



April 11, 2019

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

Regarding: Notice of Exempt Modification – Antenna Modification
Property Address: 289 H Mountain Street; Hartford, CT 06103 (A.K.A. 2 Mountain Road) (the “Property”)
Applicant: AT&T Mobility (“AT&T”, Site # CT1011)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 118-foot monopole at the above-referenced address, latitude 41.7265750°, longitude -72.7081661°. Said monopole is owned by American Tower Corporation and the underlying property owner is the SPRINGWHICH CELLULAR TOWER HOLDINGS LLC.

AT&T desires to modify its existing telecommunications facility by adding three (3) antennas and upgrading ancillary equipment as follow: adding (6) Diplexers, adding (1) surge suppressor with cabling, and adding (9) remote-radio heads (“RRHs”). The centerline height of the existing antennas and ancillary tower-mounted equipment is and will remain at 106 feet.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to the Honorable Luke Bronin, Mayor of the City of Hartford; John Collins as the Acting Building Official for the City of Hartford, Chief of Zoning Administration within the City of Hartford; the SPRINGWHICH CELLULAR TOWER HOLDINGS LLC, as property owner; and the tower owner, American Tower Corporation.

The planned modifications to AT&T’s facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The added antennas and accessory equipment will be installed at the existing height of 106 feet on the 118-foot monopole.
2. The proposed modifications will not involve any changes to AT&T’s ground-space footprint, and therefore and therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (enclosed) for AT&T's modified facility is herein provided.
5. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation for AT&T's modified facility is herein provided.
6. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
7. The existing structure and its foundation can support AT&T's proposed modifications. Please see enclosed structural analysis completed by American Tower Corporation, dated March 27, 2019, and stamped by Scott A. Wirgau.

For the foregoing reasons, AT&T respectfully requests that the proposed installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Julia Coughlin

Julia Coughlin
Site Acquisition Specialist
Empire Telecom USA, LLC
jcoughlin@empiretelecomm.com

Enclosures: Exhibit 1 – Field Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Tower Modification Drawings
Exhibit 4 – Structural Analysis
Exhibit 5 – RF Emissions Analysis Report Evaluation

cc:

The Honorable Luke Bronin
Office of the Mayor
550 Main Street, Room 200
Hartford, CT 06103

Hartford Building Department
Attn: John Collins - Acting Building Official
550 Main Street
Hartford, CT 06103

Chief of Zoning Administration
250 Constitution Plaza, 4th Floor
Hartford, CT 06103

SPRINGWHICH CELLULAR
TOWER HOLDINGS LLC
909 Chestnut, RM 36-M-1
AT&T MOBILITY LLC
St. Louis, MO 63101

American Tower Corporation
ATTN: Ryan Tierney
10 Presidential Way
Woburn, MA 01801

Unofficial Property Record Card - City of Hartford, CT

General Property Data

Parcel ID 144-714-129
Prior Parcel ID
Property Owner SPRINGWHICH CELLULAR TOWER HOLDINGS LLC
Mailing Address 909 CHESTNUT, RM 36-M-1
AT & T MOBILITY LLC
City ST LOUIS
Mailing State MO Zip 63101
ParcelZoning CAMP

Account Number
Property Location 289 H MOUNTAIN ST HARTFORD
Property Use OTHER UTILITY
Most Recent Sale Date 7/7/2003
Legal Reference 04797-0166
Grantor METROPOLITAN DISTRICT BUREAU OF
Sale Price 0
Land Area 0.000 square feet

Current Property Assessment

Card 1 Value Building Value 18,970 Xtra Features Value 0 Land Value 0 Total Value 18,970

Building Description

Building Style MFG/PROCESS
of Living Units 0
Year Built 1984
Building Grade Good
Building Condition N/A
Finished Area (SF) 682
Number Rooms 0
of 3/4 Baths 0

Foundation Type Concrete
Frame Type Wood Frame
Roof Structure FLAT
Roof Cover Membrane
Siding Brick
Interior Walls DRYWALL
of Bedrooms 0
of 1/2 Baths 0

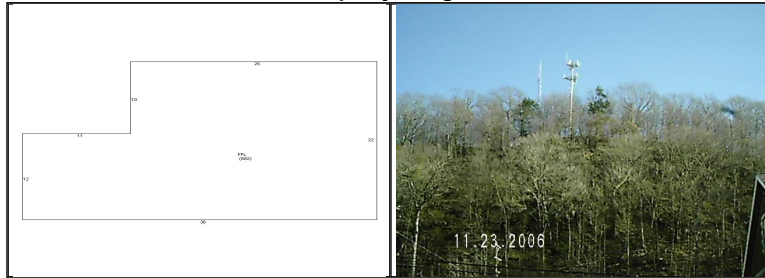
Flooring Type COMBINATION
Basement Floor N/A
Heating Type N/A
Heating Fuel N/A
Air Conditioning 0%
of Bsmt Garages 0
of Full Baths 0
of Other Fixtures 0

Legal Description

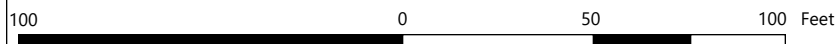
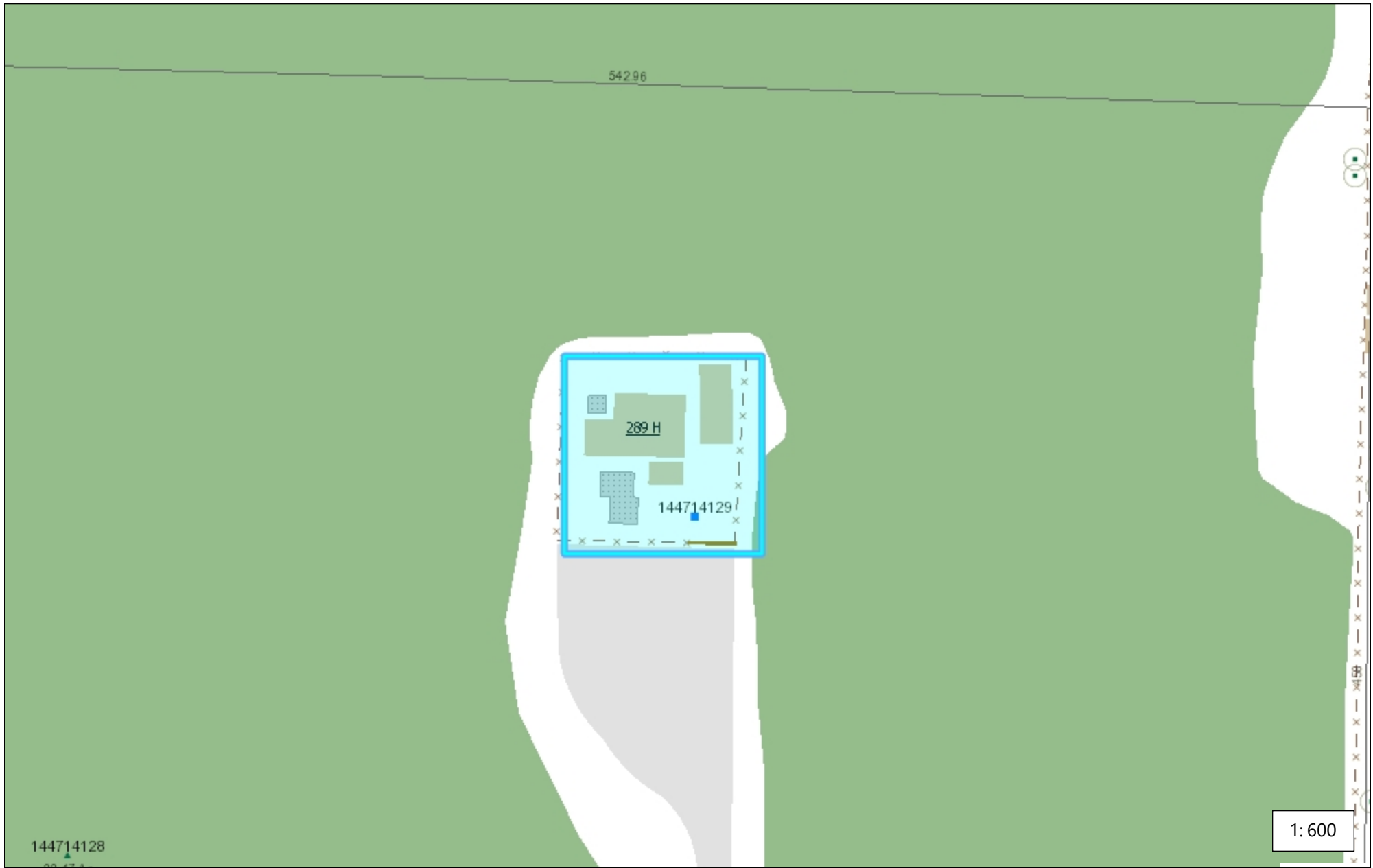
Narrative Description of Property

This property contains 0.000 square feet of land mainly classified as OTHER UTILITY with a(n) MFG/PROCESS style building, built about 1984, having Brick exterior and Membrane roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted. The Property Use designation depicted on this website is for assessment purposes only, it does not guarantee or imply rights to such use or approval of the premises for such use. Any questions regarding the approved or allowed use of a property should be confirmed with the Planning & Economic Development Division of the City of Hartford.



PROJECT NOTES

- SITE INFORMATION OBTAINED FROM THE FOLLOWING:
 - PLAN ENTITLED "HARTFORD SOUTH" PREPARED BY CENTEK ENGINEERING OF BRANFORD, CT. LAST REVISED 03/09/2018.
 - LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 05/16/2018.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
- THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION PERMITTING AGENCIES OF ANY PERMITS, APPROVALS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH VOLTAGE ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUT DOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE POTENTIALLY DANGEROUS EXPOSURE LEVELS.
- THE PROPOSED FACILITY WILL CAUSE AN INSIGNIFICANT OR NEGLIGIBLE RADIATION RADIATION RADIATION. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
- NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
- THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
- THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
- CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERS PRIOR TO INSTALLATION.
- THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-H AS PER IBC REQUIREMENTS.
- ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
- CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
- CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE STRUCTURAL ANALYSIS IS TO BE PERFORMED BY OTHERS.
- CONTRACTOR SHALL CONTACT STATE SPECIFIC ONE CALL SYSTEM THREE WORKING DAYS PRIOR TO ANY EARTH MOVING ACTIVITIES.

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THIS DRAWING AND ALL THE INFORMATION CONTAINED HEREIN IS AUTHORIZED FOR USE ONLY BY THE PARTY FOR WHOM THE WORK WAS CONTRACTED OR BY WHOM IT IS CERTIFIED. THIS DRAWING MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS FOR ANY OTHER PURPOSE WITHOUT THE EXPRESS WRITTEN CONSENT OF MASER CONSULTING CONNECTICUT.



SITE NAME: HARTFORD SOUTH
FA NUMBER: 10034968
SITE NUMBER: CT01011
6C - MRCTB032197
7C - MRCTB032202
5G NR UPGRADE - MRCTB032304
2 MOUNTAIN ROAD
HARTFORD, CT06107
HARTFORD COUNTY

VICINITY MAP



CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES:

- 2018 CONNECTICUT STATE BUILDING CODE
- 2017 NATIONAL ELECTRICAL CODE - NFPA 70
- 2017 NFPA 101
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION
- AMERICAN CONCRETE INSTITUTE
- TIA-222-G
- TIA 607 FOR GROUNDING
- INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS BY IEEE C2 LATEST EDITION
- TELECOMMUNICATIONS FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION - HANDICAPPED ACCESS NOT REQUIRED.
- PROPOSED USE: UNMANNED TELECOM FACILITY
- CONSTRUCTION TYPE: IIB
- USE GROUP: U

PROJECT INFORMATION

SITE INFORMATION
 LATITUDE: 41.7265750° N
 LONGITUDE: 72.7081461° W
 JURISDICTION: HARTFORD COUNTY

APPLICANT/LESSEE
 COMPANY: NEW CINGULAR WIRELESS PCS, LLC
 ADDRESS: 550 COCHITUATE ROAD
 CITY: STATE, ZIP: FRAMINGHAM, MA 01701

STRUCTURE OWNER
 COMPANY: AMERICAN TOWER CORPORATION
 ADDRESS: 1098 BENTONVILLE WAY
 CITY: STATE, ZIP: BELLERICA, MA 01862
 CONTACT: DAVID COOPER
 E-MAIL: DCOOPER@AMTOWER.COM

CLIENT REPRESENTATIVE
 COMPANY: EMPIRE TELECOM
 ADDRESS: 16 ESQUIRE ROAD
 CITY: STATE, ZIP: BELLERICA, MA 01862
 CONTACT: DAVID COOPER
 E-MAIL: DCOOPER@EMPRETELECOM.COM

SITE ACQUISITION
 COMPANY: EMPIRE TELECOM
 ADDRESS: 16 ESQUIRE ROAD
 CITY: STATE, ZIP: BELLERICA, MA 01862
 CONTACT: DAVID COOPER
 E-MAIL: DCOOPER@EMPRETELECOM.COM

ENGINEER
 COMPANY: MASER CONSULTING CONNECTICUT
 ADDRESS: 331 NEWMAN SPRINGS ROAD, SUITE 203
 CITY: STATE, ZIP: BRANFORD, CT 06405
 PHONE: (860) 797-0412
 E-MAIL: RANDREWS@MASERCONSULTING.COM

PROJECT DESCRIPTION/ SCOPE OF WORK

- INSTALL (0) NEW RRUS, (0) PER SECTOR
- RELOCATE (0) EXISTING RRUS, (0) PER SECTOR
- INSTALL (0) NEW PANEL ANTENNAS, (1) PER SECTOR
- INSTALL (0) NEW 18' PAIR FIBER CABLE
- INSTALL (0) NEW 6/6 DC CABLES
- INSTALL (0) NEW SECTOR MOUNTS
- INSTALL (1) NEW PIPE MOUNT ASSEMBLY

PROPOSED PROJECT SCOPE BASED ON RFDS: IDW 2310388. VERSION 3.0. LAST UPDATED 06/28/18.

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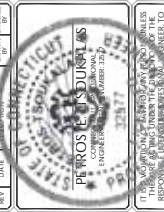
TITLE SHEET

T-1

Customized Design • Precise Construction • Quality Installation
 1000 Main Street • Suite 203 • Branford, CT 06405
 Phone: 860.797.0412 • Fax: 860.797.0413
 www.maserconsulting.com

INSITU LABORATORY
 1000 Main Street • Suite 203 • Branford, CT 06405
 Phone: 860.797.0412 • Fax: 860.797.0413
 www.insitu.com

DATE	DESCRIPTION	BY	APP'D
AS SHOWN	1/18/2018		



SITE NAME:
HARTFORD SOUTH
FA# 10034968
SITE# CT01011
2 MOUNTAIN ROAD
HARTFORD, CT 06107
HARTFORD COUNTY

RED BANK CHECK
 1000 Main Street • Suite 203 • Branford, CT 06405
 Phone: 860.797.0412 • Fax: 860.797.0413
 www.redbankcheck.com

TITLE SHEET

T-1

GENERAL NOTES:

- THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE SPECIFIC (UL, LP, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TOLCRODA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVISE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GROUND) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
- THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 50 OHMS OR LESS.
- THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATIONS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
- METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING CONDUIT CLAMPS. BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 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 B15 EQUIPMENT.
- EACH B15 CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN AWG STRANDED COPPER FOR OUTDOOR B15.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (OUTSIDE) SHALL BE FORMED USING HIGH PRESS GRIPPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE GROUND SHALL ALL BE CADWELD CONNECTIONS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
- APPROVED ANTIMOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 142 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
- 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 ROUSED IN CONDUIT TO MEET THE REQUIREMENTS OF THE NEC, THE CONDUIT SHALL BE IDENTIFIED AS NON-METALLIC CONDUIT (PROHIBITED BY LOCAL CODES) UNLESS OTHERWISE NOTED.
- ALL GROUND CONDUCTORS SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.
- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR - EMPIRE TELECOM
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER - AT&T (NEW JERSEY WIRELESS PCS, LLC)
- ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY NOTATED OTHERWISE.
- 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.
- 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.
- THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AND MAINTAINED AS SHOWN ON THE DRAWINGS. ANY UNEXPECTED UTILITIES SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXPOSED UTILITIES SHALL BE USED BY THE SUBCONTRACTOR WITHIN EXCAVATING OR DRILLING PITS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. ANY UTILITIES WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
- THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
- SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND, FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SURGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE B15 EQUIPMENT AND TOWER AREAS.
- IF NECESSARY, RUBBER, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
- SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND TT 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.
- ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301, AT 28 DAYS.
- ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000PSI STRENGTH AT 28 DAYS.
- ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEELS ARE ERRECTED USING A COMPATIBLE ZINC RICH PAINT.
- CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
- 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.
- 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 SHALL BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW, USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
- SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUT DOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF BIOSURE MONITORS ARE ADVISED TO BE WORN ALERT OF DANGEROUS EXPOSURE LEVELS.

<p>MASTER CONSTRUCTING CONSTRUCTION</p> <p>CUSTOMER SERVICE PROGRAM OFFICE: 1-800-843-8888 1000 W. WASHINGTON ST. SUITE 200 LAWRENCEVILLE, GA 30046 LANDSCAPE ARCHITECT & ENVIRONMENTAL SPECIALISTS</p>			<p>INDUSTRIAL LABORATORY 2000 W. WASHINGTON ST. SUITE 200 LAWRENCEVILLE, GA 30046 CALIBRATION #1426 CONSTRUCTION PROJECT TRACK #426583-031 WWW.VIATRA.COM</p>	<table border="1"> <tr> <td>DATE</td> <td>10/20/2024</td> </tr> <tr> <td>AS SHOWN</td> <td></td> </tr> <tr> <td>NO.</td> <td>1</td> <td>NO.</td> <td>1</td> </tr> <tr> <td>NO.</td> <td>2</td> <td>NO.</td> <td>2</td> </tr> <tr> <td>NO.</td> <td>3</td> <td>NO.</td> <td>3</td> </tr> <tr> <td>NO.</td> <td>4</td> <td>NO.</td> <td>4</td> </tr> <tr> <td>NO.</td> <td>5</td> <td>NO.</td> <td>5</td> </tr> <tr> <td>NO.</td> <td>6</td> <td>NO.</td> <td>6</td> </tr> <tr> <td>NO.</td> <td>7</td> <td>NO.</td> <td>7</td> </tr> <tr> <td>NO.</td> <td>8</td> <td>NO.</td> <td>8</td> </tr> <tr> <td>NO.</td> <td>9</td> <td>NO.</td> <td>9</td> </tr> <tr> <td>NO.</td> <td>10</td> <td>NO.</td> <td>10</td> </tr> <tr> <td>NO.</td> <td>11</td> <td>NO.</td> <td>11</td> </tr> <tr> <td>NO.</td> <td>12</td> <td>NO.</td> <td>12</td> </tr> </table>	DATE	10/20/2024	AS SHOWN		NO.	1	NO.	1	NO.	2	NO.	2	NO.	3	NO.	3	NO.	4	NO.	4	NO.	5	NO.	5	NO.	6	NO.	6	NO.	7	NO.	7	NO.	8	NO.	8	NO.	9	NO.	9	NO.	10	NO.	10	NO.	11	NO.	11	NO.	12	NO.	12	<p>PIERCE HENRIKSEN CONSULTING ENGINEERS 1000 W. WASHINGTON ST. SUITE 200 LAWRENCEVILLE, GA 30046 TEL: 770.962.1000 FAX: 770.962.1001 WWW.PHCONSULTANTS.COM</p>	<p>SITE NAME: HARTFORD SOUTH FA# 10034968 SITE# CT1011 2 MOUNTAIN ROAD LAWRENCEVILLE, GA HARTFORD COUNTY</p>	<p>BID BANK CHECK 3000 W. WASHINGTON ST. SUITE 200 LAWRENCEVILLE, GA 30046 TEL: 770.962.1000 FAX: 770.962.1001 WWW.BIDBANKCHECK.COM</p>	<p>GENERAL NOTES</p> <p>GN-1</p>
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MASTER CONSULTING CORPORATION
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 HARTFORD, CT 06105
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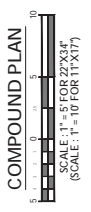
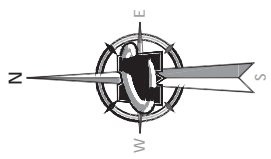
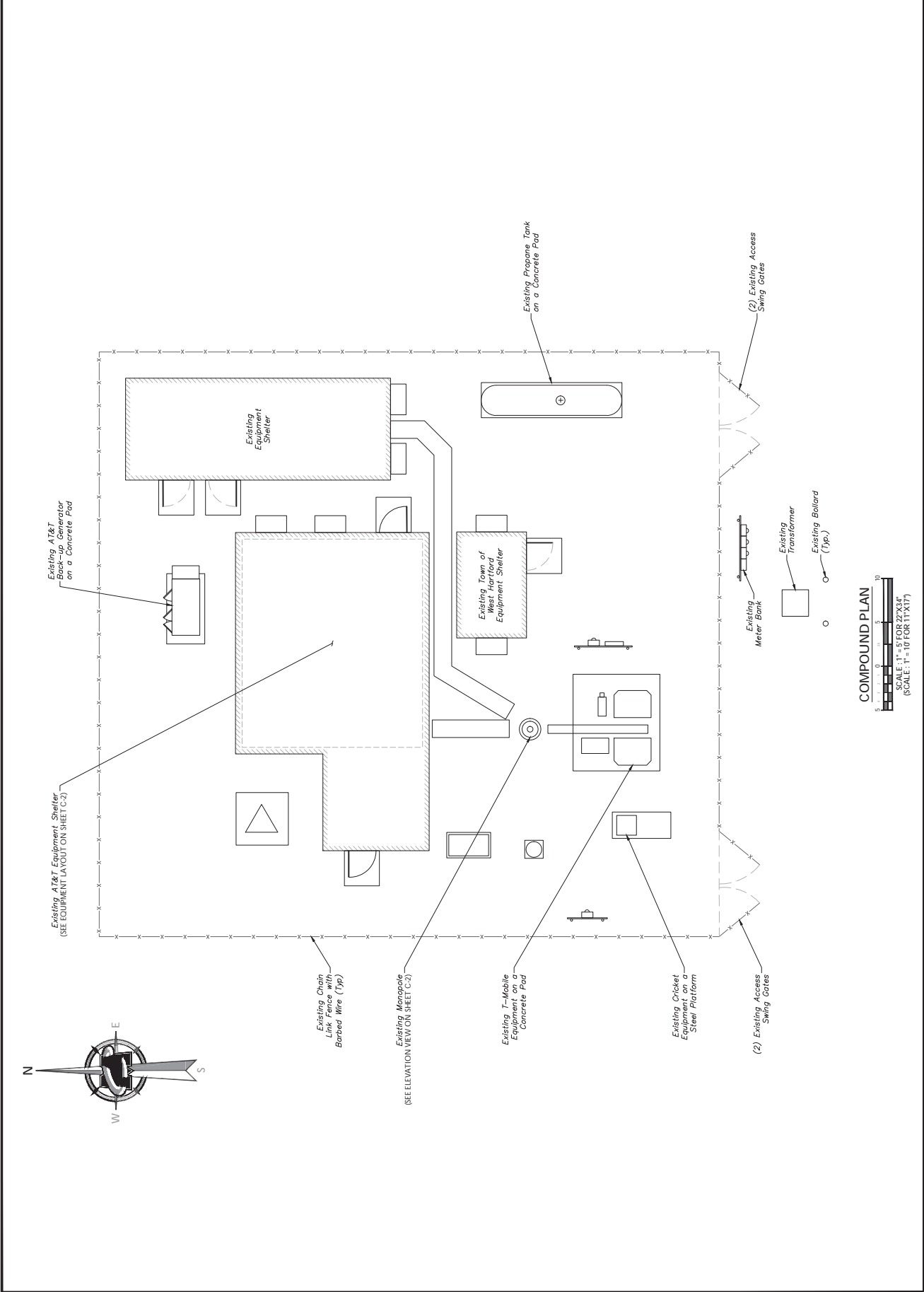
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SITE NAME:
 HARTFORD SOUTH
 FA# 10034968
 SITE# CT101011
 2 MOUNTAIN ROAD
 HARTFORD, CT 06105
 HARTFORD COUNTY

RED BANK CHECKS
 1170 ROUTE 100
 SUITE 201
 HARTFORD, CT 06105
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COMPOUND PLAN
 C-1



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 Dallas, TX 75243
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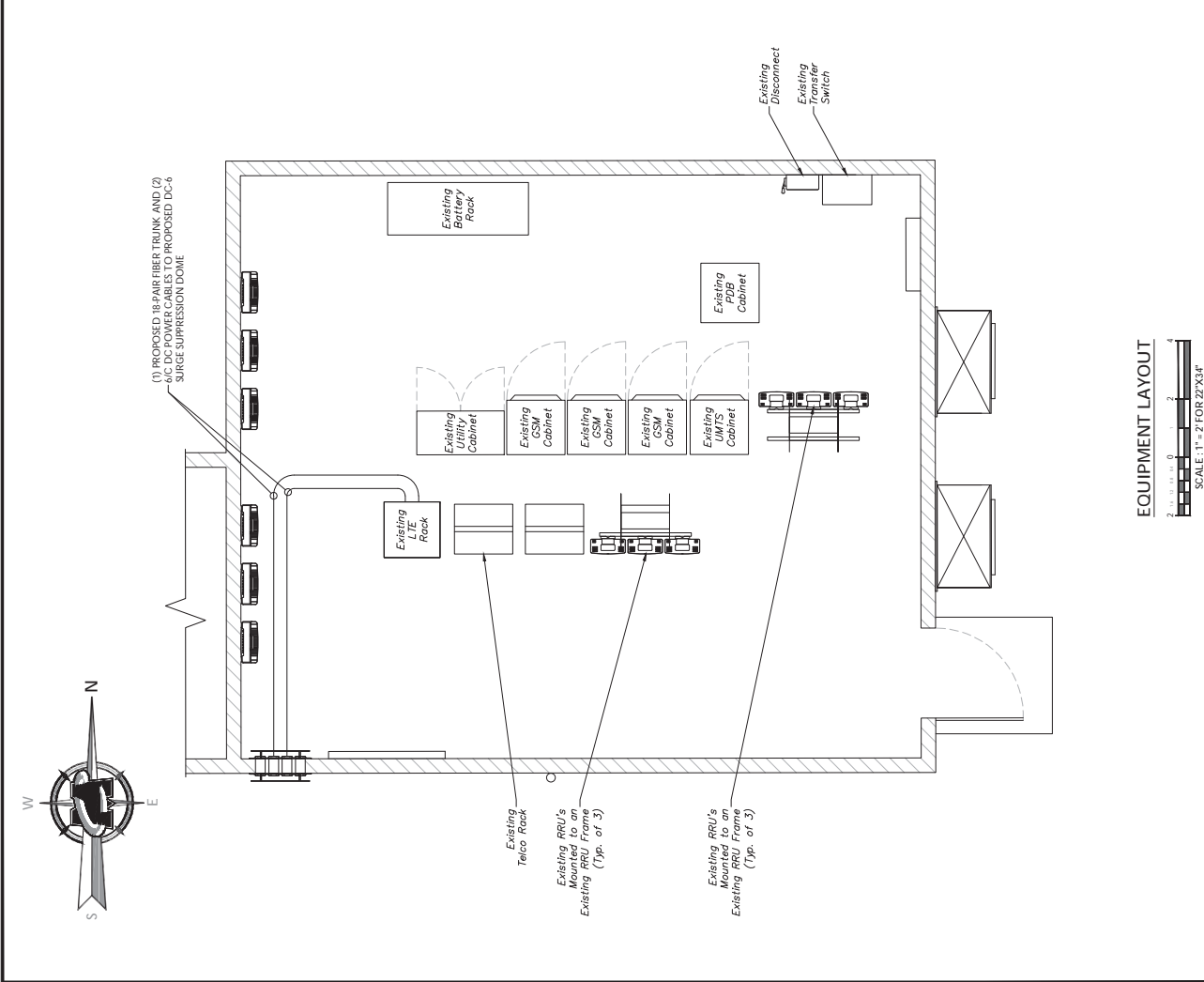
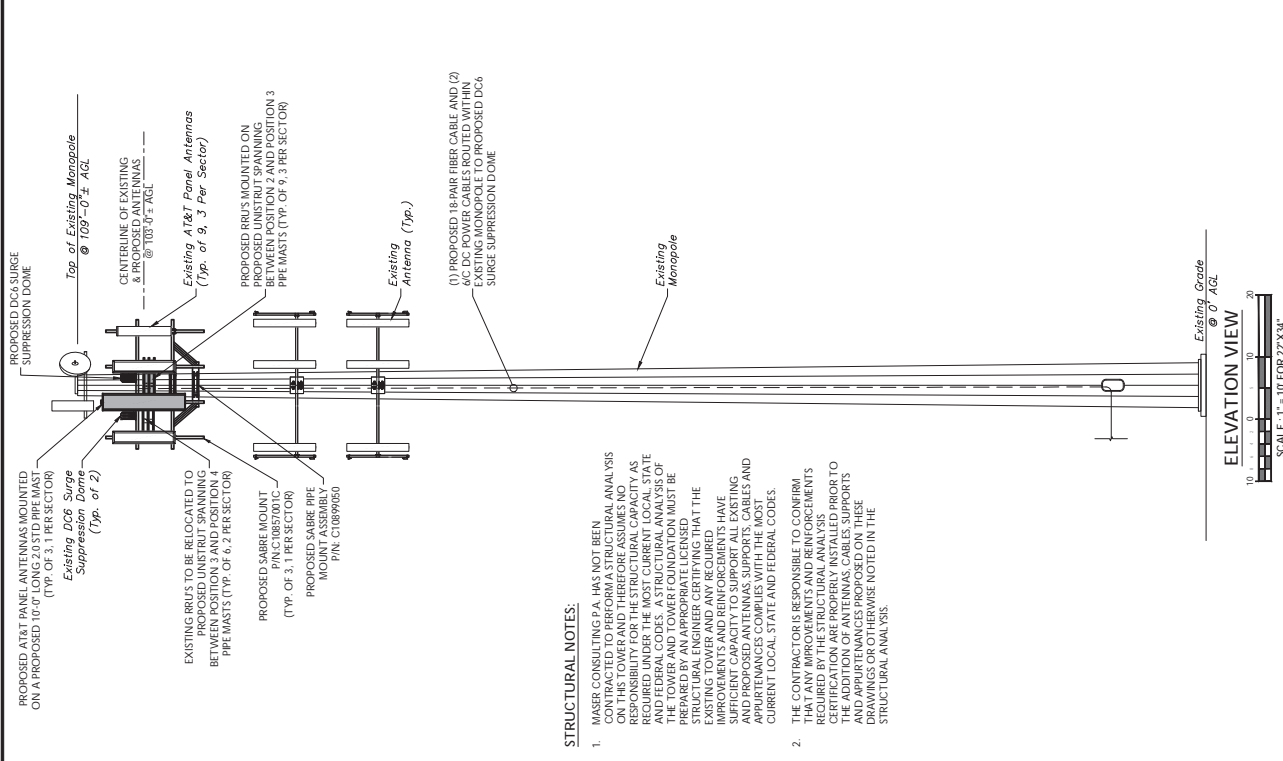
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SITE NAME:
 HARTFORD SOUTH
 FA# 10034968
 SITE# CT10101
 2 MOUNTAIN ROAD
 HARTFORD, TEXAS 76044
 HARTFORD COUNTY

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EQUIPMENT LAYOUT AND ELEVATION VIEW
 DATE: 10/01/2010
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 PROJECT: [Name]



STRUCTURAL NOTES:

- MAKER CONSULTING P.A. HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS OF THE PROPOSED TOWER. THE CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURAL CAPACITY AS REQUIRED UNDER THE MOST CURRENT LOCAL, STATE AND FEDERAL CODES. A STRUCTURAL ANALYSIS OF THE PROPOSED TOWER MUST BE PREPARED BY AN APPROPRIATE LICENSED STRUCTURAL ENGINEER CERTIFYING THAT THE EXISTING TOWER AND ANY REQUIRED IMPROVEMENTS AND REINFORCEMENTS HAVE BEEN DESIGNED TO SUPPORT THE EXISTING AND PROPOSED ANTENNAS, SUPPORTS, CABLES AND APPURTENANCES COMPLIES WITH THE MOST CURRENT LOCAL, STATE AND FEDERAL CODES.
- THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE INSTALLATION OF THE ANTENNAS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

MAKER COMMERCIAL CONSTRUCTION

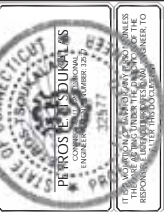
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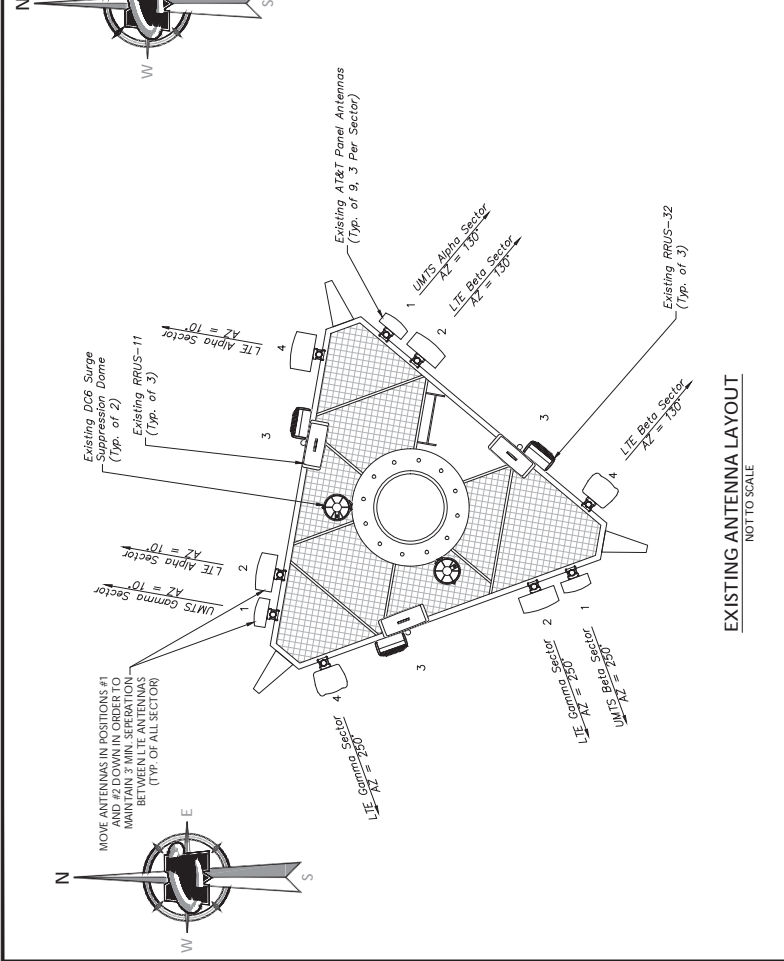
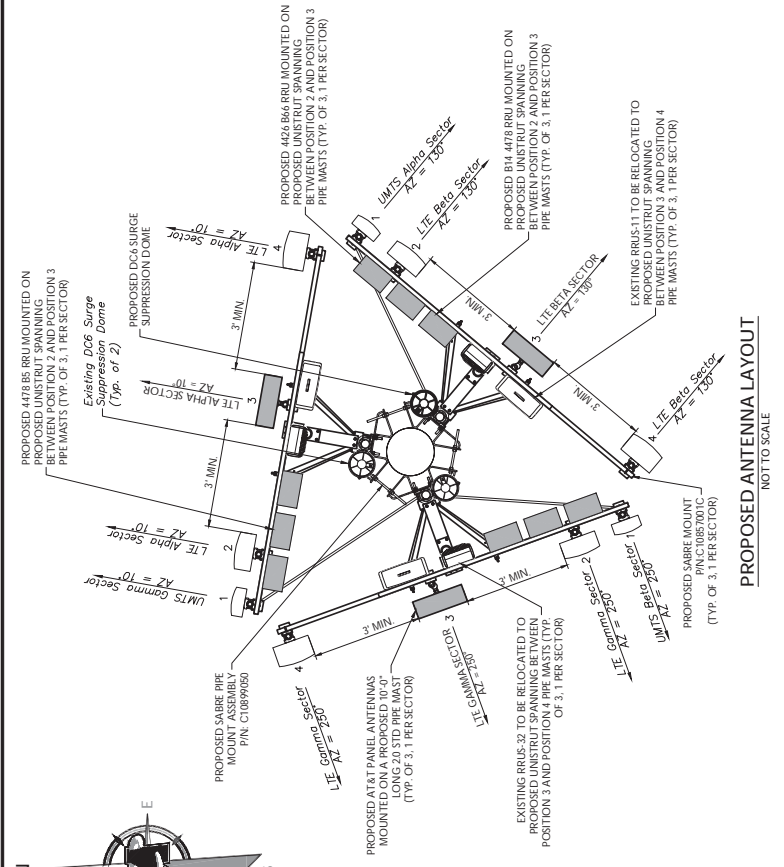
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 CALICO, CALIFORNIA 92503
 (951) 740-1000
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 CALICO, CALIFORNIA 92503
 (951) 740-1000
 WWW.PIETROSENGINEERS.COM

ANTENNA LAYOUTS AND ANTENNA SCHEDULE

DATE: 01/11/2017
 PROJECT: C-3

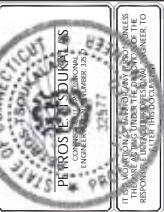


ANTENNA SCHEDULE

SECTOR	EXISTING ANTENNA	PROPOSED ANTENNA	TECHNOLOGY	ANTENNA STATUS	HEIGHT (ft)	WIDTH (ft)	DEPTH (ft)	WEIGHT (lb)	ANTENNA AZIMUTH (DEG)	ANT. CL. ELEV. (ft)	REMOTE RADIO/TA CONFIGURATION	TRANSMISSION CABLE QUANTITY	TYPE	STATUS
Sector 1	POWERWAVE 7770	POWERWAVE 7770	UMTS/LTE	EXISTING	55.00	11.00	5.00	35.00	130	103	(2) KATHREIN 78210250 DIRECTORS (1) RRUS-11	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H8	CCI OPA-68R.LOU-H8	LTE	EXISTING	92.70	14.40	7.00	88.00	10	103	(1) RRUS-32 (2) DIRECTOR FV92-1 (1) 4478 BS (1) RRUS-32-RZ	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H6	CCI OPA-68R.LOU-H6	LTE	PROPOSED	96.00	20.00	6.90	125.70	10	103	(1) RRUS-11 (AT GRADE) (1) RRUS-32 (1) 4478 BS (1) RRUS-32-RZ	1/2	FIBER/DC	PROPOSED
	CCI OPA-68R.LOU-H8	CCI OPA-68R.LOU-H8	LTE	EXISTING	96.00	14.40	8.60	87.60	10	103	(1) RRUS-11 (AT GRADE) (1) 4478 BS (1) RRUS-32-RZ	1/2	FIBER/DC	EXISTING
Sector 2	POWERWAVE 7770	POWERWAVE 7770	UMTS/LTE	EXISTING	55.00	11.00	5.00	35.00	250	103	(2) KATHREIN 78210250 DIRECTORS (1) RRUS-11	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H6	CCI OPA-68R.LOU-H6	LTE	EXISTING	72.30	14.40	7.30	67.50	100	103	(1) RRUS-32 (2) DIRECTOR FV92-1 (1) 4478 BS (1) RRUS-32-RZ	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H6	CCI OPA-68R.LOU-H6	LTE	PROPOSED	78.70	20.00	6.90	108.60	130	103	(1) RRUS-11 (AT GRADE) (1) RRUS-32 (1) 4478 BS (1) RRUS-32-RZ	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H8	CCI OPA-68R.LOU-H8	LTE	EXISTING	72.00	12.00	9.60	126.60	130	103	(1) RRUS-11 (AT GRADE) (1) 4478 BS (1) RRUS-32-RZ	2	1.58" COAX	EXISTING
Sector 3	POWERWAVE 7770	POWERWAVE 7770	UMTS/LTE	EXISTING	55.00	11.00	5.00	35.00	10	103	(2) KATHREIN 78210250 DIRECTORS (1) RRUS-11	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H6	CCI OPA-68R.LOU-H6	LTE	EXISTING	72.30	14.40	7.30	67.50	250	103	(1) RRUS-32 (2) DIRECTOR FV92-1 (1) 4478 BS (1) RRUS-32-RZ	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H6	CCI OPA-68R.LOU-H6	LTE	PROPOSED	78.70	20.00	6.90	108.60	250	103	(1) RRUS-11 (AT GRADE) (1) RRUS-32 (1) 4478 BS (1) RRUS-32-RZ	2	1.58" COAX	EXISTING
	CCI OPA-68R.LOU-H8	CCI OPA-68R.LOU-H8	LTE	EXISTING	72.00	12.00	9.60	126.60	250	103	(1) RRUS-11 (AT GRADE) (1) 4478 BS (1) RRUS-32-RZ	2	1.58" COAX	EXISTING



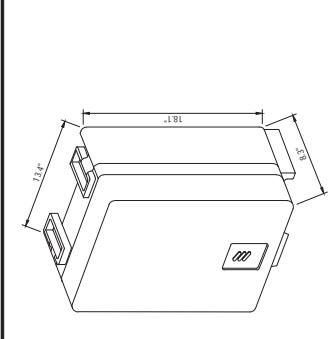
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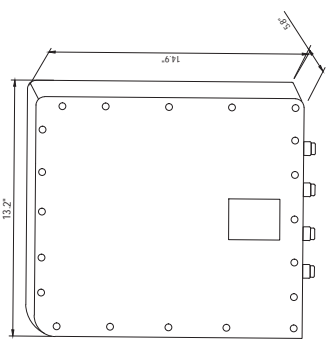
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HARTFORD SOUTH
FA# 10034968
SITE# CT10101
2 MOUNTAIN ROAD
HARTFORD, CA 95027
HARTFORD COUNTY



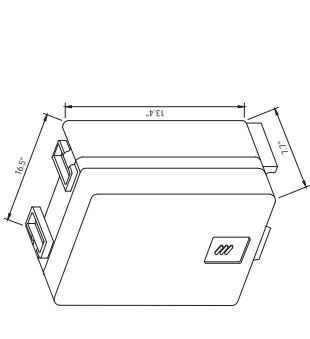
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RRU-4478-B5
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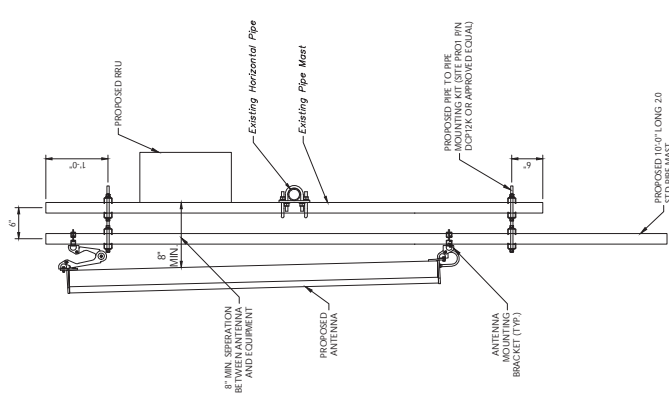
RRUS-4478 B14 DETAIL
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 DIMENSIONS (H X W X D): 18.1" H X 13.4" W X 8.3" D (INCLUDES SUNSHIELD)
 WEIGHT: 39.4 LBS



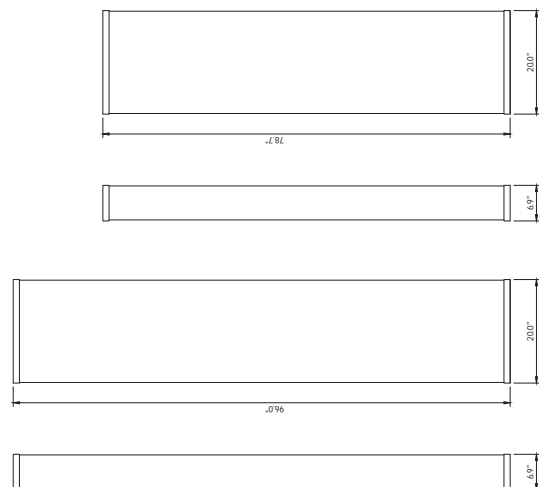
RRUS-4426 B66 DETAIL
 NOT TO SCALE
 DIMENSIONS (H X W X D): 14.9" H X 14.9" X 13.2" X 5.8" (INCLUDES SUNSHIELD) WEIGHT: 48 LBS



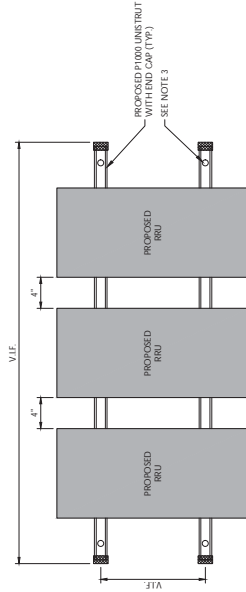
RRU-4478-B5 DETAIL
 NOT TO SCALE
 DIMENSIONS (H X W X D): 16.5" H X 13.4" W X 7.7" D (INCLUDES SUNSHIELD)
 WEIGHT: 39.5 LBS



ANTENNA MOUNTING DETAIL
 NOT TO SCALE



ANTENNA DETAILS



- NOTES:**
- INSTALL VERTICAL UNISTRUT CHANNELS AS REQUIRED TO MATCH FRAME WITH EQUIPMENT MOUNTING HOLES. FASTEN UNISTRUT CHANNELS TOGETHER WITH 3/8" UNISTRUT BOLTING HARDWARE AND SPRING NUTS.
 - EACH UNISTRUT TO BE MOUNTED ON EXISTING VERTICAL PIPE MASTS USING 3/8" Ø U-BOLTS. MINIMUM ONE AT EACH END OF UNISTRUT.
 - MOUNT RRUS TO UNISTRUT WITH 3/8" Ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS THROUGH EQUIPMENT MOUNTING HOLES. SUBCONTRACTOR SHALL SUPPLY.
 - PAINTING OF THE RRUS SHALL BE IN STRICT CONFORMANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS.
 - ANTENNAS NOT SHOWN FOR CLARITY.

RRU MOUNTING DETAIL
 NOT TO SCALE



MASTER CONSTRUCTING
 CONCRETE FORMWORK SPECIALISTS
 10000 W. 10th Street, Suite 100, Overland Park, KS 66211
 Phone: 913.241.1100 Fax: 913.241.1101
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 PROJECT NO. 1803000001
 CALLUSERS@VIAVA.COM
 WWW.VIAVA.COM

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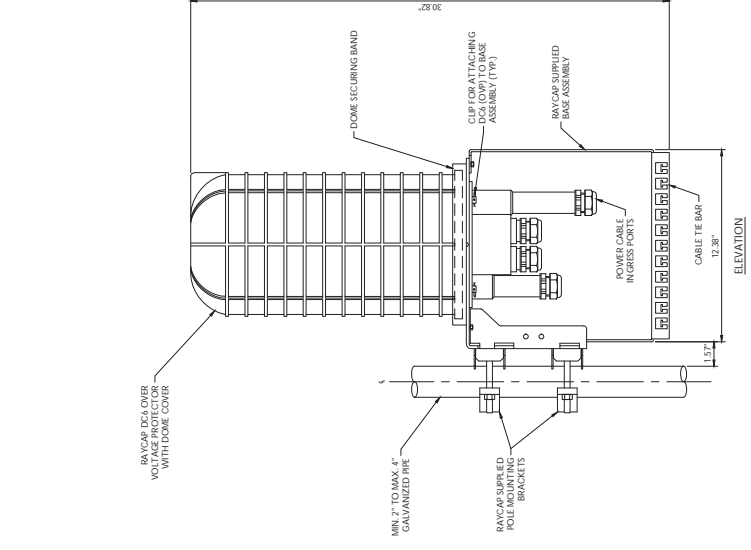
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 SITE# CT10101
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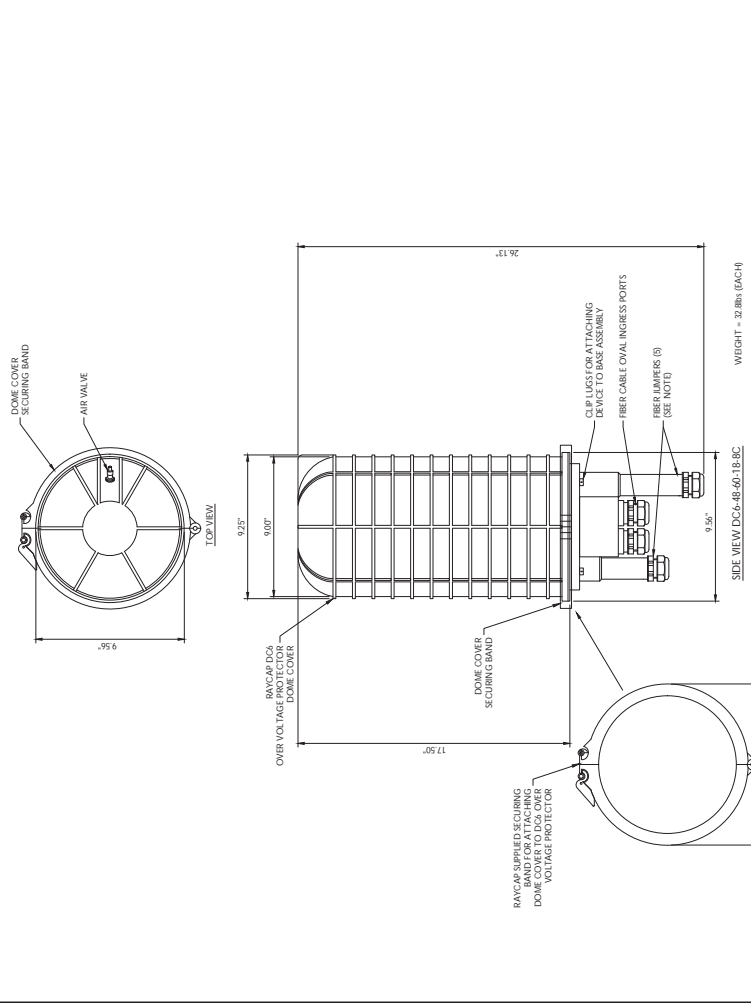
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DETAILS
 A-2



NOTES
 RAYCAP HAS A TEST SURPLUS THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUB CONTRACTOR SHALL SUPPLY THE PIPE.

RAYCAP DC6-48-60-18-8C & DC6-48-60-0-8C POLE MOUNT BASE ASSEMBLY
 NOT TO SCALE



NOTE
 REMOVE CABLE SEALING GLAND AND INSTALL IN THE 7/8" WT OR EQUIVALENT (#8 R) WHEN CONNECTING CONDUIT TO OVP.

DC6 SURGE SUPPRESSION DOME DETAIL
 NOT TO SCALE

NOTE
 REMOVE CABLE SEALING GLAND AND INSTALL IN THE 7/8" WT OR EQUIVALENT (#8 R) WHEN CONNECTING CONDUIT TO OVP.

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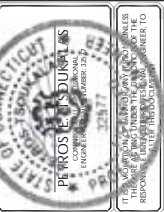
1500 ROUTE 100, SUITE 200, HARTFORD, CT 06105
 PHONE: 860.234.1100 FAX: 860.234.1101
 WWW.MASTERSCONSULTING.COM

DESIGN: COMMERCIAL PLUMBING, ELECTRICAL, MECHANICAL, AND SANITARY
 CONSTRUCTION: COMMERCIAL PLUMBING, ELECTRICAL, MECHANICAL, AND SANITARY
 LANDSCAPE ARCHITECTURE: COMMERCIAL PLUMBING, ELECTRICAL, MECHANICAL, AND SANITARY

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DATE: 10/26/2018

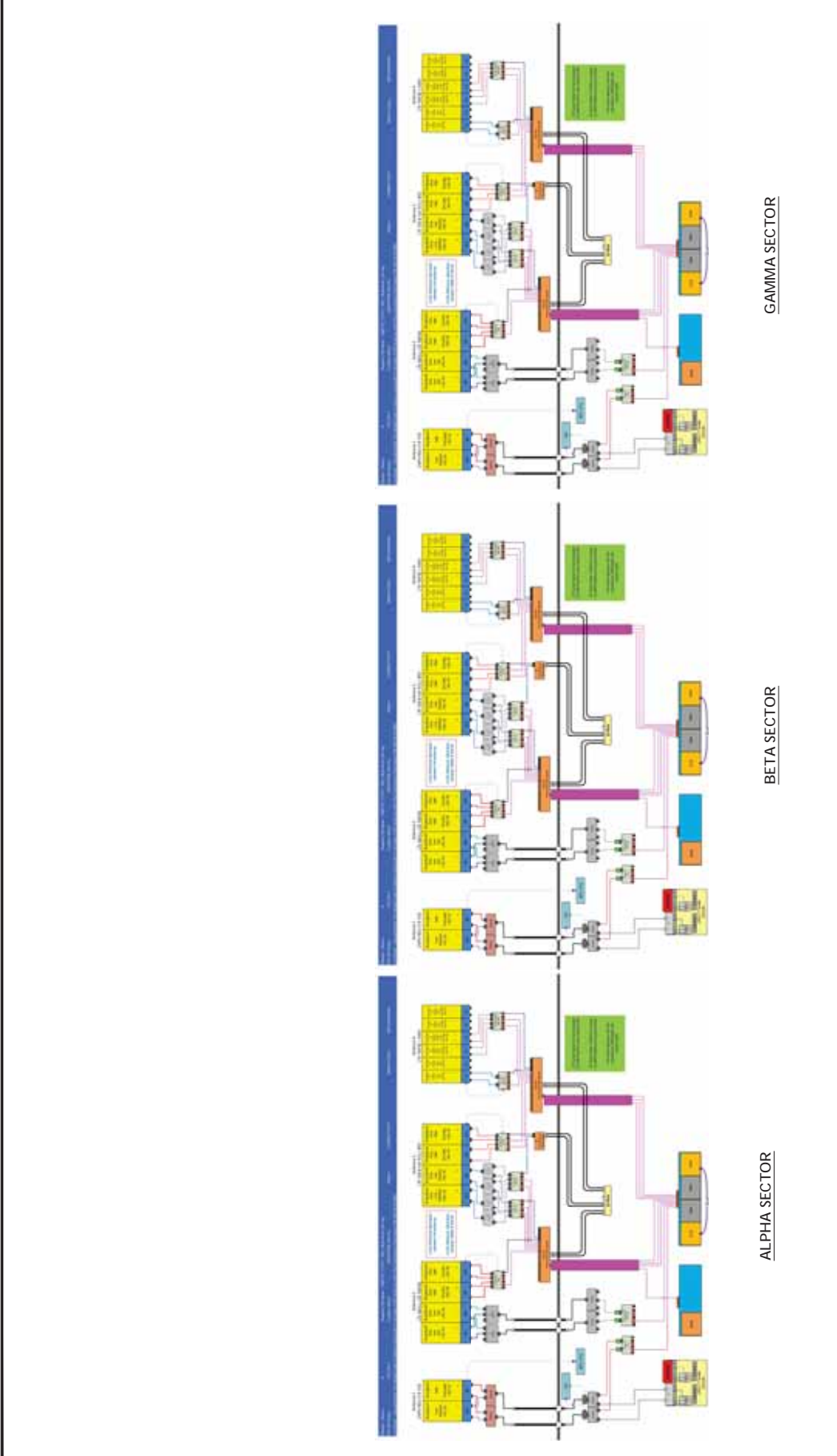
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9	ISSUED FOR PERMITS	10/26/2018
10	ISSUED FOR PERMITS	10/26/2018



SITE NAME:
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 SITE# CT101011
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 HARTFORD, CT 06105
 HARTFORD COUNTY

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 3110 WASHINGTON STREET
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RF PLUMBING DIAGRAM



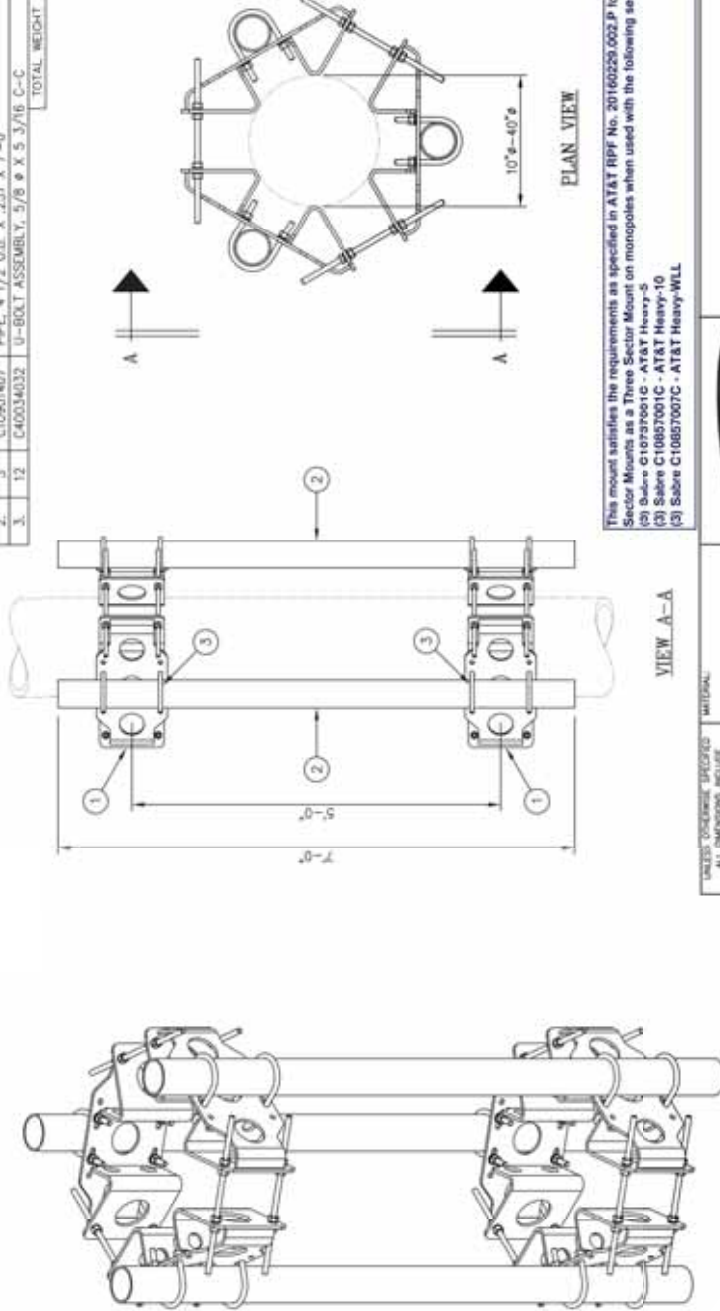
ALPHA SECTOR BETA SECTOR GAMMA SECTOR

RF PLUMBING DIAGRAMS

BASED ON: RF ENGINEERING DESIGN ENTITLED "CT101011_2019_LTE-Next-Gen-LTE_4g588b_2061A0GWAA_10034968_59334", LAST REVISED 08/28/2018.

NOTE:
SEE DRAWING C10112500 FOR INSTALLATION OF TR-COLLAR BRACKET ASSEMBLY

ITEM	QTY	PART NO.	DESCRIPTION	WEIGHT
1.	2	C10112500	TR-COLLAR BRACKET ASSEMBLY	366
2.	3	C10501407	PIPE, 4 1/2" O.D. X .237 X 7'-0"	236
3.	12	C40034032	U-BOLT ASSEMBLY, 5/8" X 5 3/16" C-C	26
TOTAL WEIGHT				648



This mount satisfies the requirements as specified in AT&T RFP No. 20160229.002.P for Antenna Sector Mounts as a Three Sector Mount on monopoles when used with the following sector mounts:
 (2) Sabre C10857001C - AT&T Heavy-5
 (3) Sabre C10857001C - AT&T Heavy-10
 (3) Sabre C10857007C - AT&T Heavy-WLL

DATE	DRAWN BY	REV	SCALE	PAGE
07/26/16	MSF	0	None	1 OF 1

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 Towers and Poles
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REV	DATE	BY	DESCRIPTION

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 DECIMALS & 1/32"
 DECIMALS & 1/64"
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 TOLERANCES DO NOT APPLY
 TO DIM MATERIAL.

4 1/2" O. D. PIPE MOUNT ASSEMBLY
 FOR MONOPOLES
 (FITS 10" TO 40" DIAMETER)



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 10000 W. 10th Avenue, Suite 1000
 Denver, CO 80202
 Phone: 303.733.1800
 Fax: 303.733.1801
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INDUSTRIAL MOUNTS
 10000 W. 10th Avenue, Suite 1000
 Denver, CO 80202
 Phone: 303.733.1800
 Fax: 303.733.1801
 www.sabreindustries.com

REV	DATE	BY	DESCRIPTION

AS SHOWN
 1808002A

PETER J. DUKALSKI
 PROFESSIONAL ENGINEER
 LICENSE NO. 100000000000000
 STATE OF COLORADO

SITE NAME:
 HARTFORD SOUTH
 FA# 10034968
 SITE# C101011
 2 MOUNTAIN ROAD
 HARTFORD, CO
 HARTFORD COUNTY

RED BANK CREDIT
 3110 W. 10th Avenue, Suite 1000
 Denver, CO 80202
 Phone: 303.733.1800
 Fax: 303.733.1801
 www.redbankcredit.com

STRUCTURAL DETAILS

S-1

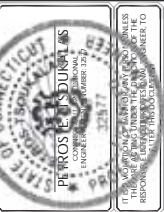


CUSTOMER: TOWER POWER COMMUNICATIONS
 PROJECT: HARTFORD SOUTH
 LOCATION: HARTFORD COUNTY
 DATE: 12/22/15



DATE: 12/22/15
 DRAWN BY: JEFF
 CHECKED BY: EK

REV	DATE	BY	DESCRIPTION
1	12/22/15	JEFF	ISSUED FOR PERMIT
2	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
3	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
4	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
5	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
6	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
7	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
8	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
9	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
10	12/22/15	JEFF	REVISED PER PERMIT COMMENTS



SITE NAME:
 HARTFORD SOUTH
 FA# 10034968
 SITE # C101011
 2 MOUNTAIN ROAD
 HARTFORD COUNTY
 HARTFORD COUNTY



STRUCTURAL DETAILS
 PERMIT

S-2

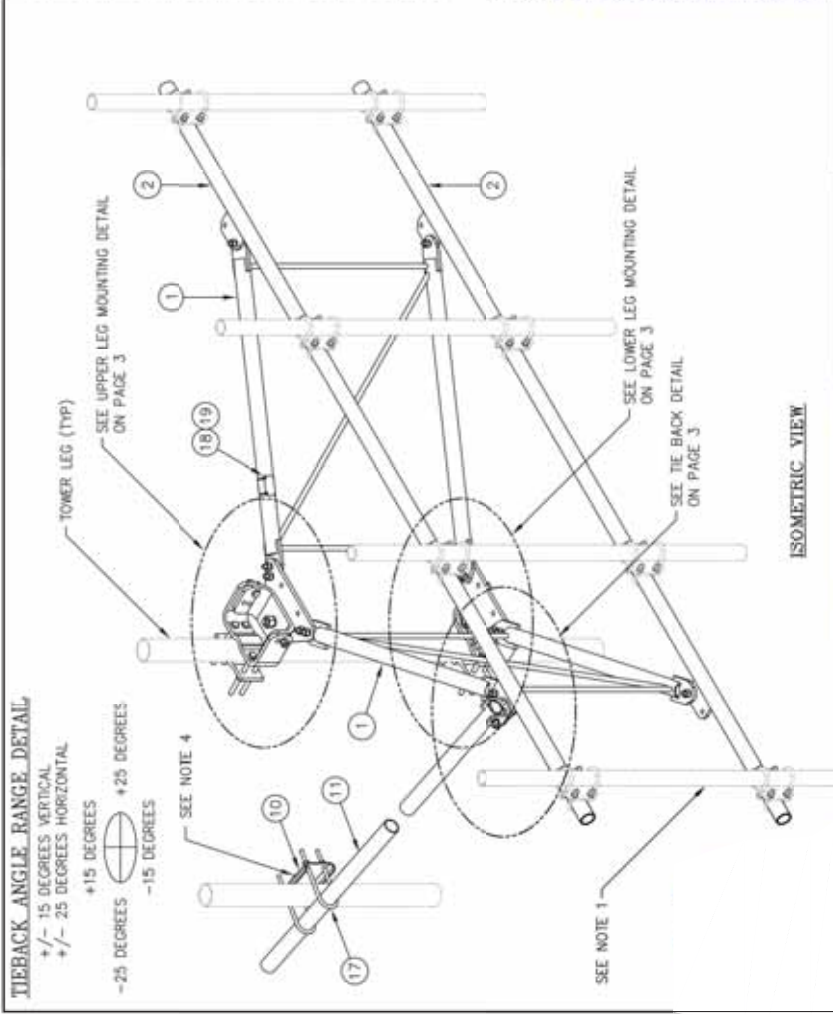


C10857001C 12' HD V-BOOM ASSEMBLY W/TIEBACK

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
1.	2	CW01222	WELDMENT, STANDOFF ARM	126
2.	2	CW01223	WELDMENT, FACE PIPE	147
3.	2	CS03109	PLATE, ROTATING	34
4.	1	CS03110	PLATE, PIVOTING (UPPER)	16
5.	1	CS03111	PLATE, LEG CLAMP (UPPER)	17
6.	1	CS03112	PLATE, PIVOTING (LOWER)	14
7.	1	CS03113	PLATE, LEG CLAMP (LOWER)	17
8.	2	CS03114	PLATE, LEG CLAMP (BACK)	14
9.	1	CS00098	PLATE, TIE BACK SWIVEL	3
10.	1	CS03285	PLATE, TIE BACK CLAMP	4
11.	1	CS03333	PIPE, TIE BACK	38
12.	2	C40026073	BOLT ASSEMBLY, 1 # X 3 A324	4
13.	8	C40140004	BOLT ASSEMBLY, 5/8 # X 8 A307	13
14.	1	C40026033	BOLT ASSEMBLY, 5/8 # X 4 1/2 A325	1
15.	12	C40026025	BOLT ASSEMBLY, 5/8 # X 2 1/2 A325	6
16.	5	C40026024	BOLT ASSEMBLY, 5/8 # X 2 1/4 A325	3
17.	2	C40034183	U-BOLT ASSEMBLY, 1/2 # X 2 9/16 C-C	3
18.	1	Z30992001	MOUNT CLASSIFICATION TAG C10857001C	1
19.	2	C40062103	STAINLESS STEEL SELF-LOOKING CABLE TIE	1
TOTAL WEIGHT				462

PACKAGING NOTE

CK00386 INCLUDES ITEMS 1, 3, 4, 5, 6, 7, 12 & 15 (8 QTY)
 CK00387 INCLUDES ITEMS 2, 8, 9, 10, 11, 13, 14, 15 (4 QTY), 16, 17, 18 & 19
 This mount satisfies the Heavy-10 requirements as specified in AT&T RFP No. 20160229.002.P for Antenna Sector Mounts.
 It satisfies ANSITM-222-G for the following parameters:
 Structure Class II, Exposure Category C, Topographic Category 1
 Mount and antenna centerline at 300' AGL
 Gust effect factor = 1.0, Wind direction probability factor = 0.95
 Four mount pipes symmetrically placed as shown
 Bare condition
 Basic wind speed = 120 mph
 (EPA)₁ = (EPA)_r = 15.0 sq.ft. per mount pipe
 Factored Weight = 663 lbs per mount pipe
 Iced condition
 Basic wind speed = 60 mph, Design ice thickness, $\delta = 1.0$ in
 (EPA)₁ = (EPA)_r = 24.0 sq.ft. per mount pipe
 Factored Weight = 1325 lbs per mount pipe



ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED	MATERIAL
ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES	
TOLERANCES FRACTIONS & 1/16"	
ANGLES & 1/2 DEG.	
DECIMALS & .010"	

TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	BY	DESCRIPTION
1	12/22/15	JEFF	ISSUED FOR PERMIT
2	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
3	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
4	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
5	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
6	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
7	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
8	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
9	12/22/15	JEFF	REVISED PER PERMIT COMMENTS
10	12/22/15	JEFF	REVISED PER PERMIT COMMENTS

Mount EPA's in accordance with ANSITM-222-G:
 (EPA)₁ = 9.12 sq.ft.
 (EPA)_r = 5.23 sq.ft.
 *Excludes mount pipes

NOTES:
 1. MOUNTING PIPES & CROSSOVER PLATE KITS MUST BE PURCHASED SEPARATELY.
 2. QUANTITIES SHOWN IN LISTS OF MATERIAL ARE FOR ONE (1) V-BOOM ONLY.
 3. THIS V-BOOM WILL MOUNT TO THE FOLLOWING: 1 1/2" # TO 5 9/16" # ROUND LEG.
 4. TIEBACK MUST BE CONNECTED TO A RIGID MEMBER THAT PROVIDES ADEQUATE SUPPORT WITHIN THE LIMITS NOTED ABOVE IN THE TIEBACK ANGLE RANGE DETAIL UNLESS APPROVED BY THE ENGINEER OF RECORD.

SABRE SECTOR FRAME
 NOT TO SCALE

12' HD V-BOOM ASSEMBLY W/TIEBACK
 (3' STANDOFF)
 W/NO ANTENNA MOUNTING PIPES

DATE	BY	CHKD	SCALE	PAGE
12/22/15	JEFF	EK	None	1 OF 3

SIZE: B
 DRAWING NO: C10857001C
 REV: 2

Sabre Industries
 Towers and Poles

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CUSTOMER: COUNTY OF HARTFORD
 PROJECT: HARTFORD COUNTY
 LOCATION: HARTFORD COUNTY
 LANDSCAPE ARCHITECT & ENVIRONMENTAL SPECIALISTS



INDUSTRIAL DESIGN
 CONSULTING
 1000 W. MAIN STREET
 SUITE 1000
 HARTFORD, CT 06103
 TEL: 860.264.1100
 WWW.SUNDESIGN.COM

NO.	AS SHOWN	DATE	DESCRIPTION
1			
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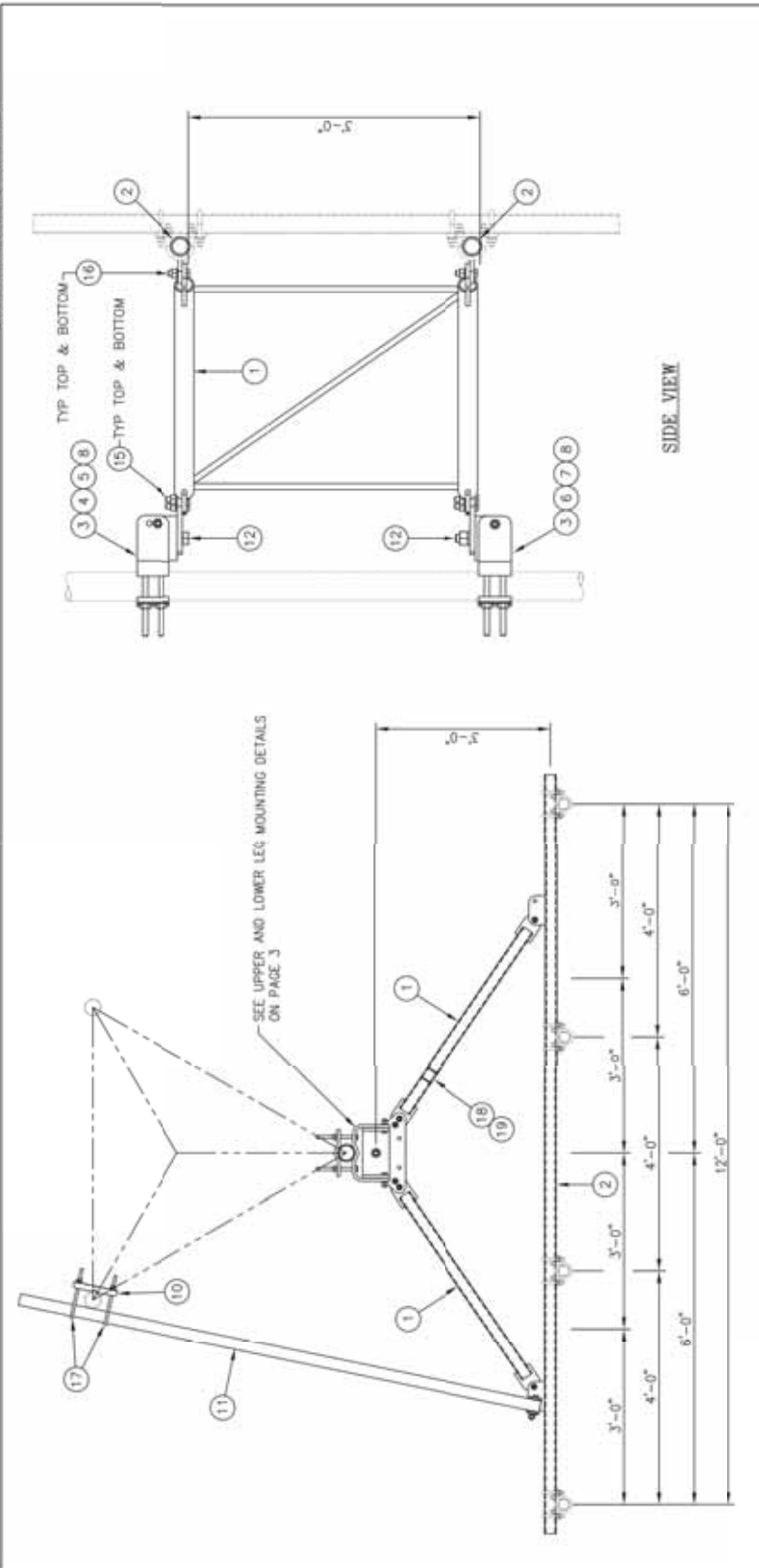
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SITE NAME:
 HARTFORD SOUTH
 FA# 10034968
 SITE# CT10101
 2 MOUNTAIN ROAD
 HARTFORD, CT 06103
 HARTFORD COUNTY



RED BANK CHECK
 3110 ROUTE 1
 SUITE 201
 HARTFORD, CT 06103
 TEL: 860.264.1100
 FAX: 860.264.1101
 WWW.REDBANKCHECK.COM

STRUCTURAL DETAILS
 S-3



12' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/NO ANTENNA MOUNTING PIPES

DATE	12/22/15	SCALE	None	PAGE	2 OF 3
DESIGNED BY	WRF	CHECKED BY	EK	DRAWING NO.	C10857001C
REV	2	SIZE	B	REV	2

Sabre Industries
Towers and Poles

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REV	DATE	DESCRIPTION
1	10/20/15	ISSUE FOR PERMIT
2	11/27/15	ISSUE FOR PERMIT

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TELEMANAGES DO NOT APPLY TO BMR MATERIAL

SABRE SECTOR FRAME
 NOT TO SCALE



MAKER CONSULTING - CONNECTICUT
 CUSTOMER SERVICE
 1000 ROUTE 202 SOUTH BRITAIN CT 06485
 (860) 253-1100 FAX (860) 253-1101
 LANDSCAPE ARCHITECTS & ENVIRONMENTAL SCIENTISTS



INSURANCE INFORMATION
 CONTRACT NO. 10115
 CONTRACT VALUE \$2,000,000
 CONTRACT TYPE COMMERCIAL
 CONTRACT DATE 10/15/15
 CONTRACT START DATE 10/15/15
 CONTRACT END DATE 10/15/15

REV	DATE	DESCRIPTION	BY	CHKD
1	10/15/15	ISSUED FOR PERMITS	JM	JK
2	10/15/15	ISSUED FOR PERMITS	JM	JK
3	10/15/15	ISSUED FOR PERMITS	JM	JK
4	10/15/15	ISSUED FOR PERMITS	JM	JK
5	10/15/15	ISSUED FOR PERMITS	JM	JK

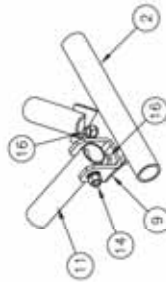
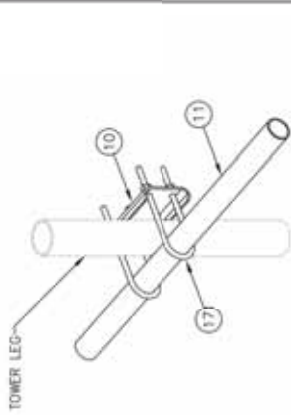


PERMITS IN CONSTRUCTION
 STATE OF CONNECTICUT
 DEPARTMENT OF CONSTRUCTION
 110 SOUTH MAIN STREET, SUITE 300
 HARTFORD, CT 06103
 TEL: 860-424-3211 FAX: 860-424-3212

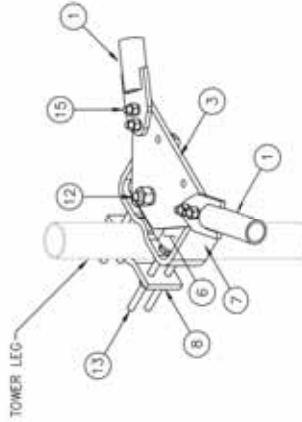
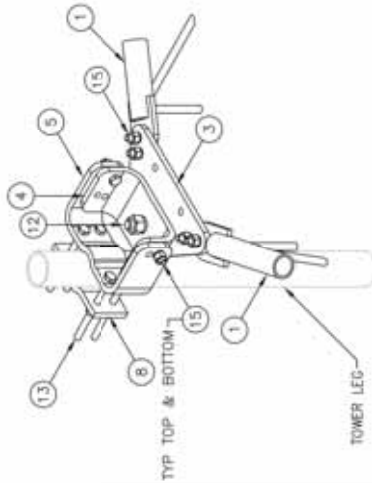


RED BANK CHECK
 110 SOUTH MAIN STREET, SUITE 300
 HARTFORD, CT 06103
 TEL: 860-424-3211 FAX: 860-424-3212

STRUCTURAL DETAILS
 S-4



-----PIVOTING OPTIONS-----



DATE	DATE	SIZE	DRAWING NO.	REV
12/22/15	12/22/15	B	C10857001C	2
DESIGNED BY	CHKD BY	SCALE		PAGE
WRF	EK	None		3 OF 3
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Sabre Industries
 Towers and Poles

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UNLESS OTHERWISE SPECIFIED	ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES
TOLERANCES FRACTIONS & 1/16"	±0.005
ANGLES & 1/2 DEG	±0.1
DECIMALS & 0.01"	±0.002
DATE	DESCRIPTION

SABRE SECTOR FRAME
 NOT TO SCALE



AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
 3500 REGENCY PARKWAY
 SUITE 100
 CARY, NC 27518
 PHONE: (919) 468-0112
 COA: PEC-0001553

302481 - HRFR - SOUTH, CONNECTICUT

110 FT MONOPOLE MODIFICATIONS

AS-BUILT SIGN-OFF	
DESCRIPTION	SIGNATURE
CONTRACTOR NAME	
CONTRACTOR REPRESENTATIVE (PRINT NAME)	
CONTRACTOR REPRESENTATIVE (SIGNATURE)	
REDEVELOPMENT P.M. (PRINT NAME)	
REDEVELOPMENT P.M. (SIGNATURE)	
	DATE

AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
 3500 REGENCY PARKWAY
 SUITE 100
 CARY, NC 27518
 PHONE: (919) 468-0112
 COA: PEC-0001553

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REV.	DESCRIPTION	BY	DATE
A	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER: 302481
 ATC SITE NAME: HRFR - SOUTH
 CONNECTICUT
 SITE ADDRESS: 289 MOUNTAIN STREET
 HARTFORD, CT 06106



Authorized by "EOR"
 Feb 28 2019 11:05 AM

DRAWN BY:	MJS
APPROVED BY:	ROBHPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA739695_C6_06

COVER	
SHEET NUMBER:	COVER
REVISION:	0

PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET	SHEET TITLE	REV.
ATC PROJECT NUMBER: OAA739695_C6_06	THE MODIFICATIONS PRESENTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER ENGINEERING PROJECT NUMBER OAA739695_C3_04 DATED 01/18/19. SATISFACTORY COMPLETION OF THE WORK INDICATED ON THESE DRAWINGS WILL RESULT IN THE STRUCTURE MEETING THE REQUIREMENTS OF THE SPECIFICATIONS UNDER WHICH THE STRUCTURAL WAS COMPLETED.	B-1	BILL OF MATERIALS	0
CUSTOMER: AT&T MOBILITY		IGN	IBC GENERAL NOTES	0
CUSTOMER SITE NAME: HARTFORD SOUTH		SIC	SPECIAL INSPECTION CHECKLIST	0
CUSTOMER SITE NUMBER: CT1011		C-101	SITE PLAN	0
SITE ADDRESS: 289 MOUNTAIN STREET HARTFORD, CT 06106		A-1	MODIFICATION PROFILE	0
DATE: 02/25/19		A-2	PLATE REINFORCEMENT INSTALLATION DETAILS [EL: 0'-0" TO 20'-0"]	0
GEOGRAPHIC COORDINATES: 41.72656944 -72.70816944		A-3	PLATE REINFORCEMENT INSTALLATION DETAILS [EL: 75'-0" TO 87'-9"]	0
		FPSB	FLAT PLATE STEP BOLT BRACKET FABRICATION & INSTALLATION DETAILS	0
		F-1	PLATE REINFORCEMENT FABRICATION DETAILS	0

BILL OF MATERIALS

QUANTITY REQUIRED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTION	LENGTH	SHEET LIST	PART WEIGHT	WEIGHT (lb)	NOTES	
4	4	302481-1	PLATE REINFORCEMENT MATERIAL & HARDWARE	20'-0"	A-2, F-1	535.9	2144		
4	4	302481-2	FL 1 1/4" X 6"	12'-0"	A-3, F-1	268.0	1072		
18	23	FFSB	FLAT PLATE STEP BOLT WELDMENT	0'-7 1/4"	FFSB	2.0	46		
140	147	NG-1438-1875-A490	NEXGEN2 BLIND BOLT ASSEMB. M20 W/ SPRING SLEEVE, A490	*****	*****	*****	*****	ALFA STEINERS - 2NG2048	
							TOTAL WEIGHT (lb)	3,262	PAGE 1 OF 1

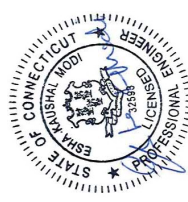


AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
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CAMDEN, NJ 08105
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REV.	DESCRIPTION	BY	DATE
1/A	FIRST ISSUE	M.S.	02/25/19

ATC SITE NUMBER:
302481
ATC SITE NAME:
HRFR - SOUTH
CONNECTICUT
SITE ADDRESS:
289 MOUNTAIN STREET
HARTFORD, CT 06106



Authorized by "EOR"
Feb 28 2019 11:05 AM
esign

DRAWN BY:	M.S.
APPROVED BY:	RDB/PPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA739695_C6_06

BILL OF MATERIALS

SHEET NUMBER:	B-1	REVISION:	0
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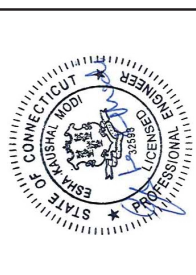
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	MMS	02/25/19

ATC SITE NUMBER:
302481

ATC SITE NAME:
HRFR - SOUTH

CONNECTICUT

SITE ADDRESS:
 289 MOUNTAIN STREET
 HARTFORD, CT 06106



Authorized by "EOR"
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DRAWN BY:	MMS
APPROVED BY:	ROB/PPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA739695_C01_06

IBC GENERAL NOTES

SHEET NUMBER:	IGN	REVISION:	0
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APPLICABLE CODES AND STANDARDS

- ANSI/AISC STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES, 2224 EDITION.
- 2018 CONNECTICUT STATE BUILDING CODE.
- 2015 INTERNATIONAL BUILDING CODE.
- ACI 318 - AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 318-02.
- CRSI - CONCRETE REINFORCING STEEL INSTITUTE, MANUAL OF STANDARD PRACTICE, LATEST EDITION.
- AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
- AWS - AMERICAN WELDING SOCIETY D1.1, STRUCTURAL WELDING CODE, LATEST EDITION.

SPECIAL INSPECTION

- A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH IBC 2015, SECTION 1704 AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
 - STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELD ONLY)
 - HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A309 EXTENSION FLANGE BOLTS TO BE TIGHTENED PER "TURN-OF-THE-NUT" METHOD)
- THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER IN ACCORDANCE WITH IBC 2015, SECTION 1704. UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM SUCH WORK WITHOUT THE SPECIAL INSPECTIONS.

WELDING

- ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
- ALL WELDS SHALL BE INSPECTED VISUALLY - IF DIRECTED BY ENGINEER OF RECORD, 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE (100% IF REJECTABLE DEFECTS ARE FOUND) TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
- INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
- ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
- ALL WELDING ON LATTICE TOWERS SHALL BE DONE WITH E70XX ELECTRODES. ALL WELDING ON POLE STRUCTURES SHALL BE DONE WITH E70XX ELECTRODES UNLESS NOTED OTHERWISE.
- PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVALITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

BOLT TIGHTENING PROCEDURE

- STRUCTURAL CONNECTIONS TO BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC SPECIFICATIONS.
- FLANGE BOLTS SHALL BE INSTALLED AND TIGHTENED USING DIRECT TENSION INDICATING (DTI) SOURTIER WASHERS. DTI SOURTIER WASHERS ARE TO BE INSTALLED AND ORIENTED / TIGHTENED PER MANUFACTURER SPECIFICATIONS TO ACHIEVE DESIRED LEVEL OF BOLT PRE-TENSION.
- IN LIEU OF USING DTI SOURTIER WASHERS, FLANGE BOLTS MAY BE TIGHTENED USING AISC / RCSC TURN-OF-THE-NUT METHOD, PENDING APPROVAL BY THE ENGINEER OF RECORD (EOR). TIGHTEN FLANGE BOLTS USING THE CHART BELOW:

BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS	+1/2" TURN BEYOND SNUG TIGHT
1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH
3/8"	BOLTS UP TO AND INCLUDING 2.2 INCH LENGTH
3/4"	BOLTS UP TO AND INCLUDING 2.4 INCH LENGTH
7/8"	BOLTS UP TO AND INCLUDING 2.6 INCH LENGTH
1"	BOLTS UP TO AND INCLUDING 2.8 INCH LENGTH
1-1/8"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH
1-1/4"	BOLTS UP TO AND INCLUDING 3.2 INCH LENGTH
1-3/8"	BOLTS UP TO AND INCLUDING 3.4 INCH LENGTH
1-1/2"	BOLTS UP TO AND INCLUDING 3.6 INCH LENGTH

BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS	+1/2" TURN BEYOND SNUG TIGHT
1/2"	BOLTS 2.25 TO 2.4 INCH LENGTH
3/8"	BOLTS 2.75 TO 2.9 INCH LENGTH
3/4"	BOLTS 3.25 TO 3.4 INCH LENGTH
7/8"	BOLTS 3.75 TO 3.9 INCH LENGTH
1"	BOLTS 4.25 TO 4.4 INCH LENGTH
1-1/8"	BOLTS 4.75 TO 4.9 INCH LENGTH
1-1/4"	BOLTS 5.25 TO 5.4 INCH LENGTH
1-3/8"	BOLTS 5.75 TO 5.9 INCH LENGTH
1-1/2"	BOLTS 6.25 TO 6.4 INCH LENGTH
- SPICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 17.04. THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A309 OR A499 BOLTS LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION, THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

8.2.1 TURN-OF-NUT PRE-TENSIONING

BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1. UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED, FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
- ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

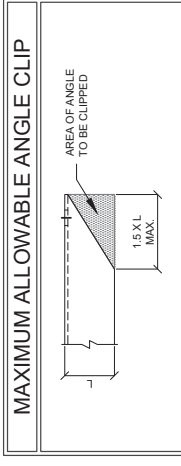
ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND NUTS THREADED TO COMPLETE THE ASSEMBLY. COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG-TIGHT CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PILES INTO FIRM CONTACT.

GENERAL

- ALL WORK TO BE COMPLETED PER APPLICABLE LOCAL, STATE, FEDERAL CODES AND ORDINANCES AND COMPLY WITH ATC MASTER SPECIFICATIONS FOR WIRELESS TOWER SITES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL REQUIRED PERMITS.
- CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
- CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
- ANY SUBSTITUTIONS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- ANY MANUFACTURED DESIGN ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER ANSI/AISC 302 AND ANS/AISC A16.4R, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
- CONTRACTORS PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

STRUCTURAL STEEL

- ALL DETAILS, FABRICATION AND EXECUTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.
- ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B895.
- ALL U-BOLTS SHALL BE ASTM A36 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.
- FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.
- ALL FIELD CUT SURFACES, FIELD DRILLED HOLES & GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVALITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
- ALL STRUCTURAL STEEL EMBEDDED IN THE CONCRETE SHALL BE APPLIED WITH (2) BRUSHED COATS OF POLYGUARD CA-14 MASTIC OR EQUIVALENT. REFER TO THE MANUFACTURER SPECIFICATIONS FOR SURFACE PREPARATION AND APPLICATION. APPLICATION OF POLYGUARD 400 WRAP IS NOT ESSENTIAL.
- CONTRACTOR SHALL PERFORM WORK ON ONLY ONE (1) TOWER FACE AND REPLACE/REINFORCE ONE (1) BOLT MEMBER AT A TIME.
- ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.



PAINT

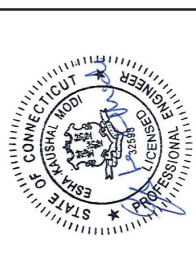
- AS REQUIRED, CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 707460-1L.



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REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER: 302481
 ATC SITE NAME: HRRP - SOUTH CONNECTICUT
 SITE ADDRESS: 289 MOUNTAIN STREET HARTFORD, CT 06106



Authorized by "EOR"
 Feb 28 2019 11:06 AM

DRAWN BY:	MJS
APPROVED BY:	ROB/PPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA736695_06_06

SPECIAL INSPECTION CHECKLIST

SHEET NUMBER:	SIC	REVISION:	0
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MODIFICATION INSPECTION NOTES

THE SPECIAL INSPECTION (SI) PROCEDURE IS INTENDED TO CONFIRM THAT CONSTRUCTION AND INSTALLATION MEETS ENGINEERING DESIGN, ATC PROCEDURES AND ATC STANDARD SPECIFICATIONS FOR WIRELESS TOWER SITES.

TO ENSURE THAT THE REQUIREMENTS OF THE SI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR AND THE SPECIAL INSPECTOR WORK TOGETHER TO CONDUCT THE SI. THE SPECIAL INSPECTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH EACH PARTY AND PROACTIVELY REACH OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR AMERICAN TOWER POINT OF CONTACT.

SPECIAL INSPECTOR

THE SPECIAL INSPECTOR IS REQUIRED TO CONTACT THE GENERAL CONTRACTOR AS SOON AS RECEIVING A PO FROM ATC. UPON RECEIVING A PO FROM ATC, THE SPECIAL INSPECTOR AT A MINIMUM MUST:

- REVIEW THE REQUIREMENTS OF THE SI CHECKLIST.
- WORK WITH THE GENERAL CONTRACTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
- ANY CONCERNS WITH THE SCOPE OF WORK OR PROJECT COMMITMENT MUST BE RELAYED TO THE ATC POINT OF CONTACT IMMEDIATELY.

THE SPECIAL INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR INSPECTION AND TEST REPORTS, REVIEWING THESE DOCUMENTS FOR COMPLIANCE WITH CONTRACT REQUIREMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE SI REPORT TO AMERICAN TOWER CORPORATION.

GENERAL CONTRACTOR

THE GENERAL CONTRACTOR IS REQUIRED TO CONTACT THE SI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE SI CHECKLIST.
- WORK WITH THE SI TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS.

THE GENERAL CONTRACTOR SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE SI CHECKLIST.

SPECIAL INSPECTION CHECKLIST

INSPECTION DOCUMENT	DESCRIPTION	INSPECTION TESTING REQUIRED	RESPONSIBILITY	SI REVIEW REQUIRED		INSPECTION FREQUENCY	
				PRE CX	DURING CX	POST CX	PERIODIC
SPECIAL INSPECTION FIELD WORK & REPORT	DOCUMENTATION AND SITE VISIT CONDUCTED BY AN ATC-APPROVED SPECIAL INSPECTOR AS REQUIRED BY ATC AND OTHER AUTHORITIES HAVING JURISDICTION. INSPECTION PARAMETERS TO FOLLOW ATC'S STANDARD SPECIFICATION FOR WIRELESS TOWER SITES.	✓	SI		✓		
ENGINEERING ASSEMBLY DRAWINGS	GC SHALL SUBMIT DRAWINGS TO SI FOR INCLUSION IN SI REPORT	✓	GC	✓			
FABRICATED MATERIAL VERIFICATION & INSPECTION	MTR AND OR MILL CERTIFICATIONS FOR SUPPLIED MATERIALS GC SHALL SUPPLY SI WITH REPORTS TO BE INCLUDED IN SI REPORT WHEN REQUIRED BY ATC	✓	SI	✓			
CERTIFIED WELD INSPECTION	INSPECTION AND REPORT OF STRUCTURAL WELDING PERFORMED DURING PROJECT COMPLETED BY A CWI AND INCLUDED WITHIN SI REPORT	✓	GC/TA	✓			✓
FOUNDATION INSPECTION & VERIFICATION	VISUAL OBSERVATION AND APPROVAL OF FOUNDATION EXCAVATION, REBAR PLACEMENT, CASINGS/HOBING/FORMING PLACEMENT, AND ANCHOR TEMPLATE AND ANCHOR PLACEMENT - TO BE SI APPROVED PRIOR TO CONCRETE POUR AND DOCUMENTED IN THE SI REPORT	✓	SI				
ANCHOR, ROCK ANCHOR OR HELICAL PULL-OUT TEST	PULL TESTING OF INSTALLED ANCHORS TO BE COMPLETED AND DOCUMENTED IN SI REPORT		GC/TA				
CONCRETE INSPECTION & VERIFICATION	CONCRETE MIX DESIGN, SLUMP TEST, COMPRESSIVE TESTING, AND SAMPLE GATHERING TECHNIQUES ARE TO BE PROVIDED TO THE SI INSPECTOR FOR REVIEW AND APPROVAL PRIOR TO CONCRETE PLACEMENT AS REQUIRED BY THE DESIGN DOCUMENTS (INSPECTION FREQUENCY IS MARKED CONTINUOUS)		GC/TA				
DIVIDING PLACEMENT/ANCHOR BOLT EMBEDMENT - EPOXY/GROUT INSTALL	ANCHORBAR EMBEDMENT, HOLE SIZE, EPOXY/GROUT TYPE, INSTALLATION TEMPERATURE AND INSTALLATION SHALL BE VERIFIED BY THE SI AND INCLUDED IN THE SI REPORT		GC/ SI				
BASE PLATE GROUT INSPECTION & VERIFICATION	BASE PLATE GROUTING TYPE AND PLACEMENT SHALL BE CONFIRMED BY THE SI AND INCLUDED IN THE SI REPORT		GC/ SI				
EARTHWORK INSPECTION & VERIFICATION	EXCAVATION, FILL, SLOPE, GRADE AND OTHER EARTHWORK REQUIREMENTS PER PLANS SHALL BE VERIFIED BY THE SI AND INCLUDED IN THE SI REPORT		GC/TA				
COMPACTION VERIFICATION	CONTRACTOR SHALL PROVIDE AN INDEPENDENT THIRD PARTY CERTIFIED INSPECTION WHICH PROVIDES TEST RESULTS FOR COMPACTION TEST OF SOILS IN PLACE TO ASTM STANDARDS.		GC/TA				
GROUND TESTING & VERIFICATION	GC SHALL PROVIDE DOCUMENTATION SHOWING THAT THE GROUNDING SYSTEM SHALL HAVE A MEASURED RESISTANCE TO THE GROUND OF NOT MORE THAN THE RECOMMENDED 10 OHMS PER THE ATC CONSTRUCTION SPECIFICATION UNDER SECTION 2.15 THIS DOCUMENTATION MUST BE AN INDEPENDENT CERTIFICATION.		GC				
STEEL CONSTRUCTION INSPECTION & VERIFICATION	VISUAL OBSERVATION AND APPROVAL OF STEEL CONSTRUCTION TO BE PERFORMED BY THE SI. INSPECTION TO INCLUDE VERIFICATION OF NEW CONSTRUCTION OR MODIFICATION OF EXISTING CONSTRUCTION PER ENGINEERED PLANS. DETAILED VERIFICATION SHALL BE INCLUDED IN SI REPORT.	✓	SI	✓			✓
ON-SITE COLD GALVANIZING VERIFICATION	SI SHALL VERIFY WITH GC ALL COLD GALVANIZATION TYPE AND APPLICATION AND INCLUDE SUMMARY IN SI REPORT	✓	GC		✓		✓
GUY WIRE TENSIONING & TOWER ALIGNMENT REPORT	GC SHALL PROVIDE SI EVIDENCE OF PROPER GUY TENSIONING AND TOWER PLUMB PER PLANS. SI SHALL VERIFY AND INCLUDE PLUMB AND TENSION REPORTING IN SI REPORT.		GC				
GC AS-BUILT DRAWINGS WITH CONSTRUCTION RED-LINES	GC SHALL SUBMIT "AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS TO SI FOR APPROVAL/REVIEW AND INCLUSION IN SI REPORT	✓	GC		✓		
SI AS-BUILT DRAWINGS WITH INSPECTION RED-LINES (AS REQUIRED)	SI SHALL SUBMIT "AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS WITHIN SI REPORT	✓	SI	✓			
TIA INSPECTION	SI SHALL COMPLETE TIA INSPECTION AND PROVIDE SEPARATE TIA INSPECTION DOCUMENTATION TO ATC CM		SI				
PHOTOGRAPHS	PHOTOGRAPHIC EVIDENCE OF SPECIAL INSPECTION, ON-SITE REMEDIATION, AND ITEMS FAILING INSPECTION & REQUIRING FOLLOW UP TO BE INCLUDED WITHIN THE SI REPORT. COMPLETE PHOTO LOG IS TO BE SUBMITTED WITHIN SI REPORT.	✓	GC/ SI	✓			✓

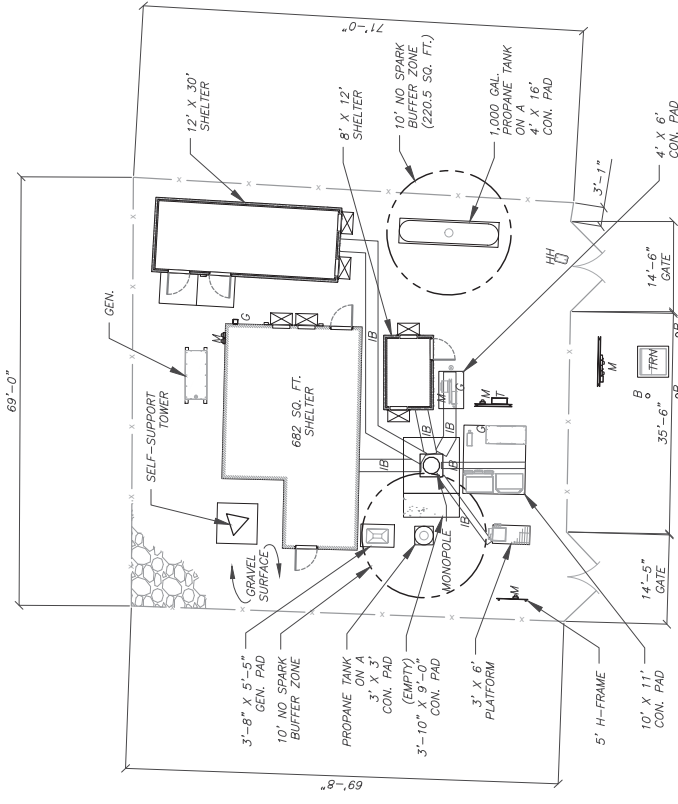
NOTE: SPECIAL INSPECTIONS ARE INTENDED TO BE A COLLABORATIVE EFFORT BETWEEN GC AND SI. WHENEVER POSSIBLE GC IS TO PROVIDE SI WITH PHOTOGRAPHIC OR OTHER ACCEPTABLE EVIDENCE OF PROPER INSTALLATION IF PERIODIC INSPECTION FREQUENCY IS ACCEPTABLE. THE GC AND SI SHALL WORK TO COMPLETE EVIDENCE OF PROPER CONSTRUCTION AND LIMIT THE NUMBER OF SI SITE VISITS REQUIRED.

TABLE KEY:
 SI - ATC APPROVED SPECIAL INSPECTOR
 GC - GENERAL CONTRACTOR
 TA - 3RD PARTY TESTING AGENCY
 CX - CONSTRUCTION
 CM - CONSTRUCTION MANAGER
 ATC - AMERICAN TOWER CORPORATION

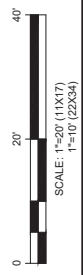


LEGEND

⊗	AV, AVV	GROUNDING TEST WELL
△	ATS	AIR VENT
□	A	AMBIENT LIGHTING
C	C	CONTROL CABINET
CS	CS	COAX SHROUD
CSC	CSC	CELL SITE CABINET
D	D	DISCONNECT
F	F	FIBER OPTICAL
G	GEN	GENERATOR
H	H	GENERATOR RECEPTACLE
HL, V	HL, V	HAND HOLE / VENT LULL
HS	HS	HYDROGEN STORAGE MATERIAL
HSM	HSM	HYDROGEN STORAGE MATERIAL
I	I	ICE BRIDGE
K	K	KENTROX BOX
LCG	LCG	LIGHTING CONTROL
L	L	LIGHTING
M	M	METER
OHV	OHV	OVERHEAD WIRE
P	P	POWER
PR	PR	POWER POLE
T	T	TELECOM
TRN	TRN	TRANSFORMER
---	---	PROPERTY LINE
- - -	- - -	PROPERTY LINE
---	---	EASEMENT
---	---	EASEMENT
---	---	WOOD FENCE
---	---	WIRE FENCE
---	---	CONCRETE FENCE
---	---	GUARD RAIL
---	---	CHAINLINK FENCE
---	---	ROAD (DIRT)
---	---	ROAD (STONE)
---	---	ROAD (PAVED)



1 SITE PLAN



AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
 3500 REGENCY PARKWAY
 SUITE 100
 HARTFORD, CT 06110
 PHONE: (810) 484-0112
 COA: PEC0001553

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REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER: 302481
 ATC SITE NAME: HRRF - SOUTH CONNECTICUT
 SITE ADDRESS: 289 MOUNTAIN STREET HARTFORD, CT 06106



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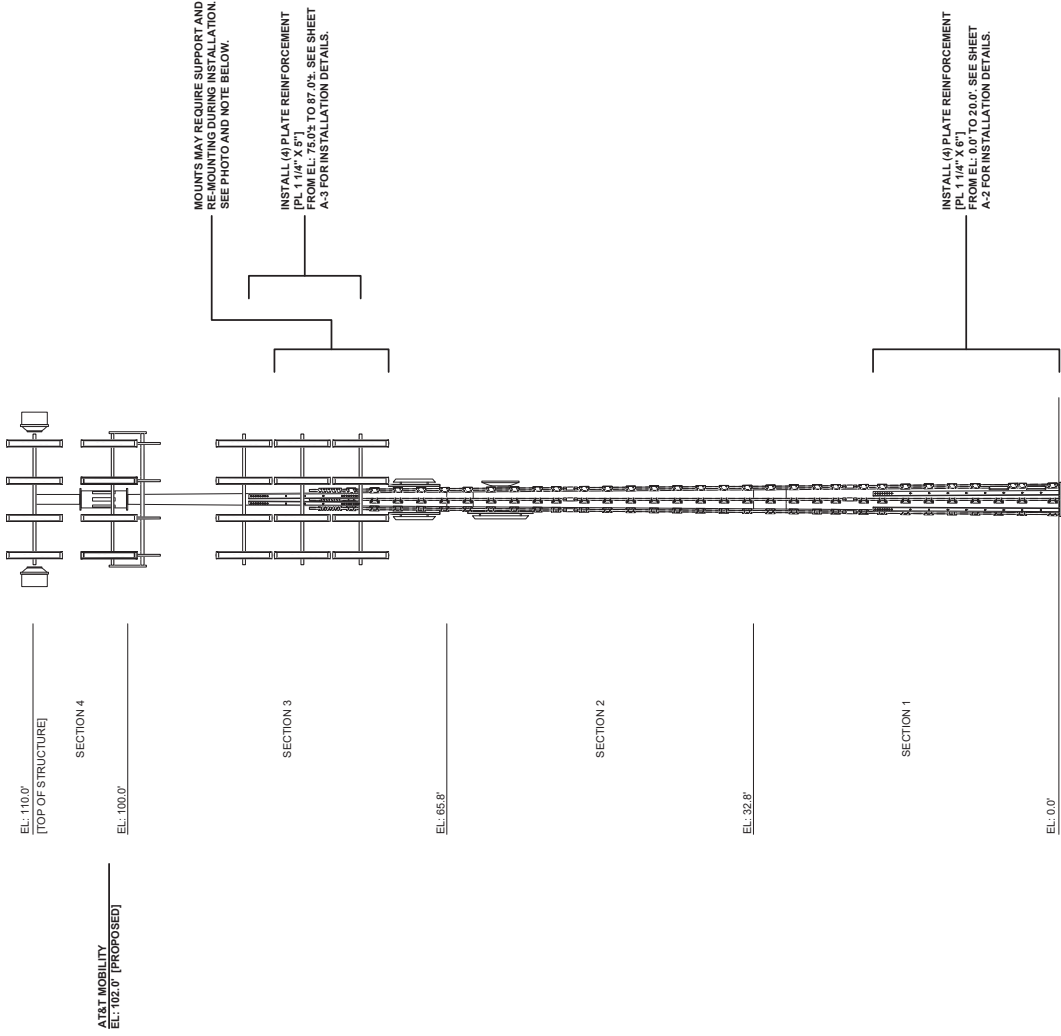
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APPROVED BY:	RDB/PPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA739695_C6_06

SITE PLAN

SHEET NUMBER:	C-101
REVISION:	0

ADDITIONAL TOWER INFORMATION:

- 1. PRE-MOD MAPPING WAS COMPLETED FOR THIS PROJECT.



AMERICAN TOWER
A.T. ENGINEERING SERVICE, PLLC
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REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	MMS	02/25/19

ATC SITE NUMBER: 302481
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DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA739695_C06_06

MODIFICATION PROFILE

SHEET NUMBER:	A-1
REVISION:	0

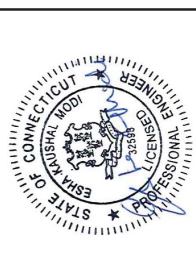


AMERICAN TOWER
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REV.	DESCRIPTION	BY	DATE
A	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER:
 302481
 ATC SITE NAME:
 HRRFR - SOUTH
 CONNECTICUT
 SITE ADDRESS:
 289 MOUNTAIN STREET
 HARTFORD, CT 06106

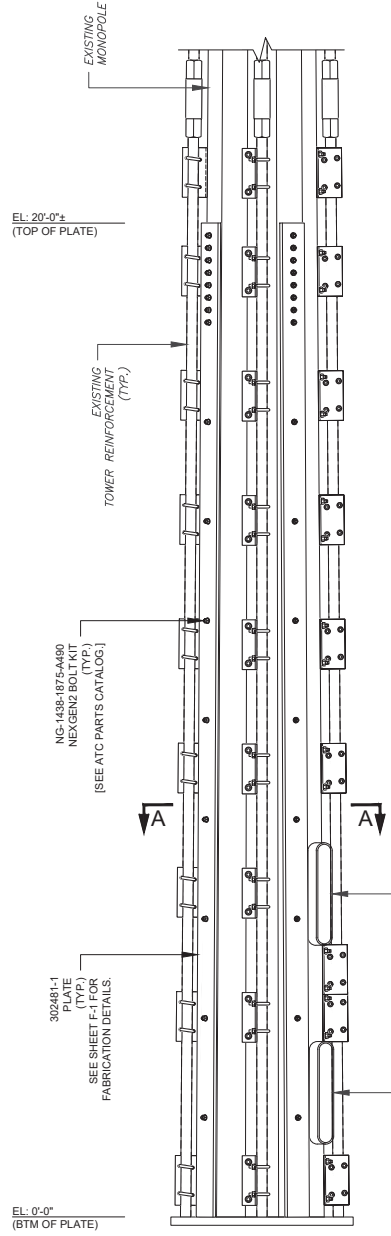


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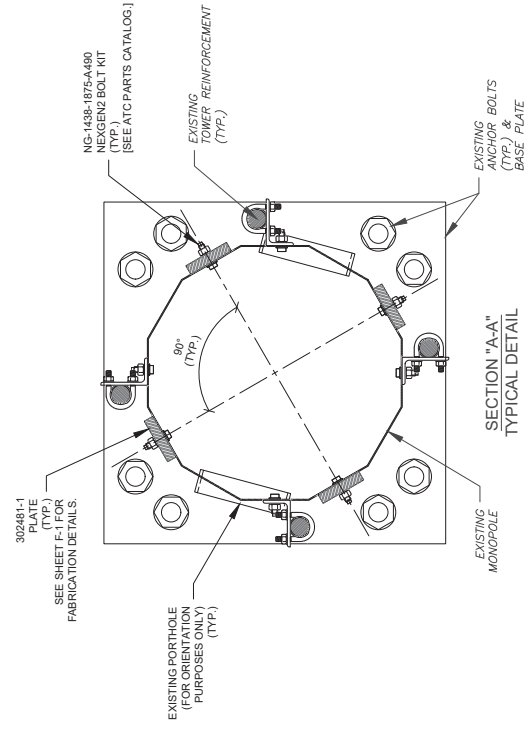
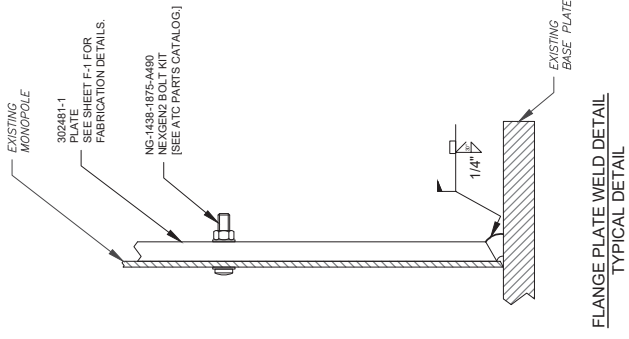

DRAWN BY:	MJS
APPROVED BY:	ROBIPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AAT39695_06_06

PLATE REINFORCEMENT
 INSTALLATION DETAILS
 [EL: -0'-0" TO 20'-0"]

SHEET NUMBER:	A-2
REVISION:	0



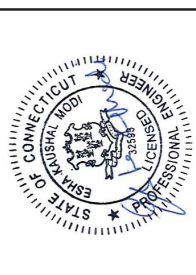
ELEVATION VIEW
 REINFORCEMENT PLATE INSTALLATION DETAIL



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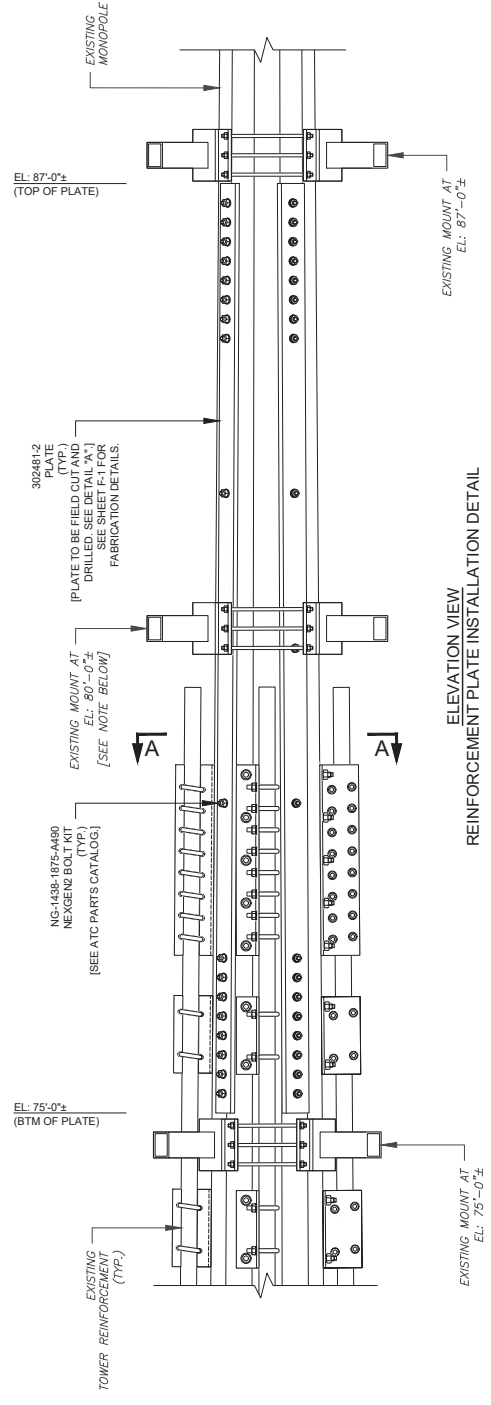


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DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA739695_C0_06

PLATE REINFORCEMENT
 INSTALLATION DETAILS
 [EL: 75'-0"± TO 87'-0"±]

SHEET NUMBER:	A-3
REVISION:	0

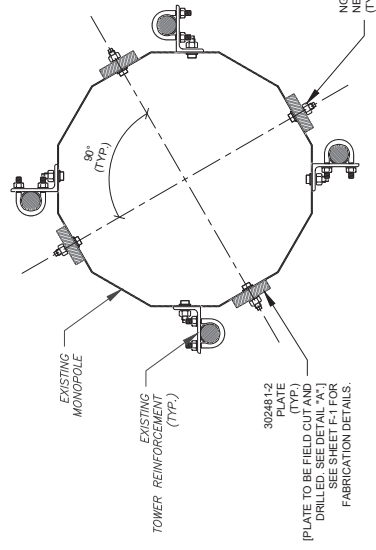


**ELEVATION VIEW
 REINFORCEMENT PLATE INSTALLATION DETAIL**

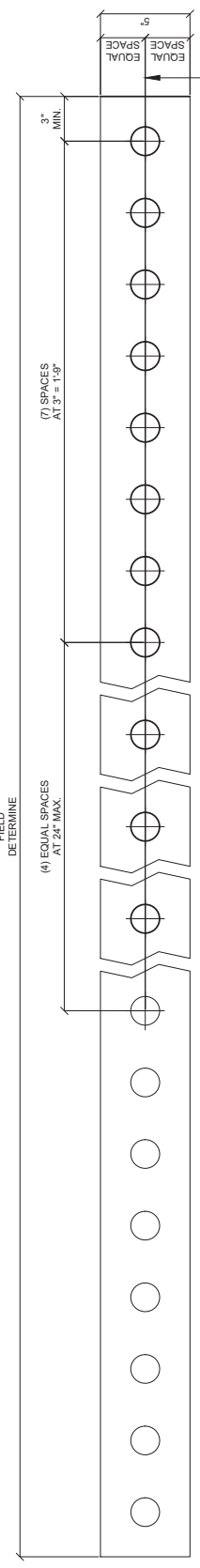
NOTE:
 CONTRACTOR TO INSTALL FLAT PLATE REINFORCEMENT UNDERNEATH EXISTING MONOPOLE. CONTRACTOR TO REMOVE EXISTING OVER PROPOSED PLATE REINFORCEMENT MOUNT AT EL: 80'-0"± IS NOT TO BE MOVED. CONTRACTOR TO FIELD CUT PLATE FOR FIT BETWEEN MOUNTS AT EL: 75'-0"± AND EL: 87'-0"±.



MODIFICATION OBSTRUCTION
 EL: 80'-0"±



**SECTION "A-A"
 TYPICAL DETAIL**

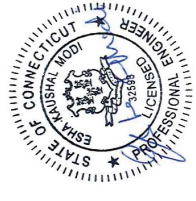


**DETAIL "A"
 FIELD CUT & DRILL**

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REV.	DESCRIPTION	BY	DATE
A	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER: 302481
 ATC SITE NAME: HRRR - SOUTH CONNECTICUT
 SITE ADDRESS: 289 MOUNTAIN STREET HARTFORD, CT 06106



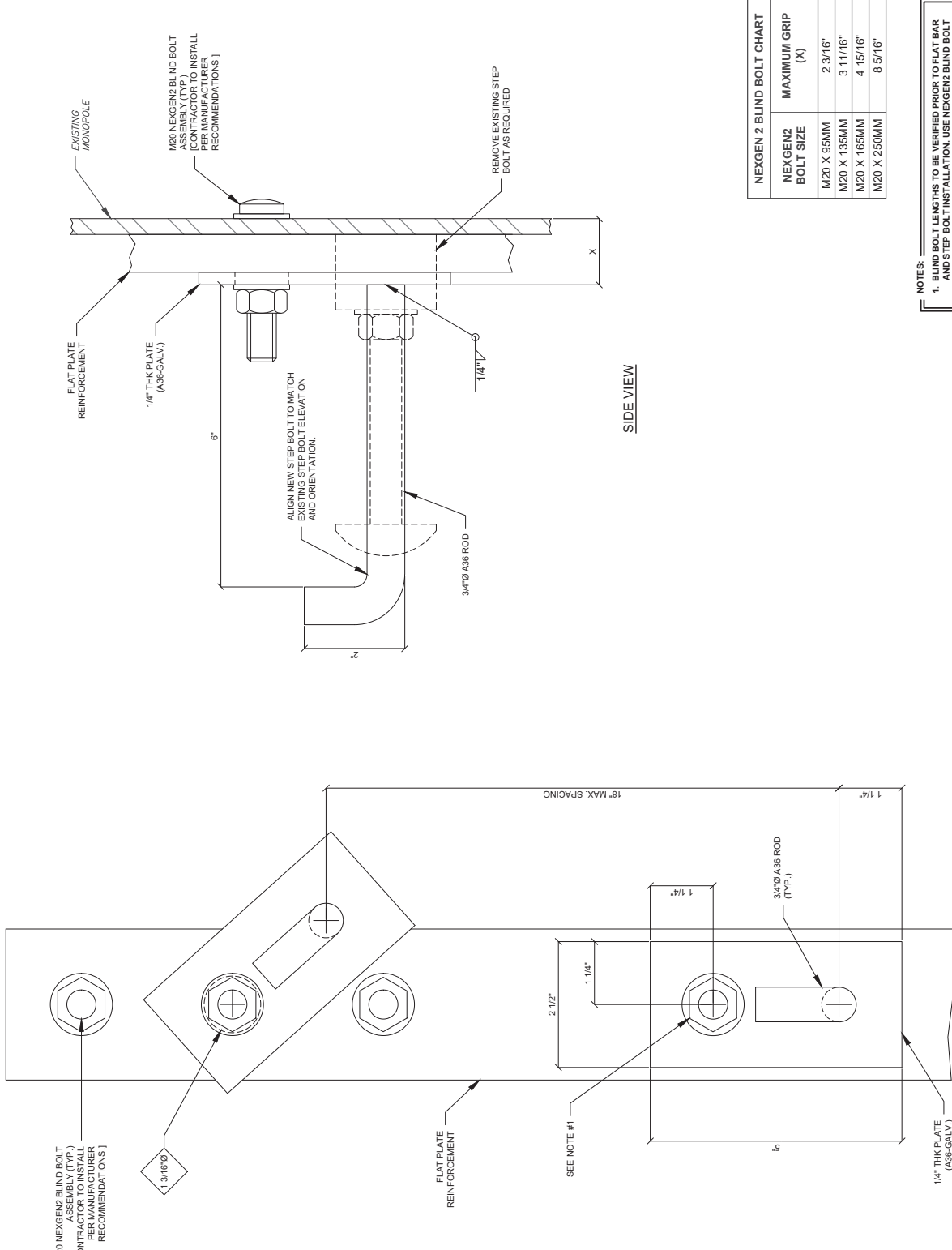
Authorized by "EOR"
 Feb 28 2019 11:06 AM

DRAWN BY:	MJS
APPROVED BY:	RDB/PPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA739695_C01_06

FLAT PLATE STEP BOLT BRACKET FABRICATION & INSTALLATION DETAILS

SHEET NUMBER: **FPSB**

REVISION: **0**



NEXGEN2 BOLT SIZE	MAXIMUM GRIP (X)
M20 X 95MM	2 3/16"
M20 X 135MM	3 11/16"
M20 X 165MM	4 15/16"
M20 X 250MM	8 5/16"

- NOTES:
- BLIND BOLT LENGTHS TO BE VERIFIED PRIOR TO FLAT BAR AND STEP BOLT INSTALLATION. USE NEXGEN2 BLIND BOLT CHART.
 - STEP PEG SPACING IS NOT TO EXCEED 18" MAX. STAGGERED OR 30" MAX. ON ANY SINGLE SIDE OF THE FLAT PLATE.

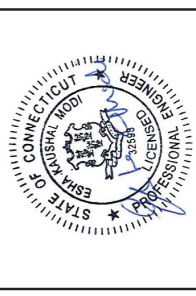


AMERICAN TOWER
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REV.	DESCRIPTION	BY	DATE
A	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER: 302481
 ATC SITE NAME: HRFR - SOUTH CONNECTICUT
 SITE ADDRESS: 289 MOUNTAIN STREET HARTFORD, CT 06106

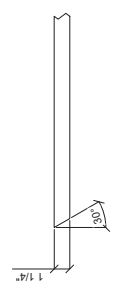
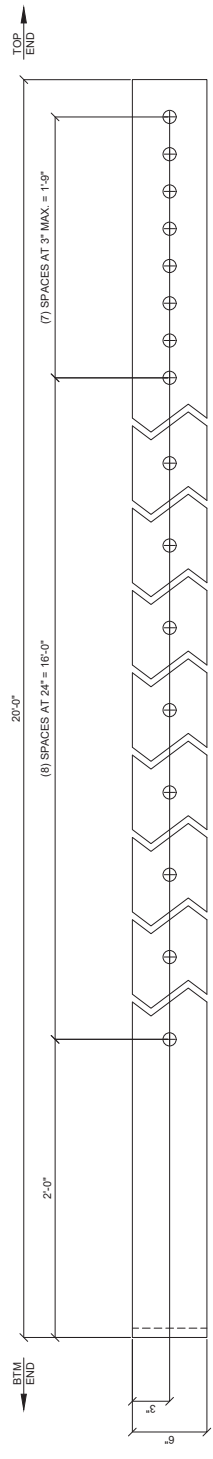
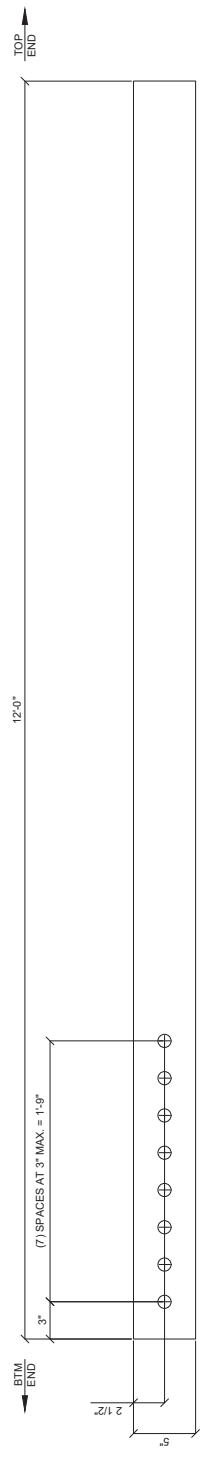


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 Feb 28 2019 11:07 AM


DRAWN BY:	MJS
APPROVED BY:	RDB/PPD
DATE DRAWN:	02/25/19
ATC JOB NO.:	0AA7396895_C06_06

PLATE REINFORCEMENT FABRICATION DETAILS

SHEET NUMBER:	F-1	REVISION:	0
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PART NO.	DESCRIPTION	LENGTH	NOTES	BLK WT	GALV WT	HOLES:
302481-2	PL 1/4" X 5"	12'-0"		255.2#	268.0#	
302481-1	PL 1/4" X 6"	20'-0"		510.4#	535.9#	
MATERIAL: A572 GR 65				FINISH: GALVANIZED		



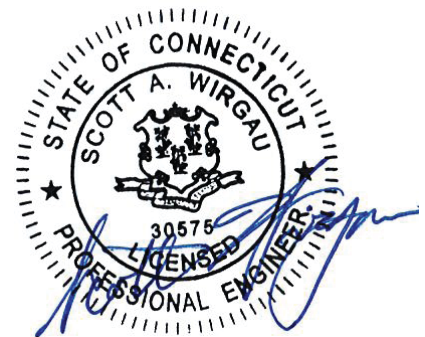
AMERICAN TOWER®
CORPORATION

Post Modification Structural Analysis Report

Structure : 110 ft Monopole
ATC Site Name : Hrfr - South, CT
ATC Site Number : 302481
Engineering Number : OAA739695_C4_07
Proposed Carrier : AT&T MOBILITY
Carrier Site Name : Hartford South
Carrier Site Number : CT1011
Site Location : 289 Mountain Street
Hartford, CT 06106-4121
41.726600,-72.708200
County : Hartford
Date : March 25, 2019
Max Usage : 99%
Result : Pass

Prepared By:
Adam Pittman
Structural Engineer II

Reviewed By:



Authorized by "EOR"
Mar 27 2019 12:43 PM

COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
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Existing and Reserved Equipment.....	2
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Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 110 ft monopole to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	Mapped by Smith Cullum Site #CT-0017(A), dated June 6, 2001
Foundation Drawing	Girard & Co Engineering Job #39902, dated April 29, 1988
Geotechnical Report	TEP Project #071162.01, dated July 23, 2007
Modifications	ATC Project #42719232, dated January 12, 2009 ATC Project #43595333, dated July 1, 2009 ATC Project #43930034, dated September 15, 2009 ATC Project #44662232, dated March 30, 2010 ATC Job #OAA739695_C6_06, dated February 25, 2019(Pending)

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	118 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1"1/2 radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 3
Topographic Category:	4
Crest Height (H):	36 ft
Spectral Response:	$S_s = 0.18, S_1 = 0.06$
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report. If the pending modifications cited in the supporting documents table are not completed, the results of this analysis are no longer valid, and AT&T Mobility should contact American Tower's Site Manager for further direction on how to proceed.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier			
112.0	3	Nokia 2.5G MAA - AAHC(64T64R)	T-Arm	(3) 1 5/8" (1.63"-41.3mm) Fiber (2) 2" conduit (3) 1/2" Coax	CLEARWIRE CORPORATION			
	3	Commscope NNVV-65B-R4						
	6	Alcatel-Lucent RRH2x50-08						
	1	Generic 12" x 12" Junction Box						
	3	Alcatel-Lucent 1900 MHz 4X45 RRH						
110.0	3	DragonWave Horizon Compact						
	1	DragonWave A-ANT-23G-1-C						
	2	DragonWave A-ANT-11G-2.5-C						
	1	Generic 12" x 12" Junction Box						
102.0	2	CCI OPA-65R-LCUU-H6				Sector Frame	(2) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (24) 1 5/8" Coax (1) 3" conduit	AT&T MOBILITY
	1	CCI OPA-65R-LCUU-H8 (92.7")						
	2	Quintel QS66512-2						
	3	Powerwave Allgon 7770.00						
	3	Ericsson RRUS-32 (77 lbs)						
	3	Ericsson RRUS 32 B2						
	3	Ericsson RRUS-11 (50 lbs.)						
	2	Raycap DC6-48-60-18-8F(32.8 lbs)						
	6	Powerwave Allgon LGP21401						
	1	CCI TPA-65R-LCUUUU-H8						
	6	Powerwave Allgon 7020.00 Dual Band RET						
90.0	3	Kathrein Scala Smart Bias Tee	Low Profile Platform	(3) 1 1/4" (1.25"-31.8mm) Fiber (18) 1 5/8" Coax	T-MOBILE			
	3	RFS APXVAARR24_43-U-NA20						
	3	Ericsson Air 3246 B66						
	3	Ericsson AIR32 B66Aa/B2a						
	3	Ericsson Radio 4449 B12,B71						
	3	Ericsson KRY 112 489/1						
	3	Ericsson KRY 112 144/1						
80.0	3	Nokia AirScale RRH 4T4R B5 160W AHCA	T-Arm	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS			
	3	Alcatel-Lucent B25 RRH4x30						
	6	Commscope JAHH-65B-R3B (63.3 lb)						
	4	Amphenol Antel BXA-70063-6CF-EDIN-2						
	6	Amphenol Antel BXA-171063-12CF-EDIN-5						
	1	Raycap RVZDC-6627-PF-48						
	3	Alcatel-Lucent B66A RRH 4x45						
3	Alcatel-Lucent B13 RRH4x30-4R							
77.0	1	Scala 840 10212	Flush	(1) 7/8" Coax	TOWN OF WEST HARTFORD			
	1	TX RX Systems 421-86A-10-18-12-N						
70.0	3	RFS APXV18-206517S-C	Leg	(6) 1 5/8" Coax	METRO PCS INC			
60.0	1	Generic Radio/ODU	Leg/Flush	(2) 0.41" (10.3mm) LMR-400 (1) 1/4" Coax (1) 7/8" Coax	TOWN OF WEST HARTFORD			
	1	Scala 840 10212						
	1	Radio Waves SP2-4.7 w/ Radome						
	1	Radio Waves SP2-4.7						



Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
102.0	6	Kaelus DBCT108F1V92-1	Sector Frame	(2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	1	Raycap DC6-48-60-0-8F (24" Height)			
	3	Ericsson RRUS 4426 B66			
	3	Ericsson RRUS 4478 B5			
	3	Ericsson RRUS 4478 B14			
	2	Kathrein Scala 80010965			
	1	Kathrein Scala 80010966			

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	45%	Pass
Shaft	91%	Pass
Base Plate	89%	Pass
Flanges	52%	Pass
Reinforcement	95%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,938.0	99%
Axial (Kips)	92.6	15%
Shear (Kips)	26.2	4%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
110.0	DragonWave A-ANT-23G-1-C	CLEARWIRE CORPORATIO	1.695	1.641
	DragonWave A-ANT-11G-2.5-C			
102.0	Kaelus DBCT108F1V92-1	AT&T MOBILITY	1.467	1.614
	Raycap DC6-48-60-0-8F (24" Height)			
	Ericsson RRUS 4426 B66			
	Ericsson RRUS 4478 B5			
	Ericsson RRUS 4478 B14			
	Kathrein Scala 80010965			
Kathrein Scala 80010966				
60.0	Radio Waves SP2-4.7 w/ Radome	TOWN OF WEST HARTFOR	0.517	1.019
	Radio Waves SP2-4.7			

*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

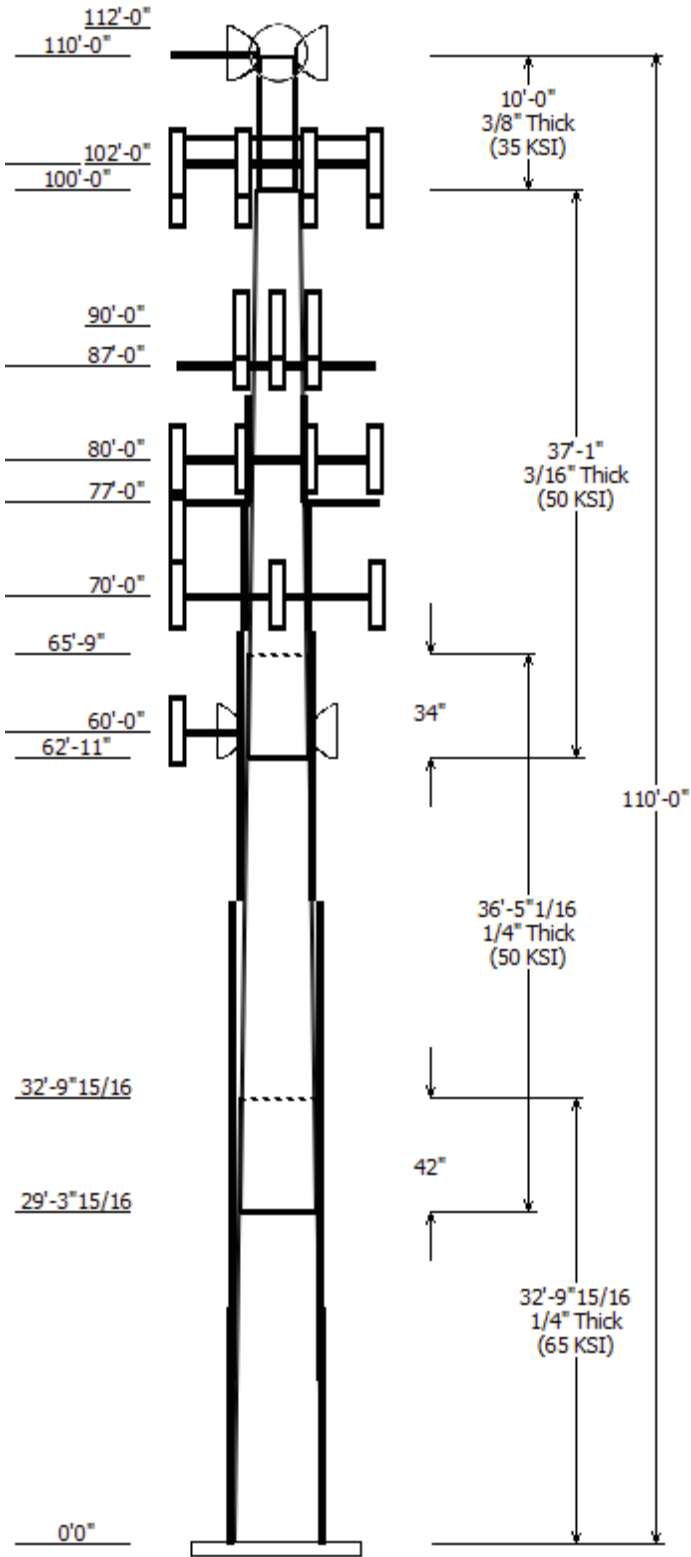
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

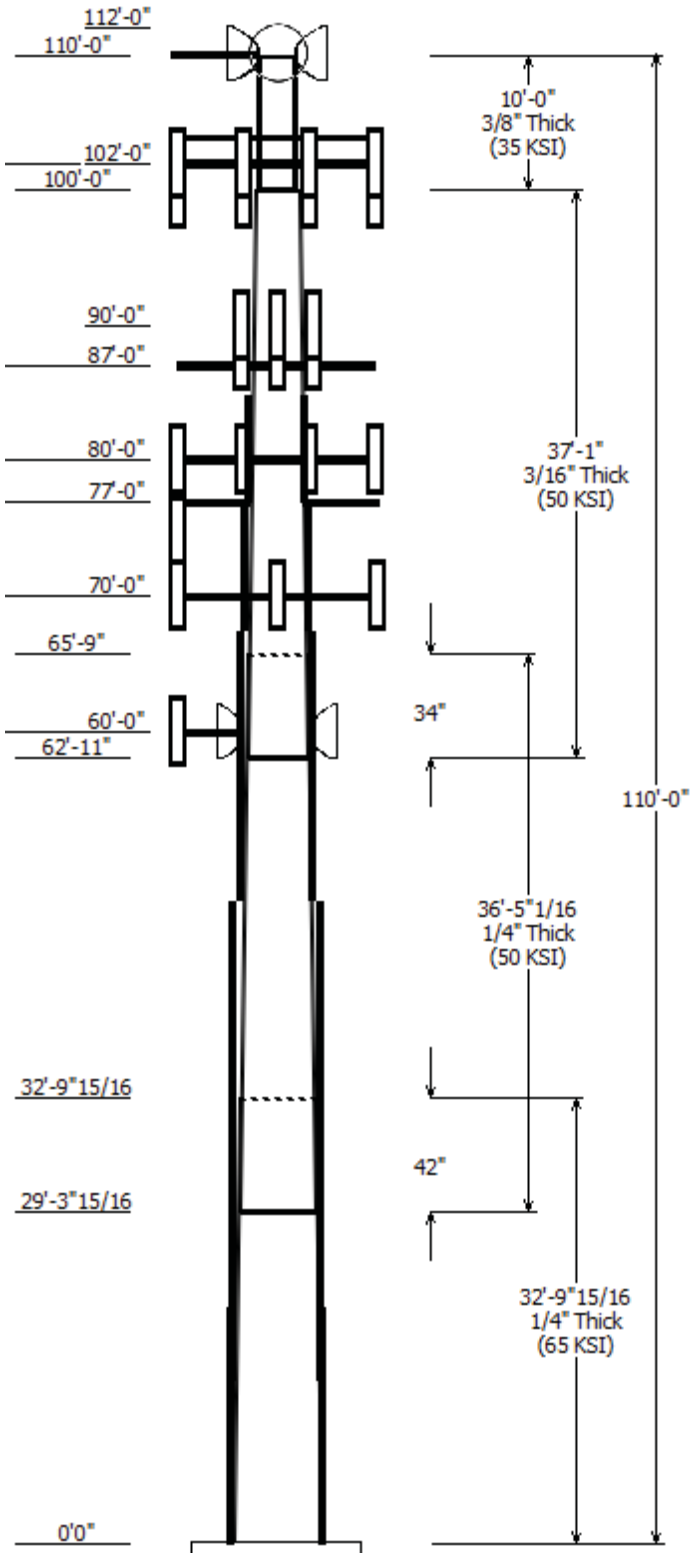
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Job Information	
Pole : 302481	Code: ANSI/TIA-222-H
Location : Hrfr - South, CT	
Description : 110 ft ITT Meyer Monopole	
Client : AT&T MOBILITY	Risk Category : II
Shape : 12 Sides	Exposure : B
Height : 110.00 (ft)	Topo Method : Method 3
Base Elev (ft): 0.00	Topographic Category : 4
Taper: 0.16400(in/ft)	

Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Grade
		Top	Bottom			
1	32.830	24.62	30.00	0.250	0.000	12 Sides 65
2	36.420	19.73	25.69	0.250	42.000	12 Sides 50
3	37.083	14.50	20.57	0.188	34.000	12 Sides 50
4	10.000	12.75	12.75	0.375	0.000	Round 35

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
112.000	112.000	3	Commscope NNVV-65B-R4
112.000	112.000	3	Nokia 2.5G MAA -
112.000	112.000	3	Alcatel-Lucent 1900 MHz 4X45
112.000	112.000	6	Alcatel-Lucent RRH2x50-08
112.000	112.000	1	Generic 12" x 12" Junction Box
110.000	110.000	1	Generic Flat Side Arm
110.000	110.000	2	DragonWave A-ANT-11G-2.5-C
110.000	110.000	1	DragonWave A-ANT-23G-1-C
110.000	110.000	3	DragonWave Horizon Compact
102.000	102.000	3	Generic Round Sector Frame
102.000	102.000	1	Kathrein Scala 80010966
102.000	102.000	2	Kathrein Scala 80010965
102.000	100.000	1	CCI TPA-65R-LCUUUU-H8
102.000	100.000	1	CCI OPA-65R-LCUU-H8 (92.7")
102.000	100.000	2	CCI OPA-65R-LCUU-H6
102.000	100.000	2	Quintel QS66512-2
102.000	100.000	3	Powerwave Allgon 7770.00
102.000	100.000	3	Ericsson RRUS-32 (77 lbs)
102.000	100.000	3	Ericsson RRUS 32 B2
102.000	100.000	3	Ericsson RRUS-11 (50 lbs.)
102.000	102.000	3	Ericsson RRUS 4478 B14
102.000	102.000	3	Ericsson RRUS 4478 B5
102.000	102.000	3	Ericsson RRUS 4426 B66
102.000	100.000	2	Raycap DC6-48-60-18-8F(32.8 lb
102.000	102.000	1	Raycap DC6-48-60-0-8F (24" Hei
102.000	100.000	6	Powerwave Allgon LGP21401
102.000	102.000	6	Kaelus DBCT108F1V92-1
102.000	100.000	6	CCI TPX-070821
102.000	102.000	6	Powerwave Allgon 7020.00
90.000	90.000	3	RFS APXVAARR24_43-U-NA20
90.000	90.000	3	Ericsson Air 3246 B66
90.000	86.000	3	Ericsson AIR32 B66Aa/B2a
90.000	90.000	3	Ericsson Radio 4449 B12,B71
90.000	90.000	3	Ericsson KRY 112 489/1
90.000	90.000	3	Ericsson KRY 112 144/1
90.000	86.000	3	Kathrein Scala Smart Bias Tee
87.000	87.000	1	Flat Low Profile Platform
80.000	80.000	1	Round Low Profile Platform
80.000	80.000	6	Commscope JAHH-65B-R3B
80.000	80.000	4	Amphenol Antel BXA-70063-
80.000	80.000	6	Amphenol Antel BXA-171063-
80.000	80.000	1	Raycap RVZDC-6627-PF-48
80.000	80.000	3	Alcatel-Lucent B66A RRH 4x45
80.000	80.000	3	Alcatel-Lucent B13 RRH4x30-4R



80.000	80.000	3	Alcatel-Lucent B25 RRH4x30
80.000	80.000	3	Nokia AirScale RRR 4T4R B5 160
77.000	77.000	2	Stand Offs
77.000	75.000	1	TX RX Systems 421-86A-10-18-
77.000	75.000	1	Scala 840 10212
70.000	70.000	3	Round Side Arms
70.000	70.000	3	RFS APXV18-206517S-C
60.000	60.000	1	Stand Off
60.000	60.000	1	Radio Waves SP2-4.7
60.000	60.000	1	Radio Waves SP2-4.7 w/
60.000	60.000	1	Scala 840 10212
60.000	60.000	1	Generic Radio/ODU

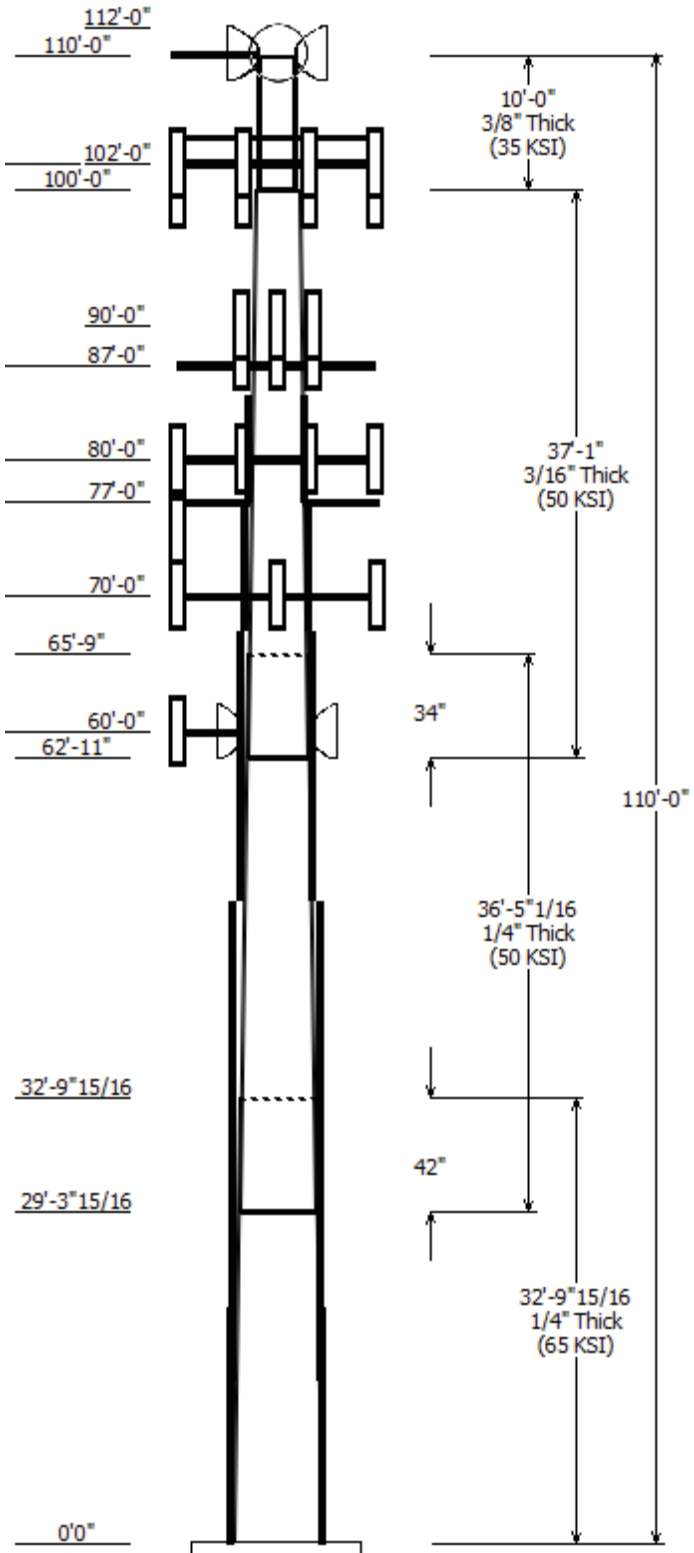
Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	60.000	0.41" (10.3mm)	Yes
0.000	60.000	1/4" Coax	No
0.000	60.000	7/8" Coax	Yes
0.000	70.000	1 5/8" Coax	Yes
0.000	77.000	7/8" Coax	Yes
0.000	80.000	1 5/8" Coax	Yes
0.000	80.000	1 5/8" Hybriflex	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	90.000	1 1/4" (1.25"-	No
0.000	90.000	1 5/8" Coax	Yes
0.000	102.0	0.39" (10mm)	No
0.000	102.0	0.78" (19.7mm) 8	No
0.000	102.0	0.78" (19.7mm) 8	No
0.000	102.0	1 5/8" Coax	Yes
0.000	102.0	1 5/8" Coax	Yes
0.000	102.0	1 5/8" Coax	No
0.000	102.0	3" conduit	No
0.000	110.0	1/2" Coax	Yes
0.000	110.0	2" conduit	No
0.000	112.0	1 5/8" (1.63"-	No
0.000	112.0	2" conduit	No

Load Cases	
1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

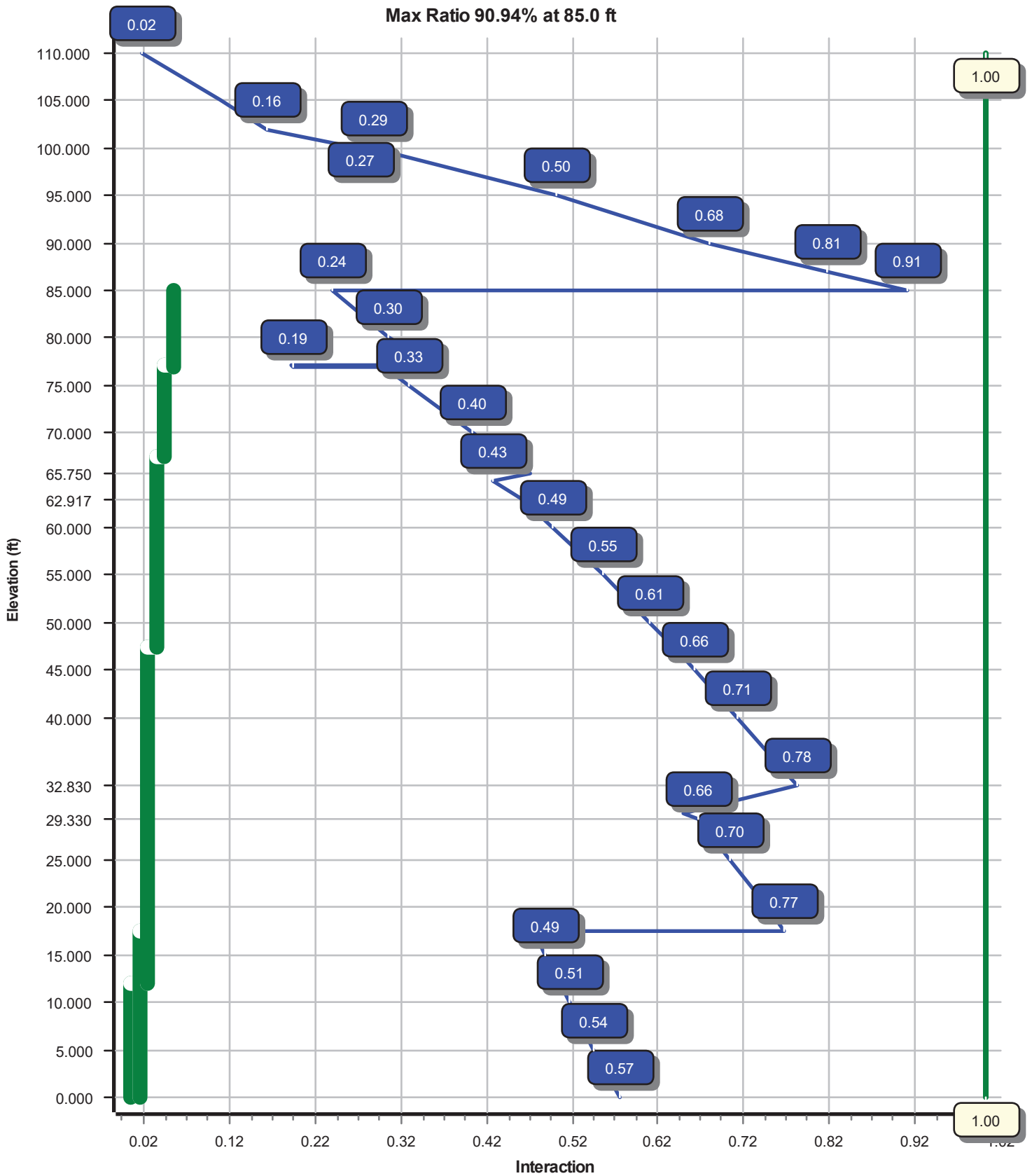
Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	1938.02	26.17	39.73
0.9D + 1.0W	1909.81	26.14	29.78
1.2D + 1.0Di + 1.0Wi	707.68	9.28	92.55
1.2D + 1.0Ev + 1.0Eh	80.81	0.92	37.73
0.9D - 1.0Ev + 1.0Eh	79.49	0.92	26.25
1.0D + 1.0W	498.76	6.80	33.16

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)

1.0D + 1.0W	60.00	6.200	1.019
1.0D + 1.0W	60.00	6.200	1.019
1.0D + 1.0W	110.00	20.339	1.641
1.0D + 1.0W	110.00	20.339	1.641



Load Case : 1.2D + 1.0W
Max Ratio 90.94% at 85.0 ft



Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

3/25/2019 4:52:29 PM

Customer: AT&T MOBILITY

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	110
Code :	ANSI/TIA-222-H	Base Diameter (in) :	30.00
Shape :	12 Sides, Sect 4: Round	Top Diameter (in) :	12.75
Pole Type :	Custom	Taper (in/ft) :	0.164
Pole Manufacturer :	ITT Meyer	Rotation (deg) :	0.00
Kd :	0.95	Ke :	0.99

Ice & Wind Parameters

Exposure Category:	B	Design Wind Speed Without Ice:	118 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 3	Operational Wind Speed:	60 mph
Topographic Category:	4	Design Ice Thickness:	1.50 in
Crest Height:	36 ft	HMSL:	286.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.27		
T _L (sec):	6	p:	1
S _s :	0.180	S ₁ :	0.060
F _a :	1.600	F _v :	2.400
S _{ds} :	0.192	S _{d1} :	0.096
		C _s :	0.030
		C _s Max:	0.030
		C _s Min:	0.030

Load Cases

1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

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Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip		Weight (lb)	Bottom						Top						
				Joint Type	Joint Len (in)		Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	32.830	0.2500	65		0.00	2,434	30.00	0.00	23.95	2705.5	29.47	120.00	24.62	32.83	19.62	1487.9	23.71	98.50	0.163750
2-12	36.420	0.2500	50	Slip	42.00	2,241	25.69	29.33	20.49	1693.2	24.86	102.79	19.73	65.75	15.68	759.9	18.47	78.93	0.163750
3-12	37.083	0.1875	50	Slip	34.00	1,322	20.57	62.92	12.31	652.8	26.72	109.72	14.50	100.00	8.64	225.9	18.04	77.33	0.163750
4-R	10.000	0.3750	35	Butt	0.00	496	12.75	100.00	14.58	279.3	0.00	34.00	12.75	110.00	14.58	279.3	0.00	34.00	0.000000
Shaft Weight						6,493													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
112.00	Generic 12" x 12" Junction Box	1	0.80	0.000	10.00	1.200	0.50	50.59	1.907	0.50
112.00	Alcatel-Lucent RRH2x50-08	6	0.80	0.000	52.90	1.700	0.50	110.65	2.540	0.50
112.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	0.000	60.00	2.320	0.50	138.53	3.372	0.50
112.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.80	0.000	103.60	4.200	0.50	213.45	5.506	0.50
112.00	Commscope NNVV-65B-R4	3	0.80	0.000	77.40	12.270	0.64	322.25	15.002	0.64
110.00	DragonWave Horizon Compact	3	0.80	0.000	10.60	0.720	0.50	32.51	1.274	0.50
110.00	DragonWave A-ANT-23G-1-C	1	1.00	0.000	15.00	1.610	1.00	49.43	2.348	1.00
110.00	Generic Flat Side Arm	1	1.00	0.000	560.00	8.500	1.00	1,016.19	15.424	1.00
110.00	DragonWave A-ANT-11G-2.5-C	2	1.00	0.000	47.60	8.670	1.00	220.25	10.353	1.00
102.00	Powerwave Allgon 7020.00 Dual	6	0.80	0.000	2.20	0.340	0.50	12.11	0.738	0.50
102.00	CCI TPX-070821	6	0.80	-2.000	7.50	0.470	0.50	19.26	0.936	0.50
102.00	Kaelus DBCT108F1V92-1	6	0.80	0.000	13.90	0.630	0.50	38.31	1.157	0.50
102.00	Powerwave Allgon LGP21401	6	0.80	-2.000	14.10	1.100	0.50	38.30	1.790	0.50
102.00	Raycap DC6-48-60-0-8F (24"	1	0.80	0.000	32.80	1.470	0.50	136.69	2.147	0.50
102.00	Raycap DC6-48-60-18-8F(32.8	2	0.80	-2.000	32.80	1.470	0.50	92.64	2.147	0.50
102.00	Ericsson RRUS 4426 B66	3	0.80	0.000	48.40	1.650	0.50	91.70	2.474	0.50
102.00	Ericsson RRUS 4478 B5	3	0.80	0.000	59.90	1.840	0.50	113.53	2.709	0.50
102.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.020	0.50	118.93	2.935	0.50
102.00	Ericsson RRUS-11 (50 lbs.)	3	0.80	-2.000	50.00	2.570	0.50	116.12	3.588	0.50
102.00	Ericsson RRUS 32 B2	3	0.80	-2.000	53.00	2.740	0.50	124.34	3.873	0.50
102.00	Ericsson RRUS-32 (77 lbs)	3	0.80	-2.000	77.00	3.310	0.50	171.34	4.554	0.50
102.00	Powerwave Allgon 7770.00	3	0.80	-2.000	35.00	5.510	0.65	164.90	6.529	0.65
102.00	Quintel QS66512-2	2	0.80	-2.000	111.00	8.130	0.74	304.30	10.833	0.74
102.00	CCI OPA-65R-LCUU-H6	2	0.80	-2.000	73.00	9.660	0.66	270.42	12.349	0.66
102.00	CCI OPA-65R-LCUU-H8 (92.7")	1	0.80	-2.000	88.00	12.750	0.67	328.84	16.239	0.67
102.00	CCI TPA-65R-LCUUUU-H8	1	0.80	-2.000	81.60	13.300	0.69	350.08	16.922	0.69
102.00	Kathrein Scala 80010965	2	0.80	0.000	97.60	13.810	0.72	356.20	16.768	0.72
102.00	Generic Round Sector Frame	3	0.75	0.000	300.00	14.400	0.67	656.79	30.456	0.67
102.00	Kathrein Scala 80010966	1	0.80	0.000	114.60	17.360	0.69	426.07	20.938	0.69
90.00	Kathrein Scala Smart Bias Tee	3	0.80	-4.000	3.30	0.080	0.50	6.46	0.280	0.50
90.00	Ericsson KRY 112 144/1	3	0.80	0.000	11.00	0.350	0.50	21.35	0.739	0.50
90.00	Ericsson KRY 112 489/1	3	0.80	0.000	15.40	0.560	0.50	32.31	1.066	0.50
90.00	Ericsson Radio 4449 B12,B71	3	0.80	0.000	74.00	1.640	0.50	127.85	2.452	0.50
90.00	Ericsson AIR32 B66Aa/B2a	3	0.80	-4.000	132.20	6.510	0.71	285.70	8.617	0.71
90.00	Ericsson Air 3246 B66	3	0.80	0.000	180.00	7.940	0.69	2,780.69	10.121	0.69
90.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.240	0.63	505.47	23.807	0.63
87.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,122.12	44.432	1.00
80.00	Nokia AirScale RRH 4T4R B5	3	0.80	0.000	35.30	1.290	0.50	72.89	2.012	0.50
80.00	Alcatel-Lucent B25 RRH4x30	3	0.80	0.000	53.00	2.120	0.50	110.71	3.069	0.50
80.00	Alcatel-Lucent B13 RRH4x30-4R	3	0.80	0.000	57.80	2.140	0.50	123.74	3.095	0.50
80.00	Alcatel-Lucent B66A RRH 4x45	3	0.80	0.000	67.00	2.580	0.50	135.00	3.659	0.50
80.00	Raycap RVZDC-6627-PF-48	1	0.80	0.000	32.00	3.780	0.50	136.83	5.044	0.50
80.00	Amphenol Antel BXA-171063-	6	0.80	0.000	12.80	4.790	0.50	104.33	7.045	0.50
80.00	Amphenol Antel BXA-70063-6CF-	4	0.80	0.000	17.00	7.570	0.66	158.47	10.207	0.66
80.00	Commscope JAHH-65B-R3B	6	0.80	0.000	63.30	9.110	0.69	256.71	11.761	0.69
80.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,119.34	40.053	1.00
77.00	Scala 840 10212	1	0.90	-2.000	6.70	2.170	0.50	54.65	3.198	0.50

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

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Customer: AT&T MOBILITY

77.00	TX RX Systems 421-86A-10-18-	1	0.90	-2.000	15.00	2.220	0.67	59.70	3.163	0.67
77.00	Stand Offs	2	1.00	0.000	75.00	2.500	1.00	109.92	3.431	1.00
70.00	Round Side Arms	3	1.00	0.000	100.00	4.000	0.67	146.40	5.988	0.67
70.00	RFS APXV18-206517S-C	3	0.80	0.000	26.40	5.160	0.68	114.56	7.410	0.68
60.00	Generic Radio/ODU	1	1.00	0.000	30.00	1.600	0.50	78.52	2.398	0.50
60.00	Scala 840 10212	1	1.00	0.000	6.70	2.170	0.50	54.36	3.191	0.50
60.00	Stand Off	1	1.00	0.000	75.00	2.500	1.00	109.70	3.739	1.00
60.00	Radio Waves SP2-4.7 w/ Radome	1	1.00	0.000	26.00	2.710	1.00	104.98	3.469	1.00
60.00	Radio Waves SP2-4.7	1	1.00	0.000	22.00	5.230	0.82	74.56	6.699	0.82
Totals	Num Loadings:56	150			11,510.40			34,274.62		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	112.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	2	0.25	0.25	0	0.00	N	CLEARWIRE
0.00	112.00	1	2" conduit	2.38	3.65	N	1	0.25	0.25	0	0.00	N	CLEARWIRE
0.00	110.00	3	1/2" Coax	0.63	0.15	N	2	0.25	0.25	90	0.25	Y	CLEARWIRE
0.00	110.00	1	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	102.00	2	0.39" (10mm) Fiber	0.39	0.06	N	2	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	2	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	2	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	12	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	50	0.25	Y	AT&T MOBILITY
0.00	102.00	6	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	50	0.25	Y	AT&T MOBILITY
0.00	102.00	6	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	1	3" conduit	3.50	7.58	N	1	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	90.00	3	1 1/4" (1.25"- 31.8mm)	1.25	1.05	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	90.00	18	1 5/8" Coax	1.98	0.82	N	5	0.25	0.25	220	0.25	Y	T-MOBILE
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	270	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	180	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	90	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	0	0.00	Y	--
0.00	80.00	12	1 5/8" Coax	1.98	0.82	N	6	0.25	0.25	130	0.25	Y	VERIZON WIRELESS
0.00	80.00	2	1 5/8" Hybriflex	1.98	1.30	N	1	0.25	0.25	130	0.25	Y	VERIZON WIRELESS
0.00	77.00	1	7/8" Coax	1.09	0.33	N	1	0.25	0.25	120	0.25	Y	TOWN OF WEST
0.00	70.00	6	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	140	0.25	Y	METRO PCS INC
0.00	60.00	2	0.41" (10.3mm) LMR-	0.41	0.07	N	2	0.25	0.25	120	1.09	Y	TOWN OF WEST
0.00	60.00	1	1/4" Coax	0.34	0.06	N	0	0.00	0.00	0	0.00	N	TOWN OF WEST
0.00	60.00	1	7/8" Coax	1.09	0.33	N	1	0.25	0.25	120	0.25	Y	TOWN OF WEST

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	12.00	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	39.0	3.31	5/8" A36 U-Bolt	No
0.00	17.50	4	PL PL 6 x 1.25	59	0.00	AJAX M20 Class	24.0	3.00	AJAX M20 Class	No
12.00	47.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
47.50	67.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
67.50	77.04	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
77.00	85.00	4	PL PL 5" x 1.25"	56	0.00	AJAX M20 Class	24.0	3.00	AJAX M20 Class	No

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Site Name: Hrfr - South, CT

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Customer: AT&T MOBILITY

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)	Additional Reinforcing		
												Area (in ²)	Ix (in ⁴)	Weight (lb)
0.00		0.2500	30.000	23.949	2,705.5	29.47	120.00	72.6	174.2	0.0	0.0	49.64	7,171	0.0
5.00		0.2500	29.181	23.290	2,488.2	28.60	116.72	73.5	164.7	0.0	401.9	49.64	6,828	844.0
10.00		0.2500	28.362	22.631	2,282.9	27.72	113.45	74.5	155.5	0.0	390.6	49.64	6,492	844.0
12.00	Reinf. Top Reinf	0.2500	28.035	22.367	2,204.0	27.37	112.14	74.9	151.9	0.0	153.1	49.64	6,361	337.6
15.00		0.2500	27.544	21.971	2,089.2	26.84	110.18	75.4	146.5	0.0	226.3	49.64	6,166	506.4
17.50	Reinf. Top	0.2500	27.134	21.642	1,996.6	26.40	108.54	75.9	142.1	0.0	185.5	49.64	6,006	422.0
20.00		0.2500	26.725	21.312	1,906.7	25.96	106.90	76.4	137.8	0.0	182.7	19.64	2,866	167.0
25.00		0.2500	25.906	20.653	1,735.2	25.09	103.63	77.4	129.4	0.0	357.0	19.64	2,726	334.0
29.33	Bot - Section 2	0.2500	25.197	20.083	1,595.3	24.33	100.79	78.2	122.3	0.0	300.1	19.64	2,607	289.2
30.00		0.2500	25.087	19.994	1,574.4	24.21	100.35	78.3	121.2	0.0	92.3	19.64	2,672	44.8
32.83	Top - Section 1	0.2500	25.124	20.024	1,581.3	24.25	100.50	62.7	121.6	0.0	385.4	19.64	2,595	189.0
35.00		0.2500	24.769	19.738	1,514.5	23.87	99.07	63.0	118.1	0.0	146.8	19.64	2,537	145.0
40.00		0.2500	23.950	19.078	1,367.8	22.99	95.80	63.0	110.3	0.0	330.2	19.64	2,405	334.0
45.00		0.2500	23.131	18.419	1,230.9	22.11	92.53	63.0	102.8	0.0	319.0	19.64	2,277	334.0
47.50	Reinf. Top Reinf	0.2500	22.722	18.090	1,166.0	21.67	90.89	63.0	99.1	0.0	155.3	19.64	2,214	167.0
50.00		0.2500	22.313	17.760	1,103.4	21.23	89.25	63.0	95.5	0.0	152.5	19.64	2,152	167.0
55.00		0.2500	21.494	17.101	985.1	20.36	85.97	63.0	88.5	0.0	296.6	19.64	2,031	334.0
60.00		0.2500	20.675	16.442	875.5	19.48	82.70	63.0	81.8	0.0	285.4	19.64	1,913	334.0
62.92	Bot - Section 3	0.2500	20.197	16.058	815.5	18.97	80.79	63.0	78.0	0.0	161.3	19.64	1,846	194.8
65.00		0.2500	19.856	15.783	774.4	18.60	79.43	63.0	75.3	0.0	199.4	19.64	1,850	139.2
65.75	Top - Section 2	0.1875	20.108	12.027	609.2	26.06	107.25	61.4	58.5	0.0	70.9	19.64	1,833	50.1
67.50	Reinf. Top Reinf	0.1875	19.822	11.854	583.3	25.65	105.72	61.7	56.8	0.0	71.1	19.64	1,794	116.9
70.00		0.1875	19.413	11.607	547.6	25.06	103.53	62.1	54.5	0.0	99.8	19.64	1,738	167.0
75.00		0.1875	18.594	11.113	480.6	23.89	99.17	63.0	49.9	0.0	193.3	19.64	1,629	334.0
77.00	Reinf Bottom	0.1875	18.266	10.915	455.4	23.42	97.42	63.0	48.2	0.0	75.0	19.64	1,587	133.6
77.04	Reinf. Top	0.1875	18.259	10.911	454.8	23.41	97.38	63.0	48.1	0.0	1.5	44.64	2,803	6.3
80.00		0.1875	17.775	10.618	419.2	22.72	94.80	63.0	45.6	0.0	108.4	25.00	1,158	252.1
85.00	Reinf. Top	0.1875	16.956	10.124	363.4	21.55	90.43	63.0	41.4	0.0	176.5	25.00	1,063	426.0
87.00		0.1875	16.629	9.926	342.5	21.08	88.69	63.0	39.8	0.0	68.2			
90.00		0.1875	16.138	9.630	312.7	20.38	86.07	63.0	37.4	0.0	99.8			
95.00		0.1875	15.319	9.135	267.0	19.21	81.70	63.0	33.7	0.0	159.6			
100.0	Top - Section 3	0.1875	14.500	8.641	225.9	18.04	77.33	63.0	30.1	0.0	151.2			
100.0	Bot - Section 4	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
102.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	99.2			
105.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	148.8			
110.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
											6,492.7			7,612.9

Load Case: 1.2D + 1.0W

118 mph with No Ice

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		496.2	0.0					0.0	0.0	496.2	0.0	0.0	0.0
5.00		914.7	482.2					219.9	1,490.6	1,134.6	1,972.8	0.0	0.0
10.00		568.7	468.8					198.9	1,490.6	767.5	1,959.3	0.0	0.0
12.00	Reinf. Top Reinf	359.6	183.7					74.7	596.2	434.4	780.0	0.0	0.0
15.00		371.4	271.6					107.6	894.3	479.0	1,165.9	0.0	0.0
17.50	Reinf. Top	313.7	222.6					86.0	745.3	399.7	967.9	0.0	0.0
20.00		429.3	219.2					83.0	439.3	512.2	658.5	0.0	0.0
25.00		494.4	428.4					158.2	878.6	652.6	1,307.0	0.0	0.0
29.33	Bot - Section 2	249.5	360.1					130.0	760.8	379.5	1,120.9	0.0	0.0
30.00		167.3	110.8					19.6	117.7	187.0	228.5	0.0	0.0
32.83	Top - Section 1	235.7	462.4					82.2	497.3	317.8	959.7	0.0	0.0
35.00		325.7	176.2					62.5	381.3	388.2	557.5	0.0	0.0
40.00		440.0	396.2					142.6	878.6	582.6	1,274.8	0.0	0.0
45.00		319.4	382.8					141.2	878.6	460.6	1,261.4	0.0	0.0
47.50	Reinf. Top Reinf	206.4	186.3					70.3	439.3	276.6	625.6	0.0	0.0
50.00		300.5	183.0					70.1	439.3	370.6	622.3	0.0	0.0
55.00		389.3	355.9					140.0	878.6	529.2	1,234.5	0.0	0.0
60.00	Appurtenance(s)	299.1	342.4	398.7	0.0	0.0	191.6	140.0	878.6	837.7	1,412.6	0.0	0.0
62.92	Bot - Section 3	185.4	193.5					81.8	510.6	267.2	704.2	0.0	0.0
65.00		104.8	239.3					58.5	364.8	163.3	604.0	0.0	0.0
65.75	Top - Section 2	91.2	85.1					21.1	131.3	112.3	216.4	0.0	0.0
67.50	Reinf. Top Reinf	153.2	85.3					49.3	306.4	202.5	391.7	0.0	0.0
70.00	Appurtenance(s)	263.9	119.8	581.5	0.0	0.0	455.0	70.6	437.7	916.0	1,012.5	0.0	0.0
75.00		242.3	231.9					141.8	845.9	384.0	1,077.8	0.0	0.0
77.00	Reinf Bottom	69.4	89.9	260.7	0.0	-164.7	206.0	57.0	338.4	387.0	634.3	0.0	0.0
77.04	Reinf. Top	100.1	1.9					1.2	11.3	101.2	13.1	0.0	0.0
80.00	Appurtenance(s)	260.4	130.0	3,248.0	0.0	0.0	3,235.1	84.9	564.6	3,593.3	3,929.8	0.0	0.0
85.00	Reinf. Top	224.7	211.7					144.0	879.7	368.7	1,091.4	0.0	0.0
87.00	Appurtenance(s)	155.5	81.9	946.9	0.0	0.0	1,800.0	42.2	147.4	1,144.6	2,029.3	0.0	0.0
90.00	Appurtenance(s)	239.6	119.8	2,113.0	0.0	-1,620.8	1,957.7	64.7	221.1	2,417.4	2,298.5	0.0	0.0
95.00		289.2	191.6					35.4	261.0	324.6	452.6	0.0	0.0
100.00	Top - Section 3	171.6	181.5					36.1	261.0	207.7	442.5	0.0	0.0
102.00	Appurtenance(s)	65.3	119.1	4,272.4	0.0	-4,307.0	3,864.1	14.7	104.4	4,352.4	4,087.6	0.0	0.0
105.00		96.0	178.6					0.0	45.3	96.0	223.9	0.0	0.0
110.00	Appurtenance(s)	60.2	297.7	1,074.8	0.0	0.0	842.4	0.0	75.5	1,135.0	1,215.5	0.0	0.0
Totals:										25,379.2	38,534.3	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

3/25/2019 4:52:36 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0W

118 mph with No Ice

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-39.73	-26.17	0.00	-1,938.02	0.00	1,938.02	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.572
5.00	-37.64	-25.21	0.00	-1,807.17	0.00	1,807.17	1,541.15	408.73	1,115.51	908.35	0.15	-0.27	0.543
10.00	-35.61	-24.54	0.00	-1,681.14	0.00	1,681.14	1,517.03	397.17	1,053.29	868.61	0.58	-0.54	0.515
12.00	-34.78	-24.18	0.00	-1,632.06	0.00	1,632.06	1,507.06	392.54	1,028.90	852.76	0.82	-0.64	0.503
12.00	-34.78	-24.18	0.00	-1,632.06	0.00	1,632.06	1,507.06	392.54	1,028.90	852.76	0.82	-0.64	0.503
15.00	-33.56	-23.77	0.00	-1,559.52	0.00	1,559.52	1,491.77	385.60	992.85	829.06	1.28	-0.80	0.487
17.50	-32.54	-23.43	0.00	-1,500.09	0.00	1,500.09	1,478.72	379.82	963.30	809.36	1.74	-0.93	0.473
17.50	-32.54	-23.43	0.00	-1,500.09	0.00	1,500.09	1,478.72	379.82	963.30	809.36	1.74	-0.93	0.765
20.00	-31.78	-23.06	0.00	-1,441.51	0.00	1,441.51	1,465.38	374.03	934.19	789.74	2.26	-1.06	0.744
25.00	-30.34	-22.58	0.00	-1,326.22	0.00	1,326.22	1,437.85	362.47	877.32	750.71	3.60	-1.48	0.702
29.33	-29.15	-22.27	0.00	-1,228.44	0.00	1,228.44	1,413.10	352.45	829.52	717.20	5.11	-1.83	0.665
30.00	-28.88	-22.15	0.00	-1,213.52	0.00	1,213.52	1,409.19	350.90	822.24	712.04	5.37	-1.89	0.646
32.83	-27.85	-21.89	0.00	-1,150.84	0.00	1,150.84	1,130.07	270.32	634.36	571.86	6.56	-2.11	0.781
35.00	-27.21	-21.61	0.00	-1,103.33	0.00	1,103.33	1,119.12	266.46	616.37	558.15	7.56	-2.28	0.758
40.00	-25.83	-21.14	0.00	-995.27	0.00	995.27	1,081.75	257.56	575.90	521.31	10.14	-2.65	0.711
45.00	-24.50	-20.73	0.00	-889.57	0.00	889.57	1,044.38	248.66	536.82	485.73	13.11	-3.00	0.661
47.50	-23.82	-20.49	0.00	-837.74	0.00	837.74	1,025.69	244.21	517.79	468.42	14.73	-3.18	0.635
47.50	-23.82	-20.49	0.00	-837.74	0.00	837.74	1,025.69	244.21	517.79	468.42	14.73	-3.18	0.635
50.00	-23.14	-20.19	0.00	-786.51	0.00	786.51	1,007.01	239.76	499.10	451.41	16.44	-3.35	0.609
55.00	-21.83	-19.70	0.00	-685.57	0.00	685.57	969.64	230.87	462.76	418.35	20.12	-3.67	0.553
60.00	-20.40	-18.85	0.00	-587.06	0.00	587.06	932.27	221.97	427.79	386.54	24.13	-3.97	0.494
62.92	-19.67	-18.59	0.00	-532.07	0.00	532.07	910.47	216.78	408.02	368.57	26.61	-4.14	0.459
65.00	-19.06	-18.40	0.00	-493.35	0.00	493.35	894.90	213.07	394.19	355.99	28.44	-4.25	0.426
65.75	-18.83	-18.30	0.00	-479.55	0.00	479.55	664.38	162.37	305.14	269.42	29.11	-4.29	0.467
67.50	-18.42	-18.10	0.00	-447.52	0.00	447.52	658.03	160.03	296.43	262.98	30.70	-4.38	0.441
67.50	-18.42	-18.10	0.00	-447.52	0.00	447.52	658.03	160.03	296.43	262.98	30.70	-4.38	0.441
70.00	-17.43	-17.16	0.00	-402.27	0.00	402.27	648.81	156.70	284.20	253.83	33.03	-4.51	0.402
75.00	-16.34	-16.74	0.00	-316.45	0.00	316.45	629.79	150.02	260.52	235.80	37.87	-4.73	0.327
77.00	-15.73	-16.31	0.00	-282.97	0.00	282.97	618.88	147.35	251.33	227.55	39.87	-4.81	0.299
77.04	-15.72	-16.22	0.00	-282.29	0.00	282.29	618.65	147.30	251.14	227.38	39.91	-4.81	0.190
77.04	-15.72	-16.22	0.00	-282.29	0.00	282.29	618.65	147.30	251.14	227.38	39.91	-4.81	0.358
80.00	-12.08	-12.33	0.00	-234.32	0.00	234.32	602.07	143.35	237.86	215.29	42.92	-4.88	0.303
85.00	-11.00	-11.89	0.00	-172.66	0.00	172.66	574.04	136.68	216.24	195.61	48.13	-5.06	0.238
85.00	-11.00	-11.89	0.00	-172.66	0.00	172.66	574.04	136.68	216.24	195.61	48.13	-5.06	0.909
87.00	-9.04	-10.60	0.00	-148.87	0.00	148.87	562.83	134.01	207.88	188.00	50.26	-5.13	0.814
90.00	-6.92	-8.03	0.00	-117.06	0.00	117.06	546.01	130.00	195.65	176.87	53.59	-5.46	0.678
95.00	-6.45	-7.71	0.00	-76.90	0.00	76.90	517.98	123.33	176.08	159.08	59.55	-5.90	0.500
100.00	-6.01	-7.47	0.00	-38.37	0.00	38.37	489.95	116.66	157.55	142.23	65.90	-6.21	0.286
100.00	-6.01	-7.47	0.00	-38.37	0.00	38.37	459.24	137.77	149.89	150.79	65.90	-6.21	0.270
102.00	-2.42	-2.70	0.00	-23.42	0.00	23.42	459.24	137.77	149.89	150.79	68.51	-6.29	0.161
105.00	-2.20	-2.59	0.00	-15.31	0.00	15.31	459.24	137.77	149.89	150.79	72.47	-6.34	0.107
110.00	0.00	-2.33	0.00	-2.38	0.00	2.38	459.24	137.77	149.89	150.79	79.13	-6.39	0.016

Load Case: 0.9D + 1.0W

118 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		496.2	0.0					0.0	0.0	496.2	0.0	0.0	0.0
5.00		914.7	361.7					219.9	1,117.9	1,134.6	1,479.6	0.0	0.0
10.00		568.7	351.6					198.9	1,117.9	767.5	1,469.5	0.0	0.0
12.00	Reinf. Top Reinf	359.6	137.8					74.7	447.2	434.4	585.0	0.0	0.0
15.00		371.4	203.7					107.6	670.8	479.0	874.4	0.0	0.0
17.50	Reinf. Top	313.7	167.0					86.0	559.0	399.7	725.9	0.0	0.0
20.00		429.3	164.4					83.0	329.5	512.2	493.9	0.0	0.0
25.00		494.4	321.3					158.2	658.9	652.6	980.2	0.0	0.0
29.33	Bot - Section 2	249.5	270.1					130.0	570.6	379.5	840.7	0.0	0.0
30.00		167.3	83.1					19.6	88.3	187.0	171.4	0.0	0.0
32.83	Top - Section 1	235.7	346.8					82.2	372.9	317.8	719.8	0.0	0.0
35.00		325.7	132.1					62.5	286.0	388.2	418.1	0.0	0.0
40.00		440.0	297.2					142.6	658.9	582.6	956.1	0.0	0.0
45.00		319.4	287.1					141.2	658.9	460.6	946.0	0.0	0.0
47.50	Reinf. Top Reinf	206.4	139.8					70.3	329.5	276.6	469.2	0.0	0.0
50.00		300.5	137.2					70.1	329.5	370.6	466.7	0.0	0.0
55.00		389.3	266.9					140.0	658.9	529.2	925.8	0.0	0.0
60.00	Appurtenance(s)	299.1	256.8	398.7	0.0	0.0	143.7	140.0	658.9	837.7	1,059.5	0.0	0.0
62.92	Bot - Section 3	185.4	145.1					81.8	383.0	267.2	528.1	0.0	0.0
65.00		104.8	179.5					58.5	273.6	163.3	453.0	0.0	0.0
65.75	Top - Section 2	91.2	63.8					21.1	98.5	112.3	162.3	0.0	0.0
67.50	Reinf. Top Reinf	153.2	64.0					49.3	229.8	202.5	293.8	0.0	0.0
70.00	Appurtenance(s)	263.9	89.8	581.5	0.0	0.0	341.3	70.6	328.3	916.0	759.4	0.0	0.0
75.00		242.3	173.9					141.8	634.4	384.0	808.4	0.0	0.0
77.00	Reinf Bottom	69.4	67.5	260.7	0.0	-164.7	154.5	57.0	253.8	387.0	475.8	0.0	0.0
77.04	Reinf. Top	100.1	1.4					1.2	8.5	101.2	9.8	0.0	0.0
80.00	Appurtenance(s)	260.4	97.5	3,248.0	0.0	0.0	2,426.3	84.9	423.5	3,593.3	2,947.3	0.0	0.0
85.00	Reinf. Top	224.7	158.8					144.0	659.7	368.7	818.6	0.0	0.0
87.00	Appurtenance(s)	155.5	61.4	946.9	0.0	0.0	1,350.0	42.2	110.5	1,144.6	1,521.9	0.0	0.0
90.00	Appurtenance(s)	239.6	89.8	2,113.0	0.0	-1,620.8	1,468.3	64.7	165.8	2,417.4	1,723.9	0.0	0.0
95.00		289.2	143.7					35.4	195.7	324.6	339.4	0.0	0.0
100.00	Top - Section 3	171.6	136.1					36.1	195.7	207.7	331.9	0.0	0.0
102.00	Appurtenance(s)	65.3	89.3	4,272.4	0.0	-4,307.0	2,898.1	14.7	78.3	4,352.4	3,065.7	0.0	0.0
105.00		96.0	133.9					0.0	34.0	96.0	167.9	0.0	0.0
110.00	Appurtenance(s)	60.2	223.2	1,074.8	0.0	0.0	631.8	0.0	56.6	1,135.0	911.7	0.0	0.0
Totals:										25,379.2	28,900.7	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

3/25/2019 4:52:43 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.0W

118 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-29.78	-26.14	0.00	-1,909.81	0.00	1,909.81	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.562
5.00	-28.19	-25.14	0.00	-1,779.09	0.00	1,779.09	1,541.15	408.73	1,115.51	908.35	0.15	-0.27	0.533
10.00	-26.65	-24.44	0.00	-1,653.40	0.00	1,653.40	1,517.03	397.17	1,053.29	868.61	0.57	-0.53	0.504
12.00	-26.01	-24.06	0.00	-1,604.52	0.00	1,604.52	1,507.06	392.54	1,028.90	852.76	0.81	-0.63	0.493
12.00	-26.01	-24.06	0.00	-1,604.52	0.00	1,604.52	1,507.06	392.54	1,028.90	852.76	0.81	-0.63	0.493
15.00	-25.09	-23.64	0.00	-1,532.33	0.00	1,532.33	1,491.77	385.60	992.85	829.06	1.26	-0.79	0.477
17.50	-24.31	-23.28	0.00	-1,473.24	0.00	1,473.24	1,478.72	379.82	963.30	809.36	1.71	-0.92	0.463
17.50	-24.31	-23.28	0.00	-1,473.24	0.00	1,473.24	1,478.72	379.82	963.30	809.36	1.71	-0.92	0.749
20.00	-23.72	-22.87	0.00	-1,415.04	0.00	1,415.04	1,465.38	374.03	934.19	789.74	2.23	-1.05	0.728
25.00	-22.61	-22.35	0.00	-1,300.68	0.00	1,300.68	1,437.85	362.47	877.32	750.71	3.54	-1.45	0.686
29.33	-21.71	-22.02	0.00	-1,203.93	0.00	1,203.93	1,413.10	352.45	829.52	717.20	5.02	-1.80	0.649
30.00	-21.49	-21.88	0.00	-1,189.18	0.00	1,189.18	1,409.19	350.90	822.24	712.04	5.28	-1.85	0.631
32.83	-20.71	-21.60	0.00	-1,127.27	0.00	1,127.27	1,130.07	270.32	634.36	571.86	6.45	-2.07	0.762
35.00	-20.20	-21.29	0.00	-1,080.39	0.00	1,080.39	1,119.12	266.46	616.37	558.15	7.43	-2.24	0.739
40.00	-19.15	-20.79	0.00	-973.92	0.00	973.92	1,081.75	257.56	575.90	521.31	9.97	-2.60	0.692
45.00	-18.13	-20.37	0.00	-869.96	0.00	869.96	1,044.38	248.66	536.82	485.73	12.88	-2.95	0.644
47.50	-17.62	-20.12	0.00	-819.05	0.00	819.05	1,025.69	244.21	517.79	468.42	14.47	-3.12	0.618
47.50	-17.62	-20.12	0.00	-819.05	0.00	819.05	1,025.69	244.21	517.79	468.42	14.47	-3.12	0.618
50.00	-17.09	-19.79	0.00	-768.75	0.00	768.75	1,007.01	239.76	499.10	451.41	16.15	-3.29	0.592
55.00	-16.09	-19.30	0.00	-669.78	0.00	669.78	969.64	230.87	462.76	418.35	19.76	-3.60	0.538
60.00	-15.02	-18.45	0.00	-573.31	0.00	573.31	932.27	221.97	427.79	386.54	23.69	-3.89	0.480
62.92	-14.47	-18.18	0.00	-519.50	0.00	519.50	910.47	216.78	408.02	368.57	26.12	-4.06	0.446
65.00	-14.00	-18.00	0.00	-481.62	0.00	481.62	894.90	213.07	394.19	355.99	27.91	-4.17	0.413
65.75	-13.83	-17.90	0.00	-468.12	0.00	468.12	664.38	162.37	305.14	269.42	28.57	-4.21	0.453
67.50	-13.52	-17.70	0.00	-436.80	0.00	436.80	658.03	160.03	296.43	262.98	30.13	-4.29	0.427
67.50	-13.52	-17.70	0.00	-436.80	0.00	436.80	658.03	160.03	296.43	262.98	30.13	-4.29	0.427
70.00	-12.78	-16.77	0.00	-392.56	0.00	392.56	648.81	156.70	284.20	253.83	32.41	-4.42	0.389
75.00	-11.97	-16.35	0.00	-308.73	0.00	308.73	629.79	150.02	260.52	235.80	37.15	-4.63	0.317
77.00	-11.51	-15.93	0.00	-276.03	0.00	276.03	618.88	147.35	251.33	227.55	39.11	-4.71	0.289
77.04	-11.50	-15.84	0.00	-275.37	0.00	275.37	618.65	147.30	251.14	227.38	39.15	-4.71	0.184
77.04	-11.50	-15.84	0.00	-275.37	0.00	275.37	618.65	147.30	251.14	227.38	39.15	-4.71	0.347
80.00	-8.84	-12.03	0.00	-228.52	0.00	228.52	602.07	143.35	237.86	215.29	42.09	-4.78	0.293
85.00	-8.03	-11.61	0.00	-168.36	0.00	168.36	574.04	136.68	216.24	195.61	47.19	-4.96	0.230
85.00	-8.03	-11.61	0.00	-168.36	0.00	168.36	574.04	136.68	216.24	195.61	47.19	-4.96	0.882
87.00	-6.57	-10.36	0.00	-145.14	0.00	145.14	562.83	134.01	207.88	188.00	49.28	-5.02	0.790
90.00	-5.02	-7.83	0.00	-114.06	0.00	114.06	546.01	130.00	195.65	176.87	52.54	-5.34	0.658
95.00	-4.67	-7.51	0.00	-74.90	0.00	74.90	517.98	123.33	176.08	159.08	58.37	-5.77	0.484
100.00	-4.34	-7.28	0.00	-37.38	0.00	37.38	489.95	116.66	157.55	142.23	64.59	-6.07	0.276
100.00	-4.34	-7.28	0.00	-37.38	0.00	37.38	459.24	137.77	149.89	150.79	64.59	-6.07	0.260
102.00	-1.75	-2.63	0.00	-22.82	0.00	22.82	459.24	137.77	149.89	150.79	67.14	-6.15	0.156
105.00	-1.59	-2.51	0.00	-14.95	0.00	14.95	459.24	137.77	149.89	150.79	71.02	-6.21	0.103
110.00	0.00	-2.33	0.00	-2.38	0.00	2.38	459.24	137.77	149.89	150.79	77.54	-6.25	0.016

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.50 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		104.4	0.0					0.0	0.0	104.4	0.0	0.0	0.0
5.00		193.9	800.8					121.1	2,217.7	314.9	3,018.5	0.0	0.0
10.00		121.8	799.1					229.8	2,259.3	351.6	3,058.4	0.0	0.0
12.00	Reinf. Top Reinf	77.7	315.4					85.3	905.8	163.0	1,221.3	0.0	0.0
15.00		80.6	465.9					121.6	1,358.8	202.2	1,824.7	0.0	0.0
17.50	Reinf. Top	68.5	381.9					101.6	1,131.6	170.1	1,513.5	0.0	0.0
20.00		94.5	375.8					100.4	824.5	194.9	1,200.3	0.0	0.0
25.00		109.7	730.8					195.1	1,645.3	304.8	2,376.1	0.0	0.0
29.33	Bot - Section 2	55.7	613.4					162.9	1,420.7	218.5	2,034.1	0.0	0.0
30.00		37.6	150.4					24.8	219.6	62.4	370.0	0.0	0.0
32.83	Top - Section 1	53.0	626.6					104.8	926.4	157.8	1,553.0	0.0	0.0
35.00		73.8	300.0					79.3	709.5	153.0	1,009.6	0.0	0.0
40.00		100.6	671.8					184.8	1,632.5	285.4	2,304.3	0.0	0.0
45.00		73.8	648.5					187.9	1,630.0	261.7	2,278.6	0.0	0.0
47.50	Reinf. Top Reinf	48.2	316.8					95.2	814.4	143.4	1,131.2	0.0	0.0
50.00		71.0	311.1					96.1	814.1	167.1	1,125.2	0.0	0.0
55.00		93.1	603.2					195.1	1,627.8	288.2	2,231.0	0.0	0.0
60.00	Appurtenance(s)	72.5	581.0	97.4	0.0	0.0	613.8	199.1	1,627.8	369.1	2,822.5	0.0	0.0
62.92	Bot - Section 3	45.5	329.8					118.2	932.3	163.6	1,262.1	0.0	0.0
65.00		25.8	336.8					85.4	666.2	111.2	1,003.0	0.0	0.0
65.75	Top - Section 2	22.6	120.0					30.9	239.8	53.5	359.9	0.0	0.0
67.50	Reinf. Top Reinf	38.1	165.8					72.0	559.8	110.1	725.6	0.0	0.0
70.00	Appurtenance(s)	66.2	232.6	153.1	0.0	0.0	1,237.9	103.9	799.9	323.1	2,270.4	0.0	0.0
75.00		61.1	449.2					185.0	1,495.9	246.1	1,945.1	0.0	0.0
77.00	Reinf Bottom	17.5	175.6	65.3	0.0	-42.7	540.2	75.3	598.8	158.2	1,314.6	0.0	0.0
77.04	Reinf. Top	25.4	3.6					1.6	16.6	27.0	20.2	0.0	0.0
80.00	Appurtenance(s)	66.4	253.8	860.3	0.0	0.0	9,618.4	112.7	944.5	1,039.4	10,816.7	0.0	0.0
85.00	Reinf. Top	55.8	412.6					109.7	1,279.0	165.5	1,691.6	0.0	0.0
87.00	Appurtenance(s)	35.9	161.0	289.4	0.0	0.0	3,922.1	40.8	299.5	366.2	4,382.6	0.0	0.0
90.00	Appurtenance(s)	53.7	235.5	476.7	0.0	-390.6	13,237.2	62.0	449.6	592.4	13,922.2	0.0	0.0
95.00		63.6	376.0					58.7	487.6	122.3	863.6	0.0	0.0
100.00	Top - Section 3	42.0	357.6					60.9	488.3	103.0	845.9	0.0	0.0
102.00	Appurtenance(s)	27.1	178.6	1,129.4	0.0	-1,025.6	12,368.8	26.5	195.5	1,183.0	12,742.9	0.0	0.0
105.00		43.6	268.1					2.3	60.4	45.9	328.5	0.0	0.0
110.00	Appurtenance(s)	27.4	447.4	272.7	0.0	0.0	2,446.1	3.8	100.8	303.9	2,994.2	0.0	0.0
Totals:										9,026.80	88,561.3	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

3/25/2019 4:52:51 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.50 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-92.55	-9.28	0.00	-707.68	0.00	707.68	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.224
5.00	-89.52	-9.12	0.00	-661.27	0.00	661.27	1,541.15	408.73	1,115.51	908.35	0.05	-0.10	0.213
10.00	-86.45	-8.86	0.00	-615.68	0.00	615.68	1,517.03	397.17	1,053.29	868.61	0.21	-0.20	0.203
12.00	-85.22	-8.77	0.00	-597.96	0.00	597.96	1,507.06	392.54	1,028.90	852.76	0.30	-0.24	0.198
12.00	-85.22	-8.77	0.00	-597.96	0.00	597.96	1,507.06	392.54	1,028.90	852.76	0.30	-0.24	0.198
15.00	-83.39	-8.63	0.00	-571.66	0.00	571.66	1,491.77	385.60	992.85	829.06	0.47	-0.29	0.192
17.50	-81.87	-8.52	0.00	-550.08	0.00	550.08	1,478.72	379.82	963.30	809.36	0.64	-0.34	0.187
17.50	-81.87	-8.52	0.00	-550.08	0.00	550.08	1,478.72	379.82	963.30	809.36	0.64	-0.34	0.305
20.00	-80.66	-8.46	0.00	-528.78	0.00	528.78	1,465.38	374.03	934.19	789.74	0.83	-0.39	0.297
25.00	-78.26	-8.33	0.00	-486.47	0.00	486.47	1,437.85	362.47	877.32	750.71	1.32	-0.54	0.280
29.33	-76.22	-8.19	0.00	-450.41	0.00	450.41	1,413.10	352.45	829.52	717.20	1.87	-0.67	0.266
30.00	-75.84	-8.19	0.00	-444.92	0.00	444.92	1,409.19	350.90	822.24	712.04	1.97	-0.69	0.259
32.83	-74.28	-8.11	0.00	-421.75	0.00	421.75	1,130.07	270.32	634.36	571.86	2.40	-0.77	0.313
35.00	-73.26	-8.07	0.00	-404.16	0.00	404.16	1,119.12	266.46	616.37	558.15	2.77	-0.84	0.304
40.00	-70.94	-7.91	0.00	-363.84	0.00	363.84	1,081.75	257.56	575.90	521.31	3.72	-0.97	0.286
45.00	-68.66	-7.72	0.00	-324.30	0.00	324.30	1,044.38	248.66	536.82	485.73	4.80	-1.10	0.267
47.50	-67.52	-7.63	0.00	-305.00	0.00	305.00	1,025.69	244.21	517.79	468.42	5.40	-1.16	0.257
47.50	-67.52	-7.63	0.00	-305.00	0.00	305.00	1,025.69	244.21	517.79	468.42	5.40	-1.16	0.257
50.00	-66.39	-7.54	0.00	-285.94	0.00	285.94	1,007.01	239.76	499.10	451.41	6.02	-1.23	0.247
55.00	-64.15	-7.33	0.00	-248.23	0.00	248.23	969.64	230.87	462.76	418.35	7.37	-1.34	0.226
60.00	-61.33	-6.98	0.00	-211.58	0.00	211.58	932.27	221.97	427.79	386.54	8.84	-1.45	0.203
62.92	-60.06	-6.84	0.00	-191.22	0.00	191.22	910.47	216.78	408.02	368.57	9.74	-1.51	0.190
65.00	-59.06	-6.73	0.00	-176.97	0.00	176.97	894.90	213.07	394.19	355.99	10.41	-1.55	0.177
65.75	-58.70	-6.69	0.00	-171.93	0.00	171.93	664.38	162.37	305.14	269.42	10.66	-1.57	0.194
67.50	-57.97	-6.60	0.00	-160.22	0.00	160.22	658.03	160.03	296.43	262.98	11.24	-1.60	0.184
67.50	-57.97	-6.60	0.00	-160.22	0.00	160.22	658.03	160.03	296.43	262.98	11.24	-1.60	0.184
70.00	-55.71	-6.27	0.00	-143.73	0.00	143.73	648.81	156.70	284.20	253.83	12.09	-1.64	0.169
75.00	-53.76	-6.02	0.00	-112.37	0.00	112.37	629.79	150.02	260.52	235.80	13.85	-1.72	0.141
77.00	-52.45	-5.83	0.00	-100.33	0.00	100.33	618.88	147.35	251.33	227.55	14.58	-1.75	0.130
77.04	-52.43	-5.82	0.00	-100.09	0.00	100.09	618.65	147.30	251.14	227.38	14.60	-1.75	0.080
77.04	-52.43	-5.82	0.00	-100.09	0.00	100.09	618.65	147.30	251.14	227.38	14.60	-1.75	0.147
80.00	-41.65	-4.48	0.00	-82.88	0.00	82.88	602.07	143.35	237.86	215.29	15.69	-1.78	0.124
85.00	-39.96	-4.29	0.00	-60.49	0.00	60.49	574.04	136.68	216.24	195.61	17.59	-1.84	0.100
85.00	-39.96	-4.29	0.00	-60.49	0.00	60.49	574.04	136.68	216.24	195.61	17.59	-1.84	0.380
87.00	-35.59	-3.83	0.00	-51.91	0.00	51.91	562.83	134.01	207.88	188.00	18.37	-1.86	0.340
90.00	-21.69	-2.82	0.00	-40.43	0.00	40.43	546.01	130.00	195.65	176.87	19.57	-1.98	0.269
95.00	-20.82	-2.71	0.00	-26.35	0.00	26.35	517.98	123.33	176.08	159.08	21.73	-2.13	0.206
100.00	-19.98	-2.60	0.00	-12.80	0.00	12.80	489.95	116.66	157.55	142.23	24.02	-2.23	0.131
100.00	-19.98	-2.60	0.00	-12.80	0.00	12.80	459.24	137.77	149.89	150.79	24.02	-2.23	0.129
102.00	-7.29	-0.92	0.00	-7.61	0.00	7.61	459.24	137.77	149.89	150.79	24.97	-2.26	0.066
105.00	-6.96	-0.86	0.00	-4.86	0.00	4.86	459.24	137.77	149.89	150.79	26.39	-2.28	0.047
110.00	0.00	-0.58	0.00	-0.56	0.00	0.56	459.24	137.77	149.89	150.79	28.79	-2.29	0.004

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		128.3	0.0					0.0	0.0	128.3	0.0	0.0	0.0
5.00		236.5	401.9					67.0	1,242.1	303.5	1,644.0	0.0	0.0
10.00		147.0	390.6					58.1	1,242.1	205.1	1,632.8	0.0	0.0
12.00	Reinf. Top Reinf	93.0	153.1					21.3	496.9	114.3	650.0	0.0	0.0
15.00		96.0	226.3					30.1	745.3	126.1	971.6	0.0	0.0
17.50	Reinf. Top	81.1	185.5					23.7	621.1	104.8	806.6	0.0	0.0
20.00		111.0	182.7					22.5	366.1	133.5	548.8	0.0	0.0
25.00		127.8	357.0					42.1	732.1	169.9	1,089.1	0.0	0.0
29.33	Bot - Section 2	64.5	300.1					33.9	634.0	98.4	934.1	0.0	0.0
30.00		43.3	92.3					5.1	98.1	48.3	190.4	0.0	0.0
32.83	Top - Section 1	60.9	385.4					21.2	414.4	82.2	799.7	0.0	0.0
35.00		84.2	146.8					16.2	317.8	100.4	464.6	0.0	0.0
40.00		113.7	330.2					36.9	732.1	150.6	1,062.4	0.0	0.0
45.00		82.6	319.0					36.5	732.1	119.1	1,051.1	0.0	0.0
47.50	Reinf. Top Reinf	53.4	155.3					18.2	366.1	71.5	521.4	0.0	0.0
50.00		77.7	152.5					18.1	366.1	95.8	518.6	0.0	0.0
55.00		100.6	296.6					36.2	732.1	136.8	1,028.7	0.0	0.0
60.00	Appurtenance(s)	77.3	285.4	103.1	0.0	0.0	159.7	36.2	732.1	216.6	1,177.2	0.0	0.0
62.92	Bot - Section 3	47.9	161.3					21.1	425.5	69.1	586.8	0.0	0.0
65.00		27.1	199.4					15.1	304.0	42.2	503.4	0.0	0.0
65.75	Top - Section 2	23.6	70.9					5.5	109.4	29.0	180.3	0.0	0.0
67.50	Reinf. Top Reinf	39.6	71.1					12.7	255.3	52.4	326.4	0.0	0.0
70.00	Appurtenance(s)	68.2	99.8	150.4	0.0	0.0	379.2	18.2	364.7	236.8	843.7	0.0	0.0
75.00		62.6	193.3					36.7	704.9	99.3	898.2	0.0	0.0
77.00	Reinf Bottom	17.9	75.0	67.4	0.0	-42.6	171.7	14.7	282.0	100.1	528.6	0.0	0.0
77.04	Reinf. Top	25.9	1.5					0.3	9.4	26.2	10.9	0.0	0.0
80.00	Appurtenance(s)	67.3	108.4	839.8	0.0	0.0	2,695.9	21.9	470.5	929.0	3,274.8	0.0	0.0
85.00	Reinf. Top	58.1	176.5					37.2	733.1	95.3	909.5	0.0	0.0
87.00	Appurtenance(s)	40.2	68.2	244.8	0.0	0.0	1,500.0	10.9	122.8	295.9	1,691.0	0.0	0.0
90.00	Appurtenance(s)	62.0	99.8	546.3	0.0	-419.1	1,631.4	16.7	184.2	625.0	1,915.4	0.0	0.0
95.00		74.9	159.6					9.1	217.5	84.0	377.1	0.0	0.0
100.00	Top - Section 3	46.2	151.2					9.3	217.5	55.5	368.7	0.0	0.0
102.00	Appurtenance(s)	20.6	99.2	1,104.6	0.0	-1,113.6	3,220.1	3.8	87.0	1,129.0	3,406.3	0.0	0.0
105.00		30.2	148.8					0.0	37.7	30.2	186.6	0.0	0.0
110.00	Appurtenance(s)	18.9	248.0	277.9	0.0	0.0	702.0	0.0	62.9	296.8	1,012.9	0.0	0.0
Totals:										6,601.33	32,111.9	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

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Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-33.16	-6.80	0.00	-498.76	0.00	498.76	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.151
5.00	-31.51	-6.53	0.00	-464.75	0.00	464.75	1,541.15	408.73	1,115.51	908.35	0.04	-0.07	0.143
10.00	-29.87	-6.35	0.00	-432.08	0.00	432.08	1,517.03	397.17	1,053.29	868.61	0.15	-0.14	0.136
12.00	-29.22	-6.25	0.00	-419.38	0.00	419.38	1,507.06	392.54	1,028.90	852.76	0.21	-0.17	0.133
12.00	-29.22	-6.25	0.00	-419.38	0.00	419.38	1,507.06	392.54	1,028.90	852.76	0.21	-0.17	0.133
15.00	-28.24	-6.14	0.00	-400.62	0.00	400.62	1,491.77	385.60	992.85	829.06	0.33	-0.21	0.128
17.50	-27.43	-6.05	0.00	-385.26	0.00	385.26	1,478.72	379.82	963.30	809.36	0.45	-0.24	0.125
17.50	-27.43	-6.05	0.00	-385.26	0.00	385.26	1,478.72	379.82	963.30	809.36	0.45	-0.24	0.203
20.00	-26.87	-5.95	0.00	-370.14	0.00	370.14	1,465.38	374.03	934.19	789.74	0.58	-0.27	0.197
25.00	-25.78	-5.82	0.00	-340.40	0.00	340.40	1,437.85	362.47	877.32	750.71	0.93	-0.38	0.186
29.33	-24.84	-5.73	0.00	-315.23	0.00	315.23	1,413.10	352.45	829.52	717.20	1.31	-0.47	0.176
30.00	-24.64	-5.70	0.00	-311.39	0.00	311.39	1,409.19	350.90	822.24	712.04	1.38	-0.48	0.171
32.83	-23.84	-5.63	0.00	-295.26	0.00	295.26	1,130.07	270.32	634.36	571.86	1.69	-0.54	0.207
35.00	-23.37	-5.55	0.00	-283.05	0.00	283.05	1,119.12	266.46	616.37	558.15	1.94	-0.59	0.200
40.00	-22.30	-5.43	0.00	-255.28	0.00	255.28	1,081.75	257.56	575.90	521.31	2.61	-0.68	0.188
45.00	-21.25	-5.32	0.00	-228.15	0.00	228.15	1,044.38	248.66	536.82	485.73	3.37	-0.77	0.175
47.50	-20.72	-5.26	0.00	-214.85	0.00	214.85	1,025.69	244.21	517.79	468.42	3.78	-0.82	0.168
47.50	-20.72	-5.26	0.00	-214.85	0.00	214.85	1,025.69	244.21	517.79	468.42	3.78	-0.82	0.168
50.00	-20.20	-5.18	0.00	-201.71	0.00	201.71	1,007.01	239.76	499.10	451.41	4.22	-0.86	0.161
55.00	-19.16	-5.05	0.00	-175.83	0.00	175.83	969.64	230.87	462.76	418.35	5.17	-0.94	0.147
60.00	-17.99	-4.83	0.00	-150.58	0.00	150.58	932.27	221.97	427.79	386.54	6.20	-1.02	0.132
62.92	-17.40	-4.76	0.00	-136.49	0.00	136.49	910.47	216.78	408.02	368.57	6.84	-1.06	0.123
65.00	-16.89	-4.72	0.00	-126.57	0.00	126.57	894.90	213.07	394.19	355.99	7.31	-1.09	0.114
65.75	-16.71	-4.69	0.00	-123.04	0.00	123.04	664.38	162.37	305.14	269.42	7.48	-1.10	0.124
67.50	-16.39	-4.64	0.00	-114.83	0.00	114.83	658.03	160.03	296.43	262.98	7.89	-1.12	0.117
67.50	-16.39	-4.64	0.00	-114.83	0.00	114.83	658.03	160.03	296.43	262.98	7.89	-1.12	0.117
70.00	-15.54	-4.40	0.00	-103.23	0.00	103.23	648.81	156.70	284.20	253.83	8.49	-1.16	0.107
75.00	-14.64	-4.29	0.00	-81.25	0.00	81.25	629.79	150.02	260.52	235.80	9.73	-1.21	0.088
77.00	-14.12	-4.18	0.00	-72.67	0.00	72.67	618.88	147.35	251.33	227.55	10.24	-1.24	0.080
77.04	-14.11	-4.16	0.00	-72.50	0.00	72.50	618.65	147.30	251.14	227.38	10.25	-1.24	0.050
77.04	-14.11	-4.16	0.00	-72.50	0.00	72.50	618.65	147.30	251.14	227.38	10.25	-1.24	0.094
80.00	-10.85	-3.16	0.00	-60.20	0.00	60.20	602.07	143.35	237.86	215.29	11.03	-1.25	0.080
85.00	-9.94	-3.05	0.00	-44.39	0.00	44.39	574.04	136.68	216.24	195.61	12.37	-1.30	0.063
85.00	-9.94	-3.05	0.00	-44.39	0.00	44.39	574.04	136.68	216.24	195.61	12.37	-1.30	0.245
87.00	-8.26	-2.73	0.00	-38.29	0.00	38.29	562.83	134.01	207.88	188.00	12.91	-1.32	0.219
90.00	-6.35	-2.07	0.00	-30.11	0.00	30.11	546.01	130.00	195.65	176.87	13.77	-1.40	0.182
95.00	-5.97	-1.98	0.00	-19.78	0.00	19.78	517.98	123.33	176.08	159.08	15.30	-1.52	0.136
100.00	-5.60	-1.92	0.00	-9.87	0.00	9.87	489.95	116.66	157.55	142.23	16.93	-1.59	0.081
100.00	-5.60	-1.92	0.00	-9.87	0.00	9.87	459.24	137.77	149.89	150.79	16.93	-1.59	0.078
102.00	-2.23	-0.70	0.00	-6.03	0.00	6.03	459.24	137.77	149.89	150.79	17.61	-1.61	0.045
105.00	-2.05	-0.66	0.00	-3.93	0.00	3.93	459.24	137.77	149.89	150.79	18.63	-1.63	0.031
110.00	0.00	-0.60	0.00	-0.62	0.00	0.62	459.24	137.77	149.89	150.79	20.34	-1.64	0.004

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period (S_g):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.06
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.27
Redundancy Factor (ρ):	1.00
Seismic Force Distribution Exponent (k):	1.88
Total Unfactored Dead Load:	33.16 k
Seismic Base Shear (E):	0.99 k

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
34	107.50	311	2,079	0.022	22	385
33	103.50	187	1,162	0.012	12	231
32	101.00	186	1,107	0.012	12	231
31	97.50	369	2,051	0.022	22	457
30	92.50	377	1,900	0.020	20	467
29	88.50	284	1,317	0.014	14	352
28	86.00	191	839	0.009	9	237
27	82.50	910	3,695	0.039	39	1,126
26	78.52	579	2,143	0.023	23	717
25	77.02	11	39	0.000	0	14
24	76.00	357	1,242	0.013	13	442
23	72.50	898	2,861	0.030	30	1,112
22	68.75	465	1,339	0.014	14	575
21	66.62	326	887	0.009	9	404
20	65.37	180	473	0.005	5	223
19	63.96	503	1,266	0.013	13	623
18	61.46	587	1,369	0.014	14	727
17	57.50	1,017	2,094	0.022	22	1,260
16	52.50	1,029	1,784	0.019	19	1,274
15	48.75	519	782	0.008	8	642
14	46.25	521	712	0.008	7	646
13	42.50	1,051	1,225	0.013	13	1,302
12	37.50	1,062	978	0.010	10	1,316
11	33.91	465	354	0.004	4	575
10	31.41	800	527	0.006	6	990

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9	29.66	190	113	0.001	1	236
8	27.16	934	468	0.005	5	1,157
7	22.50	1,089	383	0.004	4	1,349
6	18.75	549	137	0.001	1	680
5	16.25	807	154	0.002	2	999
4	13.50	972	131	0.001	1	1,203
3	11.00	650	59	0.001	1	805
2	7.50	1,633	73	0.001	1	2,022
1	2.50	1,644	9	0.000	0	2,036
Generic 12" x 12" Ju	112.00	10	72	0.001	1	12
Alcatel-Lucent RRH2x	112.00	317	2,293	0.024	24	393
Alcatel-Lucent 1900	112.00	180	1,300	0.014	14	223
Nokia 2.5G MAA - AAH	112.00	311	2,245	0.024	24	385
Commscope NNVV-65B-R	112.00	232	1,677	0.018	18	288
DragonWave Horizon C	110.00	32	222	0.002	2	39
DragonWave A-ANT-23G	110.00	15	105	0.001	1	19
Generic Flat Side Ar	110.00	560	3,910	0.041	41	694
DragonWave A-ANT-11G	110.00	95	665	0.007	7	118
Powerwave Allgon 702	102.00	13	80	0.001	1	16
CCI TPX-070821	102.00	45	273	0.003	3	56
Kaelus DBCT108F1V92-	102.00	83	505	0.005	5	103
Powerwave Allgon LGP	102.00	85	512	0.005	5	105
Raycap DC6-48-60-0-8	102.00	33	199	0.002	2	41
Raycap DC6-48-60-18-	102.00	66	397	0.004	4	81
Ericsson RRUS 4426 B	102.00	145	879	0.009	9	180
Ericsson RRUS 4478 B	102.00	180	1,088	0.011	11	223
Ericsson RRUS 4478 B	102.00	178	1,079	0.011	11	221
Ericsson RRUS-11 (50	102.00	150	909	0.010	10	186
Ericsson RRUS 32 B2	102.00	159	963	0.010	10	197
Ericsson RRUS-32 (77	102.00	231	1,399	0.015	15	286
Powerwave Allgon 777	102.00	105	636	0.007	7	130
Quintel QS66512-2	102.00	222	1,345	0.014	14	275
CCI OPA-65R-LCUU-H6	102.00	146	884	0.009	9	181
CCI OPA-65R-LCUU-H8	102.00	88	533	0.006	6	109
CCI TPA-65R-LCUUUU-H	102.00	82	494	0.005	5	101
Kathrein Scala 80010	102.00	195	1,182	0.012	12	242
Generic Round Sector	102.00	900	5,451	0.058	57	1,115
Kathrein Scala 80010	102.00	115	694	0.007	7	142
Kathrein Scala Smart	90.00	10	47	0.001	0	12
Ericsson KRY 112 144	90.00	33	158	0.002	2	41
Ericsson KRY 112 489	90.00	46	221	0.002	2	57
Ericsson Radio 4449	90.00	222	1,062	0.011	11	275
Ericsson AIR32 B66Aa	90.00	397	1,898	0.020	20	491
Ericsson Air 3246 B6	90.00	540	2,584	0.027	27	669
RFS APXVAARR24_43-U-	90.00	384	1,836	0.019	19	475
Flat Low Profile Pla	87.00	1,500	6,734	0.071	71	1,858
Nokia AirScale RRH 4	80.00	106	406	0.004	4	131
Alcatel-Lucent B25 R	80.00	159	610	0.006	6	197
Alcatel-Lucent B13 R	80.00	173	665	0.007	7	215
Alcatel-Lucent B66A	80.00	201	771	0.008	8	249
Raycap RVZDC-6627-PF	80.00	32	123	0.001	1	40
Amphenol Antel BXA-1	80.00	77	294	0.003	3	95
Amphenol Antel BXA-7	80.00	68	261	0.003	3	84
Commscope JAHH-65B-R	80.00	380	1,456	0.015	15	470
Round Low Profile PI	80.00	1,500	5,750	0.061	60	1,858
Scala 840 10212	77.00	7	24	0.000	0	8
TX RX Systems 421-86	77.00	15	54	0.001	1	19
Stand Offs	77.00	150	535	0.006	6	186
Round Side Arms	70.00	300	894	0.009	9	372
RFS APXV18-206517S-C	70.00	79	236	0.002	2	98
Generic Radio/ODU	60.00	30	67	0.001	1	37
Scala 840 10212	60.00	7	15	0.000	0	8
Stand Off	60.00	75	167	0.002	2	93
Radio Waves SP2-4.7	60.00	26	58	0.001	1	32

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Radio Waves SP2-4.7	60.00	22	49	0.001	1	27
		33,162	94,720	1.000	995	41,068

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
34	107.50	311	2,079	0.022	22	268
33	103.50	187	1,162	0.012	12	161
32	101.00	186	1,107	0.012	12	160
31	97.50	369	2,051	0.022	22	318
30	92.50	377	1,900	0.020	20	325
29	88.50	284	1,317	0.014	14	245
28	86.00	191	839	0.009	9	165
27	82.50	910	3,695	0.039	39	784
26	78.52	579	2,143	0.023	23	499
25	77.02	11	39	0.000	0	9
24	76.00	357	1,242	0.013	13	308
23	72.50	898	2,861	0.030	30	774
22	68.75	465	1,339	0.014	14	400
21	66.62	326	887	0.009	9	281
20	65.37	180	473	0.005	5	155
19	63.96	503	1,266	0.013	13	434
18	61.46	587	1,369	0.014	14	506
17	57.50	1,017	2,094	0.022	22	877
16	52.50	1,029	1,784	0.019	19	886
15	48.75	519	782	0.008	8	447
14	46.25	521	712	0.008	7	449
13	42.50	1,051	1,225	0.013	13	906
12	37.50	1,062	978	0.010	10	915
11	33.91	465	354	0.004	4	400
10	31.41	800	527	0.006	6	689
9	29.66	190	113	0.001	1	164
8	27.16	934	468	0.005	5	805
7	22.50	1,089	383	0.004	4	938
6	18.75	549	137	0.001	1	473
5	16.25	807	154	0.002	2	695
4	13.50	972	131	0.001	1	837
3	11.00	650	59	0.001	1	560
2	7.50	1,633	73	0.001	1	1,407
1	2.50	1,644	9	0.000	0	1,416
Generic 12" x 12" Ju	112.00	10	72	0.001	1	9
Alcatel-Lucent RRH2x	112.00	317	2,293	0.024	24	273
Alcatel-Lucent 1900	112.00	180	1,300	0.014	14	155
Nokia 2.5G MAA - AAH	112.00	311	2,245	0.024	24	268
Commscope NNVV-65B-R	112.00	232	1,677	0.018	18	200
DragonWave Horizon C	110.00	32	222	0.002	2	27
DragonWave A-ANT-23G	110.00	15	105	0.001	1	13
Generic Flat Side Ar	110.00	560	3,910	0.041	41	482
DragonWave A-ANT-11G	110.00	95	665	0.007	7	82
Powerwave Allgon 702	102.00	13	80	0.001	1	11
CCI TPX-070821	102.00	45	273	0.003	3	39
Kaelus DBCT108F1V92-	102.00	83	505	0.005	5	72
Powerwave Allgon LGP	102.00	85	512	0.005	5	73
Raycap DC6-48-60-0-8	102.00	33	199	0.002	2	28
Raycap DC6-48-60-18-	102.00	66	397	0.004	4	57
Ericsson RRUS 4426 B	102.00	145	879	0.009	9	125
Ericsson RRUS 4478 B	102.00	180	1,088	0.011	11	155
Ericsson RRUS 4478 B	102.00	178	1,079	0.011	11	154
Ericsson RRUS-11 (50	102.00	150	909	0.010	10	129
Ericsson RRUS 32 B2	102.00	159	963	0.010	10	137

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Ericsson RRUS-32 (77	102.00	231	1,399	0.015	15	199
Powerwave Allgon 777	102.00	105	636	0.007	7	90
Quintel QS66512-2	102.00	222	1,345	0.014	14	191
CCI OPA-65R-LCUU-H6	102.00	146	884	0.009	9	126
CCI OPA-65R-LCUU-H8	102.00	88	533	0.006	6	76
CCI TPA-65R-LCUUUU-H	102.00	82	494	0.005	5	70
Kathrein Scala 80010	102.00	195	1,182	0.012	12	168
Generic Round Sector	102.00	900	5,451	0.058	57	775
Kathrein Scala 80010	102.00	115	694	0.007	7	99
Kathrein Scala Smart	90.00	10	47	0.001	0	9
Ericsson KRY 112 144	90.00	33	158	0.002	2	28
Ericsson KRY 112 489	90.00	46	221	0.002	2	40
Ericsson Radio 4449	90.00	222	1,062	0.011	11	191
Ericsson AIR32 B66Aa	90.00	397	1,898	0.020	20	342
Ericsson Air 3246 B6	90.00	540	2,584	0.027	27	465
RFS APXVAARR24_43-U-	90.00	384	1,836	0.019	19	331
Flat Low Profile Pla	87.00	1,500	6,734	0.071	71	1,292
Nokia AirScale RRH 4	80.00	106	406	0.004	4	91
Alcatel-Lucent B25 R	80.00	159	610	0.006	6	137
Alcatel-Lucent B13 R	80.00	173	665	0.007	7	149
Alcatel-Lucent B66A	80.00	201	771	0.008	8	173
Raycap RVZDC-6627-PF	80.00	32	123	0.001	1	28
Amphenol Antel BXA-1	80.00	77	294	0.003	3	66
Amphenol Antel BXA-7	80.00	68	261	0.003	3	59
Commscope JAHH-65B-R	80.00	380	1,456	0.015	15	327
Round Low Profile PI	80.00	1,500	5,750	0.061	60	1,292
Scala 840 10212	77.00	7	24	0.000	0	6
TX RX Systems 421-86	77.00	15	54	0.001	1	13
Stand Offs	77.00	150	535	0.006	6	129
Round Side Arms	70.00	300	894	0.009	9	258
RFS APXV18-206517S-C	70.00	79	236	0.002	2	68
Generic Radio/ODU	60.00	30	67	0.001	1	26
Scala 840 10212	60.00	7	15	0.000	0	6
Stand Off	60.00	75	167	0.002	2	65
Radio Waves SP2-4.7	60.00	26	58	0.001	1	22
Radio Waves SP2-4.7	60.00	22	49	0.001	1	19
		33,162	94,720	1.000	995	28,573

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.73	-0.92	0.00	-80.81	0.00	80.81	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.031
5.00	-35.71	-0.92	0.00	-76.22	0.00	76.22	1,541.15	408.73	1,115.51	908.35	0.01	-0.01	0.030
10.00	-34.90	-0.93	0.00	-71.61	0.00	71.61	1,517.03	397.17	1,053.29	868.61	0.02	-0.02	0.029
12.00	-33.70	-0.93	0.00	-69.75	0.00	69.75	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.028
12.00	-33.70	-0.93	0.00	-69.75	0.00	69.75	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.028
15.00	-32.70	-0.93	0.00	-66.96	0.00	66.96	1,491.77	385.60	992.85	829.06	0.05	-0.03	0.027
17.50	-32.02	-0.93	0.00	-64.63	0.00	64.63	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.027
17.50	-32.02	-0.93	0.00	-64.63	0.00	64.63	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.044
20.00	-30.67	-0.93	0.00	-62.30	0.00	62.30	1,465.38	374.03	934.19	789.74	0.10	-0.05	0.042
25.00	-29.52	-0.94	0.00	-57.64	0.00	57.64	1,437.85	362.47	877.32	750.71	0.15	-0.06	0.040
29.33	-29.28	-0.94	0.00	-53.58	0.00	53.58	1,413.10	352.45	829.52	717.20	0.22	-0.08	0.039
30.00	-28.29	-0.94	0.00	-52.96	0.00	52.96	1,409.19	350.90	822.24	712.04	0.23	-0.08	0.038
32.83	-27.71	-0.93	0.00	-50.31	0.00	50.31	1,130.07	270.32	634.36	571.86	0.28	-0.09	0.046
35.00	-26.40	-0.93	0.00	-48.28	0.00	48.28	1,119.12	266.46	616.37	558.15	0.32	-0.10	0.044
40.00	-25.10	-0.92	0.00	-43.64	0.00	43.64	1,081.75	257.56	575.90	521.31	0.43	-0.11	0.042
45.00	-24.45	-0.92	0.00	-39.05	0.00	39.05	1,044.38	248.66	536.82	485.73	0.56	-0.13	0.040
47.50	-23.81	-0.91	0.00	-36.76	0.00	36.76	1,025.69	244.21	517.79	468.42	0.63	-0.14	0.038
47.50	-23.81	-0.91	0.00	-36.76	0.00	36.76	1,025.69	244.21	517.79	468.42	0.63	-0.14	0.038
50.00	-22.53	-0.89	0.00	-34.48	0.00	34.48	1,007.01	239.76	499.10	451.41	0.71	-0.15	0.037
55.00	-21.27	-0.87	0.00	-30.03	0.00	30.03	969.64	230.87	462.76	418.35	0.87	-0.16	0.034
60.00	-20.35	-0.85	0.00	-25.67	0.00	25.67	932.27	221.97	427.79	386.54	1.04	-0.17	0.031
62.92	-19.73	-0.84	0.00	-23.18	0.00	23.18	910.47	216.78	408.02	368.57	1.15	-0.18	0.029
65.00	-19.50	-0.84	0.00	-21.43	0.00	21.43	894.90	213.07	394.19	355.99	1.23	-0.18	0.027
65.75	-19.10	-0.83	0.00	-20.80	0.00	20.80	664.38	162.37	305.14	269.42	1.26	-0.19	0.030
67.50	-18.52	-0.81	0.00	-19.36	0.00	19.36	658.03	160.03	296.43	262.98	1.33	-0.19	0.029
67.50	-18.52	-0.81	0.00	-19.36	0.00	19.36	658.03	160.03	296.43	262.98	1.33	-0.19	0.029
70.00	-16.94	-0.77	0.00	-17.33	0.00	17.33	648.81	156.70	284.20	253.83	1.43	-0.20	0.026
75.00	-16.50	-0.75	0.00	-13.49	0.00	13.49	629.79	150.02	260.52	235.80	1.64	-0.21	0.023
77.00	-16.27	-0.75	0.00	-11.98	0.00	11.98	618.88	147.35	251.33	227.55	1.72	-0.21	0.021
77.04	-15.56	-0.72	0.00	-11.95	0.00	11.95	618.65	147.30	251.14	227.38	1.73	-0.21	0.012
77.04	-15.56	-0.72	0.00	-11.95	0.00	11.95	618.65	147.30	251.14	227.38	1.73	-0.21	0.022
80.00	-11.09	-0.56	0.00	-9.81	0.00	9.81	602.07	143.35	237.86	215.29	1.86	-0.21	0.018
85.00	-10.86	-0.55	0.00	-7.01	0.00	7.01	574.04	136.68	216.24	195.61	2.08	-0.22	0.015
85.00	-10.86	-0.55	0.00	-7.01	0.00	7.01	574.04	136.68	216.24	195.61	2.08	-0.22	0.055
87.00	-8.65	-0.46	0.00	-5.91	0.00	5.91	562.83	134.01	207.88	188.00	2.17	-0.22	0.047
90.00	-6.16	-0.35	0.00	-4.53	0.00	4.53	546.01	130.00	195.65	176.87	2.32	-0.23	0.037
95.00	-5.70	-0.33	0.00	-2.78	0.00	2.78	517.98	123.33	176.08	159.08	2.57	-0.25	0.028
100.00	-5.47	-0.32	0.00	-1.14	0.00	1.14	489.95	116.66	157.55	142.23	2.84	-0.26	0.019
100.00	-5.47	-0.32	0.00	-1.14	0.00	1.14	459.24	137.77	149.89	150.79	2.84	-0.26	0.020
102.00	-1.25	-0.08	0.00	-0.51	0.00	0.51	459.24	137.77	149.89	150.79	2.95	-0.26	0.006
105.00	-0.87	-0.06	0.00	-0.28	0.00	0.28	459.24	137.77	149.89	150.79	3.12	-0.27	0.004
110.00	0.00	-0.05	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	3.40	-0.27	0.000

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.25	-0.92	0.00	-79.49	0.00	79.49	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.028
5.00	-24.84	-0.92	0.00	-74.90	0.00	74.90	1,541.15	408.73	1,115.51	908.35	0.01	-0.01	0.027
10.00	-24.28	-0.92	0.00	-70.30	0.00	70.30	1,517.03	397.17	1,053.29	868.61	0.02	-0.02	0.026
12.00	-23.45	-0.92	0.00	-68.45	0.00	68.45	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.025
12.00	-23.45	-0.92	0.00	-68.45	0.00	68.45	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.025
15.00	-22.75	-0.92	0.00	-65.68	0.00	65.68	1,491.77	385.60	992.85	829.06	0.05	-0.03	0.025
17.50	-22.28	-0.92	0.00	-63.37	0.00	63.37	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.024
17.50	-22.28	-0.92	0.00	-63.37	0.00	63.37	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.040
20.00	-21.34	-0.92	0.00	-61.06	0.00	61.06	1,465.38	374.03	934.19	789.74	0.09	-0.04	0.038
25.00	-20.54	-0.92	0.00	-56.44	0.00	56.44	1,437.85	362.47	877.32	750.71	0.15	-0.06	0.037
29.33	-20.37	-0.93	0.00	-52.44	0.00	52.44	1,413.10	352.45	829.52	717.20	0.21	-0.08	0.035
30.00	-19.68	-0.92	0.00	-51.82	0.00	51.82	1,409.19	350.90	822.24	712.04	0.22	-0.08	0.034
32.83	-19.28	-0.92	0.00	-49.21	0.00	49.21	1,130.07	270.32	634.36	571.86	0.27	-0.09	0.041
35.00	-18.37	-0.91	0.00	-47.21	0.00	47.21	1,119.12	266.46	616.37	558.15	0.32	-0.10	0.040
40.00	-17.46	-0.90	0.00	-42.65	0.00	42.65	1,081.75	257.56	575.90	521.31	0.43	-0.11	0.038
45.00	-17.01	-0.90	0.00	-38.14	0.00	38.14	1,044.38	248.66	536.82	485.73	0.55	-0.13	0.035
47.50	-16.56	-0.89	0.00	-35.89	0.00	35.89	1,025.69	244.21	517.79	468.42	0.62	-0.13	0.034
47.50	-16.56	-0.89	0.00	-35.89	0.00	35.89	1,025.69	244.21	517.79	468.42	0.62	-0.13	0.034
50.00	-15.68	-0.87	0.00	-33.67	0.00	33.67	1,007.01	239.76	499.10	451.41	0.69	-0.14	0.033
55.00	-14.80	-0.85	0.00	-29.31	0.00	29.31	969.64	230.87	462.76	418.35	0.85	-0.16	0.030
60.00	-14.16	-0.83	0.00	-25.05	0.00	25.05	932.27	221.97	427.79	386.54	1.02	-0.17	0.027
62.92	-13.72	-0.82	0.00	-22.62	0.00	22.62	910.47	216.78	408.02	368.57	1.12	-0.18	0.026
65.00	-13.57	-0.82	0.00	-20.91	0.00	20.91	894.90	213.07	394.19	355.99	1.20	-0.18	0.024
65.75	-13.29	-0.81	0.00	-20.29	0.00	20.29	664.38	162.37	305.14	269.42	1.23	-0.18	0.026
67.50	-12.89	-0.79	0.00	-18.88	0.00	18.88	658.03	160.03	296.43	262.98	1.30	-0.19	0.025
67.50	-12.89	-0.79	0.00	-18.88	0.00	18.88	658.03	160.03	296.43	262.98	1.30	-0.19	0.025
70.00	-11.79	-0.75	0.00	-16.90	0.00	16.90	648.81	156.70	284.20	253.83	1.40	-0.19	0.023
75.00	-11.48	-0.74	0.00	-13.16	0.00	13.16	629.79	150.02	260.52	235.80	1.60	-0.20	0.019
77.00	-11.32	-0.73	0.00	-11.69	0.00	11.69	618.88	147.35	251.33	227.55	1.69	-0.20	0.018
77.04	-10.82	-0.70	0.00	-11.66	0.00	11.66	618.65	147.30	251.14	227.38	1.69	-0.20	0.011
77.04	-10.82	-0.70	0.00	-11.66	0.00	11.66	618.65	147.30	251.14	227.38	1.69	-0.20	0.019
80.00	-7.72	-0.55	0.00	-9.57	0.00	9.57	602.07	143.35	237.86	215.29	1.82	-0.21	0.016
85.00	-7.55	-0.54	0.00	-6.84	0.00	6.84	574.04	136.68	216.24	195.61	2.04	-0.21	0.013
85.00	-7.55	-0.54	0.00	-6.84	0.00	6.84	574.04	136.68	216.24	195.61	2.04	-0.21	0.048
87.00	-6.01	-0.45	0.00	-5.76	0.00	5.76	562.83	134.01	207.88	188.00	2.13	-0.22	0.041
90.00	-4.28	-0.34	0.00	-4.42	0.00	4.42	546.01	130.00	195.65	176.87	2.27	-0.23	0.033
95.00	-3.97	-0.32	0.00	-2.71	0.00	2.71	517.98	123.33	176.08	159.08	2.52	-0.25	0.025
100.00	-3.81	-0.31	0.00	-1.12	0.00	1.12	489.95	116.66	157.55	142.23	2.78	-0.26	0.016
100.00	-3.81	-0.31	0.00	-1.12	0.00	1.12	459.24	137.77	149.89	150.79	2.78	-0.26	0.016
102.00	-0.87	-0.08	0.00	-0.50	0.00	0.50	459.24	137.77	149.89	150.79	2.89	-0.26	0.005
105.00	-0.60	-0.05	0.00	-0.27	0.00	0.27	459.24	137.77	149.89	150.79	3.05	-0.26	0.003
110.00	0.00	-0.05	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	3.32	-0.26	0.000

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

3/25/2019 4:52:58 PM

Customer: AT&T MOBILITY

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	26.17	0.00	39.73	0.00	0.00	1938.02	85.00	0.91
0.9D + 1.0W	26.14	0.00	29.78	0.00	0.00	1909.81	85.00	0.88
1.2D + 1.0Di + 1.0Wi	9.28	0.00	92.55	0.00	0.00	707.68	85.00	0.38
1.2D + 1.0Ev + 1.0Eh	0.92	0.00	37.73	0.00	0.00	80.81	85.00	0.05
0.9D - 1.0Ev + 1.0Eh	0.92	0.00	26.25	0.00	0.00	79.49	85.00	0.05
1.0D + 1.0W	6.80	0.00	33.16	0.00	0.00	498.76	85.00	0.24

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695_C4_07

3/25/2019 4:52:58 PM

Customer: AT&T MOBILITY

Additional Steel Summary

			Intermediate Connectors				Max Member		
Elev From (ft)	Elev To (ft)	Member	VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Pu (kip)	phiPn (kip)	Ratio
0.00	12.00	(4) SOL-#20 All Thread Bar	245.9	9.6	16.8	0.571	219.5	315.5	0.696
0.00	17.50	(4) PL-PL 6 x 1.25	311.7	7.5	38.3	0.195	280.0	362.0	0.773
12.00	47.50	(4) SOL-#20 All Thread Bar	446.2	13.4	16.8	0.796	313.3	330.5	0.948
47.50	67.50	(4) SOL-#20 All Thread Bar	504.2	15.1	16.8	0.900	222.0	330.5	0.672
67.50	77.04	(4) SOL-#20 All Thread Bar	504.2	15.1	16.8	0.900	152.5	330.5	0.461
77.00	85.00	(4) PL-PL 5" x 1.25"	591.4	14.2	38.3	0.371	126.3	287.7	0.439

			Upper Termination Connectors				Lower Termination Connectors					
Elev From (ft)	Elev To (ft)	Member	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	12.00	(4) SOL-#20 All Thread Bar	0.0	12.0	0	0	0.000	0.0	12.0	0	0	0.000
0.00	17.50	(4) PL-PL 6 x 1.25	239.4	38.3	7	10	0.626	0.0	38.3	0	0	0.000
12.00	47.50	(4) SOL-#20 All Thread Bar	0.0	12.0	0	0	0.000	0.0	12.0	0	0	0.000
47.50	67.50	(4) SOL-#20 All Thread Bar	0.0	12.0	0	0	0.000	0.0	12.0	0	0	0.000
67.50	77.04	(4) SOL-#20 All Thread Bar	64.7	12.0	6	7	0.771	0.0	12.0	0	0	0.000
77.00	85.00	(4) PL-PL 5" x 1.25"	0.0	38.3	0	8	0.000	0.0	38.3	0	8	0.000

Site Name: Hrfr-South, CT
 Site Number: 302481
 Engineering Number: OAA739695
 Engineer: adam.pittman
 Date: 3/25/2019

Design Base Loads (Factored) - Design per TIA-222-G Standard

Moment (Overturning) (M_u): 1938.0 k-ft
 Shear (V_u): 26.2 k
 Axial (P_u): 39.7 k
 k

Tower Type (GT / SST / MP):

MP

Length / Width of Block: 6.0 9.0 ft

Thickness of Block: 6.0 ft

Block Height Above Ground: 0.5 ft

Depth Below Ground Surface to Water Table (w): 99.0 ft

Unit Weight of Concrete: 150.0 pcf

Unit Weight of Soil: 125.0 pcf

Unit Weight of Water: 62.4 pcf

Ultimate Compressive Bearing Pressure: 10000 psf

Capacity Increase (Due to Transient Loads): 1.00

Pullout Angle: 30.0 degrees

Rod Diameter: 1.00 in

Rod Ultimate Strength: 105 ksi

Original Rod Net Area: 0.76 in²

New Rod Net Area: 0.78 in²

Number of Rods: 18

Diameter of Cored Hole: 2.00 in

Ultimate Grout / Rock Interface Bond Strength: 200 psi

Ultimate Grout / Rock Anchor Interface Bond Strength: 600 psi

Overall Rod Embedment Length: 72 in

Rod Exposure Above Lock Off Nut in Foundation: 60 in

Rod Embedment Circle: 96 in

Free Stress Length: 0 in

Soil / Concrete Friction Coefficient: 0.44

Rock Anchor Design Plastic or Elastic: Elastic

Ignore Pullout Weight Resistance (Y/N): Y

Volume of Concrete: 324.0 ft³

Compressive Bearing Resistance: 424.1 k

Soil Strength Reduction Factor (ϕ_s): 0.75

Factored Nominal Moment Capacity per Leg ($\phi_s M_n$): 2108.0 k

Factored Nominal Uplift Capacity per Leg ($\phi_s T_n$): 1150.8 k

Factored Nominal Compressive Capacity per Leg ($\phi_s P_n$): 318.1 k

Factored Nominal Shear Capacity per Leg ($\phi_s V_n$): 660.0 k

M_u : 2095.0 k-ft

T_u : 0.0 k

P_u : 48.6 k

V_u : 26.2 k

$T_u / \phi_s T_n + M_u / \phi_s M_n$: 0.99 Result: OK

$P_u / \phi_s P_n$: 0.15 Result: OK

$V_u / \phi_s V_n$: 0.04 Result: OK

Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	3000	psi
Vertical Steel Rebar Size #:	11	
Vertical Steel Rebar Area:	1.56	in ²
# of Vertical Steel Rebars:	78	Minimum # of vertical rebar met
Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Horizontal Tie / Stirrup Size #:	5	
Horizontal Tie / Stirrup Area:	0.31	in ²
Horizontal Tie / Stirrup Spacing:	11.0	in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	60	ksi
Rod Bearing Plate Diameter:	8.0	in
Rod Bearing Plate Thickness:	1.0	in
Anchor Bearing Plate Yield Strength:	36	ksi
Anchor Rod Nut Diameter:	2.02	in
Rebar Cage Diameter:	82.0	in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90	ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.75	ACI318-05 - 9.3.2.3
Strength Compression/Bearing Reduction Factor ($\phi_{P/B}$):	0.65	ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000	ksi
Design Moment (M_u):	2095.0	k-ft
Factored Nominal Moment Capacity ($\phi_B M_n$):	21953.2	k-ft - ACI318-05 - 10.2
$M_u/\phi_B M_n$:	0.10	Result: OK
Design Shear (V_u):	518.9	k
Factored Nominal Shear Capacity ($\phi_V V_n$):	502.8	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	1.03	Result: Acceptable Overstress
Design Tension (T_u):	0.0	k
Factored Nominal Tension Capacity ($\phi_T T_n$):	6570.7	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	39.7	k
Factored Nominal Compression Capacity ($\phi_P P_n$):	6161.7	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.01	Result: OK

Base Plate & Anchor Rod Analysis

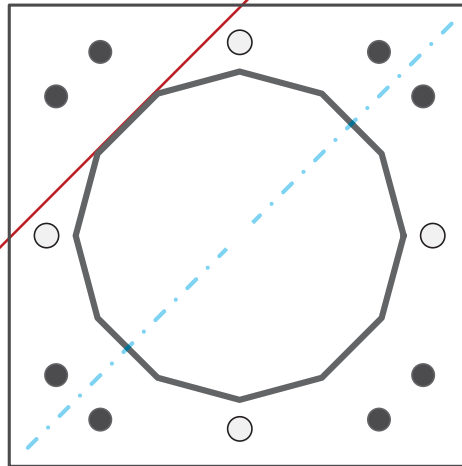
Pole Dimensions		
Number of Sides	12	-
Diameter	30	in
Thickness	0.25	in
Orientation Offset		°

Base Reactions		
Moment, Mu	1938.0	k-ft
Axial, Pu	39.7	k
Shear, Vu	26.2	k
Neutral Axis	45	°

Report Capacities		
Component	Capacity	Result
Base Plate	89%	Pass
Anchor Rods	45%	Pass
Dwyidag	66%	Pass

Base Plate		
Shape	Square	-
Width	44	in
Thickness	2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	0	in
Orientation Offset		°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	1539.9	k
Bending Stress, ϕMn	1726.7	k

Dwyidag Reinforcement		
Quantity	4	-
Bar Size	#20	in
Diameter, ϕ	2.5	in
Bracket Type	Angle	-
Circle	36.88	in
Orientation Offset	0	°
Applied Force, Pu	257.8	k
Dwyidag Bar, ϕPn	392.7	k



Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, ϕ	2 1/4	in
Bolt Circle	44	in
Grade	A615-75	-
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	115.4	k
Anchor Rods, ϕPn	259.8	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	26.2	839.3	0.43
Anchor Rod Forces	26.2	839.3	0.43
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1098.7	0.57
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in ²	in ²	in ⁴	#	in ⁴
Pole	23.0996	1.9250	0.0403		2556.06
Bolt	3.9761	3.2477	0.8393	4.5	6294.24
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		3345.94
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	44	in
Thickness, t	2	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	32.187	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	44	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	115.4	k
Applied Shear, Vu	0.8	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.444	OK
Interaction Capacity	0.450	OK

External Base Plate		
Chord Length AA	31.975	in
Additional AA	0.000	in
Section Modulus, Z	31.975	in ³
Applied Moment, Mu	1539.9	k-ft
Bending Capacity, φMn	1726.7	k-ft
Capacity, Mu/φMn	0.892	OK
Chord Length AB	30.908	in
Additional AB	0.000	in
Section Modulus, Z	30.908	in ³
Applied Moment, Mu	1416.7	k-ft
Bending Capacity, φMn	1669.0	k-ft
Capacity, Mu/φMn	0.849	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in ³
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in ³
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Dywidag Reinforcement		
Dywidag Quantity, N	4	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	36.88	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	257.8	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.657	OK

Base/Flange Plate	Plate Type	Flange @ 100.0 ft
	Pole Diameter	12.75 in
	Pole Thickness	0.375 in
	Plate Diameter	28.5 in
	Plate Thickness	1.5 in
	Plate Fy	36 ksi
	Weld Length	0.25 in
	ϕ_s Resistance	60.83 k-in
	Applied	31.55 k-in
	Stiffeners	#

Code Rev. **G**

Date **3/25/2019**
 Engineer **adam.pittman**
 Site # **302481**
 Carrier **AT&T MOBILITY**

Moment **38.4 k-ft**
 Axial **6.0 k**

Required Flange Thickness:

1.08 in OK

Bolts	#	12
	Bolt Circle	26 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.0625 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	ϕ_s Resistance	54.52 k
	Applied	5.40 k
Reinforcement	#	0
Extra Bolts	#	0

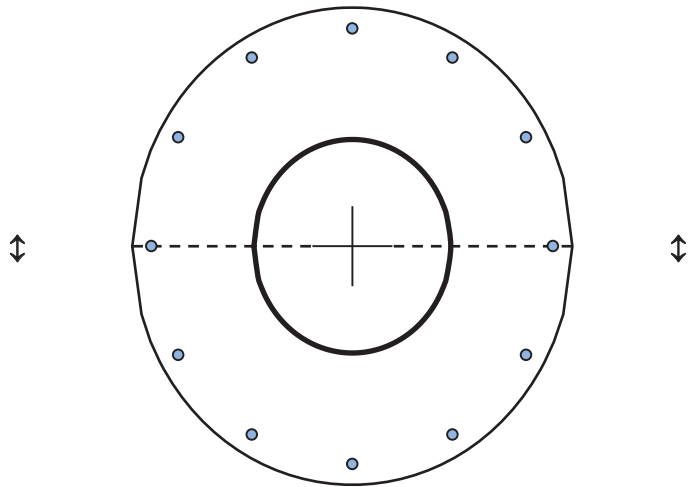


Plate Stress Ratio:

0.52 (Pass)

Bolt Stress Ratio:

0.10 (Pass)



8618 Westwood Center Drive, Suite 315, Vienna, VA 22182
703.276.1100 • 703.276.1169 fax
info@sitesafe.com • www.sitesafe.com



**Empire Telecom on behalf of
AT&T Mobility, LLC
Site FA – 10034968
USID – 59334
Site ID – CT1011 (MRCTB032197-
MRCTB032202-MRCTB032304)
Site Name – HARTFORD SOUTH**

**2 MOUNTAIN RAOD
HARTFORD, CT 06107**

Latitude: N41-43-35.67
Longitude: W72-42-29.40
Structure Type: Monopole

Report generated date: March 28, 2019
Report by: Zyotty Thamsil
Customer Contact: - New England Compliance

**AT&T Mobility, LLC will be compliant when the
remediation recommended in Section 5.2 or
other appropriate remediation is implemented.**

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1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Max Cumulative Simulated RFE Level on the Ground	<1% General Public Limit
Compliant per FCC Rules and Regulations?	Will Be Compliant
Compliant per AT&T Mobility, LLC's Policy?	Yes

The following documents were provided by the client and were utilized to create this report:

RFDS: 10034968.PM201.RFDS.CT1011

CD's: 10034968.AE201.FINAL S&S CDS.6C7C5G NR UPGRADE.REV 0.181012.CT1011

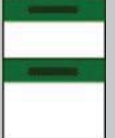








RF Powers Used: Max RRH Power

1.2 Fall Arrest Anchor Point Summary










Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	N	N/A	N

1.3 Signage Summary

a. Existing AT&T Signage

AT&T Signage Locations									
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2	Warning	Warning 2	Barriers
Access Point(s)									
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

b. Proposed AT&T Signage

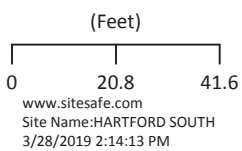
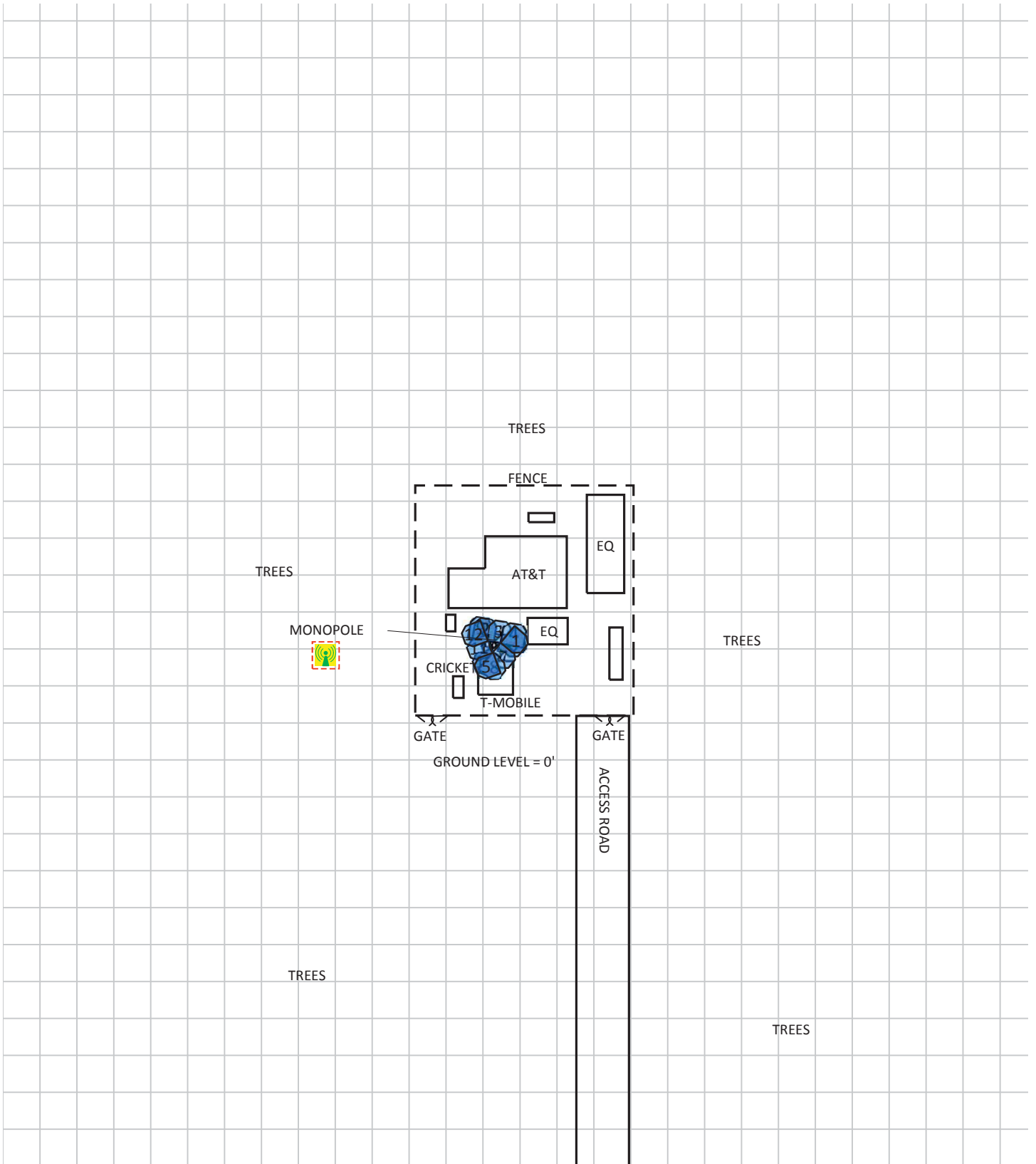
AT&T Signage Locations									
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2B	Warning	Warning 2	Barriers
Access Point(s)						1			
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- RF Exposure Diagram – All Sector Detailed View
- RF Exposure Diagram – Elevation View

Site Scale Map For: HARTFORD SOUTH



Carrier Identification

- AT&T MOBILITY LLC (Blue circle)
- VERIZON WIRELESS (Red circle)
- T-MOBILE (Pink circle)
- SPRINT (Yellow circle)
- UNKNOWN CARRIER (White circle)

Sign Legend

- Caution 1 (Yellow antenna icon)
- Caution 2 (Yellow antenna icon)
- Notice 2 (Light blue antenna icon)
- Notice 1 (Dark blue antenna icon)
- Warning (Orange antenna icon)
- Warning 2 (Orange antenna icon)
- Info 1 (Green 'i' icon)
- Info 2 (Green 'i' icon)
- RSP (RF Safety Plan icon)

Barrier (Solid red line)

Proposed Barriers/ Signs (Dashed red line)



3 Antenna Inventory

The following antenna inventory was obtained by the customer and was utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (AGL)	MDT	EDT
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	130	82	4.6	40	TPO	Watt	0	1	566.3	11.51	100.7'	0°	8°
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	LTE	130	86	4.6	80	TPO	Watt	0	1	1754.2	13.41	100.7'	0°	7°
2	AT&T MOBILITY LLC	CCI Antennas OPA-65R-LCUU-H8	Panel	722	LTE	10	63.9	7.7	80	TPO	Watt	0	1	1346.1	12.26	99.1'	0°	3°
2	AT&T MOBILITY LLC	CCI Antennas OPA-65R-LCUU-H8	Panel	2300	LTE	10	63.7	7.7	100	TPO	Watt	0	1	2924.2	14.66	99.1'	0°	2°
3	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	763	LTE	10	67.9	8	160	TPO	Watt	0	1	3623.4	13.55	99'	0°	2°
3	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	850	LTE	10	66	8	80	TPO	Watt	0	1	2128.6	14.25	99'	0°	2°
3	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	850	LTE	10	66	8	80	TPO	Watt	0	1	2128.6	14.25	99'	0°	2°
3	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	1900	LTE	10	66	8	160	TPO	Watt	0	1	6153.5	15.85	99'	0°	7°
4	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	737	LTE	10	61.9	8	60	TPO	Watt	0	1	1361.9	13.56	99'	0°	2°
4	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2100	LTE	10	65.2	8	240	TPO	Watt	0	1	5973.3	13.96	99'	0°	7°
5	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	250	82	4.6	40	TPO	Watt	0	1	566.3	11.51	100.7'	0°	10°
5	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	LTE	250	86	4.6	80	TPO	Watt	0	1	1754.2	13.41	100.7'	0°	5°
6	AT&T MOBILITY LLC	CCI Antennas OPA-65R-LCUU-H8	Panel	722	LTE	130	63.9	7.7	80	TPO	Watt	0	1	1346.1	12.26	99.1'	0°	3°
6	AT&T MOBILITY LLC	CCI Antennas OPA-65R-LCUU-H8	Panel	2300	LTE	130	63.7	7.7	100	TPO	Watt	0	1	2924.2	14.66	99.1'	0°	4°
7	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	763	LTE	130	67.9	8	160	TPO	Watt	0	1	3623.4	13.55	99'	0°	9°
7	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	850	LTE	130	66	8	80	TPO	Watt	0	1	2128.6	14.25	99'	0°	9°
7	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	850	LTE	130	66	8	80	TPO	Watt	0	1	2128.6	14.25	99'	0°	9°
7	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	1900	LTE	130	66	8	160	TPO	Watt	0	1	6153.5	15.85	99'	0°	5°
8	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	737	LTE	130	61.9	8	60	TPO	Watt	0	1	1361.9	13.56	99'	0°	9°
8	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2100	LTE	130	65.2	8	240	TPO	Watt	0	1	5973.3	13.96	99'	0°	5°
9	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	10	82	4.6	40	TPO	Watt	0	1	566.3	11.51	100.7'	0°	10°
9	AT&T MOBILITY LLC	Powerwave 7770	Panel	1900	LTE	10	86	4.6	80	TPO	Watt	0	1	1754.2	13.41	100.7'	0°	7°
10	AT&T MOBILITY LLC	CCI Antennas OPA-65R-LCUU-H8	Panel	722	LTE	250	63.9	7.7	80	TPO	Watt	0	1	1346.1	12.26	99.1'	0°	3°
10	AT&T MOBILITY LLC	CCI Antennas OPA-65R-LCUU-H8	Panel	2300	LTE	250	63.7	7.7	100	TPO	Watt	0	1	2924.2	14.66	99.1'	0°	2°
11	AT&T MOBILITY LLC	Kathrein-Scala 800-10966	Panel	763	LTE	250	67.9	8	160	TPO	Watt	0	1	3623.4	13.55	99'	0°	10°



Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (AGL)	MDT	EDT
	(PROPOSED)																	
11	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	850	LTE	250	66	8	80	TPO	Watt	0	1	2128.6	14.25	99'	0°	10°
11	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	850	LTE	250	66	8	80	TPO	Watt	0	1	2128.6	14.25	99'	0°	10°
11	AT&T MOBILITY LLC (PROPOSED)	Kathrein-Scala 800-10966	Panel	1900	LTE	250	66	8	160	TPO	Watt	0	1	6153.5	15.85	99'	0°	7°
12	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	737	LTE	250	61.9	8	60	TPO	Watt	0	1	1361.9	13.56	99'	0°	10°
12	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2100	LTE	250	65.2	8	240	TPO	Watt	0	1	5973.3	13.96	99'	0°	7°

NOTE: X, Y and Z indicate relative position of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna to the origin height above the main site level unless otherwise indicated. The distance to the bottom of the antenna is calculated by subtracting half of the length of the antenna from the antenna centerline. Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

Note: The 2100 MHz LTE technology is being added to an existing antenna.

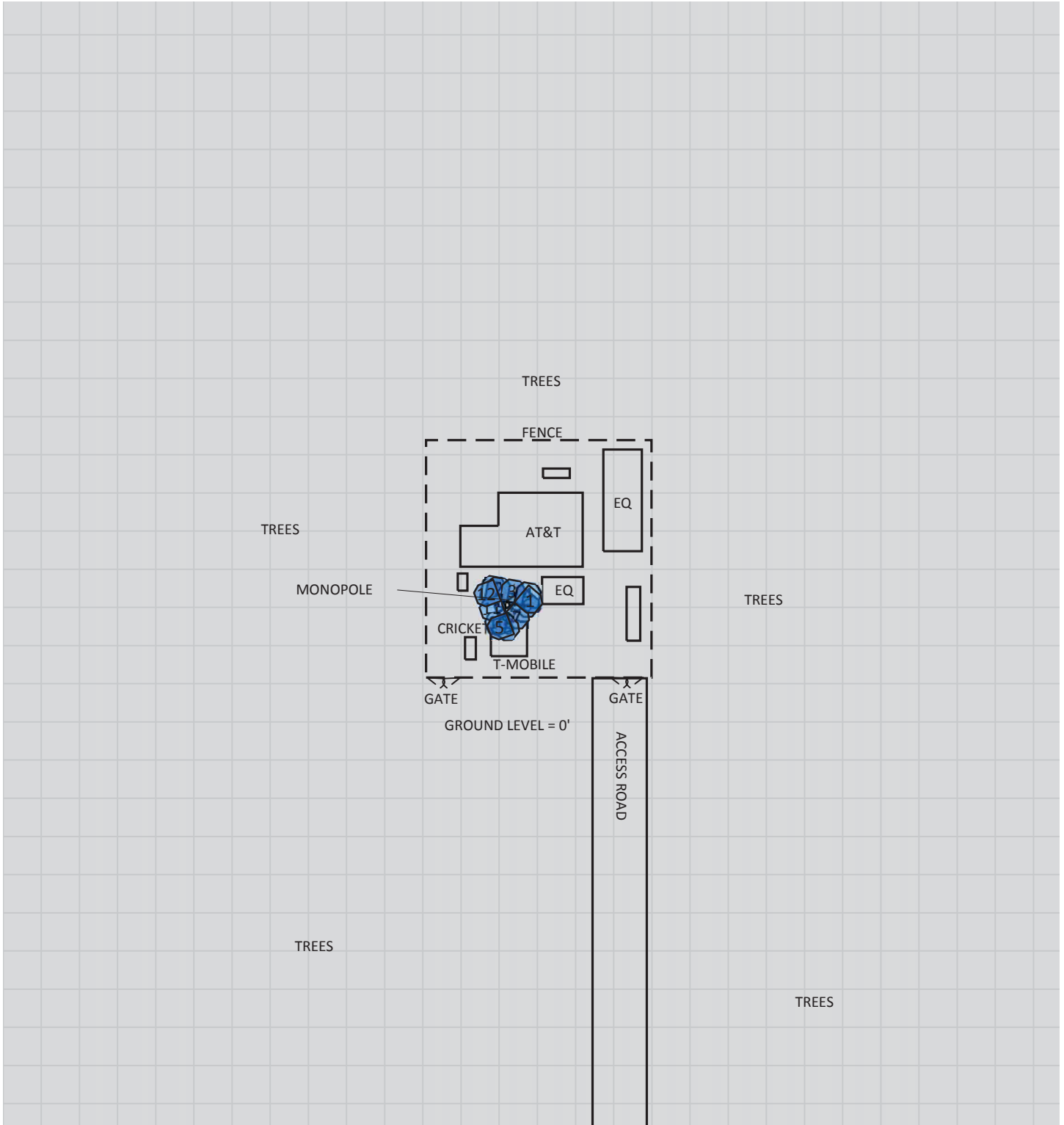
4 Emission Predictions

In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas. The total analyzed elevations in the below RF Exposure Simulations are listed below.

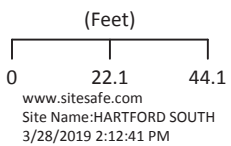
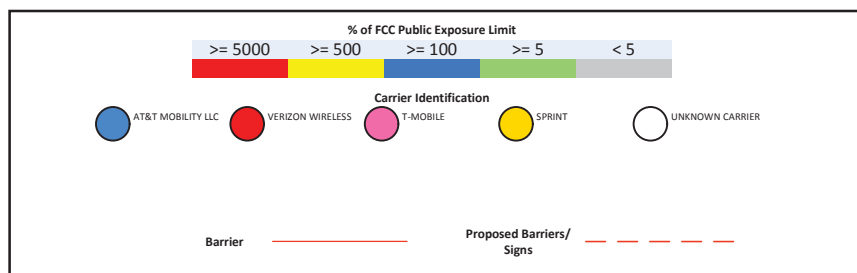
- Ground Level = 0'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: HARTFORD SOUTH

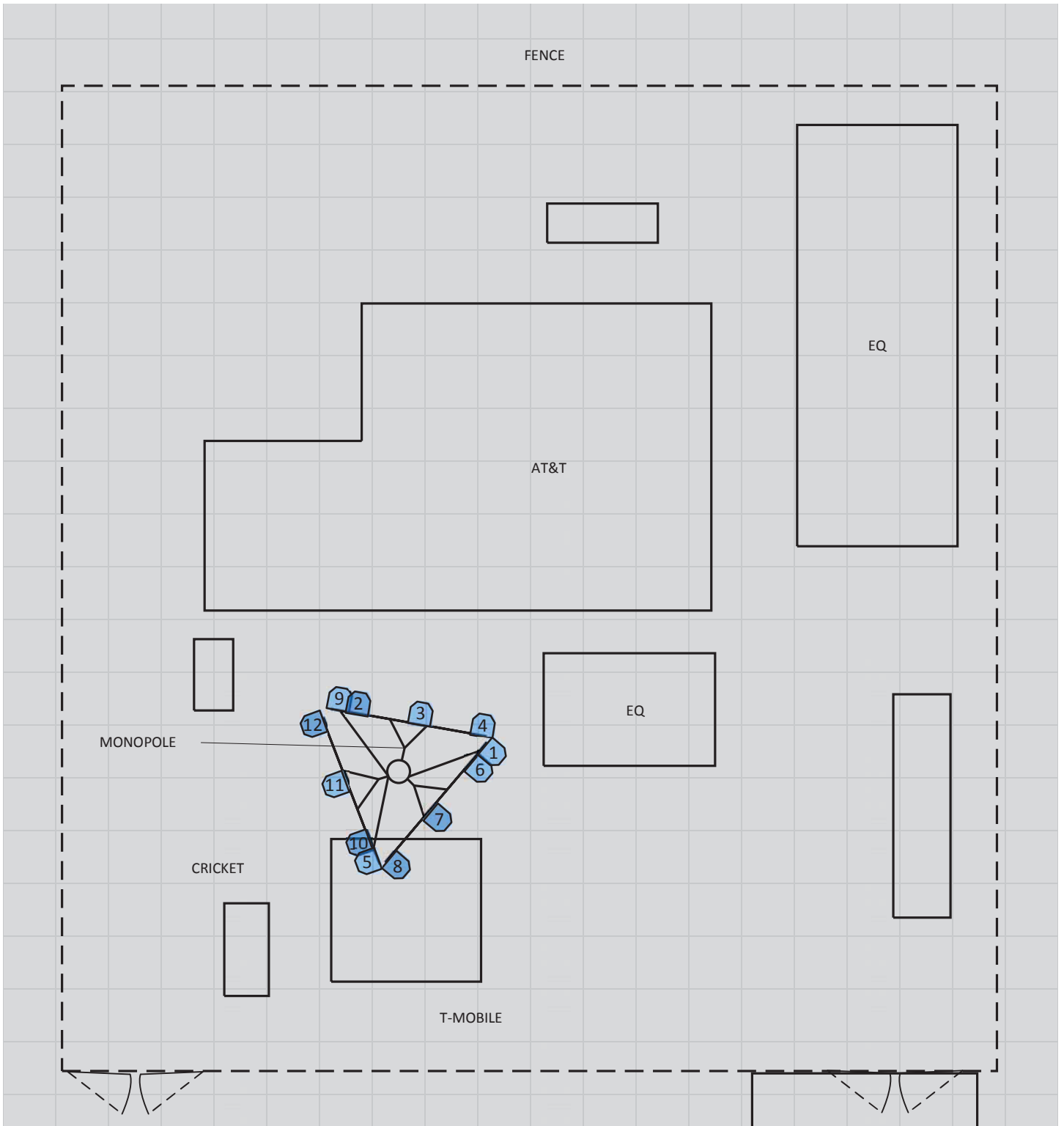


% of FCC Public Exposure Limit
Spatial average 0' - 6'

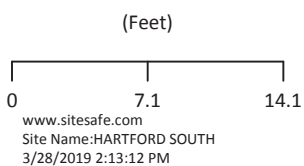
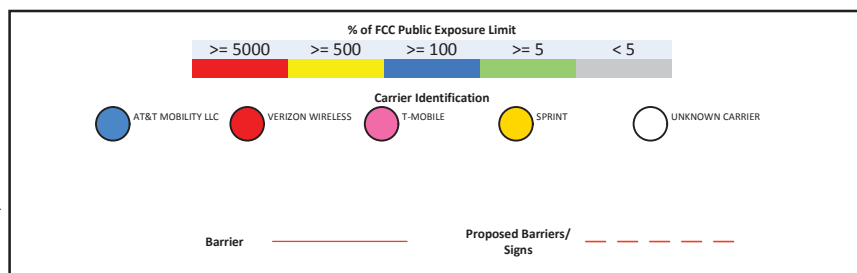


Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: HARTFORD SOUTH All Sector Detailed View

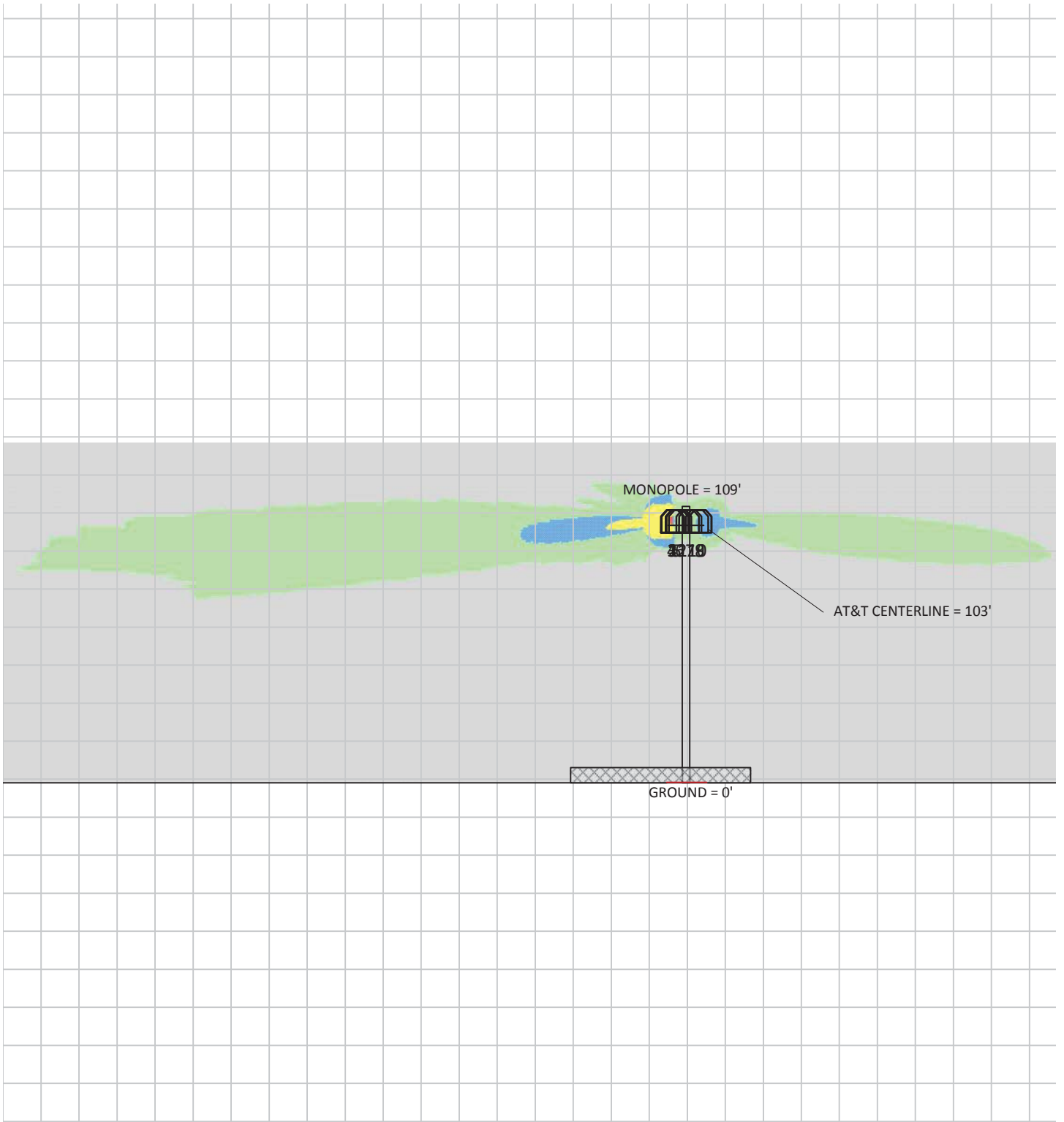


% of FCC Public Exposure Limit
Spatial average 0' - 6'

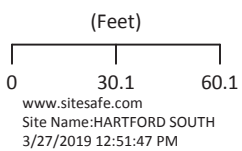
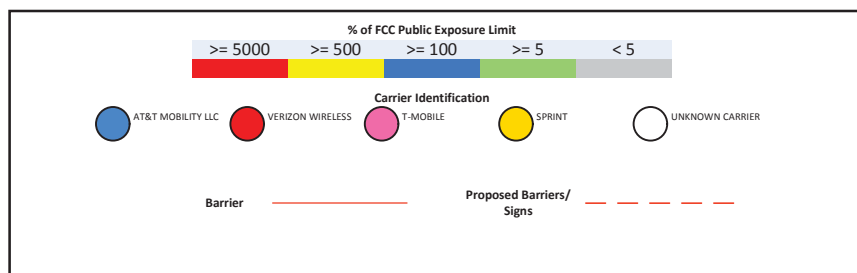


Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: HARTFORD SOUTH Elevation View



% of FCC Public Exposure Limit



Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Single Level (0)

5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Monopole Access Location

(1) Yellow Caution 2B sign(s) required.

Notes:

- Data concerning all other carriers on site was unavailable and therefore not included in this report.
- Signage may already be in place. Sitesafe does not have record of any existing signage because there were no previous visits or data supplied regarding them. All remediation is based on a worst-case scenario.
- Any existing signage that conflicts with the proposed signage in this report should be removed per AT&T Signage Posting Rules.

6 Reviewer Certification


The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Sitesafe, LLC., in Vienna, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio-frequency Radiation; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Zyotty Thamsil.

March 28, 2019

 A handwritten signature in black ink, appearing to read "Young Min Kim".
Young Min Kim



Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 (“OET Bulletin 65”), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

FCC regulations define two separate tiers of exposure limits: Occupational or “Controlled environment” and General Public or “Uncontrolled environment”. The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

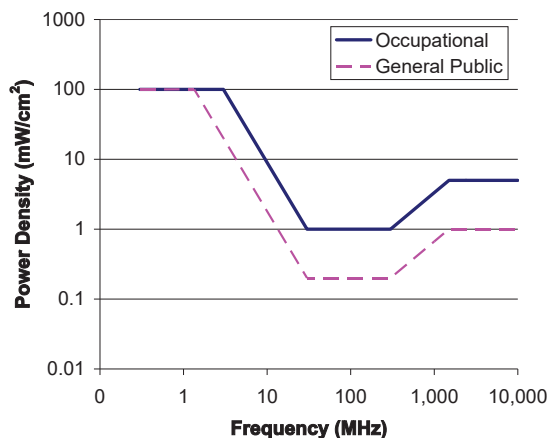
Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:

FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density



Limits for Occupational/Controlled Exposure (MPE)

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

Limits for General Population/Uncontrolled Exposure (MPE)

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

f = frequency in MHz

*Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lock Out Tag Out procedure aimed to control the unexpected energization or start up of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3 foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram: Section 4 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. Gray represents areas more than 20 times below the most conservative exposure limit.
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone.**
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers.**
- Yellow represents areas predicted to exceed Occupational MPE limits. Yellow areas should be accessible only to RF trained workers able to assess current exposure levels.
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur, but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.

Gain (of an antenna) – The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antennas as compared to an omni directional antenna.

General Population/Uncontrolled Environment – Defined by the FCC, as an area where exposure to RF energy may occur to persons who are **unaware** of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The maximum levels of RF exposure a person may be exposed to without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are aware of the



potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of Radio Frequency radiation on Humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency (RF) – The frequencies of electromagnetic waves which are used for radio communications. Approximately 3 kHz to 300 GHz.

Radio Frequency Exposure (RFE) – The amount of RF power density that a person is or might be exposed to.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average power density an average sized human will be exposed to at a location.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.

Appendix F – References

The following references can be followed for further information about RF Health and Safety.

Sitesafe, LLC.

<http://www.sitesafe.com>

FCC Radio Frequency Safety

<http://www.fcc.gov/encyclopedia/radio-frequency-safety>

National Council on Radiation Protection and Measurements (NCRP)

<http://www.ncrponline.org>

Institute of Electrical and Electronics Engineers, Inc., (IEEE)

<http://www.ieee.org>

American National Standards Institute (ANSI)

<http://www.ansi.org>

Environmental Protection Agency (EPA)

<http://www.epa.gov/radtown/wireless-tech.html>

National Institutes of Health (NIH)

<http://www.niehs.nih.gov/health/topics/agents/emf/>

Occupational Safety and Health Agency (OSHA)

<http://www.osha.gov/SLTC/radiofrequencyradiation/>

International Commission on Non-Ionizing Radiation Protection (ICNIRP)

<http://www.icnirp.org>

World Health Organization (WHO)

<http://www.who.int/peh-emf/en/>

National Cancer Institute

<http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>

American Cancer Society (ACS)

http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?sitearea=PED

European Commission Scientific Committee on Emerging and Newly Identified Health Risks

http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf

Fairfax County, Virginia Public School Survey

<http://www.fcps.edu/fts/safety-security/RFEESurvey/>

UK Health Protection Agency Advisory Group on Non-ionising Radiation

http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368

Norwegian Institute of Public Health

<http://www.fhi.no/dokumenter/545eea7147.pdf>

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please select a different Service Type or visit a [Post Office™](#) location to complete your shipment.

Create Label	Preferences	Shipping History	Address Book	SCAN Form
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Account # 161958927

Label Details

Label Number:
[9405503699300475640243](#)

SCAN® Form: 9475703699300310741756

Terms
Acceptance Cutoff: 04/11/2019 4:30 PM
Acceptance Time: 04/12/2019 9:03 AM
Scheduled Date: 04/13/2019 11:59 PM
Delivery Status: Delivered, In/At Mailbox
 2019-04-15 09:14:00.0

Label Actions

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Return Address:
 JULIA COUGHLIN
 EMPIRE TELECOM
 16 ESQUIRE RD
 N BILLERICA, MA 01862-2527
 ne_sa_deliverable@empiretelecomm.com

Delivery Address:
 THE HONORABLE LUKE A BRONIN
 OFFICE OF THE MAYOR
 550 MAIN ST RM 200
 HARTFORD, CT 06103-2913

Package:
 Ship Date: 04/11/19
 Value: \$50.00
 From: 01862

Service:
 Priority Mail® 2-Day
 Flat Rate Envelope
 USPS Tracking®

Transaction Number: 461465172

Transaction Type: Label

Payment Method: AMEX-1004

Payment Status: Account Charged

Postage Cost	\$7.35
USPS Tracking®	Free
Label Total:	\$7.35
Order Total:	\$36.75

Timestamp	Message
04-11-2019 14:48:38	LABEL PRINTED
04-11-2019 14:47:55	Getting Payment
04-11-2019 14:47:33	Setting Payment

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Label Details

Label Number:
[9405503699300475640281](#)

SCAN® Form: [9475703699300310741756](#)

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Scheduled Date: 04/13/2019 11:59 PM
Delivery Status: [Delivered, In/At Mailbox](#)
 2019-04-15 09:14:00.0

Label Actions

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[Request A Service Refund](#)

Return Address:
 JULIA COUGHLIN
 EMPIRE TELECOM
 16 ESQUIRE RD
 N BILLERICA, MA 01862-2527
 ne_sa_deliverable@empiretelecomm.com

Delivery Address:
 JOHN COLLINS
 ACTING BUILDING OFFICIAL
 550 MAIN ST
 HARTFORD, CT 06103-2913

Package:
 Ship Date: 04/11/19
 Value: \$50.00
 From: 01862

Service:
 Priority Mail® 2-Day
 Flat Rate Envelope
 USPS Tracking®

Transaction Number: [461465172](#)

Transaction Type: Label

Payment Method: AMEX-1004

Payment Status: Account Charged

Postage Cost: \$7.35
 USPS Tracking®: Free

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04-11-2019 14:47:55	Getting Payment
04-11-2019 14:47:33	Setting Payment

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Feedback

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Create Label	Preferences	Shipping History	Address Book	SCAN Form
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Label Details

Label Number:
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SCAN® Form: 9475703699300310741756

Terms
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Acceptance Time: 04/12/2019 9:03 AM
Scheduled Date: 04/13/2019 11:59 PM
Delivery Status: Delivered, In/At Mailbox
 2019-04-15 13:00:00.0

Label Actions
2019-04-15 13:00:00.0

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[Request A Service Refund](#)

Return Address:
JULIA COUGHLIN
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA, MA 01862-2527
ne_sa_deliverable@empiretelecomm.com

Delivery Address:
CHIEF OF ZONING ADMINISTRATION
250 CONSTITUTION PLZ
FL 4
HARTFORD, CT 06103-1800

Package:
Ship Date: 04/11/19
Value: \$50.00
From: 01862

Service:
Priority Mail® 2-Day
Flat Rate Envelope
USPS Tracking®

Transaction Number: 461465172

Transaction Type: Label

Payment Method: AMEX-1004

Payment Status: Account Charged

Postage Cost	\$7.35
USPS Tracking®	Free
Label Total:	\$7.35
Order Total:	\$36.75

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04-11-2019 14:47:55	Getting Payment
04-11-2019 14:47:33	Setting Payment

[Back to Shipping History](#)

Feedback

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please select a different Service Type or visit a [Post Office™](#) location to complete your shipment.

Create Label	Preferences	Shipping History	Address Book	SCAN Form
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Label Details

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SCAN® Form: [9475703699300310741756](#)

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Delivery Status: [Delivered, Front Desk/Reception/Mail Room](#)
 2019-04-15 10:34:00.0

Label Actions
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[Ship Again](#)

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[Request A Service Refund](#)

Return Address:
 JULIA COUGHLIN
 EMPIRE TELECOM
 16 ESQUIRE RD
 N BILLERICA, MA 01862-2527
 ne_sa_deliverable@empiretelecomm.com

Delivery Address:
 SPRINGWHICH CELLULAR TOWER HOLDINGS LLC
 909 CHESTNUT ST
 RM 36M1
 SAINT LOUIS, MO 63101-2065

Package:
 Ship Date: 04/11/19
 Value: \$50.00
 From: 01862

Service:
 Priority Mail® 2-Day
 Flat Rate Envelope
 USPS Tracking®

Transaction Number: 461465172

Transaction Type: Label

Payment Method: AMEX-1004

Payment Status: Account Charged

Postage Cost: \$7.35
USPS Tracking®: Free

Label Total: \$7.35
Order Total: \$36.75

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04-11-2019 14:49:10	LABEL PRINTED
04-11-2019 14:47:55	Getting Payment
04-11-2019 14:47:33	Setting Payment

[Back to Shipping History](#)

Feedback

First-Class Package International Service® is temporarily unavailable on Click-N-Ship®. Please select a different Service Type or visit a [Post Office™](#) location to complete your shipment.

Create Label	Preferences	Shipping History	Address Book	SCAN Form
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Account # 161958927

Label Details

Label Number:
[9405503699300475640267](#)

SCAN® Form: 9475703699300310741756

Terms
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Acceptance Time: 04/12/2019 9:03 AM
Scheduled Date: 04/12/2019 11:59 PM
Delivery Status: Delivered, In/At Mailbox
 2019-04-13 10:13:00.0

Label Actions
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[Ship Again](#)

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[File an insurance claim](#)
[Request A Service Refund](#)

Return Address:
 JULIA COUGHLIN
 EMPIRE TELECOM
 16 ESQUIRE RD
 N BILLERICA, MA 01862-2527
 ne_sa_deliverable@empiretelecomm.com

Delivery Address:
 RYAN TIERNEY
 AMERICAN TOWER COMRPORATON
 10 PRESIDENTIAL WAY
 WOBURN, MA 01801-1053

Package:
 Ship Date: 04/11/19
 Value: \$50.00
 From: 01862

Service:
 Priority Mail® 1-Day
 Flat Rate Envelope
 USPS Tracking®

Transaction Number: 461465172

Transaction Type: Label

Payment Method: AMEX-1004

Payment Status: Account Charged

Postage Cost	\$7.35
USPS Tracking®	Free
Label Total:	\$7.35
Order Total:	\$36.75

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04-11-2019 14:47:55	Getting Payment
04-11-2019 14:47:33	Setting Payment

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Feedback