MONTGOMERY COUNTY, MARYLAND
APPLICATION FOR WIRELESS COMMUNICATIONS SITE COORDINATION

Revised 5.8.18

DATE: _____ NUMBER: 201802-08
(To be filled in by County)

Applicant Name: AT&T Mobility

Address: 7150 Standard Drive, Suite B, Hanover, MD 21076

Contact Person and Phone Number: Carrie Lynn Fazzolari - 443.223.7483 - carrie.fazzolari@jacobs.com

Provide a description of the proposed installation, including the type and height of the structure (i.e. monopole, rooftop, water tank, guyed tower, self-support tower, etc.) and whether it is existing, modified, or new. Describe any modifications that will be made to existing structure.
Removing three (3) antennas and replacing them with three (3) Antennas (KATHREIN 80010966); adding six (6) Remote Radio Heads (RRH's).

Address/City: 17001 Overhill Road, Rockville MD 20855

Site Name: Montgomery Village Zoning: RE-1

Site Owner/Landlord: Montgomery Council KC Building Corp

Structure Owner: American Towers Inc.

Latitude/Longitude (NAD27 Degrees/Minutes/Seconds): 39-8-5 / -77-8-31

Ground Elevation AMSL in Feet: 412'

Antenna Height AGL in Feet: 173'

Frequency Bands to Be Used: Please see the frequency bands used at this site:
758 MHz –768 MHz - 788 MHz – 798 MHz
734-746MHz 704-716MHz
1945-1965MHz 1865-1885MHz
2110-2120MHz 1710-1720MHz

Maximum Effective Radiation Power (EFP): 3733 ERP

Federal Communications Commission (FCC) Emission Designator: N/A

FCC Antenna Structure Registration Number: N/A

Description of antenna(s), including physical size, patterns, gain and orientation (include copy of spec sheet or drawings):
Proposed antennas are: KATHREIN 80010966 (96"H x 20"W x 6.9"D)

Describe area to be served by the proposed installation. Attach a map of the general area showing the location of the site. Upon request, attach RF propagation studies showing service area coverage surrounding the proposed site with and without the proposed site.
N/A. Existing propogation will remain.

Will antennas be installed on an existing structure? Yes ☒ No ☐

If not, describe results of investigation about possible co-location. Include a listing of alternative sites considered and an explanation as to why each possible alternative was not selected. If a site was ruled out because of radio frequency (RF) issues, provide RF propagation maps documenting inadequate coverage:

_____

Justification of why this site was selected: This is an existing site. AT&T wants to update the technology.

Will site be used to support government telecommunications facilities or other equipment for government use?
Yes ☐ No ☒

If yes, describe: _____

Attach a site plan of the proposed facility showing location of monopole, tower, or structure on the property, location of existing and proposed equipment buildings or cabinets, and distance of any new structures or buildings from property lines and other buildings or residences within 300 feet. Clearly identify existing versus proposed facilities by carrier. Also provide an elevation sketch of the structure showing major dimensions, existing attachments, and mounting height of proposed antennas. If a balloon test has been performed, please provide copies of the photographs.

Will the antenna installation be in compliance with the maximum permissible RF exposure limits set forth in §1.1310 of the FCC Rules and Regulations? Yes ☒ No ☐
If the answer is no, please attach an explanation.

Type of compliance study required under §1.1307 of the FCC Rules and Regulations:

Categorically Excluded	☒
Routine Environmental Evaluation	☐
Environmental Assessment	☐

If antennas will be located on a rooftop, please attach a description of any steps that have been or will be taken to prevent the aggregate RF from exceeding exposure limits.

Montgomery County Code, Chapter 2-58E requires applicants to submit a facility location plan indicating the location of every existing telecommunications transmission facility and the general location of facilities that are anticipated to be built in the near future. Has a new or updated plan been filed with the County within the last year? Yes ☒ No ☐
If the answer is no, please submit a plan with this application.

If an application for an FAA review has been submitted or an FAA determination has been issued, please attach a copy.

Application fees have been paid to Montgomery County Government on 12/21/2017.

Make check payable to Montgomery County, MD and *submit payment to*:

Office of Cable and Communication Services
Department of Technology Services
Attn: Marjorie Williams
100 Maryland Avenue, Room 250
Rockville, Maryland 20857

Submit this application to:
Columbia Telecommunications Corporation
c/o Montgomery County Tower Coordinator
10613 Concord Street
Kensington, MD 20895
301-933-1488

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Revised 201802-08 3.30.18 - JR

To Whom It May Concern,

AT&T has rights to broadcast frequencies between 734 Mhz and 746 Mhz(Band 700 Lower B, Lower C). FCC regulations Part 27.50 governing the maximum transmission powers for this band restrict the operator to 1,000 Watts per 1 Mhz of bandwidth. AT&T will broadcast across 10 Mhz bandwidth. That allows for maximum of10,000 watts total power (1,000 x 10 MHz bandwidth).

AT&T has rights to broadcast frequencies between 2110 Mhz and 2120 Mhz(AWS1) as well as 2160 MHz and 2170 MHz (AWS3). FCC regulations Part 27.50 governing the maximum transmission powers for this band restrict the operator to 1,640 Watts per 1 Mhz of bandwidth. AT&T will broadcast across 10 Mhz bandwidth. That allows for maximum of 16,400 watts total power (1,640 x 10 MHz bandwidth).

The following frequencies are in compliance with FCC regulations at the **17001 Overhill Rd / Montgomery Village** site.

Stephen D. Hathway, Jr.

Stephen D. Hathway Jr.
Sr. RAN Engineer
AT&T Mobility
7150 Standard Drive
Hanover, MD 21076

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RECEIVED
MAR 01 2018
BY TR @CTC

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AT&T

Author: Wes Shelton
Sr. RAN Engineer
Ver: 02.28.18

Tower-Mounted Antennas--Meeting the FCC's 5% Rule

Background

Federal Communications Commission ("FCC") rules limit the general publics' and workers' exposure to radiofrequency ("RF") energy and obligate "all significant contributors" to the ambient RF environment to comply with those exposure limits.[1] Transmitters that produce a composite ground-level RF exposure of 5% or less of the general public ("GP") maximum permissible exposure ("MPE") limit are not a "significant contributor to the ambient RF environment," do not share in this obligation, and thus comply with FCC RF exposure regulations.[2]

Objective

The objective of this effort is to evaluate tower sites in a manner that identifies those categories of sites that under all operational parameters and environments meet the "5% condition." Those categories of tower sites will comply with FCC RF exposure rules.

Analysis

AT&T simulated various deployment scenarios using RoofMaster™ models. The simulations involved various combinations of transmitted total maximum effective radiated power up to 30,000 watts, electrical down tilt and mechanical down tilt of up to 10 degrees each, antenna centerline heights of 40 and 50 feet above ground level ("AGL"), standard and non-standard sectorized antennas, and 700 MHz operating frequencies, all of which combine to create an extremely conservative estimate of ground level exposure.

Results

The simulations revealed that the sectors noted as "Yes" in the following table meet the 5% condition and thus are compliant with FCC RF exposure regulations:

Antenna Centerline (feet)	15,000W ERP		20,000W ERP		30,000W ERP	
	Standard Sector	Non-standard Sector	Standard Sector	Non-standard Sector	Standard Sector	Non-standard Sector
40 ≤CL 50	Yes	Yes	Yes	Yes	No	No
CL ≥50	Yes	Yes	Yes	Yes	Yes	Yes

Tower sites with parameters that are not categorized "Yes" in this table must qualify for a categorical exclusion or undergo a RF site safety report by an RF safety engineer.

[1] OET Bulletin 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, at 33 (1997).
[2] 47 C.F.R. §1.1307(b)(3).

SITE NAME:

MONTGOMERY VILLAGE

USID: 3902
FA NUMBER: 10004774
ATC: 305169
MONTGOMERY COUNTY
EXISTING 173'-0" MONOPOLE

LTE 3C/4C UPGRADE

RF DATA SHEET	
ISSUE REVISION	V2018_0.2
ISSUE DATE	8/18/17

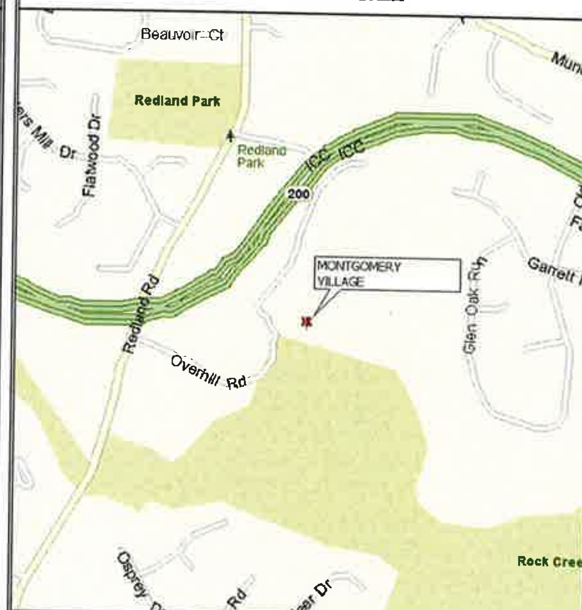
PROJECT SUMMARY

TOWER OWNER:	AMERICAN TOWER CORPORATION
ADDRESS:	116 HUNTINGTON AVE, 11TH FLOOR BOSTON, MA 02116
CONTACT:	CUSTOMER SERVICE
PHONE:	(617) 375-7500
SITE ADDRESS:	17001 OVERHILL ROAD DERWOOD, MD 20855
CUSTOMER/APPLICANT:	AT&T MOBILITY 7150 STANDARD DRIVE HANOVER, MD 21076

NAD83

LATITUDE:	39.1347170' N
LONGITUDE:	77.1418560' W
JURISDICTION:	CITY OF DERWOOD
COUNTY:	MONTGOMERY
GROUND ELEVATION:	411' AMSL
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

AREA MAP



NO SCALE

LOCATION MAP

NO SCALE

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CONTACT INFORMATION

A&E FIRM: B+T GROUP
1717 S. BOULDER, STE. 300
TULSA, OK 74119
CONTACT: PERRY KUYKENDALL
PHONE: (918) 587-4630

AT&T CONSTRUCTION LTE PM:
CONTACT: STEVE SAFIRE
PHONE: (410) 869-6578

ELECTRIC PROVIDER: N/A
PHONE:

TELCO PROVIDER: N/A
PHONE:

DRIVING DIRECTIONS

DEPART 7150 STANDARD DR, HANOVER, MD 21076 ONTO PARKWAY DR, THEN IMMEDIATELY TURN RIGHT ONTO PARK CIRCLE DR. TURN LEFT ONTO COCA COLA DR [COCA-COLA DR]. TAKE RAMP (RIGHT) ONTO MD-100 AT EXIT 5A-B, KEEP RIGHT ONTO RAMP. TAKE RAMP (LEFT) ONTO I-95. AT EXIT 33B, TAKE RAMP (RIGHT) ONTO MD-198 [SANDY SPRING RD]. ROAD NAME CHANGES TO MD-28 [NORBECK RD]. BEAR RIGHT ONTO MD-115 [MUNCASTER MILL RD]. TURN LEFT ONTO REDLAND RD. TURN LEFT ONTO OVERHILL RD. TURN RIGHT ONTO ACCESS ROAD AND ARRIVE AT MONTGOMERY VILLAGE.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
AT&T CONSTRUCTION MGR:		
JACOBS PM:		
RF ENGINEER:		
ZONING APPROVAL:		
SITE ACQUISITION:		
PROPERTY OWNER:		
STATUS CODE:		

1	ACCEPTED: WITH OR NO COMMENTS, CONSTRUCTION MAY PROCEED
2	NOT ACCEPTED: RESOLVE COMMENTS AND RESUBMIT

ACCEPTANCE DOES NOT CONSTITUTE APPROVAL OF DESIGN, CALCULATIONS, ANALYSIS, TEST METHODS OF MATERIALS DEVELOPED OR SELECTED BY THE SUBCONTRACTOR AND DOES NOT RELIEVE SUBCONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.

CODE COMPLIANCE

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

CODE TYPE	CODE
BUILDING/DWELLING	IBC 2015
STRUCTURAL	IBC 2015
MECHANICAL	IMC 2015
ELECTRICAL	NEC 2014

PROJECT DESCRIPTION

- REFER TO THE SCOPE OF WORK ON SHEET C-2.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11x17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SEE SHEET GN-1 FOR ADDITIONAL CONSTRUCTION NOTES

CALL MARYLAND ONE CALL
(800) 282-8555
CALL 3 WORKING DAYS
BEFORE YOU DIG!

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774
MONTGOMERY VILLAGE
17001 OVERHILL ROAD
DERWOOD, MD 20855
EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
A	10/11/17	SMM	PRELIMINARY REVIEW
0	11/02/17	BDH	CONSTRUCTION
1	11/08/17	BDH	CONSTRUCTION
2	12/18/17	SMM	CONSTRUCTION
3	2/16/18	GEH	CONSTRUCTION

B&T ENGINEERING, INC.

STATE OF MARYLAND PROFESSIONAL ENGINEER 2/16/18

SHEET NUMBER:	REVISION:
T-1	3

PROJECT COMPLIANCE NOTES:

1. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE AND IS NOT FOR HUMAN HABITAT. (NO HANDICAP ACCESS IS REQUIRED).
2. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.
3. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS PROPOSAL, UNLESS DURING EMERGENCY.
4. OUTDOOR STORAGE AND SOLID WASTE CONTAINERS ARE NOT PROPOSED.
5. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST AT&T SYSTEM GROUNDING STANDARDS. "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM/GPRS WIRELESS SITES". "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING". IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTIONS SPECIFICATION AND THE DRAWINGS, THE DRAWING SHALL GOVERN.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED DURING CONSTRUCTION OPERATION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION
8. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
9. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM DRAWINGS PROVIDED BY THE APPLICANT REPRESENTATIVE. THE CONTRACTOR SHALL NOTIFY AT&T OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
10. NO ADDITIONAL PARKING IS PROPOSED. EXISTING ACCESS AND PARKING WILL BE USED.
11. NO ADDITIONAL LANDSCAPING IS PROPOSED AT THIS SITE.
12. ALL COAXIAL CABLE INSTALLATION IS TO FOLLOW MANUFACTURER'S INSTRUCTION.

GREENFIELD GROUNDING NOTES:

ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.

CONNECTIONS TO THE GROUND BAR SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BAR ARE PERMITTED.

ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.

GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

ELECTRICAL INSTALLATION NOTES:

ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

WIRING, RACEWAY & SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.

EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR APPROVED EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).

PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.

SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.

POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.

ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR APPROVED EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).

RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR APPROVED EQUAL); AND RATED NEMA 1 (OR BETTER).

EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.

METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "AT&T WIRELESS".

PROJECT GENERAL NOTES:

1. OR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR– ___________
   SUBCONTRACTOR– GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER– AT&T
   OEM– ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 24782-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T GSM SITES".

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
N.T.S.	NOT TO SCALE
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

S/G	SOLID GROUND BUS BAR
S/N	SOLID NEUTRAL BUS BAR
	SUPPLEMENTAL GROUND CONDUCTOR
	2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	CHEMICAL GROUND ROD
	TEST WELL
	DISCONNECT SWITCH
M	METER

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774
MONTGOMERY VILLAGE
17001 OVERHILL ROAD
DERWOOD, MD 20855
EXISTING MONOPOLE

PROJECT NO: 115507.001.01
CHECKED BY: MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
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0	11/02/17	BDH	CONSTRUCTION
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B&T ENGINEERING, INC.

STATE OF MARYLAND
PROFESSIONAL ENGINEER
2/16/18

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: GN-1
REVISION: 3

1. THE SUBCONTRACTOR SHALL GIVE ALL NOTICES AND REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE SUBCONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID SUBCONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE SUBCONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE AT&T REPRESENTATIVE (B&T ENGINEERING) OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF SUBCONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE SUBCONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIAL AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE SUBCONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE THEMSELVES WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE SUBCONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS INFORMED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE SUBCONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE, UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS, AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEERING, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

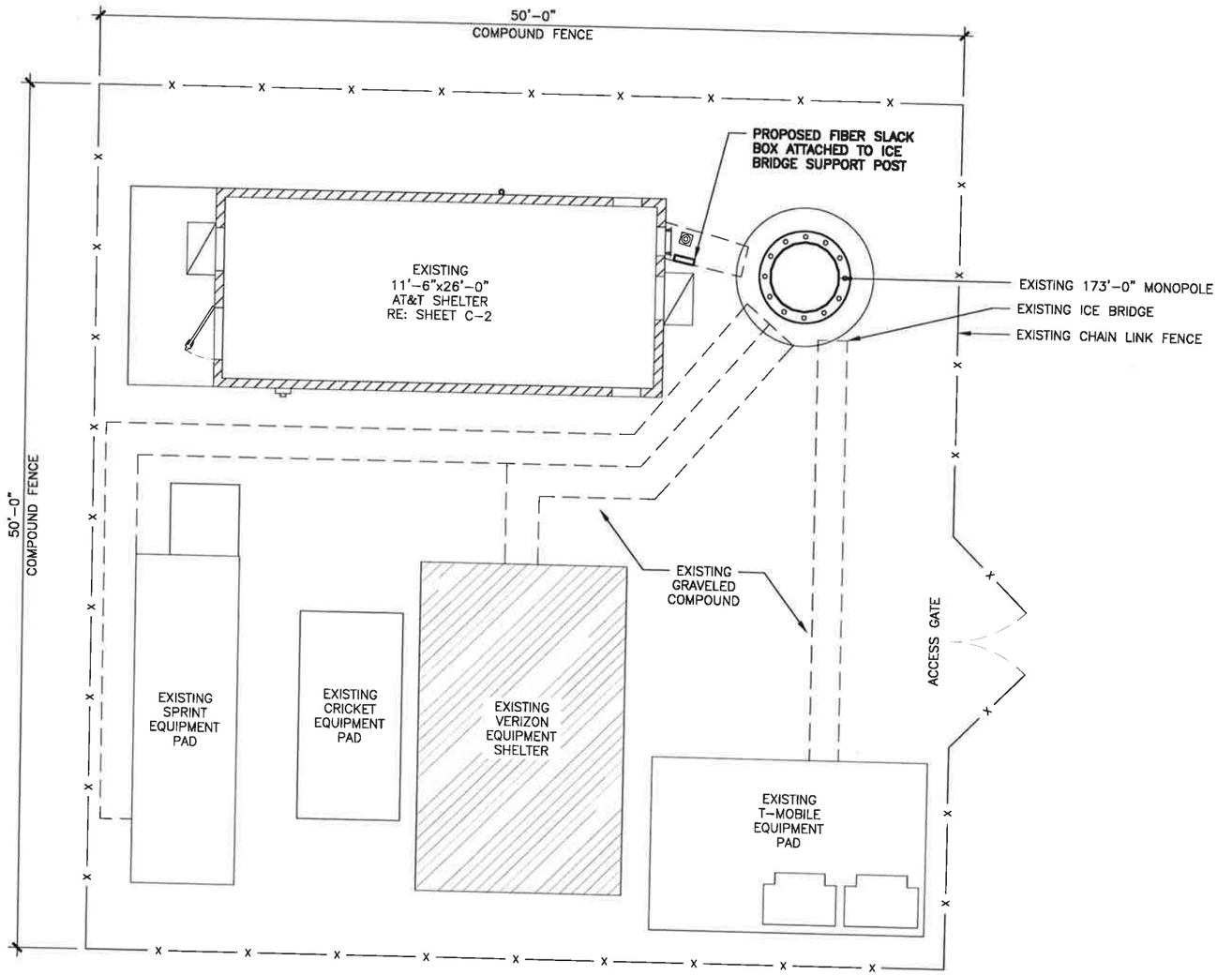
11. THE SUBCONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVEMENTS, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE SUBCONTRACTOR SHALL REPAIR ANY DAMAGE THE MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

12. THE SUBCONTRACTOR SHALL MAINTAIN THE GENERAL WORK AREA AS CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST OR SMUDGES OF ANY NATURE.

13. THE SUBCONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

14. THE SUBCONTRACTOR SHALL NOTIFY THE AT&T REPRESENTATIVE (B&T ENGINEERING) WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE SUBCONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE AT&T REPRESENTATIVE (B&T ENGINEERING).

15. THE SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOBS.



1 OVERALL SITE PLAN

SCALE: 0' 1' 4' 8' 20'

N

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

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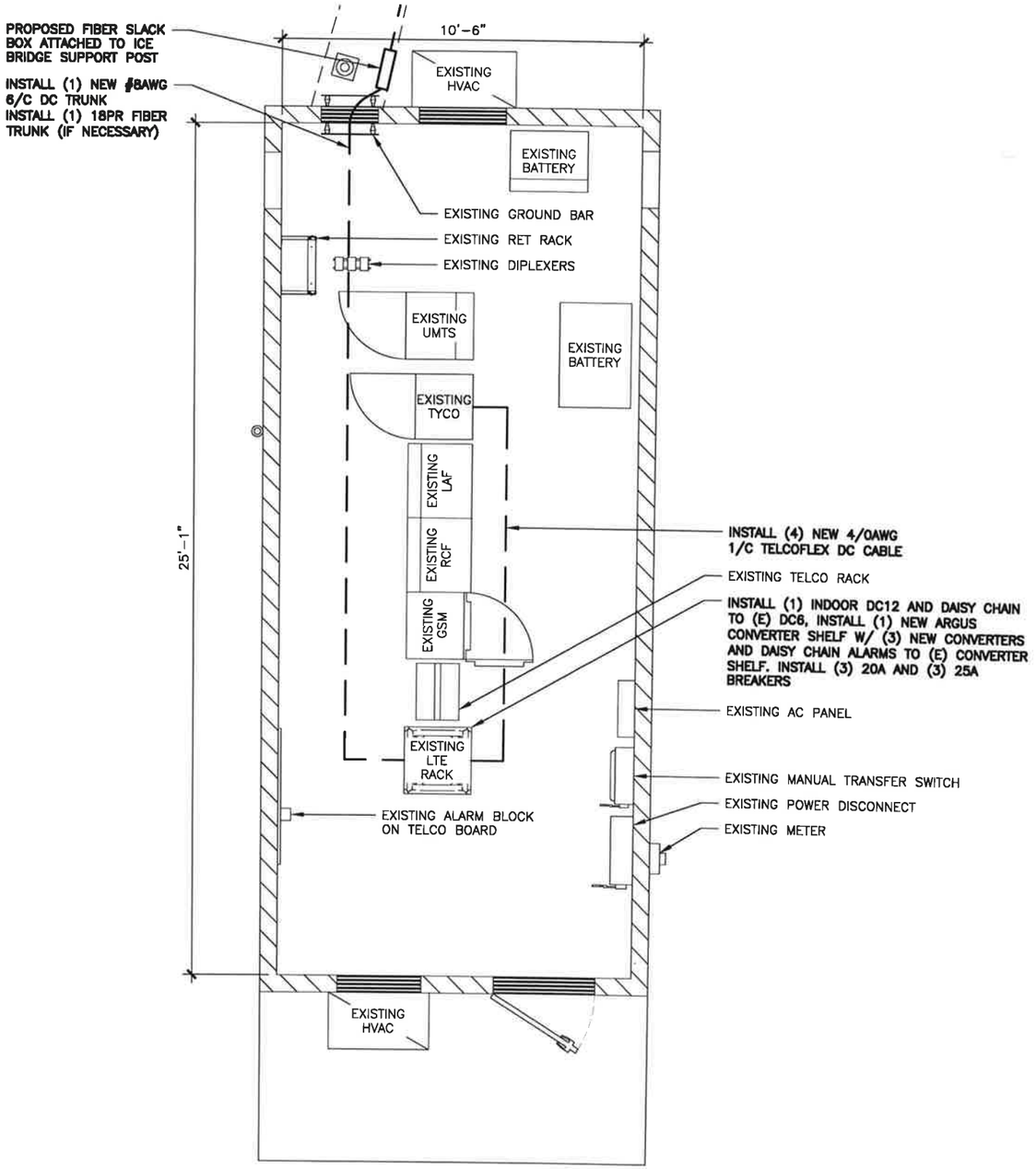
3	2/16/18	GEH	CONSTRUCTION

B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KLEIN
No. 21460
REGISTERED
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER:	REVISION:
C-1	3



1 ENLARGED SITE PLAN

SCALE: 0' 1' 2' 4' 8'

N

SCOPE OF WORK

EXISTING ANT AZ – A 0 B 120 C 240 .
LTE ANT AZ – A 0 B 120 C 240 .

TOPSIDE

1. MODIFY MOUNT PER MOUNT MODIFICATION DETAILS
2. DECOM AND REMOVE (3) GSM/UMTS ANTENNAS AND ASSOCIATED JUMPERS
3. INSTALL (3) KATHREIN 80010966 ANTENNAS
4. INSTALL (3) ROSENBERGER D218RRUDSM DUAL RRH MOUNTS ON BACK OF POSITION 4 ANTENNA PIPE MOUNTS (1 PER SECTOR)
5. INSTALL (3) B66 RRH4X45 ON (N) DUAL RRH MOUNTS (1 PER SECTOR)
6. INSTALL (3) B14 FIRSTNET RRHS ON (N) DUAL RRH MOUNTS (1 PER SECTOR)
7. INSTALL (N) RAYCAP DC6 DOME #2 ON (N) PIPE MOUNT ADJACENT TO (E) DC6 #1
8. INSTALL (3) NEW JUNCTION BOX ON (N) UNISTRUT MOUNT (1 PER SECTOR)
9. INSTALL (6) ROXTEC RG M63/4 4 HOLES GROMMET IN (N) JUNCTION BOXES (1 PER SECTOR)
10. INSTALL (3) 1" CONDUITS FROM DC6#2 TO JUNCTION BOXES (1 PER SECTOR)
11. INSTALL (3) 2/C #8 AWG DC JUMPERS FROM DC6#2 THROUGH JUNCTION BOX TO AWS RRHS (1 PER RRH)
12. INSTALL (3) 2/C # 8 AWG DC JUMPERS FROM DC6#2 THROUGH JUNCTION BOX TO FIRSTNET RRHS (1 PER RRH)
13. INSTALL (6) SM FIBER JUMPERS FROM DC6#2 THROUGH JUNCTION BOXES TO (N) AWS, AND FIRSTNET RRHS (1 PER RRH)
14. INSTALL (24) COAX JUMPERS WITH BRASS TAGS FROM (N) RRHS TO (N) ANTENNA (8 PER SECTOR)
15. INSTALL (3) RET CABLES FROM AWS RRHS TO (N) ANTENNAS (1 PER SECTOR)
16. INSTALL (1) SLACK BOX ON ICE BRIDGE OUTSIDE OF SHELTER IF (N) FIBER TRUNK IS INSTALLED.
17. INSTALL (1) 18 PAIR FIBER TRUNK FROM LTE RACK THROUGH SLACK BOX TO TOPSIDE DC6#2 (ONLY IF NECESSARY – CONSTRUCTION TO CONFIRM IF 6 EXISTING FIBER PATHS ARE GOOD)
18. INSTALL (2) 7/8" #8 AWG 6 CONDUCTOR DC TRUNK CABLES FROM (E) DC12 IN LTE RACK TO TOPSIDE DC6 #2 FOR AWS RRHS & FIRSTNET RRH'S

BOTTOMSIDE

1. RE-USE (2)(E) 250A BREAKERS IN (E) TYCO PP FOR NEW CIRCUITS TO (N) ARGUS CONVERTER SHELF #2
2. INSTALL (1) INDOOR DC12 AND DAISY CHAIN TO (E) DC6 IN LTE RACK
3. INSTALL (1) ARGUS CONVERTER SHELF WITH (3) CONVERTERS IN LTE RACK AND DAISY CHAIN ALARMS TO (E) CONVERTER SHELF
4. INSTALL (4) 4/0 TELCOFLEX DC CABLES FROM (N) ARGUS CONVERTER SHELF #2 TO (E) TYCO POWER PLANT
5. INSTALL (6) 1/C #8 TELCOFLEX DC WIRES FROM ARGUS CONVERTER SHELF TO DC12 FOR AWS RRHS (2 PER SECTOR)
6. INSTALL (6) 1/C #8 TELCOFLEX DC WIRES FROM ARGUS CONVERTER SHELF TO DC12 FOR FIRSTNET RRHS (2 PER SECTOR)
7. INSTALL (3) 20A 1P BREAKERS IN (E) ARGUS CONVERTER FOR B14 700 RRHS.
8. INSTALL (3) 25A 1P BREAKERS IN (N) ARGUS CONVERTER FOR AWS RRHS.
9. LABEL ALL (N) EQUIPMENT WITH PHENOLIC TAGS
10. LABEL ALL (N) CABLES AND BREAKERS
11. SUPPORT ALL JUMPERS, DC POWER, AND FIBER CABLES PER AT&T SPECIFICATIONS
12. GROUND ALL (N) EQUIPMENT PER AT&T SPECIFICATIONS
13. VERIFY CORRECT RATE SFP CARDS IN BBU AND RRH
14. DECOMMISSION EXISTING 1900 UMTS (BY OTHERS).
15. INSTALL PANDUIT ON LTE RACK FOR NEW FIBER ROUTING (IF NECESSARY)

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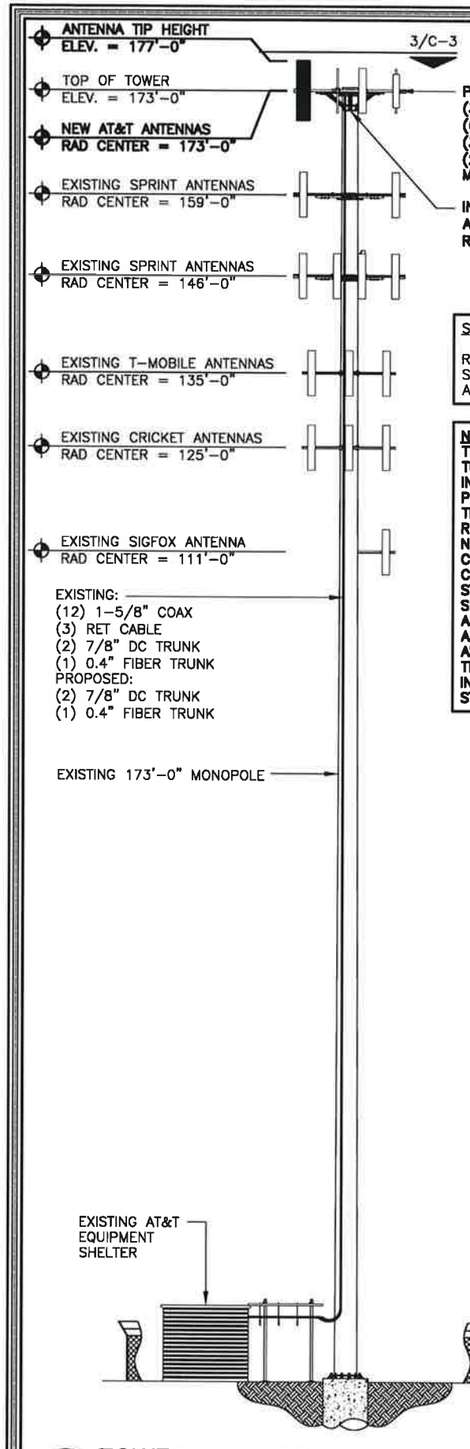
B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
No. 21437
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: C-2

REVISION: 3

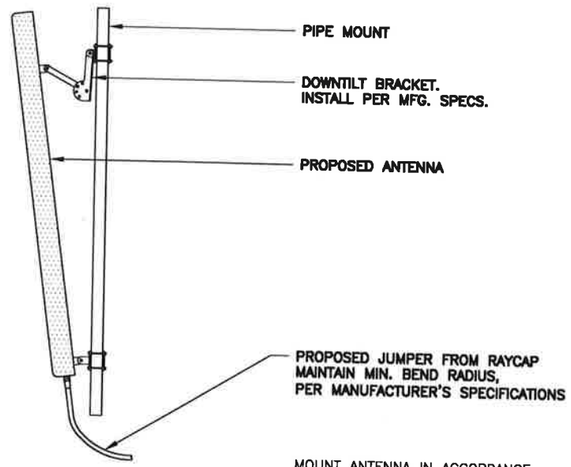


1 TOWER ELEVATION
SCALE: N.T.S.

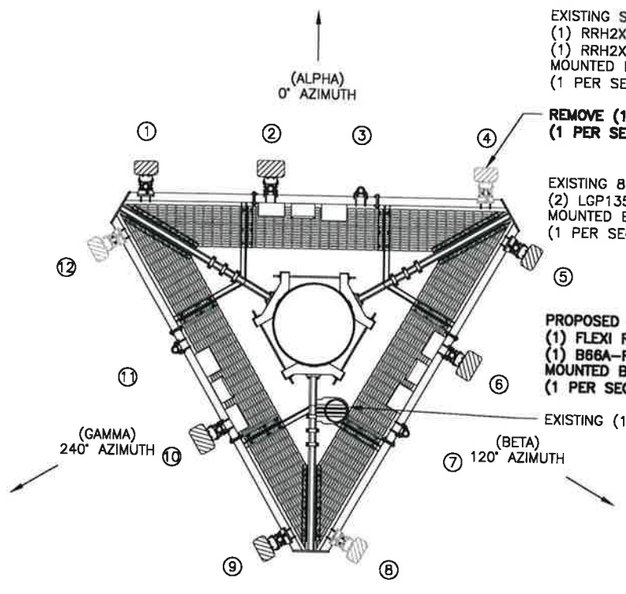
STRUCTURAL ANALYSIS NOTE:

REFER TO STRUCTURAL ANALYSIS OR STRUCTURAL LETTER FOR APPROVAL OF ADDITIONAL NEW APPURTENANCES.

NOTE:
THESE DRAWINGS ARE NOT INTENDED TO REFLECT THE STRUCTURAL INTEGRITY OF THE TOWER. THE PROPOSED ANTENNAS AND TRANSMISSION LINES SHOWN ARE REPRESENTATIVE IN NATURE AND DO NOT REFLECT THE ACTUAL CONFIGURATIONS REQUIRED. THE CONTRACTOR SHALL REFER TO THE STRUCTURAL ANALYSIS OF THIS TOWER SITE FOR THE APPROVED LOCATION AND CONFIGURATION OF ALL ANTENNAS AND TRANSMISSION LINES. ALL ANTENNAS MUST BE MOUNTED AND THE TRANSMISSION LINES CONFIGURED IN STRICT ACCORDANCE WITH THE STRUCTURAL ANALYSIS.



2 ANTENNA MOUNT DETAIL
SCALE: N.T.S.



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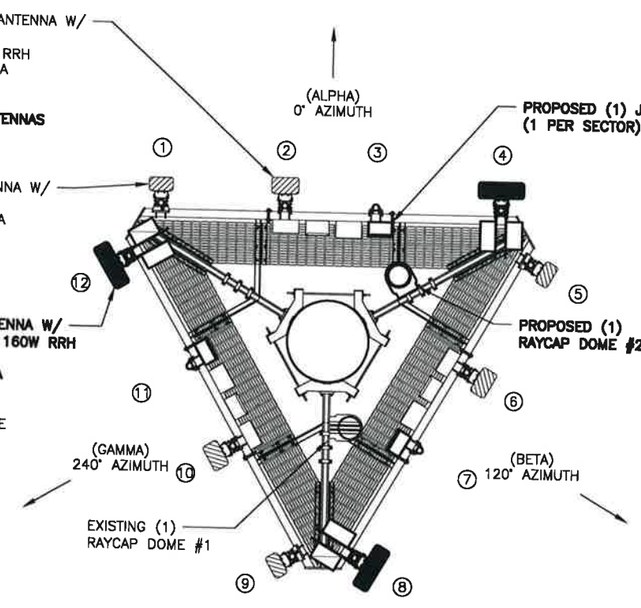

PROPOSED

3 ANTENNA AZIMUTH PLAN
SCALE: N.T.S.

N

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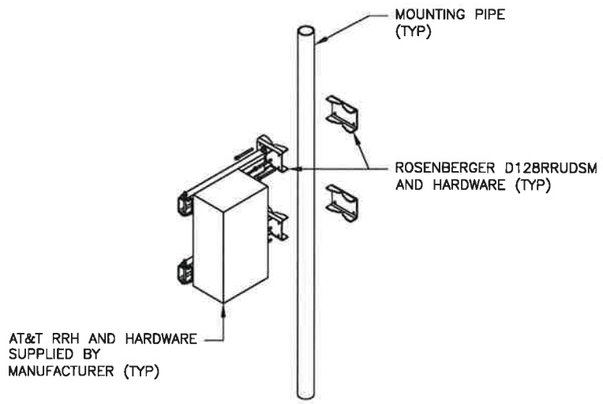
B&T ENGINEERING, INC.

SHEET NUMBER:	REVISION:
C-3	3

NOTE:

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

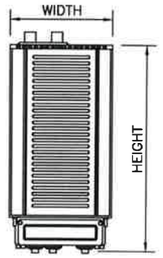


1 RRH DUAL BRACKET MOUNT DETAIL

SCALE: N.T.S.

CLEARANCE AND BREAKER SIZE TABLE

RRH	FRONT	REAR	RIGHT	LEFT	TOP	BOTTOM	BREAKER
700 07L-AT	36"	0"	3.94"	3.94"	12"	12"	15 AMP
700 DE	36"	0"	3.94"	3.94"	12"	12"	15 AMP
850 UMTS/LTE	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP
2X60 1900	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP
4T4R B14 FRBI	39.4"	2"	3.1"	3.1"	11.8"	15.7"	20 AMP
B25 1900	39.4"	2"	3.1"	3.1"	11.8"	15.7"	20 AMP
4X25 WCS 2300	39.4"	2"	3.9"	3.9"	11.8"	12"	20 AMP
AWS 2X40	36"	1.97"	3.94"	3.94"	11.82"	12"	15 AMP
AWS RDEM	36"	1.97"	3.94"	3.94"	11.82"	12"	15 AMP
AWS B66	39.4"	2"	3.1"	3.1"	11.8"	24"	25 AMP



SIZE AND WEIGHT TABLE

RRH	WIDTH	DEPTH	HEIGHT W/O CABLE MANAGEMENT COVER	WEIGHT W/O BRACKET
RRH2X40-07L	11.5"	5.7"	24.8"	50.7 LBS.
FLEXI RRH 4T4R B14 FRBI	13.03"	6.65"	23.03"	57 LBS.
RRH 2X40 AWS	10.63"	24.4"	-	44 LBS.
9745 AA B25A+700/900P	12.2"	12.7"	96.4"	126 LBS.
9745 AA B25A+700/900P	12.2"	12.7"	72.7"	117 LBS.
9745 AA B25A+700/900P	12.2"	12.7"	55.4"	106 LBS.
RRH2X40_AWS+RDEM	15.4"	9.1"	25.2"	47.6 LBS.
RRH2X60W-850 UMTS/LTE	11.5"	9.0"	18.9"	50.8 LBS.
RRH2X60W-1900 UMTS/LTE	11.2"	7.2"	20.1"	42.99 LBS.
B25 RRH4x30-4R	11.97"	7.18"	21.2"	52.9 LBS.
RRH4X25-WCS-4R	12.0"	8.7"	31.5"	70 LBS.
RRH2X40-07L-AT (RETUNED)	12.2"	6.1"	25.2"	52.5 LBS.
RRH2X40W-07L DE	12.2"	6.6"	25.2"	55 LBS.
B66A-RRH4x45	11.9"	7.2"	25.8"	68.34 LBS.

2 RRH DETAIL

SCALE: N.T.S.

ANTENNA CABLE AND ACCESSORY NOTES AND REQUIREMENTS:

1. GENERAL: PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY FOR RECEIVING, INSTALLING, TESTING, AND ADJUSTING ANTENNA CABLES FROM THE ANTENNA TO THE CONNECTIONS AT THE BASE TRANSCEIVER STATION (BTS). THIS SHALL INCLUDE ALL EQUIPMENT SHOWN OR REQUIRED FOR A COMPLETE OPERATING SYSTEM. ANTENNA, ANTENNA CABLES, CONNECTORS, AND FITTINGS SHALL BE THIRD PARTY FURNISHED COMPONENTS AS SHOWN ON THE BILL OF MATERIALS.
2. MATERIALS
   - A. ANTENNA CABLES: AS SCHEDULED
   - B. ANTENNA CONNECTORS: AS SCHEDULED
   - C. CABLE HANGERS: INSTALLED AT MAXIMUM 18" SPACING
   - D. GROUNDING KITS: AS SPECIFIED
3. INSTALLATION
   - A. ANTENNA CABLE LENGTHS SHALL BE FIELD MEASURED. INSTALLER SHALL NOTIFY AT&T PRIOR TO PURCHASE OF CABLE OF THE OVERALL LENGTH REQUIRED.
   - B. CABLES SHALL BE LABELED IN ACCORDANCE WITH AT&T ELECTRICAL MATERIALS AND METHODS SPECIFICATIONS.
   - C. ALL CABLE CONNECTIONS OUTSIDE SHALL BE COVERED WITH WEATHERPROOFING TAPE.
   - D. THE MINIMUM BENDING RADIUS FOR ALL ANTENNA CABLES SHALL BE AS SHOWN BELOW OR PER THE MANUFACTURER, WHICHEVER IS MORE CONSERVATIVE:

CABLE	IN AIR OR CABLE TRAY	IN CONDUIT
1/2"	5"	10"
7/8"	10"	18"
1-5/8"	20"	28"

   - E. CABLES SHALL BE INSTALLED WITH THE MINIMUM NUMBER OF BENDS. CABLE SHALL NOT BE LEFT UNTERMINATED IN THE FIELD. NO BENDS WILL BE ACCEPTED IF WITHIN 5" OF CONNECTOR.
   - F. GROUNDING KITS: AFTER INSTALLATION OF GROUND STRAPS, THE CONNECTIONS SHALL BE MADE WEATHER TIGHT USING WEATHERPROOF KITS AS IDENTIFIED ABOVE. GROUND PIGTAILS SHALL BE BROUGHT OUT IN THE DOWNWARD DIRECTION FROM THE CONNECTION TO THE ANTENNA CABLE WITHOUT ANY SHARP BENDS (MINIMUM RADIUS 10") AND CONNECTION SHALL BE MADE TO GROUNDING SYSTEM.

B+T GRP

AT&T

JACOBS
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PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855
EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
A	10/11/17	SMM	PRELIMINARY REVIEW
0	11/02/17	BDH	CONSTRUCTION
1	11/08/17	BDH	CONSTRUCTION
2	12/18/17	SMM	CONSTRUCTION
3	2/16/18	GEH	CONSTRUCTION

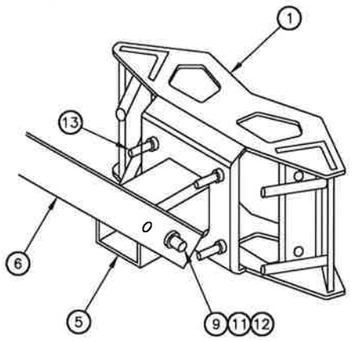
B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
PROFESSIONAL ENGINEER
2/16/18

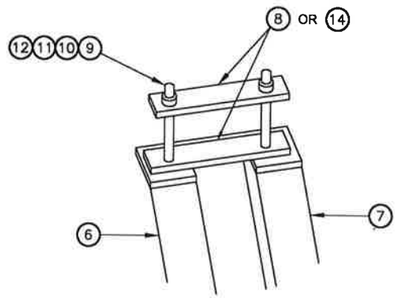
SHEET NUMBER: C-4

REVISION: 3

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	MTC 306503	CW 1030 RINGMOUNT WELDMENT	3	28.02 LBS
2	MT3043007	3/4"X30" GALV THREADED ROD	6	3.76 LBS
3	GWL06	3/4" GALV LOCK WASHER	12	0.60 LBS
4	GN06	3/4" GALV HEX NUT	12	0.64 LBS
5	MTC3713002	KICKER MOUNT STANDOFF	3	13.80 LBS
6	MTC323701	LEFT KICKER	3	10.38 LBS
7	MTC323702	RIGHT KICKER	3	10.38 LBS
8	MTC323703	CLAMP BAR	6	2.37 LBS
9	MT-301-8	5/8"X8 GALV THREADED ROD	8	0.88 LBS
10	GWF 08	5/8" GALV FLAT WASHER	12	0.08 LBS
11	GWL 08	5/8" GALV LOCK WASHER	18	0.08 LBS
12	GN 08	5/8" GALV HEX NUT	18	0.06 LBS
13	CB 08200	5/8"X2" GALV BOLT KIT (A325)	12	0.77 LBS
14	DCP10	SMALL CLAMP HALF	6	2.21 LBS



DETAIL A



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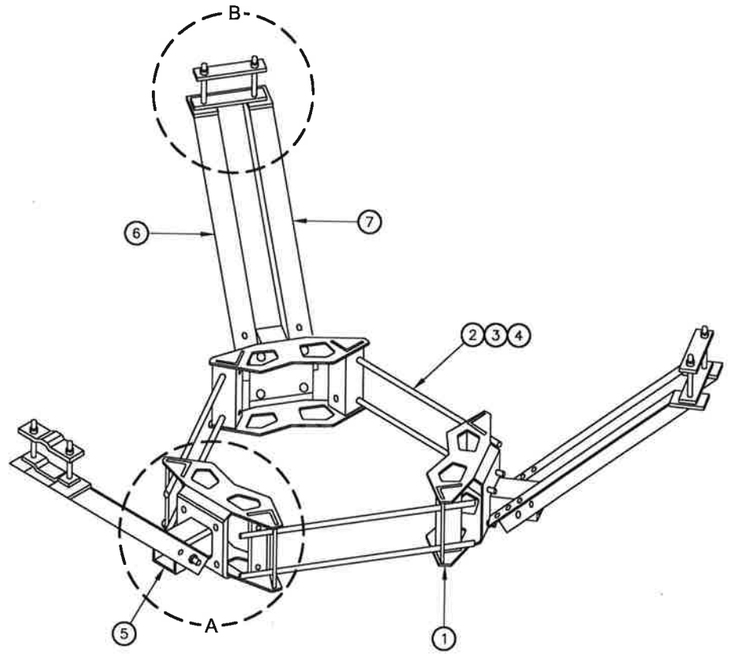

DELETE THIS SHEET IF YOU DO NOT HAVE A MONOPOLE WITH TOWER TOP RRHS

1 MT-197 KICKER SUPPORT DETAIL (ANDREW MTC3237)
SCALE: N.T.S.

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MONTGOMERY VILLAGE

17001 OVERHILL ROAD
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B&T ENGINEERING, INC.

STATE OF MARYLAND
JAMES R. KELLY
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: C-4.1
REVISION: 3

ANTENNA CABLE SCHEDULE

	ANTENNA POSITION	AZIMUTH	TYPE OF ANTENNA	RAD CENTER	COAX SIZE	EST LENGTH	COAX COLOR CODE
SECTOR #1	#1	0°	(E) KATHREIN 80010121	173'-0"	(E) (2) 1 5/8" ANDREW (E) (1) RET CABLE	200'-0"	BROWN/BLUE BROWN/BROWN
	#2	0°	(E) COMMSCOPE SBNHH-1D65B	173'-0"	POWER/FIBER	200'-0"	-
	#3	-	-	-	-	-	-
	#4	0°	(N) KATHREIN 80010966	173'-0"	(E) POWER/FIBER AND (E) (2) 1 5/8" (DECOM)	-	BROWN/RED BROWN/YELLOW
SECTOR #2	#5	120°	(E) KATHREIN 80010121	173'-0"	(E) (2) 1 5/8" ANDREW (E) (1) RET CABLE	200'-0"	ORANGE/BLUE ORANGE/BRN/BRN
	#6	120°	(E) COMMSCOPE SBNHH-1D65B	173'-0"	POWER/FIBER	200'-0"	-
	#7	-	-	-	-	-	-
	#8	120°	(N) KATHREIN 80010966	173'-0"	(E) POWER/FIBER AND (E) (2) 1 5/8" (DECOM)	-	ORANGE/RED ORANGE/YELLOW
SECTOR #3	#9	240°	(E) KATHREIN 80010121	173'-0"	(E) (2) 1 5/8" ANDREW (E) (1) RET CABLE	200'-0"	GREEN/BLUE GREEN/BROWN
	#10	240°	(E) COMMSCOPE SBNHH-1D65B	173'-0"	POWER/FIBER	-	-
	#11	-	-	-	-	-	-
	#12	240°	(N) KATHREIN 80010966	173'-0"	(E) POWER/FIBER AND (E) (2) 1 5/8" (DECOM)	-	GREEN/RED GREEN/YELLOW

ANTENNA SCHEDULE NOTES:

1. ALL CABLE LENGTHS ARE ESTIMATED AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
2. COLOR TAPE MARKINGS MUST BE 3/4" WIDE AND UV RESISTANT, SUCH AS SCOTCH 35 VINYL ELECTRICAL COLOR CODING TAPE.
3. CONTRACTOR SHALL COORDINATE COLOR CODING IN THE FIELD WITH AN AT&T REPRESENTATIVE.
4. CONTRACTOR SHALL INSTALL A BRASS IDENTIFICATION TAG 1/2" IN DIAMETER WITH 1/4" STAMPED LETTERS AND NUMBERS. INSTALL TAGS AT PORT CONNECTION NEAR THE END OF JUMPER AND ONE ON THE END NEAR THE RADIO EQUIPMENT. EACH TAG SHALL BE STAMPED WITH "AT&T" AND THE PORT IDENTIFICATION NUMBER. TAG SHALL BE ATTACHED WITH A CORROSION PROOF WIRE SUCH AS STAINLESS SEIZING WIRE.

4. ATT Naming Convention for "RET NAME"

ATT-002-290-125 (Issue 9, 03/06/15)
Antenna Remote Electrical Tilt (RET) Guidelines

Usage: [USID][CellId1][CellId2][CellId3][AntPos][FrequencyBand][Tech]

USID		CellId 1	CellId 2	CellId 3	AntPos	Freq	Tech
1 2 3 4 5 6		7	8	9	10	11	12

Field	Length	Description
USID	6	Six characters that defined the sites USID. (USID's less than 6 characters in length are preceded with 0's (zeros) (example 003831)
CellId1	1	Allowed Value / Description A Alpha B Beta C Gamma
CellId2	1	D Delta E Epsilon
CellId3	1	F Zeta No Transmitter connected to this port
AntPos	1	Allowed Value / Description 1 Antenna Position 1 on this face 2 Antenna Position 2 on this face 3 Antenna Position 3 on this face 4 Antenna Position 4 on this face 5 Antenna Position 5 on this face Antenna Position unknown
FreqBand	1	Allowed Value / Description 2 2100 MHz (AWS) 3 2300 MHz (WCS) *** Used to be W 7 700 MHz B & C Band 8 850 MHz 9 1900 MHz (PCS) D 1900 MHz & 2100 MHz combined F 1900 MHz & 2300 MHz combined H 2100 MHz & 2300 MHz combined J 1900 MHz & 2100 MHz & 2300 MHz combined K 700 MHz B &C Band & 850 MHz combined Q 700 MHz D & E Band Only Y 700 MHz D & E & 850 MHz combined

Field	Length	Description				
		Allowed Value	GSM	UMTS	LTE	Split Sector
		G	GSM			
		J	GSM	UMTS		
		F			LTE	
		K	GSM		LTE	
		L			LTE	
		N				
		U		UMTS		
Tech	1	V		UMTS	LTE	
		Y	GSM	UMTS	LTE	
		H	GSM			Split
		M	GSM	UMTS		Split
		P	GSM		LTE	Split
		Q			LTE	Split
		R				Split
		S		UMTS		Split
		T		UMTS	LTE	Split

❖ F = License Protection/FCC Compliance
Example: Use Tech = "F" for certain cell(s) having issue with 2300 MHz (WCS) and SiriusXM interference

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USID: 390
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855
EXISTING MONOPOLE

PROJECT NO: 115507.001.01
CHECKED BY: MEH

ISSUED FOR:

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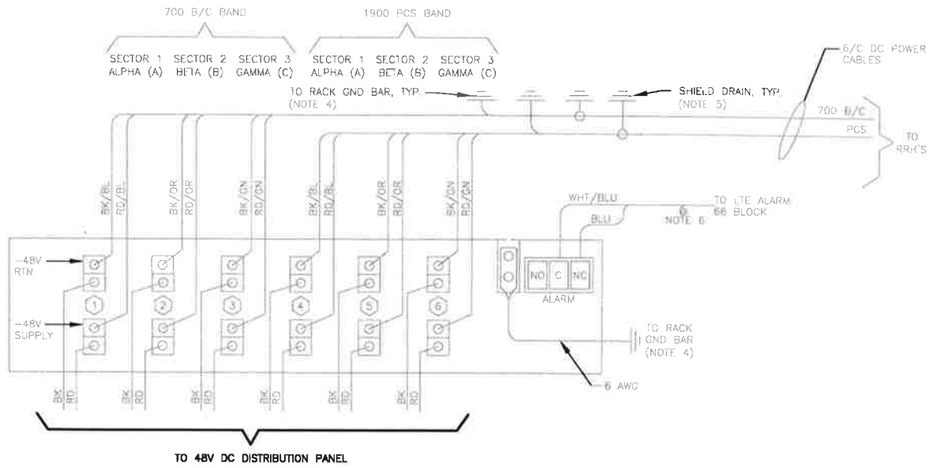
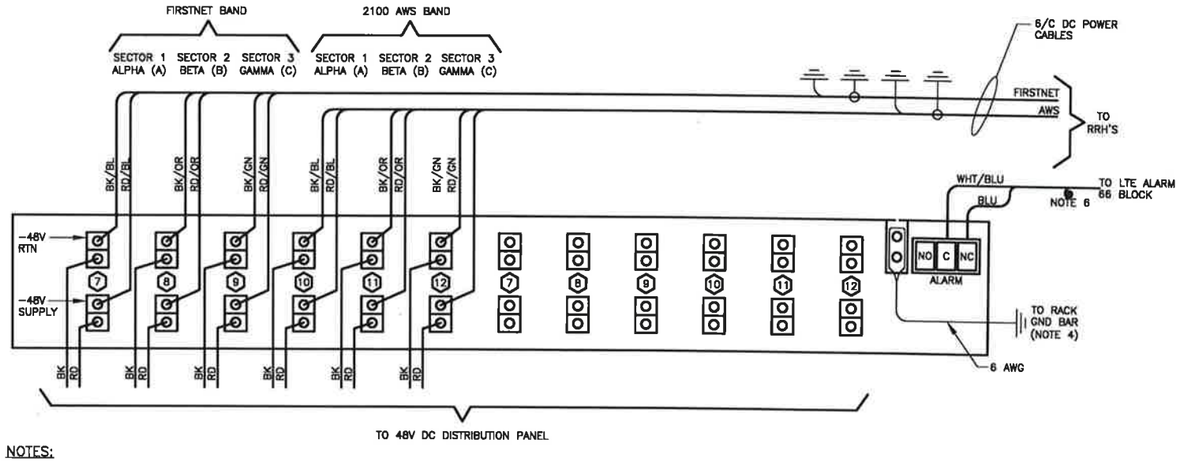
B&T ENGINEERING, INC.

STATE OF MARYLAND
GEOFFREY E. HEIT
REGISTERED
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: C-4.2
REVISION: 3



1 DC SURGE SHELF
SCALE: N.T.S.



NOTES:

1. SEE SYSTEM DIAGRAM FOR DC POWER CABLE CONDUCTOR SIZES.
2. CABLE TERMINALS FOR POWER CONNECTION SHALL BE COMPRESSION TYPE, 2-HOLE FOR 1/4"-20 STUDS.
3. CABLE TERMINAL FOR GROUND CONNECTION SHALL BE COMPRESSION TYPE, 2-HOLE 1"-CENTERS FOR 1/4"-20 STUDS.
4. CONNECTIONS TO RACK GROUND BAR SHALL BE MADE WITH 2-HOLE COMPRESSION TERMINALS.
5. WHEN SHIELDED CABLE IS USED, CONNECT CABLE SHIELD DRAIN WIRE TO RACK GROUND BAR. THIS CONNECTION SHALL BE INDEPENDENT OF THE CABLE GROUND WIRE CONNECTION.
6. TURN BACK AND STORE UNUSED CONDUCTORS.

2 DC SURGE SHELF
SCALE: N.T.S.

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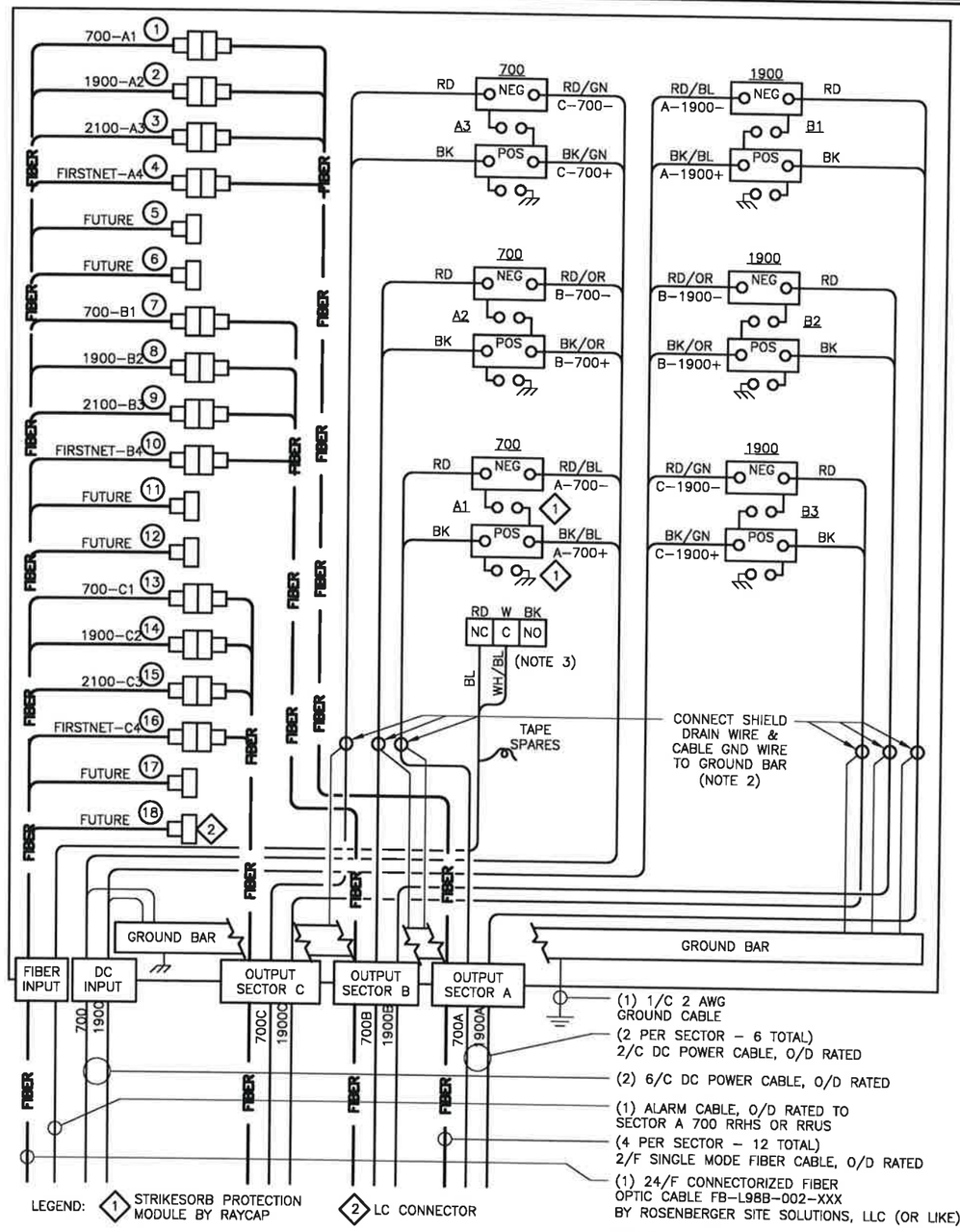
B&T ENGINEERING, INC.

STATE OF MARYLAND
GEOFFREY E. HATCHELL
No. 21431
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER:	REVISION:
C-5	3



CONNECTION DIAGRAM DC SURGE SUPPRESSION SYSTEM DC6–48–60–18–8F (BY RAYCAP)

NOTES:

1. SEE SYSTEM DIAGRAM FOR CONDUCTOR SIZES.
2. WHEN SHIELDED CABLE IS USED CONNECT CABLE SHIELD DRAIN WIRE AND GROUND WIRE TO GROUND BAR.
3. INSTALL RAYCAP PROVIDED LOOP–BACK CONNECTOR ON THE LAST ACTIVE (POWERED) MODULE WHEN FEWER THAN 6 RRHS OR RRUS ARE DEPLOYED.

1 DC SURGE PROTECTION SYSTEM

SCALE: N.T.S.

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AT&T

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MONTGOMERY VILLAGE

17001 OVERHILL ROAD
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EXISTING MONOPOLE

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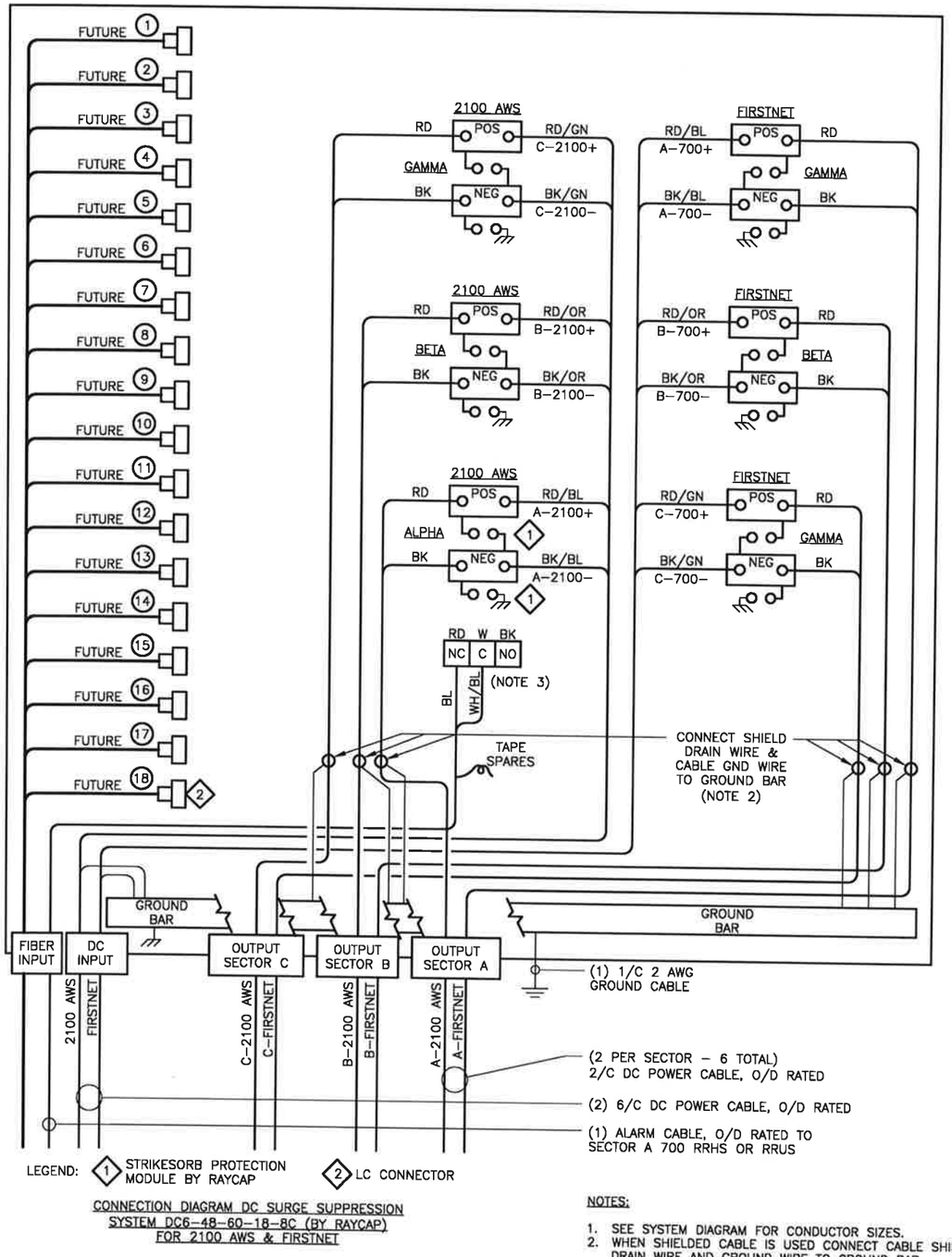
B&T ENGINEERING, INC.

STATE OF MARYLAND — JOHN W. KLEIN — REGISTERED PROFESSIONAL ENGINEER — 2/16/18

SHEET NUMBER:	REVISION:
C-6	3



CONNECTION DIAGRAM DC SURGE SUPPRESSION SYSTEM DC6–48–60–18–8C (BY RAYCAP) FOR 2100 AWS & FIRSTNET

NOTES:

1. SEE SYSTEM DIAGRAM FOR CONDUCTOR SIZES.
2. WHEN SHIELDED CABLE IS USED CONNECT CABLE SHIELD DRAIN WIRE AND GROUND WIRE TO GROUND BAR.
3. INSTALL RAYCAP PROVIDED LOOP–BACK CONNECTOR ON THE LAST ACTIVE (POWERED) MODULE WHEN FEWER THAN 6 RRHS OR RRUS ARE DEPLOYED.

1 DC SURGE PROTECTION SYSTEM

SCALE: N.T.S.

B+T GRP

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MONTGOMERY VILLAGE

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B&T ENGINEERING, INC.

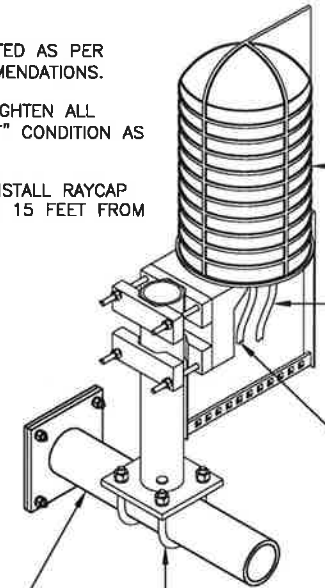
STATE OF MARYLAND
JOHN W. KLEIN
No. 21431
REGISTERED
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: C-6.1

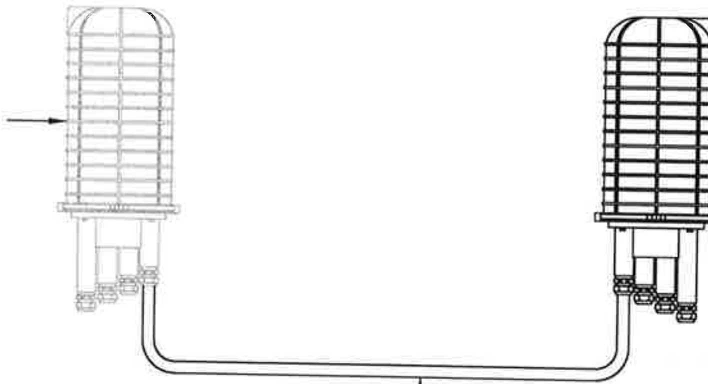
REVISION: 3

NOTES:

1. UNIT SHALL BE MOUNTED AS PER MANUFACTURER'S RECOMMENDATIONS.
2. CONTRACTOR SHALL TIGHTEN ALL BOLTS TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
3. CONTRACTOR SHALL INSTALL RAYCAP DISTRIBUTION UNIT WITHIN 15 FEET FROM ALL RRHS.



1 SURGE UNIT MOUNTING DETAIL
SCALE: N.T.S.



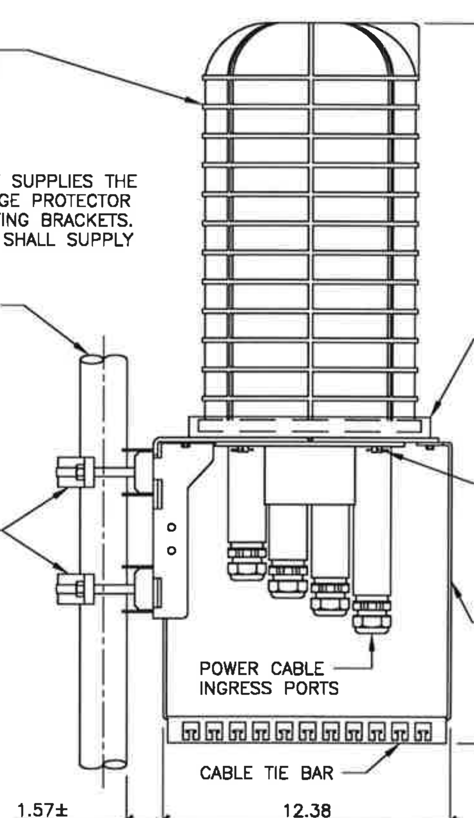
NOTES:

1. OTHER CONDUIT & CABLES NOT SHOWN FOR CLARITY.
2. INDIVIDUAL RUGGEDIZED FIBER JUMPERS TO BE PULLED FROM EXISTING DC6 TO PROPOSED DC6.
3. DETAIL TO BE USED ONLY WHEN SUFFICIENT NUMBER OF OPEN FIBERS ARE AVAILABLE IN THE EXISTING FIBER TRUNK CABLE.

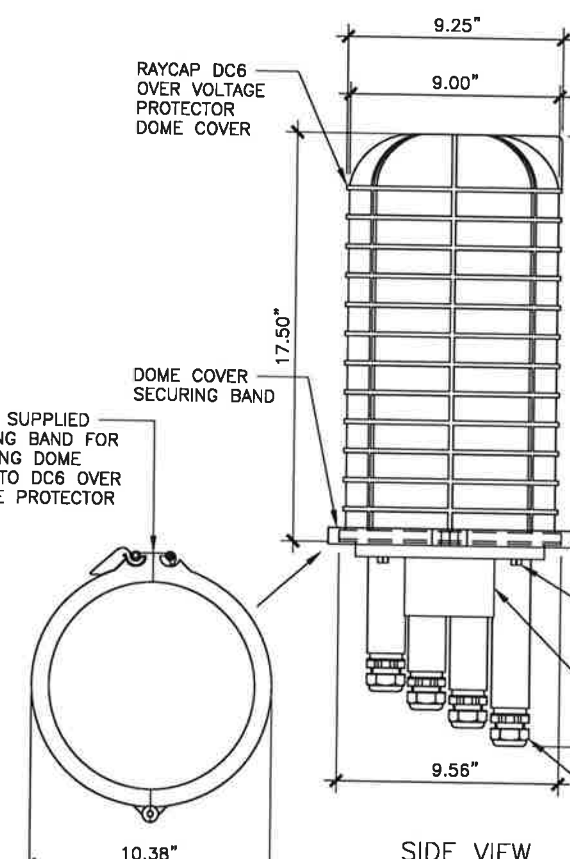
1A DUAL DC6 FIBER CONNECTION DETAIL
SCALE: N.T.S.

NOTES:

1. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

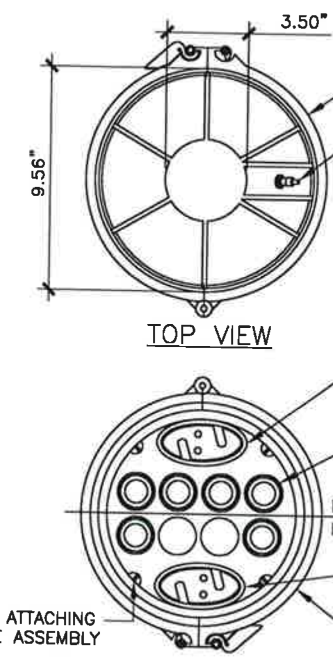


2 RAYCAP DC6 OVP ASSEMBLY
SCALE: N.T.S.



NOTES:

1. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COPPER CROUSE-HINES P/N: CAP 740 994) (OR APPROVED EQUAL) WHEN CONNECTING CONDUIT TO OVP.



3 RAYCAP DC6 DETAILS
SCALE: N.T.S.

B+T GRP

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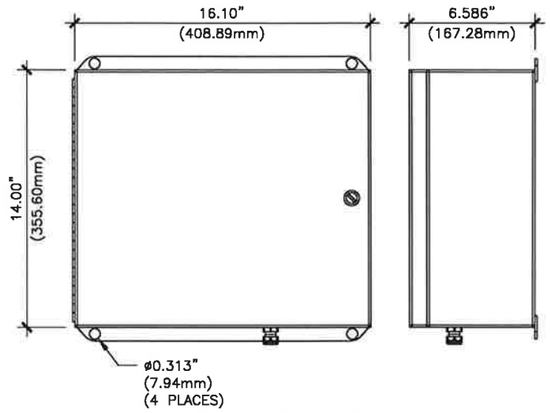
B&T ENGINEERING, INC.

STATE OF MARYLAND PROFESSIONAL ENGINEER
2/16/18

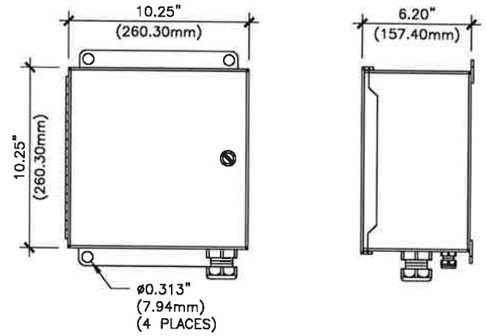
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: C-6.2
REVISION: 3

115507.001_10004774_Montgomery-Village.dwg - Sheet:C-6.2 - User: ghnes - Feb 16, 2018 - 9:43am



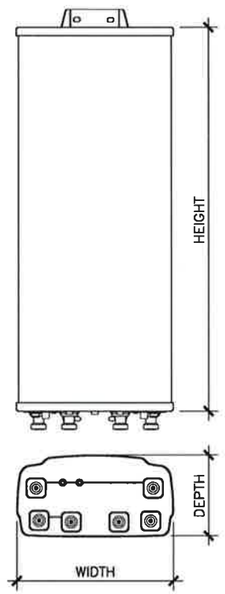
FIBER & POWER DISTRIBUTION BOX
FC12-PC6-10E



SECTOR FIBER & POWER DISTRIBUTION BOX
DC2-48-60-0-9E

1 SURGE UNIT DETAILS

SCALE: N.T.S.



ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
80010966	96.0"	20.0"	6.9"	114.6 lbs

NOTES:
1. VERIFY ANTENNA DIMENSIONS WITH MANUFACTURER
2. ANTENNA MOUNTING KIT FOR 2 TO 4.5 O.D. MAST (MODEL #DM380) (QTY. 2)
3. LOCKING TILT MOUNT KIT 0-13 DEGREES DOWNTILT ANGLE (MODEL #DB50B3)
4. VERIFY ANTENNA MODEL WITH FINAL VERSION OF THE AT&T RFDS

2 ANTENNA SPECIFICATIONS

SCALE: N.T.S.

NOTES:

1. ALCATEL-LUCENT (ALU) VIA AT&T SUPPLIES THE RRH. SUBCONTRACTOR SHALL SUPPLY ALL OTHER MATERIALS AND INSTALL ALL MOUNTING HARDWARE. ALU INSTALLS RRH AND MAKES CABLE TERMINATIONS.
2. A SUPPORT FOR A SINGLE RRH SHALL HAVE A MINIMUM OF TWO ANCHORS/FASTENERS FOR EACH UNISTRUT CHANNEL.
3. INSTALL ANCHORS/FASTENERS A MAXIMUM OF 2'-0" ON CENTERS.
   - WOOD STUDS – 1/4"ø LAG BOLT W/ 1" EMBEDMENT IN WOOD
   - CONCRETE – 1/4"ø HILTI KWIK BOLT III W/ 1-1/2" EMBEDMENT OR EQUIVALENT
   - THROUGH BOLT – 1/4"ø A36/A307 THREADED ROD W/ NUTS AND WASHERS
   - MASONRY – 1/2"ø HILTI HY 70 W/6" EMBEDMENT

   ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT-DIPPED GALVANIZED FINISH.
4. MOUNT RRH TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET. SUBCONTRACTOR SHALL SUPPLY.
5. MOUNT FIBER AND POWER DISTRIBUTION AND JUNCTION BOXES WITH FOUR (4) 1/4"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS.
6. NO PAINTING OF THE RRH OR SOLAR SHIELD IS ALLOWED.

3 JUNCTION BOX DETAIL

SCALE: N.T.S.

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

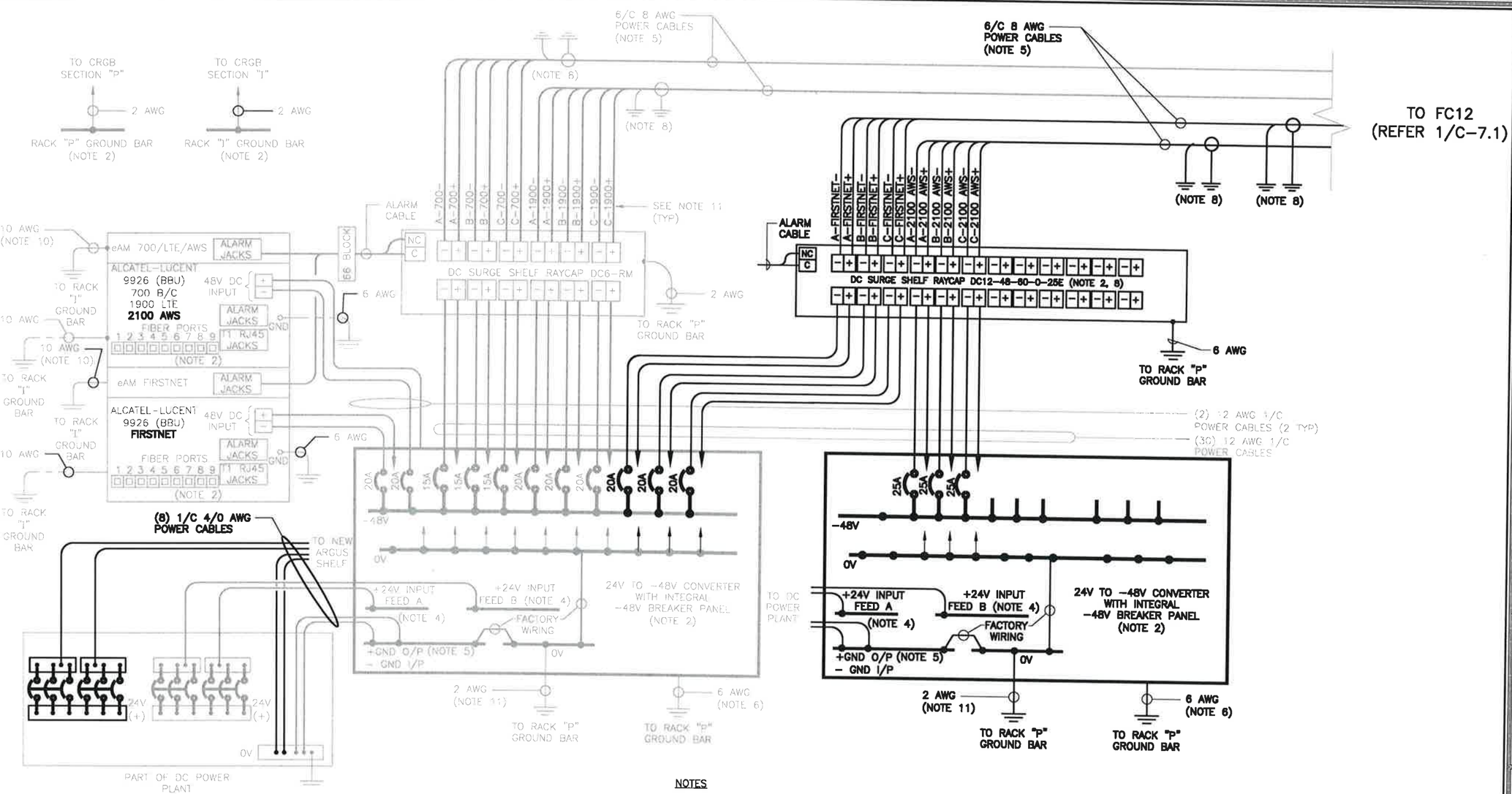
PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
A	10/11/17	SMM	PRELIMINARY REVIEW
0	11/02/17	BDH	CONSTRUCTION
1	11/08/17	BDH	CONSTRUCTION
2	12/18/17	SMM	CONSTRUCTION
3	2/16/18	GEH	CONSTRUCTION

B&T ENGINEERING, INC.

SHEET NUMBER:	REVISION:
C-6.3	3



NOTES

1. LABEL THE DC POWER CABLES WITH FIBER TAGS AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE A 145 TYPE FIBER TAG WITH UV RATED P-TOUCH LABEL ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-700B/C+".
2. INSTALL ON LTE EQUIPMENT RACK.
3. SEE 1/C-6, 1/C-6.1, 1/C-6.2 FOR FC12 & DC2 INTERNAL WIRING. CABLE GROUND WIRES NOT SHOWN FOR CLARITY.
4. CABLE TERMINALS FOR INPUT FEED A, FEED B AND REFERENCE GROUND SHALL BE 2-HOLE: 3/8" ON 1" CENTER.
5. INSTALL CABLE TERMINALS FOR FEED A AND FEED B RETURN BACK-TO-BACK ON OPPOSITE SIDES OF PAD.
6. CABLE TERMINALS FOR CHASSIS GROUND SHALL BE 2-HOLE, 1/4" ON 5/8" CENTER.
7. NOT USED.
8. SEE 1 & 2/C-5 FOR DC 6 & DC 12 INTERNAL WIRING.
9. A JUNCTION BOX IS REQUIRED WHEN FIBER OPTIC CABLES ARE INSTALLED IN CONDUIT AS SCOPED BY MARKET.
10. PROVIDE GROUND WIRES FOR ENHANCED ALARM MODULE (eAM) WHEN EMPLOYED BY MARKET.
11. CONVERTER REFERENCE GROUND IS NOT REQUIRED WHEN CONVERTER AND 24V DC POWER PLANT ARE ON THE SAME RACK OR ENCLOSURE.
12. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
13. SEE ALARM BLOCK ASSIGNMENT DETAIL FOR ALARM CABLE CONNECTIONS.
14. ADD DC SURGE MODULES TO EXISTING RACK MOUNTED SURGE UNITS AS REQUIRED.

1 WIRING DIAGRAM
SCALE: N.T.S.

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 39902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

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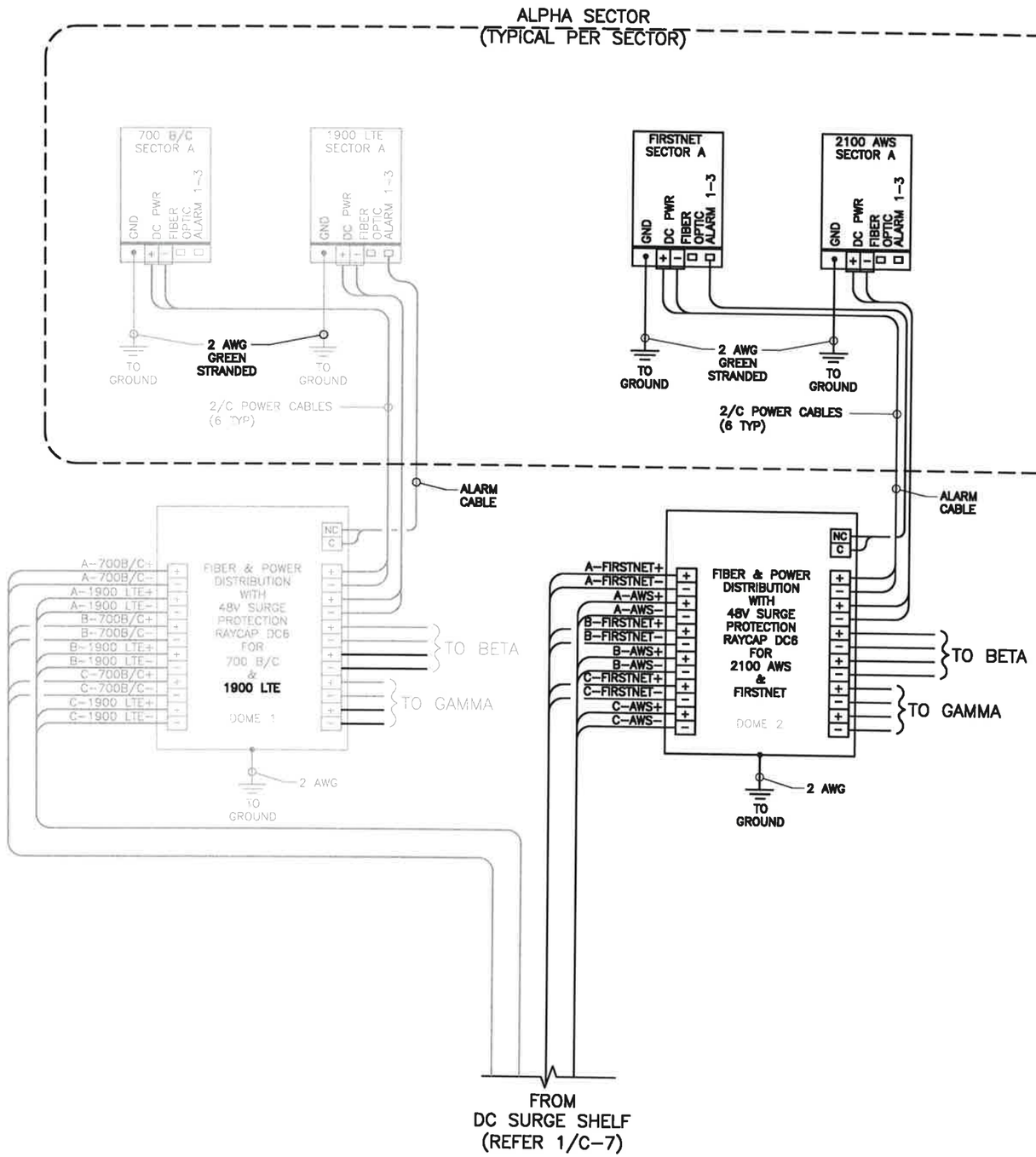
B&T ENGINEERING, INC.

STATE OF MARYLAND
GEORGE E. HUNT
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: C-7
REVISION: 3



1 WIRING DIAGRAM
SCALE: N.T.S.

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

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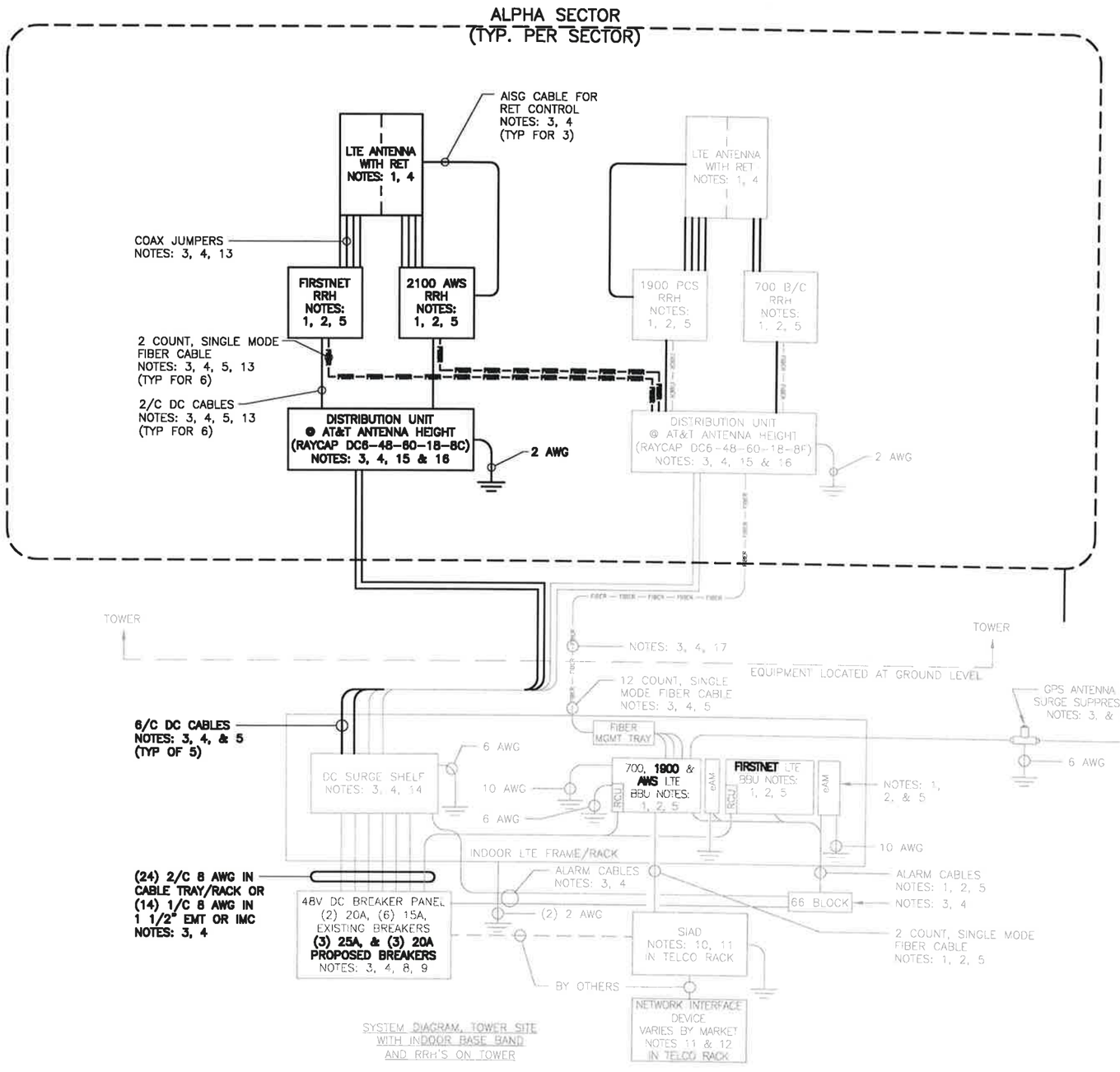
B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
No. 21708
REGISTERED
PROFESSIONAL ENGINEER
2/16/18

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: C-7.1
REVISION: 3



1 SYSTEM DIAGRAM
SCALE: N.T.S.

NOTES:

1. FURNISHED BY OEM/AT&T.
2. INSTALLED BY OEM OR AS SCOPED BY MARKET.
3. FURNISHED BY JACOBS.
4. INSTALLED BY JACOBS.
5. FINAL CONNECTION BY OEM OR AS SCOPED BY MARKET.
6. OPEN END OF LFMC TO BE LEFT WEATHERPROOFED UNTIL TERMINATED.
7. DELETED
8. PART OF DC POWER PLANT. BREAKERS SPECIFIED SEPARATELY.
9. BREAKERS TO BE TAGGED AND LOCKED OUT.
10. SIAD IS FURNISHED AND INSTALLED BY OTHERS AND INCLUDES POWER CONNECTIONS AND FIBER TO THE UNIT OR AS SCOPED BY MARKET. WHEN IN JACOBS SCOPE, INSTALL #2 TIN STRANDED MINIMUM CHASSIS GROUND, PROVIDE (2) 20A BREAKERS FROM A 24V DC POWER SOURCE OR (2) 20A BREAKERS FROM A 48V DC POWER SOURCE AND CONNECT USING MFR POWER CABLE WITH SPECIAL CONNECTOR.
11. LEC TO FURNISH AND INSTALL NETWORK INTERFACE DEVICE.
12. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
13. NOT USED.
14. DC SURGE SHELF SHALL BE RAYCAP DC6 AND DC12.
15. SEE 1&2/C-5 FOR INTERNAL WIRING DIAGRAM.
16. SEE 1/C-6-C-6.2 FOR INTERNAL WIRING DIAGRAM.
17. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS. MAX DC CABLE LENGTH IS 16 FEET FOR TOWER TOP APPLICATIONS.
18. GROUNDING WIRES SHALL BE TIN COPPER STRANDED, THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS #2 UNLESS NOTED OTHERWISE.
19. RET CONTROL FROM THE RRH IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
20. MAXIMUM 4/0 AWG CABLE LENGTH FROM 24V DC POWER PLANT TO CONVERTER SHALL NOT EXCEED 44 FT.
21. PROVIDE GROUND WIRES FOR ENHANCED ALARM MODULE (eAM) WHEN EMPLOYED BY MARKET.

B+T GRP
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FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855
EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

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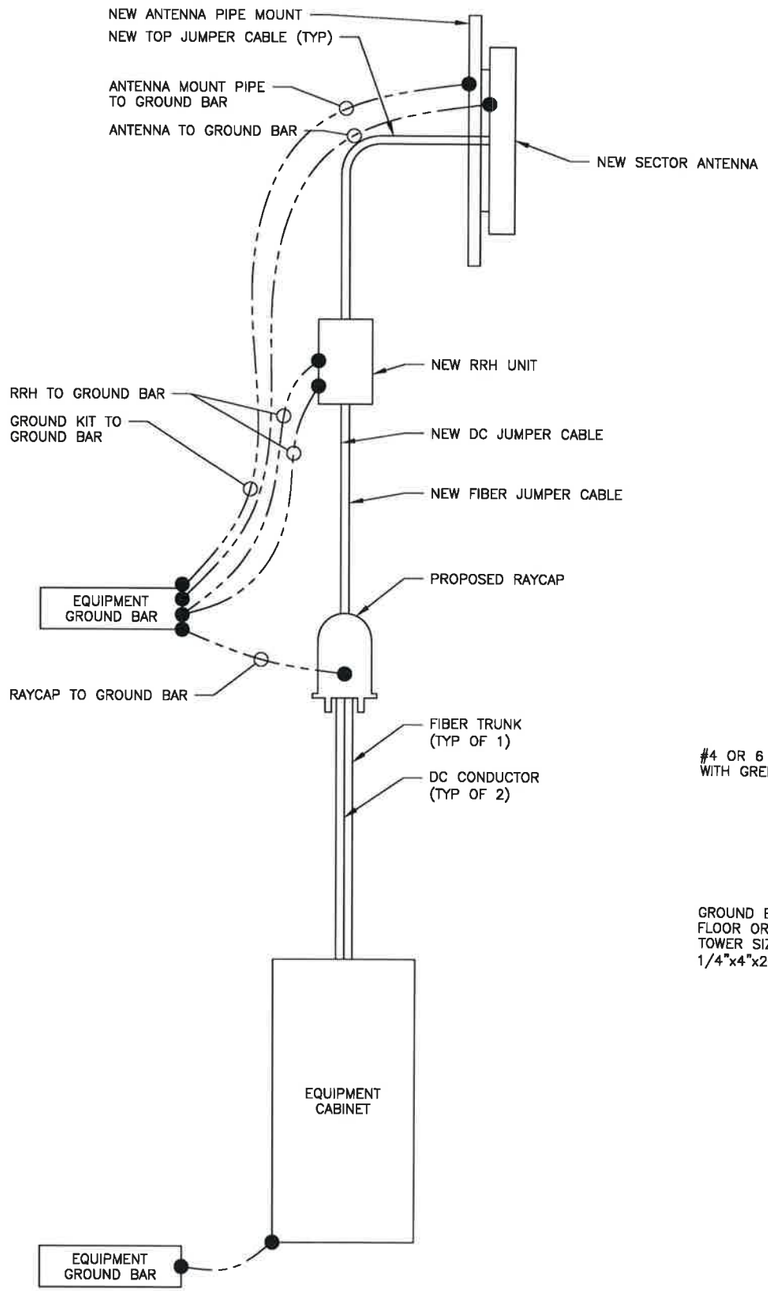
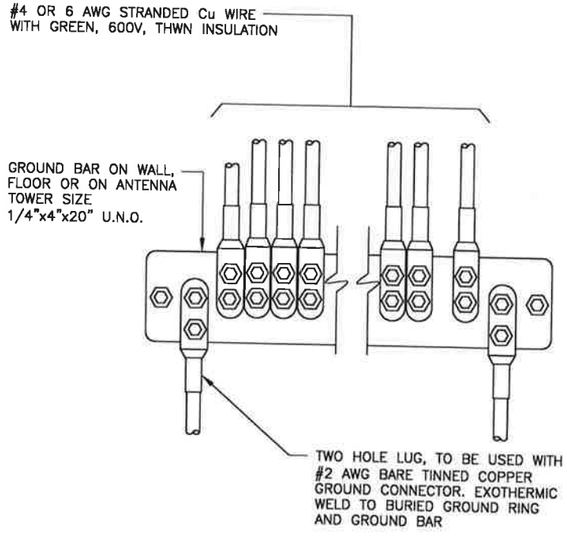
B&T ENGINEERING, INC.

STATE OF MARYLAND — JOHN W. KELLY — NO. 21708 — REGISTERED PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: C-8
REVISION: 3



1 GROUNDING SCHEMATIC
SCALE: N.T.S.



2 INSTALLATION OF GROUND WIRE TO GROUND BAR
SCALE: N.T.S.

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

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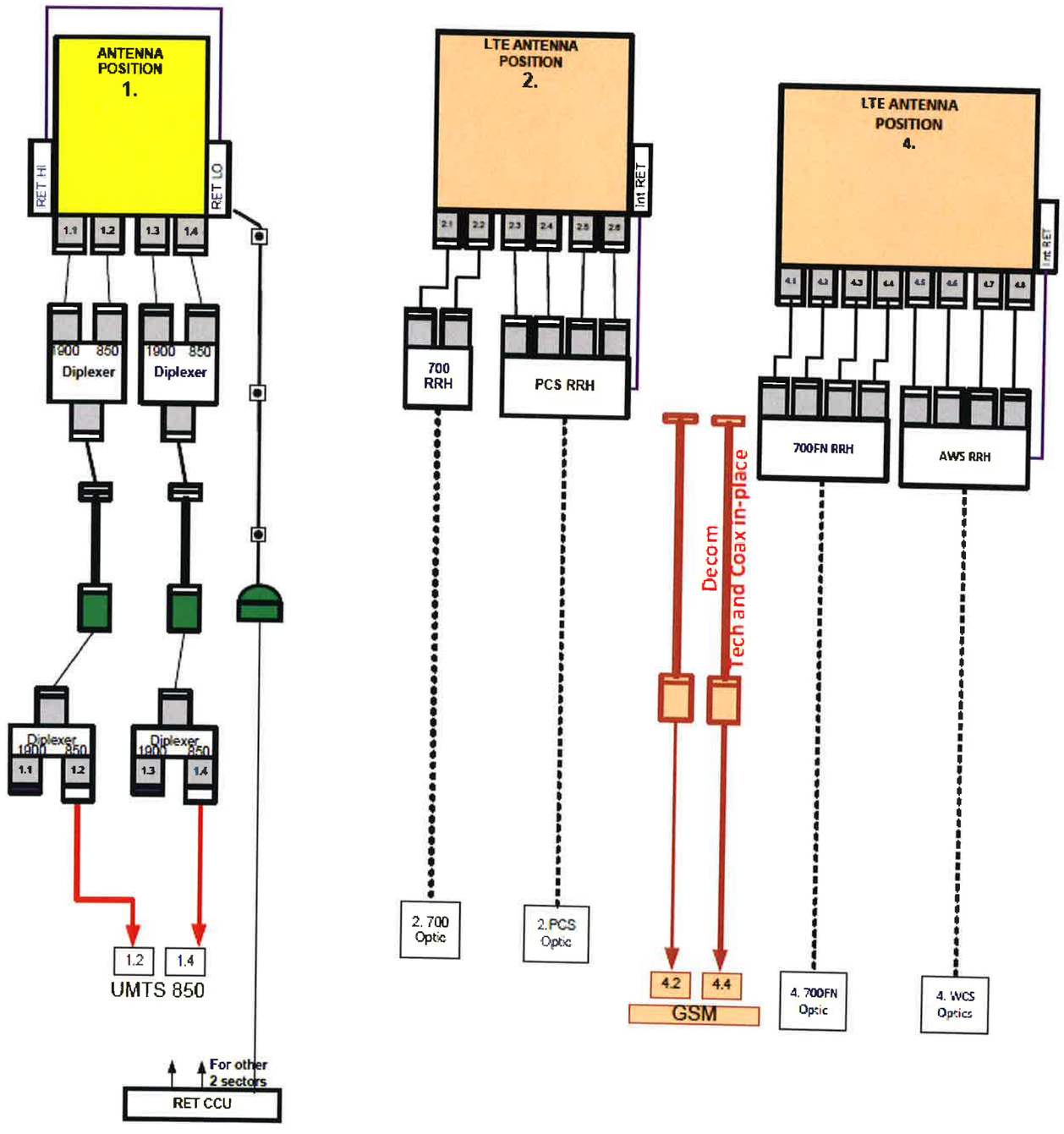
B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
No. 21431
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: G-1
REVISION: 3



B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

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MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
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B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. REED
No. 21603
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: RF-1

REVISION: 3

STEP 1: ENTER QUANTITIES OF EQUIPMENT & DC OPERATING VOLTAGE:

STEP 2: ENTER DC PLANT TYPE FROM DROP-DOWN MENU:

GENERIC - ANY +24VDC PLANT

+24V PRIMARY DC PLANT SPECIFIED

(DC PLANT CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)

STEP 2A: THIS STEP ONLY SHOWN IF "GENERIC" DC PLANT PLANT TYPE HAS BEEN SELECTED:

	125		8
	10		2

* ENTER 0 FOR SLOT VALUES TO BYPASS SLOT QUANTITY CHECK ON DC PLANT

THIS STEP ONLY SHOWN IF TYCO GPS2424 DC PLANT PLANT TYPE HAS BEEN SELECTED:

STEP 3: DO YOU WANT TO CONFIGURE A STANDARD STAND-ALONE DC CONVERTER SYSTEM? Y

NOTE: IF YOU SELECT "Y" ANY INTEGRATED DC PLANT CONVERTER OPTIONS WILL BE BYPASSED

SELECT A STANDARD STAND-ALONE CONVERTER SYSTEM FROM THE DROP-DOWN LIST:

ALPHA STD 24V to 48V DC CONVERTER SYSTEM (NEQ.13289)

(CONVERTER CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)

STEP 4: ENTER INDOOR SITE BUILDING/SHELTER DATA:

(Square footage used for interior AC lighting LOAD calculation)

SELECT SITE BUILDING TYPE & SIZE: OTHER

SPECIFY TOTAL FLOOR SPACE (SQUARE FEET): 250

STEP 5: ENTER SITE HVAC SYSTEM DATA:

SPECIFY INDIVIDUAL HVAC UNIT SIZE (TONS): 5 SPECIFY QUANTITY: 2

DOES SITE HAVE ADDITIONAL HVAC (DIFFERENT SIZE)? N

ARE THERE SITE HVAC HEATING UNITS? N

TOTAL SPECIFIED SITE HVAC: 10-TONS ESTIMATED HVAC REQUIREMENT: TWO 4-TON UNITS

CONFIGURATION (STEP 1) INDICATES TOTAL OF: 0 40W; 3 60W; 0 80W; & 0 120W REMOTE HEADS DEPLOYED (990 WATTS)

IF ALL REMOTE HEADS ARE EXTERNAL TO HVAC SPACE: REVISED HVAC TWO 4-TON UNITS

STEP 6: ENTER SITE STATIONARY GENERATOR DATA:

DOES SITE HAVE A STATIONARY GENERATOR? N

ESTIMATED CAPACITY REQUIRED: 48 KW (NO SITE GENERATOR)

STEP 7: ENTER SITE BATTERY CONFIGURATION DATA:

SELECT SINGLE STRING BATTERY CAPACITY (AH): 1400

SPECIFY TOTAL QUANTITY OF BATTERY STRINGS: 2

TOTAL SITE BATTERY CAPACITY (AH): 2800

NOTE: NON-STANDARD BATTERY CAPACITY HAS BEEN SPECIFIED

(4) 4/0 CONNECTION CABLES PER POLARITY ON EACH STRING ARE REQUIRED

ESTIMATED BATTERY RESERVE TIME: 5.26 HOURS (NO SITE GENSET)

SITES WITH STATIONARY GENSETS REQUIRE MINIMUM 2 HOURS - ALL OTHERS A MINIMUM OF 4 HOURS

SITE POWER CALCULATION TOOL - VERSION 3.0 - DECEMBER, 2013 R. BADGERO

ANY QUESTIONS PLEASE CONTACT RICK BADGERO (RB6620@ATT.COM)

DC POWER SUMMARY

- EXISTING RECTIFIERS – 8
- REQUIRED RECTIFIERS – 6
- EXISTING CONVERTERS – 4
- REQUIRED CONVERTERS – 7
- INSTALL (1) NEW ARGUS CONVERTER SHELF WITH (3) –48V CONVERTERS

NOTE: LOAD VALUES FOR ANY EQUIPMENT CAN BE USER SPECIFIED ON THE POWER CONSUMPTION WORKSHEET - USER CHANGES TO DEFAULT LOAD VALUES ARE HIGHLIGHTED IN BRIGHT YELLOW

	GSM 2G EQUIPMENT		
0	Ericsson 2206	24	0
0	(FUTURE)		0
0	Ericsson 2109 MICROCELL	24	0
0	Ericsson 2308 MICROCELL	24	0
0	(FUTURE)		0
0	Nokia (Ultrasite)	24	0
0	Nokia MetroSITE (MICROCELL)	24	0
0	(FUTURE)		0
0	Nortel S8000 (4 TRX - HePA 850)	24	0
0	Nortel S8000 (8 TRX - HePA 850)	24	0
0	Nortel S8000 (4 TRX - HePA 1900)	24	0
0	Nortel S8000 (8 TRX - HePA 1900)	24	0
0	Nortel S12000 (6 TRX - HePA 850)	24	0
0	Nortel S12000 (12 TRX - HePA 850)	24	0
0	Nortel S12000 (6 TRX - HePA 1900)	24	0
0	Nortel S12000 (12 TRX - HePA 1900)	24	0
0	(FUTURE)		0
0	Siemens ECU	48	0
0	Siemens ECU Extension Cabinet	48	0
0	Siemens FCU (24 Radios)	48	0
0	Siemens FCU Extension Cabinet	48	0
0	Siemens MICROCELL	48	0
0	(FUTURE)		0

	LTE 4G & Multi-Std EQUIPMENT		
0	A-LU 9926 LTE BBU (w/max. 3 eCEM-u)	48	0
0	(FUTURE)		0
3	A-LU 9442 LTE Remote Head (60W)	48	990
0	A-LU Remote Head (80W)	48	0
0	Ericsson LTE IRBS6601 BBU - 1 DUL	48	0
0	Ericsson LTE RBS6601 BBU - 2 DUL	48	0
0	Ericsson W/CDMA RBS6601 - 1 DUW	48	0
0	(FUTURE)		0
0	Ericsson LTE RRUS Remote Head (60W)	48	0
0	EricssonRemote Head (80W)	48	0
0	Ericsson RRUS12 (120W)	48	0
0	Ericsson RRUSA2	48	0
0	Ericsson LTE RBS6601 BBU - 1DUS	48	0
0	Ericsson LTE RBS6601 BBU - 2DUS	48	0
0	Ericsson AIR 21 (60W)	48	0
0	(FUTURE)		0
0	(FUTURE)		0

	UMTS 3G EQUIPMENT		
0	A-LU MACRO NodeB (3S1C - 40W)	24	0
1	A-LU MACRO NodeB (3S2C - 40W)	24	4090
0	A-LU MACRO NodeB (3S3C - 40W)	24	0
0	A-LU MACRO NodeB (3S4C - 40W)	24	0
0	A-LU MACRO NodeB (3S5C - 40W - 2 CAB)	24	0
0	(FUTURE)		0
0	A-LU MICRO NodeB	24	0
0	(FUTURE)		0
0	A-LU 9396 d2U Distributed NodeB MU	48	0
0	A-LU 9341 Remote Head (40W)	48	0
0	A-LU Remote Head (60W)	48	0
0	A-LU Remote Head (80W)	48	0
0	Ericsson RBS3206 NodeB 3S1C - 1 CAB	48	0
0	Ericsson RBS3206 NodeB 3S2C - 1 CAB	24	0
	NON-OBIF Ericsson 3rd, 4th & 5th Carrier		0
0	Ericsson RBS3206 NodeB 3S3C - 2 CAB	48	0
0	Ericsson RBS3206 NodeB 3S4C - 2 CAB	48	0
0	Ericsson RBS3206 NodeB 3S5C - 3 CAB	48	0
	OBIF Ericsson 3rd, 4th & 5th Carrier		0
0	Ericsson RBS3206 NodeB 3S3C - 1 CAB	48	0
	(3S3C w/OBIF & 3 60W RRUS)	48	0
	Ericsson RBS3206 NodeB 3S4C - 1 CAB	48	0
	(3S4C w/OBIF & 6 60W RRUS)	48	0
0	Ericsson RBS3206 NodeB 3S5C - 2 CAB	48	0
	(3S5C w/OBIF & 6 60W RRUS)	48	0
0	(FUTURE)		0
0	Ericsson 3303 MICRO NodeB	24	0
0	(FUTURE)		0
0	Ericsson RBS3418 Distributed NodeB MU	48	0
0	Ericsson RRU (40W)	48	0
0	Ericsson RRU (60W)	48	0
0	Ericsson RRU (80W)	48	0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0

	ANCILLARY CELL SITE EQUIPMENT		
1	A-LU 7705 SIAD	24	100
0	(FUTURE)		0
0	A-LU MPR-9500 MW Service Switch - MSS	48	0
0	A-Lu MPR-9500 MW Outdoor Unit - ODU	48	0
0	A-Lu MPR-9500 MW MPT-HL (Indoor)	48	0
0	(FUTURE)	48	0
0	Cisco MWR-2941 SIAD	24	0
0	(FUTURE)		0
0	Cisco 15310 EOS (SONET) MUX	48	0
0	Cisco 15454 MSP (MW Ring Config.)	48	0
0	(FUTURE)		0
1	Tru-Position LMU (E911)	24	150
0	DC Free Air (per HVAC unit)	48	0
1	GENERIC Ethernet NID	24	75
0	GENERIC Hydrogen Detector	24	0
1	GENERIC RET Controller	24	75
0	GENERIC RXAIT	24	0
0	GENERIC Smoke Detector	24	0
0	GENERIC TMA System	48	0
0	GENERIC Tower Lighting (DC)	48	0
0	NG480	48	0
0	Cisco 2911	48	0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0

	TX RF AMP (MCPA or SCPA) EQPT.		
0	Andrew (12 module mcpa FRAME)	24	0
0	Andrew 135 Watt Module	24	0
0	(FUTURE)		0
0	Powerwave 12 module mcpa FRAME)	24	0
0	Powerwave 90 Watt Module	24	0
0	Powerwave 120 Watt Module	24	0
0	Powerwave 180 Watt Module	24	0
0	(FUTURE)		0
0	CCI 125 Watt DAB SCPA Module	24	0
0	CCI 125 Watt DAC SCPA Module	24	0
0	(FUTURE)		0

	USER SPECIFIED AC EQUIPMENT		
1	Telco Receplacle	120	0.72
1	Receplacle #1	120	0.18
1	Receplacle #2	120	0.18
1	Receplacle #3	120	0.18
1	Interior Lidhtings	120	0.84
1	Exterior Lightings	120	0.3
0			0
0			0
0			0
0			0
		TOTAL USER SPECIFIED KVA:	2.4
	TOTAL 120VAC AMPS:	20	
	TOTAL 240VAC AMPS:	0	

	USER SPECIFIED DC EQUIPMENT		
3	RRH2x60-1900A-4R	48	990
0	RRH4x25-WCS-4R	48	0
0	B25 RRH4x30-4R	48	0
0	9412 Heaters	48	0
3	B66A RRH4x45	48	2640
1	FSM4 (5C + FIRSTNET)	48	593
3	B14 Firstnet RRH	48	2208
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
		TOTAL USER SPECIFIED WATTS:	6431
	TOTAL +24V (27V) AMPS:	0	
	TOTAL -48V (54V) AMPS:	119.1	

+24V PRIMARY VOLTAGE DC PLANT SPECIFIED			
+24VDC EQUIPMENT LOAD:	4490 WATTS	=	167 AMPS at +24V
-48VDC EQUIPMENT LOAD:	7421 WATTS	=	138 AMPS at -48V
297 AMPS (8011 WATTS) AT PRIMARY 24V REQUIRED TO SUPPORT 48V DC CONVERTER SYSTEM			
TOTAL PRIMARY 24V LOAD:	12501 WATTS	=	463 AMPS at +24V

(DC PLANT CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)		
DC PLANT: GENERIC - ANY +24VDC PLANT		
+24V RECTIFIERS REQUIRED (N+1):	6	
+24V RECTIFIER SLOTS:	8	
CONV. TYPE: ALPHA STD 24V to 48V DC CONVERTER SYSTEM (NEQ.13289)		
-48V CONVERTERS REQUIRED:	5	INSUFFICIENT SLOTS
-48V COVERTER SLOTS:	4	REQUIREMENTS EXCEED SLOT CAPACITY
ESTIMATED BATTERY RESERVE TIME		
2 1400 AH 24V STRINGS =	5.26 HOURS	(4 HOUR MINIMUM BATTERY RESERVE)

ESTIMATED SITE MAX. AC LOAD (AMPS):	197.13 AMPS
ESTIMATE 200A SERVICE SUFFICIENT	

	48 KW
ON SITE GENERATOR CAPACITY:	0 KW
(NO ON-SITE GENERATOR)	

RECOMMENDED HVAC SYSTEM:	TWO 4-TON
SPECIFIED SITE TOTAL HVAC CAPACITY:	10-TONS
ESTIMATE SUFFICIENT HVAC CAPACITY	

(1) POWER LOAD CALCULATIONS

SCALE: N.T.S.

B+T GRP

AT&T

JACOBS

7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855
EXISTING MONOPOLE

PROJECT NO: 115507.001.01

CHECKED BY: MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
A	10/11/17	SMM	PRELIMINARY REVIEW
0	11/02/17	BDH	CONSTRUCTION
1	11/08/17	BDH	CONSTRUCTION
2	12/18/17	SMM	CONSTRUCTION
3	2/16/18	GEH	CONSTRUCTION

B&T ENGINEERING, INC.

STATE OF MARYLAND PROFESSIONAL ENGINEER

2/16/18

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: RF-2

REVISION: 3

EXISTING ARGUS –48V DISTRIBUTION PANEL

DESCRIPTION								(N) 2100 AWS RRH SECTOR G	(N) 2100 AWS RRH SECTOR B	(N) 2100 AWS RRH SECTOR A	(E) 1900 LTE RRH SECTOR G	(E) 1900 LTE RRH SECTOR B	(E) 1900 LTE RRH SECTOR A	(E) 700 LTE RRH SECTOR G	(E) 700 LTE RRH SECTOR B	(E) 700 LTE RRH SECTOR A	FUTURE LTE BBU	700/1900 LTE BBU
BRKR (A)								25	25	25	15	15	15	15	15	15	20	20
POSITION	CB1	CB2	CB3	CB4	CB5	CB6	CB7	CB8	CB9	CB10	CB11	CB12	CB13	CB14	CB15	CB16	CB17	CB18

NEW ARGUS –48V DISTRIBUTION PANEL

DESCRIPTION																(N) FIRSTNET RRH SECTOR G	(N) FIRSTNET RRH SECTOR B	(N) FIRSTNET RRH SECTOR A
BRKR (A)																20	20	20
POSITION	CB1	CB2	CB3	CB4	CB5	CB6	CB7	CB8	CB9	CB10	CB11	CB12	CB13	CB14	CB15	CB16	CB17	CB18

1 DC PANEL SCHEDULE
SCALE: N.T.S.

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO: 115507.001.01
CHECKED BY: MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
A	10/11/17	SMM	PRELIMINARY REVIEW
0	11/02/17	BDH	CONSTRUCTION
1	11/08/17	BDH	CONSTRUCTION
2	12/18/17	SMM	CONSTRUCTION
3	2/16/18	GEH	CONSTRUCTION

B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. REED
REGISTERED
PROFESSIONAL ENGINEER
2/16/18

SHEET NUMBER: RF-3
REVISION: 3

MONTGOMERY COUNTY, MARYLAND
APPLICATION FOR WIRELESS COMMUNICATIONS SITE COORDINATION

DATE: ____ **NUMBER:** 201802-08
(To be filled in by County)

Applicant Name: AT&T Mobility

Address: 7150 Standard Drive, Suite B, Hanover, MD 21076

Contact Person and Phone Number: Carrie Lynn Fazzolari - 443.223.7483 - carrie.fazzolari@jacobs.com

RECEIVED
DEC 21 2017
BY CR @CTC

Provide a description of the proposed installation, including the type and height of the structure (i.e. monopole, rooftop, water tank, guyed tower, self-support tower, etc.) and whether it is existing, modified, or new. Describe any modifications that will be made to existing structure.
Removing three (3) antennas and replacing them with three (3) Antennas (KATHREIN 80010966); adding six (6) Remote Radio Heads (RRH's).

Address/City: 17001 Overhill Road, Rockville MD 20855

Site Name: Montgomery Village Zoning: RE-1

Site Owner/Landlord: Montgomery Council KC Building Corp

Structure Owner: American Towers Inc.

Latitude/Longitude (NAD27 Degrees/Minutes/Seconds): 39-8-5 / -77-8-31

Ground Elevation AMSL in Feet: 487'

Antenna Height AGL in Feet: 173'

Frequency Bands to Be Used: 700, 850, 1900

Maximum Effective Radiation Power (EFP): 500 TPO

Federal Communications Commission (FCC) Emission Designator: N/A

FCC Antenna Structure Registration Number: N/A

Description of antenna(s), including physical size, patterns, gain and orientation (include copy of spec sheet or drawings):
Proposed antennas are: KATHREIN 80010966 (96"H x 20"W x 6.9"D)

Describe area to be served by the proposed installation. Attach a map of the general area showing the location of the site. Upon request, attach RF propagation studies showing service area coverage surrounding the proposed site with and without the proposed site.
N/A. Existing propogation will remain.

Will antennas be installed on an existing structure? Yes ☒ No ☐

If not, describe results of investigation about possible co-location. Include a listing of alternative sites considered and an explanation as to why each possible alternative was not selected. If a site was ruled out because of radio frequency (RF) issues, provide RF propagation maps documenting inadequate coverage:

_____

Justification of why this site was selected: This is an existing site. AT&T wants to update the technology.

Will site be used to support government telecommunications facilities or other equipment for government use?
Yes ☐ No ☒

If yes, describe: _____

Attach a site plan of the proposed facility showing location of monopole, tower, or structure on the property, location of existing and proposed equipment buildings or cabinets, and distance of any new structures or buildings from property lines and other buildings or residences within 300 feet. Clearly identify existing versus proposed facilities by carrier. Also provide an elevation sketch of the structure showing major dimensions, existing attachments, and mounting height of proposed antennas. If a balloon test has been performed, please provide copies of the photographs.

Will the antenna installation be in compliance with the maximum permissible RF exposure limits set forth in §1.1310 of the FCC Rules and Regulations? Yes ☒ No ☐
If the answer is no, please attach an explanation.

Type of compliance study required under §1.1307 of the FCC Rules and Regulations:

Categorically Excluded	☒
Routine Environmental Evaluation	☐
Environmental Assessment	☐

If antennas will be located on a rooftop, please attach a description of any steps that have been or will be taken to prevent the aggregate RF from exceeding exposure limits.

Montgomery County Code, Chapter 2-58E requires applicants to submit a facility location plan indicating the location of every existing telecommunications transmission facility and the general location of facilities that are anticipated to be built in the near future. Has a new or updated plan been filed with the County within the last year? Yes ☒ No ☐
If the answer is no, please submit a plan with this application.

If an application for an FAA review has been submitted or an FAA determination has been issued, please attach a copy.

Application fees have been paid to Montgomery County Government on 12/21/2017.

Make check payable to Montgomery County, MD and *submit payment to*:

Office of Cable and Communication Services
Department of Technology Services
Attn: Marjorie Williams
100 Maryland Avenue, Room 250
Rockville, Maryland 20857

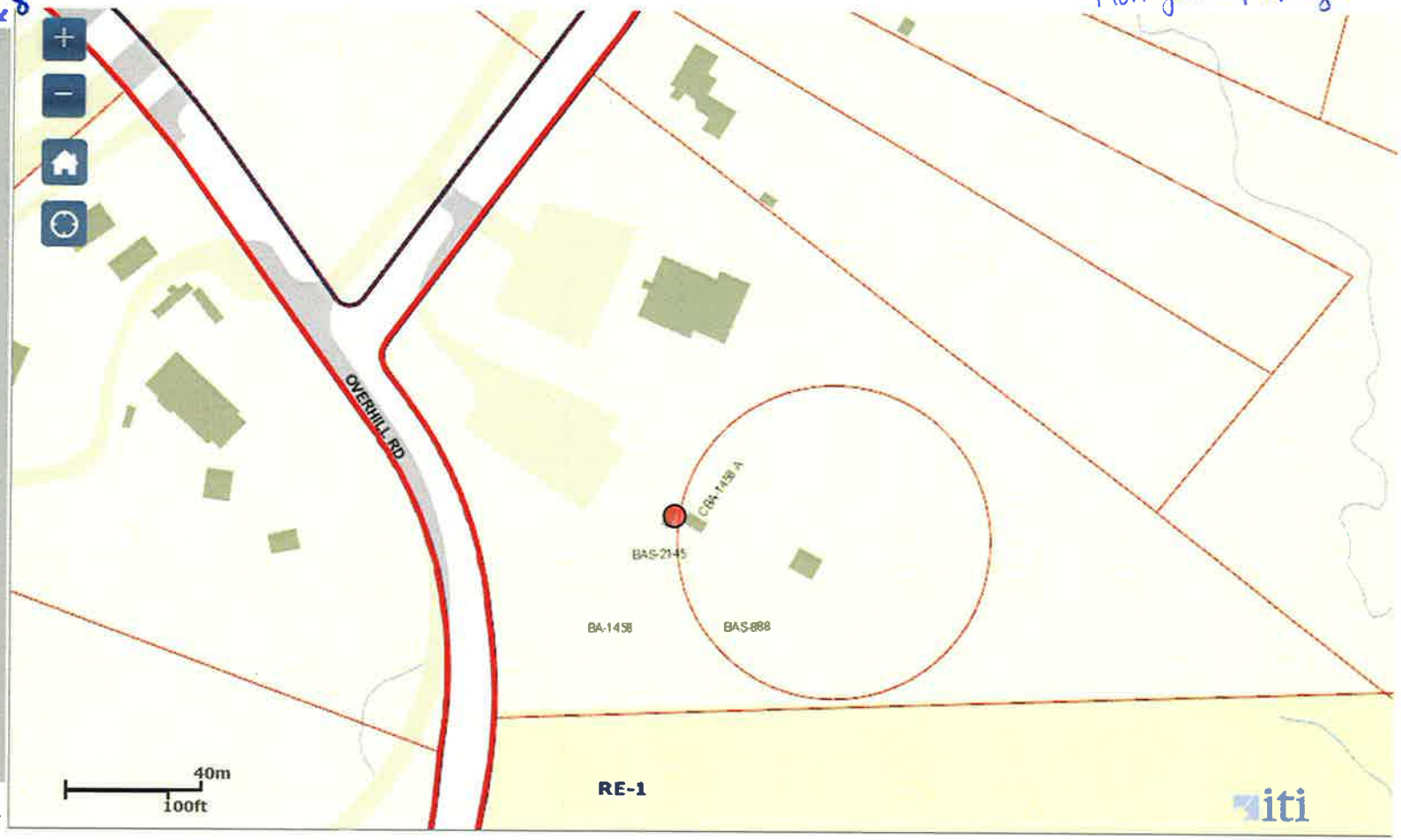
Submit this application to:
Columbia Telecommunications Corporation
c/o Montgomery County Tower Coordinator
10613 Concord Street
Kensington, MD 20895
301-933-1488

39-8-5
-77-8-31

Montgomery Village

Property Info	
cation:	Latitude: 39.1347 Longitude:-77.1419
CT #:	00117975
rcel , Lot , Block:	N/A , P5 , C
dress:	17001 OVERHILL RD ROCKVILLE, 20855
gal Description:	CASHELL EST
aduse:	Cultural
SC Grid:	223NW07
ning Info	
ne:	RE-1
erlay Zone:	N/A
R Overlay:	N/A
wable Use Table:	View PDF
er Legislative Districts	
tic Tier:	Tier 1: Sewer existing
nicipality:	N/A
ster Plan:	UPPER ROCK CREEK
toric Site/District:	N/A
king District:	N/A
an District:	N/A
tral Business District:	N/A
cial Protection Area:	N/A
erprise Zone:	N/A
& Entertainment District:	N/A
cial Tax District:	N/A
e/Pedestrian Priority Area:	N/A
an Renewal Area:	N/A
ro Station Policy Area:	N/A
rity Funding Area:	Yes

ck Here to see a list of Development Plans




OVERHILL RD
BA-2776
S-2625
CBA-1458-A
BAS-2145
BA-1458
BAS-888
RE-1
40m
100ft
iti

Real Property Data Search (w2) Guide to searching the database

Search Result for MONTGOMERY COUNTY

View Map View GroundRent Redemption View GroundRent Registration

Account Identifier: District - 04 Account Number - 00117975

Owner Information

Owner Name:	MONTG CNCL K C BLDG CORP	**Use:**	COMMERCIAL
		Principal Residence:	NO
Mailing Address:	PO BOX 5626 DERWOOD MD 20855-0626	**Deed Reference:**	/02160/ 00054

Location & Structure Information

Premises Address:	17001 OVERHILL RD ROCKVILLE 20855-0000	**Legal Description:**	CASHELL EST

Map:	Grid:	Parcel:	Sub District:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:
GT41	0000	0000		0025		C	P5	2018	Plat Ref:

Special Tax Areas: **Town:** NONE
Ad Valorem:
Tax Class: 42

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1964	4002		5.6800 AC	723

Stories	Basement	Type	Exterior	Full/Half Bath	Garage	Last Major Renovation
		CLUB HOUSE				

Value Information

	Base Value	Value As of 01/01/2015	Phase-in Assessments As of 07/01/2017	As of 07/01/2018
Land:	2,037,000	2,037,000		
Improvements	227,300	227,300		
Total:	2,264,300	2,264,300	2,264,300	
Preferential Land:	0			

Transfer Information

Seller:	**Date:**	**Price:**	
Type:	**Deed1:**	**Deed2:**	
Seller:	**Date:**	**Price:**	
Type:	**Deed1:**	**Deed2:**	
Seller:	**Date:**	**Price:**	
Type:	**Deed1:**	**Deed2:**	

Exemption Information

Partial Exempt Assessments:	Class	07/01/2017	07/01/2018
County:	830	1,869,180.00	
State:	830	1,869,180.00	
Municipal:	830	0.00	0.00

Tax Exempt: **Special Tax Recapture:**
Exempt Class: NONE

Homestead Application Information

Homestead Application Status: No Application

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**

1. This screen allows you to search the Real Property database and display property records.
2. Click here for a glossary of terms.
3. Deleted accounts can only be selected by Property Account Identifier.
4. The following pages are for information purpose only. The data is not to be used for legal reports or documents. While we have confidence in the accuracy of these records, the Department makes no warranties, expressed or implied, regarding the information.

8-Port Antenna	R1	R2	Y1	Y2
Frequency Range	698–960	698–960	1695–2690	1695–2690
Dual Polarization	X	X	X	X
HPBW	65°	65°	65°	65°
Adjust. Electr. DT	1°–10°	1°–10°	2.5°–12°	2.5°–12°

set by *FlexRET*

KATHREIN

AISG

8-Port Antenna 698–960/698–960/1695–2690/1695–2690 65°/65°/65°/65° 16.5/16.5/18/18dBi 1°–10°/1°–10°/2.5°–12°/2.5°–12°T

Type No.		80010966			
Left side, lowband		R1, connector 1–2			
		698–960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.7	16.1	16.4	16.5
Gain over all Tilts	dBi	15.6 ± 0.4	16.1 ± 0.3	16.3 ± 0.3	16.4 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	66 ± 2.9	65 ± 2.3	65 ± 2.6	64 ± 2.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 23	> 24	> 25
Cross Polar Discrimination over Sector	dB	> 10.0	> 9.5	> 10.0	> 11.5
Vertical Pattern:					
Elevation Beamwidth	°	9.7 ± 0.7	9.0 ± 0.5	8.7 ± 0.5	8.3 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 18	> 18	> 20
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R1 // R2) > 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Port 1–2	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

936.5298/d.1 ngmn 04.25.02.01 Subject to alteration.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Right side, lowband		R2, connector 3–4			
		698–960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.5	16.0	16.3	16.6
Gain over all Tilts	dBi	15.5 ± 0.6	16.0 ± 0.5	16.3 ± 0.4	16.5 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 3.5	65 ± 2.6	64 ± 3.0	63 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 23	> 24	> 26
Cross Polar Discrimination over Sector	dB	> 9.5	> 10.5	> 10.0	> 11.5
Vertical Pattern:					
Elevation Beamwidth	°	9.8 ± 0.6	9.0 ± 0.7	8.6 ± 0.4	8.1 ± 0.5
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 21	> 20	> 20
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R2 // R1) > 30 (R2 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Port 3–4	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5–6				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.6	18.0	18.3	18.1	17.9
Gain over all Tilts	dBi	17.5 ± 0.4	17.9 ± 0.4	18.1 ± 0.5	18.0 ± 0.6	17.8 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 4.9	64 ± 5.0	62 ± 5.4	57 ± 5.7	61 ± 7.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 26	> 26	> 25	> 24
Cross Polar Discrimination over Sector	dB	> 8.5	> 11.5	> 10.0	> 7.5	> 9.0
Vertical Pattern:						
Elevation Beamwidth	°	6.4 ± 0.5	5.9 ± 0.3	5.5 ± 0.4	4.8 ± 0.3	4.4 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 19	> 17	> 19	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 5–6	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Right side, highband		Y2, connector 7–8				
				1695–2690		
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.5	17.9	18.2	18.3	18.1
Gain over all Tilts	dBi	17.4 ± 0.5	17.8 ± 0.4	18.0 ± 0.6	18.2 ± 0.6	17.9 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 3.0	66 ± 5.5	63 ± 6.9	56 ± 7.1	57 ± 7.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 25	> 27	> 25
Cross Polar Discrimination over Sector	dB	> 9.5	> 11.0	> 10.0	> 9.5	> 10.5
Vertical Pattern:						
Elevation Beamwidth	°	6.4 ± 0.5	5.9 ± 0.3	5.6 ± 0.4	4.9 ± 0.4	4.4 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1
First Upper Side Lobe Suppression	dB	> 19	> 18	> 18	> 19	> 18
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 7–8	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< –153 (2 x 43 dBm carrier)
Polarization	°	+45, –45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input		8 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		FlexRET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h) (93 mph)	N | lbf	Frontal: 1400 | 315 Maximal: 1405 | 316
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	2438 / 508 / 175 96.0 / 20.0 / 6.9
Category of Mounting Hardware		XH (X-Heavy)
Weight	kg lb	52.0 / 57.0 (clamps incl.) 114.6 / 125.7 (clamps incl.)
Packing Size	mm inches	2635 / 542 / 268 103.7 / 21.3 / 10.6
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm | 2.2–4.5 inches diameter

Accessories (order separately if required)

Type No.	Description	Remarks mm | inches	Weight approx. kg | lb	Units per antenna
85010097	2 clamps	Mast diameter: 110 – 220 | 4.3 – 8.7	9.4 | 20.7	1
85010099	1 downtilt kit	Downtilt angle: 0° – 10°	10.6 | 23.4	1
86010154	Site Sharing Adapter	3-way (see figure below)	0.7 | 1.5	
86010155	Site Sharing Adapter	6-way (see figure below)	1.4 | 3.1	
86010162	Gender Adapter	Solely to be used in combination with the FlexRET module 86010153V01	0.045 | 0.099	1
86010163	Port Extender		0.16 | 0.35	1

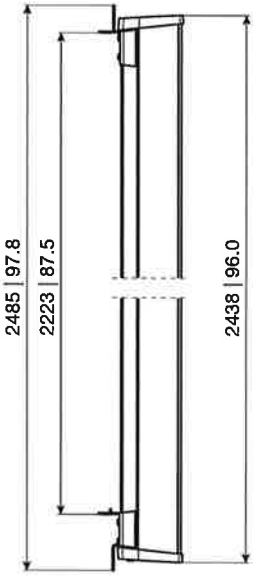
Accessories (included in the scope of supply)

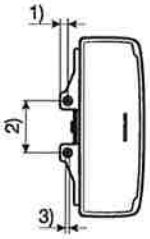
85010096	2 clamps	Mast diameter: 55 – 115 | 2.2 – 4.5	5.0 | 11.0	1
86010153V01	FlexRET			1

For downtilt mounting use the clamps for an appropriate mast diameter together with the downtilt kit.
Wall mounting: No additional mounting kit needed.

Material: **Reflector screen:** Aluminum.
Fiberglass housing: It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance and painting. The color of the radome is light grey.
All nuts and bolts: Stainless steel or hot-dip galvanized steel.

Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

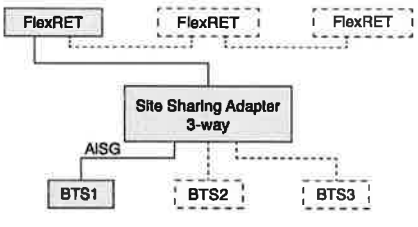




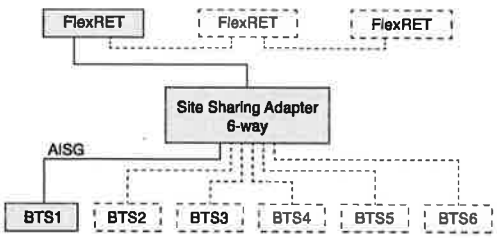
1) 22 | 0.9
2) 150 | 5.9
3) Ø 11 | 0.4

All dimensions in mm | inches

Configuration example with Site Sharing Adapter 86010154



Configuration example with Site Sharing Adapter 86010155

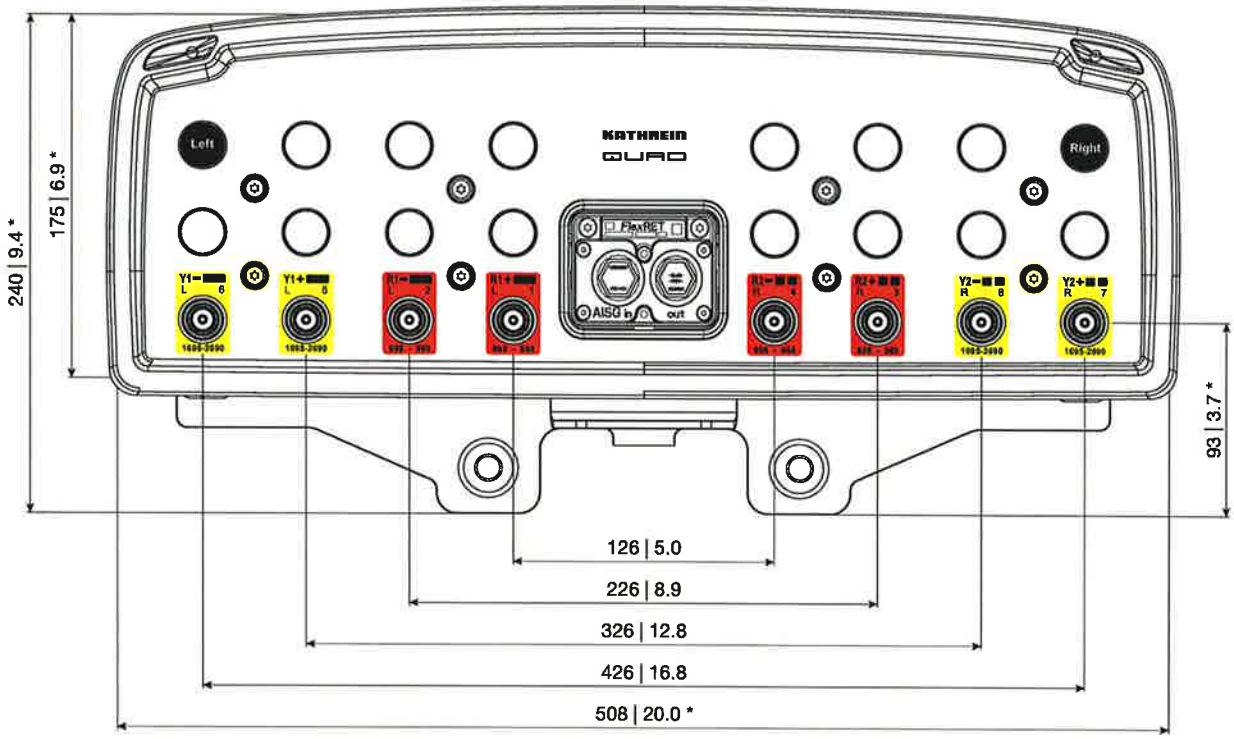


For more information please refer to the respective data sheets.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

936.5298/d.1 ngmn 04.25.02.01 Subject to alteration.

Layout of interface:



Bottom view
* Dimensions refer to radome
All dimensions in mm | inches

Correlation Table

Frequency range	Array	Connector
698–960 MHz	R1	1–2
698–960 MHz	R2	3–4
1695–2690 MHz	Y1	5–6
1695–2690 MHz	Y2	7–8

Order Information

Model	Description
80010966	8-Port antenna with mounting bracket
80010966K	8-Port antenna with mounting bracket and mechanical tilt bracket

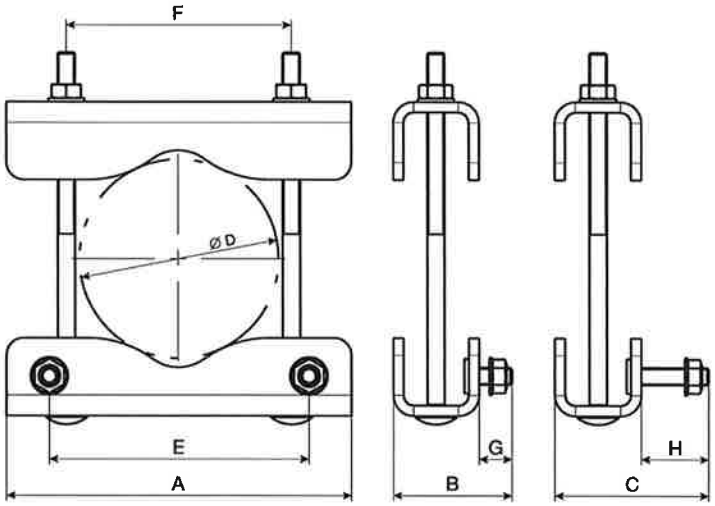
Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Mounting Hardware
Clamp
(Wind Load Category "XH")

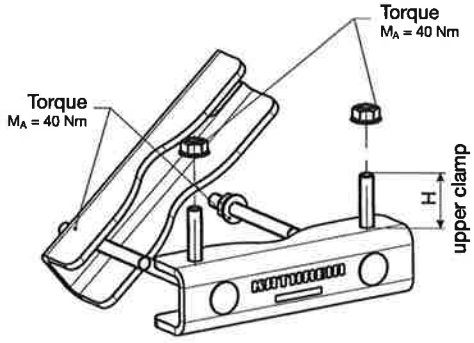
KATHREIN

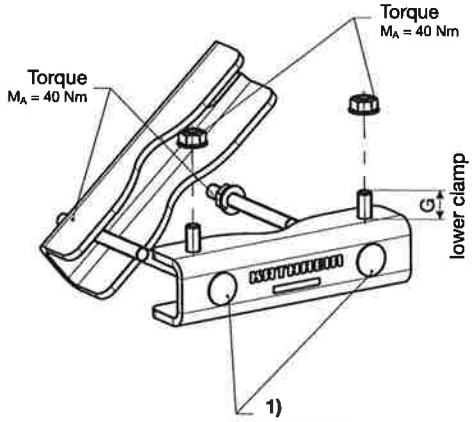
Clamp

Type No.		85010096
Suitable for mast diameter	mm inches	55 – 115 2.2 – 4.5
Scope of supply		1 x lower clamp 1 x upper clamp
Material – Clamp – Screws – Nuts		Hot-dip galvanized steel Hot-dip galvanized steel Stainless steel
Weight	kg lb	5.0 11.0



lower clamp upper clamp





1)
Attention!
Square of the screw must be positioned in the square hole before tightening the nut.

2)
All nuts have the same wrench size 17.

	A	B	C	D	E	F	G	H
mm	200	69	89	55 – 115	150	130	(19)	(39)
inches	7.9	2.7	3.5	2.2 – 4.5	5.9	5.1	(0.7)	(1.5)

Please note: Kathrein does not recommend to use counter nuts.

936.5063 Subject to alteration.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

FlexRET

KATHREIN

A flexible, integrated solution for adjusting the electrical downtilt of Kathrein FlexRET antennas.

- Compliant to 3GPP/AISG 2.0
- Single RETs or Multi RET displayed
- Two way antenna sharing feasibility
- Daisy Chain feasibility
- Pre-configured

Type No.		86010153V01
Protocols		compliant to 3GPP/AISG 2.0
Logical interface ex factory		3GPP/AISG 2.0
Operates as		Single RETs or Multi RET
Ex factory		Single RETs
Input voltage range	V	10 ... 30 (pin 6)
Power consumption	W	Typically < 1; < 10 (motor activated)
Connectors		2 x 8 pin connector according to IEC 60130-9; according to AISG-C 485 Daisy chain in: male; Daisy chain out: female
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Adjustment time (full range)	sec	40 (typically, depending on antenna type)
Adjustment cycles		> 50,000
Temperature range	°C	–40 ... +60
Protection class		IP 24 (installed)
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5
Housing material		Profile: Aluminum anodized; cover: Aluminum die cast coated
Weight	g lb	350 0.77
Packing size (H x W x D)	mm inches	245 x 93 x 102 9.6 x 3.6 x 4
Dimensions (H x W x D)	mm inches	142 x 71 x 51 5.6 x 2.8 x 2

Please note:
If the Primary which controls the FlexRET system does not support the default ex-factory interface setting, then the FlexRET must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

If the FlexRET of an antenna has to be replaced, the FlexRET gets the information stored in the antenna after power on automatically. It is not necessary to configure the FlexRET manually.

Standards:
EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
EN 55022 (Emission)
EN 55024 (Immunity)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition

Certification: CE, FCC

Scope of supply: FlexRET

Optional:

Site Sharing Adapter (86010154 or 86010155) to create independent logical interfaces at one antenna or site. Makes it possible to operate with more than one independent Node B.

Gender Adapter (86010162) to convert the AISG out (female) to an AISG in (male) port in order to operate one FlexRet with exactly 2 BTS.
Detailed information is given in the data sheet of the Gender Adapter.

Port Extender (86010163) to convert the existing AISG input and output in order to operate FlexRet with exactly 2 BTS while maintaining the daisy chain capability.
Detailed information is given in the data sheet of the Port Extender.

Please note:
In general, the addressing of the FlexRET is automatically performed. Only in case the FlexRET is manually addressed, the serial number has to be extended by the corresponding colour coding extension (e.g. CSG351234-**R1**). The respective information can be found on the site documentation which is included in the scope of supply.

936.5204 Subject to alteration.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Startup of FlexRET

The FlexRET module included in the antenna is preconfigured with the following information: Antenna model no., Antenna Serial no., Antenna configuration data. After connecting a control cable and scanning the antenna line devices (ALD) the used primary (e.g. NodeB, ALC, etc.) will find the FlexRET. You only need to insert your additional data.

Connecting the control cables:

Connect a control cable to the daisy chain input of the FlexRET. The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened').
The connector should be tightened by hand or by a special torque screw driver (order no. 85010080).
See also data sheet for Kathrein AISG-cable (86010007, ...).
Please note: To ensure the tightness of the RET System, Kathrein recommend the use of Kathrein components only.
Please note: If the daisy chain output is not used, do not remove the protection cap.

For daisy chain operation, remove the protection cap and attach a control cable to interconnect with the daisy chain input of the subsequent FlexRET or external RCU.
Please note: Do not remove the protection cap on the daisy chain output of the last FlexRET or RCU device.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

FCC – Statements

FCC § 15.19

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC § 15.105

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

Canada CNR-Gen Section 7.1.3

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ICES-003

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

936.5204 Subject to alteration.

FCC § 15.21 (Warning Statement)

[Any] changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Compliance Information Statement (Declaration of Conformity Procedure)

Responsible Party: Kathrein USA

Address: Greenway Plaza II 2400 Lakeside Blvd. Suite 650
Richardson, Texas 75082

Telephone: (01+) 214.238.8800

Type of equipment:

Model Name: FlexRET
FCC ID SP3-86010153

936.5204 Subject to alteration.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

CLS Group

Structural Analysis Report

Structure	:	**173 ft Monopole**
ATC Site Name	:	**Montgomery Village, MD**
ATC Site Number	:	**305169**
Engineering Number	:	**OAA713651_C3_01**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**MONTGOMERY VILLAGE**
Carrier Site Number	:	**MONTGOMERY VILLAGE**
Site Location	:	**17001 Overhill Road** **Derwood, MD 20855-1557** **39.134700,-77.141900**
County	:	**MONTGOMERY**
Date	:	**October 4, 2017**
Max Usage	:	**83%**
Result	:	**Pass**

Prepared By:
Zachary A. Medoff

Professional Certification
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 05-50402, Expiration Date: 12/29/2018.

STATE OF MARYLAND · TYLER M. BARKER · 50402 · PROFESSIONAL ENGINEER

Tyler M. Barker
CLS - Director of Engineering
PE # 05-50402 Exp. 12/29/2018
COA # 07 - 47793 Exp. 11/8/2017

Digitally signed by Tyler M. Barker
Date: 2017.10.05 09:12:23 -04'00'

Table of Contents

CLSGroup

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 173 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	FWT, PJF Job #1946695 (A), dated May 16, 1995
Foundation Drawing	FWT, PJF Job #1946695 (A), dated May 16, 1995
Geotechnical Report	E2Si Project #95-099, dated May 15, 1995

Analysis

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

Basic Wind Speed:	90 mph (3-Second Gust, V_{asd}) / 115 mph (3-Second Gust, V_{ult})
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.12, S_1 = 0.05
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

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

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Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
176.0	176.0	2	9" x 4.5" Air Inlet	Flush	(2) 1/4" Synflex 1300 (1) 0.38" Cat 5e	Earth Networks
		1	11" x 12.5" Aspirated Shelter			
173.0	173.0	6	Kathrein 860-10025	Platform w/ Handrails	(12) 1 5/8" Coax (3) 3/8" RET Control Cable (1) 0.40" Fiber	AT&T Mobility
		6	Powerwave LGP13519			
		3	Hoffman AHE10X10X6			
		6	Powerwave LGP21401			
		1	Raycap DC6-48-60-18-8F			
		3	Alcatel-Lucent RRH2X60-1900A-4R			
		3	Kathrein 800-10121			
		3	Commscope SBNHH-1D65B			
159.0	159.0	1	RFS 2.5GHz Co-location Filter	Platform w/ Handrails	(4) 1 1/4" Hybriflex	Sprint Nextel
		3	Alcatel-Lucent 800MHz 2X50W RRH			
		6	Alcatel-Lucent 1900MHz RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ SS			
		3	RFS APXVTM14-C-I20			
		3	RFS APXVSPP18-C-A20			
146.0	146.0	2	DragonWave Horizon DUO (Radio)	Low Profile Platform	(12) 7/8" Coax (6) 1 5/8" Coax (6) 1 1/4" Conduit (4) 1/2" Coax	
		3	KMW TTA (HB-X-WM-17-65-00T)			
		3	KMW AM-X-WM-17-65-00T			
		2	Andrew VHLP2-18			
		2	Andrew VHLP2-23			
		6	EMS RR90-11-00DBL			
135.0	135.0	3	Ericsson KRY 112 144/1	Platform w/ Handrails	(2) 1/2" Coax (12) 1 5/8" Coax (1) 1 1/4" Fiber	T-Mobile
		1	GPS			
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	RFS APXVF24-C-A20			
125.0	125.0	3	KMW HB-X-AW-19-65-00T	Side Arms	(6) 1 5/8" Coax (1) 0.24" Cat 5e	Cricket
		3	74" x 8" Panel			
115.0	115.0	1	9" x 4.5" Air Inlet	Flush	(1) 1/4" Synflex 1300	Earth Networks
111.0	111.0	1	Procom CXL 900-3LW	Side Arm	(1) 1/2" Coax	Sigfox S.A.
		1	5" x 3" x 2" Cavity Filter			
		1	Low Noise Amplifier			
5.0	5.0	1	15" x 7.5" Rain Gauge	Flush	-	Earth Networks

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
173.0	173.0	3	Kathrein 800-10121	-	(2) 0.76" 8 AWG 6	AT&T Mobility
		6	Kathrein 860-10025			

CLSGroup

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
173.0	173.0	3	Hoffman AHE10X10X6	Platform w/ Handrails	(4) 0.78" 8 AWG 6	AT&T Mobility
		1	Raycap DC6-48-60-18-8F			
		3	Alcatel-Lucent RRH2x40W-07L (700)			
		3	Nokia Flexi RRH 4T4R B14 160W FRBI			
		3	Alcatel-Lucent B66A RRH 4x45			
		3	Kathrein 80010966			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	80%	Pass
Shaft	83%	Pass
Base Plate	75%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,300.0	4,455.0	4,181.3	94%
Shear (Kips)	26.0	35.1	35.0	100%

*** The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
173.0	Kathrein Scala 80010966	AT&T Mobility	3.495	2.216
146.0	Andrew VHLP2-18	Sprint Nextel	2.478	2.053
	Andrew VHLP2-23			

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

AMERICAN TOWER®
CORPORATION

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

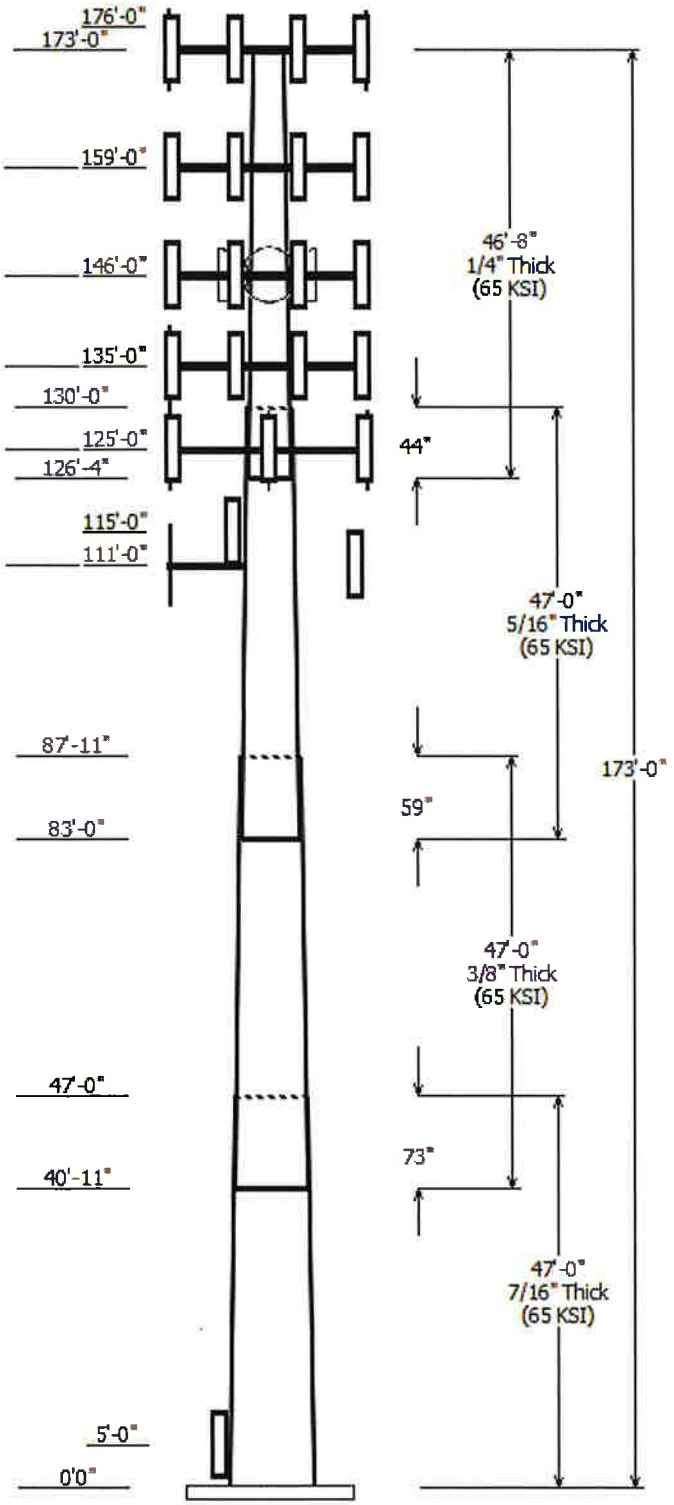
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Tower Services LLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Tower Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Job Information

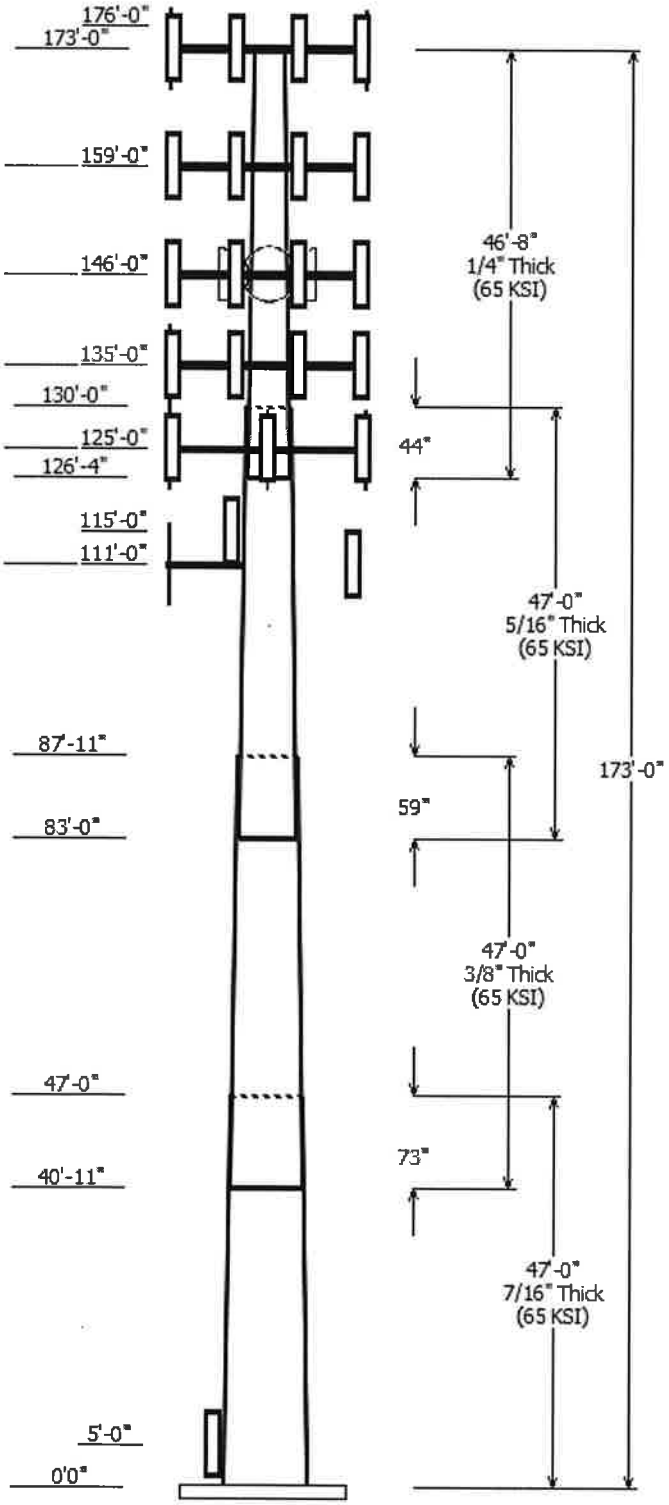
Pole :	305169	Code:	ANSI/TIA-222-G
Description :			
Client :	AT&T MOBILITY	Struct Class :	II
Location :	Montgomery Village, MD		
Shape :	12 Sides	Exposure :	B
Height :	173.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.224827 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	47.000	44.43	55.00	0.438		0.000	0.224800	65
2	47.000	35.98	46.55	0.375	Slip Joint	73.000	0.224800	65
3	47.000	27.14	37.71	0.313	Slip Joint	59.000	0.224800	65
4	46.667	17.98	28.47	0.250	Slip Joint	44.000	0.224800	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
176.000	176.000	2	9" x 4.5" Air Inlet
176.000	176.000	1	11" x 12.5" Aspirated Shelter
173.000	173.000	3	Commscope SBNHH-1D65B
173.000	173.000	6	Powerwave Allgon LGP21401
173.000	173.000	3	Alcatel-Lucent RRH2X60-1900A-
173.000	173.000	6	Powerwave Allgon LGP13519
173.000	173.000	1	Raycap DC6-48-60-18-8F
173.000	173.000	3	Hoffman AHE10X10X6
173.000	173.000	3	Kathrein Scala 800-10121
173.000	173.000	3	Kathrein Scala 80010966
173.000	173.000	3	Alcatel-Lucent RRH2x40W-07L
173.000	173.000	3	Alcatel-Lucent B66A RRH 4x45
173.000	173.000	3	Nokia Flexi RRH 4T4R B14 160W
173.000	173.000	1	Raycap DC6-48-60-18-8F
173.000	173.000	3	Hoffman AHE10X10X6
173.000	173.000	6	Kathrein Scala 860-10025
173.000	173.000	1	Flat Platform w/ Handrails
159.000	159.000	3	RFS APXVSPP18-C-A20
159.000	159.000	3	RFS APXVTM14-C-I20
159.000	159.000	3	Alcatel-Lucent 800 MHz 2X50W
159.000	159.000	6	Alcatel-Lucent 1900MHz RRH
159.000	159.000	3	Alcatel-Lucent TD-RRH8x20-25
159.000	159.000	1	RFS 2.5GHz Co-location Filter
159.000	159.000	1	Flat Platform w/ Handrails
146.000	146.000	3	KMW TTA (HB-X-WM-17-65-00T)
146.000	146.000	2	Andrew VHLP2-18
146.000	146.000	2	DragonWave Horizon DUO
146.000	146.000	2	Andrew VHLP2-23
146.000	146.000	6	EMS RR90-11-00DBL
146.000	146.000	3	KMW AM-X-WM-17-65-00T
146.000	146.000	1	Flat Low Profile Platform
135.000	135.000	3	Ericsson AIR 21, 1.3M, B4A B2P
135.000	135.000	3	RFS APXVF24-C-A20
135.000	135.000	3	Ericsson AIR 21, 1.3 M, B2A B4
135.000	135.000	3	Ericsson KRY 112 144/1
135.000	135.000	1	GPS
135.000	135.000	3	Ericsson RRUS 11 B12
135.000	135.000	1	Platform w/ Handrails
125.000	125.000	3	74" x 8" Panel
125.000	125.000	3	KMW HB-X-AW-19-65-00T
125.000	125.000	3	Flat Side Arms
115.000	115.000	1	9" x 4.5" Air Inlet
111.000	111.000	1	5" x 3" x 2" Cavity Filter
111.000	111.000	1	Low Noise Amplifier



111.000	111.000	1	Side Arm
111.000	111.000	1	Procom CXL 900-3LW
5.000	5.000	1	15" x 7.5" Rain Gauge

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	111.0	1/2" Coax	No
0.000	115.0	1/4" Synflex 1300	No
0.000	125.0	0.24" Cat 5e	No
0.000	125.0	1 5/8" Coax	No
0.000	135.0	1 1/4" Fiber	Yes
0.000	135.0	1 5/8" Coax	Yes
0.000	135.0	1/2" Coax	Yes
0.000	146.0	1 1/4" Conduit	Yes
0.000	146.0	1 5/8" Coax	Yes
0.000	146.0	1/2" Coax	Yes
0.000	146.0	7/8" Coax	Yes
0.000	159.0	1 1/4" Hybriflex	Yes
0.000	173.0	0.40" Fiber	No
0.000	173.0	0.78" 8 AWG 6	No
0.000	173.0	1 5/8" Coax	No
0.000	173.0	3/8" RET Control	No
0.000	176.0	0.38" Cat 5e	No
0.000	176.0	1/4" Synflex 1300	No

Load Cases

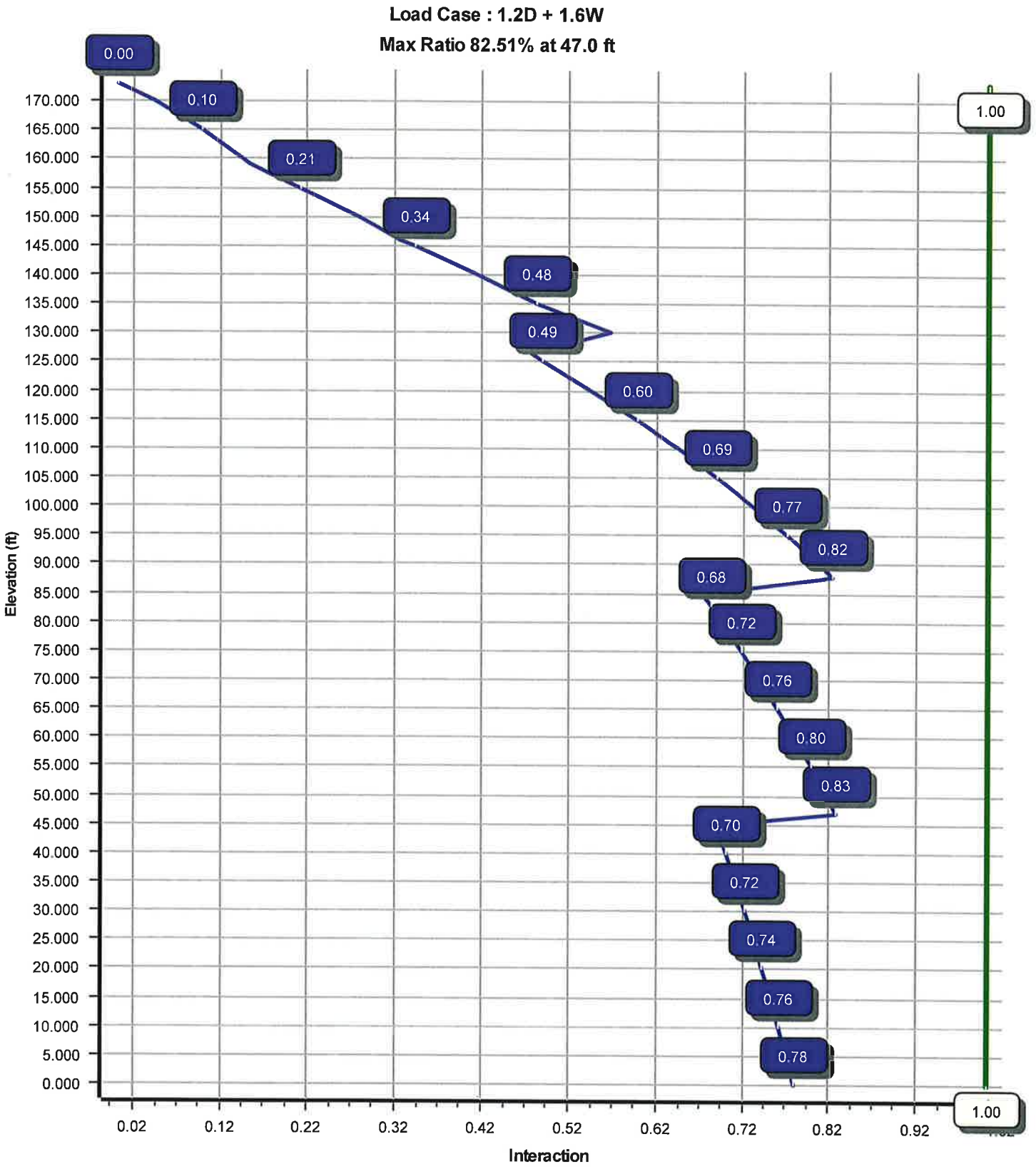
1.2D + 1.6W	90 mph with No Ice
0.9D + 1.6W	90 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	4181.29	35.02	57.05
0.9D + 1.6W	4009.24	33.27	42.78
1.2D + 1.0Di + 1.0Wi	757.66	5.72	97.57
(1.2 + 0.2Sds) * DL + E ELFM	272.01	1.86	56.40
(1.2 + 0.2Sds) * DL + E EMAM	262.53	1.87	56.40
(0.9 - 0.2Sds) * DL + E ELFM	266.45	1.86	40.22
(0.9 - 0.2Sds) * DL + E EMAM	256.72	1.87	40.22
1.0D + 1.0W	1122.52	9.24	47.59

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	146.00	29.731	2.053
1.0D + 1.0W	146.00	29.731	2.053


Load Case : 1.2D + 1.6W
Max Ratio 82.51% at 47.0 ft
0.00
0.10
0.21
0.34
0.48
0.49
0.60
0.69
0.77
0.82
0.68
0.72
0.76
0.80
0.83
0.70
0.72
0.74
0.76
0.78
1.00
1.00
170.000
165.000
160.000
155.000
150.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	305169	Code: ANSI/TIA-222-G	
Site Name:	Montgomery Village, MD	Engineering Number:OAA713651_C3_01	10/4/2017 8:57:17 PM
Customer:	AT&T MOBILITY		

Analysis Parameters

Location:	MONTGOMERY County, MD	Height (ft):	173
Code:	ANSI/TIA-222-G	Base Diameter (in):	55.00
Shape:	12 Sides	Top Diameter (in):	17.98
Pole Type:	Taper	Taper (in/ft) :	0.225
Pole Manfacturer:	FWT	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	90 mph
Exposure Category:	B	Design Wind Speed With Ice:	40 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	3.08				
T_L (sec):	8	p:	1.3	C_s:	0.030
S_s:	0.121	S_1:	0.051	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.129	S_{d1}:	0.082		

Load Cases

1.2D + 1.6W	90 mph with No Ice
0.9D + 1.6W	90 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 305169 Code: ANSI/TIA-222-G

Site Name: Montgomery Village, MD Engineering Number:OAA713651_C3_01 10/4/2017 8:57:17 PM

Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-12	47.000	0.4375	65		0.00	11,103	55.00	0.00	76.86	29208.1	31.01	125.71	44.43	47.00	61.98	15312.6	24.53	101.56	0.224827
2-12	47.000	0.3750	65	Slip	73.00	7,897	46.55	40.92	55.76	15174.6	30.58	124.14	35.98	87.92	43.00	6959.1	23.03	95.96	0.224827
3-12	47.000	0.3125	65	Slip	59.00	5,169	37.71	83.00	37.64	6720.1	29.66	120.69	27.14	130.00	27.00	2482.0	20.60	86.87	0.224827
4-12	46.667	0.2500	65	Slip	44.00	2,937	28.47	126.33	22.72	2309.6	27.84	113.89	17.98	173.00	14.27	572.7	16.59	71.92	0.224827
				Shaft Weight		27,106													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
176.00	11" x 12.5" Aspirated Shelter	1	4.00	0.760	1.00	36.79	1.239	1.00	0.000	0.000
176.00	9" x 4.5" Air Inlet	2	0.70	0.210	1.00	10.46	0.623	1.00	0.000	0.000
173.00	Alcatel-Lucent B66A RRH	3	67.00	2.580	0.67	139.24	3.726	0.67	0.000	0.000
173.00	Alcatel-Lucent RRH2x40W-	3	51.00	2.140	0.67	126.63	3.150	0.67	0.000	0.000
173.00	Alcatel-Lucent RRH2X60-	3	46.00	1.870	0.50	103.51	2.820	0.50	0.000	0.000
173.00	Commscope SBNHH-1D65B	3	40.60	8.080	0.69	217.66	10.910	0.69	0.000	0.000
173.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,443.29	63.698	1.00	0.000	0.000
173.00	Hoffman AHE10X10X6	3	30.00	0.970	0.50	58.31	1.691	0.50	0.000	0.000
173.00	Hoffman AHE10X10X6	3	30.00	0.970	0.50	58.31	1.691	0.50	0.000	0.000
173.00	Kathrein Scala 800-10121	3	44.10	5.160	0.68	160.51	7.299	0.68	0.000	0.000
173.00	Kathrein Scala 80010966	3	114.60	17.360	0.63	440.70	21.106	0.63	0.000	0.000
173.00	Kathrein Scala 860-10025	6	1.10	0.160	0.50	6.54	0.512	0.50	0.000	0.000
173.00	Nokia Flexi RRH 4T4R B14	3	50.70	2.420	0.67	114.51	3.502	0.67	0.000	0.000
173.00	Powerwave Allgon LGP13519	6	5.30	0.340	0.50	14.93	0.800	0.50	0.000	0.000
173.00	Powerwave Allgon LGP21401	6	14.10	1.100	0.50	39.44	1.822	0.50	0.000	0.000
173.00	Raycap DC6-48-60-18-8F	1	20.00	1.110	1.00	73.47	1.699	1.00	0.000	0.000
173.00	Raycap DC6-48-60-18-8F	1	20.00	1.110	1.00	73.47	1.699	1.00	0.000	0.000
159.00	Alcatel-Lucent 1900MHz RRH	6	44.00	3.260	0.67	153.66	4.458	0.67	0.000	0.000
159.00	Alcatel-Lucent 800 MHz	3	64.00	2.060	0.67	141.56	3.025	0.67	0.000	0.000
159.00	Alcatel-Lucent TD-RRH8x20-	3	70.00	4.050	0.67	165.14	5.388	0.67	0.000	0.000
159.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,430.59	63.511	1.00	0.000	0.000
159.00	RFS 2.5GHz Co-location Filter	1	43.00	0.920	0.50	77.71	1.584	0.50	0.000	0.000
159.00	RFS APXVSPP18-C-A20	3	57.00	8.020	0.69	230.64	10.826	0.69	0.000	0.000
159.00	RFS APXVTM14-C-I20	3	52.90	6.340	0.66	191.50	8.532	0.66	0.000	0.000
146.00	Andrew VHLP2-18	2	31.00	4.690	0.90	128.56	5.963	0.90	0.000	0.000
146.00	Andrew VHLP2-23	2	27.00	4.690	0.90	124.56	5.963	0.90	0.000	0.000
146.00	DragonWave Horizon DUO	2	7.00	0.200	0.50	20.06	0.461	0.50	0.000	0.000
146.00	EMS RR90-11-00DBL	6	18.00	5.070	0.68	137.99	6.940	0.68	0.000	0.000
146.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,147.25	45.173	1.00	0.000	0.000
146.00	KMW AM-X-WM-17-65-00T	3	14.20	3.360	0.64	76.57	5.238	0.64	0.000	0.000
146.00	KMW TTA (HB-X-WM-17-65-	3	15.90	0.650	0.50	36.35	1.120	0.50	0.000	0.000
135.00	Ericsson AIR 21, 1.3 M, B2A	3	83.00	6.050	0.71	227.44	8.190	0.71	0.000	0.000
135.00	Ericsson AIR 21, 1.3M, B4A	3	81.50	6.090	0.70	225.41	8.231	0.70	0.000	0.000
135.00	Ericsson KRY 112 144/1	3	11.00	0.410	0.50	21.65	0.879	0.50	0.000	0.000
135.00	Ericsson RRUS 11 B12	3	50.70	2.790	0.67	122.36	3.875	0.67	0.000	0.000
135.00	GPS	1	10.00	1.000	1.00	38.96	1.703	1.00	0.000	0.000
135.00	Platform w/ Handrails	1	2000.00	42.400	1.00	3,406.52	63.156	1.00	0.000	0.000
135.00	RFS APXVF24-C-A20	3	50.70	12.870	0.66	297.11	16.437	0.66	0.000	0.000
125.00	74" x 8" Panel	3	40.00	6.060	0.68	151.62	8.477	0.68	0.000	0.000
125.00	Flat Side Arms	3	150.00	6.300	0.67	221.83	8.714	0.67	0.000	0.000
125.00	KMW HB-X-AW-19-65-00T	3	28.70	2.800	1.00	117.21	4.089	1.00	0.000	0.000
115.00	9" x 4.5" Air Inlet	1	0.70	0.210	1.00	10.06	0.606	1.00	0.000	0.000
111.00	5" x 3" x 2" Cavity Filter	1	1.50	0.170	1.00	6.26	0.492	1.00	0.000	0.000
111.00	Low Noise Amplifier	1	2.00	0.190	1.00	7.49	0.512	1.00	0.000	0.000
111.00	Procom CXL 900-3LW	1	1.50	0.130	1.00	6.70	0.819	1.00	0.000	0.000
111.00	Side Arm	1	100.00	3.000	1.00	147.40	4.523	1.00	0.000	0.000
5.00	15" x 7.5" Rain Gauge	1	2.00	0.630	1.00	20.42	0.935	1.00	0.000	0.000

Totals 122 12061.90 26,546.27 Number of Loadings : 47

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	176.00	1	0.38" Cat 5e	0.38	0.09	N	0.00	N	Earth Networks
0.00	176.00	2	1/4" Synflex 1300	0.25	0.02	N	0.00	N	Earth Networks
0.00	173.00	1	0.40" Fiber	0.40	0.09	N	0.00	N	AT&T Mobility
0.00	173.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	173.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	173.00	3	3/8" RET Control Cable	0.38	0.23	N	0.00	N	AT&T Mobility
0.00	159.00	4	1 1/4" Hybriflex	1.54	1.00	N	1.54	Y	Sprint Nextel
0.00	146.00	6	1 1/4" Conduit	1.66	2.27	N	0.00	Y	Sprint Nextel
0.00	146.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Sprint Nextel
0.00	146.00	4	1/2" Coax	0.63	0.15	N	0.00	Y	Sprint Nextel
0.00	146.00	12	7/8" Coax	1.09	0.33	N	3.96	Y	Sprint Nextel
0.00	135.00	1	1 1/4" Fiber	1.25	1.05	N	1.25	Y	T-Mobile
0.00	135.00	12	1 5/8" Coax	1.98	0.82	N	0.44	Y	T-Mobile
0.00	135.00	2	1/2" Coax	0.63	0.15	N	0.00	Y	T-Mobile
0.00	125.00	1	0.24" Cat 5e	0.24	0.03	N	0.00	N	Cricket
0.00	125.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	Cricket
0.00	115.00	1	1/4" Synflex 1300	0.25	0.02	N	0.00	N	Earth Networks
0.00	111.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Sigfox S.A.

Segment Properties (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.4375	55.000	76.865	29,208.1	31.01	125.71	70.9	1025.	0.0	0.0
5.00		0.4375	53.876	75.281	27,439.7	30.32	123.14	71.6	983.9	0.0	1,294.3
10.00		0.4375	52.752	73.698	25,744.2	29.63	120.58	72.4	942.8	0.0	1,267.4
15.00		0.4375	51.628	72.114	24,120.0	28.94	118.01	73.2	902.5	0.0	1,240.4
20.00		0.4375	50.503	70.530	22,565.6	28.25	115.44	73.9	863.2	0.0	1,213.5
25.00		0.4375	49.379	68.947	21,079.5	27.56	112.87	74.7	824.7	0.0	1,186.5
30.00		0.4375	48.255	67.363	19,660.1	26.87	110.30	75.4	787.1	0.0	1,159.6
35.00		0.4375	47.131	65.780	18,305.9	26.19	107.73	76.2	750.3	0.0	1,132.6
40.00		0.4375	46.007	64.196	17,015.3	25.50	105.16	76.9	714.5	0.0	1,105.7
40.92	Bot - Section 2	0.4375	45.801	63.906	16,785.5	25.37	104.69	77.0	708.0	0.0	199.8
45.00		0.4375	44.883	62.612	15,786.9	24.81	102.59	77.7	679.5	0.0	1,646.0
47.00	Top - Section 1	0.3750	45.183	54.106	13,865.8	29.61	120.49	72.4	592.8	0.0	794.0
50.00		0.3750	44.509	53.291	13,249.0	29.12	118.69	73.0	575.1	0.0	548.2
55.00		0.3750	43.385	51.934	12,262.2	28.32	115.69	73.8	546.0	0.0	895.1
60.00		0.3750	42.260	50.577	11,325.6	27.52	112.69	74.7	517.7	0.0	872.1
65.00		0.3750	41.136	49.219	10,438.0	26.71	109.70	75.6	490.2	0.0	849.0
70.00		0.3750	40.012	47.862	9,598.0	25.91	106.70	76.5	463.4	0.0	825.9
75.00		0.3750	38.888	46.504	8,804.3	25.11	103.70	77.3	437.4	0.0	802.8
80.00		0.3750	37.764	45.147	8,055.6	24.30	100.70	78.2	412.1	0.0	779.7
83.00	Bot - Section 3	0.3750	37.089	44.333	7,627.5	23.82	98.91	78.7	397.3	0.0	456.7
85.00		0.3750	36.640	43.790	7,350.7	23.50	97.71	79.1	387.6	0.0	554.5
87.92	Top - Section 2	0.3125	36.609	36.523	6,141.7	28.71	117.15	73.4	324.1	0.0	796.4
90.00		0.3125	36.141	36.052	5,907.0	28.31	115.65	73.8	315.7	0.0	257.2
95.00		0.3125	35.016	34.921	5,368.2	27.34	112.05	74.9	296.2	0.0	603.8
100.0		0.3125	33.892	33.790	4,863.3	26.38	108.46	75.9	277.2	0.0	584.5
105.0		0.3125	32.768	32.659	4,391.0	25.42	104.86	77.0	258.9	0.0	565.3
110.0		0.3125	31.644	31.527	3,950.4	24.45	101.26	78.0	241.2	0.0	546.0
111.0		0.3125	31.419	31.301	3,865.9	24.26	100.54	78.3	237.7	0.0	106.9
115.0		0.3125	30.520	30.396	3,540.2	23.49	97.66	79.1	224.1	0.0	419.9
120.0		0.3125	29.396	29.265	3,159.5	22.53	94.07	80.1	207.6	0.0	507.5
125.0		0.3125	28.272	28.134	2,807.1	21.56	90.47	81.2	191.8	0.0	488.3
126.3	Bot - Section 4	0.3125	27.972	27.832	2,717.8	21.30	89.51	81.5	187.7	0.0	127.0
130.0	Top - Section 3	0.2500	27.648	22.055	2,113.1	26.95	110.59	75.3	147.7	0.0	621.4
135.0		0.2500	26.523	21.150	1,863.5	25.75	106.09	76.6	135.7	0.0	367.5
140.0		0.2500	25.399	20.245	1,634.4	24.54	101.60	77.9	124.3	0.0	352.1
145.0		0.2500	24.275	19.340	1,424.9	23.34	97.10	79.3	113.4	0.0	336.8
146.0		0.2500	24.050	19.159	1,385.3	23.10	96.20	79.5	111.3	0.0	65.5
150.0		0.2500	23.151	18.435	1,234.1	22.13	92.60	80.6	103.0	0.0	255.9
155.0		0.2500	22.027	17.530	1,061.1	20.93	88.11	81.9	93.1	0.0	306.0
159.0		0.2500	21.128	16.806	935.0	19.96	84.51	81.9	85.5	0.0	233.7
160.0		0.2500	20.903	16.625	905.1	19.72	83.61	81.9	83.7	0.0	56.9
165.0		0.2500	19.779	15.721	765.2	18.52	79.11	81.9	74.7	0.0	275.2
170.0		0.2500	18.654	14.816	640.5	17.31	74.62	81.9	66.3	0.0	259.8
173.0		0.2500	17.980	14.273	572.7	16.59	71.92	81.9	61.5	0.0	148.5
											27,105.5

Load Case: 1.2D + 1.6W — 90 mph with No Ice — 27 Iterations

Gust Response Factor :1.10 — Wind Importance Factor :1.00
Dead Load Factor :1.20
Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		308.5	0.0					0.0	0.0	308.5	0.0	0.0	0.0
5.00	Appertunance(s)	612.9	1,553.2	15.3	0.0	0.0	2.4	0.0	339.1	628.2	1,894.7	0.0	0.0
10.00		604.7	1,520.8					0.0	339.1	604.7	1,859.9	0.0	0.0
15.00		596.5	1,488.5					0.0	339.1	596.5	1,827.6	0.0	0.0
20.00		588.2	1,456.2					0.0	339.1	588.2	1,795.3	0.0	0.0
25.00		580.0	1,423.8					0.0	339.1	580.0	1,763.0	0.0	0.0
30.00		578.6	1,391.5					0.0	339.1	578.6	1,730.6	0.0	0.0
35.00		589.0	1,359.2					0.0	339.1	589.0	1,698.3	0.0	0.0
40.00		353.8	1,326.8					0.0	339.1	353.8	1,666.0	0.0	0.0
40.92	Bot - Section 2	308.8	239.7					0.0	62.2	308.8	301.9	0.0	0.0
45.00		378.8	1,975.2					0.0	276.9	378.8	2,252.1	0.0	0.0
47.00	Top - Section 1	313.7	952.8					0.0	135.6	313.7	1,088.5	0.0	0.0
50.00		505.5	657.8					0.0	203.5	505.5	861.3	0.0	0.0
55.00		637.8	1,074.2					0.0	339.1	637.8	1,413.3	0.0	0.0
60.00		643.8	1,046.5					0.0	339.1	643.8	1,385.6	0.0	0.0
65.00		648.4	1,018.7					0.0	339.1	648.4	1,357.9	0.0	0.0
70.00		651.8	991.0					0.0	339.1	651.8	1,330.2	0.0	0.0
75.00		654.1	963.3					0.0	339.1	654.1	1,302.4	0.0	0.0
80.00		524.2	935.6					0.0	339.1	524.2	1,274.7	0.0	0.0
83.00	Bot - Section 3	330.1	548.1					0.0	203.5	330.1	751.5	0.0	0.0
85.00		327.9	665.3					0.0	135.6	327.9	801.0	0.0	0.0
87.92	Top - Section 2	332.4	955.7					0.0	197.8	332.4	1,153.5	0.0	0.0
90.00		468.4	308.7					0.0	141.3	468.4	450.0	0.0	0.0
95.00		633.9	724.5					0.0	339.1	633.9	1,063.6	0.0	0.0
100.00		601.0	701.4					122.3	339.1	723.3	1,040.5	0.0	0.0
105.00		589.2	678.3					124.0	339.1	713.3	1,017.4	0.0	0.0
110.00		349.1	655.2					125.7	339.1	474.8	994.4	0.0	0.0
111.00	Appertunance(s)	285.1	128.3	123.2	0.0	0.0	126.0	25.3	67.8	433.6	322.1	0.0	0.0
115.00	Appertunance(s)	505.7	503.9	7.5	0.0	0.0	0.8	102.0	270.6	615.2	775.3	0.0	0.0
120.00		549.1	609.0					129.0	338.1	678.1	947.1	0.0	0.0
125.00	Appertunance(s)	341.9	585.9	1,220.6	0.0	0.0	787.3	130.5	338.1	1,693.1	1,711.4	0.0	0.0
126.33	Bot - Section 4	266.9	152.4					35.1	82.2	301.9	234.6	0.0	0.0
130.00	Top - Section 3	456.2	745.7					97.0	226.2	553.1	971.8	0.0	0.0
135.00	Appertunance(s)	512.4	441.1	3,217.3	0.0	0.0	3,408.8	133.5	308.4	3,863.2	4,158.3	0.0	0.0
140.00		495.9	422.6					103.2	241.3	599.1	663.8	0.0	0.0
145.00		291.4	404.1					104.3	241.3	395.7	645.4	0.0	0.0
146.00	Appertunance(s)	203.8	78.6	2,376.6	0.0	0.0	2,194.0	21.0	48.3	2,601.4	2,320.8	0.0	0.0
150.00		344.4	307.0					0.0	82.1	344.4	389.2	0.0	0.0
155.00		333.4	367.1					0.0	102.7	333.4	469.8	0.0	0.0
159.00	Appertunance(s)	180.6	280.4	3,272.1	0.0	0.0	3,646.4	0.0	82.1	3,452.7	4,009.0	0.0	0.0
160.00		208.2	68.3					0.0	15.7	208.2	84.0	0.0	0.0
165.00		337.2	330.2					0.0	78.7	337.2	408.9	0.0	0.0
170.00		259.3	311.7					0.0	78.7	259.3	390.4	0.0	0.0
173.00	Appertunance(s)	94.7	178.2	4,318.1	0.0	0.0	4,302.0	0.0	47.2	4,412.9	4,527.4	0.0	0.0
								Totals:		35,181.1	57,104.4	0.00	0.00

Site Number: 305169
Site Name: Montgomery Village, MD
Customer: AT&T MOBILITY

Code: ANSI/TIA-222-G
Engineering Number:OAA713651_C3_01

10/4/2017 8:57:20 PM

Load Case: 1.2D + 1.6W — 90 mph with No Ice — 27 Iterations

Gust Response Factor :1.10
Dead Load Factor :1.20
Wind Load Factor :1.60

Wind Importance Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-57.05	-35.02	0.00	-4,181.29	0.00	4,181.29	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.778
5.00	-55.03	-34.58	0.00	-4,006.19	0.00	4,006.19	4,854.47	2,427.24	10,705.9	5,287.28	0.11	-0.20	0.769
10.00	-53.06	-34.16	0.00	-3,833.28	0.00	3,833.28	4,802.16	2,401.08	10,366.0	5,119.39	0.42	-0.40	0.760
15.00	-51.11	-33.73	0.00	-3,662.49	0.00	3,662.49	4,747.71	2,373.85	10,026.4	4,951.68	0.96	-0.61	0.751
20.00	-49.20	-33.31	0.00	-3,493.82	0.00	3,493.82	4,691.11	2,345.56	9,687.51	4,784.30	1.71	-0.82	0.741
25.00	-47.32	-32.88	0.00	-3,327.30	0.00	3,327.30	4,632.38	2,316.19	9,349.57	4,617.40	2.68	-1.04	0.731
30.00	-45.48	-32.44	0.00	-3,162.92	0.00	3,162.92	4,571.50	2,285.75	9,012.90	4,451.13	3.89	-1.25	0.721
35.00	-43.67	-31.98	0.00	-3,000.73	0.00	3,000.73	4,508.49	2,254.24	8,677.81	4,285.64	5.32	-1.48	0.710
40.00	-41.94	-31.68	0.00	-2,840.82	0.00	2,840.82	4,443.33	2,221.66	8,344.59	4,121.08	6.99	-1.70	0.699
40.92	-41.58	-31.45	0.00	-2,811.78	0.00	2,811.78	4,431.15	2,215.58	8,283.73	4,091.02	7.32	-1.75	0.697
45.00	-39.27	-31.09	0.00	-2,683.38	0.00	2,683.38	4,376.03	2,188.02	8,013.55	3,957.59	8.90	-1.94	0.687
47.00	-38.13	-30.82	0.00	-2,621.19	0.00	2,621.19	3,526.79	1,763.39	6,520.63	3,220.29	9.73	-2.03	0.825
50.00	-37.17	-30.42	0.00	-2,528.72	0.00	2,528.72	3,498.91	1,749.46	6,370.90	3,146.35	11.06	-2.18	0.815
55.00	-35.65	-29.89	0.00	-2,376.63	0.00	2,376.63	3,450.74	1,725.37	6,121.80	3,023.33	13.48	-2.44	0.797
60.00	-34.16	-29.35	0.00	-2,227.19	0.00	2,227.19	3,400.42	1,700.21	5,873.50	2,900.70	16.17	-2.71	0.778
65.00	-32.70	-28.79	0.00	-2,080.47	0.00	2,080.47	3,347.97	1,673.98	5,626.32	2,778.63	19.15	-2.98	0.759
70.00	-31.27	-28.21	0.00	-1,936.54	0.00	1,936.54	3,293.37	1,646.69	5,380.54	2,657.25	22.42	-3.25	0.739
75.00	-29.87	-27.63	0.00	-1,795.48	0.00	1,795.48	3,236.64	1,618.32	5,136.48	2,536.71	25.97	-3.53	0.717
80.00	-28.53	-27.14	0.00	-1,657.34	0.00	1,657.34	3,177.76	1,588.88	4,894.43	2,417.17	29.81	-3.81	0.695
83.00	-27.74	-26.82	0.00	-1,575.94	0.00	1,575.94	3,141.41	1,570.70	4,750.29	2,345.99	32.26	-3.98	0.681
85.00	-26.89	-26.51	0.00	-1,522.29	0.00	1,522.29	3,116.74	1,558.37	4,654.69	2,298.77	33.95	-4.09	0.671
87.92	-25.70	-26.16	0.00	-1,444.98	0.00	1,444.98	2,412.79	1,206.39	3,612.71	1,784.18	36.50	-4.26	0.821
90.00	-25.19	-25.75	0.00	-1,390.49	0.00	1,390.49	2,395.86	1,197.93	3,540.68	1,748.61	38.39	-4.38	0.806
95.00	-24.04	-25.17	0.00	-1,261.73	0.00	1,261.73	2,353.73	1,176.87	3,368.34	1,663.50	43.14	-4.70	0.769
100.00	-22.93	-24.49	0.00	-1,135.87	0.00	1,135.87	2,309.46	1,154.73	3,196.97	1,578.86	48.23	-5.02	0.730
105.00	-21.85	-23.81	0.00	-1,013.43	0.00	1,013.43	2,263.05	1,131.52	3,026.88	1,494.86	53.65	-5.33	0.688
110.00	-20.83	-23.31	0.00	-894.40	0.00	894.40	2,214.49	1,107.25	2,858.37	1,411.64	59.40	-5.64	0.643
111.00	-20.49	-22.90	0.00	-871.10	0.00	871.10	2,204.53	1,102.26	2,824.89	1,395.11	60.59	-5.71	0.634
115.00	-19.68	-22.30	0.00	-779.51	0.00	779.51	2,163.80	1,081.90	2,691.74	1,329.35	65.46	-5.95	0.596
120.00	-18.70	-21.62	0.00	-668.02	0.00	668.02	2,110.96	1,055.48	2,527.29	1,248.14	71.84	-6.24	0.544
125.00	-17.13	-19.80	0.00	-559.94	0.00	559.94	2,055.99	1,027.99	2,365.32	1,168.14	78.51	-6.52	0.488
126.33	-16.89	-19.51	0.00	-533.54	0.00	533.54	2,040.97	1,020.48	2,322.59	1,147.04	80.34	-6.59	0.474
130.00	-15.92	-18.91	0.00	-462.01	0.00	462.01	1,495.03	747.52	1,688.85	834.06	85.47	-6.78	0.565
135.00	-12.19	-14.62	0.00	-367.49	0.00	367.49	1,458.71	729.35	1,579.59	780.10	92.68	-7.02	0.480
140.00	-11.55	-13.99	0.00	-294.37	0.00	294.37	1,420.24	710.12	1,471.51	726.72	100.15	-7.27	0.414
145.00	-10.93	-13.54	0.00	-224.40	0.00	224.40	1,379.63	689.81	1,364.91	674.08	107.87	-7.50	0.341
146.00	-8.95	-10.68	0.00	-210.86	0.00	210.86	1,371.25	685.62	1,343.80	663.65	109.45	-7.54	0.324
150.00	-8.58	-10.31	0.00	-168.15	0.00	168.15	1,336.88	668.44	1,260.10	622.31	115.81	-7.70	0.277
155.00	-8.14	-9.93	0.00	-116.61	0.00	116.61	1,292.16	646.08	1,157.52	571.66	123.94	-7.86	0.211
159.00	-4.63	-5.97	0.00	-76.88	0.00	76.88	1,238.80	619.40	1,063.37	525.16	130.55	-7.96	0.150
160.00	-4.57	-5.75	0.00	-70.91	0.00	70.91	1,225.46	612.73	1,040.46	513.84	132.22	-7.99	0.142
165.00	-4.21	-5.37	0.00	-42.15	0.00	42.15	1,158.76	579.38	929.64	459.11	140.61	-8.08	0.096
170.00	-3.86	-5.06	0.00	-15.31	0.00	15.31	1,092.06	546.03	825.05	407.46	149.07	-8.13	0.041
173.00	0.00	-4.46	0.00	-0.14	0.00	0.14	1,052.04	526.02	765.30	377.95	154.17	-8.14	0.000

Load Case: 0.9D + 1.6W — 90 mph with No Ice (Reduced DL) — 26 Iterations

Gust Response Factor :1.10
Dead Load Factor :0.90
Wind Load Factor :1.60

Wind Importance Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		285.0	0.0					0.0	0.0	285.0	0.0	0.0	0.0
5.00	Appertunance(s)	564.0	1,164.9	15.3	0.0	0.0	1.8	0.0	254.3	579.3	1,421.0	0.0	0.0
10.00		552.3	1,140.6					0.0	254.3	552.3	1,395.0	0.0	0.0
15.00		540.5	1,116.4					0.0	254.3	540.5	1,370.7	0.0	0.0
20.00		528.7	1,092.1					0.0	254.3	528.7	1,346.5	0.0	0.0
25.00		517.0	1,067.9					0.0	254.3	517.0	1,322.2	0.0	0.0
30.00		511.2	1,043.6					0.0	254.3	511.2	1,298.0	0.0	0.0
35.00		515.7	1,019.4					0.0	254.3	515.7	1,273.7	0.0	0.0
40.00		308.1	995.1					0.0	254.3	308.1	1,249.5	0.0	0.0
40.92	Bot - Section 2	266.5	179.8					0.0	46.6	266.5	226.4	0.0	0.0
45.00		326.0	1,481.4					0.0	207.7	326.0	1,689.1	0.0	0.0
47.00	Top - Section 1	269.2	714.6					0.0	101.7	269.2	816.4	0.0	0.0
50.00		431.9	493.4					0.0	152.6	431.9	646.0	0.0	0.0
55.00		540.3	805.6					0.0	254.3	540.3	1,060.0	0.0	0.0
60.00		539.6	784.8					0.0	254.3	539.6	1,039.2	0.0	0.0
65.00		537.4	764.1					0.0	254.3	537.4	1,018.4	0.0	0.0
70.00		533.9	743.3					0.0	254.3	533.9	997.6	0.0	0.0
75.00		529.3	722.5					0.0	254.3	529.3	976.8	0.0	0.0
80.00		419.9	701.7					0.0	254.3	419.9	956.0	0.0	0.0
83.00	Bot - Section 3	262.0	411.0					0.0	152.6	262.0	563.7	0.0	0.0
85.00		258.2	499.0					0.0	101.7	258.2	600.7	0.0	0.0
87.92	Top - Section 2	261.1	716.8					0.0	148.4	261.1	865.2	0.0	0.0
90.00		365.4	231.5					0.0	106.0	365.4	337.5	0.0	0.0
95.00		560.5	543.4					0.0	254.3	560.5	797.7	0.0	0.0
100.00		601.0	526.1					122.3	254.3	723.3	780.4	0.0	0.0
105.00		589.2	508.7					124.0	254.3	713.3	763.1	0.0	0.0
110.00		349.1	491.4					125.7	254.3	474.8	745.8	0.0	0.0
111.00	Appertunance(s)	285.1	96.2	123.2	0.0	0.0	94.5	25.3	50.9	433.6	241.6	0.0	0.0
115.00	Appertunance(s)	505.7	377.9	7.5	0.0	0.0	0.6	102.0	202.9	615.2	581.5	0.0	0.0
120.00		549.1	456.8					129.0	253.6	678.1	710.4	0.0	0.0
125.00	Appertunance(s)	341.9	439.5	1,220.6	0.0	0.0	590.5	130.5	253.6	1,693.1	1,283.5	0.0	0.0
126.33	Bot - Section 4	266.9	114.3					35.1	61.7	301.9	175.9	0.0	0.0
130.00	Top - Section 3	456.2	559.3					97.0	169.6	553.1	728.9	0.0	0.0
135.00	Appertunance(s)	512.4	330.8	3,217.3	0.0	0.0	2,556.6	133.5	231.3	3,863.2	3,118.7	0.0	0.0
140.00		495.9	316.9					103.2	180.9	599.1	497.9	0.0	0.0
145.00		291.4	303.1					104.3	180.9	395.7	484.0	0.0	0.0
146.00	Appertunance(s)	203.8	59.0	2,376.6	0.0	0.0	1,645.5	21.0	36.2	2,601.4	1,740.6	0.0	0.0
150.00		344.4	230.3					0.0	61.6	344.4	291.9	0.0	0.0
155.00		333.4	275.4					0.0	77.0	333.4	352.4	0.0	0.0
159.00	Appertunance(s)	180.6	210.3	3,272.1	0.0	0.0	2,734.8	0.0	61.6	3,452.7	3,006.7	0.0	0.0
160.00		208.2	51.2					0.0	11.8	208.2	63.0	0.0	0.0
165.00		337.2	247.6					0.0	59.0	337.2	306.6	0.0	0.0
170.00		259.3	233.8					0.0	59.0	259.3	292.8	0.0	0.0
173.00	Appertunance(s)	94.7	133.6	4,318.1	0.0	0.0	3,226.5	0.0	35.4	4,412.9	3,395.5	0.0	0.0
								Totals:		33,432.6	42,828.3	0.00	0.00

Load Case: 0.9D + 1.6W 90 mph with No Ice (Reduced DL) 26 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00
Dead Load Factor :0.90
Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-42.78	-33.27	0.00	-4,009.24	0.00	4,009.24	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.744
5.00	-41.25	-32.82	0.00	-3,842.91	0.00	3,842.91	4,854.47	2,427.24	10,705.9	5,287.28	0.10	-0.19	0.736
10.00	-39.74	-32.40	0.00	-3,678.79	0.00	3,678.79	4,802.16	2,401.08	10,366.0	5,119.39	0.41	-0.39	0.727
15.00	-38.26	-31.98	0.00	-3,516.79	0.00	3,516.79	4,747.71	2,373.85	10,026.4	4,951.68	0.92	-0.58	0.718
20.00	-36.81	-31.57	0.00	-3,356.87	0.00	3,356.87	4,691.11	2,345.56	9,687.51	4,784.30	1.64	-0.79	0.710
25.00	-35.38	-31.16	0.00	-3,199.02	0.00	3,199.02	4,632.38	2,316.19	9,349.57	4,617.40	2.58	-0.99	0.701
30.00	-33.98	-30.75	0.00	-3,043.21	0.00	3,043.21	4,571.50	2,285.75	9,012.90	4,451.13	3.73	-1.20	0.691
35.00	-32.61	-30.33	0.00	-2,889.45	0.00	2,889.45	4,508.49	2,254.24	8,677.81	4,285.64	5.11	-1.42	0.682
40.00	-31.30	-30.06	0.00	-2,737.79	0.00	2,737.79	4,443.33	2,221.66	8,344.59	4,121.08	6.71	-1.64	0.672
40.92	-31.02	-29.85	0.00	-2,710.23	0.00	2,710.23	4,431.15	2,215.58	8,283.73	4,091.02	7.03	-1.68	0.670
45.00	-29.27	-29.54	0.00	-2,588.35	0.00	2,588.35	4,376.03	2,188.02	8,013.55	3,957.59	8.55	-1.86	0.661
47.00	-28.41	-29.30	0.00	-2,529.27	0.00	2,529.27	3,526.79	1,763.39	6,520.63	3,220.29	9.35	-1.96	0.794
50.00	-27.68	-28.94	0.00	-2,441.36	0.00	2,441.36	3,498.91	1,749.46	6,370.90	3,146.35	10.62	-2.09	0.784
55.00	-26.51	-28.48	0.00	-2,296.65	0.00	2,296.65	3,450.74	1,725.37	6,121.80	3,023.33	12.95	-2.35	0.768
60.00	-25.37	-28.01	0.00	-2,154.24	0.00	2,154.24	3,400.42	1,700.21	5,873.50	2,900.70	15.55	-2.61	0.750
65.00	-24.25	-27.54	0.00	-2,014.18	0.00	2,014.18	3,347.97	1,673.98	5,626.32	2,778.63	18.42	-2.87	0.732
70.00	-23.16	-27.06	0.00	-1,876.48	0.00	1,876.48	3,293.37	1,646.69	5,380.54	2,657.25	21.56	-3.13	0.713
75.00	-22.09	-26.58	0.00	-1,741.18	0.00	1,741.18	3,236.64	1,618.32	5,136.48	2,536.71	24.98	-3.40	0.693
80.00	-21.06	-26.18	0.00	-1,608.27	0.00	1,608.27	3,177.76	1,588.88	4,894.43	2,417.17	28.69	-3.67	0.672
83.00	-20.45	-25.94	0.00	-1,529.72	0.00	1,529.72	3,141.41	1,570.70	4,750.29	2,345.99	31.05	-3.84	0.659
85.00	-19.81	-25.68	0.00	-1,477.85	0.00	1,477.85	3,116.74	1,558.37	4,654.69	2,298.77	32.68	-3.95	0.650
87.92	-18.90	-25.41	0.00	-1,402.94	0.00	1,402.94	2,412.79	1,206.39	3,612.71	1,784.18	35.14	-4.11	0.795
90.00	-18.50	-25.09	0.00	-1,350.00	0.00	1,350.00	2,395.86	1,197.93	3,540.68	1,748.61	36.96	-4.23	0.780
95.00	-17.61	-24.57	0.00	-1,224.55	0.00	1,224.55	2,353.73	1,176.87	3,368.34	1,663.50	41.56	-4.54	0.744
100.00	-16.77	-23.87	0.00	-1,101.72	0.00	1,101.72	2,309.46	1,154.73	3,196.97	1,578.86	46.47	-4.85	0.705
105.00	-15.95	-23.18	0.00	-982.37	0.00	982.37	2,263.05	1,131.52	3,026.88	1,494.86	51.71	-5.15	0.665
110.00	-15.18	-22.68	0.00	-866.48	0.00	866.48	2,214.49	1,107.25	2,858.37	1,411.64	57.26	-5.45	0.621
111.00	-14.92	-22.27	0.00	-843.79	0.00	843.79	2,204.53	1,102.26	2,824.89	1,395.11	58.41	-5.51	0.612
115.00	-14.30	-21.66	0.00	-754.72	0.00	754.72	2,163.80	1,081.90	2,691.74	1,329.35	63.12	-5.75	0.575
120.00	-13.57	-20.98	0.00	-646.40	0.00	646.40	2,110.96	1,055.48	2,527.29	1,248.14	69.29	-6.03	0.525
125.00	-12.42	-19.20	0.00	-541.49	0.00	541.49	2,055.99	1,027.99	2,365.32	1,168.14	75.74	-6.30	0.470
126.33	-12.23	-18.91	0.00	-515.89	0.00	515.89	2,040.97	1,020.48	2,322.59	1,147.04	77.50	-6.37	0.456
130.00	-11.50	-18.32	0.00	-446.57	0.00	446.57	1,495.03	747.52	1,688.85	834.06	82.46	-6.55	0.544
135.00	-8.80	-14.15	0.00	-355.00	0.00	355.00	1,458.71	729.35	1,579.59	780.10	89.44	-6.78	0.461
140.00	-8.32	-13.53	0.00	-284.23	0.00	284.23	1,420.24	710.12	1,471.51	726.72	96.66	-7.03	0.397
145.00	-7.86	-13.10	0.00	-216.57	0.00	216.57	1,379.63	689.81	1,364.91	674.08	104.12	-7.25	0.327
146.00	-6.45	-10.31	0.00	-203.48	0.00	203.48	1,371.25	685.62	1,343.80	663.65	105.64	-7.29	0.312
150.00	-6.17	-9.94	0.00	-162.25	0.00	162.25	1,336.88	668.44	1,260.10	622.31	111.80	-7.44	0.266
155.00	-5.85	-9.58	0.00	-112.53	0.00	112.53	1,292.16	646.08	1,157.52	571.66	119.65	-7.60	0.202
159.00	-3.32	-5.76	0.00	-74.20	0.00	74.20	1,238.80	619.40	1,063.37	525.16	126.04	-7.70	0.144
160.00	-3.28	-5.55	0.00	-68.44	0.00	68.44	1,225.46	612.73	1,040.46	513.84	127.65	-7.72	0.136
165.00	-3.02	-5.18	0.00	-40.69	0.00	40.69	1,158.76	579.38	929.64	459.11	135.76	-7.80	0.091
170.00	-2.76	-4.88	0.00	-14.79	0.00	14.79	1,092.06	546.03	825.05	407.46	143.94	-7.86	0.039
173.00	0.00	-4.46	0.00	-0.14	0.00	0.14	1,052.04	526.02	765.30	377.95	148.87	-7.87	0.000

Site Number: 305169 Code: ANSI/TIA-222-G
Site Name: Montgomery Village, MD Engineering Number:OAA713651_C3_01 10/4/2017 8:57:24 PM
Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi — 40 mph with 0.75 in Radial Ice — 26 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00
Dead Load Factor :1.20 Ice Importance Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		44.0	0.0					0.0	0.0	44.0	0.0	0.0	0.0
5.00	Appertunance(s)	87.2	1,966.3	2.8	0.0	0.0	12.9	0.0	767.5	90.0	2,746.7	0.0	0.0
10.00		85.8	1,973.6					0.0	820.2	85.8	2,793.8	0.0	0.0
15.00		84.2	1,955.6					0.0	847.4	84.2	2,803.1	0.0	0.0
20.00		82.6	1,929.4					0.0	866.4	82.6	2,795.8	0.0	0.0
25.00		81.0	1,899.0					0.0	881.1	81.0	2,780.1	0.0	0.0
30.00		80.2	1,865.8					0.0	893.2	80.2	2,759.0	0.0	0.0
35.00		81.1	1,830.8					0.0	903.6	81.1	2,734.4	0.0	0.0
40.00		48.5	1,794.4					0.0	912.6	48.5	2,707.0	0.0	0.0
40.92	Bot - Section 2	42.0	325.8					0.0	168.2	42.0	494.0	0.0	0.0
45.00		51.4	2,359.3					0.0	752.5	51.4	3,111.8	0.0	0.0
47.00	Top - Section 1	42.5	1,140.5					0.0	370.3	42.5	1,510.9	0.0	0.0
50.00		68.4	936.8					0.0	557.6	68.4	1,494.4	0.0	0.0
55.00		85.7	1,531.5					0.0	934.6	85.7	2,466.1	0.0	0.0
60.00		85.8	1,496.6					0.0	940.7	85.8	2,437.3	0.0	0.0
65.00		85.6	1,461.1					0.0	946.4	85.6	2,407.5	0.0	0.0
70.00		85.3	1,425.2					0.0	951.7	85.3	2,376.9	0.0	0.0
75.00		84.8	1,388.9					0.0	956.7	84.8	2,345.6	0.0	0.0
80.00		67.4	1,352.2					0.0	961.3	67.4	2,313.6	0.0	0.0
83.00	Bot - Section 3	42.1	795.0					0.0	578.9	42.1	1,374.0	0.0	0.0
85.00		41.5	831.3					0.0	386.8	41.5	1,218.1	0.0	0.0
87.92	Top - Section 2	42.0	1,194.3					0.0	565.3	42.0	1,759.6	0.0	0.0
90.00		59.0	477.5					0.0	404.7	59.0	882.2	0.0	0.0
95.00		82.5	1,119.3					0.0	974.0	82.5	2,093.2	0.0	0.0
100.00		81.3	1,086.2					43.2	977.8	124.5	2,063.9	0.0	0.0
105.00		80.0	1,052.8					43.9	981.4	123.9	2,034.3	0.0	0.0
110.00		47.5	1,019.3					44.7	984.9	92.2	2,004.3	0.0	0.0
111.00	Appertunance(s)	38.9	200.8	27.7	0.0	0.0	134.2	9.0	197.4	75.6	532.4	0.0	0.0
115.00	Appertunance(s)	69.2	786.8	2.7	0.0	0.0	7.2	36.4	790.2	108.2	1,584.2	0.0	0.0
120.00		75.4	951.7					46.1	990.5	121.5	1,942.2	0.0	0.0
125.00	Appertunance(s)	47.1	917.7	212.2	0.0	0.0	1,188.0	46.8	993.6	306.1	3,099.3	0.0	0.0
126.33	Bot - Section 4	36.8	240.2					12.6	257.6	49.4	497.7	0.0	0.0
130.00	Top - Section 3	63.1	985.0					34.9	709.4	98.0	1,694.4	0.0	0.0
135.00	Appertunance(s)	71.2	756.0	561.0	0.0	0.0	5,700.8	48.1	969.9	680.3	7,426.7	0.0	0.0
140.00		69.3	726.2					28.8	653.3	98.1	1,379.5	0.0	0.0
145.00		40.9	696.2					29.1	655.0	70.0	1,351.2	0.0	0.0
146.00	Appertunance(s)	33.1	136.6	446.6	0.0	0.0	3,637.5	5.9	131.2	485.6	3,905.3	0.0	0.0
150.00		58.5	531.5					0.0	133.5	58.5	665.0	0.0	0.0
155.00		56.9	635.9					0.0	167.2	56.9	803.0	0.0	0.0
159.00	Appertunance(s)	31.0	487.9	578.1	0.0	0.0	6,162.8	0.0	133.9	609.1	6,784.6	0.0	0.0
160.00		36.0	119.7					0.0	15.7	36.0	135.4	0.0	0.0
165.00		58.6	575.1					0.0	78.7	58.6	653.8	0.0	0.0
170.00		45.4	544.6					0.0	78.7	45.4	623.2	0.0	0.0
173.00	Appertunance(s)	16.7	313.6	761.6	0.0	0.0	7,580.6	0.0	47.2	778.2	7,941.4	0.0	0.0
								Totals:		5,719.25	97,526.9	0.00	0.00

Site Number: 305169 Code: ANSI/TIA-222-G

Site Name: Montgomery Village, MD Engineering Number:OAA713651_C3_01 10/4/2017 8:57:27 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph with 0.75 in Radial Ice 26 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-97.57	-5.72	0.00	-757.66	0.00	757.66	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.159
5.00	-94.82	-5.69	0.00	-729.07	0.00	729.07	4,854.47	2,427.24	10,705.9	5,287.28	0.02	-0.04	0.157
10.00	-92.02	-5.66	0.00	-700.63	0.00	700.63	4,802.16	2,401.08	10,366.0	5,119.39	0.08	-0.07	0.156
15.00	-89.21	-5.63	0.00	-672.33	0.00	672.33	4,747.71	2,373.85	10,026.4	4,951.68	0.17	-0.11	0.155
20.00	-86.41	-5.60	0.00	-644.17	0.00	644.17	4,691.11	2,345.56	9,687.51	4,784.30	0.31	-0.15	0.153
25.00	-83.63	-5.57	0.00	-616.17	0.00	616.17	4,632.38	2,316.19	9,349.57	4,617.40	0.49	-0.19	0.152
30.00	-80.87	-5.54	0.00	-588.31	0.00	588.31	4,571.50	2,285.75	9,012.90	4,451.13	0.71	-0.23	0.150
35.00	-78.13	-5.50	0.00	-560.62	0.00	560.62	4,508.49	2,254.24	8,677.81	4,285.64	0.97	-0.27	0.148
40.00	-75.42	-5.47	0.00	-533.11	0.00	533.11	4,443.33	2,221.66	8,344.59	4,121.08	1.28	-0.31	0.146
40.92	-74.93	-5.46	0.00	-528.09	0.00	528.09	4,431.15	2,215.58	8,283.73	4,091.02	1.34	-0.32	0.146
45.00	-71.81	-5.42	0.00	-505.81	0.00	505.81	4,376.03	2,188.02	8,013.55	3,957.59	1.63	-0.36	0.144
47.00	-70.30	-5.40	0.00	-494.96	0.00	494.96	3,526.79	1,763.39	6,520.63	3,220.29	1.79	-0.38	0.174
50.00	-68.80	-5.36	0.00	-478.77	0.00	478.77	3,498.91	1,749.46	6,370.90	3,146.35	2.03	-0.40	0.172
55.00	-66.33	-5.32	0.00	-451.95	0.00	451.95	3,450.74	1,725.37	6,121.80	3,023.33	2.48	-0.45	0.169
60.00	-63.89	-5.27	0.00	-425.36	0.00	425.36	3,400.42	1,700.21	5,873.50	2,900.70	2.98	-0.50	0.165
65.00	-61.48	-5.22	0.00	-399.01	0.00	399.01	3,347.97	1,673.98	5,626.32	2,778.63	3.54	-0.56	0.162
70.00	-59.10	-5.16	0.00	-372.92	0.00	372.92	3,293.37	1,646.69	5,380.54	2,657.25	4.15	-0.61	0.158
75.00	-56.75	-5.11	0.00	-347.10	0.00	347.10	3,236.64	1,618.32	5,136.48	2,536.71	4.82	-0.66	0.154
80.00	-54.43	-5.05	0.00	-321.57	0.00	321.57	3,177.76	1,588.88	4,894.43	2,417.17	5.54	-0.72	0.150
83.00	-53.06	-5.02	0.00	-306.41	0.00	306.41	3,141.41	1,570.70	4,750.29	2,345.99	6.00	-0.75	0.148
85.00	-51.84	-4.99	0.00	-296.38	0.00	296.38	3,116.74	1,558.37	4,654.69	2,298.77	6.32	-0.77	0.146
87.92	-50.08	-4.94	0.00	-281.84	0.00	281.84	2,412.79	1,206.39	3,612.71	1,784.18	6.80	-0.80	0.179
90.00	-49.19	-4.91	0.00	-271.54	0.00	271.54	2,395.86	1,197.93	3,540.68	1,748.61	7.16	-0.83	0.176
95.00	-47.09	-4.85	0.00	-246.99	0.00	246.99	2,353.73	1,176.87	3,368.34	1,663.50	8.06	-0.89	0.169
100.00	-45.03	-4.74	0.00	-222.76	0.00	222.76	2,309.46	1,154.73	3,196.97	1,578.86	9.02	-0.95	0.161
105.00	-42.99	-4.63	0.00	-199.07	0.00	199.07	2,263.05	1,131.52	3,026.88	1,494.86	10.06	-1.01	0.152
110.00	-40.98	-4.52	0.00	-175.95	0.00	175.95	2,214.49	1,107.25	2,858.37	1,411.64	11.15	-1.08	0.143
111.00	-40.45	-4.46	0.00	-171.43	0.00	171.43	2,204.53	1,102.26	2,824.89	1,395.11	11.38	-1.09	0.141
115.00	-38.87	-4.36	0.00	-153.60	0.00	153.60	2,163.80	1,081.90	2,691.74	1,329.35	12.31	-1.14	0.134
120.00	-36.92	-4.23	0.00	-131.82	0.00	131.82	2,110.96	1,055.48	2,527.29	1,248.14	13.53	-1.19	0.123
125.00	-33.83	-3.88	0.00	-110.67	0.00	110.67	2,055.99	1,027.99	2,365.32	1,168.14	14.81	-1.25	0.111
126.33	-33.33	-3.83	0.00	-105.50	0.00	105.50	2,040.97	1,020.48	2,322.59	1,147.04	15.16	-1.26	0.108
130.00	-31.64	-3.72	0.00	-91.45	0.00	91.45	1,495.03	747.52	1,688.85	834.06	16.14	-1.30	0.131
135.00	-24.22	-2.89	0.00	-72.84	0.00	72.84	1,458.71	729.35	1,579.59	780.10	17.53	-1.35	0.110
140.00	-22.84	-2.78	0.00	-58.39	0.00	58.39	1,420.24	710.12	1,471.51	726.72	18.97	-1.40	0.096
145.00	-21.49	-2.68	0.00	-44.51	0.00	44.51	1,379.63	689.81	1,364.91	674.08	20.46	-1.44	0.082
146.00	-17.60	-2.11	0.00	-41.82	0.00	41.82	1,371.25	685.62	1,343.80	663.65	20.76	-1.45	0.076
150.00	-16.94	-2.04	0.00	-33.40	0.00	33.40	1,336.88	668.44	1,260.10	622.31	21.99	-1.48	0.066
155.00	-16.14	-1.97	0.00	-23.20	0.00	23.20	1,292.16	646.08	1,157.52	571.66	23.56	-1.51	0.053
159.00	-9.37	-1.18	0.00	-15.32	0.00	15.32	1,238.80	619.40	1,063.37	525.16	24.84	-1.53	0.037
160.00	-9.23	-1.14	0.00	-14.14	0.00	14.14	1,225.46	612.73	1,040.46	513.84	25.16	-1.54	0.035
165.00	-8.58	-1.07	0.00	-8.42	0.00	8.42	1,158.76	579.38	929.64	459.11	26.78	-1.56	0.026
170.00	-7.96	-1.01	0.00	-3.06	0.00	3.06	1,092.06	546.03	825.05	407.46	28.42	-1.57	0.015
173.00	0.00	-0.79	0.00	-0.04	0.00	0.04	1,052.04	526.02	765.30	377.95	29.40	-1.57	0.000

Site Number: 305169
Site Name: Montgomery Village, MD
Customer: AT&T MOBILITY

Code: ANSI/TIA-222-G
Engineering Number:OAA713651_C3_01

10/4/2017 8:57:27 PM

Load Case: 1.0D + 1.0W

Gust Response Factor :1.10
Dead Load Factor :1.00
Wind Load Factor :1.00

Serviceability 60 mph

25 Iterations
Wind Importance Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00								0.0	0.0				
5.00	Appertunance(s)	79.2	0.0							79.2	0.0	0.0	0.0
10.00		156.7	1,294.3	4.2	0.0	0.0	2.0	0.0	282.6	160.9	1,578.9	0.0	0.0
15.00		153.4	1,267.4					0.0	282.6	153.4	1,550.0	0.0	0.0
20.00		150.1	1,240.4					0.0	282.6	150.1	1,523.0	0.0	0.0
25.00		146.9	1,213.5					0.0	282.6	146.9	1,496.1	0.0	0.0
30.00		143.6	1,186.5					0.0	282.6	143.6	1,469.1	0.0	0.0
35.00		142.0	1,159.6					0.0	282.6	142.0	1,442.2	0.0	0.0
40.00		143.2	1,132.6					0.0	282.6	143.2	1,415.2	0.0	0.0
40.92	Bot - Section 2	85.6	1,105.7					0.0	282.6	85.6	1,388.3	0.0	0.0
45.00		74.0	199.8					0.0	51.8	74.0	251.6	0.0	0.0
47.00	Top - Section 1	90.6	1,646.0					0.0	230.8	90.6	1,876.8	0.0	0.0
50.00		74.8	794.0					0.0	113.0	74.8	907.1	0.0	0.0
55.00		120.0	548.2					0.0	169.6	120.0	717.7	0.0	0.0
60.00		150.1	895.1					0.0	282.6	150.1	1,177.7	0.0	0.0
65.00		149.9	872.1					0.0	282.6	149.9	1,154.7	0.0	0.0
70.00		149.3	849.0					0.0	282.6	149.3	1,131.6	0.0	0.0
75.00		148.3	825.9					0.0	282.6	148.3	1,108.5	0.0	0.0
80.00		147.0	802.8					0.0	282.6	147.0	1,085.4	0.0	0.0
83.00	Bot - Section 3	116.6	779.7					0.0	282.6	116.6	1,062.3	0.0	0.0
85.00		72.8	456.7					0.0	169.6	72.8	626.3	0.0	0.0
87.92	Top - Section 2	71.7	554.5					0.0	113.0	71.7	667.5	0.0	0.0
90.00		72.5	796.4					0.0	164.8	72.5	961.3	0.0	0.0
95.00		101.5	257.2					0.0	117.8	101.5	375.0	0.0	0.0
100.00		155.7	603.8					0.0	282.6	155.7	886.4	0.0	0.0
105.00		166.9	584.5					34.0	282.6	200.9	867.1	0.0	0.0
110.00		163.7	565.3					34.5	282.6	198.1	847.9	0.0	0.0
111.00	Appertunance(s)	97.0	546.0					34.9	282.6	131.9	828.6	0.0	0.0
115.00	Appertunance(s)	79.2	106.9	34.2	0.0	0.0	105.0	7.0	56.5	120.4	268.4	0.0	0.0
120.00		140.5	419.9	2.1	0.0	0.0	0.7	28.3	225.5	170.9	646.1	0.0	0.0
125.00	Appertunance(s)	152.5	507.5					35.8	281.8	188.4	789.3	0.0	0.0
126.33	Bot - Section 4	95.0	488.3	339.1	0.0	0.0	656.1	36.3	281.8	470.3	1,426.1	0.0	0.0
130.00	Top - Section 3	74.1	127.0					9.7	68.5	83.9	195.5	0.0	0.0
135.00	Appertunance(s)	126.7	621.4					26.9	188.5	153.7	809.9	0.0	0.0
140.00		142.3	367.5	893.7	0.0	0.0	2,840.7	37.1	257.0	1,073.1	3,465.2	0.0	0.0
145.00		137.7	352.1					28.7	201.1	166.4	553.2	0.0	0.0
146.00	Appertunance(s)	80.9	336.8					29.0	201.1	109.9	537.8	0.0	0.0
150.00		56.6	65.5	660.2	0.0	0.0	1,828.3	5.8	40.2	722.6	1,934.0	0.0	0.0
155.00		95.7	255.9					0.0	68.4	95.7	324.3	0.0	0.0
159.00	Appertunance(s)	92.6	306.0					0.0	85.6	92.6	391.5	0.0	0.0
160.00		50.2	233.7	908.9	0.0	0.0	3,038.7	0.0	68.4	959.1	3,340.8	0.0	0.0
165.00		57.8	56.9					0.0	13.1	57.8	70.0	0.0	0.0
170.00		93.7	275.2					0.0	65.6	93.7	340.7	0.0	0.0
173.00	Appertunance(s)	72.0	259.8					0.0	65.6	72.0	325.3	0.0	0.0
		26.3	148.5	1,199.5	0.0	0.0	3,585.0	0.0	39.3	1,225.8	3,772.8	0.0	0.0
								Totals:		9,286.86	47,587.0	0.00	0.00

Site Number: 305169 Code: ANSI/TIA-222-G

Site Name: Montgomery Village, MD Engineering Number:OAA713651_C3_01 10/4/2017 8:57:30 PM

Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W Serviceability 60 mph 25 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-47.59	-9.24	0.00	-1,122.52	0.00	1,122.52	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.215
5.00	-46.00	-9.12	0.00	-1,076.30	0.00	1,076.30	4,854.47	2,427.24	10,705.9	5,287.28	0.03	-0.05	0.213
10.00	-44.44	-9.01	0.00	-1,030.68	0.00	1,030.68	4,802.16	2,401.08	10,366.0	5,119.39	0.11	-0.11	0.211
15.00	-42.91	-8.90	0.00	-985.63	0.00	985.63	4,747.71	2,373.85	10,026.4	4,951.68	0.26	-0.16	0.208
20.00	-41.41	-8.79	0.00	-941.13	0.00	941.13	4,691.11	2,345.56	9,687.51	4,784.30	0.46	-0.22	0.206
25.00	-39.93	-8.68	0.00	-897.18	0.00	897.18	4,632.38	2,316.19	9,349.57	4,617.40	0.72	-0.28	0.203
30.00	-38.48	-8.57	0.00	-853.78	0.00	853.78	4,571.50	2,285.75	9,012.90	4,451.13	1.05	-0.34	0.200
35.00	-37.06	-8.46	0.00	-810.93	0.00	810.93	4,508.49	2,254.24	8,677.81	4,285.64	1.43	-0.40	0.197
40.00	-35.66	-8.38	0.00	-768.64	0.00	768.64	4,443.33	2,221.66	8,344.59	4,121.08	1.88	-0.46	0.195
40.92	-35.41	-8.33	0.00	-760.96	0.00	760.96	4,431.15	2,215.58	8,283.73	4,091.02	1.97	-0.47	0.194
45.00	-33.53	-8.24	0.00	-726.96	0.00	726.96	4,376.03	2,188.02	8,013.55	3,957.59	2.40	-0.52	0.191
47.00	-32.61	-8.18	0.00	-710.47	0.00	710.47	3,526.79	1,763.39	6,520.63	3,220.29	2.62	-0.55	0.230
50.00	-31.89	-8.08	0.00	-685.93	0.00	685.93	3,498.91	1,749.46	6,370.90	3,146.35	2.98	-0.59	0.227
55.00	-30.70	-7.96	0.00	-645.52	0.00	645.52	3,450.74	1,725.37	6,121.80	3,023.33	3.63	-0.66	0.222
60.00	-29.54	-7.83	0.00	-605.73	0.00	605.73	3,400.42	1,700.21	5,873.50	2,900.70	4.36	-0.73	0.218
65.00	-28.40	-7.70	0.00	-566.57	0.00	566.57	3,347.97	1,673.98	5,626.32	2,778.63	5.17	-0.81	0.212
70.00	-27.29	-7.58	0.00	-528.05	0.00	528.05	3,293.37	1,646.69	5,380.54	2,657.25	6.05	-0.88	0.207
75.00	-26.19	-7.45	0.00	-490.18	0.00	490.18	3,236.64	1,618.32	5,136.48	2,536.71	7.01	-0.96	0.201
80.00	-25.13	-7.34	0.00	-452.95	0.00	452.95	3,177.76	1,588.88	4,894.43	2,417.17	8.05	-1.03	0.195
83.00	-24.50	-7.27	0.00	-430.94	0.00	430.94	3,141.41	1,570.70	4,750.29	2,345.99	8.71	-1.08	0.192
85.00	-23.82	-7.20	0.00	-416.40	0.00	416.40	3,116.74	1,558.37	4,654.69	2,298.77	9.17	-1.11	0.189
87.92	-22.86	-7.13	0.00	-395.39	0.00	395.39	2,412.79	1,206.39	3,612.71	1,784.18	9.86	-1.16	0.231
90.00	-22.48	-7.04	0.00	-380.55	0.00	380.55	2,395.86	1,197.93	3,540.68	1,748.61	10.38	-1.19	0.227
95.00	-21.59	-6.90	0.00	-345.34	0.00	345.34	2,353.73	1,176.87	3,368.34	1,663.50	11.67	-1.28	0.217
100.00	-20.71	-6.71	0.00	-310.85	0.00	310.85	2,309.46	1,154.73	3,196.97	1,578.86	13.05	-1.36	0.206
105.00	-19.86	-6.52	0.00	-277.30	0.00	277.30	2,263.05	1,131.52	3,026.88	1,494.86	14.53	-1.45	0.194
110.00	-19.03	-6.38	0.00	-244.70	0.00	244.70	2,214.49	1,107.25	2,858.37	1,411.64	16.09	-1.53	0.182
111.00	-18.76	-6.27	0.00	-238.32	0.00	238.32	2,204.53	1,102.26	2,824.89	1,395.11	16.41	-1.55	0.179
115.00	-18.11	-6.10	0.00	-213.24	0.00	213.24	2,163.80	1,081.90	2,691.74	1,329.35	17.74	-1.62	0.169
120.00	-17.32	-5.92	0.00	-182.72	0.00	182.72	2,110.96	1,055.48	2,527.29	1,248.14	19.48	-1.70	0.155
125.00	-15.91	-5.42	0.00	-153.14	0.00	153.14	2,055.99	1,027.99	2,365.32	1,168.14	21.29	-1.77	0.139
126.33	-15.71	-5.34	0.00	-145.92	0.00	145.92	2,040.97	1,020.48	2,322.59	1,147.04	21.79	-1.79	0.135
130.00	-14.90	-5.17	0.00	-126.35	0.00	126.35	1,495.03	747.52	1,688.85	834.06	23.19	-1.84	0.162
135.00	-11.47	-4.00	0.00	-100.49	0.00	100.49	1,458.71	729.35	1,579.59	780.10	25.16	-1.91	0.137
140.00	-10.91	-3.83	0.00	-80.49	0.00	80.49	1,420.24	710.12	1,471.51	726.72	27.20	-1.98	0.118
145.00	-10.38	-3.71	0.00	-61.35	0.00	61.35	1,379.63	689.81	1,364.91	674.08	29.30	-2.04	0.099
146.00	-8.47	-2.92	0.00	-57.65	0.00	57.65	1,371.25	685.62	1,343.80	663.65	29.73	-2.05	0.093
150.00	-8.15	-2.82	0.00	-45.97	0.00	45.97	1,336.88	668.44	1,260.10	622.31	31.47	-2.10	0.080
155.00	-7.76	-2.72	0.00	-31.89	0.00	31.89	1,292.16	646.08	1,157.52	571.66	33.69	-2.14	0.062
159.00	-4.46	-1.63	0.00	-21.03	0.00	21.03	1,238.80	619.40	1,063.37	525.16	35.49	-2.17	0.044
160.00	-4.39	-1.57	0.00	-19.40	0.00	19.40	1,225.46	612.73	1,040.46	513.84	35.95	-2.17	0.041
165.00	-4.05	-1.47	0.00	-11.53	0.00	11.53	1,158.76	579.38	929.64	459.11	38.24	-2.20	0.029
170.00	-3.73	-1.38	0.00	-4.19	0.00	4.19	1,092.06	546.03	825.05	407.46	40.55	-2.21	0.014
173.00	0.00	-1.24	0.00	-0.04	0.00	0.04	1,052.04	526.02	765.30	377.95	41.94	-2.22	0.000

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.12
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05
Long-Period Transition Period (T_L):	8
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coeffiecient F_v:	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.13
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.08
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	3.08
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	47.59 k
Seismic Base Shear (E):	1.86 k

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	188	5,524	0.011	20	230
42	167.50	325	9,127	0.018	33	399
41	162.50	341	8,997	0.017	32	418
40	159.50	70	1,781	0.003	6	86
39	157.00	302	7,447	0.014	27	370
38	152.50	392	9,105	0.018	33	480
37	148.00	324	7,103	0.014	26	398
36	145.50	106	2,238	0.004	8	130
35	142.50	538	10,921	0.021	39	659
34	137.50	553	10,459	0.020	38	678
33	132.50	625	10,965	0.021	40	766
32	128.17	810	13,303	0.026	48	993
31	125.67	195	3,087	0.006	11	240
30	122.50	770	11,555	0.022	42	944
29	117.50	789	10,897	0.021	39	968
28	113.00	645	8,241	0.016	30	791
27	110.50	163	1,995	0.004	7	200
26	107.50	829	9,576	0.019	35	1,016
25	102.50	848	8,908	0.017	32	1,039
24	97.50	867	8,243	0.016	30	1,063
23	92.50	886	7,584	0.015	27	1,087
22	88.96	375	2,968	0.006	11	460
21	86.46	961	7,186	0.014	26	1,178

20	84.00	667	4,710	0.009	17	818
19	81.50	626	4,160	0.008	15	768
18	77.50	1,062	6,380	0.012	23	1,302
17	72.50	1,085	5,705	0.011	21	1,330
16	67.50	1,108	5,050	0.010	18	1,359
15	62.50	1,132	4,420	0.009	16	1,387
14	57.50	1,155	3,818	0.007	14	1,415
13	52.50	1,178	3,246	0.006	12	1,444
12	48.50	718	1,688	0.003	6	880
11	46.00	907	1,919	0.004	7	1,112
10	42.96	1,877	3,463	0.007	12	2,301
9	40.46	252	412	0.001	1	308
8	37.50	1,388	1,952	0.004	7	1,702
7	32.50	1,415	1,495	0.003	5	1,735
6	27.50	1,442	1,091	0.002	4	1,768
5	22.50	1,469	744	0.001	3	1,801
4	17.50	1,496	458	0.001	2	1,834
3	12.50	1,523	238	0.000	1	1,867
2	7.50	1,550	87	0.000	0	1,900
1	2.50	1,577	10	0.000	0	1,933
9" x 4.5" Air Inlet	176.00	1	43	0.000	0	2
11" x 12.5" Aspirate	176.00	4	124	0.000	0	5
Kathrein Scala 860-1	173.00	7	198	0.000	1	8
Powerwave Allgon LGP	173.00	32	952	0.002	3	39
Hoffman AHE10X10X6	173.00	90	2,694	0.005	10	110
Hoffman AHE10X10X6	173.00	90	2,694	0.005	10	110
Powerwave Allgon LGP	173.00	85	2,532	0.005	9	104
Raycap DC6-48-60-18-	173.00	20	599	0.001	2	25
Raycap DC6-48-60-18-	173.00	20	599	0.001	2	25
Alcatel-Lucent RRH2X	173.00	138	4,130	0.008	15	169
Alcatel-Lucent RRH2x	173.00	153	4,579	0.009	17	188
Nokia Flexi RRH 4T4R	173.00	152	4,552	0.009	16	186
Alcatel-Lucent B66A	173.00	201	6,016	0.012	22	246
Kathrein Scala 800-1	173.00	132	3,960	0.008	14	162
Commscope SBNHH-1D65	173.00	122	3,645	0.007	13	149
Kathrein Scala 80010	173.00	344	10,290	0.020	37	421
Flat Platform w/ Han	173.00	2,000	59,858	0.116	216	2,452
RFS 2.5GHz Co-locati	159.00	43	1,087	0.002	4	53
Alcatel-Lucent 800 M	159.00	192	4,854	0.009	17	235
Alcatel-Lucent 1900M	159.00	264	6,674	0.013	24	324
Alcatel-Lucent TD-RR	159.00	210	5,309	0.010	19	257
RFS APXVTM14-C-I20	159.00	159	4,012	0.008	14	195
RFS APXVSPP18-C-A20	159.00	171	4,323	0.008	16	210
Flat Platform w/ Han	159.00	2,000	50,562	0.098	182	2,452
DragonWave Horizon D	146.00	14	298	0.001	1	17
KMW TTA (HB-X-WM-17-	146.00	48	1,017	0.002	4	58
KMW AM-X-WM-17-65-00	146.00	43	908	0.002	3	52
Andrew VHLP2-18	146.00	62	1,322	0.003	5	76
Andrew VHLP2-23	146.00	54	1,151	0.002	4	66
EMS RR90-11-00DBL	146.00	108	2,302	0.004	8	132
Flat Low Profile Pla	146.00	1,500	31,974	0.062	115	1,839
Ericsson KRY 112 144	135.00	33	601	0.001	2	40
GPS	135.00	10	182	0.000	1	12
Ericsson RRUS 11 B12	135.00	152	2,772	0.005	10	186
Ericsson AIR 21, 1.3	135.00	249	4,538	0.009	16	305
Ericsson AIR 21, 1.3	135.00	244	4,456	0.009	16	300
RFS APXVF24-C-A20	135.00	152	2,772	0.005	10	186
Platform w/ Handrail	135.00	2,000	36,450	0.071	131	2,452
KMW HB-X-AW-19-65-00	125.00	86	1,345	0.003	5	106
74" x 8" Panel	125.00	120	1,875	0.004	7	147
Flat Side Arms	125.00	450	7,031	0.014	25	552
9" x 4.5" Air Inlet	115.00	1	9	0.000	0	1
Procom CXL 900-3LW	111.00	2	18	0.000	0	2
5" x 3" x 2" Cavity	111.00	2	18	0.000	0	2

Low Noise Amplifier	111.00	2	25	0.000	0	2
Side Arm	111.00	100	1,232	0.002	4	123
15" x 7.5" Rain Gaug	5.00	2	0	0.000	0	2
		47,592	514,839	1.000	1,856	58,339

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	188	5,524	0.011	20	164
42	167.50	325	9,127	0.018	33	284
41	162.50	341	8,997	0.017	32	298
40	159.50	70	1,781	0.003	6	61
39	157.00	302	7,447	0.014	27	264
38	152.50	392	9,105	0.018	33	342
37	148.00	324	7,103	0.014	26	283
36	145.50	106	2,238	0.004	8	92
35	142.50	538	10,921	0.021	39	470
34	137.50	553	10,459	0.020	38	484
33	132.50	625	10,965	0.021	40	546
32	128.17	810	13,303	0.026	48	708
31	125.67	195	3,087	0.006	11	171
30	122.50	770	11,555	0.022	42	673
29	117.50	789	10,897	0.021	39	690
28	113.00	645	8,241	0.016	30	564
27	110.50	163	1,995	0.004	7	143
26	107.50	829	9,576	0.019	35	724
25	102.50	848	8,908	0.017	32	741
24	97.50	867	8,243	0.016	30	758
23	92.50	886	7,584	0.015	27	775
22	88.96	375	2,968	0.006	11	328
21	86.46	961	7,186	0.014	26	840
20	84.00	667	4,710	0.009	17	584
19	81.50	626	4,160	0.008	15	547
18	77.50	1,062	6,380	0.012	23	929
17	72.50	1,085	5,705	0.011	21	949
16	67.50	1,108	5,050	0.010	18	969
15	62.50	1,132	4,420	0.009	16	989
14	57.50	1,155	3,818	0.007	14	1,009
13	52.50	1,178	3,246	0.006	12	1,030
12	48.50	718	1,688	0.003	6	627
11	46.00	907	1,919	0.004	7	793
10	42.96	1,877	3,463	0.007	12	1,641
9	40.46	252	412	0.001	1	220
8	37.50	1,388	1,952	0.004	7	1,214
7	32.50	1,415	1,495	0.003	5	1,237
6	27.50	1,442	1,091	0.002	4	1,261
5	22.50	1,469	744	0.001	3	1,284
4	17.50	1,496	458	0.001	2	1,308
3	12.50	1,523	238	0.000	1	1,331
2	7.50	1,550	87	0.000	0	1,355
1	2.50	1,577	10	0.000	0	1,379
9" x 4.5" Air Inlet	176.00	1	43	0.000	0	1
11" x 12.5" Aspirate	176.00	4	124	0.000	0	3
Kathrein Scala 860-1	173.00	7	198	0.000	1	6
Powerwave Allgon LGP	173.00	32	952	0.002	3	28
Hoffman AHE10X10X6	173.00	90	2,694	0.005	10	79
Hoffman AHE10X10X6	173.00	90	2,694	0.005	10	79
Powerwave Allgon LGP	173.00	85	2,532	0.005	9	74
Raycap DC6-48-60-18-	173.00	20	599	0.001	2	17

Raycap DC6-48-60-18-	173.00	20	599	0.001	2	17
Alcatel-Lucent RRH2X	173.00	138	4,130	0.008	15	121
Alcatel-Lucent RRH2x	173.00	153	4,579	0.009	17	134
Nokia Flexi RRH 4T4R	173.00	152	4,552	0.009	16	133
Alcatel-Lucent B66A	173.00	201	6,016	0.012	22	176
Kathrein Scala 800-1	173.00	132	3,960	0.008	14	116
Commscope SBNHH-1D65	173.00	122	3,645	0.007	13	106
Kathrein Scala 80010	173.00	344	10,290	0.020	37	301
Flat Platform w/ Han	173.00	2,000	59,858	0.116	216	1,748
RFS 2.5GHz Co-locati	159.00	43	1,087	0.002	4	38
Alcatel-Lucent 800 M	159.00	192	4,854	0.009	17	168
Alcatel-Lucent 1900M	159.00	264	6,674	0.013	24	231
Alcatel-Lucent TD-RR	159.00	210	5,309	0.010	19	184
RFS APXVTM14-C-I20	159.00	159	4,012	0.008	14	139
RFS APXVSPP18-C-A20	159.00	171	4,323	0.008	16	149
Flat Platform w/ Han	159.00	2,000	50,562	0.098	182	1,748
DragonWave Horizon D	146.00	14	298	0.001	1	12
KMW TTA (HB-X-WM-17-	146.00	48	1,017	0.002	4	42
KMW AM-X-WM-17-65-00	146.00	43	908	0.002	3	37
Andrew VHLP2-18	146.00	62	1,322	0.003	5	54
Andrew VHLP2-23	146.00	54	1,151	0.002	4	47
EMS RR90-11-00DBL	146.00	108	2,302	0.004	8	94
Flat Low Profile Pla	146.00	1,500	31,974	0.062	115	1,311
Ericsson KRY 112 144	135.00	33	601	0.001	2	29
GPS	135.00	10	182	0.000	1	9
Ericsson RRUS 11 B12	135.00	152	2,772	0.005	10	133
Ericsson AIR 21, 1.3	135.00	249	4,538	0.009	16	218
Ericsson AIR 21, 1.3	135.00	244	4,456	0.009	16	214
RFS APXVF24-C-A20	135.00	152	2,772	0.005	10	133
Platform w/ Handrail	135.00	2,000	36,450	0.071	131	1,748
KMW HB-X-AW-19-65-00	125.00	86	1,345	0.003	5	75
74" x 8" Panel	125.00	120	1,875	0.004	7	105
Flat Side Arms	125.00	450	7,031	0.014	25	393
9" x 4.5" Air Inlet	115.00	1	9	0.000	0	1
Procom CXL 900-3LW	111.00	2	18	0.000	0	1
5" x 3" x 2" Cavity	111.00	2	18	0.000	0	1
Low Noise Amplifier	111.00	2	25	0.000	0	2
Side Arm	111.00	100	1,232	0.002	4	87
15" x 7.5" Rain Gaug	5.00	2	0	0.000	0	2
		47,592	514,839	1.000	1,856	41,605

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-56.40	-1.86	0.00	-272.01	0.00	272.01	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.061
5.00	-54.50	-1.87	0.00	-262.71	0.00	262.71	4,854.47	2,427.24	10,705.9	5,287.28	0.01	-0.01	0.061
10.00	-52.63	-1.88	0.00	-253.34	0.00	253.34	4,802.16	2,401.08	10,366.0	5,119.39	0.03	-0.03	0.060
15.00	-50.79	-1.89	0.00	-243.92	0.00	243.92	4,747.71	2,373.85	10,026.4	4,951.68	0.06	-0.04	0.060
20.00	-48.99	-1.90	0.00	-234.45	0.00	234.45	4,691.11	2,345.56	9,687.51	4,784.30	0.11	-0.05	0.059
25.00	-47.23	-1.91	0.00	-224.95	0.00	224.95	4,632.38	2,316.19	9,349.57	4,617.40	0.18	-0.07	0.059
30.00	-45.49	-1.91	0.00	-215.41	0.00	215.41	4,571.50	2,285.75	9,012.90	4,451.13	0.26	-0.08	0.058
35.00	-43.79	-1.91	0.00	-205.84	0.00	205.84	4,508.49	2,254.24	8,677.81	4,285.64	0.35	-0.10	0.058
40.00	-43.48	-1.92	0.00	-196.27	0.00	196.27	4,443.33	2,221.66	8,344.59	4,121.08	0.46	-0.11	0.057
40.92	-41.18	-1.91	0.00	-194.51	0.00	194.51	4,431.15	2,215.58	8,283.73	4,091.02	0.49	-0.12	0.057
45.00	-40.07	-1.91	0.00	-186.72	0.00	186.72	4,376.03	2,188.02	8,013.55	3,957.59	0.59	-0.13	0.056
47.00	-39.19	-1.90	0.00	-182.91	0.00	182.91	3,526.79	1,763.39	6,520.63	3,220.29	0.65	-0.14	0.068
50.00	-37.74	-1.90	0.00	-177.20	0.00	177.20	3,498.91	1,749.46	6,370.90	3,146.35	0.74	-0.15	0.067
55.00	-36.33	-1.89	0.00	-167.72	0.00	167.72	3,450.74	1,725.37	6,121.80	3,023.33	0.90	-0.17	0.066
60.00	-34.94	-1.88	0.00	-158.26	0.00	158.26	3,400.42	1,700.21	5,873.50	2,900.70	1.09	-0.18	0.065
65.00	-33.58	-1.87	0.00	-148.85	0.00	148.85	3,347.97	1,673.98	5,626.32	2,778.63	1.29	-0.20	0.064
70.00	-32.25	-1.86	0.00	-139.49	0.00	139.49	3,293.37	1,646.69	5,380.54	2,657.25	1.51	-0.22	0.062
75.00	-30.95	-1.84	0.00	-130.20	0.00	130.20	3,236.64	1,618.32	5,136.48	2,536.71	1.76	-0.24	0.061
80.00	-30.18	-1.83	0.00	-121.00	0.00	121.00	3,177.76	1,588.88	4,894.43	2,417.17	2.03	-0.26	0.060
83.00	-29.36	-1.81	0.00	-115.51	0.00	115.51	3,141.41	1,570.70	4,750.29	2,345.99	2.20	-0.28	0.059
85.00	-28.18	-1.79	0.00	-111.88	0.00	111.88	3,116.74	1,558.37	4,654.69	2,298.77	2.31	-0.28	0.058
87.92	-27.72	-1.78	0.00	-106.67	0.00	106.67	2,412.79	1,206.39	3,612.71	1,784.18	2.49	-0.30	0.071
90.00	-26.63	-1.75	0.00	-102.96	0.00	102.96	2,395.86	1,197.93	3,540.68	1,748.61	2.62	-0.31	0.070
95.00	-25.57	-1.73	0.00	-94.19	0.00	94.19	2,353.73	1,176.87	3,368.34	1,663.50	2.96	-0.33	0.067
100.00	-24.53	-1.70	0.00	-85.54	0.00	85.54	2,309.46	1,154.73	3,196.97	1,578.86	3.31	-0.35	0.065
105.00	-23.51	-1.67	0.00	-77.03	0.00	77.03	2,263.05	1,131.52	3,026.88	1,494.86	3.70	-0.38	0.062
110.00	-23.31	-1.67	0.00	-68.68	0.00	68.68	2,214.49	1,107.25	2,858.37	1,411.64	4.11	-0.40	0.059
111.00	-22.39	-1.63	0.00	-67.01	0.00	67.01	2,204.53	1,102.26	2,824.89	1,395.11	4.19	-0.41	0.058
115.00	-21.42	-1.59	0.00	-60.49	0.00	60.49	2,163.80	1,081.90	2,691.74	1,329.35	4.54	-0.42	0.055
120.00	-20.48	-1.55	0.00	-52.52	0.00	52.52	2,110.96	1,055.48	2,527.29	1,248.14	5.00	-0.45	0.052
125.00	-19.44	-1.50	0.00	-44.76	0.00	44.76	2,055.99	1,027.99	2,365.32	1,168.14	5.48	-0.47	0.048
126.33	-18.44	-1.45	0.00	-42.76	0.00	42.76	2,040.97	1,020.48	2,322.59	1,147.04	5.61	-0.48	0.046
130.00	-17.68	-1.41	0.00	-37.45	0.00	37.45	1,495.03	747.52	1,688.85	834.06	5.98	-0.49	0.057
135.00	-13.52	-1.15	0.00	-30.42	0.00	30.42	1,458.71	729.35	1,579.59	780.10	6.50	-0.51	0.048
140.00	-12.86	-1.11	0.00	-24.66	0.00	24.66	1,420.24	710.12	1,471.51	726.72	7.05	-0.53	0.043
145.00	-12.73	-1.10	0.00	-19.11	0.00	19.11	1,379.63	689.81	1,364.91	674.08	7.62	-0.55	0.038
146.00	-10.09	-0.91	0.00	-18.01	0.00	18.01	1,371.25	685.62	1,343.80	663.65	7.73	-0.55	0.034
150.00	-9.61	-0.88	0.00	-14.35	0.00	14.35	1,336.88	668.44	1,260.10	622.31	8.20	-0.57	0.030
155.00	-9.24	-0.85	0.00	-9.96	0.00	9.96	1,292.16	646.08	1,157.52	571.66	8.81	-0.58	0.025
159.00	-5.44	-0.53	0.00	-6.56	0.00	6.56	1,238.80	619.40	1,063.37	525.16	9.30	-0.59	0.017
160.00	-5.02	-0.49	0.00	-6.03	0.00	6.03	1,225.46	612.73	1,040.46	513.84	9.42	-0.59	0.016
165.00	-4.62	-0.46	0.00	-3.58	0.00	3.58	1,158.76	579.38	929.64	459.11	10.04	-0.60	0.012
170.00	-4.39	-0.43	0.00	-1.30	0.00	1.30	1,092.06	546.03	825.05	407.46	10.68	-0.60	0.007
173.00	0.00	-0.39	0.00	0.00	0.00	0.00	1,052.04	526.02	765.30	377.95	11.06	-0.60	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.22	-1.86	0.00	-266.45	0.00	266.45	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.057
5.00	-38.86	-1.87	0.00	-257.16	0.00	257.16	4,854.47	2,427.24	10,705.9	5,287.28	0.01	-0.01	0.057
10.00	-37.53	-1.87	0.00	-247.82	0.00	247.82	4,802.16	2,401.08	10,366.0	5,119.39	0.03	-0.03	0.056
15.00	-36.22	-1.88	0.00	-238.45	0.00	238.45	4,747.71	2,373.85	10,026.4	4,951.68	0.06	-0.04	0.056
20.00	-34.94	-1.89	0.00	-229.04	0.00	229.04	4,691.11	2,345.56	9,687.51	4,784.30	0.11	-0.05	0.055
25.00	-33.68	-1.89	0.00	-219.61	0.00	219.61	4,632.38	2,316.19	9,349.57	4,617.40	0.17	-0.07	0.055
30.00	-32.44	-1.89	0.00	-210.17	0.00	210.17	4,571.50	2,285.75	9,012.90	4,451.13	0.25	-0.08	0.054
35.00	-31.23	-1.89	0.00	-200.71	0.00	200.71	4,508.49	2,254.24	8,677.81	4,285.64	0.34	-0.10	0.054
40.00	-31.01	-1.89	0.00	-191.27	0.00	191.27	4,443.33	2,221.66	8,344.59	4,121.08	0.45	-0.11	0.053
40.92	-29.37	-1.88	0.00	-189.53	0.00	189.53	4,431.15	2,215.58	8,283.73	4,091.02	0.48	-0.11	0.053
45.00	-28.57	-1.88	0.00	-181.85	0.00	181.85	4,376.03	2,188.02	8,013.55	3,957.59	0.58	-0.13	0.052
47.00	-27.94	-1.87	0.00	-178.10	0.00	178.10	3,526.79	1,763.39	6,520.63	3,220.29	0.63	-0.13	0.063
50.00	-26.91	-1.87	0.00	-172.48	0.00	172.48	3,498.91	1,749.46	6,370.90	3,146.35	0.72	-0.14	0.063
55.00	-25.90	-1.86	0.00	-163.15	0.00	163.15	3,450.74	1,725.37	6,121.80	3,023.33	0.88	-0.16	0.061
60.00	-24.91	-1.85	0.00	-153.86	0.00	153.86	3,400.42	1,700.21	5,873.50	2,900.70	1.06	-0.18	0.060
65.00	-23.95	-1.83	0.00	-144.62	0.00	144.62	3,347.97	1,673.98	5,626.32	2,778.63	1.26	-0.20	0.059
70.00	-23.00	-1.82	0.00	-135.45	0.00	135.45	3,293.37	1,646.69	5,380.54	2,657.25	1.48	-0.22	0.058
75.00	-22.07	-1.80	0.00	-126.37	0.00	126.37	3,236.64	1,618.32	5,136.48	2,536.71	1.72	-0.24	0.057
80.00	-21.52	-1.79	0.00	-117.38	0.00	117.38	3,177.76	1,588.88	4,894.43	2,417.17	1.98	-0.26	0.055
83.00	-20.93	-1.77	0.00	-112.02	0.00	112.02	3,141.41	1,570.70	4,750.29	2,345.99	2.14	-0.27	0.054
85.00	-20.09	-1.74	0.00	-108.48	0.00	108.48	3,116.74	1,558.37	4,654.69	2,298.77	2.26	-0.28	0.054
87.92	-19.77	-1.74	0.00	-103.39	0.00	103.39	2,412.79	1,206.39	3,612.71	1,784.18	2.43	-0.29	0.066
90.00	-18.99	-1.71	0.00	-99.77	0.00	99.77	2,395.86	1,197.93	3,540.68	1,748.61	2.56	-0.30	0.065
95.00	-18.23	-1.68	0.00	-91.23	0.00	91.23	2,353.73	1,176.87	3,368.34	1,663.50	2.88	-0.32	0.063
100.00	-17.49	-1.65	0.00	-82.81	0.00	82.81	2,309.46	1,154.73	3,196.97	1,578.86	3.23	-0.34	0.060
105.00	-16.77	-1.62	0.00	-74.54	0.00	74.54	2,263.05	1,131.52	3,026.88	1,494.86	3.60	-0.37	0.057
110.00	-16.62	-1.62	0.00	-66.44	0.00	66.44	2,214.49	1,107.25	2,858.37	1,411.64	4.00	-0.39	0.055
111.00	-15.97	-1.58	0.00	-64.82	0.00	64.82	2,204.53	1,102.26	2,824.89	1,395.11	4.08	-0.39	0.054
115.00	-15.28	-1.54	0.00	-58.49	0.00	58.49	2,163.80	1,081.90	2,691.74	1,329.35	4.42	-0.41	0.051
120.00	-14.60	-1.50	0.00	-50.78	0.00	50.78	2,110.96	1,055.48	2,527.29	1,248.14	4.87	-0.43	0.048
125.00	-13.86	-1.45	0.00	-43.27	0.00	43.27	2,055.99	1,027.99	2,365.32	1,168.14	5.33	-0.46	0.044
126.33	-13.15	-1.40	0.00	-41.33	0.00	41.33	2,040.97	1,020.48	2,322.59	1,147.04	5.46	-0.46	0.042
130.00	-12.60	-1.36	0.00	-36.20	0.00	36.20	1,495.03	747.52	1,688.85	834.06	5.82	-0.48	0.052
135.00	-9.64	-1.11	0.00	-29.40	0.00	29.40	1,458.71	729.35	1,579.59	780.10	6.33	-0.50	0.044
140.00	-9.17	-1.07	0.00	-23.84	0.00	23.84	1,420.24	710.12	1,471.51	726.72	6.86	-0.52	0.039
145.00	-9.08	-1.07	0.00	-18.47	0.00	18.47	1,379.63	689.81	1,364.91	674.08	7.41	-0.53	0.034
146.00	-7.20	-0.88	0.00	-17.41	0.00	17.41	1,371.25	685.62	1,343.80	663.65	7.52	-0.54	0.031
150.00	-6.85	-0.85	0.00	-13.87	0.00	13.87	1,336.88	668.44	1,260.10	622.31	7.98	-0.55	0.027
155.00	-6.59	-0.82	0.00	-9.63	0.00	9.63	1,292.16	646.08	1,157.52	571.66	8.57	-0.56	0.022
159.00	-3.88	-0.51	0.00	-6.35	0.00	6.35	1,238.80	619.40	1,063.37	525.16	9.04	-0.57	0.015
160.00	-3.58	-0.48	0.00	-5.84	0.00	5.84	1,225.46	612.73	1,040.46	513.84	9.16	-0.57	0.014
165.00	-3.29	-0.44	0.00	-3.46	0.00	3.46	1,158.76	579.38	929.64	459.11	9.77	-0.58	0.010
170.00	-3.13	-0.42	0.00	-1.26	0.00	1.26	1,092.06	546.03	825.05	407.46	10.38	-0.59	0.006
173.00	0.00	-0.39	0.00	0.00	0.00	0.00	1,052.04	526.02	765.30	377.95	10.75	-0.59	0.000

Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.12
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.13
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.08
Period Based on Rayleigh Method (sec):	3.08
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	188	1.857	1.812	1.079	0.230	38	230
42	167.50	325	1.772	1.413	0.929	0.195	55	399
41	162.50	341	1.668	1.003	0.766	0.154	46	418
40	159.50	70	1.607	0.799	0.679	0.132	8	86
39	157.00	302	1.557	0.650	0.613	0.114	30	370
38	152.50	392	1.469	0.427	0.506	0.085	29	480
37	148.00	324	1.383	0.253	0.415	0.059	17	398
36	145.50	106	1.337	0.175	0.370	0.047	4	130
35	142.50	538	1.282	0.097	0.321	0.032	15	659
34	137.50	553	1.194	-0.001	0.250	0.012	6	678
33	132.50	625	1.109	-0.065	0.192	-0.005	-3	766
32	128.17	810	1.037	-0.099	0.151	-0.016	-11	993
31	125.67	195	0.997	-0.111	0.130	-0.021	-4	240
30	122.50	770	0.948	-0.119	0.107	-0.026	-18	944
29	117.50	789	0.872	-0.121	0.077	-0.031	-21	968
28	113.00	645	0.806	-0.113	0.056	-0.033	-18	791
27	110.50	163	0.771	-0.106	0.046	-0.032	-5	200
26	107.50	829	0.730	-0.096	0.036	-0.030	-21	1,016
25	102.50	848	0.663	-0.075	0.023	-0.024	-17	1,039
24	97.50	867	0.600	-0.053	0.015	-0.015	-11	1,063
23	92.50	886	0.540	-0.031	0.009	-0.005	-4	1,087
22	88.96	375	0.500	-0.016	0.007	0.003	1	460
21	86.46	961	0.472	-0.006	0.006	0.008	7	1,178
20	84.00	667	0.446	0.003	0.006	0.013	7	818
19	81.50	626	0.419	0.012	0.006	0.017	9	768
18	77.50	1,062	0.379	0.024	0.007	0.023	22	1,302
17	72.50	1,085	0.332	0.038	0.010	0.029	27	1,330
16	67.50	1,108	0.288	0.048	0.013	0.033	32	1,359
15	62.50	1,132	0.247	0.056	0.017	0.035	34	1,387
14	57.50	1,155	0.209	0.062	0.022	0.036	36	1,415
13	52.50	1,178	0.174	0.066	0.027	0.036	37	1,444
12	48.50	718	0.149	0.068	0.030	0.036	22	880
11	46.00	907	0.134	0.069	0.032	0.035	28	1,112
10	42.96	1,877	0.117	0.070	0.035	0.035	57	2,301

9	40.46	252	0.103	0.071	0.037	0.035	8	308
8	37.50	1,388	0.089	0.071	0.039	0.034	41	1,702
7	32.50	1,415	0.067	0.072	0.041	0.033	41	1,735
6	27.50	1,442	0.048	0.071	0.042	0.032	41	1,768
5	22.50	1,469	0.032	0.069	0.041	0.031	40	1,801
4	17.50	1,496	0.019	0.064	0.038	0.029	38	1,834
3	12.50	1,523	0.010	0.055	0.032	0.026	35	1,867
2	7.50	1,550	0.004	0.040	0.022	0.020	27	1,900
1	2.50	1,577	0.000	0.016	0.009	0.009	13	1,933
9" x 4.5" Air Inlet	176.00	1	1.956	2.347	1.270	0.274	0	2
11" x 12.5" Aspirate	176.00	4	1.956	2.347	1.270	0.274	1	5
Kathrein Scala 860-1	173.00	7	1.890	1.980	1.140	0.245	1	8
Powerwave Allgon LGP	173.00	32	1.890	1.980	1.140	0.245	7	39
Hoffman AHE10X10X6	173.00	90	1.890	1.980	1.140	0.245	19	110
Hoffman AHE10X10X6	173.00	90	1.890	1.980	1.140	0.245	19	110
Powerwave Allgon LGP	173.00	85	1.890	1.980	1.140	0.245	18	104
Raycap DC6-48-60-18-	173.00	20	1.890	1.980	1.140	0.245	4	25
Raycap DC6-48-60-18-	173.00	20	1.890	1.980	1.140	0.245	4	25
Alcatel-Lucent RRH2X	173.00	138	1.890	1.980	1.140	0.245	29	169
Alcatel-Lucent RRH2x	173.00	153	1.890	1.980	1.140	0.245	32	188
Nokia Flexi RRH 4T4R	173.00	152	1.890	1.980	1.140	0.245	32	186
Alcatel-Lucent B66A	173.00	201	1.890	1.980	1.140	0.245	43	246
Kathrein Scala 800-1	173.00	132	1.890	1.980	1.140	0.245	28	162
Commscope SBNHH-	173.00	122	1.890	1.980	1.140	0.245	26	149
Kathrein Scala 80010	173.00	344	1.890	1.980	1.140	0.245	73	421
Flat Platform w/ Han	173.00	2,000	1.890	1.980	1.140	0.245	424	2,452
RFS 2.5GHz Co-locati	159.00	43	1.596	0.768	0.665	0.128	5	53
Alcatel-Lucent 800 M	159.00	192	1.596	0.768	0.665	0.128	21	235
Alcatel-Lucent 1900M	159.00	264	1.596	0.768	0.665	0.128	29	324
Alcatel-Lucent TD-RR	159.00	210	1.596	0.768	0.665	0.128	23	257
RFS APXVTM14-C-I20	159.00	159	1.596	0.768	0.665	0.128	18	195
RFS APXVSPP18-C-A20	159.00	171	1.596	0.768	0.665	0.128	19	210
Flat Platform w/ Han	159.00	2,000	1.596	0.768	0.665	0.128	222	2,452
DragonWave Horizon D	146.00	14	1.346	0.190	0.378	0.049	1	17
KMW TTA (HB-X-WM-17-	146.00	48	1.346	0.190	0.378	0.049	2	58
KMW AM-X-WM-17-65-	146.00	43	1.346	0.190	0.378	0.049	2	52
Andrew VHLP2-18	146.00	62	1.346	0.190	0.378	0.049	3	76
Andrew VHLP2-23	146.00	54	1.346	0.190	0.378	0.049	2	66
EMS RR90-11-00DBL	146.00	108	1.346	0.190	0.378	0.049	5	132
Flat Low Profile Pla	146.00	1,500	1.346	0.190	0.378	0.049	64	1,839
Ericsson KRY 112 144	135.00	33	1.151	-0.037	0.220	0.003	0	40
GPS	135.00	10	1.151	-0.037	0.220	0.003	0	12
Ericsson RRUS 11 B12	135.00	152	1.151	-0.037	0.220	0.003	0	186
Ericsson AIR 21, 1.3	135.00	249	1.151	-0.037	0.220	0.003	1	305
Ericsson AIR 21, 1.3	135.00	244	1.151	-0.037	0.220	0.003	1	300
RFS APXVF24-C-A20	135.00	152	1.151	-0.037	0.220	0.003	0	186
Platform w/ Handrail	135.00	2,000	1.151	-0.037	0.220	0.003	5	2,452
KMW HB-X-AW-19-65-00	125.00	86	0.987	-0.113	0.125	-0.022	-2	106
74" x 8" Panel	125.00	120	0.987	-0.113	0.125	-0.022	-2	147
Flat Side Arms	125.00	450	0.987	-0.113	0.125	-0.022	-9	552
9" x 4.5" Air Inlet	115.00	1	0.835	-0.117	0.064	-0.032	0	1
Procom CXL 900-3LW	111.00	2	0.778	-0.107	0.048	-0.032	0	2
5" x 3" x 2" Cavity	111.00	2	0.778	-0.107	0.048	-0.032	0	2
Low Noise Amplifier	111.00	2	0.778	-0.107	0.048	-0.032	0	2
Side Arm	111.00	100	0.778	-0.107	0.048	-0.032	-3	123
15" x 7.5" Rain Gaug	5.00	2	0.002	0.029	0.016	0.016	0	2
		47,592	96.260	46.642	36.417	6.677	1,882	58,339

Site Number: 305169
Site Name: Montgomery Village, MD
Customer: AT&T MOBILITY

Code: ANSI/TIA-222-G
Engineering Number:OAA713651_C3_01

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Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
43	171.50	188	1.857	1.812	1.079	0.230	38	164
42	167.50	325	1.772	1.413	0.929	0.195	55	284
41	162.50	341	1.668	1.003	0.766	0.154	46	298
40	159.50	70	1.607	0.799	0.679	0.132	8	61
39	157.00	302	1.557	0.650	0.613	0.114	30	264
38	152.50	392	1.469	0.427	0.506	0.085	29	342
37	148.00	324	1.383	0.253	0.415	0.059	17	283
36	145.50	106	1.337	0.175	0.370	0.047	4	92
35	142.50	538	1.282	0.097	0.321	0.032	15	470
34	137.50	553	1.194	-0.001	0.250	0.012	6	484
33	132.50	625	1.109	-0.065	0.192	-0.005	-3	546
32	128.17	810	1.037	-0.099	0.151	-0.016	-11	708
31	125.67	195	0.997	-0.111	0.130	-0.021	-4	171
30	122.50	770	0.948	-0.119	0.107	-0.026	-18	673
29	117.50	789	0.872	-0.121	0.077	-0.031	-21	690
28	113.00	645	0.806	-0.113	0.056	-0.033	-18	564
27	110.50	163	0.771	-0.106	0.046	-0.032	-5	143
26	107.50	829	0.730	-0.096	0.036	-0.030	-21	724
25	102.50	848	0.663	-0.075	0.023	-0.024	-17	741
24	97.50	867	0.600	-0.053	0.015	-0.015	-11	758
23	92.50	886	0.540	-0.031	0.009	-0.005	-4	775
22	88.96	375	0.500	-0.016	0.007	0.003	1	328
21	86.46	961	0.472	-0.006	0.006	0.008	7	840
20	84.00	667	0.446	0.003	0.006	0.013	7	584
19	81.50	626	0.419	0.012	0.006	0.017	9	547
18	77.50	1,062	0.379	0.024	0.007	0.023	22	929
17	72.50	1,085	0.332	0.038	0.010	0.029	27	949
16	67.50	1,108	0.288	0.048	0.013	0.033	32	969
15	62.50	1,132	0.247	0.056	0.017	0.035	34	989
14	57.50	1,155	0.209	0.062	0.022	0.036	36	1,009
13	52.50	1,178	0.174	0.066	0.027	0.036	37	1,030
12	48.50	718	0.149	0.068	0.030	0.036	22	627
11	46.00	907	0.134	0.069	0.032	0.035	28	793
10	42.96	1,877	0.117	0.070	0.035	0.035	57	1,641
9	40.46	252	0.103	0.071	0.037	0.035	8	220
8	37.50	1,388	0.089	0.071	0.039	0.034	41	1,214
7	32.50	1,415	0.067	0.072	0.041	0.033	41	1,237
6	27.50	1,442	0.048	0.071	0.042	0.032	41	1,261
5	22.50	1,469	0.032	0.069	0.041	0.031	40	1,284
4	17.50	1,496	0.019	0.064	0.038	0.029	38	1,308
3	12.50	1,523	0.010	0.055	0.032	0.026	35	1,331
2	7.50	1,550	0.004	0.040	0.022	0.020	27	1,355
1	2.50	1,577	0.000	0.016	0.009	0.009	13	1,379
9" x 4.5" Air Inlet	176.00	1	1.956	2.347	1.270	0.274	0	1
11" x 12.5" Aspirate	176.00	4	1.956	2.347	1.270	0.274	1	3
Kathrein Scala 860-1	173.00	7	1.890	1.980	1.140	0.245	1	6
Powerwave Allgon LGP	173.00	32	1.890	1.980	1.140	0.245	7	28
Hoffman AHE10X10X6	173.00	90	1.890	1.980	1.140	0.245	19	79
Hoffman AHE10X10X6	173.00	90	1.890	1.980	1.140	0.245	19	79
Powerwave Allgon LGP	173.00	85	1.890	1.980	1.140	0.245	18	74
Raycap DC6-48-60-18-	173.00	20	1.890	1.980	1.140	0.245	4	17
Raycap DC6-48-60-18-	173.00	20	1.890	1.980	1.140	0.245	4	17
Alcatel-Lucent RRH2X	173.00	138	1.890	1.980	1.140	0.245	29	121
Alcatel-Lucent RRH2x	173.00	153	1.890	1.980	1.140	0.245	32	134
Nokia Flexi RRH 4T4R	173.00	152	1.890	1.980	1.140	0.245	32	133
Alcatel-Lucent B66A	173.00	201	1.890	1.980	1.140	0.245	43	176

Kathrein Scala 800-1	173.00	132	1.890	1.980	1.140	0.245	28	116
Commscope SBNHH-	173.00	122	1.890	1.980	1.140	0.245	26	106
Kathrein Scala 80010	173.00	344	1.890	1.980	1.140	0.245	73	301
Flat Platform w/ Han	173.00	2,000	1.890	1.980	1.140	0.245	424	1,748
RFS 2.5GHz Co-locati	159.00	43	1.596	0.768	0.665	0.128	5	38
Alcatel-Lucent 800 M	159.00	192	1.596	0.768	0.665	0.128	21	168
Alcatel-Lucent 1900M	159.00	264	1.596	0.768	0.665	0.128	29	231
Alcatel-Lucent TD-RR	159.00	210	1.596	0.768	0.665	0.128	23	184
RFS APXVTM14-C-I20	159.00	159	1.596	0.768	0.665	0.128	18	139
RFS APXVSPP18-C-A20	159.00	171	1.596	0.768	0.665	0.128	19	149
Flat Platform w/ Han	159.00	2,000	1.596	0.768	0.665	0.128	222	1,748
DragonWave Horizon D	146.00	14	1.346	0.190	0.378	0.049	1	12
KMW TTA (HB-X-WM-17-	146.00	48	1.346	0.190	0.378	0.049	2	42
KMW AM-X-WM-17-65-	146.00	43	1.346	0.190	0.378	0.049	2	37
Andrew VHLP2-18	146.00	62	1.346	0.190	0.378	0.049	3	54
Andrew VHLP2-23	146.00	54	1.346	0.190	0.378	0.049	2	47
EMS RR90-11-00DBL	146.00	108	1.346	0.190	0.378	0.049	5	94
Flat Low Profile Pla	146.00	1,500	1.346	0.190	0.378	0.049	64	1,311
Ericsson KRY 112 144	135.00	33	1.151	-0.037	0.220	0.003	0	29
GPS	135.00	10	1.151	-0.037	0.220	0.003	0	9
Ericsson RRUS 11 B12	135.00	152	1.151	-0.037	0.220	0.003	0	133
Ericsson AIR 21, 1.3	135.00	249	1.151	-0.037	0.220	0.003	1	218
Ericsson AIR 21, 1.3	135.00	244	1.151	-0.037	0.220	0.003	1	214
RFS APXVF24-C-A20	135.00	152	1.151	-0.037	0.220	0.003	0	133
Platform w/ Handrail	135.00	2,000	1.151	-0.037	0.220	0.003	5	1,748
KMW HB-X-AW-19-65-00	125.00	86	0.987	-0.113	0.125	-0.022	-2	75
74" x 8" Panel	125.00	120	0.987	-0.113	0.125	-0.022	-2	105
Flat Side Arms	125.00	450	0.987	-0.113	0.125	-0.022	-9	393
9" x 4.5" Air Inlet	115.00	1	0.835	-0.117	0.064	-0.032	0	1
Procom CXL 900-3LW	111.00	2	0.778	-0.107	0.048	-0.032	0	1
5" x 3" x 2" Cavity	111.00	2	0.778	-0.107	0.048	-0.032	0	1
Low Noise Amplifier	111.00	2	0.778	-0.107	0.048	-0.032	0	2
Side Arm	111.00	100	0.778	-0.107	0.048	-0.032	-3	87
15" x 7.5" Rain Gaug	5.00	2	0.002	0.029	0.016	0.016	0	2
		47,592	96.260	46.642	36.417	6.677	1,882	41,605

Site Number: 305169
Site Name: Montgomery Village, MD
Customer: AT&T MOBILITY

Code: ANSI/TIA-222-G
Engineering Number:OAA713651_C3_01

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Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-56.40	-1.87	0.00	-262.53	0.00	262.53	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.060
5.00	-54.50	-1.86	0.00	-253.16	0.00	253.16	4,854.47	2,427.24	10,705.9	5,287.28	0.01	-0.01	0.059
10.00	-52.63	-1.84	0.00	-243.87	0.00	243.87	4,802.16	2,401.08	10,366.0	5,119.39	0.03	-0.03	0.059
15.00	-50.80	-1.81	0.00	-234.70	0.00	234.70	4,747.71	2,373.85	10,026.4	4,951.68	0.06	-0.04	0.058
20.00	-48.99	-1.78	0.00	-225.66	0.00	225.66	4,691.11	2,345.56	9,687.51	4,784.30	0.11	-0.05	0.058
25.00	-47.23	-1.75	0.00	-216.76	0.00	216.76	4,632.38	2,316.19	9,349.57	4,617.40	0.17	-0.07	0.057
30.00	-45.49	-1.72	0.00	-208.02	0.00	208.02	4,571.50	2,285.75	9,012.90	4,451.13	0.25	-0.08	0.057
35.00	-43.79	-1.68	0.00	-199.44	0.00	199.44	4,508.49	2,254.24	8,677.81	4,285.64	0.34	-0.10	0.056
40.00	-43.48	-1.68	0.00	-191.02	0.00	191.02	4,443.33	2,221.66	8,344.59	4,121.08	0.45	-0.11	0.056
40.92	-41.18	-1.63	0.00	-189.48	0.00	189.48	4,431.15	2,215.58	8,283.73	4,091.02	0.47	-0.11	0.056
45.00	-40.07	-1.60	0.00	-182.84	0.00	182.84	4,376.03	2,188.02	8,013.55	3,957.59	0.57	-0.13	0.055
47.00	-39.19	-1.59	0.00	-179.63	0.00	179.63	3,526.79	1,763.39	6,520.63	3,220.29	0.63	-0.13	0.067
50.00	-37.74	-1.55	0.00	-174.87	0.00	174.87	3,498.91	1,749.46	6,370.90	3,146.35	0.71	-0.14	0.066
55.00	-36.33	-1.53	0.00	-167.10	0.00	167.10	3,450.74	1,725.37	6,121.80	3,023.33	0.87	-0.16	0.066
60.00	-34.94	-1.50	0.00	-159.47	0.00	159.47	3,400.42	1,700.21	5,873.50	2,900.70	1.05	-0.18	0.065
65.00	-33.58	-1.48	0.00	-151.97	0.00	151.97	3,347.97	1,673.98	5,626.32	2,778.63	1.25	-0.20	0.065
70.00	-32.25	-1.45	0.00	-144.59	0.00	144.59	3,293.37	1,646.69	5,380.54	2,657.25	1.47	-0.22	0.064
75.00	-30.95	-1.44	0.00	-137.32	0.00	137.32	3,236.64	1,618.32	5,136.48	2,536.71	1.71	-0.24	0.064
80.00	-30.18	-1.44	0.00	-130.12	0.00	130.12	3,177.76	1,588.88	4,894.43	2,417.17	1.97	-0.26	0.063
83.00	-29.36	-1.43	0.00	-125.81	0.00	125.81	3,141.41	1,570.70	4,750.29	2,345.99	2.14	-0.28	0.063
85.00	-28.18	-1.42	0.00	-122.95	0.00	122.95	3,116.74	1,558.37	4,654.69	2,298.77	2.26	-0.29	0.063
87.92	-27.72	-1.43	0.00	-118.80	0.00	118.80	2,412.79	1,206.39	3,612.71	1,784.18	2.44	-0.30	0.078
90.00	-26.63	-1.43	0.00	-115.83	0.00	115.83	2,395.86	1,197.93	3,540.68	1,748.61	2.57	-0.31	0.077
95.00	-25.57	-1.45	0.00	-108.67	0.00	108.67	2,353.73	1,176.87	3,368.34	1,663.50	2.91	-0.34	0.076
100.00	-24.53	-1.47	0.00	-101.42	0.00	101.42	2,309.46	1,154.73	3,196.97	1,578.86	3.28	-0.36	0.075
105.00	-23.51	-1.50	0.00	-94.05	0.00	94.05	2,263.05	1,131.52	3,026.88	1,494.86	3.67	-0.39	0.073
110.00	-23.31	-1.51	0.00	-86.55	0.00	86.55	2,214.49	1,107.25	2,858.37	1,411.64	4.10	-0.42	0.072
111.00	-22.39	-1.53	0.00	-85.04	0.00	85.04	2,204.53	1,102.26	2,824.89	1,395.11	4.19	-0.43	0.071
115.00	-21.42	-1.55	0.00	-78.92	0.00	78.92	2,163.80	1,081.90	2,691.74	1,329.35	4.56	-0.45	0.069
120.00	-20.48	-1.58	0.00	-71.15	0.00	71.15	2,110.96	1,055.48	2,527.29	1,248.14	5.04	-0.48	0.067
125.00	-19.43	-1.59	0.00	-63.27	0.00	63.27	2,055.99	1,027.99	2,365.32	1,168.14	5.57	-0.51	0.064
126.33	-18.44	-1.60	0.00	-61.15	0.00	61.15	2,040.97	1,020.48	2,322.59	1,147.04	5.71	-0.52	0.062
130.00	-17.68	-1.60	0.00	-55.29	0.00	55.29	1,495.03	747.52	1,688.85	834.06	6.12	-0.54	0.078
135.00	-13.51	-1.55	0.00	-47.29	0.00	47.29	1,458.71	729.35	1,579.59	780.10	6.70	-0.57	0.070
140.00	-12.85	-1.54	0.00	-39.52	0.00	39.52	1,420.24	710.12	1,471.51	726.72	7.32	-0.61	0.063
145.00	-12.72	-1.54	0.00	-31.82	0.00	31.82	1,379.63	689.81	1,364.91	674.08	7.97	-0.64	0.056
146.00	-10.09	-1.42	0.00	-30.29	0.00	30.29	1,371.25	685.62	1,343.80	663.65	8.11	-0.64	0.053
150.00	-9.61	-1.39	0.00	-24.62	0.00	24.62	1,336.88	668.44	1,260.10	622.31	8.65	-0.67	0.047
155.00	-9.24	-1.36	0.00	-17.69	0.00	17.69	1,292.16	646.08	1,157.52	571.66	9.36	-0.69	0.038
159.00	-5.43	-0.96	0.00	-12.26	0.00	12.26	1,238.80	619.40	1,063.37	525.16	9.95	-0.71	0.028
160.00	-5.01	-0.91	0.00	-11.30	0.00	11.30	1,225.46	612.73	1,040.46	513.84	10.10	-0.71	0.026
165.00	-4.61	-0.86	0.00	-6.73	0.00	6.73	1,158.76	579.38	929.64	459.11	10.85	-0.72	0.019
170.00	-4.38	-0.82	0.00	-2.45	0.00	2.45	1,092.06	546.03	825.05	407.46	11.61	-0.73	0.010
173.00	0.00	-0.76	0.00	0.00	0.00	0.00	1,052.04	526.02	765.30	377.95	12.07	-0.73	0.000

Site Number: 305169
Site Name: Montgomery Village, MD
Customer: AT&T MOBILITY

Code: ANSI/TIA-222-G
Engineering Number:OAA713651_C3_01

10/4/2017 8:57:31 PM

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.22	-1.87	0.00	-256.72	0.00	256.72	4,904.65	2,452.32	11,046.0	5,455.22	0.00	0.00	0.055
5.00	-38.86	-1.85	0.00	-247.36	0.00	247.36	4,854.47	2,427.24	10,705.9	5,287.28	0.01	-0.01	0.055
10.00	-37.53	-1.83	0.00	-238.09	0.00	238.09	4,802.16	2,401.08	10,366.0	5,119.39	0.03	-0.02	0.054
15.00	-36.22	-1.80	0.00	-228.96	0.00	228.96	4,747.71	2,373.85	10,026.4	4,951.68	0.06	-0.04	0.054
20.00	-34.94	-1.76	0.00	-219.98	0.00	219.98	4,691.11	2,345.56	9,687.51	4,784.30	0.11	-0.05	0.053
25.00	-33.68	-1.73	0.00	-211.16	0.00	211.16	4,632.38	2,316.19	9,349.57	4,617.40	0.17	-0.06	0.053
30.00	-32.44	-1.70	0.00	-202.52	0.00	202.52	4,571.50	2,285.75	9,012.90	4,451.13	0.24	-0.08	0.053
35.00	-31.23	-1.66	0.00	-194.04	0.00	194.04	4,508.49	2,254.24	8,677.81	4,285.64	0.33	-0.09	0.052
40.00	-31.01	-1.66	0.00	-185.74	0.00	185.74	4,443.33	2,221.66	8,344.59	4,121.08	0.44	-0.11	0.052
40.92	-29.37	-1.60	0.00	-184.22	0.00	184.22	4,431.15	2,215.58	8,283.73	4,091.02	0.46	-0.11	0.052
45.00	-28.57	-1.58	0.00	-177.68	0.00	177.68	4,376.03	2,188.02	8,013.55	3,957.59	0.56	-0.12	0.051
47.00	-27.95	-1.56	0.00	-174.53	0.00	174.53	3,526.79	1,763.39	6,520.63	3,220.29	0.61	-0.13	0.062
50.00	-26.92	-1.52	0.00	-169.86	0.00	169.86	3,498.91	1,749.46	6,370.90	3,146.35	0.69	-0.14	0.062
55.00	-25.91	-1.49	0.00	-162.24	0.00	162.24	3,450.74	1,725.37	6,121.80	3,023.33	0.85	-0.16	0.061
60.00	-24.92	-1.46	0.00	-154.77	0.00	154.77	3,400.42	1,700.21	5,873.50	2,900.70	1.02	-0.18	0.061
65.00	-23.95	-1.44	0.00	-147.45	0.00	147.45	3,347.97	1,673.98	5,626.32	2,778.63	1.22	-0.19	0.060
70.00	-23.00	-1.42	0.00	-140.26	0.00	140.26	3,293.37	1,646.69	5,380.54	2,657.25	1.43	-0.21	0.060
75.00	-22.07	-1.40	0.00	-133.18	0.00	133.18	3,236.64	1,618.32	5,136.48	2,536.71	1.67	-0.23	0.059
80.00	-21.52	-1.39	0.00	-126.19	0.00	126.19	3,177.76	1,588.88	4,894.43	2,417.17	1.92	-0.25	0.059
83.00	-20.94	-1.39	0.00	-122.02	0.00	122.02	3,141.41	1,570.70	4,750.29	2,345.99	2.09	-0.27	0.059
85.00	-20.10	-1.38	0.00	-119.24	0.00	119.24	3,116.74	1,558.37	4,654.69	2,298.77	2.20	-0.28	0.058
87.92	-19.77	-1.38	0.00	-115.22	0.00	115.22	2,412.79	1,206.39	3,612.71	1,784.18	2.37	-0.29	0.073
90.00	-18.99	-1.39	0.00	-112.34	0.00	112.34	2,395.86	1,197.93	3,540.68	1,748.61	2.50	-0.30	0.072
95.00	-18.23	-1.40	0.00	-105.41	0.00	105.41	2,353.73	1,176.87	3,368.34	1,663.50	2.83	-0.33	0.071
100.00	-17.49	-1.42	0.00	-98.40	0.00	98.40	2,309.46	1,154.73	3,196.97	1,578.86	3.19	-0.35	0.070
105.00	-16.77	-1.45	0.00	-91.28	0.00	91.28	2,263.05	1,131.52	3,026.88	1,494.86	3.57	-0.38	0.068
110.00	-16.62	-1.46	0.00	-84.04	0.00	84.04	2,214.49	1,107.25	2,858.37	1,411.64	3.99	-0.41	0.067
111.00	-15.97	-1.48	0.00	-82.58	0.00	82.58	2,204.53	1,102.26	2,824.89	1,395.11	4.07	-0.42	0.066
115.00	-15.28	-1.50	0.00	-76.67	0.00	76.67	2,163.80	1,081.90	2,691.74	1,329.35	4.43	-0.44	0.065
120.00	-14.60	-1.52	0.00	-69.16	0.00	69.16	2,110.96	1,055.48	2,527.29	1,248.14	4.91	-0.47	0.062
125.00	-13.86	-1.54	0.00	-61.56	0.00	61.56	2,055.99	1,027.99	2,365.32	1,168.14	5.41	-0.50	0.059
126.33	-13.15	-1.54	0.00	-59.51	0.00	59.51	2,040.97	1,020.48	2,322.59	1,147.04	5.55	-0.51	0.058
130.00	-12.60	-1.55	0.00	-53.85	0.00	53.85	1,495.03	747.52	1,688.85	834.06	5.95	-0.53	0.073
135.00	-9.63	-1.51	0.00	-46.11	0.00	46.11	1,458.71	729.35	1,579.59	780.10	6.52	-0.56	0.066
140.00	-9.16	-1.50	0.00	-38.55	0.00	38.55	1,420.24	710.12	1,471.51	726.72	7.12	-0.59	0.060
145.00	-9.07	-1.49	0.00	-31.07	0.00	31.07	1,379.63	689.81	1,364.91	674.08	7.75	-0.62	0.053
146.00	-7.19	-1.38	0.00	-29.57	0.00	29.57	1,371.25	685.62	1,343.80	663.65	7.88	-0.62	0.050
150.00	-6.85	-1.35	0.00	-24.05	0.00	24.05	1,336.88	668.44	1,260.10	622.31	8.41	-0.65	0.044
155.00	-6.58	-1.32	0.00	-17.29	0.00	17.29	1,292.16	646.08	1,157.52	571.66	9.11	-0.67	0.035
159.00	-3.87	-0.94	0.00	-12.01	0.00	12.01	1,238.80	619.40	1,063.37	525.16	9.67	-0.69	0.026
160.00	-3.57	-0.90	0.00	-11.06	0.00	11.06	1,225.46	612.73	1,040.46	513.84	9.82	-0.69	0.024
165.00	-3.29	-0.84	0.00	-6.58	0.00	6.58	1,158.76	579.38	929.64	459.11	10.55	-0.70	0.017
170.00	-3.12	-0.80	0.00	-2.40	0.00	2.40	1,092.06	546.03	825.05	407.46	11.29	-0.71	0.009
173.00	0.00	-0.76	0.00	0.00	0.00	0.00	1,052.04	526.02	765.30	377.95	11.74	-0.71	0.000

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	35.02	0.00	57.05	0.00	0.00	4181.29	47.00	0.83
0.9D + 1.6W	33.27	0.00	42.78	0.00	0.00	4009.24	87.92	0.79
1.2D + 1.0Di + 1.0Wi	5.72	0.00	97.57	0.00	0.00	757.66	87.92	0.18
(1.2 + 0.2Sds) * DL + E ELFM	1.86	0.00	56.40	0.00	0.00	272.01	87.92	0.07
(1.2 + 0.2Sds) * DL + E EMAM	1.87	0.00	56.40	0.00	0.00	262.53	130.00	0.08
(0.9 - 0.2Sds) * DL + E ELFM	1.86	0.00	40.22	0.00	0.00	266.45	87.92	0.07
(0.9 - 0.2Sds) * DL + E EMAM	1.87	0.00	40.22	0.00	0.00	256.72	130.00	0.07
1.0D + 1.0W	9.24	0.00	47.59	0.00	0.00	1122.52	87.92	0.23

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
3,300.00	35.00	26.00	4,181.29	97.57	35.02	93.86

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
60.0	2.750	64.000	Clipped	0	14.00	11.053	843.23	1128.43	0.75

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
63.25	16	2.25" 18J	2.25	75.00	100.00	Clustered	6.00	45.0	204.42	260.00	0.80	192.22	260.00	0.76

AT&T

SITE NAME:

MONTGOMERY VILLAGE

USID: 3902

FA NUMBER: 10004774

ATC: 305169

MONTGOMERY COUNTY

EXISTING 173'-0" MONOPOLE

LTE 3C/4C UPGRADE

RF DATA SHEET	
ISSUE REVISION	V2018_0.2
ISSUE DATE	8/18/17

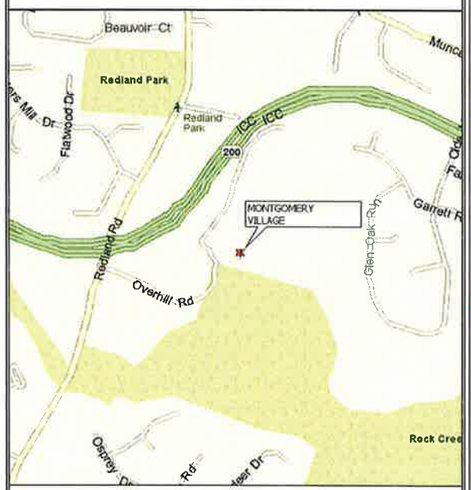
PROJECT SUMMARY

TOWER OWNER:	AMERICAN TOWER CORPORATION
ADDRESS:	116 HUNTINGTON AVE, 11TH FLOOR BOSTON, MA 02116
CONTACT:	CUSTOMER SERVICE
PHONE:	(617) 375-7500
SITE ADDRESS:	17001 OVERHILL ROAD DERWOOD, MD 20855
CUSTOMER/APPLICANT:	AT&T MOBILITY 7150 STANDARD DRIVE HANOVER, MD 21076

NAD83

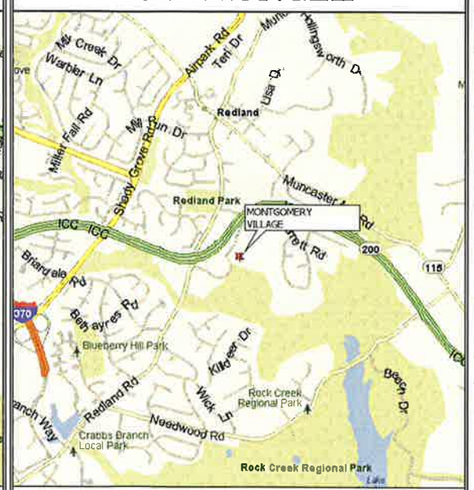
LATITUDE:	39.1347170° N
LONGITUDE:	77.1418560° W
JURISDICTION:	CITY OF DERWOOD
COUNTY:	MONTGOMERY
GROUND ELEVATION:	411' AMSL
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

AREA MAP



NO SCALE

LOCATION MAP



NO SCALE

DRAWING INDEX

CONTACT INFORMATION

A&E FIRM:	B+T GROUP 1717 S. BOULDER, STE. 300 TULSA, OK 74119
CONTACT:	PERRY KUYKENDALL
PHONE:	(918) 587-4630
AT&T CONSTRUCTION LTE PM:	
CONTACT:	STEVE SAFIRE
PHONE:	(410) 869-6578
ELECTRIC PROVIDER:	N/A
PHONE:	
TELCO PROVIDER:	N/A
PHONE:	

DRIVING DIRECTIONS

DEPART 7150 STANDARD DR, HANOVER, MD 21076 ONTO PARKWAY DR, THEN IMMEDIATELY TURN RIGHT ONTO PARK CIRCLE DR. TURN LEFT ONTO COCA COLA DR [COCA-COLA DR]. TAKE RAMP (RIGHT) ONTO MD-100 AT EXIT 5A-B, KEEP RIGHT ONTO RAMP. TAKE RAMP (LEFT) ONTO I-95. AT EXIT 33B, TAKE RAMP (RIGHT) ONTO MD-198 [SANDY SPRING RD]. ROAD NAME CHANGES TO MD-28 [NORBECK RD]. BEAR RIGHT ONTO MD-115 [MUNCASTER MILL RD]. TURN LEFT ONTO REDLAND RD. TURN LEFT ONTO OVERHILL RD. TURN RIGHT ONTO ACCESS ROAD AND ARRIVE AT MONTGOMERY VILLAGE.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
AT&T CONSTRUCTION MGR:		
JACOBS PM:		
RF ENGINEER:		
ZONING APPROVAL:		
SITE ACQUISITION:		
PROPERTY OWNER:		

STATUS CODE:		
1		ACCEPTED: WITH OR NO COMMENTS, CONSTRUCTION MAY PROCEED
2		NOT ACCEPTED: RESOLVE COMMENTS AND RESUBMIT

ACCEPTANCE DOES NOT CONSTITUTE APPROVAL OF DESIGN, CALCULATIONS, ANALYSIS, TEST METHODS OF MATERIALS DEVELOPED OR SELECTED BY THE SUBCONTRACTOR AND DOES NOT RELIEVE SUBCONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.

CODE COMPLIANCE

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

CODE TYPE	CODE
BUILDING/DWELLING	IBC 2015
STRUCTURAL	IBC 2015
MECHANICAL	IMC 2015
ELECTRICAL	NEC 2014

PROJECT DESCRIPTION

- REFER TO THE SCOPE OF WORK ON SHEET C-2.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11x17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SEE SHEET GN-1 FOR ADDITIONAL CONSTRUCTION NOTES

CALL MARYLAND ONE CALL
(800) 282-8555
CALL 3 WORKING DAYS
BEFORE YOU DIG!

811

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
A	10/11/17	SMM	PRELIMINARY REVIEW
0	11/02/17	BDH	CONSTRUCTION
1	11/08/17	BDH	CONSTRUCTION
2	12/18/17	SMM	CONSTRUCTION

B&T ENGINEERING, INC.

SHEET NUMBER:	REVISION:
T-1	2

PROJECT COMPLIANCE NOTES:

1. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE AND IS NOT FOR HUMAN HABITAT. (NO HANDICAP ACCESS IS REQUIRED).
2. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.
3. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS PROPOSAL, UNLESS DURING EMERGENCY.
4. OUTDOOR STORAGE AND SOLID WASTE CONTAINERS ARE NOT PROPOSED.
5. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST AT&T SYSTEM GROUNDING STANDARDS. "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM/GPRS WIRELESS SITES". "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING". IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTIONS SPECIFICATION AND THE DRAWINGS, THE DRAWING SHALL GOVERN.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED DURING CONSTRUCTION OPERATION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION
8. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
9. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM DRAWINGS PROVIDED BY THE APPLICANT REPRESENTATIVE. THE CONTRACTOR SHALL NOTIFY AT&T OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
10. NO ADDITIONAL PARKING IS PROPOSED. EXISTING ACCESS AND PARKING WILL BE USED.
11. NO ADDITIONAL LANDSCAPING IS PROPOSED AT THIS SITE.
12. ALL COAXIAL CABLE INSTALLATION IS TO FOLLOW MANUFACTURER'S INSTRUCTION.

GREENFIELD GROUNDING NOTES:

ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.

CONNECTIONS TO THE GROUND BAR SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BAR ARE PERMITTED.

ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.

GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

ELECTRICAL INSTALLATION NOTES:

ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

WIRING, RACEWAY & SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.

EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR APPROVED EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).

PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.

SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.

POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.

ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR APPROVED EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).

RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR APPROVED EQUAL); AND RATED NEMA 1 (OR BETTER).

EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.

METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "AT&T WIRELESS".

PROJECT GENERAL NOTES:

1. OR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR- _____
   SUBCONTRACTOR- GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER- AT&T
   OEM- ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 24782-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T GSM SITES".

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
N.T.S.	NOT TO SCALE
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

S/G	SOLID GROUND BUS BAR
S/N	SOLID NEUTRAL BUS BAR
	SUPPLEMENTAL GROUND CONDUCTOR
	2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	CHEMICAL GROUND ROD
	TEST WELL
	DISCONNECT SWITCH
M	METER

B+T GRP

AT&T

JACOBS
7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
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MONTGOMERY VILLAGE

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B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
REGISTERED
PROFESSIONAL ENGINEER
12/18/17

SHEET NUMBER: GN-1
REVISION: 2

1. THE SUBCONTRACTOR SHALL GIVE ALL NOTICES AND REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE SUBCONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID SUBCONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE SUBCONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE AT&T REPRESENTATIVE (B&T ENGINEERING) OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF SUBCONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE SUBCONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIAL AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE SUBCONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE THEMSELVES WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE SUBCONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS INFORMED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE SUBCONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE, UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS, AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEERING, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

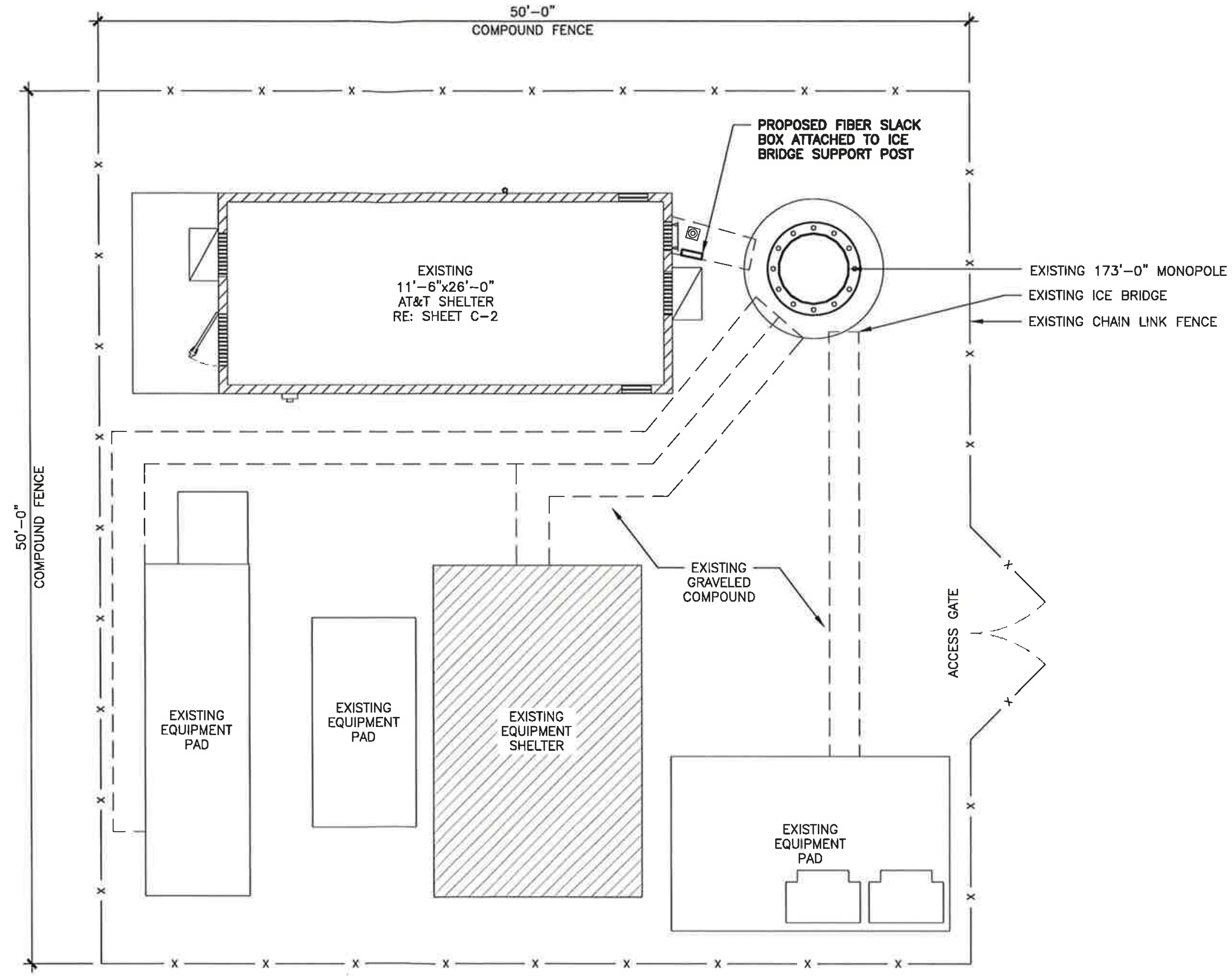
11. THE SUBCONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVEMENTS, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE SUBCONTRACTOR SHALL REPAIR ANY DAMAGE THE MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

12. THE SUBCONTRACTOR SHALL MAINTAIN THE GENERAL WORK AREA AS CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST OR SMUDGES OF ANY NATURE.

13. THE SUBCONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

14. THE SUBCONTRACTOR SHALL NOTIFY THE AT&T REPRESENTATIVE (B&T ENGINEERING) WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE SUBCONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE AT&T REPRESENTATIVE (B&T ENGINEERING).

15. THE SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOBS.



1 OVERALL SITE PLAN

SCALE: 0' 1' 4' 8' 20'

N

B+T GRP

AT&T

JACOBS

7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

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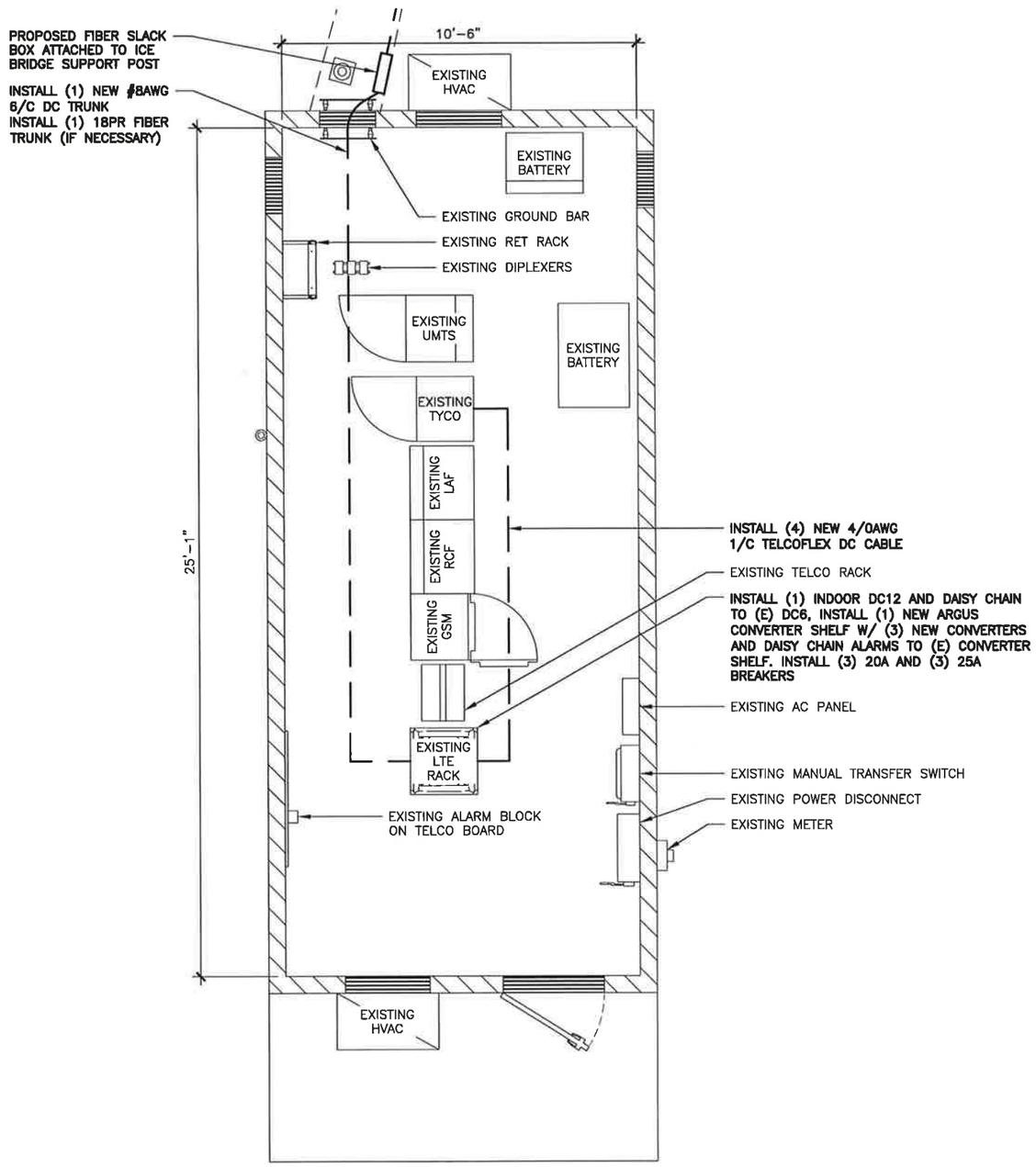
B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
REGISTERED
PROFESSIONAL ENGINEER
12/18/17

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER:	REVISION:
C-1	2

115507.001_10004774_Montgomery-Village.dwg — Sheet:C-1 — User: mhildebrand — Dec 18, 2017 — 2:17pm



1 ENLARGED SITE PLAN

SCALE: 0' 1' 2' 4' 8'

N

SCOPE OF WORK

EXISTING ANT AZ – A 0 B 120 C 240 .
LTE ANT AZ – A 0 B 120 C 240 .

TOPSIDE
1. DECOM AND REMOVE (3) GSM/UMTS ANTENNAS AND ASSOCIATED JUMPERS
2. INSTALL (3) KATHREIN 80010966 ANTENNAS
3. INSTALL (3) ROSENBERGER D218RRUDSM DUAL RRH MOUNTS ON BACK OF POSITION 4 ANTENNA PIPE MOUNTS (1 PER SECTOR)
4. INSTALL (3) B66 RRH4X45 ON (N) DUAL RRH MOUNTS (1 PER SECTOR)
5. INSTALL (3) B14 FIRSTNET RRHS ON (N) DUAL RRH MOUNTS (1 PER SECTOR)
6. INSTALL (N) RAYCAP DC6 DOME #2 ON (N) PIPE MOUNT ADJACENT TO (E) DC6 #1
7. INSTALL (3) NEW JUNCTION BOX ON (N) UNISTRUT MOUNT (1 PER SECTOR)
8. INSTALL (6) ROXTEC RG M63/4 4 HOLES GROMMET IN (N) JUNCTION BOXES (1 PER SECTOR)
9. INSTALL (3) 1" CONDUITS FROM DC6#2 TO JUNCTION BOXES (1 PER SECTOR)
10. INSTALL (3) 2/C #8 AWG DC JUMPERS FROM DC6#2 THROUGH JUNCTION BOX TO AWS RRHS (1 PER RRH)
11. INSTALL (3) 2/C # 8 AWG DC JUMPERS FROM DC6#2 THROUGH JUNCTION BOX TO FIRSTNET RRHS (1 PER RRH)
12. INSTALL (6) SM FIBER JUMPERS FROM DC6#2 THROUGH JUNCTION BOXES TO (N) AWS, AND FIRSTNET RRHS (1 PER RRH)
13. INSTALL (24) COAX JUMPERS WITH BRASS TAGS FROM (N) RRHS TO (N) ANTENNA (8 PER SECTOR)
14. INSTALL (3) RET CABLES FROM AWS RRHS TO (N) ANTENNAS (1 PER SECTOR)
15. INSTALL (1) SLACK BOX ON ICE BRIDGE OUTSIDE OF SHELTER IF (N) FIBER TRUNK IS INSTALLED.
16. INSTALL (1) 18 PAIR FIBER TRUNK FROM LTE RACK THROUGH SLACK BOX TO TOPSIDE DC6#2 (ONLY IF NECESSARY – CONSTRUCTION TO CONFIRM IF 6 EXISTING FIBER PATHS ARE GOOD)
17. INSTALL (2) 7/8" #8 AWG 6 CONDUCTOR DC TRUNK CABLES FROM (E) DC12 IN LTE RACK TO TOPSIDE DC6 #2 FOR AWS RRHS & FIRSTNET RRH'S

BOTTOMSIDE
1. RE-USE (2)(E) 250A BREAKERS IN (E) TYCO PP FOR NEW CIRCUITS TO (N) ARGUS CONVERTER SHELF #2
2. INSTALL (1) INDOOR DC12 AND DAISY CHAIN TO (E) DC6 IN LTE RACK
3. INSTALL (1) ARGUS CONVERTER SHELF WITH (3) CONVERTERS IN LTE RACK AND DAISY CHAIN ALARMS TO (E) CONVERTER SHELF
4. INSTALL (4) 4/0 TELCOFLEX DC CABLES FROM (N) ARGUS CONVERTER SHELF #2 TO (E) TYCO POWER PLANT
5. INSTALL (6) 1/C #8 TELCOFLEX DC WIRES FROM ARGUS CONVERTER SHELF TO DC12 FOR AWS RRHS (2 PER SECTOR)
6. INSTALL (6) 1/C #8 TELCOFLEX DC WIRES FROM ARGUS CONVERTER SHELF TO DC12 FOR FIRSTNET RRHS (2 PER SECTOR)
7. INSTALL (3) 20A 1P BREAKERS IN (E) ARGUS CONVERTER FOR B14 700 RRHS.
8. INSTALL (3) 25A 1P BREAKERS IN (N) ARGUS CONVERTER FOR AWS RRHS.
9. LABEL ALL (N) EQUIPMENT WITH PHENOLIC TAGS
10. LABEL ALL (N) CABLES AND BREAKERS
11. SUPPORT ALL JUMPERS, DC POWER, AND FIBER CABLES PER AT&T SPECIFICATIONS
12. GROUND ALL (N) EQUIPMENT PER AT&T SPECIFICATIONS
13. VERIFY CORRECT RATE SFP CARDS IN BBU AND RRH
14. DECOMMISSION EXISTING 1900 UMTS (BY OTHERS).
15. INSTALL PANDUIT ON LTE RACK FOR NEW FIBER ROUTING (IF NECESSARY)

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FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
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0	11/02/17	BDH	CONSTRUCTION
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B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
No. 21601
REGISTERED
PROFESSIONAL ENGINEER
12/18/17

SHEET NUMBER: C-2

REVISION: 2

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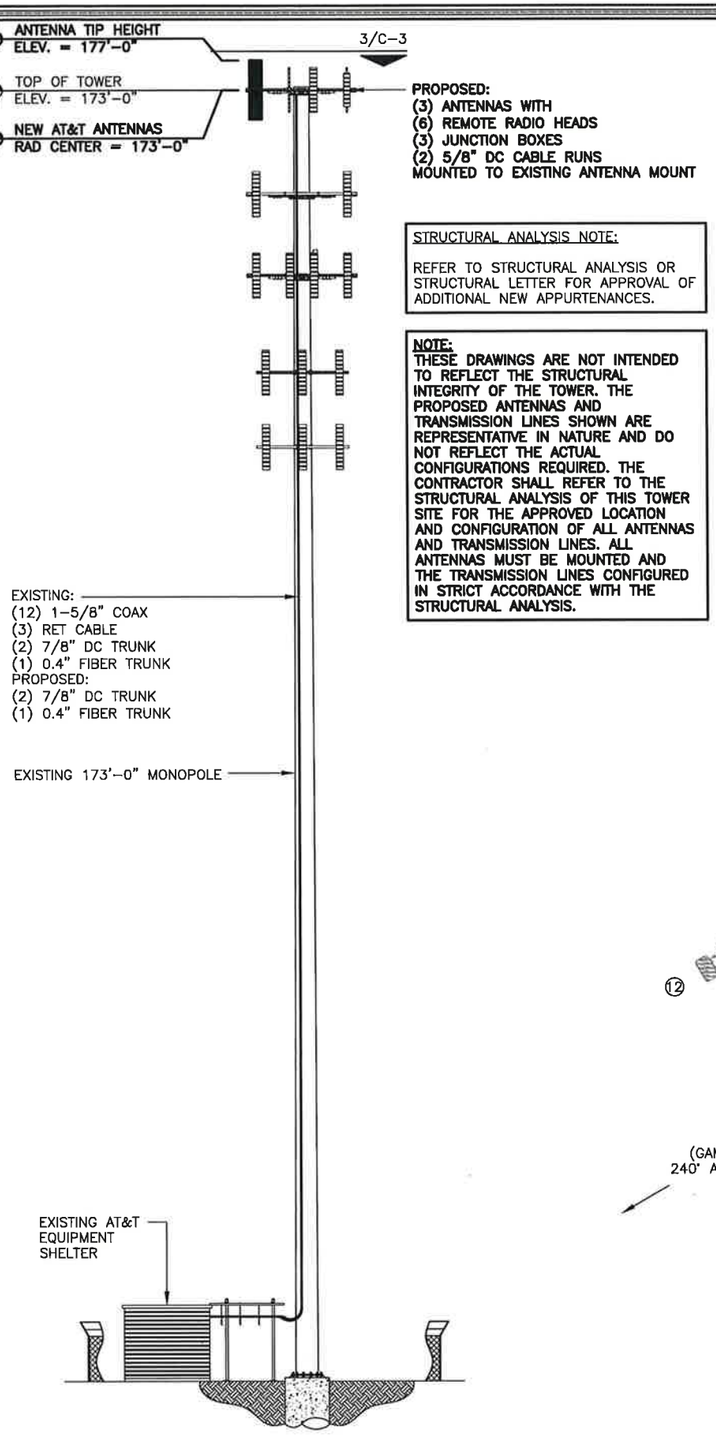
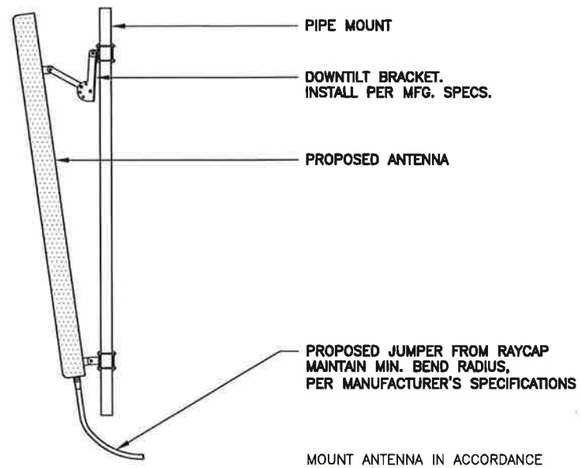


STRUCTURAL ANALYSIS NOTE:

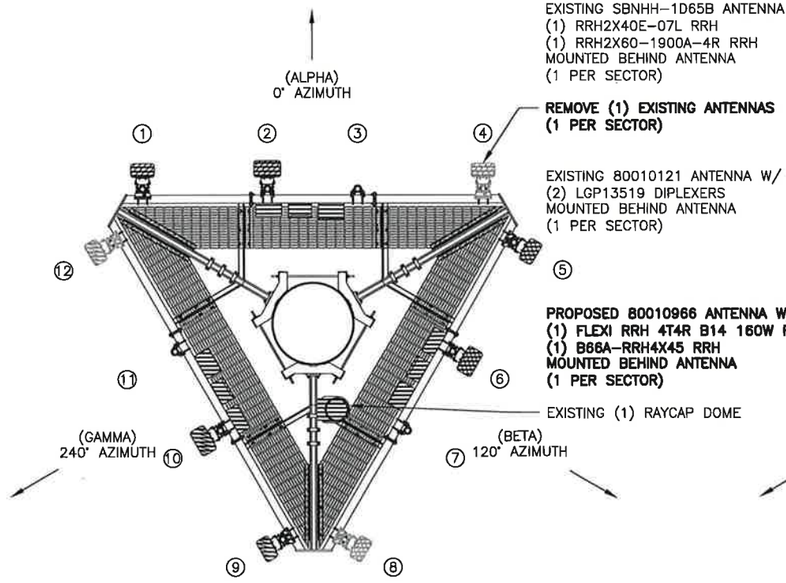
REFER TO STRUCTURAL ANALYSIS OR STRUCTURAL LETTER FOR APPROVAL OF ADDITIONAL NEW APPURTENANCES.

NOTE:
THESE DRAWINGS ARE NOT INTENDED TO REFLECT THE STRUCTURAL INTEGRITY OF THE TOWER. THE PROPOSED ANTENNAS AND TRANSMISSION LINES SHOWN ARE REPRESENTATIVE IN NATURE AND DO NOT REFLECT THE ACTUAL CONFIGURATIONS REQUIRED. THE CONTRACTOR SHALL REFER TO THE STRUCTURAL ANALYSIS OF THIS TOWER SITE FOR THE APPROVED LOCATION AND CONFIGURATION OF ALL ANTENNAS AND TRANSMISSION LINES. ALL ANTENNAS MUST BE MOUNTED AND THE TRANSMISSION LINES CONFIGURED IN STRICT ACCORDANCE WITH THE STRUCTURAL ANALYSIS.

1 TOWER ELEVATION
SCALE: N.T.S.



2 ANTENNA MOUNT DETAIL
SCALE: N.T.S.



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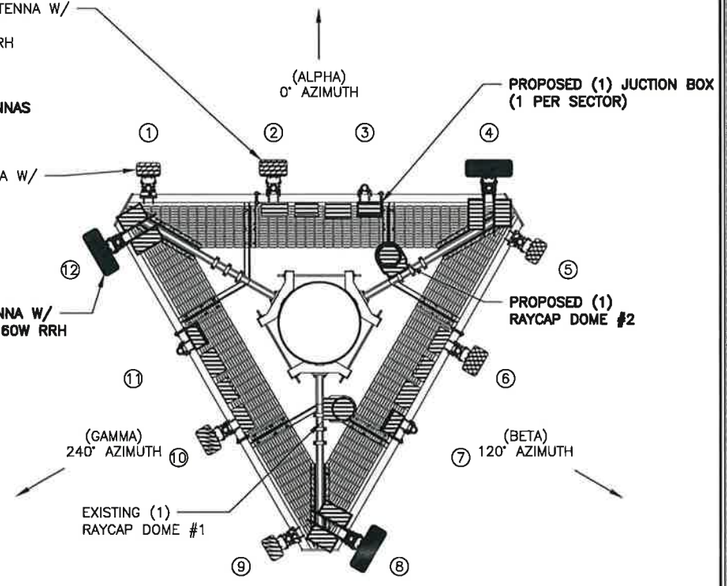

PROPOSED

3 ANTENNA AZIMUTH PLAN
SCALE: N.T.S.

N

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MONTGOMERY VILLAGE

17001 OVERHILL ROAD
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SHEET NUMBER:	REVISION:
C-3	2

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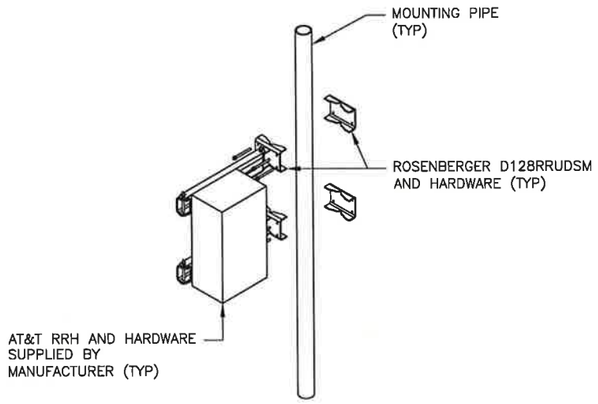
NOTE:

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

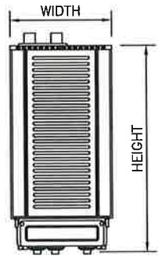


1 RRH DUAL BRACKET MOUNT DETAIL

SCALE: N.T.S.

CLEARANCE AND BREAKER SIZE TABLE

RRH	FRONT	REAR	RIGHT	LEFT	TOP	BOTTOM	BREAKER
700 07L–AT	36"	0"	3.94"	3.94"	12"	12"	15 AMP
700 DE	36"	0"	3.94"	3.94"	12"	12"	15 AMP
850 UMTS/LTE	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP
2X60 1900	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP
4T4R B14 FRBI	39.4"	2"	3.1"	3.1"	11.8"	15.7"	20 AMP
B25 1900	39.4"	2"	3.1"	3.1"	11.8"	15.7"	20 AMP
4X25 WCS 2300	39.4"	2"	3.9"	3.9"	11.8"	12"	20 AMP
AWS 2X40	36"	1.97"	3.94"	3.94"	11.82"	12"	15 AMP
AWS RDEM	36"	1.97"	3.94"	3.94"	11.82"	12"	15 AMP
AWS B66	39.4"	2"	3.1"	3.1"	11.8"	24"	25 AMP



SIZE AND WEIGHT TABLE

RRH	WIDTH	DEPTH	HEIGHT W/O CABLE MANAGEMENT COVER	WEIGHT W/O BRACKET
RRH2X40–07L	11.5"	5.7"	24.8"	50.7 LBS.
FLEXI RRH 4T4R B14 FRBI	13.03"	6.65"	23.03"	57 LBS.
RRH 2X40 AWS	10.63"	24.4"	–	44 LBS.
9745 AA B25A+700/900P	12.2"	12.7"	96.4"	126 LBS.
9745 AA B25A+700/900P	12.2"	12.7"	72.7"	117 LBS.
9745 AA B25A+700/900P	12.2"	12.7"	55.4"	106 LBS.
RRH2X40_AWS+RDEM	15.4"	9.1"	25.2"	47.6 LBS.
RRH2X60W–850 UMTS/LTE	11.5"	9.0"	18.9"	50.8 LBS.
RRH2X60W–1900 UMTS/LTE	11.2"	7.2"	20.1"	42.99 LBS.
B25 RRH4x30–4R	11.97"	7.18"	21.2"	52.9 LBS.
RRH4X25–WCS–4R	12.0"	8.7"	31.5"	70 LBS.
RRH2X40–07L–AT (RETUNED)	12.2"	6.1"	25.2"	52.5 LBS.
RRH2X40W–07L DE	12.2"	6.6"	25.2"	55 LBS.
B66A–RRH4x45	11.9"	7.2"	25.8"	68.34 LBS.

2 RRH DETAIL

SCALE: N.T.S.

ANTENNA CABLE AND ACCESSORY NOTES AND REQUIREMENTS:

1. GENERAL: PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY FOR RECEIVING, INSTALLING, TESTING, AND ADJUSTING ANTENNA CABLES FROM THE ANTENNA TO THE CONNECTIONS AT THE BASE TRANSCEIVER STATION (BTS). THIS SHALL INCLUDE ALL EQUIPMENT SHOWN OR REQUIRED FOR A COMPLETE OPERATING SYSTEM. ANTENNA, ANTENNA CABLES, CONNECTORS, AND FITTINGS SHALL BE THIRD PARTY FURNISHED COMPONENTS AS SHOWN ON THE BILL OF MATERIALS.

2. MATERIALS

   A. ANTENNA CABLES: AS SCHEDULED
   B. ANTENNA CONNECTORS: AS SCHEDULED
   C. CABLE HANGERS: INSTALLED AT MAXIMUM 18" SPACING
   D. GROUNDING KITS: AS SPECIFIED

3. INSTALLATION

   A. ANTENNA CABLE LENGTHS SHALL BE FIELD MEASURED. INSTALLER SHALL NOTIFY AT&T PRIOR TO PURCHASE OF CABLE OF THE OVERALL LENGTH REQUIRED.
   B. CABLES SHALL BE LABELED IN ACCORDANCE WITH AT&T ELECTRICAL MATERIALS AND METHODS SPECIFICATIONS.
   C. ALL CABLE CONNECTIONS OUTSIDE SHALL BE COVERED WITH WEATHERPROOFING TAPE.
   D. THE MINIMUM BENDING RADIUS FOR ALL ANTENNA CABLES SHALL BE AS SHOWN BELOW OR PER THE MANUFACTURER, WHICHEVER IS MORE CONSERVATIVE:

CABLE	IN AIR OR CABLE TRAY	IN CONDUIT
1/2"	5"	10"
7/8"	10"	18"
1–5/8"	20"	28"

   E. CABLES SHALL BE INSTALLED WITH THE MINIMUM NUMBER OF BENDS. CABLE SHALL NOT BE LEFT UNTERMINATED IN THE FIELD. NO BENDS WILL BE ACCEPTED IF WITHIN 5" OF CONNECTOR.
   F. GROUNDING KITS: AFTER INSTALLATION OF GROUND STRAPS, THE CONNECTIONS SHALL BE MADE WEATHER TIGHT USING WEATHERPROOF KITS AS IDENTIFIED ABOVE. GROUND PIGTAILS SHALL BE BROUGHT OUT IN THE DOWNWARD DIRECTION FROM THE CONNECTION TO THE ANTENNA CABLE WITHOUT ANY SHARP BENDS (MINIMUM RADIUS 10") AND CONNECTION SHALL BE MADE TO GROUNDING SYSTEM.

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MONTGOMERY VILLAGE

17001 OVERHILL ROAD
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SHEET NUMBER:	REVISION:
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ANTENNA CABLE SCHEDULE

ANTENNA POSITION		AZIMUTH	TYPE OF ANTENNA	RAD CENTER	COAX SIZE	EST LENGTH	COAX COLOR CODE
SECTOR #1	#1	0°	(E) KATHREIN 80010121	173'-0"	(E) (2) 1 5/8" ANDREW (E) (1) RET CABLE	200'-0"	BROWN/BLUE BROWN/BROWN
	#2	0°	(E) COMMSCOPE SBNHH-1D65B	173'-0"	POWER/FIBER	200'-0"	-
	#3	-	-	-	-	-	-
	#4	0°	(N) KATHREIN 80010966	173'-0"	(E) POWER/FIBER AND (E) (2) 1 5/8" (DECOM)	-	BROWN/RED BROWN/YELLOW
SECTOR #2	#5	120°	(E) KATHREIN 80010121	173'-0"	(E) (2) 1 5/8" ANDREW (E) (1) RET CABLE	200'-0"	ORANGE/BLUE ORANGE/BRN/BRN
	#6	120°	(E) COMMSCOPE SBNHH-1D65B	173'-0"	POWER/FIBER	200'-0"	-
	#7	-	-	-	-	-	-
	#8	120°	(N) KATHREIN 80010966	173'-0"	(E) POWER/FIBER AND (E) (2) 1 5/8" (DECOM)	-	ORANGE/RED ORANGE/YELLOW
SECTOR #3	#9	240°	(E) KATHREIN 80010121	173'-0"	(E) (2) 1 5/8" ANDREW (E) (1) RET CABLE	200'-0"	GREEN/BLUE GREEN/BROWN
	#10	240°	(E) COMMSCOPE SBNHH-1D65B	173'-0"	POWER/FIBER	-	-
	#11	-	-	-	-	-	-
	#12	240°	(N) KATHREIN 80010966	173'-0"	(E) POWER/FIBER AND (E) (2) 1 5/8" (DECOM)	-	GREEN/RED GREEN/YELLOW

ANTENNA SCHEDULE NOTES:

1. ALL CABLE LENGTHS ARE ESTIMATED AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
2. COLOR TAPE MARKINGS MUST BE 3/4" WIDE AND UV RESISTANT, SUCH AS SCOTCH 35 VINYL ELECTRICAL COLOR CODING TAPE.
3. CONTRACTOR SHALL COORDINATE COLOR CODING IN THE FIELD WITH AN AT&T REPRESENTATIVE.
4. CONTRACTOR SHALL INSTALL A BRASS IDENTIFICATION TAG 1/2" IN DIAMETER WITH 1/4" STAMPED LETTERS AND NUMBERS. INSTALL TAGS AT PORT CONNECTION NEAR THE END OF JUMPER AND ONE ON THE END NEAR THE RADIO EQUIPMENT. EACH TAG SHALL BE STAMPED WITH "AT&T" AND THE PORT IDENTIFICATION NUMBER. TAG SHALL BE ATTACHED WITH A CORROSION PROOF WIRE SUCH AS STAINLESS SEIZING WIRE.

4. ATT Naming Convention for "RET NAME"

ATT-002-290-125 (Issue 9, 03/06/15)
Antenna Remote Electrical Tilt (RET) Guidelines

Usage: [USID][CellId1][CellId2][CellId3][AntPos][FrequencyBand][Tech]

USID		CellId 1	CellId 2	CellId 3	AntPos	Freq	Tech
1 2 3 4 5 6		7	8	9	10	11	12

Field	Length	Description
USID	6	Six characters that defined the sites USID. USID's less than 6 characters in length are preceded with 0's (zeros) (example 003333)
CellId1	1	Allowed Value: A = Alpha; B = Beta; C = Gamma
CellId2	1	Allowed Value: D = Delta; E = Epsilon
CellId3	1	Allowed Value: F = Zeta; - = No Transmitter connected to this port
AntPos	1	Allowed Value: 1 = Antenna Position 1 on this face; 2 = Antenna Position 2 on this face; 3 = Antenna Position 3 on this face; 4 = Antenna Position 4 on this face; 5 = Antenna Position 5 on this face; - = Antenna Position unknown
FreqBand	1	Allowed Value: 2 = 2100 MHz (AWS); 3 = 2300 MHz (WCS) *** Used to be W; 7 = 700 MHz B & C Band; 8 = 850 MHz; 9 = 1900 MHz (PCS); D = 1900 MHz & 2100 MHz combined; F = 1900 MHz & 2300 MHz combined; H = 2100 MHz & 2300 MHz combined; J = 1900 MHz & 2100 MHz & 2300 MHz combined; K = 700 MHz B &C Band & 850 MHz combined; Q = 700 MHz D & E Band Only; Y = 700 MHz D & E & 850 MHz combined

Field	Length	Description				
		Allowed Value	GSM	UMTS	LTE	Split Sector
		G	GSM			
		J	GSM	UMTS		
		F			LTE	
		K	GSM		LTE	
		L			LTE	
		N				
		U		UMTS		
Tech	1	V		UMTS	LTE	
		Y	GSM	UMTS	LTE	
		H	GSM			Split
		M	GSM	UMTS		Split
		P	GSM		LTE	Split
		Q			LTE	Split
		R				Split
		S		UMTS		Split
		T		UMTS	LTE	Split

❖ F = License Protection/FCC Compliance
Example: Use Tech = "F" for certain cell(s) having issue with 2300 MHz (WCS) and 3GPP/LTE interference

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MONTGOMERY VILLAGE

17001 OVERHILL ROAD
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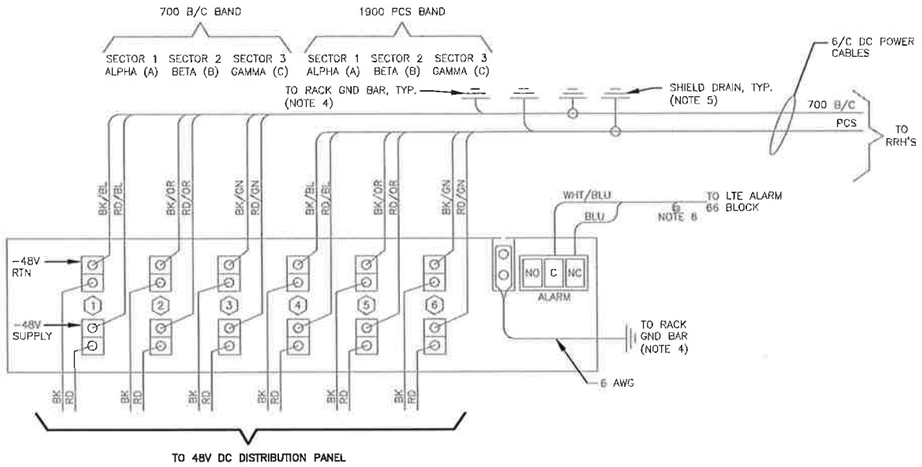
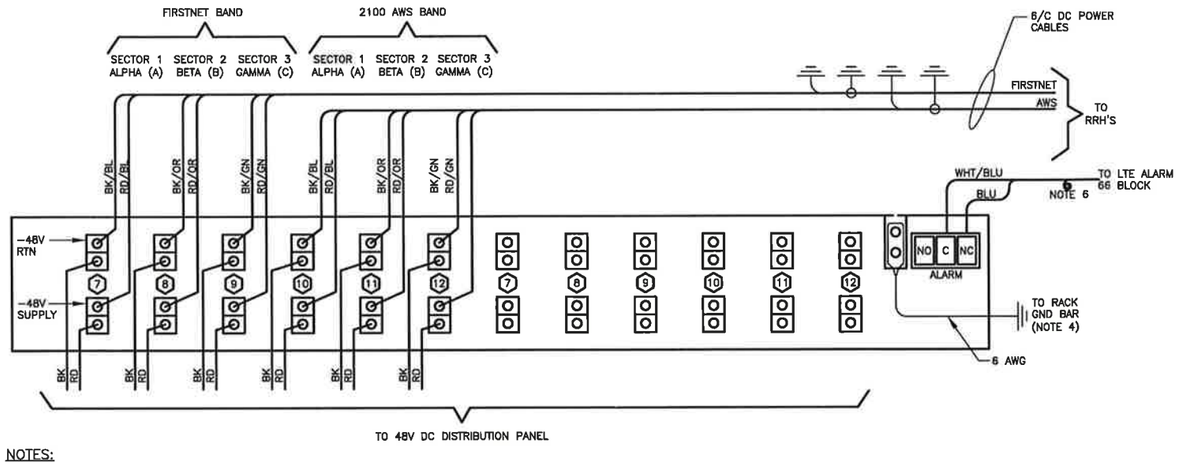
SHEET NUMBER: C-4.1
REVISION: 2



1 DC SURGE SHELF

SCALE: N.T.S.



NOTES:

1. SEE SYSTEM DIAGRAM FOR DC POWER CABLE CONDUCTOR SIZES.
2. CABLE TERMINALS FOR POWER CONNECTION SHALL BE COMPRESSION TYPE, 2-HOLE FOR 1/4"-20 STUDS.
3. CABLE TERMINAL FOR GROUND CONNECTION SHALL BE COMPRESSION TYPE, 2-HOLE 1"-CENTERS FOR 1/4"-20 STUDS.
4. CONNECTIONS TO RACK GROUND BAR SHALL BE MADE WITH 2-HOLE COMPRESSION TERMINALS.
5. WHEN SHIELDED CABLE IS USED, CONNECT CABLE SHIELD DRAIN WIRE TO RACK GROUND BAR. THIS CONNECTION SHALL BE INDEPENDENT OF THE CABLE GROUND WIRE CONNECTION.
6. TURN BACK AND STORE UNUSED CONDUCTORS.

2 DC SURGE SHELF

SCALE: N.T.S.

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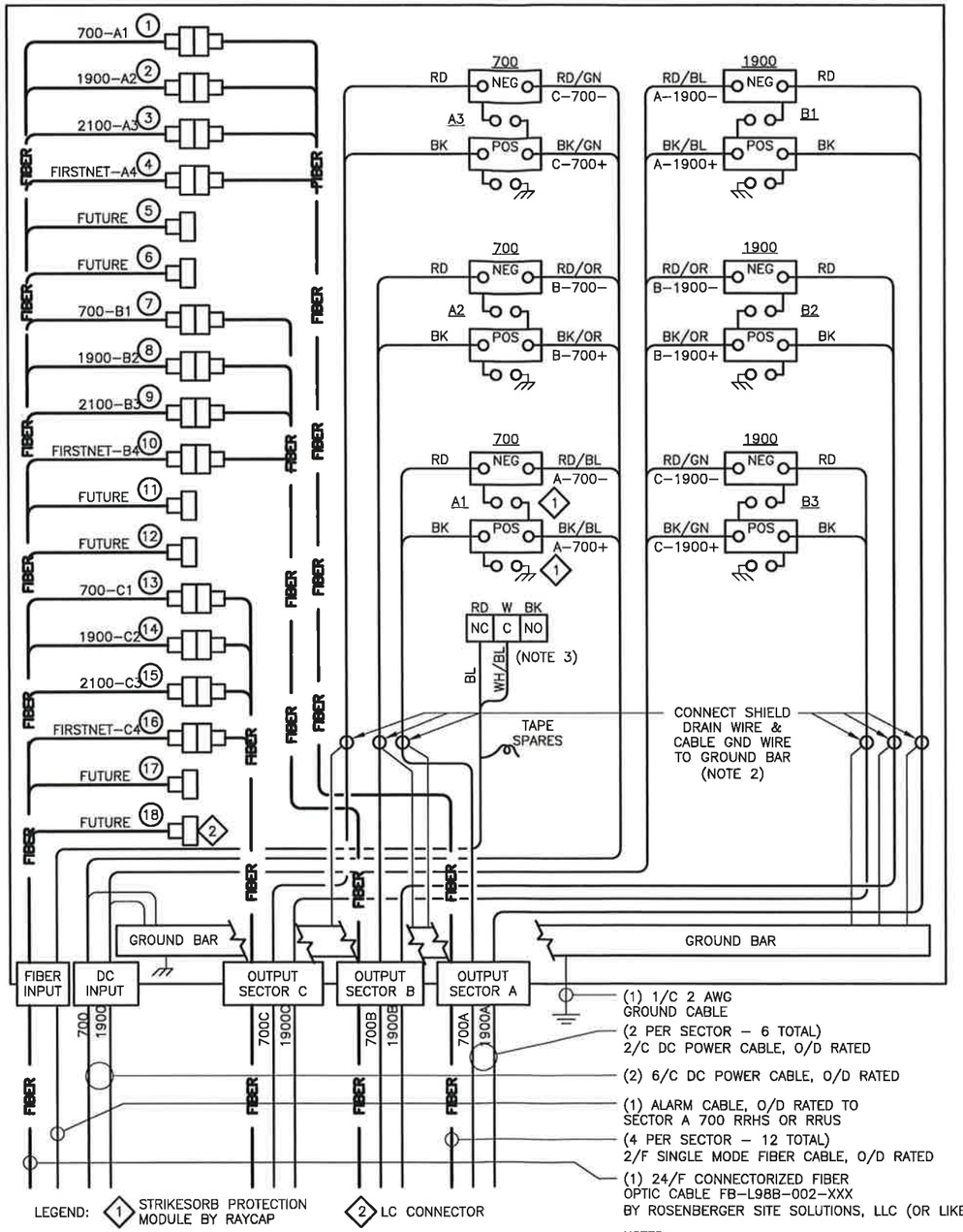
SHEET NUMBER:	REVISION:
C-5	2



NOTES:

1. SEE SYSTEM DIAGRAM FOR CONDUCTOR SIZES.
2. WHEN SHIELDED CABLE IS USED CONNECT CABLE SHIELD DRAIN WIRE AND GROUND WIRE TO GROUND BAR.
3. INSTALL RAYCAP PROVIDED LOOP–BACK CONNECTOR ON THE LAST ACTIVE (POWERED) MODULE WHEN FEWER THAN 6 RRHS OR RRUS ARE DEPLOYED.

CONNECTION DIAGRAM DC SURGE SUPPRESSION SYSTEM DC6–48–60–18–8F (BY RAYCAP)

1 DC SURGE PROTECTION SYSTEM

SCALE: N.T.S.

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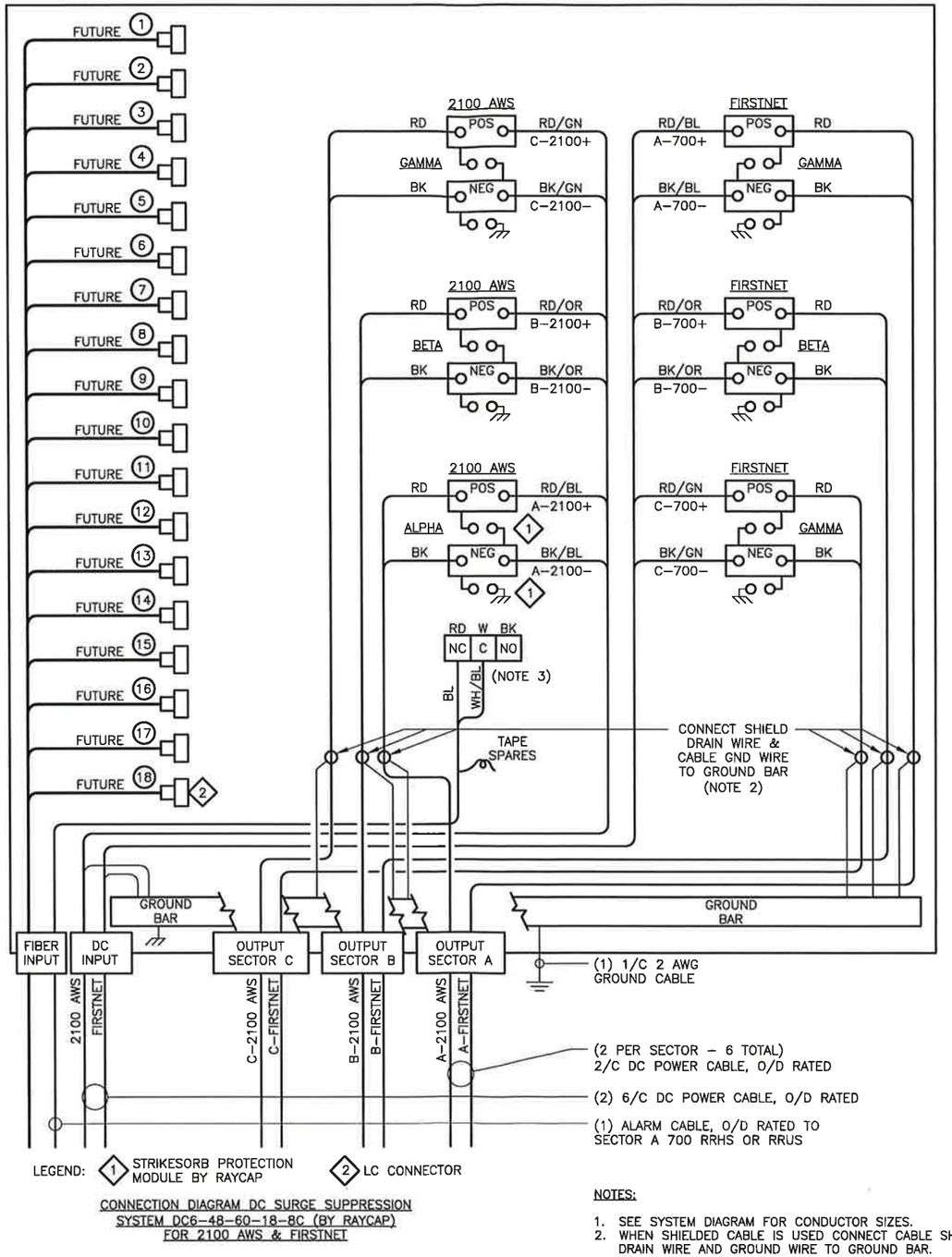
SHEET NUMBER: C-6

REVISION: 2



CONNECTION DIAGRAM DC SURGE SUPPRESSION
SYSTEM DC6–48–60–18–8C (BY RAYCAP)
FOR 2100 AWS & FIRSTNET

NOTES:

1. SEE SYSTEM DIAGRAM FOR CONDUCTOR SIZES.
2. WHEN SHIELDED CABLE IS USED CONNECT CABLE SHIELD DRAIN WIRE AND GROUND WIRE TO GROUND BAR.
3. INSTALL RAYCAP PROVIDED LOOP–BACK CONNECTOR ON THE LAST ACTIVE (POWERED) MODULE WHEN FEWER THAN 6 RRHS OR RRUS ARE DEPLOYED.

1 DC SURGE PROTECTION SYSTEM

SCALE: N.T.S.

B+T GRP

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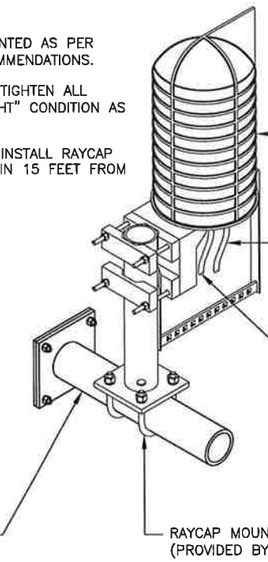
12/18/17

SHEET NUMBER: C-6.1
REVISION: 2

NOTES:

1. UNIT SHALL BE MOUNTED AS PER MANUFACTURER'S RECOMMENDATIONS.
2. CONTRACTOR SHALL TIGHTEN ALL BOLTS TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
3. CONTRACTOR SHALL INSTALL RAYCAP DISTRIBUTION UNIT WITHIN 15 FEET FROM ALL RRHS.



PROPOSED RAYCAP DC DISTRIBUTION UNIT W/ INTEGRATED SURGE PROTECTOR MOUNTED TO ANTENNA MOUNT ARM (PART# DC6-48-60-0-8F) (SEE NOTE 3) (TYP. OF 1)

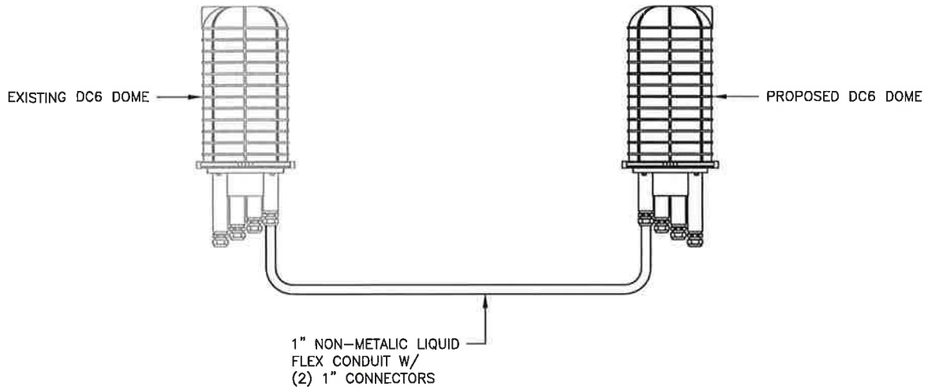
PROPOSED DC CABLE ROUTED FROM EQUIPMENT SHELTER. (2) 7/8" ROSENBERGER THREE PAIR POWER CABLES PART# WR-VGB6ST-BRD

PROPOSED DC CABLE ROUTED TO PROPOSED RRU UNITS. (1) ROSENBERGER SINGLE PAIR POWER CABLES PART# WR-VG122ST-BRDA (TYP. PER RRU)

PROPOSED ANTENNA MOUNT ARM

RAYCAP MOUNT BRACKET (PROVIDED BY MANUFACTURER)

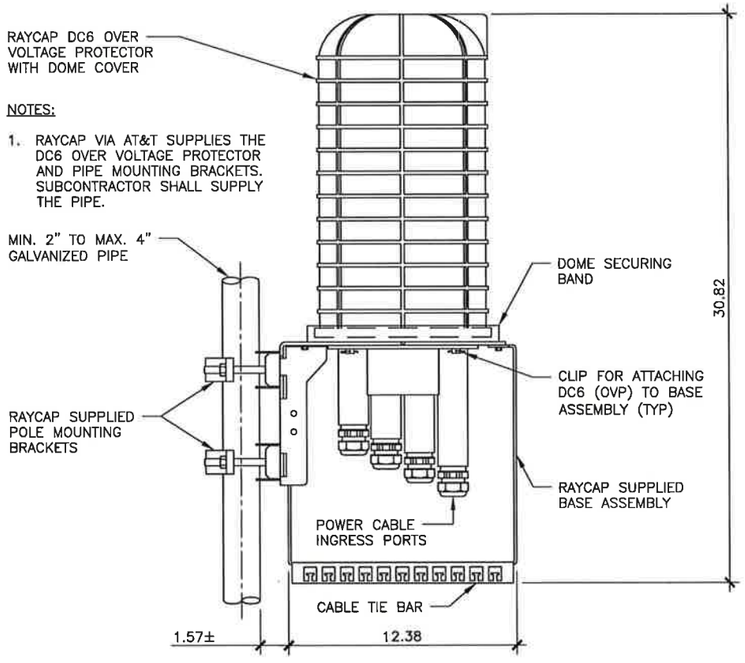
1 SURGE UNIT MOUNTING DETAIL
SCALE: N.T.S.



NOTES:

1. OTHER CONDUIT & CABLES NOT SHOWN FOR CLARITY.
2. INDIVIDUAL RUGGEDIZED FIBER JUMPERS TO BE PULLED FROM EXISTING DC6 TO PROPOSED DC6.
3. DETAIL TO BE USED ONLY WHEN SUFFICIENT NUMBER OF OPEN FIBERS ARE AVAILABLE IN THE EXISTING FIBER TRUNK CABLE.

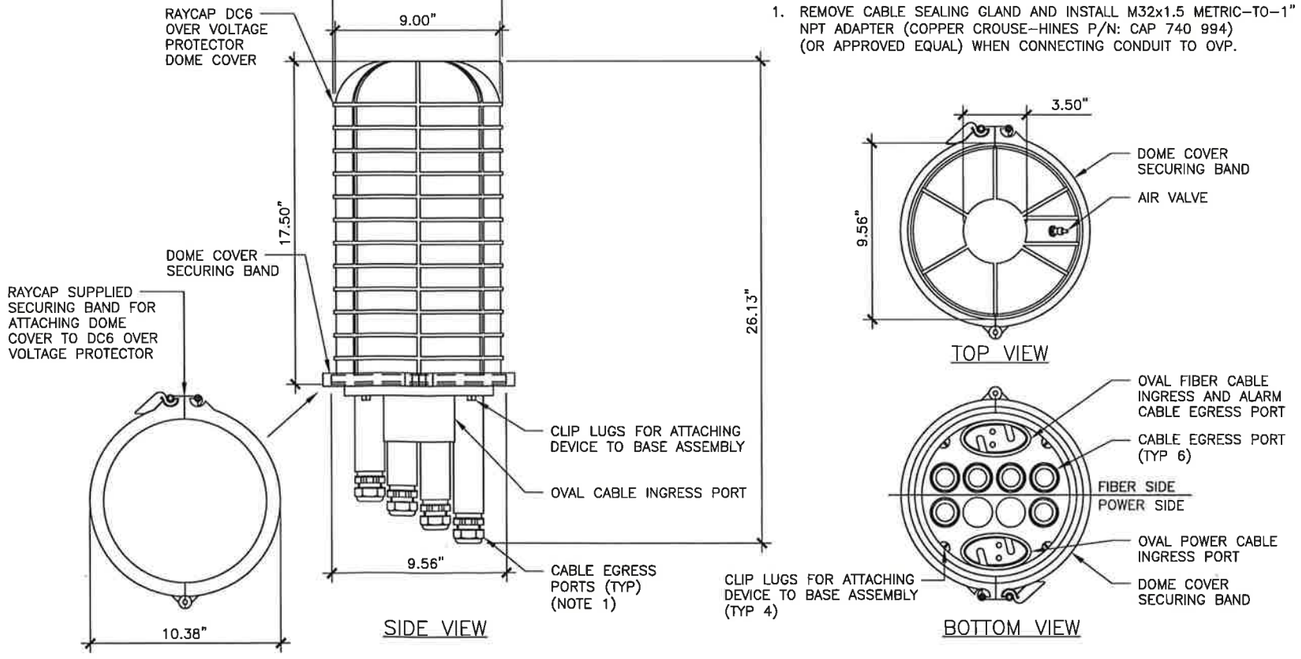
1A DUAL DC6 FIBER CONNECTION DETAIL
SCALE: N.T.S.



NOTES:

1. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

2 RAYCAP DC6 OVP ASSEMBLY
SCALE: N.T.S.



NOTES:

1. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COPPER CROUSE-HINES P/N: CAP 740 994) (OR APPROVED EQUAL) WHEN CONNECTING CONDUIT TO OVP.

3 RAYCAP DC6 DETAILS
SCALE: N.T.S.

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AT&T

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HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
CHECKED BY:	MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
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2	12/18/17	SMM	CONSTRUCTION

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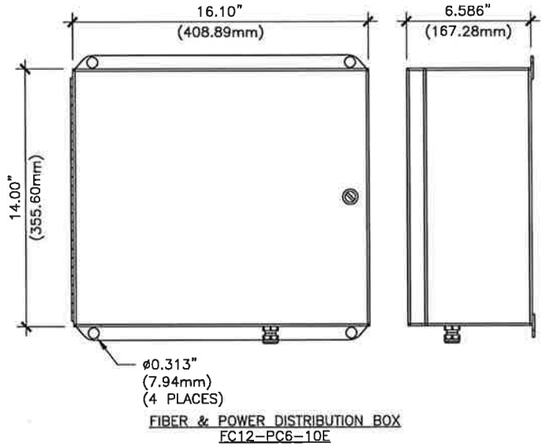
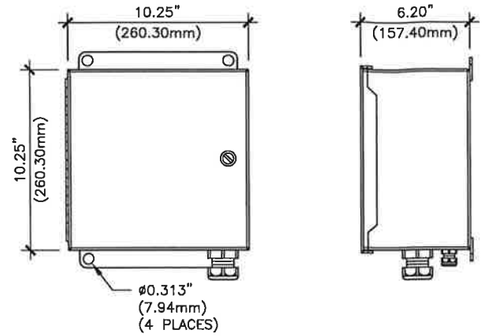


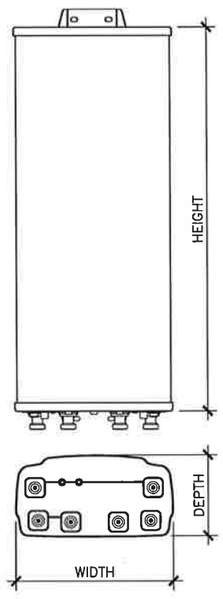
FIBER & POWER DISTRIBUTION BOX
FC12-PC6-10E



SECTOR FIBER & POWER DISTRIBUTION BOX
DC2-48-60-0-9E

1 SURGE UNIT DETAILS

SCALE: N.T.S.

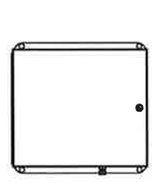


ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
80010966	96.0"	20.0"	6.9"	114.6 lbs

NOTES:
1. VERIFY ANTENNA DIMENSIONS WITH MANUFACTURER
2. ANTENNA MOUNTING KIT FOR 2 TO 4.5 O.D. MAST (MODEL #DM380) (QTY. 2)
3. LOCKING TILT MOUNT KIT 0-13 DEGREES DOWNTILT ANGLE (MODEL #DB5083)
4. VERIFY ANTENNA MODEL WITH FINAL VERSION OF THE AT&T RFDS

2 ANTENNA SPECIFICATIONS

SCALE: N.T.S.



NOTES:

1. ALCATEL-LUCENT (ALU) VIA AT&T SUPPLIES THE RRH. SUBCONTRACTOR SHALL SUPPLY ALL OTHER MATERIALS AND INSTALL ALL MOUNTING HARDWARE. ALU INSTALLS RRH AND MAKES CABLE TERMINATIONS.
2. A SUPPORT FOR A SINGLE RRH SHALL HAVE A MINIMUM OF TWO ANCHORS/FASTENERS FOR EACH UNISTRUT CHANNEL.
3. INSTALL ANCHORS/FASTENERS A MAXIMUM OF 2'-0" ON CENTERS.
   - WOOD STUDS – 1/4"ø LAG BOLT W/ 1" EMBEDMENT IN WOOD
   - CONCRETE – 1/4"ø HILTI KWIK BOLT III W/ 1-1/2" EMBEDMENT OR EQUIVALENT
   - THROUGH BOLT – 1/4"ø A36/A307 THREADED ROD W/ NUTS AND WASHERS
   - MASONRY – 1/2"ø HILTI HY 70 W/6" EMBEDMENT

   ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT-DIPPED GALVANIZED FINISH.
4. MOUNT RRH TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET. SUBCONTRACTOR SHALL SUPPLY.
5. MOUNT FIBER AND POWER DISTRIBUTION AND JUNCTION BOXES WITH FOUR (4) 1/4"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS.
6. NO PAINTING OF THE RRH OR SOLAR SHIELD IS ALLOWED.

3 JUNCTION BOX DETAIL

SCALE: N.T.S.

B+T GRP

AT&T

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HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
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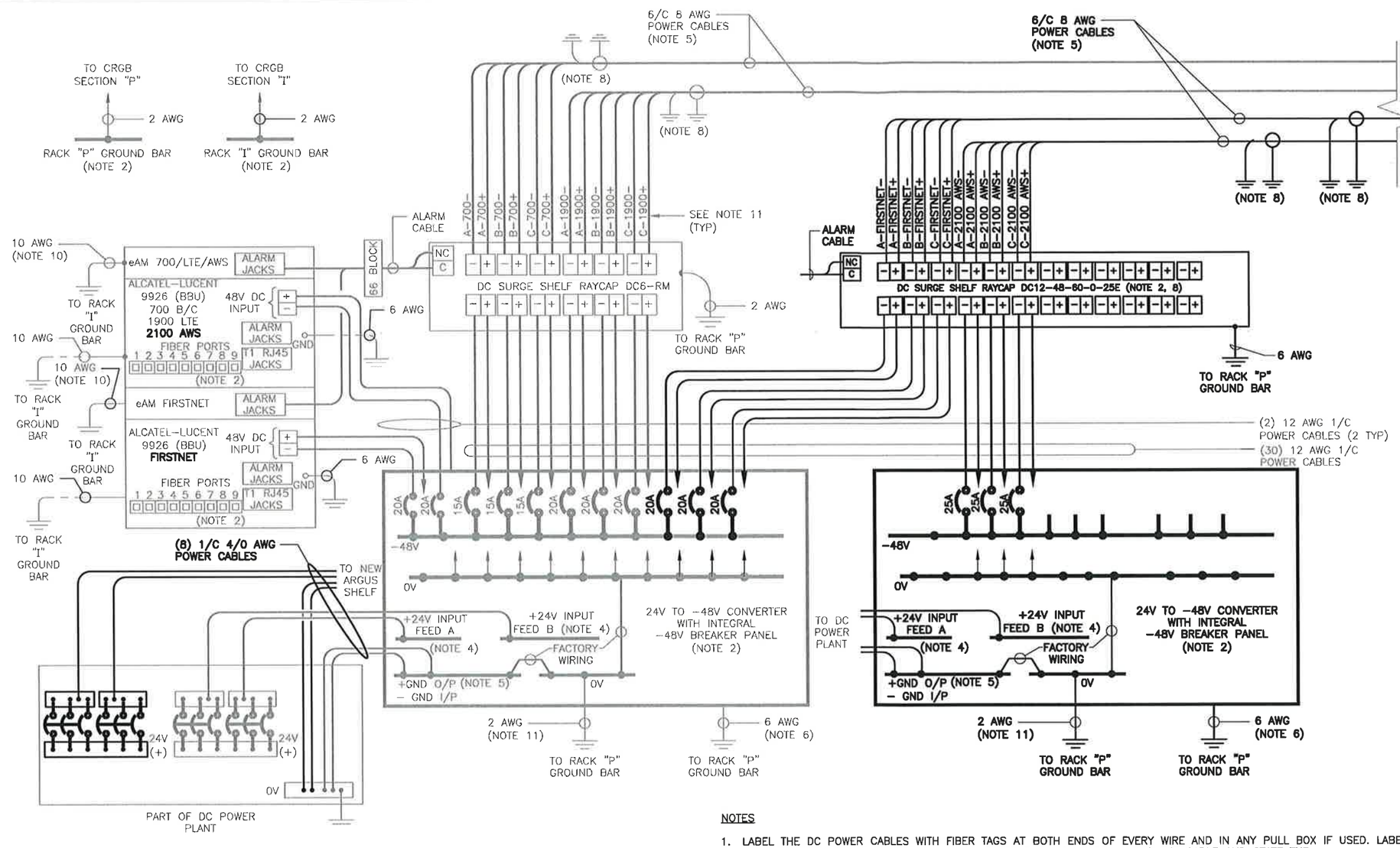

NOTES

1. LABEL THE DC POWER CABLES WITH FIBER TAGS AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE A 145 TYPE FIBER TAG WITH UV RATED P-TOUCH LABEL ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-700B/C+".
2. INSTALL ON LTE EQUIPMENT RACK.
3. SEE 1/C-6, 1/C-6.1, 1/C-6.2 FOR FC12 & DC2 INTERNAL WIRING. CABLE GROUND WIRES NOT SHOWN FOR CLARITY.
4. CABLE TERMINALS FOR INPUT FEED A, FEED B AND REFERENCE GROUND SHALL BE 2-HOLE: 3/8" ON 1" CENTER.
5. INSTALL CABLE TERMINALS FOR FEED A AND FEED B RETURN BACK-TO-BACK ON OPPOSITE SIDES OF PAD.
6. CABLE TERMINALS FOR CHASSIS GROUND SHALL BE 2-HOLE, 1/4" ON 5/8" CENTER.
7. NOT USED.
8. SEE 1 & 2/C-5 FOR DC 6 & DC 12 INTERNAL WIRING.
9. A JUNCTION BOX IS REQUIRED WHEN FIBER OPTIC CABLES ARE INSTALLED IN CONDUIT AS SCOPED BY MARKET.
10. PROVIDE GROUND WIRES FOR ENHANCED ALARM MODULE (eAM) WHEN EMPLOYED BY MARKET.
11. CONVERTER REFERENCE GROUND IS NOT REQUIRED WHEN CONVERTER AND 24V DC POWER PLANT ARE ON THE SAME RACK OR ENCLOSURE.
12. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
13. SEE ALARM BLOCK ASSIGNMENT DETAIL FOR ALARM CABLE CONNECTIONS.
14. ADD DC SURGE MODULES TO EXISTING RACK MOUNTED SURGE UNITS AS REQUIRED.

1 WIRING DIAGRAM

SCALE: N.T.S.

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MONTGOMERY VILLAGE

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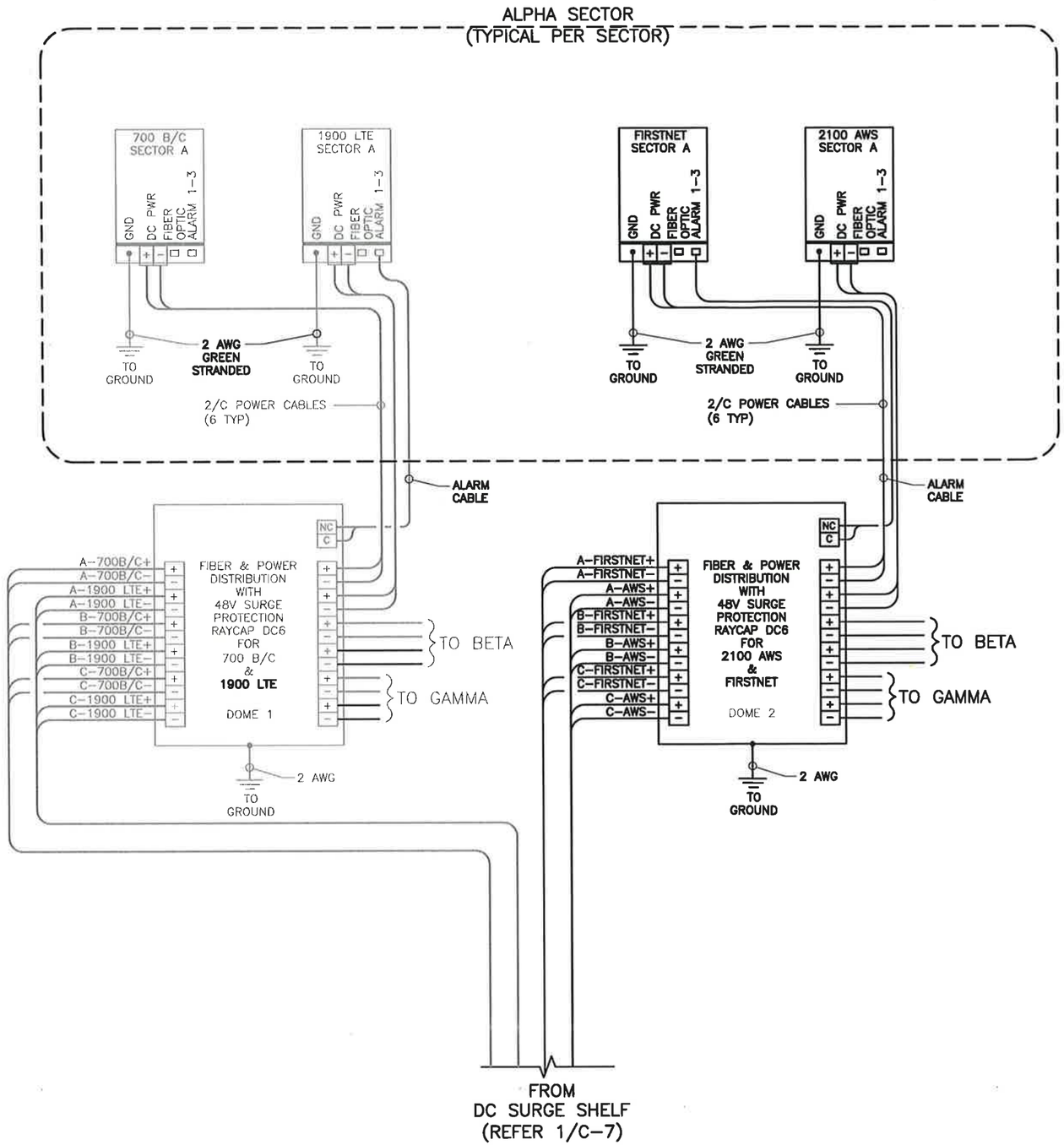

1 WIRING DIAGRAM
SCALE: N.T.S.

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STATE OF MARYLAND
JOHN W. KELLY
PROFESSIONAL ENGINEER
12/18/17

SHEET NUMBER: C-7.1
REVISION: 2

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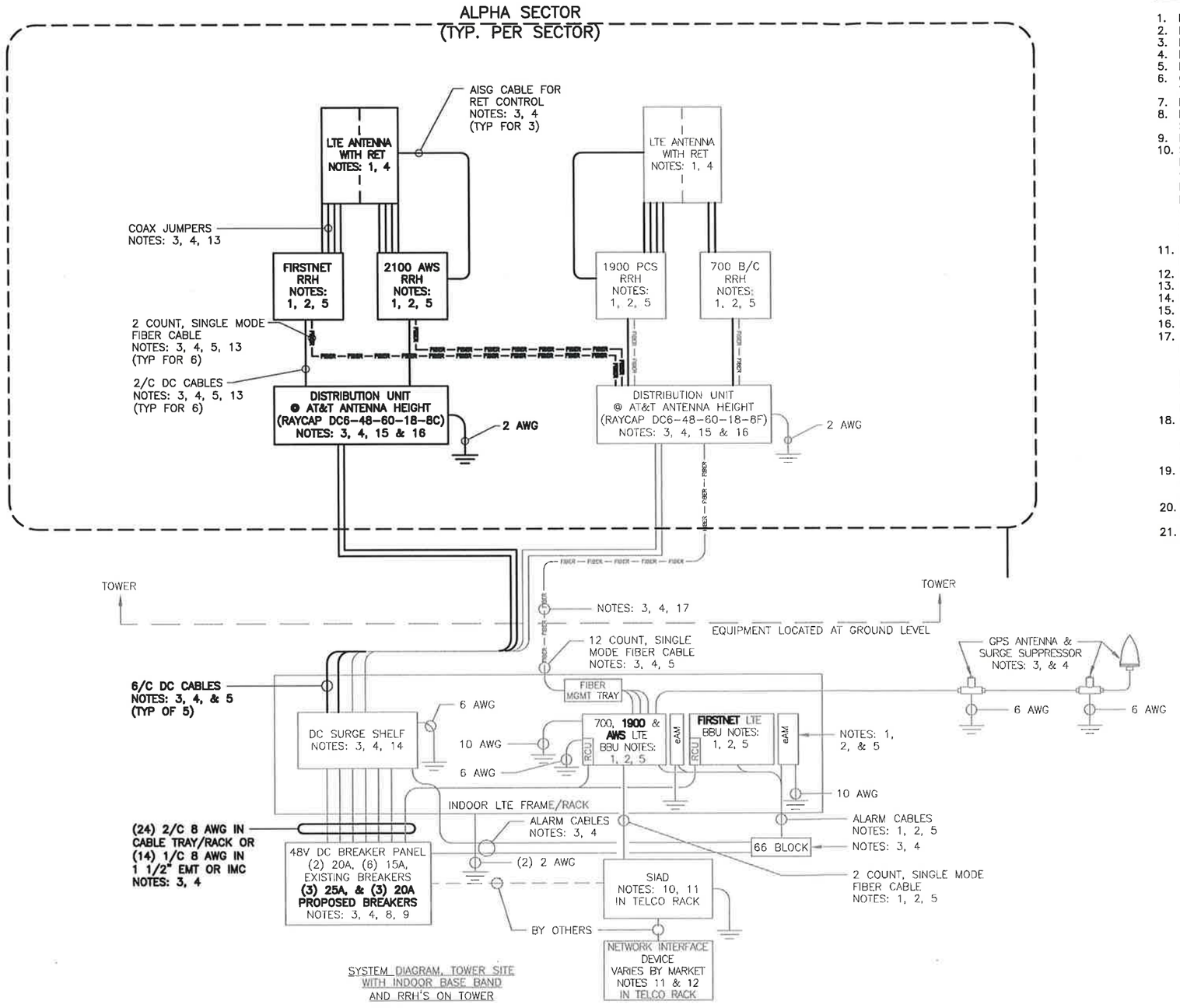

SYSTEM DIAGRAM, TOWER SITE WITH INDOOR BASE BAND AND RRH'S ON TOWER

1 SYSTEM DIAGRAM
SCALE: N.T.S.

NOTES:

1. FURNISHED BY OEM/AT&T.
2. INSTALLED BY OEM OR AS SCOPED BY MARKET.
3. FURNISHED BY JACOBS.
4. INSTALLED BY JACOBS.
5. FINAL CONNECTION BY OEM OR AS SCOPED BY MARKET.
6. OPEN END OF LFMC TO BE LEFT WEATHERPROOFED UNTIL TERMINATED.
7. DELETED
8. PART OF DC POWER PLANT. BREAKERS SPECIFIED SEPARATELY.
9. BREAKERS TO BE TAGGED AND LOCKED OUT.
10. SIAD IS FURNISHED AND INSTALLED BY OTHERS AND INCLUDES POWER CONNECTIONS AND FIBER TO THE UNIT OR AS SCOPED BY MARKET. WHEN IN JACOBS SCOPE, INSTALL #2 TIN STRANDED MINIMUM CHASSIS GROUND, PROVIDE (2) 20A BREAKERS FROM A 24V DC POWER SOURCE OR (2) 20A BREAKERS FROM A 48V DC POWER SOURCE AND CONNECT USING MFR POWER CABLE WITH SPECIAL CONNECTOR.
11. LEC TO FURNISH AND INSTALL NETWORK INTERFACE DEVICE.
12. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
13. NOT USED.
14. DC SURGE SHELF SHALL BE RAYCAP DC6 AND DC12.
15. SEE 1&2/C-5 FOR INTERNAL WIRING DIAGRAM.
16. SEE 1/C-6-C-6.2 FOR INTERNAL WIRING DIAGRAM.
17. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS. MAX DC CABLE LENGTH IS 16 FEET FOR TOWER TOP APPLICATIONS.
18. GROUNDING WIRES SHALL BE TIN COPPER STRANDED, THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS #2 UNLESS NOTED OTHERWISE.
19. RET CONTROL FROM THE RRH IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
20. MAXIMUM 4/0 AWG CABLE LENGTH FROM 24V DC POWER PLANT TO CONVERTER SHALL NOT EXCEED 44 FT.
21. PROVIDE GROUND WIRES FOR ENHANCED ALARM MODULE (eAM) WHEN EMPLOYED BY MARKET.

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AT&T

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MONTGOMERY VILLAGE

17001 OVERHILL ROAD
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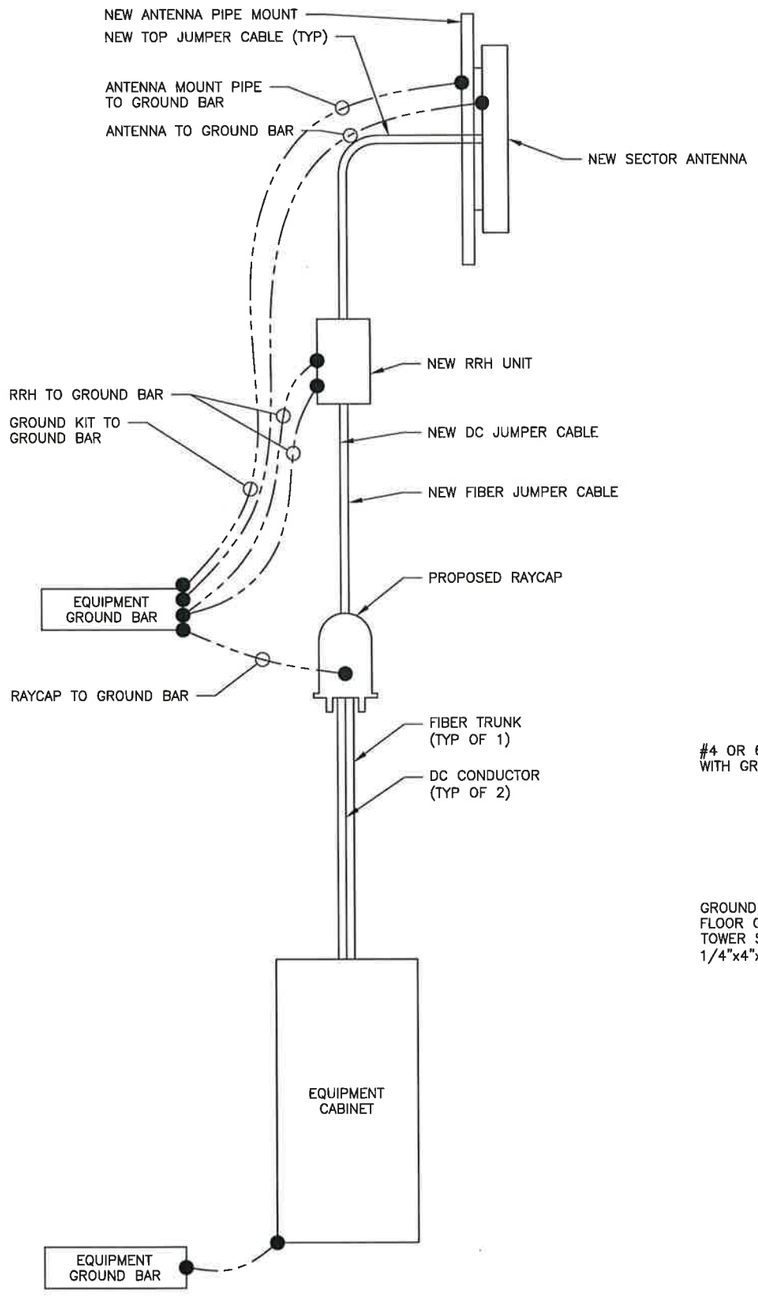
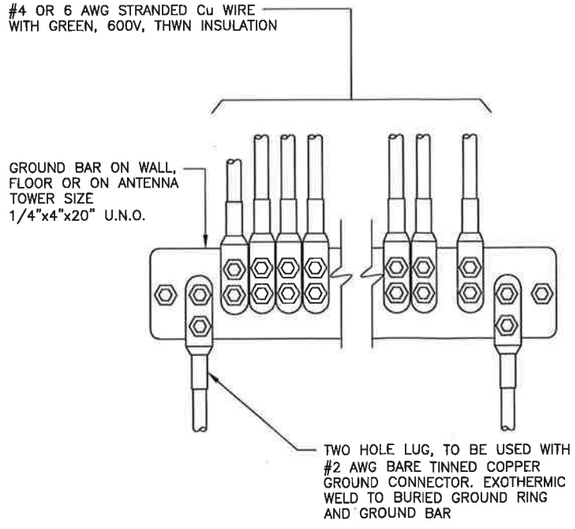
SHEET NUMBER:	REVISION:
C-8	2



1 GROUNDING SCHEMATIC
SCALE: N.T.S.



2 INSTALLATION OF GROUND WIRE TO GROUND BAR
SCALE: N.T.S.

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JACOBS
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MONTGOMERY VILLAGE

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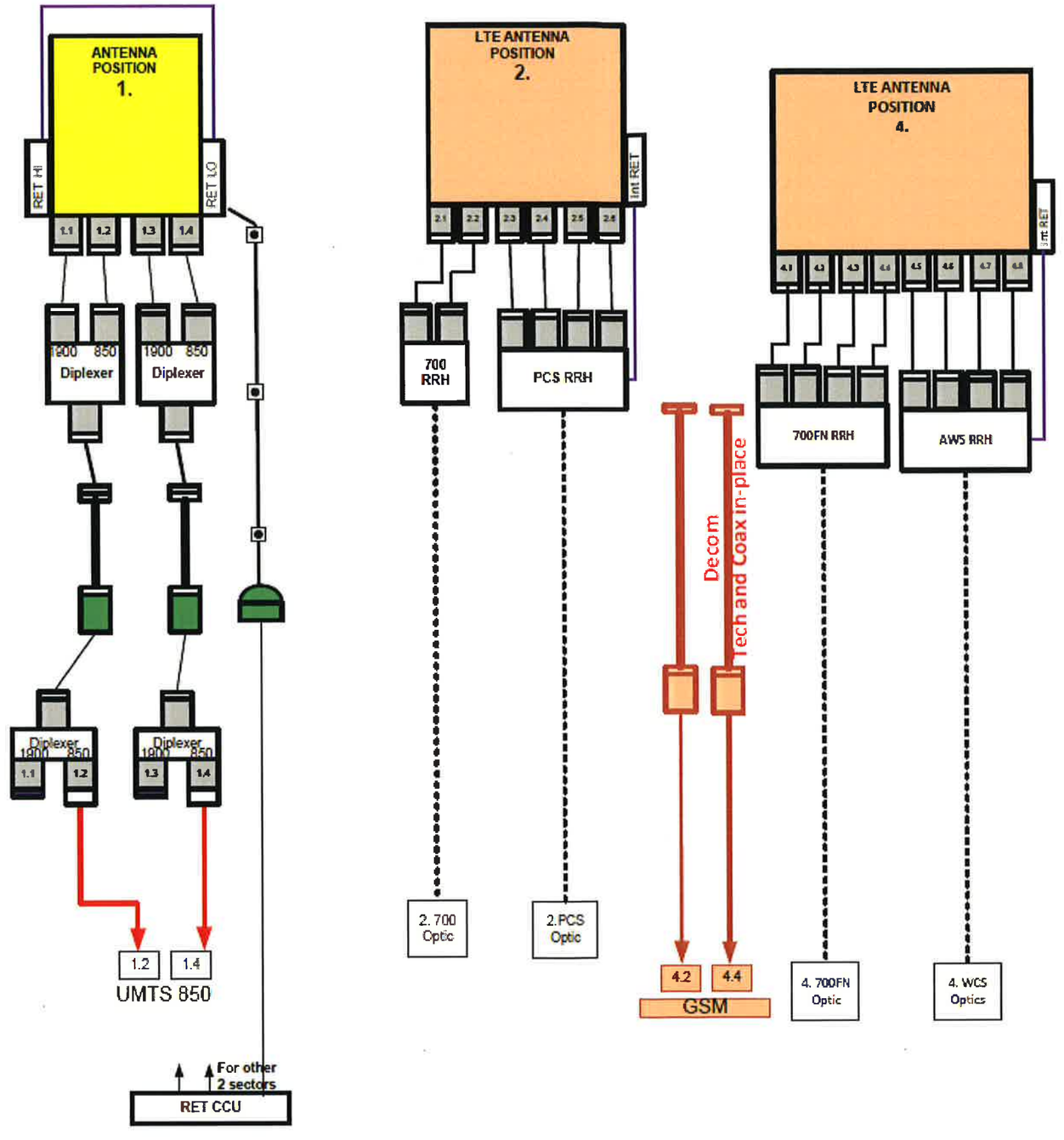
STATE OF MARYLAND
JOHN W. KELLY
PROFESSIONAL ENGINEER
12/18/17

SHEET NUMBER:	REVISION:
G-1	2



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MONTGOMERY VILLAGE

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B&T ENGINEERING, INC.

SHEET NUMBER: RF-1

REVISION: 2

STEP 1: ENTER QUANTITIES OF EQUIPMENT & DC OPERATING VOLTAGE:

STEP 2: ENTER DC PLANT TYPE FROM DROP-DOWN MENU:

GENERIC - ANY +24VDC PLANT

+24V PRIMARY DC PLANT SPECIFIED

(DC PLANT CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)

STEP 2A: THIS STEP ONLY SHOWN IF "GENERIC" DC PLANT PLANT TYPE HAS BEEN SELECTED:

	125		8
	10		2

* ENTER 0 FOR SLOT VALUES TO BYPASS SLOT QUANTITY CHECK ON DC PLANT

THIS STEP ONLY SHOWN IF TYCO GPS2424 DC PLANT PLANT TYPE HAS BEEN SELECTED:

STEP 3: DO YOU WANT TO CONFIGURE A STANDARD STAND-ALONE DC CONVERTER SYSTEM? Y

NOTE: IF YOU SELECT "Y" ANY INTEGRATED DC PLANT CONVERTER OPTIONS WILL BE BYPASSED

SELECT A STANDARD STAND-ALONE CONVERTER SYSTEM FROM THE DROP-DOWN LIST:

ALPHA STD 24V to 48V DC CONVERTER SYSTEM (NEQ.13289)

(CONVERTER CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)

STEP 4: ENTER INDOOR SITE BUILDING/SHELTER DATA:

(Square footage used for interior AC lighting LOAD calculation)

SELECT SITE BUILDING TYPE & SIZE: OTHER

SPECIFY TOTAL FLOOR SPACE (SQUARE FEET): 250

STEP 5: ENTER SITE HVAC SYSTEM DATA:

SPECIFY INDIVIDUAL HVAC UNIT SIZE (TONS): 5 SPECIFY QUANTITY: 2

DOES SITE HAVE ADDITIONAL HVAC (DIFFERENT SIZE)? N

ARE THERE SITE HVAC HEATING UNITS? N

TOTAL SPECIFIED SITE HVAC: 10-TONS ESTIMATED HVAC REQUIREMENT: TWO 4-TON UNITS

CONFIGURATION (STEP 1) INDICATES TOTAL OF: 0 40W; 3 60W; 0 80W; & 0 120W REMOTE HEADS DEPLOYED (990 WATTS)

IF ALL REMOTE HEADS ARE EXTERNAL TO HVAC SPACE: REVISED HVAC TWO 4-TON UNITS

STEP 6: ENTER SITE STATIONARY GENERATOR DATA:

DOES SITE HAVE A STATIONARY GENERATOR? N

ESTIMATED CAPACITY REQUIRED: 48 KW (NO SITE GENERATOR)

STEP 7: ENTER SITE BATTERY CONFIGURATION DATA:

SELECT SINGLE STRING BATTERY CAPACITY (AH): 1400

SPECIFY TOTAL QUANTITY OF BATTERY STRINGS: 2

TOTAL SITE BATTERY CAPACITY (AH): 2800

NOTE: NON-STANDARD BATTERY CAPACITY HAS BEEN SPECIFIED

(4) 4/0 CONNECTION CABLES PER POLARITY ON EACH STRING ARE REQUIRED

ESTIMATED BATTERY RESERVE TIME: 5.26 HOURS (NO SITE GENSET)

SITES WITH STATIONARY GENSETS REQUIRE MINIMUM 2 HOURS - ALL OTHERS A MINIMUM OF 4 HOURS

SITE POWER CALCULATION TOOL - VERSION 3.0 - DECEMBER, 2013 R. BADGERO

ANY QUESTIONS PLEASE CONTACT RICK BADGERO (RB6620@ATT.COM)

DC POWER SUMMARY

- EXISTING RECTIFIERS – 8
- REQUIRED RECTIFIERS – 6
- EXISTING CONVERTERS – 4
- REQUIRED CONVERTERS – 7
- INSTALL (1) NEW ARGUS CONVERTER SHELF WITH (3) –48V CONVERTERS

NOTE: LOAD VALUES FOR ANY EQUIPMENT CAN BE USER SPECIFIED ON THE POWER CONSUMPTION WORKSHEET - USER CHANGES TO DEFAULT LOAD VALUES ARE HIGHLIGHTED IN BRIGHT YELLOW

	GSM 2G EQUIPMENT		
0	Ericsson 2206	24	0
0	(FUTURE)		0
0	Ericsson 2109 MICROCELL	24	0
0	Ericsson 2308 MICROCELL	24	0
0	(FUTURE)		0
0	Nokia (Ultrasite)	24	0
0	Nokia MetroSITE (MICROCELL)	24	0
0	(FUTURE)		0
0	Nortel S8000 (4 TRX - HePA 850)	24	0
0	Nortel S8000 (8 TRX - HePA 850)	24	0
0	Nortel S8000 (4 TRX - HePA 1900)	24	0
0	Nortel S8000 (8 TRX - HePA 1900)	24	0
0	Nortel S12000 (6 TRX - HePA 850)	24	0
0	Nortel S12000 (12 TRX - HePA 850)	24	0
0	Nortel S12000 (6 TRX - HePA 1900)	24	0
0	Nortel S12000 (12 TRX - HePA 1900)	24	0
0	(FUTURE)		0
0	Siemens ECU	48	0
0	Siemens ECU Extension Cabinet	48	0
0	Siemens FCU (24 Radios)	48	0
0	Siemens FCU Extension Cabinet	48	0
0	Siemens MICROCELL	48	0
0	(FUTURE)		0

	LTE 4G & Multi-Std EQUIPMENT		
0	A-LU 9926 LTE BBU (w/max. 3 eCEM-u)	48	0
0	(FUTURE)		0
3	A-LU 9442 LTE Remote Head (60W)	48	990
0	A-LU Remote Head (80W)	48	0
0	Ericsson LTE IRBS6601 BBU - 1 DUL	48	0
0	Ericsson LTE RBS6601 BBU - 2 DUL	48	0
0	Ericsson W/CDMA RBS6601 - 1 DUW	48	0
0	(FUTURE)		0
0	Ericsson LTE RRUS Remote Head (60W)	48	0
0	EricssonRemote Head (80W)	48	0
0	Ericsson RRUS12 (120W)	48	0
0	Ericsson RRUSA2	48	0
0	Ericsson LTE RBS6601 BBU - 1DUS	48	0
0	Ericsson LTE RBS6601 BBU - 2DUS	48	0
0	Ericsson AIR 21 (60W)	48	0
0	(FUTURE)		0
0	(FUTURE)		0

	UMTS 3G EQUIPMENT		
0	A-LU MACRO NodeB (3S1C - 40W)	24	0
1	A-LU MACRO NodeB (3S2C - 40W)	24	4090
0	A-LU MACRO NodeB (3S3C - 40W)	24	0
0	A-LU MACRO NodeB (3S4C - 40W)	24	0
0	A-LU MACRO NodeB (3S5C - 40W - 2 CAB)	24	0
0	(FUTURE)		0
0	A-LU MICRO NodeB	24	0
0	(FUTURE)		0
0	A-LU 9396 d2U Distributed NodeB MU	48	0
0	A-LU 9341 Remote Head (40W)	48	0
0	A-LU Remote Head (60W)	48	0
0	A-LU Remote Head (80W)	48	0
0	Ericsson RBS3206 NodeB 3S1C - 1 CAB	48	0
0	Ericsson RBS3206 NodeB 3S2C - 1 CAB	24	0
	NON-OBIF Ericsson 3rd, 4th & 5th Carrier		0
0	Ericsson RBS3206 NodeB 3S3C - 2 CAB	48	0
0	Ericsson RBS3206 NodeB 3S4C - 2 CAB	48	0
0	Ericsson RBS3206 NodeB 3S5C - 3 CAB	48	0
	OBIF Ericsson 3rd, 4th & 5th Carrier		0
0	Ericsson RBS3206 NodeB 3S3C - 1 CAB	48	0
	(3S3C w/OBIF & 3 60W RRUS)	48	0
	Ericsson RBS3206 NodeB 3S4C - 1 CAB	48	0
	(3S4C w/OBIF & 6 60W RRUS)	48	0
0	Ericsson RBS3206 NodeB 3S5C - 2 CAB	48	0
	(3S5C w/OBIF & 6 60W RRUS)	48	0
0	(FUTURE)		0
0	Ericsson 3303 MICRO NodeB	24	0
0	(FUTURE)		0
0	Ericsson RBS3418 Distributed NodeB MU	48	0
0	Ericsson RRU (40W)	48	0
0	Ericsson RRU (60W)	48	0
0	Ericsson RRU (80W)	48	0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0

	USER SPECIFIED AC EQUIPMENT		
1	Telco Receptacle	120	0.72
1	Receptacle #1	120	0.18
1	Receptacle #2	120	0.18
1	Receptacle #3	120	0.18
1	Interior Lidhtings	120	0.84
1	Exterior Lightings	120	0.3
0			0
0			0
0			0
0			0
		TOTAL USER SPECIFIED KVA:	2.4

TOTAL 120VAC AMPS: 20

TOTAL 240VAC AMPS: 0

	ANCILLARY CELL SITE EQUIPMENT		
1	A-LU 7705 SIAD	24	100
0	(FUTURE)		0
0	A-LU MPR-9500 MW Service Switch - MSS	48	0
0	A-Lu MPR-9500 MW Outdoor Unit - ODU	48	0
0	A-Lu MPR-9500 MW MPT-HL (Indoor)	48	0
0	(FUTURE)	48	0
0	Cisco MWR-2941 SIAD	24	0
0	(FUTURE)		0
0	Cisco 15310 EOS (SONET) MUX	48	0
0	Cisco 15454 MSP (MW Ring Config.)	48	0
0	(FUTURE)		0
1	Tru-Position LMU (E911)	24	150
0	DC Free Air (per HVAC unit)	48	0
1	GENERIC Ethernet NID	24	75
0	GENERIC Hydrogen Detector	24	0
1	GENERIC RET Controller	24	75
0	GENERIC RXAIT	24	0
0	GENERIC Smoke Detector	24	0
0	GENERIC TMA System	48	0
0	GENERIC Tower Lighting (DC)	48	0
0	NG480	48	0
0	Cisco 2911	48	0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0
0	(FUTURE)		0

	TX RF AMP (MCPA or SCPA) EQPT.		
0	Andrew (12 module mcpa FRAME)	24	0
0	Andrew 135 Watt Module	24	0
0	(FUTURE)		0
0	Powerwave 12 module mcpa FRAME)	24	0
0	Powerwave 90 Watt Module	24	0
0	Powerwave 120 Watt Module	24	0
0	Powerwave 180 Watt Module	24	0
0	(FUTURE)		0
0	CCI 125 Watt DAB SCPA Module	24	0
0	CCI 125 Watt DAC SCPA Module	24	0
0	(FUTURE)		0

	USER SPECIFIED DC EQUIPMENT		
3	RRH2x60-1900A-4R	48	990
0	RRH4x25-WCS-4R	48	0
0	B25 RRH4x30-4R	48	0
0	9412 Heaters	48	0
3	B66A RRH4x45	48	2640
1	FSM4 (5C + FIRSTNET)	48	593
3	B14 Firstnet RRH	48	2208
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
0		48	0
		TOTAL USER SPECIFIED WATTS:	6431
		TOTAL +24V (27V) AMPS:	0
		TOTAL -48V (54V) AMPS:	119.1

+24V PRIMARY VOLTAGE DC PLANT SPECIFIED			
+24VDC EQUIPMENT LOAD:	4490 WATTS	=	167 AMPS at +24V
-48VDC EQUIPMENT LOAD:	7421 WATTS	=	138 AMPS at -48V
297 AMPS (8011 WATTS) AT PRIMARY 24V REQUIRED TO SUPPORT 48V DC CONVERTER SYSTEM			
TOTAL PRIMARY 24V LOAD:	12501 WATTS	=	463 AMPS at +24V

(DC PLANT CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)		
DC PLANT: GENERIC - ANY +24VDC PLANT		
+24V RECTIFIERS REQUIRED (N+1):	6	
+24V RECTIFIER SLOTS:	8	
CONV. TYPE: ALPHA STD 24V to 48V DC CONVERTER SYSTEM (NEQ.13289)		
-48V CONVERTERS REQUIRED:	5	INSUFFICIENT SLOTS
-48V COVERTER SLOTS:	4	REQUIREMENTS EXCEED SLOT CAPACITY
ESTIMATED BATTERY RESERVE TIME		
2 1400 AH 24V STRINGS =	5.26 HOURS	(4 HOUR MINIMUM BATTERY RESERVE)

ESTIMATED SITE MAX. AC LOAD (AMPS):	197.13 AMPS
ESTIMATE 200A SERVICE SUFFICIENT	

	48 KW
ON SITE GENERATOR CAPACITY:	0 KW
(NO ON-SITE GENERATOR)	

RECOMMENDED HVAC SYSTEM:	TWO 4-TON
SPECIFIED SITE TOTAL HVAC CAPACITY:	10-TONS
ESTIMATE SUFFICIENT HVAC CAPACITY	

(1) POWER LOAD CALCULATIONS

SCALE: N.T.S.

B+T GRP

AT&T

JACOBS

7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

17001 OVERHILL ROAD
DERWOOD, MD 20855
EXISTING MONOPOLE

PROJECT NO: 115507.001.01

CHECKED BY: MEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
A	10/11/17	SMM	PRELIMINARY REVIEW
0	11/02/17	BDH	CONSTRUCTION
1	11/08/17	BDH	CONSTRUCTION
2	12/18/17	SMM	CONSTRUCTION

B&T ENGINEERING, INC.

STATE OF MARYLAND
W. KELL
PROFESSIONAL ENGINEER
12/18/17

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: RF-2

REVISION: 2

115507.001_10004774_Montgomery-Village.dwg – Sheet:RF-2 – User: mhildebrand – Dec 18, 2017 – 2:18pm

EXISTING ARGUS –48V DISTRIBUTION PANEL

DESCRIPTION								(N) 2100 AWS RRH SECTOR G	(N) 2100 AWS RRH SECTOR B	(N) 2100 AWS RRH SECTOR A	(E) 1900 LTE RRH SECTOR G	(E) 1900 LTE RRH SECTOR B	(E) 1900 LTE RRH SECTOR A	(E) 700 LTE RRH SECTOR G	(E) 700 LTE RRH SECTOR B	(E) 700 LTE RRH SECTOR A	FUTURE LTE BBU	700/1900 LTE BBU
BRKR (A)								25	25	25	15	15	15	15	15	15	20	20
POSITION	CB1	CB2	CB3	CB4	CB5	CB6	CB7	CB8	CB9	CB10	CB11	CB12	CB13	CB14	CB15	CB16	CB17	CB18

NEW ARGUS –48V DISTRIBUTION PANEL

DESCRIPTION																(N) FIRSTNET RRH SECTOR G	(N) FIRSTNET RRH SECTOR B	(N) FIRSTNET RRH SECTOR A
BRKR (A)																20	20	20
POSITION	CB1	CB2	CB3	CB4	CB5	CB6	CB7	CB8	CB9	CB10	CB11	CB12	CB13	CB14	CB15	CB16	CB17	CB18

1 DC PANEL SCHEDULE
SCALE: N.T.S.

B+T GRP

AT&T

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7150 STANDARD DRIVE
HANOVER, MD 21076
PHONE: (410) 712-4174

USID: 3902
FA: 10004774

MONTGOMERY VILLAGE

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DERWOOD, MD 20855

EXISTING MONOPOLE

PROJECT NO:	115507.001.01
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B&T ENGINEERING, INC.

STATE OF MARYLAND
JOHN W. KELLY
REGISTERED
PROFESSIONAL ENGINEER
12/18/17

SHEET NUMBER: RF-3
REVISION: 2