x25.04x0.25	2	-10469.60	197935.00	43.4	Pass
L3	106.42 - 79.58	Pole	TP39.11x30.1195x0.375	3	-15745.10	544970.00	35.5	Pass
L4	79.58 - 46.08	Pole	TP47.94x36.8091x0.4375	4	-26256.60	1177710.00	35.6	Pass
L5	46.08 - 0	Pole	TP60.25x45.2289x0.5	5	-46962.40	2823220.00	34.7	Pass
							Summary	
							Pole (L2)	43.4 Pass
							Base Plate	31.8 Pass
							<b>RATING =</b>	<b>43.4 Pass</b>

# Monopole Pier and Pad Foundation

BU # :

Site Name: CT1338

App. Number:

TIA-222 Revision: H

Design Reactions		
Shear, <b>S</b> :	26.351	kips
Moment, <b>M</b> :	2684.43	ft-kips
Tower Height, <b>H</b> :	149	ft
Tower Weight, <b>Wt</b> :	46.972	kips
Base Diameter, <b>BD</b> :	5.02	ft

Foundation Dimensions		
Depth, <b>D</b> :	10	ft
Pad Width, <b>W</b> :	25	ft
Neglected Depth, <b>N</b> :	0	ft
Thickness, <b>T</b> :	3.00	ft
Pier Diameter, <b>Pd</b> :	8.00	ft
Ext. Above Grade, <b>E</b> :	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, <b>Cc</b> :	3.0	in

Soil Properties		
Soil Unit Weight, <b>γ</b> :	0.125	kcf
Ult. Bearing Capacity, <b>Bc</b> :	10.0	ksf
Angle of Friction, <b>Φ</b> :	34	deg
Cohesion, <b>Co</b> :	0.000	ksf
Passive Pressure, <b>Pp</b> :	0.003	ksf
Base Friction, <b>μ</b> :	0.50	

Material Properties		
Rebar Yield Strength, <b>Fy</b> :	60000	psi
Concrete Strength, <b>F'c</b> :	4000	psi
Concrete Unit Weight, <b>δc</b> :	0.150	kcf
Seismic Zone, <b>z</b> :	1	

Rebar Properties		
Pier Rebar Size, <b>Sp</b> :	11	
Pier Rebar Quantity, <b>mp</b> :	54	24
Pad Rebar Size, <b>Spad</b> :	9	
Pad Rebar Quantity, <b>mpad</b> :	132	10
Pier Tie Size, <b>St</b> :	5	4
Tie Quantity, <b>mt</b> :	12	7

Design Checks			
	Capacity/ Availability	Demand/ Limits	Check
<i>Req'd Pier Diam. (ft)</i>	8	7.02	OK
<i>Overturning (ft-kips)</i>	9843.53	2684.43	27.3%
<i>Shear Capacity (kips)</i>	420.26	26.35	6.3%
<i>Bearing (ksf)</i>	7.50	2.44	32.5%
<i>Pad Shear - 1-way (kips)</i>	923.14	386.34	41.9%
<i>Pad Shear - 2-way (kips)</i>	2483.22	126.14	5.1%
<i>Pad Moment Capacity (k-ft)</i>	16960.87	862.02	5.1%
<i>Pier Moment Capacity (k-ft)</i>	14446.76	2882.06	19.9%

## **ATTACHMENT 4**



December 3, 2021



SAI Communications  
12 Industrial Way  
Salem NH, 03079

RE:      Site Number:            CT1338 (NSB)  
         FA Number:            10128142  
         PACE Number:        MRCTB057522  
         PT Number:            2051A12J24  
         Site Name:            REDDING BLACK ROCK ROAD  
         Site Address:        186 Black Rock Road  
                                    Redding, CT 06896

To Whom It May Concern:

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

- **(3) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 68 lbs. /each)**
- **(3) DMP65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(2) Squid Surge Arrestors (24.0"x9.7" Ø – Wt. = 33 lbs.)**

\*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1, P/N VFA12-WLL-30120 dated May 3, 2018, P/N MM01 dated May 10, 2010, and P/N LWRM dated August 24, 2012, were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, 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 – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30-degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 130 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.45 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.
- HDG considers this site to have a spectral response acceleration parameter at short periods,  $S_s$ , of 0.220 and a spectral response acceleration parameter at a period of 1 second,  $S_1$ , of 0.067.
- The mount has been analyzed with load combinations consisting of 500 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 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst-case location on the mount.
- The proposed mounts are secured to the existing monopole with HSS members secured to ring mounts. The ring mounts are secured around the monopole using threaded rods. HDG considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the (3) Proposed SitePro1 VFA12-WLL-30120 mounts, (6) Proposed SitePro1 MM01 standoffs, and (2) Proposed SitePro1 LWRM collar mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	9	LC23	78%	PASS

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N VFA12-M3-WLL, dated May 3, 2018.
- Fabrication drawings prepared by SitePro1 P/N MM01, dated May 10, 2010.
- Fabrication drawings prepared by SitePro1 P/N LWRM, dated August 24, 2012.

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 proposed mount will be 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  
Vice President



Daniel P. Hamm, PE  
Principal



**HUDSON**  
Design Group LLC

## Wind & Ice Calculations

Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



### 2.6.5.2 Velocity Pressure Coeff:

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

$K_z = 1.099$

$z = 145$  (ft)  
 $z_g = 1200$  (ft)  
 $\alpha = 7.0$

$$K_{zmin} \leq K_z \leq 2.01$$

Table 2-4

Exposure	$z_g$	$\alpha$	$K_{zmin}$	$K_c$
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

### 2.6.6.2 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

$$K_{zt} = [1 + (K_c K_t / K_h)]^2$$

$K_{zt} = 1$

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

Category = 1

$$K_h = e^{(fz/H)}$$

$K_h = 1$

$K_c = 0.9$  (from Table 2-4)

$K_t = 0$  (from Table 2-5)

$f = 0$  (from Table 2-5)

$z = 145$

$z_g = 635$  (Mean elevation of base of structure above sea level)

$H = 0$  (Ht. of the crest above surrounding terrain)

$K_{zt} = 1.00$  (from 2.6.6.2.1)

$K_e = 0.98$  (from 2.6.8)

### 2.6.10 Design Ice Thickness

Max Ice Thickness =

Importance Factor =

$t_i = 1.00$  in

$I = 1.25$  (from Table 2-3)

$K_{iz} = 1.16$  (from Sec. 2.6.10)

$$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$$

$t_{iz} = 1.45$  in

Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



## 2.6.9 Gust Effect Factor

### 2.6.9.1 Self Supporting Lattice Structures

$G_h = 1.0$  Latticed Structures > 600 ft

$G_h = 0.85$  Latticed Structures 450 ft or less

$G_h = 0.85 + 0.15 [h/150 - 3.0]$

$h =$  ht. of structure

$h =$  160

$G_h =$  0.85

### 2.6.9.2 Guyed Masts

$G_h =$  0.85

### 2.6.9.3 Pole Structures

$G_h =$  1.1

### 2.6.9 Appurtenances

$G_h =$  1.0

### 2.6.9.4 Structures Supported on Other Structures

(Cantilevered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5))

$G_h =$  1.35

$G_h =$  1.00

## 2.6.11.2 Design Wind Force on Appurtenances

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

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

$q_z =$  44.14

$q_{z(ice)} =$  6.53

$q_{z(30)} =$  2.35

$K_z =$  1.099 (from 2.6.5.2)

$K_{zt} =$  1.0 (from 2.6.6.2.1)

$K_s =$  1.0 (from 2.6.7)

$K_e =$  0.98 (from 2.6.8)

$K_d =$  0.95 (from Table 2-2)

$V_{max} =$  130 mph (Ultimate Wind Speed)

$V_{max(ice)} =$  50 mph

$V_{30} =$  30 mph

Table 2-2

Structure Type	Wind Direction Probability Factor, $K_d$
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00



Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



**Determine Ca:**

**Table 2-9**

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio $\leq 2.5$	Aspect Ratio = 7	Aspect Ratio $\geq 25$
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		$1.2 - 2.8(r_s) \geq 0.85$	$1.4 - 4.0(r_s) \geq 0.90$	$2.0 - 6.0(r_s) \geq 1.25$
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	$39 \leq C \leq 78$ (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (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 = 1.45 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)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.44	1.24	561	98	30
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.44	1.24	561	98	30
B14 4478 RRH	18.1	8.3	13.4	1.04	2.18	1.20	55	13	3
4415 B30 RRH	16.5	5.9	13.4	0.68	2.80	1.21	36	9	2
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.90	1.20	62	14	3
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.20	60	13	3
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	50	11	3
2" Pipe	2.4	12.0		0.20	0.20	0.70	6		
2-1/2" Pipe	2.9	12.0		0.24	0.24	0.70	7		
3" Pipe	3.5	12.0		0.29	0.29	0.70	9		
5/8" Round Bar	0.6	12.0		0.05	0.05	0.70	2		
3/4" Round Bar	0.8	12.0		0.06	0.06	0.70	2		
PL 3-1/2x5/8 Plate	0.6	12.0		0.05	0.05	1.20	3		
PL 11-1/4x5/8 Plate	0.6	12.0		0.05	0.05	1.20	3		
HSS 4x4	4.0	12.0		0.33	0.33	1.20	18		

Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



WIND LOADS

Angle = 30 (deg)

Ice Thickness = 1.45 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)	Force (lbs)	Force (lbs)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	483
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	483
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	55	89	64
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	47
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	62	87	68
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	60	72	63

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	86
DMP65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	86
B14 4478 RRH	21.0	11.2	16.3	1.63	2.38	1.88	1.29	1.20	1.20	13	19	14
4415 B30 RRH	19.4	8.8	16.3	1.19	2.20	2.20	1.19	1.20	1.20	9	17	11
B5/B12 4449 RRH	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	14	18	15
B2/B66A 8843 RRH	17.8	13.8	16.1	1.71	1.99	1.29	1.11	1.20	1.20	13	16	14

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	26
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	26
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	3
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3

Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.45 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)	Force (lbs)	Force (lbs)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	326
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	326
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	55	89	81
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	70
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	62	87	81
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	60	72	69

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	62
DMP65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	62
B14 4478 RRH	21.0	11.2	16.3	1.63	2.38	1.88	1.29	1.20	1.20	13	19	17
4415 B30 RRH	19.4	8.8	16.3	1.19	2.20	2.20	1.19	1.20	1.20	9	17	15
B5/B12 4449 RRH	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	14	18	17
B2/B66A 8843 RRH	17.8	13.8	16.1	1.71	1.99	1.29	1.11	1.20	1.20	13	16	15

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	17
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	17
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.45 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)	Force (lbs)	Force (lbs)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	248
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	248
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	55	89	89
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	81
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	62	87	87
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	60	72	72

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	50
DMP65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	50
B14 4478 RRH	21.0	11.2	16.3	1.63	2.38	1.88	1.29	1.20	1.20	13	19	19
4415 B30 RRH	19.4	8.8	16.3	1.19	2.20	2.20	1.19	1.20	1.20	9	17	17
B5/B12 4449 RRH	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	14	18	18
B2/B66A 8843 RRH	17.8	13.8	16.1	1.71	1.99	1.29	1.11	1.20	1.20	13	16	16

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	13
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	13
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	5
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



WIND LOADS

Angle = 120 (deg)

Ice Thickness = 1.45 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)	Force (lbs)	Force (lbs)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	326
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	326
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	55	89	81
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	70
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	62	87	81
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	60	72	69

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	62
DMP65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	62
B14 4478 RRH	21.0	11.2	16.3	1.63	2.38	1.88	1.29	1.20	1.20	13	19	17
4415 B30 RRH	19.4	8.8	16.3	1.19	2.20	2.20	1.19	1.20	1.20	9	17	15
B5/B12 4449 RRH	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	14	18	17
B2/B66A 8843 RRH	17.8	13.8	16.1	1.71	1.99	1.29	1.11	1.20	1.20	13	16	15

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	17
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	17
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 12/2/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



WIND LOADS

Angle = 150 (deg)

Ice Thickness = 1.45 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)	Force (lbs)	Force (lbs)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	483
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	561	248	483
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	55	89	64
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	47
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	62	87	68
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	60	72	63

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	86
DMP65R-BU6DA-K Antenna	74.1	23.6	10.6	12.14	5.45	3.14	6.99	1.23	1.40	97	50	86
B14 4478 RRH	21.0	11.2	16.3	1.63	2.38	1.88	1.29	1.20	1.20	13	19	14
4415 B30 RRH	19.4	8.8	16.3	1.19	2.20	2.20	1.19	1.20	1.20	9	17	11
B5/B12 4449 RRH	20.8	12.3	16.1	1.78	2.33	1.69	1.29	1.20	1.20	14	18	15
B2/B66A 8843 RRH	17.8	13.8	16.1	1.71	1.99	1.29	1.11	1.20	1.20	13	16	14

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	26
DMP65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	30	13	26
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	3
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3



Date: 12/2/2021

Project Name: REDDING BLACK ROCK ROAD

Project No.: CT1338

Designed By: ID Checked By: MSC



**HUDSON**  
Design Group LLC

### ICE WEIGHT CALCULATIONS

Thickness of ice: 1.45 in.  
Density of ice: 56 pcf

#### TPA65R-BU6DA-K Antenna

Weight of ice based on total radial SF area:

Height (in): 71.2  
Width (in): 20.7  
Depth (in): 7.7

Total weight of ice on object: 247 lbs

Weight of object: 68.0 lbs

Combined weight of ice and object: 315 lbs

#### DMP65R-BU6DA-K Antenna

Weight of ice based on total radial SF area:

Height (in): 71.2  
Width (in): 20.7  
Depth (in): 7.7

Total weight of ice on object: 247 lbs

Weight of object: 80.0 lbs

Combined weight of ice and object: 327 lbs

#### B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in): 18.1  
Width (in): 13.4  
Depth (in): 8.3

Total weight of ice on object: 46 lbs

Weight of object: 60.0 lbs

Combined weight of ice and object: 106 lbs

#### 4415 B30 RRH

Weight of ice based on total radial SF area:

Height (in): 16.5  
Width (in): 13.4  
Depth (in): 5.9

Total weight of ice on object: 39 lbs

Weight of object: 46.0 lbs

Combined weight of ice and object: 85 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: 47 lbs

Weight of object: 73.0 lbs

Combined weight of ice and object: 120 lbs

#### B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in): 14.9  
Width (in): 13.2  
Depth (in): 10.9

Total weight of ice on object: 41 lbs

Weight of object: 72.0 lbs

Combined weight of ice and object: 113 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: 40 lbs

Weight of object: 33 lbs

Combined weight of ice and object: 73 lbs

#### 2" Pipe

Per foot weight of ice:

diameter (in): 2.38

Per foot weight of ice on object: 7 plf

#### 3" Pipe

Per foot weight of ice:

diameter (in): 3.5

Per foot weight of ice on object: 9 plf

#### 2-1/2" Pipe

Per foot weight of ice:

diameter (in): 2.88

Per foot weight of ice on object: 8 plf

#### 3/4" Round Bar

Per foot weight of ice:

diameter (in): 0.75

Per foot weight of ice on object: 4 plf

#### 5/8" Round Bar

Per foot weight of ice:

diameter (in): 0.625

Per foot weight of ice on object: 4 plf

#### PL 11-1/4x5/8 Plate

Weight of ice based on total radial SF area:

Height (in): 11.25  
Width (in): 0.625

Per foot weight of ice on object: 23 plf

#### PL 3-1/2x5/8 Plate

Weight of ice based on total radial SF area:

Height (in): 3.5  
Width (in): 0.625

Per foot weight of ice on object: 9 plf

#### HSS 4x4

Weight of ice based on total radial SF area:

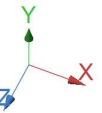
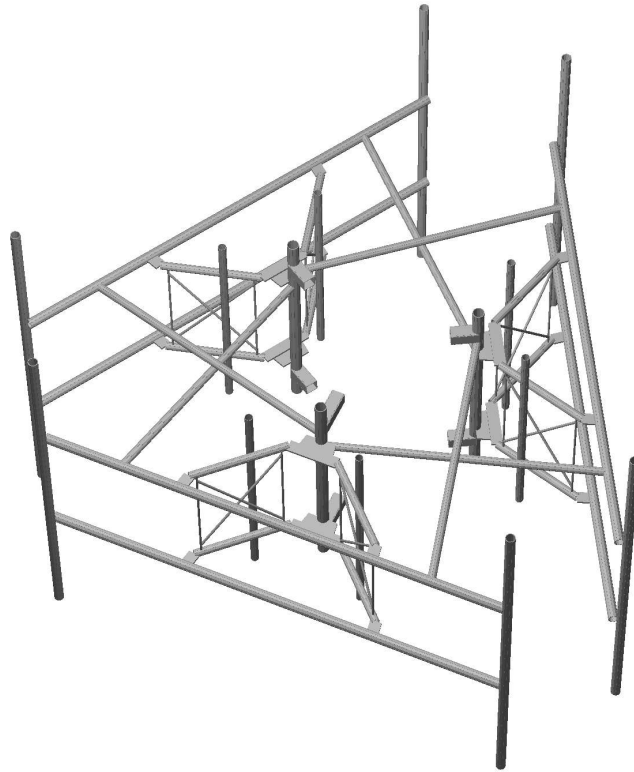
Height (in): 4  
Width (in): 4

Per foot weight of ice on object: 13 plf







**HUDSON**  
Design Group LLC

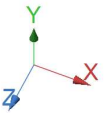
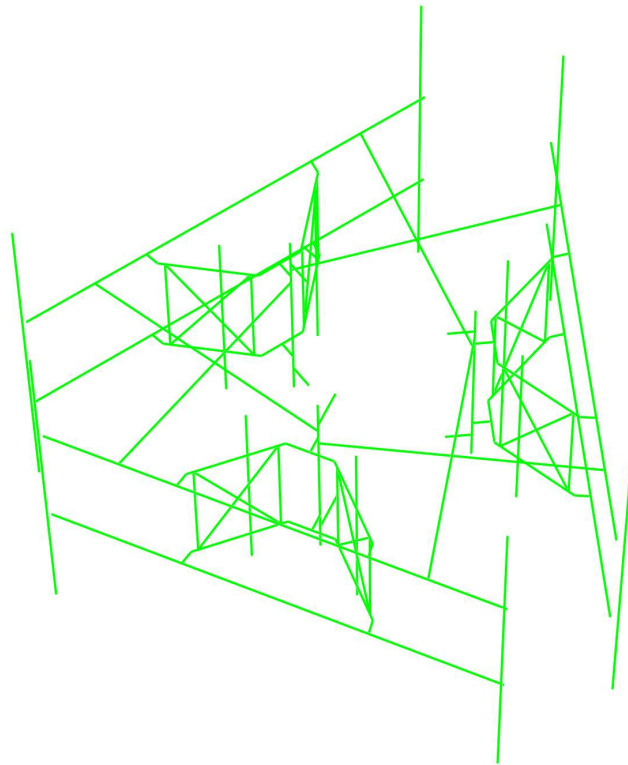
## **Mount Calculations (Proposed Conditions)**

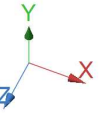
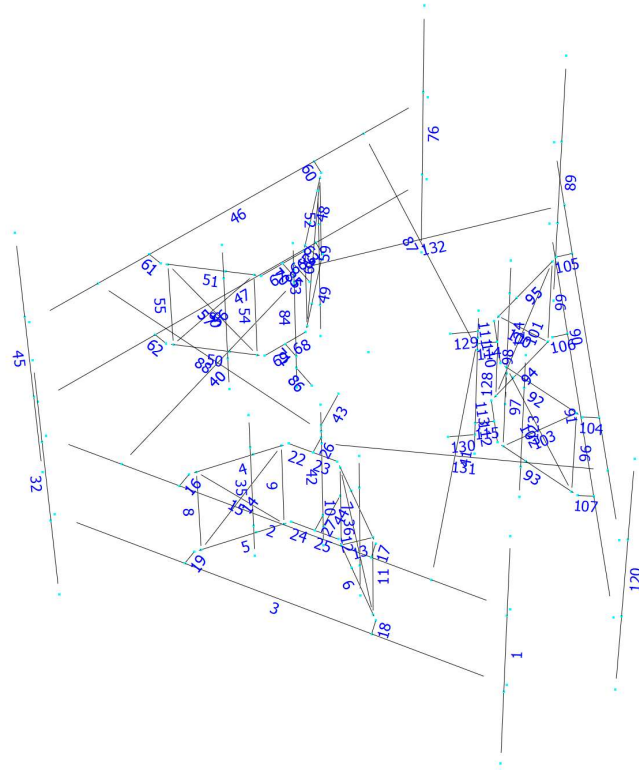


**File name:** W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1338\CT1338.ret

**Design status**

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







## Load data

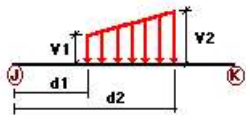
### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

### Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	2	z	-0.007	0.00	0.00	No	0.00	No
	3	z	-0.007	0.00	0.00	No	0.00	No
	4	z	-0.006	0.00	0.00	No	0.00	No
	5	z	-0.006	0.00	0.00	No	0.00	No
	6	z	-0.006	0.00	0.00	No	0.00	No
	7	z	-0.006	0.00	0.00	No	0.00	No
	8	z	-0.002	0.00	0.00	No	0.00	No
	9	z	-0.002	0.00	0.00	No	0.00	No
	10	z	-0.002	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	-0.003	0.00	0.00	No	0.00	No
	17	z	-0.003	0.00	0.00	No	0.00	No
	18	z	-0.003	0.00	0.00	No	0.00	No
	19	z	-0.003	0.00	0.00	No	0.00	No
	22	z	-0.003	0.00	0.00	No	0.00	No
	23	z	-0.003	0.00	0.00	No	0.00	No
	24	z	-0.003	0.00	0.00	No	0.00	No
	25	z	-0.003	0.00	0.00	No	0.00	No

26	z	-0.003	0.00	0.00	No	0.00	No
27	z	-0.003	0.00	0.00	No	0.00	No
35	z	-0.006	0.00	0.00	No	0.00	No
36	z	-0.006	0.00	0.00	No	0.00	No
40	z	-0.006	0.00	0.00	No	0.00	No
41	z	-0.006	0.00	0.00	No	0.00	No
42	z	-0.009	0.00	0.00	No	0.00	No
43	z	-0.018	0.00	0.00	No	0.00	No
44	z	-0.018	0.00	0.00	No	0.00	No
45	z	-0.007	0.00	0.00	No	0.00	No
46	z	-0.007	0.00	0.00	No	0.00	No
47	z	-0.007	0.00	0.00	No	0.00	No
48	z	-0.006	0.00	0.00	No	0.00	No
49	z	-0.006	0.00	0.00	No	0.00	No
50	z	-0.006	0.00	0.00	No	0.00	No
51	z	-0.006	0.00	0.00	No	0.00	No
52	z	-0.002	0.00	0.00	No	0.00	No
53	z	-0.002	0.00	0.00	No	0.00	No
54	z	-0.002	0.00	0.00	No	0.00	No
55	z	-0.002	0.00	0.00	No	0.00	No
56	z	-0.002	0.00	0.00	No	0.00	No
57	z	-0.002	0.00	0.00	No	0.00	No
58	z	-0.002	0.00	0.00	No	0.00	No
59	z	-0.002	0.00	0.00	No	0.00	No
60	z	-0.003	0.00	0.00	No	0.00	No
61	z	-0.003	0.00	0.00	No	0.00	No
62	z	-0.003	0.00	0.00	No	0.00	No
63	z	-0.003	0.00	0.00	No	0.00	No
66	z	-0.003	0.00	0.00	No	0.00	No
67	z	-0.003	0.00	0.00	No	0.00	No
68	z	-0.003	0.00	0.00	No	0.00	No
69	z	-0.003	0.00	0.00	No	0.00	No
70	z	-0.003	0.00	0.00	No	0.00	No
71	z	-0.003	0.00	0.00	No	0.00	No
76	z	-0.007	0.00	0.00	No	0.00	No
79	z	-0.006	0.00	0.00	No	0.00	No
80	z	-0.006	0.00	0.00	No	0.00	No
84	z	-0.009	0.00	0.00	No	0.00	No
85	z	-0.018	0.00	0.00	No	0.00	No
86	z	-0.018	0.00	0.00	No	0.00	No
87	z	-0.006	0.00	0.00	No	0.00	No
88	z	-0.006	0.00	0.00	No	0.00	No
89	z	-0.007	0.00	0.00	No	0.00	No
90	z	-0.007	0.00	0.00	No	0.00	No
91	z	-0.007	0.00	0.00	No	0.00	No
92	z	-0.006	0.00	0.00	No	0.00	No
93	z	-0.006	0.00	0.00	No	0.00	No
94	z	-0.006	0.00	0.00	No	0.00	No
95	z	-0.006	0.00	0.00	No	0.00	No
96	z	-0.002	0.00	0.00	No	0.00	No
97	z	-0.002	0.00	0.00	No	0.00	No
98	z	-0.002	0.00	0.00	No	0.00	No
99	z	-0.002	0.00	0.00	No	0.00	No
100	z	-0.002	0.00	0.00	No	0.00	No
101	z	-0.002	0.00	0.00	No	0.00	No
102	z	-0.002	0.00	0.00	No	0.00	No
103	z	-0.002	0.00	0.00	No	0.00	No
104	z	-0.003	0.00	0.00	No	0.00	No
105	z	-0.003	0.00	0.00	No	0.00	No
106	z	-0.003	0.00	0.00	No	0.00	No
107	z	-0.003	0.00	0.00	No	0.00	No
110	z	-0.003	0.00	0.00	No	0.00	No
111	z	-0.003	0.00	0.00	No	0.00	No
112	z	-0.003	0.00	0.00	No	0.00	No
113	z	-0.003	0.00	0.00	No	0.00	No
114	z	-0.003	0.00	0.00	No	0.00	No

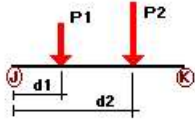
W30	115	z	-0.003	0.00	0.00	No	0.00	No
	120	z	-0.007	0.00	0.00	No	0.00	No
	123	z	-0.006	0.00	0.00	No	0.00	No
	124	z	-0.006	0.00	0.00	No	0.00	No
	128	z	-0.009	0.00	0.00	No	0.00	No
	129	z	-0.018	0.00	0.00	No	0.00	No
	130	z	-0.018	0.00	0.00	No	0.00	No
	131	z	-0.006	0.00	0.00	No	0.00	No
	132	z	-0.006	0.00	0.00	No	0.00	No
	1	x	-0.007	0.00	0.00	No	0.00	No
	2	x	-0.007	0.00	0.00	No	0.00	No
	3	x	-0.007	0.00	0.00	No	0.00	No
	4	x	-0.006	0.00	0.00	No	0.00	No
	5	x	-0.006	0.00	0.00	No	0.00	No
	6	x	-0.006	0.00	0.00	No	0.00	No
	7	x	-0.006	0.00	0.00	No	0.00	No
	8	x	-0.002	0.00	0.00	No	0.00	No
	9	x	-0.002	0.00	0.00	No	0.00	No
	10	x	-0.002	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	-0.003	0.00	0.00	No	0.00	No
	17	x	-0.003	0.00	0.00	No	0.00	No
	18	x	-0.003	0.00	0.00	No	0.00	No
	19	x	-0.003	0.00	0.00	No	0.00	No
	22	x	-0.003	0.00	0.00	No	0.00	No
	23	x	-0.003	0.00	0.00	No	0.00	No
	24	x	-0.003	0.00	0.00	No	0.00	No
	25	x	-0.003	0.00	0.00	No	0.00	No
	26	x	-0.003	0.00	0.00	No	0.00	No
	27	x	-0.003	0.00	0.00	No	0.00	No
	32	x	-0.007	0.00	0.00	No	0.00	No
	35	x	-0.006	0.00	0.00	No	0.00	No
	36	x	-0.006	0.00	0.00	No	0.00	No
	40	x	-0.006	0.00	0.00	No	0.00	No
	41	x	-0.006	0.00	0.00	No	0.00	No
	42	x	-0.009	0.00	0.00	No	0.00	No
	43	x	-0.018	0.00	0.00	No	0.00	No
	44	x	-0.018	0.00	0.00	No	0.00	No
	45	x	-0.007	0.00	0.00	No	0.00	No
	46	x	-0.007	0.00	0.00	No	0.00	No
	47	x	-0.007	0.00	0.00	No	0.00	No
	48	x	-0.006	0.00	0.00	No	0.00	No
	49	x	-0.006	0.00	0.00	No	0.00	No
	50	x	-0.006	0.00	0.00	No	0.00	No
	51	x	-0.006	0.00	0.00	No	0.00	No
	52	x	-0.002	0.00	0.00	No	0.00	No
	53	x	-0.002	0.00	0.00	No	0.00	No
	54	x	-0.002	0.00	0.00	No	0.00	No
	55	x	-0.002	0.00	0.00	No	0.00	No
	56	x	-0.002	0.00	0.00	No	0.00	No
	57	x	-0.002	0.00	0.00	No	0.00	No
	58	x	-0.002	0.00	0.00	No	0.00	No
	59	x	-0.002	0.00	0.00	No	0.00	No
	60	x	-0.003	0.00	0.00	No	0.00	No
	61	x	-0.003	0.00	0.00	No	0.00	No
	62	x	-0.003	0.00	0.00	No	0.00	No
	63	x	-0.003	0.00	0.00	No	0.00	No
	66	x	-0.003	0.00	0.00	No	0.00	No
	67	x	-0.003	0.00	0.00	No	0.00	No
	68	x	-0.003	0.00	0.00	No	0.00	No
	69	x	-0.003	0.00	0.00	No	0.00	No
	70	x	-0.003	0.00	0.00	No	0.00	No

	71	x	-0.003	0.00	0.00	No	0.00	No
	76	x	-0.007	0.00	0.00	No	0.00	No
	79	x	-0.006	0.00	0.00	No	0.00	No
	80	x	-0.006	0.00	0.00	No	0.00	No
	84	x	-0.009	0.00	0.00	No	0.00	No
	85	x	-0.018	0.00	0.00	No	0.00	No
	86	x	-0.018	0.00	0.00	No	0.00	No
	87	x	-0.006	0.00	0.00	No	0.00	No
	88	x	-0.006	0.00	0.00	No	0.00	No
	89	x	-0.007	0.00	0.00	No	0.00	No
	90	x	-0.007	0.00	0.00	No	0.00	No
	91	x	-0.007	0.00	0.00	No	0.00	No
	92	x	-0.006	0.00	0.00	No	0.00	No
	93	x	-0.006	0.00	0.00	No	0.00	No
	94	x	-0.006	0.00	0.00	No	0.00	No
	95	x	-0.006	0.00	0.00	No	0.00	No
	96	x	-0.002	0.00	0.00	No	0.00	No
	97	x	-0.002	0.00	0.00	No	0.00	No
	98	x	-0.002	0.00	0.00	No	0.00	No
	99	x	-0.002	0.00	0.00	No	0.00	No
	100	x	-0.002	0.00	0.00	No	0.00	No
	101	x	-0.002	0.00	0.00	No	0.00	No
	102	x	-0.002	0.00	0.00	No	0.00	No
	103	x	-0.002	0.00	0.00	No	0.00	No
	104	x	-0.003	0.00	0.00	No	0.00	No
	105	x	-0.003	0.00	0.00	No	0.00	No
	106	x	-0.003	0.00	0.00	No	0.00	No
	107	x	-0.003	0.00	0.00	No	0.00	No
	110	x	-0.003	0.00	0.00	No	0.00	No
	111	x	-0.003	0.00	0.00	No	0.00	No
	112	x	-0.003	0.00	0.00	No	0.00	No
	113	x	-0.003	0.00	0.00	No	0.00	No
	114	x	-0.003	0.00	0.00	No	0.00	No
	115	x	-0.003	0.00	0.00	No	0.00	No
	120	x	-0.007	0.00	0.00	No	0.00	No
	123	x	-0.006	0.00	0.00	No	0.00	No
	124	x	-0.006	0.00	0.00	No	0.00	No
	128	x	-0.009	0.00	0.00	No	0.00	No
	129	x	-0.018	0.00	0.00	No	0.00	No
	130	x	-0.018	0.00	0.00	No	0.00	No
	131	x	-0.006	0.00	0.00	No	0.00	No
	132	x	-0.006	0.00	0.00	No	0.00	No
Di	1	y	-0.008	0.00	0.00	No	0.00	No
	2	y	-0.008	0.00	0.00	No	0.00	No
	3	y	-0.008	0.00	0.00	No	0.00	No
	4	y	-0.007	0.00	0.00	No	0.00	No
	5	y	-0.007	0.00	0.00	No	0.00	No
	6	y	-0.007	0.00	0.00	No	0.00	No
	7	y	-0.007	0.00	0.00	No	0.00	No
	8	y	-0.004	0.00	0.00	No	0.00	No
	9	y	-0.004	0.00	0.00	No	0.00	No
	10	y	-0.004	0.00	0.00	No	0.00	No
	11	y	-0.004	0.00	0.00	No	0.00	No
	12	y	-0.004	0.00	0.00	No	0.00	No
	13	y	-0.004	0.00	0.00	No	0.00	No
	14	y	-0.004	0.00	0.00	No	0.00	No
	15	y	-0.004	0.00	0.00	No	0.00	No
	16	y	-0.009	0.00	0.00	No	0.00	No
	17	y	-0.009	0.00	0.00	No	0.00	No
	18	y	-0.009	0.00	0.00	No	0.00	No
	19	y	-0.009	0.00	0.00	No	0.00	No
	22	y	-0.009	0.00	0.00	No	0.00	No
	23	y	-0.009	0.00	0.00	No	0.00	No
	24	y	-0.009	0.00	0.00	No	0.00	No
	25	y	-0.009	0.00	0.00	No	0.00	No
	26	y	-0.023	0.00	0.00	No	0.00	No

27	y	-0.023	0.00	0.00	No	0.00	No
32	y	-0.008	0.00	0.00	No	0.00	No
35	y	-0.007	0.00	0.00	No	0.00	No
36	y	-0.007	0.00	0.00	No	0.00	No
40	y	-0.007	0.00	0.00	No	0.00	No
41	y	-0.007	0.00	0.00	No	0.00	No
42	y	-0.009	0.00	0.00	No	0.00	No
43	y	-0.013	0.00	0.00	No	0.00	No
44	y	-0.013	0.00	0.00	No	0.00	No
45	y	-0.008	0.00	0.00	No	0.00	No
46	y	-0.008	0.00	0.00	No	0.00	No
47	y	-0.008	0.00	0.00	No	0.00	No
48	y	-0.007	0.00	0.00	No	0.00	No
49	y	-0.007	0.00	0.00	No	0.00	No
50	y	-0.007	0.00	0.00	No	0.00	No
51	y	-0.007	0.00	0.00	No	0.00	No
52	y	-0.004	0.00	0.00	No	0.00	No
53	y	-0.004	0.00	0.00	No	0.00	No
54	y	-0.004	0.00	0.00	No	0.00	No
55	y	-0.004	0.00	0.00	No	0.00	No
56	y	-0.004	0.00	0.00	No	0.00	No
57	y	-0.004	0.00	0.00	No	0.00	No
58	y	-0.004	0.00	0.00	No	0.00	No
59	y	-0.004	0.00	0.00	No	0.00	No
60	y	-0.009	0.00	0.00	No	0.00	No
61	y	-0.009	0.00	0.00	No	0.00	No
62	y	-0.009	0.00	0.00	No	0.00	No
63	y	-0.009	0.00	0.00	No	0.00	No
66	y	-0.009	0.00	0.00	No	0.00	No
67	y	-0.009	0.00	0.00	No	0.00	No
68	y	-0.009	0.00	0.00	No	0.00	No
69	y	-0.009	0.00	0.00	No	0.00	No
70	y	-0.023	0.00	0.00	No	0.00	No
71	y	-0.023	0.00	0.00	No	0.00	No
76	y	-0.008	0.00	0.00	No	0.00	No
79	y	-0.007	0.00	0.00	No	0.00	No
80	y	-0.007	0.00	0.00	No	0.00	No
84	y	-0.009	0.00	0.00	No	0.00	No
85	y	-0.013	0.00	0.00	No	0.00	No
86	y	-0.013	0.00	0.00	No	0.00	No
87	y	-0.007	0.00	0.00	No	0.00	No
88	y	-0.007	0.00	0.00	No	0.00	No
89	y	-0.008	0.00	0.00	No	0.00	No
90	y	-0.008	0.00	0.00	No	0.00	No
91	y	-0.008	0.00	0.00	No	0.00	No
92	y	-0.007	0.00	0.00	No	0.00	No
93	y	-0.007	0.00	0.00	No	0.00	No
94	y	-0.007	0.00	0.00	No	0.00	No
95	y	-0.007	0.00	0.00	No	0.00	No
96	y	-0.004	0.00	0.00	No	0.00	No
97	y	-0.004	0.00	0.00	No	0.00	No
98	y	-0.004	0.00	0.00	No	0.00	No
99	y	-0.004	0.00	0.00	No	0.00	No
100	y	-0.004	0.00	0.00	No	0.00	No
101	y	-0.004	0.00	0.00	No	0.00	No
102	y	-0.004	0.00	0.00	No	0.00	No
103	y	-0.004	0.00	0.00	No	0.00	No
104	y	-0.009	0.00	0.00	No	0.00	No
105	y	-0.009	0.00	0.00	No	0.00	No
106	y	-0.009	0.00	0.00	No	0.00	No
107	y	-0.009	0.00	0.00	No	0.00	No
110	y	-0.009	0.00	0.00	No	0.00	No
111	y	-0.009	0.00	0.00	No	0.00	No
112	y	-0.009	0.00	0.00	No	0.00	No
113	y	-0.009	0.00	0.00	No	0.00	No
114	y	-0.023	0.00	0.00	No	0.00	No

115	y	-0.023	0.00	0.00	No	0.00	No
120	y	-0.008	0.00	0.00	No	0.00	No
123	y	-0.007	0.00	0.00	No	0.00	No
124	y	-0.007	0.00	0.00	No	0.00	No
128	y	-0.009	0.00	0.00	No	0.00	No
129	y	-0.013	0.00	0.00	No	0.00	No
130	y	-0.013	0.00	0.00	No	0.00	No
131	y	-0.007	0.00	0.00	No	0.00	No
132	y	-0.007	0.00	0.00	No	0.00	No

## Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
<hr/>					
DL	1	y	-0.034	1.50	No
		y	-0.034	8.50	No
	32	y	-0.04	1.50	No
		y	-0.04	8.50	No
	35	y	-0.073	50.00	Yes
		y	-0.072	50.00	Yes
		y	-0.033	25.00	Yes
	36	y	-0.06	50.00	Yes
		y	-0.046	50.00	Yes
	45	y	-0.034	1.50	No
		y	-0.034	8.50	No
	76	y	-0.04	1.50	No
		y	-0.04	8.50	No
	79	y	-0.073	50.00	Yes
		y	-0.072	50.00	Yes
		y	-0.033	25.00	Yes
	80	y	-0.06	50.00	Yes
		y	-0.046	50.00	Yes
	89	y	-0.034	1.50	No
		y	-0.034	8.50	No
	120	y	-0.04	1.50	No
		y	-0.04	8.50	No
	123	y	-0.073	50.00	Yes
		y	-0.072	50.00	Yes
		y	-0.033	25.00	Yes
	124	y	-0.06	50.00	Yes
		y	-0.046	50.00	Yes
W0	1	z	-0.281	2.50	No
		z	-0.281	7.50	No
	32	z	-0.281	2.50	No
		z	-0.281	7.50	No
	35	z	-0.055	50.00	Yes
		z	-0.036	50.00	Yes
		z	-0.05	25.00	Yes
	36	z	-0.062	50.00	Yes
		z	-0.06	50.00	Yes
	45	z	-0.164	2.50	No
		z	-0.164	7.50	No
	76	z	-0.164	2.50	No
		z	-0.164	7.50	No
	79	z	-0.081	50.00	Yes
		z	-0.05	25.00	Yes
	80	z	-0.081	50.00	Yes



W30	89	z	-0.164	2.50	No
		z	-0.164	7.50	No
	120	z	-0.164	2.50	No
		z	-0.164	7.50	No
	123	z	-0.081	50.00	Yes
		z	-0.05	25.00	Yes
	124	z	-0.081	50.00	Yes
	1	x	-0.124	2.50	No
		x	-0.124	7.50	No
	32	x	-0.124	2.50	No
		x	-0.124	7.50	No
	35	x	-0.089	50.00	Yes
		x	-0.05	25.00	Yes
	36	x	-0.087	50.00	Yes
	45	x	-0.242	2.50	No
		x	-0.242	7.50	No
	76	x	-0.242	2.50	No
		x	-0.242	7.50	No
	79	x	-0.064	50.00	Yes
		x	-0.05	25.00	Yes
Di	80	x	-0.068	50.00	Yes
	89	x	-0.242	2.50	No
		x	-0.242	7.50	No
	120	x	-0.242	2.50	No
		x	-0.242	7.50	No
	123	x	-0.064	50.00	Yes
		x	-0.05	25.00	Yes
	124	x	-0.068	50.00	Yes
	1	y	-0.124	1.50	No
		y	-0.124	8.50	No
	32	y	-0.124	1.50	No
		y	-0.124	8.50	No
	35	y	-0.046	50.00	Yes
		y	-0.039	50.00	Yes
		y	-0.04	25.00	Yes
	36	y	-0.047	50.00	Yes
		y	-0.041	50.00	Yes
	45	y	-0.124	1.50	No
		y	-0.124	8.50	No
Wi0	76	y	-0.124	1.50	No
		y	-0.124	8.50	No
	79	y	-0.046	50.00	Yes
		y	-0.039	50.00	Yes
		y	-0.04	25.00	Yes
	80	y	-0.047	50.00	Yes
		y	-0.041	50.00	Yes
	89	y	-0.124	1.50	No
		y	-0.124	8.50	No
	120	y	-0.124	1.50	No
		y	-0.124	8.50	No
	123	y	-0.046	50.00	Yes
		y	-0.039	50.00	Yes
		y	-0.04	25.00	Yes
	124	y	-0.047	50.00	Yes
		y	-0.041	50.00	Yes
	1	z	-0.05	2.50	No
		z	-0.05	7.50	No
	32	z	-0.05	2.50	No
		z	-0.05	7.50	No
	35	z	-0.013	50.00	Yes
		z	-0.009	50.00	Yes
	36	z	-0.014	50.00	Yes
		z	-0.013	50.00	Yes
		z	-0.011	25.00	Yes
	45	z	-0.031	2.50	No
		z	-0.031	7.50	No

Wi30	76	z	-0.031	2.50	No
		z	-0.031	7.50	No
	79	z	-0.017	50.00	Yes
	80	z	-0.017	50.00	Yes
		z	-0.011	25.00	Yes
	89	z	-0.031	2.50	No
		z	-0.031	7.50	No
	120	z	-0.031	2.50	No
		z	-0.031	7.50	No
	123	z	-0.017	50.00	Yes
	124	z	-0.017	50.00	Yes
		z	-0.011	25.00	Yes
	1	x	-0.025	2.50	No
		x	-0.025	7.50	No
	32	x	-0.025	2.50	No
		x	-0.025	7.50	No
	35	x	-0.019	50.00	Yes
		x	-0.011	25.00	Yes
	36	x	-0.018	50.00	Yes
	45	x	-0.043	2.50	No
		x	-0.043	7.50	No
	76	x	-0.043	2.50	No
		x	-0.043	7.50	No
	79	x	-0.014	50.00	Yes
		x	-0.011	25.00	Yes
	80	x	-0.015	50.00	Yes
	89	x	-0.043	2.50	No
		x	-0.043	7.50	No
	120	x	-0.043	2.50	No
		x	-0.043	7.50	No
WL0	123	x	-0.014	50.00	Yes
		x	-0.011	25.00	Yes
	124	x	-0.015	50.00	Yes
	1	z	-0.015	2.50	No
		z	-0.015	7.50	No
	32	z	-0.015	2.50	No
		z	-0.015	7.50	No
	35	z	-0.003	50.00	Yes
		z	-0.002	50.00	Yes
		z	-0.003	25.00	Yes
	36	z	-0.003	50.00	Yes
		z	-0.003	50.00	Yes
	45	z	-0.009	2.50	No
		z	-0.009	7.50	No
	76	z	-0.009	2.50	No
		z	-0.009	7.50	No
	79	z	-0.004	50.00	Yes
		z	-0.003	25.00	Yes
	80	z	-0.004	50.00	Yes
	89	z	-0.009	2.50	No
		z	-0.009	7.50	No
	120	z	-0.009	2.50	No
		z	-0.009	7.50	No
	123	z	-0.004	50.00	Yes
		z	-0.003	25.00	Yes
WL30	124	z	-0.004	50.00	Yes
	1	x	-0.007	2.50	No
		x	-0.007	7.50	No
	32	x	-0.007	2.50	No
		x	-0.007	7.50	No
	35	x	-0.005	50.00	Yes
		x	-0.003	25.00	Yes
	36	x	-0.005	50.00	Yes
	45	x	-0.013	2.50	No
		x	-0.013	7.50	No
	76	x	-0.013	2.50	No

		x	-0.013	7.50	No
	79	x	-0.003	50.00	Yes
		x	-0.003	25.00	Yes
	80	x	-0.003	50.00	Yes
	89	x	-0.013	2.50	No
		x	-0.013	7.50	No
	120	x	-0.013	2.50	No
		x	-0.013	7.50	No
	123	x	-0.003	50.00	Yes
		x	-0.003	25.00	Yes
	124	x	-0.003	50.00	Yes
LL1	2	y	-0.25	50.00	Yes
LL2	2	y	-0.25	100.00	Yes
LLa1	1	y	-0.50	50.00	Yes
LLa2	32	y	-0.50	50.00	Yes

### Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

### Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	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
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	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
LLa4	0.00	0.00	0.00

## Steel Code Check

### Report: Summary - Group by member

#### Load conditions to be included in design :

LC1=1.2DL+W0  
 LC2=1.2DL+W30  
 LC3=1.2DL-W0  
 LC4=1.2DL-W30  
 LC5=0.9DL+W0  
 LC6=0.9DL+W30  
 LC7=0.9DL-W0  
 LC8=0.9DL-W30  
 LC9=1.2DL+Di+Wi0  
 LC10=1.2DL+Di+Wi30  
 LC11=1.2DL+Di-Wi0  
 LC12=1.2DL+Di-Wi30  
 LC13=1.4DL  
 LC14=1.2DL+1.6LL1  
 LC15=1.2DL+1.6LL2  
 LC16=1.2DL+WL0+1.6LLa1  
 LC17=1.2DL+WL30+1.6LLa1  
 LC18=1.2DL-WL0+1.6LLa1  
 LC19=1.2DL-WL30+1.6LLa1  
 LC20=1.2DL+WL0+1.6LLa2  
 LC21=1.2DL+WL30+1.6LLa2  
 LC22=1.2DL-WL0+1.6LLa2  
 LC23=1.2DL-WL30+1.6LLa2  
 LC24=1.2DL+WL0+1.6LLa3  
 LC25=1.2DL+WL30+1.6LLa3  
 LC26=1.2DL-WL0+1.6LLa3  
 LC27=1.2DL-WL30+1.6LLa3  
 LC28=1.2DL+WL0+1.6LLa4  
 LC29=1.2DL+WL30+1.6LLa4  
 LC30=1.2DL-WL0+1.6LLa4  
 LC31=1.2DL-WL30+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
<b>HSS_SQR 4X4X3_16</b>		<b>43</b>	LC2 at 100.00%	<b>0.20</b>	<b>OK</b>	Eq. H1-1b
		<b>44</b>	LC12 at 0.00%	0.17	OK	Eq. H1-1b
		<b>85</b>	LC1 at 100.00%	0.13	OK	Eq. H1-1b
		<b>86</b>	LC11 at 0.00%	0.12	OK	Eq. H1-1b
		<b>129</b>	LC3 at 100.00%	0.14	OK	Eq. H1-1b
		<b>130</b>	LC9 at 0.00%	0.12	OK	Eq. H1-1b
<b>PIPE 2-1_2x0.203</b>		<b>1</b>	LC19 at 33.33%	0.47	OK	Eq. H1-1b
		<b>2</b>	LC21 at 28.75%	0.46	OK	Eq. H1-1b
		<b>3</b>	LC16 at 70.83%	<b>0.60</b>	<b>OK</b>	Eq. H1-1b
		<b>32</b>	LC21 at 33.33%	0.48	OK	Eq. H1-1b
		<b>45</b>	LC4 at 64.58%	0.20	OK	Eq. H1-1b
		<b>46</b>	LC2 at 16.25%	0.33	OK	Eq. H1-1b
		<b>47</b>	LC4 at 70.83%	0.46	OK	Eq. H1-1b
		<b>76</b>	LC9 at 33.33%	0.27	OK	Eq. H1-1b
		<b>89</b>	LC9 at 33.33%	0.26	OK	Eq. H1-1b
		<b>90</b>	LC4 at 83.75%	0.35	OK	Eq. H1-1b
		<b>91</b>	LC2 at 29.17%	0.46	OK	Eq. H1-1b
		<b>120</b>	LC11 at 33.33%	0.21	OK	Eq. H1-1b
<b>PIPE 2x0.154</b>		<b>4</b>	LC21 at 93.75%	0.42	OK	Eq. H1-1b
		<b>5</b>	LC20 at 93.75%	<b>0.44</b>	<b>OK</b>	Eq. H1-1b
		<b>6</b>	LC16 at 93.75%	0.41	OK	Eq. H1-1b
		<b>7</b>	LC16 at 93.75%	0.41	OK	Eq. H1-1b

	35	LC21 at 22.92%	0.22	OK	Eq. H1-1b
	36	LC19 at 22.92%	0.19	OK	Eq. H1-1b
	40	LC22 at 0.00%	0.09	OK	Eq. H3-1
	41	LC18 at 0.00%	0.08	OK	Eq. H3-1
	48	LC12 at 93.75%	0.25	OK	Eq. H1-1b
	49	LC3 at 93.75%	0.31	OK	Eq. H1-1b
	50	LC4 at 93.75%	0.32	OK	Eq. H1-1b
	51	LC11 at 93.75%	0.24	OK	Eq. H1-1b
	79	LC9 at 22.92%	0.11	OK	Eq. H1-1b
	80	LC11 at 22.92%	0.12	OK	Eq. H1-1b
	87	LC8 at 100.00%	0.08	OK	Sec. E1
	88	LC3 at 50.00%	0.07	OK	Eq. H1-1b
	92	LC11 at 93.75%	0.25	OK	Eq. H1-1b
	93	LC2 at 93.75%	0.35	OK	Eq. H1-1b
	94	LC3 at 93.75%	0.28	OK	Eq. H1-1b
	95	LC10 at 93.75%	0.24	OK	Eq. H1-1b
	123	LC12 at 22.92%	0.15	OK	Eq. H1-1b
	124	LC9 at 22.92%	0.09	OK	Eq. H1-1b
	131	LC3 at 50.00%	0.07	OK	Eq. H1-1b
	132	LC6 at 0.00%	0.08	OK	Sec. E1
<hr/>					
<b>PIPE 3x0.216</b>	42	LC12 at 85.71%	0.33	OK	Eq. H1-1b
	84	LC1 at 26.79%	0.30	OK	Eq. H1-1b
	128	LC10 at 85.71%	0.29	OK	Eq. H1-1b
<hr/>					
<b>PL 11-1/4x5/8</b>	26	LC9 at 100.00%	0.27	OK	Eq. H1-1b
	27	LC12 at 100.00%	0.21	OK	Eq. H1-1b
	70	LC12 at 100.00%	0.27	OK	Eq. H1-1b
	71	LC11 at 100.00%	0.22	OK	Eq. H1-1b
	114	LC10 at 100.00%	0.27	OK	Eq. H1-1b
	115	LC9 at 100.00%	0.22	OK	Eq. H1-1b
<hr/>					
<b>PL 3-1/2x5/8</b>	16	LC20 at 100.00%	0.47	OK	Eq. H1-1b
	17	LC16 at 100.00%	0.45	OK	Eq. H1-1b
	18	LC16 at 100.00%	0.47	OK	Eq. H1-1b
	19	LC20 at 100.00%	0.48	OK	Eq. H1-1b
	22	LC21 at 100.00%	0.66	OK	Eq. H1-1b
	23	LC16 at 0.00%	0.61	OK	Eq. H1-1b
	24	LC23 at 100.00%	0.64	OK	Eq. H1-1b
	25	LC17 at 0.00%	0.61	OK	Eq. H1-1b
	60	LC10 at 100.00%	0.23	OK	Eq. H1-1b
	61	LC9 at 100.00%	0.22	OK	Eq. H1-1b
	62	LC12 at 100.00%	0.21	OK	Eq. H1-1b
	63	LC11 at 100.00%	0.22	OK	Eq. H1-1b
	66	LC9 at 100.00%	0.46	OK	Eq. H1-1b
	67	LC11 at 0.00%	0.41	OK	Eq. H1-1b
	68	LC11 at 100.00%	0.44	OK	Eq. H1-1b
	69	LC12 at 0.00%	0.39	OK	Eq. H1-1b
	104	LC9 at 100.00%	0.23	OK	Eq. H1-1b
	105	LC12 at 100.00%	0.22	OK	Eq. H1-1b
	106	LC11 at 100.00%	0.21	OK	Eq. H1-1b
	107	LC10 at 100.00%	0.22	OK	Eq. H1-1b
	110	LC11 at 100.00%	0.45	OK	Eq. H1-1b
	111	LC10 at 0.00%	0.41	OK	Eq. H1-1b
	112	LC10 at 100.00%	0.44	OK	Eq. H1-1b
	113	LC11 at 0.00%	0.39	OK	Eq. H1-1b
<hr/>					
<b>RndBar 3_4</b>	12	LC16 at 96.88%	0.32	OK	Eq. H1-1a
	13	LC16 at 0.00%	0.25	OK	Eq. H1-1b
	14	LC22 at 0.00%	0.35	OK	Eq. H1-1a
	15	LC23 at 100.00%	0.28	OK	Eq. H1-1b
	56	LC10 at 100.00%	0.15	OK	Eq. H1-1b
	57	LC12 at 0.00%	0.15	OK	Eq. H1-1b
	58	LC9 at 0.00%	0.18	OK	Eq. H1-1b
	59	LC11 at 100.00%	0.19	OK	Eq. H1-1b
	100	LC9 at 100.00%	0.15	OK	Eq. H1-1b
	101	LC11 at 0.00%	0.15	OK	Eq. H1-1b
	102	LC12 at 0.00%	0.18	OK	Eq. H1-1b
	103	LC10 at 100.00%	0.19	OK	Eq. H1-1b
<hr/>					
<b>RndBar 5_8</b>	8	LC22 at 87.50%	0.74	OK	Eq. H1-1a

<b>9</b>	LC23 at 87.50%	<b>0.78</b>	<b>OK</b>	Eq. H1-1a
<b>10</b>	LC17 at 87.50%	0.74	OK	Eq. H1-1a
<b>11</b>	LC16 at 87.50%	0.73	OK	Eq. H1-1a
<b>52</b>	LC10 at 87.50%	0.45	OK	Eq. H1-1a
<b>53</b>	LC11 at 87.50%	0.45	OK	Eq. H1-1a
<b>54</b>	LC9 at 87.50%	0.39	OK	Eq. H1-1a
<b>55</b>	LC12 at 87.50%	0.41	OK	Eq. H1-1a
<b>96</b>	LC9 at 87.50%	0.46	OK	Eq. H1-1a
<b>97</b>	LC10 at 87.50%	0.45	OK	Eq. H1-1a
<b>98</b>	LC11 at 87.50%	0.39	OK	Eq. H1-1a
<b>99</b>	LC11 at 87.50%	0.40	OK	Eq. H1-1a

---

## 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
1	0.00	0.00	1.50	0
2	-0.6362	0.00	1.9783	0
3	0.00	-3.3333	1.50	0
4	-0.6362	-3.3333	1.9783	0
5	0.6362	-3.3333	1.9783	0
6	0.6362	0.00	1.9783	0
7	6.00	-6.6667	4.33	0
8	6.00	3.3333	4.33	0
9	-6.00	0.00	4.13	0
10	6.00	0.00	4.13	0
11	-6.00	-3.3333	4.13	0
12	6.00	-3.3333	4.13	0
13	-2.4126	0.00	3.7374	0
14	-2.4126	-3.3333	3.7374	0
15	2.4126	-3.3333	3.7374	0
16	2.4126	0.00	3.7374	0
17	-2.2835	0.00	3.6096	0
18	-2.2835	-3.3333	3.6096	0
19	-0.7653	0.00	2.1062	0
20	-0.7653	-3.3333	2.1062	0
21	0.7653	0.00	2.1062	0
22	0.7653	-3.3333	2.1062	0
23	2.2835	0.00	3.6096	0
24	2.2835	-3.3333	3.6096	0
25	-2.4792	0.00	4.13	0
26	2.4792	0.00	4.13	0
27	2.4792	-3.3333	4.13	0
28	-2.4792	-3.3333	4.13	0



29	6.00	3.33E-06	4.33	0
30	6.00	-3.3333	4.33	0
31	0.00	0.00	1.9783	0
32	0.00	-3.3333	1.9783	0
33	-1.2713	0.00	2.6073	0
34	-1.2713	-3.3333	2.6073	0
35	-1.4213	0.00	2.4573	0
36	-1.4213	-3.3333	2.4573	0
37	1.2713	0.00	2.6073	0
38	1.2713	-3.3333	2.6073	0
39	1.4213	0.00	2.4573	0
40	1.4213	-3.3333	2.4573	0
41	-6.00	-6.6667	4.33	0
42	-6.00	3.3333	4.33	0
43	-6.00	3.33E-06	4.33	0
44	-6.00	-3.3333	4.33	0
45	-1.4213	-4.6667	2.4573	0
46	1.4213	-4.6667	2.4573	0
47	-1.4213	1.3333	2.4573	0
48	1.4213	1.3333	2.4573	0
55	-4.00	0.00	4.13	0
56	-2.601	-0.25	-2.5952	0
57	4.00	0.00	4.13	0
58	2.3055	0.25	-2.5431	0
59	0.00	1.335	1.50	0
60	0.00	-4.665	1.50	0
61	0.00	0.50	1.50	0
62	0.00	-3.8333	1.50	0
63	0.00	0.50	0.50	0
64	0.00	-3.8333	0.50	0
65	0.00	0.00	-1.25	0
66	-2.601	0.00	-2.5952	0
67	-2.6971	0.00	-3.3853	0
68	-2.601	-3.3333	-2.5952	0
69	-2.6971	-3.3333	-3.3853	0
70	-3.3333	-3.3333	-2.2835	0
71	-3.3333	0.00	-2.2835	0
72	-8.0518	-6.6667	1.1859	0
73	-8.0518	3.3333	1.1859	0
74	-1.8786	0.00	-9.1064	0
75	-7.8786	0.00	1.2859	0
76	-1.8786	-3.3333	-9.1064	0
77	-7.8786	-3.3333	1.2859	0
78	-3.3323	0.00	-5.8033	0
79	-3.3323	-3.3333	-5.8033	0
80	-5.7449	-3.3333	-1.6246	0
81	-5.7449	0.00	-1.6246	0
82	-3.2862	0.00	-5.6276	0
83	-3.2862	-3.3333	-5.6276	0
84	-2.7433	0.00	-3.5611	0
85	-2.7433	-3.3333	-3.5611	0
86	-3.5086	0.00	-2.2356	0
87	-3.5086	-3.3333	-2.2356	0
88	-5.5697	0.00	-1.6725	0
89	-5.5697	-3.3333	-1.6725	0
90	-3.639	0.00	-6.0573	0
91	-6.1182	0.00	-1.7632	0
92	-6.1182	-3.3333	-1.7632	0
93	-3.639	-3.3333	-6.0573	0
94	-8.0518	3.33E-06	1.1859	0
95	-8.0518	-3.3333	1.1859	0
96	-3.0152	0.00	-2.8344	0
97	-3.0152	-3.3333	-2.8344	0
98	-2.9243	0.00	-4.2499	0
99	-2.9243	-3.3333	-4.2499	0
100	-2.7194	0.00	-4.3048	0

101	-2.7194	-3.3333	-4.3048	0
102	-4.1956	0.00	-2.0479	0
103	-4.1956	-3.3333	-2.0479	0
104	-4.1407	0.00	-1.843	0
105	-4.1407	-3.3333	-1.843	0
106	-2.0518	-6.6667	-9.2064	0
107	-2.0518	3.3333	-9.2064	0
108	-2.0518	3.33E-06	-9.2064	0
109	-2.0518	-3.3333	-9.2064	0
110	-2.7194	-4.6667	-4.3048	0
111	-4.1407	-4.6667	-1.843	0
112	-2.7194	1.3333	-4.3048	0
113	-4.1407	1.3333	-1.843	0
120	-2.8786	0.00	-7.3743	0
121	-6.8786	0.00	-0.4461	0
122	-2.601	1.335	-2.5952	0
123	-2.601	-4.665	-2.5952	0
124	-2.601	0.50	-2.5952	0
125	-2.601	-3.8333	-2.5952	0
126	-2.0207	0.50	-2.2602	0
127	-2.0207	-3.8333	-2.2602	0
128	2.3055	-0.25	-2.5431	0
129	0.00	0.25	1.50	0
130	2.3055	0.00	-2.5431	0
131	3.0379	0.00	-2.2314	0
132	2.3055	-3.3333	-2.5431	0
133	3.0379	-3.3333	-2.2314	0
134	2.4017	-3.3333	-3.3332	0
135	2.4017	0.00	-3.3332	0
136	1.7564	-6.6667	-9.1543	0
137	1.7564	3.3333	-9.1543	0
138	7.5832	0.00	1.338	0
139	1.5832	0.00	-9.0543	0
140	7.5832	-3.3333	1.338	0
141	1.5832	-3.3333	-9.0543	0
142	5.4495	0.00	-1.5725	0
143	5.4495	-3.3333	-1.5725	0
144	3.0369	-3.3333	-5.7512	0
145	3.0369	0.00	-5.7512	0
146	5.2742	0.00	-1.6204	0
147	5.2742	-3.3333	-1.6204	0
148	3.2131	0.00	-2.1835	0
149	3.2131	-3.3333	-2.1835	0
150	2.4479	0.00	-3.509	0
151	2.4479	-3.3333	-3.509	0
152	2.9907	0.00	-5.5755	0
153	2.9907	-3.3333	-5.5755	0
154	5.8228	0.00	-1.7111	0
155	3.3436	0.00	-6.0052	0
156	3.3436	-3.3333	-6.0052	0
157	5.8228	-3.3333	-1.7111	0
158	1.7564	3.33E-06	-9.1543	0
159	1.7564	-3.3333	-9.1543	0
160	2.7198	0.00	-2.7823	0
161	2.7198	-3.3333	-2.7823	0
162	3.9002	0.00	-1.9958	0
163	3.9002	-3.3333	-1.9958	0
164	3.8453	0.00	-1.7909	0
165	3.8453	-3.3333	-1.7909	0
166	2.6288	0.00	-4.1978	0
167	2.6288	-3.3333	-4.1978	0
168	2.4239	0.00	-4.2527	0
169	2.4239	-3.3333	-4.2527	0
170	7.7564	-6.6667	1.238	0
171	7.7564	3.3333	1.238	0
172	7.7564	3.33E-06	1.238	0

173	7.7564	-3.3333	1.238	0
174	3.8453	-4.6667	-1.7909	0
175	2.4239	-4.6667	-4.2527	0
176	3.8453	1.3333	-1.7909	0
177	2.4239	1.3333	-4.2527	0
184	6.5832	0.00	-0.394	0
185	2.5832	0.00	-7.3222	0
186	2.3055	1.335	-2.5431	0
187	2.3055	-4.665	-2.5431	0
188	2.3055	0.50	-2.5431	0
189	2.3055	-3.8333	-2.5431	0
190	1.7253	0.50	-2.2081	0
191	1.7253	-3.8333	-2.2081	0
192	0.00	-0.25	1.50	0
193	-2.601	0.25	-2.5952	0

## Restraints

Node	TX	TY	TZ	RX	RY	RZ
63	1	1	1	0	1	0
64	1	1	1	0	1	0
126	1	1	1	0	1	0
127	1	1	1	0	1	0
190	1	1	1	0	1	0
191	1	1	1	0	1	0

## Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	8	7		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
2	9	10		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
3	11	12		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
4	13	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	14	4		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	15	5		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	16	6		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	17	18		RndBar 5_8	A36	0.00	0.00	0.00
9	19	20		RndBar 5_8	A36	0.00	0.00	0.00
10	21	22		RndBar 5_8	A36	0.00	0.00	0.00
11	23	24		RndBar 5_8	A36	0.00	0.00	0.00
12	21	24		RndBar 3_4	A36	0.00	0.00	0.00
13	22	23		RndBar 3_4	A36	0.00	0.00	0.00
14	18	19		RndBar 3_4	A36	0.00	0.00	0.00
15	17	20		RndBar 3_4	A36	0.00	0.00	0.00
16	13	25		PL 3-1/2x5/8	A36	0.00	0.00	0.00
17	16	26		PL 3-1/2x5/8	A36	0.00	0.00	0.00
18	15	27		PL 3-1/2x5/8	A36	0.00	0.00	0.00
19	14	28		PL 3-1/2x5/8	A36	0.00	0.00	0.00
22	2	31		PL 3-1/2x5/8	A36	0.00	0.00	0.00
23	31	6		PL 3-1/2x5/8	A36	0.00	0.00	0.00
24	4	32		PL 3-1/2x5/8	A36	0.00	0.00	0.00
25	32	5		PL 3-1/2x5/8	A36	0.00	0.00	0.00
26	31	1		PL 11-1/4x5/8	A36	11.25	9.25	0.00
27	32	3		PL 11-1/4x5/8	A36	11.25	9.25	0.00
32	42	41		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
35	47	45		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

36	48	46	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
40	55	56	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
41	58	57	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	59	60	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
43	61	63	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
44	62	64	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
45	73	72	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
46	74	75	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
47	76	77	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
48	78	67	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
49	79	69	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
50	80	70	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
51	81	71	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
52	82	83	RndBar 5_8	A36	0.00	0.00	0.00
53	84	85	RndBar 5_8	A36	0.00	0.00	0.00
54	86	87	RndBar 5_8	A36	0.00	0.00	0.00
55	88	89	RndBar 5_8	A36	0.00	0.00	0.00
56	86	89	RndBar 3_4	A36	0.00	0.00	0.00
57	87	88	RndBar 3_4	A36	0.00	0.00	0.00
58	83	84	RndBar 3_4	A36	0.00	0.00	0.00
59	82	85	RndBar 3_4	A36	0.00	0.00	0.00
60	78	90	PL 3-1/2x5/8	A36	0.00	0.00	0.00
61	81	91	PL 3-1/2x5/8	A36	0.00	0.00	0.00
62	80	92	PL 3-1/2x5/8	A36	0.00	0.00	0.00
63	79	93	PL 3-1/2x5/8	A36	0.00	0.00	0.00
66	67	96	PL 3-1/2x5/8	A36	0.00	0.00	0.00
67	96	71	PL 3-1/2x5/8	A36	0.00	0.00	0.00
68	69	97	PL 3-1/2x5/8	A36	0.00	0.00	0.00
69	97	70	PL 3-1/2x5/8	A36	0.00	0.00	0.00
70	96	66	PL 11-1/4x5/8	A36	11.25	9.25	0.00
71	97	68	PL 11-1/4x5/8	A36	11.25	9.25	0.00
76	107	106	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
79	112	110	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
80	113	111	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
84	122	123	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
85	124	126	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
86	125	127	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
87	120	128	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	129	121	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
89	137	136	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	138	139	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
91	140	141	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
92	142	131	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	143	133	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	144	134	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
95	145	135	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
96	146	147	RndBar 5_8	A36	0.00	0.00	0.00
97	148	149	RndBar 5_8	A36	0.00	0.00	0.00
98	150	151	RndBar 5_8	A36	0.00	0.00	0.00
99	152	153	RndBar 5_8	A36	0.00	0.00	0.00
100	150	153	RndBar 3_4	A36	0.00	0.00	0.00
101	151	152	RndBar 3_4	A36	0.00	0.00	0.00
102	147	148	RndBar 3_4	A36	0.00	0.00	0.00
103	146	149	RndBar 3_4	A36	0.00	0.00	0.00
104	142	154	PL 3-1/2x5/8	A36	0.00	0.00	0.00
105	145	155	PL 3-1/2x5/8	A36	0.00	0.00	0.00
106	144	156	PL 3-1/2x5/8	A36	0.00	0.00	0.00
107	143	157	PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	131	160	PL 3-1/2x5/8	A36	0.00	0.00	0.00
111	160	135	PL 3-1/2x5/8	A36	0.00	0.00	0.00
112	133	161	PL 3-1/2x5/8	A36	0.00	0.00	0.00
113	161	134	PL 3-1/2x5/8	A36	0.00	0.00	0.00
114	160	130	PL 11-1/4x5/8	A36	11.25	9.25	0.00
115	161	132	PL 11-1/4x5/8	A36	11.25	9.25	0.00
120	171	170	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
123	176	174	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

124	177	175	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
128	186	187	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
129	188	190	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
130	189	191	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
131	184	192	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
132	193	185	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

## Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	315.00	0	0.00	0.00	0.00
8	0.00	2	0.00	0.00	1.00
9	0.00	2	0.00	0.00	1.00
10	0.00	2	0.00	0.00	1.00
11	0.00	2	0.00	0.00	1.00
16	90.00	0	0.00	0.00	0.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
22	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	90.00	0	0.00	0.00	0.00
32	315.00	0	0.00	0.00	0.00
35	315.00	0	0.00	0.00	0.00
36	315.00	0	0.00	0.00	0.00
45	0.00	2	0.8192	0.00	-0.5736
52	0.00	2	-0.1736	0.00	0.9848
53	0.00	2	-0.1736	0.00	0.9848
54	0.00	2	-0.1736	0.00	0.9848
55	0.00	2	-0.1736	0.00	0.9848
60	90.00	0	0.00	0.00	0.00
61	90.00	0	0.00	0.00	0.00
62	90.00	0	0.00	0.00	0.00
63	90.00	0	0.00	0.00	0.00
66	90.00	0	0.00	0.00	0.00
67	90.00	0	0.00	0.00	0.00
68	90.00	0	0.00	0.00	0.00
69	90.00	0	0.00	0.00	0.00
70	90.00	0	0.00	0.00	0.00
71	90.00	0	0.00	0.00	0.00
76	0.00	2	0.8192	0.00	-0.5736
79	0.00	2	0.8192	0.00	-0.5736
80	0.00	2	0.8192	0.00	-0.5736
84	0.00	2	0.9848	0.00	0.1736
89	0.00	2	0.5736	0.00	-0.8192
96	0.00	2	0.1736	0.00	0.9848
97	0.00	2	0.1736	0.00	0.9848
98	0.00	2	0.1736	0.00	0.9848
99	0.00	2	0.1736	0.00	0.9848
104	90.00	0	0.00	0.00	0.00
105	90.00	0	0.00	0.00	0.00
106	90.00	0	0.00	0.00	0.00
107	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
111	90.00	0	0.00	0.00	0.00
112	90.00	0	0.00	0.00	0.00
113	90.00	0	0.00	0.00	0.00
114	90.00	0	0.00	0.00	0.00

115	90.00	0	0.00	0.00	0.00
120	0.00	2	0.5736	0.00	-0.8192
123	0.00	2	0.5736	0.00	-0.8192
124	0.00	2	0.5736	0.00	-0.8192
128	0.00	2	0.9848	0.00	-0.1736

## Rigid end offsets

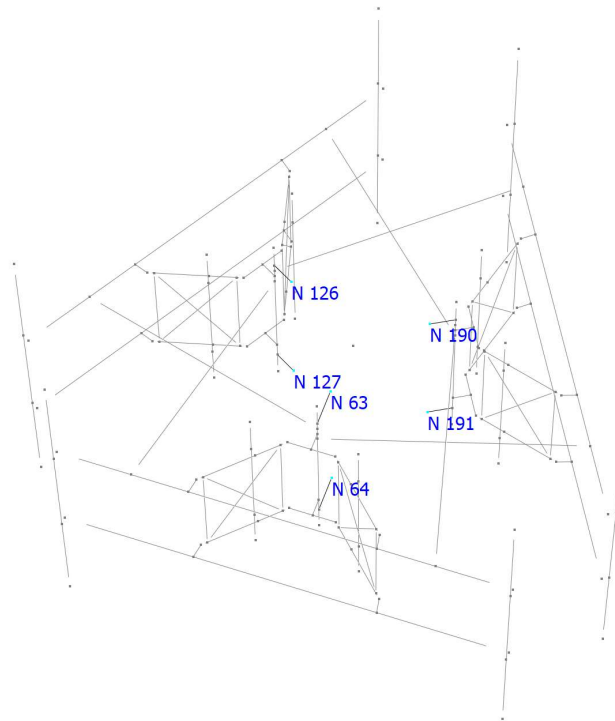
Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
12	0.00	-3.50	0.00	0.00	3.50	0.00
13	0.00	3.50	0.00	0.00	-3.50	0.00
14	0.00	3.50	0.00	0.00	-3.50	0.00
15	0.00	-3.50	0.00	0.00	3.50	0.00
26	0.00	-0.625	0.00	0.00	-0.625	0.00
27	0.00	-0.625	0.00	0.00	-0.625	0.00
56	0.00	-3.50	0.00	0.00	3.50	0.00
57	0.00	3.50	0.00	0.00	-3.50	0.00
58	0.00	3.50	0.00	0.00	-3.50	0.00
59	0.00	-3.50	0.00	0.00	3.50	0.00
70	0.00	-0.625	0.00	0.00	-0.625	0.00
71	0.00	-0.625	0.00	0.00	-0.625	0.00
100	0.00	-3.50	0.00	0.00	3.50	0.00
101	0.00	3.50	0.00	0.00	-3.50	0.00
102	0.00	3.50	0.00	0.00	-3.50	0.00
103	0.00	-3.50	0.00	0.00	3.50	0.00
114	0.00	-0.625	0.00	0.00	-0.625	0.00
115	0.00	-0.625	0.00	0.00	-0.625	0.00

## Hinges

Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
13	0	0	0	0	0	0	0	0	0	0	Tension only
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	1	1	0	0	0	0	0	0	0	0	Full
17	1	1	0	0	0	0	0	0	0	0	Full
18	1	1	0	0	0	0	0	0	0	0	Full
19	1	1	0	0	0	0	0	0	0	0	Full
40	1	1	0	0	1	1	0	0	0	0	Full
41	1	1	0	0	1	1	0	0	0	0	Full
57	0	0	0	0	0	0	0	0	0	0	Tension only
59	0	0	0	0	0	0	0	0	0	0	Tension only
60	1	1	0	0	0	0	0	0	0	0	Full
61	1	1	0	0	0	0	0	0	0	0	Full
62	1	1	0	0	0	0	0	0	0	0	Full
63	1	1	0	0	0	0	0	0	0	0	Full
87	1	1	0	0	1	1	0	0	0	0	Full
88	1	1	0	0	1	1	0	0	0	0	Full
101	0	0	0	0	0	0	0	0	0	0	Tension only
103	0	0	0	0	0	0	0	0	0	0	Tension only
104	1	1	0	0	0	0	0	0	0	0	Full
105	1	1	0	0	0	0	0	0	0	0	Full
106	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full
131	1	1	0	0	1	1	0	0	0	0	Full
132	1	1	0	0	1	1	0	0	0	0	Full

-----

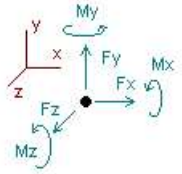




## Analysis result

### Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+W0  
 LC2=1.2DL+W30  
 LC3=1.2DL-W0  
 LC4=1.2DL-W30  
 LC5=0.9DL+W0  
 LC6=0.9DL+W30  
 LC7=0.9DL-W0  
 LC8=0.9DL-W30  
 LC9=1.2DL+Di+W0  
 LC10=1.2DL+Di+W30  
 LC11=1.2DL+Di-W0  
 LC12=1.2DL+Di-W30  
 LC13=1.4DL  
 LC14=1.2DL+1.6LL1  
 LC15=1.2DL+1.6LL2  
 LC16=1.2DL+WL0+1.6LLa1  
 LC17=1.2DL+WL30+1.6LLa1  
 LC18=1.2DL-WL0+1.6LLa1  
 LC19=1.2DL-WL30+1.6LLa1  
 LC20=1.2DL+WL0+1.6LLa2  
 LC21=1.2DL+WL30+1.6LLa2  
 LC22=1.2DL-WL0+1.6LLa2  
 LC23=1.2DL-WL30+1.6LLa2  
 LC24=1.2DL+WL0+1.6LLa3  
 LC25=1.2DL+WL30+1.6LLa3  
 LC26=1.2DL-WL0+1.6LLa3  
 LC27=1.2DL-WL30+1.6LLa3  
 LC28=1.2DL+WL0+1.6LLa4  
 LC29=1.2DL+WL30+1.6LLa4  
 LC30=1.2DL-WL0+1.6LLa4  
 LC31=1.2DL-WL30+1.6LLa4

Node		Forces						Moments					
		Fx	Ic	Fy	Ic	Fz	Ic	Mx	Ic	My	Ic	Mz	Ic
		[Kip]		[Kip]		[Kip]		[Kip*ft]		[Kip*ft]		[Kip*ft]	
63	Max	1.644	LC2	1.084	LC10	-0.198	LC7	0.00000	LC1	1.62169	LC2	0.00000	LC1
	Min	-1.527	LC8	0.320	LC5	-1.315	LC9	0.00000	LC1	-1.53042	LC8	0.00000	LC1
64	Max	1.051	LC17	1.246	LC12	1.688	LC9	0.00000	LC1	1.13002	LC17	0.00000	LC1
	Min	-1.172	LC23	0.365	LC7	-0.190	LC7	0.00000	LC1	-1.31679	LC23	0.00000	LC1
126	Max	1.063	LC3	1.037	LC9	1.586	LC1	0.00000	LC1	1.08432	LC1	0.00000	LC1
	Min	-0.377	LC5	0.250	LC7	-1.048	LC7	0.00000	LC1	-1.01779	LC7	0.00000	LC1
127	Max	0.343	LC6	1.306	LC11	0.495	LC5	0.00000	LC1	0.80995	LC5	0.00000	LC1
	Min	-1.279	LC12	0.334	LC5	-1.134	LC3	0.00000	LC1	-0.90559	LC3	0.00000	LC1

190	Max	0.348	LC5	1.028	LC12	1.576	LC1	0.00000	LC1	1.18111	LC3	0.00000	LC1
	Min	-1.150	LC3	0.254	LC6	-1.242	LC7	0.00000	LC1	-1.12414	LC5	0.00000	LC1
<hr/>													
191	Max	1.372	LC2	1.295	LC11	0.494	LC5	0.00000	LC1	0.80009	LC7	0.00000	LC1
	Min	-0.357	LC8	0.337	LC8	-0.967	LC3	0.00000	LC1	-0.90110	LC1	0.00000	LC1
<hr/>													



**HUDSON**  
Design Group LLC

## Connection Check

Date: 12/3/2021  
 Project Name: REDDING BLACK ROCK ROAD  
 Project No.: CT1338  
 Designed By: ID Checked By: MSC



### CHECK CONNECTION CAPACITY (Worst Case)

**Reference:** AISC Steel Construction Manual 14th Edition (ASD)

**Bolt Type =** A325 5/8" (Threaded Rod)

**Allowable Tensile Load =**

$$F_{Tall} = 13806 \text{ lbs.}$$

**Allowable Shear Load =**

$$F_{Vall} = 8283 \text{ lbs.}$$

### TENSILE FORCES

**Reaction**  $F = 1315 \text{ lbs.}$  (See Bentley Output)

### SHEAR FORCES

**Reactions in X direction:** 1644 lbs. (See Bentley Output)

**Reactions in Y direction:** 1084 lbs. (See Bentley Output)

**Resultant:** 1969 lbs.

**No. of Supports =** 1

**No. of Bolts / Support =** 3

**Tension Design Load /Bolts =**

$$f_t = 438.33 \text{ lbs.} < 13806 \text{ lbs.} \text{ Therefore, OK !}$$

**Shear Design Load / Bolts=**

$$f_v = 656.40 \text{ lbs.} < 8283 \text{ lbs.} \text{ Therefore, OK !}$$

### CHECK COMBINED TENSION AND SHEAR

$$\begin{array}{rclclcl}
 f_t / F_T & + & f_v / F_V & \leq & 1.0 \\
 0.032 & + & 0.079 & = & 0.111 < 1.0 \text{ Therefore, OK !}
 \end{array}$$

## **ATTACHMENT 5**



C Squared Systems, LLC  
65 Dartmouth Drive  
Auburn, NH 03032  
603-644-2800  
[support@csquaredsystems.com](mailto:support@csquaredsystems.com)

---

## Calculated Radio Frequency Exposure



CT1338

186 Black Rock Turnpike, Redding, CT

---

March 30, 2022

## Table of Contents

1. Introduction.....	1
2. FCC Guidelines for Evaluating RF Radiation Exposure Limits.....	1
3. RF Exposure Calculation Methods.....	2
4. Calculation Results .....	3
5. Conclusion .....	4
6. Statement of Certification.....	4
Attachment A: References .....	5
Attachment B: FCC Limits for Maximum Permissible Exposure (MPE) .....	6
Attachment C: AT&T Antenna Data Sheets and Electrical Patterns.....	8

## List of Tables

Table 1: Carrier Information.....	3
Table 2: FCC Limits for Maximum Permissible Exposure (MPE) .....	6

## List of Figures

Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE).....	7
---	---



## 1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of AT&T antenna arrays on an existing tower located at 186 Black Rock Turnpike in Redding, CT. The coordinates of the existing tower are 41° 18' 35.77"N, 73° 20' 51.35"W.

AT&T is proposing the following:

- 1) Install six (6) multi-band antennas (two (2) per sector) to support its commercial LTE network and the FirstNet National Public Safety Broadband Network ("NPSBN").

This report considers the planned antenna configuration for AT&T<sup>1</sup> to derive the resulting % Maximum Permissible Exposure of its proposed installation.

## 2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

---

<sup>1</sup> As referenced to AT&T's Radio Frequency Design Sheet dated 10/6/2021.

### 3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left( \frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

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

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

#### 4. Calculation Results

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

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm <sup>2</sup> )	Limit	% MPE
Redding FD WNWN646	85	33	3	95	0.0164	0.2000	0.82%
Redding FD WNWN646	60	33	1	95	0.0117	0.2000	0.59%
Redding FD WQKB457	100	150	2	17	0.0013	0.2000	0.07%
Verizon	140	751	4	591	0.0473	0.5007	0.95%
Verizon	140	874	4	677	0.0542	0.5827	0.93%
Verizon	140	1980	4	1008	0.0808	1.0000	0.81%
Verizon	140	2120	4	987	0.0791	1.0000	0.79%
Verizon	140	3730	4	6531	0.5232	1.0000	5.23%
AT&T	145	739	1	2450	0.0046	0.4927	0.93%
AT&T	145	763	1	2749	0.0051	0.5087	1.01%
AT&T	145	885	1	2813	0.0052	0.5900	0.89%
AT&T	145	1900	2	6297	0.0234	1.0000	2.34%
AT&T	145	2100	2	9445	0.0352	1.0000	3.52%
						<b>AT&amp;T Total</b>	<b>18.86%</b>

Table 1: Carrier Information<sup>2</sup>

<sup>2</sup> The existing record in the CSC Power Density Table for AT&T should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for Redding FD and Verizon was taken directly from the CSC database dated 01/21/2022. Please note that % MPE values listed are rounded to two decimal points and the total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

## 5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level is **18.86% of the FCC General Population/Uncontrolled limit.**

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

## 6. Statement of Certification

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



---

March 30, 2022  
Date

Reviewed/Approved By: Martin J. Lavin  
Senior RF Engineer  
C Squared Systems, LLC

### **Attachment A: References**

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

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

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

### (A) Limits for Occupational/Controlled Exposure<sup>3</sup>

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

### (B) Limits for General Population/Uncontrolled Exposure<sup>4</sup>

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

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

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

<sup>3</sup> Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

<sup>4</sup> General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

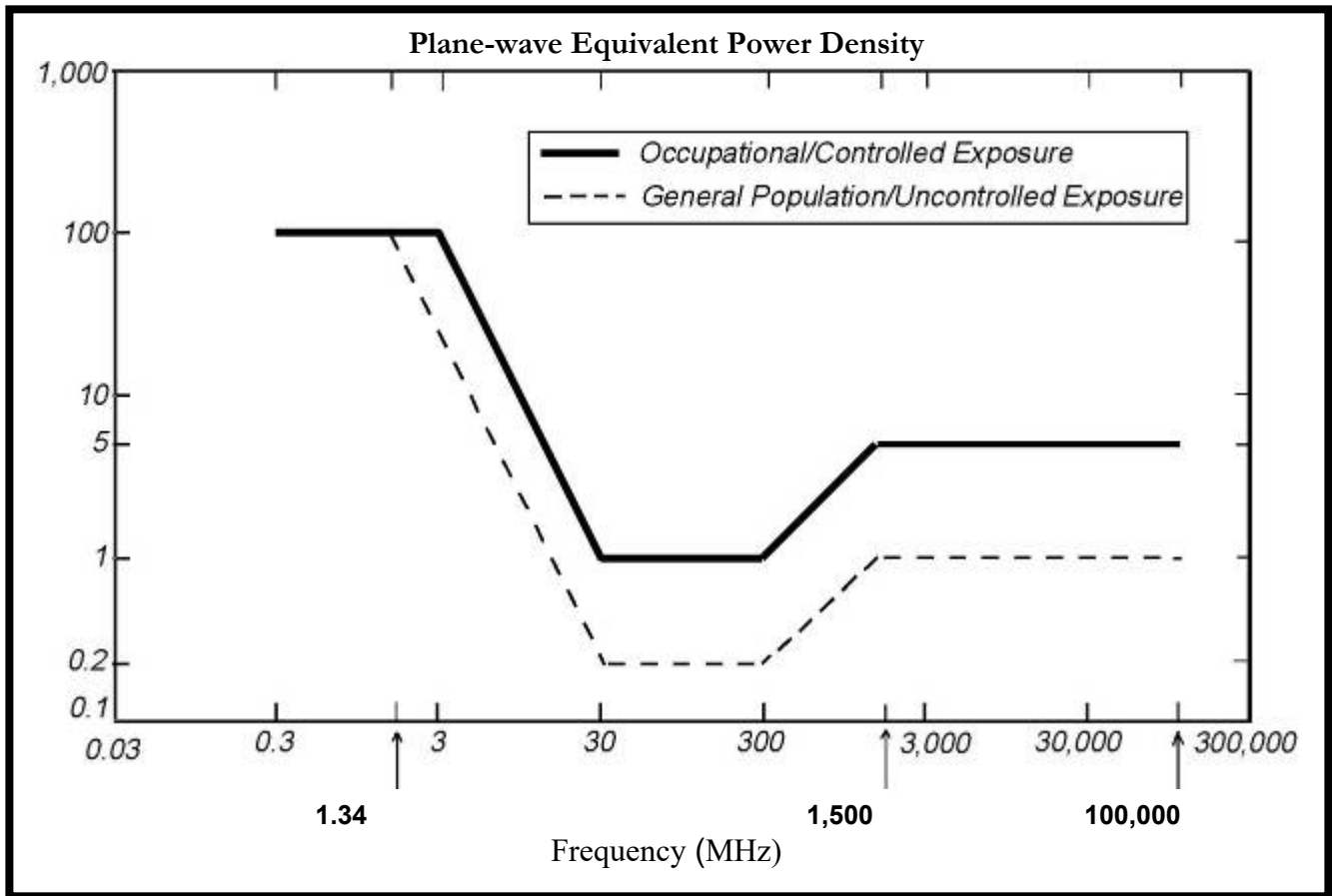
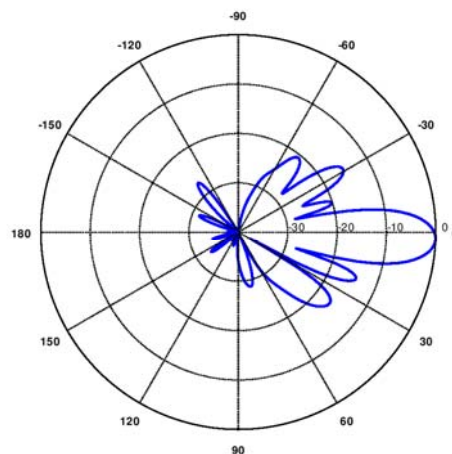


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

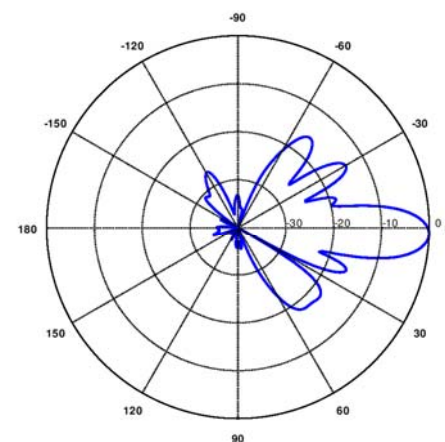
### 739 MHz

Manufacturer: CCI Products  
 Model #: DMP65R-BU6D  
 Frequency Band: 698-798 MHz  
 Gain: 14.0 dBi  
 Vertical Beamwidth: 13.0°  
 Horizontal Beamwidth: 74°  
 Polarization: Dual Linear 45°  
 Size L x W x D: 71.2" × 20.7" × 7.7"



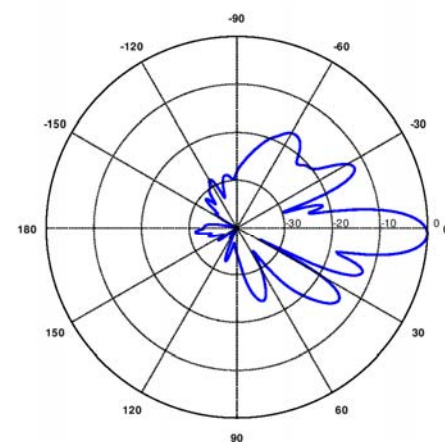
### 763 MHz

Manufacturer: CCI Products  
 Model #: TPA65R-BU6D  
 Frequency Band: 698 - 806MHz  
 Gain: 14.5 dBi  
 Vertical Beamwidth: 12.8°  
 Horizontal Beamwidth: 73°  
 Polarization: Dual Linear 45°  
 Size L x W x D: 71.2" × 20.7" × 7.7"



### 885 MHz

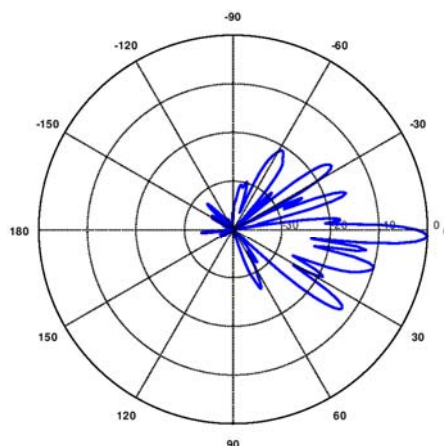
Manufacturer: CCI Products  
 Model #: DMP65R-BU6D  
 Frequency Band: 824 - 896 MHz  
 Gain: 14.6 dBi  
 Vertical Beamwidth: 11.1°  
 Horizontal Beamwidth: 63°  
 Polarization: Dual Linear 45°  
 Size L x W x D: 71.2" × 20.7" × 7.7"





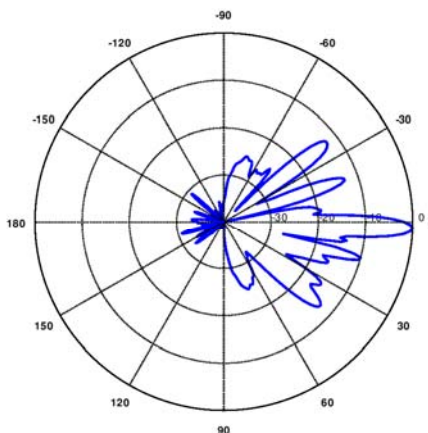
### 1900 MHz

Manufacturer: CCI Products  
 Model #: TPA65R-BU6D  
 Frequency Band: 1920-1990 MHz  
 Gain: 18.1 dBi  
 Vertical Beamwidth: 5.2°  
 Horizontal Beamwidth: 66°  
 Polarization: Dual Linear 45°  
 Size L x W x D: 71.2" × 20.7" × 7.7"



### 2100 MHz

Manufacturer: CCI Products  
 Model #: DMP65R-BU6D  
 Frequency Band: 1920-2180 MHz  
 Gain: 18.1 dBi  
 Vertical Beamwidth: 4.8°  
 Horizontal Beamwidth: 68°  
 Polarization: Dual Linear 45°  
 Size L x W x D: 71.2" × 20.7" × 7.7"



## **ATTACHMENT 6**



445 Hamilton Avenue, 14th Floor  
White Plains, New York 10601  
T 914 761 1300  
F 914 761 5372  
cuddyfeder.com

Daniel Patrick  
[dpatrick@cuddyfeder.com](mailto:dpatrick@cuddyfeder.com)

July 20, 2022

**FEDERAL EXPRESS**

Julia Pemberton, First Selectwoman  
Town of Redding  
100 Hill Road  
P.O. Box 1028  
Redding, CT 06875

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC  
Premises: 186 Black Rock Turnpike, Redding, Connecticut

Dear First Selectwoman Pemberton:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the existing communications tower and at the associated compound at 186 Black Rock Turnpike in the Town of Redding. AT&T proposes to install 6 antennas, 9 remote radiohead units on a sector frame mount attached to the existing tower at the centerline height of approximately 145' above ground level, with the height to the top of AT&T's antennas at approximately 148' above ground level.

Enclosed herein is a copy of the submission made to the Council requesting approval of the tower share which includes information regarding the technical, legal, environmental, and economic feasibility of AT&T's proposed installation.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'DP', is written over a horizontal line.

Daniel Patrick  
Enclosure



## Shipment Receipt

### Address Information

#### Ship to:

Julia Pemberton  
First Selectwoman  
Town of Redding  
100 Hill Road  
REDDING CENTER, CT  
06875  
US  
914 761 1300

#### Ship from:

Daniel Patrick  
Cuddy & Feder LLP  
445 Hamilton Avenue  
Suite 1400  
White Plains, NY  
10601  
US  
9147611300

### Shipment Information:

Tracking no.: 777437715114

Ship date: 07/20/2022

Estimated shipping charges: 27.23 USD

### Package Information

Pricing option: FedEx Standard Rate

Service type: Priority Overnight

Package type: FedEx Pak

Number of packages: 1

Total weight: 1 LBS

Declared Value: 0.00 USD

Special Services: No signature required

Pickup/Drop-off: Use an already scheduled pickup at my location

### Billing Information:

Bill transportation to: CuddyFeder-963

Your reference: 1844-3768

P.O. no.:

Invoice no.:

Department no.:

Thank you for shipping online with FedEx ShipManager at [fedex.com](https://fedex.com).

### Please Note

FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1000, e.g., jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits. Consult the applicable FedEx Service Guide for details.

The estimated shipping charge may be different than the actual charges for your shipment. Differences may occur based on actual weight, dimensions, and other factors. Consult the applicable [FedEx Service Guide](#) or the FedEx Rate Sheets for details on how shipping charges are calculated.



Daniel Patrick  
[dpatrick@cuddyfeder.com](mailto:dpatrick@cuddyfeder.com)

July 20, 2022

**FEDERAL EXPRESS**

Aimee Pardee, Land Use Director  
Old Town House  
23 Cross Highway  
P.O. Box 1028  
Redding, CT 06875

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC  
Premises: 186 Black Rock Turnpike, Redding, Connecticut

Dear Ms. Pardee:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the existing communications tower and at the associated compound at 186 Black Rock Turnpike in the Town of Redding. AT&T proposes to install 6 antennas, 9 remote radiohead units on a sector frame mount attached to the existing tower at the centerline height of approximately 145' above ground level, with the height to the top of AT&T's antennas at approximately 148' above ground level.

Enclosed herein is a copy of the submission made to the Council requesting approval of the tower share which includes information regarding the technical, legal, environmental, and economic feasibility of AT&T's proposed installation.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'DP', with a stylized flourish extending to the right.

Daniel Patrick  
Enclosure



## Shipment Receipt

### Address Information

#### Ship to:

Aimee Pardee  
Land Use Director  
Old Town House  
23 Cross Highway  
REDDING CENTER, CT  
06875  
US  
914 761-1300

#### Ship from:

Daniel Patrick  
Cuddy & Feder LLP  
445 Hamilton Avenue  
Suite 1400  
White Plains, NY  
10601  
US  
9147611300

### Shipment Information:

Tracking no.: 777437816812

Ship date: 07/20/2022

Estimated shipping charges: 21.52 USD

### Package Information

Pricing option: FedEx Standard Rate

Service type: Priority Overnight

Package type: FedEx Envelope

Number of packages: 1

Total weight: 1 LBS

Declared Value: 0.00 USD

Special Services: No signature required

Pickup/Drop-off: Use an already scheduled pickup at my location

### Billing Information:

Bill transportation to: CuddyFeder-963

Your reference: 1844-3768

P.O. no.:

Invoice no.:

Department no.:

Thank you for shipping online with FedEx ShipManager at [fedex.com](https://fedex.com).

### Please Note

FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1000, e.g., jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits; Consult the applicable FedEx Service Guide for details. The estimated shipping charge may be different than the actual charges for your shipment. Differences may occur based on actual weight, dimensions, and other factors. Consult the applicable [FedEx Service Guide](#) or the FedEx Rate Sheets for details on how shipping charges are calculated.



Daniel Patrick  
[dpatrick@cuddyfeder.com](mailto:dpatrick@cuddyfeder.com)

July 20, 2022

**FEDERAL EXPRESS**

Redding Fire District 1  
P.O. Box 45  
Redding, CT 06875

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC  
Premises: 186 Black Rock Turnpike, Redding, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the existing communications tower and at the associated compound at 186 Black Rock Turnpike in the Town of Redding. AT&T proposes to install 6 antennas, 9 remote radiohead units on a sector frame mount attached to the existing tower at the centerline height of approximately 145' above ground level, with the height to the top of AT&T's antennas at approximately 148' above ground level.

Enclosed herein is a copy of the submission made to the Council requesting approval of the tower share which includes information regarding the technical, legal, environmental, and economic feasibility of AT&T's proposed installation.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

A handwritten signature in dark ink, appearing to be 'DP', written over a horizontal line.

Daniel Patrick  
Enclosure



## Shipment Receipt

### Address Information

**Ship to:**

Redding Fire District 1

186 Black Road Turnpike

REDDING CENTER, CT  
06875

US

914 761 1300

**Ship from:**

Daniel Patrick

Cuddy & Feder LLP

445 Hamilton Avenue

Suite 1400

White Plains, NY

10601

US

9147611300

### Shipment Information:

Tracking no.: 777437946531

Ship date: 07/20/2022

Estimated shipping charges: 27.23 USD

### Package Information

Pricing option: FedEx Standard Rate

Service type: Priority Overnight

Package type: FedEx Pak

Number of packages: 1

Total weight: 1 LBS

Declared Value: 0.00 USD

Special Services: No signature required

Pickup/Drop-off: Use an already scheduled pickup at my location

### Billing Information:

Bill transportation to: CuddyFeder-963

Your reference: 1844-3768

P.O. no.:

Invoice no.:

Department no.:

Thank you for shipping online with FedEx ShipManager at [fedex.com](https://fedex.com).

### Please Note

FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1000, e.g., jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits; Consult the applicable FedEx Service Guide for details.

The estimated shipping charge may be different than the actual charges for your shipment. Differences may occur based on actual weight, dimensions, and other factors. Consult the applicable FedEx Service Guide or the FedEx Rate Sheets for details on how shipping charges are calculated.





Daniel Patrick  
[dpatrick@cuddylfeder.com](mailto:dpatrick@cuddylfeder.com)

July 20, 2022

**FEDERAL EXPRESS**

Message Center Management  
40 Woodland Street  
Hartford, CT 06105

Re: Tower Sharing Request by New Cingular Wireless PCS, LLC  
Premises: 186 Black Rock Turnpike, Redding, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced request to the Connecticut Siting Council ("Council") for shared use approval to allow AT&T to install its wireless communications equipment on the existing communications tower and at the associated compound at 186 Black Rock Turnpike in the Town of Redding. AT&T proposes to install 6 antennas, 9 remote radiohead units on a sector frame mount attached to the existing tower at the centerline height of approximately 145' above ground level, with the height to the top of AT&T's antennas at approximately 148' above ground level.

Enclosed herein is a copy of the submission made to the Council requesting approval of the tower share which includes information regarding the technical, legal, environmental, and economic feasibility of AT&T's proposed installation.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

A handwritten signature in dark ink, appearing to be 'DP', written over a horizontal line.

Daniel Patrick  
Enclosure



## Shipment Receipt

### Address Information

**Ship to:**

Message Center Management

40 Woodland Street

HARTFORD, CT

06105

US

914 761 1300

**Ship from:**

Daniel Patrick

Cuddy & Feder LLP

445 Hamilton Avenue

Suite 1400

White Plains, NY

10601

US

9147611300

### Shipment Information:

Tracking no.: 777437975906

Ship date: 07/20/2022

Estimated shipping charges: 22.97 USD

### Package Information

Pricing option: FedEx Standard Rate

Service type: Priority Overnight

Package type: FedEx Pak

Number of packages: 1

Total weight: 1 LBS

Declared Value: 0.00 USD

Special Services: No signature required

Pickup/Drop-off: Use an already scheduled pickup at my location

### Billing Information:

Bill transportation to: CuddyFeder-963

Your reference: 1844-3768

P.O. no.:

Invoice no.:

Department no.:

Thank you for shipping online with FedEx ShipManager at [fedex.com](https://fedex.com).

### Please Note

FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1000, e.g., jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits; Consult the applicable FedEx Service Guide for details.

The estimated shipping charge may be different than the actual charges for your shipment. Differences may occur based on actual weight, dimensions, and other factors. Consult the applicable FedEx Service Guide or the FedEx Rate Sheets for details on how shipping charges are calculated.