



20 Commercial St
Branford, CT 06405
Phone: (203) 208-0806
Fax: (203) 488-4820

September 3, 2015

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Attn: Ms. Melanie Bachman, Executive Director

Re: Notice of Exempt Modification Application
10 Teresa Road (60 Rice Lane)
Beacon Falls, CT 06403

Dear Ms. Bachman,

On behalf of New Cingular Wireless PCS, LLC ("AT&T"), enclosed for filing are an original and two (2) copies of AT&T's Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site.

I also enclose herewith a check in the amount of \$625.00 representing the fee for the Notice of Exempt Modification.

If you have any questions, please feel free to contact me.

Thank you,

By: _____

Name: Paul Sagristano
Vertical Development LLC
Phone- 917-841-0247
Fax- 401-633-6202
psagristano@verticaldevelopmentllc.com

cc:

| | | |
|--|--|---|
| Christopher Bielick 10 Maple Ave. Beacon Falls, CT 06403 203-729-4340 | | Charles Edwards 52 Burton Road Beacon Falls, CT 06403 |
|--|--|---|

siting.council@ct.gov (electronic copy)

Notice of Exempt Modification
10 Teresa Rd.
Beacon Falls, CT 06403

New Cingular Wireless PCS, LLC ("AT&T") submits this Notice of Exempt Modification to the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-73 and 16-50j-72(b) of the Regulations of Connecticut State Agencies ("Regulations") in connection with AT&T's planned modification of antennas and associated equipment on an existing 160' monopole located at 10 Teresa Rd., in the Town of Beacon Falls, Connecticut. More particularly, AT&T plans to upgrade this site by adding LTE technology to its facilities. The proposed modifications will not increase the tower height, cause a significant adverse change or alteration in the physical or environmental characteristics of the site, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six (6) decibels, add radio frequency sending or receiving capability which increases the total radio frequency electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996, as amended, and the State Department of Energy and Environmental Protection, pursuant to Section 22a-162 of the Connecticut General Statutes, or impair the structural integrity of the facility, as determined in a certification provided by a professional engineer licensed in Connecticut.

To better meet the growing voice and data demands of its wireless customers, AT&T is upgrading their network nationwide to include LTE technology, which will provide faster service and better overall performance. Pursuant to the LTE technology upgrade at this site, AT&T will add panel antennas, install RRHs, and install related equipment to its equipment area within the fenced tower compound.

The monopole tower located at 10 Teresa Road, in the Town of Beacon Falls, Connecticut (lat. 41.45569°, long. -73.03979°) is owned and operated by SBA Properties, Inc, a Florida corporation (“Landlord”). AT&T’s existing facility is located within the Landlord’s existing fenced compound. AT&T currently has Twelve (9) panel antennas (three (3) per sector) with a centerline of 133’ installed on the tower. AT&T’s base station equipment is located adjacent to the base of the tower within the fenced compound. A site plan depicting this is attached.

AT&T currently has three (3) LTE antennas, 3 (3) existing Kathrein 800-10121 panel antennas (One (1) per sector), Six (6) Powerwave TMAs, three (3) Ericsson RRUS-11 (one (1) per sector) which will be connected and located behind the Kathrein panel antennas, and one (1) DC-6 Surge Suppressor.

AT&T plans to replace the three (3) existing LTE antennas with three (3) CCI OPA-65R-LCUU-H6 panel antennas, and add three (3) RRUS-12 (1 per sector), three (3) Ericsson A2 modules (1) per sector (attached behind each respective RRU-12). The height of the tower will not be increased and all antennas, surge suppressors, and RRHs will be installed at the existing 133’ centerline.

AT&T will make no modifications to their existing ground based communications platform. The compound’s boundaries will not need to be extended. The proposed modifications will not cause a significant adverse change or alteration in the physical or environmental characteristics of the site, since it is already a telecommunications installation and the modifications will be compatible with this. Other than brief, construction-related noise, these modifications will not increase noise levels at the tower site boundary by six (6) decibels.

The proposed modifications will not add radio frequency sending or receiving capability which increases the total radio frequency electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996, as amended, and the State

Department of Energy and Environmental Protection, pursuant to Section 22a-162 of the Connecticut General Statutes. A radio frequency emissions analysis prepared by EBI Consulting concludes that the proposed final configuration (including other carriers on the tower) will emit 21.68% of the allowable FCC established general public limits sampled at the ground level (see page 1 and the 6th page of Radio Frequency Emissions Analysis Report Evaluation of Human Exposure Potential to Non-Ionizing Emissions (the "MPE" Assessment) dated June 1, 2015). Emissions values for additional carriers were based upon values listed in Connecticut Siting Council active database (see the 2nd and 6 page of the MPE Assessment dated June 1, 2015). The information used in the 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 (see the 2nd page of the MPE Assessment).

The proposed modifications will not overtax the structural integrity of the facility. Tower Engineering Solutions structural engineers performed a structural analysis of the tower on September 1, 2015 to verify that it can support the proposed loading at 100% of capacity for the Tower and 79% Capacity for the foundation. The monopole will comply with the specified ANSI-TIA-222-G requirements and adequately structurally support the proposed loading.

In conclusion, AT&T's proposed modifications do not constitute a modification subject to the Council's review because AT&T will not change the height of the tower, will not extend the boundaries of the compound, will not cause a significant adverse change or alteration in the physical or environmental characteristics of the site, will not increase the noise levels at the site, will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards, and will not impair the structural integrity of the facility. Therefore, AT&T respectfully requests that the Council acknowledge that this Notice of Exempt Modification meets the Council's exemption criteria.

PROJECT INFORMATION

SCOPE OF WORK: • AT&T ANTENNAS: (1) NEW LTE ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW LTE ANTENNAS; (1) EXISTING GSM/UMTS ANTENNA TO REMAIN (1 PER SECTOR)
 • AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRUs.
 • (1) NEW A2 MODULE PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) A2 MODULES.

SITE ADDRESS: 10 TERESA ROAD
 BEACON FALLS, CT 06403

LATITUDE: 41.4556919 41° 27' 20.49084"N
 LONGITUDE: -73.0397989 73° 02' 23.27604"W

USID: 24518

TOWER OWNER: SBA PROPERTIES, LLC.
 5900 BROKEN SOUND PARKWAY,
 NW BOCA RATON, FL 33487-2797

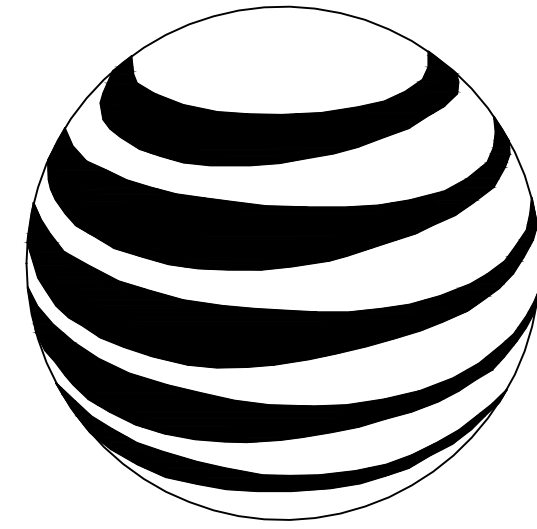
PHONE: 561-226-9523

TYPE OF SITE: MONOPOLE / OUTDOOR EQUIPMENT

MONOPOLE HEIGHT: 186'-0"±

RAD CENTER: 163'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
 PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



**at&t
 MOBILITY**

FA CODE: 10070922
SITE NUMBER: CT5416
SITE NAME: BEACON FALLS NE

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: VERTICAL DEVELOPMENT, LLC
 ADDRESS: 20 COMMERCIAL STREET
 BRANFORD, CT 06405
 CONTACT: PAUL SAGRISTANO
 PHONE: 917-841-0247
 EMAIL: psagrystano@verticaldevelopmentllc.com

ZONING:

COMPANY: VERTICAL DEVELOPMENT, LLC
 ADDRESS: 20 COMMERCIAL STREET
 BRANFORD, CT 06405
 CONTACT: PAUL SAGRISTANO
 PHONE: 917-841-0247
 EMAIL: psagrystano@verticaldevelopmentllc.com

ENGINEERING:

COMPANY: COM-EX CONSULTANTS, LLC
 ADDRESS: 4 SECOND AVENUE
 SUITE 204
 DENVER, NJ 07834
 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

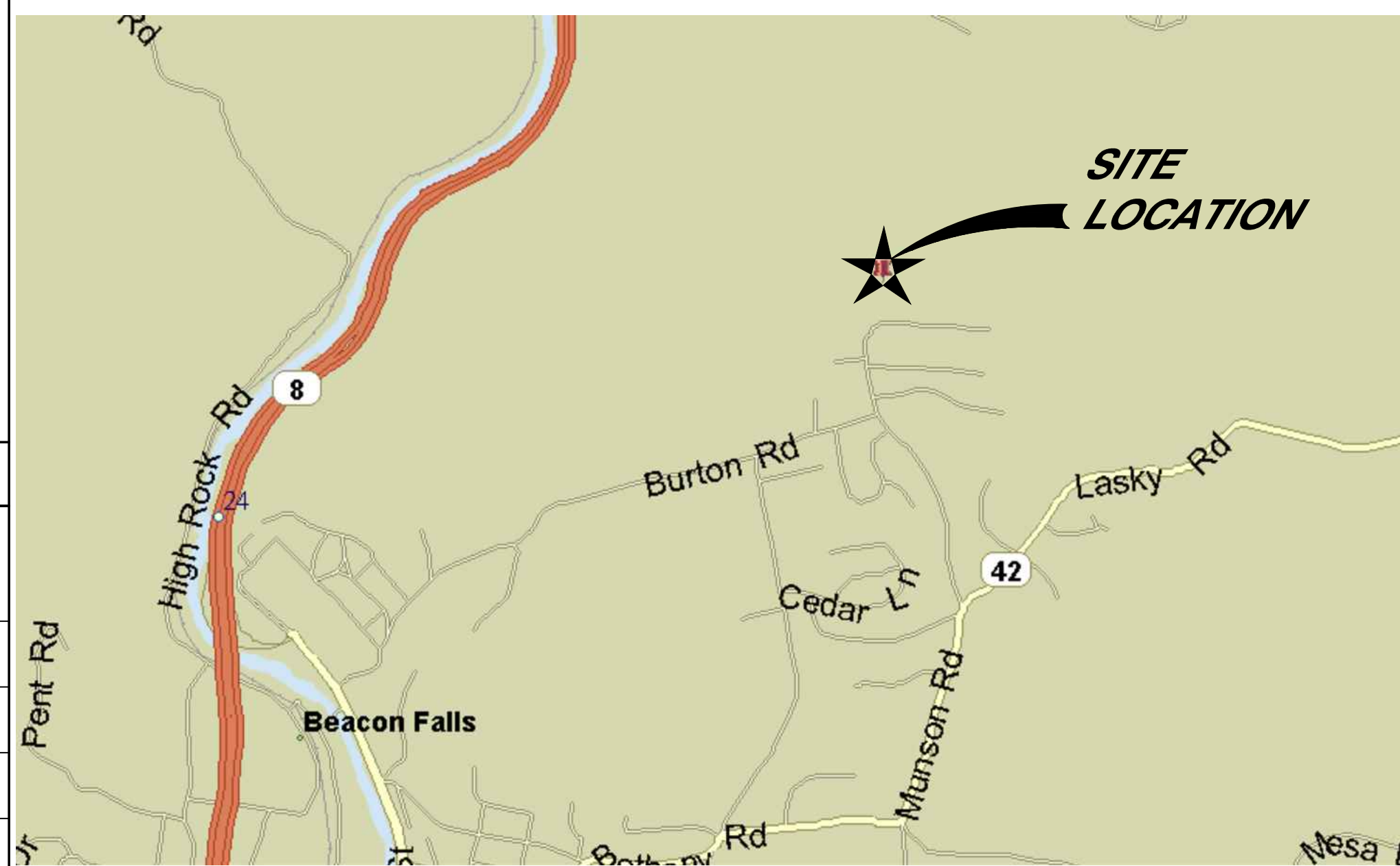
DRAWING INDEX

REV.

| | | |
|------|-----------------------------|---|
| T-1 | TITLE SHEET | 0 |
| GN-1 | GROUNDING & GENERAL NOTES | 0 |
| A-1 | COMPOUND LAYOUT | 0 |
| A-2 | EQUIPMENT LAYOUT | 0 |
| A-3 | ANTENNA LAYOUTS & ELEVATION | 0 |
| A-4 | DETAILS | 0 |
| G-1 | GROUNDING DETAILS | 0 |

VICINITY MAP

1. DEPART 550 COCHITUATE RD, TOWN OF FRAMINGHAM, MA 01701 [550 COCHITUATE RD, TOWN OF FRAMINGHAM, MA 01701] ON SR-30 [COCHITUATE RD] (WEST) 2. BEAR LEFT (SOUTH) ONTO SR-126 [CONCORD ST]TURN LEFT (SOUTH) ONTO CONCORD ST 3. TURN RIGHT (WEST) ONTO SR-9 [WORCESTER RD]MERGE ONTO SR-30 [SR-9] 4. KEEP STRAIGHT ONTO SR-9 [WORCESTER RD]TURN RIGHT ONTO RAMP KEEP LEFT TO STAY ON RAMP *TOLL ROAD* 5. MERGE ONTO I-90 [MASS PIKE] 6. AT EXIT 9, TAKE RAMP (RIGHT) ONTO I-84 ENTERING CONNECTICUT 7. AT EXIT 57, TAKE RAMP (LEFT) ONTO SR-15ROAD NAME CHANGES TO US-5 [SR-15] 8. AT EXIT 86, TAKE RAMP (RIGHT) ONTO I-91 AT EXIT 18, TAKE RAMP (RIGHT) ONTO I-69IAT EXIT 1, TAKE RAMP (LEFT) ONTO I-84. 9. AT EXIT 19, TAKE RAMP (LEFT) ONTO SR-8 10. AT EXIT 24, TURN RIGHT ONTO RAMP TURN RIGHT (SOUTH-EAST) ONTO N MAIN ST, TURN LEFT (NORTH-EAST) ONTO BURTON RD. 11 TURN LEFT (NORTH) ONTO RICE LNROAD NAME CHANGES TO RICE LANE EXT TURN LEFT (NORTH) ONTO LOCAL ROAD(S) ARRIVE 41.45569°N 73.03980°W.



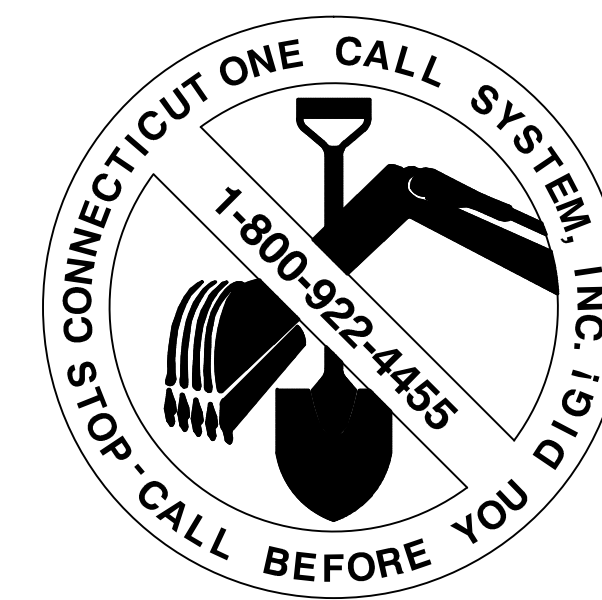
GENERAL NOTES

- 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.

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: | DATE: |
|-----------------------|-------|-------|
| SITE ACQUISITION: | | |
| CONSTRUCTION MANAGER: | | |
| AT&T PROJECT MANAGER: | | |



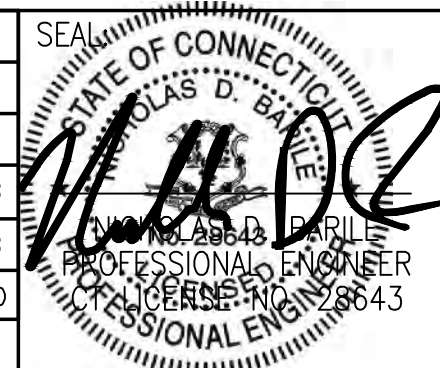
CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



SITE NUMBER: CT5416
SITE NAME: BEACON FALLS NE
 10 TERESA ROAD
 BEACON FALLS, CT 06403
 NEW HAVEN COUNTY



| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|-----|----------|-----------------------------|----|-----|-------|
| 1 | 05/19/15 | REVISED PER CLIENT COMMENTS | GR | NDB | NDB |
| 0 | 04/27/15 | ISSUED AS FINAL | GR | NDB | NDB |



| | | |
|-----------------------------------|---------------------|--------|
| AT&T | | |
| DRAWING TITLE: TITLE SHEET | | |
| JOB NUMBER: 14263-EMP | DRAWING NUMBER: T-1 | REV: 1 |

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. 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. INFORMATION SHOWN ON THIS SET OF DRAWINGS TAKEN FROM PLANS PREPARED BY HUDSON DESIGN GROUP FOR AT&T DATED (03/30/11). CONTRACTOR TO NOTIFY ENGINEER IF DISCREPANCIES EXIST PRIOR TO COMMENCEMENT OF CONSTRUCTION
3. 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.
4. 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.
5. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE 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.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. 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.

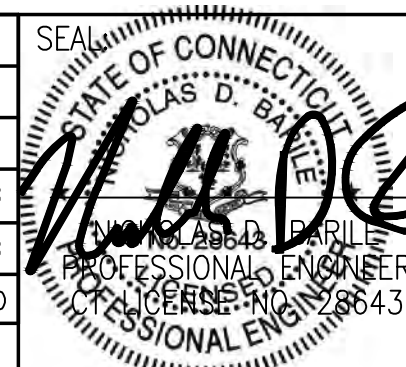
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - INTERNATIONAL 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
21. 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
22. 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.
23. INFORMATION SHOWN ON THIS SET OF DRAWINGS TAKEN FROM PLANS PREPARED BY HUDSON DESIGN GROUP FOR AT&T DATED 3/30/11. CONTRACTOR TO NOTIFY ENGINEER IF DISCREPANCIES EXIST PRIOR TO COMMENCEMENT OF CONSTRUCTION.



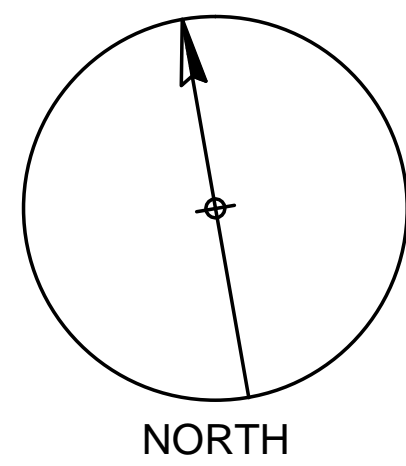
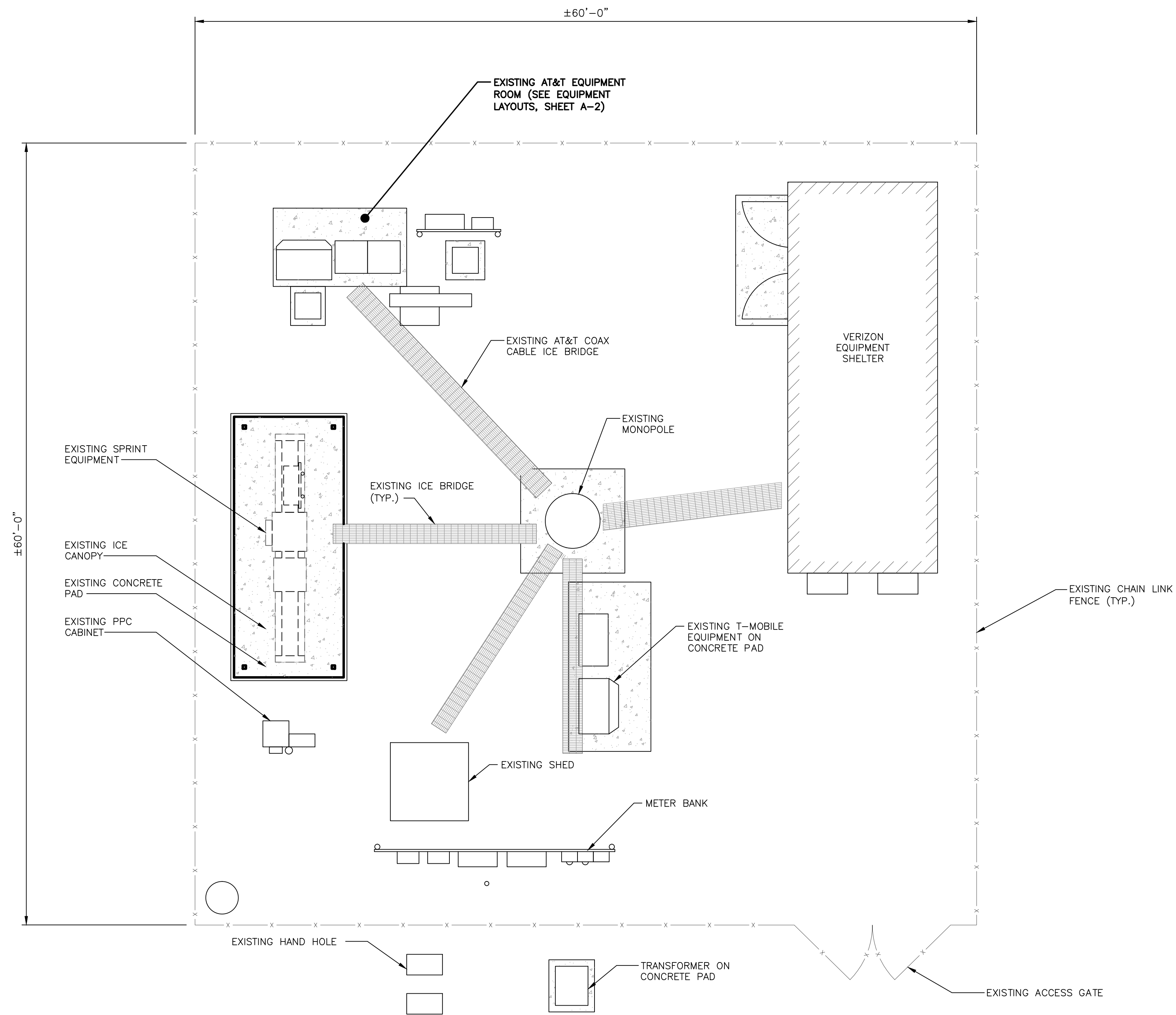
SITE NUMBER: CT5416
SITE NAME: BEACON FALLS NE
 10 TERESA ROAD
 BEACON FALLS, CT 06403
 NEW HAVEN COUNTY



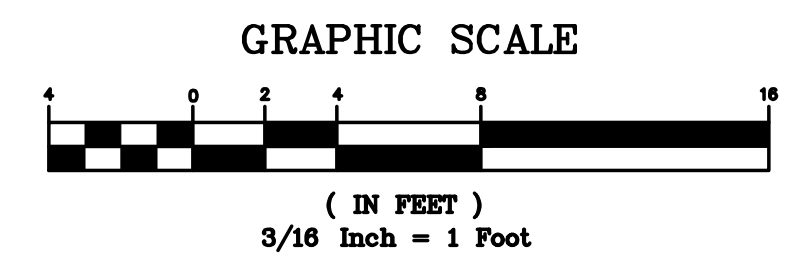
| 1 | 05/19/15 | REVISED PER CLIENT COMMENTS | GR | NDB | NDB |
|-----------------|----------|-----------------------------|-----------------|--------------|-------|
| 0 | 04/27/15 | ISSUED AS FINAL | GR | NDB | NDB |
| NO. | DATE | REVISIONS | BY | CHK | APP'D |
| SCALE: AS SHOWN | | | DESIGNED BY: KD | DRAWN BY: GR | |



| | | |
|--|------------------------|----------|
| AT&T | | |
| DRAWING TITLE: GROUNDING NOTES & GENERAL NOTES | | |
| JOB NUMBER 14263-EMP | DRAWING NUMBER GN-1 | REV 1 |



COMPOUND LAYOUT
SCALE: 3/16" = 1'-0"



COM-EX
Consultants
4 SECOND AVENUE
SUITE 204
DENVER, NJ 07834
PHONE: 862.209.4300
FAX: 862.209.4301

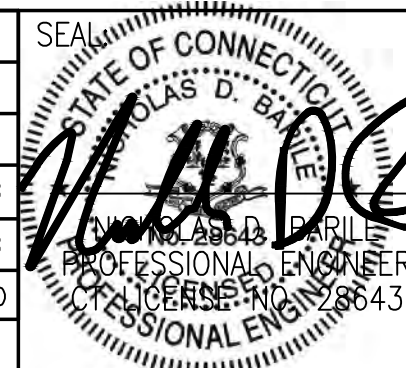
EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5416
SITE NAME: BEACON FALLS NE
10 TERESA ROAD
BEACON FALLS, CT 06403
NEW HAVEN COUNTY

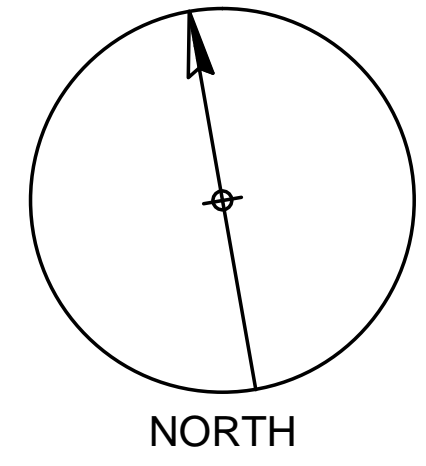
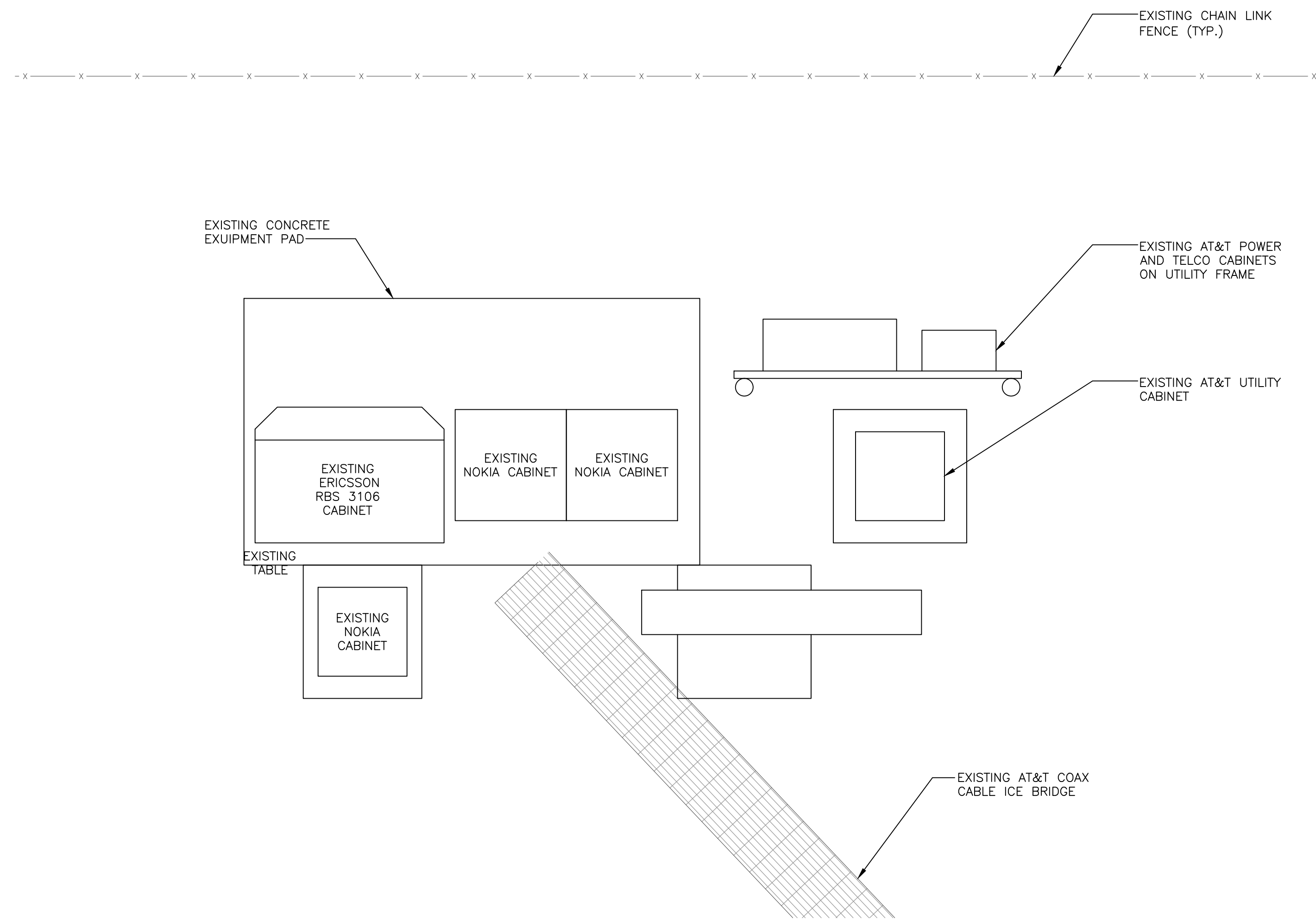
at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|-----|----------|-----------------------------|----|-----|-------|
| 1 | 05/19/15 | REVISED PER CLIENT COMMENTS | GR | NDB | NDB |
| 0 | 04/27/15 | ISSUED AS FINAL | GR | NDB | NDB |

SCALE: AS SHOWN DESIGNED BY: KD DRAWN BY: GR



| AT&T | | |
|----------------|----------------|-----|
| DRAWING TITLE: | | |
| JOB NUMBER | DRAWING NUMBER | REV |
| 14263-EMP | A-1 | 1 |



EXISTING EQUIPMENT LAYOUT

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



(IN FEET)
1/2 Inch = 1 Foot

NO GROUND EQUIPMENT MODIFICATIONS ARE BEING MADE AS PART OF THIS SCOPE. EXISTING GROUND EQUIPMENT CONFIGURATION TO REMAIN.

COM-EX
Consultants
4 SECOND AVENUE
SUITE 204
DENVER, NJ 07834
PHONE: 862.209.4300
FAX: 862.209.4301

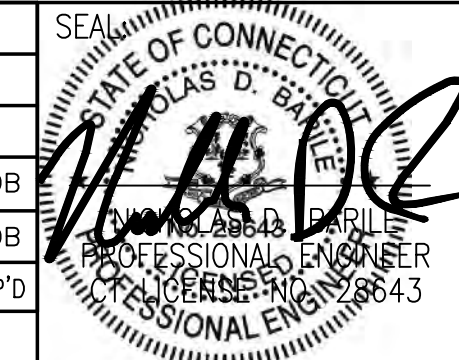
EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5416
SITE NAME: BEACON FALLS NE
10 TERESA ROAD
BEACON FALLS, CT 06403
NEW HAVEN COUNTY

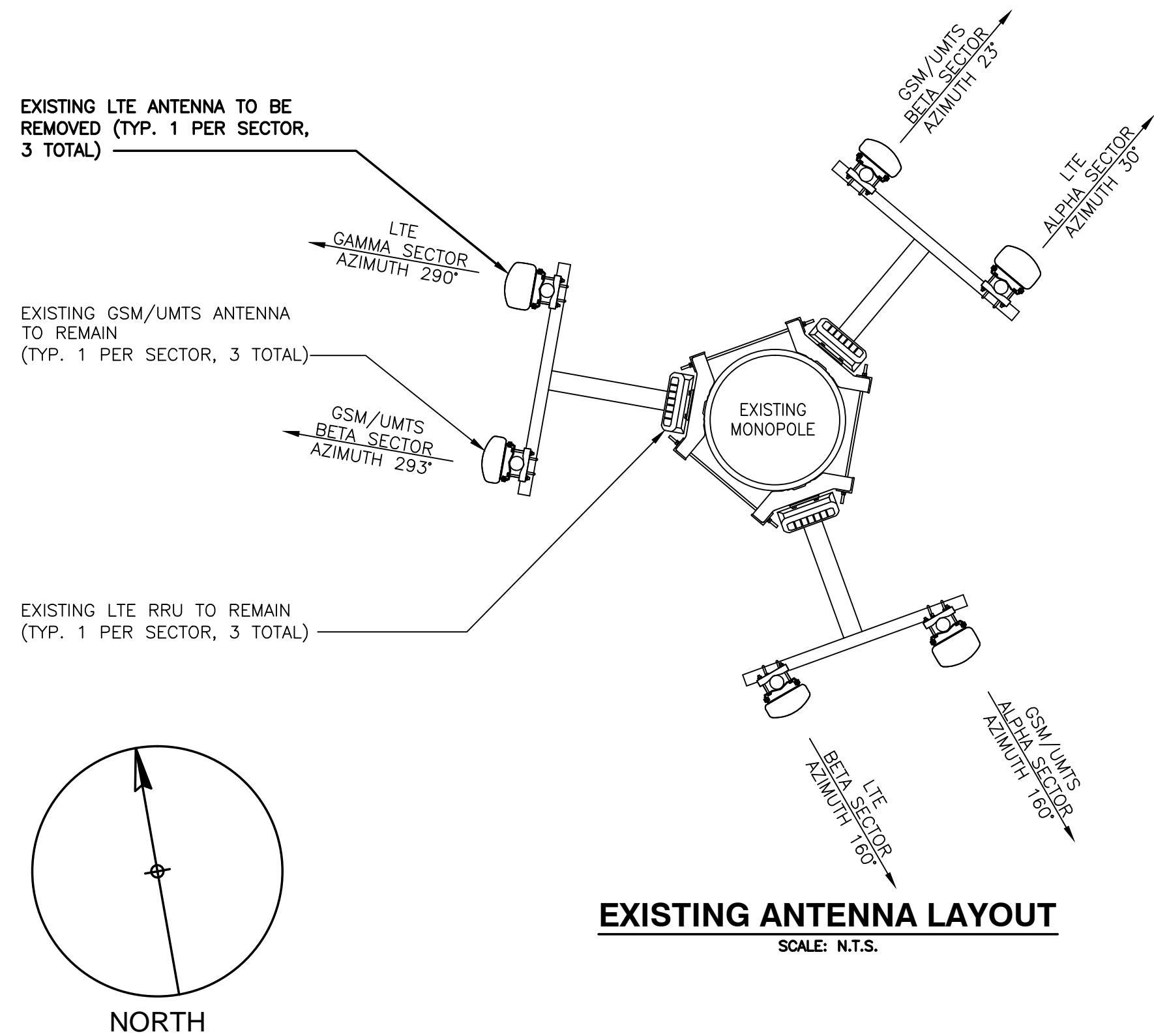
 **at&t**
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|-----|----------|-----------------------------|----|-----|-------|
| 1 | 05/19/15 | REVISED PER CLIENT COMMENTS | GR | NDB | NDB |
| 0 | 04/27/15 | ISSUED AS FINAL | GR | NDB | NDB |

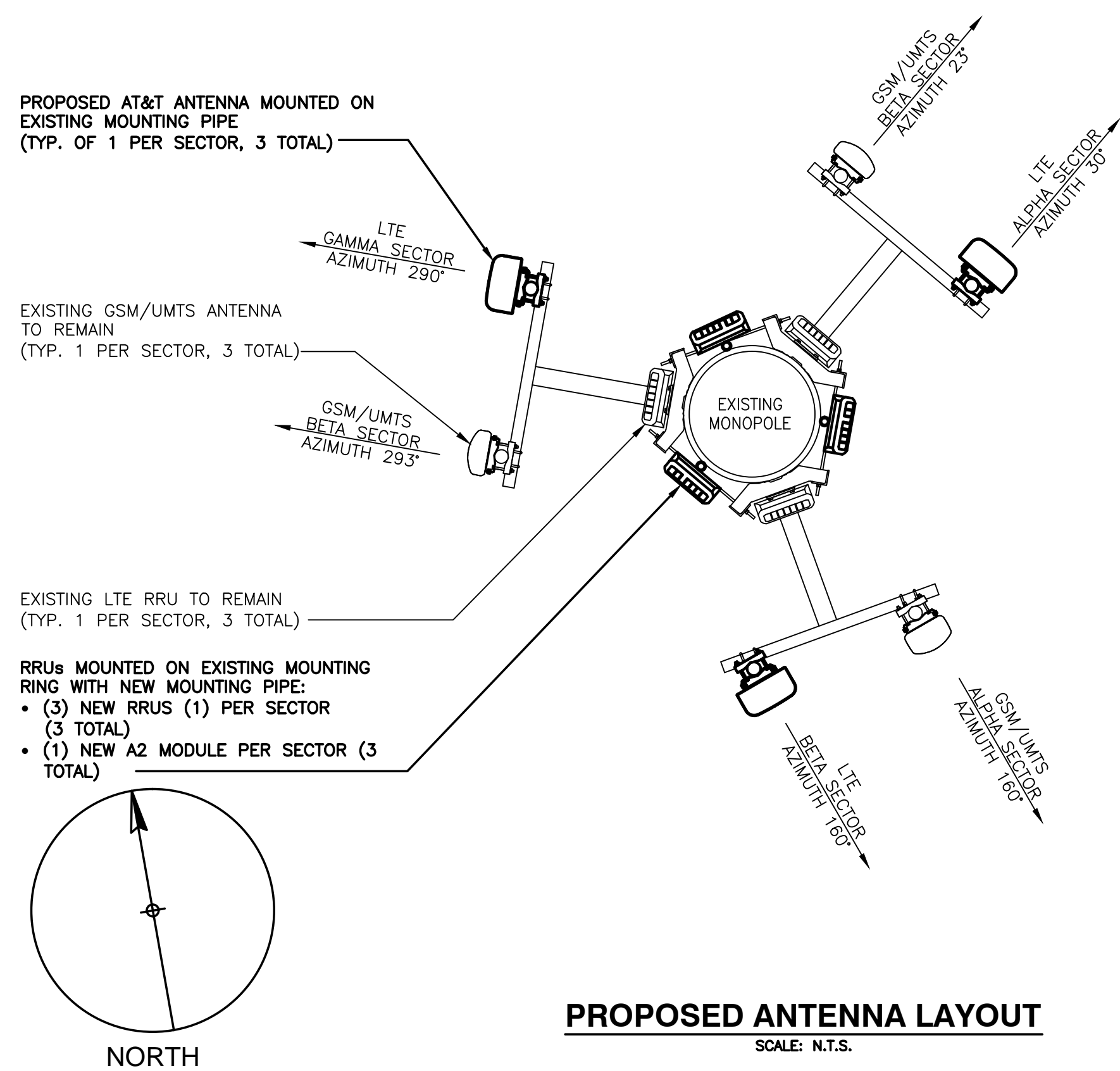
SCALE: AS SHOWN DESIGNED BY: KD DRAWN BY: GR



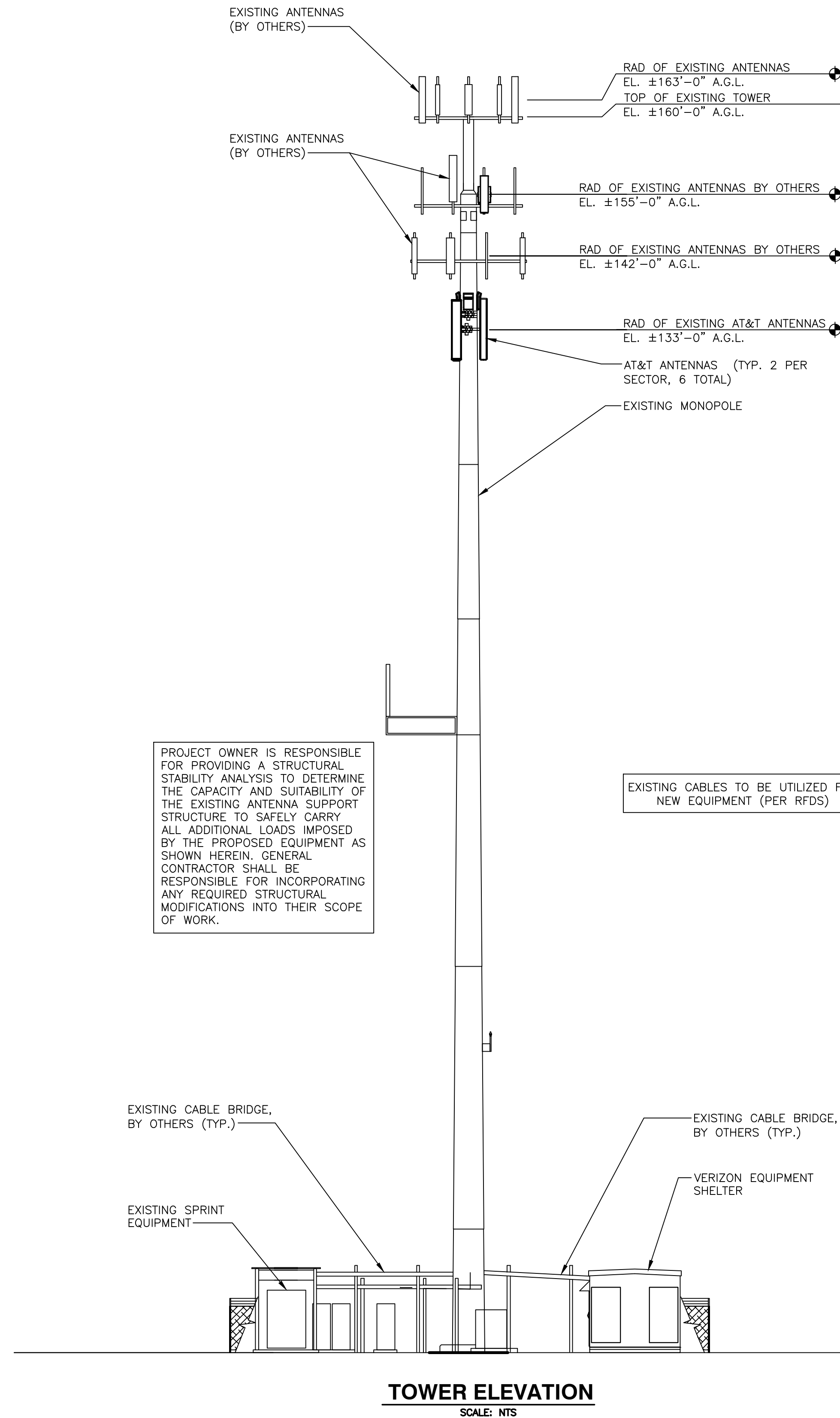
| | | |
|---|-----------------------|----------|
| AT&T | | |
| DRAWING TITLE: EQUIPMENT LAYOUT | | |
| JOB NUMBER 14263-EMP | DRAWING NUMBER A-2 | REV 1 |



EXISTING ANTENNA LAYOUT
SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT
SCALE: N.T.S.



TOWER ELEVATION
SCALE: NTS

COM-EX
Consultants
4 SECOND AVENUE SUITE 204
DENVER, CO 80202
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5416
SITE NAME: BEACON FALLS NE
10 TERESA ROAD
BEACON FALLS, CT 06403
NEW HAVEN COUNTY

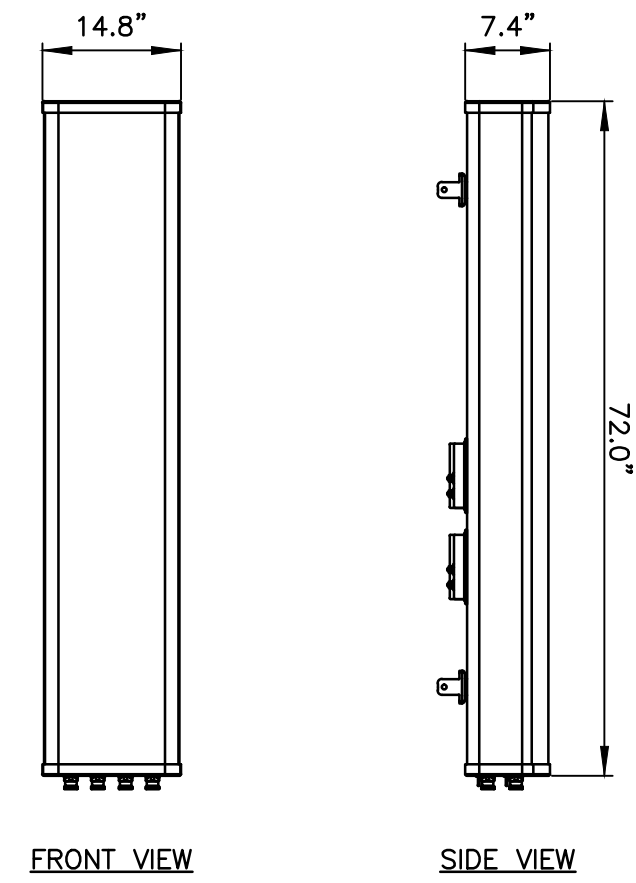
at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|-----|----------|-----------------------------|----|-----|-------|
| 1 | 05/19/15 | REVISED PER CLIENT COMMENTS | GR | NDB | NDB |
| 0 | 04/27/15 | ISSUED AS FINAL | GR | NDB | NDB |

SCALE: AS SHOWN DESIGNED BY: KD DRAWN BY: GR

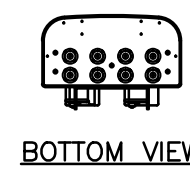
SEAL
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
NO. 10443
GREGORY R. PARLLE
1000 WASHINGTON STREET
MIDDLETOWN, CT 06457

AT&T
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATION
JOB NUMBER: 14263-EMP
DRAWING NUMBER: A-3
REV: 1



FRONT VIEW

SIDE VIEW

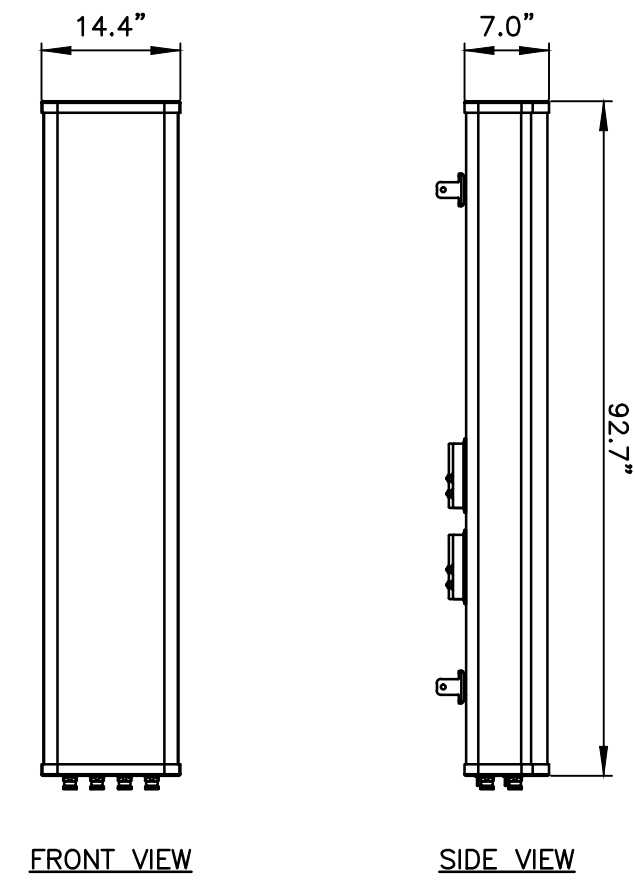


BOTTOM VIEW

| | |
|--------------|-----------------|
| MANUFACTURER | CCI |
| MODEL | OPA-65R-LCUU-H6 |
| WEIGHT | 73.0 LBS |

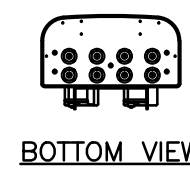
LTE ANTENNA DETAIL

SCALE: N.T.S.



FRONT VIEW

SIDE VIEW

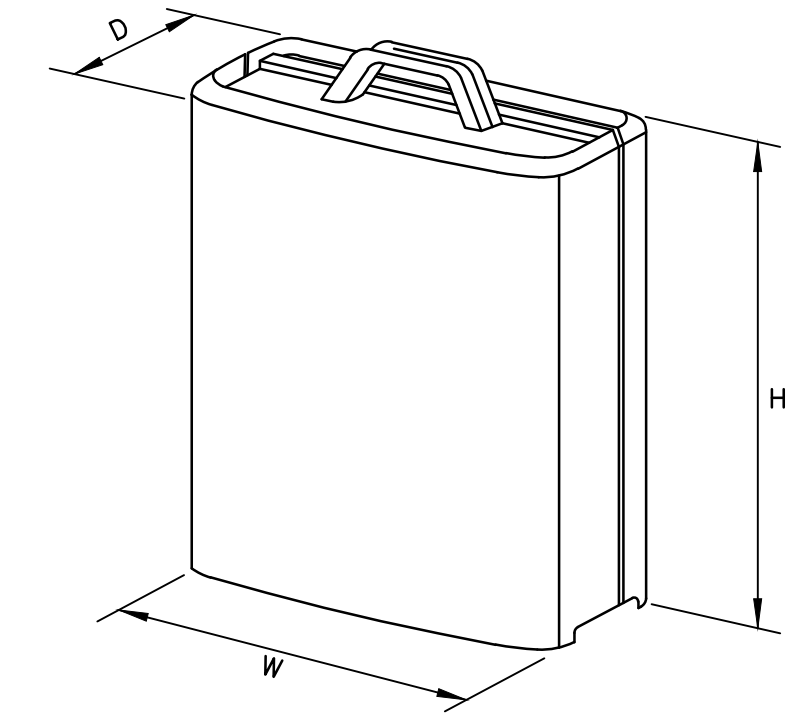


BOTTOM VIEW

| | |
|--------------|-----------------|
| MANUFACTURER | CCI |
| MODEL | OPA-65R-LCUU-H8 |
| WEIGHT | 88.0 LBS |

LTE ANTENNA DETAIL

SCALE: N.T.S.



| MODEL | L x W x H | WEIGHT |
|-----------|-------------------------|----------|
| *RRUS-11 | 19.69" x 16.97" x 7.17" | 50.7 LBS |
| RRUS-12 | 20.4" x 18.5" x 7.5" | 58 LBS |
| A2 MODULE | 16.4" x 15.2" x 3.4" | 22 LBS |

*DENOTES EXISTING.

RRU DETAIL

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

| SECTOR | POSITION | MAKE | MODEL | SIZE (INCHES) |
|--------|----------|----------|-----------------------|----------------|
| ALPHA | A1 | KATHREIN | 800-10121 | 54.5"x10.3"x9" |
| | A2 | - | - | - |
| | A3 | KMW | AM-X-CD-16-65-00T-RET | 72"x11.8"x5.9" |
| | A4 | - | - | - |
| BETA | B1 | KATHREIN | 800-10121 | 54.5"x10.3"x9" |
| | B2 | - | - | - |
| | B3 | KMW | AM-X-CD-16-65-00T-RET | 72"x11.8"x5.9" |
| | B4 | - | - | - |
| GAMMA | G1 | KATHREIN | 800-10121 | 54.5"x10.3"x9" |
| | G2 | - | - | - |
| | G3 | ANDREW | SBNH-1D6565C | 72"x11.8"x5.9" |
| | G4 | - | - | - |

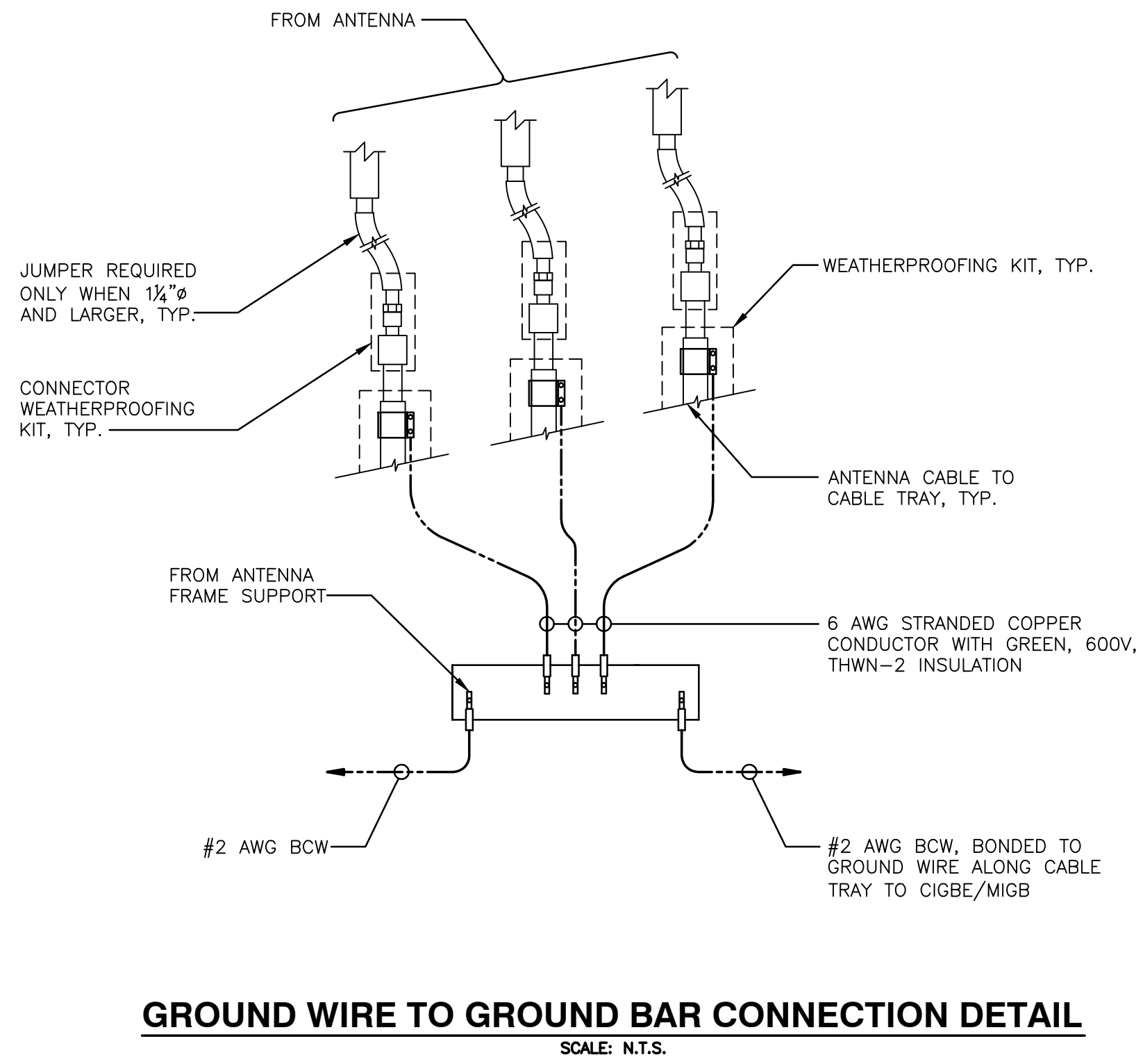
FINAL ANTENNA SCHEDULE

| SECTOR | POSITION | MAKE | MODEL | SIZE (INCHES) |
|--------|----------|----------|-----------------|----------------|
| ALPHA | A1 | KATHREIN | 800-10121 | 54.5"x10.3"x9" |
| | A2 | - | - | - |
| | A3 | - | - | - |
| | A4 | CCI | OPA-65R-LCUU-H6 | 72"x14.8"x7.4" |
| BETA | B1 | KATHREIN | 7770.00.850.06 | - |
| | B2 | - | - | - |
| | B3 | - | - | - |
| | B4 | CCI | OPA-65R-LCUU-H6 | 72"x14.8"x7.4" |
| GAMMA | G1 | KATHREIN | 7770.00.850.06 | - |
| | G2 | - | - | - |
| | G3 | - | - | - |
| | G4 | CCI | OPA-65R-LCUU-H8 | 92.7"x14.4"x7" |

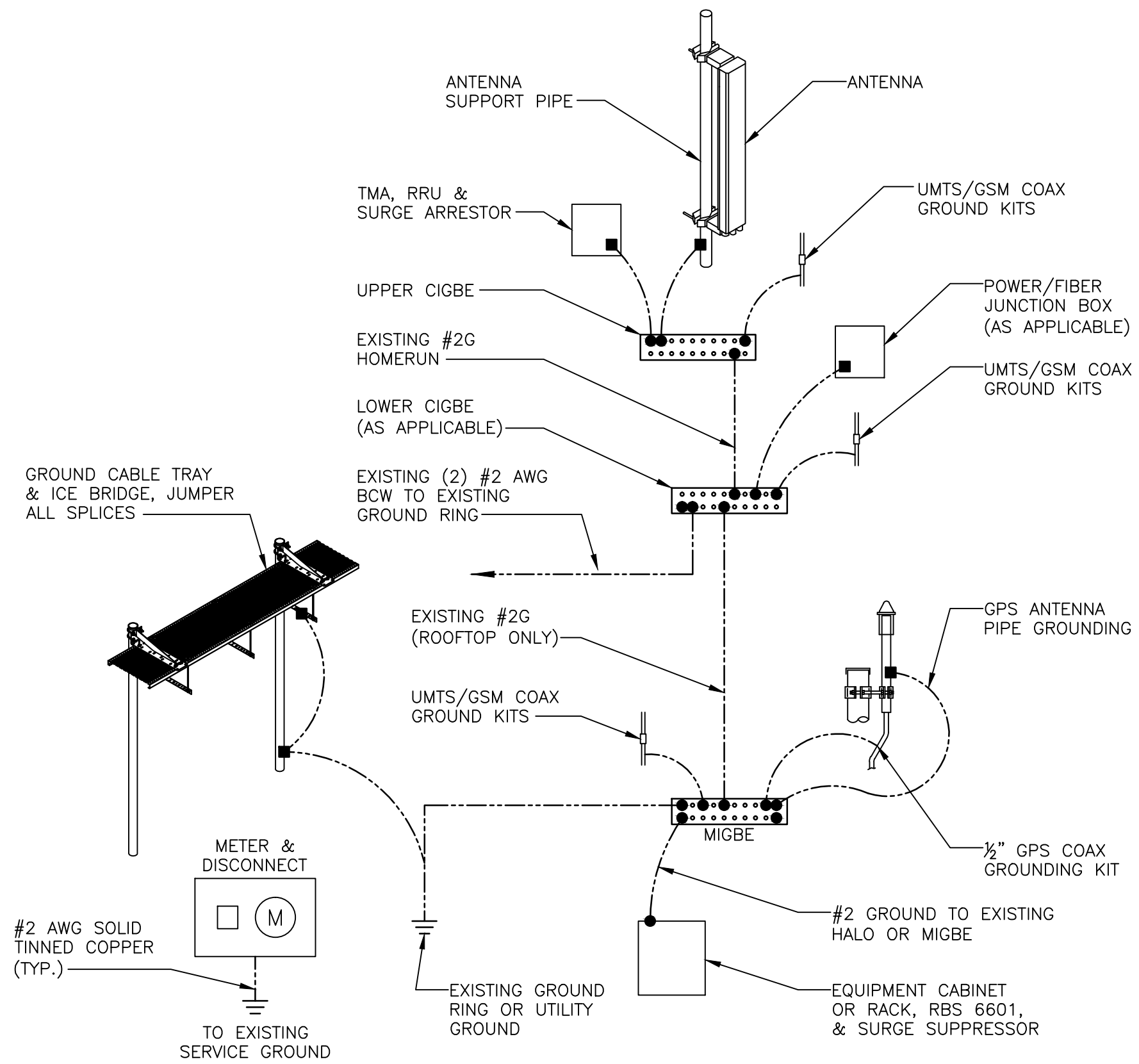
FINAL RRH SCHEDULE

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

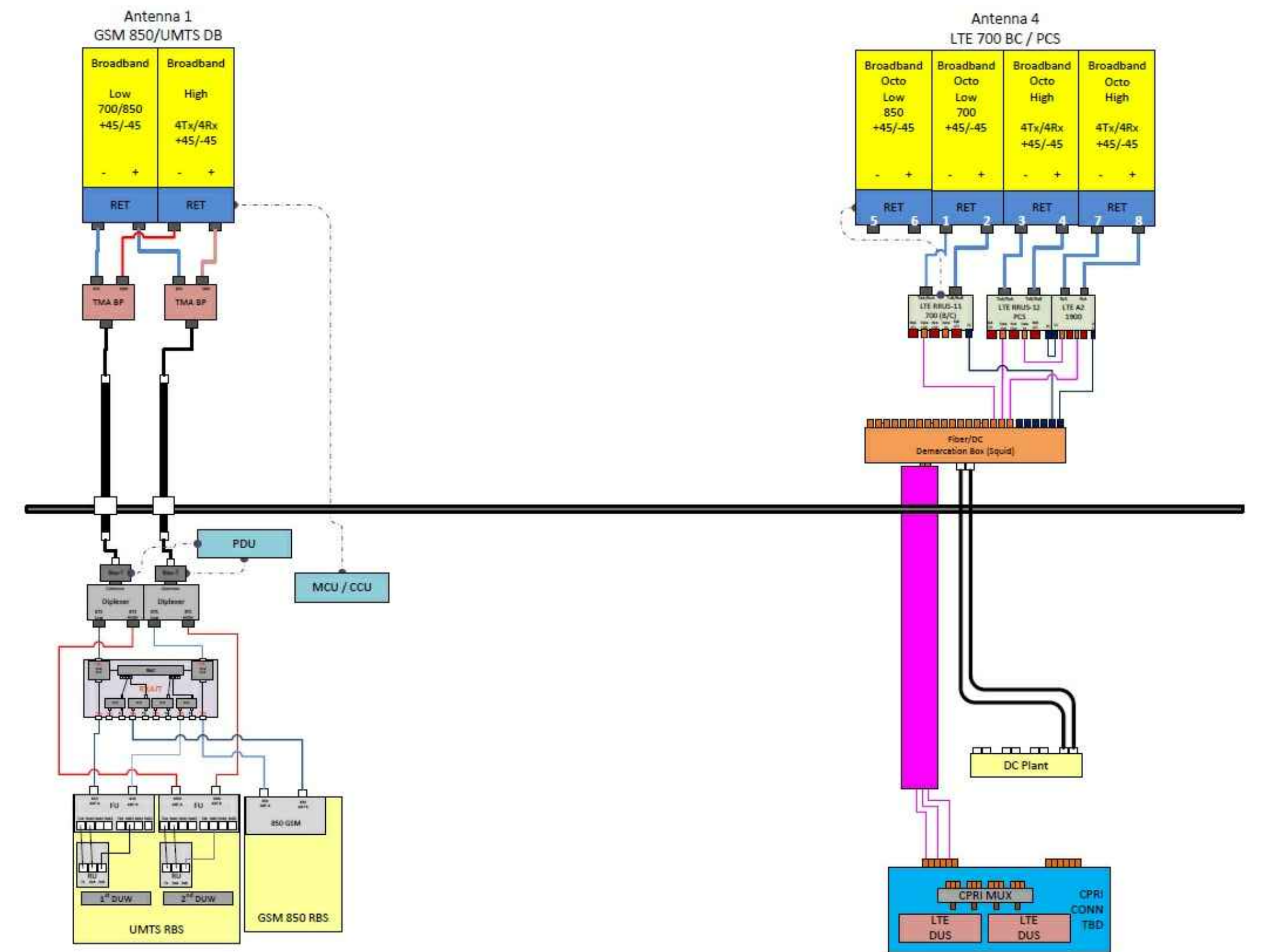
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING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



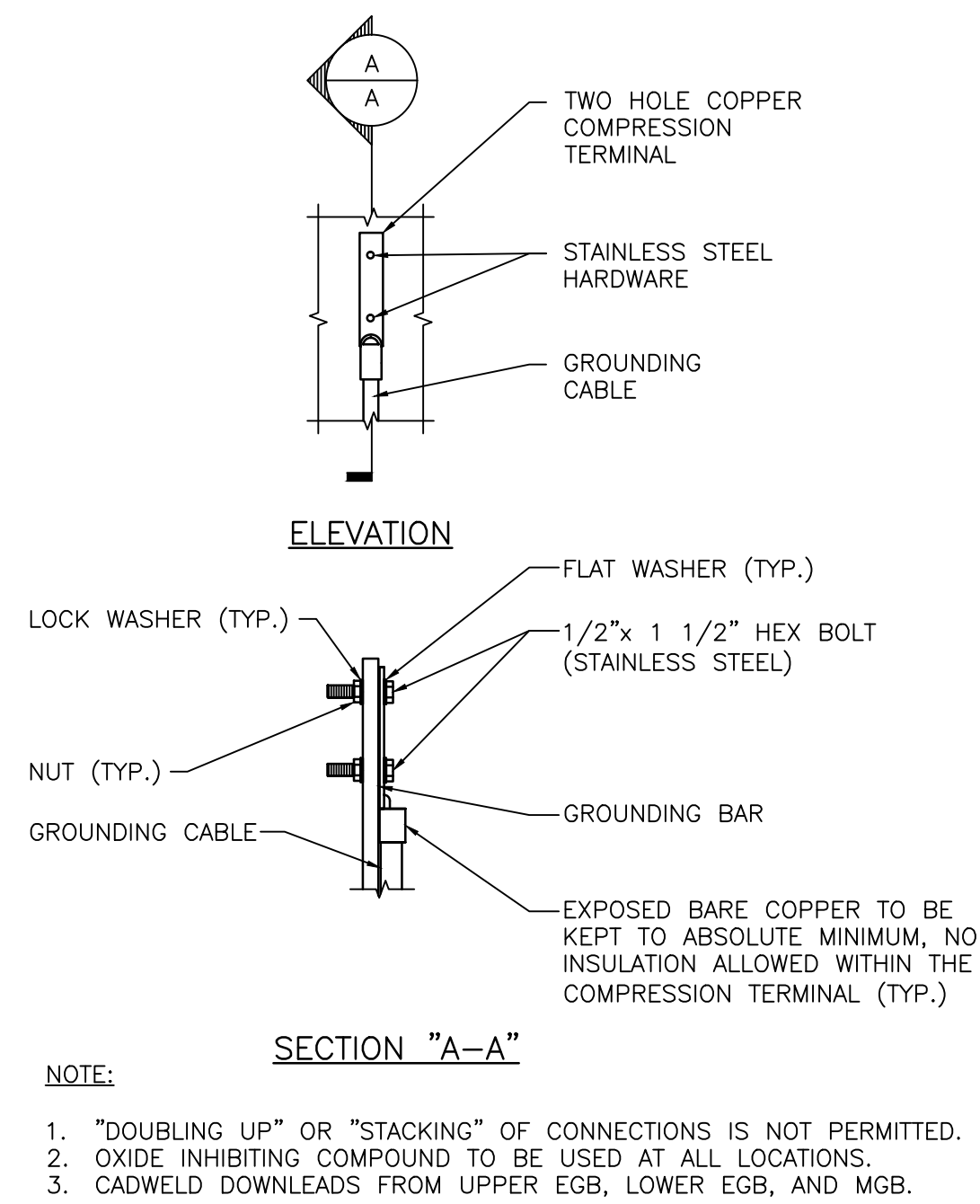
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



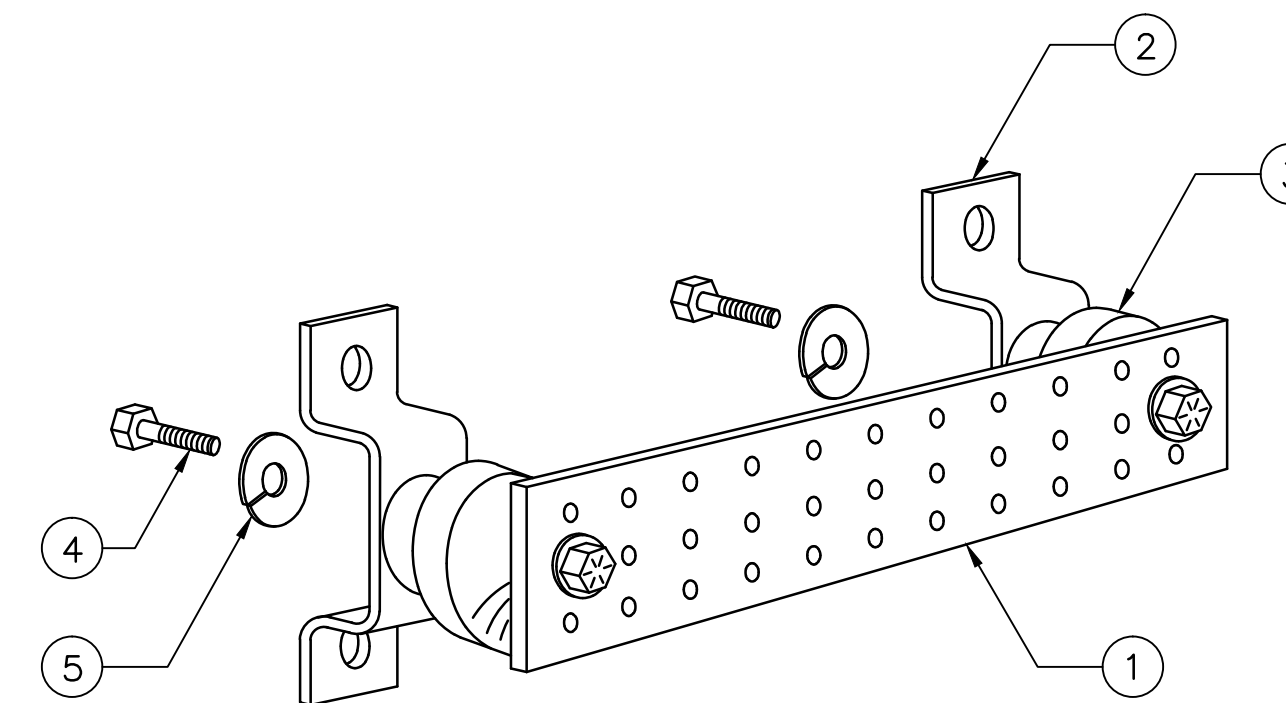
GROUNDING RISER DIAGRAM
SCALE: N.T.S.



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 |

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

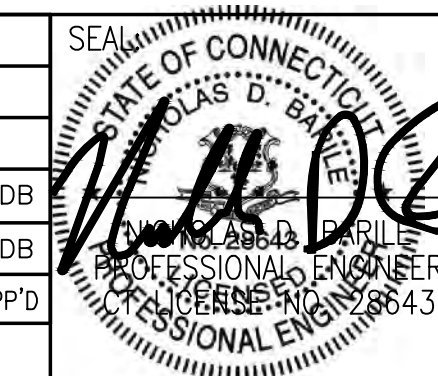
SECTION "A" - SURGE ABSORBERS

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

GROUND BAR DETAIL
SCALE: N.T.S.

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|-----|----------|-----------------------------|----|-----|-------|
| 1 | 05/19/15 | REVISED PER CLIENT COMMENTS | GR | NDB | NDB |
| 0 | 04/27/15 | ISSUED AS FINAL | GR | NDB | NDB |

SCALE: AS SHOWN DESIGNED BY: KD DRAWN BY: GR





Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 160 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02049-S

Customer Site Name: Beacon Falls

Carrier Name: AT&T

Carrier Site Number: CT5416

Carrier Site Name: N/A

Site Location: 60 Rice Lane

Beacon Falls, Connecticut

New Haven County

Latitude: 41.455689

Longitude: -73.039866

Analysis Result:

Max Structural Usage: 100.0% [Pass]

Max Foundation Usage: 79% [Pass]

Report Prepared By : Jarryd Tibbetts





Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

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Latitude: 41.455689

Longitude: -73.039866

Analysis Result:

Max Structural Usage: 100.0% [Pass]

Max Foundation Usage: 79% [Pass]

Report Prepared By : Jarryd Tibbetts

Introduction

The purpose of this report is to summarize the analysis results on the 160 ft Nudd Corporation Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

| | |
|------------------------------|---|
| Tower Drawings | Tower Drawing prepared by Fred A. Nudd, Project #7342 dated 1/14/00 Steel Mapping prepared by FDH, Job #09-04127T T1 dated 5/5/09 |
| Foundation Drawing | Foundation Drawing prepared by Fred A. Nudd, Project #7342 dated 1/14/00 |
| Geotechnical Report | Geotechnical Report prepared by SEA Consultants, Ref #99339.02-A dated 8/2/99 |
| Modification Drawings | Modification Drawing prepared by O2Wireless Solutions, Job #2230-022 dated 5/23/02 Modification Drawing prepared by FDH, Project #09-04232E S2 dated 1/03/09 Modification Drawing prepared by FDH, Project #12-04772E S3 dated 10/15/13 |

Analysis Criteria

The analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-F. In accordance with this standard, the structure was analyzed using **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

| | |
|---|---|
| Basic Wind Speed Used in the Analysis: | 85.0 mph (fastest mile) |
| Basic Wind Speed with Ice: | 74 mph (fastest mile) with 1/2" radial ice concurrent |
| Operational Wind Speed: | 50 mph + 0" Radial ice |
| Standard/Codes: | ANSI/TIA/EIA 222-F / 2005 Connecticut State Building Code |

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

| Items | Elevation (ft) | Qty. | Antenna Descriptions | Mount Type & Qty. | Transmission Lines | Owner |
|-------|----------------|------|---|----------------------|--|----------|
| 1 | 165.0 | 1 | Andrew - DB222 - Whip | Low Profile Platform | *(1) 7/8" | BFFD |
| 2 | 162.2 | 6 | Decibel - DB846F65ZAXY - Panel | | (18) 1 5/8" | Verizon |
| 3 | | 6 | Antel - LPA-185063/8CF - Panel | | | |
| 4 | | 3 | Antel - BXA-70063/4CF - Panel | | | |
| 5 | 152.0 | 3 | RFS - APXVSP18-C-A20 - Panel | Low Profile Platform | (3) 1-1/4" | Sprint |
| 6 | | 3 | ALU - 1900MHz - RRU | | | |
| 7 | | 3 | ALU - 800MHz - Filter | | | |
| 8 | | 3 | ALU - 800 MHz - RRU | | | |
| 9 | | 4 | RFS - ACU-A20-N - RET | | | |
| 10 | 150.0 | 3 | RFS - APXVTM14-C-120 - Panel | | (1) 1-1/4" | |
| 11 | | 3 | Alcatel Lucent - TD-RRH8x20-25 - RRU | | | |
| 12 | 143.8 | 6 | Powerwave - LGP13907 - TMA/TTA | Low Profile Platform | (12) 1 5/8" *(1) 1 5/8" | T-Mobile |
| 13 | 142.9 | 3 | Ericsson - AIR 21 B2A B4P - Panel | | | |
| 14 | | 3 | Ericsson - AIR 21 B4A B2P - Panel | | | |
| 15 | | 3 | Ericsson - KRY 112 144/1 - TMA/TTA | | | |
| 16 | 135.0 | 6 | Ericsson - RRUS 11 - RRU | Collar Mount | (6) 1 5/8" (6) 1 1/4" (2) DC (1) 1/2" Fiber inside 3" Conduit | AT&T |
| 18 | | 1 | Raycap - DC6-48-60-18-8F - Surge Suppressor | | | |
| 20 | 132.5 | 3 | Kathrein - 800 10121 - Panel | (3) T-Arms | | |
| 21 | | 2 | KMW - AM-X-CD-16-65-00T - Panel | | | |
| 22 | | 1 | Andrew - SBNH-1D6565C - Panel | | | |
| 23 | | 6 | Powerwave - LGP21901 - TMA/TTA | | | |
| 24 | | 6 | Powerwave - LGP21401 - TMA/TTA | | | |
| 28 | 115.0 | 1 | DB222 - Whip | (1) 3 ft Standoff | *(1) 7/8" | BFFD |
| 29 | 40.0 | 1 | GPS | Standoff | (1) 1/2" | Sprint |

*Considered outside of the pole shaft

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

| Items | Elevation (ft) | Qty. | Antenna Descriptions | Mount Type & Qty. | Transmission Lines | Owner |
|-------|----------------|------|---------------------------------|---|--|-------|
| 19 | 133.0 | 3 | CCI - OPA-65R-LCUU-H6 - Panel | Low Profile Platform (Commscope 3607ED-12) | (6) 1 5/8" (6) 1 1/4" (1) 1/2" Fiber (2) DC inside 3" Conduit | AT&T |
| 20 | | 3 | Kathrein - 800 10121 - Panel | | | |
| 24 | | 6 | Powerwave - 21401 - TMA/TTA | | | |
| 25 | | 3 | Ericsson - RRUS 11 - RRU | | | |
| 26 | | 3 | Ericsson - RRUS 12 - RRU | | | |
| 27 | | 3 | Ericsson - RRUS A2 Module - RRU | | | |

All proposed transmission lines are considered running inside of the pole shafts.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

| | Pole shafts | Anchor Bolts | Base Plate | Flange | Plates |
|-------------|--------------|--------------|--------------|--------------|---------------|
| Max. Usage: | 91.7% | 67.3% | 68.5% | 90.5% | 100.0% |
| Pass/Fail | Pass | Pass | Pass | Pass | Pass |

Foundations

| | Moment (Kip-Ft) | Shear (Kips) | Axial (Kips) |
|---------------------------|-----------------|--------------|--------------|
| Original Design Reactions | 2373.8 | 25.4 | N/A |
| Analysis Reactions | 3843.8 | 35.6 | 47.1 |

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-F for the installed antennas. Maximum twist/sway at the elevation of the proposed equipment is 1.867 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation was found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-F Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed or/and ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Stress 91.7% at 20.0ft

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

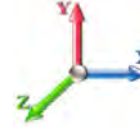
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69

9/1/2015
 Page: 1



Dead Load Factor: 1.00
Wind Load Factor: 1.00

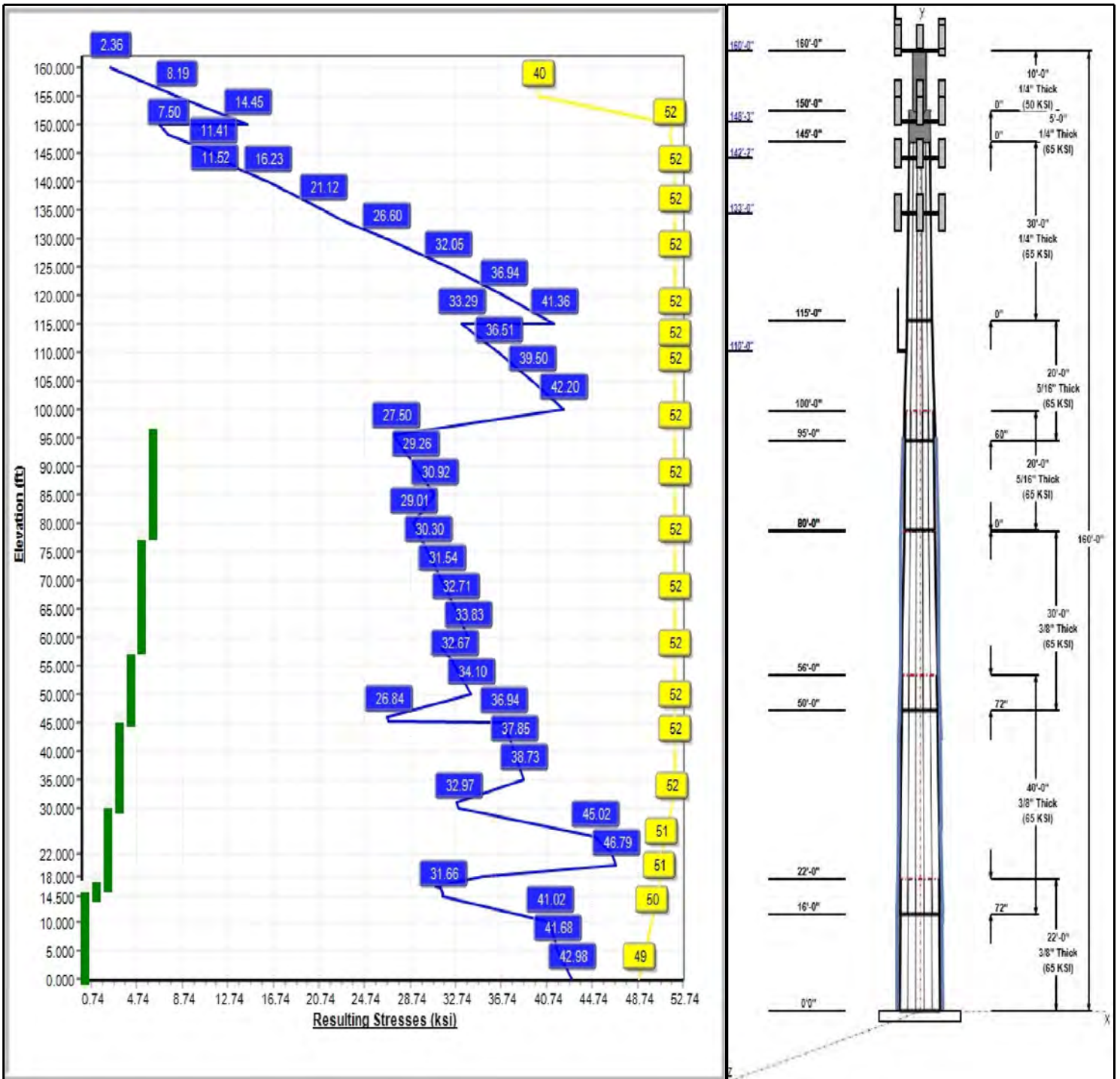
Load Case : 85 mph Wind with 0 in Ice



Iterations: 24

- 51 Allowable Stress
- 47 Resulting Stress

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Structure: CT02049-S-SBA

Type: Custom
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 12 Sided
Taper: 0.19400

9/1/2015

Page: 2



Shaft Properties

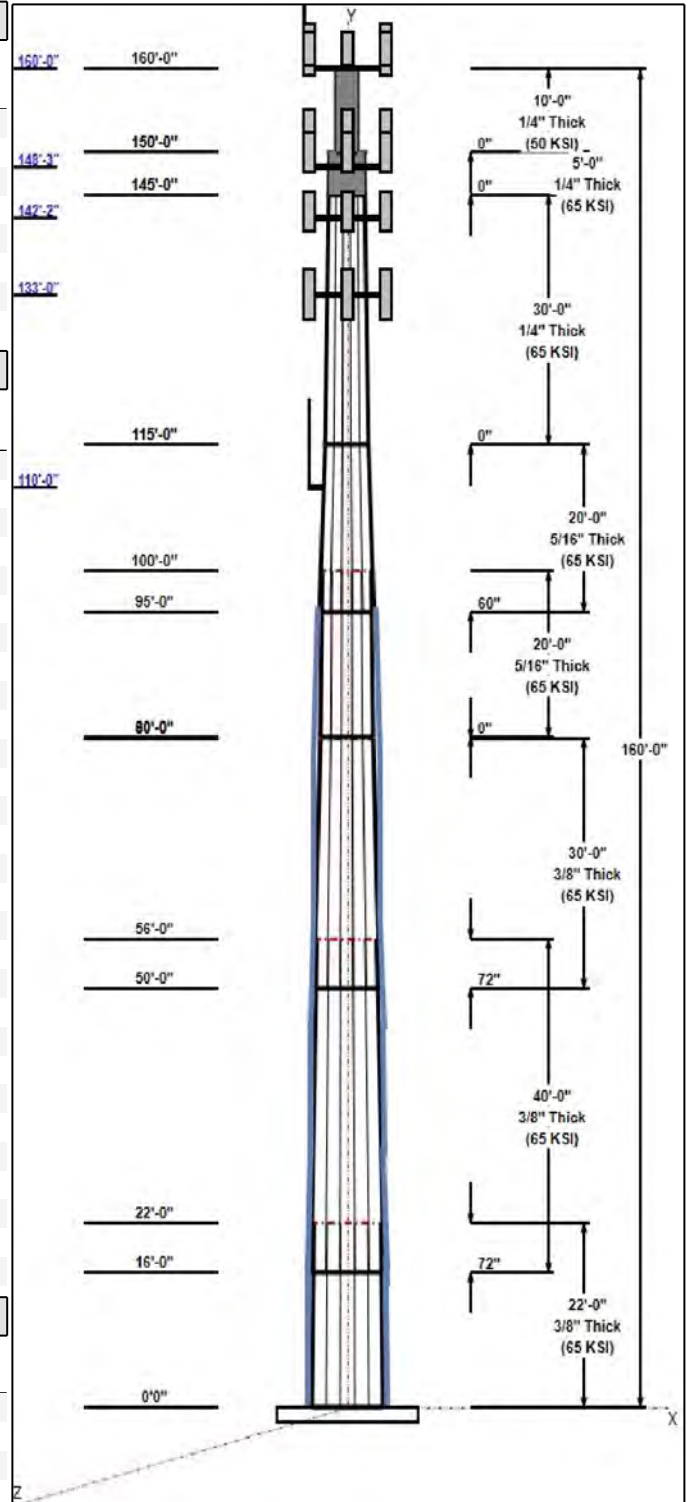
| Seq | Length (ft) | Top (in) | Bottom (in) | Thick (in) | Joint Type | Taper | Grade (ksi) |
|-----|-------------|----------|-------------|------------|------------|---------|-------------|
| 1 | 22.00 | 46.11 | 50.38 | 0.375 | | 0.19400 | 65 |
| 2 | 40.00 | 40.26 | 48.02 | 0.375 | Slip | 0.19400 | 65 |
| 3 | 30.00 | 36.35 | 42.17 | 0.375 | Slip | 0.19400 | 65 |
| 4 | 20.00 | 32.48 | 36.35 | 0.313 | Butt | 0.19400 | 65 |
| 5 | 20.00 | 30.19 | 34.07 | 0.313 | Slip | 0.19400 | 65 |
| 6 | 30.00 | 24.38 | 30.19 | 0.250 | Butt | 0.19400 | 65 |
| 7 | 5.00 | 24.38 | 24.38 | 0.250 | Butt | 0.19400 | 65 |
| 8 | 10.00 | 16.00 | 16.00 | 0.250 | Butt | 0.00000 | 50 |

Discrete Appurtenances

| Attach Elev (ft) | Force Elev (ft) | Qty | Description | Carrier |
|------------------|-----------------|-----|----------------------|----------|
| 160.00 | 160.00 | 1 | 6' Lightning rod | |
| 160.00 | 162.20 | 3 | BXA-70063/4CF | Verizon |
| 160.00 | 165.00 | 1 | DB222 | |
| 160.00 | 162.20 | 6 | DB846F65ZAXY | Verizon |
| 160.00 | 160.00 | 1 | Low Profile Platform | Verizon |
| 160.00 | 162.20 | 6 | LPA-185063/8CF | Verizon |
| 148.30 | 152.00 | 3 | 1900MHz RRH | Sprint |
| 148.30 | 152.00 | 3 | 800 MHz RRH | Sprint |
| 148.30 | 152.00 | 4 | ACU-A20-N | Sprint |
| 148.30 | 152.00 | 3 | ALU 800MHz External | Sprint |
| 148.30 | 152.00 | 3 | APXVSP18-C-A20 | Sprint |
| 148.30 | 150.00 | 3 | APXVTM14-C-120 | Sprint |
| 148.30 | 148.30 | 1 | Low Profile Platform | Sprint |
| 148.30 | 150.00 | 3 | TD-RRH8x20-25 | Sprint |
| 142.20 | 142.90 | 3 | AIR 21 B2A B4P | T-Mobile |
| 142.20 | 142.90 | 3 | AIR 21 B4A B2P | T-Mobile |
| 142.20 | 142.90 | 3 | KRY 112 144/1 | T-Mobile |
| 142.20 | 143.80 | 6 | LGP13907 | T-Mobile |
| 142.20 | 142.20 | 1 | Low Profile Platform | T-Mobile |
| 133.00 | 133.00 | 6 | 21401 | AT&T |
| 133.00 | 133.00 | 3 | 800 10121 | AT&T |
| 133.00 | 133.00 | 1 | Low Profile Platform | AT&T |
| 133.00 | 133.00 | 3 | OPA-65R-LCUU-H6 | AT&T |
| 133.00 | 133.00 | 3 | RRUS 11 | AT&T |
| 133.00 | 133.00 | 3 | RRUS 12 | AT&T |
| 133.00 | 133.00 | 3 | RRUS A2 Module | AT&T |
| 110.00 | 110.00 | 1 | 3 ft Standoff | BFFD |
| 110.00 | 115.29 | 1 | DB222 | BFFD |
| 40.00 | 40.00 | 1 | GPS | Sprint |

Linear Appurtenances

| Elev From (ft) | Elev To (ft) | Placement | Description | Carrier |
|----------------|--------------|-----------|---------------|----------|
| 0.00 | 160.00 | Inside | 1 5/8" Coax | Verizon |
| 0.00 | 160.00 | Outside | 7/8" Coax | |
| 0.00 | 148.30 | Inside | 1-1/4" Hybrid | Sprint |
| 0.00 | 148.30 | Inside | 1-1/4" Hybrid | Sprint |
| 0.00 | 142.20 | Inside | 1 5/8" Coax | T-Mobile |
| 0.00 | 142.20 | Outside | 1 5/8" Hybrid | T-Mobile |
| 0.00 | 133.00 | Inside | 1 1/4" Coax | AT&T |
| 0.00 | 133.00 | Inside | 1 5/8" Coax | AT&T |
| 0.00 | 133.00 | Inside | 1/2" Coax | AT&T |



Structure: CT02049-S-SBA

Type: Custom
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 12 Sided
Taper: 0.00000

9/1/2015

Page: 3



| | | | | |
|-------|--------|---------|-------------------------|--------|
| 0.00 | 133.00 | Inside | 7/8" DC Power | AT&T |
| 0.00 | 110.00 | Outside | 7/8" Coax | BFFD |
| 32.00 | 98.00 | Outside | 1.25" Reinforcing plate | |
| 0.00 | 40.00 | Inside | 1/2" Coax | Sprint |
| 0.00 | 32.00 | Outside | 1.25" Reinforcing plate | |

Anchor Bolts

| Qty | Specifications | Grade (ksi) | Arrangement |
|-----|-----------------|-------------|-------------|
| 18 | 2.00" F1554 105 | 105.0 | Radial |

Base Plate

| Thickness (in) | Specifications (in) | Grade (ksi) | Geometry |
|----------------|---------------------|-------------|----------|
| 1.5000 | 63.0 | 50.0 | Round |

Reactions

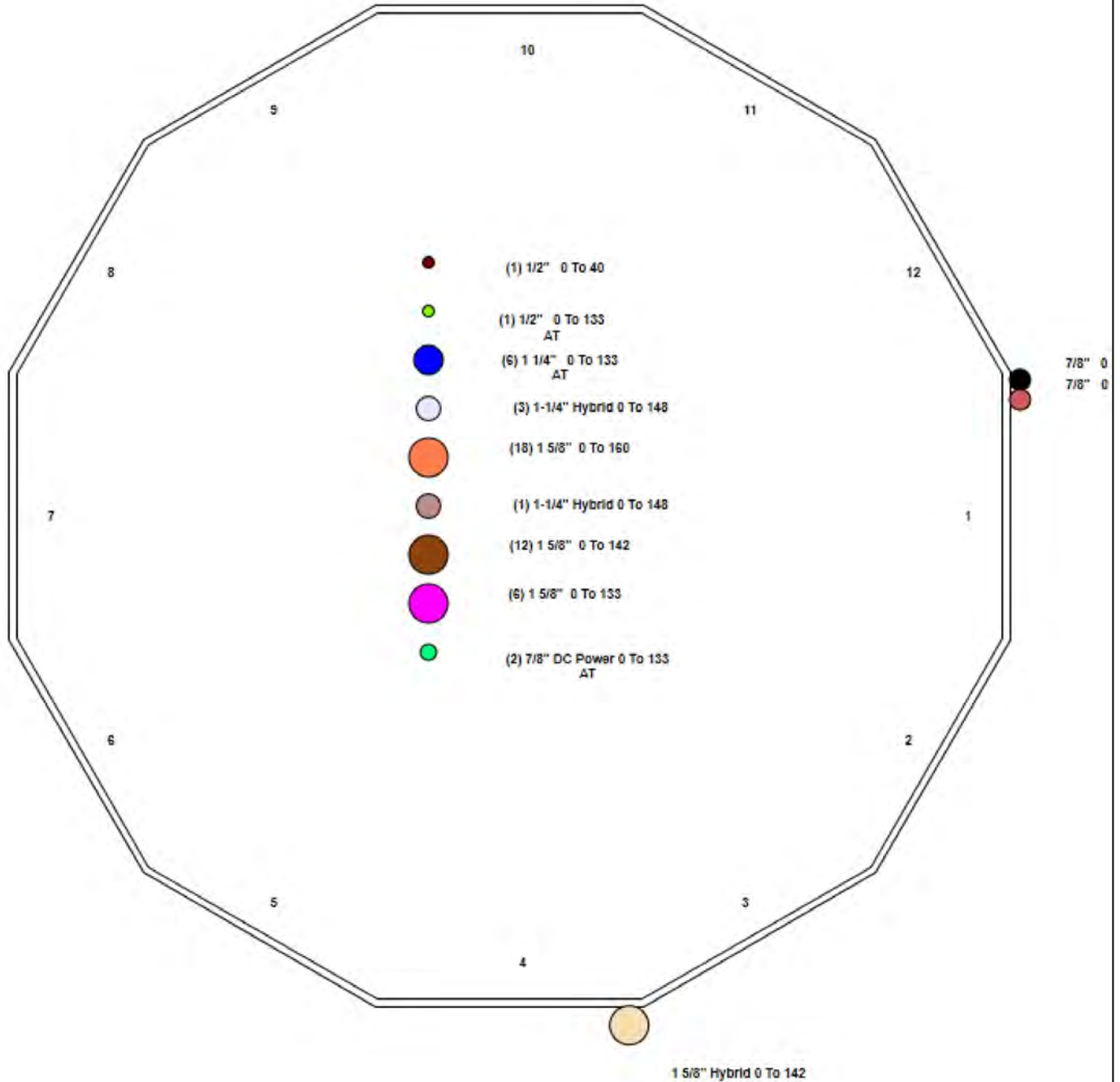
| Load Case | Moment | Shear | Axial |
|-------------------------|--------|-------|-------|
| 50 mph Wind with 0" Ice | 1331.5 | 12.3 | 40.1 |

Structure: CT02049-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Beacon Falls
Height: 160.00 (ft)

9/1/2015

Page: 4



Shaft Properties

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 5



| Sec. No. | Shape | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Overlap (in) | Weight (lb) |
|----------------------------|-------|-------------|------------|----------|------------|--------------|---------------|
| 1 | 12 | 22.000 | 0.3750 | 65 | | 0.00 | 4,327 |
| 2 | 12 | 40.000 | 0.3750 | 65 | Slip | 72.00 | 7,193 |
| 3 | 12 | 30.000 | 0.3750 | 65 | Slip | 72.00 | 4,794 |
| 4 | 12 | 20.000 | 0.3125 | 65 | Flange | 0.00 | 2,335 |
| 5 | 12 | 20.000 | 0.3125 | 65 | Slip | 60.00 | 2,179 |
| 6 | 12 | 30.000 | 0.2500 | 65 | Flange | 0.00 | 2,221 |
| 7 | R | 5.000 | 0.2500 | 65 | Flange | 0.00 | 316 |
| 8 | R | 10.000 | 0.2500 | 50 | Flange | 0.00 | 421 |
| Total Shaft Weight: | | | | | | | 23,786 |

Bottom

Top

| Sec. No. | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Taper |
|----------|----------|-----------|-------------|-----------|-----------|-----------|----------|-----------|-------------|-----------|-----------|-----------|----------|
| 1 | 50.38 | 0.00 | 60.38 | 19265.63 | 33.85 | 134.3 | 46.11 | 22.00 | 55.22 | 14741.2 | 30.80 | 122.9 | 0.194000 |
| 2 | 48.02 | 16.00 | 57.53 | 16670.65 | 32.16 | 128.0 | 40.26 | 56.00 | 48.16 | 9779.90 | 26.62 | 107.3 | 0.194000 |
| 3 | 42.17 | 50.00 | 50.47 | 11256.46 | 27.99 | 112.4 | 36.35 | 80.00 | 43.45 | 7178.88 | 23.83 | 96.94 | 0.194000 |
| 4 | 36.35 | 80.00 | 36.27 | 6013.63 | 29.02 | 116.3 | 32.48 | 100.0 | 32.36 | 4273.08 | 25.70 | 103.9 | 0.194000 |
| 5 | 34.07 | 95.00 | 33.97 | 4940.86 | 27.06 | 109.0 | 30.19 | 115.0 | 30.06 | 3425.51 | 23.74 | 96.60 | 0.194000 |
| 6 | 30.19 | 115.0 | 24.10 | 2757.64 | 30.21 | 120.7 | 24.38 | 145.0 | 19.42 | 1441.83 | 23.97 | 97.5 | 0.194000 |
| 7 | 24.38 | 145.0 | 18.95 | 1379.54 | 0 | 97.5 | 24.38 | 150.0 | 18.19 | 1219.74 | 0 | 97.5 | 0.194000 |
| 8 | 16.00 | 150.0 | 12.37 | 383.86 | 0 | 64 | 16.00 | 160.0 | 12.37 | 383.86 | 0 | 64 | 0.000000 |

Additional Steel

| Elev From (ft) | Elev To (ft) | Qty | Description | Fy (ksi) | Fu (ksi) | Offset (in) | Intermediate Connectors | | Termination Connectors | | | |
|----------------|--------------|-----|--------------------------|----------|----------|-------------|-------------------------|--------------|------------------------|--------------|-----------|-----------|
| | | | | | | | Description | Spacing (in) | Description | Spacing (in) | Lower Qty | Upper Qty |
| 0.00 | 16.25 | 3 | PLT C10x30(1.5" Hole) | 65 | 80 | 0.00 | AJM20&sleeve | 20.00 | AJM20&sleeve | 3.00 | | |
| 14.50 | 18.00 | 3 | PLT 6"X1-1/4" | 65 | 80 | 0.00 | AJM20&sleeve | 0.00 | AJM20&sleeve | 3.00 | | |
| 16.25 | 31.00 | 3 | PLT C10x15.3(1.5" | 65 | 80 | 0.00 | AJM20&sleeve | 20.00 | AJM20&sleeve | 3.00 | | |
| 30.00 | 46.00 | 3 | PLT 6"X1-1/4"(1.25" | 65 | 80 | 0.00 | AJM20&sleeve | 18.00 | AJM20&sleeve | 3.00 | 8 | 8 |
| 45.16 | 58.00 | 3 | PLT 7" x | 65 | 80 | 0.00 | AJM20&sleeve | 12.00 | AJM20&sleeve | 3.00 | 13 | |
| 58.00 | 78.00 | 3 | PLT 5.5"x1 1/4"(1.25"hol | 65 | 80 | 0.00 | AJM20&sleeve | 18.00 | AJM20&sleeve | 3.00 | | |
| 78.00 | 95.58 | 3 | PLT 5.5"x1 1/4"(1.25"hol | 65 | 80 | 0.00 | AJM20&sleeve | 18.00 | AJM20&sleeve | 3.00 | | 10 |

Loading Summary

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 6



Discrete Appurtenances

| No. | Elev (ft) | Description | Qty | No Ice | | | Ice | | | Hor. Ecc. (ft) | Vert Ecc (ft) |
|----------------|-----------|--------------------------------|-----------|-----------------|-----------|-------------|------------------|-----------|-------------|----------------|---------------|
| | | | | Weight (lb) | CaAa (sf) | CaAa Factor | Weight (lb) | CaAa (sf) | CaAa Factor | | |
| 1 | 160.0 | 6' Lightning rod | 1 | 6.50 | 0.38 | 1.00 | 11.80 | 0.980 | 1.00 | 0.00 | 0.00 |
| 2 | 160.0 | BXA-70063/4CF | 3 | 9.90 | 5.16 | 0.72 | 38.60 | 5.740 | 0.74 | 0.00 | 2.20 |
| 3 | 160.0 | DB222 | 1 | 16.00 | 2.25 | 1.00 | 35.90 | 3.990 | 1.00 | 0.00 | 5.00 |
| 4 | 160.0 | DB846F65ZAXY | 6 | 21.00 | 7.03 | 0.93 | 0.00 | 7.810 | 0.94 | 0.00 | 2.20 |
| 5 | 160.0 | Low Profile Platform | 1 | 1200.00 | 20.75 | 1.00 | 1800.00 | 27.00 | 1.00 | 0.00 | 0.00 |
| 6 | 160.0 | LPA-185063/8CF | 6 | 9.00 | 3.04 | 0.94 | 0.00 | 3.560 | 0.95 | 0.00 | 2.20 |
| 7 | 148.3 | 1900MHz RRH | 3 | 44.00 | 3.80 | 0.75 | 75.20 | 4.200 | 0.77 | 0.00 | 3.70 |
| 8 | 148.3 | 800 MHz RRH | 3 | 53.00 | 2.49 | 0.75 | 74.10 | 2.820 | 0.77 | 0.00 | 3.70 |
| 9 | 148.3 | ACU-A20-N | 4 | 1.00 | 0.14 | 0.75 | 2.30 | 0.220 | 0.77 | 0.00 | 3.70 |
| 10 | 148.3 | ALU 800MHz External Notch Filt | 3 | 8.80 | 0.78 | 0.69 | 13.80 | 0.960 | 0.71 | 0.00 | 3.70 |
| 11 | 148.3 | APXVSP18-C-A20 | 3 | 57.00 | 8.26 | 0.82 | 106.50 | 9.080 | 0.82 | 0.00 | 3.70 |
| 12 | 148.3 | APXVTM14-C-120 | 3 | 56.00 | 6.90 | 0.76 | 91.90 | 7.290 | 0.77 | 0.00 | 1.70 |
| 13 | 148.3 | Low Profile Platform | 1 | 1200.00 | 20.75 | 1.00 | 1800.00 | 27.00 | 1.00 | 0.00 | 0.00 |
| 14 | 148.3 | TD-RRH8x20-25 | 3 | 70.00 | 4.72 | 0.69 | 92.00 | 4.970 | 0.71 | 0.00 | 1.70 |
| 15 | 142.2 | AIR 21 B2A B4P | 3 | 91.50 | 6.58 | 0.83 | 129.20 | 6.970 | 0.83 | 0.00 | 0.70 |
| 16 | 142.2 | AIR 21 B4A B2P | 3 | 90.40 | 6.58 | 0.83 | 128.10 | 6.970 | 0.83 | 0.00 | 0.70 |
| 17 | 142.2 | KRY 112 144/1 | 3 | 11.00 | 0.41 | 0.70 | 14.10 | 0.550 | 0.72 | 0.00 | 0.70 |
| 18 | 142.2 | LGP13907 | 6 | 10.40 | 0.59 | 0.75 | 14.60 | 0.750 | 0.77 | 0.00 | 1.60 |
| 19 | 142.2 | Low Profile Platform | 1 | 1200.00 | 20.75 | 1.00 | 1800.00 | 27.00 | 1.00 | 0.00 | 0.00 |
| 20 | 133.0 | 21401 | 6 | 14.10 | 1.29 | 0.67 | 21.20 | 1.530 | 0.69 | 0.00 | 0.00 |
| 21 | 133.0 | 800 10121 | 3 | 46.30 | 5.45 | 0.79 | 79.20 | 6.090 | 0.81 | 0.00 | 0.00 |
| 22 | 133.0 | Low Profile Platform | 1 | 1350.00 | 21.00 | 1.00 | 1800.00 | 27.00 | 1.00 | 0.00 | 0.00 |
| 23 | 133.0 | OPA-65R-LCUU-H6 | 3 | 80.00 | 10.36 | 0.77 | 134.00 | 10.85 | 0.77 | 0.00 | 0.00 |
| 24 | 133.0 | RRUS 11 | 3 | 50.70 | 2.94 | 0.75 | 66.00 | 3.140 | 0.75 | 0.00 | 0.00 |
| 25 | 133.0 | RRUS 12 | 3 | 58.00 | 3.69 | 0.70 | 75.70 | 3.890 | 0.71 | 0.00 | 0.00 |
| 26 | 133.0 | RRUS A2 Module | 3 | 21.20 | 1.86 | 0.40 | 31.40 | 2.150 | 0.40 | 0.00 | 0.00 |
| 27 | 110.0 | 3 ft Standoff | 1 | 40.00 | 1.00 | 1.00 | 63.00 | 4.340 | 1.00 | 0.00 | 0.00 |
| 28 | 110.0 | DB222 | 1 | 16.00 | 2.25 | 1.00 | 35.90 | 3.990 | 1.00 | 0.00 | 5.29 |
| 29 | 40.00 | GPS | 1 | 10.00 | 1.00 | 1.00 | 18.00 | 1.250 | 1.00 | 0.00 | 0.00 |
| Totals: | | | 82 | 7,612.90 | | | 11,038.00 | | | | |

Linear Appurtenances

| Bottom Elev. (ft) | Top Elev. (ft) | Description | No Ice | | Ice | | Exposed |
|-------------------|----------------|-------------------|----------------|--------------|----------------|--------------|---------|
| | | | Weight (lb/ft) | CaAa (sf/ft) | Weight (lb/ft) | CaAa (sf/ft) | |
| 0.00 | 160.0 | (18) 1 5/8" Coax | 1.04 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 160.0 | (1) 7/8" Coax | 0.52 | 0.00 | 0.00 | 0.00 | Outside |
| 0.00 | 148.3 | (1) 1-1/4" Hybrid | 2.86 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 148.3 | (3) 1-1/4" Hybrid | 2.86 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 142.2 | (12) 1 5/8" Coax | 1.04 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 142.2 | (1) 1 5/8" Hybrid | 1.10 | 0.20 | 1.52 | 0.25 | Outside |
| 0.00 | 133.0 | (6) 1 1/4" Coax | 1.98 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 133.0 | (6) 1 5/8" Coax | 1.04 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 133.0 | (1) 1/2" Coax | 0.96 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 133.0 | (2) 7/8" DC Power | 0.65 | 0.00 | 0.00 | 0.00 | Inside |
| 0.00 | 110.0 | (1) 7/8" Coax | 0.52 | 0.00 | 0.00 | 0.00 | Outside |

Discrete Appurtenances

| No. | Elev (ft) | Description | Qty | No Ice | | | Ice | | | Hor. Ecc. (ft) | Vert Ecc (ft) |
|----------------|--------------|-----------------------------|-----|-----------------|--------------|----------------|----------------|--------------|----------------|----------------------|---------------------|
| | | | | Weight (lb) | CaAa (sf) | CaAa Factor | Weight (lb) | CaAa (sf) | CaAa Factor | | |
| 32.00 | 98.00 | (3) 1.25" Reinforcing plate | | 0.00 | 0.21 | | 1.56 | 0.26 | Outside | | |
| 0.00 | 40.00 | (1) 1/2" Coax | | 0.00 | 0.00 | | 0.00 | 0.00 | Inside | | |
| 0.00 | 32.00 | (3) 1.25" Reinforcing plate | | 0.00 | 0.48 | | 3.00 | 0.55 | Outside | | |
| Totals: | | | | 2,075.77 | | | 415.10 | | | | |

Shaft Section Properties

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 8



Increment Length: 5 (ft)

Additional Reinforcing

| Elev (ft) | Description | Thick (in) | Flat Dia (in) | Area (in^2) | Ix (in^4) | W/t Ratio | D/t Ratio | Fy (ksi) | Fb (ksi) | Weight (lb) | Area (in^2) | Ixp (in^4) | Iyp (in^4) | Weight (lb) |
|-----------|-----------------|------------|---------------|-------------|-----------|-----------|-----------|----------|----------|-------------|-------------|------------|------------|-------------|
| 0.00 | RB1 | 0.3750 | 50.375 | 60.375 | 19265.6 | 33.85 | 134.33 | 65 | 49 | 0.0 | 26.46 | 9158.8 | 9158.8 | 0.0 |
| 5.00 | | 0.3750 | 49.405 | 59.204 | 18166.0 | 33.16 | 131.75 | 65 | 49 | 1017.2 | 26.46 | 8824.7 | 8824.7 | 132.3 |
| 10.00 | | 0.3750 | 48.435 | 58.032 | 17109.0 | 32.46 | 129.16 | 65 | 50 | 997.3 | 26.46 | 8496.8 | 8496.8 | 132.3 |
| 14.50 | RB2 | 0.3750 | 47.562 | 56.978 | 16193.5 | 31.84 | 126.83 | 65 | 50 | 880.6 | 48.96 | 14943.3 | 14943.3 | 463.6 |
| 15.00 | | 0.3750 | 47.465 | 56.861 | 16093.8 | 31.77 | 126.57 | 65 | 50 | 96.8 | 48.96 | 14884.8 | 14884.8 | 51.5 |
| 16.00 | Bot - Section 2 | 0.3750 | 47.271 | 56.627 | 15895.7 | 31.63 | 126.06 | 65 | 51 | 193.1 | 48.96 | 14768.1 | 14768.1 | 103.0 |
| 16.25 | RT1 RB3 | 0.3750 | 47.222 | 56.568 | 15846.5 | 31.60 | 125.93 | 65 | 51 | 97.1 | 48.96 | 15192.1 | 15192.1 | 25.8 |
| 18.00 | RT2 | 0.3750 | 46.883 | 56.158 | 15504.4 | 31.36 | 125.02 | 65 | 51 | 676.7 | 35.97 | 11159.6 | 11159.6 | 157.6 |
| 20.00 | | 0.3750 | 46.495 | 55.690 | 15119.6 | 31.08 | 123.99 | 65 | 51 | 767.4 | 13.47 | 4337.2 | 4337.2 | 26.9 |
| 22.00 | Top - Section 1 | 0.3750 | 46.857 | 56.127 | 15478.5 | 31.34 | 124.95 | 65 | 51 | 761.0 | 13.47 | 4271.2 | 4271.2 | 26.9 |
| 25.00 | | 0.3750 | 46.275 | 55.424 | 14904.3 | 30.92 | 123.40 | 65 | 51 | 569.4 | 13.47 | 4173.1 | 4173.1 | 40.4 |
| 30.00 | RB4 | 0.3750 | 45.305 | 54.253 | 13979.2 | 30.23 | 120.81 | 65 | 52 | 933.0 | 35.97 | 10143.1 | 10143.1 | 450.2 |
| 31.00 | RT3 | 0.3750 | 45.111 | 54.019 | 13798.9 | 30.09 | 120.30 | 65 | 52 | 184.2 | 35.97 | 10060.6 | 10060.6 | 90.0 |
| 35.00 | | 0.3750 | 44.335 | 53.082 | 13093.2 | 29.54 | 118.23 | 65 | 52 | 728.9 | 22.50 | 5879.6 | 5879.6 | 306.2 |
| 40.00 | | 0.3750 | 43.365 | 51.910 | 12245.5 | 28.84 | 115.64 | 65 | 52 | 893.2 | 22.50 | 5633.5 | 5633.5 | 382.8 |
| 45.00 | | 0.3750 | 42.395 | 50.739 | 11435.1 | 28.15 | 113.05 | 65 | 52 | 873.2 | 22.50 | 5392.7 | 5392.7 | 382.8 |
| 45.16 | RB5 | 0.3750 | 42.364 | 50.702 | 11409.8 | 28.13 | 112.97 | 65 | 52 | 27.6 | 48.75 | 11681.9 | 11681.9 | 26.5 |
| 46.00 | RT4 | 0.3750 | 42.201 | 50.505 | 11277.5 | 28.01 | 112.54 | 65 | 52 | 144.6 | 48.75 | 11595.5 | 11595.5 | 139.3 |
| 50.00 | Bot - Section 3 | 0.3750 | 41.425 | 49.568 | 10661.4 | 27.46 | 110.47 | 65 | 52 | 681.1 | 26.25 | 6031.0 | 6031.0 | 357.2 |
| 55.00 | | 0.3750 | 40.455 | 48.397 | 9923.3 | 26.76 | 107.88 | 65 | 52 | 1682.2 | 26.25 | 5969.5 | 5969.5 | 446.6 |
| 56.00 | Top - Section 2 | 0.3750 | 41.011 | 49.068 | 10342.0 | 27.16 | 109.36 | 65 | 52 | 331.7 | 26.25 | 5915.6 | 5915.6 | 89.3 |
| 58.00 | RT5 RB6 | 0.3750 | 40.623 | 48.599 | 10048.6 | 26.88 | 108.33 | 65 | 52 | 332.3 | 26.25 | 5808.5 | 5808.5 | 178.6 |
| 60.00 | | 0.3750 | 40.235 | 48.131 | 9760.8 | 26.61 | 107.29 | 65 | 52 | 329.2 | 20.63 | 4464.3 | 4464.3 | 140.4 |
| 65.00 | | 0.3750 | 39.265 | 46.960 | 9065.4 | 25.91 | 104.71 | 65 | 52 | 808.9 | 20.63 | 4259.2 | 4259.2 | 350.9 |
| 70.00 | | 0.3750 | 38.295 | 45.788 | 8403.8 | 25.22 | 102.12 | 65 | 52 | 789.0 | 20.63 | 4059.0 | 4059.0 | 350.9 |
| 75.00 | | 0.3750 | 37.325 | 44.617 | 7775.3 | 24.53 | 99.53 | 65 | 52 | 769.1 | 20.63 | 3863.7 | 3863.7 | 350.9 |
| 78.00 | RT6 RB7 | 0.3750 | 36.743 | 43.914 | 7413.6 | 24.11 | 97.98 | 65 | 52 | 451.9 | 20.63 | 3748.8 | 3748.8 | 210.5 |
| 80.00 | Top - Section 3 | 0.0000 | 0.000 | 0.000 | 0.0 | NAN | NAN | 0 | 0 | 297.3 | 20.63 | 3673.2 | 3673.2 | 140.4 |
| 80.00 | Bot - Section 4 | 0.3750 | 36.355 | 43.446 | 7178.9 | 23.83 | 96.95 | 65 | 52 | | | | | |
| 85.00 | | 0.3125 | 35.385 | 35.292 | 5541.0 | 28.20 | 113.23 | 65 | 52 | 608.8 | 20.63 | 3487.5 | 3487.5 | 350.9 |
| 90.00 | | 0.3125 | 34.415 | 34.316 | 5093.9 | 27.37 | 110.13 | 65 | 52 | 592.1 | 20.63 | 3306.7 | 3306.7 | 350.9 |
| 95.00 | Bot - Section 5 | 0.3125 | 33.445 | 33.340 | 4671.5 | 26.53 | 107.02 | 65 | 52 | 575.5 | 20.63 | 3130.7 | 3130.7 | 350.9 |
| 95.58 | RT7 | 0.3125 | 33.332 | 33.226 | 4624.0 | 26.44 | 106.66 | 65 | 52 | 132.6 | 20.63 | 3223.1 | 3223.1 | 40.7 |
| 100.00 | Top - Section 4 | 0.3125 | 33.100 | 32.992 | 4527.1 | 26.24 | 105.92 | 65 | 52 | 995.9 | | | | |
| 105.00 | | 0.3125 | 32.130 | 32.016 | 4137.0 | 25.41 | 102.82 | 65 | 52 | 553.0 | | | | |
| 110.00 | | 0.3125 | 31.160 | 31.040 | 3770.1 | 24.57 | 99.71 | 65 | 52 | 536.4 | | | | |
| 115.00 | Top - Section 5 | 0.0000 | 0.000 | 0.000 | 0.0 | NAN | NAN | 0 | 0 | 519.8 | | | | |
| 115.00 | Bot - Section 6 | 0.3125 | 30.190 | 30.064 | 3425.5 | 23.74 | 96.61 | 65 | 52 | | | | | |
| 120.00 | | 0.2500 | 29.220 | 23.321 | 2498.2 | 29.17 | 116.88 | 65 | 52 | 403.4 | | | | |
| 125.00 | | 0.2500 | 28.250 | 22.540 | 2255.6 | 28.13 | 113.00 | 65 | 52 | 390.1 | | | | |
| 130.00 | | 0.2500 | 27.280 | 21.759 | 2029.2 | 27.10 | 109.12 | 65 | 52 | 376.9 | | | | |
| 133.00 | | 0.2500 | 26.698 | 21.291 | 1900.9 | 26.47 | 106.79 | 65 | 52 | 219.7 | | | | |
| 135.00 | | 0.2500 | 26.310 | 20.978 | 1818.5 | 26.06 | 105.24 | 65 | 52 | 143.8 | | | | |
| 140.00 | | 0.2500 | 25.340 | 20.197 | 1622.9 | 25.02 | 101.36 | 65 | 52 | 350.3 | | | | |
| 142.20 | | 0.2500 | 24.913 | 19.854 | 1541.5 | 24.56 | 99.65 | 65 | 52 | 149.9 | | | | |
| 145.00 | Top - Section 6 | 0.0000 | 0.000 | 0.000 | 0.0 | NAN | NAN | 0 | 0 | 187.1 | | | | |
| 145.00 | Bot - Section 7 | 0.2500 | 24.370 | 19.417 | 1441.8 | 23.98 | 97.48 | 65 | 52 | | | | | |
| 148.30 | | 0.2500 | 23.735 | 18.445 | 1272.6 | 0.00 | 94.94 | 65 | 52 | 209.9 | | | | |
| 150.00 | Top - Section 7 | 0.0000 | 0.000 | 0.000 | 0.0 | NAN | NAN | 0 | 0 | 105.9 | | | | |
| 150.00 | Bot - Section 8 | 0.2500 | 23.405 | 18.186 | 1219.7 | 0.00 | 93.62 | 65 | 52 | | | | | |
| 155.00 | | 0.2500 | 16.000 | 12.370 | 383.9 | 0.00 | 64.00 | 50 | 40 | 210.5 | | | | |
| 160.00 | | 0.2500 | 16.000 | 12.370 | 383.9 | 0.00 | 64.00 | 50 | 40 | 210.5 | | | | |

Increment Length: 5 (ft)

| Elev (ft) | Description | Thick (in) | Flat Dia (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Fy (ksi) | Fb (ksi) | Weight (lb) | Additional Reinforcing | | | Weight (lb) |
|--------------|-------------|---------------|---------------------|----------------------------|--------------------------|--------------|--------------|-------------|-------------|----------------|----------------------------|---------------------------|---------------------------|----------------|
| | | | | | | | | | | | Area (in ²) | Ixp (in ⁴) | Iyp (in ⁴) | |
| Total Weight | | | | | | | | | | 23786.1 | | | 6647.4 | |

Wind Loading - Shaft

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 10



Load Case: 85 mph Wind with 0" Ice

Iterations: 24

Dead Load Factor 1.00
Wind Load Factor 1.00



| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|-----------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | RB1 | 0.00 | 1.00 | 18.496 | 31.26 | 356.82 | 1.030 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 0.00 | 1.00 | 18.496 | 31.26 | 349.95 | 1.030 | 0.000 | 5.00 | 20.788 | 21.41 | 669.3 | 0.0 | 1281.8 |
| 10.00 | | 0.00 | 1.00 | 18.496 | 31.26 | 343.08 | 1.030 | 0.000 | 5.00 | 20.383 | 20.99 | 656.3 | 0.0 | 1261.9 |
| 14.50 | RB2 | 0.00 | 1.00 | 18.496 | 31.26 | 336.90 | 1.030 | 0.000 | 4.50 | 17.999 | 18.54 | 579.5 | 0.0 | 1807.7 |
| 15.00 | | 0.00 | 1.00 | 18.496 | 31.26 | 336.21 | 1.030 | 0.000 | 0.50 | 1.980 | 2.04 | 63.7 | 0.0 | 199.9 |
| 16.00 | Bot - Section 2 | 0.00 | 1.00 | 18.496 | 31.26 | 334.84 | 1.030 | 0.000 | 1.00 | 3.947 | 4.07 | 127.1 | 0.0 | 399.1 |
| 16.25 | RT1 RB3 | 0.00 | 1.00 | 18.496 | 31.26 | 334.49 | 1.030 | 0.000 | 0.25 | 1.000 | 1.03 | 32.2 | 0.0 | 148.6 |
| 18.00 | RT2 | 0.00 | 1.00 | 18.496 | 31.26 | 332.09 | 1.030 | 0.000 | 1.75 | 6.971 | 7.18 | 224.4 | 0.0 | 991.8 |
| 20.00 | | 0.00 | 1.00 | 18.496 | 31.26 | 329.34 | 1.030 | 0.000 | 2.00 | 7.907 | 8.14 | 254.6 | 0.0 | 821.2 |
| 22.00 | Top - Section 1 | 0.00 | 1.00 | 18.496 | 31.26 | 326.59 | 1.030 | 0.000 | 2.00 | 7.842 | 8.08 | 252.5 | 0.0 | 814.9 |
| 25.00 | | 0.00 | 1.00 | 18.496 | 31.26 | 327.78 | 1.030 | 0.000 | 3.00 | 11.642 | 11.99 | 374.8 | 0.0 | 650.2 |
| 30.00 | RB4 | 0.00 | 1.00 | 18.496 | 31.26 | 320.91 | 1.030 | 0.000 | 5.00 | 19.079 | 19.65 | 614.3 | 0.0 | 1833.3 |
| 31.00 | RT3 | 0.00 | 1.00 | 18.496 | 31.26 | 319.54 | 1.030 | 0.000 | 1.00 | 3.767 | 3.88 | 121.3 | 0.0 | 364.3 |
| 35.00 | | 0.00 | 1.02 | 18.810 | 31.79 | 316.69 | 1.030 | 0.000 | 4.00 | 14.908 | 15.35 | 488.1 | 0.0 | 1341.4 |
| 40.00 | Appurtenance(s) | 0.00 | 1.06 | 19.541 | 33.02 | 315.73 | 1.030 | 0.000 | 5.00 | 18.271 | 18.82 | 621.5 | 0.0 | 1658.8 |
| 45.00 | | 0.00 | 1.09 | 20.210 | 34.15 | 313.90 | 1.030 | 0.000 | 5.00 | 17.867 | 18.40 | 628.5 | 0.0 | 1638.8 |
| 45.16 | RB5 | 0.00 | 1.09 | 20.230 | 34.19 | 313.83 | 1.030 | 0.000 | 0.16 | 0.565 | 0.58 | 19.9 | 0.0 | 80.7 |
| 46.00 | RT4 | 0.00 | 1.10 | 20.337 | 34.37 | 313.45 | 1.030 | 0.000 | 0.84 | 2.960 | 3.05 | 104.8 | 0.0 | 423.3 |
| 50.00 | Bot - Section 3 | 0.00 | 1.13 | 20.827 | 35.20 | 311.37 | 1.030 | 0.000 | 4.00 | 13.938 | 14.36 | 505.3 | 0.0 | 1395.5 |
| 55.00 | | 0.00 | 1.16 | 21.402 | 36.17 | 308.25 | 1.030 | 0.000 | 5.00 | 17.371 | 17.89 | 647.2 | 0.0 | 2575.3 |
| 56.00 | Top - Section 2 | 0.00 | 1.16 | 21.513 | 36.36 | 307.56 | 1.030 | 0.000 | 1.00 | 3.426 | 3.53 | 128.3 | 0.0 | 510.3 |
| 58.00 | RT5 RB6 | 0.00 | 1.17 | 21.730 | 36.72 | 311.89 | 1.030 | 0.000 | 2.00 | 6.803 | 7.01 | 257.3 | 0.0 | 689.6 |
| 60.00 | | 0.00 | 1.19 | 21.941 | 37.08 | 310.41 | 1.030 | 0.000 | 2.00 | 6.738 | 6.94 | 257.4 | 0.0 | 609.9 |
| 65.00 | | 0.00 | 1.21 | 22.449 | 37.94 | 306.41 | 1.030 | 0.000 | 5.00 | 16.563 | 17.06 | 647.2 | 0.0 | 1510.8 |
| 70.00 | | 0.00 | 1.24 | 22.929 | 38.75 | 302.02 | 1.030 | 0.000 | 5.00 | 16.158 | 16.64 | 644.9 | 0.0 | 1490.8 |
| 75.00 | | 0.00 | 1.26 | 23.386 | 39.52 | 297.28 | 1.030 | 0.000 | 5.00 | 15.754 | 16.23 | 641.3 | 0.0 | 1470.9 |
| 78.00 | RT6 RB7 | 0.00 | 1.28 | 23.649 | 39.97 | 294.29 | 1.030 | 0.000 | 3.00 | 9.258 | 9.54 | 381.1 | 0.0 | 873.0 |
| 80.00 | Top - Section 3 | 0.00 | 1.29 | 23.821 | 40.26 | 292.24 | 1.030 | 0.000 | 2.00 | 6.091 | 6.27 | 252.6 | 0.0 | 578.0 |
| 85.00 | | 0.00 | 1.31 | 24.237 | 40.96 | 286.92 | 1.030 | 0.000 | 5.00 | 14.946 | 15.39 | 630.6 | 0.0 | 1310.6 |
| 90.00 | | 0.00 | 1.33 | 24.636 | 41.63 | 281.34 | 1.030 | 0.000 | 5.00 | 14.542 | 14.98 | 623.6 | 0.0 | 1294.0 |
| 95.00 | Bot - Section 5 | 0.00 | 1.35 | 25.020 | 42.28 | 275.53 | 1.030 | 0.000 | 5.00 | 14.137 | 14.56 | 615.7 | 0.0 | 1277.4 |
| 95.58 | RT7 | 0.00 | 1.36 | 25.063 | 42.36 | 274.84 | 1.030 | 0.000 | 0.58 | 1.644 | 1.69 | 71.7 | 0.0 | 214.0 |
| 100.00 | Top - Section 4 | 0.00 | 1.37 | 25.389 | 42.91 | 269.51 | 1.030 | 0.000 | 4.42 | 12.350 | 12.72 | 545.8 | 0.0 | 995.9 |
| 105.00 | | 0.00 | 1.39 | 25.745 | 43.51 | 268.51 | 1.030 | 0.000 | 5.00 | 13.590 | 14.00 | 609.0 | 0.0 | 553.0 |
| 110.00 | Appurtenance(s) | 0.00 | 1.41 | 26.090 | 44.09 | 262.14 | 1.030 | 0.000 | 5.00 | 13.185 | 13.58 | 598.8 | 0.0 | 536.4 |
| 115.00 | Top - Section 5 | 0.00 | 1.43 | 26.423 | 44.66 | 255.60 | 1.030 | 0.000 | 5.00 | 12.781 | 13.16 | 587.9 | 0.0 | 519.8 |
| 120.00 | | 0.00 | 1.45 | 26.747 | 45.20 | 248.89 | 1.030 | 0.000 | 5.00 | 12.377 | 12.75 | 576.2 | 0.0 | 403.4 |
| 125.00 | | 0.00 | 1.46 | 27.060 | 45.73 | 242.04 | 1.030 | 0.000 | 5.00 | 11.973 | 12.33 | 564.0 | 0.0 | 390.1 |
| 130.00 | | 0.00 | 1.48 | 27.365 | 46.25 | 235.04 | 1.030 | 0.000 | 5.00 | 11.569 | 11.92 | 551.1 | 0.0 | 376.9 |
| 133.00 | Appurtenance(s) | 0.00 | 1.49 | 27.544 | 46.55 | 230.78 | 1.030 | 0.000 | 3.00 | 6.747 | 6.95 | 323.5 | 0.0 | 219.7 |
| 135.00 | | 0.00 | 1.50 | 27.662 | 46.75 | 227.91 | 1.030 | 0.000 | 2.00 | 4.417 | 4.55 | 212.7 | 0.0 | 143.8 |
| 140.00 | | 0.00 | 1.51 | 27.951 | 47.24 | 220.65 | 1.030 | 0.000 | 5.00 | 10.760 | 11.08 | 523.5 | 0.0 | 350.3 |
| 142.20 | Appurtenance(s) | 0.00 | 1.52 | 28.076 | 47.45 | 217.42 | 1.030 | 0.000 | 2.20 | 4.607 | 4.74 | 225.1 | 0.0 | 149.9 |
| 145.00 | Top - Section 6 | 0.00 | 1.53 | 28.233 | 47.71 | 213.27 | 1.030 | 0.000 | 2.80 | 5.750 | 5.92 | 282.6 | 0.0 | 187.1 |
| 148.30 | Appurtenance(s) | 0.00 | 1.54 | 28.415 | 48.02 | 208.38 | 0.590 | 0.000 | 3.30 | 6.615 | 3.90 | 187.4 | 0.0 | 209.9 |
| 150.00 | Top - Section 7 | 0.00 | 1.54 | 28.507 | 48.18 | 205.82 | 0.590 | 0.000 | 1.70 | 3.339 | 1.97 | 94.9 | 0.0 | 105.9 |
| 155.00 | | 0.00 | 1.56 | 28.776 | 48.63 | 141.36 | 0.590 | 0.000 | 5.00 | 6.667 | 3.93 | 191.3 | 0.0 | 210.5 |
| 160.00 | Appurtenance(s) | 0.00 | 1.57 | 29.038 | 49.07 | 142.00 | 0.590 | 0.000 | 5.00 | 6.667 | 3.93 | 193.0 | 0.0 | 210.5 |

Wind Loading - Shaft

Structure: CT02049-S-SBA

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 11



Totals: 160.00

18,403.8

37,080.8

Discrete Appurtenance Forces

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 12



Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | CaAa Factor | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|----------------|-----------|---------------------------|-----|----------|------------|-------------|-----------------|-----------------|----------------|---------------|------------------|---------------|---------------|
| 1 | 160.00 | Low Profile Platform | 1 | 29.038 | 49.074 | 1.00 | 20.75 | 1200.00 | 0.000 | 0.000 | 1018.29 | 0.00 | 0.00 |
| 2 | 160.00 | DB846F65ZAXY | 6 | 29.151 | 49.266 | 0.93 | 39.23 | 126.00 | 0.000 | 2.200 | 1932.57 | 0.00 | 4251.66 |
| 3 | 160.00 | DB222 | 1 | 29.294 | 49.507 | 1.00 | 2.25 | 16.00 | 0.000 | 5.000 | 111.39 | 0.00 | 556.96 |
| 4 | 160.00 | BXA-70063/4CF | 3 | 29.151 | 49.266 | 0.72 | 11.15 | 29.70 | 0.000 | 2.200 | 549.10 | 0.00 | 1208.02 |
| 5 | 160.00 | 6' Lightning rod | 1 | 29.038 | 49.074 | 1.00 | 0.38 | 6.50 | 0.000 | 0.000 | 18.65 | 0.00 | 0.00 |
| 6 | 160.00 | LPA-185063/8CF | 6 | 29.151 | 49.266 | 0.94 | 17.15 | 54.00 | 0.000 | 2.200 | 844.69 | 0.00 | 1858.33 |
| 7 | 148.30 | ALU 800MHz External Notch | 3 | 28.615 | 48.360 | 0.69 | 1.61 | 26.40 | 0.000 | 3.700 | 78.08 | 0.00 | 288.90 |
| 8 | 148.30 | 1900MHz RRH | 3 | 28.615 | 48.360 | 0.75 | 8.55 | 132.00 | 0.000 | 3.700 | 413.48 | 0.00 | 1529.87 |
| 9 | 148.30 | 800 MHz RRH | 3 | 28.615 | 48.360 | 0.75 | 5.60 | 159.00 | 0.000 | 3.700 | 270.94 | 0.00 | 1002.47 |
| 10 | 148.30 | ACU-A20-N | 4 | 28.615 | 48.360 | 0.75 | 0.42 | 4.00 | 0.000 | 3.700 | 20.31 | 0.00 | 75.15 |
| 11 | 148.30 | TD-RRH8x20-25 | 3 | 28.507 | 48.177 | 0.69 | 9.77 | 210.00 | 0.000 | 1.700 | 470.71 | 0.00 | 800.21 |
| 12 | 148.30 | APXVSP18-C-A20 | 3 | 28.615 | 48.360 | 0.82 | 20.32 | 171.00 | 0.000 | 3.700 | 982.66 | 0.00 | 3635.83 |
| 13 | 148.30 | APXVTM14-C-120 | 3 | 28.507 | 48.177 | 0.76 | 15.77 | 168.00 | 0.000 | 1.700 | 759.92 | 0.00 | 1291.87 |
| 14 | 148.30 | Low Profile Platform | 1 | 28.415 | 48.021 | 1.00 | 20.75 | 1200.00 | 0.000 | 0.000 | 996.43 | 0.00 | 0.00 |
| 15 | 142.20 | Low Profile Platform | 1 | 28.076 | 47.448 | 1.00 | 20.75 | 1200.00 | 0.000 | 0.000 | 984.55 | 0.00 | 0.00 |
| 16 | 142.20 | KRY 112 144/1 | 3 | 28.115 | 47.515 | 0.70 | 0.86 | 33.00 | 0.000 | 0.700 | 40.91 | 0.00 | 28.64 |
| 17 | 142.20 | AIR 21 B4A B2P | 3 | 28.115 | 47.515 | 0.83 | 16.32 | 271.20 | 0.000 | 0.700 | 775.67 | 0.00 | 542.97 |
| 18 | 142.20 | AIR 21 B2A B4P | 3 | 28.115 | 47.515 | 0.83 | 16.32 | 274.50 | 0.000 | 0.700 | 775.67 | 0.00 | 542.97 |
| 19 | 142.20 | LGP13907 | 6 | 28.166 | 47.600 | 0.75 | 2.66 | 62.40 | 0.000 | 1.600 | 126.38 | 0.00 | 202.20 |
| 20 | 133.00 | Low Profile Platform | 1 | 27.544 | 46.550 | 1.00 | 21.00 | 1350.00 | 0.000 | 0.000 | 977.55 | 0.00 | 0.00 |
| 21 | 133.00 | 21401 | 6 | 27.544 | 46.550 | 0.67 | 5.19 | 84.60 | 0.000 | 0.000 | 241.40 | 0.00 | 0.00 |
| 22 | 133.00 | 800 10121 | 3 | 27.544 | 46.550 | 0.79 | 12.92 | 138.90 | 0.000 | 0.000 | 601.26 | 0.00 | 0.00 |
| 23 | 133.00 | RRUS 11 | 3 | 27.544 | 46.550 | 0.75 | 6.62 | 152.10 | 0.000 | 0.000 | 307.93 | 0.00 | 0.00 |
| 24 | 133.00 | OPA-65R-LCUU-H6 | 3 | 27.544 | 46.550 | 0.77 | 23.81 | 240.00 | 0.000 | 0.000 | 1108.22 | 0.00 | 0.00 |
| 25 | 133.00 | RRUS 12 | 3 | 27.544 | 46.550 | 0.70 | 7.78 | 174.00 | 0.000 | 0.000 | 362.26 | 0.00 | 0.00 |
| 26 | 133.00 | RRUS A2 Module | 3 | 27.544 | 46.550 | 0.40 | 2.23 | 63.60 | 0.000 | 0.000 | 103.90 | 0.00 | 0.00 |
| 27 | 110.00 | DB222 | 1 | 26.442 | 44.688 | 1.00 | 2.25 | 16.00 | 0.000 | 5.292 | 100.55 | 0.00 | 532.07 |
| 28 | 110.00 | 3 ft Standoff | 1 | 26.090 | 44.092 | 1.00 | 1.00 | 40.00 | 0.000 | 0.000 | 44.09 | 0.00 | 0.00 |
| 29 | 40.00 | GPS | 1 | 19.541 | 33.024 | 1.00 | 1.00 | 10.00 | 0.000 | 0.000 | 33.02 | 0.00 | 0.00 |
| Totals: | | | | | | | | 7,612.90 | | | 15,050.59 | | |

Total Applied Force Summary

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 13



Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|-----------|--------------------|---------------------|-------------------|--------------------|-------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 775.55 | 1222.42 | 0.00 | 0.00 |
| 10.00 | | 762.54 | 1202.49 | 0.00 | 0.00 |
| 14.50 | | 675.16 | 1409.72 | 0.00 | 0.00 |
| 15.00 | | 74.37 | 155.64 | 0.00 | 0.00 |
| 16.00 | | 148.34 | 310.68 | 0.00 | 0.00 |
| 16.25 | | 37.51 | 126.46 | 0.00 | 0.00 |
| 18.00 | | 261.64 | 859.72 | 0.00 | 0.00 |
| 20.00 | | 297.07 | 823.44 | 0.00 | 0.00 |
| 22.00 | | 294.99 | 817.06 | 0.00 | 0.00 |
| 25.00 | | 438.58 | 653.51 | 0.00 | 0.00 |
| 30.00 | | 720.55 | 1456.04 | 0.00 | 0.00 |
| 31.00 | | 142.55 | 288.82 | 0.00 | 0.00 |
| 35.00 | | 548.82 | 1093.41 | 0.00 | 0.00 |
| 40.00 | (1) appurtenances | 722.21 | 1358.83 | 0.00 | 0.00 |
| 45.00 | | 698.55 | 1328.90 | 0.00 | 0.00 |
| 45.16 | | 22.14 | 56.49 | 0.00 | 0.00 |
| 46.00 | | 116.62 | 296.21 | 0.00 | 0.00 |
| 50.00 | | 563.03 | 1096.59 | 0.00 | 0.00 |
| 55.00 | | 721.30 | 2201.58 | 0.00 | 0.00 |
| 56.00 | | 143.19 | 435.53 | 0.00 | 0.00 |
| 58.00 | | 287.43 | 540.11 | 0.00 | 0.00 |
| 60.00 | | 287.76 | 498.66 | 0.00 | 0.00 |
| 65.00 | | 724.98 | 1232.71 | 0.00 | 0.00 |
| 70.00 | | 724.36 | 1212.78 | 0.00 | 0.00 |
| 75.00 | | 722.33 | 1192.85 | 0.00 | 0.00 |
| 78.00 | | 430.30 | 706.15 | 0.00 | 0.00 |
| 80.00 | | 285.59 | 466.78 | 0.00 | 0.00 |
| 85.00 | | 714.52 | 1032.53 | 0.00 | 0.00 |
| 90.00 | | 708.96 | 1015.93 | 0.00 | 0.00 |
| 95.00 | | 702.39 | 999.32 | 0.00 | 0.00 |
| 95.58 | | 81.80 | 181.77 | 0.00 | 0.00 |
| 100.00 | | 605.53 | 1060.37 | 0.00 | 0.00 |
| 105.00 | | 652.53 | 625.90 | 0.00 | 0.00 |
| 110.00 | (2) appurtenances | 787.54 | 665.29 | 0.00 | 532.07 |
| 115.00 | | 632.53 | 590.08 | 0.00 | 0.00 |
| 120.00 | | 621.45 | 473.69 | 0.00 | 0.00 |
| 125.00 | | 609.70 | 460.41 | 0.00 | 0.00 |
| 130.00 | | 597.32 | 447.12 | 0.00 | 0.00 |
| 133.00 | (22) appurtenances | 4053.95 | 2465.10 | 0.00 | 0.00 |
| 135.00 | | 231.40 | 162.68 | 0.00 | 0.00 |
| 140.00 | | 570.78 | 397.40 | 0.00 | 0.00 |
| 142.20 | (16) appurtenances | 2949.19 | 2011.75 | 0.00 | 1316.79 |
| 145.00 | | 282.57 | 207.48 | 0.00 | 0.00 |
| 148.30 | (23) appurtenances | 4179.96 | 2304.38 | 0.00 | 8624.31 |
| 150.00 | | 94.91 | 108.60 | 0.00 | 0.00 |
| 155.00 | | 191.28 | 218.26 | 0.00 | 0.00 |
| 160.00 | (18) appurtenances | 4667.72 | 1650.46 | 0.00 | 7874.96 |

Total Applied Force Summary

Structure: CT02049-S-SB

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 14



| | | | | |
|----------------|------------------|------------------|-------------|------------------|
| Totals: | 35,563.47 | 40,122.12 | 0.00 | 18,348.13 |
|----------------|------------------|------------------|-------------|------------------|

Resulting Forces and Deflections

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 15



Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

| Elev (ft) | Lateral FX (-) (kips) | Axial FY (-) (kips) | Lateral FZ (kips) | Moment MX (ft-kips) | Torsion MY (ft-kips) | Moment MZ (ft-kips) | Deflect X (in) | Deflect Z (in) | Deflect Resultant (in) | Rotation Sway (deg) | Rotation Twist (deg) |
|-----------|-----------------------|---------------------|-------------------|---------------------|----------------------|---------------------|----------------|----------------|------------------------|---------------------|----------------------|
| 0.00 | -35.630 | -40.062 | 0.000 | 0.000 | 0.000 | -3843.7 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 5.00 | -34.980 | -38.726 | 0.000 | 0.000 | 0.000 | -3665.6 | -0.101 | 0.000 | 0.101 | -0.188 | 0.000 |
| 10.00 | -34.329 | -37.420 | 0.000 | 0.000 | 0.000 | -3490.7 | -0.399 | 0.000 | 0.399 | -0.376 | 0.000 |
| 14.50 | -33.700 | -35.962 | 0.000 | 0.000 | 0.000 | -3336.2 | -0.836 | 0.000 | 0.836 | -0.547 | 0.000 |
| 15.00 | -33.639 | -35.794 | 0.000 | 0.000 | 0.000 | -3319.4 | -0.894 | 0.000 | 0.894 | -0.562 | 0.000 |
| 16.00 | -33.499 | -35.474 | 0.000 | 0.000 | 0.000 | -3285.7 | -1.016 | 0.000 | 1.016 | -0.593 | 0.000 |
| 16.25 | -33.479 | -35.330 | 0.000 | 0.000 | 0.000 | -3277.4 | -1.047 | 0.000 | 1.047 | -0.600 | 0.000 |
| 18.00 | -33.244 | -34.438 | 0.000 | 0.000 | 0.000 | -3218.8 | -1.277 | 0.000 | 1.277 | -0.652 | 0.000 |
| 20.00 | -32.984 | -33.572 | 0.000 | 0.000 | 0.000 | -3152.3 | -1.565 | 0.000 | 1.565 | -0.720 | 0.000 |
| 22.00 | -32.743 | -32.694 | 0.000 | 0.000 | 0.000 | -3086.3 | -1.887 | 0.000 | 1.887 | -0.812 | 0.000 |
| 25.00 | -32.393 | -31.948 | 0.000 | 0.000 | 0.000 | -2988.1 | -2.441 | 0.000 | 2.441 | -0.948 | 0.000 |
| 30.00 | -31.712 | -30.437 | 0.000 | 0.000 | 0.000 | -2826.1 | -3.550 | 0.000 | 3.550 | -1.165 | 0.000 |
| 31.00 | -31.606 | -30.106 | 0.000 | 0.000 | 0.000 | -2794.4 | -3.798 | 0.000 | 3.798 | -1.198 | 0.000 |
| 35.00 | -31.116 | -28.936 | 0.000 | 0.000 | 0.000 | -2668.0 | -4.857 | 0.000 | 4.857 | -1.328 | 0.000 |
| 40.00 | -30.453 | -27.493 | 0.000 | 0.000 | 0.000 | -2512.4 | -6.353 | 0.000 | 6.353 | -1.522 | 0.000 |
| 45.00 | -29.763 | -26.133 | 0.000 | 0.000 | 0.000 | -2360.1 | -8.051 | 0.000 | 8.051 | -1.716 | 0.000 |
| 45.16 | -29.746 | -26.069 | 0.000 | 0.000 | 0.000 | -2355.4 | -8.108 | 0.000 | 8.108 | -1.723 | 0.000 |
| 46.00 | -29.651 | -25.741 | 0.000 | 0.000 | 0.000 | -2330.4 | -8.414 | 0.000 | 8.414 | -1.747 | 0.000 |
| 50.00 | -29.118 | -24.587 | 0.000 | 0.000 | 0.000 | -2211.8 | -9.926 | 0.000 | 9.926 | -1.860 | 0.000 |
| 55.00 | -28.364 | -22.358 | 0.000 | 0.000 | 0.000 | -2066.2 | -11.971 | 0.000 | 11.971 | -2.042 | 0.000 |
| 56.00 | -28.227 | -21.901 | 0.000 | 0.000 | 0.000 | -2037.8 | -12.403 | 0.000 | 12.403 | -2.079 | 0.000 |
| 58.00 | -27.946 | -21.337 | 0.000 | 0.000 | 0.000 | -1981.4 | -13.289 | 0.000 | 13.289 | -2.152 | 0.000 |
| 60.00 | -27.686 | -20.787 | 0.000 | 0.000 | 0.000 | -1925.5 | -14.206 | 0.000 | 14.206 | -2.222 | 0.000 |
| 65.00 | -26.975 | -19.498 | 0.000 | 0.000 | 0.000 | -1787.1 | -16.632 | 0.000 | 16.632 | -2.407 | 0.000 |
| 70.00 | -26.257 | -18.235 | 0.000 | 0.000 | 0.000 | -1652.2 | -19.251 | 0.000 | 19.251 | -2.591 | 0.000 |
| 75.00 | -25.522 | -17.013 | 0.000 | 0.000 | 0.000 | -1520.9 | -22.061 | 0.000 | 22.061 | -2.772 | 0.000 |
| 78.00 | -25.083 | -16.289 | 0.000 | 0.000 | 0.000 | -1444.3 | -23.838 | 0.000 | 23.838 | -2.881 | 0.000 |
| 80.00 | -24.809 | -15.784 | 0.000 | 0.000 | 0.000 | -1394.2 | -25.060 | 0.000 | 25.060 | -2.953 | 0.000 |
| 85.00 | -24.087 | -14.714 | 0.000 | 0.000 | 0.000 | -1270.1 | -28.245 | 0.000 | 28.245 | -3.128 | 0.000 |
| 90.00 | -23.367 | -13.663 | 0.000 | 0.000 | 0.000 | -1149.7 | -31.622 | 0.000 | 31.622 | -3.318 | 0.000 |
| 95.00 | -22.629 | -12.667 | 0.000 | 0.000 | 0.000 | -1032.9 | -35.195 | 0.000 | 35.195 | -3.503 | 0.000 |
| 95.58 | -22.556 | -12.455 | 0.000 | 0.000 | 0.000 | -1019.7 | -35.622 | 0.000 | 35.622 | -3.525 | 0.000 |
| 100.00 | -21.930 | -11.349 | 0.000 | 0.000 | 0.000 | -920.09 | -38.958 | 0.000 | 38.958 | -3.680 | 0.000 |
| 105.00 | -21.288 | -10.666 | 0.000 | 0.000 | 0.000 | -810.44 | -42.966 | 0.000 | 42.966 | -3.968 | 0.000 |
| 110.00 | -20.499 | -9.969 | 0.000 | 0.000 | 0.000 | -703.47 | -47.260 | 0.000 | 47.260 | -4.229 | 0.000 |
| 115.00 | -19.863 | -9.346 | 0.000 | 0.000 | 0.000 | -600.98 | -51.819 | 0.000 | 51.819 | -4.475 | 0.000 |
| 120.00 | -19.243 | -8.841 | 0.000 | 0.000 | 0.000 | -501.67 | -56.626 | 0.000 | 56.626 | -4.704 | 0.000 |
| 125.00 | -18.632 | -8.355 | 0.000 | 0.000 | 0.000 | -405.45 | -61.689 | 0.000 | 61.689 | -4.962 | 0.000 |
| 130.00 | -18.021 | -7.909 | 0.000 | 0.000 | 0.000 | -312.29 | -67.006 | 0.000 | 67.006 | -5.188 | 0.000 |
| 133.00 | -13.768 | -5.803 | 0.000 | 0.000 | 0.000 | -258.23 | -70.302 | 0.000 | 70.302 | -5.308 | 0.000 |
| 135.00 | -13.534 | -5.635 | 0.000 | 0.000 | 0.000 | -230.69 | -72.539 | 0.000 | 72.539 | -5.382 | 0.000 |
| 140.00 | -12.938 | -5.271 | 0.000 | 0.000 | 0.000 | -163.02 | -78.254 | 0.000 | 78.254 | -5.536 | 0.000 |
| 142.20 | -9.811 | -3.544 | 0.000 | 0.000 | 0.000 | -133.24 | -80.815 | 0.000 | 80.815 | -5.593 | 0.000 |
| 145.00 | -9.513 | -3.355 | 0.000 | 0.000 | 0.000 | -105.77 | -84.110 | 0.000 | 84.110 | -5.655 | 0.000 |
| 148.30 | -5.126 | -1.473 | 0.000 | 0.000 | 0.000 | -65.757 | -88.034 | 0.000 | 88.034 | -5.713 | 0.000 |
| 150.00 | -5.022 | -1.371 | 0.000 | 0.000 | 0.000 | -57.042 | -90.070 | 0.000 | 90.070 | -5.737 | 0.000 |
| 155.00 | -4.811 | -1.167 | 0.000 | 0.000 | 0.000 | -31.931 | -96.098 | 0.000 | 96.098 | -5.789 | 0.000 |
| 160.00 | -4.668 | 0.000 | 0.000 | 0.000 | 0.000 | -7.875 | 0.000 | 0.000 | 102.197 | -5.862 | 0.000 |

Resulting Forces and Deflections

Structure: CT02049-S-SB

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 16



Resulting Stresses

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 17



Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Applied Stresses

| Elev (ft) | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | fb Combined (ksi) | Allow Stress (ksi) | f/Fb Stress Ratio |
|-----------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-------------------|--------------------|-------------------|
| 0.00 | 0.66 | 1.20 | 0.00 | 0.00 | 0.00 | 42.31 | 42.98 | 48.9 | 0.880 |
| 5.00 | 0.65 | 1.20 | 0.00 | 0.00 | 0.00 | 41.68 | 41.68 | 49.4 | 0.844 |
| 10.00 | 0.64 | 1.20 | 0.00 | 0.00 | 0.00 | 41.02 | 41.02 | 49.9 | 0.821 |
| 14.50 | 0.63 | 1.20 | 0.00 | 0.00 | 0.00 | 31.66 | 31.66 | 50.4 | 0.628 |
| 15.00 | 0.63 | 1.20 | 0.00 | 0.00 | 0.00 | 31.59 | 31.59 | 50.5 | 0.626 |
| 16.00 | 0.63 | 1.20 | 0.00 | 0.00 | 0.00 | 31.46 | 31.46 | 50.6 | 0.622 |
| 16.25 | 0.62 | 1.20 | 0.00 | 0.00 | 0.00 | 30.97 | 30.97 | 50.6 | 0.612 |
| 18.00 | 0.61 | 1.20 | 0.00 | 0.00 | 0.00 | 35.16 | 35.16 | 50.8 | 0.692 |
| 20.00 | 0.60 | 1.20 | 0.00 | 0.00 | 0.00 | 46.79 | 46.79 | 51.0 | 0.917 |
| 22.00 | 0.58 | 1.19 | 0.00 | 0.00 | 0.00 | 46.49 | 46.49 | 51.2 | 0.907 |
| 25.00 | 0.58 | 1.19 | 0.00 | 0.00 | 0.00 | 45.02 | 45.02 | 51.2 | 0.880 |
| 30.00 | 0.56 | 1.19 | 0.00 | 0.00 | 0.00 | 32.97 | 32.97 | 51.7 | 0.638 |
| 31.00 | 0.56 | 1.19 | 0.00 | 0.00 | 0.00 | 32.82 | 32.82 | 51.8 | 0.634 |
| 35.00 | 0.55 | 1.19 | 0.00 | 0.00 | 0.00 | 38.73 | 38.73 | 52.0 | 0.745 |
| 40.00 | 0.53 | 1.19 | 0.00 | 0.00 | 0.00 | 37.85 | 37.85 | 52.0 | 0.728 |
| 45.00 | 0.52 | 1.19 | 0.00 | 0.00 | 0.00 | 36.94 | 36.94 | 52.0 | 0.710 |
| 45.16 | 0.51 | 1.19 | 0.00 | 0.00 | 0.00 | 26.84 | 26.84 | 52.0 | 0.516 |
| 46.00 | 0.51 | 1.19 | 0.00 | 0.00 | 0.00 | 26.71 | 26.71 | 52.0 | 0.514 |
| 50.00 | 0.50 | 1.19 | 0.00 | 0.00 | 0.00 | 34.10 | 34.10 | 52.0 | 0.656 |
| 55.00 | 0.46 | 1.19 | 0.00 | 0.00 | 0.00 | 32.67 | 32.67 | 52.0 | 0.628 |
| 56.00 | 0.45 | 1.17 | 0.00 | 0.00 | 0.00 | 32.47 | 32.47 | 52.0 | 0.624 |
| 58.00 | 0.44 | 1.17 | 0.00 | 0.00 | 0.00 | 31.53 | 31.53 | 52.0 | 0.606 |
| 60.00 | 0.43 | 1.17 | 0.00 | 0.00 | 0.00 | 33.83 | 33.83 | 52.0 | 0.651 |
| 65.00 | 0.42 | 1.17 | 0.00 | 0.00 | 0.00 | 32.71 | 32.71 | 52.0 | 0.629 |
| 70.00 | 0.40 | 1.17 | 0.00 | 0.00 | 0.00 | 31.54 | 31.54 | 52.0 | 0.606 |
| 75.00 | 0.38 | 1.16 | 0.00 | 0.00 | 0.00 | 30.30 | 30.30 | 52.0 | 0.583 |
| 78.00 | 0.37 | 1.16 | 0.00 | 0.00 | 0.00 | 29.53 | 29.53 | 52.0 | 0.568 |
| 80.00 | 0.36 | 1.16 | 0.00 | 0.00 | 0.00 | 29.01 | 29.01 | 52.0 | 0.558 |
| 85.00 | 0.42 | 1.39 | 0.00 | 0.00 | 0.00 | 30.92 | 30.92 | 52.0 | 0.595 |
| 90.00 | 0.40 | 1.38 | 0.00 | 0.00 | 0.00 | 29.26 | 29.26 | 52.0 | 0.563 |
| 95.00 | 0.38 | 1.38 | 0.00 | 0.00 | 0.00 | 27.50 | 27.50 | 52.0 | 0.529 |
| 95.58 | 0.37 | 1.38 | 0.00 | 0.00 | 0.00 | 26.91 | 27.28 | 52.0 | 0.525 |
| 100.00 | 0.34 | 1.35 | 0.00 | 0.00 | 0.00 | 41.79 | 42.20 | 52.0 | 0.811 |
| 105.00 | 0.33 | 1.35 | 0.00 | 0.00 | 0.00 | 39.10 | 39.50 | 52.0 | 0.760 |
| 110.00 | 0.32 | 1.34 | 0.00 | 0.00 | 0.00 | 36.12 | 36.51 | 52.0 | 0.702 |
| 115.00 | 0.31 | 1.34 | 0.00 | 0.00 | 0.00 | 32.90 | 33.29 | 52.0 | 0.640 |
| 115.00 | 0.31 | 1.34 | 0.00 | 0.00 | 0.00 | 32.90 | 33.29 | 52.0 | 0.795 |
| 120.00 | 0.38 | 1.68 | 0.00 | 0.00 | 0.00 | 36.45 | 36.94 | 52.0 | 0.710 |
| 125.00 | 0.37 | 1.68 | 0.00 | 0.00 | 0.00 | 31.54 | 32.05 | 52.0 | 0.616 |
| 130.00 | 0.36 | 1.68 | 0.00 | 0.00 | 0.00 | 26.08 | 26.60 | 52.0 | 0.512 |
| 133.00 | 0.27 | 1.31 | 0.00 | 0.00 | 0.00 | 22.53 | 22.91 | 52.0 | 0.441 |
| 135.00 | 0.27 | 1.31 | 0.00 | 0.00 | 0.00 | 20.73 | 21.12 | 52.0 | 0.406 |
| 140.00 | 0.26 | 1.30 | 0.00 | 0.00 | 0.00 | 15.81 | 16.23 | 52.0 | 0.312 |
| 142.20 | 0.18 | 1.00 | 0.00 | 0.00 | 0.00 | 13.38 | 13.67 | 52.0 | 0.263 |
| 145.00 | 0.17 | 1.00 | 0.00 | 0.00 | 0.00 | 11.11 | 11.41 | 52.0 | 0.219 |
| 145.00 | 0.17 | 1.00 | 0.00 | 0.00 | 0.00 | 11.11 | 11.41 | 52.0 | 0.222 |
| 148.30 | 0.08 | 0.56 | 0.00 | 0.00 | 0.00 | 7.36 | 7.50 | 51.6 | 47.0 0.145 |

Resulting Stresses

Structure: CT02049-S-SBA

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 18



| | | | | | | | | | | |
|--------|------|------|------|------|------|------|------|------|------|-------|
| 150.00 | 0.08 | 0.55 | 0.00 | 0.00 | 0.00 | 6.57 | 6.71 | 51.8 | 47.1 | 0.130 |
| 150.00 | 0.08 | 0.55 | 0.00 | 0.00 | 0.00 | 6.57 | 6.71 | 51.8 | 47.1 | 0.279 |
| 155.00 | 0.09 | 0.78 | 0.00 | 0.00 | 0.00 | 7.99 | 8.19 | 40.0 | 40.0 | 0.205 |
| 160.00 | 0.00 | 0.76 | 0.00 | 0.00 | 0.00 | 1.97 | 2.36 | 40.0 | 40.0 | 0.059 |

Wind Loading - Shaft

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 19



Load Case: 73.61 mph Wind with 0.5" Ice

Iterations: 24

Dead Load Factor 1.00
Wind Load Factor 1.00



| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|-----------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | RB1 | 0.00 | 1.00 | 13.871 | 23.44 | 309.01 | 1.030 | 0.500 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 0.00 | 1.00 | 13.871 | 23.44 | 303.06 | 1.030 | 0.500 | 5.00 | 21.204 | 21.84 | 512.0 | 152.4 | 1434.3 |
| 10.00 | | 0.00 | 1.00 | 13.871 | 23.44 | 297.11 | 1.030 | 0.500 | 5.00 | 20.800 | 21.42 | 502.2 | 149.5 | 1411.4 |
| 14.50 | RB2 | 0.00 | 1.00 | 13.871 | 23.44 | 291.75 | 1.030 | 0.500 | 4.50 | 18.374 | 18.93 | 443.7 | 132.1 | 1939.8 |
| 15.00 | | 0.00 | 1.00 | 13.871 | 23.44 | 291.16 | 1.030 | 0.500 | 0.50 | 2.021 | 2.08 | 48.8 | 14.7 | 214.5 |
| 16.00 | Bot - Section 2 | 0.00 | 1.00 | 13.871 | 23.44 | 289.97 | 1.030 | 0.500 | 1.00 | 4.031 | 4.15 | 97.3 | 29.2 | 428.3 |
| 16.25 | RT1 RB3 | 0.00 | 1.00 | 13.871 | 23.44 | 289.67 | 1.030 | 0.500 | 0.25 | 1.021 | 1.05 | 24.6 | 7.4 | 156.0 |
| 18.00 | RT2 | 0.00 | 1.00 | 13.871 | 23.44 | 287.59 | 1.030 | 0.500 | 1.75 | 7.117 | 7.33 | 171.8 | 51.5 | 1043.2 |
| 20.00 | | 0.00 | 1.00 | 13.871 | 23.44 | 285.21 | 1.030 | 0.500 | 2.00 | 8.073 | 8.32 | 194.9 | 58.3 | 879.6 |
| 22.00 | Top - Section 1 | 0.00 | 1.00 | 13.871 | 23.44 | 282.83 | 1.030 | 0.500 | 2.00 | 8.008 | 8.25 | 193.4 | 57.9 | 872.7 |
| 25.00 | | 0.00 | 1.00 | 13.871 | 23.44 | 283.86 | 1.030 | 0.500 | 3.00 | 11.892 | 12.25 | 287.1 | 85.7 | 735.9 |
| 30.00 | RB4 | 0.00 | 1.00 | 13.871 | 23.44 | 277.91 | 1.030 | 0.500 | 5.00 | 19.496 | 20.08 | 470.7 | 139.9 | 1973.2 |
| 31.00 | RT3 | 0.00 | 1.00 | 13.871 | 23.44 | 276.72 | 1.030 | 0.500 | 1.00 | 3.851 | 3.97 | 93.0 | 27.9 | 392.1 |
| 35.00 | | 0.00 | 1.02 | 14.106 | 23.84 | 274.25 | 1.030 | 0.500 | 4.00 | 15.241 | 15.70 | 374.2 | 109.6 | 1450.9 |
| 40.00 | Appurtenance(s) | 0.00 | 1.06 | 14.655 | 24.77 | 273.42 | 1.030 | 0.500 | 5.00 | 18.688 | 19.25 | 476.7 | 134.0 | 1792.7 |
| 45.00 | | 0.00 | 1.09 | 15.156 | 25.61 | 271.84 | 1.030 | 0.500 | 5.00 | 18.283 | 18.83 | 482.4 | 131.0 | 1769.8 |
| 45.16 | RB5 | 0.00 | 1.09 | 15.172 | 25.64 | 271.78 | 1.030 | 0.500 | 0.16 | 0.578 | 0.60 | 15.3 | 4.2 | 84.9 |
| 46.00 | RT4 | 0.00 | 1.10 | 15.252 | 25.78 | 271.45 | 1.030 | 0.500 | 0.84 | 3.030 | 3.12 | 80.4 | 21.9 | 445.2 |
| 50.00 | Bot - Section 3 | 0.00 | 1.13 | 15.620 | 26.40 | 269.65 | 1.030 | 0.500 | 4.00 | 14.271 | 14.70 | 388.0 | 102.4 | 1498.0 |
| 55.00 | | 0.00 | 1.16 | 16.051 | 27.13 | 266.94 | 1.030 | 0.500 | 5.00 | 17.787 | 18.32 | 497.0 | 127.4 | 2702.6 |
| 56.00 | Top - Section 2 | 0.00 | 1.16 | 16.134 | 27.27 | 266.35 | 1.030 | 0.500 | 1.00 | 3.509 | 3.61 | 98.5 | 25.4 | 535.6 |
| 58.00 | RT5 RB6 | 0.00 | 1.17 | 16.296 | 27.54 | 270.09 | 1.030 | 0.500 | 2.00 | 6.970 | 7.18 | 197.7 | 50.2 | 739.8 |
| 60.00 | | 0.00 | 1.19 | 16.455 | 27.81 | 268.81 | 1.030 | 0.500 | 2.00 | 6.905 | 7.11 | 197.8 | 49.8 | 659.6 |
| 65.00 | | 0.00 | 1.21 | 16.836 | 28.45 | 265.35 | 1.030 | 0.500 | 5.00 | 16.979 | 17.49 | 497.6 | 121.5 | 1632.2 |
| 70.00 | | 0.00 | 1.24 | 17.196 | 29.06 | 261.55 | 1.030 | 0.500 | 5.00 | 16.575 | 17.07 | 496.1 | 118.5 | 1609.3 |
| 75.00 | | 0.00 | 1.26 | 17.538 | 29.64 | 257.45 | 1.030 | 0.500 | 5.00 | 16.171 | 16.66 | 493.7 | 115.5 | 1586.4 |
| 78.00 | RT6 RB7 | 0.00 | 1.28 | 17.736 | 29.97 | 254.86 | 1.030 | 0.500 | 3.00 | 9.508 | 9.79 | 293.6 | 68.3 | 941.2 |
| 80.00 | Top - Section 3 | 0.00 | 1.29 | 17.865 | 30.19 | 253.08 | 1.030 | 0.500 | 2.00 | 6.258 | 6.45 | 194.6 | 45.0 | 623.0 |
| 85.00 | | 0.00 | 1.31 | 18.177 | 30.72 | 248.47 | 1.030 | 0.500 | 5.00 | 15.362 | 15.82 | 486.1 | 109.6 | 1420.2 |
| 90.00 | | 0.00 | 1.33 | 18.476 | 31.22 | 243.64 | 1.030 | 0.500 | 5.00 | 14.958 | 15.41 | 481.1 | 106.6 | 1400.6 |
| 95.00 | Bot - Section 5 | 0.00 | 1.35 | 18.764 | 31.71 | 238.61 | 1.030 | 0.500 | 5.00 | 14.554 | 14.99 | 475.4 | 103.7 | 1381.0 |
| 95.58 | RT7 | 0.00 | 1.36 | 18.796 | 31.77 | 238.01 | 1.030 | 0.500 | 0.58 | 1.692 | 1.74 | 55.4 | 12.2 | 226.2 |
| 100.00 | Top - Section 4 | 0.00 | 1.37 | 19.041 | 32.18 | 233.39 | 1.030 | 0.500 | 4.42 | 12.718 | 13.10 | 421.5 | 90.7 | 1086.7 |
| 105.00 | | 0.00 | 1.39 | 19.308 | 32.63 | 232.53 | 1.030 | 0.500 | 5.00 | 14.006 | 14.43 | 470.7 | 99.7 | 652.7 |
| 110.00 | Appurtenance(s) | 0.00 | 1.41 | 19.566 | 33.07 | 227.01 | 1.030 | 0.500 | 5.00 | 13.602 | 14.01 | 463.3 | 96.7 | 633.1 |
| 115.00 | Top - Section 5 | 0.00 | 1.43 | 19.816 | 33.49 | 221.35 | 1.030 | 0.500 | 5.00 | 13.198 | 13.59 | 455.3 | 93.7 | 613.6 |
| 120.00 | | 0.00 | 1.45 | 20.059 | 33.90 | 215.54 | 1.030 | 0.500 | 5.00 | 12.794 | 13.18 | 446.7 | 90.8 | 494.2 |
| 125.00 | | 0.00 | 1.46 | 20.294 | 34.30 | 209.61 | 1.030 | 0.500 | 5.00 | 12.390 | 12.76 | 437.7 | 87.8 | 477.9 |
| 130.00 | | 0.00 | 1.48 | 20.523 | 34.68 | 203.55 | 1.030 | 0.500 | 5.00 | 11.985 | 12.34 | 428.2 | 84.8 | 461.7 |
| 133.00 | Appurtenance(s) | 0.00 | 1.49 | 20.657 | 34.91 | 199.85 | 1.030 | 0.500 | 3.00 | 6.997 | 7.21 | 251.6 | 49.8 | 269.6 |
| 135.00 | | 0.00 | 1.50 | 20.745 | 35.06 | 197.37 | 1.030 | 0.500 | 2.00 | 4.584 | 4.72 | 165.5 | 32.8 | 176.6 |
| 140.00 | | 0.00 | 1.51 | 20.962 | 35.43 | 191.08 | 1.030 | 0.500 | 5.00 | 11.177 | 11.51 | 407.8 | 78.9 | 429.2 |
| 142.20 | Appurtenance(s) | 0.00 | 1.52 | 21.056 | 35.58 | 188.28 | 1.030 | 0.500 | 2.20 | 4.790 | 4.93 | 175.6 | 34.2 | 184.1 |
| 145.00 | Top - Section 6 | 0.00 | 1.53 | 21.173 | 35.78 | 184.69 | 1.030 | 0.500 | 2.80 | 5.983 | 6.16 | 220.5 | 42.5 | 229.6 |
| 148.30 | Appurtenance(s) | 0.00 | 1.54 | 21.310 | 36.01 | 180.46 | 0.590 | 0.500 | 3.30 | 6.890 | 4.07 | 146.4 | 48.9 | 258.8 |
| 150.00 | Top - Section 7 | 0.00 | 1.54 | 21.379 | 36.13 | 178.24 | 0.590 | 0.500 | 1.70 | 3.481 | 2.05 | 74.2 | 24.8 | 130.8 |
| 155.00 | | 0.00 | 1.56 | 21.581 | 36.47 | 122.42 | 0.590 | 0.500 | 5.00 | 7.083 | 4.18 | 152.4 | 50.4 | 260.9 |
| 160.00 | Appurtenance(s) | 0.00 | 1.57 | 21.777 | 36.80 | 122.98 | 0.590 | 0.500 | 5.00 | 7.083 | 4.18 | 153.8 | 50.4 | 260.9 |

Wind Loading - Shaft

Structure: CT02049-S-SBA

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 20



Totals: 160.00

14,192.4

40,600.9

Discrete Appurtenance Forces

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 21



Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | CaAa Factor | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|----------------|-----------|---------------------------|-----|----------|------------|-------------|------------------|----------------|----------------|---------------|------------------|---------------|---------------|
| 1 | 160.00 | Low Profile Platform | 1 | 21.777 | 36.803 | 1.00 | 27.00 | 1800.00 | 0.000 | 0.000 | 993.69 | 0.00 | 0.00 |
| 2 | 160.00 | DB846F65ZAXY | 6 | 21.862 | 36.947 | 0.94 | 44.05 | 0.00 | 0.000 | 2.200 | 1627.47 | 0.00 | 3580.43 |
| 3 | 160.00 | DB222 | 1 | 21.969 | 37.128 | 1.00 | 3.99 | 35.90 | 0.000 | 5.000 | 148.14 | 0.00 | 740.71 |
| 4 | 160.00 | BXA-70063/4CF | 3 | 21.862 | 36.947 | 0.74 | 12.74 | 115.80 | 0.000 | 2.200 | 470.81 | 0.00 | 1035.79 |
| 5 | 160.00 | 6' Lightning rod | 1 | 21.777 | 36.803 | 1.00 | 0.98 | 11.80 | 0.000 | 0.000 | 36.07 | 0.00 | 0.00 |
| 6 | 160.00 | LPA-185063/8CF | 6 | 21.862 | 36.947 | 0.95 | 20.29 | 0.00 | 0.000 | 2.200 | 749.73 | 0.00 | 1649.41 |
| 7 | 148.30 | ALU 800MHz External Notch | 3 | 21.460 | 36.268 | 0.71 | 2.04 | 41.40 | 0.000 | 3.700 | 74.16 | 0.00 | 274.39 |
| 8 | 148.30 | 1900MHz RRH | 3 | 21.460 | 36.268 | 0.77 | 9.70 | 225.60 | 0.000 | 3.700 | 351.87 | 0.00 | 1301.93 |
| 9 | 148.30 | 800 MHz RRH | 3 | 21.460 | 36.268 | 0.77 | 6.51 | 222.30 | 0.000 | 3.700 | 236.26 | 0.00 | 874.15 |
| 10 | 148.30 | ACU-A20-N | 4 | 21.460 | 36.268 | 0.77 | 0.68 | 9.20 | 0.000 | 3.700 | 24.58 | 0.00 | 90.93 |
| 11 | 148.30 | TD-RRH8x20-25 | 3 | 21.379 | 36.131 | 0.71 | 10.59 | 276.00 | 0.000 | 1.700 | 382.49 | 0.00 | 650.23 |
| 12 | 148.30 | APXVSP18-C-A20 | 3 | 21.460 | 36.268 | 0.82 | 22.39 | 319.50 | 0.000 | 3.700 | 812.09 | 0.00 | 3004.72 |
| 13 | 148.30 | APXVTM14-C-120 | 3 | 21.379 | 36.131 | 0.77 | 16.75 | 275.70 | 0.000 | 1.700 | 605.28 | 0.00 | 1028.98 |
| 14 | 148.30 | Low Profile Platform | 1 | 21.310 | 36.013 | 1.00 | 27.00 | 1800.00 | 0.000 | 0.000 | 972.36 | 0.00 | 0.00 |
| 15 | 142.20 | Low Profile Platform | 1 | 21.056 | 35.584 | 1.00 | 27.00 | 1800.00 | 0.000 | 0.000 | 960.76 | 0.00 | 0.00 |
| 16 | 142.20 | KRY 112 144/1 | 3 | 21.085 | 35.634 | 0.72 | 1.19 | 42.30 | 0.000 | 0.700 | 42.33 | 0.00 | 29.63 |
| 17 | 142.20 | AIR 21 B4A B2P | 3 | 21.085 | 35.634 | 0.83 | 17.44 | 384.30 | 0.000 | 0.700 | 621.42 | 0.00 | 434.99 |
| 18 | 142.20 | AIR 21 B2A B4P | 3 | 21.085 | 35.634 | 0.83 | 17.44 | 387.60 | 0.000 | 0.700 | 621.42 | 0.00 | 434.99 |
| 19 | 142.20 | LGP13907 | 6 | 21.123 | 35.698 | 0.77 | 3.46 | 87.60 | 0.000 | 1.600 | 123.69 | 0.00 | 197.91 |
| 20 | 133.00 | Low Profile Platform | 1 | 20.657 | 34.910 | 1.00 | 27.00 | 1800.00 | 0.000 | 0.000 | 942.58 | 0.00 | 0.00 |
| 21 | 133.00 | 21401 | 6 | 20.657 | 34.910 | 0.69 | 6.33 | 127.20 | 0.000 | 0.000 | 221.13 | 0.00 | 0.00 |
| 22 | 133.00 | 800 10121 | 3 | 20.657 | 34.910 | 0.81 | 14.80 | 237.60 | 0.000 | 0.000 | 516.63 | 0.00 | 0.00 |
| 23 | 133.00 | RRUS 11 | 3 | 20.657 | 34.910 | 0.75 | 7.06 | 198.00 | 0.000 | 0.000 | 246.64 | 0.00 | 0.00 |
| 24 | 133.00 | OPA-65R-LCUU-H6 | 3 | 20.657 | 34.910 | 0.77 | 25.06 | 402.00 | 0.000 | 0.000 | 874.98 | 0.00 | 0.00 |
| 25 | 133.00 | RRUS 12 | 3 | 20.657 | 34.910 | 0.71 | 8.31 | 227.10 | 0.000 | 0.000 | 290.07 | 0.00 | 0.00 |
| 26 | 133.00 | RRUS A2 Module | 3 | 20.657 | 34.910 | 0.40 | 2.58 | 94.20 | 0.000 | 0.000 | 90.07 | 0.00 | 0.00 |
| 27 | 110.00 | DB222 | 1 | 19.831 | 33.514 | 1.00 | 3.99 | 35.90 | 0.000 | 5.292 | 133.72 | 0.00 | 707.61 |
| 28 | 110.00 | 3 ft Standoff | 1 | 19.566 | 33.067 | 1.00 | 4.34 | 63.00 | 0.000 | 0.000 | 143.51 | 0.00 | 0.00 |
| 29 | 40.00 | GPS | 1 | 14.655 | 24.767 | 1.00 | 1.25 | 18.00 | 0.000 | 0.000 | 30.96 | 0.00 | 0.00 |
| Totals: | | | | | | | 11,038.00 | | | | 13,344.90 | | |

Total Applied Force Summary

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 22



Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|-----------|--------------------|---------------------|-------------------|--------------------|-------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 605.76 | 1386.75 | 0.00 | 0.00 |
| 10.00 | | 596.00 | 1363.86 | 0.00 | 0.00 |
| 14.50 | | 528.05 | 1552.55 | 0.00 | 0.00 |
| 15.00 | | 58.18 | 171.48 | 0.00 | 0.00 |
| 16.00 | | 116.08 | 342.24 | 0.00 | 0.00 |
| 16.25 | | 29.34 | 134.46 | 0.00 | 0.00 |
| 18.00 | | 204.66 | 915.34 | 0.00 | 0.00 |
| 20.00 | | 232.44 | 886.53 | 0.00 | 0.00 |
| 22.00 | | 230.88 | 879.68 | 0.00 | 0.00 |
| 25.00 | | 343.39 | 746.37 | 0.00 | 0.00 |
| 30.00 | | 564.51 | 1607.84 | 0.00 | 0.00 |
| 31.00 | | 111.73 | 319.06 | 0.00 | 0.00 |
| 35.00 | | 429.79 | 1208.17 | 0.00 | 0.00 |
| 40.00 | (1) appurtenances | 570.83 | 1505.51 | 0.00 | 0.00 |
| 45.00 | | 547.68 | 1464.62 | 0.00 | 0.00 |
| 45.16 | | 17.37 | 60.83 | 0.00 | 0.00 |
| 46.00 | | 91.48 | 318.91 | 0.00 | 0.00 |
| 50.00 | | 441.87 | 1202.79 | 0.00 | 0.00 |
| 55.00 | | 566.15 | 2333.67 | 0.00 | 0.00 |
| 56.00 | | 112.45 | 461.83 | 0.00 | 0.00 |
| 58.00 | | 225.80 | 592.23 | 0.00 | 0.00 |
| 60.00 | | 226.14 | 550.31 | 0.00 | 0.00 |
| 65.00 | | 570.14 | 1358.87 | 0.00 | 0.00 |
| 70.00 | | 570.24 | 1335.98 | 0.00 | 0.00 |
| 75.00 | | 569.26 | 1313.08 | 0.00 | 0.00 |
| 78.00 | | 339.41 | 777.22 | 0.00 | 0.00 |
| 80.00 | | 225.40 | 513.69 | 0.00 | 0.00 |
| 85.00 | | 564.40 | 1146.84 | 0.00 | 0.00 |
| 90.00 | | 560.70 | 1127.27 | 0.00 | 0.00 |
| 95.00 | | 556.23 | 1107.70 | 0.00 | 0.00 |
| 95.58 | | 64.77 | 194.53 | 0.00 | 0.00 |
| 100.00 | | 477.33 | 1152.12 | 0.00 | 0.00 |
| 105.00 | | 511.53 | 722.46 | 0.00 | 0.00 |
| 110.00 | (2) appurtenances | 781.84 | 801.79 | 0.00 | 707.61 |
| 115.00 | | 497.11 | 683.32 | 0.00 | 0.00 |
| 120.00 | | 489.08 | 563.97 | 0.00 | 0.00 |
| 125.00 | | 480.54 | 547.72 | 0.00 | 0.00 |
| 130.00 | | 471.52 | 531.47 | 0.00 | 0.00 |
| 133.00 | (22) appurtenances | 3459.88 | 3397.54 | 0.00 | 0.00 |
| 135.00 | | 183.06 | 195.23 | 0.00 | 0.00 |
| 140.00 | | 452.12 | 475.82 | 0.00 | 0.00 |
| 142.20 | (16) appurtenances | 2564.75 | 2906.38 | 0.00 | 1097.52 |
| 145.00 | | 220.51 | 248.56 | 0.00 | 0.00 |
| 148.30 | (23) appurtenances | 3605.48 | 3450.82 | 0.00 | 7225.32 |
| 150.00 | | 74.20 | 132.54 | 0.00 | 0.00 |
| 155.00 | | 152.42 | 266.06 | 0.00 | 0.00 |
| 160.00 | (18) appurtenances | 4179.72 | 2229.56 | 0.00 | 7006.34 |

Total Applied Force Summary

Structure: CT02049-S-SB

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 23



| | | | | |
|----------------|------------------|------------------|-------------|------------------|
| Totals: | 29,472.23 | 47,185.54 | 0.00 | 16,036.79 |
|----------------|------------------|------------------|-------------|------------------|

Resulting Forces and Deflections

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 24



Load Case: 73.61 mph Wind with 0.5" Ice

Iterations: 24

Dead Load Factor 1.00
Wind Load Factor 1.00



| Elev (ft) | Lateral FX (-) (kips) | Axial FY (-) (kips) | Lateral FZ (kips) | Moment MX (ft-kips) | Torsion MY (ft-kips) | Moment MZ (ft-kips) | Deflect X (in) | Deflect Z (in) | Deflect Resultant (in) | Rotation Sway (deg) | Rotation Twist (deg) |
|-----------|-----------------------|---------------------|-------------------|---------------------|----------------------|---------------------|----------------|----------------|------------------------|---------------------|----------------------|
| 0.00 | -29.539 | -47.143 | 0.000 | 0.000 | 0.000 | -3280.2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 5.00 | -29.060 | -45.676 | 0.000 | 0.000 | 0.000 | -3132.5 | -0.086 | 0.000 | 0.086 | -0.160 | 0.000 |
| 10.00 | -28.577 | -44.238 | 0.000 | 0.000 | 0.000 | -2987.2 | -0.341 | 0.000 | 0.341 | -0.322 | 0.000 |
| 14.50 | -28.097 | -42.651 | 0.000 | 0.000 | 0.000 | -2858.6 | -0.714 | 0.000 | 0.714 | -0.468 | 0.000 |
| 15.00 | -28.052 | -42.470 | 0.000 | 0.000 | 0.000 | -2844.6 | -0.764 | 0.000 | 0.764 | -0.481 | 0.000 |
| 16.00 | -27.945 | -42.121 | 0.000 | 0.000 | 0.000 | -2816.5 | -0.868 | 0.000 | 0.868 | -0.507 | 0.000 |
| 16.25 | -27.933 | -41.974 | 0.000 | 0.000 | 0.000 | -2809.6 | -0.895 | 0.000 | 0.895 | -0.513 | 0.000 |
| 18.00 | -27.757 | -41.036 | 0.000 | 0.000 | 0.000 | -2760.7 | -1.091 | 0.000 | 1.091 | -0.558 | 0.000 |
| 20.00 | -27.563 | -40.119 | 0.000 | 0.000 | 0.000 | -2705.2 | -1.338 | 0.000 | 1.338 | -0.616 | 0.000 |
| 22.00 | -27.389 | -39.195 | 0.000 | 0.000 | 0.000 | -2650.0 | -1.613 | 0.000 | 1.613 | -0.695 | 0.000 |
| 25.00 | -27.138 | -38.381 | 0.000 | 0.000 | 0.000 | -2567.9 | -2.088 | 0.000 | 2.088 | -0.812 | 0.000 |
| 30.00 | -26.617 | -36.733 | 0.000 | 0.000 | 0.000 | -2432.2 | -3.038 | 0.000 | 3.038 | -0.998 | 0.000 |
| 31.00 | -26.544 | -36.384 | 0.000 | 0.000 | 0.000 | -2405.6 | -3.250 | 0.000 | 3.250 | -1.027 | 0.000 |
| 35.00 | -26.178 | -35.120 | 0.000 | 0.000 | 0.000 | -2299.4 | -4.159 | 0.000 | 4.159 | -1.139 | 0.000 |
| 40.00 | -25.673 | -33.552 | 0.000 | 0.000 | 0.000 | -2168.5 | -5.441 | 0.000 | 5.441 | -1.307 | 0.000 |
| 45.00 | -25.138 | -32.063 | 0.000 | 0.000 | 0.000 | -2040.1 | -6.899 | 0.000 | 6.899 | -1.474 | 0.000 |
| 45.16 | -25.126 | -31.997 | 0.000 | 0.000 | 0.000 | -2036.1 | -6.949 | 0.000 | 6.949 | -1.479 | 0.000 |
| 46.00 | -25.059 | -31.655 | 0.000 | 0.000 | 0.000 | -2015.0 | -7.211 | 0.000 | 7.211 | -1.500 | 0.000 |
| 50.00 | -24.653 | -30.409 | 0.000 | 0.000 | 0.000 | -1914.8 | -8.510 | 0.000 | 8.510 | -1.598 | 0.000 |
| 55.00 | -24.065 | -28.054 | 0.000 | 0.000 | 0.000 | -1791.5 | -10.268 | 0.000 | 10.268 | -1.756 | 0.000 |
| 56.00 | -23.962 | -27.576 | 0.000 | 0.000 | 0.000 | -1767.4 | -10.640 | 0.000 | 10.640 | -1.788 | 0.000 |
| 58.00 | -23.746 | -26.965 | 0.000 | 0.000 | 0.000 | -1719.5 | -11.402 | 0.000 | 11.402 | -1.851 | 0.000 |
| 60.00 | -23.554 | -26.377 | 0.000 | 0.000 | 0.000 | -1672.0 | -12.191 | 0.000 | 12.191 | -1.912 | 0.000 |
| 65.00 | -23.007 | -24.974 | 0.000 | 0.000 | 0.000 | -1554.3 | -14.280 | 0.000 | 14.280 | -2.073 | 0.000 |
| 70.00 | -22.452 | -23.598 | 0.000 | 0.000 | 0.000 | -1439.2 | -16.537 | 0.000 | 16.537 | -2.233 | 0.000 |
| 75.00 | -21.879 | -22.261 | 0.000 | 0.000 | 0.000 | -1327.0 | -18.960 | 0.000 | 18.960 | -2.391 | 0.000 |
| 78.00 | -21.537 | -21.470 | 0.000 | 0.000 | 0.000 | -1261.3 | -20.492 | 0.000 | 20.492 | -2.486 | 0.000 |
| 80.00 | -21.329 | -20.926 | 0.000 | 0.000 | 0.000 | -1218.3 | -21.547 | 0.000 | 21.547 | -2.549 | 0.000 |
| 85.00 | -20.768 | -19.748 | 0.000 | 0.000 | 0.000 | -1111.6 | -24.298 | 0.000 | 24.298 | -2.702 | 0.000 |
| 90.00 | -20.206 | -18.591 | 0.000 | 0.000 | 0.000 | -1007.8 | -27.217 | 0.000 | 27.217 | -2.869 | 0.000 |
| 95.00 | -19.621 | -17.483 | 0.000 | 0.000 | 0.000 | -906.79 | -30.307 | 0.000 | 30.307 | -3.031 | 0.000 |
| 95.58 | -19.570 | -17.266 | 0.000 | 0.000 | 0.000 | -895.41 | -30.677 | 0.000 | 30.677 | -3.050 | 0.000 |
| 100.00 | -19.086 | -16.076 | 0.000 | 0.000 | 0.000 | -808.92 | -33.564 | 0.000 | 33.564 | -3.187 | 0.000 |
| 105.00 | -18.598 | -15.306 | 0.000 | 0.000 | 0.000 | -713.49 | -37.037 | 0.000 | 37.037 | -3.440 | 0.000 |
| 110.00 | -17.825 | -14.485 | 0.000 | 0.000 | 0.000 | -619.79 | -40.762 | 0.000 | 40.762 | -3.669 | 0.000 |
| 115.00 | -17.334 | -13.772 | 0.000 | 0.000 | 0.000 | -530.67 | -44.721 | 0.000 | 44.721 | -3.886 | 0.000 |
| 120.00 | -16.857 | -13.180 | 0.000 | 0.000 | 0.000 | -444.00 | -48.899 | 0.000 | 48.899 | -4.089 | 0.000 |
| 125.00 | -16.385 | -12.607 | 0.000 | 0.000 | 0.000 | -359.72 | -53.303 | 0.000 | 53.303 | -4.318 | 0.000 |
| 130.00 | -15.906 | -12.072 | 0.000 | 0.000 | 0.000 | -277.80 | -57.933 | 0.000 | 57.933 | -4.519 | 0.000 |
| 133.00 | -12.199 | -8.943 | 0.000 | 0.000 | 0.000 | -230.08 | -60.805 | 0.000 | 60.805 | -4.625 | 0.000 |
| 135.00 | -12.017 | -8.742 | 0.000 | 0.000 | 0.000 | -205.68 | -62.755 | 0.000 | 62.755 | -4.691 | 0.000 |
| 140.00 | -11.540 | -8.287 | 0.000 | 0.000 | 0.000 | -145.60 | -67.740 | 0.000 | 67.740 | -4.828 | 0.000 |
| 142.20 | -8.744 | -5.600 | 0.000 | 0.000 | 0.000 | -119.11 | -69.975 | 0.000 | 69.975 | -4.879 | 0.000 |
| 145.00 | -8.508 | -5.363 | 0.000 | 0.000 | 0.000 | -94.636 | -72.850 | 0.000 | 72.850 | -4.934 | 0.000 |
| 148.30 | -4.618 | -2.234 | 0.000 | 0.000 | 0.000 | -59.335 | -76.277 | 0.000 | 76.277 | -4.987 | 0.000 |
| 150.00 | -4.534 | -2.106 | 0.000 | 0.000 | 0.000 | -51.484 | -78.054 | 0.000 | 78.054 | -5.008 | 0.000 |
| 155.00 | -4.361 | -1.849 | 0.000 | 0.000 | 0.000 | -28.812 | -83.320 | 0.000 | 83.320 | -5.055 | 0.000 |
| 160.00 | -4.180 | 0.000 | 0.000 | 0.000 | 0.000 | -7.006 | 0.000 | 0.000 | 88.650 | -5.121 | 0.000 |

Resulting Forces and Deflections

Structure: CT02049-S-SB

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 25



Resulting Stresses

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 26



Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Applied Stresses

| Elev (ft) | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | fb Combined (ksi) | Allow Stress (ksi) | f/Fb Stress Ratio |
|-----------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-------------------|--------------------|-------------------|
| 0.00 | 0.78 | 0.99 | 0.00 | 0.00 | 0.00 | 36.11 | 36.89 | 48.9 | 0.755 |
| 5.00 | 0.77 | 1.00 | 0.00 | 0.00 | 0.00 | 35.62 | 35.62 | 49.4 | 0.721 |
| 10.00 | 0.76 | 1.00 | 0.00 | 0.00 | 0.00 | 35.10 | 35.10 | 49.9 | 0.703 |
| 14.50 | 0.75 | 1.00 | 0.00 | 0.00 | 0.00 | 27.12 | 27.12 | 50.4 | 0.538 |
| 15.00 | 0.75 | 1.00 | 0.00 | 0.00 | 0.00 | 27.07 | 27.07 | 50.5 | 0.536 |
| 16.00 | 0.74 | 1.00 | 0.00 | 0.00 | 0.00 | 26.97 | 26.97 | 50.6 | 0.533 |
| 16.25 | 0.74 | 1.00 | 0.00 | 0.00 | 0.00 | 26.55 | 26.55 | 50.6 | 0.525 |
| 18.00 | 0.73 | 1.00 | 0.00 | 0.00 | 0.00 | 30.15 | 30.15 | 50.8 | 0.593 |
| 20.00 | 0.72 | 1.01 | 0.00 | 0.00 | 0.00 | 40.16 | 40.16 | 51.0 | 0.787 |
| 22.00 | 0.70 | 0.99 | 0.00 | 0.00 | 0.00 | 39.92 | 39.92 | 51.2 | 0.779 |
| 25.00 | 0.69 | 0.99 | 0.00 | 0.00 | 0.00 | 38.69 | 38.69 | 51.2 | 0.756 |
| 30.00 | 0.68 | 1.00 | 0.00 | 0.00 | 0.00 | 28.38 | 28.38 | 51.7 | 0.549 |
| 31.00 | 0.67 | 1.00 | 0.00 | 0.00 | 0.00 | 28.25 | 28.25 | 51.8 | 0.545 |
| 35.00 | 0.66 | 1.00 | 0.00 | 0.00 | 0.00 | 33.38 | 33.38 | 52.0 | 0.642 |
| 40.00 | 0.65 | 1.00 | 0.00 | 0.00 | 0.00 | 32.67 | 32.67 | 52.0 | 0.628 |
| 45.00 | 0.63 | 1.01 | 0.00 | 0.00 | 0.00 | 31.93 | 31.93 | 52.0 | 0.614 |
| 45.16 | 0.63 | 1.01 | 0.00 | 0.00 | 0.00 | 23.20 | 23.20 | 52.0 | 0.446 |
| 46.00 | 0.63 | 1.01 | 0.00 | 0.00 | 0.00 | 23.09 | 23.09 | 52.0 | 0.444 |
| 50.00 | 0.61 | 1.01 | 0.00 | 0.00 | 0.00 | 29.52 | 29.52 | 52.0 | 0.568 |
| 55.00 | 0.58 | 1.01 | 0.00 | 0.00 | 0.00 | 28.33 | 28.33 | 52.0 | 0.545 |
| 56.00 | 0.56 | 0.99 | 0.00 | 0.00 | 0.00 | 28.16 | 28.16 | 52.0 | 0.542 |
| 58.00 | 0.55 | 0.99 | 0.00 | 0.00 | 0.00 | 27.36 | 27.36 | 52.0 | 0.526 |
| 60.00 | 0.55 | 0.99 | 0.00 | 0.00 | 0.00 | 29.38 | 29.38 | 52.0 | 0.565 |
| 65.00 | 0.53 | 1.00 | 0.00 | 0.00 | 0.00 | 28.45 | 28.45 | 52.0 | 0.547 |
| 70.00 | 0.52 | 1.00 | 0.00 | 0.00 | 0.00 | 27.47 | 27.47 | 52.0 | 0.528 |
| 75.00 | 0.50 | 1.00 | 0.00 | 0.00 | 0.00 | 26.43 | 26.43 | 52.0 | 0.508 |
| 78.00 | 0.49 | 1.00 | 0.00 | 0.00 | 0.00 | 25.79 | 25.79 | 52.0 | 0.496 |
| 80.00 | 0.48 | 1.00 | 0.00 | 0.00 | 0.00 | 25.35 | 25.35 | 52.0 | 0.488 |
| 85.00 | 0.56 | 1.20 | 0.00 | 0.00 | 0.00 | 27.06 | 27.06 | 52.0 | 0.520 |
| 90.00 | 0.54 | 1.20 | 0.00 | 0.00 | 0.00 | 25.65 | 25.65 | 52.0 | 0.493 |
| 95.00 | 0.52 | 1.20 | 0.00 | 0.00 | 0.00 | 24.15 | 24.15 | 52.0 | 0.464 |
| 95.58 | 0.52 | 1.20 | 0.00 | 0.00 | 0.00 | 23.63 | 24.15 | 52.0 | 0.464 |
| 100.00 | 0.49 | 1.18 | 0.00 | 0.00 | 0.00 | 36.74 | 37.28 | 52.0 | 0.717 |
| 105.00 | 0.48 | 1.18 | 0.00 | 0.00 | 0.00 | 34.42 | 34.96 | 52.0 | 0.672 |
| 110.00 | 0.47 | 1.17 | 0.00 | 0.00 | 0.00 | 31.82 | 32.35 | 52.0 | 0.622 |
| 115.00 | 0.46 | 1.17 | 0.00 | 0.00 | 0.00 | 29.05 | 29.58 | 52.0 | 0.569 |
| 115.00 | 0.46 | 1.17 | 0.00 | 0.00 | 0.00 | 29.05 | 29.58 | 52.0 | 0.707 |
| 120.00 | 0.57 | 1.47 | 0.00 | 0.00 | 0.00 | 32.26 | 32.92 | 52.0 | 0.633 |
| 125.00 | 0.56 | 1.48 | 0.00 | 0.00 | 0.00 | 27.99 | 28.66 | 52.0 | 0.551 |
| 130.00 | 0.55 | 1.49 | 0.00 | 0.00 | 0.00 | 23.20 | 23.89 | 52.0 | 0.459 |
| 133.00 | 0.42 | 1.16 | 0.00 | 0.00 | 0.00 | 20.07 | 20.59 | 52.0 | 0.396 |
| 135.00 | 0.42 | 1.16 | 0.00 | 0.00 | 0.00 | 18.49 | 19.01 | 52.0 | 0.366 |
| 140.00 | 0.41 | 1.16 | 0.00 | 0.00 | 0.00 | 14.12 | 14.67 | 52.0 | 0.282 |
| 142.20 | 0.28 | 0.89 | 0.00 | 0.00 | 0.00 | 11.96 | 12.34 | 52.0 | 0.237 |
| 145.00 | 0.28 | 0.89 | 0.00 | 0.00 | 0.00 | 9.94 | 10.33 | 52.0 | 0.199 |
| 145.00 | 0.28 | 0.89 | 0.00 | 0.00 | 0.00 | 9.94 | 10.33 | 52.0 | 0.201 |
| 148.30 | 0.12 | 0.50 | 0.00 | 0.00 | 0.00 | 6.64 | 6.82 | 51.6 | 47.0 0.132 |

Resulting Stresses

Structure: CT02049-S-SBA

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 27



| | | | | | | | | | | |
|--------|------|------|------|------|------|------|------|------|------|-------|
| 150.00 | 0.12 | 0.50 | 0.00 | 0.00 | 0.00 | 5.93 | 6.10 | 51.8 | 47.1 | 0.118 |
| 150.00 | 0.12 | 0.50 | 0.00 | 0.00 | 0.00 | 5.93 | 6.10 | 51.8 | 47.1 | 0.253 |
| 155.00 | 0.15 | 0.71 | 0.00 | 0.00 | 0.00 | 7.21 | 7.46 | 40.0 | 40.0 | 0.186 |
| 160.00 | 0.00 | 0.68 | 0.00 | 0.00 | 0.00 | 1.75 | 2.11 | 40.0 | 40.0 | 0.053 |

Wind Loading - Shaft

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 28



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|-----------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | RB1 | 0.00 | 1.00 | 6.400 | 10.82 | 209.90 | 1.030 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 0.00 | 1.00 | 6.400 | 10.82 | 205.85 | 1.030 | 0.000 | 5.00 | 20.788 | 21.41 | 231.6 | 0.0 | 1281.8 |
| 10.00 | | 0.00 | 1.00 | 6.400 | 10.82 | 201.81 | 1.030 | 0.000 | 5.00 | 20.383 | 20.99 | 227.1 | 0.0 | 1261.9 |
| 14.50 | RB2 | 0.00 | 1.00 | 6.400 | 10.82 | 198.17 | 1.030 | 0.000 | 4.50 | 17.999 | 18.54 | 200.5 | 0.0 | 1807.7 |
| 15.00 | | 0.00 | 1.00 | 6.400 | 10.82 | 197.77 | 1.030 | 0.000 | 0.50 | 1.980 | 2.04 | 22.1 | 0.0 | 199.9 |
| 16.00 | Bot - Section 2 | 0.00 | 1.00 | 6.400 | 10.82 | 196.96 | 1.030 | 0.000 | 1.00 | 3.947 | 4.07 | 44.0 | 0.0 | 399.1 |
| 16.25 | RT1 RB3 | 0.00 | 1.00 | 6.400 | 10.82 | 196.76 | 1.030 | 0.000 | 0.25 | 1.000 | 1.03 | 11.1 | 0.0 | 148.6 |
| 18.00 | RT2 | 0.00 | 1.00 | 6.400 | 10.82 | 195.35 | 1.030 | 0.000 | 1.75 | 6.971 | 7.18 | 77.7 | 0.0 | 991.8 |
| 20.00 | | 0.00 | 1.00 | 6.400 | 10.82 | 193.73 | 1.030 | 0.000 | 2.00 | 7.907 | 8.14 | 88.1 | 0.0 | 821.2 |
| 22.00 | Top - Section 1 | 0.00 | 1.00 | 6.400 | 10.82 | 192.11 | 1.030 | 0.000 | 2.00 | 7.842 | 8.08 | 87.4 | 0.0 | 814.9 |
| 25.00 | | 0.00 | 1.00 | 6.400 | 10.82 | 192.81 | 1.030 | 0.000 | 3.00 | 11.642 | 11.99 | 129.7 | 0.0 | 650.2 |
| 30.00 | RB4 | 0.00 | 1.00 | 6.400 | 10.82 | 188.77 | 1.030 | 0.000 | 5.00 | 19.079 | 19.65 | 212.6 | 0.0 | 1833.3 |
| 31.00 | RT3 | 0.00 | 1.00 | 6.400 | 10.82 | 187.96 | 1.030 | 0.000 | 1.00 | 3.767 | 3.88 | 42.0 | 0.0 | 364.3 |
| 35.00 | | 0.00 | 1.02 | 6.509 | 11.00 | 186.29 | 1.030 | 0.000 | 4.00 | 14.908 | 15.35 | 168.9 | 0.0 | 1341.4 |
| 40.00 | Appurtenance(s) | 0.00 | 1.06 | 6.762 | 11.43 | 185.72 | 1.030 | 0.000 | 5.00 | 18.271 | 18.82 | 215.0 | 0.0 | 1658.8 |
| 45.00 | | 0.00 | 1.09 | 6.993 | 11.82 | 184.65 | 1.030 | 0.000 | 5.00 | 17.867 | 18.40 | 217.5 | 0.0 | 1638.8 |
| 45.16 | RB5 | 0.00 | 1.09 | 7.000 | 11.83 | 184.61 | 1.030 | 0.000 | 0.16 | 0.565 | 0.58 | 6.9 | 0.0 | 80.7 |
| 46.00 | RT4 | 0.00 | 1.10 | 7.037 | 11.89 | 184.38 | 1.030 | 0.000 | 0.84 | 2.960 | 3.05 | 36.3 | 0.0 | 423.3 |
| 50.00 | Bot - Section 3 | 0.00 | 1.13 | 7.207 | 12.18 | 183.16 | 1.030 | 0.000 | 4.00 | 13.938 | 14.36 | 174.8 | 0.0 | 1395.5 |
| 55.00 | | 0.00 | 1.16 | 7.406 | 12.52 | 181.32 | 1.030 | 0.000 | 5.00 | 17.371 | 17.89 | 223.9 | 0.0 | 2575.3 |
| 56.00 | Top - Section 2 | 0.00 | 1.16 | 7.444 | 12.58 | 180.92 | 1.030 | 0.000 | 1.00 | 3.426 | 3.53 | 44.4 | 0.0 | 510.3 |
| 58.00 | RT5 RB6 | 0.00 | 1.17 | 7.519 | 12.71 | 183.46 | 1.030 | 0.000 | 2.00 | 6.803 | 7.01 | 89.0 | 0.0 | 689.6 |
| 60.00 | | 0.00 | 1.19 | 7.592 | 12.83 | 182.59 | 1.030 | 0.000 | 2.00 | 6.738 | 6.94 | 89.0 | 0.0 | 609.9 |
| 65.00 | | 0.00 | 1.21 | 7.768 | 13.13 | 180.24 | 1.030 | 0.000 | 5.00 | 16.563 | 17.06 | 223.9 | 0.0 | 1510.8 |
| 70.00 | | 0.00 | 1.24 | 7.934 | 13.41 | 177.66 | 1.030 | 0.000 | 5.00 | 16.158 | 16.64 | 223.2 | 0.0 | 1490.8 |
| 75.00 | | 0.00 | 1.26 | 8.092 | 13.68 | 174.87 | 1.030 | 0.000 | 5.00 | 15.754 | 16.23 | 221.9 | 0.0 | 1470.9 |
| 78.00 | RT6 RB7 | 0.00 | 1.28 | 8.183 | 13.83 | 173.11 | 1.030 | 0.000 | 3.00 | 9.258 | 9.54 | 131.9 | 0.0 | 873.0 |
| 80.00 | Top - Section 3 | 0.00 | 1.29 | 8.242 | 13.93 | 171.91 | 1.030 | 0.000 | 2.00 | 6.091 | 6.27 | 87.4 | 0.0 | 578.0 |
| 85.00 | | 0.00 | 1.31 | 8.387 | 14.17 | 168.78 | 1.030 | 0.000 | 5.00 | 14.946 | 15.39 | 218.2 | 0.0 | 1310.6 |
| 90.00 | | 0.00 | 1.33 | 8.525 | 14.41 | 165.49 | 1.030 | 0.000 | 5.00 | 14.542 | 14.98 | 215.8 | 0.0 | 1294.0 |
| 95.00 | Bot - Section 5 | 0.00 | 1.35 | 8.657 | 14.63 | 162.08 | 1.030 | 0.000 | 5.00 | 14.137 | 14.56 | 213.0 | 0.0 | 1277.4 |
| 95.58 | RT7 | 0.00 | 1.36 | 8.672 | 14.66 | 161.67 | 1.030 | 0.000 | 0.58 | 1.644 | 1.69 | 24.8 | 0.0 | 214.0 |
| 100.00 | Top - Section 4 | 0.00 | 1.37 | 8.785 | 14.85 | 158.53 | 1.030 | 0.000 | 4.42 | 12.350 | 12.72 | 188.9 | 0.0 | 995.9 |
| 105.00 | | 0.00 | 1.39 | 8.908 | 15.06 | 157.95 | 1.030 | 0.000 | 5.00 | 13.590 | 14.00 | 210.7 | 0.0 | 553.0 |
| 110.00 | Appurtenance(s) | 0.00 | 1.41 | 9.028 | 15.26 | 154.20 | 1.030 | 0.000 | 5.00 | 13.185 | 13.58 | 207.2 | 0.0 | 536.4 |
| 115.00 | Top - Section 5 | 0.00 | 1.43 | 9.143 | 15.45 | 150.35 | 1.030 | 0.000 | 5.00 | 12.781 | 13.16 | 203.4 | 0.0 | 519.8 |
| 120.00 | | 0.00 | 1.45 | 9.255 | 15.64 | 146.41 | 1.030 | 0.000 | 5.00 | 12.377 | 12.75 | 199.4 | 0.0 | 403.4 |
| 125.00 | | 0.00 | 1.46 | 9.363 | 15.82 | 142.38 | 1.030 | 0.000 | 5.00 | 11.973 | 12.33 | 195.1 | 0.0 | 390.1 |
| 130.00 | | 0.00 | 1.48 | 9.469 | 16.00 | 138.26 | 1.030 | 0.000 | 5.00 | 11.569 | 11.92 | 190.7 | 0.0 | 376.9 |
| 133.00 | Appurtenance(s) | 0.00 | 1.49 | 9.531 | 16.11 | 135.75 | 1.030 | 0.000 | 3.00 | 6.747 | 6.95 | 111.9 | 0.0 | 219.7 |
| 135.00 | | 0.00 | 1.50 | 9.572 | 16.18 | 134.06 | 1.030 | 0.000 | 2.00 | 4.417 | 4.55 | 73.6 | 0.0 | 143.8 |
| 140.00 | | 0.00 | 1.51 | 9.672 | 16.35 | 129.79 | 1.030 | 0.000 | 5.00 | 10.760 | 11.08 | 181.2 | 0.0 | 350.3 |
| 142.20 | Appurtenance(s) | 0.00 | 1.52 | 9.715 | 16.42 | 127.89 | 1.030 | 0.000 | 2.20 | 4.607 | 4.74 | 77.9 | 0.0 | 149.9 |
| 145.00 | Top - Section 6 | 0.00 | 1.53 | 9.769 | 16.51 | 125.45 | 1.030 | 0.000 | 2.80 | 5.750 | 5.92 | 97.8 | 0.0 | 187.1 |
| 148.30 | Appurtenance(s) | 0.00 | 1.54 | 9.832 | 16.62 | 122.58 | 0.590 | 0.000 | 3.30 | 6.615 | 3.90 | 64.9 | 0.0 | 209.9 |
| 150.00 | Top - Section 7 | 0.00 | 1.54 | 9.864 | 16.67 | 121.07 | 0.590 | 0.000 | 1.70 | 3.339 | 1.97 | 32.8 | 0.0 | 105.9 |
| 155.00 | | 0.00 | 1.56 | 9.957 | 16.83 | 83.15 | 0.590 | 0.000 | 5.00 | 6.667 | 3.93 | 66.2 | 0.0 | 210.5 |
| 160.00 | Appurtenance(s) | 0.00 | 1.57 | 10.048 | 16.98 | 83.53 | 0.590 | 0.000 | 5.00 | 6.667 | 3.93 | 66.8 | 0.0 | 210.5 |

Wind Loading - Shaft

Structure: CT02049-S-SBA

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 29



Totals: 160.00

6,368.1

37,080.8

Discrete Appurtenance Forces

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 30



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | CaAa Factor | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|----------------|-----------|---------------------------|-----|----------|------------|-------------|-----------------|-----------------|----------------|---------------|-----------------|---------------|---------------|
| 1 | 160.00 | Low Profile Platform | 1 | 10.048 | 16.981 | 1.00 | 20.75 | 1200.00 | 0.000 | 0.000 | 352.35 | 0.00 | 0.00 |
| 2 | 160.00 | DB846F65ZAXY | 6 | 10.087 | 17.047 | 0.93 | 39.23 | 126.00 | 0.000 | 2.200 | 668.71 | 0.00 | 1471.16 |
| 3 | 160.00 | DB222 | 1 | 10.136 | 17.131 | 1.00 | 2.25 | 16.00 | 0.000 | 5.000 | 38.54 | 0.00 | 192.72 |
| 4 | 160.00 | BXA-70063/4CF | 3 | 10.087 | 17.047 | 0.72 | 11.15 | 29.70 | 0.000 | 2.200 | 190.00 | 0.00 | 418.00 |
| 5 | 160.00 | 6' Lightning rod | 1 | 10.048 | 16.981 | 1.00 | 0.38 | 6.50 | 0.000 | 0.000 | 6.45 | 0.00 | 0.00 |
| 6 | 160.00 | LPA-185063/8CF | 6 | 10.087 | 17.047 | 0.94 | 17.15 | 54.00 | 0.000 | 2.200 | 292.28 | 0.00 | 643.02 |
| 7 | 148.30 | ALU 800MHz External Notch | 3 | 9.902 | 16.734 | 0.69 | 1.61 | 26.40 | 0.000 | 3.700 | 27.02 | 0.00 | 99.97 |
| 8 | 148.30 | 1900MHz RRH | 3 | 9.902 | 16.734 | 0.75 | 8.55 | 132.00 | 0.000 | 3.700 | 143.07 | 0.00 | 529.37 |
| 9 | 148.30 | 800 MHz RRH | 3 | 9.902 | 16.734 | 0.75 | 5.60 | 159.00 | 0.000 | 3.700 | 93.75 | 0.00 | 346.88 |
| 10 | 148.30 | ACU-A20-N | 4 | 9.902 | 16.734 | 0.75 | 0.42 | 4.00 | 0.000 | 3.700 | 7.03 | 0.00 | 26.00 |
| 11 | 148.30 | TD-RRH8x20-25 | 3 | 9.864 | 16.670 | 0.69 | 9.77 | 210.00 | 0.000 | 1.700 | 162.88 | 0.00 | 276.89 |
| 12 | 148.30 | APXVSPP18-C-A20 | 3 | 9.902 | 16.734 | 0.82 | 20.32 | 171.00 | 0.000 | 3.700 | 340.02 | 0.00 | 1258.07 |
| 13 | 148.30 | APXVTM14-C-120 | 3 | 9.864 | 16.670 | 0.76 | 15.77 | 168.00 | 0.000 | 1.700 | 262.95 | 0.00 | 447.01 |
| 14 | 148.30 | Low Profile Platform | 1 | 9.832 | 16.616 | 1.00 | 20.75 | 1200.00 | 0.000 | 0.000 | 344.79 | 0.00 | 0.00 |
| 15 | 142.20 | Low Profile Platform | 1 | 9.715 | 16.418 | 1.00 | 20.75 | 1200.00 | 0.000 | 0.000 | 340.67 | 0.00 | 0.00 |
| 16 | 142.20 | KRY 112 144/1 | 3 | 9.728 | 16.441 | 0.70 | 0.86 | 33.00 | 0.000 | 0.700 | 14.16 | 0.00 | 9.91 |
| 17 | 142.20 | AIR 21 B4A B2P | 3 | 9.728 | 16.441 | 0.83 | 16.32 | 271.20 | 0.000 | 0.700 | 268.40 | 0.00 | 187.88 |
| 18 | 142.20 | AIR 21 B2A B4P | 3 | 9.728 | 16.441 | 0.83 | 16.32 | 274.50 | 0.000 | 0.700 | 268.40 | 0.00 | 187.88 |
| 19 | 142.20 | LGP13907 | 6 | 9.746 | 16.471 | 0.75 | 2.66 | 62.40 | 0.000 | 1.600 | 43.73 | 0.00 | 69.97 |
| 20 | 133.00 | Low Profile Platform | 1 | 9.531 | 16.107 | 1.00 | 21.00 | 1350.00 | 0.000 | 0.000 | 338.25 | 0.00 | 0.00 |
| 21 | 133.00 | 21401 | 6 | 9.531 | 16.107 | 0.67 | 5.19 | 84.60 | 0.000 | 0.000 | 83.53 | 0.00 | 0.00 |
| 22 | 133.00 | 800 10121 | 3 | 9.531 | 16.107 | 0.79 | 12.92 | 138.90 | 0.000 | 0.000 | 208.05 | 0.00 | 0.00 |
| 23 | 133.00 | RRUS 11 | 3 | 9.531 | 16.107 | 0.75 | 6.62 | 152.10 | 0.000 | 0.000 | 106.55 | 0.00 | 0.00 |
| 24 | 133.00 | OPA-65R-LCUU-H6 | 3 | 9.531 | 16.107 | 0.77 | 23.81 | 240.00 | 0.000 | 0.000 | 383.47 | 0.00 | 0.00 |
| 25 | 133.00 | RRUS 12 | 3 | 9.531 | 16.107 | 0.70 | 7.78 | 174.00 | 0.000 | 0.000 | 125.35 | 0.00 | 0.00 |
| 26 | 133.00 | RRUS A2 Module | 3 | 9.531 | 16.107 | 0.40 | 2.23 | 63.60 | 0.000 | 0.000 | 35.95 | 0.00 | 0.00 |
| 27 | 110.00 | DB222 | 1 | 9.150 | 15.463 | 1.00 | 2.25 | 16.00 | 0.000 | 5.292 | 34.79 | 0.00 | 184.11 |
| 28 | 110.00 | 3 ft Standoff | 1 | 9.028 | 15.257 | 1.00 | 1.00 | 40.00 | 0.000 | 0.000 | 15.26 | 0.00 | 0.00 |
| 29 | 40.00 | GPS | 1 | 6.762 | 11.427 | 1.00 | 1.00 | 10.00 | 0.000 | 0.000 | 11.43 | 0.00 | 0.00 |
| Totals: | | | | | | | | 7,612.90 | | | 5,207.82 | | |

Total Applied Force Summary

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 31



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|-----------|--------------------|---------------------|-------------------|--------------------|-------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 268.36 | 1222.42 | 0.00 | 0.00 |
| 10.00 | | 263.85 | 1202.49 | 0.00 | 0.00 |
| 14.50 | | 233.62 | 1409.72 | 0.00 | 0.00 |
| 15.00 | | 25.73 | 155.64 | 0.00 | 0.00 |
| 16.00 | | 51.33 | 310.68 | 0.00 | 0.00 |
| 16.25 | | 12.98 | 126.46 | 0.00 | 0.00 |
| 18.00 | | 90.53 | 859.72 | 0.00 | 0.00 |
| 20.00 | | 102.79 | 823.44 | 0.00 | 0.00 |
| 22.00 | | 102.07 | 817.06 | 0.00 | 0.00 |
| 25.00 | | 151.76 | 653.51 | 0.00 | 0.00 |
| 30.00 | | 249.33 | 1456.04 | 0.00 | 0.00 |
| 31.00 | | 49.32 | 288.82 | 0.00 | 0.00 |
| 35.00 | | 189.90 | 1093.41 | 0.00 | 0.00 |
| 40.00 | (1) appurtenances | 249.90 | 1358.83 | 0.00 | 0.00 |
| 45.00 | | 241.71 | 1328.90 | 0.00 | 0.00 |
| 45.16 | | 7.66 | 56.49 | 0.00 | 0.00 |
| 46.00 | | 40.35 | 296.21 | 0.00 | 0.00 |
| 50.00 | | 194.82 | 1096.59 | 0.00 | 0.00 |
| 55.00 | | 249.59 | 2201.58 | 0.00 | 0.00 |
| 56.00 | | 49.55 | 435.53 | 0.00 | 0.00 |
| 58.00 | | 99.46 | 540.11 | 0.00 | 0.00 |
| 60.00 | | 99.57 | 498.66 | 0.00 | 0.00 |
| 65.00 | | 250.86 | 1232.71 | 0.00 | 0.00 |
| 70.00 | | 250.64 | 1212.78 | 0.00 | 0.00 |
| 75.00 | | 249.94 | 1192.85 | 0.00 | 0.00 |
| 78.00 | | 148.89 | 706.15 | 0.00 | 0.00 |
| 80.00 | | 98.82 | 466.78 | 0.00 | 0.00 |
| 85.00 | | 247.24 | 1032.53 | 0.00 | 0.00 |
| 90.00 | | 245.31 | 1015.93 | 0.00 | 0.00 |
| 95.00 | | 243.04 | 999.32 | 0.00 | 0.00 |
| 95.58 | | 28.30 | 181.77 | 0.00 | 0.00 |
| 100.00 | | 209.53 | 1060.37 | 0.00 | 0.00 |
| 105.00 | | 225.79 | 625.90 | 0.00 | 0.00 |
| 110.00 | (2) appurtenances | 272.51 | 665.29 | 0.00 | 184.11 |
| 115.00 | | 218.87 | 590.08 | 0.00 | 0.00 |
| 120.00 | | 215.04 | 473.69 | 0.00 | 0.00 |
| 125.00 | | 210.97 | 460.41 | 0.00 | 0.00 |
| 130.00 | | 206.69 | 447.12 | 0.00 | 0.00 |
| 133.00 | (22) appurtenances | 1402.75 | 2465.10 | 0.00 | 0.00 |
| 135.00 | | 80.07 | 162.68 | 0.00 | 0.00 |
| 140.00 | | 197.50 | 397.40 | 0.00 | 0.00 |
| 142.20 | (16) appurtenances | 1020.48 | 2011.75 | 0.00 | 455.64 |
| 145.00 | | 97.77 | 207.48 | 0.00 | 0.00 |
| 148.30 | (23) appurtenances | 1446.35 | 2304.38 | 0.00 | 2984.19 |
| 150.00 | | 32.84 | 108.60 | 0.00 | 0.00 |
| 155.00 | | 66.19 | 218.26 | 0.00 | 0.00 |
| 160.00 | (18) appurtenances | 1615.13 | 1650.46 | 0.00 | 2724.90 |

Total Applied Force Summary

Structure: CT02049-S-SB

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 32



| | | | | |
|----------------|------------------|------------------|-------------|-----------------|
| Totals: | 12,305.70 | 40,122.12 | 0.00 | 6,348.83 |
|----------------|------------------|------------------|-------------|-----------------|

Resulting Forces and Deflections

Structure: CT02049-S-SB
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 33



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

| Elev (ft) | Lateral FX (-) (kips) | Axial FY (-) (kips) | Lateral FZ (kips) | Moment MX (ft-kips) | Torsion MY (ft-kips) | Moment MZ (ft-kips) | Deflect X (in) | Deflect Z (in) | Deflect Resultant (in) | Rotation Sway (deg) | Rotation Twist (deg) |
|-----------|-----------------------|---------------------|-------------------|---------------------|----------------------|---------------------|----------------|----------------|------------------------|---------------------|----------------------|
| 0.00 | -12.328 | -40.115 | 0.000 | 0.000 | 0.000 | -1331.5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 5.00 | -12.104 | -38.879 | 0.000 | 0.000 | 0.000 | -1269.8 | -0.035 | 0.000 | 0.035 | -0.065 | 0.000 |
| 10.00 | -11.879 | -37.664 | 0.000 | 0.000 | 0.000 | -1209.3 | -0.138 | 0.000 | 0.138 | -0.130 | 0.000 |
| 14.50 | -11.661 | -36.248 | 0.000 | 0.000 | 0.000 | -1155.9 | -0.290 | 0.000 | 0.290 | -0.190 | 0.000 |
| 15.00 | -11.640 | -36.091 | 0.000 | 0.000 | 0.000 | -1150.0 | -0.310 | 0.000 | 0.310 | -0.195 | 0.000 |
| 16.00 | -11.592 | -35.779 | 0.000 | 0.000 | 0.000 | -1138.4 | -0.352 | 0.000 | 0.352 | -0.205 | 0.000 |
| 16.25 | -11.585 | -35.651 | 0.000 | 0.000 | 0.000 | -1135.5 | -0.363 | 0.000 | 0.363 | -0.208 | 0.000 |
| 18.00 | -11.503 | -34.787 | 0.000 | 0.000 | 0.000 | -1115.2 | -0.442 | 0.000 | 0.442 | -0.226 | 0.000 |
| 20.00 | -11.414 | -33.959 | 0.000 | 0.000 | 0.000 | -1092.2 | -0.542 | 0.000 | 0.542 | -0.250 | 0.000 |
| 22.00 | -11.331 | -33.134 | 0.000 | 0.000 | 0.000 | -1069.4 | -0.654 | 0.000 | 0.654 | -0.281 | 0.000 |
| 25.00 | -11.210 | -32.470 | 0.000 | 0.000 | 0.000 | -1035.4 | -0.846 | 0.000 | 0.846 | -0.328 | 0.000 |
| 30.00 | -10.975 | -31.007 | 0.000 | 0.000 | 0.000 | -979.40 | -1.230 | 0.000 | 1.230 | -0.404 | 0.000 |
| 31.00 | -10.939 | -30.713 | 0.000 | 0.000 | 0.000 | -968.43 | -1.316 | 0.000 | 1.316 | -0.415 | 0.000 |
| 35.00 | -10.770 | -29.611 | 0.000 | 0.000 | 0.000 | -924.68 | -1.683 | 0.000 | 1.683 | -0.460 | 0.000 |
| 40.00 | -10.541 | -28.242 | 0.000 | 0.000 | 0.000 | -870.83 | -2.201 | 0.000 | 2.201 | -0.528 | 0.000 |
| 45.00 | -10.303 | -26.909 | 0.000 | 0.000 | 0.000 | -818.12 | -2.790 | 0.000 | 2.790 | -0.595 | 0.000 |
| 45.16 | -10.297 | -26.852 | 0.000 | 0.000 | 0.000 | -816.48 | -2.810 | 0.000 | 2.810 | -0.597 | 0.000 |
| 46.00 | -10.264 | -26.552 | 0.000 | 0.000 | 0.000 | -807.83 | -2.915 | 0.000 | 2.915 | -0.605 | 0.000 |
| 50.00 | -10.080 | -25.448 | 0.000 | 0.000 | 0.000 | -766.77 | -3.439 | 0.000 | 3.439 | -0.644 | 0.000 |
| 55.00 | -9.820 | -23.243 | 0.000 | 0.000 | 0.000 | -716.37 | -4.148 | 0.000 | 4.148 | -0.708 | 0.000 |
| 56.00 | -9.773 | -22.805 | 0.000 | 0.000 | 0.000 | -706.55 | -4.298 | 0.000 | 4.298 | -0.720 | 0.000 |
| 58.00 | -9.676 | -22.262 | 0.000 | 0.000 | 0.000 | -687.00 | -4.605 | 0.000 | 4.605 | -0.746 | 0.000 |
| 60.00 | -9.587 | -21.758 | 0.000 | 0.000 | 0.000 | -667.65 | -4.923 | 0.000 | 4.923 | -0.770 | 0.000 |
| 65.00 | -9.342 | -20.518 | 0.000 | 0.000 | 0.000 | -619.72 | -5.764 | 0.000 | 5.764 | -0.834 | 0.000 |
| 70.00 | -9.094 | -19.299 | 0.000 | 0.000 | 0.000 | -573.01 | -6.672 | 0.000 | 6.672 | -0.898 | 0.000 |
| 75.00 | -8.841 | -18.103 | 0.000 | 0.000 | 0.000 | -527.54 | -7.646 | 0.000 | 7.646 | -0.961 | 0.000 |
| 78.00 | -8.689 | -17.395 | 0.000 | 0.000 | 0.000 | -501.02 | -8.262 | 0.000 | 8.262 | -0.999 | 0.000 |
| 80.00 | -8.595 | -16.923 | 0.000 | 0.000 | 0.000 | -483.64 | -8.686 | 0.000 | 8.686 | -1.024 | 0.000 |
| 85.00 | -8.346 | -15.886 | 0.000 | 0.000 | 0.000 | -440.67 | -9.790 | 0.000 | 9.790 | -1.084 | 0.000 |
| 90.00 | -8.098 | -14.866 | 0.000 | 0.000 | 0.000 | -398.93 | -10.962 | 0.000 | 10.962 | -1.150 | 0.000 |
| 95.00 | -7.843 | -13.867 | 0.000 | 0.000 | 0.000 | -358.44 | -12.201 | 0.000 | 12.201 | -1.214 | 0.000 |
| 95.58 | -7.818 | -13.682 | 0.000 | 0.000 | 0.000 | -353.90 | -12.349 | 0.000 | 12.349 | -1.222 | 0.000 |
| 100.00 | -7.603 | -12.616 | 0.000 | 0.000 | 0.000 | -319.34 | -13.506 | 0.000 | 13.506 | -1.276 | 0.000 |
| 105.00 | -7.383 | -11.983 | 0.000 | 0.000 | 0.000 | -281.32 | -14.897 | 0.000 | 14.897 | -1.376 | 0.000 |
| 110.00 | -7.111 | -11.314 | 0.000 | 0.000 | 0.000 | -244.23 | -16.387 | 0.000 | 16.387 | -1.466 | 0.000 |
| 115.00 | -6.892 | -10.720 | 0.000 | 0.000 | 0.000 | -208.67 | -17.969 | 0.000 | 17.969 | -1.552 | 0.000 |
| 120.00 | -6.679 | -10.242 | 0.000 | 0.000 | 0.000 | -174.21 | -19.637 | 0.000 | 19.637 | -1.631 | 0.000 |
| 125.00 | -6.469 | -9.779 | 0.000 | 0.000 | 0.000 | -140.82 | -21.395 | 0.000 | 21.395 | -1.721 | 0.000 |
| 130.00 | -6.259 | -9.332 | 0.000 | 0.000 | 0.000 | -108.47 | -23.241 | 0.000 | 23.241 | -1.800 | 0.000 |
| 133.00 | -4.782 | -6.910 | 0.000 | 0.000 | 0.000 | -89.699 | -24.386 | 0.000 | 24.386 | -1.841 | 0.000 |
| 135.00 | -4.702 | -6.746 | 0.000 | 0.000 | 0.000 | -80.135 | -25.163 | 0.000 | 25.163 | -1.867 | 0.000 |
| 140.00 | -4.495 | -6.353 | 0.000 | 0.000 | 0.000 | -56.626 | -27.148 | 0.000 | 27.148 | -1.920 | 0.000 |
| 142.20 | -3.409 | -4.376 | 0.000 | 0.000 | 0.000 | -46.281 | -28.038 | 0.000 | 28.038 | -1.940 | 0.000 |
| 145.00 | -3.306 | -4.170 | 0.000 | 0.000 | 0.000 | -36.736 | -29.182 | 0.000 | 29.182 | -1.962 | 0.000 |
| 148.30 | -1.782 | -1.917 | 0.000 | 0.000 | 0.000 | -22.842 | -30.545 | 0.000 | 30.545 | -1.982 | 0.000 |
| 150.00 | -1.745 | -1.809 | 0.000 | 0.000 | 0.000 | -19.814 | -31.252 | 0.000 | 31.252 | -1.990 | 0.000 |
| 155.00 | -1.672 | -1.592 | 0.000 | 0.000 | 0.000 | -11.087 | -33.347 | 0.000 | 33.347 | -2.008 | 0.000 |
| 160.00 | -1.615 | 0.000 | 0.000 | 0.000 | 0.000 | -2.725 | 0.000 | 0.000 | 35.466 | -2.034 | 0.000 |

Resulting Forces and Deflections

Structure: CT02049-S-SB

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 34



Resulting Stresses

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 35



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

Applied Stresses

| Elev (ft) | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | fb Combined (ksi) | Allow Stress (ksi) | f/Fb Stress Ratio |
|-----------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-------------------|--------------------|-------------------|
| 0.00 | 0.66 | 0.41 | 0.00 | 0.00 | 0.00 | 14.66 | 15.32 | 48.9 | 0.314 |
| 5.00 | 0.66 | 0.42 | 0.00 | 0.00 | 0.00 | 14.44 | 14.44 | 49.4 | 0.292 |
| 10.00 | 0.65 | 0.42 | 0.00 | 0.00 | 0.00 | 14.21 | 14.21 | 49.9 | 0.285 |
| 14.50 | 0.64 | 0.42 | 0.00 | 0.00 | 0.00 | 10.97 | 10.97 | 50.4 | 0.217 |
| 15.00 | 0.63 | 0.42 | 0.00 | 0.00 | 0.00 | 10.95 | 10.95 | 50.5 | 0.217 |
| 16.00 | 0.63 | 0.42 | 0.00 | 0.00 | 0.00 | 10.90 | 10.90 | 50.6 | 0.215 |
| 16.25 | 0.63 | 0.42 | 0.00 | 0.00 | 0.00 | 10.73 | 10.73 | 50.6 | 0.212 |
| 18.00 | 0.62 | 0.42 | 0.00 | 0.00 | 0.00 | 12.18 | 12.18 | 50.8 | 0.240 |
| 20.00 | 0.61 | 0.42 | 0.00 | 0.00 | 0.00 | 16.21 | 16.21 | 51.0 | 0.318 |
| 22.00 | 0.59 | 0.41 | 0.00 | 0.00 | 0.00 | 16.11 | 16.11 | 51.2 | 0.314 |
| 25.00 | 0.59 | 0.41 | 0.00 | 0.00 | 0.00 | 15.60 | 15.60 | 51.2 | 0.305 |
| 30.00 | 0.57 | 0.41 | 0.00 | 0.00 | 0.00 | 11.43 | 11.43 | 51.7 | 0.221 |
| 31.00 | 0.57 | 0.41 | 0.00 | 0.00 | 0.00 | 11.37 | 11.37 | 51.8 | 0.220 |
| 35.00 | 0.56 | 0.41 | 0.00 | 0.00 | 0.00 | 13.42 | 13.42 | 52.0 | 0.258 |
| 40.00 | 0.54 | 0.41 | 0.00 | 0.00 | 0.00 | 13.12 | 13.12 | 52.0 | 0.252 |
| 45.00 | 0.53 | 0.41 | 0.00 | 0.00 | 0.00 | 12.80 | 12.80 | 52.0 | 0.246 |
| 45.16 | 0.53 | 0.41 | 0.00 | 0.00 | 0.00 | 9.30 | 9.30 | 52.0 | 0.179 |
| 46.00 | 0.53 | 0.41 | 0.00 | 0.00 | 0.00 | 9.26 | 9.26 | 52.0 | 0.178 |
| 50.00 | 0.51 | 0.41 | 0.00 | 0.00 | 0.00 | 11.82 | 11.82 | 52.0 | 0.227 |
| 55.00 | 0.48 | 0.41 | 0.00 | 0.00 | 0.00 | 11.33 | 11.33 | 52.0 | 0.218 |
| 56.00 | 0.46 | 0.40 | 0.00 | 0.00 | 0.00 | 11.26 | 11.26 | 52.0 | 0.217 |
| 58.00 | 0.46 | 0.40 | 0.00 | 0.00 | 0.00 | 10.93 | 10.93 | 52.0 | 0.210 |
| 60.00 | 0.45 | 0.40 | 0.00 | 0.00 | 0.00 | 11.73 | 11.73 | 52.0 | 0.226 |
| 65.00 | 0.44 | 0.40 | 0.00 | 0.00 | 0.00 | 11.34 | 11.34 | 52.0 | 0.218 |
| 70.00 | 0.42 | 0.40 | 0.00 | 0.00 | 0.00 | 10.94 | 10.94 | 52.0 | 0.210 |
| 75.00 | 0.41 | 0.40 | 0.00 | 0.00 | 0.00 | 10.51 | 10.51 | 52.0 | 0.202 |
| 78.00 | 0.40 | 0.40 | 0.00 | 0.00 | 0.00 | 10.24 | 10.24 | 52.0 | 0.197 |
| 80.00 | 0.39 | 0.40 | 0.00 | 0.00 | 0.00 | 10.06 | 10.06 | 52.0 | 0.194 |
| 85.00 | 0.45 | 0.48 | 0.00 | 0.00 | 0.00 | 10.73 | 10.73 | 52.0 | 0.206 |
| 90.00 | 0.43 | 0.48 | 0.00 | 0.00 | 0.00 | 10.15 | 10.15 | 52.0 | 0.195 |
| 95.00 | 0.42 | 0.48 | 0.00 | 0.00 | 0.00 | 9.54 | 9.54 | 52.0 | 0.184 |
| 95.58 | 0.41 | 0.48 | 0.00 | 0.00 | 0.00 | 9.34 | 9.75 | 52.0 | 0.187 |
| 100.00 | 0.38 | 0.47 | 0.00 | 0.00 | 0.00 | 14.50 | 14.91 | 52.0 | 0.287 |
| 105.00 | 0.37 | 0.47 | 0.00 | 0.00 | 0.00 | 13.57 | 13.97 | 52.0 | 0.269 |
| 110.00 | 0.36 | 0.47 | 0.00 | 0.00 | 0.00 | 12.54 | 12.93 | 52.0 | 0.249 |
| 115.00 | 0.36 | 0.47 | 0.00 | 0.00 | 0.00 | 11.42 | 11.81 | 52.0 | 0.227 |
| 115.00 | 0.36 | 0.47 | 0.00 | 0.00 | 0.00 | 11.42 | 11.81 | 52.0 | 0.282 |
| 120.00 | 0.44 | 0.58 | 0.00 | 0.00 | 0.00 | 12.66 | 13.14 | 52.0 | 0.253 |
| 125.00 | 0.43 | 0.58 | 0.00 | 0.00 | 0.00 | 10.96 | 11.43 | 52.0 | 0.220 |
| 130.00 | 0.43 | 0.58 | 0.00 | 0.00 | 0.00 | 9.06 | 9.54 | 52.0 | 0.183 |
| 133.00 | 0.32 | 0.46 | 0.00 | 0.00 | 0.00 | 7.83 | 8.19 | 52.0 | 0.157 |
| 135.00 | 0.32 | 0.46 | 0.00 | 0.00 | 0.00 | 7.20 | 7.56 | 52.0 | 0.145 |
| 140.00 | 0.31 | 0.45 | 0.00 | 0.00 | 0.00 | 5.49 | 5.86 | 52.0 | 0.113 |
| 142.20 | 0.22 | 0.35 | 0.00 | 0.00 | 0.00 | 4.65 | 4.90 | 52.0 | 0.094 |
| 145.00 | 0.21 | 0.35 | 0.00 | 0.00 | 0.00 | 3.86 | 4.12 | 52.0 | 0.079 |
| 145.00 | 0.21 | 0.35 | 0.00 | 0.00 | 0.00 | 3.86 | 4.12 | 52.0 | 0.080 |
| 148.30 | 0.10 | 0.19 | 0.00 | 0.00 | 0.00 | 2.56 | 2.68 | 51.6 | 47.0 0.052 |

Resulting Stresses

Structure: CT02049-S-SBA

Code: EIA/TIA-222-F

9/1/2015

Site Name: Beacon Falls

Exposure: C

Height: 160.00 (ft)

Gh: 1.69

Base Elev: 0.000 (ft)

Struct Class: II

Page: 36



| | | | | | | | | | | |
|--------|------|------|------|------|------|------|------|------|------|-------|
| 150.00 | 0.10 | 0.19 | 0.00 | 0.00 | 0.00 | 2.28 | 2.40 | 51.8 | 47.1 | 0.046 |
| 150.00 | 0.10 | 0.19 | 0.00 | 0.00 | 0.00 | 2.28 | 2.40 | 51.8 | 47.1 | 0.099 |
| 155.00 | 0.13 | 0.27 | 0.00 | 0.00 | 0.00 | 2.77 | 2.94 | 40.0 | 40.0 | 0.073 |
| 160.00 | 0.00 | 0.26 | 0.00 | 0.00 | 0.00 | 0.68 | 0.82 | 40.0 | 40.0 | 0.020 |

Final Analysis Summary

Structure: CT02049-S-SBA
Site Name: Beacon Falls
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/1/2015
 Page: 37



Reactions

| Load Case | Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | t MZ (ft-kips) |
|------------------------------|-----------------|-----------------|-----------------|---------------------|---------------------|----------------|
| 85 mph Wind with 0" Ice | 35.6 | 0.00 | 40.06 | 0.00 | 0.00 | 3843.80 |
| 73.61 mph Wind with 0.5" Ice | 29.5 | 0.00 | 47.14 | 0.00 | 0.00 | 3280.27 |
| 50 mph Wind with 0" Ice | 12.3 | 0.00 | 40.11 | 0.00 | 0.00 | 1331.54 |

Max Stresses

| Load Case | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | Combined Stress (ksi) | Allowable Stress (ksi) | Elev (ft) | Stress Ratio |
|------------------------------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------|--------------|
| 85 mph Wind with 0" Ice | 0.60 | 1.20 | 0.00 | 0.00 | 0.00 | 46.79 | 46.79 | 51.0 | 20.00 | 0.917 |
| 73.61 mph Wind with 0.5" Ice | 0.72 | 1.01 | 0.00 | 0.00 | 0.00 | 40.16 | 40.16 | 51.0 | 20.00 | 0.787 |
| 50 mph Wind with 0" Ice | 0.61 | 0.42 | 0.00 | 0.00 | 0.00 | 16.21 | 16.21 | 51.0 | 20.00 | 0.318 |

Additional Steel Summary

Intermediate Connectors
 Upper Termination
 Lower Termination
 Max Member

| Elev From (ft) | Elev To (ft) | Member | VQ/I (lb/in) | V (kips) | Shear Allow (kips) | MQ/I (kips) | Num Reqd | Num Actual | MQ/I (kips) | Num Reqd | Num Actual | MQ/I (kips) | Ta (kips) | Pa (kips) | Ratio |
|----------------|--------------|-------------------------------|--------------|----------|--------------------|-------------|----------|------------|-------------|----------|------------|-------------|-----------|-----------|-------|
| 0.0 | 16.3 | (3) PLT-C10x30(1.5" Hole) | -303.0 | -6.06 | 33.0 | 280.2 | 9 | 0 | 376.1 | 0 | 0 | 376.1 | 416.6 | 437.2 | 0.903 |
| 14.5 | 18.0 | (3) PLT-6"X1-1/4" | -303.0 | 0.00 | 0.0 | 265.5 | 9 | 0 | 360.0 | 1 | 0 | 267.3 | 390.0 | 389.9 | 0.685 |
| 16.3 | 31.0 | (3) PLT-C10x15.3(1.5" Hole) | -238.6 | -4.77 | 33.0 | 153.3 | 5 | 0 | 267.3 | 1 | 0 | 222.6 | 220.3 | 223.4 | 1.000 |
| 30.0 | 46.0 | (3) PLT-6"X1-1/4"(1.25" Hole) | 289.7 | 5.21 | 33.0 | 199.2 | 7 | 8 | 245.4 | 1 | 8 | 293.3 | 316.7 | 355.4 | 0.926 |
| 45.2 | 58.0 | (3) PLT-7" x 1.25"(1.25"Hole) | -332.5 | -3.99 | 33.0 | 274.6 | 0 | 0 | 233.6 | 1 | 13 | 303.3 | 383.3 | 430.8 | 0.791 |
| 58.0 | 78.0 | (3) PLT-5.5"x1 1/4"(1.25"hol) | -322.9 | -5.81 | 33.0 | 202.7 | 0 | 0 | 234.5 | 0 | 0 | 234.5 | 283.3 | 325.8 | 0.828 |
| 78.0 | 95.6 | (3) PLT-5.5"x1 1/4"(1.25"hol) | -347.9 | -6.26 | 33.0 | 188.7 | 6 | 10 | 202.8 | 0 | 0 | 212.6 | 283.3 | 325.8 | 0.750 |



Monopole Mat Foundation Design

Date
9/1/2015

| | | | |
|-----------------------|---------------|--------------------------------|-------------|
| Customer Name: | AT&T | EIA/TIA Standard: | EIA-222-F |
| Site Name: | Beacon Falls | Structure Height (Ft.): | 160 |
| Site Number: | CT02049-S-SBA | Engineer Name: | J. Tibbetts |
| Engr. Number: | 17236 | Engineer Login ID: | |

Foundation Info Obtained from:

| |
|-----------------------|
| Drawings/Calculations |
| Monopole |
| Analysis |

Structure Type:

Analysis or Design?

Base Reactions (Unfactored)

| | | | |
|----------------------|------|---------------------|--------|
| Axial Load (Kips): | 47.1 | Shear Force (Kips): | 35.6 |
| Uplift Force (Kips): | 0.0 | Moment (Kips-ft): | 3843.8 |

Allowable overstress %: 5.0%

Foundation Geometries:

| | | | |
|--------------------------|------|-------------------------|------|
| Diameter of Pier (ft.): | 7.0 | Depth of Base BG (ft.): | 4.8 |
| Pier Height A. G. (ft.): | 0.50 | Thickness of Pad (ft.): | 3.50 |
| Length of Pad (ft.): | 28 | Width of Pad (ft.): | 28 |

| | | | |
|-----------------------------|------|-----------------------------|------|
| Final Length of pad (ft) | 28.0 | Final width of pad (ft): | 28.0 |
| Control Value for Cell D18: | 0 | Control Value for Cell F18: | 0 |

Material Properties and Rebar Info:

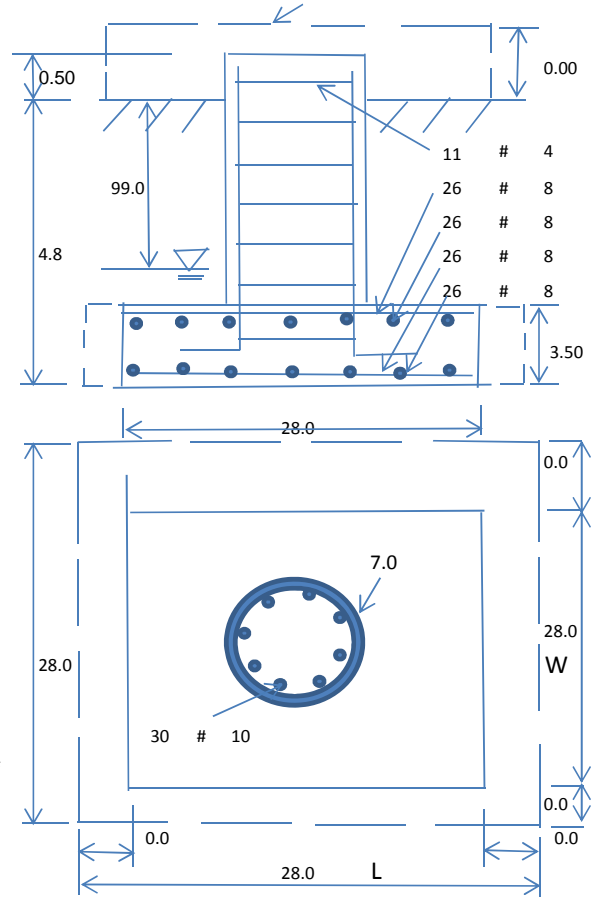
| | | | | |
|--------------------------|------|---------------------------|-------|-----|
| Concrete Strength (psi): | 3000 | Steel Elastic Modulus: | 29000 | ksi |
| Vertical bar yield (ksi) | 60 | Tie steel yield (ksi): | 60 | |
| Vertical Rebar Size #: | 10 | Tie / Stirrup Size #: | 4 | |
| Qty. of Vertical Rebars: | 30 | Tie Spacing (in): | 6.0 | |
| Pad Rebar Yield (Ksi): | 60 | Pad Steel Rebar Size (#): | 8 | |
| Concrete Cover (in.): | 3 | Unit Weight of Concrete: | 150.0 | pcf |

| | | | |
|--|----|---------------------------|----|
| Rebar at the bottom of the concrete pad: | | | |
| Qty. of Rebar in Pad (L): | 26 | Qty. of Rebar in Pad (W): | 26 |
| Rebar at the top of the concrete pad: | | | |
| Qty. of Rebar in Pad (L): | 26 | Qty. of Rebar in Pad (W): | 26 |

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

| | | | | |
|---------------------------------------|-------|--|------|-----|
| Soil Unit Weight (pcf): | 115.0 | Soil Buoyant Weight: | 50.0 | Pcf |
| Water Table B.G.S. (ft): | 99.0 | Unit Weight of Water: | 62.4 | pcf |
| Allowable Net Soil Bearing (psf): | 3000 | Allowable Skin Friction: | 0 | Psf |
| Consider Friction for O.T.M. (Y/N): | No | Consider Friction for bearing (Y/N): | No | |
| Consider soil hori. force for O.T.M.: | No | Reduction factor on the maximum soil bearing pressure: | 1.00 | |



Foundation Analysis and Design:

| | | | |
|--|---------|--|--------|
| Total Dry Soil Volume (cu. Ft.): | 931.89 | Total Dry Soil Weight (Kips): | 107.17 |
| Total Buoyant Soil Volume (cu. Ft.): | 0.00 | Total Buoyant Soil Weight (Kips): | 0.00 |
| Total Effective Soil Weight (Kips): | 107.17 | Weight from the Concrete Block at Top (K): | 0.00 |
| Total Dry Concrete Volume (cu. Ft.): | 2811.35 | Total Dry Concrete Weight (Kips): | 421.70 |
| Total Buoyant Concrete Volume (cu. Ft.): | 0.00 | Total Buoyant Concrete Weight (Kips): | 0.00 |
| Total Effective Concrete Weight (Kips): | 421.70 | Total Vertical Load on Base (Kips): | 575.97 |

Check Soil Capacities:

| | | | | | | |
|--|--------|---|-------------------------------|------|------|-----|
| Calculated Maxium Net Soil Pressure under the base (psf): | 2018 | < | Allowable Soil Bearing (psf): | 3000 | 0.67 | OK! |
| Allowable Foundation Overturning Resistance (SF=1.5, kips-ft.): | 5375.7 | > | Applied Momont (kips-ft): | 4031 | 0.75 | OK! |
| Factor of Safety Against Overturning (O. R. Moment/Design Moment): | 2.00 | | | | | OK! |

Load/
Capacity
Ratio

Check the capacities of Reinforcing Concrete:

| | | | | |
|--|------|--------------------------------------|------|--|
| Strength reduction factor (Flexure and axial tension): | 0.90 | Strength reduction factor (Shear): | 0.75 | |
| Strength reduction factor (Axial compression): | 0.65 | Wind Load Factor on Concrete Design: | 1.30 | |

Load/
Capacity
Ratio

(1) Concrete Pier:

| | | | | | |
|---|--------|--|--------|------|-----|
| Vertical Steel Rebar Area (sq. in./each): | 1.27 | Tie / Stirrup Area (sq. in./each): | 0.20 | | |
| Calculated Moment Capacity (Mn,Kips-Ft): | 6439.6 | > Design Factored Moment (Mu, Kips-Ft): | 5077.9 | 0.79 | OK! |
| Calculated Shear Capacity (Kips): | 724.1 | > Design Factored Shear (Kips): | 46.3 | 0.06 | OK! |
| Calculated Tension Capacity (Tn, Kips): | 2057.4 | > Design Factored Tension (Tu Kips): | 0.0 | 0.00 | OK! |
| Calculated Compression Capacity (Pn, Kips): | 7297.9 | > Design Factored Axial Load (Pu Kips): | 61.2 | 0.01 | OK! |
| Moment & Axial Strength Combination(Pu/Pn+Mu/Mn): | 0.80 | OK! Check Tie Spacing (Design/Required): | | 0.5 | OK! |
| Pier Reinforcement Ratio: | 0.007 | Reinforcement Ratio is satisfied per ACI | | | |

(2).Concrete Pad:

| | | | | | |
|---|--------|--|--------|------|-----|
| One-Way Design Shear Capacity (L-Direction, Kips): | 1062.8 | > One-Way Factored Shear (L-D. Kips): | 278.5 | 0.26 | OK! |
| One-Way Design Shear Capacity (W-Direction, Kips): | 1062.8 | > One-Way Factored Shear (W-D., Kips) | 278.5 | 0.26 | OK! |
| One-Way Design Shear Capacity (Corner-Corner. Kips): | 1237.3 | > One-Way Factored Shear (C-C, Kips): | 466.3 | 0.38 | OK! |
| Lower Steel Pad Reinforcement Ratio (L-Direct.): | 0.0016 | OK! Lower Steel Pad Reinf. Ratio (W-Direc | 0.0016 | | |
| Lower Steel Pad Moment Capacity (L-Direction. Kips-ft): | 3492.1 | > Moment at Bottom (L-Direct. K-Ft): | 781.2 | 0.22 | OK! |
| Lower Steel Pad Moment Capacity (W-Direction. Kips-ft): | 3492.1 | > Moment at Bottom (W-Direct. K-Ft): | 781.2 | 0.22 | OK! |
| Lower Steel Pad Moment Capacity (Corner-Corner,K-ft): | 4918.4 | > Moment at Bottom (C-C Dir. K-Ft): | 1104.7 | 0.22 | OK! |
| Upper Steel Pad Reinforcement Ratio (L-Direct.): | 0.0016 | OK! Upper Steel Reinf. Ratio (W-Direct.): | 0.0016 | | |
| Upper Steel Pad Moment Capacity (L-Direction. Kips-ft): | 3492.1 | > Moment at the top (L-Dir Kips-Ft): | 902.5 | 0.26 | OK! |
| Upper Steel Pad Moment Capacity (W-Direction. Kips-ft): | 3492.1 | > Moment at the top (W-Dir Kips-Ft): | 902.5 | 0.26 | OK! |
| Upper Steel Pad Moment Capacity (Corner-Corner. K-ft): | 4918.4 | > Moment at the top (C-C Direc. K-Ft): | 940.8 | 0.19 | OK! |

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

AT&T Existing Facility

Site ID: CT5416

Beacon Falls NE
10 Teresa Road
Beacon Falls, CT 06403

June 1, 2015

EBI Project Number: 6215002980

| Site Compliance Summary | |
|--|------------------|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general public allowable limit: | 21.68 % |

June 1, 2015

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 01701

Emissions Analysis for Site: **CT5416 – Beacon Falls NE**

EBI Consulting was directed to analyze the proposed AT&T facility located at **10 Teresa Road, Beacon Falls, 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 limit for the 700 MHz Band and the 800 MHz band is $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively, and the general population exposure limit for the 1900 MHz PCS band 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 **10 Teresa Road, Beacon Falls, 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 GSM 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 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.
- 4) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 60 Watts

- 6) 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.
- 7) For the following calculations the sample point was the top of a six 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.
- 8) The antennas used in this modeling are the **Kathrein 800-10121** for 1900 MHz (PCS) and 850 MHz channels and the **CCI OPA-65R-LCUU-H6 and OPA-65R-LCUU-H8** for 700 MHz and 1900 MHz (PCS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Kathrein 800-10121** has a maximum gain of **11.5 dBd** at its main lobe at 850 MHz and a maximum gain of **14.4 dBd** at its main lobe at 1900 MHz. The **CCI OPA-65R-LCUU-H6** has a maximum gain of **11.7 dBd** at its main lobe at 700 MHz and a maximum gain of **14.9 dBd** at its main lobe at 1900 MHz. The **CCI OPA-65R-LCUU-H8** has a maximum gain of **12.6 dBd** at its main lobe at 700 MHz and a maximum gain of **14.9 dBd** at its main lobe at 1900 MHz. 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.
- 9) The antenna mounting height centerline of the proposed antennas is **133 feet** above ground level (AGL).
- 10) 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

| Sector: | A | Sector: | B | Sector: | C |
|-----------------|-------------------------|-----------------|-------------------------|-----------------|-------------------------|
| Antenna #: | 1 | Antenna #: | 1 | Antenna #: | 1 |
| Make / Model: | Kathrein 800-10121 | Make / Model: | Kathrein 800-10121 | Make / Model: | Kathrein 800-10121 |
| Gain: | 11.5 / 13.4 dBd | Gain: | 11.5 / 13.4 dBd | Gain: | 11.5 / 13.4 dBd |
| Height (AGL): | 133 feet | Height (AGL): | 133 feet | Height (AGL): | 133 feet |
| Frequency Bands | 850 MHz / 1900 MHz(PCS) | Frequency Bands | 850 MHz / 1900 MHz(PCS) | Frequency Bands | 850 MHz / 1900 MHz(PCS) |
| Channel Count | 6 | Channel Count | 6 | # PCS Channels: | 6 |
| Total TX Power: | 180 | Total TX Power: | 180 | # AWS Channels: | 180 |
| ERP (W): | 2,426.99 | ERP (W): | 2,426.99 | ERP (W): | 2,426.99 |
| Antenna A1 MPE% | 0.85 | Antenna B1 MPE% | 0.85 | Antenna C1 MPE% | 0.85 |
| Antenna #: | 2 | Antenna #: | 2 | Antenna #: | 2 |
| Make / Model: | CCI OPA-65R-LCUU-H6 | Make / Model: | CCI OPA-65R-LCUU-H6 | Make / Model: | CCI OPA-65R-LCUU-H8 |
| Gain: | 11.7 / 14.9 dBd | Gain: | 11.7 / 14.9 dBd | Gain: | 12.6 / 14.9 dBd |
| Height (AGL): | 133 feet | Height (AGL): | 133 feet | Height (AGL): | 133 feet |
| Frequency Bands | 700 MHz(PCS) / 1900 MHz | Frequency Bands | 700 MHz(PCS) / 1900 MHz | Frequency Bands | 700 MHz(PCS) / 1900 MHz |
| Channel Count | 4 | Channel Count | 4 | Channel Count | 4 |
| Total TX Power: | 240 | Total TX Power: | 240 | Total TX Power: | 240 |
| ERP (W): | 3,082.95 | ERP (W): | 3,082.95 | ERP (W): | 3,256.52 |
| Antenna A2 MPE% | 1.67 | Antenna B2 MPE% | 1.67 | Antenna C2 MPE% | 1.87 |

| Site Composite MPE% | |
|--------------------------|----------------|
| Carrier | MPE% |
| AT&T | 7.57 % |
| T-Mobile | 0.17 % |
| Verizon Wireless | 10.80 % |
| Clearwire | 0.77 % |
| Sprint | 0.15 % |
| Beacon Hose Co. | 2.22 % |
| Site Total MPE %: | 21.68 % |

| | |
|----------------------|----------------|
| AT&T Sector 1 Total: | 2.52 % |
| AT&T Sector 2 Total: | 2.52 % |
| AT&T Sector 3 Total: | 2.72 % |
| Site Total: | 21.68 % |

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 1: | 2.52 % |
| Sector 2: | 2.52 % |
| Sector 3 : | 2.72 % |
| AT&T Total: | 7.57 % |
| | |
| Site Total: | 21.68 % |
| | |
| Site Compliance Status: | COMPLIANT |

The anticipated composite MPE value for this site assuming all carriers present is **21.68%** 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.



Scott Heffernan
RF Engineering Director

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