February 28, 2019

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

Re:	**Notice of Exempt Modification – Antenna Swap**
Property Address:	**323 ROUTE 81 KILLINGWORTH, CT (the "Property")**
Applicant:	**New Cingular Wireless PCS, LLC ("AT&T")**

Dear Ms. Bachman:

On behalf of AT&T, 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).

AT&T currently maintains a wireless telecommunications facility consisting of nine (9) wireless telecommunication antennas at an antenna center line height of 133-feet on an existing 140 foot-self-support tower, owned Valley Shore Emergency Communications Inc., and located on the Killingworth town Property (the "Tower"). On February 18th, 1987 a decision and order by the Connecticut Sitting Council who directed that a Certificate of Environmental Compatibility and Public Need as provided by Section 16-50K of the General Statues of Connecticut (CGS) was issued to Metro Mobile PCS of Hartford Inc., for the construction, operation, and of a cellular mobile phone telecommunication tower and associated equipment in the Killingworth Connecticut subject to conditions. SEE ATTACHED.

The Connecticut Siting Council (the "Council") approved AT&T's use of the Tower in the following subsequent prior decisions;

EM-CING-070-081203- New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 323 Route 81, **Killingworth**, Connecticut.

EM-AT&T-070-121211 – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 323 Route 81, **Killingworth**, Connecticut.

AT&T now intends to REMOVE (6) PANEL ANTENNAS, INSTALL (6) PANEL ANTENNAS, REMOVE (3) RRUS-11, INSTALL (3) 441S B2S INSTALL (3) B2/B66A 8843 INSTALL (3) BS/12 4449 INSTALL (1) DC/FIBER DC6-48-60-18-8C-EV AND (1) DC ONLY DC6-48-60-0-8C-EV W/ (1) FIBER AND (4) DC CABLES.

In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Catherine Iino, First Selectwoman and the Assessor Michael Bekech of the Town of Killingworth, Town Hall, 323 Route 81, Killingworth, CT 06419; owner of the land. A copy of this letter is also being sent to Valley Shore Emergency Communications Inc., Director: Richard Darin 315 Spencer Plains Rd, Westbrook, CT 06498; owner of the tower.

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)

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 133-foot level of the 140-foot self-support tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels 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 the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitutes an exempt modification under R.C.S.A. §16-50j-72(b)(2).

Sincerely,

David Barbagallo

David Barbagallo | Real Estate Specialist
Smartlink
85 Rangeway Rd Bldg. #3 Suite 102
North Billerica | MA 01862-2105
(M) 860-681-7708
(F) 801-346-2771
David.barbagallo@smartlinkllc.com

Enclosures
CC w/enclosures:
Catherine Iino, First Selectwoman and the Assessor of the Town of Killingworth Michael Bekech; owner of the property.
Valley Shore Emergency Communications Inc., Director: Richard Darin tower owner

DOCKET NO. 69

AN APPLICATION OF METRO MOBILE CTS OF HARTFORD, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF FACILITIES TO PROVIDE CELLULAR SERVICE IN THE TOWNS OF KILLINGWORTH, MIDDLETOWN, AND OLD SAYBROOK, CONNECTICUT.	:	CONNECTICUT SITING COUNCIL
	:	February 18, 1987

D E C I S I O N A N D O R D E R

Pursuant to the foregoing opinion, the Connecticut Siting Council (Council) hereby directs that a Certificate of Environmental Compatibility and Public Need as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of Hartford, Inc., for the construction, operation, and maintenance of a cellular mobile phone telecommunication tower and associated equipment in the town of Killingworth, Connecticut. The proposed Middletown and Old Saybrook sites are rejected without prejudice.

The facility shall be constructed, operated, and maintained as specified in the Council's record on this matter, and subject to the following conditions.

1. The tower, including antennas, shall be no taller than necessary to provide the proposed service, and in no event shall exceed 173 feet.
2. A fence not lower than eight feet shall surround the tower and its associated equipment building.
3. Unless necessary to comply with condition number four, below, no lights shall be installed on the tower.
4. The facility shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.

5. The certificate holder shall comply with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies, providing for development and management (D&M) plans and reporting. The D&M plan shall provide plans for evergreen screening around the fenced perimeter.
6. No construction activities shall take place outside the hours of 7:00 A.M. to 7:00 P.M., Monday through Saturday.
7. The certificate holder or its successor shall notify the Council if and when directional antennas or any equipment other than that listed in the D&M plan is added to the facility.
8. The certificate holder or its successor shall permit public or private entities to share space on the tower, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
9. If the tower does not provide or permanently cease to provide cellular service following completion of construction, this Decision and Order shall be void and the tower and all associated equipment shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.
10. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision.

11. The certificate holder shall comply with any future radiofrequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this Decision shall continue to be in compliance with such standards.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Decision and Order be served on each person listed below. A notice of the issuance shall be published in the Hartford Courant, the New Haven Register, the Middletown Press, and the Clinton Recorder.

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut, this 18th day of February 1987.

Council Members	Vote Cast		
	Middletown	Killingworth	Old Saybrook
Gloria Dibble Pond Chairperson	No	Yes	No
Commissioner John Downey Designee: Commissioner Peter G. Boucher	No	Yes	Yes
Commissioner Stanley Pac Designee: Brian Emerick	No	Yes	Yes
Owen L. Clark	No	Yes	Yes
Fred J. Doocy	No	Yes	No
Mortimer A. Gelston	No	Yes	No
James G. Horsfall	No	Yes	No
William Smith		Absent	
Colin C. Tait	No	No	No

STATE OF CONNECTICUT)
: ss. New Britain, February 18, 1987
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

John C. Kelly
Executive Director
Connecticut Siting Council

I certify that a copy of the opinion and decision and order have been forwarded by mail to all parties of record on 2-19-87.

ATTEST:

Stanley J. Modzelesky
Executive Assistant
Connecticut Siting Council

323

Search Results

Parcel Details

Return To Search Results

323 ROUTE 81

KILLINGWORTH TOWN OF

323 ROUTE 81
KILLINGWORTH, CT 06419

Parcel ID: 24-07
Lot Size (ac): 42.5
Sale Price: $0

Links

Parcel Details

Photo

Google Map

Abutters

g Bird's Eye

Scroll

Parcel

move Parcel

About

Layers

Identify

Email Map Link

Copy and paste the following string into an email to link to the current map vie

Close

Print Map

Size:

Scale: 1" = ft. Title:

Close Print

Delivered
Tuesday 3/12/2019 at 11:47 am

DELIVERED

Signed for by: M.OTOOLE

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Smartlink LLC
Dave Barbagallo
265 Lincoln St
KENSINGTON, CT US 06037
860 681-7708

TO

Town of Killingworth
Catherine Lino First Select woman
KILLINGWORTH, CT US 06419
860 663-1765

Ask FedEx

Shipment Facts

DELIVERY ATTEMPTS
1

DELIVERED TO
Receptionist/Front Desk

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
1 lbs / 0.45 kgs

TERMS
Shipper

PACKAGING
FedEx Pak

SPECIAL HANDLING SECTION
Deliver Weekday

STANDARD TRANSIT
3/14/2019 by 4:30 pm

SHIP DATE
Mon 3/11/2019

Travel History

Local

ACTUAL DELIVERY
Tue 3/12/2019 11:47 am

Expand History

Delivered
Tuesday 3/12/2019 at 11:47 am

DELIVERED

Signed for by: M.OTOOLE

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Smartlink LLC
Dave Barbagallo
265 Lincoln St
KENSINGTON, CT US 06037
860 681-7708

TO

Town of Killingworth
Michael Bekech Assessor
KILLINGWORTH, CT US 06419
860 663-1765

Ask FedEx

Shipment Facts

DELIVERY ATTEMPTS
1

DELIVERED TO
Receptionist/Front Desk

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
1 lbs / 0.45 kgs

TERMS
Shipper

PACKAGING
FedEx Pak

SPECIAL HANDLING SECTION
Deliver Weekday

STANDARD TRANSIT
3/14/2019 by 4:30 pm

SHIP DATE
Mon 3/11/2019

Travel History

Local

ACTUAL DELIVERY
Tue 3/12/2019 11:47 am

Expand History

Delivered
Tuesday 3/12/2019 at 12:47 pm

DELIVERED

Signed for by: P.JACKSON

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Smartlink LLC
Dave Barbagallo
265 Lincoln St
KENSINGTON, CT US 06037
860 681-7708

TO

Valley Shore Emergency Communicatio
Richard Darin
WESTBROOK, CT US 06498
860 399-7921

Ask FedEx

Shipment Facts

DELIVERY ATTEMPTS
1

DELIVERED TO
Receptionist/Front Desk

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
0.5 lbs / 0.23 kgs

TERMS
Shipper

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

STANDARD TRANSIT
3/14/2019 by 8:00 pm

SHIP DATE
Mon 3/11/2019

Travel History

Local

ACTUAL DELIVERY
Tue 3/12/2019 12:47 pm

Expand History

SHEET INDEX

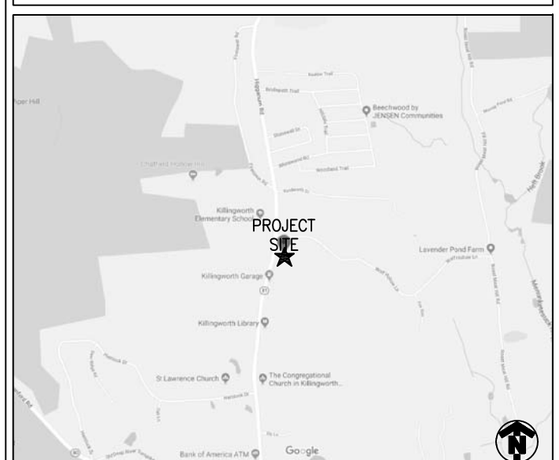
NO.	DESCRIPTION
T1	TITLE SHEET
C1	GENERAL NOTES
C2	OVERALL & ENLARGED SITE PLAN
C3	ELEVATION VIEW
C4	ANTENNA ORIENTATION PLAN
C5	EQUIPMENT DETAILS
C5A	EQUIPMENT DETAILS
C6	PLUMBING DIAGRAM
C7	GROUNDING DETAILS

DRIVING DIRECTIONS

FROM 550 COCHITUATE RD.:

GET ON I-90 WEST/MASSACHUSETTS TURNPIKE FROM SPEEN STREET. HEAD NORTHEAST TOWARD SPEEN STREET. TURN RIGHT TOWARD SPEEN STREET. TURN RIGHT ONTO COCHITUATE ROAD. USE THE RIGHT LANE TO TAKE THE RAMP TO I-90/MASSPIKE/SPRINGFIELD/BOSTON. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-90 WEST/MASSACHUSETTS TURNPIKE/WORCESTER/SPRINGFIELD AND MERGE ONTO I-90 WEST/MASSACHUSETTS TURNPIKE. CONTINUE ON I-90 WEST/MASSACHUSETTS TURNPIKE TO YOUR DESTINATION IN HADDAM. TAKE EXIT CT-9 SOUTH. MERGE ONTO I-90 WEST/MASSACHUETTS TURNPIKE. USE THE RIGHT 2 LANES TO TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. CONTINUE ONTO I-84. USE THE LEFT 2 LANES TO TAKE EXIT 57 FOR CT-15 SOUTH TOWARD I-91 SOUTH/CHARTER OAK BRIDGE/NEW YORK CITY. CONTINUE ONTO CT-15 SOUTH. CONTINUE ONTO CT-15 SOUTH/US-5 SOUTH. TAKE EXIT 86 TO MERGE ONTO I-91 SOUTH TOWARD NEW HAVEN/NEW YORK CITY. USE THE LEFT LANE TO TAKE EXIT 22S TO MERGE ONTO CT-9 SOUTH TOWARD MIDDLETOWN/OLD SAYBROOK. TAKE EXIT 9 FOR CT-81 TOWARD KILLINGWORTH/CLINTON. TURN RIGHT ONTO CT-81 SOUTH/KILLINGWORTH ROAD.

LOCATION MAP



at&t

PROJECT

LTE 2C/3C/4C/RETROFIT

SITE NAME

KILLINGWORTH-RTE 81

CELL SITE ID

CTL02045

FA SITE NUMBER

10034999

PACE ID

MRCTB035091/MRCTB035254
MRCTB035289/MRCTB035122

SITE ADDRESS

323 ROUTE 81
KILLINGWORTH, CT 06419

STRUCTURE TYPE

SELF SUPPORT

PROJECT TEAM

smartlink

PROJECT MANAGER

INFINIGY

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

ENGINEER

SCOPE OF WORK (PER LTE RFDS, DATED: 01/23/2019, V4.00):

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED.
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- FACILITY HAS NO PLUMBING OR REFRIGERANTS.
- THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS.
- ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. EQUIPMENT, ANTENNAS/RRU AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.

TOWER SCOPE

- REMOVE (6) PANEL ANTENNAS
- INSTALL (6) PANEL ANTENNAS
- REMOVE (3) RRUS-11
- INSTALL (3) 4415 B25
- INSTALL (3) B2/B66A 8843
- INSTALL (3) B5/12 4449
- INSTALL (1) DC/FIBER DC6-48-60-18-8C-EV AND (1) DC ONLY DC6-48-60-0-8C-EV W/ (1) FIBER AND (4) DC CABLES

GROUND SCOPE

- SWAP DUS WITH 6630
- ADD 2ND 6630 FOR 5G

PROJECT SUMMARY

SITE NAME:	KILLINGWORTH-RET 81	
CELL SITE ID:	CTL02045	
FA SITE #:	10034999	
SITE ADDRESS:	323 ROUTE 81 KILLINGWORTH, CT 06419	
COUNTY:	MIDDLESEX	
SITE COORDINATES: LATITUDE:	41.3694639° N	(NAD 83)
LONGITUDE:	72.5642211° W	(NAD 83)
ELEVATION:	±448'	(AMSL)
RAD CENTER	±133'	(AGL)
LANDLORD:	VALLEY SHORE COMMUNICATIONS INC. P.O. BOX 497 WESTBROOK, CT 06498 (203) 399-2435	
APPLICANT:	AT&T MOBILITY 550 COCHITUATE RD. FRAMINGHAM, MA 01701	
CLIENT REPRESENTATIVE:	SMARTLINK, LLC 85 RANGEWAY RD. SUITE 102 NORTH BILLERICA, MA 01862	
CONTACT:	ED WEISSMAN (917) 528-1857	
ENGINEER:	INFINIGY 1033 WATERVLIET SHAKER ROAD ALBANY, NY 12205	
CONTACT:	ALEX WELLER (518) 690-0790	
BUILDING CODE:	2015 IBC/2018 CONNECTICUT STATE BUILDING CODE (ANSI/TIA-222-G) UNIFORM BUILDING CODE BUILDING OFFICIALS & CODE ADMINISTRATORS UNIFORM MECHANICAL CODE UNIFORM PLUMBING CODE LOCAL BUILDING CODE CITY/COUNTY ORDINANCES	
ELECTRICAL CODE:	NATIONAL ELECTRICAL CODE (LATEST EDITION)	

811 Know what's below. Call before you dig.

TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG
TOLL FREE: 1-800-922-4455 OR www.cbyd.com
CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
JOHN S. STEVENS
24705
02/26/2019
PROFESSIONAL ENGINEER

No.	Submittal / Revision	App'd	Date
1	ISSUED FOR PERMIT	BMM	02/26/19
0	ISSUED FOR REVIEW	BMM	01/31/19

Drawn: BMM Date: 01/31/19
Designed: ASW Date: 01/31/19
Checked: AJD Date: 01/31/19

Project Number: 1106-A0001-C

Project Title:

KILLINGWORTH-RTE 81
CTL02045
FA# 10034999
323 ROUTE 81
KILLINGWORTH, CT 06419

Prepared For: smartlink

Drawing Scale: AS NOTED
Date: 02/26/19

CD

Drawing Title

TITLE PAGE

Drawing Number

T1

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC").
D. AND NFPA 101 (LIFE SAFETY CODE).
E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).

1.2 DEFINITIONS:
A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B: COMPANY: AT&T CORPORATION
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D: CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E: THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.

1.4 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

1.6 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.7 NOTICE TO PROCEED:
A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE AT&T WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

2.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE, POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

2.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

2.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
A. CONTRACTOR SHALL PROCURE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY AT&T TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.

2.5 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

3.1 RECEIPT OF MATERIAL AND EQUIPMENT: CONTRACTOR IS RESPONSIBLE FOR AT&T PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
A. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
B. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
C. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
D. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO AT&T OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
E. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
F. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.

4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

5.1 TESTS AND INSPECTIONS:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL COORDINATE TEST AND INSPECTION SCHEDULES WITH COMPANY'S REPRESENTATIVE WHO MUST BE ON SITE TO WITNESS SUCH TESTS AND INSPECTIONS.

C. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.

D. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.

E. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.

F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.

G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.

A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.

B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.

C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.

E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRISE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.

F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOLID SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HEREINAFTER SPECIFIED.

G. BACKFILLING OF TRENCHES. TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPACTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ROOTS, SOD, RUBBING, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
F	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
T	TRANSFORMER
M	KILOWATT HOUR METER
JB	JUNCTION BOX
PB	PULL BOX TO NEC/TELCO STANDARDS
----------	UNDERGROUND UTILITIES
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION
OR ⊗	GROUND ROD
OR ⊠	GROUND ROD WITH INSPECTION SLEEVE
	GROUND BAR
	120AC DUPLEX RECEPTACLE
G	GROUND CONDUCTOR
	DC POWER AND FIBER OPTIC TRUNK CABLES
	DC POWER CABLES
# / #	REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER

ABBREVIATIONS

CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
MIGB	MASTER ISOLATED GROUND BAR
SST	SELF SUPPORTING TOWER
GPS	GLOBAL POSITIONING SYSTEM
TYP.	TYPICAL
DWG	DRAWING
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
PVC	POLYVINYL CHLORIDE
CAB	CABINET
C	CONDUIT
SS	STAINLESS STEEL
G	GROUND
AWG	AMERICAN WIRE GAUGE
RGS	RIGID GALVANIZED STEEL
AHJ	AUTHORITY HAVING JURISDICTION
TTLNA	TOWER TOP LOW NOISE AMPLIFIER
UNO	UNLESS NOTED OTHERWISE
EMT	ELECTRICAL METALLIC TUBING
AGL	ABOVE GROUND LEVEL

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JOHN S. STEVENS
34795
02/26/2019
PROFESSIONAL ENGINEER

No.	Submittal / Revision	App'd	Date
1	ISSUED FOR PERMIT	BMM	02/26/19
0	ISSUED FOR REVIEW	BMM	01/31/19

Drawn: BMM Date: 01/31/19
Designed: ASW Date: 01/31/19
Checked: AJD Date: 01/31/19

Project Number: 1106-A0001-C

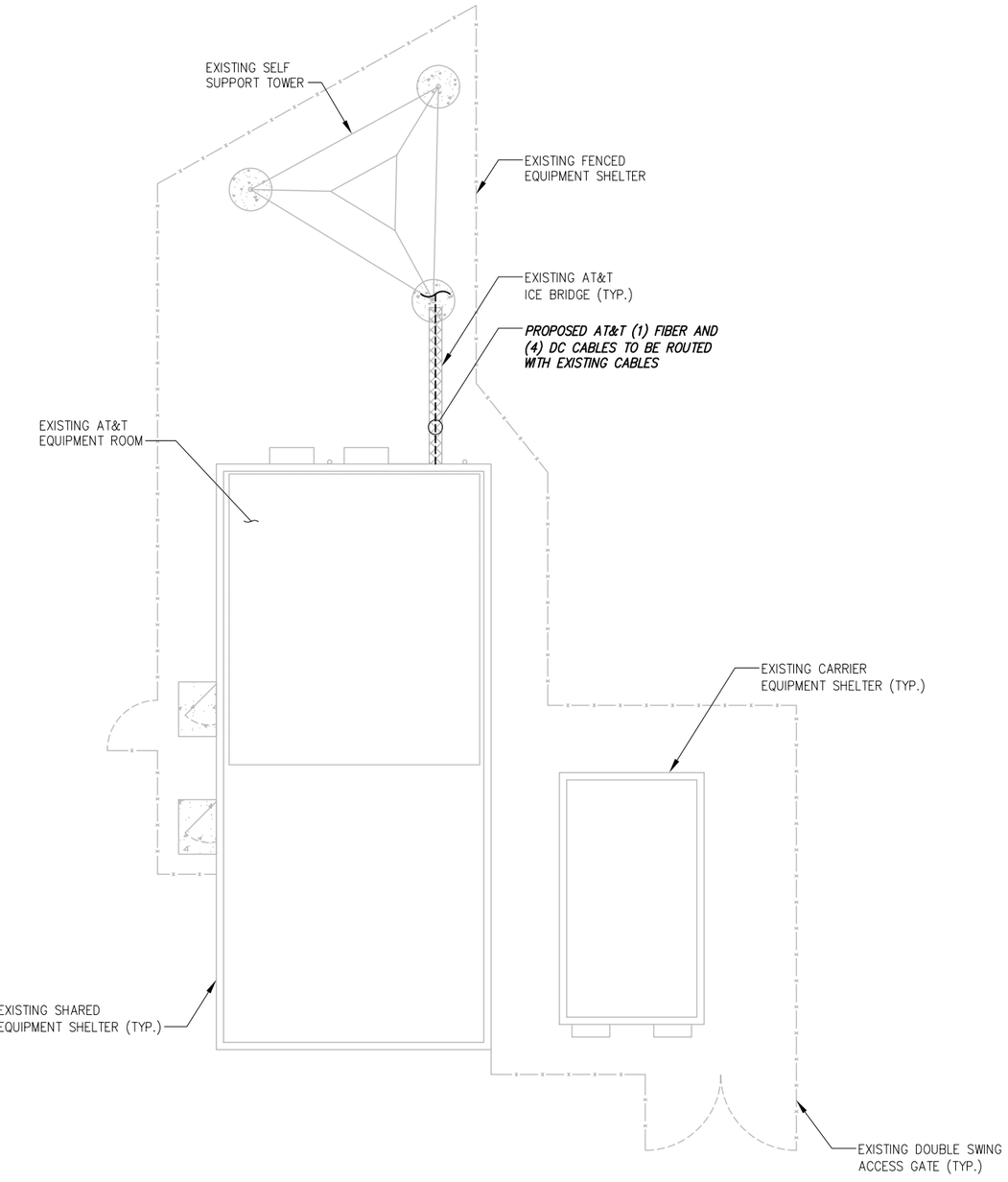
Project Title:
KILLINGWORTH-RTE 81
CTL02045
FA# 10034999
323 ROUTE 81
KILLINGWORTH, CT 06419

Prepared For: smartlink

Drawing Scale: AS NOTED
Date: 02/26/19
CD

Drawing Title
GENERAL NOTES

Drawing Number
C1

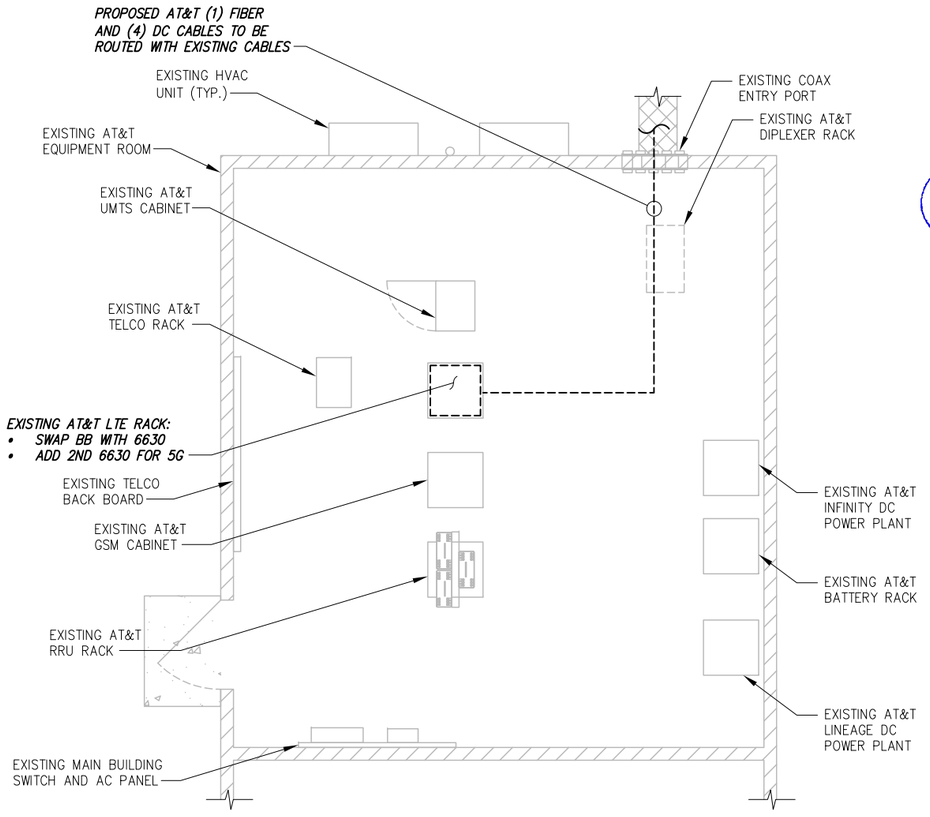


BASEMAPPING PREPARED FROM A SITE WALK PERFORMED BY INFINIGY ENGINEERING ON 11/17/18 AND PROVIDED INFORMATION, AND DOES NOT REPRESENT AN ACTUAL FIELD SURVEY.

TRUE NORTH

1 SITE PLAN
SCALE: AS NOTED

GRAPHIC SCALE:
10' 5' 0 5' 10'
SCALE (11x17): 1" = 10'-0"
SCALE (22x34): 1" = 5'-0"



TRUE NORTH

2 ENLARGED EQUIPMENT PLAN
SCALE: AS NOTED

GRAPHIC SCALE:
6' 3' 0 3' 6'
SCALE (11x17): 1" = 6'-0"
SCALE (22x34): 1" = 3'-0"

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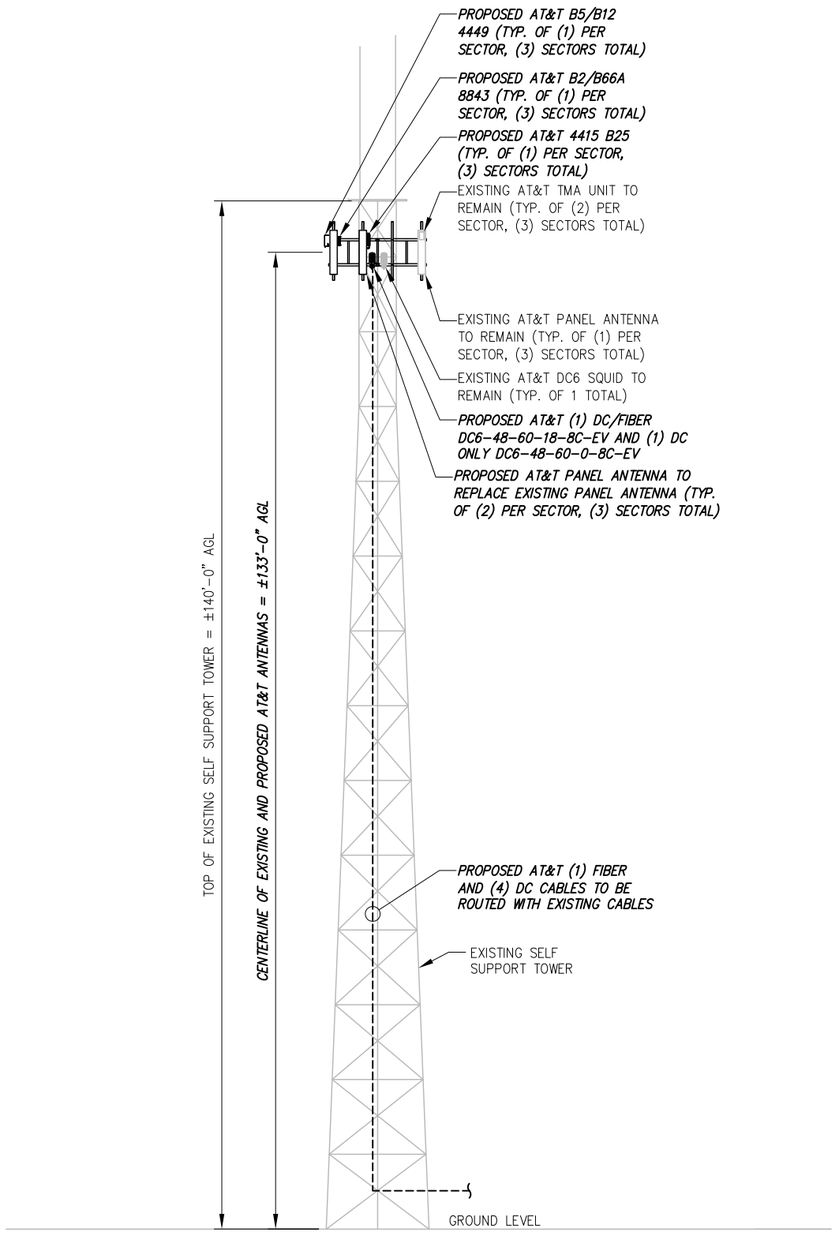
Drawing Title
OVERALL & ENLARGED SITE PLAN

Drawing Number
C2



1 ELEVATION VIEW
NOT TO SCALE

NOTE:
- FOR ADDITIONAL STRUCTURAL INFORMATION PERTAINING TO THE TOWER STRUCTURE, SEE 'STRUCTURAL ANALYSIS REPORT' COMPLETED BY INFINIGY, DATED 02/05/19.
- FOR ADDITIONAL STRUCTURAL INFORMATION PERTAINING TO THE ANTENNA MOUNT, SEE FAILING 'MOUNT ANALYSIS REPORT' COMPLETED BY INFINIGY, DATED 02/05/19. MOUNT MUST BE REPLACED PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT.

SEPARATION NOTE:
- 3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNA
- 6 FEET MINIMUM SEPARATION BETWEEN 700BC & 700 DE

FINAL ANTENNA CONFIGURATION & CABLE SCHEDULE BASED ON LTE RFDS DATED 01/23/19, V 4.00

SECTOR	ANTENNA POSITION	ANTENNA STATUS & TECHNOLOGY	ANTENNA MANF/MODEL	TMA/ DIPLEXER	RRUS	AZIMUTH	ANTENNA ℄ HEIGHT	CABLE FEEDER TYPE	CABLE FEEDER LENGTH	RAYCAP UNIT
ALPHA	A-1	(E) UMTS 850	POWERWAVE 7770	(2) (E) LGP21401	--	143°	±133'	(2) (E) 1-5/8" COAX	±180'	(1) (E) DC6 'SQUID' (1) (P) DC6-48-60-18-8C-EV (1) (P) DC6-48-60-0-8C-EV
	A-2	--	--	--	--	--	--	(2) (E) 1-5/8" COAX	--	
	A-3	*(P) LTE 1900*	*KATHREIN 840-370799K*	--	*(1) (P) 4415 B25*	*20°*	*±133'*	(1) (E) FIBER CABLE (2) (E) DC CABLES	--	
	A-4	*(P) LTE 700/850/AWS /5G 850*	*KATHREIN 800-10966*	--	*(1) (P) B5/B12 4449 (1) (P) B2/B66A 8843*	*20°*	*±133'*	SEE A-3 FOR CABLE INFORMATION	--	
BETA	B-1	(E) UMTS 850	POWERWAVE 7770	(2) (E) LGP21401	--	260°	±133'	(2) (E) 1-5/8" COAX	±180'	
	B-2	--	--	--	--	--	--	(2) (E) 1-5/8" COAX	--	
	B-3	*(P) LTE 1900*	*KATHREIN 800-10991K*	--	*(1) (P) 4415 B25*	*143°*	*±133'*	*(1) (P) FIBER CABLE (4) (P) DC CABLES*	--	
	B-4	*(P) LTE 700/850/AWS /5G 850*	*KATHREIN 800-10965*	--	*(1) (P) B5/B12 4449 (1) (P) B2/B66A 8843*	*143°*	*±133'*	SEE A-3 FOR CABLE INFORMATION	--	
GAMMA	G-1	(E) UMTS 850	POWERWAVE 7770	(2) (E) LGP21401	--	20°	±133'	(2) (E) 1-5/8" COAX	±180'	
	G-2	--	--	--	--	--	--	(2) (E) 1-5/8" COAX	--	
	G-3	*(P) LTE 1900*	*KATHREIN 800-10991K*	--	*(1) (P) 4415 B25*	*260°*	*±133'*	SEE A-3 FOR CABLE INFORMATION	--	
	G-4	*(P) LTE 700/850/AWS /5G 850*	*KATHREIN 800-10965*	--	*(1) (P) B5/B12 4449 (1) (P) B2/B66A 8843*	*260°*	*±133'*	SEE A-3 FOR CABLE INFORMATION	--	

2 AT&T ANTENNA SCHEDULE
NOT TO SCALE

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24705
02/26/2019
PROFESSIONAL ENGINEER

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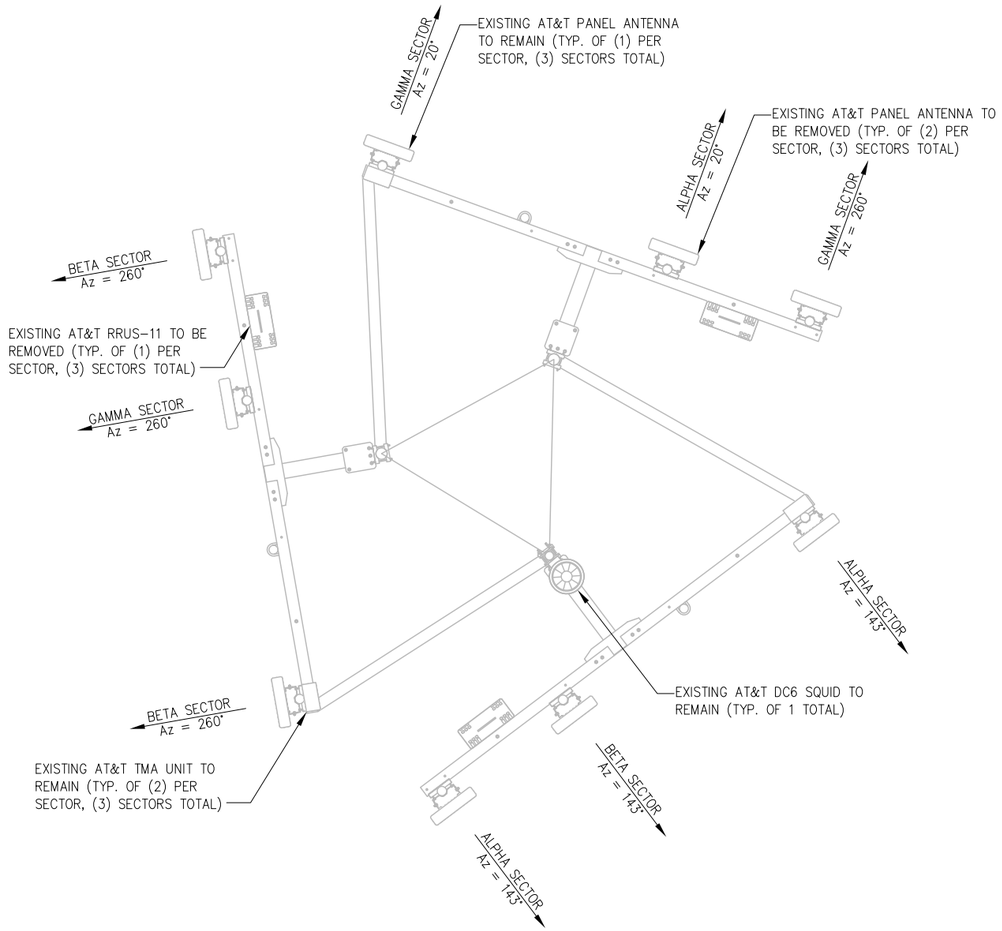
KILLINGWORTH, CT 06419

Prepared For: smartlink

Drawing Scale: AS NOTED
Date: 02/26/19
CD

Drawing Title
ELEVATION VIEW

Drawing Number
C3



1 ANTENNA ORIENTATION PLAN (EXISTING)
NOT TO SCALE

SEPARATION NOTE:
- 3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNA
- 6 FEET MINIMUM SEPARATION BETWEEN 700BC & 700 DE

NOTE:
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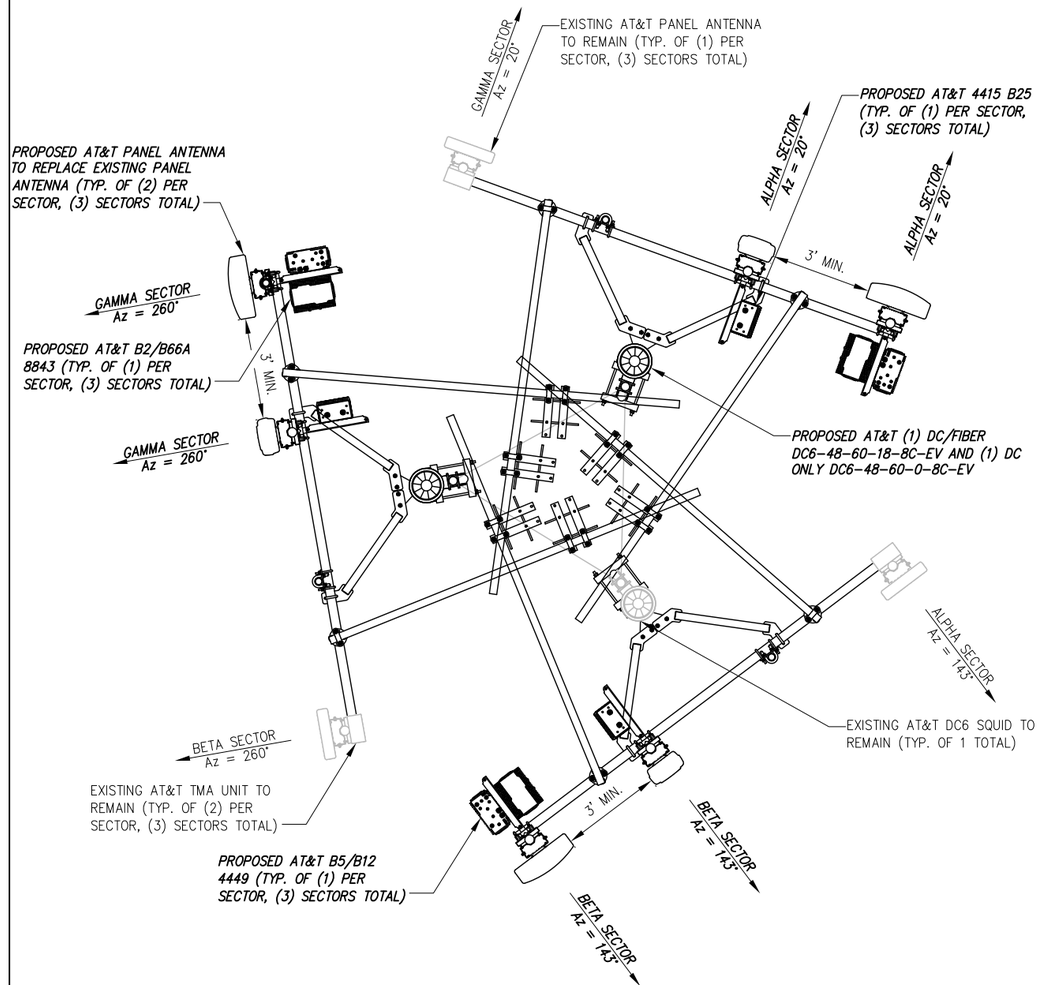
- *FOR ADDITIONAL STRUCTURAL INFORMATION PERTAINING TO THE ANTENNA MOUNT, SEE FAILING 'MOUNT ANALYSIS REPORT' COMPLETED BY INFINIGY, DATED 02/05/19. MOUNT MUST BE REPLACED PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT.*



2 PROPOSED ANTENNA ORIENTATION PLAN
NOT TO SCALE

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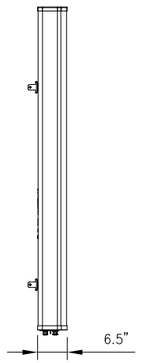
KILLINGWORTH, CT 06419

Prepared For: smartlink

Drawing Scale: AS NOTED
Date: 02/26/19
CD

Drawing Title
ANTENNA ORIENTATION PLAN

Drawing Number
C4



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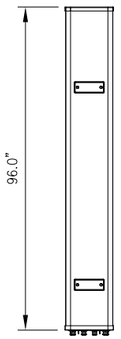
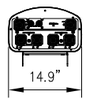


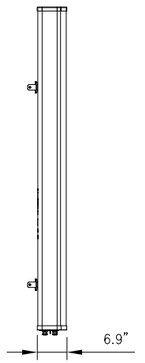
REAR



TOP

KATHREIN MODEL NO.:	840-370799K
RADOME MATERIAL:	FIBERGLASS,
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	96.0"x14.9"x6.5"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	105.8 LBS
CONNECTOR:	7-16 DIN FEMALE

1 ANTENNA DETAIL
NOT TO SCALE



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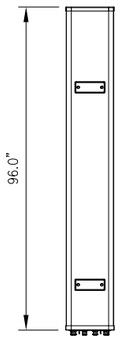

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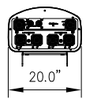
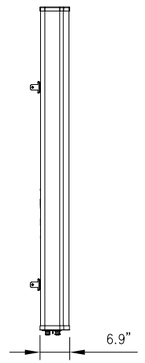


TOP

KATHREIN MODEL NO.:	800-10966
RADOME MATERIAL:	FIBERGLASS,
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	96.0"x20.0"x6.9"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	114.6 LBS
CONNECTOR:	7-16 DIN FEMALE

2 ANTENNA DETAIL
NOT TO SCALE



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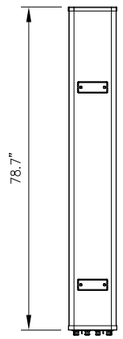

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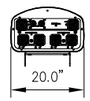
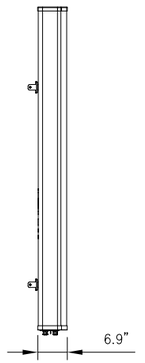


TOP

KATHREIN MODEL NO.:	800-10991K
RADOME MATERIAL:	FIBERGLASS,
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	78.7"x20.0"x6.9"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	100.9 LBS
CONNECTOR:	7-16 DIN FEMALE

3 ANTENNA DETAIL
NOT TO SCALE



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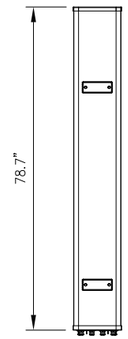

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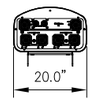
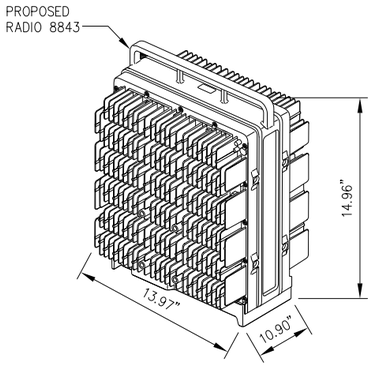


TOP

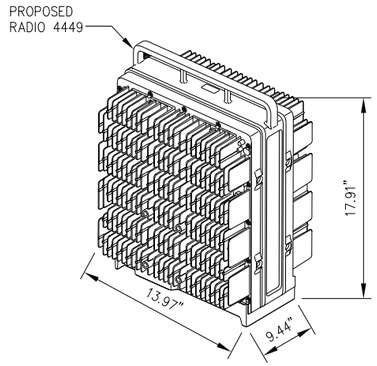
KATHREIN MODEL NO.:	800-10965
RADOME MATERIAL:	FIBERGLASS,
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	78.7"x20.0"x6.9"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	108.6 LBS
CONNECTOR:	7-16 DIN FEMALE

4 ANTENNA DETAIL
NOT TO SCALE



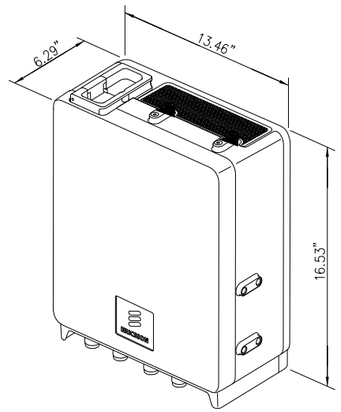
RADIO 8843 SPECIFICATIONS
- HxWxD, (INCHES) : 14.96"x13.97"x10.90"
- WEIGHT (LBS) : 71.87
- COLOR : GRAY

5 ERICSSON RADIO 8843 DETAIL
NOT TO SCALE



RADIO 4449 SPECIFICATIONS
- HxWxD, (INCHES) : 17.91"x13.97"x9.44"
- WEIGHT (LBS) : 70.54
- COLOR : GRAY

6 ERICSSON RADIO 4449 DETAIL
NOT TO SCALE



RADIO 4415 SPECIFICATIONS
- HxWxD, (INCHES): 16.53"x13.46"x6.29"
- WEIGHT (LBS): 47.4
- COLOR: NCS S 1002-B/NCS S 6502-B

7 ERICSSON RADIO 4415 DETAIL
NOT TO SCALE

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Office # (518) 690-0790
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at&t

STATE OF CONNECTICUT
JOHN S. STEVENS
24705
02/26/2019
PROFESSIONAL ENGINEER

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No.	Submittal / Revision	App'd	Date
1	ISSUED FOR PERMIT	BMM	02/26/19
0	ISSUED FOR REVIEW	BMM	01/31/19

Drawn: BMM Date: 01/31/19
Designed: ASW Date: 01/31/19
Checked: AJD Date: 01/31/19

Project Number: 1106-A0001-C

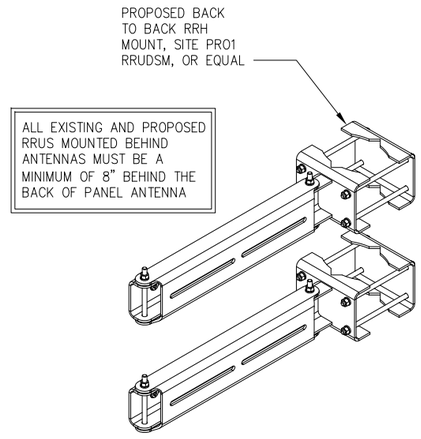
Project Title:
KILLINGWORTH-RTE 81
CTL02045
FA# 10034999
323 ROUTE 81
KILLINGWORTH, CT 06419

Prepared For: smartlink

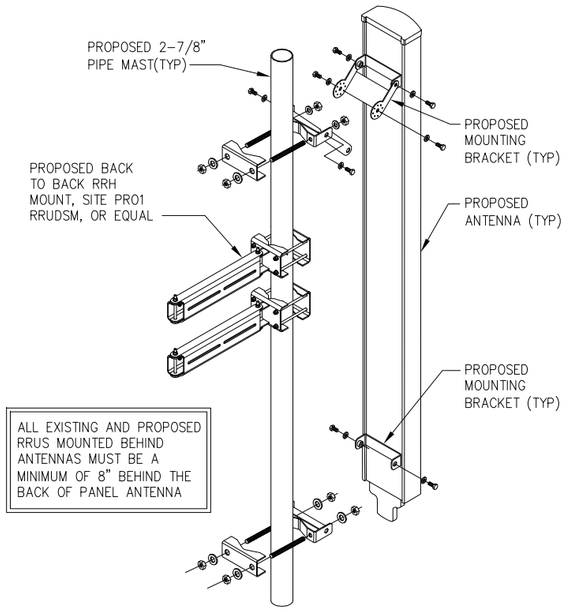
Drawing Scale: AS NOTED
Date: 02/26/19
CD

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C5



1 BACK TO BACK PIPE MOUNT DETAIL
NOT TO SCALE



2 MOUNTING DETAIL
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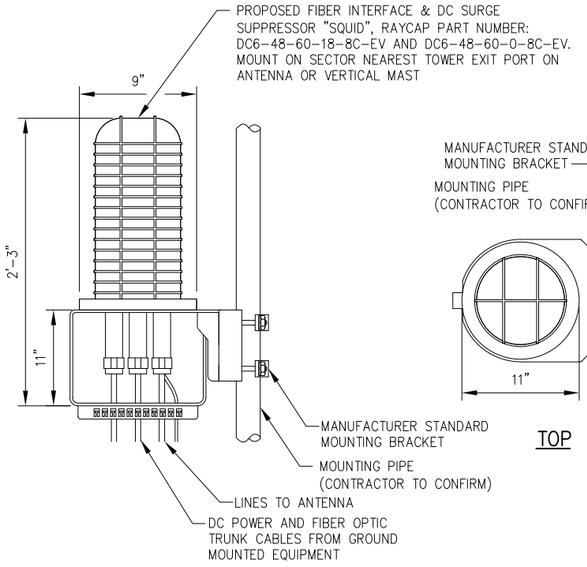

SIDE

3 SQUID DETAIL
NOT TO SCALE

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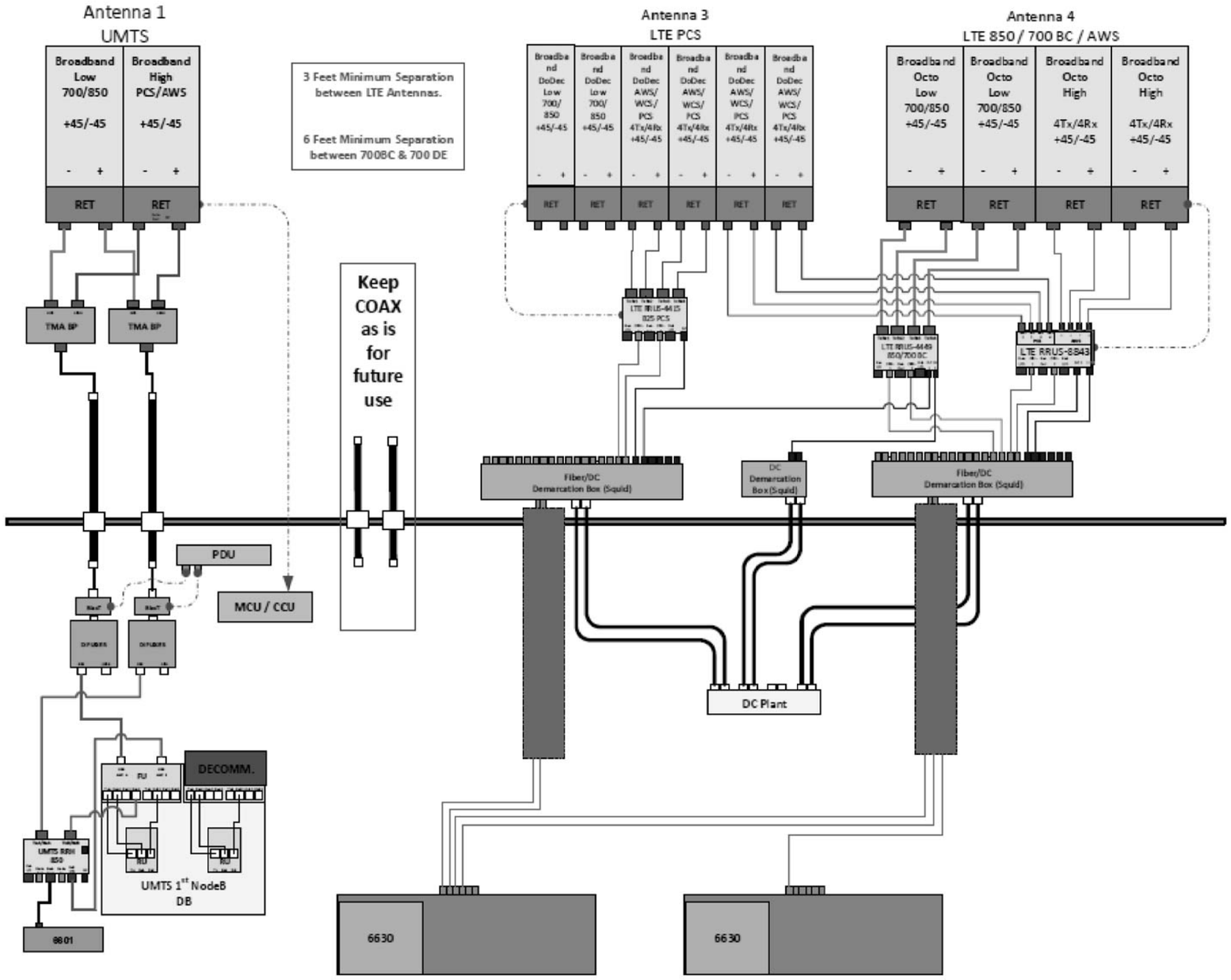
Prepared For:
smartlink

Drawing Scale:
AS NOTED
Date:
02/26/19
CD

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C5A



ALPHA/BETA/GAMMA

1 PLUMBING DIAGRAM (FINAL CONFIGURATION)
NOT TO SCALE

*BASED ON LTE RFDS, V. 4.0, DATED 01/23/19

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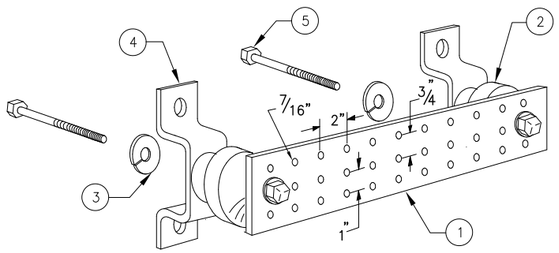
Prepared For: smartlink

Drawing Scale: AS NOTED
Date: 02/26/19
CD

Drawing Title
PLUMBING DIAGRAM

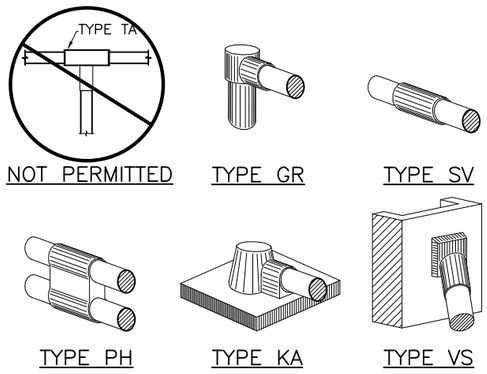
Drawing Number
C6



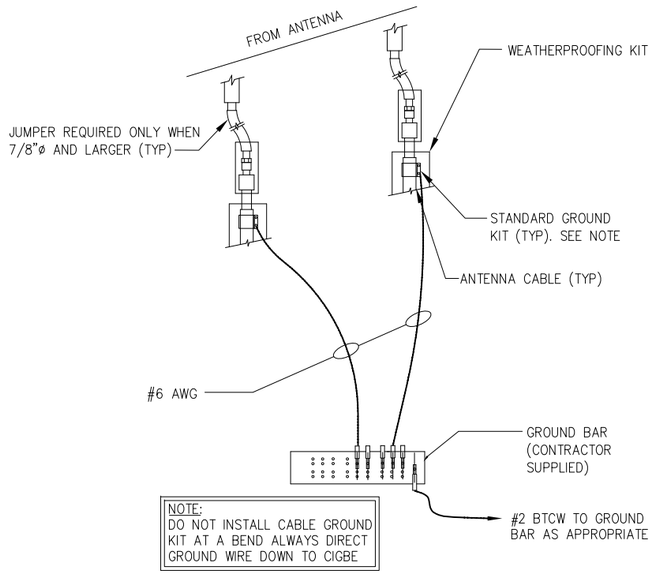
LEGEND

1 – SOLID TINNED COPPER GROUND BAR, 1/4"x 4"x 20" MIN., NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2 – INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061–4
3 – 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015–8
4 – WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A–6056
5 – 5/8–11 X 1" H.H.C.S. BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012–1
6 – GROUND BAR SHALL BE SIZED TO ACCOMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY
7 – GROUND BARS SHALL NEITHER BE FIELD FABRICATED NOR NEW HOLES DRILLED
8 – GROUND LUGS SHALL MATCH THE HOLE SPACING ON THE BAR
9 – HARDWARE DIAMETER SHALL BE MINIMUM 3/8"

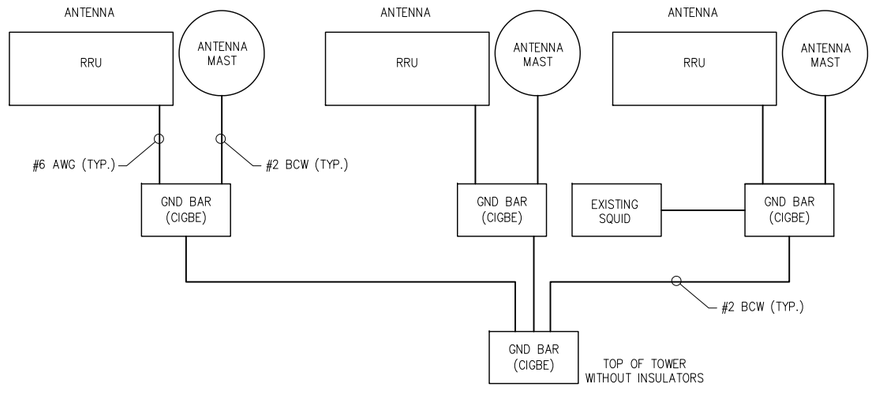
1 — GROUND BAR
NOT TO SCALE



2 — CADWELDS (TYPICAL)
NOT TO SCALE



3 — CONNECTION OF GROUND WIRES TO GROUNDING BARS @ ANTENNAS
NOT TO SCALE



4 — SCHEMATIC DIAGRAM GROUNDING SYSTEM
NOT TO SCALE

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JOHN S. STEVENS
02/26/2019
PROFESSIONAL ENGINEER
LICENSED

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smartlink

Drawing Scale:
AS NOTED
Date:
02/26/19

CD

Drawing Title
GROUNDING DETAILS

Drawing Number
C7

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Structural Analysis Report

February 5, 2019

Site Name	Killingworth – RTE 81
Site Number	CTL02045
FA Number	10034999
PACE Number	MRCTB035091/ MRCTB035254/ MRCTB035289/ MRCTB035122
Client	Smartlink
Carrier	AT&T
Infinigy Job Number	499-006
Site Location	323 Route 81 Killingworth, CT 06419 41° 22' 10.07" N NAD83 72° 33' 51.20" W NAD83
Mount Centerline EL.	140.0 ft
Tower Classification	Self-Support
Structural Usage	**74.7%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and foundation are therefore deemed adequate to support the existing and proposed loading as listed in this report.

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
LICENSED
PROFESSIONAL ENGINEER
Joseph R. Johnston
FEB 05 2019

Brenden Archer
Project Engineer II

Contents

Introduction

Infinigy Engineering has been requested to perform a structural analysis on the existing 140' Self-Support. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The tower was analyzed using tnxTower version 8.0.4.0 tower analysis software.

Supporting Documentation

Construction Drawings	Infinigy Engineering, Job #499-006, dated January 31, 2019
RFDS	AT&T RFDS ID #2572167, dated January 23, 2019
Previous Tower Analysis	Hudson Design Group, dated November 30, 2012
Modification Drawings	Hudson Design Group, dated December 7, 2012

Analysis Code Requirements

Wind Speed	101 mph (3-Second Gust, V_{ASD}) / 130 mph (3-Second Gust, V_{ULT})
Wind Speed w/ ice	40 mph (3-Second Gust, V_{ASD}) w/ 3/4" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2015 IBC/ 2018 Connecticut State Building Code
Structure Class	II
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and foundation are therefore deemed adequate to support the existing and proposed loading as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

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Existing and Reserved Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
145.0	3	Decibel DB-810	Side Arm	(3) 1-5/8”	--
140.0	1	Decibel DB-411-A		(11) 7/8”	--
133.0	1	Decibel DB225-A	Sector Frame	(12) 1-5/8” (1) Fiber (2) DC	AT&T
	6	Powerwave 7770			
	1	Powerwave P65-17-XLH-RR			
	1	KMW AM-X-CD-16-65-00T-RET			
	1	Commscope SBNH-1D4545A			
	3	Ericsson RRUS-11			
	6	Powerwave LGP-21401			
	1	Raycap DC6-48-60-18-8F			
123.0	1	MF-900B	Direct	--	--
80.0	1	Generic 1’ Square Panel	Side Arm	--	--
75.0	1	Decibel DB225-A	Direct	--	--
66.0	1	Omni 3”x12’	Side Arm	--	--

To Be Removed

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
133.0	3	Powerwave 7770	--	--	AT&T
	1	Powerwave P65-17-XLH-RR			
	1	KMW AM-X-CD-16-65-00T-RET			
	1	Commscope SBNH-1D4545A			
	3	Ericsson RRUS-11			

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
133.0	1	Kathrein 840-370799K	--	(1) Fiber (4) DC	AT&T
	2	Kathrein 800-10991K			
	1	Kathrein 800-10966			
	2	Kathrein 800-10965			
	3	Ericsson RRUS-4415 B25			
	3	Ericsson RRUS-8843 B2/B66A			
	3	Ericsson RRUS-4449 B5/B12			
	2	Raycap DC6-48-60-18-8F			

Final Configuration

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
145.0	3	Decibel DB-810	Side Arm	(3) 1-5/8”	--
140.0	1	Decibel DB-411-A		(11) 7/8”	--
133.0	1	Decibel DB225-A	Sector Frame	(12) 1-5/8” (2) Fiber (6) DC	AT&T
	3	Powerwave 7770			
	1	Kathrein 840-370799K			
	2	Kathrein 800-10991K			
	1	Kathrein 800-10966			
	2	Kathrein 800-10965			
	3	Ericsson RRUS-4415 B25			
	3	Ericsson RRUS-8843 B2/B66A			
	3	Ericsson RRUS-4449 B5/B12			
	6	Powerwave LGP-21401			
	3	Raycap DC6-48-60-18-8F			
123.0	1	MF-900B	Direct	--	--
80.0	1	Generic 1’ Square Panel	Side Arm	--	--
75.0	1	Decibel DB225-A	Direct	--	--
66.0	1	Omni 3”x12’	Side Arm	--	--

Structure Usages

	Summary	
Leg (T7)	62.5	Pass
Diagonal (T2)	74.7	Pass
Secondary Horizontal (T5)	14.0	Pass
Top Girt (T1)	0.4	Pass
RATING =	**74.7**	**Pass**

Foundation Reactions

Reaction Data	Analysis Reactions	Result
Base Compression (kip)	16.4	68.8%
Base Shear (kip)	18.2	35.6%
Base Moment (kip-ft)	0.0	53.3%

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (°)	Sway (°)
133.0	2.617	0.052	0.183

*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.
*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.
*Per ANSI/TIA-222-G Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.
*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

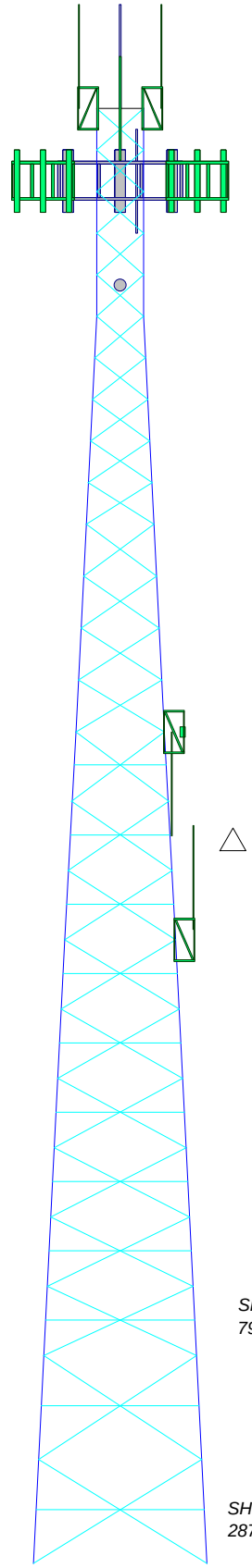
Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

Section	T1	T2	T3	T4	T5	T6	T7			
Legs	ROHN 3.5 STD			Rohn 3.5 X-STR	Rohn 3.5 X-STR w/ Third Pipe	Rohn 4 X-STR w/ Third Pipe	ROHN 5 X-STR			
Leg Grade	A572-50									
Diagonals	L1 1/2x1 1/2x1/8		L2x2x1/8	L2 1/2x2 1/2x3/16		L2 1/2x2 1/2x5/16	L3x3x3/8			
Diagonal Grade	A36									
Top Girts	L3x3x1/4	N.A.		N.A.						
Sec. Horizontals	N.A.			L2 1/2x2 1/2x3/16		L2 1/2x2 1/2x5/16	L3x3x3/8			
Face Width (ft)	4.5		6.55	8.58	10.61	12.64	14.67	16.7		
# Panels @ (ft)	10 @ 4		4 @ 5	9 @ 6.66667			2 @ 10			
Weight (lb)	834.1	798.6	1119.4	1665.0	2032.3	3125.0	3528.0	13096.6		



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB810K-XC	145	Radio 4449 (ATI)	133
DB810K-XC	145	Radio 4449 (ATI)	133
DB810K-XC	145	RRUS 8843 (ATI)	133
Angle Side Arm	140	RRUS 8843 (ATI)	133
Angle Side Arm	140	RRUS 8843 (ATI)	133
Angle Side Arm	140	(2) LGP21401 (ATI)	133
DB411-A	140	(2) LGP21401 (ATI)	133
DB225-A	133	(2) LGP21401 (ATI)	133
800-10966 (ATI)	133	DC6-48-60-0-8F (ATI)	133
800-10965 (ATI)	133	DC6-48-60-0-8F (ATI)	133
800-10965 (ATI)	133	DC6-48-60-0-8F (ATI)	133
7770 (ATI)	133	Pipe Sector Frame (ATI)	133
7770 (ATI)	133	Pipe Sector Frame (ATI)	133
7770 (ATI)	133	Pipe Sector Frame (ATI)	133
840-370799K (ATI)	133	MF-900B	123
800-10991K (ATI)	133	1' Square Panel	80
800-10991K (ATI)	133	Pipe Side Arm	80
RRUS 4415 (ATI)	133	DB225-A	75
RRUS 4415 (ATI)	133	12' Omni	60
RRUS 4415 (ATI)	133	Pipe Side Arm	60
Radio 4449 (ATI)	133		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

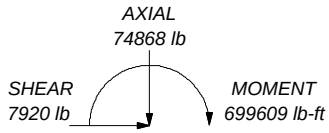
TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 74.7%

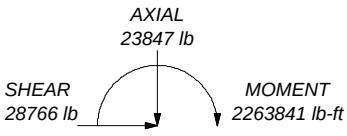
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 164478 lb
SHEAR: 18156 lb

UPLIFT: -142781 lb
SHEAR: 15685 lb



TORQUE 5406 lb-ft
50 mph WIND - 0.7500 in ICE



TORQUE 24491 lb-ft
REACTIONS - 101 mph WIND

Infinigy Engineering PLLC
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Albany, NY
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FAX: (518) 690-0790

Job: ***CTL02045***			
Project: ***499-006***			
Client: Smartlink	Drawn by: BArcher	App'd:	
Code: TIA-222-G	Date: 02/05/19	Scale: NTS	
Path: C:\Users\BArcher\Desktop\Archerb\Towers\CTL02045\Tower\CTL02045_Existing.en		Dwg No. E-1	

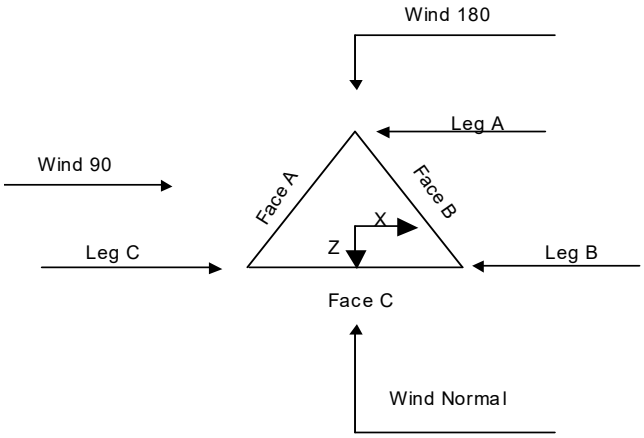
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 140.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.50 ft at the top and 16.70 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 101 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r	√	All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	140.00-120.00			4.50	1	20.00
T2	120.00-100.00			4.50	1	20.00
T3	100.00-80.00			6.55	1	20.00
T4	80.00-60.00			8.58	1	20.00
T5	60.00-40.00			10.61	1	20.00
T6	40.00-20.00			12.64	1	20.00
T7	20.00-0.00			14.67	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	140.00-120.00	4.00	X Brace	No	No	0.0000	0.0000
T2	120.00-100.00	4.00	X Brace	No	No	0.0000	0.0000
T3	100.00-80.00	5.00	X Brace	No	No	0.0000	0.0000
T4	80.00-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T5	60.00-40.00	6.67	X Brace	No	Yes	0.0000	0.0000
T6	40.00-20.00	6.67	X Brace	No	Yes	0.0000	0.0000
T7	20.00-0.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 140.00-120.00	Pipe	ROHN 3.5 STD	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 120.00-100.00	Pipe	ROHN 3.5 STD	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T3 100.00-80.00	Pipe	Rohn 3.5 X-STR	A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T4 80.00-60.00	Pipe	Rohn 3.5 X-STR	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 60.00-40.00	Arbitrary Shape	Rohn 3.5 X-STR w/ Third Pipe	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 40.00-20.00	Arbitrary Shape	Rohn 4 X-STR w/ Third Pipe	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T7 20.00-0.00	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 140.00-120.00	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 80.00-60.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T5 60.00-40.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 40.00-20.00	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T7 20.00-0.00	Single Angle	L3x3x3/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T2	No	No	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T3	No	No	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T4	No	No	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T5	No	No	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T6	No	No	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T7 20.00-0.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T2 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8	C	No	No	Ar (CaAa)	140.00 - 8.00	0.0000	0.1	3	3	1.8000 1.9800	1.9800		1.04
7/8	C	No	No	Ar (CaAa)	140.00 - 8.00	0.0000	0.1	2	2	1.1100	1.1100		0.54
7/8	A	No	No	Ar (CaAa)	140.00 - 8.00	0.0000	0.1	9	9	1.1100	1.1100		0.54
***													
1 5/8 (AT&T)	B	No	No	Ar (CaAa)	133.00 - 8.00	0.0000	-0.4	12	6	1.8000 1.9800	1.9800		1.04
1-1/2 (AT&T)	B	No	No	Ar (CaAa)	133.00 - 8.00	0.0000	0	1	1	0.4000 1.8600	1.8600		0.79
1-1/2 (AT&T)	B	No	No	Ar (CaAa)	133.00 - 8.00	0.0000	0	1	1	0.4000 1.8600	1.8600		0.79
1 (AT&T)	B	No	No	Ar (CaAa)	133.00 - 8.00	0.0000	0	2	2	0.4000 1.2500	1.2500		0.58
1 (AT&T)	B	No	No	Ar (CaAa)	133.00 - 8.00	0.0000	0	4	2	0.4000 1.2500	1.2500		0.58

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	140.00-120.00	A	0.000	0.000	19.980	0.000	97.20
		B	0.000	0.000	45.474	0.000	228.07
		C	0.000	0.000	16.320	0.000	84.00
T2	120.00-100.00	A	0.000	0.000	19.980	0.000	97.20
		B	0.000	0.000	69.960	0.000	350.88
		C	0.000	0.000	16.320	0.000	84.00
T3	100.00-80.00	A	0.000	0.000	19.980	0.000	97.20
		B	0.000	0.000	69.960	0.000	350.88
		C	0.000	0.000	16.320	0.000	84.00
T4	80.00-60.00	A	0.000	0.000	19.980	0.000	97.20

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	69.960	0.000	350.88
		C	0.000	0.000	16.320	0.000	84.00
T5	60.00-40.00	A	0.000	0.000	19.980	0.000	97.20
		B	0.000	0.000	69.960	0.000	350.88
		C	0.000	0.000	16.320	0.000	84.00
T6	40.00-20.00	A	0.000	0.000	19.980	0.000	97.20
		B	0.000	0.000	69.960	0.000	350.88
		C	0.000	0.000	16.320	0.000	84.00
T7	20.00-0.00	A	0.000	0.000	11.988	0.000	58.32
		B	0.000	0.000	41.976	0.000	210.53
		C	0.000	0.000	9.792	0.000	50.40

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	140.00-120.00	A	1.720	0.000	0.000	56.926	0.000	784.60
		B		0.000	0.000	84.538	0.000	1654.40
		C		0.000	0.000	55.563	0.000	700.44
T2	120.00-100.00	A	1.692	0.000	0.000	56.758	0.000	773.57
		B		0.000	0.000	129.245	0.000	2514.93
		C		0.000	0.000	55.179	0.000	689.20
T3	100.00-80.00	A	1.658	0.000	0.000	56.560	0.000	760.62
		B		0.000	0.000	128.287	0.000	2479.45
		C		0.000	0.000	54.727	0.000	676.05
T4	80.00-60.00	A	1.617	0.000	0.000	56.318	0.000	744.84
		B		0.000	0.000	127.114	0.000	2436.39
		C		0.000	0.000	54.173	0.000	660.09
T5	60.00-40.00	A	1.564	0.000	0.000	56.004	0.000	724.45
		B		0.000	0.000	125.590	0.000	2381.02
		C		0.000	0.000	53.454	0.000	639.59
T6	40.00-20.00	A	1.486	0.000	0.000	55.549	0.000	695.02
		B		0.000	0.000	123.372	0.000	2301.69
		C		0.000	0.000	52.409	0.000	610.26
T7	20.00-0.00	A	1.331	0.000	0.000	32.791	0.000	382.49
		B		0.000	0.000	71.385	0.000	1289.16
		C		0.000	0.000	30.205	0.000	332.28

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	140.00-120.00	0.4236	-6.8378	-0.3181	-4.1092
T2	120.00-100.00	1.6787	-10.7850	1.0099	-7.3472
T3	100.00-80.00	1.8164	-13.3510	1.0968	-9.5681
T4	80.00-60.00	1.7757	-14.3991	1.0817	-10.9155
T5	60.00-40.00	1.6810	-14.9615	1.0257	-12.0799
T6	40.00-20.00	1.7325	-16.1633	0.9813	-13.3731
T7	20.00-0.00	1.4810	-13.8961	0.6983	-11.9142

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	1 5/8	120.00 - 140.00	0.6000	0.5118
T1	2	7/8	120.00 - 140.00	0.6000	0.5118
T1	3	7/8	120.00 - 140.00	0.6000	0.5118
T1	5	1 5/8	120.00 - 133.00	0.6000	0.5118
T1	6	1-1/2	120.00 - 133.00	0.6000	0.5118
T1	7	1-1/2	120.00 - 133.00	0.6000	0.5118
T1	8	1	120.00 - 133.00	0.6000	0.5118
T1	9	1	120.00 - 133.00	0.6000	0.5118
T2	1	1 5/8	100.00 - 120.00	0.6000	0.5866
T2	2	7/8	100.00 - 120.00	0.6000	0.5866
T2	3	7/8	100.00 - 120.00	0.6000	0.5866
T2	5	1 5/8	100.00 - 120.00	0.6000	0.5866
T2	6	1-1/2	100.00 - 120.00	0.6000	0.5866
T2	7	1-1/2	100.00 - 120.00	0.6000	0.5866
T2	8	1	100.00 - 120.00	0.6000	0.5866
T2	9	1	100.00 - 120.00	0.6000	0.5866
T3	1	1 5/8	80.00 - 100.00	0.6000	0.6000
T3	2	7/8	80.00 - 100.00	0.6000	0.6000
T3	3	7/8	80.00 - 100.00	0.6000	0.6000
T3	5	1 5/8	80.00 - 100.00	0.6000	0.6000
T3	6	1-1/2	80.00 - 100.00	0.6000	0.6000
T3	7	1-1/2	80.00 - 100.00	0.6000	0.6000
T3	8	1	80.00 - 100.00	0.6000	0.6000
T3	9	1	80.00 - 100.00	0.6000	0.6000
T4	1	1 5/8	60.00 - 80.00	0.6000	0.6000
T4	2	7/8	60.00 - 80.00	0.6000	0.6000
T4	3	7/8	60.00 - 80.00	0.6000	0.6000
T4	5	1 5/8	60.00 - 80.00	0.6000	0.6000
T4	6	1-1/2	60.00 - 80.00	0.6000	0.6000
T4	7	1-1/2	60.00 - 80.00	0.6000	0.6000
T4	8	1	60.00 - 80.00	0.6000	0.6000
T4	9	1	60.00 - 80.00	0.6000	0.6000
T5	1	1 5/8	40.00 - 60.00	0.6000	0.6000
T5	2	7/8	40.00 - 60.00	0.6000	0.6000
T5	3	7/8	40.00 - 60.00	0.6000	0.6000
T5	5	1 5/8	40.00 - 60.00	0.6000	0.6000
T5	6	1-1/2	40.00 - 60.00	0.6000	0.6000
T5	7	1-1/2	40.00 - 60.00	0.6000	0.6000
T5	8	1	40.00 - 60.00	0.6000	0.6000
T5	9	1	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	1	1 5/8	20.00 - 40.00	0.6000	0.6000
T6	2	7/8	20.00 - 40.00	0.6000	0.6000
T6	3	7/8	20.00 - 40.00	0.6000	0.6000
T6	5	1 5/8	20.00 - 40.00	0.6000	0.6000
T6	6	1-1/2	20.00 - 40.00	0.6000	0.6000
T6	7	1-1/2	20.00 - 40.00	0.6000	0.6000
T6	8	1	20.00 - 40.00	0.6000	0.6000
T6	9	1	20.00 - 40.00	0.6000	0.6000
T7	1	1 5/8	8.00 - 20.00	0.6000	0.6000
T7	2	7/8	8.00 - 20.00	0.6000	0.6000
T7	3	7/8	8.00 - 20.00	0.6000	0.6000
T7	5	1 5/8	8.00 - 20.00	0.6000	0.6000
T7	6	1-1/2	8.00 - 20.00	0.6000	0.6000
T7	7	1-1/2	8.00 - 20.00	0.6000	0.6000
T7	8	1	8.00 - 20.00	0.6000	0.6000
T7	9	1	8.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Angle Side Arm	A	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.82 1.10 1.40	6.23 8.47 10.20	150.00 230.00 310.00
Angle Side Arm	B	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.82 1.10 1.40	6.23 8.47 10.20	150.00 230.00 310.00
Angle Side Arm	C	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.82 1.10 1.40	6.23 8.47 10.20	150.00 230.00 310.00
DB810K-XC	A	From Leg	2.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.63 5.10 6.60	3.63 5.10 6.60	35.00 61.88 98.03
DB810K-XC	B	From Leg	2.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.63 5.10 6.60	3.63 5.10 6.60	35.00 61.88 98.03
DB810K-XC	C	From Leg	2.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.63 5.10 6.60	3.63 5.10 6.60	35.00 61.88 98.03
DB411-A	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.50 2.70 3.90	1.50 2.70 3.90	25.00 32.50 40.00
DB225-A	A	From Leg	3.68 1.56 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	3.21 5.78 8.35	3.21 5.78 8.35	37.00 48.10 59.20
800-10966 (AT&T)	A	From Leg	3.00 -6.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	13.61 14.21 14.82	7.35 7.94 8.54	81.90 155.92 237.75
800-10965 (AT&T)	B	From Leg	3.00 -6.00	0.0000	133.00	No Ice 1/2" Ice	13.81 14.35	5.83 6.32	108.60 185.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	14.89	6.82	268.71
800-10965	C	From Leg	3.00	0.0000	133.00	No Ice	13.81	5.83	108.60
(AT&T)			-6.00			1/2" Ice	14.35	6.32	185.13
			0.00			1" Ice	14.89	6.82	268.71
7770	A	From Leg	3.00	0.0000	133.00	No Ice	5.51	2.93	35.00
(AT&T)			6.00			1/2" Ice	5.87	3.27	67.63
			0.00			1" Ice	6.23	3.63	105.06
7770	B	From Leg	3.00	0.0000	133.00	No Ice	5.51	2.93	35.00
(AT&T)			6.00			1/2" Ice	5.87	3.27	67.63
			0.00			1" Ice	6.23	3.63	105.06
7770	C	From Leg	3.00	0.0000	133.00	No Ice	5.51	2.93	35.00
(AT&T)			6.00			1/2" Ice	5.87	3.27	67.63
			0.00			1" Ice	6.23	3.63	105.06
840-370799K	A	From Leg	3.00	0.0000	133.00	No Ice	13.66	7.19	105.80
(AT&T)			-3.00			1/2" Ice	14.26	7.78	179.35
			0.00			1" Ice	14.87	8.37	260.71
800-10991K	B	From Leg	3.00	0.0000	133.00	No Ice	13.81	5.83	100.90
(AT&T)			-3.00			1/2" Ice	14.35	6.32	177.43
			0.00			1" Ice	14.89	6.82	261.01
800-10991K	C	From Leg	3.00	0.0000	133.00	No Ice	13.81	5.83	100.90
(AT&T)			-3.00			1/2" Ice	14.35	6.32	177.43
			0.00			1" Ice	14.89	6.82	261.01
RRUS 4415	A	From Leg	3.00	0.0000	133.00	No Ice	1.85	0.82	44.00
(AT&T)			-3.00			1/2" Ice	2.02	0.94	58.11
			0.00			1" Ice	2.20	1.07	74.74
RRUS 4415	B	From Leg	3.00	0.0000	133.00	No Ice	1.85	0.82	44.00
(AT&T)			-3.00			1/2" Ice	2.02	0.94	58.11
			0.00			1" Ice	2.20	1.07	74.74
RRUS 4415	C	From Leg	3.00	0.0000	133.00	No Ice	1.85	0.82	44.00
(AT&T)			-3.00			1/2" Ice	2.02	0.94	58.11
			0.00			1" Ice	2.20	1.07	74.74
Radio 4449	A	From Leg	3.00	0.0000	133.00	No Ice	4.19	2.45	74.96
(AT&T)			-6.00			1/2" Ice	4.45	2.67	109.14
			0.00			1" Ice	4.71	2.89	147.18
Radio 4449	B	From Leg	3.00	0.0000	133.00	No Ice	4.19	2.45	74.96
(AT&T)			-6.00			1/2" Ice	4.45	2.67	109.14
			0.00			1" Ice	4.71	2.89	147.18
Radio 4449	C	From Leg	3.00	0.0000	133.00	No Ice	4.19	2.45	74.96
(AT&T)			-6.00			1/2" Ice	4.45	2.67	109.14
			0.00			1" Ice	4.71	2.89	147.18
RRUS 8843	A	From Leg	3.00	0.0000	133.00	No Ice	1.75	1.36	72.00
(AT&T)			-6.00			1/2" Ice	1.91	1.51	90.38
			0.00			1" Ice	2.09	1.67	111.53
RRUS 8843	B	From Leg	3.00	0.0000	133.00	No Ice	1.75	1.36	72.00
(AT&T)			-6.00			1/2" Ice	1.91	1.51	90.38
			0.00			1" Ice	2.09	1.67	111.53
RRUS 8843	C	From Leg	3.00	0.0000	133.00	No Ice	1.75	1.36	72.00
(AT&T)			-6.00			1/2" Ice	1.91	1.51	90.38
			0.00			1" Ice	2.09	1.67	111.53
(2) LGP21401	A	From Leg	3.00	0.0000	133.00	No Ice	0.82	0.35	17.50
(AT&T)			6.00			1/2" Ice	0.94	0.44	23.31
			0.00			1" Ice	1.06	0.54	30.86
(2) LGP21401	B	From Leg	3.00	0.0000	133.00	No Ice	0.82	0.35	17.50
(AT&T)			6.00			1/2" Ice	0.94	0.44	23.31
			0.00			1" Ice	1.06	0.54	30.86
(2) LGP21401	C	From Leg	3.00	0.0000	133.00	No Ice	0.82	0.35	17.50
(AT&T)			6.00			1/2" Ice	0.94	0.44	23.31

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	1.06	0.54	30.86
DC6-48-60-0-8F (AT&T)	A	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.04 2.23 2.43	2.04 2.23 2.43	32.80 54.09 78.44
DC6-48-60-0-8F (AT&T)	B	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.04 2.23 2.43	2.04 2.23 2.43	32.80 54.09 78.44
DC6-48-60-0-8F (AT&T)	C	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.04 2.23 2.43	2.04 2.23 2.43	32.80 54.09 78.44
Pipe Sector Frame (AT&T)	A	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	14.40 19.50 24.60	7.20 10.50 13.80	300.00 415.00 530.00
Pipe Sector Frame (AT&T)	B	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	14.40 19.50 24.60	7.20 10.50 13.80	300.00 415.00 530.00
Pipe Sector Frame (AT&T)	C	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	14.40 19.50 24.60	7.20 10.50 13.80	300.00 415.00 530.00
***									
Pipe Side Arm	B	From Leg	1.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	0.46 0.62 0.78	3.55 4.93 5.89	150.00 175.00 200.00
1' Square Panel	B	From Leg	2.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	1.20 1.34 1.48	0.32 0.40 0.49	20.00 27.91 37.76
DB225-A	B	From Leg	0.50 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	3.21 5.78 8.35	3.21 5.78 8.35	37.00 48.10 59.20
Pipe Side Arm	B	From Leg	1.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice 1" Ice	0.46 0.62 0.78	3.55 4.93 5.89	150.00 175.00 200.00
12' Omni	B	From Leg	2.00 0.00 6.00	0.0000	60.00	No Ice 1/2" Ice 1" Ice	3.60 4.83 6.08	3.60 4.83 6.08	12.00 38.06 71.92

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
MF-900B	A	Paraboloid w/o Radome	From Leg	0.50 0.00 0.00	0.0000		123.00	1.33	No Ice 1/2" Ice 1" Ice	2.66 1.58 3.16	13.00 21.09 29.10

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140 - 120	2.897	39	0.1852	0.0549
T2	120 - 100	2.113	39	0.1740	0.0455

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T3	100 - 80	1.429	39	0.1389	0.0286
T4	80 - 60	0.889	39	0.1080	0.0167
T5	60 - 40	0.491	39	0.0742	0.0110
T6	40 - 20	0.219	39	0.0469	0.0055
T7	20 - 0	0.057	39	0.0229	0.0020

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	DB810K-XC	39	2.897	0.1852	0.0549	172870
140.00	Angle Side Arm	39	2.897	0.1852	0.0549	172870
133.00	DB225-A	39	2.617	0.1834	0.0523	123478
123.00	MF-900B	39	2.227	0.1773	0.0474	50947
80.00	Pipe Side Arm	39	0.889	0.1080	0.0167	32920
75.00	DB225-A	39	0.776	0.0997	0.0150	34009
60.00	Pipe Side Arm	39	0.491	0.0742	0.0110	38427

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140 - 120	12.984	2	0.8278	0.2493
T2	120 - 100	9.480	2	0.7783	0.2064
T3	100 - 80	6.415	2	0.6219	0.1299
T4	80 - 60	3.990	2	0.4841	0.0759
T5	60 - 40	2.207	2	0.3326	0.0497
T6	40 - 20	0.984	2	0.2102	0.0249
T7	20 - 0	0.258	2	0.1027	0.0092

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	DB810K-XC	2	12.984	0.8278	0.2493	39161
140.00	Angle Side Arm	2	12.984	0.8278	0.2493	39161
133.00	DB225-A	2	11.732	0.8198	0.2374	27972
123.00	MF-900B	2	9.986	0.7928	0.2152	11541
80.00	Pipe Side Arm	2	3.990	0.4841	0.0759	7332
75.00	DB225-A	2	3.486	0.4471	0.0681	7573
60.00	Pipe Side Arm	2	2.207	0.3326	0.0497	8561

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	ROHN 3.5 STD	20.00	4.00	35.9 K=1.00	2.6795	-21590.80	109730.00	0.197 [1] ✔
T2	120 - 100	ROHN 3.5 STD	20.03	4.01	36.0 K=1.00	2.6795	-47798.70	109694.00	0.436 [1] ✔
T3	100 - 80	Rohn 3.5 X-STR	20.03	5.01	46.0 K=1.00	3.6890	-69780.80	142199.00	0.491 [1] ✔
T4	80 - 60	Rohn 3.5 X-STR	20.03	3.47	31.8 K=1.00	3.6890	-90734.50	154146.00	0.589 [1] ✔
T5	60 - 40	Rohn 3.5 X-STR w/ Third Pipe	20.03	3.44	30.1 K=1.00	4.7470	-113531.00	199909.00	0.568 [1] ✔
T6	40 - 20	Rohn 4 X-STR w/ Third Pipe	20.03	3.43	25.6 K=1.00	5.6510	-137241.00	242403.00	0.566 [1] ✔
T7	20 - 0	ROHN 5 X-STR	20.03	5.18	33.8 K=1.00	6.1120	-158209.00	253029.00	0.625 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L1 1/2x1 1/2x1/8	6.02	2.79	112.9 K=1.00	0.3594	-3349.62	5949.86	0.563 [1] ✔
T2	120 - 100	L1 1/2x1 1/2x1/8	7.50	3.67	148.9 K=1.00	0.3594	-2735.29	3662.33	0.747 [1] ✔
T3	100 - 80	L2x2x1/8	9.71	4.81	145.2 K=1.00	0.4844	-3338.29	5190.27	0.643 [1] ✔
T4	80 - 60	L2 1/2x2 1/2x3/16	12.25	6.13	148.5 K=1.00	0.9020	-4533.26	9237.72	0.491 [1] ✔
T5	60 - 40	L2 1/2x2 1/2x3/16	13.99	7.00	169.7 K=1.00	0.9020	-5118.97	7077.10	0.723 [1] ✔
T6	40 - 20	L2 1/2x2 1/2x5/16	15.81	7.88	193.5 K=1.00	1.4600	-6061.27	8812.53	0.688 [1] ✔
T7	20 - 0	L3x3x3/8	19.03	9.54	195.1 K=1.00	2.1100	-7130.00	12525.40	0.569 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	80 - 60	L2 1/2x2 1/2x3/16	10.26	9.93	153.1 K=1.00	0.9020	-679.39	8691.42	0.078 [1] ✔
T5	60 - 40	L2 1/2x2 1/2x3/16	12.29	11.96	184.5 K=1.00	0.9020	-841.28	5988.96	0.140 [1] ✔
T6	40 - 20	L2 1/2x2 1/2x5/16	13.65	13.27	209.3 K=1.00	1.4600	-1016.10	7530.99	0.135 [1] ✔
T7	20 - 0	L3x3x3/8	15.16	14.70	193.2 K=1.00	2.1100	-1066.45	12774.60	0.083 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L3x3x1/4	4.50	4.17	84.5 K=1.00	1.4400	-117.01	32049.10	0.004 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	ROHN 3.5 STD	20.00	4.00	35.9	2.6795	18594.40	120579.00	0.154 [1] ✔
T2	120 - 100	ROHN 3.5 STD	20.03	4.01	36.0	2.6795	43172.40	120579.00	0.358 [1] ✔
T3	100 - 80	Rohn 3.5 X-STR	20.03	5.01	46.0	3.6890	63287.40	166004.00	0.381 [1] ✔
T4	80 - 60	Rohn 3.5 X-STR	20.03	3.47	31.8	3.6890	81952.40	166004.00	0.494 [1] ✔
T5	60 - 40	Rohn 3.5 X-STR w/ Third Pipe	20.03	3.44	30.1	4.7470	101583.00	213615.00	0.476 [1] ✔
T6	40 - 20	Rohn 4 X-STR w/ Third Pipe	20.03	3.43	25.6	5.6510	121085.00	254295.00	0.476 [1] ✔
T7	20 - 0	ROHN 5 X-STR	20.03	5.18	33.8	6.1120	137882.00	275039.00	0.501 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	140 - 120	L1 1/2x1 1/2x1/8	6.02	2.79	71.9	0.3594	3282.98	11643.80	0.282 [1] ✔
T2	120 - 100	L1 1/2x1 1/2x1/8	7.50	3.67	94.8	0.3594	2699.55	11643.80	0.232 [1] ✔
T3	100 - 80	L2x2x1/8	9.71	4.81	92.2	0.4844	3296.28	15693.80	0.210 [1] ✔
T4	80 - 60	L2 1/2x2 1/2x3/16	12.25	6.13	94.5	0.9020	4250.30	29224.80	0.145 [1] ✔
T5	60 - 40	L2 1/2x2 1/2x3/16	13.99	7.00	108.0	0.9020	4796.17	29224.80	0.164 [1] ✔
T6	40 - 20	L2 1/2x2 1/2x5/16	15.81	7.88	124.3	1.4600	5512.81	47304.00	0.117 [1] ✔
T7	20 - 0	L3x3x3/8	19.03	9.54	125.4	2.1100	6165.22	68364.00	0.090 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T4	80 - 60	L2 1/2x2 1/2x3/16	10.26	9.93	153.1	0.9020	691.05	29224.80	0.024 [1] ✔
T5	60 - 40	L2 1/2x2 1/2x3/16	12.29	11.96	184.5	0.9020	887.30	29224.80	0.030 [1] ✔
T6	40 - 20	L2 1/2x2 1/2x5/16	12.97	12.59	198.6	1.4600	1134.47	47304.00	0.024 [1] ✔
T7	20 - 0	L3x3x3/8	15.16	14.70	193.2	2.1100	1091.43	68364.00	0.016 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

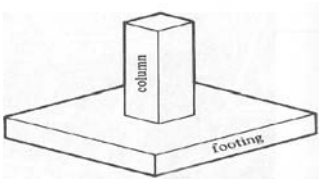
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	140 - 120	L3x3x1/4	4.50	4.17	53.8	1.4400	116.31	46656.00	0.002 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	140 - 120	Leg	ROHN 3.5 STD	3	-21590.80	109730.00	19.7	Pass
		Diagonal	L1 1/2x1 1/2x1/8	10	-3349.62	5949.86	56.3	Pass
		Top Girt	L3x3x1/4	4	-117.01	32049.10	0.4	Pass
T2	120 - 100	Leg	ROHN 3.5 STD	39	-47798.70	109694.00	43.6	Pass
		Diagonal	L1 1/2x1 1/2x1/8	42	-2735.29	3662.33	74.7	Pass
T3	100 - 80	Leg	Rohn 3.5 X-STR	72	-69780.80	142199.00	49.1	Pass
		Diagonal	L2x2x1/8	75	-3338.29	5190.27	64.3	Pass
T4	80 - 60	Leg	Rohn 3.5 X-STR	99	-90734.50	154146.00	58.9	Pass
		Diagonal	L2 1/2x2 1/2x3/16	102	-4533.26	9237.72	49.1	Pass
		Secondary Horizontal	L2 1/2x2 1/2x3/16	108	-679.39	8691.42	7.8	Pass
T5	60 - 40	Leg	Rohn 3.5 X-STR w/ Third Pipe	129	-113531.00	199909.00	56.8	Pass
		Diagonal	L2 1/2x2 1/2x3/16	132	-5118.97	7077.10	72.3	Pass
		Secondary Horizontal	L2 1/2x2 1/2x3/16	138	-841.28	5988.96	14.0	Pass
T6	40 - 20	Leg	Rohn 4 X-STR w/ Third Pipe	159	-137241.00	242403.00	56.6	Pass
		Diagonal	L2 1/2x2 1/2x5/16	162	-6061.27	8812.53	68.8	Pass
		Secondary Horizontal	L2 1/2x2 1/2x5/16	176	-1016.10	7530.99	13.5	Pass
T7	20 - 0	Leg	ROHN 5 X-STR	189	-158209.00	253029.00	62.5	Pass
		Diagonal	L3x3x3/8	192	-7130.00	12525.40	56.9	Pass
		Secondary Horizontal	L3x3x3/8	207	-1066.45	12774.60	8.3	Pass
							Summary	
							Leg (T7) 62.5	Pass
							Diagonal (T2) 74.7	Pass
							Secondary Horizontal (T5) 14.0	Pass
							Top Girt (T1) 0.4	Pass
							RATING = **74.7**	**Pass**

Date:	2/5/2019
Site Name:	CTL02045
Client:	Smartlink
Infinigy Job #:	499-006
Analysis/Design:	Analysis
Column Shape:	Circle
Footing Shape:	Square
Tower Type:	Self Support



Infinigy Engineering PLLC
Pad + Pier Calculations
ACI 318-11

Loading Data		
TIA Code Revision:	ANSI/TIA-222-G	
Uplift:	0.0	kips
Axial:	16.4	kips
Shear:	18.2	kips
Moment:	0	k-ft

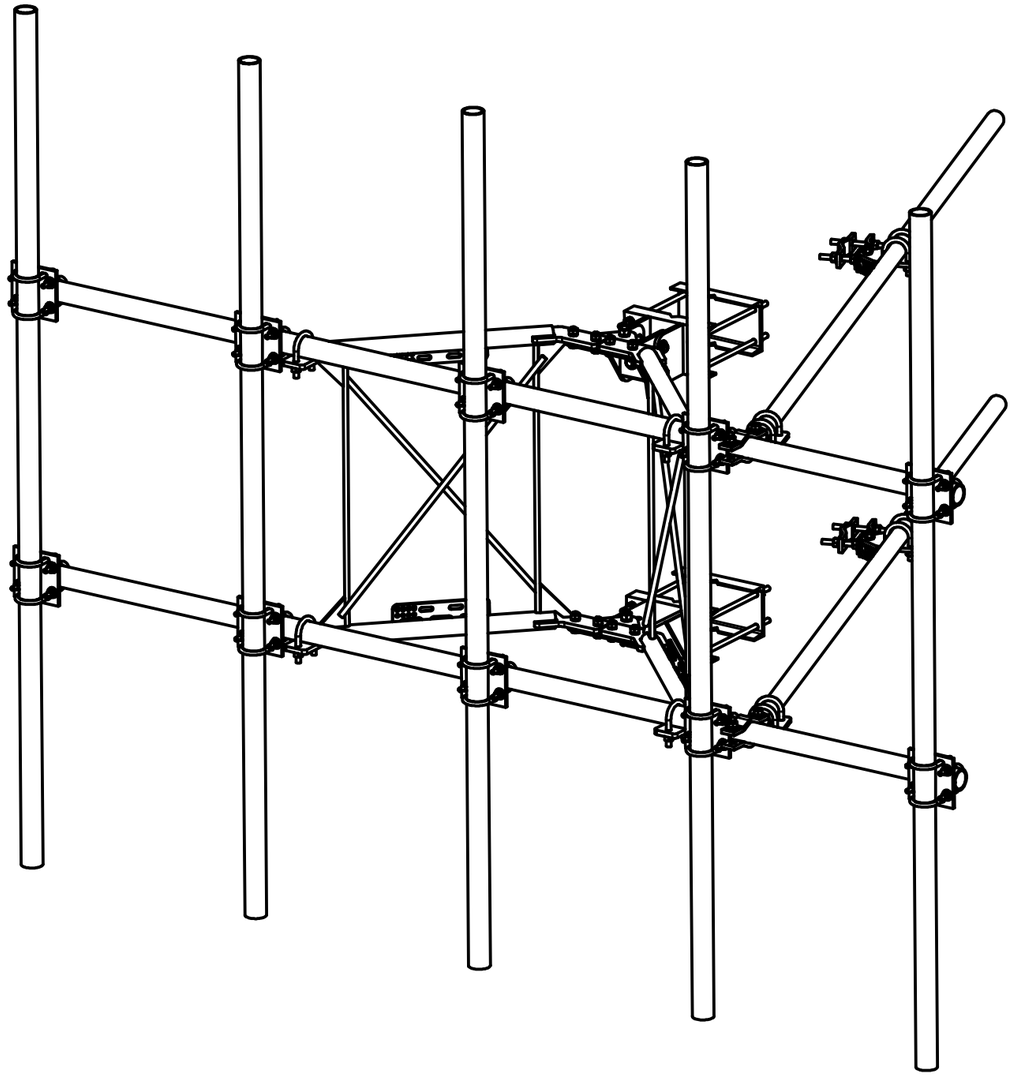
Soil Data		
Soil Type:	Clay	
Water Table Depth:	7	ft
Soil Dry Unit Weight:	105.0	pcf
ø Angle:	30	deg
Cohesion:	1000	psf
Ultimate Skin Friction:	500	psf
Friction Coefficient:	0.4	
Ultimate Bearing Pressure:	6000	psf

Column Data		
Concrete Strength:	3000	psi
Column Diameter:	3	ft
Column Total Length:	9.9	ft
Column Height above ground:	0.8	ft
Vertical Rebar Strength:		psi
Vertical Rebar Size:		(#10) max.
Vertical Rebar Quantity:		(4) min.
Tie Rebar Strength:		psi
Tie Rebar Size:		(#3) max.
Tie Rebar Spacing:		in
Rebar Clear Distance:		in

Footing Data		
Concrete Strength:	3000	psi
Footing Length:	8.5	ft
Footing Width:	10.6	ft
Footing Thickness:	3.100	ft
Horizontal Rebar Strength:		psi
Horizontal Rebar Size:		
Horizontal Rebar Quantity:		
Rebar Clear Distance:		in
Dowel Strength:		psi
Dowel Size:		(#11) max.
Dowel Development Length:		in
Dowel Quantity:		

Concrete Strength Check		
Footing One-Way Shear Ratio:	1.89	%

Soil Stability Check		
ϕs Bearing:	0.75	
ϕs Uplift:	0.75	
Bearing Ratio:	4.04	%
Sliding Ratio:	35.59	%
Toe Pressure Ratio:	68.77	%
Overturning Ratio:	53.25	%



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	1	X-HDCAMDSS	CLAMP WELDMENT FOR BCAM-HD		28.59	28.59
3	1	X-HDMHTP	HEAVY DUTY MULTI-HOLE TAPER PLATE WELDMENT		29.36	29.36
4	2	X-VFAPL3	VFA-HD PIVOT PLATE	24 in	9.69	19.38
5	2	X-HDLCBB	HEAVY DUTY LEG CONNECTION BACKING BRACKET	13 in	16.66	33.33
6	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.51	16.51
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	1	X-HDCAMSP	POSITIONING PLATE WELDMENT FOR BCAM-HD		2.58	2.58
9	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
10	10	SCX2	CROSSOVER PLATE	7 in	4.80	47.96
11	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
12	8	DCP	1/2" THICK, 5-3/4" CNTER TO CENTER CLAMP HALF	8 1/8 in	2.36	18.90
13	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
14	2	P30150	2-7/8" X 150" (2-1/2" SCH. 40) GALVANIZED PIPE	150 in	76.94	153.87
15	2	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	0.96
16	2	G34LW	3/4" HDG LOCKWASHER		0.04	0.09
17	2	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.42
18	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
19	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
20	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)	18 in	0.40	3.19
21	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
22	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
23	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
24	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
25	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
26	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
27	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
28	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
30	48	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	35.45
30	20	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	13.13
31	80	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.73
32	80	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.11
33	80	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	5.73
34	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
35	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.53	0.53
36	5	P30120	2-7/8" x 120" (2-1/2" SCH. 40) GALVANIZED PIPE	120 in	58.07	290.33
					TOTAL WT. #	1024.51

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ALL OTHER ASSEMBLY (± 0.060")

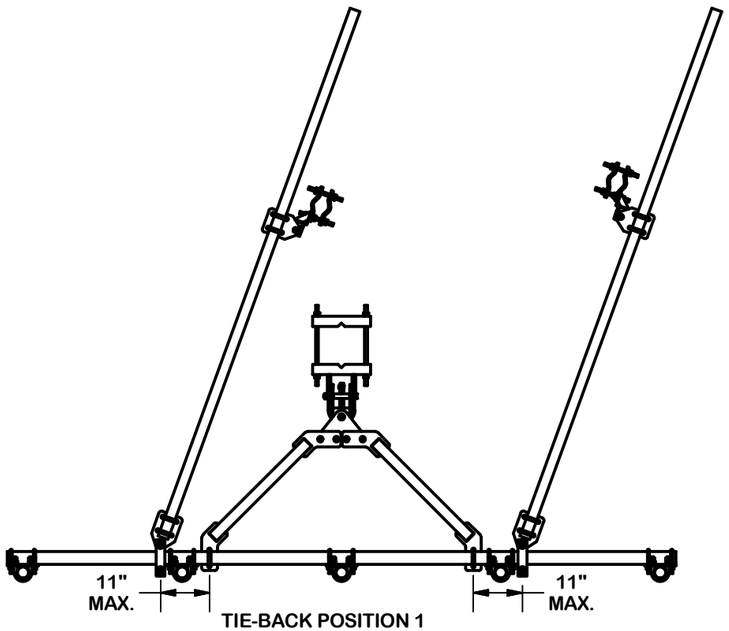
DESCRIPTION: 12' 6" HEAVY DUTY V-FRAME ASSEMBLY W/ 2 STIFF ARMS & MOUNT PIPES

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
SP1	CSL 1/25/2017		VFA12-WLL-30120

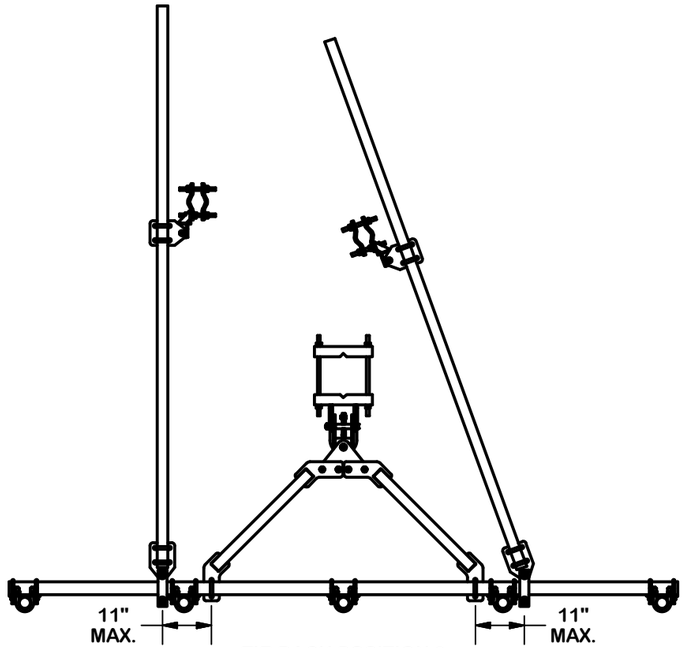
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
87	02	CUSTOMER	BMC 5/3/2018	VFA12-WLL-30120

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

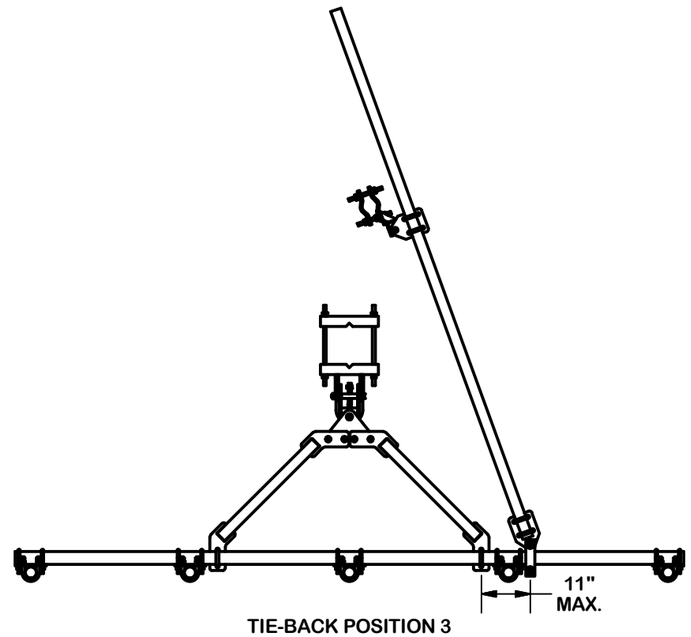
TIE-BACK POSITIONS



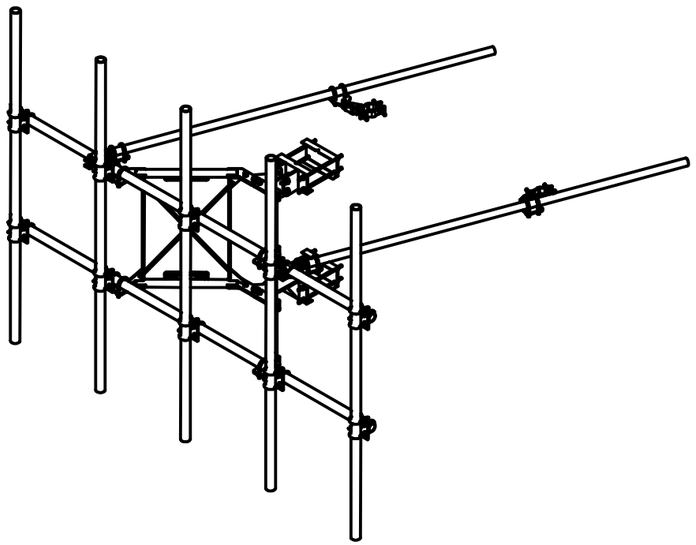
TIE-BACK POSITION 1
-20° / +20° TOP PARALLEL

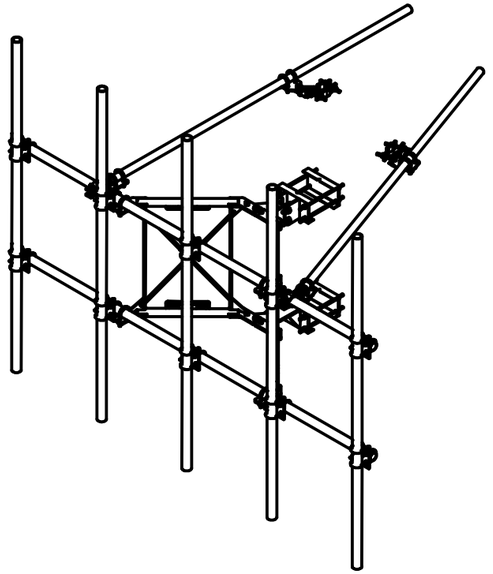


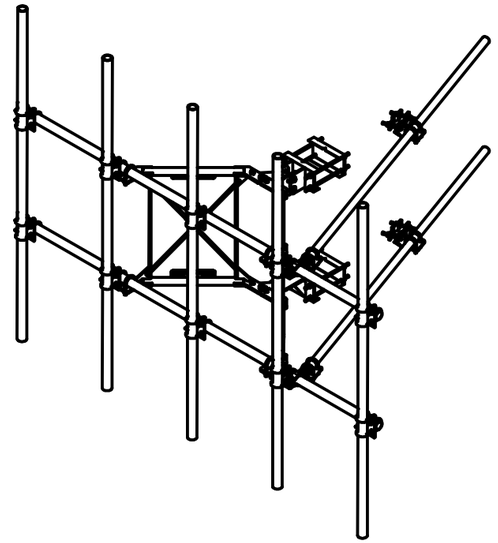
TIE-BACK POSITION 2
-20° / -20° TOP CROSS



TIE-BACK POSITION 3
-20° SAME SIDE STACKED







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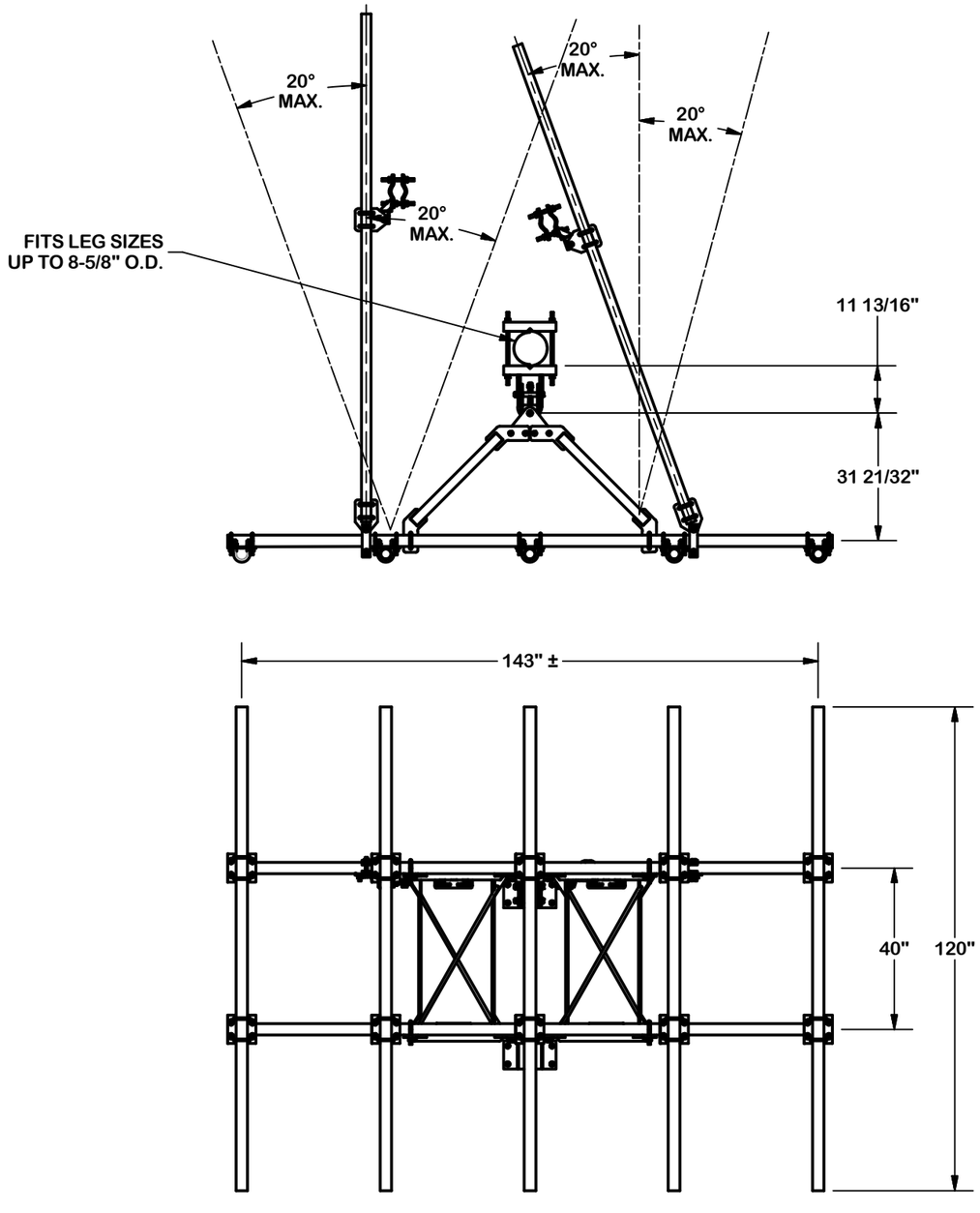
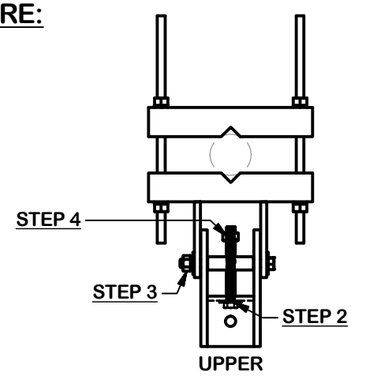
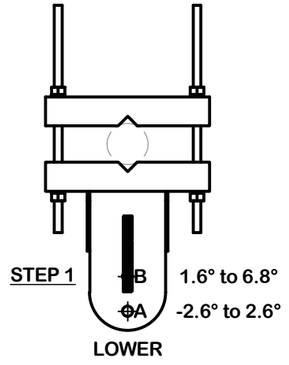
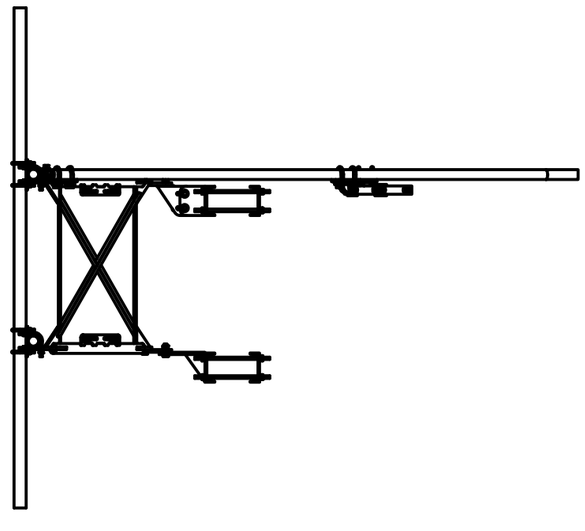


ANGLE CALIBRATING PROCEDURE:

1. MEASURE TOWER TAPER AND PICK LOWER BRACKET HOLE:
   - HOLE A = -2.6° TO 2.6°
   - HOLE B = 1.6° TO 6.8°
2. USE CALIBRATING BOLT TO ADJUST FRAME TO DESIRED TAPER
3. TORQUE LOCKING BOLTS TO 100 ft.-lbs.
4. ADVANCE LOCKING NUT TO POSITIONING PLATE, THEN TIGHTEN.







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87	02	CUSTOMER	BMC 5/3/2018	VFA12-WLL-30120

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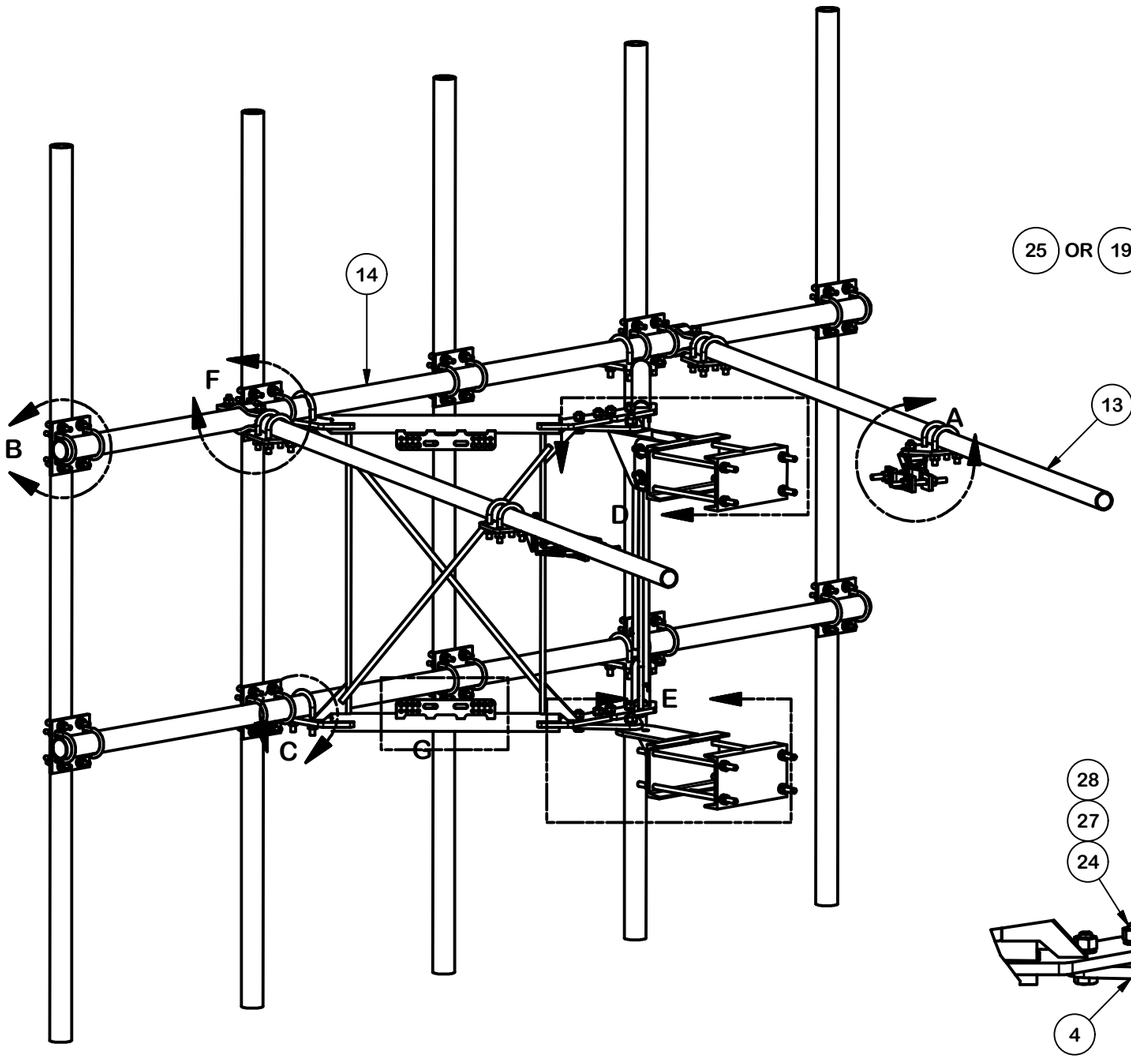
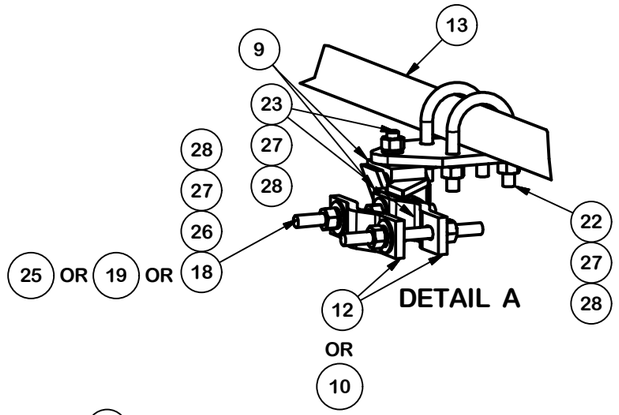
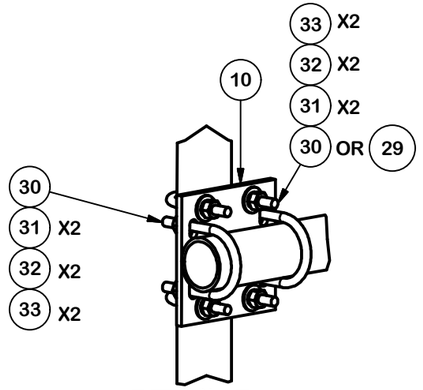




DETAIL A



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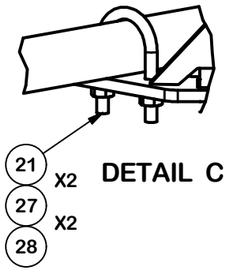

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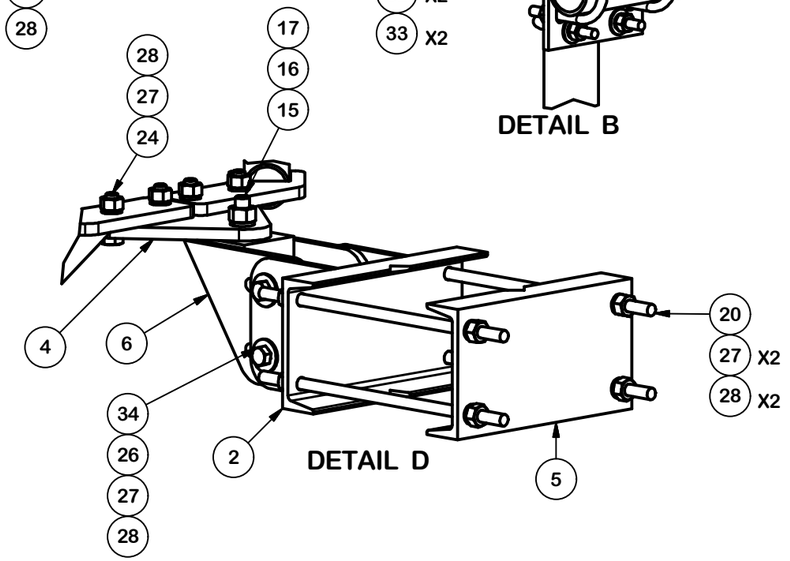
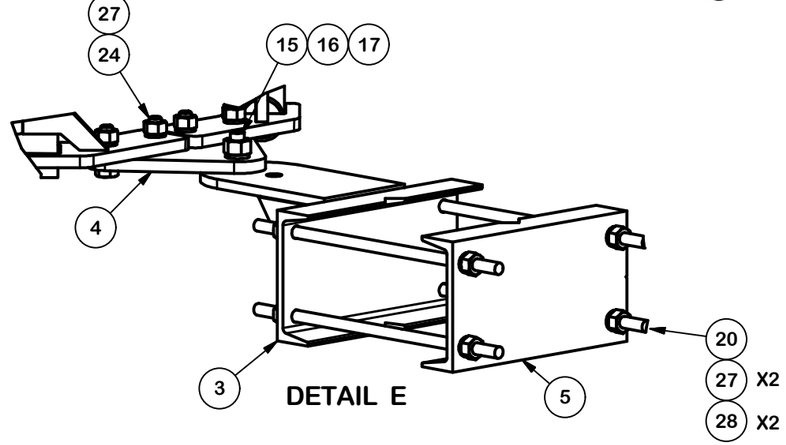
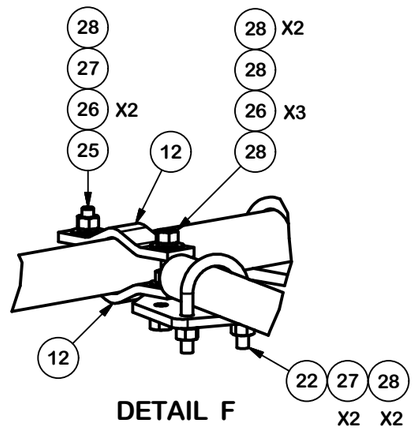


DETAIL D



DETAIL E

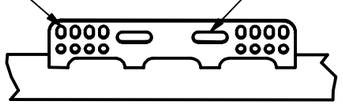


DETAIL F

7/16" LUG HOLES

REVIEW CARRIER STANDARDS FOR PROPER SURFACE PREPARTION AND ASSEMBLY OF ELECTRICAL CONNECTIONS

9/16" SLOTTED HOLE FOR EQUIPMENT PIPE U-BOLT



DETAIL G

TOLERANCE NOTES

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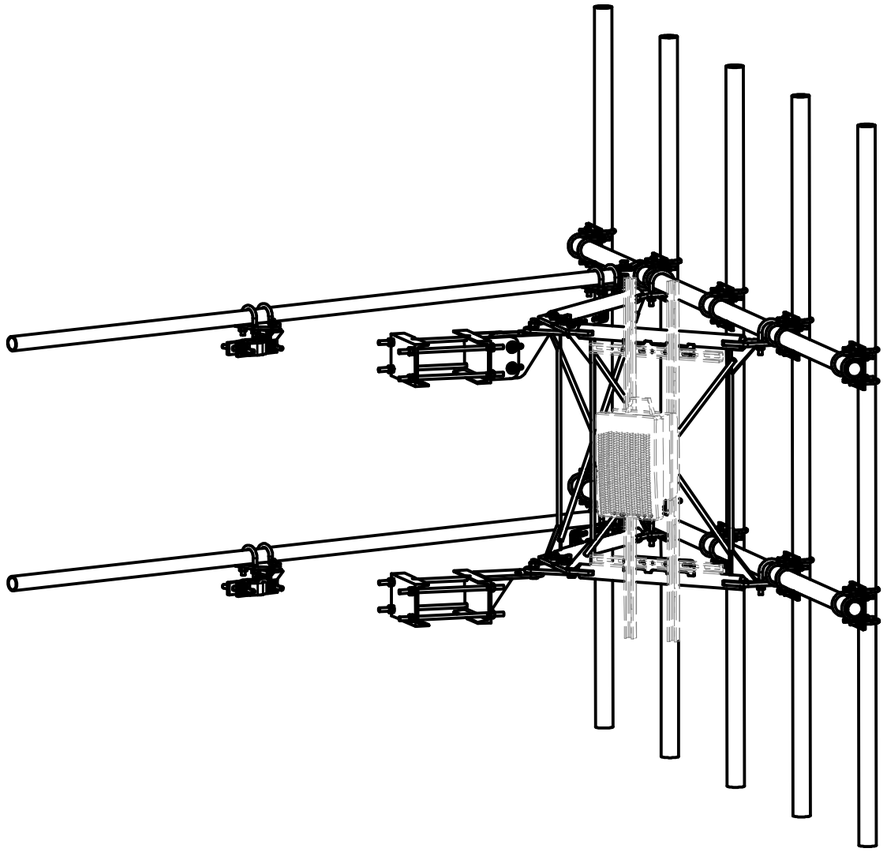
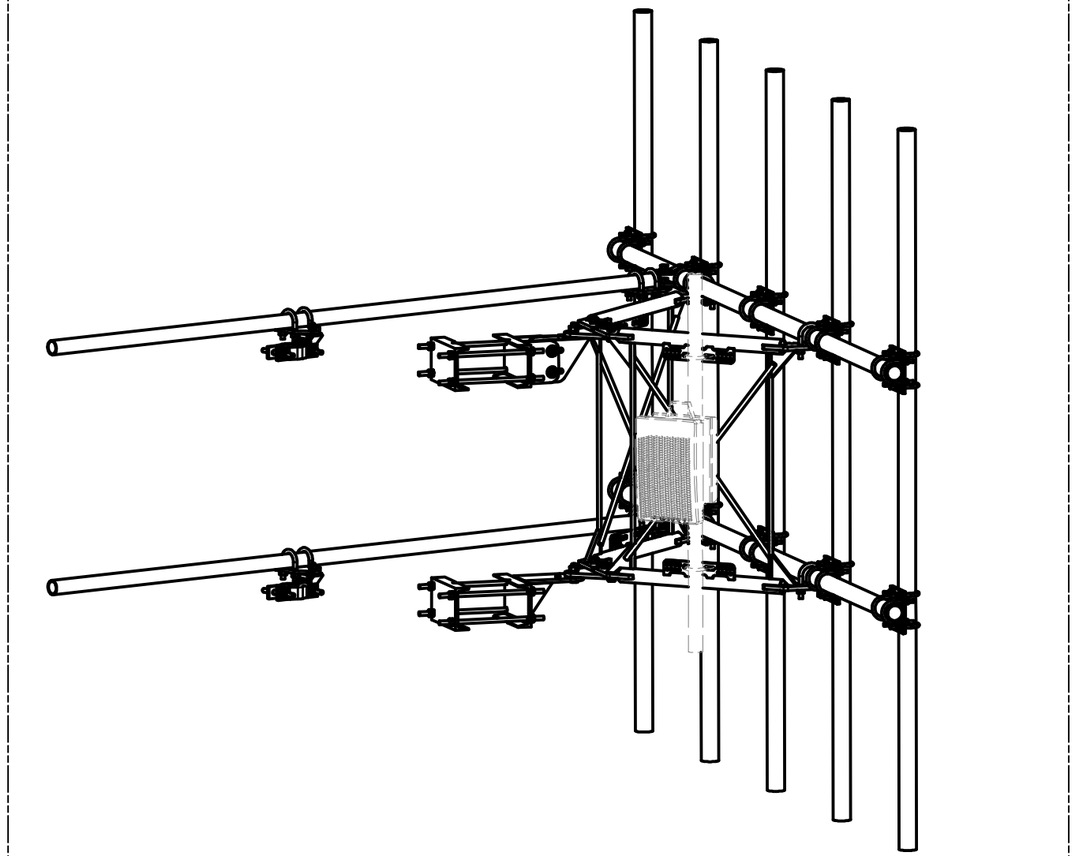
SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
SP1	CSL 1/25/2017		VFA12-WLL-30120	4 OF 5
CLASS / SUB: 87 / 02	DRAWING USAGE: CUSTOMER	CHECKED BY: BMC 5/3/2018	DWG. NO. VFA12-WLL-30120	



UNISTRUT AND HARDWARE
SOLD SEPARATELY.

REQUIRES 3/8" HARDWARE



EQUIPMENT PIPE AND HARDWARE
SOLD SEPARATELY.

REQUIRES 1/2" HARDWARE
AND 2-3/8" TO 4-1/2" O.D. PIPE

TOLERANCE NOTES

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SP1	CSL 1/25/2017		VFA12-WLL-30120

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
87	02	CUSTOMER	BMC 5/3/2018	VFA12-WLL-30120

SITESAFE
RF COMPLIANCE EXPERTS

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

Smartlink on behalf of AT&T Mobility, LLC Site FA – 10034999 USID – 59409 Site ID – CT2045 Site Name – KILLINGWORTH-RTE 81 (MRCTB035091-MRCTB035254-MRCTB035289-MRCTB035122)

323 ROUTE 81
KILLINGWORTH, CT 06419

Latitude: N41-22-10.07
Longitude: W72-33-51.20
Structure Type: Self-Support

Report generated date: March 8, 2019
Report by: Sam Cosgrove
Customer Contact: David Barbagallo

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

Table of Contents

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
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?	No

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

RFDS: NEW-ENGLAND_CONNECTICUT_CT2045_2019-LTE-Next-Carrier_LTE_sp656b_PTN_10034999_59409_09-19-2018_Final-Approved_v4.00

CD's: 10034999_AE201_190226_CTL02045_REV1

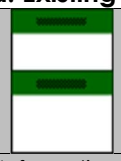
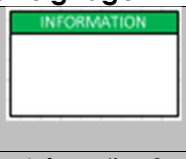
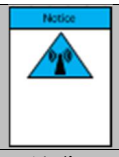
RF Powers Used: NEW-ENGLAND_CONNECTICUT_CT2045_2019-LTE-Next-Carrier_LTE_sp656b_PTN_10034999_59409_09-19-2018_Final-Approved_v4.00

1.2 Fall Arrest Anchor Point Summary

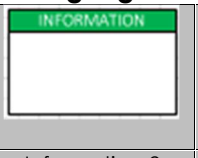
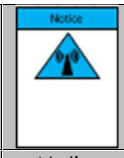
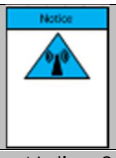
Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	N	N/A	N

1.3 Signage Summary

a. Existing AT&T Signage

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

b. Proposed AT&T Signage

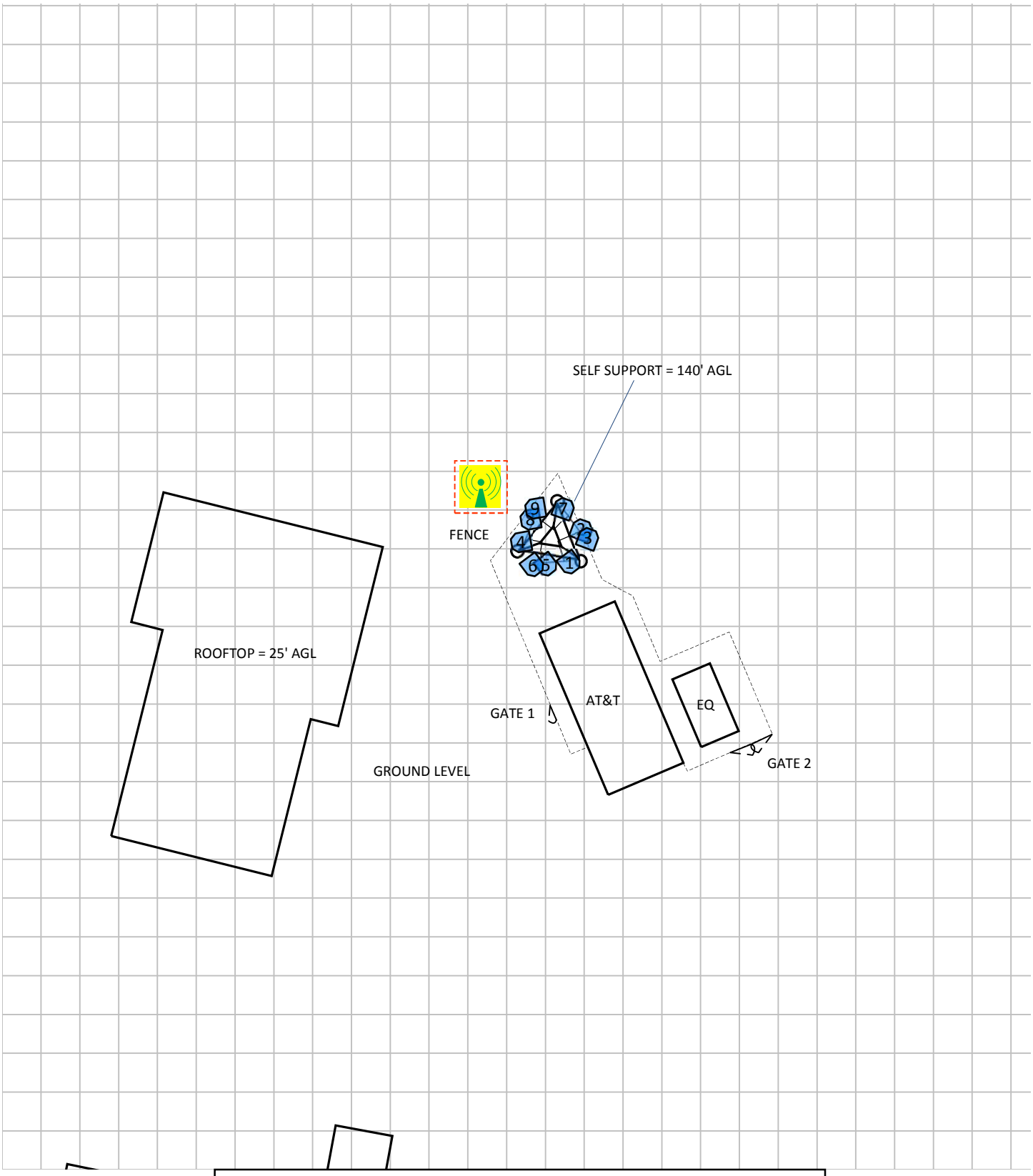
AT&T Signage Locations									
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2B	Warning	Warning 2	Barriers
Access Point(s)						**1**			
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- RF Exposure Diagram –Detail View
- RF Exposure Diagram –Elevation View

Site Scale Map For: KILLINGWORTH-RTE 81



www.sitesafe.com
Site Name:KILLINGWORTH-RTE 81
3/8/2019 2:10:35 PM

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)	Tech	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	143	82	4.6	312.6	ERP	Watt	0	1	312.6	11.51	130.7'	0°	8°
2	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 80010991	Panel	1900	LTE	20	65	6.6	3664.376	ERP	Watt	0	1	3664.4	14.14	129.7'	0°	6°
3	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	737	LTE	20	63.9	6.6	1475.707	ERP	Watt	0	1	1475.7	12.5	129.7'	0°	3°
3	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	850	LTE	20	61.7	6.6	1000	ERP	Watt	0	1	1000	13.62	129.7'	0°	3°
3	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	2100	AWS	20	65.2	6.6	3837.072	ERP	Watt	0	1	3837.1	16.48	129.7'	0°	6°
3	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	850	5G	20	61.7	6.6	1000	ERP	Watt	0	1	1000	13.62	129.7'	0°	3°
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	260	82	4.6	312.6	ERP	Watt	0	1	312.6	11.51	130.7'	0°	4°
5	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 80010991	Panel	1900	LTE	143	65	6.6	3664.376	ERP	Watt	0	1	3664.4	14.14	129.7'	0°	2°
6	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	737	LTE	143	63.9	6.6	1475.707	ERP	Watt	0	1	1475.7	12.5	129.7'	0°	6°
6	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	850	LTE	143	61.7	6.6	1000	ERP	Watt	0	1	1000	13.62	129.7'	0°	6°
6	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	2100	AWS	143	65.2	6.6	3837.072	ERP	Watt	0	1	3837.1	16.48	129.7'	0°	3°
6	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	850	5G	143	61.7	6.6	1000	ERP	Watt	0	1	1000	13.62	129.7'	0°	6°
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	20	82	4.6	312.6	ERP	Watt	0	1	312.6	11.51	130.7'	0°	4°
8	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 80010991	Panel	1900	LTE	260	65	6.6	3664.376	ERP	Watt	0	1	3664.4	14.14	129.7'	0°	2°
9	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	2100	AWS	260	65.2	6.6	3837.072	ERP	Watt	0	1	3837.1	16.48	129.7'	0°	3°
9	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	850	5G	260	61.7	6.6	1000	ERP	Watt	0	1	1000	13.62	129.7'	0°	2°
9	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	737	LTE	260	63.9	6.6	1475.707	ERP	Watt	0	1	1475.7	12.5	129.7'	0°	2°
9	AT&T MOBILITY LLC (Proposed)	Kathrein-Scala 800-10965	Panel	850	LTE	260	61.7	6.6	1000	ERP	Watt	0	1	1000	13.62	129.7'	0°	2°

NOTE: X, Y and Z indicate relative position of the bottom 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 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.

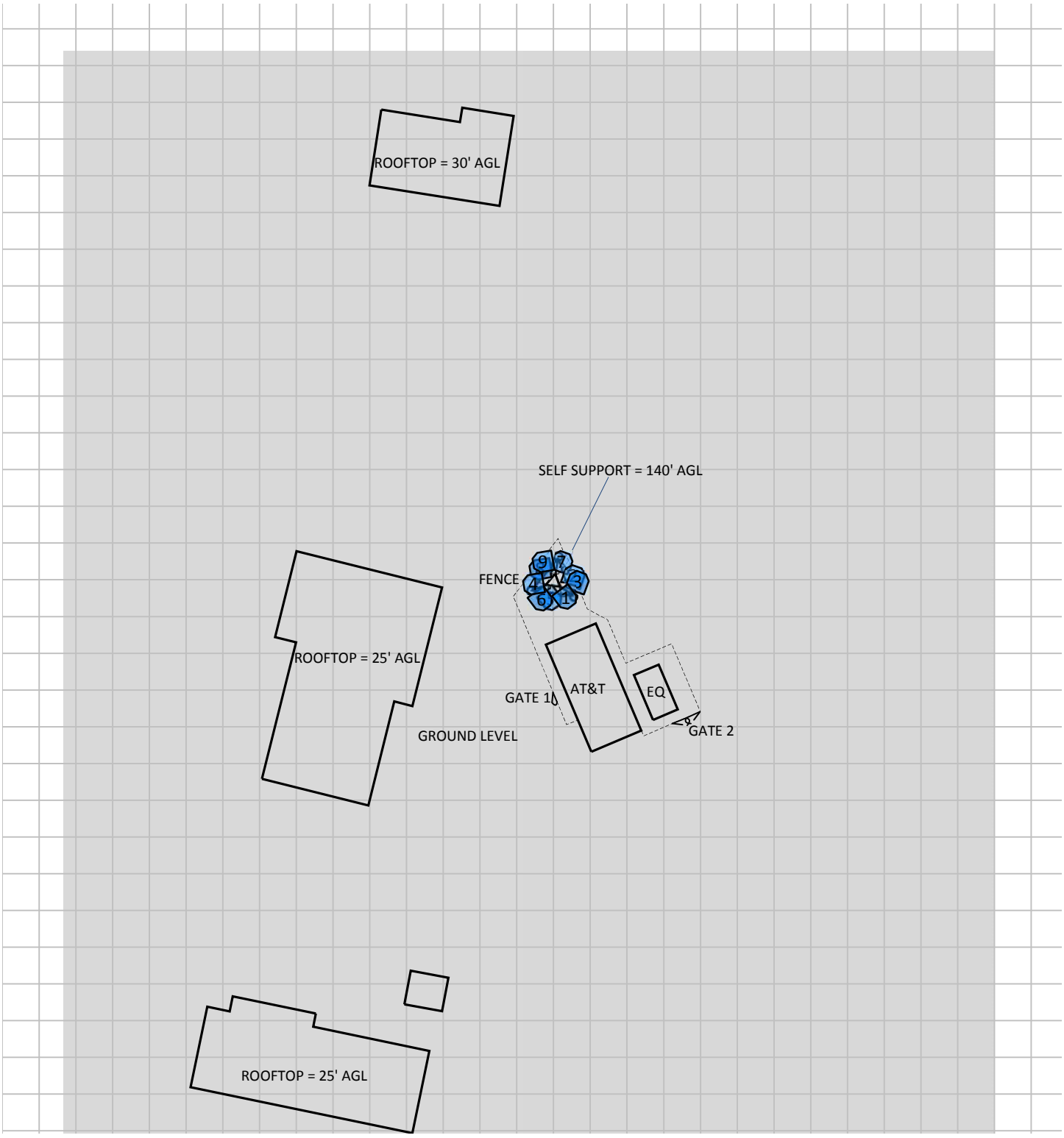
4 Emission Predictions

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.

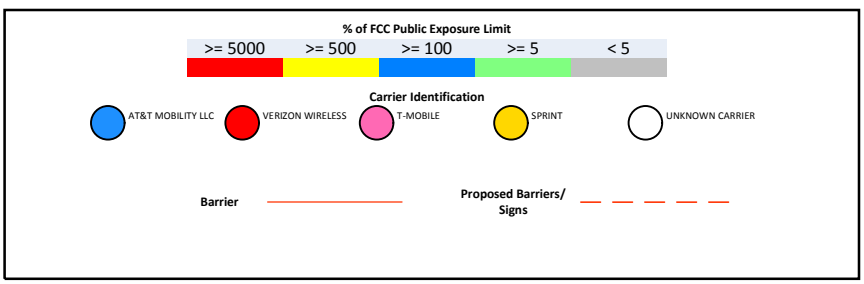
- Ground Level = 0'
- Rooftop = 25'
- Rooftop = 30'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: KILLINGWORTH-RTE 81



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



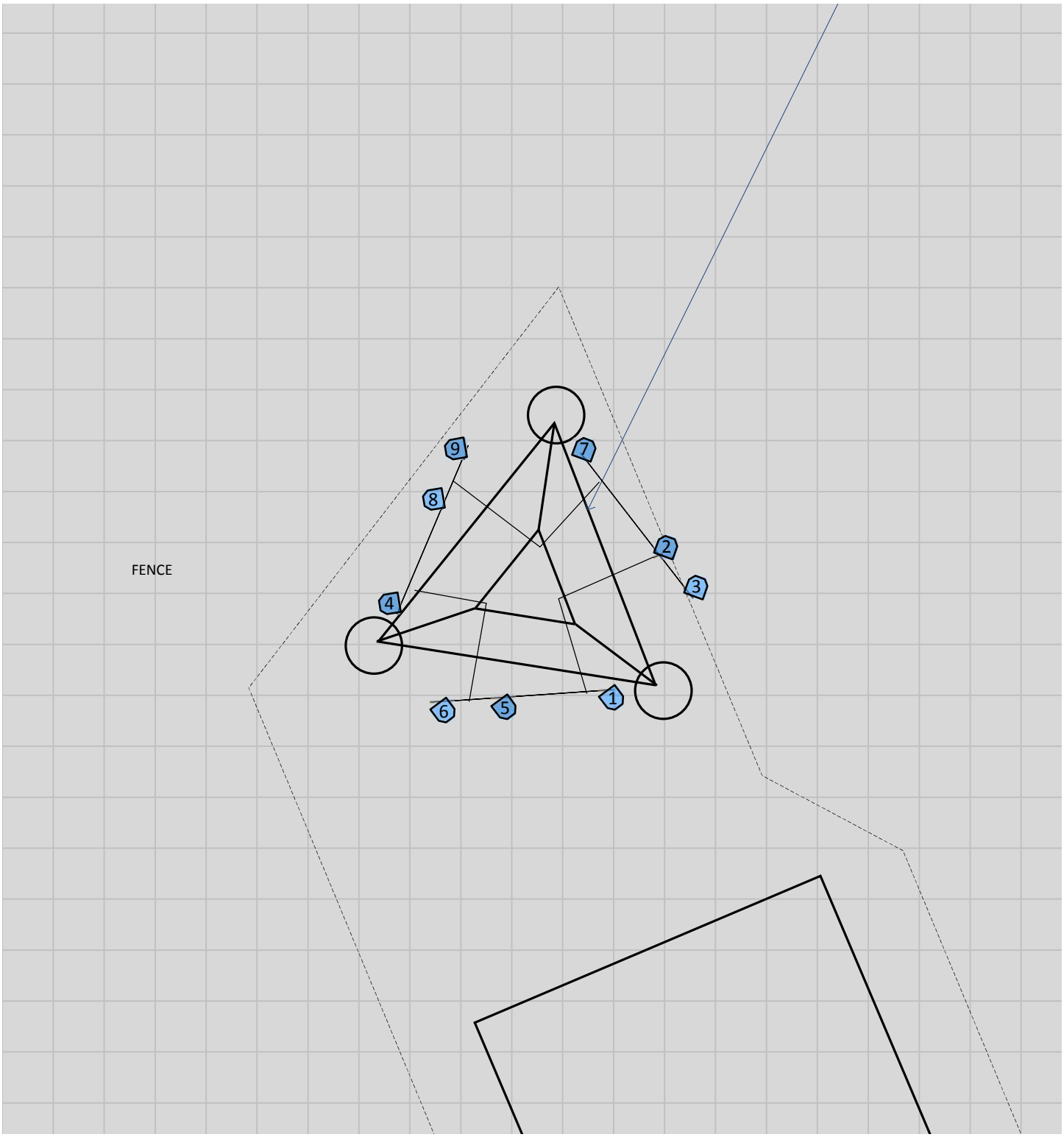
(Feet)

0 25.5 51.1

www.sitesafe.com
Site Name:KILLINGWORTH-RTE 81
3/8/2019 2:03:13 PM

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

RF Exposure Simulation For: KILLINGWORTH-RTE 81
Detail View



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

% of FCC Public Exposure Limit

>= 5000	>= 500	>= 100	>= 5	< 5

Carrier Identification

AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

Barrier

Proposed Barriers/ Signs

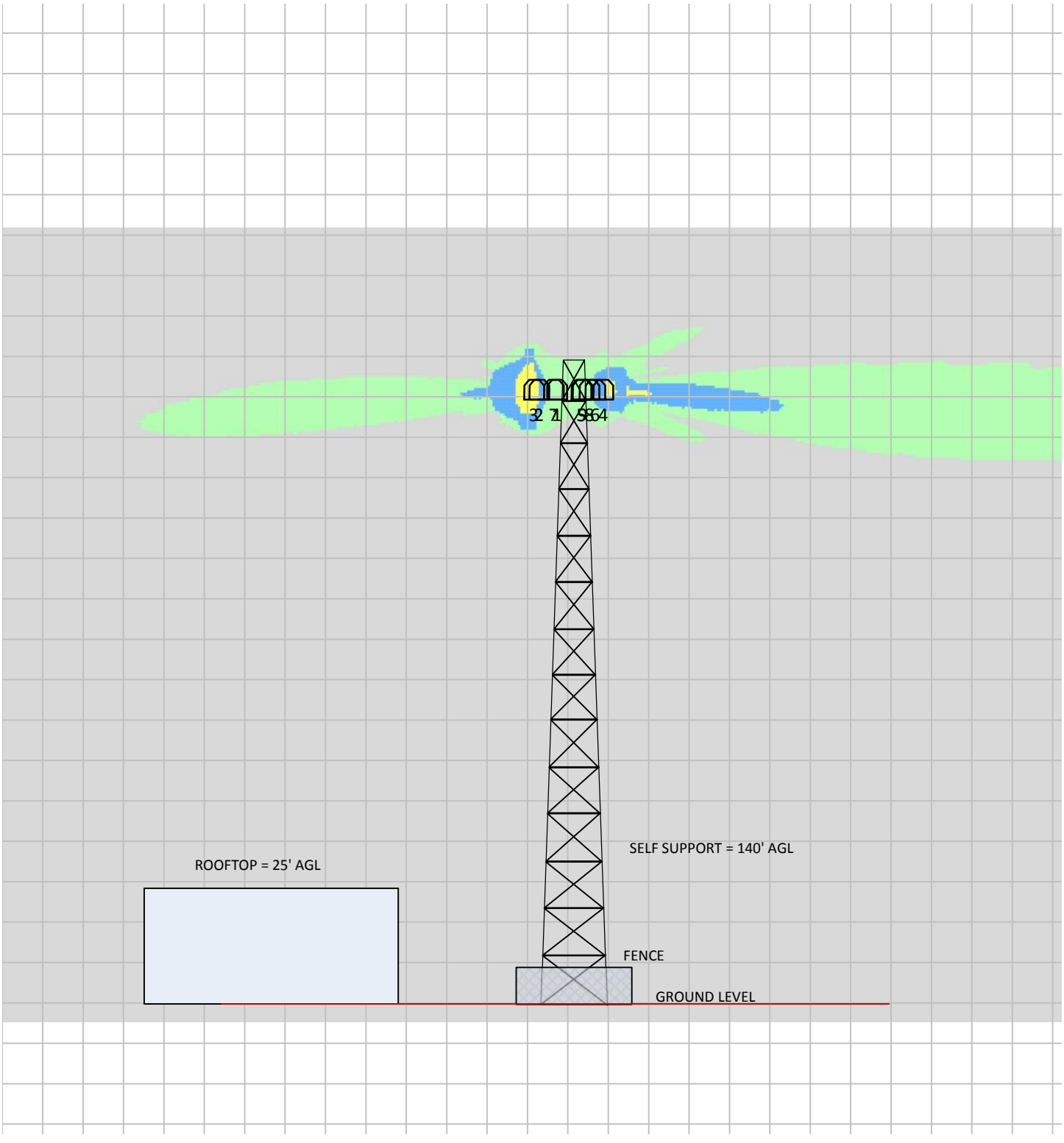
(Feet)

0 3.5 6.9

www.sitesafe.com
Site Name:KILLINGWORTH-RTE 81
3/8/2019 2:03:28 PM

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

RF Exposure Simulation For: KILLINGWORTH-RTE 81
Elevation View



% of FCC Public Exposure Limit

% of FCC Public Exposure Limit
>= 5000 | >= 500 | >= 100 | >= 5 | < 5

Carrier Identification
AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

Barrier | Proposed Barriers/ Signs

(Feet)
0 15.3 30.6

www.sitesafe.com
Site Name:KILLINGWORTH-RTE 81
3/8/2019 2:00:32 PM

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:

Site 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 Sam Cosgrove.

March 8, 2019

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.

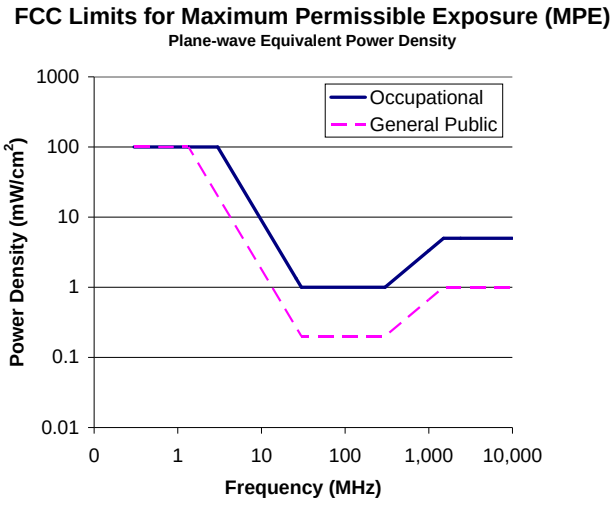
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* 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:



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?siteareа=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