



**Crown Castle**  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

December 7, 2016

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

**RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 876354**  
**AT&T Site ID: CT2153**  
**515 Post Road East, Westport, CT 06880**  
**Latitude: 41° 8' 24.26" / Longitude: -73° 20' 51.61"**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 120-foot level of the existing 148-foot monopole at 515 Post Road East in Westport, CT. The tower is owned by Crown Castle. The property is owned by the Town of Westport. AT&T now intends to replace three (3) Powerwave with three (3) Quintel new 1.9 GHz antenna. AT&T also intends to install three (3) RRU32s, two (2) DC, one (1) Fiber, one (1) Raycap, and place six (6) triplexers.

This facility was approved by the Westport Zoning Board of Appeals in ZBA Case #5347 on January 21, 1997. This approval included the conditions that:

1. Mindful of the mandate of the Telecommunications Act of 1996, The Town shall not unreasonably discriminate among providers of functionally equivalent services; The Town shall encourage collocation of other commercial providers as such services on this monopole. The Town shall retain the discretion to all additional commercial users licensed by the FCC on this monopole.
2. The proposed tower height cannot exceed 150 feet in total height.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. James Marpe, First Selectman for the Town of Westport, as well as the property owner, and Crown Castle is the tower owner.

Melanie A. Bachman

December 7, 2016

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1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora  
Real Estate Specialist  
12 Gill Street, Suite 5800, Woburn, MA 01801  
781-729-0053  
[Jeff.Barbadora@crowncastle.com](mailto:Jeff.Barbadora@crowncastle.com)

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. James Marpe, First Selectman  
110 Myrtle Avenue, Room 310  
Westport, CT 06880

Town of Westport  
110 Myrtle Avenue  
Westport, CT 06880



**Attorneys at Law**

777 Summer Street  
P.O. Box 15859  
Stamford, Connecticut 06901-0859

(203) 327-2000  
Facsimile (203) 353-3392

e.mail: LAWCTS@AOL.COM

February 7, 1997

MICHAEL J. CACACE\*  
MARK P. SANTAGATA  
PAUL T. TUSCH  
KENNETH A. DELLAROCCO\*  
EDWARD F. NEMCHEK\*  
ALICE ANN FITZPATRICK  
RONALD E. KOWALSKI, II  
RUSSELL A. GREEN\*  
AAMINA AHMAD

LEGAL ASSISTANTS  
SONJA WALTON  
JANE E. BARUCCI  
CAROLINE A. TOMAC  
SANDRA MILGRIM

\*ALSO ADMITTED IN NEW YORK

Mr. Stephen Howard  
Property Specialist  
Sprint Spectrum, L.P.  
9 Barnes Industrial Road  
Wallingford, CT 06492

Re: Westport Fire Station/Sprint Site 355

Dear Steve:

As you know, on January 21, 1997, the Westport Zoning Board of Appeals approved the application for a variance for the above-referenced site and on January 23, 1997, the Westport Planning & Zoning Commission approved a site plan/special permit application together with a positive report pursuant to Section 8-24 of the Connecticut General Statutes to the First Selectman on the lease between Sprint Spectrum and the Town of Westport on the above-referenced site. Subsequently, the Fire Chief has requested that the First Selectman place approval of the lease for the site on the agenda of the Board of Selectmen for its February 12 meeting. Upon approval of the lease by the Board of Selectmen, the Fire Chief will be empowered to enter into the proposed lease with Sprint Spectrum, L.P. I have enclosed the resolutions approving the applications from both the Zoning Board of Appeals and the Planning & Zoning Commission.

Although I believe you already have copies of these approvals, I do want to highlight some conditions contained in the approvals which I believe you should be aware of. The Zoning Board of Appeals (ZBA Case # 5347) approval of our variance request contains the following condition:

Mindful of the mandate of the Telecommunications Act of 1996, The Town shall not unreasonably discriminate among providers of functionally equivalent services; The Town shall encourage co-location of other commercial providers as such services on this monopole. The Town shall retain the discretion to allow

Mr. Stephen Howard  
February 7, 1997  
Page Two

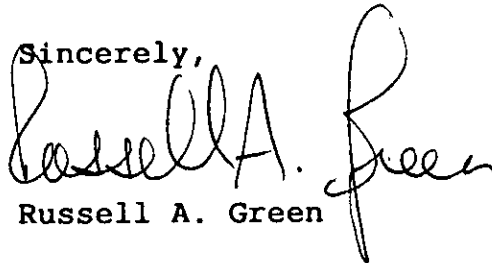
additional commercial users licensed by the  
FCC on this monopole.

The proposed tower can not exceed 150 feet in total height.

The Planning & Zoning Commission in Resolution No. 96-130 incorporated as a condition of approval conformance to ZBA Variance and thereby the above-noted conditions. In addition, both approvals require conformance to the maps and plans submitted with the applications.

Should you have any questions or concerns, please do not hesitate to contact me. Thank you for your attention to this matter.

Sincerely,

A handwritten signature in cursive script that reads "Russell A. Green". The signature is written in black ink and is positioned to the right of the typed name.

Russell A. Green

RAG/glb

Enc.

cc: Julie Reach  
Scott Chasse  
Paul T. Tusch

PNZ\G7206Let.Spr

## 515 POST RD E

**Location** 515 POST RD E

**Mblu** E09/ / 064/000 000/

**Acct#** 14749

**Owner** SPRINT SPECTRUM LP

**Assessment** \$919,300

**Appraisal** \$1,313,300

**PID** 100864

**Building Count** 1

### Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$1,313,300	\$0	\$1,313,300

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$919,300	\$0	\$919,300

### Owner of Record

**Owner** SPRINT SPECTRUM LP  
**Co-Owner**  
**Address** PO BOX 8430  
 KANSAS CITY, MO 64114-8430

**Sale Price** \$0  
**Certificate**  
**Book & Page** 123/ 123  
**Sale Date** 11/15/2015  
**Instrument** 29

### Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
SPRINT SPECTRUM LP	\$0		123/ 123	29	11/15/2015

### Building Information

#### Building 1 : Section 1

**Year Built:**  
**Living Area:** 0  
**Replacement Cost:** \$0  
**Building Percent Good:**  
**Replacement Cost Less Depreciation:** \$0

#### Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Building Attributes	
Field	Description
Style	Vacant Land
Model	

Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Kitchens	
Whirlpool Tubs	
Hot Tubs	
Sauna (SF Area)	
Fin Basement	
Fin Bsmt Qual	
Bsmt. Garages	
Interior Cond	
Fireplaces	
Ceiling Height	
Sprinklers	
Acc Apts	

**Extra Features**

Extra Features	<u>Legend</u>
No Data for Extra Features	

**Land**

Land Use	Land Line Valuation
Use Code      390	Size (Acres)      0

**Description** Com Ld Dv  
**Zone**  
**Neighborhood**  
**Alt Land Appr** No  
**Category**

**Frontage**  
**Depth**  
**Assessed Value** \$0  
**Appraised Value** \$0

**Outbuildings**

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CELL	Cell on BLDG	SI		4 Sites	\$1,312,000	1

**Valuation History**

Appraisal
No Data for Appraisal History

Assessment
No Data for Assessment History

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**PROJECT INFORMATION**

SCOPE OF WORK: • REPLACE EXISTING ANTENNA PLATFORM WITH VALMONT SITE PRO LOW PROFILE PLATFORM WITH HANDRAIL KIT (P/N: RMQP-384 & HRK12)  
 • AT&T ANTENNAS: RELOCATE (3) EXISTING ANTENNAS PER SECTOR TO NEW LOW PROFILE MOUNT, FOR A TOTAL (9) RELOCATED ANTENNAS.  
 • AT&T RRUS: REMOVE (1) RRUN PER SECTOR FOR A TOTAL OF (3) REMOVED RRUS; INSTALL (1) NEW RRUS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUS; RELOCATE (2) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (6) EXISTING RRUS RELOCATED TO NEW LOW PROFILE PLATFORM.

SITE ADDRESS: 515 POST ROAD EAST  
WESTPORT, CT 06880

LATITUDE: 41.1401589 41° 8' 24.57204"N  
 LONGITUDE: -73.3472211 -73° 20' 49.99596"W

USID: 60434

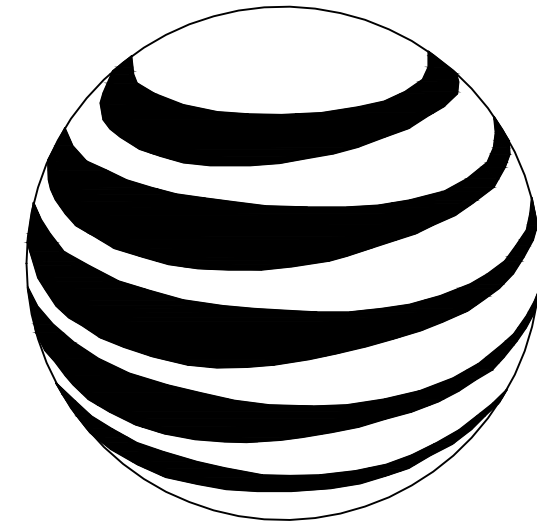
TOWER OWNER: CITY HALL  
125 EAST AVENUE  
NORWALK, CT 06851

TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

MONOPOLE HEIGHT: 148-0"±  
 RAD CENTER: 120'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



**at&t**  
MOBILITY

**FA CODE: 10035241**  
**SITE NUMBER: CTU2153**  
**SITE NAME: WESTPORT FD**  
**CROWN BU: 876354**

**PROJECT TEAM**

**CLIENT REPRESENTATIVE**

COMPANY: EMPIRE TELECOM  
 ADDRESS: 16 ESQUIRE ROAD  
BILLERICA, MA 01821  
 CONTACT: DAVID COOPER  
 PHONE: 617-639-4908  
 EMAIL: dcooper@empiretelecomm.com

**SITE ACQUISITION:**

COMPANY: EMPIRE TELECOM  
 ADDRESS: 16 ESQUIRE ROAD  
BILLERICA, MA 01821  
 CONTACT: DAVID COOPER  
 PHONE: 617-639-4908  
 EMAIL: dcooper@empiretelecomm.com

COMPANY: EMPIRE TELECOM  
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BILLERICA, MA 01821  
 CONTACT: DAVID COOPER  
 PHONE: 617-639-4908  
 EMAIL: dcooper@empiretelecomm.com

**ENGINEERING:**

COMPANY: COM-EX CONSULTANTS, LLC  
 ADDRESS: 115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
 CONTACT: NICHOLAS D. BARILE, P.E.  
 PHONE: 862-209-4300  
 EMAIL: nbarile@comexconsultants.com

**RF ENGINEER:**

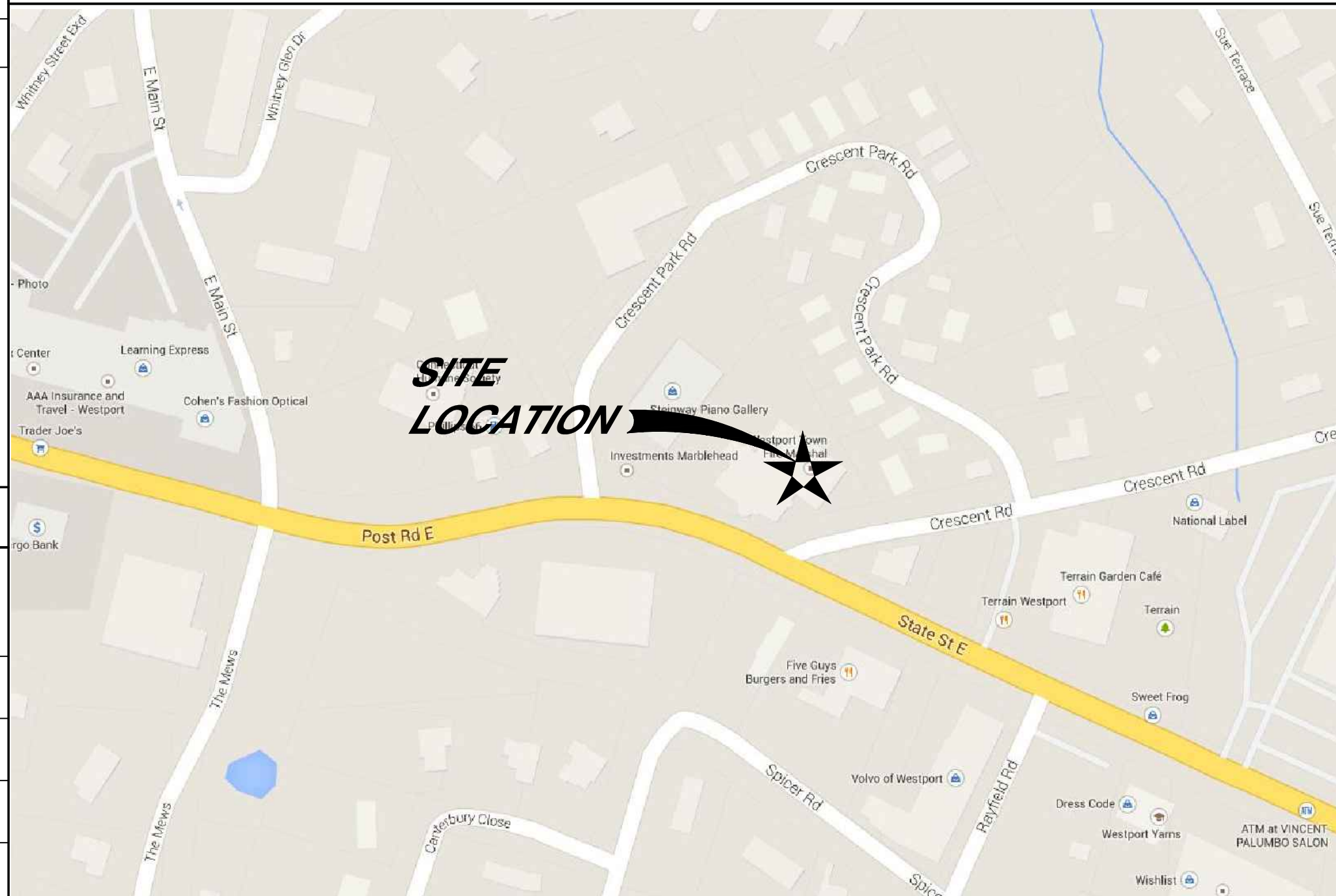
COMPANY: AT&T MOBILITY – NEW ENGLAND  
 ADDRESS: 550 COCHITUATE ROAD  
SUITE 550 13 & 14  
FRAMINGHAM, MA 01701  
 CONTACT: CAMERON SYME  
 PHONE: 508-596-7146  
 EMAIL: cs6970@att.com

**CONSTRUCTION MANAGEMENT:**

COMPANY: EMPIRE TELECOM  
 ADDRESS: 16 ESQUIRE ROAD  
BILLERICA, MA 01821  
 CONTACT: GRZEGORZ "GREG" DORMAN  
 PHONE: 484-683-1750  
 EMAIL: gdorman@empiretelecomm.com

**VICINITY MAP**

1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. 0.3 MILES. TURN LEFT AT CAPITAL BLVD. 0.3 MILES. TURN LEFT AT WEST ST. 0.3 MILES. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN. 9.6 MILES. TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY. 0.4 MILES. MERGE ONTO CT-15 S. 29.8 MILES. TAKE EXIT 52 FOR STATE ROUTE 108 S/STATE ROUTE 8 S TOWARD BRIDGEPORT. 0.7 MILES. FOLLOW SIGNS FOR CT-8 S/BRIDGEPORT AND MERGE ONTO CT-8 S/STATE ROUTE 8 S. 5.3 MILES. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-95 S/N.Y. CITY AND MERGE ONTO I-95 S. 5.6 MILES. TAKE EXIT 19 TOWARD US-1/S PORT. 0.2 MILES. MERGE ONTO PEASE AVE. 0.1 MILES. SLIGHT RIGHT AT US-1 S/POST RD DESTINATION WILL BE ON THE RIGHT. 3.1 MILES.



**GENERAL NOTES**

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- 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.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

**DRAWING INDEX**

**REV.**

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A-3	ANTENNA LAYOUTS & ELEVATIONS	B
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**APPROVALS**

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		



CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



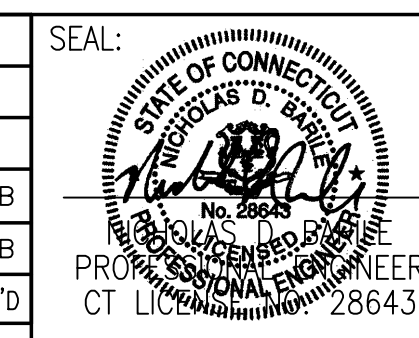
**SITE NUMBER: CTU2153**  
**SITE NAME: WESTPORT FD**

515 POST ROAD EAST  
WESTPORT, CT 06880  
FAIRFIELD COUNTY



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	11/7/16	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
A	07/20/16	ISSUED AS PRELIMINARY	KCD	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: AM		



<b>AT&amp;T</b>		
DRAWING TITLE: <b>TITLE SHEET</b>		
JOB NUMBER 16040-EMP	DRAWING NUMBER T-1	REV B



**GROUNDING NOTES:**

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

**GENERAL NOTES:**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR – EMPIRE TELECOM  
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER – AT&T MOBILITY  
 OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (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.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

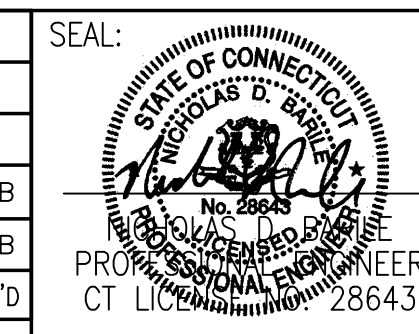
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
  - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
  - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
  - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
  - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
  - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
  - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
  - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
  - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
  - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.
22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY TURNING MILL CONSULTANTS, LLC FOR A RECENT UPGRADE DATED 06/26/2013. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.



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**SITE NAME: WESTPORT FD**  
 515 POST ROAD EAST  
 WESTPORT, CT 06880  
 FAIRFIELD COUNTY

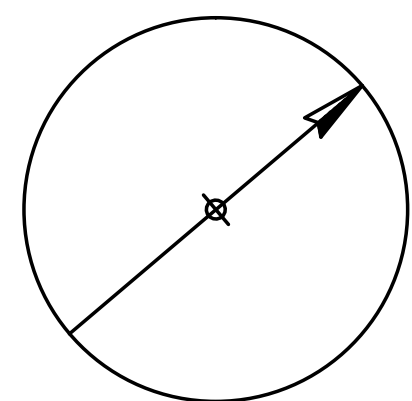
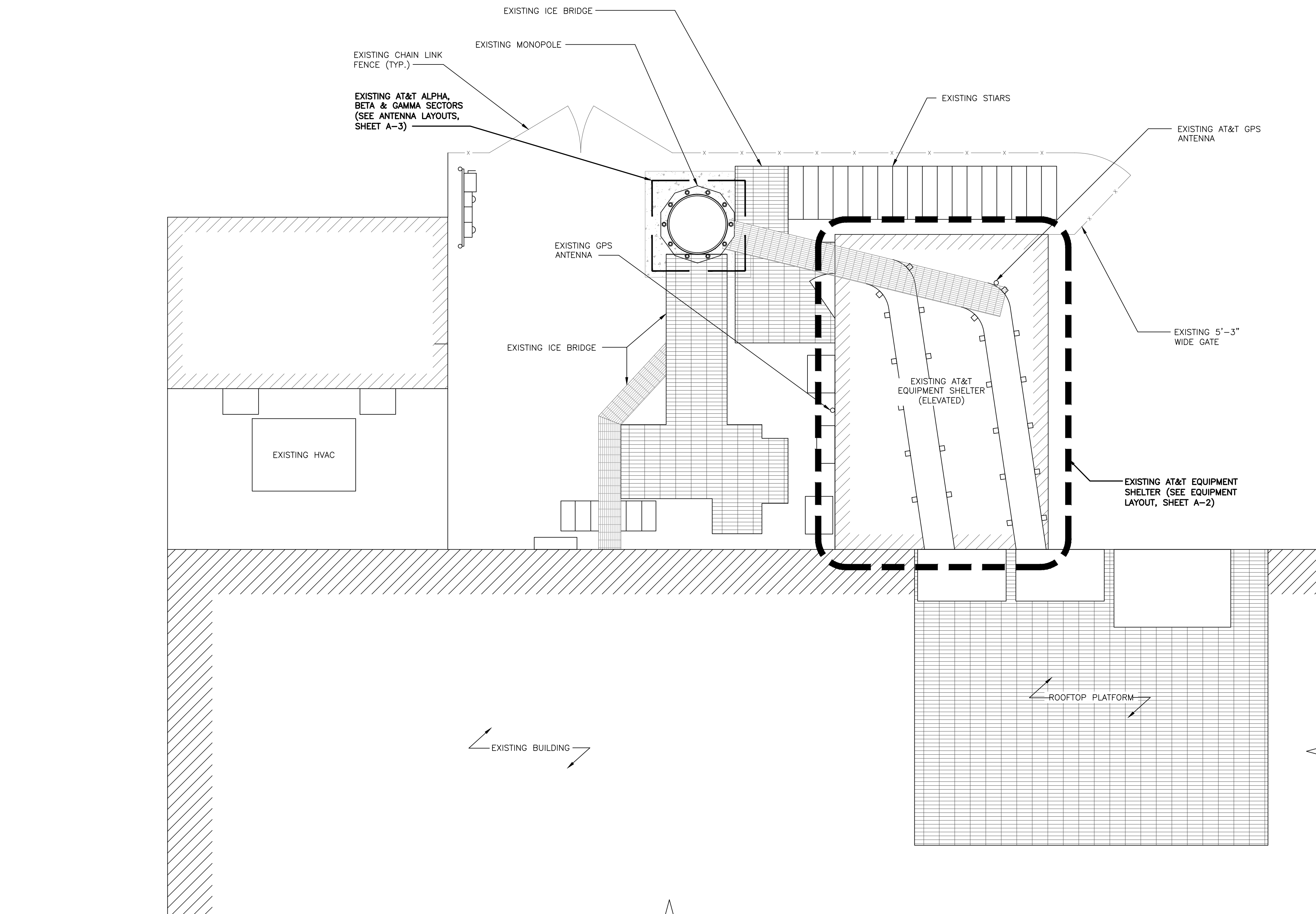


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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: AM		



<b>AT&amp;T</b>		
DRAWING TITLE: <b>GROUNDING &amp; GENERAL NOTES</b>		
JOB NUMBER 16040-EMP	DRAWING NUMBER GN-1	REV B





NORTH

**COMPOUND LAYOUT**

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



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

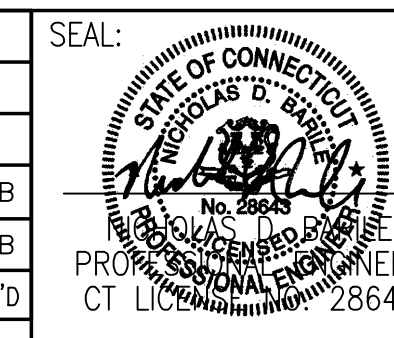
**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

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

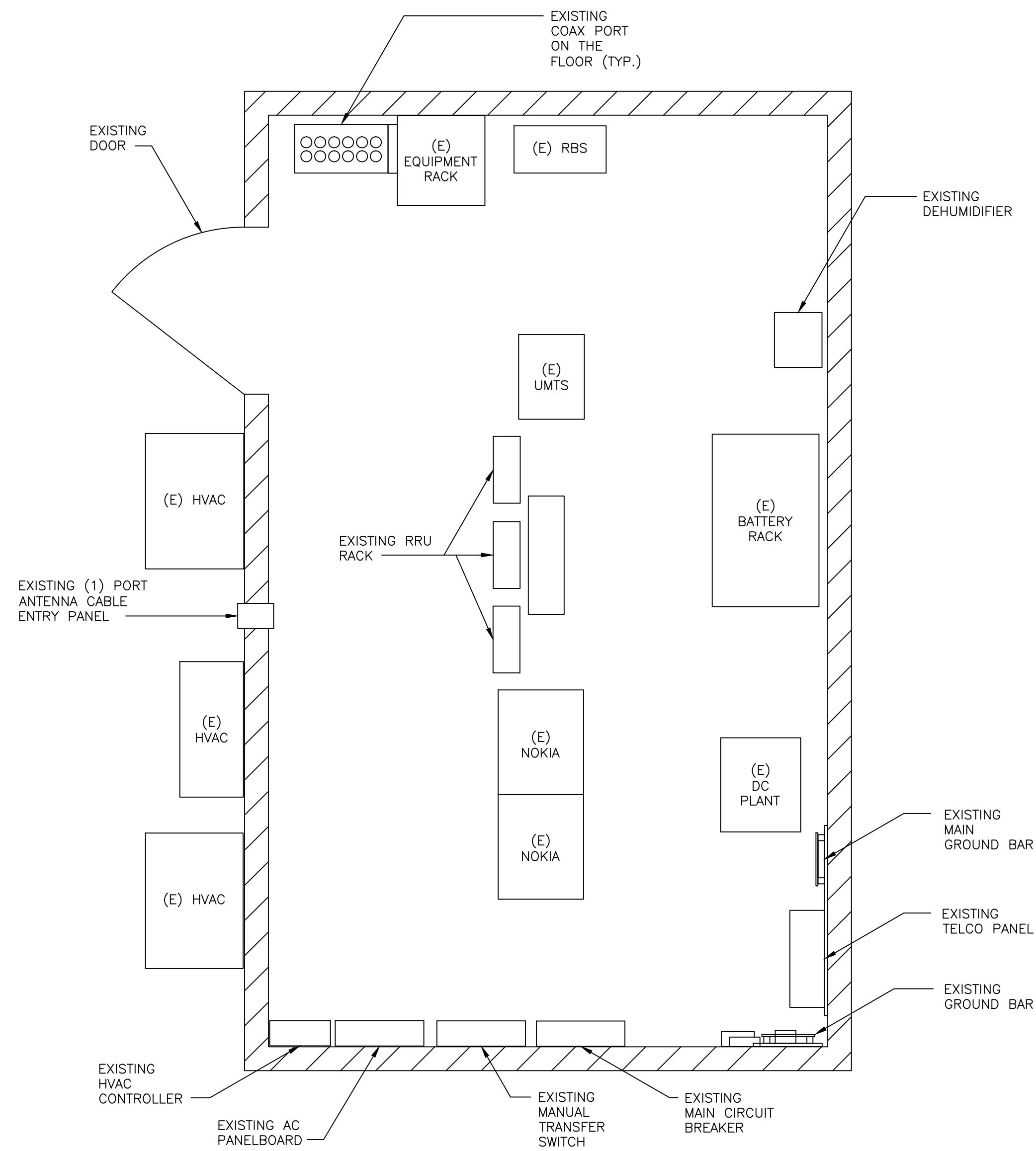
**SITE NUMBER: CTU2153**  
**SITE NAME: WESTPORT FD**  
515 POST ROAD EAST  
WESTPORT, CT 06880  
FAIRFIELD COUNTY

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

B	11/7/16	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: AM		



<b>AT&amp;T</b>		
DRAWING TITLE: <b>COMPOUND LAYOUT</b>		
JOB NUMBER 16040-EMP	DRAWING NUMBER A-1	REV B

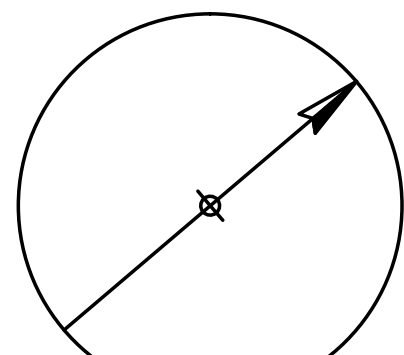


**EXISTING EQUIPMENT LAYOUT**

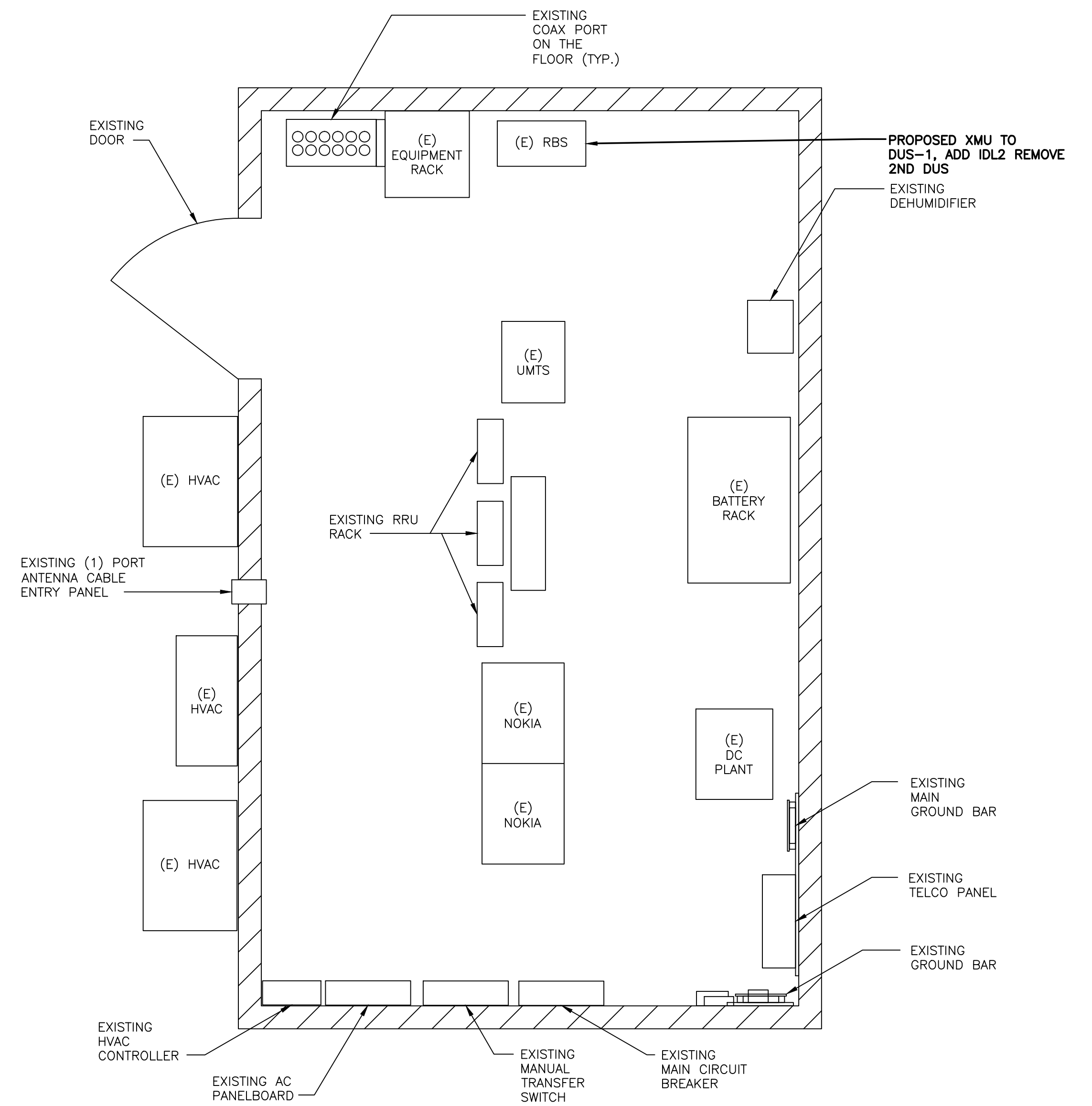
SCALE: 1" = 2'-0"



( IN FEET )  
1/2 Inch = 1 Foot

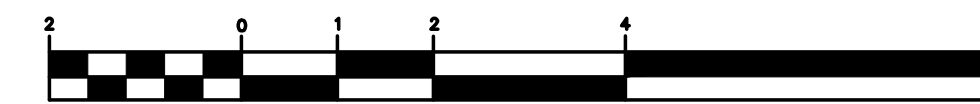


NORTH

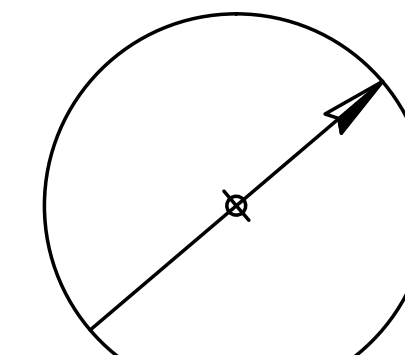


**PROPOSED EQUIPMENT LAYOUT**

SCALE: 1" = 2'-0"



( IN FEET )  
1/2 Inch = 1 Foot



NORTH

**COM-EX**  
Consultants  
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**EMPIRE**  
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16 ESQUIRE ROAD  
BILLERICA, MA 01821

**SITE NUMBER: CTU2153**  
**SITE NAME: WESTPORT FD**  
515 POST ROAD EAST  
WESTPORT, CT 06880  
FAIRFIELD COUNTY

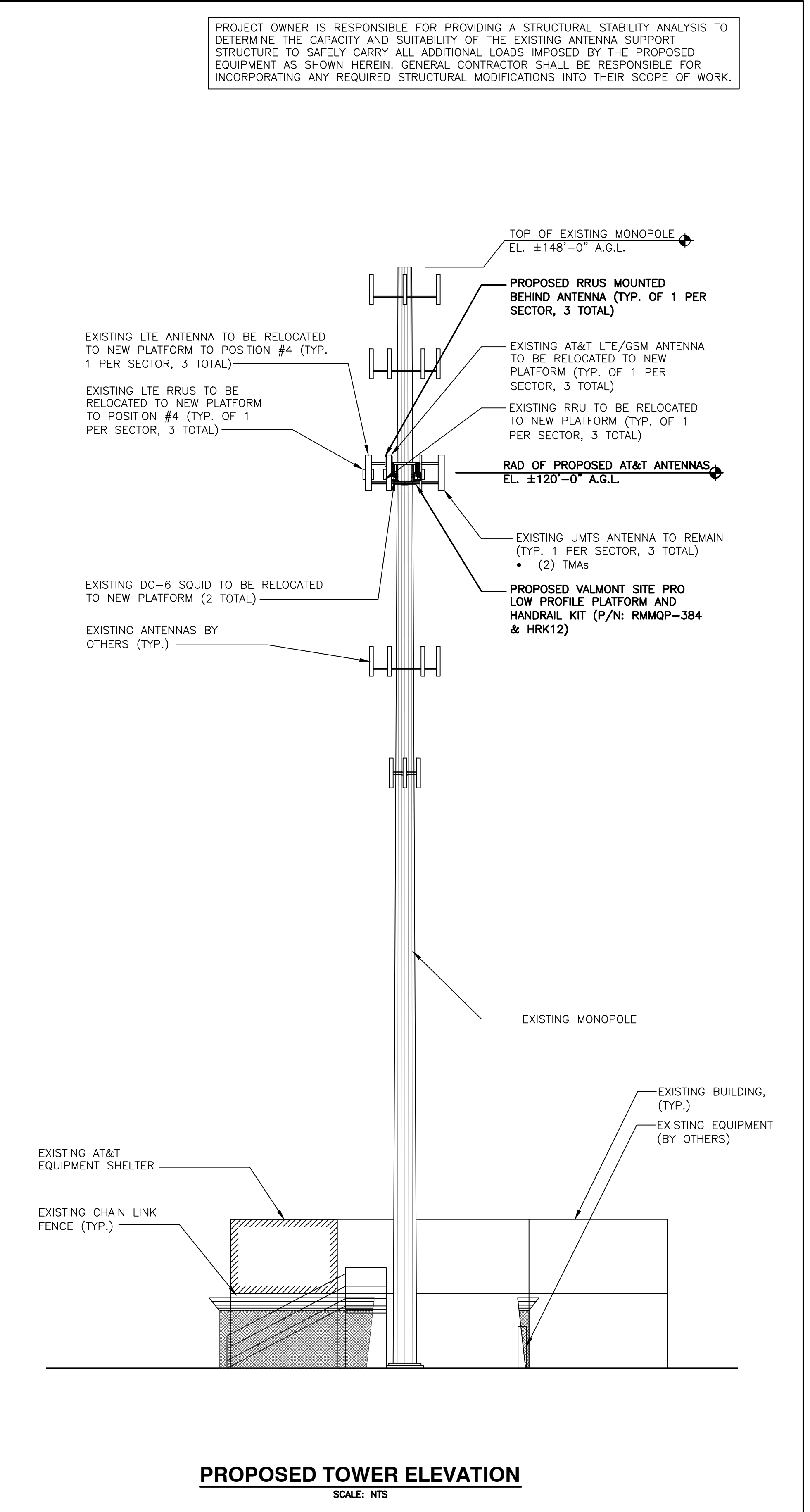
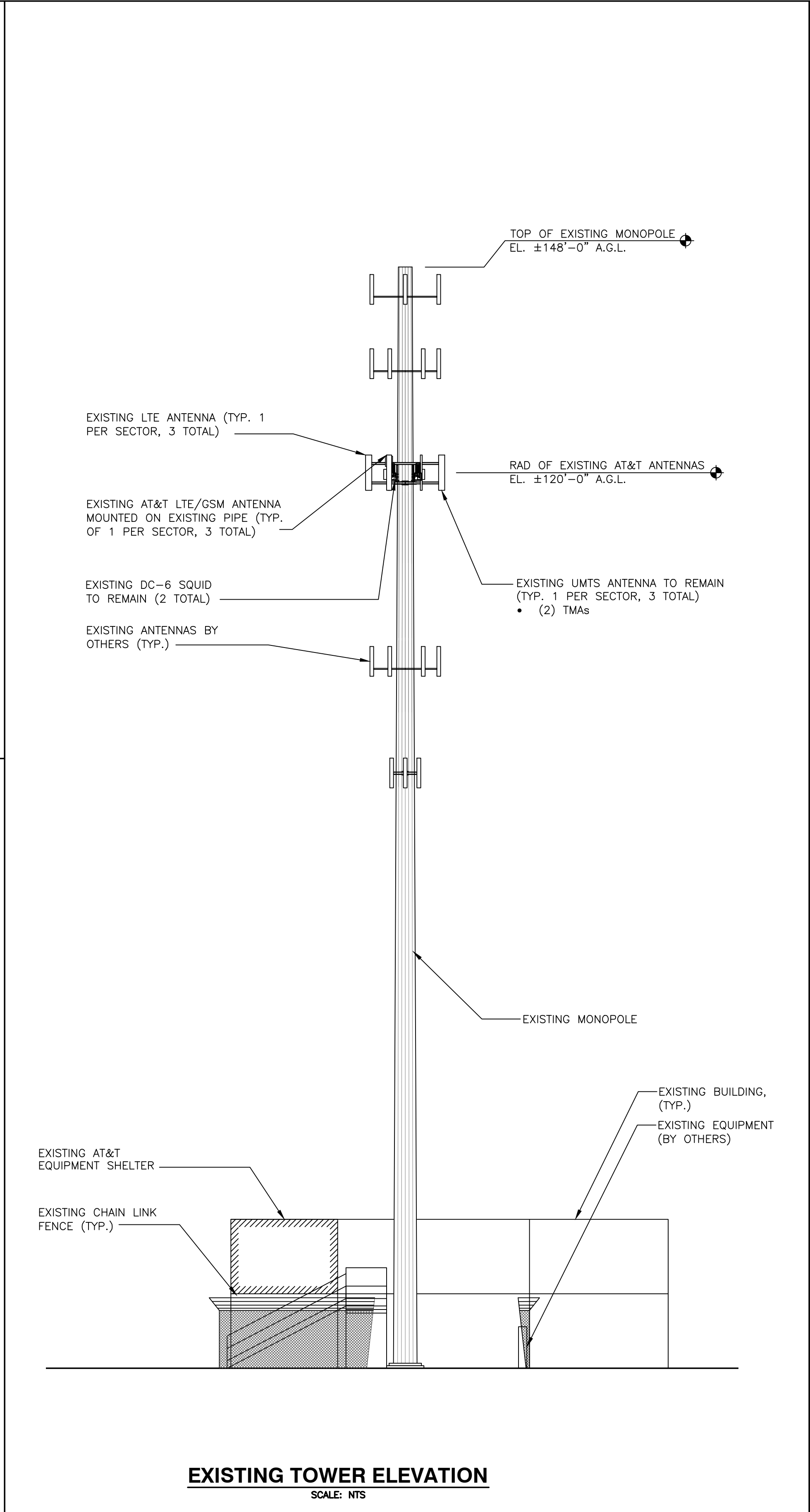
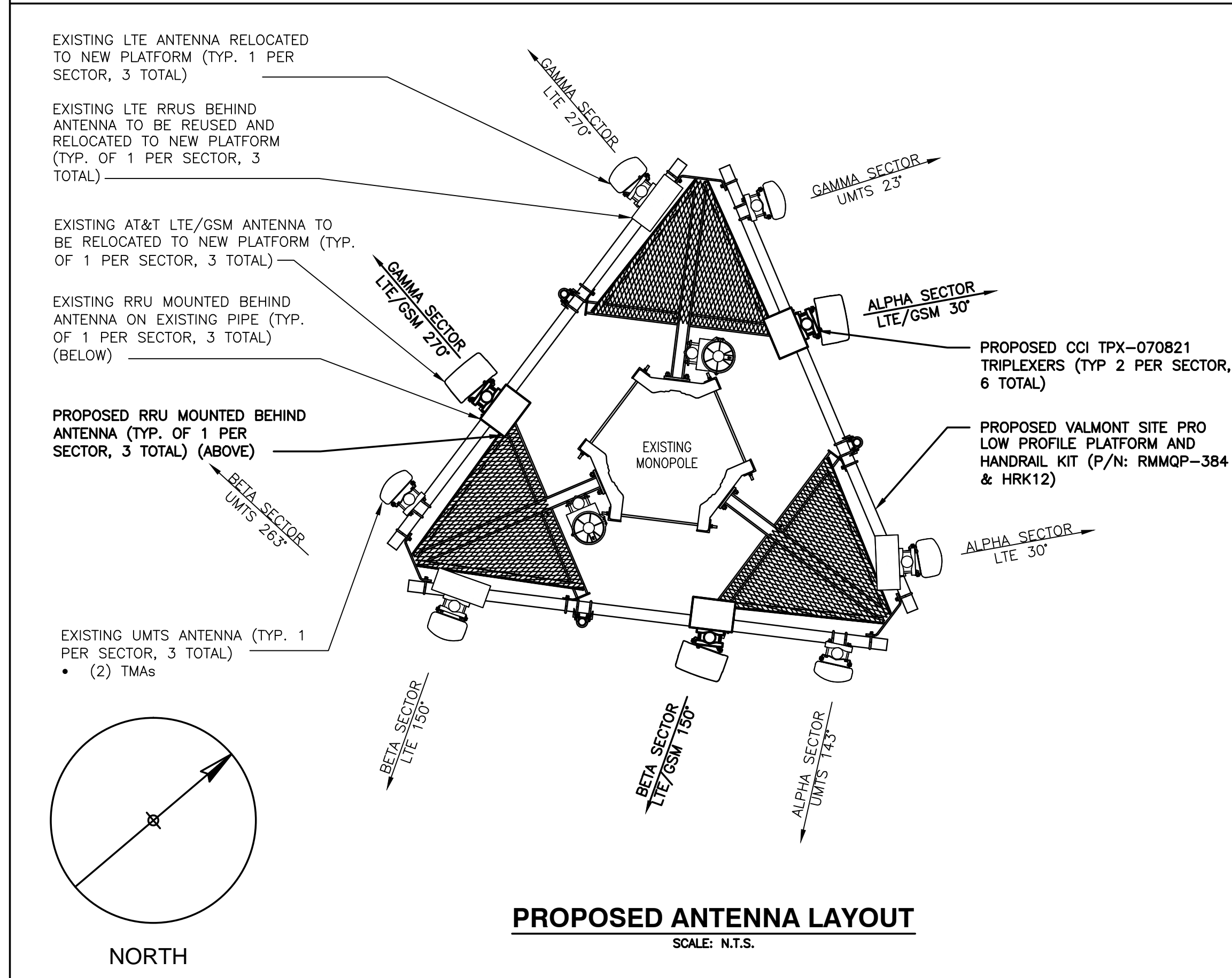
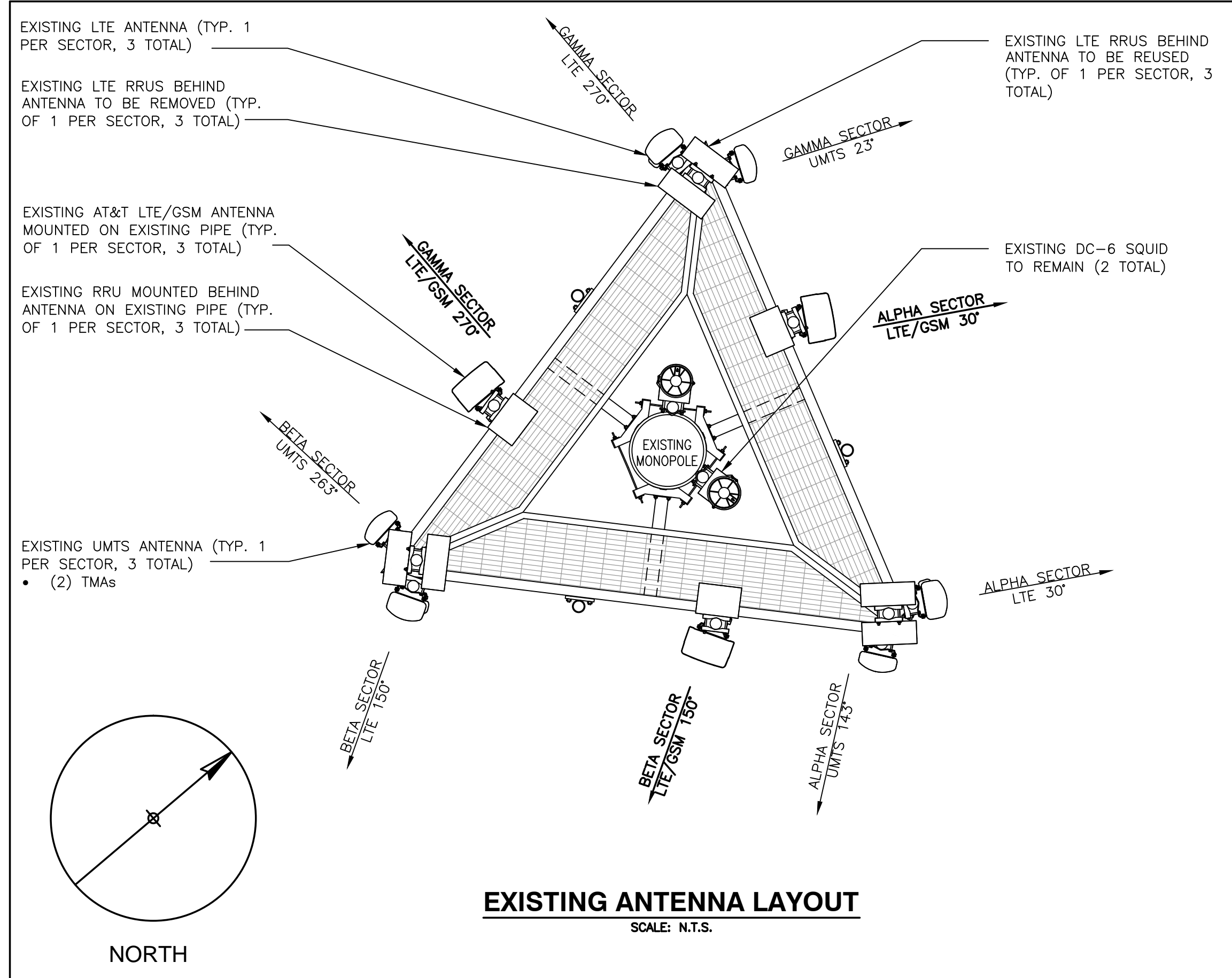
**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SEAL:  
  
PROFESSIONAL ENGINEER  
CT LICENSE NO. 28643

<b>AT&amp;T</b>		
DRAWING TITLE: <b>EQUIPMENT LAYOUT</b>		
JOB NUMBER 16040-EMP	DRAWING NUMBER A-2	REV B





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115 ROUTE 46  
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telecom  
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**SITE NUMBER: CTU2153**  
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FAIRFIELD COUNTY

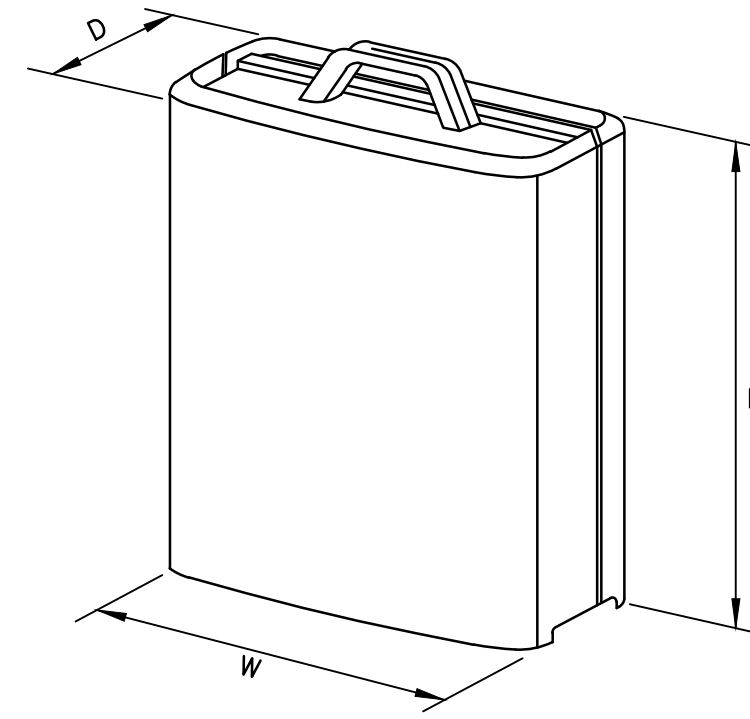
**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SEAL:  
STATE OF CONNECTICUT  
PROFESSIONAL ENGINEER  
CT LICENSE NUMBER: 28643

<b>AT&amp;T</b>		
DRAWING TITLE: <b>ANTENNA LAYOUTS &amp; ELEVATIONS</b>		
JOB NUMBER 16040-EMP	DRAWING NUMBER A-3	REV B

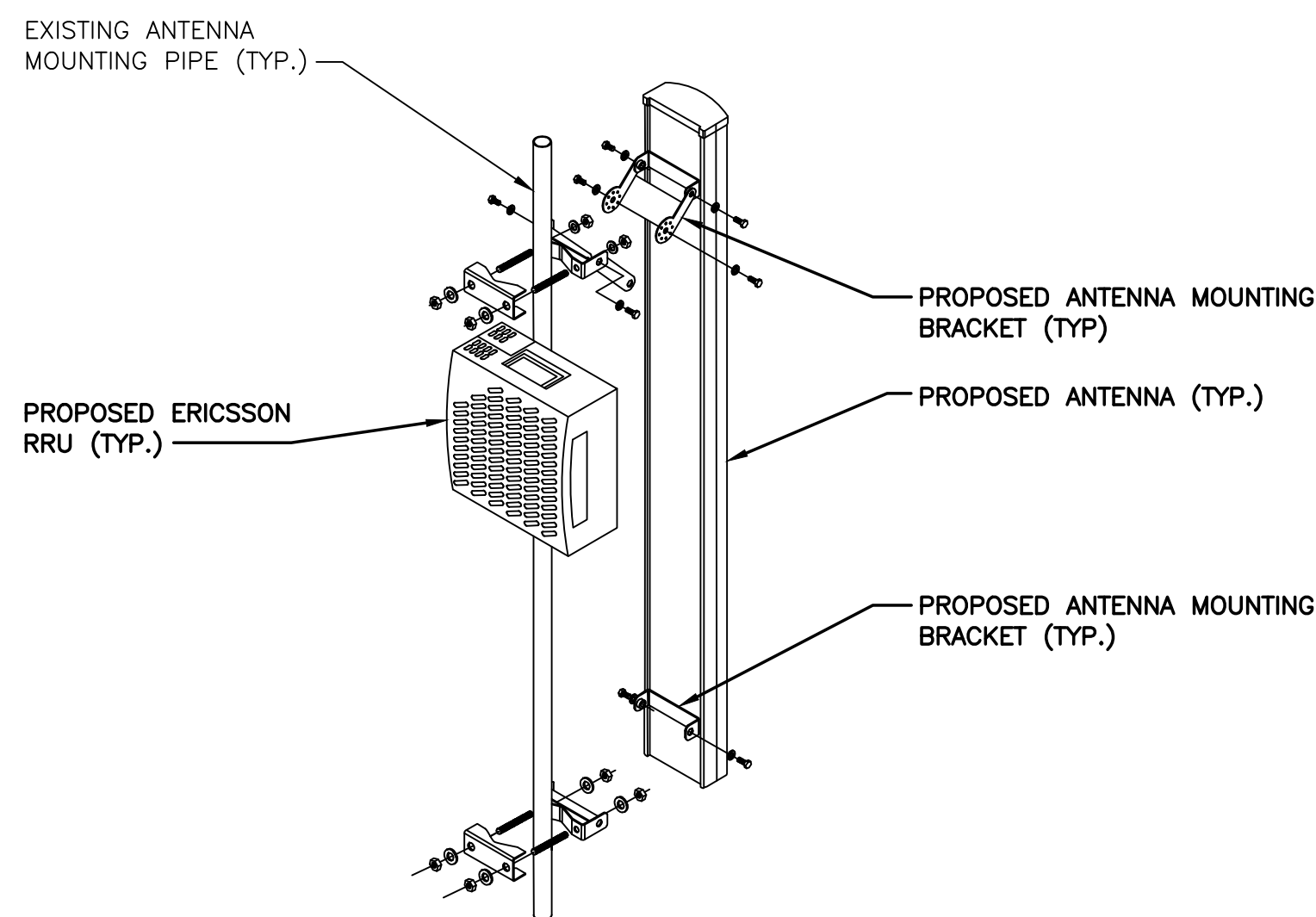




MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-32	29.9"x13.3"x9.5"	77 LBS

\*DENOTES EXISTING.

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



**ANTENNA AND RRU MOUNTING DETAIL**  
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	QUINTEL	QS66512-3	72"x12"x9.6"
	A3	-	-	-
	A4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	QUINTEL	QS66512-3	72"x12"x9.6"
	B3	-	-	-
	B4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	QUINTEL	QS66512-3	72"x12"x9.6"
	G3	-	-	-
	G4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	QUINTEL	QS66512-3	72"x12"x9.6"
	A3	-	-	-
	A4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	QUINTEL	QS66512-3	72"x12"x9.6"
	B3	-	-	-
	B4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	QUINTEL	QS66512-3	72"x12"x9.6"
	G3	-	-	-
	G4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"

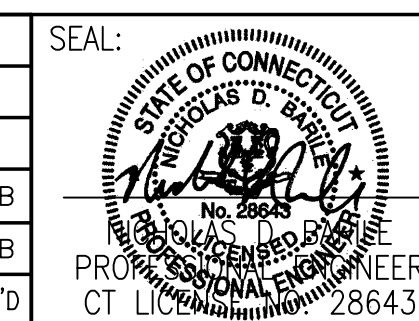
PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-32 B2	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
BETA	ERICSSON	RRUS-32 B2	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
GAMMA	ERICSSON	RRUS-32 B2	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-

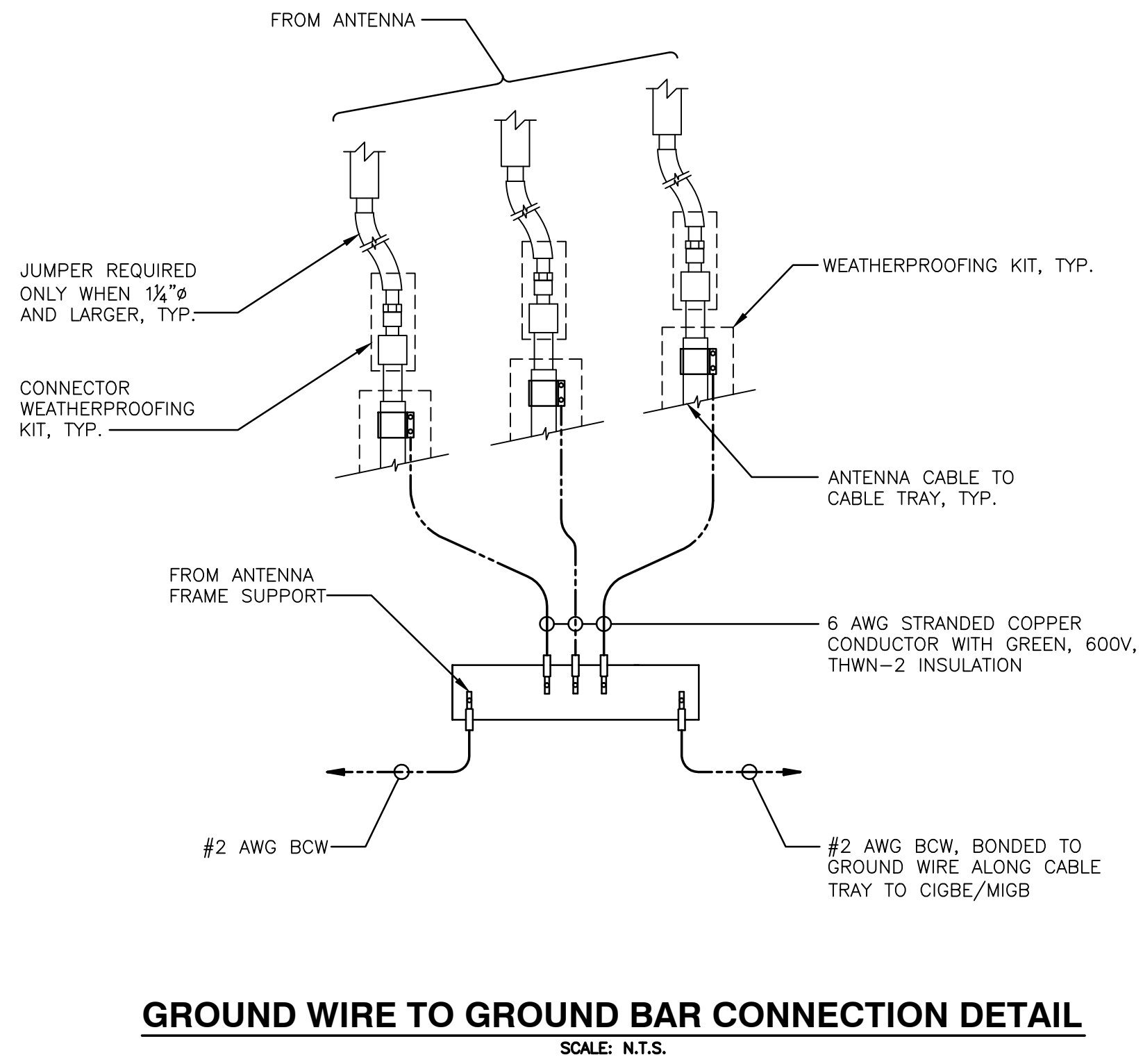
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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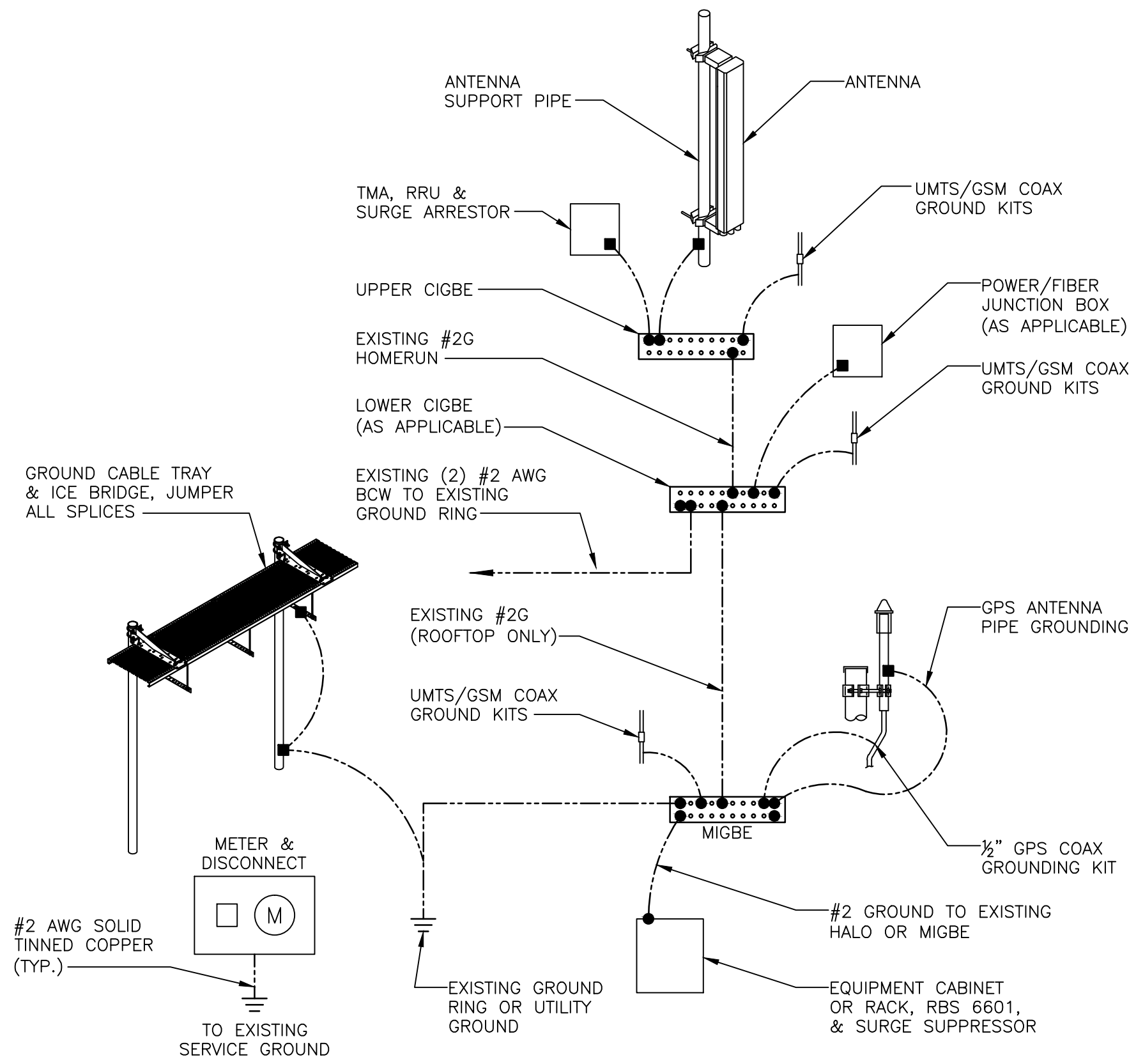
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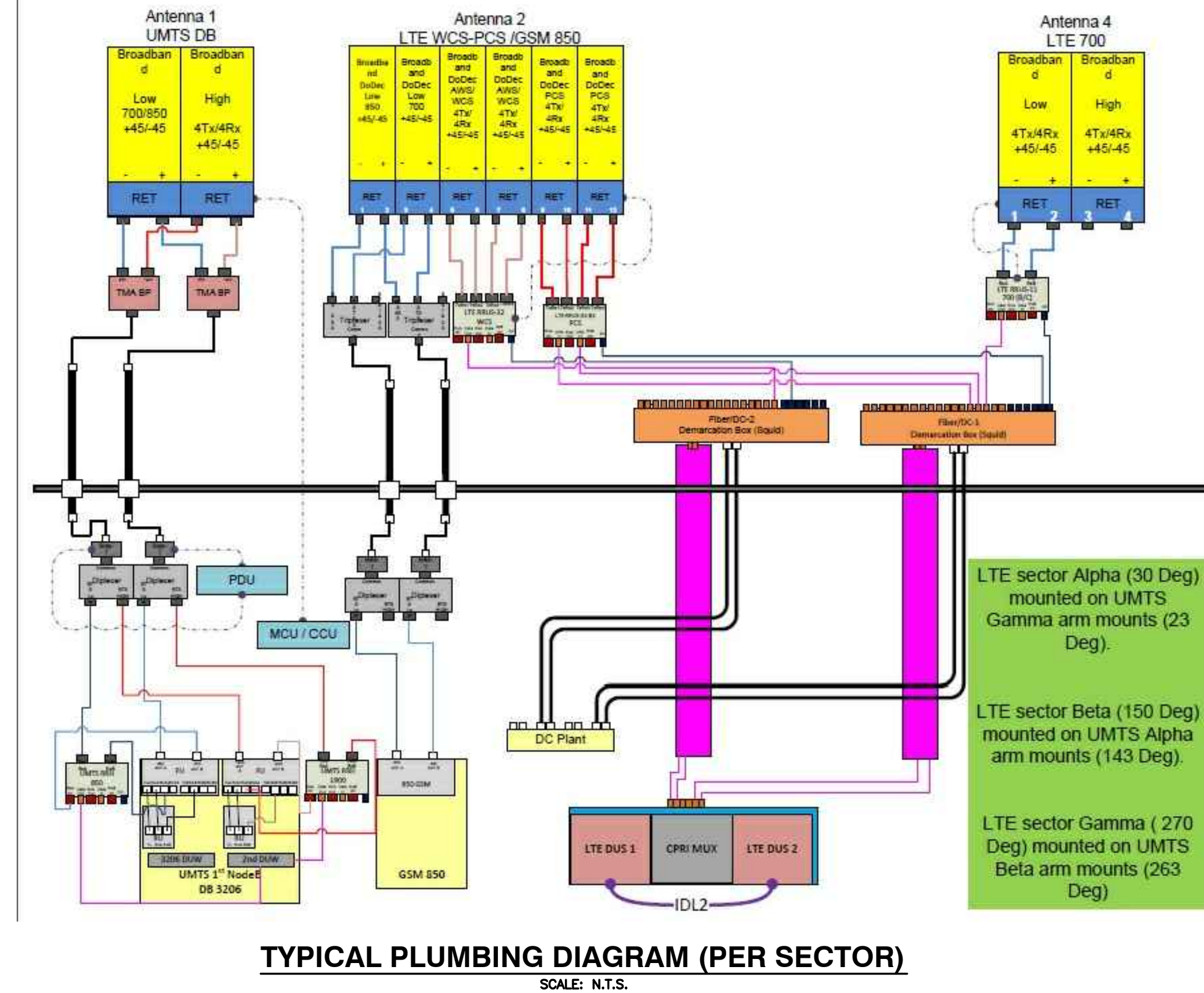




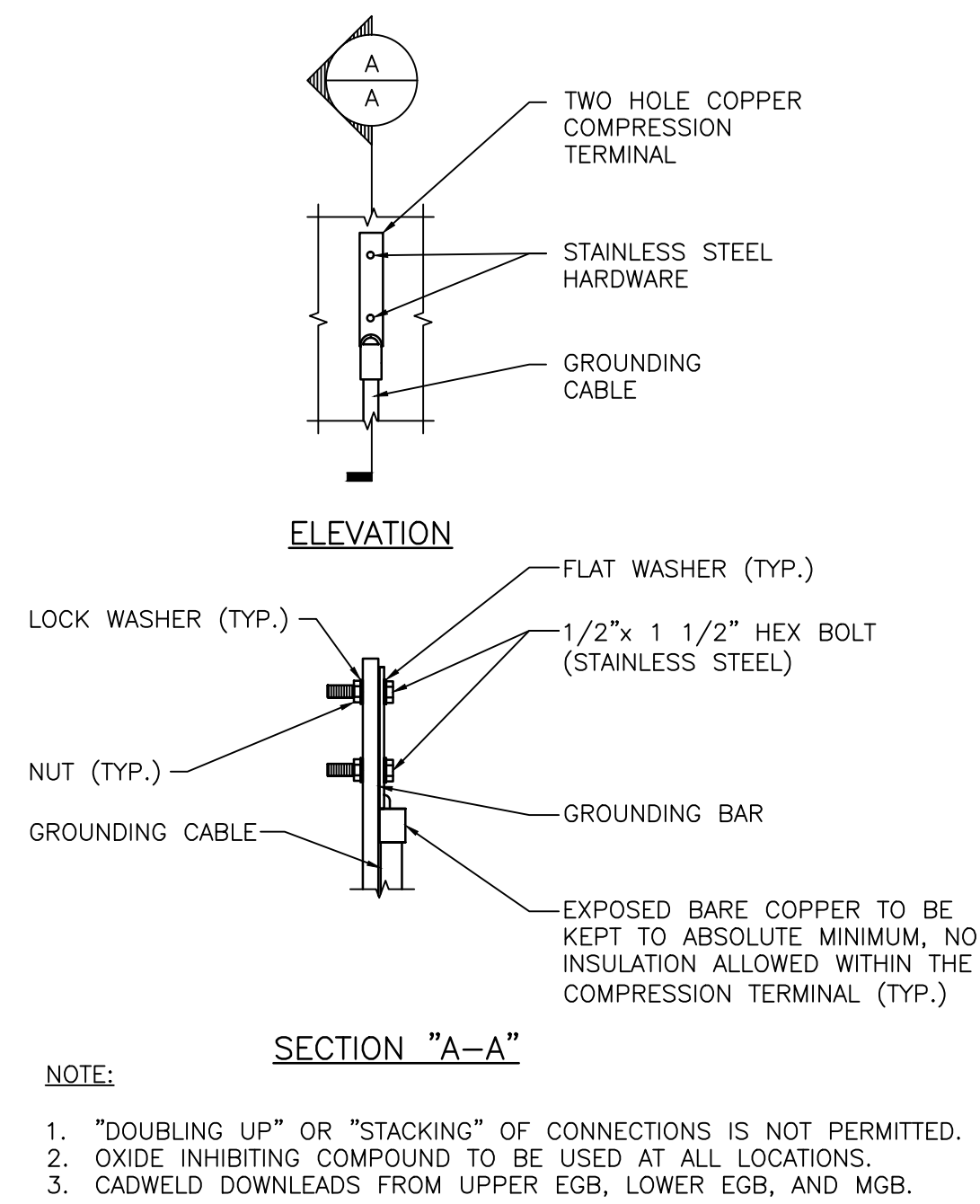
**GROUND WIRE TO GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



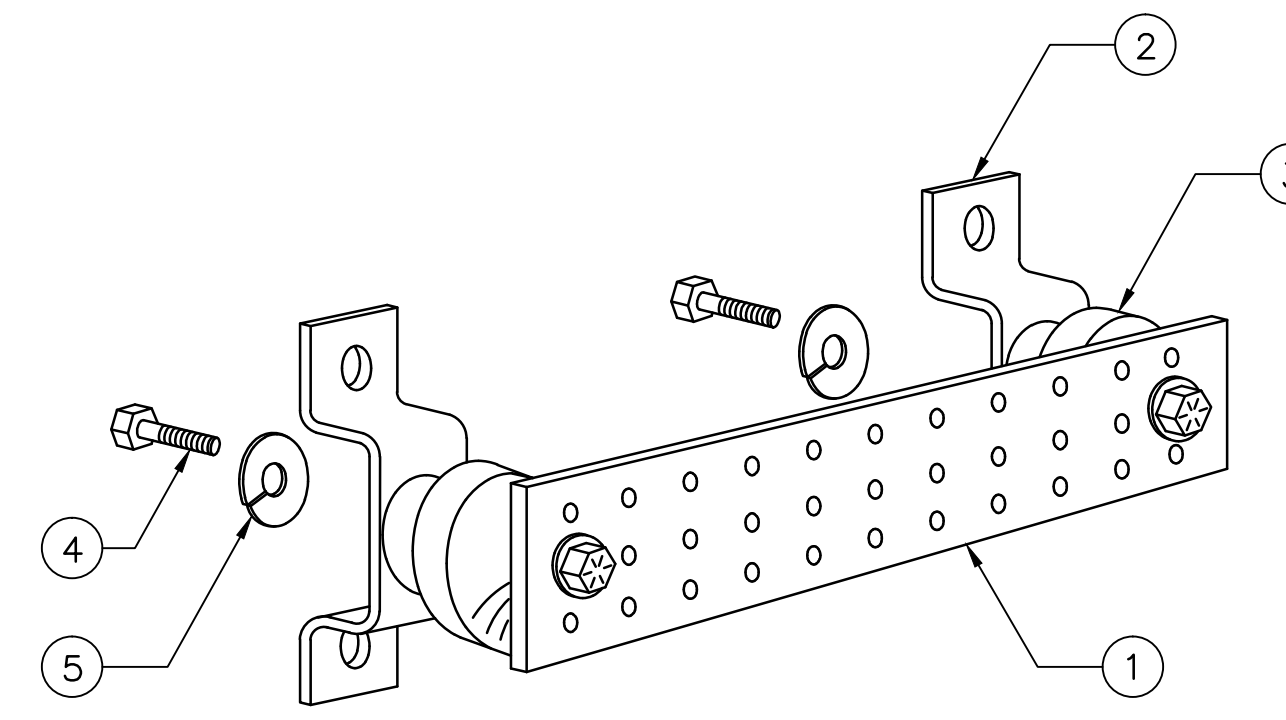
**GROUNDING RISER DIAGRAM**  
SCALE: N.T.S.



**TYPICAL PLUMBING DIAGRAM (PER SECTOR)**  
SCALE: N.T.S.



**TYPICAL GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



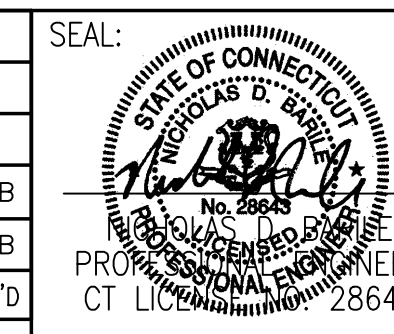
ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x 1/4")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	5/8"-11x1" H.H.C.S.
5	4	5/8" LOCK WASHER

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

- NOTES:
- EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION
- SECTION "P" - SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
  - GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
  - TELCO GROUND BAR
  - COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
  - +24V POWER SUPPLY RETURN BAR (#2)
  - -48V POWER SUPPLY RETURN BAR (#2)
  - RECTIFIER FRAMES
- SECTION "A" - SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
  - EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
  - METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
  - BUILDING STEEL (IF AVAILABLE) (#2)

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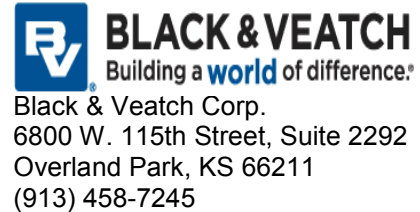
SCALE: AS SHOWN    DESIGNED BY: NJM    DRAWN BY: AM



AT&T		
DRAWING TITLE:		
GROUNDING, ONE-LINE DIAGRAM & DETAILS		
JOB NUMBER	DRAWING NUMBER	REV
16040-EMP	G-1	B

Date: July 05, 2016

Charles McGuirt  
Crown Castle  
3530 Toringdon Way Suite 300  
Charlotte, NC 28277



**Subject:** Structural Analysis Report

**Carrier Designation:** AT&T Mobility Co-Locate  
**Carrier Site Number:** CTL02153  
**Carrier Site Name:** Westport FD

**Crown Castle Designation:** Crown Castle BU Number: 876354  
Crown Castle Site Name: WESTPORT FIRE DEPARTMENT  
Crown Castle JDE Job Number: 385241  
Crown Castle Work Order Number: 1262968  
Crown Castle Application Number: 353712 Rev. 0

**Engineering Firm Designation:** Black & Veatch Corp. Project Number: 182896

**Site Data:** 515 Post Road East, Westport, Fairfield County, CT  
Latitude 41° 8' 24.26", Longitude -73° 20' 51.61"  
148 Foot - Monopole Tower

Dear Charles McGuirt,

Black & Veatch Corp. is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 921145, in accordance with application 353712, revision 0.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment

**sufficient Capacity**

Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 85 mph fastest mile with a 1.15 Importance Factor (91.2 mph fastest mile).

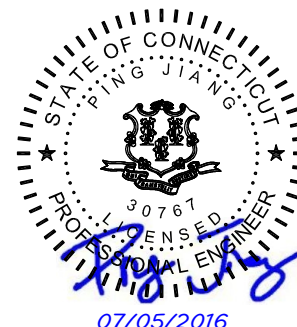
We at Black & Veatch Corp. appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Dilip Allaboina / Justin Vibbert

Respectfully submitted by:

Ping Jiang, P.E.

Professional Engineer





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## 1) INTRODUCTION

This tower is a 148 ft Monopole tower designed by Paul J. Ford and Company in February of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

Tower was modified multiple times in the past to accommodate additional loading.

The tower has been reinforced per reinforcement drawings prepared by Paul J. Ford and Company in February of 2008. This modification consisted of the installation of (24) new base plate stiffeners.

The tower was later reinforced per reinforcement drawings prepared by Sabre in April of 2011. Modifications consisted of shaft reinforcement from 0' to 72'-2".

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice with a 1.15 Importance Factor (91.2 mph fastest mile), 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	120.0	3	ericsson	RRUS 32	1 2	3/8 3/4	1
		3	ericsson	RRUS 32 B2			
		6	powerwave technologies	7020.00			
		3	quintel technology	QS66512-3 w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			

Note:

- 1) Refer Appendix B for detailed coax layout

**Table 2 - Existing Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
148.0	160.0	1	decibel	DB420	6 2 3	5/16 1/2 1 1/4	1	
	152.0	2	andrew	VHLP800-11				
	151.0	3	argus technologies	LLPX310R w/ Mount Pipe				
		3	samsung telecommunications	FDD_R6_RRH				
	148.0	148.0	3	alcatel lucent				800 EXTERNAL NOTCH FILTER
			3	alcatel lucent				800MHZ RRH
			9	alcatel lucent				PCS 1900MHz 4x45W-65MHz
			1	cci tower mounts				Platform Mount [LP 1201-1]
			9	rfs celwave				ACU-A20-N
	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe					

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
144.0	144.0	1	andrew	VHLP2.5-10W	1	EW90	1
		1	cci tower mounts	Pipe Mount [PM 601-1]			
120.0	120.0	1	cci tower mounts	Platform Mount [LP 1201-1]	12	1 5/8 5/8 3/8	1
		3	ericsson	RRUS-11			
		6	powerwave technologies	LGP2140X			
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		3	powerwave technologies	7770.00 w/ Mount Pipe	-	-	2
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
		6	powerwave technologies	LGP2140X			
		3	ericsson	RRUS-11			
96.0	110.0	1	rfs celwave	PD220	5	1/2 7/8	1
	108.0	1	decibel	DB205-A			
	107.0	1	decibel	DB224			
		1	decibel	DB420-B			
	105.0	1	andrew	DB806E-XT			
		2	rfs celwave	PD1110			
	2	rfs celwave	PD201-1				
	96.0	1	cci tower mounts	Platform Mount [LP 1201-1]			
90.0	3	rfs celwave	PD83-1				
82.0	82.0	3	andrew	ETW190VS12UB	18	7/8 1 1/4	1
		3	andrew	LNx-6515DS-VTM w/ Mount Pipe			
		1	cci tower mounts	Platform Mount [LP 1201-1]			
		3	commscope	ATSBT-BOTTOM-FM-4G			
		6	rfs celwave	APXV18-206516S-C-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
72.0	72.0	1	cci tower mounts	Side Arm Mount [SO 102-3]	6	1 5/8	1
		3	kathrein	800 10504 w/ Mount Pipe			
53.0	56.0	1	radiall larsen	BSA150B	2	1/2	1
	53.0	1	cci tower mounts	Side Arm Mount [SO 702-1]			
	50.0	1	radiall larsen	BSA150B			
50.0	50.0	1	trimble	BULLET III	1	1/2	1

Notes:

- 1) Existing Equipment
- 2) Equipment To Be Removed; Not Considered In This Analysis

**Table 3 - Design Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148	148	12	unknown	08980 H90	-	-
140	140	2	unknown	084200	-	-
120	120	12	unknown	ALP9212N	-	-
100	100	1	unknown	08230	-	-
		1	unknown	P01100		
		1	unknown	P01109		
		4	unknown	P01142		
		1	unknown	P0220		
50	50	2	unknown	CHANNELMASTRES	-	-
15	15	1	unknown	GPS	-	-

**3) ANALYSIS PROCEDURE**

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tower Engineering Professionals	1531886	CCISITES
4-POST-MODIFICATION INSPECTION	Paul J. Ford and Company	2485808	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	2971197	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford and Company	1448194	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford and Company	1446984	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	2848812	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	FDH Velocitel	6003413	CCISITES

**3.1) Analysis Method**

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

**3.2) Assumptions**

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
- 5) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

#### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP23.015x22x0.25	Pole	10.9%	Pass
143 - 138	Pole	TP24.03x23.015x0.25	Pole	19.1%	Pass
138 - 133	Pole	TP25.045x24.03x0.25	Pole	26.7%	Pass
133 - 128	Pole	TP26.06x25.045x0.25	Pole	33.7%	Pass
128 - 123	Pole	TP27.075x26.06x0.25	Pole	40.1%	Pass
123 - 118	Pole	TP28.09x27.075x0.25	Pole	48.5%	Pass
118 - 113	Pole	TP29.105x28.09x0.25	Pole	59.0%	Pass
113 - 108	Pole	TP30.12x29.105x0.25	Pole	68.4%	Pass
108 - 104.5	Pole	TP31.643x30.12x0.25	Pole	74.5%	Pass
104.5 - 99.5	Pole	TP31.346x30.331x0.375	Pole	57.5%	Pass
99.5 - 94.5	Pole	TP32.361x31.346x0.375	Pole	63.7%	Pass
94.5 - 89.5	Pole	TP33.376x32.361x0.375	Pole	69.6%	Pass
89.5 - 84.5	Pole	TP34.391x33.376x0.375	Pole	74.9%	Pass
84.5 - 79.5	Pole	TP35.406x34.391x0.375	Pole	80.6%	Pass
79.5 - 74.5	Pole	TP36.421x35.406x0.375	Pole	86.3%	Pass
74.5 - 70.67	Pole	TP37.199x36.421x0.375	Pole	90.4%	Pass
70.67 - 70.42	Pole + Reinf.	TP37.25x37.199x0.5	Reinf. 5 Compression	85.0%	Pass
70.42 - 65.42	Pole + Reinf.	TP38.265x37.25x0.5	Reinf. 5 Compression	90.3%	Pass
65.42 - 63.67	Pole + Reinf.	TP38.62x38.265x0.5	Reinf. 5 Compression	92.1%	Pass
63.67 - 63.42	Pole	TP38.671x38.62x0.375	Pole	97.6%	Pass
63.42 - 63.25	Pole	TP39.72x38.671x0.375	Pole	97.8%	Pass
63.25 - 57.25	Pole	TP39.173x37.955x0.4375	Pole	92.3%	Pass
57.25 - 53.23	Pole	TP39.989x39.173x0.4375	Pole	95.1%	Pass
53.23 - 52.98	Pole + Reinf.	TP40.04x39.989x0.6	Reinf. 4 Bolt Shear	81.5%	Pass
52.98 - 47.98	Pole + Reinf.	TP41.055x40.04x0.5875	Reinf. 4 Compression	83.8%	Pass
47.98 - 42.98	Pole + Reinf.	TP42.07x41.055x0.5875	Reinf. 4 Compression	87.0%	Pass
42.98 - 37.98	Pole + Reinf.	TP43.085x42.07x0.5813	Reinf. 4 Compression	90.0%	Pass

37.98 - 35.13	Pole + Reinf.	TP43.665x43.085x0.575	Reinf. 4 Bolt Shear	93.2%	Pass
35.13 - 34.88	Pole + Reinf.	TP43.716x43.665x0.6375	Reinf. 1 Bolt Shear	85.0%	Pass
34.88 - 34.5	Pole + Reinf.	TP44.959x43.716x0.6375	Reinf. 1 Compression	83.8%	Pass
34.5 - 27.75	Pole + Reinf.	TP44.287x42.917x0.7	Reinf. 1 Compression	82.3%	Pass
27.75 - 25.88	Pole + Reinf.	TP44.667x44.287x0.6875	Reinf. 3 Bolt Shear	84.5%	Pass
25.88 - 25.75	Pole + Reinf.	TP44.693x44.667x0.55	Pole	99.7%	Pass
25.75 - 25.63	Pole + Reinf.	TP44.718x44.693x0.75	Reinf. 1 Compression	78.8%	Pass
25.63 - 25.5	Pole + Reinf.	TP44.744x44.718x0.75	Reinf. 1 Compression	78.9%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.759x44.744x0.75	Reinf. 1 Compression	81.0%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.774x45.759x0.7375	Reinf. 1 Compression	82.9%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.789x46.774x0.7375	Reinf. 1 Compression	84.8%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.804x47.789x0.725	Reinf. 1 Compression	86.6%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.819x48.804x0.725	Reinf. 1 Compression	88.3%	Pass
0.5 - 0	Pole + Reinf.	TP49.92x49.819x0.725	Reinf. 1 Compression	88.4%	Pass
				Summary	
			Pole	99.7%	Pass
			Reinforcement	93.2%	Pass
			Overall	99.7%	Pass

**Table 6 - Tower Component Stresses vs. Capacity – LC5**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	88.1	Pass
1	Base Plate		20.1	Pass
1	Plate Stiffeners		53.2	Pass
1	Pole Punching Shear		9.8	Pass
1	Base Foundation	0	65.9	Pass
1	Base Foundation Soil Interaction		94.4	Pass

<b>Structure Rating (max from all components) =</b>	<b>99.7%</b>
---	--------------

Note:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

#### 4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

**APPENDIX A**  
**TNXTOWER OUTPUT**

**DESIGNED APPURTENANCE LOADING**

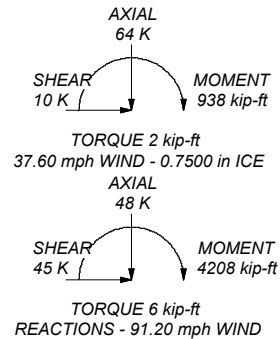
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 1201-1]	148	DC6-48-60-18-8F	120
APXVSP18-C-A20 w/ Mount Pipe	148	DC6-48-60-18-8F	120
APXVSP18-C-A20 w/ Mount Pipe	148	4' x 2" Pipe Mount	120
APXVSP18-C-A20 w/ Mount Pipe	148	4' x 2" Pipe Mount	120
LLPX310R w/ Mount Pipe	148	4' x 2" Pipe Mount	120
LLPX310R w/ Mount Pipe	148	6' x 2" Horizontal Mount Pipe	120
LLPX310R w/ Mount Pipe	148	6' x 2" Horizontal Mount Pipe	120
DB420	148	6' x 2" Horizontal Mount Pipe	120
(3) PCS 1900MHz 4x45W-65MHz	148	7770.00 w/ Mount Pipe	120
(3) PCS 1900MHz 4x45W-65MHz	148	Platform Mount [LP 1201-1]	120
(3) PCS 1900MHz 4x45W-65MHz	148	7770.00 w/ Mount Pipe	120
(3) ACU-A20-N	148	PD1110	96
(3) ACU-A20-N	148	PD1110	96
(3) ACU-A20-N	148	PD201-1	96
800MHZ RRH	148	PD83-1	96
800MHZ RRH	148	DB205-A	96
800MHZ RRH	148	PD201-1	96
800 EXTERNAL NOTCH FILTER	148	PD83-1	96
800 EXTERNAL NOTCH FILTER	148	DB806E-XT	96
800 EXTERNAL NOTCH FILTER	148	PD220	96
FDD_R6_RRH	148	DB224	96
FDD_R6_RRH	148	(4) 6' x 2" Mount Pipe	96
FDD_R6_RRH	148	(2) 6' x 2" Mount Pipe	96
6' x 2" Mount Pipe	148	(3) 6' x 2" Mount Pipe	96
6' x 2" Mount Pipe	148	Platform Mount [LP 1201-1]	96
6' x 2" Mount Pipe	148	DB420-B	96
6' x 2" Mount Pipe	148	PD83-1	96
6' x 2" Mount Pipe	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
6' x 2" Mount Pipe	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
VHLP800-11	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
VHLP800-11	148	APXV18-206516S-C-A20 w/ Mount Pipe	82
Pipe Mount [PM 601-1]	144	LNx-6515DS-VTM w/ Mount Pipe	82
VHLP2.5-10W	144	LNx-6515DS-VTM w/ Mount Pipe	82
7770.00 w/ Mount Pipe	120	LNx-6515DS-VTM w/ Mount Pipe	82
P65-16-XLH-RR w/ Mount Pipe	120	ETW190VS12UB	82
P65-16-XLH-RR w/ Mount Pipe	120	ETW190VS12UB	82
P65-16-XLH-RR w/ Mount Pipe	120	ETW190VS12UB	82
QS66512-3 w/ Mount Pipe	120	ATMAA1412D-1A20	82
QS66512-3 w/ Mount Pipe	120	ATMAA1412D-1A20	82
QS66512-3 w/ Mount Pipe	120	ATMAA1412D-1A20	82
RRUS-11	120	ATSBT-BOTTOM-FM-4G	82
RRUS-11	120	ATSBT-BOTTOM-FM-4G	82
RRUS-11	120	ATSBT-BOTTOM-FM-4G	82
(2) LGP2140X	120	Platform Mount [LP 1201-1]	82
(2) LGP2140X	120	APXV18-206516S-C-A20 w/ Mount Pipe	82
(2) LGP2140X	120	APXV18-206516S-C-A20 w/ Mount Pipe	82
RRUS 32	120	800 10504 w/ Mount Pipe	72
RRUS 32	120	Side Arm Mount [SO 102-3]	72
RRUS 32	120	800 10504 w/ Mount Pipe	72
RRUS 32 B2	120	800 10504 w/ Mount Pipe	72
RRUS 32 B2	120	BSA150B	53
RRUS 32 B2	120	Side Arm Mount [SO 702-1]	53
(2) 7020.00	120	8'x2" Antenna Mount Pipe	53
(2) 7020.00	120	BSA150B	53
(2) 7020.00	120	BULLET III	50

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

**TOWER DESIGN NOTES**

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 91.20 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.00 mph wind.



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	12	0.2500	4.0000	29.1054	30.1204	A607-60	0.3
2	5.0000	12	0.2500	4.0000	28.0903	29.1054	A607-60	0.3
3	5.0000	12	0.2500	4.0000	26.0602	27.0753	A607-60	0.3
4	5.0000	12	0.2500	4.0000	24.0301	25.0452	A607-60	0.3
5	5.0000	12	0.2500	4.0000	22.0000	23.0151	A607-60	0.3
6	5.0000	12	0.2500	4.0000	20.9699	21.9851	A607-60	0.3
7	5.0000	12	0.2500	4.0000	19.9398	20.9550	A607-60	0.3
8	5.0000	12	0.2500	4.0000	18.9097	19.9249	A607-60	0.3
9	5.0000	12	0.2500	4.0000	17.8796	18.8948	A607-60	0.3
10	5.0000	12	0.2500	4.0000	16.8495	17.8647	A607-60	0.3
11	5.0000	12	0.2500	4.0000	15.8194	16.8346	A607-60	0.3
12	5.0000	12	0.2500	4.0000	14.7893	15.8045	A607-60	0.3
13	5.0000	12	0.2500	4.0000	13.7592	14.7744	A607-60	0.3
14	5.0000	12	0.2500	4.0000	12.7291	13.7443	A607-60	0.3
15	5.0000	12	0.2500	4.0000	11.6990	12.7142	A607-60	0.3
16	5.0000	12	0.2500	4.0000	10.6689	11.6841	A607-60	0.3
17	5.0000	12	0.2500	4.0000	9.6388	10.6540	A607-60	0.3
18	5.0000	12	0.2500	4.0000	8.6087	9.6239	A607-60	0.3
19	5.0000	12	0.2500	4.0000	7.5786	8.5938	A607-60	0.3
20	5.0000	12	0.2500	4.0000	6.5485	7.5637	A607-60	0.3
21	5.0000	12	0.2500	4.0000	5.5184	6.5336	A607-60	0.3
22	5.0000	12	0.2500	4.0000	4.4883	5.5035	A607-60	0.3
23	5.0000	12	0.2500	4.0000	3.4582	4.4734	A607-60	0.3
24	5.0000	12	0.2500	4.0000	2.4281	3.4433	A607-60	0.3
25	5.0000	12	0.2500	4.0000	1.3980	2.4132	A607-60	0.3
26	5.0000	12	0.2500	4.0000	0.3679	1.3831	A607-60	0.3
27	5.0000	12	0.2500	4.0000	0.3378	0.3530	A607-60	0.3
28	5.0000	12	0.2500	4.0000	0.3077	0.3229	A607-60	0.3
29	5.0000	12	0.2500	4.0000	0.2776	0.2928	A607-60	0.3
30	5.0000	12	0.2500	4.0000	0.2475	0.2627	A607-60	0.3
31	5.0000	12	0.2500	4.0000	0.2174	0.2326	A607-60	0.3
32	5.0000	12	0.2500	4.0000	0.1873	0.2025	A607-60	0.3
33	5.0000	12	0.2500	4.0000	0.1572	0.1724	A607-60	0.3
34	5.0000	12	0.2500	4.0000	0.1271	0.1423	A607-60	0.3
35	5.0000	12	0.2500	4.0000	0.0970	0.1122	A607-60	0.3
36	5.0000	12	0.2500	4.0000	0.0669	0.0821	A607-60	0.3
37	5.0000	12	0.2500	4.0000	0.0368	0.0520	A607-60	0.3
38	5.0000	12	0.2500	4.0000	0.0067	0.0219	A607-60	0.3
39	5.0000	12	0.2500	4.0000	0.0000	0.0000	A607-60	0.3
40	5.0000	12	0.2500	4.0000	0.0000	0.0000	A607-60	0.3

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FAX: (913) 458-8136

**WESTPORT FIRE DEPARTMENT (BU#876354)**  
Project: 182896 (876354.1262968)  
Client: Crown Castle      Drawn by: Justin D. Vibbert, E.I.T.      App'd:  
Code: TIA/EIA-222-F      Date: 07/05/16      Scale: NTS  
Path: C:\Users\jwb70985\Desktop\Verity\876354\876354.1262968\_Structural\_Analysis\_en      Dwg No. E-1



## Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Basic wind speed of 91.20 mph.
- 3) Nominal ice thickness of 0.7500 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56.00 pcf.
- 6) A wind speed of 37.60 mph is used in combination with ice.
- 7) Temperature drop of 50.00 °F.
- 8) Deflections calculated using a wind speed of 50.00 mph.
- 9) A non-linear (P-delta) analysis was used.
- 10) Pressures are calculated at each section.
- 11) Stress ratio used in pole design is 1.333.
- 12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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## 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	148.0000- 143.0000	5.0000	0.00	12	22.0000	23.0151	0.2500	1.0000	A607-60 (60 ksi)
L2	143.0000- 138.0000	5.0000	0.00	12	23.0151	24.0301	0.2500	1.0000	A607-60 (60 ksi)
L3	138.0000- 133.0000	5.0000	0.00	12	24.0301	25.0452	0.2500	1.0000	A607-60 (60 ksi)
L4	133.0000- 128.0000	5.0000	0.00	12	25.0452	26.0602	0.2500	1.0000	A607-60 (60 ksi)
L5	128.0000- 123.0000	5.0000	0.00	12	26.0602	27.0753	0.2500	1.0000	A607-60 (60 ksi)
L6	123.0000- 118.0000	5.0000	0.00	12	27.0753	28.0903	0.2500	1.0000	A607-60 (60 ksi)
L7	118.0000- 113.0000	5.0000	0.00	12	28.0903	29.1054	0.2500	1.0000	A607-60 (60 ksi)
L8	113.0000- 108.0000	5.0000	0.00	12	29.1054	30.1204	0.2500	1.0000	A607-60 (60 ksi)
L9	108.0000- 100.5000	7.5000	4.00	12	30.1204	31.6430	0.2500	1.0000	A607-60 (60 ksi)
L10	100.5000-	5.0000	0.00	12	30.3310	31.3460	0.3750	1.5000	A607-60

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
L11	99.5000 99.5000- 94.5000	5.0000	0.00	12	31.3460	32.3610	0.3750	1.5000	(60 ksi) A607-60 (60 ksi)
L12	94.5000- 89.5000	5.0000	0.00	12	32.3610	33.3761	0.3750	1.5000	A607-60 (60 ksi)
L13	89.5000- 84.5000	5.0000	0.00	12	33.3761	34.3911	0.3750	1.5000	A607-60 (60 ksi)
L14	84.5000- 79.5000	5.0000	0.00	12	34.3911	35.4061	0.3750	1.5000	A607-60 (60 ksi)
L15	79.5000- 74.5000	5.0000	0.00	12	35.4061	36.4211	0.3750	1.5000	A607-60 (60 ksi)
L16	74.5000- 70.6670	3.8330	0.00	12	36.4211	37.1993	0.3750	1.5000	A607-60 (60 ksi)
L17	70.6670- 70.4170	0.2500	0.00	12	37.1993	37.2500	0.5000	2.0000	A607-60 (60 ksi)
L18	70.4170- 65.4170	5.0000	0.00	12	37.2500	38.2651	0.5000	2.0000	A607-60 (60 ksi)
L19	65.4170- 63.6670	1.7500	0.00	12	38.2651	38.6203	0.5000	2.0000	A607-60 (60 ksi)
L20	63.6670- 63.4170	0.2500	0.00	12	38.6203	38.6711	0.3750	1.5000	A607-60 (60 ksi)
L21	63.4170- 58.2500	5.1670	5.00	12	38.6711	39.7200	0.3750	1.5000	A607-60 (60 ksi)
L22	58.2500- 57.2500	6.0000	0.00	12	37.9550	39.1731	0.4375	1.7500	A607-60 (60 ksi)
L23	57.2500- 53.2290	4.0210	0.00	12	39.1731	39.9894	0.4375	1.7500	A607-60 (60 ksi)
L24	53.2290- 52.9790	0.2500	0.00	12	39.9894	40.0401	0.6000	2.4000	A607-60 (60 ksi)
L25	52.9790- 47.9790	5.0000	0.00	12	40.0401	41.0552	0.5875	2.3500	A607-60 (60 ksi)
L26	47.9790- 42.9790	5.0000	0.00	12	41.0552	42.0703	0.5875	2.3500	A607-60 (60 ksi)
L27	42.9790- 37.9790	5.0000	0.00	12	42.0703	43.0854	0.5813	2.3250	A607-60 (60 ksi)
L28	37.9790- 35.1250	2.8540	0.00	12	43.0854	43.6648	0.5750	2.3000	A607-60 (60 ksi)
L29	35.1250- 34.8750	0.2500	0.00	12	43.6648	43.7155	0.6375	2.5500	A607-60 (60 ksi)
L30	34.8750- 28.7500	6.1250	5.75	12	43.7155	44.9590	0.6375	2.5500	A607-60 (60 ksi)
L31	28.7500- 27.7500	6.7500	0.00	12	42.9167	44.2869	0.7000	2.8000	A607-60 (60 ksi)
L32	27.7500- 25.8750	1.8750	0.00	12	44.2869	44.6675	0.6875	2.7500	A607-60 (60 ksi)
L33	25.8750- 25.7500	0.1250	0.00	12	44.6675	44.6929	0.5500	2.2000	A607-60 (60 ksi)
L34	25.7500- 25.6250	0.1250	0.00	12	44.6929	44.7182	0.7500	3.0000	A607-60 (60 ksi)
L35	25.6250- 25.5000	0.1250	0.00	12	44.7182	44.7436	0.7500	3.0000	A607-60 (60 ksi)
L36	25.5000- 20.5000	5.0000	0.00	12	44.7436	45.7586	0.7500	3.0000	A607-60 (60 ksi)
L37	20.5000- 15.5000	5.0000	0.00	12	45.7586	46.7736	0.7375	2.9500	A607-60 (60 ksi)
L38	15.5000- 10.5000	5.0000	0.00	12	46.7736	47.7885	0.7375	2.9500	A607-60 (60 ksi)
L39	10.5000- 5.5000	5.0000	0.00	12	47.7885	48.8035	0.7250	2.9000	A607-60 (60 ksi)
L40	5.5000-0.5000	5.0000	0.00	12	48.8035	49.8185	0.7250	2.9000	A607-60 (60 ksi)
L41	0.5000-0.0000	0.5000		12	49.8185	49.9200	0.7250	2.9000	A607-60 (60 ksi)

### Tapered Pole Properties

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	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.8269	18.3259	1212.2378	8.1499	11.9218	101.6825	2456.3225	9.0194	5.4980	21.992
L2	23.8269	18.3259	1212.2378	8.1499	11.9218	101.6825	2456.3225	9.0194	5.4980	21.992
	24.8778	19.1430	1381.7298	8.5133	12.4476	111.0038	2799.7592	9.4216	5.7701	23.08
L3	24.8778	19.1430	1381.7298	8.5133	12.4476	111.0038	2799.7592	9.4216	5.7701	23.08
	25.9287	19.9601	1566.3271	8.8767	12.9734	120.7338	3173.8034	9.8238	6.0421	24.168
L4	25.9287	19.9601	1566.3271	8.8767	12.9734	120.7338	3173.8034	9.8238	6.0421	24.168
	26.9795	20.7772	1766.6743	9.2401	13.4992	130.8726	3579.7611	10.2259	6.3141	25.257
L5	26.9795	20.7772	1766.6743	9.2401	13.4992	130.8726	3579.7611	10.2259	6.3141	25.257
	28.0304	21.5943	1983.4159	9.6034	14.0250	141.4202	4018.9384	10.6281	6.5862	26.345
L6	28.0304	21.5943	1983.4159	9.6034	14.0250	141.4202	4018.9384	10.6281	6.5862	26.345
	29.0812	22.4115	2217.1972	9.9668	14.5508	152.3765	4492.6425	11.0302	6.8582	27.433
L7	29.0812	22.4115	2217.1972	9.9668	14.5508	152.3765	4492.6425	11.0302	6.8582	27.433
	30.1321	23.2286	2468.6623	10.3302	15.0766	163.7415	5002.1791	11.4324	7.1302	28.521
L8	30.1321	23.2286	2468.6623	10.3302	15.0766	163.7415	5002.1791	11.4324	7.1302	28.521
	31.1830	24.0457	2738.4566	10.6936	15.6024	175.5153	5548.8555	11.8346	7.4023	29.609
L9	31.1830	24.0457	2738.4566	10.6936	15.6024	175.5153	5548.8555	11.8346	7.4023	29.609
	32.2416	36.1718	4143.0744	10.7242	15.7114	263.6980	8394.9919	17.8027	7.1237	18.997
L10	32.2416	36.1718	4143.0744	10.7242	15.7114	263.6980	8394.9919	17.8027	7.1237	18.997
	32.4518	37.3975	4578.6591	11.0876	16.2372	281.9854	9277.6047	18.4059	7.3957	19.722
L11	32.4518	37.3975	4578.6591	11.0876	16.2372	281.9854	9277.6047	18.4059	7.3957	19.722
	33.5026	38.6231	5043.7522	11.4510	16.7630	300.8859	10220.0094	19.0091	7.6678	20.447
L12	33.5026	38.6231	5043.7522	11.4510	16.7630	300.8859	10220.0094	19.0091	7.6678	20.447
	34.5534	39.8488	5539.3204	11.8144	17.2888	320.3994	11224.1648	19.6124	7.9398	21.173
L13	34.5534	39.8488	5539.3204	11.8144	17.2888	320.3994	11224.1648	19.6124	7.9398	21.173
	35.6043	41.0744	6066.3301	12.1778	17.8146	340.5261	12292.0294	20.2156	8.2118	21.898
L14	35.6043	41.0744	6066.3301	12.1778	17.8146	340.5261	12292.0294	20.2156	8.2118	21.898
	36.6551	42.3001	6625.7494	12.5411	18.3404	361.2659	13425.5647	20.8188	8.4838	22.624
L15	36.6551	42.3001	6625.7494	12.5411	18.3404	361.2659	13425.5647	20.8188	8.4838	22.624
	37.7059	43.5257	7218.5445	12.9045	18.8662	382.6188	14626.7282	21.4220	8.7559	23.349
L16	37.7059	43.5257	7218.5445	12.9045	18.8662	382.6188	14626.7282	21.4220	8.7559	23.349
	38.5115	44.4653	7696.1862	13.1831	19.2692	399.4030	15594.5597	21.8845	8.9644	23.905
L17	38.5115	59.0858	10157.4370	13.1383	19.2692	527.1327	20581.7212	29.0802	8.6294	17.259
	38.5641	59.1675	10199.6351	13.1565	19.2955	528.6014	20667.2260	29.1205	8.6430	17.286
L18	38.5641	59.1675	10199.6351	13.1565	19.2955	528.6014	20667.2260	29.1205	8.6430	17.286
	39.6149	60.8017	11068.3315	13.5199	19.8213	558.4060	22427.4403	29.9248	8.9150	17.83
L19	39.6149	60.8017	11068.3315	13.5199	19.8213	558.4060	22427.4403	29.9248	8.9150	17.83
	39.9827	61.3737	11383.6430	13.6471	20.0053	569.0307	23066.3470	30.2063	9.0102	18.02
L20	39.9827	46.1812	8621.9960	13.6918	20.0053	430.9851	17470.5014	22.7290	9.3452	24.921
	40.0352	46.2425	8656.3654	13.7100	20.0316	432.1352	17540.1431	22.7592	9.3588	24.957
L21	40.0352	46.2425	8656.3654	13.7100	20.0316	432.1352	17540.1431	22.7592	9.3588	24.957
	41.1212	47.5091	9387.3225	14.0855	20.5750	456.2499	19021.2604	23.3825	9.6400	25.707
L22	40.3448	52.8527	9495.5569	13.4313	19.6607	482.9721	19240.5727	26.0125	8.9994	20.57
	40.5549	54.5687	10450.7974	13.8673	20.2916	515.0296	21176.1489	26.8571	9.3259	21.316

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
L23	40.5549	54.5687	10450.797 4	13.8673	20.2916	515.0296	21176.148 9	26.8571	9.3259	21.316
	41.4001	55.7187	11125.549 5	14.1596	20.7145	537.0899	22543.379 6	27.4231	9.5447	21.816
L24	41.4001	76.1003	15070.605 6	14.1014	20.7145	727.5389	30537.132 9	37.4542	9.1092	15.182
	41.4526	76.1984	15128.937 1	14.1196	20.7408	729.4291	30655.328 1	37.5025	9.1228	15.205
L25	41.4526	74.6345	14827.840 4	14.1240	20.7408	714.9119	30045.224 6	36.7328	9.1563	15.585
	42.5035	76.5548	16002.056 7	14.4874	21.2666	752.4501	32424.505 3	37.6779	9.4283	16.048
L26	42.5035	76.5548	16002.056 7	14.4874	21.2666	752.4501	32424.505 3	37.6779	9.4283	16.048
	43.5544	78.4751	17236.682 9	14.8508	21.7924	790.9488	34926.192 7	38.6230	9.7003	16.511
L27	43.5544	77.6519	17061.023 1	14.8531	21.7924	782.8882	34570.258 3	38.2179	9.7171	16.718
	44.6053	79.5518	18344.163 2	15.2165	22.3182	821.9366	37170.248 0	39.1530	9.9891	17.186
L28	44.6053	78.7080	18154.920 5	15.2187	22.3182	813.4573	36786.791 0	38.7377	10.0059	17.402
	45.2051	79.7807	18907.425 9	15.4261	22.6184	835.9329	38311.570 9	39.2656	10.1612	17.672
L29	45.2051	88.3242	20871.496 9	15.4038	22.6184	922.7681	42291.311 3	43.4705	9.9937	15.676
	45.2576	88.4284	20945.442 7	15.4219	22.6446	924.9623	42441.145 5	43.5218	10.0073	15.698
L30	45.2576	88.4284	20945.442 7	15.4219	22.6446	924.9623	42441.145 5	43.5218	10.0073	15.698
	46.5450	90.9810	22812.105 0	15.8671	23.2888	979.5327	46223.509 3	44.7781	10.3405	16.22
L31	45.6390	95.1564	21646.690 4	15.1136	22.2308	973.7239	43862.063 4	46.8331	9.6257	13.751
	45.8492	98.2448	23823.590 2	15.6041	22.9406	1038.4901	48273.052 7	48.3531	9.9929	14.276
L32	45.8492	96.5181	23418.305 4	15.6086	22.9406	1020.8234	47451.835 7	47.5033	10.0264	14.584
	46.2432	97.3607	24036.989 9	15.7448	23.1378	1038.8640	48705.458 3	47.9180	10.1284	14.732
L33	46.2432	78.1321	19410.515 8	15.7941	23.1378	838.9107	39330.967 5	38.4542	10.4969	19.085
	46.2695	78.1770	19444.026 7	15.8031	23.1509	839.8819	39398.869 7	38.4764	10.5037	19.098
L34	46.2695	106.1220	26155.820 0	15.7315	23.1509	1129.7968	52998.782 5	52.2300	9.9677	13.29
	46.2957	106.1833	26201.157 5	15.7406	23.1641	1131.1129	53090.648 7	52.2602	9.9745	13.299
L35	46.2957	106.1833	26201.157 5	15.7406	23.1641	1131.1129	53090.648 7	52.2602	9.9745	13.299
	46.3220	106.2446	26246.545 7	15.7497	23.1772	1132.4298	53182.617 3	52.2904	9.9813	13.308
L36	46.3220	106.2446	26246.545 7	15.7497	23.1772	1132.4298	53182.617 3	52.2904	9.9813	13.308
	47.3728	108.6958	28105.381 4	16.1131	23.7030	1185.7333	56949.122 4	53.4967	10.2533	13.671
L37	47.3728	106.9138	27659.991 1	16.1176	23.7030	1166.9428	56046.641 0	52.6197	10.2868	13.948
	48.4236	109.3242	29573.222 9	16.4809	24.2287	1220.5859	59923.367 3	53.8060	10.5588	14.317
L38	48.4236	109.3242	29573.222 9	16.4809	24.2287	1220.5859	59923.367 3	53.8060	10.5588	14.317
	49.4743	111.7345	31572.704 0	16.8443	24.7545	1275.4345	63974.858 1	54.9923	10.8308	14.686
L39	49.4743	109.8699	31062.317 1	16.8488	24.7545	1254.8166	62940.675 9	54.0746	10.8643	14.985
	50.5251	112.2393	33115.648 3	17.2121	25.2802	1309.9427	67101.281 6	55.2408	11.1363	15.36
L40	50.5251	112.2393	33115.648 3	17.2121	25.2802	1309.9427	67101.281 6	55.2408	11.1363	15.36

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
	51.5759	114.6088	35257.528 6	17.5755	25.8060	1366.2540	71441.311 8	56.4070	11.4084	15.736
L41	51.5759	114.6088	35257.528 6	17.5755	25.8060	1366.2540	71441.311 8	56.4070	11.4084	15.736
	51.6810	114.8457	35476.659 8	17.6118	25.8586	1371.9503	71885.330 9	56.5236	11.4356	15.773

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>r</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 148.0000-143.0000				1	1	1			
L2 143.0000-138.0000				1	1	1			
L3 138.0000-133.0000				1	1	1			
L4 133.0000-128.0000				1	1	1			
L5 128.0000-123.0000				1	1	1			
L6 123.0000-118.0000				1	1	1			
L7 118.0000-113.0000				1	1	1			
L8 113.0000-108.0000				1	1	1			
L9 108.0000-100.5000				1	1	1			
L10 100.5000-99.5000				1	1	1			
L11 99.5000-94.5000				1	1	1			
L12 94.5000-89.5000				1	1	1			
L13 89.5000-84.5000				1	1	1			
L14 84.5000-79.5000				1	1	1			
L15 79.5000-74.5000				1	1	1			
L16 74.5000-70.6670				1	1	1			
L17 70.6670-70.4170				1	1	0.981044			
L18 70.4170-65.4170				1	1	0.974834			
L19 65.4170-63.6670				1	1	0.972739			
L20 63.6670-63.4170				1	1	1			
L21 63.4170-58.2500				1	1	1			
L22 58.2500-57.2500				1	1	1			
L23 57.2500-53.2290				1	1	1			
L24 53.2290-52.9790				1	1	0.968735			
L25 52.9790-47.9790				1	1	0.982904			
L26 47.9790-42.9790				1	1	0.977075			
L27 42.9790-37.9790				1	1	0.981826			
L28 37.9790-35.1250				1	1	0.989239			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_r$	Adjust. Factor $A_r$	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in
L29 35.1250-34.8750				1	1	0.965503			
L30 34.8750-28.7500				1	1	0.96501			
L31 28.7500-27.7500				1	1	0.966024			
L32 27.7500-25.8750				1	1	0.98109			
L33 25.8750-25.7500				1	1	1.11828			
L34 25.7500-25.6250				1	1	0.976971			
L35 25.6250-25.5000				1	1	0.976792			
L36 25.5000-20.5000				1	1	0.969798			
L37 20.5000-15.5000				1	1	0.979171			
L38 15.5000-10.5000				1	1	0.972673			
L39 10.5000-5.5000				1	1	0.982858			
L40 5.5000-0.5000				1	1	0.976796			
L41 0.5000-0.0000				1	1	0.976203			

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

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

**Feed Line/Linear Appurtenances - Entered As Area**

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		$C_A A_A$	Weight
				ft			ft <sup>2</sup> /ft	plf
Safety Line 3/8	C	No	CaAa (Out Of Face)	148.0000 - 6.0000	1	No Ice	0.0375	0.22
						1/2" Ice	0.1375	0.75
						1" Ice	0.2375	1.28
						2" Ice	0.4375	2.34
						4" Ice	0.8375	4.46
***								
7983A(1/2")	C	No	Inside Pole	148.0000 - 8.0000	2	No Ice	0.0000	0.08
						1/2" Ice	0.0000	0.08
						1" Ice	0.0000	0.08
						2" Ice	0.0000	0.08
						4" Ice	0.0000	0.08
9207(5/16")	C	No	Inside Pole	148.0000 - 8.0000	6	No Ice	0.0000	0.60
						1/2" Ice	0.0000	0.60
						1" Ice	0.0000	0.60
						2" Ice	0.0000	0.60
						4" Ice	0.0000	0.60
MLE Hybrid 3Power/6Fiber RL 2( 1/4")	C	No	Inside Pole	148.0000 - 8.0000	3	No Ice	0.0000	0.68
						1/2" Ice	0.0000	0.68
						1" Ice	0.0000	0.68
						2" Ice	0.0000	0.68
						4" Ice	0.0000	0.68

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub>		Weight
							ft <sup>2</sup> /ft	plf
2" innerduct conduit	C	No	Inside Pole	148.0000 - 8.0000	2	No Ice	0.0000	0.20
						1/2" Ice	0.0000	0.20
						1" Ice	0.0000	0.20
						2" Ice	0.0000	0.20
						4" Ice	0.0000	0.20
***								
EW90(ELLIPTICAL)	B	No	Inside Pole	144.0000 - 8.0000	1	No Ice	0.0000	0.32
						1/2" Ice	0.0000	0.32
						1" Ice	0.0000	0.32
						2" Ice	0.0000	0.32
						4" Ice	0.0000	0.32
***								
LDF7-50A(1-5/8")	B	No	Inside Pole	120.0000 - 8.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
FB-L98-002-XXX( 3/8)	B	No	CaAa (Out Of Face)	120.0000 - 8.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
WR-VG82ST-BRDA( 5/8")	B	No	CaAa (Out Of Face)	120.0000 - 8.0000	1	No Ice	0.0645	0.31
						1/2" Ice	0.1645	1.01
						1" Ice	0.2645	2.32
						2" Ice	0.4645	6.77
						4" Ice	0.8645	23.01
WR-VG82ST-BRDA( 5/8")	B	No	CaAa (Out Of Face)	120.0000 - 8.0000	1	No Ice	0.0000	0.31
						1/2" Ice	0.0000	1.01
						1" Ice	0.0000	2.32
						2" Ice	0.0000	6.77
						4" Ice	0.0000	23.01
FB-L98B-034-XXX(3/8")	B	No	CaAa (Out Of Face)	120.0000 - 8.0000	1	No Ice	0.0394	0.06
						1/2" Ice	0.1394	0.60
						1" Ice	0.2394	1.76
						2" Ice	0.4394	5.91
						4" Ice	0.8394	21.53
WR-VG86ST-BRD(3/4")	B	No	CaAa (Out Of Face)	120.0000 - 8.0000	2	No Ice	0.0795	0.58
						1/2" Ice	0.1795	1.38
						1" Ice	0.2795	2.78
						2" Ice	0.4795	7.41
						4" Ice	0.8795	24.02
***								
LDF4-50A(1/2")	C	No	Inside Pole	96.0000 - 8.0000	5	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
LDF5-50A(7/8)	C	No	Inside Pole	96.0000 - 8.0000	8	No Ice	0.0000	0.33
						1/2" Ice	0.0000	0.33
						1" Ice	0.0000	0.33
						2" Ice	0.0000	0.33
						4" Ice	0.0000	0.33
***								
LDF5-50A(7/8)	B	No	Inside Pole	82.0000 - 8.0000	18	No Ice	0.0000	0.33
						1/2" Ice	0.0000	0.33
						1" Ice	0.0000	0.33
						2" Ice	0.0000	0.33
						4" Ice	0.0000	0.33
LCF114-50J(1-1/4")	B	No	Inside Pole	82.0000 - 8.0000	6	No Ice	0.0000	0.70
						1/2" Ice	0.0000	0.70
						1" Ice	0.0000	0.70
						2" Ice	0.0000	0.70
						4" Ice	0.0000	0.70
***								
HJ7-50A(1-5/8")	C	No	Inside Pole	72.0000 - 8.0000	6	No Ice	0.0000	1.04
						1/2" Ice	0.0000	1.04
						1" Ice	0.0000	1.04
						2" Ice	0.0000	1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub>		Weight
						ft <sup>2</sup> /ft	plf	
LDF4-50A(1/2")	C	No	Inside Pole	53.0000 - 8.0000	2	4" Ice	0.0000	1.04
						No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
LDF4-50A(1/2")	C	No	Inside Pole	50.0000 - 8.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
						***		
CCI-SFP-065125	A	No	CaAa (Out Of Face)	35.1250 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.2917	0.00
						1" Ice	0.3750	0.00
						2" Ice	0.5417	0.00
						4" Ice	0.8750	0.00
CCI-SFP-065125	B	No	CaAa (Out Of Face)	35.1250 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.2917	0.00
						1" Ice	0.3750	0.00
						2" Ice	0.5417	0.00
						4" Ice	0.8750	0.00
CCI-SFP-065125	C	No	CaAa (Out Of Face)	28.5000 - 0.0000	2	No Ice	0.2083	0.00
						1/2" Ice	0.2917	0.00
						1" Ice	0.3750	0.00
						2" Ice	0.5417	0.00
						4" Ice	0.8750	0.00
CCI-SFP-065125	C	No	CaAa (Out Of Face)	35.1250 - 23.1250	1	No Ice	0.2083	0.00
						1/2" Ice	0.2917	0.00
						1" Ice	0.3750	0.00
						2" Ice	0.5417	0.00
						4" Ice	0.8750	0.00
CCI-SFP-060100	A	No	CaAa (Out Of Face)	55.2290 - 35.1250	1	No Ice	0.1667	0.00
						1/2" Ice	0.2500	0.00
						1" Ice	0.3333	0.00
						2" Ice	0.5000	0.00
						4" Ice	0.8333	0.00
CCI-SFP-060100	B	No	CaAa (Out Of Face)	55.2290 - 35.1250	1	No Ice	0.1667	0.00
						1/2" Ice	0.2500	0.00
						1" Ice	0.3333	0.00
						2" Ice	0.5000	0.00
						4" Ice	0.8333	0.00
CCI-SFP-060100	C	No	CaAa (Out Of Face)	55.2290 - 35.1250	1	No Ice	0.1667	0.00
						1/2" Ice	0.2500	0.00
						1" Ice	0.3333	0.00
						2" Ice	0.5000	0.00
						4" Ice	0.8333	0.00
CCI-SFP-045100	A	No	CaAa (Out Of Face)	72.1670 - 62.1670	1	No Ice	0.1667	0.00
						1/2" Ice	0.2500	0.00
						1" Ice	0.3333	0.00
						2" Ice	0.5000	0.00
						4" Ice	0.8333	0.00
CCI-SFP-045100	B	No	CaAa (Out Of Face)	72.1670 - 62.1670	1	No Ice	0.1667	0.00
						1/2" Ice	0.2500	0.00
						1" Ice	0.3333	0.00
						2" Ice	0.5000	0.00
						4" Ice	0.8333	0.00
CCI-SFP-045100	C	No	CaAa (Out Of Face)	72.1670 - 62.1670	1	No Ice	0.1667	0.00
						1/2" Ice	0.2500	0.00
						1" Ice	0.3333	0.00
						2" Ice	0.5000	0.00
						4" Ice	0.8333	0.00
***								



### Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	$A_R$	$A_F$	$C_{AA}$	$C_{AA}$	Weight  K
			ft <sup>2</sup>	ft <sup>2</sup>	In Face ft <sup>2</sup>	Out Face ft <sup>2</sup>	
L1	148.0000- 143.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	0.03
L2	143.0000- 138.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	0.03
L3	138.0000- 133.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	0.03
L4	133.0000- 128.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	0.03
L5	128.0000- 123.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	0.03
L6	123.0000- 118.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.526	0.03
		C	0.000	0.000	0.000	0.188	0.03
L7	118.0000- 113.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.314	0.06
		C	0.000	0.000	0.000	0.188	0.03
L8	113.0000- 108.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.314	0.06
		C	0.000	0.000	0.000	0.188	0.03
L9	108.0000- 100.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.972	0.09
		C	0.000	0.000	0.000	0.281	0.05
L10	100.5000- 99.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.263	0.01
		C	0.000	0.000	0.000	0.037	0.01
L11	99.5000-94.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.314	0.06
		C	0.000	0.000	0.000	0.188	0.04
L12	94.5000-89.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.314	0.06
		C	0.000	0.000	0.000	0.188	0.05
L13	89.5000-84.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.314	0.06
		C	0.000	0.000	0.000	0.188	0.05
L14	84.5000-79.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.314	0.09
		C	0.000	0.000	0.000	0.188	0.05
L15	79.5000-74.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.314	0.11
		C	0.000	0.000	0.000	0.188	0.05
L16	74.5000-70.6670	A	0.000	0.000	0.000	0.250	0.00
		B	0.000	0.000	0.000	1.258	0.09
		C	0.000	0.000	0.000	0.394	0.05
L17	70.6670-70.4170	A	0.000	0.000	0.000	0.042	0.00
		B	0.000	0.000	0.000	0.107	0.01
		C	0.000	0.000	0.000	0.051	0.00
L18	70.4170-65.4170	A	0.000	0.000	0.000	0.833	0.00
		B	0.000	0.000	0.000	2.148	0.11
		C	0.000	0.000	0.000	1.021	0.08
L19	65.4170-63.6670	A	0.000	0.000	0.000	0.292	0.00
		B	0.000	0.000	0.000	0.752	0.04
		C	0.000	0.000	0.000	0.357	0.03
L20	63.6670-63.4170	A	0.000	0.000	0.000	0.042	0.00
		B	0.000	0.000	0.000	0.107	0.01
		C	0.000	0.000	0.000	0.051	0.00
L21	63.4170-58.2500	A	0.000	0.000	0.000	0.208	0.00
		B	0.000	0.000	0.000	1.567	0.11
		C	0.000	0.000	0.000	0.402	0.08
L22	58.2500-57.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.263	0.02
		C	0.000	0.000	0.000	0.037	0.02

Tower Sectio n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L23	57.2500-53.2290	A	0.000	0.000	0.000	0.333	0.00
		B	0.000	0.000	0.000	1.390	0.09
		C	0.000	0.000	0.000	0.484	0.06
L24	53.2290-52.9790	A	0.000	0.000	0.000	0.042	0.00
		B	0.000	0.000	0.000	0.107	0.01
		C	0.000	0.000	0.000	0.051	0.00
L25	52.9790-47.9790	A	0.000	0.000	0.000	0.833	0.00
		B	0.000	0.000	0.000	2.148	0.11
		C	0.000	0.000	0.000	1.021	0.08
L26	47.9790-42.9790	A	0.000	0.000	0.000	0.833	0.00
		B	0.000	0.000	0.000	2.148	0.11
		C	0.000	0.000	0.000	1.021	0.08
L27	42.9790-37.9790	A	0.000	0.000	0.000	0.833	0.00
		B	0.000	0.000	0.000	2.148	0.11
		C	0.000	0.000	0.000	1.021	0.08
L28	37.9790-35.1250	A	0.000	0.000	0.000	0.476	0.00
		B	0.000	0.000	0.000	1.226	0.06
		C	0.000	0.000	0.000	0.583	0.05
L29	35.1250-34.8750	A	0.000	0.000	0.000	0.052	0.00
		B	0.000	0.000	0.000	0.118	0.01
		C	0.000	0.000	0.000	0.061	0.00
L30	34.8750-28.7500	A	0.000	0.000	0.000	1.276	0.00
		B	0.000	0.000	0.000	2.886	0.14
		C	0.000	0.000	0.000	1.506	0.10
L31	28.7500-27.7500	A	0.000	0.000	0.000	0.208	0.00
		B	0.000	0.000	0.000	0.471	0.02
		C	0.000	0.000	0.000	0.558	0.02
L32	27.7500-25.8750	A	0.000	0.000	0.000	0.391	0.00
		B	0.000	0.000	0.000	0.884	0.04
		C	0.000	0.000	0.000	1.242	0.03
L33	25.8750-25.7500	A	0.000	0.000	0.000	0.026	0.00
		B	0.000	0.000	0.000	0.059	0.00
		C	0.000	0.000	0.000	0.083	0.00
L34	25.7500-25.6250	A	0.000	0.000	0.000	0.026	0.00
		B	0.000	0.000	0.000	0.059	0.00
		C	0.000	0.000	0.000	0.083	0.00
L35	25.6250-25.5000	A	0.000	0.000	0.000	0.026	0.00
		B	0.000	0.000	0.000	0.059	0.00
		C	0.000	0.000	0.000	0.083	0.00
L36	25.5000-20.5000	A	0.000	0.000	0.000	1.042	0.00
		B	0.000	0.000	0.000	2.356	0.11
		C	0.000	0.000	0.000	2.766	0.08
L37	20.5000-15.5000	A	0.000	0.000	0.000	1.042	0.00
		B	0.000	0.000	0.000	2.356	0.11
		C	0.000	0.000	0.000	2.271	0.08
L38	15.5000-10.5000	A	0.000	0.000	0.000	1.042	0.00
		B	0.000	0.000	0.000	2.356	0.11
		C	0.000	0.000	0.000	2.271	0.08
L39	10.5000-5.5000	A	0.000	0.000	0.000	1.042	0.00
		B	0.000	0.000	0.000	1.699	0.06
		C	0.000	0.000	0.000	2.252	0.04
L40	5.5000-0.5000	A	0.000	0.000	0.000	1.042	0.00
		B	0.000	0.000	0.000	1.042	0.00
		C	0.000	0.000	0.000	2.083	0.00
L41	0.5000-0.0000	A	0.000	0.000	0.000	0.104	0.00
		B	0.000	0.000	0.000	0.104	0.00
		C	0.000	0.000	0.000	0.208	0.00

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

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	148.0000- 143.0000	A	0.896	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.084	0.04

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L2	143.0000-138.0000	A	0.892	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.080	0.04
L3	138.0000-133.0000	A	0.889	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.076	0.04
L4	133.0000-128.0000	A	0.885	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.072	0.04
L5	128.0000-123.0000	A	0.880	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.068	0.04
L6	123.0000-118.0000	A	0.876	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	1.928	0.04
		C		0.000	0.000	0.000	1.064	0.04
L7	118.0000-113.0000	A	0.872	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.801	0.10
		C		0.000	0.000	0.000	1.059	0.04
L8	113.0000-108.0000	A	0.867	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.783	0.10
		C		0.000	0.000	0.000	1.055	0.04
L9	108.0000-100.5000	A	0.861	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	7.137	0.15
		C		0.000	0.000	0.000	1.573	0.06
L10	100.5000-99.5000	A	0.857	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.952	0.02
		C		0.000	0.000	0.000	0.210	0.01
L11	99.5000-94.5000	A	0.854	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.729	0.10
		C		0.000	0.000	0.000	1.041	0.04
L12	94.5000-89.5000	A	0.848	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.707	0.10
		C		0.000	0.000	0.000	1.036	0.05
L13	89.5000-84.5000	A	0.843	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.684	0.10
		C		0.000	0.000	0.000	1.030	0.05
L14	84.5000-79.5000	A	0.837	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.661	0.13
		C		0.000	0.000	0.000	1.024	0.05
L15	79.5000-74.5000	A	0.830	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	4.635	0.15
		C		0.000	0.000	0.000	1.018	0.05
L16	74.5000-70.6670	A	0.824	0.000	0.000	0.000	0.456	0.00
		B		0.000	0.000	0.000	3.992	0.11
		C		0.000	0.000	0.000	1.232	0.05
L17	70.6670-70.4170	A	0.822	0.000	0.000	0.000	0.076	0.00
		B		0.000	0.000	0.000	0.306	0.01
		C		0.000	0.000	0.000	0.126	0.00
L18	70.4170-65.4170	A	0.818	0.000	0.000	0.000	1.515	0.00
		B		0.000	0.000	0.000	6.101	0.15
		C		0.000	0.000	0.000	2.520	0.08
L19	65.4170-63.6670	A	0.813	0.000	0.000	0.000	0.529	0.00
		B		0.000	0.000	0.000	2.127	0.05
		C		0.000	0.000	0.000	0.879	0.03
L20	63.6670-63.4170	A	0.811	0.000	0.000	0.000	0.075	0.00
		B		0.000	0.000	0.000	0.303	0.01
		C		0.000	0.000	0.000	0.125	0.00
L21	63.4170-58.2500	A	0.807	0.000	0.000	0.000	0.376	0.00
		B		0.000	0.000	0.000	5.071	0.15
		C		0.000	0.000	0.000	1.404	0.09
L22	58.2500-57.2500	A	0.802	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.909	0.03
		C		0.000	0.000	0.000	0.199	0.02
L23	57.2500-53.2290	A	0.798	0.000	0.000	0.000	0.599	0.00
		B		0.000	0.000	0.000	4.223	0.12
		C		0.000	0.000	0.000	1.392	0.07
L24	53.2290-52.9790	A	0.794	0.000	0.000	0.000	0.075	0.00
		B		0.000	0.000	0.000	0.299	0.01
		C		0.000	0.000	0.000	0.124	0.00

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L25	52.9790-47.9790	A	0.789	0.000	0.000	0.000	1.491	0.00
		B		0.000	0.000	0.000	5.962	0.15
		C		0.000	0.000	0.000	2.468	0.09
L26	47.9790-42.9790	A	0.779	0.000	0.000	0.000	1.483	0.00
		B		0.000	0.000	0.000	5.915	0.15
		C		0.000	0.000	0.000	2.450	0.09
L27	42.9790-37.9790	A	0.769	0.000	0.000	0.000	1.474	0.00
		B		0.000	0.000	0.000	5.863	0.15
		C		0.000	0.000	0.000	2.430	0.09
L28	37.9790-35.1250	A	0.759	0.000	0.000	0.000	0.837	0.00
		B		0.000	0.000	0.000	3.321	0.08
		C		0.000	0.000	0.000	1.377	0.05
L29	35.1250-34.8750	A	0.755	0.000	0.000	0.000	0.084	0.00
		B		0.000	0.000	0.000	0.300	0.01
		C		0.000	0.000	0.000	0.131	0.00
L30	34.8750-28.7500	A	0.750	0.000	0.000	0.000	2.042	0.00
		B		0.000	0.000	0.000	7.327	0.18
		C		0.000	0.000	0.000	3.190	0.11
L31	28.7500-27.7500	A	0.750	0.000	0.000	0.000	0.333	0.00
		B		0.000	0.000	0.000	1.196	0.03
		C		0.000	0.000	0.000	1.021	0.02
L32	27.7500-25.8750	A	0.750	0.000	0.000	0.000	0.625	0.00
		B		0.000	0.000	0.000	2.243	0.05
		C		0.000	0.000	0.000	2.227	0.03
L33	25.8750-25.7500	A	0.750	0.000	0.000	0.000	0.042	0.00
		B		0.000	0.000	0.000	0.150	0.00
		C		0.000	0.000	0.000	0.148	0.00
L34	25.7500-25.6250	A	0.750	0.000	0.000	0.000	0.042	0.00
		B		0.000	0.000	0.000	0.150	0.00
		C		0.000	0.000	0.000	0.148	0.00
L35	25.6250-25.5000	A	0.750	0.000	0.000	0.000	0.042	0.00
		B		0.000	0.000	0.000	0.150	0.00
		C		0.000	0.000	0.000	0.148	0.00
L36	25.5000-20.5000	A	0.750	0.000	0.000	0.000	1.667	0.00
		B		0.000	0.000	0.000	5.981	0.14
		C		0.000	0.000	0.000	5.063	0.09
L37	20.5000-15.5000	A	0.750	0.000	0.000	0.000	1.667	0.00
		B		0.000	0.000	0.000	5.981	0.14
		C		0.000	0.000	0.000	4.271	0.09
L38	15.5000-10.5000	A	0.750	0.000	0.000	0.000	1.667	0.00
		B		0.000	0.000	0.000	5.981	0.14
		C		0.000	0.000	0.000	4.271	0.09
L39	10.5000-5.5000	A	0.750	0.000	0.000	0.000	1.667	0.00
		B		0.000	0.000	0.000	3.824	0.07
		C		0.000	0.000	0.000	4.177	0.05
L40	5.5000-0.5000	A	0.750	0.000	0.000	0.000	1.667	0.00
		B		0.000	0.000	0.000	1.667	0.00
		C		0.000	0.000	0.000	3.333	0.00
L41	0.5000-0.0000	A	0.750	0.000	0.000	0.000	0.167	0.00
		B		0.000	0.000	0.000	0.167	0.00
		C		0.000	0.000	0.000	0.333	0.00

### Feed Line Center of Pressure

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub> Ice	CP <sub>z</sub> Ice
	ft	in	in	in	in
L1	148.0000-143.0000	-0.0478	0.0276	-0.2356	0.1360
L2	143.0000-138.0000	-0.0478	0.0276	-0.2366	0.1366
L3	138.0000-133.0000	-0.0478	0.0276	-0.2374	0.1371
L4	133.0000-128.0000	-0.0479	0.0276	-0.2381	0.1374

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub> Ice	CP <sub>z</sub> Ice
	ft	in	in	in	in
L5	128.0000-123.0000	-0.0479	0.0277	-0.2386	0.1378
L6	123.0000-118.0000	0.0842	0.1016	0.1737	0.3413
L7	118.0000-113.0000	0.2600	0.2001	0.6261	0.5661
L8	113.0000-108.0000	0.2610	0.2008	0.6324	0.5717
L9	108.0000-100.5000	0.2622	0.2017	0.6396	0.5780
L10	100.5000-99.5000	0.2625	0.2020	0.6421	0.5802
L11	99.5000-94.5000	0.2630	0.2024	0.6437	0.5815
L12	94.5000-89.5000	0.2638	0.2030	0.6485	0.5856
L13	89.5000-84.5000	0.2646	0.2036	0.6528	0.5893
L14	84.5000-79.5000	0.2654	0.2042	0.6566	0.5926
L15	79.5000-74.5000	0.2661	0.2047	0.6600	0.5955
L16	74.5000-70.6670	0.2520	0.1939	0.6122	0.5521
L17	70.6670-70.4170	0.2327	0.1791	0.5491	0.4951
L18	70.4170-65.4170	0.2334	0.1796	0.5512	0.4970
L19	65.4170-63.6670	0.2342	0.1802	0.5538	0.4991
L20	63.6670-63.4170	0.2345	0.1804	0.5545	0.4998
L21	63.4170-58.2500	0.2593	0.1995	0.6370	0.5740
L22	58.2500-57.2500	0.2680	0.2063	0.6673	0.6013
L23	57.2500-53.2290	0.2510	0.1931	0.6062	0.5459
L24	53.2290-52.9790	0.2361	0.1817	0.5570	0.5015
L25	52.9790-47.9790	0.2367	0.1821	0.5583	0.5025
L26	47.9790-42.9790	0.2378	0.1830	0.5605	0.5042
L27	42.9790-37.9790	0.2389	0.1838	0.5621	0.5053
L28	37.9790-35.1250	0.2397	0.1844	0.5629	0.5057
L29	35.1250-34.8750	0.2334	0.1796	0.5509	0.4949
L30	34.8750-28.7500	0.2341	0.1802	0.5522	0.4958
L31	28.7500-27.7500	-0.0849	0.3441	0.1317	0.6736
L32	27.7500-25.8750	-0.1824	0.3948	0.0064	0.7289
L33	25.8750-25.7500	-0.1827	0.3953	0.0064	0.7303
L34	25.7500-25.6250	-0.1827	0.3954	0.0064	0.7305
L35	25.6250-25.5000	-0.1827	0.3954	0.0064	0.7307
L36	25.5000-20.5000	-0.0796	0.3431	0.1405	0.6770
L37	20.5000-15.5000	0.0171	0.2948	0.2692	0.6287
L38	15.5000-10.5000	0.0172	0.2963	0.2715	0.6341
L39	10.5000-5.5000	-0.1158	0.2240	-0.0625	0.4620
L40	5.5000-0.5000	-0.2250	0.1299	-0.3196	0.1845
L41	0.5000-0.0000	-0.2254	0.1302	-0.3205	0.1851

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
Platform Mount [LP 1201-1]	C	None		0.0000	148.0000	No Ice	23.1000	23.1000	2.10
						1/2" Ice	26.8000	26.8000	2.50
						1" Ice	30.5000	30.5000	2.90
						2" Ice	37.9000	37.9000	3.70
						4" Ice	52.7000	52.7000	5.30
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	4.0000 -7.00 0.00	0.0000	148.0000	No Ice	8.4975	6.9458	0.08
						1/2" Ice	9.1490	8.1266	0.15
						1" Ice	9.7672	9.0212	0.23
						2" Ice	11.0311	10.8440	0.41
						4" Ice	13.6786	14.8507	0.91
APXVSPP18-C-A20 w/	A	From Face	4.0000	60.0000	148.0000	No Ice	8.4975	6.9458	0.08

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 K
Mount Pipe			7.00 0.00			1/2" 9.1490 Ice 9.7672 1" Ice 11.0311 2" Ice 13.6786 4" Ice	8.1266 9.0212 10.8440 14.8507	0.15 0.23 0.41 0.91
APXVSP18-C-A20 w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice 8.4975 1/2" 9.1490 Ice 9.7672 1" Ice 11.0311 2" Ice 13.6786 4" Ice	6.9458 8.1266 9.0212 10.8440 14.8507	0.08 0.15 0.23 0.41 0.91
LLPX310R w/ Mount Pipe	A	From Face	4.0000 0.00 3.00	0.0000	148.0000	No Ice 5.0651 1/2" 5.4799 Ice 5.9053 1" Ice 6.7882 2" Ice 8.7047 4" Ice	2.9846 3.5275 4.0872 5.3142 8.1325	0.05 0.08 0.13 0.23 0.54
LLPX310R w/ Mount Pipe	B	From Face	4.0000 -3.50 3.00	0.0000	148.0000	No Ice 5.0651 1/2" 5.4799 Ice 5.9053 1" Ice 6.7882 2" Ice 8.7047 4" Ice	2.9846 3.5275 4.0872 5.3142 8.1325	0.05 0.08 0.13 0.23 0.54
LLPX310R w/ Mount Pipe	C	From Face	4.0000 -3.50 3.00	0.0000	148.0000	No Ice 5.0651 1/2" 5.4799 Ice 5.9053 1" Ice 6.7882 2" Ice 8.7047 4" Ice	2.9846 3.5275 4.0872 5.3142 8.1325	0.05 0.08 0.13 0.23 0.54
DB420	A	From Face	4.0000 0.00 12.00	0.0000	148.0000	No Ice 3.3300 1/2" 5.9940 Ice 8.6580 1" Ice 13.9860 2" Ice 24.6420 4" Ice	3.3300 5.9940 8.6580 13.9860 24.6420	0.03 0.04 0.05 0.07 0.12
(3) PCS 1900MHz 4x45W- 65MHz	A	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice 2.7087 1/2" 2.9477 Ice 3.1953 1" Ice 3.7164 2" Ice 4.8623 4" Ice	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
(3) PCS 1900MHz 4x45W- 65MHz	B	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice 2.7087 1/2" 2.9477 Ice 3.1953 1" Ice 3.7164 2" Ice 4.8623 4" Ice	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
(3) PCS 1900MHz 4x45W- 65MHz	C	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice 2.7087 1/2" 2.9477 Ice 3.1953 1" Ice 3.7164 2" Ice 4.8623 4" Ice	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
(3) ACU-A20-N	A	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice 0.0778 1/2" 0.1210 Ice 0.1728 1" Ice 0.3025 2" Ice 0.6654 4" Ice	0.1361 0.1890 0.2506 0.3997 0.8015	0.00 0.00 0.00 0.01 0.04
(3) ACU-A20-N	B	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice 0.0778 1/2" 0.1210 Ice 0.1728 1" Ice 0.3025 2" Ice 0.6654 4" Ice	0.1361 0.1890 0.2506 0.3997 0.8015	0.00 0.00 0.00 0.01 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
(3) ACU-A20-N	C	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice	0.0778	0.1361	0.00
						1/2"	0.1210	0.1890	0.00
						Ice	0.1728	0.2506	0.00
						1" Ice	0.3025	0.3997	0.01
						2" Ice	0.6654	0.8015	0.04
800MHZ RRH	A	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice	2.4899	2.0685	0.05
						1/2"	2.7061	2.2705	0.07
						Ice	2.9310	2.4812	0.10
						1" Ice	3.4068	2.9284	0.16
						2" Ice	4.4620	3.9265	0.32
800MHZ RRH	B	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice	2.4899	2.0685	0.05
						1/2"	2.7061	2.2705	0.07
						Ice	2.9310	2.4812	0.10
						1" Ice	3.4068	2.9284	0.16
						2" Ice	4.4620	3.9265	0.32
800MHZ RRH	C	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice	2.4899	2.0685	0.05
						1/2"	2.7061	2.2705	0.07
						Ice	2.9310	2.4812	0.10
						1" Ice	3.4068	2.9284	0.16
						2" Ice	4.4620	3.9265	0.32
800 EXTERNAL NOTCH FILTER	A	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice	0.7701	0.3747	0.01
						1/2"	0.8898	0.4647	0.02
						Ice	1.0181	0.5634	0.02
						1" Ice	1.3007	0.7868	0.04
						2" Ice	1.9696	1.3372	0.11
800 EXTERNAL NOTCH FILTER	B	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice	0.7701	0.3747	0.01
						1/2"	0.8898	0.4647	0.02
						Ice	1.0181	0.5634	0.02
						1" Ice	1.3007	0.7868	0.04
						2" Ice	1.9696	1.3372	0.11
800 EXTERNAL NOTCH FILTER	C	From Face	4.0000 0.00 0.00	0.0000	148.0000	No Ice	0.7701	0.3747	0.01
						1/2"	0.8898	0.4647	0.02
						Ice	1.0181	0.5634	0.02
						1" Ice	1.3007	0.7868	0.04
						2" Ice	1.9696	1.3372	0.11
FDD_R6_RRH	A	From Face	4.0000 0.00 3.00	0.0000	148.0000	No Ice	1.7889	0.7778	0.03
						1/2"	1.9715	0.9182	0.04
						Ice	2.1627	1.0673	0.06
						1" Ice	2.5710	1.3914	0.09
						2" Ice	3.4914	2.1432	0.20
FDD_R6_RRH	B	From Face	4.0000 0.00 3.00	0.0000	148.0000	No Ice	1.7889	0.7778	0.03
						1/2"	1.9715	0.9182	0.04
						Ice	2.1627	1.0673	0.06
						1" Ice	2.5710	1.3914	0.09
						2" Ice	3.4914	2.1432	0.20
FDD_R6_RRH	C	From Face	4.0000 0.00 3.00	0.0000	148.0000	No Ice	1.7889	0.7778	0.03
						1/2"	1.9715	0.9182	0.04
						Ice	2.1627	1.0673	0.06
						1" Ice	2.5710	1.3914	0.09
						2" Ice	3.4914	2.1432	0.20
6' x 2" Mount Pipe	A	From Face	4.0000 -3.50 0.00	0.0000	148.0000	No Ice	1.4250	1.4250	0.02
						1/2"	1.9250	1.9250	0.03
						Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice	4.7022	4.7022	0.23





Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			0.00			Ice 9.9098	8.4270	0.22
						1" Ice 11.1763	10.2390	0.39
						2" Ice 13.8289	14.0988	0.89
						4" Ice		
P65-16-XLH-RR w/ Mount Pipe	B	From Face	4.0000 7.00 0.00	30.0000	120.0000	No Ice 8.6375	6.3625	0.08
						1/2" 9.2903	7.5378	0.14
						Ice 9.9098	8.4270	0.22
						1" Ice 11.1763	10.2390	0.39
						2" Ice 13.8289	14.0988	0.89
						4" Ice		
P65-16-XLH-RR w/ Mount Pipe	C	From Face	4.0000 7.00 0.00	30.0000	120.0000	No Ice 8.6375	6.3625	0.08
						1/2" 9.2903	7.5378	0.14
						Ice 9.9098	8.4270	0.22
						1" Ice 11.1763	10.2390	0.39
						2" Ice 13.8289	14.0988	0.89
						4" Ice		
QS66512-3 w/ Mount Pipe	A	From Face	4.0000 3.50 0.00	23.0000	120.0000	No Ice 8.6375	8.4625	0.13
						1/2" 9.2903	9.6573	0.21
						Ice 9.9098	10.6203	0.29
						1" Ice 11.1763	12.6104	0.49
						2" Ice 13.8289	16.8055	1.02
						4" Ice		
QS66512-3 w/ Mount Pipe	B	From Face	4.0000 3.50 0.00	23.0000	120.0000	No Ice 8.6375	8.4625	0.13
						1/2" 9.2903	9.6573	0.21
						Ice 9.9098	10.6203	0.29
						1" Ice 11.1763	12.6104	0.49
						2" Ice 13.8289	16.8055	1.02
						4" Ice		
QS66512-3 w/ Mount Pipe	C	From Face	4.0000 3.50 0.00	23.0000	120.0000	No Ice 8.6375	8.4625	0.13
						1/2" 9.2903	9.6573	0.21
						Ice 9.9098	10.6203	0.29
						1" Ice 11.1763	12.6104	0.49
						2" Ice 13.8289	16.8055	1.02
						4" Ice		
RRUS-11	A	From Face	4.0000 0.00 0.00	30.0000	120.0000	No Ice 3.2486	1.3726	0.05
						1/2" 3.4905	1.5510	0.07
						Ice 3.7411	1.7380	0.09
						1" Ice 4.2682	2.1381	0.15
						2" Ice 5.4260	3.0418	0.31
						4" Ice		
RRUS-11	B	From Face	4.0000 0.00 0.00	30.0000	120.0000	No Ice 3.2486	1.3726	0.05
						1/2" 3.4905	1.5510	0.07
						Ice 3.7411	1.7380	0.09
						1" Ice 4.2682	2.1381	0.15
						2" Ice 5.4260	3.0418	0.31
						4" Ice		
RRUS-11	C	From Face	4.0000 0.00 0.00	30.0000	120.0000	No Ice 3.2486	1.3726	0.05
						1/2" 3.4905	1.5510	0.07
						Ice 3.7411	1.7380	0.09
						1" Ice 4.2682	2.1381	0.15
						2" Ice 5.4260	3.0418	0.31
						4" Ice		
(2) LGP2140X	A	From Face	4.0000 0.00 0.00	23.0000	120.0000	No Ice 1.2600	0.3780	0.01
						1/2" 1.4160	0.4932	0.02
						Ice 1.5806	0.6170	0.03
						1" Ice 1.9358	0.8905	0.05
						2" Ice 2.7499	1.5412	0.13
						4" Ice		
(2) LGP2140X	B	From Face	4.0000 0.00 0.00	23.0000	120.0000	No Ice 1.2600	0.3780	0.01
						1/2" 1.4160	0.4932	0.02
						Ice 1.5806	0.6170	0.03
						1" Ice 1.9358	0.8905	0.05
						2" Ice 2.7499	1.5412	0.13
						4" Ice		
(2) LGP2140X	C	From Face	4.0000	23.0000	120.0000	No Ice 1.2600	0.3780	0.01

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 K	
			0.00			1/2"	1.4160	0.4932	0.02
			0.00			Ice	1.5806	0.6170	0.03
						1" Ice	1.9358	0.8905	0.05
						2" Ice	2.7499	1.5412	0.13
						4" Ice			
RRUS 32	A	From Face	4.0000	23.0000	120.0000	No Ice	3.3332	1.9828	0.06
			0.00			1/2"	3.5968	2.2137	0.08
			0.00			Ice	3.8690	2.4533	0.10
						1" Ice	4.4394	2.9583	0.16
						2" Ice	5.6838	4.0721	0.34
						4" Ice			
RRUS 32	B	From Face	4.0000	23.0000	120.0000	No Ice	3.3332	1.9828	0.06
			0.00			1/2"	3.5968	2.2137	0.08
			0.00			Ice	3.8690	2.4533	0.10
						1" Ice	4.4394	2.9583	0.16
						2" Ice	5.6838	4.0721	0.34
						4" Ice			
RRUS 32	C	From Face	4.0000	23.0000	120.0000	No Ice	3.3332	1.9828	0.06
			0.00			1/2"	3.5968	2.2137	0.08
			0.00			Ice	3.8690	2.4533	0.10
						1" Ice	4.4394	2.9583	0.16
						2" Ice	5.6838	4.0721	0.34
						4" Ice			
RRUS 32 B2	A	From Face	4.0000	23.0000	120.0000	No Ice	3.1866	1.8511	0.05
			0.00			1/2"	3.4453	2.0771	0.07
			0.00			Ice	3.7126	2.3117	0.10
						1" Ice	4.2733	2.8069	0.16
						2" Ice	5.4983	3.9010	0.32
						4" Ice			
RRUS 32 B2	B	From Face	4.0000	23.0000	120.0000	No Ice	3.1866	1.8511	0.05
			0.00			1/2"	3.4453	2.0771	0.07
			0.00			Ice	3.7126	2.3117	0.10
						1" Ice	4.2733	2.8069	0.16
						2" Ice	5.4983	3.9010	0.32
						4" Ice			
RRUS 32 B2	C	From Face	4.0000	23.0000	120.0000	No Ice	3.1866	1.8511	0.05
			0.00			1/2"	3.4453	2.0771	0.07
			0.00			Ice	3.7126	2.3117	0.10
						1" Ice	4.2733	2.8069	0.16
						2" Ice	5.4983	3.9010	0.32
						4" Ice			
(2) 7020.00	A	From Face	4.0000	23.0000	120.0000	No Ice	0.1191	0.2042	0.00
			0.00			1/2"	0.1714	0.2791	0.01
			0.00			Ice	0.2323	0.3627	0.01
						1" Ice	0.3801	0.5559	0.02
						2" Ice	0.7793	1.0459	0.07
						4" Ice			
(2) 7020.00	B	From Face	4.0000	23.0000	120.0000	No Ice	0.1191	0.2042	0.00
			0.00			1/2"	0.1714	0.2791	0.01
			0.00			Ice	0.2323	0.3627	0.01
						1" Ice	0.3801	0.5559	0.02
						2" Ice	0.7793	1.0459	0.07
						4" Ice			
(2) 7020.00	C	From Face	4.0000	23.0000	120.0000	No Ice	0.1191	0.2042	0.00
			0.00			1/2"	0.1714	0.2791	0.01
			0.00			Ice	0.2323	0.3627	0.01
						1" Ice	0.3801	0.5559	0.02
						2" Ice	0.7793	1.0459	0.07
						4" Ice			
DC6-48-60-18-8F	A	From Face	1.0000	0.0000	120.0000	No Ice	1.4667	1.4667	0.02
			0.00			1/2"	1.6667	1.6667	0.04
			0.00			Ice	1.8778	1.8778	0.06
						1" Ice	2.3333	2.3333	0.11
						2" Ice	3.3778	3.3778	0.24
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
DC6-48-60-18-8F	A	From Face	1.0000	0.0000	0.0000	120.0000	No Ice	1.4667	1.4667	0.02
			0.00				1/2"	1.6667	1.6667	0.04
			0.00				Ice	1.8778	1.8778	0.06
							1" Ice	2.3333	2.3333	0.11
							2" Ice	3.3778	3.3778	0.24
4' x 2" Pipe Mount	A	From Face	4.0000	0.0000	0.0000	120.0000	No Ice	0.7852	0.7852	0.03
			-3.50				1/2"	1.0284	1.0284	0.04
			0.00				Ice	1.2809	1.2809	0.04
							1" Ice	1.8136	1.8136	0.07
							2" Ice	3.1111	3.1111	0.17
4' x 2" Pipe Mount	B	From Face	4.0000	0.0000	0.0000	120.0000	No Ice	0.7852	0.7852	0.03
			-3.50				1/2"	1.0284	1.0284	0.04
			0.00				Ice	1.2809	1.2809	0.04
							1" Ice	1.8136	1.8136	0.07
							2" Ice	3.1111	3.1111	0.17
4' x 2" Pipe Mount	C	From Face	4.0000	0.0000	0.0000	120.0000	No Ice	0.7852	0.7852	0.03
			-3.50				1/2"	1.0284	1.0284	0.04
			0.00				Ice	1.2809	1.2809	0.04
							1" Ice	1.8136	1.8136	0.07
							2" Ice	3.1111	3.1111	0.17
6' x 2" Horizontal Mount Pipe	A	From Face	4.0000	0.0000	0.0000	120.0000	No Ice	0.8000	0.8000	0.03
			0.00				1/2"	1.2167	1.2167	0.17
			3.00				Ice	1.6444	1.6444	0.32
							1" Ice	2.5333	2.5333	0.65
							2" Ice	4.4444	4.4444	1.39
6' x 2" Horizontal Mount Pipe	B	From Face	4.0000	0.0000	0.0000	120.0000	No Ice	0.8000	0.8000	0.03
			0.00				1/2"	1.2167	1.2167	0.17
			3.00				Ice	1.6444	1.6444	0.32
							1" Ice	2.5333	2.5333	0.65
							2" Ice	4.4444	4.4444	1.39
6' x 2" Horizontal Mount Pipe	C	From Face	4.0000	0.0000	0.0000	120.0000	No Ice	0.8000	0.8000	0.03
			0.00				1/2"	1.2167	1.2167	0.17
			3.00				Ice	1.6444	1.6444	0.32
							1" Ice	2.5333	2.5333	0.65
							2" Ice	4.4444	4.4444	1.39
*** Platform Mount [LP 1201-1]	C	None		0.0000	0.0000	96.0000	No Ice	23.1000	23.1000	2.10
							1/2"	26.8000	26.8000	2.50
							Ice	30.5000	30.5000	2.90
							1" Ice	37.9000	37.9000	3.70
							2" Ice	52.7000	52.7000	5.30
DB420-B	A	From Face	4.0000	0.0000	0.0000	96.0000	No Ice	3.3300	3.3300	0.03
			-7.00				1/2"	5.9940	5.9940	0.04
			11.00				Ice	8.6580	8.6580	0.05
							1" Ice	13.9860	13.9860	0.07
							2" Ice	24.6420	24.6420	0.12
PD83-1	A	From Face	4.0000	0.0000	0.0000	96.0000	No Ice	3.7000	3.7000	0.02
			-7.00				1/2"	5.5750	5.5750	0.05
			-6.00				Ice	7.4667	7.4667	0.09
							1" Ice	11.3000	11.3000	0.20
							2" Ice	18.4568	18.4568	0.58
PD1110	A	From Face	4.0000	0.0000	0.0000	96.0000	No Ice	2.5023	2.5023	0.02
			-3.50				1/2"	3.8435	3.8435	0.04
			9.00				Ice	5.2013	5.2013	0.07
							1" Ice	7.9670	7.9670	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
PD1110	A	From Face	4.0000 3.50 9.00	0.0000	96.0000	2" Ice	11.6110	11.6110	0.42
						4" Ice			
						No Ice	2.5023	2.5023	0.02
						1/2" Ice	3.8435	3.8435	0.04
						1" Ice	5.2013	5.2013	0.07
PD201-1	A	From Face	4.0000 7.00 9.00	0.0000	96.0000	1" Ice	7.9670	7.9670	0.15
						2" Ice	11.6110	11.6110	0.42
						4" Ice			
						No Ice	0.6279	0.6279	0.00
						1/2" Ice	1.5391	1.5391	0.01
PD83-1	A	From Face	4.0000 7.00 -6.00	0.0000	96.0000	Ice	2.4669	2.4669	0.02
						1" Ice	4.2716	4.2716	0.07
						2" Ice	6.5661	6.5661	0.23
						4" Ice			
						No Ice	3.7000	3.7000	0.02
DB205-A	B	From Face	4.0000 -3.50 12.00	0.0000	96.0000	1/2" Ice	5.5750	5.5750	0.05
						Ice	7.4667	7.4667	0.09
						1" Ice	11.3000	11.3000	0.20
						2" Ice	18.4568	18.4568	0.58
						4" Ice			
PD201-1	B	From Face	4.0000 7.00 9.00	0.0000	96.0000	No Ice	1.2000	1.2000	0.04
						1/2" Ice	2.1600	2.1600	0.05
						Ice	3.1200	3.1200	0.06
						1" Ice	5.0400	5.0400	0.08
						2" Ice	8.8800	8.8800	0.13
PD83-1	B	From Face	4.0000 7.00 -6.00	0.0000	96.0000	4" Ice			
						No Ice	0.6279	0.6279	0.00
						1/2" Ice	1.5391	1.5391	0.01
						Ice	2.4669	2.4669	0.02
						1" Ice	4.2716	4.2716	0.07
DB806E-XT	C	From Face	4.0000 -7.00 9.00	0.0000	96.0000	2" Ice	6.5661	6.5661	0.23
						4" Ice			
						No Ice	3.7000	3.7000	0.02
						1/2" Ice	5.5750	5.5750	0.05
						Ice	7.4667	7.4667	0.09
PD220	C	From Face	4.0000 -3.50 14.00	0.0000	96.0000	1" Ice	11.3000	11.3000	0.20
						2" Ice	18.4568	18.4568	0.58
						4" Ice			
						No Ice	3.0800	3.0800	0.02
						1/2" Ice	5.3000	5.3000	0.05
DB224	C	From Face	4.0000 3.50 11.00	0.0000	96.0000	Ice	7.5367	7.5367	0.09
						1" Ice	12.0600	12.0600	0.21
						2" Ice	21.3067	21.3067	0.62
						4" Ice			
						No Ice	3.1500	3.1500	0.03
(4) 6' x 2" Mount Pipe	A	From Face	4.0000 -7.00 0.00	0.0000	96.0000	1/2" Ice	5.6700	5.6700	0.04
						Ice	8.1900	8.1900	0.05
						1" Ice	13.2300	13.2300	0.07
						2" Ice	23.3100	23.3100	0.11
						4" Ice			
(2) 6' x 2" Mount Pipe	B	From Face	4.0000 -3.50 0.00	0.0000	96.0000	No Ice	1.4250	1.4250	0.02
						1/2" Ice	1.9250	1.9250	0.03
						Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice	4.7022	4.7022	0.23

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
(3) 6' x 2" Mount Pipe	C	From Face	4.0000	3.50	0.0000	96.0000	1" Ice	3.0596	3.0596	0.09
							2" Ice	4.7022	4.7022	0.23
							4" Ice			
							No Ice	1.4250	1.4250	0.02
							1/2" Ice	1.9250	1.9250	0.03
							Ice	2.2939	2.2939	0.05
							1" Ice	3.0596	3.0596	0.09
2" Ice	4.7022	4.7022	0.23							
4" Ice										
*****										
Platform Mount [LP 1201-1]	C	None			0.0000	82.0000	No Ice	23.1000	23.1000	2.10
							1/2" Ice	26.8000	26.8000	2.50
							Ice	30.5000	30.5000	2.90
							1" Ice	37.9000	37.9000	3.70
							2" Ice	52.7000	52.7000	5.30
4" Ice										
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Face	4.0000	3.50	0.0000	82.0000	No Ice	3.8586	3.2963	0.04
							1/2" Ice	4.2736	4.0044	0.07
							Ice	4.7274	4.6717	0.11
							1" Ice	5.6860	6.0562	0.21
							2" Ice	7.7274	9.0382	0.53
4" Ice										
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Face	4.0000	3.50	0.0000	82.0000	No Ice	3.8586	3.2963	0.04
							1/2" Ice	4.2736	4.0044	0.07
							Ice	4.7274	4.6717	0.11
							1" Ice	5.6860	6.0562	0.21
							2" Ice	7.7274	9.0382	0.53
4" Ice										
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Face	4.0000	3.50	0.0000	82.0000	No Ice	3.8586	3.2963	0.04
							1/2" Ice	4.2736	4.0044	0.07
							Ice	4.7274	4.6717	0.11
							1" Ice	5.6860	6.0562	0.21
							2" Ice	7.7274	9.0382	0.53
4" Ice										
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Face	4.0000	-7.00	0.0000	82.0000	No Ice	3.8586	3.2963	0.04
							1/2" Ice	4.2736	4.0044	0.07
							Ice	4.7274	4.6717	0.11
							1" Ice	5.6860	6.0562	0.21
							2" Ice	7.7274	9.0382	0.53
4" Ice										
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Face	4.0000	-7.00	0.0000	82.0000	No Ice	3.8586	3.2963	0.04
							1/2" Ice	4.2736	4.0044	0.07
							Ice	4.7274	4.6717	0.11
							1" Ice	5.6860	6.0562	0.21
							2" Ice	7.7274	9.0382	0.53
4" Ice										
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Face	4.0000	-7.00	0.0000	82.0000	No Ice	3.8586	3.2963	0.04
							1/2" Ice	4.2736	4.0044	0.07
							Ice	4.7274	4.6717	0.11
							1" Ice	5.6860	6.0562	0.21
							2" Ice	7.7274	9.0382	0.53
4" Ice										
LNx-6515DS-VTM w/ Mount Pipe	A	From Face	4.0000	-3.50	0.0000	82.0000	No Ice	11.6465	9.8442	0.08
							1/2" Ice	12.3679	11.3685	0.17
							Ice	13.0985	12.9168	0.27
							1" Ice	14.5554	15.2710	0.51
							2" Ice	17.8287	20.1438	1.15
4" Ice										
LNx-6515DS-VTM w/ Mount Pipe	B	From Face	4.0000	-3.50	0.0000	82.0000	No Ice	11.6465	9.8442	0.08
							1/2" Ice	12.3679	11.3685	0.17
							Ice	13.0985	12.9168	0.27
							1" Ice	14.5554	15.2710	0.51
							2" Ice	17.8287	20.1438	1.15
4" Ice										
LNx-6515DS-VTM w/ Mount Pipe	C	From Face	4.0000	0.0000	0.0000	82.0000	No Ice	11.6465	9.8442	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
Mount Pipe			-3.50 0.00			1/2" 12.3679 Ice 13.0985 1" Ice 14.5554 2" Ice 17.8287 4" Ice	11.3685 12.9168 15.2710 20.1438	0.17 0.27 0.51 1.15
ETW190VS12UB	A	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 0.6644 1/2" 0.7783 Ice 0.9008 1" Ice 1.1717 2" Ice 1.8173 4" Ice	0.3669 0.4613 0.5644 0.7964 1.3642	0.01 0.02 0.03 0.04 0.11
ETW190VS12UB	B	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 0.6644 1/2" 0.7783 Ice 0.9008 1" Ice 1.1717 2" Ice 1.8173 4" Ice	0.3669 0.4613 0.5644 0.7964 1.3642	0.01 0.02 0.03 0.04 0.11
ETW190VS12UB	C	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 0.6644 1/2" 0.7783 Ice 0.9008 1" Ice 1.1717 2" Ice 1.8173 4" Ice	0.3669 0.4613 0.5644 0.7964 1.3642	0.01 0.02 0.03 0.04 0.11
ATMAA1412D-1A20	A	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1.1667 1/2" 1.3136 Ice 1.4691 1" Ice 1.8062 2" Ice 2.5840 4" Ice	0.4667 0.5747 0.6914 0.9506 1.5728	0.01 0.02 0.03 0.06 0.14
ATMAA1412D-1A20	B	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1.1667 1/2" 1.3136 Ice 1.4691 1" Ice 1.8062 2" Ice 2.5840 4" Ice	0.4667 0.5747 0.6914 0.9506 1.5728	0.01 0.02 0.03 0.06 0.14
ATMAA1412D-1A20	C	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 1.1667 1/2" 1.3136 Ice 1.4691 1" Ice 1.8062 2" Ice 2.5840 4" Ice	0.4667 0.5747 0.6914 0.9506 1.5728	0.01 0.02 0.03 0.06 0.14
ATSBT-BOTTOM-FM-4G	A	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 0.2025 1/2" 0.2673 Ice 0.3408 1" Ice 0.5135 2" Ice 0.9628 4" Ice	0.1095 0.1632 0.2257 0.3764 0.7816	0.00 0.00 0.01 0.01 0.05
ATSBT-BOTTOM-FM-4G	B	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 0.2025 1/2" 0.2673 Ice 0.3408 1" Ice 0.5135 2" Ice 0.9628 4" Ice	0.1095 0.1632 0.2257 0.3764 0.7816	0.00 0.00 0.01 0.01 0.05
ATSBT-BOTTOM-FM-4G	C	From Face	4.0000 0.00 0.00	0.0000	82.0000	No Ice 0.2025 1/2" 0.2673 Ice 0.3408 1" Ice 0.5135 2" Ice 0.9628 4" Ice	0.1095 0.1632 0.2257 0.3764 0.7816	0.00 0.00 0.01 0.01 0.05
***** Side Arm Mount [SO 102-3]	C	None		0.0000	72.0000	No Ice 3.0000 1/2" 3.4800 Ice 3.9600 1" Ice 4.9200 2" Ice 6.8400	3.0000 3.4800 3.9600 4.9200 6.8400	0.08 0.11 0.14 0.20 0.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
800 10504 w/ Mount Pipe	A	From Leg	2.0000 0.00 0.00	0.0000	72.0000	4" Ice			
						No Ice	3.5887	3.1779	0.04
						1/2" Ice	4.0069	3.9053	0.07
						1" Ice	4.4217	4.5808	0.11
						2" Ice	5.3391	5.9816	0.21
800 10504 w/ Mount Pipe	B	From Leg	2.0000 0.00 0.00	0.0000	72.0000	4" Ice			
						No Ice	3.5887	3.1779	0.04
						1/2" Ice	4.0069	3.9053	0.07
						1" Ice	4.4217	4.5808	0.11
						2" Ice	5.3391	5.9816	0.21
800 10504 w/ Mount Pipe	C	From Leg	2.0000 0.00 0.00	0.0000	72.0000	4" Ice			
						No Ice	3.5887	3.1779	0.04
						1/2" Ice	4.0069	3.9053	0.07
						1" Ice	4.4217	4.5808	0.11
						2" Ice	5.3391	5.9816	0.21
***** Side Arm Mount [SO 702-1]	A	From Leg	0.0000 0.00 0.00	0.0000	53.0000	4" Ice			
						No Ice	1.0000	1.4300	0.03
						1/2" Ice	1.2500	2.0500	0.04
						1" Ice	1.5000	2.6700	0.05
						2" Ice	2.0000	3.9100	0.07
8'x2" Antenna Mount Pipe	A	From Leg	0.0000 0.00 0.00	0.0000	53.0000	4" Ice			
						No Ice	1.9000	1.9000	0.03
						1/2" Ice	2.7281	2.7281	0.04
						1" Ice	3.4009	3.4009	0.06
						2" Ice	4.3962	4.3962	0.12
BSA150B	A	From Leg	3.0000 0.00 3.00	0.0000	53.0000	4" Ice			
						No Ice	11.7778	11.7778	0.00
						1/2" Ice	12.3000	12.3000	0.15
						1" Ice	12.8333	12.8333	0.31
						2" Ice	13.9333	13.9333	0.65
BSA150B	A	From Leg	3.0000 0.00 -3.00	0.0000	53.0000	4" Ice			
						No Ice	11.7778	11.7778	0.00
						1/2" Ice	12.3000	12.3000	0.15
						1" Ice	12.8333	12.8333	0.31
						2" Ice	13.9333	13.9333	0.65
***** BULLET III	C	From Face	1.0000 0.00 0.00	0.0000	50.0000	4" Ice			
						No Ice	0.0774	0.0774	0.00
						1/2" Ice	0.1184	0.1184	0.00
						1" Ice	0.1680	0.1680	0.00
						2" Ice	0.2933	0.2933	0.01
***						0.6474	0.6474	0.04	

### 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 K	
VHLP800-11	B	Paraboloid w/Shroud (HP)	From Face	3.0000	90.0000		148.0000	2.6000	No Ice	5.3100	0.06
				0.00					1/2" Ice	5.6600	0.09
				4.00					1" Ice	6.0000	0.12
									2" Ice	6.6900	0.18
									4" Ice	8.0800	0.29
VHLP800-11	C	Paraboloid w/Shroud (HP)	From Face	3.0000	90.0000		148.0000	2.6000	No Ice	5.3100	0.06
				-7.00					1/2" Ice	5.6600	0.09
				4.00					1" Ice	6.0000	0.12
									2" Ice	6.6900	0.18
									4" Ice	8.0800	0.29
***											
VHLP2.5-10W	A	Paraboloid w/Shroud (HP)	From Face	1.0000	0.0000		144.0000	2.9167	No Ice	6.6800	0.05
				0.00					1/2" Ice	7.0700	0.08
				0.00					1" Ice	7.4600	0.12
									2" Ice	8.2300	0.19
									4" Ice	9.7800	0.34
***											

### Load Combinations

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



### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	148 - 143	Pole	Max Tension	14	0.00	-0.00	-0.00
			Max. Compression	14	-6.52	0.63	0.71
			Max. Mx	5	-3.32	-43.00	-1.20
			Max. My	2	-3.34	1.81	43.35
			Max. Vy	5	7.92	-43.00	-1.20
			Max. Vx	2	-7.77	1.81	43.35
L2	143 - 138	Pole	Max. Torque	10			-1.70
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-7.01	0.64	0.71
			Max. Mx	5	-3.63	-84.05	-2.99
			Max. My	2	-3.65	3.79	83.65
			Max. Vy	5	8.50	-84.05	-2.99
L3	138 - 133	Pole	Max. Vx	2	-8.35	3.79	83.65
			Max. Torque	10			-1.70
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-7.52	0.65	0.71
			Max. Mx	5	-3.96	-128.06	-4.79
			Max. My	2	-3.98	5.77	126.91
L4	133 - 128	Pole	Max. Vy	5	9.11	-128.06	-4.79
			Max. Vx	2	-8.96	5.77	126.91
			Max. Torque	10			-1.70
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8.05	0.66	0.70
			Max. Mx	5	-4.31	-175.11	-6.59
L5	128 - 123	Pole	Max. My	2	-4.33	7.76	173.21
			Max. Vy	5	9.72	-175.11	-6.59
			Max. Vx	2	-9.57	7.76	173.21
			Max. Torque	10			-1.70
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8.60	0.67	0.70
L6	123 - 118	Pole	Max. Mx	5	-4.67	-225.28	-8.39
			Max. My	2	-4.69	9.74	222.63
			Max. Vy	5	10.35	-225.28	-8.39
			Max. Vx	2	-10.20	9.74	222.63
			Max. Torque	10			-1.70
			Max Tension	1	0.00	0.00	0.00
L7	118 - 113	Pole	Max. Compression	14	-15.98	0.86	0.80
			Max. Mx	5	-8.23	-292.35	-10.17
			Max. My	2	-8.26	11.79	289.06
			Max. Vy	5	17.70	-292.35	-10.17
			Max. Vx	2	-17.54	11.79	289.06
			Max. Torque	9			-2.00
L8	113 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.66	0.82	0.77
			Max. Mx	5	-8.72	-382.61	-12.01
			Max. My	2	-8.74	13.81	378.54
			Max. Vy	5	18.41	-382.61	-12.01
			Max. Vx	2	-18.26	13.81	378.54
L9	108 - 100.5	Pole	Max. Torque	9			-2.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-17.37	0.78	0.74
			Max. Mx	5	-9.24	-476.45	-13.84
			Max. My	2	-9.26	15.83	471.61
			Max. Vy	5	19.13	-476.45	-13.84
L10	100.5 - 99.5	Pole	Max. Vx	2	-18.98	15.83	471.61
			Max. Torque	9			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-17.88	0.74	0.71
			Max. Mx	5	-9.61	-544.28	-15.13
			Max. My	2	-9.63	17.23	538.90
			Max. Vy	5	19.64	-544.28	-15.13
			Max. Vx	2	-19.49	17.23	538.90
			Max. Torque	9			-1.96
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.29	0.69	0.67

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L11	99.5 - 94.5	Pole	Max. Mx	5	-10.66	-644.46	-16.96
			Max. My	2	-10.68	19.25	638.30
			Max. Vy	5	20.43	-644.46	-16.96
			Max. Vx	2	-20.28	19.25	638.30
			Max. Torque	9			-1.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24.08	2.58	-0.34
			Max. Mx	5	-13.75	-759.59	-19.11
			Max. My	2	-13.77	21.99	753.16
			Max. Vy	5	24.58	-759.59	-19.11
L12	94.5 - 89.5	Pole	Max. Vx	2	-24.43	21.99	753.16
			Max. Torque	7			-6.54
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.08	2.53	-0.38
			Max. Mx	5	-14.57	-884.32	-20.96
			Max. My	2	-14.59	24.01	877.12
			Max. Vy	5	25.33	-884.32	-20.96
			Max. Vx	2	-25.17	24.01	877.12
			Max. Torque	7			-6.54
			L13	89.5 - 84.5	Pole	Max Tension	1
Max. Compression	14	-26.11				2.48	-0.42
Max. Mx	5	-15.43				-1012.79	-22.80
Max. My	2	-15.45				26.03	1004.80
Max. Vy	5	26.07				-1012.79	-22.80
Max. Vx	2	-25.92				26.03	1004.80
Max. Torque	7						-6.53
Max Tension	1	0.00				0.00	0.00
Max. Compression	14	-31.44				2.42	-0.46
L14	84.5 - 79.5	Pole				Max. Mx	5
			Max. My	2	-18.80	28.05	1146.03
			Max. Vy	5	30.75	-1154.81	-24.64
			Max. Vx	2	-30.59	28.05	1146.03
			Max. Torque	7			-6.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.57	2.37	-0.50
			Max. Mx	5	-19.77	-1310.34	-26.49
			Max. My	2	-19.79	30.06	1300.77
			L15	79.5 - 74.5	Pole	Max. Vy	5
Max. Vx	2	-31.33				30.06	1300.77
Max. Torque	7						-6.50
Max Tension	1	0.00				0.00	0.00
Max. Compression	14	-33.87				2.32	-0.53
Max. Mx	5	-20.73				-1432.90	-27.89
Max. My	2	-20.74				31.60	1422.74
Max. Vy	5	32.68				-1432.90	-27.89
Max. Vx	2	-32.52				31.60	1422.74
L16	74.5 - 70.667	Pole				Max. Torque	7
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.94	2.32	-0.53
			Max. Mx	5	-20.80	-1441.08	-27.99
			Max. My	2	-20.82	31.70	1430.87
			Max. Vy	5	32.71	-1441.08	-27.99
			Max. Vx	2	-32.56	31.70	1430.87
			Max. Torque	7			-6.49
			Max Tension	1	0.00	0.00	0.00
			L17	70.667 - 70.417	Pole	Max. Compression	14
Max. Mx	5	-22.06				-1606.78	-29.82
Max. My	2	-22.07				33.70	1595.79
Max. Vy	5	33.58				-1606.78	-29.82
Max. Vx	2	-33.43				33.70	1595.79
Max. Torque	7						-6.49
Max Tension	1	0.00				0.00	0.00
Max. Compression	14	-35.87				2.24	-0.59
Max. Mx	5	-22.50				-1665.80	-30.46
L18	70.417 - 65.417	Pole				Max. My	2
			Max. Vy	5	33.58	-1606.78	-29.82
			Max. Vx	2	-33.43	33.70	1595.79
L19	65.417 - 63.667	Pole	Max. Torque	7			-6.49
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.87	2.24	-0.59

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L20	63.667 - 63.417	Pole	Max. Vy	5	33.89	-1665.80	-30.46
			Max. Vx	2	-33.74	34.40	1654.54
			Max. Torque	7			-6.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.93	2.24	-0.59
L21	63.417 - 58.25	Pole	Max. Mx	5	-22.57	-1674.28	-30.55
			Max. My	2	-22.59	34.50	1662.98
			Max. Vy	5	33.92	-1674.28	-30.55
			Max. Vx	2	-33.77	34.50	1662.98
			Max. Torque	7			-6.47
L22	58.25 - 57.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.97	2.24	-0.59
			Max. Mx	5	-22.61	-1679.94	-30.61
			Max. My	2	-22.63	34.57	1668.62
			Max. Vy	5	33.94	-1679.94	-30.61
L23	57.25 - 53.229	Pole	Max. Vx	2	-33.79	34.57	1668.62
			Max. Torque	7			-6.47
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.59	2.17	-0.64
			Max. Mx	5	-24.80	-1886.57	-32.81
L24	53.229 - 52.979	Pole	Max. My	2	-24.81	36.96	1874.30
			Max. Vy	5	34.92	-1886.57	-32.81
			Max. Vx	2	-34.77	36.96	1874.30
			Max. Torque	7			-6.46
			Max Tension	1	0.00	0.00	0.00
L25	52.979 - 47.979	Pole	Max. Compression	14	-39.69	2.12	-0.68
			Max. Mx	5	-25.81	-2028.15	-34.27
			Max. My	2	-25.82	38.56	2015.25
			Max. Vy	5	35.52	-2028.15	-34.27
			Max. Vx	2	-35.37	38.56	2015.25
L26	47.979 - 42.979	Pole	Max. Torque	7			-6.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-40.37	2.12	1.80
			Max. Mx	5	-25.92	-2037.10	-34.40
			Max. My	2	-25.94	38.66	2024.27
L27	42.979 - 37.979	Pole	Max. Vy	5	36.66	-2037.10	-34.40
			Max. Vx	2	-36.49	38.66	2024.27
			Max. Torque	9			-6.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42.08	2.06	1.75
L28	37.979 - 35.125	Pole	Max. Mx	5	-27.47	-2222.46	-36.22
			Max. My	2	-27.48	40.64	2208.76
			Max. Vy	5	37.49	-2222.46	-36.22
			Max. Vx	2	-37.32	40.64	2208.76
			Max. Torque	9			-6.46
L27	42.979 - 37.979	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-43.81	2.00	1.70
			Max. Mx	5	-29.06	-2411.89	-38.04
			Max. My	2	-29.07	42.61	2397.33
			Max. Vy	5	38.30	-2411.89	-38.04
L27	42.979 - 37.979	Pole	Max. Vx	2	-38.13	42.61	2397.33
			Max. Torque	9			-6.43
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-45.56	1.94	1.66
			Max. Mx	5	-30.68	-2605.28	-39.86
L28	37.979 - 35.125	Pole	Max. My	2	-30.69	44.58	2589.84
			Max. Vy	5	39.08	-2605.28	-39.86
			Max. Vx	2	-38.91	44.58	2589.84
			Max. Torque	9			-6.41
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L29	35.125 - 34.875	Pole	Max. Compression	14	-46.57	1.90	1.63
			Max. Mx	5	-31.62	-2717.39	-40.89
			Max. My	2	-31.63	45.69	2701.47
			Max. Vy	5	39.51	-2717.39	-40.89
			Max. Vx	2	-39.34	45.69	2701.47
			Max. Torque	9			-6.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-46.67	1.90	1.63
L30	34.875 - 28.75	Pole	Max. Mx	5	-31.72	-2727.27	-40.98
			Max. My	2	-31.73	45.79	2711.30
			Max. Vy	5	39.54	-2727.27	-40.98
			Max. Vx	2	-39.37	45.79	2711.30
			Max. Torque	9			-6.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-46.81	1.90	1.63
			Max. Mx	5	-31.85	-2742.11	-41.12
L31	28.75 - 27.75	Pole	Max. My	2	-31.86	45.94	2726.07
			Max. Vy	5	39.60	-2742.11	-41.12
			Max. Vx	2	-39.43	45.94	2726.07
			Max. Torque	9			-6.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.49	1.81	1.57
			Max. Mx	5	-36.03	-3013.29	-43.56
			Max. My	2	-36.03	48.58	2996.09
L32	27.75 - 25.875	Pole	Max. Vy	5	40.76	-3013.29	-43.56
			Max. Vx	2	-40.59	48.58	2996.09
			Max. Torque	9			-6.35
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.27	1.79	1.55
			Max. Mx	5	-36.74	-3089.99	-44.23
			Max. My	2	-36.74	49.31	3072.46
			Max. Vy	5	41.08	-3089.99	-44.23
L33	25.875 - 25.75	Pole	Max. Vx	2	-40.91	49.31	3072.46
			Max. Torque	9			-6.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.31	1.79	1.55
			Max. Mx	5	-36.81	-3095.12	-44.28
			Max. My	2	-36.81	49.36	3077.57
			Max. Vy	5	41.08	-3095.12	-44.28
			Max. Vx	2	-40.91	49.36	3077.57
L34	25.75 - 25.625	Pole	Max. Torque	9			-6.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.37	1.79	1.55
			Max. Mx	5	-36.86	-3100.26	-44.33
			Max. My	2	-36.86	49.41	3082.68
			Max. Vy	5	41.10	-3100.26	-44.33
			Max. Vx	2	-40.94	49.41	3082.68
			Max. Torque	9			-6.34
L35	25.625 - 25.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.42	1.79	1.55
			Max. Mx	5	-36.91	-3105.40	-44.37
			Max. My	2	-36.91	49.46	3087.80
			Max. Vy	5	41.12	-3105.40	-44.37
			Max. Vx	2	-40.96	49.46	3087.80
			Max. Torque	9			-6.34
			Max Tension	1	0.00	0.00	0.00
L36	25.5 - 20.5	Pole	Max. Compression	14	-54.65	1.72	1.50
			Max. Mx	5	-38.97	-3313.11	-46.17
			Max. My	2	-38.98	51.40	3294.65
			Max. Vy	5	41.97	-3313.11	-46.17
			Max. Vx	2	-41.80	51.40	3294.65
			Max. Torque	9			-6.34

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L37	20.5 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-56.90	1.66	1.46
			Max. Mx	5	-41.08	-3524.97	-47.97
			Max. My	2	-41.09	53.34	3505.65
			Max. Vy	5	42.79	-3524.97	-47.97
			Max. Vx	2	-42.62	53.34	3505.65
			Max. Torque	9			-6.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-59.18	1.59	1.41
L38	15.5 - 10.5	Pole	Max. Mx	5	-43.23	-3740.95	-49.76
			Max. My	2	-43.23	55.26	3720.76
			Max. Vy	5	43.62	-3740.95	-49.76
			Max. Vx	2	-43.45	55.26	3720.76
			Max. Torque	9			-6.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-61.39	1.56	1.38
			Max. Mx	5	-45.31	-3960.98	-51.54
			Max. My	2	-45.31	57.19	3939.96
L39	10.5 - 5.5	Pole	Max. Vy	5	44.42	-3960.98	-51.54
			Max. Vx	2	-44.26	57.19	3939.96
			Max. Torque	9			-6.31
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-63.51	1.56	1.38
			Max. Mx	5	-47.32	-4184.96	-53.31
			Max. My	2	-47.32	59.11	4163.11
			Max. Vy	5	45.20	-4184.96	-53.31
			Max. Vx	2	-45.03	59.11	4163.11
L40	5.5 - 0.5	Pole	Max. Torque	9			-6.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-63.72	1.56	1.38
			Max. Mx	5	-47.53	-4207.58	-53.48
			Max. My	2	-47.53	59.30	4185.64
			Max. Vy	5	45.27	-4207.58	-53.48
			Max. Vx	2	-45.11	59.30	4185.64
			Max. Torque	9			-6.32
			Max Tension	1	0.00	0.00	0.00
L41	0.5 - 0	Pole	Max. Compression	14	-63.72	1.56	1.38
			Max. Mx	5	-47.53	-4207.58	-53.48
			Max. My	2	-47.53	59.30	4185.64
			Max. Vy	5	45.27	-4207.58	-53.48
			Max. Vx	2	-45.11	59.30	4185.64
			Max. Torque	9			-6.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-63.72	1.56	1.38
			Max. Mx	5	-47.53	-4207.58	-53.48

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	63.72	0.00	0.00
	Max. H <sub>x</sub>	11	47.54	45.12	0.39
	Max. H <sub>z</sub>	2	47.54	0.38	45.10
	Max. M <sub>x</sub>	2	4185.64	0.38	45.10
	Max. M <sub>z</sub>	5	4207.58	-45.26	-0.35
	Max. Torsion	3	5.92	-22.36	38.94
	Min. Vert	31	47.54	-11.81	-6.84
	Min. H <sub>x</sub>	5	47.54	-45.26	-0.35
	Min. H <sub>z</sub>	8	47.54	-0.38	-45.05
	Min. M <sub>x</sub>	8	-4177.54	-0.38	-45.05
	Min. M <sub>z</sub>	11	-4187.31	45.12	0.39
	Min. Torsion	9	-6.32	22.41	-38.88

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturing Moment, M <sub>x</sub> kip-ft	Overturing Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	47.54	0.00	0.00	0.18	0.96	0.00
Dead+Wind 0 deg - No Ice	47.54	-0.38	-45.10	-4185.64	59.30	-5.66

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overturning Moment, M <sub>x</sub>	Overturning Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 30 deg - No Ice	47.54	22.36	-38.94	-3607.80	-2062.64	-5.92
Dead+Wind 60 deg - No Ice	47.54	39.18	-22.15	-2032.56	-3640.53	-5.09
Dead+Wind 90 deg - No Ice	47.54	45.26	0.35	53.48	-4207.58	-2.75
Dead+Wind 120 deg - No Ice	47.54	39.31	22.74	2122.34	-3659.95	0.69
Dead+Wind 150 deg - No Ice	47.54	22.97	39.07	3626.92	-2154.61	4.13
Dead+Wind 180 deg - No Ice	47.54	0.38	45.05	4177.54	-56.61	5.39
Dead+Wind 210 deg - No Ice	47.54	-22.41	38.88	3597.74	2072.28	6.32
Dead+Wind 240 deg - No Ice	47.54	-39.01	22.26	2048.70	3616.60	5.57
Dead+Wind 270 deg - No Ice	47.54	-45.12	-0.39	-60.00	4187.31	3.55
Dead+Wind 300 deg - No Ice	47.54	-39.21	-22.74	-2121.45	3646.87	-0.24
Dead+Wind 330 deg - No Ice	47.54	-22.87	-39.09	-3630.07	2141.07	-3.69
Dead+Ice+Temp	63.72	-0.00	-0.00	-1.38	1.56	0.00
Dead+Wind 0 deg+Ice+Temp	63.72	-0.07	-9.88	-933.64	12.74	-1.65
Dead+Wind 30 deg+Ice+Temp	63.72	4.92	-8.54	-805.53	-460.29	-1.50
Dead+Wind 60 deg+Ice+Temp	63.72	8.60	-4.87	-456.09	-811.24	-1.05
Dead+Wind 90 deg+Ice+Temp	63.72	9.93	0.07	8.68	-937.63	-0.28
Dead+Wind 120 deg+Ice+Temp	63.72	8.62	4.98	470.18	-814.84	0.64
Dead+Wind 150 deg+Ice+Temp	63.72	5.03	8.56	806.15	-477.73	1.42
Dead+Wind 180 deg+Ice+Temp	63.72	0.07	9.87	929.15	-9.23	1.60
Dead+Wind 210 deg+Ice+Temp	63.72	-4.93	8.52	800.68	465.09	1.58
Dead+Wind 240 deg+Ice+Temp	63.72	-8.56	4.89	456.28	809.58	1.13
Dead+Wind 270 deg+Ice+Temp	63.72	-9.90	-0.07	-12.86	936.68	0.42
Dead+Wind 300 deg+Ice+Temp	63.72	-8.60	-4.97	-472.93	815.29	-0.55
Dead+Wind 330 deg+Ice+Temp	63.72	-5.01	-8.56	-809.68	478.08	-1.32
Dead+Wind 0 deg - Service	47.54	-0.12	-13.56	-1259.07	18.56	-1.70
Dead+Wind 30 deg - Service	47.54	6.72	-11.71	-1085.22	-619.80	-1.79
Dead+Wind 60 deg - Service	47.54	11.78	-6.66	-611.33	-1094.50	-1.55
Dead+Wind 90 deg - Service	47.54	13.61	0.11	16.23	-1265.12	-0.83
Dead+Wind 120 deg - Service	47.54	11.81	6.84	638.63	-1100.38	0.22
Dead+Wind 150 deg - Service	47.54	6.90	11.74	1091.27	-647.50	1.27
Dead+Wind 180 deg - Service	47.54	0.12	13.54	1256.88	-16.33	1.63
Dead+Wind 210 deg - Service	47.54	-6.74	11.69	1082.44	624.11	1.91
Dead+Wind 240 deg - Service	47.54	-11.72	6.69	616.44	1088.69	1.68
Dead+Wind 270 deg - Service	47.54	-13.56	-0.12	-17.93	1260.41	1.06
Dead+Wind 300 deg - Service	47.54	-11.78	-6.83	-638.10	1097.85	-0.08
Dead+Wind 330 deg - Service	47.54	-6.87	-11.75	-1091.95	644.84	-1.11

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-47.54	0.00	0.00	47.54	0.00	0.000%
2	-0.38	-47.54	-45.10	0.38	47.54	45.10	0.000%
3	22.36	-47.54	-38.94	-22.36	47.54	38.94	0.000%
4	39.18	-47.54	-22.15	-39.18	47.54	22.15	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
5	45.26	-47.54	0.35	-45.26	47.54	-0.35	0.000%
6	39.31	-47.54	22.74	-39.31	47.54	-22.74	0.000%
7	22.97	-47.54	39.07	-22.97	47.54	-39.07	0.000%
8	0.38	-47.54	45.05	-0.38	47.54	-45.05	0.000%
9	-22.41	-47.54	38.88	22.41	47.54	-38.88	0.000%
10	-39.01	-47.54	22.26	39.01	47.54	-22.26	0.000%
11	-45.12	-47.54	-0.39	45.12	47.54	0.39	0.000%
12	-39.21	-47.54	-22.74	39.21	47.54	22.74	0.000%
13	-22.87	-47.54	-39.09	22.87	47.54	39.09	0.000%
14	0.00	-63.72	0.00	0.00	63.72	0.00	0.000%
15	-0.07	-63.72	-9.88	0.07	63.72	9.88	0.000%
16	4.92	-63.72	-8.54	-4.92	63.72	8.54	0.000%
17	8.60	-63.72	-4.87	-8.60	63.72	4.87	0.000%
18	9.93	-63.72	0.07	-9.93	63.72	-0.07	0.000%
19	8.62	-63.72	4.98	-8.62	63.72	-4.98	0.000%
20	5.03	-63.72	8.56	-5.03	63.72	-8.56	0.000%
21	0.07	-63.72	9.87	-0.07	63.72	-9.87	0.000%
22	-4.93	-63.72	8.52	4.93	63.72	-8.52	0.000%
23	-8.56	-63.72	4.89	8.56	63.72	-4.89	0.000%
24	-9.90	-63.72	-0.07	9.90	63.72	0.07	0.000%
25	-8.60	-63.72	-4.97	8.60	63.72	4.97	0.000%
26	-5.01	-63.72	-8.56	5.01	63.72	8.56	0.000%
27	-0.12	-47.54	-13.56	0.12	47.54	13.56	0.000%
28	6.72	-47.54	-11.71	-6.72	47.54	11.71	0.000%
29	11.78	-47.54	-6.66	-11.78	47.54	6.66	0.000%
30	13.61	-47.54	0.11	-13.61	47.54	-0.11	0.000%
31	11.81	-47.54	6.84	-11.81	47.54	-6.84	0.000%
32	6.90	-47.54	11.74	-6.90	47.54	-11.74	0.000%
33	0.12	-47.54	13.54	-0.12	47.54	-13.54	0.000%
34	-6.74	-47.54	11.69	6.74	47.54	-11.69	0.000%
35	-11.72	-47.54	6.69	11.72	47.54	-6.69	0.000%
36	-13.56	-47.54	-0.12	13.56	47.54	0.12	0.000%
37	-11.78	-47.54	-6.83	11.78	47.54	6.83	0.000%
38	-6.87	-47.54	-11.75	6.87	47.54	11.75	0.000%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00036704
3	Yes	6	0.00000001	0.00004191
4	Yes	6	0.00000001	0.00004992
5	Yes	5	0.00000001	0.00009939
6	Yes	6	0.00000001	0.00004912
7	Yes	6	0.00000001	0.00004443
8	Yes	5	0.00000001	0.00023814
9	Yes	6	0.00000001	0.00005172
10	Yes	6	0.00000001	0.00004216
11	Yes	5	0.00000001	0.00021285
12	Yes	6	0.00000001	0.00004638
13	Yes	6	0.00000001	0.00005158
14	Yes	4	0.00000001	0.00003164
15	Yes	6	0.00000001	0.00010099
16	Yes	6	0.00000001	0.00010220
17	Yes	6	0.00000001	0.00010259
18	Yes	6	0.00000001	0.00010111
19	Yes	6	0.00000001	0.00010428
20	Yes	6	0.00000001	0.00010385
21	Yes	6	0.00000001	0.00010035
22	Yes	6	0.00000001	0.00010255
23	Yes	6	0.00000001	0.00010284
24	Yes	6	0.00000001	0.00010160
25	Yes	6	0.00000001	0.00010497
26	Yes	6	0.00000001	0.00010479

27	Yes	5	0.00000001	0.00006393
28	Yes	5	0.00000001	0.00009864
29	Yes	5	0.00000001	0.00012375
30	Yes	5	0.00000001	0.00004119
31	Yes	5	0.00000001	0.00011865
32	Yes	5	0.00000001	0.00010571
33	Yes	5	0.00000001	0.00005769
34	Yes	5	0.00000001	0.00013229
35	Yes	5	0.00000001	0.00009844
36	Yes	5	0.00000001	0.00004602
37	Yes	5	0.00000001	0.00010873
38	Yes	5	0.00000001	0.00012994

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 143	25.971	31	1.6063	0.0099
L2	143 - 138	24.293	31	1.5970	0.0092
L3	138 - 133	22.631	31	1.5761	0.0085
L4	133 - 128	20.996	31	1.5451	0.0079
L5	128 - 123	19.398	31	1.5057	0.0074
L6	123 - 118	17.845	31	1.4594	0.0069
L7	118 - 113	16.344	31	1.4068	0.0064
L8	113 - 108	14.903	31	1.3444	0.0060
L9	108 - 100.5	13.532	31	1.2729	0.0056
L10	104.5 - 99.5	12.619	31	1.2184	0.0053
L11	99.5 - 94.5	11.361	31	1.1788	0.0052
L12	94.5 - 89.5	10.160	31	1.1160	0.0048
L13	89.5 - 84.5	9.026	31	1.0488	0.0041
L14	84.5 - 79.5	7.964	31	0.9782	0.0035
L15	79.5 - 74.5	6.978	31	0.9046	0.0029
L16	74.5 - 70.667	6.071	31	0.8278	0.0025
L17	70.667 - 70.417	5.431	31	0.7669	0.0022
L18	70.417 - 65.417	5.391	31	0.7639	0.0022
L19	65.417 - 63.667	4.623	31	0.7021	0.0020
L20	63.667 - 63.417	4.370	31	0.6804	0.0019
L21	63.417 - 58.25	4.334	31	0.6762	0.0019
L22	63.25 - 57.25	4.311	31	0.6734	0.0019
L23	57.25 - 53.229	3.495	31	0.6176	0.0017
L24	53.229 - 52.979	3.001	31	0.5547	0.0015
L25	52.979 - 47.979	2.972	31	0.5518	0.0015
L26	47.979 - 42.979	2.426	31	0.4923	0.0013
L27	42.979 - 37.979	1.942	31	0.4322	0.0011
L28	37.979 - 35.125	1.521	31	0.3711	0.0009
L29	35.125 - 34.875	1.310	31	0.3358	0.0008
L30	34.875 - 28.75	1.292	31	0.3330	0.0008
L31	34.5 - 27.75	1.266	31	0.3288	0.0008
L32	27.75 - 25.875	0.828	31	0.2862	0.0006
L33	25.875 - 25.75	0.720	31	0.2657	0.0006
L34	25.75 - 25.625	0.713	31	0.2639	0.0006
L35	25.625 - 25.5	0.706	31	0.2627	0.0006
L36	25.5 - 20.5	0.699	31	0.2614	0.0006
L37	20.5 - 15.5	0.452	31	0.2106	0.0005
L38	15.5 - 10.5	0.258	31	0.1591	0.0003
L39	10.5 - 5.5	0.118	31	0.1080	0.0002
L40	5.5 - 0.5	0.032	31	0.0563	0.0001
L41	0.5 - 0	0.000	31	0.0000	0.0000

### Critical Deflections and Radius of Curvature - Service Wind



Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
152.0000	VHLP800-11	31	25.971	1.6063	0.0099	18273
148.0000	Platform Mount [LP 1201-1]	31	25.971	1.6063	0.0099	18273
144.0000	VHLP2.5-10W	31	24.627	1.5996	0.0093	18273
120.0000	Platform Mount [LP 1201-1]	31	16.938	1.4289	0.0066	5313
96.0000	Platform Mount [LP 1201-1]	31	10.513	1.1369	0.0050	4637
82.0000	Platform Mount [LP 1201-1]	31	7.462	0.9415	0.0033	3889
72.0000	Side Arm Mount [SO 102-3]	31	5.648	0.7858	0.0023	3856
53.0000	Side Arm Mount [SO 702-1]	31	2.975	0.5521	0.0015	4242
50.0000	BULLET III	31	2.639	0.5167	0.0014	4703

### Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	148 - 143	86.236	6	5.3416	0.0339
L2	143 - 138	80.669	6	5.3107	0.0315
L3	138 - 133	75.154	6	5.2407	0.0293
L4	133 - 128	69.731	6	5.1372	0.0272
L5	128 - 123	64.430	6	5.0061	0.0253
L6	123 - 118	59.277	6	4.8521	0.0235
L7	118 - 113	54.296	6	4.6771	0.0219
L8	113 - 108	49.512	6	4.4696	0.0203
L9	108 - 100.5	44.962	6	4.2322	0.0189
L10	104.5 - 99.5	41.929	6	4.0510	0.0180
L11	99.5 - 94.5	37.754	6	3.9196	0.0174
L12	94.5 - 89.5	33.763	6	3.7106	0.0162
L13	89.5 - 84.5	29.997	6	3.4874	0.0138
L14	84.5 - 79.5	26.471	6	3.2525	0.0117
L15	79.5 - 74.5	23.195	6	3.0078	0.0099
L16	74.5 - 70.667	20.180	6	2.7522	0.0084
L17	70.667 - 70.417	18.053	6	2.5499	0.0073
L18	70.417 - 65.417	17.920	6	2.5398	0.0072
L19	65.417 - 63.667	15.368	6	2.3342	0.0065
L20	63.667 - 63.417	14.526	6	2.2621	0.0063
L21	63.417 - 58.25	14.408	6	2.2483	0.0062
L22	63.25 - 57.25	14.330	6	2.2390	0.0062
L23	57.25 - 53.229	11.620	6	2.0536	0.0057
L24	53.229 - 52.979	9.979	6	1.8444	0.0051
L25	52.979 - 47.979	9.883	6	1.8348	0.0051
L26	47.979 - 42.979	8.065	6	1.6368	0.0043
L27	42.979 - 37.979	6.456	6	1.4371	0.0036
L28	37.979 - 35.125	5.057	6	1.2341	0.0030
L29	35.125 - 34.875	4.355	6	1.1167	0.0026
L30	34.875 - 28.75	4.296	6	1.1074	0.0026
L31	34.5 - 27.75	4.210	6	1.0934	0.0025
L32	27.75 - 25.875	2.753	6	0.9515	0.0021
L33	25.875 - 25.75	2.393	6	0.8834	0.0020
L34	25.75 - 25.625	2.370	6	0.8777	0.0019
L35	25.625 - 25.5	2.347	6	0.8734	0.0019
L36	25.5 - 20.5	2.324	6	0.8692	0.0019
L37	20.5 - 15.5	1.502	6	0.7002	0.0015
L38	15.5 - 10.5	0.859	6	0.5291	0.0011
L39	10.5 - 5.5	0.394	6	0.3591	0.0007
L40	5.5 - 0.5	0.108	6	0.1874	0.0004
L41	0.5 - 0	0.001	6	0.0169	0.0000

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.0000	VHLP800-11	6	86.236	5.3416	0.0339	5702
148.0000	Platform Mount [LP 1201-1]	6	86.236	5.3416	0.0339	5702
144.0000	VHLP2.5-10W	6	81.779	5.3194	0.0320	5702
120.0000	Platform Mount [LP 1201-1]	6	56.266	4.7506	0.0225	1622
96.0000	Platform Mount [LP 1201-1]	6	34.938	3.7804	0.0167	1408
82.0000	Platform Mount [LP 1201-1]	6	24.801	3.1305	0.0107	1177
72.0000	Side Arm Mount [SO 102-3]	6	18.774	2.6128	0.0077	1165
53.0000	Side Arm Mount [SO 702-1]	6	9.891	1.8356	0.0051	1279
50.0000	BULLET III	6	8.775	1.7181	0.0047	1417

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
L1	148 - 143 (1)	TP23.0151x22x0.25	5.0000	0.0000	0.0	36.000	18.3259	-3.32	659.73	0.005
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	5.0000	0.0000	0.0	36.000	19.1430	-3.63	689.15	0.005
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	5.0000	0.0000	0.0	36.000	19.9601	-3.94	718.56	0.005
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	5.0000	0.0000	0.0	36.000	20.7772	-4.29	747.98	0.006
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	5.0000	0.0000	0.0	36.000	21.5943	-4.65	777.40	0.006
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	5.0000	0.0000	0.0	36.000	22.4115	-8.21	806.81	0.010
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	5.0000	0.0000	0.0	36.000	23.2286	-8.70	836.23	0.010
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	5.0000	0.0000	0.0	36.000	24.0457	-9.21	865.64	0.011
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	7.5000	0.0000	0.0	36.000	24.6177	-9.59	886.24	0.011
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	5.0000	0.0000	0.0	36.000	37.3975	-10.64	1346.31	0.008
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	5.0000	0.0000	0.0	36.000	38.6231	-13.73	1390.43	0.010
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	5.0000	0.0000	0.0	36.000	39.8488	-14.55	1434.56	0.010
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	5.0000	0.0000	0.0	36.000	41.0744	-15.41	1478.68	0.010
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	5.0000	0.0000	0.0	36.000	42.3001	-18.76	1522.80	0.012
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	5.0000	0.0000	0.0	36.000	43.5257	-19.75	1566.93	0.013
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	3.8330	0.0000	0.0	36.000	44.4653	-20.71	1600.75	0.013
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.5	0.2500	0.0000	0.0	36.000	59.1675	-20.79	2130.03	0.010
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.5	5.0000	0.0000	0.0	36.000	60.8017	-22.05	2188.86	0.010
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.5	1.7500	0.0000	0.0	36.000	61.3737	-22.49	2209.45	0.010
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	0.2500	0.0000	0.0	36.000	46.2425	-22.56	1664.73	0.014
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	5.1670	0.0000	0.0	36.000	46.2834	-22.60	1666.20	0.014
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	6.0000	0.0000	0.0	36.000	54.5687	-24.78	1964.47	0.013
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	4.0210	0.0000	0.0	36.000	55.7187	-25.80	2005.87	0.013
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.6	0.2500	0.0000	0.0	36.000	76.1983	-25.91	2743.14	0.009
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.5875	5.0000	0.0000	0.0	36.000	76.5548	-27.46	2755.97	0.010
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.5875	5.0000	0.0000	0.0	36.000	78.4751	-29.05	2825.10	0.010
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.5813	5.0000	0.0000	0.0	36.000	79.5518	-30.68	2863.86	0.011

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.575	2.8540	0.0000	0.0	36.000	79.7807	-31.61	2872.11	0.011
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	0.2500	0.0000	0.0	36.000	88.4284	-31.72	3183.42	0.010
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	6.1250	0.0000	0.0	36.000	88.5847	-31.85	3189.05	0.010
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.7	6.7500	0.0000	0.0	36.000	98.2448	-36.02	3536.81	0.010
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.6875	1.8750	0.0000	0.0	36.000	97.3607	-36.73	3504.99	0.010
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.55	0.1250	0.0000	0.0	36.000	78.1770	-36.80	2814.37	0.013
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	0.1250	0.0000	0.0	36.000	106.1830	-36.85	3822.60	0.010
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	0.1250	0.0000	0.0	36.000	106.2450	-36.90	3824.81	0.010
L36	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	5.0000	0.0000	0.0	36.000	108.6960	-38.97	3913.05	0.010
L37	20.5 - 15.5 (37)	TP46.7736x45.7586x0.7375	5.0000	0.0000	0.0	36.000	109.3240	-41.08	3935.67	0.010
L38	15.5 - 10.5 (38)	TP47.7885x46.7736x0.7375	5.0000	0.0000	0.0	36.000	111.7340	-43.22	4022.44	0.011
L39	10.5 - 5.5 (39)	TP48.8035x47.7885x0.725	5.0000	0.0000	0.0	36.000	112.2390	-45.31	4040.62	0.011
L40	5.5 - 0.5 (40)	TP49.8185x48.8035x0.725	5.0000	0.0000	0.0	36.000	114.6090	-47.32	4125.92	0.011
L41	0.5 - 0 (41)	TP49.92x49.8185x0.725	0.5000	0.0000	0.0	36.000	114.8460	-47.53	4134.45	0.011

### Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M <sub>x</sub> kip-ft	Actual f <sub>bx</sub> ksi	Allow. F <sub>bx</sub> ksi	Ratio f <sub>bx</sub> F <sub>bx</sub>	Actual M <sub>y</sub> kip-ft	Actual f <sub>by</sub> ksi	Allow. F <sub>by</sub> ksi	Ratio f <sub>by</sub> F <sub>by</sub>
L1	148 - 143 (1)	TP23.0151x22x0.25	44.08	5.201	36.000	0.144	0.00	0.000	36.000	0.000
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	85.33	9.224	36.000	0.256	0.00	0.000	36.000	0.000
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	130.10	12.931	36.000	0.359	0.00	0.000	36.000	0.000
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	177.94	16.315	36.000	0.453	0.00	0.000	36.000	0.000
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	228.89	19.422	36.000	0.539	0.00	0.000	36.000	0.000
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	296.74	23.369	36.000	0.649	0.00	0.000	36.000	0.000
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	387.79	28.420	36.000	0.789	0.00	0.000	36.000	0.000
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	482.43	32.984	36.000	0.916	0.00	0.000	36.000	0.000
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	550.83	35.923	36.000	0.998	0.00	0.000	36.000	0.000
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	651.80	27.738	36.000	0.770	0.00	0.000	36.000	0.000
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	768.10	30.634	36.000	0.851	0.00	0.000	36.000	0.000
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	893.64	33.470	36.000	0.930	0.00	0.000	36.000	0.000
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	1022.9	36.047	36.000	1.001	0.00	0.000	36.000	0.000
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	1165.7	38.721	36.000	1.076	0.00	0.000	36.000	0.000
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	1322.0	41.464	36.000	1.152	0.00	0.000	36.000	0.000
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	1445.2	43.422	36.000	1.206	0.00	0.000	36.000	0.000
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.5	1453.4	32.996	36.000	0.917	0.00	0.000	36.000	0.000
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.5	1619.9	34.813	36.000	0.967	0.00	0.000	36.000	0.000
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.5	1679.2	35.413	36.000	0.984	0.00	0.000	36.000	0.000
L20	63.667 -	TP38.6711x38.6203x0.375	1687.7	46.868	36.000	1.302	0.00	0.000	36.000	0.000

Section No.	Elevation ft	Size	Actual $M_x$ kip-ft	Actual $f_{bx}$ ksi	Allow. $F_{bx}$ ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual $M_y$ kip-ft	Actual $f_{by}$ ksi	Allow. $F_{by}$ ksi	Ratio $\frac{f_{by}}{F_{by}}$
L21	63.417 (20)	5	8							
	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	1693.4	46.943	36.000	1.304	0.00	0.000	36.000	0.000
L22	58.25 - 57.25 (22)	5	7							
	58.25 - 57.25 (22)	TP39.1731x37.955x0.437	1901.0	44.294	36.000	1.230	0.00	0.000	36.000	0.000
L23	57.25 - 53.229 (23)	75	8							
	57.25 - 53.229 (23)	TP39.9894x39.1731x0.43	2043.2	45.652	36.000	1.268	0.00	0.000	36.000	0.000
L24	53.229 - 52.979 (24)	2	2							
	53.229 - 52.979 (24)	TP40.0401x39.9894x0.6	2052.2	33.761	36.000	0.938	0.00	0.000	36.000	0.000
L25	52.979 - 47.979 (25)	75	5							
	52.979 - 47.979 (25)	TP41.0552x40.0401x0.58	2238.3	35.697	36.000	0.992	0.00	0.000	36.000	0.000
L26	47.979 - 42.979 (26)	75	5							
	47.979 - 42.979 (26)	TP42.0703x41.0552x0.58	2428.5	36.845	36.000	1.023	0.00	0.000	36.000	0.000
L27	42.979 - 37.979 (27)	13	1							
	42.979 - 37.979 (27)	TP43.0854x42.0703x0.58	2622.7	38.291	36.000	1.064	0.00	0.000	36.000	0.000
L28	37.979 - 35.125 (28)	7	7							
	37.979 - 35.125 (28)	TP43.6648x43.0854x0.57	2735.2	39.265	36.000	1.091	0.00	0.000	36.000	0.000
L29	35.125 - 34.875 (29)	8	8							
	35.125 - 34.875 (29)	TP43.7155x43.6648x0.63	2745.1	35.615	36.000	0.989	0.00	0.000	36.000	0.000
L30	34.875 - 28.75 (30)	5	5							
	34.875 - 28.75 (30)	TP44.959x43.7155x0.637	2760.0	35.681	36.000	0.991	0.00	0.000	36.000	0.000
L31	28.75 - 27.75 (31)	9	9							
	28.75 - 27.75 (31)	TP44.2869x42.9167x0.7	3032.2	35.039	36.000	0.973	0.00	0.000	36.000	0.000
L32	27.75 - 25.875 (32)	8	8							
	27.75 - 25.875 (32)	TP44.6675x44.2869x0.68	3109.2	35.916	36.000	0.998	0.00	0.000	36.000	0.000
L33	25.875 - 25.75 (33)	3	3							
	25.875 - 25.75 (33)	TP44.6929x44.6675x0.55	3114.4	44.498	36.000	1.236	0.00	0.000	36.000	0.000
L34	25.75 - 25.625 (34)	9	9							
	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	3119.5	33.096	36.000	0.919	0.00	0.000	36.000	0.000
L35	25.625 - 25.5 (35)	5	5							
	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	3124.7	33.112	36.000	0.920	0.00	0.000	36.000	0.000
L36	25.5 - 20.5 (36)	2	2							
	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	3333.2	33.733	36.000	0.937	0.00	0.000	36.000	0.000
L37	20.5 - 15.5 (37)	75	5							
	20.5 - 15.5 (37)	TP46.7736x45.7586x0.73	3545.8	34.861	36.000	0.968	0.00	0.000	36.000	0.000
L38	15.5 - 10.5 (38)	8	8							
	15.5 - 10.5 (38)	TP47.7885x46.7736x0.73	3762.5	35.401	36.000	0.983	0.00	0.000	36.000	0.000
L39	10.5 - 5.5 (39)	8	8							
	10.5 - 5.5 (39)	TP48.8035x47.7885x0.72	3983.3	36.490	36.000	1.014	0.00	0.000	36.000	0.000
L40	5.5 - 0.5 (40)	0	0							
	5.5 - 0.5 (40)	TP49.8185x48.8035x0.72	4208.1	36.960	36.000	1.027	0.00	0.000	36.000	0.000
L41	0.5 - 0 (41)	9	9							
	0.5 - 0 (41)	TP49.92x49.8185x0.725	4230.7	37.005	36.000	1.028	0.00	0.000	36.000	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V$ K	Actual $f_v$ ksi	Allow. $F_v$ ksi	Ratio $\frac{f_v}{F_v}$	Actual $T$ kip-ft	Actual $f_{vt}$ ksi	Allow. $F_{vt}$ ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	148 - 143 (1)	TP23.0151x22x0.25	7.96	0.434	24.000	0.037	1.09	0.061	24.000	0.003
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	8.55	0.446	24.000	0.038	1.09	0.056	24.000	0.002
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	9.26	0.464	24.000	0.039	0.38	0.018	24.000	0.001
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	9.88	0.475	24.000	0.040	0.39	0.017	24.000	0.001
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	10.51	0.487	24.000	0.041	0.39	0.016	24.000	0.001
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	17.86	0.797	24.000	0.067	0.39	0.014	24.000	0.001
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	18.57	0.799	24.000	0.068	0.39	0.014	24.000	0.001
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	19.29	0.802	24.000	0.068	0.39	0.013	24.000	0.001
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	19.80	0.804	24.000	0.068	0.40	0.012	24.000	0.001
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	20.59	0.551	24.000	0.047	0.40	0.008	24.000	0.000
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	24.74	0.641	24.000	0.054	4.66	0.087	24.000	0.004
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	25.49	0.640	24.000	0.054	4.66	0.082	24.000	0.003

Section No.	Elevation ft	Size	Actual V K	Actual $f_v$ ksi	Allow. $F_v$ ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual $f_{vt}$ ksi	Allow. $F_{vt}$ ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	26.23	0.639	24.000	0.054	4.66	0.077	24.000	0.003
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	30.91	0.731	24.000	0.062	4.66	0.073	24.000	0.003
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	31.64	0.727	24.000	0.062	4.66	0.069	24.000	0.003
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	32.84	0.738	24.000	0.063	4.66	0.066	24.000	0.003
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.5	32.87	0.556	24.000	0.047	4.66	0.050	24.000	0.002
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.5	33.74	0.555	24.000	0.047	4.67	0.047	24.000	0.002
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.5	34.05	0.555	24.000	0.047	4.67	0.046	24.000	0.002
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	34.08	0.737	24.000	0.062	4.67	0.061	24.000	0.003
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	34.10	0.737	24.000	0.062	4.67	0.061	24.000	0.003
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	35.08	0.643	24.000	0.054	4.67	0.051	24.000	0.002
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	35.68	0.640	24.000	0.054	4.67	0.049	24.000	0.002
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.6	36.82	0.483	24.000	0.041	4.67	0.036	24.000	0.002
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.5875	37.65	0.492	24.000	0.042	0.56	0.004	24.000	0.000
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.5875	38.45	0.490	24.000	0.041	0.56	0.004	24.000	0.000
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.5813	39.23	0.493	24.000	0.042	0.57	0.004	24.000	0.000
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.575	39.67	0.497	24.000	0.042	0.57	0.004	24.000	0.000
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	39.69	0.449	24.000	0.038	0.57	0.003	24.000	0.000
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	39.75	0.449	24.000	0.038	0.57	0.003	24.000	0.000
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.7	40.91	0.416	24.000	0.035	0.58	0.003	24.000	0.000
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.6875	41.23	0.424	24.000	0.036	0.59	0.003	24.000	0.000
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.55	41.23	0.527	24.000	0.045	0.59	0.004	24.000	0.000
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	41.26	0.389	24.000	0.033	0.59	0.003	24.000	0.000
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	41.28	0.389	24.000	0.033	0.59	0.003	24.000	0.000
L36	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	42.12	0.388	24.000	0.033	0.62	0.003	24.000	0.000
L37	20.5 - 15.5 (37)	TP46.7736x45.7586x0.7375	42.94	0.393	24.000	0.033	0.64	0.003	24.000	0.000
L38	15.5 - 10.5 (38)	TP47.7885x46.7736x0.7375	43.77	0.392	24.000	0.033	0.66	0.003	24.000	0.000
L39	10.5 - 5.5 (39)	TP48.8035x47.7885x0.725	44.57	0.397	24.000	0.034	0.68	0.003	24.000	0.000
L40	5.5 - 0.5 (40)	TP49.8185x48.8035x0.725	45.35	0.396	24.000	0.033	0.69	0.003	24.000	0.000
L41	0.5 - 0 (41)	TP49.92x49.8185x0.725	45.42	0.395	24.000	0.033	0.69	0.003	24.000	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio P $\frac{P}{P_a}$	Ratio $f_{bx}$ $\frac{f_{bx}}{F_{bx}}$	Ratio $f_{by}$ $\frac{f_{by}}{F_{by}}$	Ratio $f_v$ $\frac{f_v}{F_v}$	Ratio $f_{vt}$ $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
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Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P$	$f_{bx}$	$f_{by}$	$f_v$	$f_{vt}$			
		$P_a$	$F_{bx}$	$F_{by}$	$F_v$	$F_{vt}$			
L1	148 - 143 (1)	0.005	0.144	0.000	0.037	0.003	0.150	1.333	H1-3+VT ✓
L2	143 - 138 (2)	0.005	0.256	0.000	0.038	0.002	0.262	1.333	H1-3+VT ✓
L3	138 - 133 (3)	0.005	0.359	0.000	0.039	0.001	0.365	1.333	H1-3+VT ✓
L4	133 - 128 (4)	0.006	0.453	0.000	0.040	0.001	0.459	1.333	H1-3+VT ✓
L5	128 - 123 (5)	0.006	0.539	0.000	0.041	0.001	0.546	1.333	H1-3+VT ✓
L6	123 - 118 (6)	0.010	0.649	0.000	0.067	0.001	0.660	1.333	H1-3+VT ✓
L7	118 - 113 (7)	0.010	0.789	0.000	0.068	0.001	0.801	1.333	H1-3+VT ✓
L8	113 - 108 (8)	0.011	0.916	0.000	0.068	0.001	0.928	1.333	H1-3+VT ✓
L9	108 - 100.5 (9)	0.011	0.998	0.000	0.068	0.001	1.010	1.333	H1-3+VT ✓
L10	100.5 - 99.5 (10)	0.008	0.770	0.000	0.047	0.000	0.779	1.333	H1-3+VT ✓
L11	99.5 - 94.5 (11)	0.010	0.851	0.000	0.054	0.004	0.862	1.333	H1-3+VT ✓
L12	94.5 - 89.5 (12)	0.010	0.930	0.000	0.054	0.003	0.941	1.333	H1-3+VT ✓
L13	89.5 - 84.5 (13)	0.010	1.001	0.000	0.054	0.003	1.013	1.333	H1-3+VT ✓
L14	84.5 - 79.5 (14)	0.012	1.076	0.000	0.062	0.003	1.089	1.333	H1-3+VT ✓
L15	79.5 - 74.5 (15)	0.013	1.152	0.000	0.062	0.003	1.165	1.333	H1-3+VT ✓
L16	74.5 - 70.667 (16)	0.013	1.206	0.000	0.063	0.003	1.220	1.333	H1-3+VT ✓
L17	70.667 - 70.417 (17)	0.010	0.917	0.000	0.047	0.002	0.927	1.333	H1-3+VT ✓
L18	70.417 - 65.417 (18)	0.010	0.967	0.000	0.047	0.002	0.978	1.333	H1-3+VT ✓
L19	65.417 - 63.667 (19)	0.010	0.984	0.000	0.047	0.002	0.995	1.333	H1-3+VT ✓
L20	63.667 - 63.417 (20)	0.014	1.302	0.000	0.062	0.003	1.317	1.333	H1-3+VT ✓
L21	63.417 - 58.25 (21)	0.014	1.304	0.000	0.062	0.003	1.319	1.333	H1-3+VT ✓
L22	58.25 - 57.25 (22)	0.013	1.230	0.000	0.054	0.002	1.244	1.333	H1-3+VT ✓
L23	57.25 - 53.229 (23)	0.013	1.268	0.000	0.054	0.002	1.282	1.333	H1-3+VT ✓
L24	53.229 - 52.979 (24)	0.009	0.938	0.000	0.041	0.002	0.948	1.333	H1-3+VT ✓
L25	52.979 - 47.979 (25)	0.010	0.992	0.000	0.042	0.000	1.002	1.333	H1-3+VT ✓
L26	47.979 - 42.979 (26)	0.010	1.023	0.000	0.041	0.000	1.034	1.333	H1-3+VT ✓
L27	42.979 - 37.979 (27)	0.011	1.064	0.000	0.042	0.000	1.075	1.333	H1-3+VT ✓
L28	37.979 - 35.125 (28)	0.011	1.091	0.000	0.042	0.000	1.102	1.333	H1-3+VT ✓
L29	35.125 - 34.875 (29)	0.010	0.989	0.000	0.038	0.000	1.000	1.333	H1-3+VT ✓
L30	34.875 - 28.75 (30)	0.010	0.991	0.000	0.038	0.000	1.001	1.333	H1-3+VT ✓

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P$	$f_{bx}$	$f_{by}$	$f_v$	$f_{vt}$			
		$P_a$	$F_{bx}$	$F_{by}$	$F_v$	$F_{vt}$			
L31	28.75 - 27.75 (31)	0.010	0.973	0.000	0.035	0.000	0.984	1.333	H1-3+VT ✓
L32	27.75 - 25.875 (32)	0.010	0.998	0.000	0.036	0.000	1.008	1.333	H1-3+VT ✓
L33	25.875 - 25.75 (33)	0.013	1.236	0.000	0.045	0.000	1.250	1.333	H1-3+VT ✓
L34	25.75 - 25.625 (34)	0.010	0.919	0.000	0.033	0.000	0.929	1.333	H1-3+VT ✓
L35	25.625 - 25.5 (35)	0.010	0.920	0.000	0.033	0.000	0.930	1.333	H1-3+VT ✓
L36	25.5 - 20.5 (36)	0.010	0.937	0.000	0.033	0.000	0.947	1.333	H1-3+VT ✓
L37	20.5 - 15.5 (37)	0.010	0.968	0.000	0.033	0.000	0.979	1.333	H1-3+VT ✓
L38	15.5 - 10.5 (38)	0.011	0.983	0.000	0.033	0.000	0.994	1.333	H1-3+VT ✓
L39	10.5 - 5.5 (39)	0.011	1.014	0.000	0.034	0.000	1.025	1.333	H1-3+VT ✓
L40	5.5 - 0.5 (40)	0.011	1.027	0.000	0.033	0.000	1.038	1.333	H1-3+VT ✓
L41	0.5 - 0 (41)	0.011	1.028	0.000	0.033	0.000	1.040	1.333	H1-3+VT ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail
L1	148 - 143	Pole	TP23.0151x22x0.25	1	-3.32	879.42	11.2	Pass
L2	143 - 138	Pole	TP24.0301x23.0151x0.25	2	-3.63	918.63	19.6	Pass
L3	138 - 133	Pole	TP25.0452x24.0301x0.25	3	-3.94	957.85	27.4	Pass
L4	133 - 128	Pole	TP26.0602x25.0452x0.25	4	-4.29	997.06	34.5	Pass
L5	128 - 123	Pole	TP27.0753x26.0602x0.25	5	-4.65	1036.27	41.0	Pass
L6	123 - 118	Pole	TP28.0903x27.0753x0.25	6	-8.21	1075.48	49.5	Pass
L7	118 - 113	Pole	TP29.1054x28.0903x0.25	7	-8.70	1114.69	60.1	Pass
L8	113 - 108	Pole	TP30.1204x29.1054x0.25	8	-9.21	1153.90	69.6	Pass
L9	108 - 100.5	Pole	TP31.643x30.1204x0.25	9	-9.59	1181.35	75.8	Pass
L10	100.5 - 99.5	Pole	TP31.346x30.331x0.375	10	-10.64	1794.63	58.4	Pass
L11	99.5 - 94.5	Pole	TP32.361x31.346x0.375	11	-13.73	1853.44	64.6	Pass
L12	94.5 - 89.5	Pole	TP33.3761x32.361x0.375	12	-14.55	1912.27	70.6	Pass
L13	89.5 - 84.5	Pole	TP34.3911x33.3761x0.375	13	-15.41	1971.08	76.0	Pass
L14	84.5 - 79.5	Pole	TP35.4061x34.3911x0.375	14	-18.76	2029.89	81.7	Pass
L15	79.5 - 74.5	Pole	TP36.4211x35.4061x0.375	15	-19.75	2088.72	87.4	Pass
L16	74.5 - 70.667	Pole	TP37.1993x36.4211x0.375	16	-20.71	2133.80	91.5	Pass
L17	70.667 - 70.417	Pole	TP37.25x37.1993x0.5	17	-20.79	2839.33	69.5	Pass
L18	70.417 - 65.417	Pole	TP38.2651x37.25x0.5	18	-22.05	2917.75	73.3	Pass
L19	65.417 - 63.667	Pole	TP38.6203x38.2651x0.5	19	-22.49	2945.20	74.6	Pass
L20	63.667 - 63.417	Pole	TP38.6711x38.6203x0.375	20	-22.56	2219.08	98.8	Pass
L21	63.417 - 58.25	Pole	TP39.72x38.6711x0.375	21	-22.60	2221.04	98.9	Pass
L22	58.25 - 57.25	Pole	TP39.1731x37.955x0.4375	22	-24.78	2618.64	93.3	Pass
L23	57.25 - 53.229	Pole	TP39.9894x39.1731x0.4375	23	-25.80	2673.82	96.2	Pass
L24	53.229 - 52.979	Pole	TP40.0401x39.9894x0.6	24	-25.91	3656.61	71.1	Pass
L25	52.979 - 47.979	Pole	TP41.0552x40.0401x0.5875	25	-27.46	3673.71	75.2	Pass
L26	47.979 - 42.979	Pole	TP42.0703x41.0552x0.5875	26	-29.05	3765.86	77.6	Pass
L27	42.979 - 37.979	Pole	TP43.0854x42.0703x0.5813	27	-30.68	3817.53	80.6	Pass
L28	37.979 - 35.125	Pole	TP43.6648x43.0854x0.575	28	-31.61	3828.52	82.7	Pass
L29	35.125 - 34.875	Pole	TP43.7155x43.6648x0.6375	29	-31.72	4243.50	75.0	Pass
L30	34.875 - 28.75	Pole	TP44.959x43.7155x0.6375	30	-31.85	4251.00	75.1	Pass
L31	28.75 - 27.75	Pole	TP44.2869x42.9167x0.7	31	-36.02	4714.57	73.8	Pass
L32	27.75 - 25.875	Pole	TP44.6675x44.2869x0.6875	32	-36.73	4672.15	75.7	Pass
L33	25.875 - 25.75	Pole	TP44.6929x44.6675x0.55	33	-36.80	3751.56	93.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail	
L34	25.75 - 25.625	Pole	TP44.7182x44.6929x0.75	34	-36.85	5095.53	69.7	Pass	
L35	25.625 - 25.5	Pole	TP44.7436x44.7182x0.75	35	-36.90	5098.47	69.7	Pass	
L36	25.5 - 20.5	Pole	TP45.7586x44.7436x0.75	36	-38.97	5216.10	71.1	Pass	
L37	20.5 - 15.5	Pole	TP46.7736x45.7586x0.7375	37	-41.08	5246.25	73.4	Pass	
L38	15.5 - 10.5	Pole	TP47.7885x46.7736x0.7375	38	-43.22	5361.91	74.6	Pass	
L39	10.5 - 5.5	Pole	TP48.8035x47.7885x0.725	39	-45.31	5386.15	76.9	Pass	
L40	5.5 - 0.5	Pole	TP49.8185x48.8035x0.725	40	-47.32	5499.85	77.9	Pass	
L41	0.5 - 0	Pole	TP49.92x49.8185x0.725	41	-47.53	5511.22	78.0	Pass	
							Summary		
							Pole (L21)	98.9	Pass
							<b>RATING =</b>	<b>98.9</b>	<b>Pass</b>

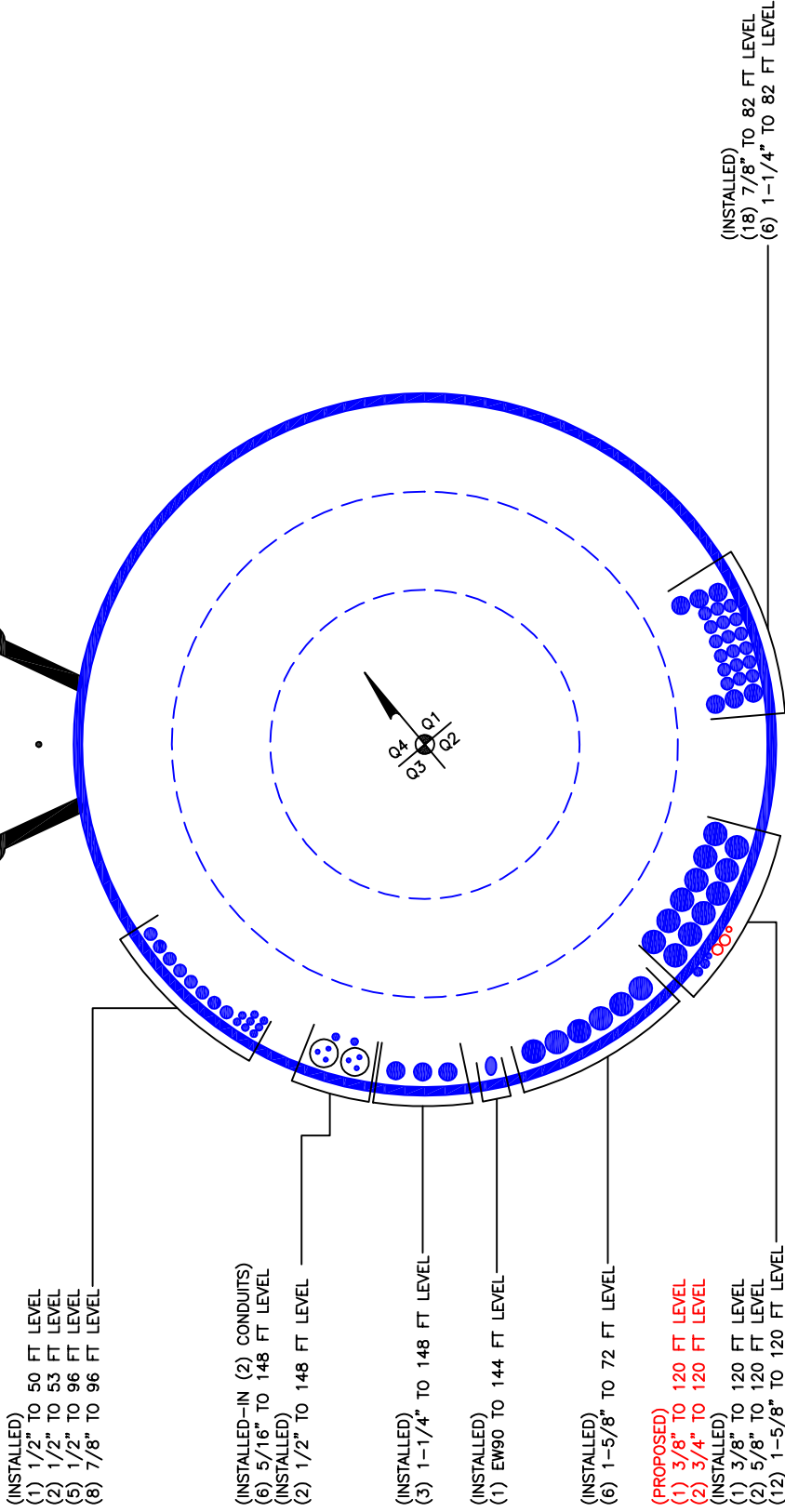
Note: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.



**APPENDIX B**  
**BASE LEVEL DRAWING**



CLIMBING PEGS  
W/SAFETY CLIMB



- (INSTALLED)
- (1) 1/2" TO 50 FT LEVEL
- (2) 1/2" TO 53 FT LEVEL
- (5) 1/2" TO 96 FT LEVEL
- (8) 7/8" TO 96 FT LEVEL

- (INSTALLED-IN (2) CONDUITS)
- (6) 5/16" TO 148 FT LEVEL
- (INSTALLED)
- (2) 1/2" TO 148 FT LEVEL

- (INSTALLED)
- (3) 1-1/4" TO 148 FT LEVEL
- (INSTALLED)
- (1) EW90 TO 144 FT LEVEL

- (INSTALLED)
- (6) 1-5/8" TO 72 FT LEVEL

- (PROPOSED)
- (1) 3/8" TO 120 FT LEVEL
- (2) 3/4" TO 120 FT LEVEL
- (INSTALLED)
- (1) 3/8" TO 120 FT LEVEL
- (2) 5/8" TO 120 FT LEVEL
- (12) 1-5/8" TO 120 FT LEVEL

- (INSTALLED)
- (18) 7/8" TO 82 FT LEVEL
- (6) 1-1/4" TO 82 FT LEVEL

**APPENDIX C**  
**ADDITIONAL CALCULATIONS**



# TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	148 - 143	5		12	22.000	23.015	0.25	A607-60	1.000
2	143 - 138	5		12	23.015	24.030	0.25	A607-60	1.000
3	138 - 133	5		12	24.030	25.045	0.25	A607-60	1.000
4	133 - 128	5		12	25.045	26.060	0.25	A607-60	1.000
5	128 - 123	5		12	26.060	27.075	0.25	A607-60	1.000
6	123 - 118	5		12	27.075	28.090	0.25	A607-60	1.000
7	118 - 113	5		12	28.090	29.105	0.25	A607-60	1.000
8	113 - 108	5		12	29.105	30.120	0.25	A607-60	1.000
9	108 - 104.5	7.5	4	12	30.120	31.643	0.25	A607-60	1.000
10	104.5 - 99.5	5		12	30.331	31.346	0.375	A607-60	1.000
11	99.5 - 94.5	5		12	31.346	32.361	0.375	A607-60	1.000
12	94.5 - 89.5	5		12	32.361	33.376	0.375	A607-60	1.000
13	89.5 - 84.5	5		12	33.376	34.391	0.375	A607-60	1.000
14	84.5 - 79.5	5		12	34.391	35.406	0.375	A607-60	1.000
15	79.5 - 74.5	5		12	35.406	36.421	0.375	A607-60	1.000
16	74.5 - 70.667	3.833		12	36.421	37.199	0.375	A607-60	1.000
17	70.667 - 70.417	0.25		12	37.199	37.250	0.5	A607-60	0.981
18	70.417 - 65.417	5		12	37.250	38.265	0.5	A607-60	0.975
19	65.417 - 63.667	1.75		12	38.265	38.620	0.5	A607-60	0.973
20	63.667 - 63.417	0.25		12	38.620	38.671	0.375	A607-60	1.000
21	63.417 - 63.25	5.167	5	12	38.671	39.720	0.375	A607-60	1.000
22	63.25 - 57.25	6		12	37.955	39.173	0.4375	A607-60	1.000
23	57.25 - 53.229	4.021		12	39.173	39.989	0.4375	A607-60	1.000
24	53.229 - 52.979	0.25		12	39.989	40.040	0.6	A607-60	0.969
25	52.979 - 47.979	5		12	40.040	41.055	0.5875	A607-60	0.983
26	47.979 - 42.979	5		12	41.055	42.070	0.5875	A607-60	0.977
27	42.979 - 37.979	5		12	42.070	43.085	0.58125	A607-60	0.982
28	37.979 - 35.125	2.854		12	43.085	43.665	0.575	A607-60	0.989
29	35.125 - 34.875	0.25		12	43.665	43.716	0.6375	A607-60	0.966
30	34.875 - 34.5	6.125	5.75	12	43.716	44.959	0.6375	A607-60	0.965
31	34.5 - 27.75	6.75		12	42.917	44.287	0.7	A607-60	0.966
32	27.75 - 25.875	1.875		12	44.287	44.667	0.6875	A607-60	0.981
33	25.875 - 25.75	0.125		12	44.667	44.693	0.55	A607-60	1.118
34	25.75 - 25.625	0.125		12	44.693	44.718	0.75	A607-60	0.977
35	25.625 - 25.5	0.125		12	44.718	44.744	0.75	A607-60	0.977
36	25.5 - 20.5	5		12	44.744	45.759	0.75	A607-60	0.970
37	20.5 - 15.5	5		12	45.759	46.774	0.7375	A607-60	0.979
38	15.5 - 10.5	5		12	46.774	47.789	0.7375	A607-60	0.973
39	10.5 - 5.5	5		12	47.789	48.804	0.725	A607-60	0.983
40	5.5 - 0.5	5		12	48.804	49.819	0.725	A607-60	0.977
41	0.5 - 0	0.5		12	49.819	49.920	0.725	A607-60	0.976

## TNX Section Forces

Increment (ft):		5	TNX Output		
	Section Height (ft)	P <sub>u</sub> (K)	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)	
1	148 - 143	3.3373	42.871	7.8091	
2	143 - 138	3.6435	83.386	8.4177	
3	138 - 133	3.9607	127.38	9.1097	
4	133 - 128	4.308	174.45	9.7262	
5	128 - 123	4.6747	224.64	10.357	
6	123 - 118	8.2348	291.73	17.701	
7	118 - 113	8.721	382.01	18.416	
8	113 - 108	9.2354	475.88	19.137	
9	108 - 104.5	9.6107	543.73	19.642	
10	104.5 - 99.5	10.663	643.93	20.433	
11	99.5 - 94.5	13.748	759.46	24.584	
12	94.5 - 89.5	14.572	884.22	25.33	
13	89.5 - 84.5	15.428	1012.7	26.076	
14	84.5 - 79.5	18.782	1154.8	30.75	
15	79.5 - 74.5	19.77	1310.3	31.484	
16	74.5 - 70.667	20.725	1432.9	32.68	
17	70.667 - 70.417	20.804	1441.1	32.713	
18	70.417 - 65.417	22.061	1606.8	33.586	
19	65.417 - 63.667	22.502	1665.8	33.894	
20	63.667 - 63.417	22.574	1674.3	33.923	
21	63.417 - 63.25	22.612	1680	33.947	
22	63.25 - 57.25	24.797	1886.6	34.924	
23	57.25 - 53.229	25.809	2028.2	35.525	
24	53.229 - 52.979	25.925	2037.1	36.661	
25	52.979 - 47.979	27.473	2222.5	37.493	
26	47.979 - 42.979	29.062	2411.9	38.296	
27	42.979 - 37.979	30.685	2605.3	39.076	
28	37.979 - 35.125	31.62	2717.4	39.514	
29	35.125 - 34.875	31.725	2727.3	39.54	
30	34.875 - 34.5	31.855	2742.2	39.599	
31	34.5 - 27.75	36.027	3013.3	40.756	
32	27.75 - 25.875	36.737	3090	41.082	
33	25.875 - 25.75	36.805	3095.2	41.083	
34	25.75 - 25.625	36.858	3100.3	41.103	
35	25.625 - 25.5	36.909	3105.5	41.125	
36	25.5 - 20.5	38.974	3313.2	41.971	
37	20.5 - 15.5	41.085	3525	42.792	
38	15.5 - 10.5	43.227	3741	43.618	
39	10.5 - 5.5	45.3	3961.1	44.4	
40	5.5 - 0.5	47.3	4185.0	45.2	
41	0.5 - 0	47.5	4207.6	45.3	

# Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP23.015x22x0.25	Pole	10.9%	Pass
143 - 138	Pole	TP24.03x23.015x0.25	Pole	19.1%	Pass
138 - 133	Pole	TP25.045x24.03x0.25	Pole	26.7%	Pass
133 - 128	Pole	TP26.06x25.045x0.25	Pole	33.7%	Pass
128 - 123	Pole	TP27.075x26.06x0.25	Pole	40.1%	Pass
123 - 118	Pole	TP28.09x27.075x0.25	Pole	48.5%	Pass
118 - 113	Pole	TP29.105x28.09x0.25	Pole	59.0%	Pass
113 - 108	Pole	TP30.12x29.105x0.25	Pole	68.4%	Pass
108 - 104.5	Pole	TP31.643x30.12x0.25	Pole	74.5%	Pass
104.5 - 99.5	Pole	TP31.346x30.331x0.375	Pole	57.5%	Pass
99.5 - 94.5	Pole	TP32.361x31.346x0.375	Pole	63.7%	Pass
94.5 - 89.5	Pole	TP33.376x32.361x0.375	Pole	69.6%	Pass
89.5 - 84.5	Pole	TP34.391x33.376x0.375	Pole	74.9%	Pass
84.5 - 79.5	Pole	TP35.406x34.391x0.375	Pole	80.6%	Pass
79.5 - 74.5	Pole	TP36.421x35.406x0.375	Pole	86.3%	Pass
74.5 - 70.67	Pole	TP37.199x36.421x0.375	Pole	90.4%	Pass
70.67 - 70.42	Pole + Reinf.	TP37.25x37.199x0.5	Reinf. 5 Compression	85.0%	Pass
70.42 - 65.42	Pole + Reinf.	TP38.265x37.25x0.5	Reinf. 5 Compression	90.3%	Pass
65.42 - 63.67	Pole + Reinf.	TP38.62x38.265x0.5	Reinf. 5 Compression	92.1%	Pass
63.67 - 63.42	Pole	TP38.671x38.62x0.375	Pole	97.6%	Pass
63.42 - 63.25	Pole	TP39.72x38.671x0.375	Pole	97.8%	Pass
63.25 - 57.25	Pole	TP39.173x37.955x0.4375	Pole	92.3%	Pass
57.25 - 53.23	Pole	TP39.989x39.173x0.4375	Pole	95.1%	Pass
53.23 - 52.98	Pole + Reinf.	TP40.04x39.989x0.6	Reinf. 4 Bolt Shear	81.5%	Pass
52.98 - 47.98	Pole + Reinf.	TP41.055x40.04x0.5875	Reinf. 4 Compression	83.8%	Pass
47.98 - 42.98	Pole + Reinf.	TP42.07x41.055x0.5875	Reinf. 4 Compression	87.0%	Pass
42.98 - 37.98	Pole + Reinf.	TP43.085x42.07x0.5813	Reinf. 4 Compression	90.0%	Pass
37.98 - 35.13	Pole + Reinf.	TP43.665x43.085x0.575	Reinf. 4 Bolt Shear	93.2%	Pass
35.13 - 34.88	Pole + Reinf.	TP43.716x43.665x0.6375	Reinf. 1 Bolt Shear	85.0%	Pass
34.88 - 34.5	Pole + Reinf.	TP44.959x43.716x0.6375	Reinf. 1 Compression	83.8%	Pass
34.5 - 27.75	Pole + Reinf.	TP44.287x42.917x0.7	Reinf. 1 Compression	82.3%	Pass
27.75 - 25.88	Pole + Reinf.	TP44.667x44.287x0.6875	Reinf. 3 Bolt Shear	84.5%	Pass
25.88 - 25.75	Pole + Reinf.	TP44.693x44.667x0.55	Pole	99.7%	Pass
25.75 - 25.63	Pole + Reinf.	TP44.718x44.693x0.75	Reinf. 1 Compression	78.8%	Pass
25.63 - 25.5	Pole + Reinf.	TP44.744x44.718x0.75	Reinf. 1 Compression	78.9%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.759x44.744x0.75	Reinf. 1 Compression	81.0%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.774x45.759x0.7375	Reinf. 1 Compression	82.9%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.789x46.774x0.7375	Reinf. 1 Compression	84.8%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.804x47.789x0.725	Reinf. 1 Compression	86.6%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.819x48.804x0.725	Reinf. 1 Compression	88.3%	Pass
0.5 - 0	Pole + Reinf.	TP49.92x49.819x0.725	Reinf. 1 Compression	88.4%	Pass
				Summary	
			Pole	99.7%	Pass
			Reinforcement	93.2%	Pass
			Overall	99.7%	Pass

# Additional Calculations

Section Elevation (ft)	Moment of Inertia (in <sup>4</sup> )			Area (in <sup>2</sup> )			% Capacity					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
148 - 143	1214	n/a	1214	18.30	n/a	18.30	10.9%					
143 - 138	1384	n/a	1384	19.12	n/a	19.12	19.1%					
138 - 133	1568	n/a	1568	19.93	n/a	19.93	26.7%					
133 - 128	1769	n/a	1769	20.75	n/a	20.75	33.7%					
128 - 123	1986	n/a	1986	21.56	n/a	21.56	40.1%					
123 - 118	2220	n/a	2220	22.38	n/a	22.38	48.5%					
118 - 113	2472	n/a	2472	23.20	n/a	23.20	59.0%					
113 - 108	2742	n/a	2742	24.01	n/a	24.01	68.4%					
108 - 104.5	2943	n/a	2943	24.58	n/a	24.58	74.5%					
104.5 - 99.5	4585	n/a	4585	37.34	n/a	37.34	57.5%					
99.5 - 94.5	5051	n/a	5051	38.57	n/a	38.57	63.7%					
94.5 - 89.5	5547	n/a	5547	39.79	n/a	39.79	69.6%					
89.5 - 84.5	6075	n/a	6075	41.02	n/a	41.02	74.9%					
84.5 - 79.5	6635	n/a	6635	42.24	n/a	42.24	80.6%					
79.5 - 74.5	7228	n/a	7228	43.46	n/a	43.46	86.3%					
74.5 - 70.67	7707	n/a	7707	44.40	n/a	44.40	90.4%					
70.67 - 70.42	7739	2481	10219	44.46	13.50	57.96	66.4%					85.0%
70.42 - 65.42	8395	2614	11009	45.69	13.50	59.19	70.6%					90.3%
65.42 - 63.67	8634	2661	11295	46.12	13.50	59.62	72.0%					92.1%
63.67 - 63.42	8668	n/a	8668	46.18	n/a	46.18	97.6%					
63.42 - 63.25	8691	n/a	8691	46.22	n/a	46.22	97.8%					
63.25 - 57.25	10465	n/a	10465	54.49	n/a	54.49	92.3%					
57.25 - 53.23	11141	n/a	11141	55.64	n/a	55.64	95.1%					
53.23 - 52.98	11184	3817	15001	55.71	18.00	73.71	68.7%					81.5%
52.98 - 47.98	12066	4007	16073	57.14	18.00	75.14	71.7%					83.7%
47.98 - 42.98	12993	4202	17195	58.57	18.00	76.57	74.6%					87.0%
42.98 - 37.98	13967	4401	18368	59.99	18.00	77.99	77.2%					90.1%
37.98 - 35.13	14544	4516	19060	60.81	18.00	78.81	78.7%					93.2%
35.13 - 34.88	14595	6205	20800	60.88	24.38	85.26	72.5%	85.0%		85.0%		
34.88 - 34.5	14672	6226	20898	60.99	24.38	85.36	72.6%	83.8%		83.8%		
34.5 - 27.75	17276	6363	23638	70.40	24.38	94.77	71.4%	82.3%		82.3%		
27.75 - 25.88	17730	6469	24199	71.01	24.38	95.38	72.1%	83.1%		84.5%		
25.88 - 25.75	18076	1614	19689	71.05	16.25	87.30	99.7%	83.9%				
25.75 - 25.63	17832	8544	26376	71.09	32.50	103.59	70.0%	78.8%	74.3%			
25.63 - 25.5	17863	8553	26416	71.13	32.50	103.63	70.0%	78.9%	73.1%			
25.5 - 20.5	19119	8933	28052	72.76	32.50	105.26	71.9%	81.0%	75.1%			
20.5 - 15.5	20433	9322	29755	74.39	32.50	106.89	73.7%	83.0%	77.1%			
15.5 - 10.5	21806	9719	31525	76.03	32.50	108.53	75.4%	84.8%	78.9%			
10.5 - 5.5	23239	10125	33363	77.66	32.50	110.16	77.0%	86.6%	80.6%			
5.5 - 0.5	24733	10538	35271	79.29	32.50	111.79	78.5%	88.3%	82.3%			
0.5 - 0	24886	10580	35466	79.45	32.50	111.95	78.7%	88.4%	82.4%			

Note: Section capacity checked in 5 degree increments.



# Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
  - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
  - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)\*(Rod Diameter)

## Site Data

BU#: 876354		
Site Name: WESTPORT FIRE DEPARTM		
App #: 353712 Rev. 0		
Anchor Rod Data		
Eta Factor, $\eta$	0.5	TIA G (Fig. 4-4)
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, $F_y$ :	75	ksi
Strength, $F_u$ :	100	ksi
Bolt Circle:	58	in
Anchor Spacing:	6	in

## Plate Data

W=Side:	60	in
Thick:	2.75	in
Grade:	50	ksi
Clip Distance:	0	in

## Stiffener Data (Welding at both sides)

Configuration:	Stiffened	
Weld Type:	Both	**
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	6	in
Height:	18	in
Thick:	1	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

## Pole Data

Diam:	49.92	in
Thick:	0.5	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round

## Stress Increase Factor

ASD ASIF:	1.333
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\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

## Base Reactions

TIA Revision:	F	
Unfactored Moment, M:	4208	ft-kips
Unfactored Axial, P:	48	kips
Unfactored Shear, V:	45	kips

## Anchor Rod Results

TIA F --> Maximum Rod Tension	171.7 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	88.1% <b>Pass</b>

## Base Plate Results

Base Plate Stress:	5.3 ksi	Shear Check Only
Allowable PL Bending Stress:	26.7 ksi	
Base Plate Stress Ratio:	20.1% <b>Pass</b>	

## PL Ref. Data

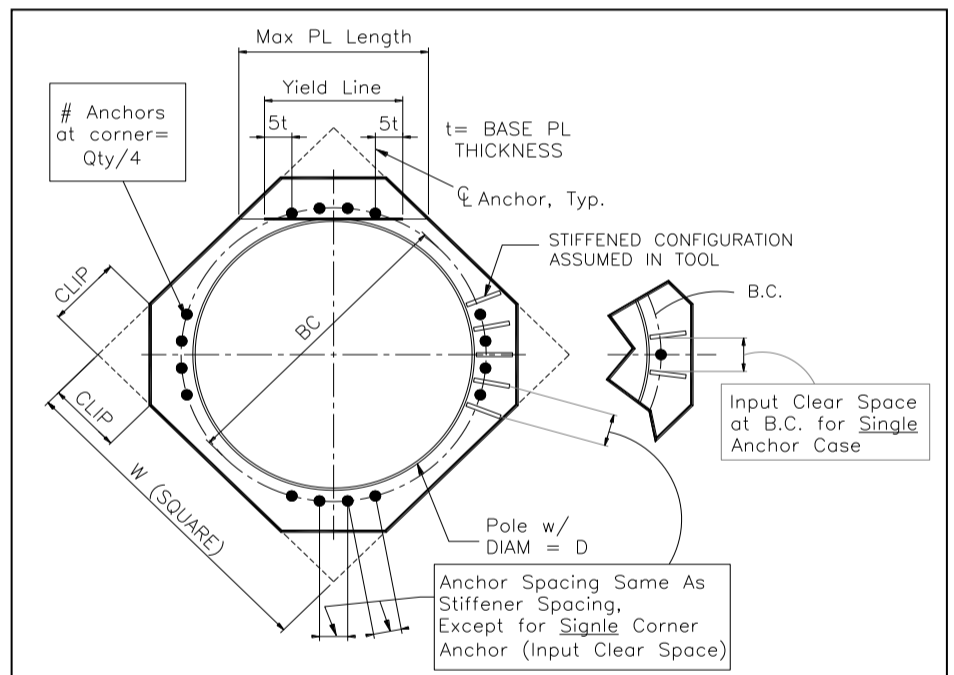
Yield Line (in):	N/A, Roark
Max PL Length:	34.93

## Stiffener Results

Horizontal Weld :	51.6% <b>Pass</b>
Vertical Weld:	44.6% <b>Pass</b>
Plate Flex+Shear, $f_b/F_b+(f_v/F_v)^2$ :	12.6% <b>Pass</b>
Plate Tension+Shear, $f_t/F_t+(f_v/F_v)^2$ :	52.0% <b>Pass</b>
Plate Comp. (AISC Bracket):	53.2% <b>Pass</b>

## Pole Results

Pole Punching Shear Check:	9.8% <b>Pass</b>
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BU: 876354  
 Site Name: WESTPORT FIRE DEPARTMENT  
 App Number: 353712 Rev. 0  
 Work Order: 1262968



Monopole Drilled Pier

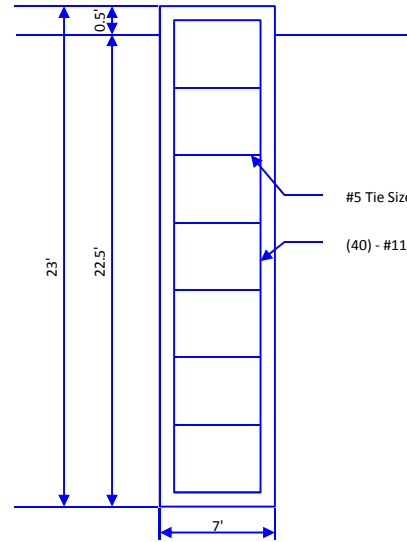
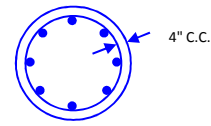
Input

**Criteria**  
 TIA Revision: F  
 ACI 318 Revision: 2005  
 Seismic Category: B

**Forces**  
 Compression: 47.5 kips  
 Shear: 45.3 kips  
 Moment: 4207.6 k-ft  
 Swelling Force: 0 kips

**Foundation Dimensions**  
 Pier Diameter: 7 ft  
 Ext. above grade: 0.5 ft  
 Depth below grade: 22.5 ft

**Material Properties**  
 Number of Rebar: 40  
 Rebar Size: 11  
 Tie Size: 5  
 Rebar tensile strength: 60 ksi  
 Concrete Strength: 3000 psi  
 Ultimate Concrete Strain: 0.003 in/in  
 Clear Cover to Ties: 4 in



Soil Profile: a

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.5	0	3.5	100		0	0	0		
2	4.5	3.5	8	100		0	0	0		
3	5	8	13	135		45	1.013	1.013		
4	5	13	18	135		45	1.613	1.613		
5	4.5	18	22.5	135		45	2.213	2.213	99	

Analysis Results

Soil Lateral Capacity  
 Depth to Zero Shear: 8.91 ft  
 Max Moment, Mu: 4613.97 k-ft  
 Soil Safety Factor: 2.12  
 Safety Factor Req'd: 2  
**RATING: 94.4%**

Soil Axial Capacity  
 Skin Friction (k): 253.87 kips  
 End Bearing (k): 1904.98 kips  
 Comp. Capacity (k), φCn: 2158.85 kips  
 Comp. (k), Cu: 61.75 kips  
**RATING: 2.9%**

Concrete/Steel Check  
 Mu (from soil analysis): 5998.16 k-ft  
 φMn: 9107.82 k-ft  
**RATING: 65.9%**

rho provided: 1.13  
 rho required: 0.33 OK

**Overall Foundation Rating: 94.4%**



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

AT&T Existing Facility

Site ID: CT2153

Westport FD  
515 Post Road East  
Westport, CT 06880

**November 17, 2016**

**EBI Project Number: 6216005367**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>16.53 %</b>



November 17, 2016

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

## Emissions Analysis for Site: **CT2153 – Westport FD**

EBI Consulting was directed to analyze the proposed AT&T facility located at **515 Post Road East, Westport, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **515 Post Road East, Westport, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Powerwave 7770, Quintel QS66512-3 and the Powerwave P65-16-XLH-RR** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerlines of the proposed antennas are **120 feet** above ground level (AGL) for **Sector A**, **120 feet** above ground level (AGL) for **Sector B** and **120 feet** above ground level (AGL) for Sector C.
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



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

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	<b>0.77 %</b>	Antenna B1 MPE%	<b>0.77 %</b>	Antenna C1 MPE%	<b>0.77 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	Quintel QS66512-3	Make / Model:	Quintel QS66512-3	Make / Model:	Quintel QS66512-3
Gain:	11.4 / 15.15 / 12.78 dBd	Gain:	11.4 / 15.15 / 12.78 dBd	Gain:	11.4 / 15.15 / 12.78 dBd
Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>
Frequency Bands	850 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)	Frequency Bands	850 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)	Frequency Bands	850 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	300 Watts	Total TX Power(W):	300 Watts	Total TX Power(W):	300 Watts
ERP (W):	7,032.37	ERP (W):	7,032.37	ERP (W):	7,032.37
Antenna A2 MPE%	<b>2.12 %</b>	Antenna B2 MPE%	<b>2.12 %</b>	Antenna C2 MPE%	<b>2.12 %</b>
Antenna #:	<b>3</b>	Antenna #:	<b>3</b>	Antenna #:	<b>3</b>
Make / Model:	Powerwave P65-16-XLH-RR	Make / Model:	Powerwave P65-16-XLH-RR	Make / Model:	Powerwave P65-16-XLH-RR
Gain:	12.7 dBd	Gain:	12.7 dBd	Gain:	12.7 dBd
Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,234.50	ERP (W):	2,234.50	ERP (W):	2,234.50
Antenna A3 MPE%	<b>1.32 %</b>	Antenna B3 MPE%	<b>1.32 %</b>	Antenna C3 MPE%	<b>1.32 %</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>4.21 %</b>
Nextel	0.34 %
Westport	1.23 %
Sprint	0.74 %
Westport Fire Dept.	0.01 %
Clearwire	0.08 %
MetroPCS	5.10 %
T-Mobile	4.82 %
<b>Site Total MPE %:</b>	<b>16.53 %</b>

AT&T Sector A Total:	4.21 %
AT&T Sector B Total:	4.21 %
AT&T Sector C Total:	4.21 %
<b>Site Total:</b>	<b>16.53 %</b>

AT&T _ Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	120	2.29	850 MHz	567	0.40%
AT&T 1900 MHz (PCS) UMTS	2	656.33	120	3.63	1900 MHz (PCS)	1000	0.36%
AT&T 850 MHz GSM	2	414.12	120	2.29	850 MHz	567	0.40%
AT&T 2300 MHz (WCS) LTE	2	1,964.04	120	10.87	2300 MHz (WCS)	1000	1.09%
AT&T 1900 MHz (PCS) LTE	2	1,138.02	120	6.30	1900 MHz (PCS)	1000	0.63%
AT&T 700 MHz LTE	2	1,117.25	120	6.18	700 MHz	467	1.32%
						<b>Total:</b>	<b>4.21%</b>



## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	4.21 %
Sector B:	4.21 %
Sector C:	4.21 %
AT&T Maximum Total (per sector):	4.21 %
Site Total:	16.53 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **16.53 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.