

KENNETH C. BALDWIN

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Also admitted in Massachusetts  
and New York

November 15, 2022

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

**Notice of Exempt Modification – Facility Modification  
185 Academy Road, Cheshire, Connecticut**

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) intervened in the Diamond Towers V, LLC (“Diamond”) tower application, Docket No. 498, filed with the Council on March 16, 2021. The Council approved Docket No. 498 on August 13, 2021 including Cellco’s request to install certain antennas and remote radio heads (“RRHs”) on the approved tower. The Council’s Decision and Order for Docket No. 498 is included in [Attachment 1](#).

Since the Docket No. 498 approval, Cellco has decided to install different model antennas and RRHs than originally approved and now intends to install three (3) Samsung MT6407-77A antennas, three (3) MX06FIT665 antennas and three (3) MX10FIT665 antennas on its proposed t-arm antenna mounts. Cellco also intends to install nine (9) new remote radio heads (“RRHs”) behind its antennas. A set of project plans showing Cellco’s proposed facility modifications and new antennas and RRH specifications are included in [Attachment 2](#).

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Cheshire’s Chief Elected Official and Land Use Officer.

Melanie A. Bachman, Esq.  
November 15, 2022  
Page 2

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. The antennas will be installed on Cellco's approved T-arm mounts.
2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The installation of Cellco's new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Cellco's far field tables for Cellco's facility are included in Attachment 3. The modified facility will be capable of providing Cellco's 5G wireless service.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. According to the attached Structural Analysis ("SA") and Mount Analysis ("MA"), the existing tower, tower foundation and antenna mounts can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4.

A copy of the parcel map and Property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 5.

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

Melanie A. Bachman, Esq.  
November 15, 2022  
Page 3

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Kenneth C. Baldwin

Enclosures

Copy to:

Sean M. Kimball, Cheshire Town Manager  
Michael Glidden, Town Planner  
Cheshire United Methodist Church, Property Owner  
Tim Parks, Verizon Wireless

# **ATTACHMENT 1**

<p><b>DOCKET NO. 498</b> – Diamond Towers V, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 185 Academy Road (Route 68/Route 70), Cheshire, Connecticut.</p>	<p>} Connecticut          } Siting          } Council</p>
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August 12, 2021

**Decision and Order**

Pursuant to Connecticut General Statutes §16-50p, and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment, ecological balance, public health and safety, scenic, historic, and recreational values, agriculture, forests and parks, air and water purity, and fish, aquaculture and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Diamond Towers V, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 185 Academy Road, Cheshire, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council’s record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopine at a height of 95 feet above ground to provide the proposed wireless services, sufficient to accommodate the antennas of Cellco Partnership d/b/a Verizon Wireless (Cellco) and other entities, both public and private. The height of the “tree branches” at the top of the monopine structure shall not exceed 99 feet above ground level and the density and configuration of the “tree branches” shall conceal the antennas. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.
  
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a) A certified letter from a wireless telecommunications carrier with a firm commitment to install associated wireless equipment at the facility upon completion of construction;
  - b) final site plan(s) for development of the facility that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code and include specifications for the tower, tower foundation, antennas and equipment compound including, but not limited to, fence design, landscaping, ground equipment, access road, utility installation and emergency backup generator;
  - c) the tower shall be designed with a yield point to ensure that the tower setback radius remains within the boundaries of the subject property;
  - d) construction plans for site clearing, grading, landscaping, water drainage and stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
  - e) construction schedule including hours and days of the week for construction activities developed in consultation with the property owner; and

- f) A Fuel Spill Response Plan.
3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
  4. Upon the establishment of any new federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
  5. The Certificate Holder shall provide the Council with a copy of necessary permits from any other state or federal agency with concurrent jurisdiction prior to the commencement of construction.
  6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
  7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
  8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Cheshire.
  9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.
  10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.
  11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

12. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.
13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.
14. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.
15. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.
16. This Certificate may be surrendered by the Certificate Holder upon written notification and acknowledgment by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated April 8, 2021, and notice of issuance published in The Cheshire Herald.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

# **ATTACHMENT 2**



# verizon

## WIRELESS SERVICES FACILITY

**CHESHIRE EAST CT  
185 ACADEMY ROAD  
CHESHIRE, CT 06410**

### DRAWING INDEX

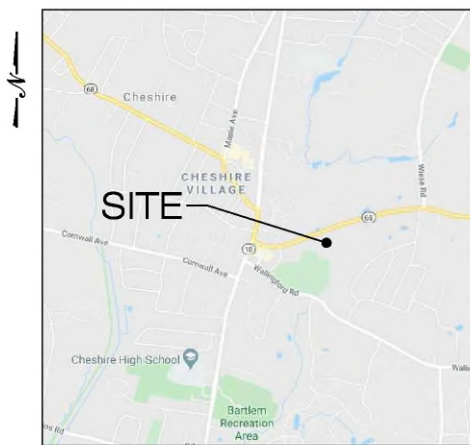
- T-1 TITLE SHEET
- SP-1 SITE PLAN
- C-1 COMPOUND PLAN & WEST ELEVATION
- C-2 EQUIPMENT AREA PLAN & DETAILS
- C-3 EQUIPMENT DETAILS
- M-1 MECHANICAL PLAN, DETAILS & NOTES
- S-1 STRUCTURAL PLANS & DETAILS
- E-1 ELECTRICAL PLAN, SCHEDULES & NOTES
- E-2 SCHEMATIC ONE-LINE RISER DIAGRAM, DETAILS & NOTES
- E-3 EQUIPMENT GROUNDING PLANS & NOTES
- E-4 GROUNDING DETAILS
- B-1 RF BILL OF MATERIALS & EQUIPMENT SPECIFICATIONS
- N-1 NOTES & SPECIFICATIONS

### SITE DIRECTIONS

**START: 20 ALEXANDER DRIVE  
WALLINGFORD, CONNECTICUT 06492**

**END: 185 ACADEMY ROAD  
CHESHIRE, CT 06410**

1. TAKE ALEXANDER DR. AND BARNES INDUSTRIAL PARK RD. TO CT-68W 0.8 MI
2. HEAD SOUTH TOWARD ALEXANDER DR 371 FT
3. TURN RIGHT 0.1 MI
4. TURN RIGHT TOWARD ALEXANDER DRIVE 72 FT
5. TURN RIGHT TOWARD ALEXANDER DRIVE 167 FT
6. TURN RIGHT ONTO ALEXANDER DRIVE 0.3 MI
7. TURN LEFT AT 181 CROSS STREET ONTO CT-68 W 0.1 MI
8. TURN LEFT ONTO CT-68W/CT-70 W (DESTINATION ON THE LEFT) 0.8 MI



**LOCATION MAP**  
SCALE: 1" = 1000'

### SITE INFORMATION

VZ SITE NAME: CHESHIRE EAST CT  
VZ PROJ. FUZE I.D.: 15372347  
VZ LOCATION CODE: 470656  
VZ PROJECT CODE: 20171649710

LOCATION: 185 ACADEMY ROAD  
CHESHIRE, CT 06410

PROJECT SCOPE: INSTALLATION CONSISTS OF SIX (6) PANEL ANTENNAS, THREE (3) SAMSUNG MT8407-77A ANTENNAS W/ INTEGRATED RRHs, SIX (6) DUAL-BAND REMOTE RADIO HEADS (RRHs) & ONE (1) 120VP MOUNTED TO A PENDING 96± AGL MONOPINE TOWER (BY OTHERS) IN ADDITION TO BASE EQUIPMENT CABINETS, 50KW PROPANE EMERGENCY STANDBY POWER GENERATOR & A 1,000 GAL. PROPANE TANK W/ PROTECTIVE ICE CANOPY LOCATED AT GRADE WITHIN PENDING (2,100± SF) FENCED COMPOUND AREA.

MAP/LOT: 58-27

LATITUDE: 41° 29' 53.7872"N (41.49827422°N)

LONGITUDE: 72° 53' 39.3902"W (72.89427505°W)

GROUND ELEVATION: 242.7± AMSL

PROPERTY OWNER: CHESHIRE UNITED METHODIST CHURCH  
185 ACADEMY ROAD  
CHESHIRE, CT 06410

TOWER OWNER: DIAMOND COMMUNICATIONS LLC  
210 MOUNTAIN AVENUE  
UNIT 619  
SPRINGFIELD, NJ 07081

APPLICANT: CELCO PARTNERSHIP  
d/b/a VERIZON WIRELESS  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

LEGAL/REGULATORY COUNSEL: ROBINSON & COLE, LLP  
KENNETH C. BALDWIN, ESQ.  
280 TRUMBULL STREET  
HARTFORD, CT 06103

ENGINEER CONTACT: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
567 VALUXHALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06385  
860 663-1697

COORDINATES & GROUND ELEVATION INDICATED HEREIN WERE ESTABLISHED FROM A TOPOGRAPHIC LAND SURVEY, AS PREPARED BY MARTIN SURVEYING ASSOCIATES, LLC, INC. DATED MAY 05, 2020.

Cellco Partnership d/b/a  
**verizon**

20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**ALL-POINTS  
TECHNOLOGY CORPORATION**

567 VALUXHALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06385 PHONE: (860) 663-1697  
WWW.ALLPOINTS.COM FAX: (860) 663-0836

CONSTRUCTION DOCUMENTS		
NO.	DATE	REVISION
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1	10/31/22	REVISED: JRM
2		
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5		
6		



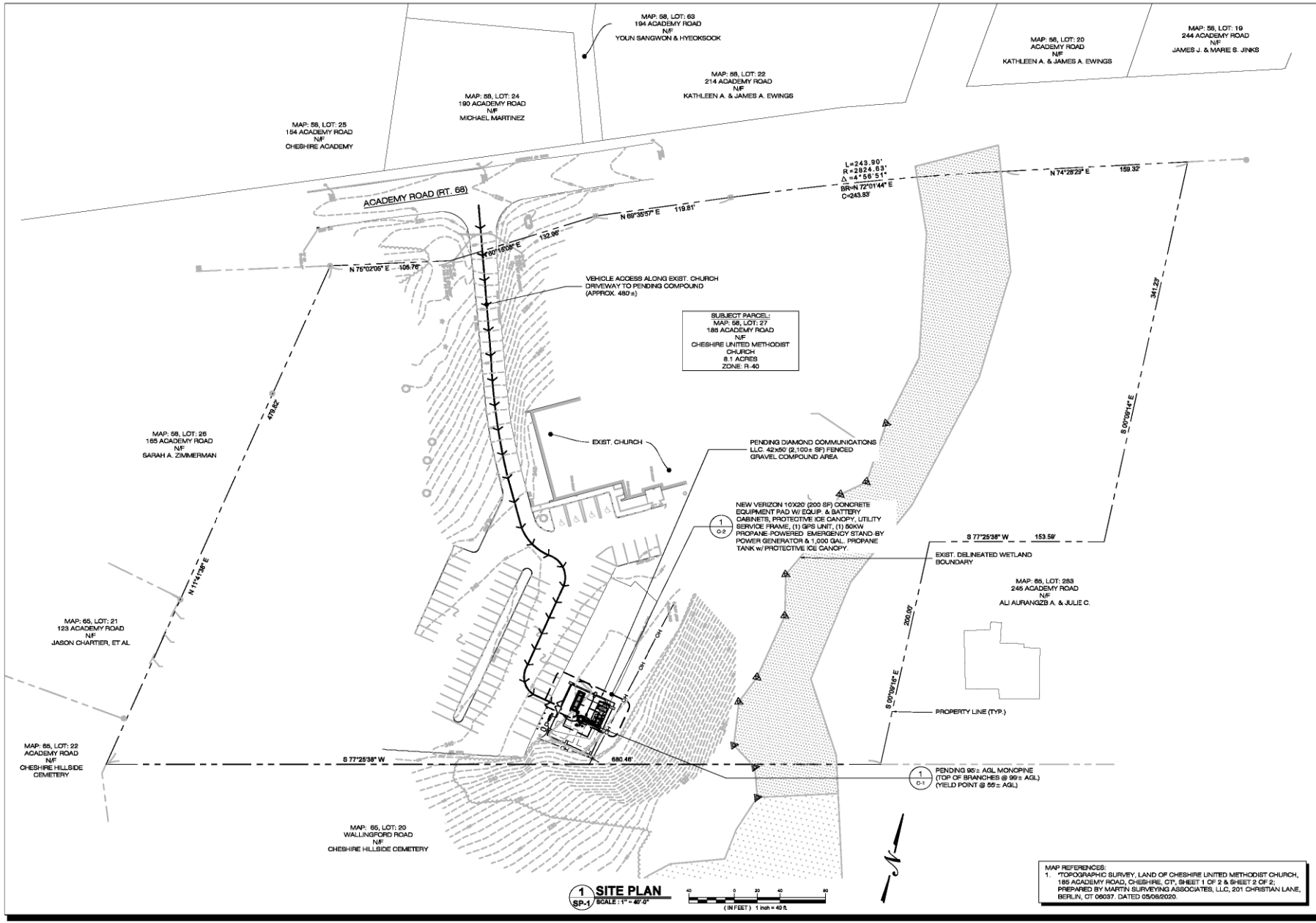
DESIGN PROFESSIONALS OF RECORD  
PROF: MICHAEL S. TRODDEN P.E.  
CONTR: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 567 VALUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CHESHIRE UNITED METHODIST CHURCH  
ADDRESS: 185 ACADEMY ROAD CHESHIRE, CT 06410

**CHESHIRE EAST CT**  
SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06410  
APT FILING NUMBER: CT141089950  
DRAWN BY: DRA  
CHECKED BY: JRM  
DATE: 10/05/22  
VZW PROJECT CODE: 20171649710  
VZW LOCATION CODE: 470656  
VZW FUZE ID: 15372347

SHEET TITLE:  
**TITLE SHEET**

SHEET NUMBER:  
**T-1**



Cellco Partnership d/b/a  
**verizon**  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**ALL-POINTS**  
TECHNOLOGY CORPORATION  
567 VAUXHALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06385 PHONE: (860) 463-9897  
WWW.ALLPOINTSCT.COM FAX: (860) 463-9836

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**STATE OF CONNECTICUT**  
**MICHAEL S. TRODDEN**  
33313  
**LICENSED PROFESSIONAL ENGINEER**

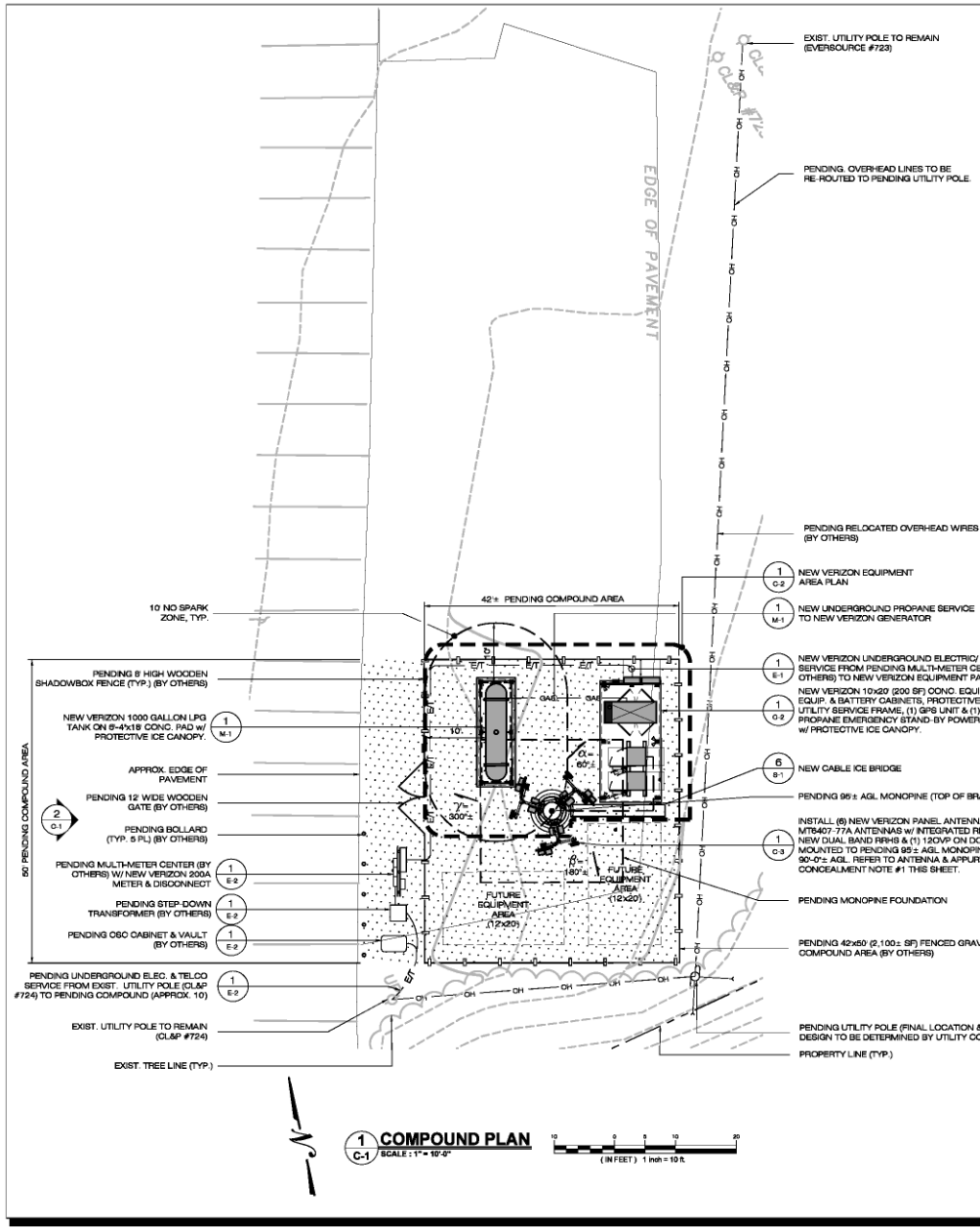
**DESIGN PROFESSIONALS OF RECORD**  
PRF: MICHAEL S. TRODDEN P.E.  
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

**OWNER:** CHESHIRE UNITED METHODIST CHURCH  
**ADDRESS:** 185 ACADEMY ROAD CHESHIRE, CT 06416

**CHESHIRE EAST CT**  
**SITE:** 185 ACADEMY ROAD  
**ADDRESS:** CHESHIRE, CT 06416  
**APT FILING NUMBER:** CT141NB0950  
**DRAWN BY:** DRA  
**DATE:** 10/05/22 **CHECKED BY:** JRM  
**VZW PROJECT CODE:** 20171649710  
**VZW LOCATION CODE:** 470656  
**VZW FLZE ID:** 15372347

**SHEET TITLE:**  
**SITE PLAN**

**SHEET NUMBER:**  
**SP-1**



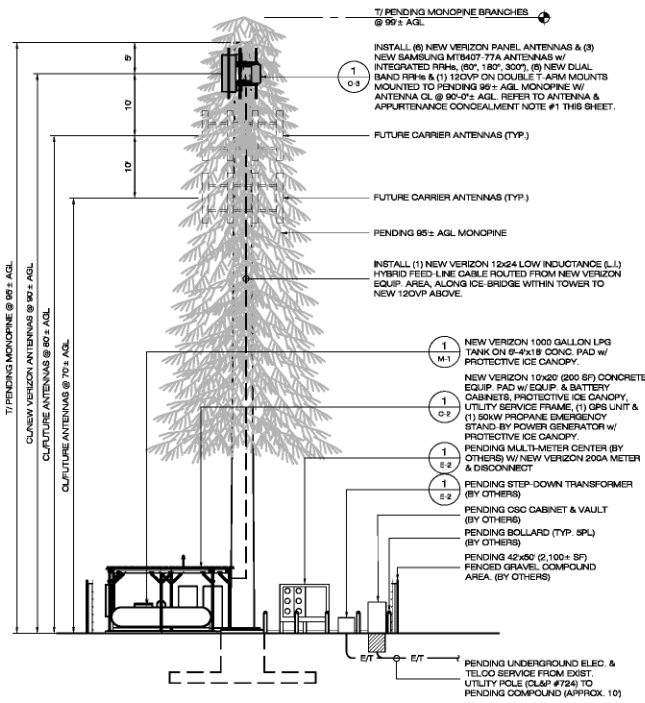
**1 COMPOUND PLAN**  
C-1 SCALE: 1" = 10'-0"  
(IN FEET) 1 in. = 10 ft.

**EXCAVATION & TRENCHING NOTES:**

- CONTRACTOR SHALL ENGAGE THE SERVICES OF AN UNDERGROUND UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND UTILITIES, GROUNDING & EQUIPMENT IN THE TRENCHING AREA TO AVOID ANY DAMAGE.
- HAND EXCAVATE WITHIN 6" OF EXIST. UNDERGROUND UTILITIES (V.I.F.) MAINTAIN 18" MIN. CLEARANCE.
- CONTRACTOR TO COORDINATE TRENCHING OPERATIONS W/ OWNER AND/OR MANAGEMENT COMPANY SO AS TO MINIMIZE DISRUPTIONS TO THE EXIST. PROPERTY OPERATIONS.

**ANTENNA & APPURTENANCE CONCEALMENT NOTE:**

- PAINT ANTENNAS, MOUNTS, CABLES & APPURTENANCES TO MATCH MONOPINE. INSTALL VALMONT BOARDS ON ALL NON LSE ANTENNAS. PAINT LSE ANTENNAS TO MATCH MONOPINE IN ACCORDANCE W/ LSE MANUFACTURER INSTALLATION MANUAL. REQUIREMENTS. COORDINATE W/ VERIZON CONSTRUCTION MANAGER & OWNER.



**2 WEST ELEVATION**  
C-1 SCALE: 1" = 10'-0"  
(IN FEET) 1 in. = 10 ft.

**STRUCTURAL ANALYSIS NOTE:**

- REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION P.C., MARKED REV. DATED OCTOBER 31, 2022, AVAILABLE UNDER SEPARATE COVER.

**MOUNT ANALYSIS NOTE:**

- REFER TO MOUNT ANALYSIS PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION P.C., MARKED REV. DATED OCTOBER 31, 2022, AVAILABLE UNDER SEPARATE COVER.

Cellco Partnership d/b/a  
**verizon**  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**ALL-POINTS TECHNOLOGY CORPORATION**  
567 VALMALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06385 PHONE: (860) 483-9887  
WWW.ALLPOINTS TECH.COM FAX: (860) 483-9836

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**DESIGN PROFESSIONALS OF RECORD**

PROF: MICHAEL S. TRODDEN P.E.  
CONSP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADDR: 567 VALMALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CHESHIRE LIMITED  
METHUEN CHURCH ADDRESS: 185 ACADEMY ROAD CHESHIRE, CT 06416

**CHESHIRE EAST CT**

SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06416

APT FILING NUMBER: CT14189950

DATE: 10/05/22 CHECKED BY: JRM

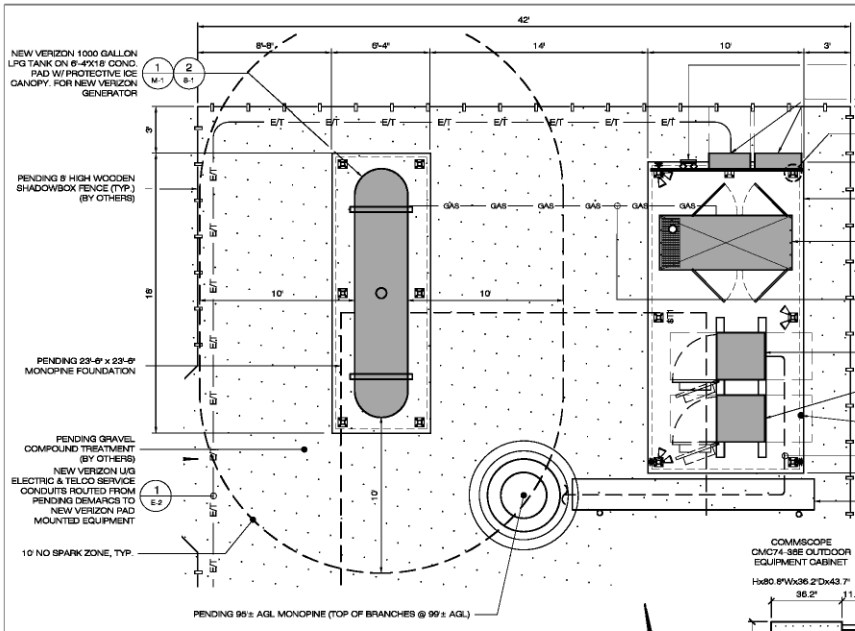
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VZW FLZE ID: 18372347

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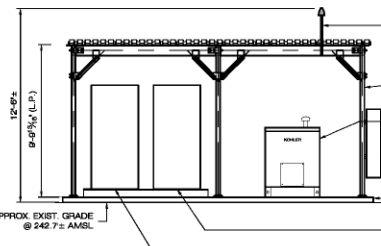
**COMPOUND PLAN & WEST ELEVATION**

**SHEET NUMBER:**

**C-1**



- 2 NEW VERIZON MAIN GROUND BAR (MGB)
- 1 NEW NEMA 3R INTEGRATED LOAD CENTER W/ AT'S, TVSS, 30kVA TELCO HOFFMAN BOX, & ASSOC. UTILITIES MOUNTED ON UNISTRUT SUPPORT FRAME
- 6 SERVICE FRAME CONNECTION DETAIL, TYP.
- 1 NEW VERIZON 10x20' (200 SF) CONCRETE EQUIPMENT PAD W/ PROTECTIVE ICE CANOPY, UTILITY SERVICE FRAME & (1) GRS UNIT.
- 1 NEW VERIZON 80kW PROPANE EMERGENCY STAND-BY POWER GENERATOR.
- 1 NEW UNDERGROUND PROPANE SERVICE TO NEW VERIZON GENERATOR
- 3-5 NEW COMMSCOPE EQUIPMENT CABINET ON STEEL BASE FRAME
- 3-5 NEW COMMSCOPE BATTERY CABINET ON STEEL BASE FRAME
- 6 NEW GRS UNIT MOUNTED TO EQUIPMENT FRAME
- 7 NEW VERIZON 12x24 LOW INDUCTANCE HYBRID CABLE SUPPORTED AT US OF ICE CANOPY
- 1 NEW VERIZON CABLE ICE BRIDGE W/ (1) NEW VERIZON 12x24 LOW INDUCTANCE (L.I.) HYBRID FEED-LINE CABLE ROUTED FROM NEW VERIZON EQUIPMENT PAD UP INTERIOR OF MONOPINE TOWER TO VERIZON EQUIPMENT ABOVE.

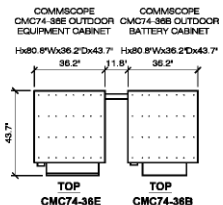


**EASTERN ELEVATION**  
2 C-2 SCALE: 1/4" = 1'-0"

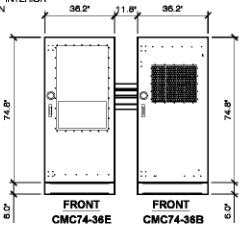
- 5 NEW GRS UNIT MOUNTED TO EQUIPMENT FRAME
- 6 NEW UTILITY FRAME MOUNTED TO SUPPORT POSTS
- 1 NEW VERIZON 80kW PROPANE EMERGENCY STAND-BY POWER GENERATOR
- 1 NEW NEMA 3R INTEGRATED LOAD CENTER W/ AT'S, TVSS, 30kVA TELCO HOFFMAN BOX, & ASSOC. UTILITIES MOUNTED ON UNISTRUT SUPPORT FRAME
- 1 NEW VERIZON 10x20' (200 SF) CONCRETE EQUIPMENT PAD W/ PROTECTIVE ICE CANOPY, UTILITY SERVICE FRAME & (1) GRS UNIT.
- 3-5 NEW COMMSCOPE EQUIPMENT CABINET ON STEEL BASE FRAME
- 3-5 NEW COMMSCOPE BATTERY CABINET ON STEEL BASE FRAME

**1 EQUIPMENT AREA PLAN**  
C-2 SCALE: 1/4" = 1'-0"

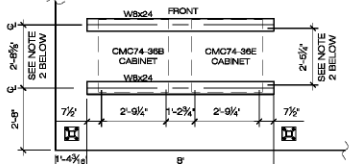
- EXCAVATION & TRENCHING NOTES:**
- CONTRACTOR SHALL ENGAGE THE SERVICES OF AN UNDERGROUND UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND UTILITIES, GROUNDING & EQUIPMENT IN THE TRENCHING AREA TO AVOID ANY DAMAGE.
  - HAND EXCAVATE WITHIN 5' OF EXIST. UNDERGROUND UTILITIES (V.L.F.) MAINTAIN 18" MIN. CLEARANCE.
  - CONTRACTOR TO COORDINATE TRENCHING OPERATIONS W/ OWNER AND/OR MANAGEMENT COMPANY SO AS TO MINIMIZE DISRUPTIONS TO THE EXIST. PROPERTY OPERATIONS.



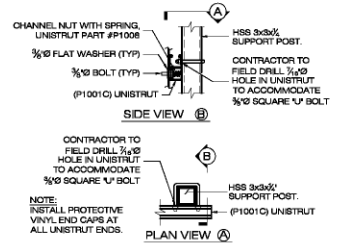
**3 OUTDOOR CABINET CMC74-38E & CMC74-38B PLAN VIEW**  
C-2 SCALE: 3/4" = 1'-0"



**4 OUTDOOR CABINET CMC74-36E & CMC74-36B ELEVATION VIEW**  
C-2 SCALE: 3/4" = 1'-0"



- NOTES:**
- FASTEN W/ BEAMS TO CONCRETE PAD W/ 3/4" HDG HILT KWIK BOLT 3 W/ 2" EMBEDMENT @ 24" O.C. MAX. (TAGGERED); MIN. 2" FROM W/ BEAM ENDS
  - COORDINATE W/ BEAM FLANGE SPACING W/ EQUIPMENT CABINET BOLTING PATTERN. MOUNT EQUIPMENT CABINETS TO DUNNAGE FRAME PER MANUFACTURER'S RECOMMENDATIONS
- 5 EQUIPMENT BOLTING PATTERN**  
C-2 SCALE: 1/2" = 1'-0"



**6 SERVICE FRAME CONN. DETAIL**  
C-2 SCALE: 1 1/2" = 1'-0"

Cellco Partnership d/b/a  
**verizon**  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**ALL-POINTS TECHNOLOGY CORPORATION**  
587 VALUETHALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06385 PHONE: (860) 463-9877  
WWW.ALLPOINTSCT.COM FAX: (860) 463-9836

**CONSTRUCTION DOCUMENTS**

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5		
6		



**DESIGN PROFESSIONALS OF RECORD**

PROF: MICHAEL S. TRODDEN, P.E.  
CENP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 587 VALUETHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CHESHIRE UNITED METHODIST CHURCH  
ADDRESS: 185 ACADEMY ROAD CHESHIRE, CT 06410

**CHESHIRE EAST CT**

SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06410

APT FILING NUMBER: CT141NB0950

DRAWN BY: DRA  
DATE: 10/05/22 CHECKED BY: JRM

VZW PROJECT CODE: 20171049710  
VZW LOCATION CODE: 470656  
VZW FLUZE ID: 15372347

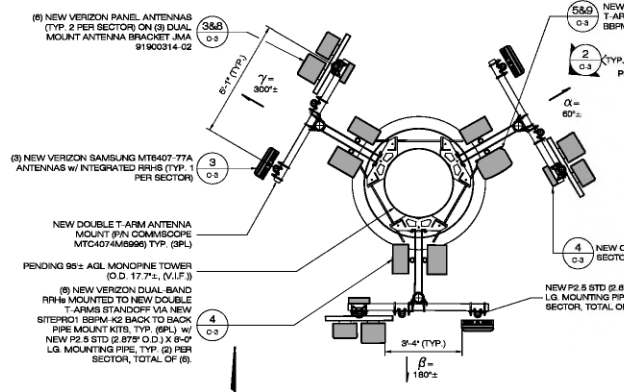
**SHEET TITLE:**

**EQUIPMENT AREA PLAN & DETAILS**

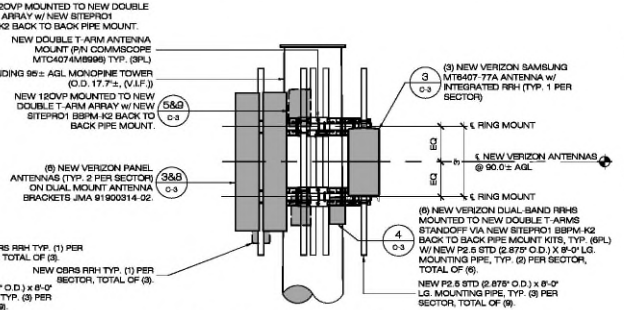
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**C-2**

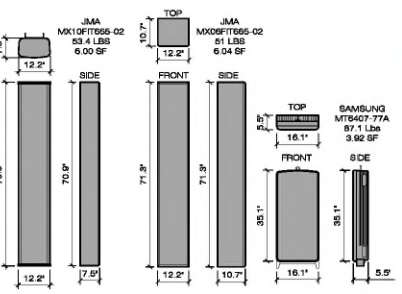
**ANTENNA & APPURTENANCE CONCEALMENT NOTE:**  
 1. PAINT ANTENNAS, MOUNTS, CABLING & APPURTENANCES TO MATCH MONOPINE. INSTALL VALMONT SOCKS ON ALL NON LBS ANTENNAS. PAINT LBS ANTENNAS TO MATCH MONOPINE IN ACCORDANCE W/ LBS MANUFACTURER INSTALLATION MANUAL REQUIREMENTS. COORDINATE W/ VERIZON CONSTRUCTION MANAGER & OWNER.



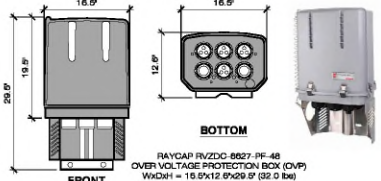
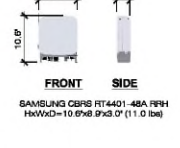
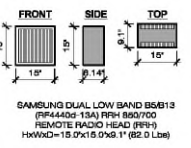
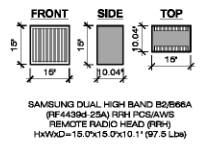
**1 ANTENNA MOUNT PLAN**  
 C-3 SCALE: 1/4" = 1'-0"



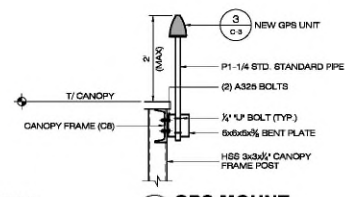
**2 ANTENNA MOUNT DETAIL**  
 C-3 SCALE: 1/2" = 1'-0"



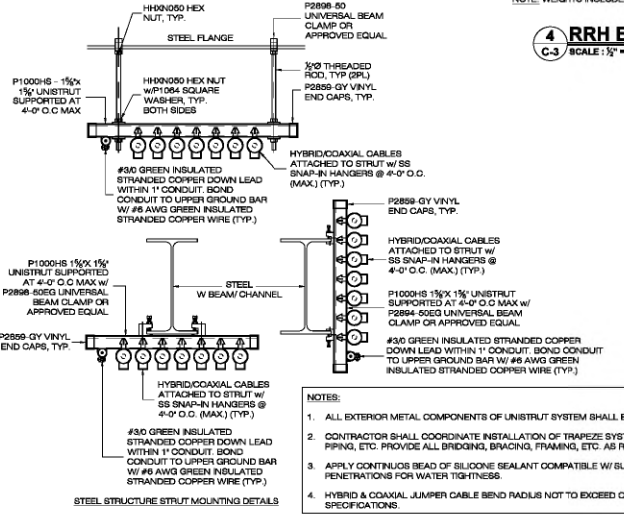
**3 ANTENNA DETAILS**  
 C-3 SCALE: 1/2" = 1'-0"



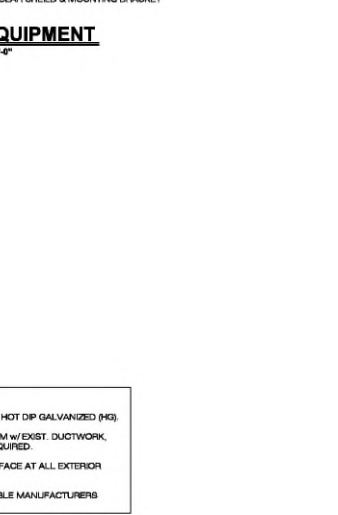
**5 OVER VOLTAGE PROTECTION BOX (12 OVP)**  
 C-3 SCALE: 1/2" = 1'-0"



**6 GPS MOUNT**  
 C-3 SCALE: N.T.S.

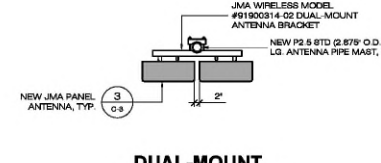


**7 CABLE SUPPORT DETAILS**  
 C-3 SCALE: 1/2" = 1'-0"

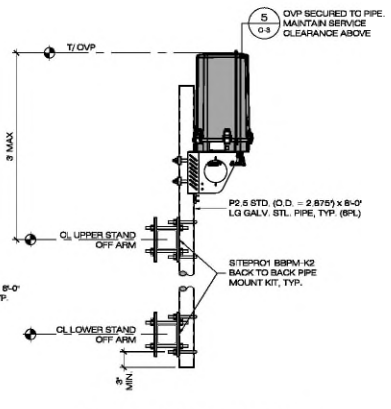


**4 RRRH EQUIPMENT**  
 C-3 SCALE: 1/2" = 1'-0"

**NOTES:**  
 1. ALL EXTERIOR METAL COMPONENTS OF UNISTRUT SYSTEM SHALL BE HOT DIP GALVANIZED (H3).  
 2. CONTRACTOR SHALL COORDINATE INSTALLATION OF TRAPEZE SYSTEM W/ EXIST. DUCTWORK, PIPING, ETC. PROVIDE ALL BRIDGING, BRACING, FRAMING, ETC. AS REQUIRED.  
 3. APPLY CONTINUOUS BEAD OF SILICONE SEALANT COMPATIBLE W/ SURFACE AT ALL EXTERIOR PENETRATIONS FOR WATER TIGHTNESS.  
 4. HYBRID & COAXIAL JUMPER CABLE BEND RADIUS NOT TO EXCEED CABLE MANUFACTURERS SPECIFICATIONS.



**8 DUAL-MOUNT BRACKET DETAIL**  
 C-3 SCALE: N.T.S.



**9 OVP TOWER MOUNT**  
 C-3 SCALE: 1/2" = 1'-0"

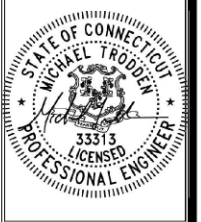


**verizon**  
 20 ALEXANDER DRIVE  
 WALLINGFORD, CT 06492

**ALL-POINTS TECHNOLOGY CORPORATION**  
 587 VALMORAL STREET EXTENSION - SUITE 311  
 WATERFORD, CT 06385 PHONE: (860) 463-9897  
 WWW.ALLPOINTS.COM FAX: (860) 463-9836

**CONSTRUCTION DOCUMENTS**

NO.	DATE	REVISION
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2		
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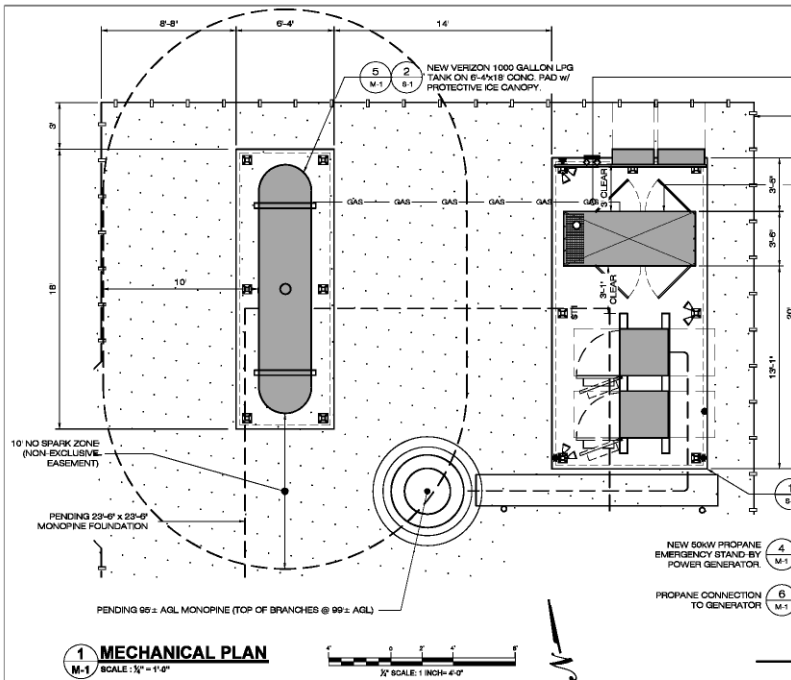


**DESIGN PROFESSIONALS OF RECORD**  
 PRF: MICHAEL S. TRODDEN P.E.  
 CEMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
 ADDR: 587 VALMORAL STREET EXT. SUITE 311 WATERFORD, CT 06385

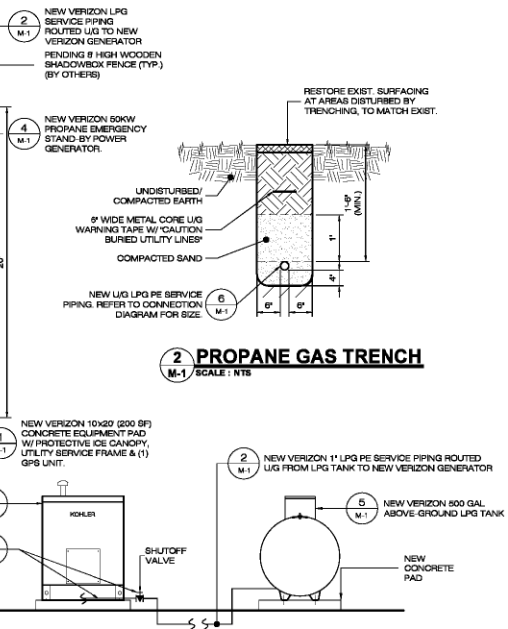
**OWNER:** CHESHIRE UNITED METHODIST CHURCH  
 ADDRESS: 185 ACADEMY ROAD CHESHIRE, CT 06410

**CHESHIRE EAST CT**  
 SITE: 185 ACADEMY ROAD  
 ADDRESS: CHESHIRE, CT 06410  
 APT FILING NUMBER: CT14189950  
 DATE: 10/05/22 CHECKED BY: JRM  
 VZW PROJECT CODE: 20171049710  
 VZW LOCATION CODE: 470656  
 VZW FLZE ID: 15372347

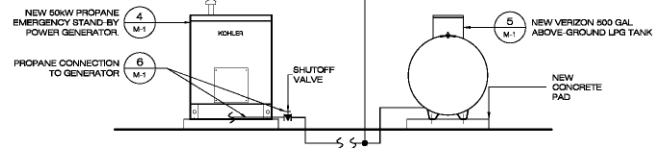
**SHEET TITLE:**  
**EQUIPMENT DETAILS**  
**C-3**



**1 MECHANICAL PLAN**  
M-1 SCALE: 1/4" = 1'-0"

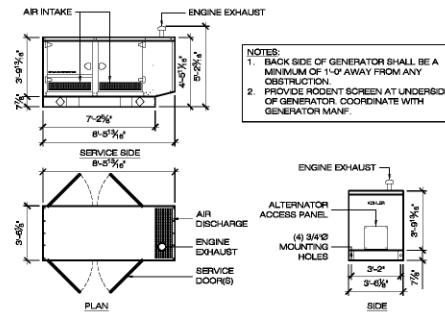


**2 PROPANE GAS TRENCH**  
M-1 SCALE: N.T.S.



**3 PROPANE CONNECTION DIAGRAM**  
M-1 SCALE: N.T.S.

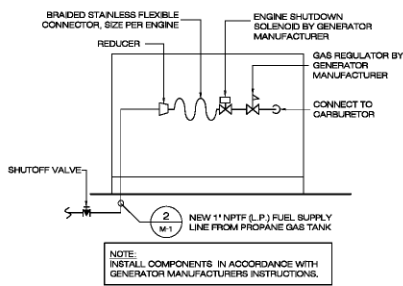
NOTE: ALL VALVES USED IN METALLIC PIPING SYSTEMS MUST HAVE PRESSURE CONTAINING PARTS OF STEEL, DUCTILE (NODULAR) IRON, MALLEABLE IRON OR BRASS. ALL MATERIALS USED, INCLUDING VALVE SEAT DISCS, PACKING, SEALS AND DIAPHRAGMS MUST BE RESISTANT TO THE ACTION OF LP GAS UNDER SERVICE CONDITIONS. MANY VALVES ARE LISTED BY INDEPENDENT TESTING LABORATORIES FOR USE IN LP GAS SERVICE. THESE CAN BE USED AS RECOMMENDED BY THE MANUFACTURER. OTHER VALVES CAN BE USED, BUT MUST COMPLY WITH THE REQUIREMENTS OF NFPA 98 AND SHOULD BE RECOMMENDED BY THE MANUFACTURER FOR LP GAS SERVICE TO BE SURE THAT ALL THE COMPONENT PARTS OF THE VALVE ARE APPROVED FOR LP GAS SERVICE. VALVES USED WITH POLYETHYLENE PIPE AND TUBING MUST MEET THE REQUIREMENTS OF ASTM D2513 AND BE SO MARKED.



**4 GENERATOR SCHEMATICS**  
M-1 SCALE: 1/4" = 1'-0"

**5 ABOVE GROUND PROPANE TANK DETAIL**  
M-1 SCALE: N.T.S.

- GENERATOR MECHANICAL NOTES:**
- THE MECHANICAL SUBCONTRACTOR SHALL COORDINATE ALL WORK TO BE PERFORMED WITH THE GENERAL AND ELECTRICAL CONTRACTORS. ANY WORK DONE BY THIS CONTRACTOR WHICH INTERFERES WITH WORK BY OTHERS AND WHICH WAS NOT FIRST COORDINATED SHALL BE REMOVED AND RELOCATED AT CONTRACTORS EXPENSE.
  - THIS CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL UTILITIES AND THE PLACEMENT OF ALL ALIGNMENT PRIOR TO THE START OF HIS WORK. NO EXTRAS WILL BE ALLOWED DUE TO EQUIPMENT LOCATION CHANGE FROM THAT ON THE DRAWING.
  - IT IS THE INTENT THAT THE WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT ANY MATERIAL OR WORK NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS, BUT NECESSARY TO FULLY COMPLETE THE WORK, SHALL BE PROVIDED.
  - THE LOCATION OF SOME ITEMS SHOWN ON THE DRAWINGS MAY BE APPROXIMATE AND THE OWNER SHALL HAVE THE RIGHT TO MAKE MINOR REVISIONS BEFORE THE WORK IS INSTALLED WITHOUT ADDITIONAL COST.
  - THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY VALVES AND ALL CONTROL DEVICES REQUIRED FOR PROPER COMPLETION OF UTILITY PIPING.
  - ALL WORK SHALL BE IN ACCORDANCE WITH 2021 INTERNATIONAL MECHANICAL CODE AND PLUMBING CODE, AS AMENDED BY THE 2022 CONNECTICUT STATE BUILDING CODE, NFPA 54, NATIONAL FUEL GAS CODE & NFPA 98, LIQUEFIED PETROLEUM GAS CODE (WHERE APPLICABLE, AS INCORPORATED INTO THE 2022 CONNECTICUT STATE FIRE SAFETY AND FIRE PREVENTION CODES).
  - GAS DEMAND IS 387 CFH AT 6 TO 11 INCHES W.C.**
  - ALL BELOW GROUND GAS PIPING SHALL BE POLYETHYLENE (PE) PLASTIC PIPE OR TUBING PE 2409 (MEDIUM DENSITY YELLOW) OR PE 3408 (HIGH DENSITY BLACK) CONFORMING TO ASTM D2513. SPECIFICATIONS FOR THERMOPLASTIC GAS PRESSURE PIPE SYSTEMS SHALL BE USED.
  - PE PLASTIC PIPING MAY NOT BE USED FOR GAS PIPING INSIDE OR BENEATH BUILDINGS, OR FOR VENTING GAS PRESSURE REGULATORS.
  - THE FOLLOWING SPECIFICATIONS SHALL BE USED FOR PE FITTINGS (WHERE APPLICABLE):
    - ASTM D2688 SPECIFICATION FOR SOCKET TYPE POLYETHYLENE FITTINGS FOR OUTSIDE DIAMETER CONTROLLED PE PIPE AND TUBING.
    - ASTM D3261 SPECIFICATION FOR BUTT FUSION POLYETHYLENE (PE) PLASTIC FITTINGS FOR POLYETHYLENE (PE) PIPE AND TUBING.
    - ASTM F1065 STANDARD SPECIFICATION FOR ELECTROFUSION TYPE PE FITTINGS FOR OUTSIDE DIAMETER CONTROLLED PE PIPE AND TUBING.
  - PROVIDE ESCUTCHEONS WHERE PIPES PENETRATE FLOORS, WALLS OR CEILINGS.
  - ALL GAS PIPING OTHER THAN THAT NOTED ABOVE SHALL BE SCHEDULE 40 BLACK IRON PIPE, WITH THREADED FITTINGS.
  - FIELD PAINT EXPOSED VERTICAL GAS PIPE RISER AT BUILDING EXTERIOR TO MATCH EXISTING BUILDING FACADE. ALL OTHER PIPE TO BE PAINTED YELLOW.
  - FOR OTHER THAN BLACK IRON PIPE, LABEL ALL EXPOSED PIPING PER CODE AND UTILITY COMPANY REQUIREMENTS.
  - ALL VALVES USED IN METALLIC PIPING SYSTEMS MUST HAVE PRESSURE CONTAINING PARTS OF STEEL, DUCTILE (NODULAR) IRON, MALLEABLE IRON OR BRASS.
  - ALL MATERIALS USED, INCLUDING VALVE SEAT DISCS, PACKING, SEALS AND DIAPHRAGMS MUST BE RESISTANT TO THE ACTION OF LP GAS UNDER SERVICE CONDITIONS. MANY VALVES ARE LISTED BY INDEPENDENT TESTING LABORATORIES FOR USE IN LP GAS SERVICE. THESE CAN BE USED AS RECOMMENDED BY THE MANUFACTURER. OTHER VALVES CAN BE USED, BUT MUST COMPLY WITH THE REQUIREMENTS OF NFPA 98 AND SHOULD BE RECOMMENDED BY THE MANUFACTURER FOR LP GAS SERVICE TO BE SURE THAT ALL THE COMPONENT PARTS OF THE VALVE ARE APPROVED FOR LP GAS SERVICE.
  - VALVES USED WITH POLYETHYLENE PIPE AND TUBING MUST MEET THE REQUIREMENTS OF ASTM D2513 AND BE SO MARKED.



**6 GENERATOR CONNECTION DETAIL**  
M-1 N.T.S.

Cellco Partnership d/b/a  
**verizon**  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**ALL-POINTS TECHNOLOGY CORPORATION**  
567 VALHALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06385 PHONE: (860) 463-1987  
WWW.ALLPOINTSCT.COM FAX: (860) 463-0836

CONSTRUCTION DOCUMENTS		
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**STATE OF CONNECTICUT**  
**MICHAEL S. TRODDEN**  
33313  
LICENSED PROFESSIONAL ENGINEER

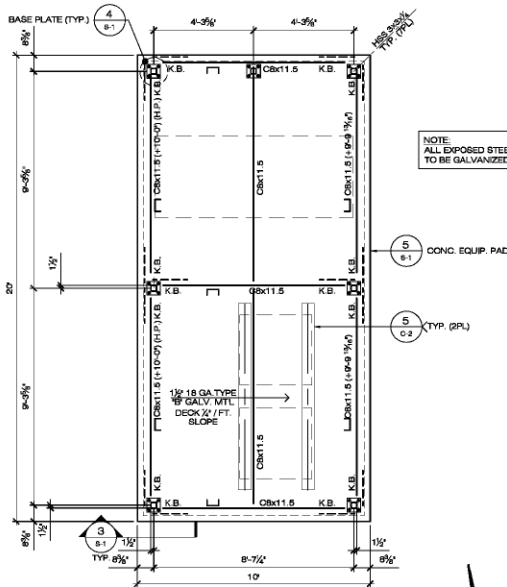
**DESIGN PROFESSIONALS OF RECORD**  
PROF: MICHAEL S. TRODDEN P.E.  
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 567 VALHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CHESHIRE LIMITED  
160 WESTBURY CHURCH ADDRESS: 165 ACADEMY ROAD CHESHIRE, CT 06616

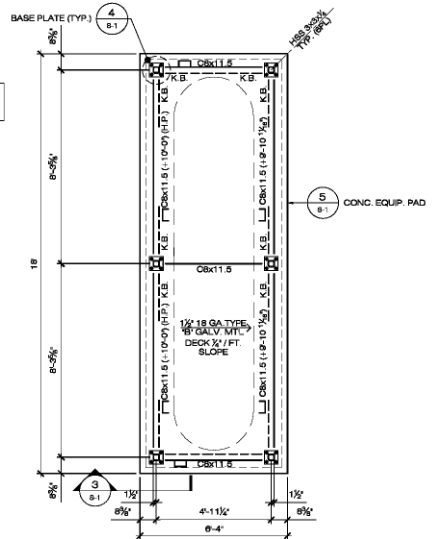
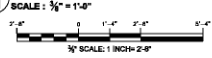
**CHESHIRE EAST CT**  
SITE: 165 ACADEMY ROAD ADDRESS: CHESHIRE, CT 06616  
APT FILING NUMBER: CT14180950  
DATE: 10/05/22 DRAWN BY: DRA  
VZV PROJECT CODE: 20171049710 CHECKED BY: JRM  
VZV LOCATION CODE: 470656  
VZV FLZE ID: 18372347

**SHEET TITLE:**  
**MECHANICAL PLAN DETAILS & NOTES**

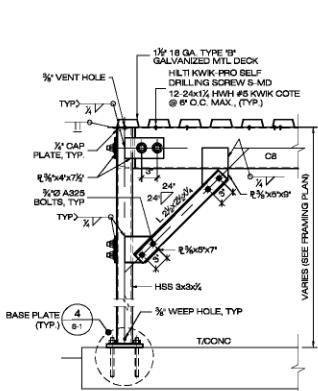
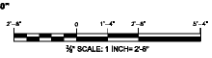
**SHEET NUMBER:**  
**M-1**



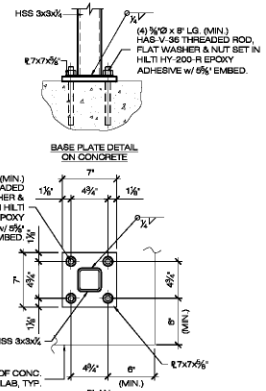
**1 CANOPY FRAMING PLAN**  
S-1 SCALE: 3/4" = 1'-0"



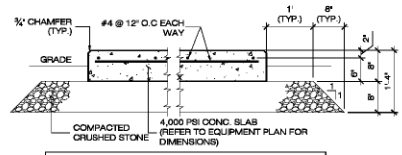
**2 PROPANE TANK CANOPY FRAMING PLAN**  
S-1 SCALE: 3/4" = 1'-0"



**3 CANOPY SUPPORT**  
S-1 SCALE: 1" = 1'-0"

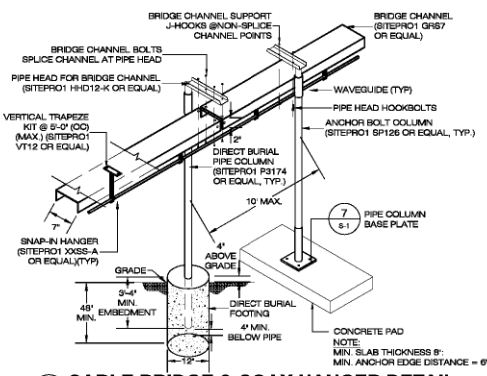


**4 POST BASE DETAIL**  
S-1 SCALE: 1 1/2\"/>

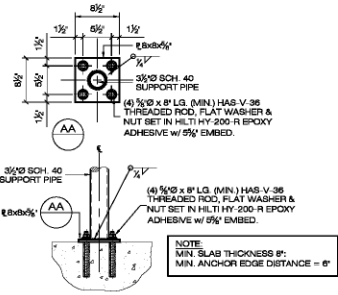


- NOTES:**
- CONTRACTOR SHALL COORDINATE ALL SLAB DIMENSIONS, CONDUIT STUB-UP LOCATIONS & HOLD DOWN REQUIREMENTS W/ EQUIPMENT MANUFACTURER.
  - CONCRETE SLAB DESIGN IS BASED ON A MINIMUM ALLOWABLE SOIL BEARING PRESSURE (q<sub>u</sub>) OF 3,000 PSF

**5 TYPICAL CONCRETE PAD DETAIL**  
S-1 SCALE: N.T.S.



**6 CABLE BRIDGE & COAX HANGER DETAIL**  
S-1 SCALE: N.T.S.



**7 PIPE BASE PLATE**  
S-1 SCALE: N.T.S.

Cellco Partnership d/b/a  
**verizon**

20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**ALL-POINTS TECHNOLOGY CORPORATION**

567 VALUOHALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06096 PHONE: (860) 463-9897  
WWW.ALLPOINTSTECH.COM FAX: (860) 463-0836

**CONSTRUCTION DOCUMENTS**

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**DESIGN PROFESSIONALS OF RECORD**

PROF: MICHAEL S. TRODDEN, P.E.  
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 567 VALUOHALL STREET EXT. SUITE 311 WATERFORD, CT 06096

OWNER: CHESHIRE LIMITED  
METHODIST CHURCH  
ADDRESS: 185 ACADEMY ROAD CHESHIRE, CT 06610

**CHESHIRE EAST CT**

SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06610

APT FILING NUMBER: CT14189950

DATE: 10/05/22 DRAWN BY: JRM  
CHECKED BY: JRM

VZW PROJECT CODE: 20171049710  
VZW LOCATION CODE: 470656  
VZW FLZE ID: 15372347

SHEET TITLE:  
**STRUCTURAL PLANS & DETAILS**

SHEET NUMBER:  
**S-1**

ELECTRICAL SYMBOL & ABBREVIATION LIST			
SYMBOL	DESCRIPTION	ABBREV.	DESCRIPTION
	FUSED DISCONNECT SWITCH (VOLTAGE AS REQUIRED)	AFD	ABOVE FINISHED FLOOR
	ELECTRICAL CONDUIT & CABLES	AFG	ABOVE FINISHED GRADE
	TELCO/FIBER CONDUIT & DRAG LINE	AGB	ANTENNA GROUND BAR
	GROUND CONDUIT & WIRE	AWG	AMERICAN WIRE GAGE
	DUPLEX RECEPTACLE WITH PANEL DP1 CIRCUIT INDICATED (MOUNTED 42" AFF)	BOW	BARE COPPER WIRE
	ELECTRIC METER AND BASE COORDINATE WITH UTILITY COMPANY	C	CONDUIT
	TRANSFORMER	DP	DISTRIBUTION PANEL
	NON-FUSED DISCONNECT SWITCH (VOLTAGE AS REQUIRED)	ECB	ENCLOSED CIRCUIT BREAKER
	GROUND BAR	EOB	EQUIPMENT GROUND BAR
	SPECIAL PURPOSE OUTLET	FACP	FIRE ALARM CONTROL PANEL
	GROUND ROD	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	GROUND CONNECTION	GRC	GALVANIZED RIGID CONDUIT
	INTEGRATED LOAD CENTER w/ XFER SWITCH	KWH	KILO-WATT-HOUR
	12 HR. TIMER SWITCH (MOUNTED 48" AFF)	LFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
	DUPLEX RECEPTACLE WITH GFCI AND WEATHERPROOF COVER WHILE IN USE	MGB	MASTER GROUND BAR
	GROUND BAR	MTS	MANUAL TRANSFER SWITCH
	LIGHT FIXTURE	NF	NON-FUSED
		N.O.	NORMALLY OPEN
		RGS	RIGID STEEL CONDUIT
		SA	SURGE ARRESTOR
		TL	TWIST-LOCK
		UNO	UNLESS NOTED OTHERWISE
		WP	WEATHERPROOF

LIGHTING FIXTURE SCHEDULE					
TYPE	MANUFACTURER CATALOG MODEL No.	GENERAL DESCRIPTION	LAMP	MOUNTING	NOTES
A	RAB LIGHTING INC. LED MODEL # BULLET12X12W	BULLET FLOOD 2X12W	LED (2480LM)	SURFACE	1,2
-	-	-	-	-	-

NOTES:

- ALUMINUM ROUND WEATHERPROOF BOX MCMMASTER-CARR MODEL# 7219K1.
- ALUMINUM WEATHERPROOF COVER MCMMASTER-CARR MODEL# 7219K13.

EQUIPMENT LEGEND	
DESIGNATION	DESCRIPTION
I.L.C.	INTEGRATED LOAD CENTER (I.L.C.) - 200A-2P, 120/240VAC, 1 PH, 3W, W/ 200A SERVICE DISCONNECT SWITCH, AUTOMATIC TRANSFER SWITCH AND DOUBLE TVSS (NORMAL POWER AND GENERATOR), NEMA 3R ENCLOSURE, MIN. TWO YEAR MANUF. WARRANTY, FURNISH BOLT-ON CIRCUIT BREAKERS - TOTAL 42 POLES, 25KVAIC.
8T1	<ol style="list-style-type: none"> <li>20A @ 125V, 12 HOUR TIMER SWITCH - MCMMASTER-CARR MODEL# 701048B (SEE NOTE 2 BELOW).</li> <li>DOUBLE GANG WEATHER PROOF OUTLET BOX - MCMMASTER-CARR MODEL# 7219K28</li> <li>DOUBLE GANG WEATHER PROOF COVER - INTERMATIC MODEL# WP1230C.</li> </ol>

- SITE UTILITY NOTES:
- CONTRACTOR SHALL ENGAGE THE SERVICES OF AN UNDERGROUND UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND EQUIPMENT IN THE TRENCHING AREA TO AVOID ANY DAMAGE.
  - HAND EXCAVATE WITHIN 5' OF EXIST. UNDERGROUND UTILITIES (V.I.F.) MAINTAIN 18" MIN. CLEARANCE.
  - CONTRACTOR TO COORDINATE TRENCHING OPERATIONS W/ OWNER AND/OR MANAGEMENT COMPANY SO AS TO MINIMIZE DISRUPTIONS TO THE EXIST. PROPERTY OPERATIONS. REINSTATE FINISHED GRADE TO PRE-CONSTRUCTION CONDITIONS & STANDARDS.

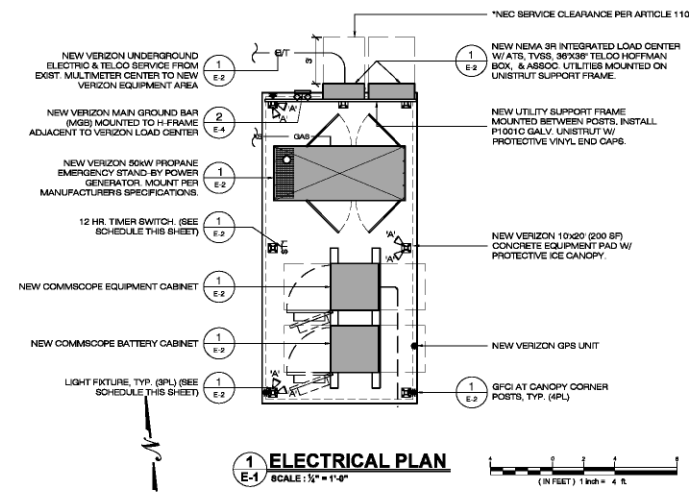
PANEL SCHEDULE											
PANEL NAME/LOCATION: ILC/VERIZON EQUIPMENT AREA						MOUNTING: SURFACE					
MAIN: 200A, 1P MCB						MANUFACTURER: ASCO OR EQUAL					
VOLTAGE/PHASE: 120/240V, 1Ø, 3W INTEGRATED LOAD CENTER (I.L.C.)						BREAKER TYPE: BOLT ON					
PANEL RATING: 200A, 240 VAC						AIC RATING: 42K MIN.					
CKT NO.	LOAD DESCRIPTION	TRIP (AMPS)	P	DEMAND LOAD (AMPS)	A (KVA)	B (KVA)	DEMAND LOAD (AMPS)	P	TRIP (AMPS)	LOAD DESCRIPTION	CKT NO.
1	RECTIFIER #1	30	2	5.83	1.4	5.83			2	RECTIFIER #5	2
3				5.83	1.4	5.83			30		4
5	RECTIFIER # 2	30	2	5.83	1.4	5.83			2	RECTIFIER #6	6
7				5.83	1.4	5.83			30		8
9	RECTIFIER #3	30	2	5.83	1.4	5.83			2	RECTIFIER #7	10
11				5.83	1.4	5.83			30		12
13	RECTIFIER # 4	30	2	5.83	1.4	5.83			2	RECTIFIER #8	14
15				5.83	1.4	5.83			30		16
17	QUADRI-PLEX RECEPTACLE	20	1	0.36	0.54	0.18	1	20	GFCI (EQUIPMENT CABINET)		18
19	GFCI (CORNER OF EQUIP. CANOPY)	20	1	0.18		0.36	0.18	1	20	GFCI (TELEO BOX)	20
21	GFCI (CORNER OF EQUIP. CANOPY)	20	1	0.18	1.62	1.44	1	15	GEN BATTERY CHARGER		22
23	GFCI (CORNER OF EQUIP. CANOPY)	20	1	0.18	1.68	1.50	1	15	GEN BLOCK HEATER		24
25	GFCI (CORNER OF EQUIP. CANOPY)	20	1	0.18	0.36	0.18	1	15	GEN GFCI RECEPTACLE		26
27						0.12	0.12	1	15	CANOPY LIGHTING	28
29					0.01		0.01				30
31						0.01		2	60	TVSS	32
33											34
35	SPARE	-	-	-	-	-	-	-	-	SPARE	36
37	SPARE	-	-	-	-	-	-	-	-	SPARE	38
39	SPARE	-	-	-	-	-	-	-	-	SPARE	40
41	SPARE	-	-	-	-	-	-	-	-	SPARE	42
				A	B	TOTAL					
				8.13	7.77	16.1	TOTAL PANEL LOAD (kW)				
						38.4	TOTAL RATED CAPACITY (kW)				
						22.3	TOTAL PANEL RATED SPARE CAPACITY (kW)				
						57.8	PANEL AMPS (A)				

NOTES:

- DOOR DIRECTORY TO BE COMPLETED WITH RESPECT TO THE ACTUAL CIRCUIT DESCRIPTION.
- BRANCH CBS AND CONDUCTOR SIZE AND QUANTITY BASED ON SPECIFIED EQUIPMENT.
- BRANCH CONDUCTOR SPECIFIED SHALL BE TYPE THHWY 600V 75 DEG. C RATED COPPER U.N.O.

STANDARD ACCESSORIES:

- COPPER BUSBING ONLY
- COPPER EQUIPMENT GROUND KIT
- INSULATED COPPER SOLID NEUTRAL BAR
- BOLT-ON BRANCH CIRCUIT BREAKERS
- DIRECTORY FRAME WITH GLASS/PLASTIC
- LAMINATED ENGRAVED BAKELITE NAMEPLATE
- FRONT DOOR (DOOR-IN-DOOR CONSTRUCTION)
- NEMA 3R



Cellco Partnership d/b/a

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CONSTRUCTION DOCUMENTS

NO.	DATE	REVISION
0	10/05/22	FOR REVIEW: JRM
1	10/31/22	REVISED: JRM
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3		
4		
5		

DESIGN PROFESSIONALS OF RECORD

PROF. MICHAEL S. TRODDEN P.E.  
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**CHESHIRE EAST CT**

SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06610

APT FILING NUMBER: CT141089050

DRAWN BY: JRM

DATE: 10/05/22 CHECKED BY: JRM

VZW PROJECT CODE: 20171049710

VZW LOCATION CODE: 470656

VZW FLUZE ID: 15372347

SHEET TITLE:

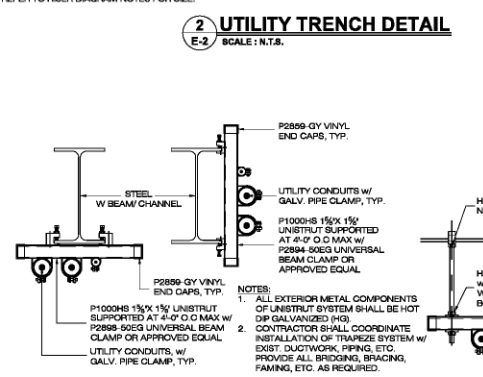
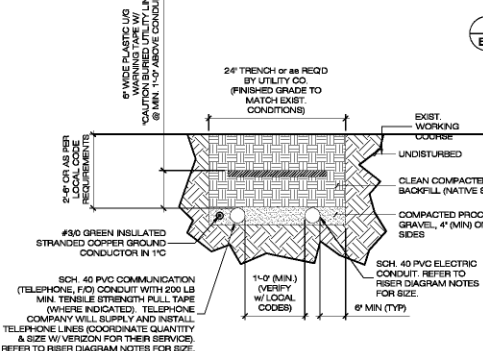
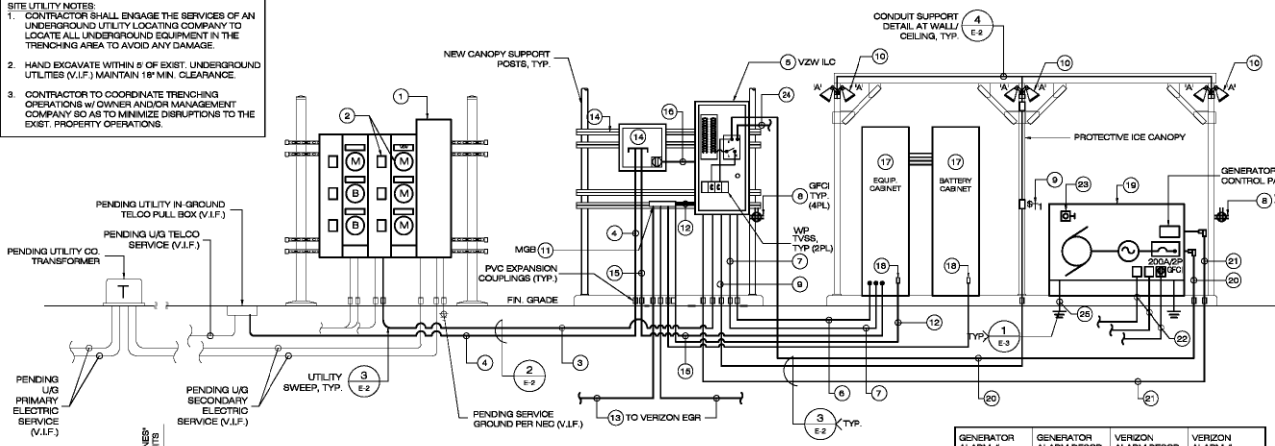
**ELECTRICAL PLAN SCHEDULES & NOTES**

SHEET NUMBER:

**E-1**



- SITE UTILITY NOTES:**
- CONTRACTOR SHALL ENGAGE THE SERVICES OF AN UNDERGROUND UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND EQUIPMENT IN THE TRENCHING AREA TO AVOID ANY DAMAGE.
  - HAND EXCAVATE WITHIN 5' OF EXIST. UNDERGROUND UTILITIES (V.I.F.) MAINTAIN 18" MIN. CLEARANCE.
  - CONTRACTOR TO COORDINATE TRENCHING OPERATIONS w/ OWNER AND/OR MANAGEMENT COMPANY SO AS TO MINIMIZE DISRUPTIONS TO THE EXIST. PROPERTY OPERATIONS.



**1 SCHEMATIC ONE-LINE RISER DIAGRAM**  
E-2 SCALE: N.T.S.

**2 UTILITY TRENCH DETAIL**  
E-2 SCALE: N.T.S.

**4 UTILITY CONDUIT SUPPORT DETAILS**  
E-2

GENERATOR ALARM #	GENERATOR ALARM DESC	VERIZON ALARM DESC	VERIZON ALARM #
1	FAULT	GENERATOR FAILURE	USERALARM5
3	LOW FUEL	GENERATOR LOW FUEL	USERALARM6
4	GENERATOR RUNNING	GENERATOR RUNNING	USERALARM7
N/A	N/A	AC POWER FAILURE	USERALARM27

**5 ALARM SCHEDULE**  
E-2 SCALE: N.T.S.

- STRUT ATTACHMENT NOTES:**
- EXIST. CMU WALL (HOLLOW & GROUT FILLED)  
FASTEN TO CMU w/ 3/4" DIA. SS HLT HLO 1/4" x 1/4" HLO SLEEVE ANCHORS (MIN. 2 PER UNH-STRUT)  
- MIN. EMBED: 1/2"  
- MIN. SPACING: 8"  
- MIN. EDGE DISTANCE: 12"
  - CONCRETE WALL/CELLING  
UN-STRUT ANCHORED TO WALL/CELLING w/ 3/4" DIA. SS HAS E ROD (MIN. 2 UN-STRUT) w/ HLT HY200 EPOXY ADHESIVE  
- MIN. EMBED: 2 1/2"  
- MIN. SPACING: 8"  
- MIN. EDGE DISTANCE: 8"
  - BRICK/MASONRY WALL/CELLING  
UN-STRUT ANCHORED TO WALL w/ 3/4" SS HAS E THREADED ROD w/ HLT HY200 EPOXY ADHESIVE (MIN. 2 PER BRACKET) w/ LOCK WASHERS AND NUTS.  
- MIN. 3/8" EMBED.  
- MIN. SPACING: 16" (VERT & HORIZ.)  
- MIN. EDGE DISTANCE: 16"
  - WD. JOIST CELLING  
UN-STRUT ANCHORED TO US OF EXIST. WD. JOIST @ 8'-0" O.C. MAX w/ #10 x 1 1/2" LG. SAMPSON BD CONNEXION SCREWS w/ PLAT WASHERS (MODEL NO. SD10112), TYP. 2 PER STRUT.
- USE STAINLESS STEEL ANCHORS INTO CONCRETE.
  - USE CARBON STEEL ANCHORS INTO BRICK OR MASONRY.
  - INSTALL ALL ANCHORS PER MANUFACTURERS RECOMMENDATIONS.

**ELECTRICAL ONE-LINE RISER KEY NOTES:**

- PENDING 1Ø, 3W, 120/240V, 2P-80A, 85,000 AC MAIN CIRCUIT BREAKER & (2) 1Ø, 3W, 120/240V, 1200A RATED VERTICALLY CENTER BRANCH UNITS w/ LEVER BYPASS SOCKETS (V.I.F.).
- NEW 120/240V, 1Ø, 3W KWH MANUAL BY-PASS METER SCHNEIDER ELECTRIC (OR EQUAL) W/200A, 2P TENANT CIRCUIT BREAKER COORDINATE INSTALLATION AND ACTIVATION OF METER WITH UTILITY COMPANY. REFER TO E-1 FOR LOCATION. VERIFY LOCATION OF METER WITH UTILITY COMPANY AND LOCAL ELECTRICAL INSPECTOR. METER SOCKET SHALL BE CLEARLY LABELED "CARRIER NAME" SERVICE ENTRANCE, 200A, 120/240V, 1Ø, 3W."
- (Ø)3Ø & (1)Ø 6 G IN 2" C TO SUPPORT 200A, 120/240V, 1Ø, 3W NORMAL POWER SERVICE FROM LOAD SIDE OF VERIZON COMBINATION METER SOCKET TO NORMAL TERMINAL OF VERIZON L.O.
- NEW VERIZON 24 PAIR SINGLE MODE FIBER SERVICE IN 3" C WITH PULL HOPE ROUTED UNDERGROUND FROM TELCO DEMARC TO NEW HOFFMAN BOX AND FIBER TERMINATION PANEL (FTP) LOCATED AT VERIZON EQUIPMENT AREA. PROVIDE JUNCTION BOXES AND EXPANSION COUPLINGS AS REQUIRED. FINAL TERMINATION BY OTHERS. COORDINATE INSTALLATION WITH LOCAL UTILITY COMPANY AND AUTHORITY HAVING JURISDICTION (A.H.J.).
- NEW VERIZON 120/240V, 1 PH, 3W, NEMA 3R INTEGRATED LOAD CENTER w/ 200A-2P MAIN CIRCUIT BREAKER (MCB), AUTOMATIC TRANSFER SWITCH AND DOUBLE TAPS. REFER TO E-1 FOR SPECIFICATIONS. CONTRACTOR SHALL PROVIDE TYPE WRITTEN CARD WITH AS-BUILT BRANCH CIRCUITING AND PROVIDE ONE COPY FOR VERIZON CONSTRUCTION MANAGER AND FURNISH SECOND COPY WITH I.L.C. PROVIDE LABEL ON FRONT OF PANEL WITH BLACK LETTERS ON WHITE BACKGROUND MARKED VERIZON. MOUNT VERIZON LOAD CENTER BETWEEN EQUIPMENT SUPPORT POSTS ON P1001 GALL. UNIBRIT AND INSTALL PROTECTIVE VINYL END CAPS.
- (1)Ø #6 AWG, (1) #6Ø IN 2" C TO FEED NEW EQUIPMENT CABINET. INSTALL ALL WIRING PER MANUFACTURERS SPECIFICATIONS.
- (2) #12 & (1) #12Ø IN 3/4" C TO FEED NEW EQUIPMENT CABINET 20A/120V GFCI OUTLET.
- (2) #12 & (1) #12Ø IN 3/4" C TO FEED NEW 20A/120V GFCI OUTLET (NEMA 5-20R) IN NEMA 3R ENCLOSURE LOCATED AT VERIZON CORNER CANOPY POSTS. INSTALL APPROX. 48" A.F.G. REFER TO EQUIPMENT LEGEND ON DRAWING E-1 FOR SPECIFICATIONS AND 2E-1 FOR LOCATION.
- (2) #12 & (1) #12Ø IN 3/4" C TO FEED NEW 20A/120V 12 HR TMR SWITCH IN NEMA 3R ENCLOSURE LOCATED AT VERIZON CORNER CANOPY POSTS. INSTALL APPROX. 48" A.F.G. REFER TO EQUIPMENT LEGEND ON DRAWING E-1 FOR SPECIFICATIONS AND 2E-1 FOR LOCATION.
- NEW SERVICE LIGHT FIXTURE. SECURE LIGHT FIXTURE TO J-BOX. REFER TO LIGHTING FIXTURE SCHEDULE ON DRAWING E-1 FOR SPECIFICATIONS AND E-1 FOR LOCATION. WIRE SWITCH TO CONTROL ALL LIGHTS SIMULTANEOUSLY (TYP.)
- MAIN GROUND BAR (MGB); REFER TO E-3 FOR LOCATION AND E-4 FOR DETAILS.
- PROVIDE #6 AWG GREEN INSULATED STRANDED COPPER WIRE IN 1" C AND GROUND VERIZON LOAD CENTER TO MAIN GROUND BAR (MGB). REFER TO DRAWING E-3 FOR LOCATION AND GROUNDING NOTES.
- PROVIDE #10 AWG GREEN INSULATED STRANDED COPPER WIRE (EGR) IN 1" C TO EGR (TYP. 2PL). BOND METALLIC CONDUIT WITH #6 AWG GREEN INSULATED STRANDED COPPER WIRE AT BOTH ENDS. REFER TO 2E-1 LOCATION.
- 3 x 3 x 1" NEMA-3R HOFFMAN BOX w/ HINGED COVER, LOOKALIKE CLASP. 3/4" MARINE GRADE PLYWOOD BACKBOARD PAINTED WITH BLACK FIRE RETARDANT INTUMESCENT PAINT.
- MOUNTED INSIDE AND (1) DUPLEX GFCI LOCATED INSIDE ON BOTTOM RIGHT HAND CORNER. MOUNT HOFFMAN BOX BETWEEN EQUIPMENT SUPPORT POSTS ON P1001 GALL. UNIBRIT. AND INSTALL PROTECTIVE VINYL END CAPS.
- FIBER TELCO SERVICE ROUTED WITHIN 2" FROM TELCO HOFFMAN BOX TO EQUIPMENT CABINET. FINAL TERMINATION BY OTHERS. PROVIDE JUNCTION BOXES WHERE REQUIRED.
- (2) #12 & (1) #12Ø IN 3/4" C TO FEED NEW 20A/120V GFCI OUTLET (NEMA 5-20R) IN NEMA 3R ENCLOSURE LOCATED WITHIN VERIZON HOFFMAN BOX. INSTALL APPROX. 48" A.F.G. REFER TO E-1 FOR LOCATION.
- VERIZON WIRELESS COMMSCOPE EQUIPMENT & BATTERY CABINETS. COORDINATE INSTALLATION WITH VERIZON CONSTRUCTION MANAGER.
- BOND EQUIPMENT & BATTERY CABINET TO MAIN GROUND BAR (MGB) PER EQUIPMENT CABINET MANUFACTURER SPECIFICATIONS. MIN #2 AWG GREEN INSULATED STRANDED COPPER WIRE. INSTALL CABINET INTERNAL GROUNDING PER MANUFACTURERS SPECIFICATIONS.
- NEW VERIZON KOHLER CO. 80kW PROPANE EMERGENCY STANDBY POWER GENERATOR KOHLER MODEL#AV-8007, 120/240V, 1Ø, 3W, 60 HZ. REFER TO GENERATOR MANUFACTURER FOR INSTALLATION REQUIREMENTS. PROVIDE RODENT SCREEN AT UNDERSIDE OF GENERATOR. COORDINATE WITH GENERATOR MANF.
- (Ø) #3Ø & (1) #6Ø IN 2" C TO SUPPORT 200A, 120/240V, 1Ø, 3W SERVICE FROM VERIZON GENERATOR TO EMERGENCY TERMINAL LUGS OF ATS
- (Ø) #12AWG (FOR GENERATOR START SIGNAL) IN 1" C BETWEEN GENERATOR CONTROL PANEL AND ATS CONTROL. REFER TO MANUFACTURERS INSTRUCTION MANUAL FOR ENGINE CONTROL AND MONITORING CIRCUITS WIRING AND TERMINATION REQUIREMENTS.
- PROVIDE (Ø) BRANCH CIRCUIT FEEDS FOR: BLOCK HEATER, WEATHER RESISTANT DUPLEX GFCI OUTLET (NEMA 5-20R) & ENCLOSURE (NEMA 3R) & BATTERY CHARGER. PROVIDE (Ø) #12 & (1) #12Ø IN 1" C TO L.O. SUPPLY FROM (Ø) 20A/120V CIRCUIT BREAKERS COMPATIBLE WITH L.O.
- PROVIDE 3/4" C AND CONDUCTORS TO SUPPORT REMOTE GENERATOR SHUT-OFF SWITCH WITH BREAK GLASS ENCLOSURE IN PROXIMITY TO GENERATOR. COORDINATE FINAL LOCATION WITH LOCAL FIRE MARSHALL. INSTALL ALL REQUIRED SIGNAGE.
- PROVIDE 3/4" C FOR ALARM WIRES ROUTED TO TELCO BOARD ALARM TERMINAL BLOCK.
- GROUND GENERATOR PER NEC REQUIREMENTS.
- (GENERAL) USE GFC FOR ALL EXTERIOR APPLICATIONS, INCLUDING SWEEPS.
- (GENERAL) COORDINATE ALL OUTAGES WITH OWNER AND PROVIDE TEMPORARY POWER AS REQUIRED.
- (GENERAL) PAINT ALL EXPOSED EXTERIOR CONDUITS TO MATCH EXTERIOR OF EXIST. BUILDING (WHERE APPLICABLE).
- (GENERAL) CONTRACTOR SHALL VERIFY THAT ALL BUILDING/STRUCTURE GROUNDING ELECTRODES ARE BONDED WITH APPROPRIATELY SIZED CONDUCTORS PER NEC.
- (GENERAL) ALL ENTRY HOLE(S) TO BE SEALED WATER TIGHT (WHERE APPLICABLE).

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**CONSTRUCTION DOCUMENTS**

NO.	DATE	REVISION
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**STATE OF CONNECTICUT**  
MICHAEL S. TRODDEN  
LICENSED PROFESSIONAL ENGINEER  
33313

**DESIGN PROFESSIONALS OF RECORD**

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**CHESHIRE EAST CT**

SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06616  
APT FILING NUMBER: CT14109950

DATE: 10/05/22 CHECKED BY: JRM  
DRAWN BY: JRM

VZW PROJECT CODE: 20171649710  
VZW LOCATION CODE: 470656  
VZW FLZE ID: 15372347

**SHEET TITLE:**  
**SCHEMATIC ONE-LINE RISER DIAGRAM, DETAILS & NOTES**

SHEET NUMBER:  
**E-2**

### TYPICAL FOUNDING NOTES

- 1 GROUND PER NEC (NFPA-70), NESC AND MANUFACTURERS SPECIFICATIONS
- 2 #30 GREEN INSULATED STRANDED COPPER DOWN LEAD WITHIN 1'0" BETWEEN UPPER EQUIPMENT GROUND BAR AND LOWER EQUIPMENT GROUND BAR (EGB) AT BASE OF STRUCTURE. ROUTE GROUND CONDUIT ALONGSIDE HYBRID CABLE CONDUITS (WHERE APPLICABLE). COORDINATE W/ VERIZON CONSTRUCTION MANAGER AND OWNER. BOND CONDUIT TO GROUND BARS) WITH #6 AWG GREEN INSULATED STRANDED COPPER WIRE (WHERE APPLICABLE). REFER TO E-4 FOR DETAILS.
- 3 BOND VERIZON MAIN GROUND BAR (MGB) TO NEW EXTERIOR GROUND RING (EGR) W/ #30 AWG GREEN INSULATED STRANDED COPPER WIRE (WHERE APPLICABLE). REFER TO E-4 FOR DETAILS.
- 4 #30 GREEN INSULATED STRANDED COPPER DOWN LEAD WITHIN 1'0" BETWEEN ANTENNA SECTOR GROUND BAR & UPPER EQUIPMENT GROUND BAR (EGB). REFER TO E-4 FOR DETAILS.
- 5 #2 AWG SOLID TINNED BARE COPPER WIRE (STBC) EXTERNAL GROUND RING (EGR) AT PERIMETER OF EQUIP. AREA & BETWEEN GROUND RINGS LOCATED MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE, TYP.
- 6 BOND CANOPY POSTS, STEEL SERVICE FRAME POSTS & STEEL DRAINAGE FRAME (WHERE APPLICABLE) TO VERIZON EXTERIOR GROUND RING (EGR) W/ #2 AWG SOLID TINNED BARE COPPER WIRE (STBC) IN 1' L.T.C.
- 7 BOND VERIZON INTEGRATED LOAD CENTER & TELCO HOFFMAN BOX TO EQUIPMENT GROUND BAR (EGB) W/ #6 AWG GREEN INSULATED STRANDED COPPER WIRE.
- 8 BOND VERIZON WIRELESS EQUIPMENT & BATTERY CABINETS TO VERIZON EQUIPMENT BAR (EGB) WITH #2 AWG GREEN INSULATED STRANDED COPPER WIRE PER MANUFACTURERS SPECIFICATIONS.
- 9 BOND HYBRID/COAXIAL CABLES TO ANTENNA SECTOR GROUND BARS & EQUIPMENT GROUND BAR (EGB) AT CANOPY W/ #6 AWG GREEN INSULATED STRANDED COPPER WIRE.
- 10 GROUND RRHS, QUAD DIPLEXERS & CVP TO ANTENNA GROUND BAR W/ #6 AWG GREEN INSULATED STRANDED COPPER WIRE PER MANUFACTURERS RECOMMENDATIONS.
- 11 BOND ANTENNA MOUNTING PPS, ANTENNA MOUNTING BRACKETS & FRAMES TO ANTENNA GROUND BAR W/ #2 AWG GREEN INSULATED COPPER WIRE.
- 12 BOND GPS ANTENNA MOUNTING MAST (AS APPLICABLE) TO MAIN GROUND BAR W/ #2 AWG GREEN INSULATED COPPER WIRE.
- 13 BOND ALL ICE BRIDGE POSTS TO EXTERNAL GROUND RING (EGR) WITH #2 SOLID TINNED WIRE.
- 14 BOND NEW GENERATOR PER MFR AND NEC REQUIREMENTS, TYP.

#### GROUNDING GENERAL NOTES:

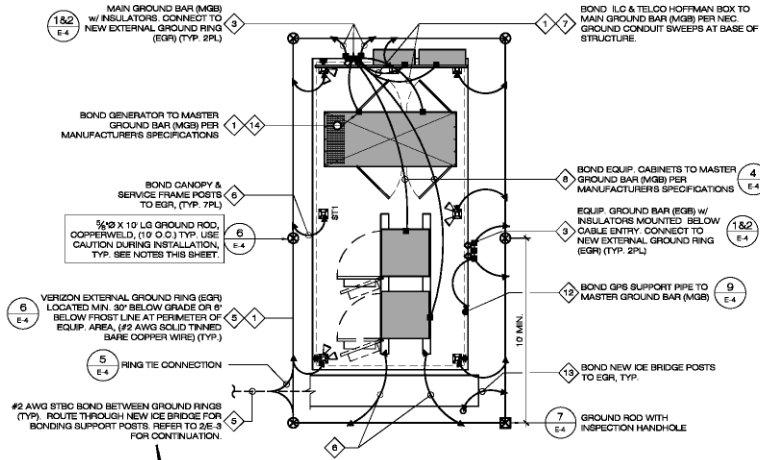
1. ALL SURGE SUPPRESSION DEVICES (WHERE APPLICABLE) SHALL BE BONDED TO EQUIPMENT GROUND BAR (EGB) PER MANUFACTURERS SPECIFICATIONS.
2. ALL IN-GROUND RINGS, RADIALS, AND BONDING CONDUCTORS SHALL BE #2 AWG SOLID BARE TINNED COPPER (STBC) ALL AT SAME 30 IN. DEPTH OR 6 IN. BELOW FROST LINE WHICHEVER IS GREATER.
3. ALL GROUND RINGS SHALL BE MIN 2 FT FROM FOUNDATION BEING ENCASED.
4. COMBINE IN-GROUND RINGS, RADIALS, AND BONDING CONDUCTORS INTO SINGLE CONDUCTOR FOR ALL PORTIONS PARALLEL 2 FT APART OR CLOSER.
5. UNLESS NOTED OTHERWISE, ALL ABOVE GROUND CONDUCTORS SHALL BE MIN #6 AWG INSULATED STRANDED COPPER.
6. CONDUCTORS BONDING ABOVE-GROUND CONNECTIONS TO IN-GROUND CONNECTIONS SHALL BE MIN #2 AWG STBC UNLESS NOTED OTHERWISE AND SHALL BE PROTECTED BY LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT FOR ALL PORT ONS ABOVE GROUND.
7. REFER TO GROUNDING NOTES & SPECIFICATIONS ON SHEET N-1 FOR MORE INFORMATION.

#### GROUNDING LEGEND

SYMBOL	DESCRIPTION
	EXOTHERMIC WELD
	MECHANICAL CONNECTION
	GROUND ROD
	GROUND CONDUCTOR
	GROUND ROD W/ INSPECTION HAND HOLE

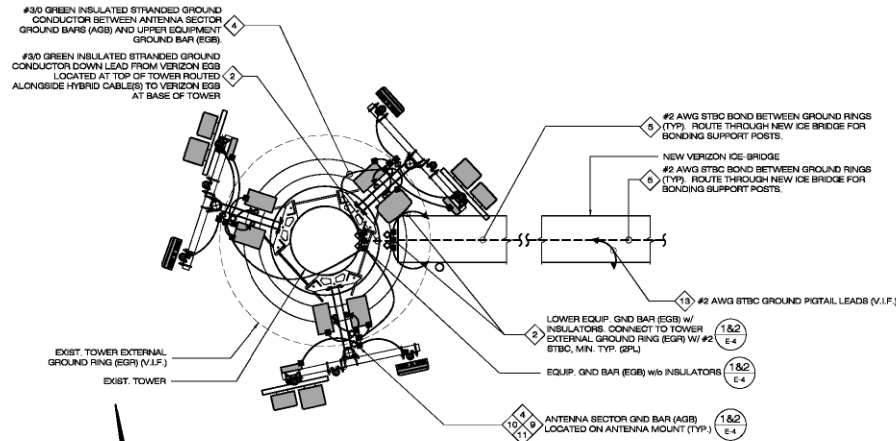
#### SITE UTILITY NOTES:

1. CONTRACTOR SHALL ENGAGE THE SERVICES OF AN UNDERGROUND UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND EQUIPMENT IN THE TRENCHING AREA TO AVOID ANY DAMAGE.
2. HAND EXCAVATE WITHIN 6' OF EXIST. UNDERGROUND UTILITIES (V.I.F.) MAINTAIN 18" MIN. CLEARANCE.
3. CONTRACTOR TO COORDINATE TRENCHING OPERATIONS W/ OWNER AND/OR MANAGEMENT COMPANY SO AS TO MINIMIZE DISRUPTIONS TO THE EXIST. PROPERTY OPERATIONS.



**1 EQUIPMENT GROUNDING PLAN**

E-3 SCALE: N.T.S.



**2 ANTENNA GROUNDING PLAN**

E-3 SCALE: N.T.S.

Cellco Partnership d/b/a

**verizon**

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#### DESIGN PROFESSIONALS OF RECORD

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COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
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#### CHESHIRE EAST CT

SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06410  
APT FILING NUMBER: CT141NB0950  
DRAWN BY: DRA  
DATE: 10/05/22 CHECKED BY: JRM  
VZW PROJECT CODE: 20171049710  
VZW LOCATION CODE: 470656  
VZW FLZE ID: 15372347

SHEET TITLE:  
**EQUIPMENT GROUNDING PLANS & NOTES**

SHEET NUMBER:

**E-3**

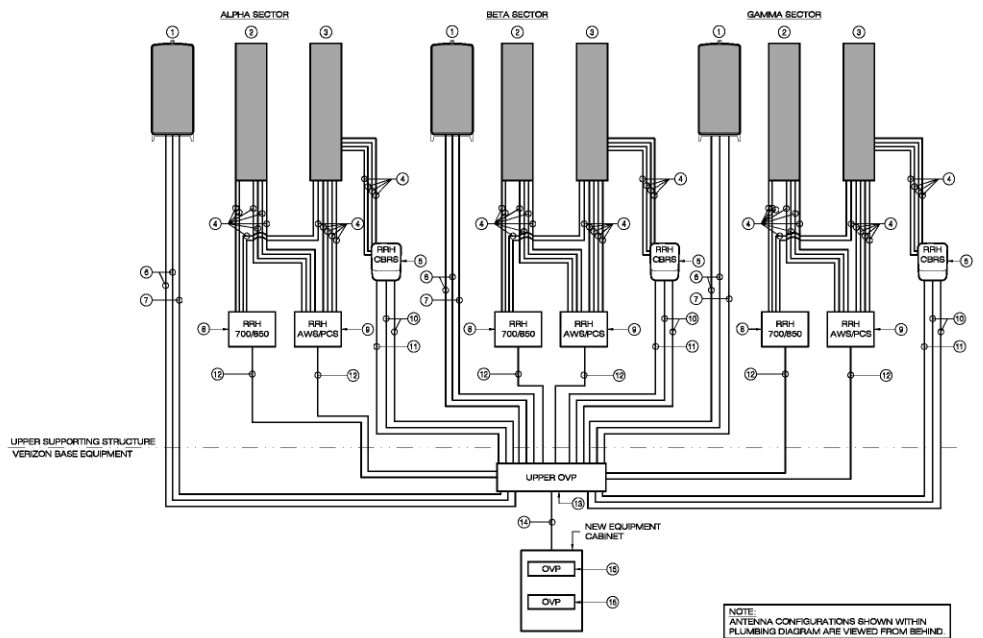


EQUIPMENT DATA									
EQUIPMENT SPECIFICATIONS									
SECTOR	ANTENNA MAKE/MODEL	QTY	AZIMUTH	EQUIPMENT STATUS	HEIGHT (N)	WIDTH (N)	DEPTH (N)	WEIGHT (LBS)	
ALPHA	SAMSUNG MT6407-77A	1	60°	NEW	35.1 <sup>1R</sup>	16.1 <sup>1R</sup>	6.5 <sup>1R</sup>	87.1 <sup>1R</sup>	
	700/850/2100_JMA MX06FT1855-02	1	60°	NEW	71.3	12.2	10.7	51.0 <sup>1R</sup>	
BETA	SAMSUNG MT6407-77A	1	180°	NEW	35.1 <sup>1R</sup>	16.1 <sup>1R</sup>	6.5 <sup>1R</sup>	87.1 <sup>1R</sup>	
	700/850/2100_JMA MX06FT1855-02	1	180°	NEW	71.3	12.2	10.7	51.0 <sup>1R</sup>	
GAMMA	SAMSUNG MT6407-77A	1	300°	NEW	35.1 <sup>1R</sup>	16.1 <sup>1R</sup>	6.5 <sup>1R</sup>	87.1 <sup>1R</sup>	
	700/850/2100_JMA MX06FT1855-02	1	300°	NEW	71.3	12.2	10.7	51.0 <sup>1R</sup>	
APPURTENANCE MAKE/MODEL									
	SAMSUNG B2/B66A RRH (PF4439d 25A)	3	-	NEW	15.0	15.0	10.1	97.5	
	SAMSUNG B5/B13 RRH (PF4439d 13A)	3	-	NEW	15.0	15.0	9.1	82.0	
	SAMSUNG CBR5 RT4401-48 RRH	3	-	NEW	10.6	8.9	3.0	11.0	
	RAYCAP RVZDC 6627-PF-48	1	-	NEW	29.5	16.5	12.6	26.9	

- (1) WEIGHT WITHOUT MOUNTING BRACKET  
(2) ANTENNA DATA BASED ON LATEST VERIZON RFD'S  
(3) EQUIPMENT CONFIGURATION AS VIEWED FROM BEHIND.

BILL OF MATERIALS				
EQUIPMENT DESCRIPTION	QUANTITY	LENGTH		COMMENTS
① L96 ANTENNA w/ INTEGRATED RRH	3			(SAMSUNG MT6407-77A)
② 700/850/2100	3			(JMA MX06FT1855-02)
③ 700/850/1900/2100	3			(JMA MX10FT1855-02)
④ 1/2" JUMPER CABLE	48	15 FT		ROUTED FROM RRH'S TO ANTENNAS
⑤ CBR5 RRH	3			SAMSUNG CBR5 RT4401-48A MOUNTED TO NEW ANTENNA MOUNT
⑥ ANTENNA LINK CABLES	6	15 M		ROUTE FROM UPPER OVP TO L96 ANTENNA
⑦ ANTENNA POWER CABLES	3	15 M		PROPRIETARY POWER CABLE FROM EXIST. OVP TO L96 ANTENNA
⑧ 850/700 DUAL BAND RRH	3			SAMSUNG B5/B13 RRH (PF4439d 13A) MOUNTED TO NEW ANTENNA MOUNT
⑨ PCS/AWS DUAL BAND RRH	3			SAMSUNG B2/B66 RRH (PF4439d 25A) MOUNTED TO NEW ANTENNA MOUNT
⑩ CPRI CABLES	6	25 FT		ROUTE FROM UPPER OVP TO RRH
⑪ 10 AWG x2 DC POWER CABLE	3	25 FT		PROPRIETARY POWER CABLE FROM UPPER OVP TO RRH
⑫ RRH CABLES	6	15M		PROPRIETARY POWER & FIBER CABLES
⑬ UPPER 120V P	1			(RVZDC-6627-PF-48) MOUNTED TO NEW ANTENNA MOUNT
⑭ HYBRID CABLE	1	130+ FT		12x24 LOW INDUCTANCE (L) HYBRID FEED-LINE CABLE ROUTED FROM LOWER OVP(s) TO UPPER OVP
⑮ LOWER 80V P	2			(6 OVP) RACK MOUNTED IN NEW EQUIPMENT CABINET

- NOTES: 1. INFORMATION SHOWN HEREON IS FOR USE BY VERIZON EQUIPMENT OPERATIONS.  
2. INFORMATION IS BASED ON LATEST VERIZON RFD'S.  
3. \* DENOTES EQUIPMENT DESIGNATED FOR LEASING ONLY (WHERE APPLICABLE).  
4. INSTALL ALARM BOARDS AT ALL OVP'S WHERE REQUIRED. COORDINATE W/ VERIZON EQUIPMENT ENGINEERING.  
5. INSTALL UP-CONVERTERS LOCATED AT BASE OVP'S WHERE REQUIRED. COORDINATE W/ VERIZON EQUIPMENT ENGINEERING AS NECESSARY.  
6. COORDINATE ANTENNA CABLING REQUIREMENTS WITH VERIZON ENGINEERING.  
7. CONTRACTOR SHALL INSTALL NEW SIDE-BY-SIDE & DUAL-MOUNT BRACKETS PER ANTENNA MOUNT MANUFACTURER RECOMMENDATIONS, INCLUDING VERIFICATION OF MINIMUM PIPE DIA/METER REQUIRED TO INSTALL NEW MOUNT BRACKETS. CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD SHOULD EXIST. PIPE MUST REQUIRE REPLACEMENT TO SUPPORT THE NEW MOUNT BRACKETS.



**1 PLUMBING DIAGRAM**  
**B-1** SCALE: N.T.S.

Cellco Partnership d/b/a  
**verizon**  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**ALL-POINTS**  
TECHNOLOGY CORPORATION  
567 VALUXHALL STREET EXTENSION - SUITE 311  
WATERFORD, CT 06385 PHONE: (860) 463-1987  
WWW.ALLPOINTS.COM FAX: (860) 463-0836

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	10/05/22	FOR REVIEW: JRM
1	10/31/22	REVISED: JRM
2		
3		
4		
5		
6		



DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.  
CONS: ALL-POINTS TECHNOLOGY CORPORATION, P.C.  
ADD: 567 VALUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CHESHIRE UNITED METHODIST CHURCH  
ADDRESS: 185 ACADEMY ROAD CHESHIRE, CT 06610

CHESHIRE EAST CT

SITE: 185 ACADEMY ROAD  
ADDRESS: CHESHIRE, CT 06610

APT FILING NUMBER: CT141NB0950

DRAWN BY: JRM  
DATE: 10/05/22 CHECKED BY: JRM

VZW PROJECT CODE: 20171649710  
VZW LOCATION CODE: 470656  
VZW FLUZE ID: 15372347

SHEET TITLE:  
**RF BILL OF MATERIALS & EQUIPMENT SPECIFICATIONS**

SHEET NUMBER:  
**B-1**



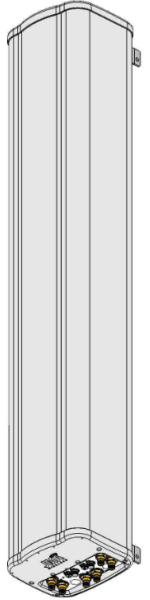
# MX06FIT665-02

NWAV™ X-Pol Antenna | Hex-Port | 6 ft | 65°



## X-Pol, Hex-Port 6 ft 65° Form In Tighter with Smart Bias T (2) 698–894 MHz & (4) 1695–2180 MHz

- Excellent Passive Intermodulation (PIM) performance reduces harmful interference
- Fully integrated (iRETs) with *independent* RET control for low and high bands for ease of network optimization
- SON-Ready array spacing supports beamforming capabilities
- Suitable for LTE/CDMA/PCS/UMTS/GSM Air interface technologies
- Integrated Smart BIAS-Ts reduces leasing costs
- Optimized width for reduced wind loading



Electrical Specification (Minimum/ Maximum)	Ports 1,2		Ports 3,4,5,6		
	698–798	824–894	1695–1880	1850–1990	1920–2180
Frequency bands, MHz	698–798	824–894	1695–1880	1850–1990	1920–2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.4	14.8	17.8	18.1	18.2
Horizontal beamwidth (HBW), degrees <sup>1</sup>	66.0	57.0	63.0	63.0	58.0
Front-to-back ratio, co-polar power @180°± 30°, dB	>22	>22.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>17.0	>15.6	>23	>18	>18
Sector power ratio, percent <sup>1</sup>	<5.0	<3.0	<4.6	<3.8	<5.0
Vertical beamwidth, (VBW), degrees <sup>1</sup>	13.5	12.0	6.0	5.5	5.4
Electrical downtilt (EDT) range, degrees	2-14	2-14	0-9		
First upper side lobe (USLS) suppression, dB <sup>1</sup>	≤ -17.0	≤ -16.0	≤ -17.0	≤ -16.0	≤ -16.0
Minimum cross-polar isolation, port-to-port, dB	25	25	25	25	25
Maximum VSWR/ return loss, dB	1.5/ -14.0	1.5/ -14.0	1.5/ -14.0	1.5/ -14.0	1.5/ -14.0
Maximum passive Intermodulation (PIM), 2x 20W carrier, dBc	-153	-153	-153		
Maximum input power per any port, watts	300		250		
Total composite power all ports, watts	1500				

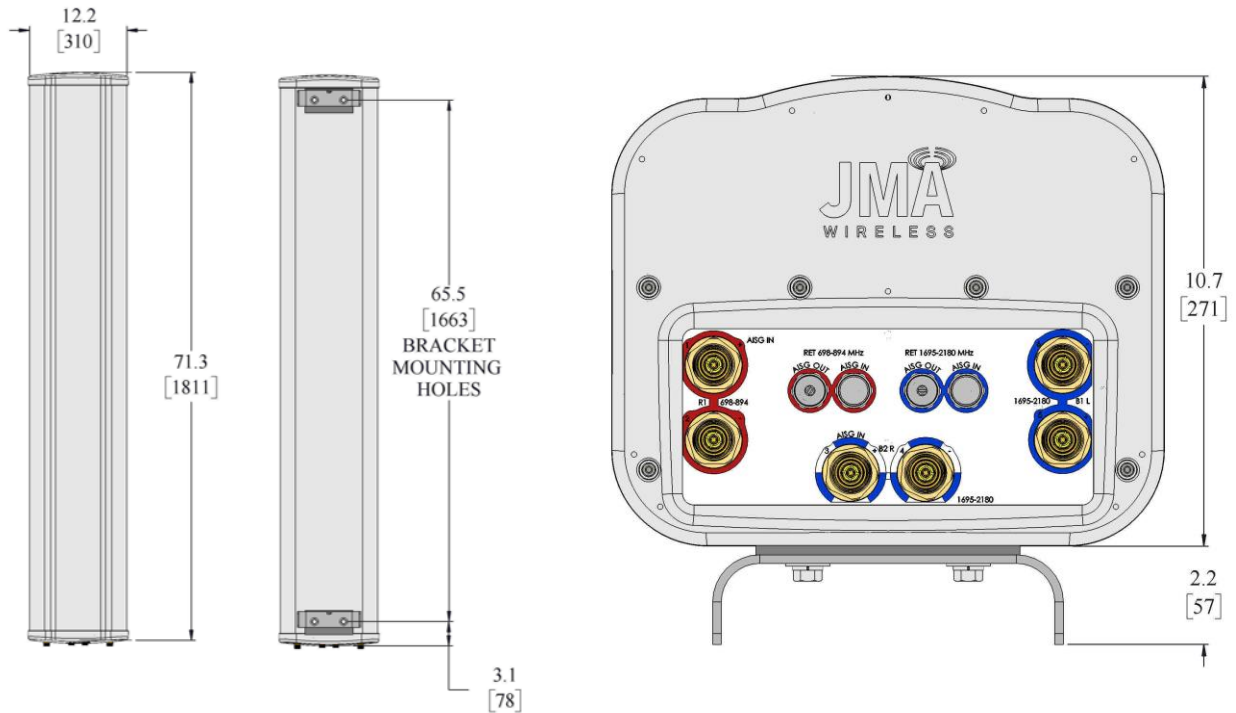
<sup>1</sup> Typical value over frequency and tilt

# MX06FIT665-02

NWAV™ X-Pol Antenna | Hex-Port | 6 ft | 65°



Mechanical Specifications	
Dimensions height/ width/ depth, inches (mm)	71.3/ 12.2/ 10.7 (1811/ 310/ 271)
Shipping dimensions length/ width/ height, inches (mm)	82/ 20/ 15 (2083/ 508/ 381)
No. of RF input ports, connector type & location	6 x 4.3-10 female, bottom
RF connector torque	96 in- lb (10.85 N-M or 8 ft-lbs)
Net antenna weight, lb (kg)	51 (23.18)
Shipping weight, lb (kg)	91 (41.36)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.18)
Range of mechanical up/ down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral & rear wind loading @ 150 km/h, lbf (N)	87 (386), 68 (301), 109 (485)
Equivalent flat plate @100 mph and Cd=2, sq. ft.	1.42

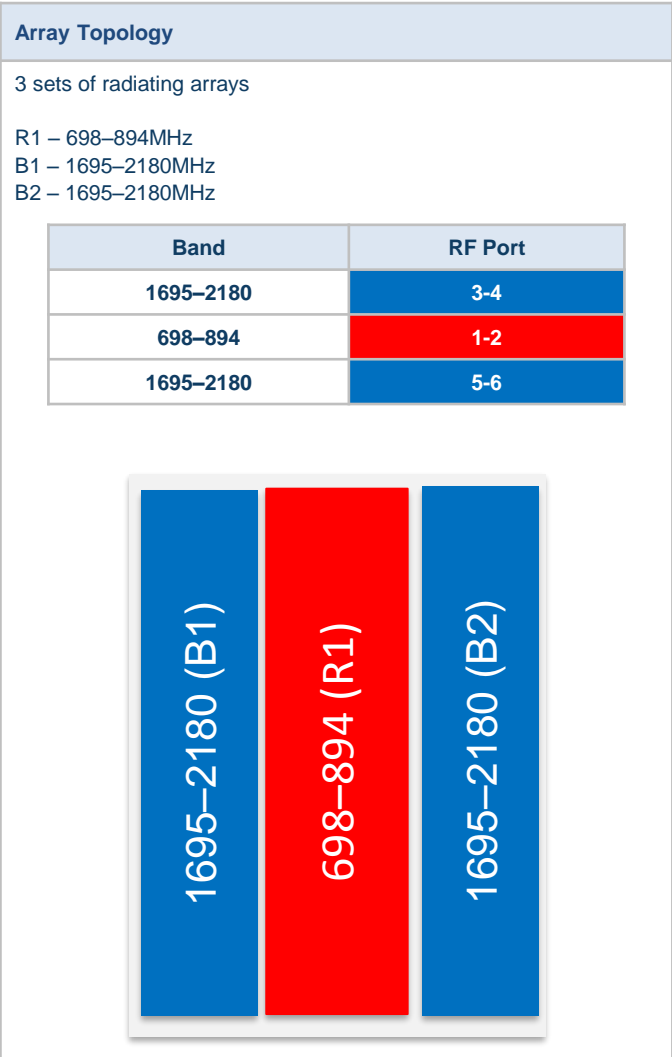
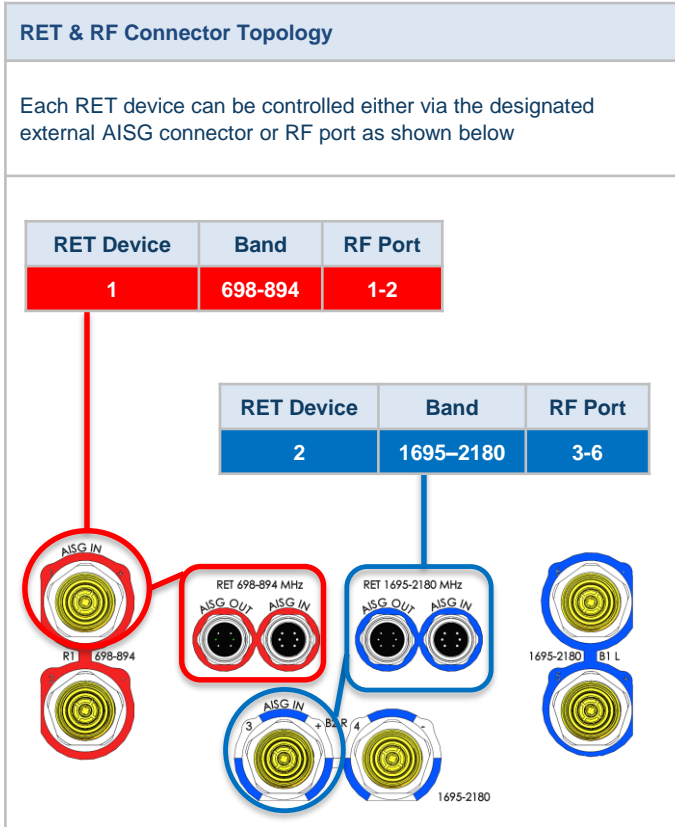


Ordering Information	
<b>Antenna Model</b>	<b>Description</b>
MX06FIT665-02	6F X- Pol HEX FIT 65° 2-14°/ 0-9° RET, 4.3-10 & SBT
<b>Optional Accessories</b>	
992100-CA030-SC	Optional AISG jumper cable, M/F, 3.0 meters
PCU-1000	Primary control unit, USB

# MX06FIT665-02

NWAV™ X-Pol Antenna | Hex-Port | 6 ft | 65°

Remote Electrical Tilt (RET 1000) Information	
RET location	Integrated into antenna
RET interface connector type	8 Pin AISG connector per IEC 60130-9
RET interface connector quantity	2 pairs of AISG male/ female connectors
RET interface connector location	Bottom of the antenna
Total No. of internal RETs low bands	1
Total No. of internal RETs high bands	1
RET input operating voltage, vdc	10-30
RET max. power consumption, idle state, W	≤ 2.0
RET max. power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0/ 3GPP





# MX10FIT665-xx

## NWAV™ X-Pol Ten-Port Antenna

**X-Pol Ten-Port 6 ft, 65° Form in Tighter with Smart Bias Ts, 698-4200 MHz:**

**2 ports 698-894 MHz, 4 ports 1695-2180 MHz, and 4 ports 3400-4200 MHz**

- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for high band & ease of future network optimization.
- SON-Ready array spacing supports beamforming capabilities
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs
- Optimized form factor for reduced wind loading




Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.4	14.8	17.8	18.1	18.2
Horizontal beamwidth (HBW), degrees <sup>1</sup>	66.0	61.0	63.0	63.0	58.0
Front-to-back ratio, co-polar power @180°± 30°, dB	>22	>22.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>17.0	>15.6	>23	>18	>18
Vertical beamwidth (VBW), degrees <sup>1</sup>	13.5	12.0	6.0	5.5	5.4
Electrical downtilt (EDT) range, degrees	2-14		0-9		
First upper side lobe (USLS) suppression, dB <sup>1</sup>	≤-17.0	≤-16.0	≤-17.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB <sup>1</sup>	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports (1-10), watts	1500				

<sup>1</sup> Typical value over frequency and tilt

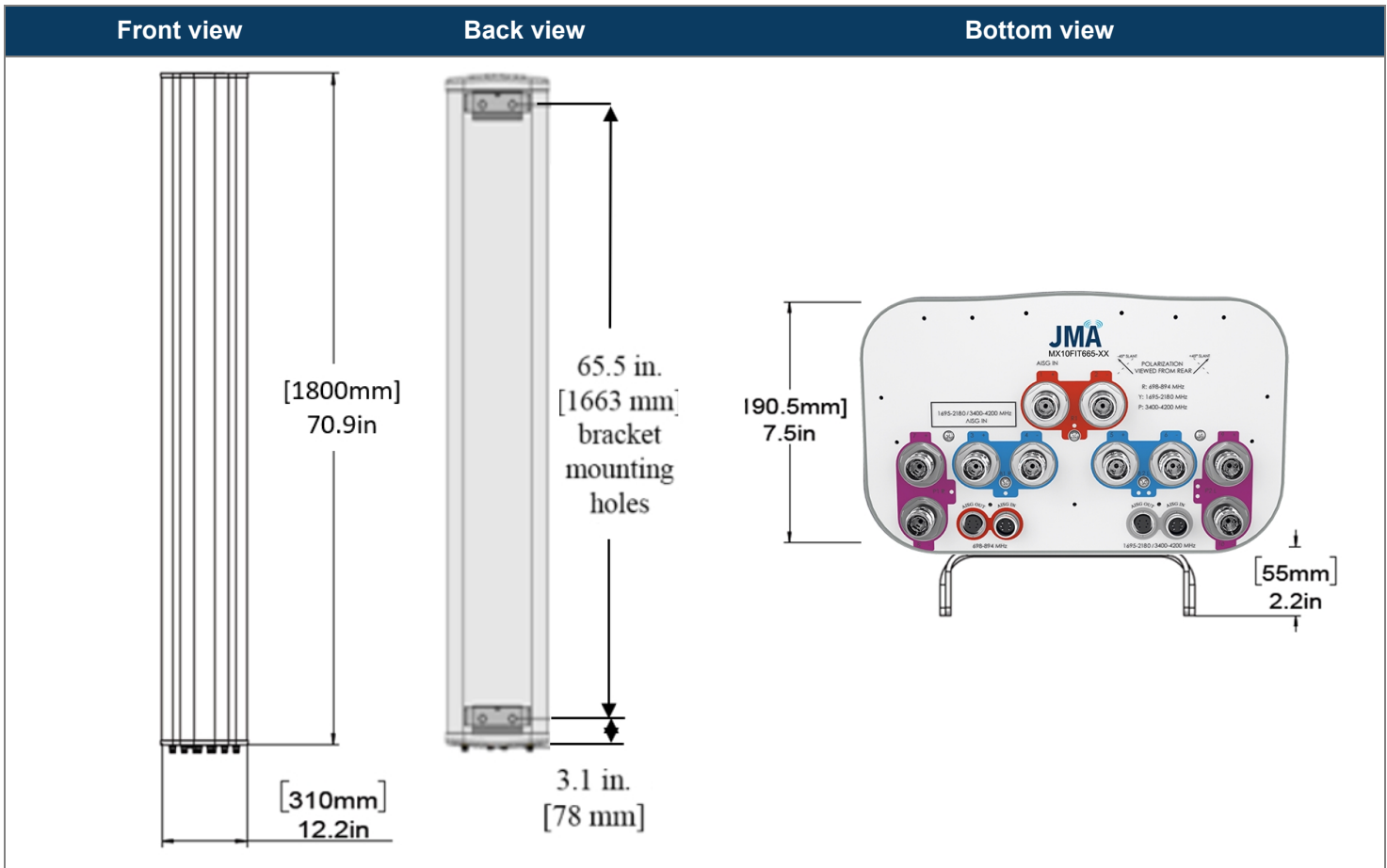
Electrical specification (minimum/maximum)	Ports 7, 8, 9, 10			
Frequency bands, MHz	3400-3550	3550-3700	3700-3950	3950-4200
Polarization	± 45°			
Average gain over all tilts, dBi	13.6	13.8	14.0	14.2
Horizontal beamwidth (HBW), degrees	65	62	60	58
Front-to-back ratio, co-polar power @180°± 30°, dB	>23	>23	>23	>22
Vertical beamwidth (VBW), degrees <sup>1</sup>	20	19.6	19.3	18.5
Electrical downtilt (EDT) range, degrees	2-12 orderable in 1 deg increments			
First upper side lobe (USLS) suppression, dB <sup>1</sup>	≤-15	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB <sup>1</sup>	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0			
Max input power per any port, watts	150			
Total composite power all ports (1-10), watts	1500			

<sup>1</sup> Typical value over frequency and tilt

\* For ports 7-10, the electrical downtilt is FET configured with internal RET, where the required electrical downtilt is defined at the time of order per the ordering information below.

Ordering information	
Antenna model	Description
MX10FIT665-xx (xx represents the FET in one degree increments for 3.4-4.2 GHz)	6F X- Pol 10 Port FIT 65° 2-14°/ 0-9°/ 2-12°, 4.3-10 & SBTs xx=02 thru 12 for each 1 degree tilt 3.4-4.2 GHz Examples MX10FIT665-02 – 2deg, MX10FIT665-09 – 9deg, MX10FIT665-12-12deg
Optional accessories	
<a href="#">AISG cables</a>	M/F cables for AISG connections
<a href="#">PCU-1000 RET controller</a>	Stand-alone controller for RET control and configurations
<a href="#">91900314-02</a>	Dual Mount Bracket (see 91900314 bracket document for details)

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	70.9/ 12.2/ 7.5 (1800/ 309.9/ 190.5)
Shipping dimensions length/width/height, inches (mm)	76/ 20/ 14.5 (1930/ 508/ 368)
No. of RF input ports, connector type, and location	10 x 4.3-10 female, bottom
RF connector torque	96 lbf-in (10.85 N·m or 8 lbf-ft)
Net antenna weight, lb (kg)	53.4 (24.3)
Shipping weight, lb (kg)	97.5 (44.3)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	20.3 (9.2)
Range of mechanical up/down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal and lateral, and rear wind loading @ 150 km/h, lbf (N)	66.9 (297.6), 60.0 (266.9)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	1.49
EPA frontal and lateral, ft <sup>2</sup> , (m <sup>2</sup> )	3.0 (0.28), 3.6 (0.33)

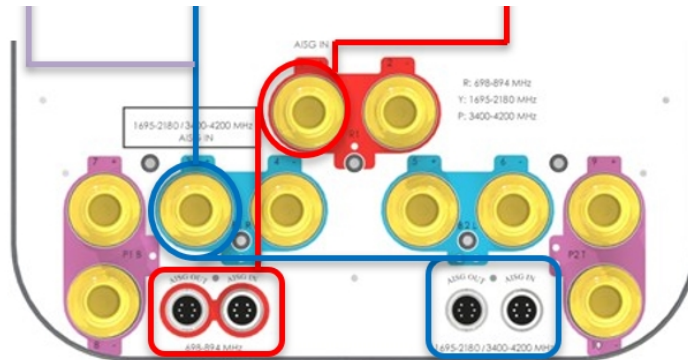


Remote electrical tilt (RET 1000) information	
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9 or RF port bias-t
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors and 2 RF port bias-ts
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 698-894 MHz	1
Total no. of internal RETs 1695-2180 MHz	1
Total no. of internal RETs 3400-4200 MHz	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

### RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF smart bias-t port as shown below:

Band	RF port	Band	RF port	Band	RF port
3400-4200	7-10	1695-2180	3-6	698-894	1-2



Note: The RET Device for 3400-4200 MHz is connected via the 1695-2180 Port 3 Bias T port or 1695-2180/3400-4200 MHz AISG ports.

### Array topology

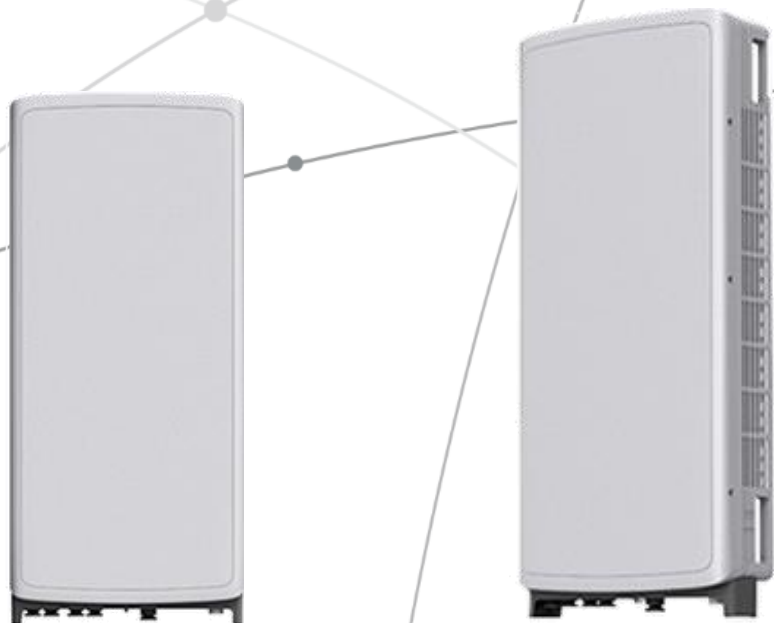
5 sets of radiating arrays R1: 698-894 MHz B1: 1695-2180 MHz B2: 1695-2180 MHz P1: 3400-4200 MHz P2: 3400-4200 MHz	<table border="1"> <thead> <tr> <th>Band</th> <th>RF port</th> </tr> </thead> <tbody> <tr> <td>698-894</td> <td>1-2</td> </tr> <tr> <td>1695-2180</td> <td>3-4</td> </tr> <tr> <td>1695-2180</td> <td>5-6</td> </tr> <tr> <td>3400-4200</td> <td>7-8</td> </tr> <tr> <td>3400-4200</td> <td>9-10</td> </tr> </tbody> </table>	Band	RF port	698-894	1-2	1695-2180	3-4	1695-2180	5-6	3400-4200	7-8	3400-4200	9-10	
	Band	RF port												
698-894	1-2													
1695-2180	3-4													
1695-2180	5-6													
3400-4200	7-8													
3400-4200	9-10													

## **SAMSUNG** C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

Model Code : MT6407-77A



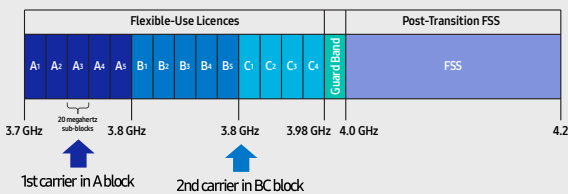
## Points of Differentiation

### Wide Bandwidth

With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

Samsung C-Band massive MIMO Radio covers the entire C-Band 280 MHz spectrum, so it can meet the operator's needs in current A block and future B/C blocks

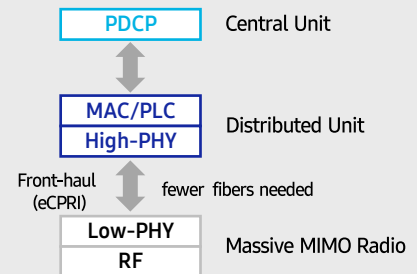
C-Band spectrum supported by Massive MIMO Radio



### Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.

It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.

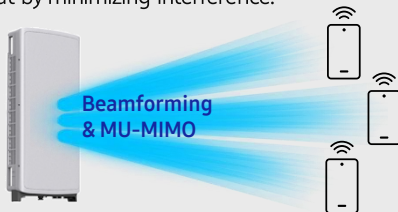


### Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

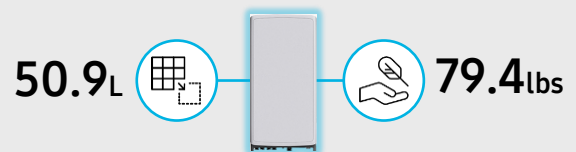
Furthermore, as C-Band massive MIMO Radio supports MU-MIMO (Multi-user MIMO), it enables to increase user throughput by minimizing interference.



### Well Matched Design

Samsung C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 50.9L and 79.4lbs. This makes it easy to install the Radio.

It is designed to look solid and compact, with a low profile appearance so that, when installed, harmonizes well with the surrounding environment.



## Technical Specifications

Item	Specification
Tech	NR
Band	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/Weight	16.06 x 35.06 x 5.51 inch (50.86L) / 79.4 lbs



# SAMSUNG



## **About Samsung Electronics Co., Ltd.**

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

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# Specifications

The table below outlines the main specifications of the RRH.

**Table 1. Specifications**

Item	RT4401-48A
Air Technology	LTE
Band	Band 48 (3.5 GHz)
Operating Frequency (MHz)	3550 to 3700
RF Chain	4TX/4RX
Input Power	-48 V DC (-38 to -57 V DC, 1 SKU), with clip-on AC-DC converter (Option)
Dimension (W × D × H) (mm)	8.55 in. (217.4) × 4.15 in. (105.5) × 13.91 in. (353.5) * RRH only 11.39 in. (289.4) × 5.45 in. (138.5) × 16.16 in. (410.5) * with Clip-on antenna, AC-DC power unit
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A [B48]: FCC 47 CFR 96.41 e)
Spectrum Analyzer	TX/RX Support
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
Operating Humidity	5 to 100 [%] (RH), condensing, not to exceed 30 g/m <sup>3</sup> absolute humidity
Altitude	-60 to 1,800 m
Earthquake	Telcordia Earthquake Risk Zone4 (Telcordia GR-63-CORE)
Vibration in Use	Office Vibration
Transportation Vibration	Transportation Vibration
Noise	Fanless (natural convection cooling)
Wind Resistance	Telcordia GR-487-CORE, Section 3.34
EMC	FCC Title 47, CFR Part 96
Safety	UL 60950-1 2nd ED



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Item	RT4401-48A
	UL 62368-1 UL 60950-22
RF	FCC Title 47, CFR Part 96

The table below outlines the AC/DC power unit specifications of the RRH system.

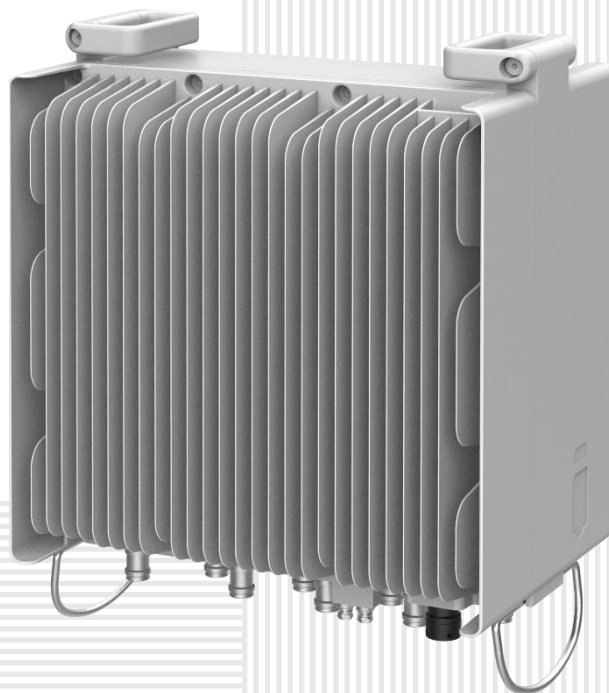
# SAMSUNG

## AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER  
FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code RF4439d-25A



Homepage  
[samsungnetworks.com](http://samsungnetworks.com)

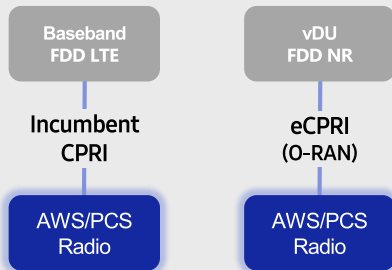


Youtube  
[www.youtube.com/samsung5g](http://www.youtube.com/samsung5g)

## Points of Differentiation

### Continuous Migration

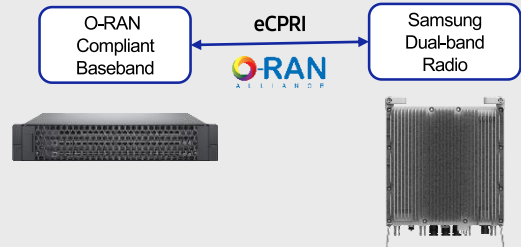
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



### O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

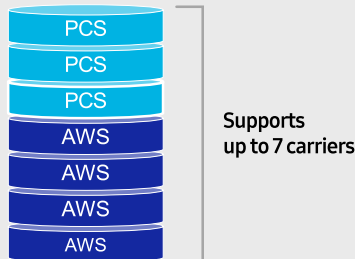
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



### Optimum Spectrum Utilization

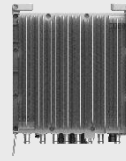
The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



### Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



- 2 FH connectivity
- O-RAN capability
- More carriers and spectrum

Same as an incumbent radio volume

## Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

# SAMSUNG

## 700/850MHZ MACRO RADIO

DUAL-BAND AND HIGH POWER  
FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This 700/850MHz 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code RF4440d-13A



Homepage  
[samsungnetworks.com](http://samsungnetworks.com)

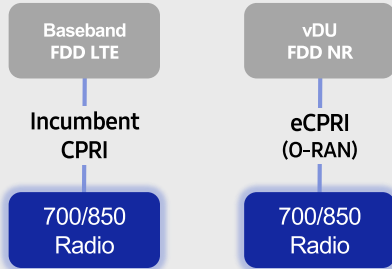


Youtube  
[www.youtube.com/samsung5g](http://www.youtube.com/samsung5g)

## Points of Differentiation

### Continuous Migration

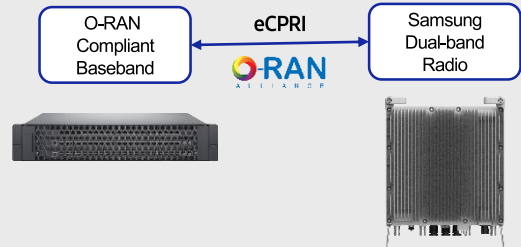
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



### O-RAN Compliant

A standardized O-RAN radio can help when implementing cost-effective networks because it is capable of sending more data without compromising additional investments.

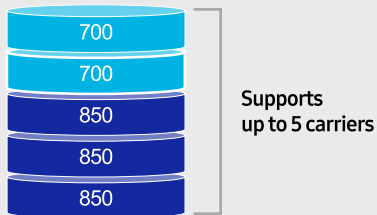
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



### Optimum Spectrum Utilization

The number of required carriers varies according to site (region). The ability to support many carriers is essential for using all frequencies that the operator has available.

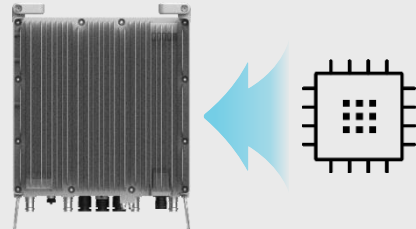
The new 700/850MHz dual-band radio can support up to 2 carriers in the B13 (700MHz) band and 3 carriers in the B5 (850MHz) band, respectively.



### Secured Integrity

Access to sensitive data is allowed only to authorized software.

The Samsung radio's CPU can protect root of trust, which is credential information to verify SW integrity, and secure storage provides access control to sensitive data by using dedicated hardware (TPM).

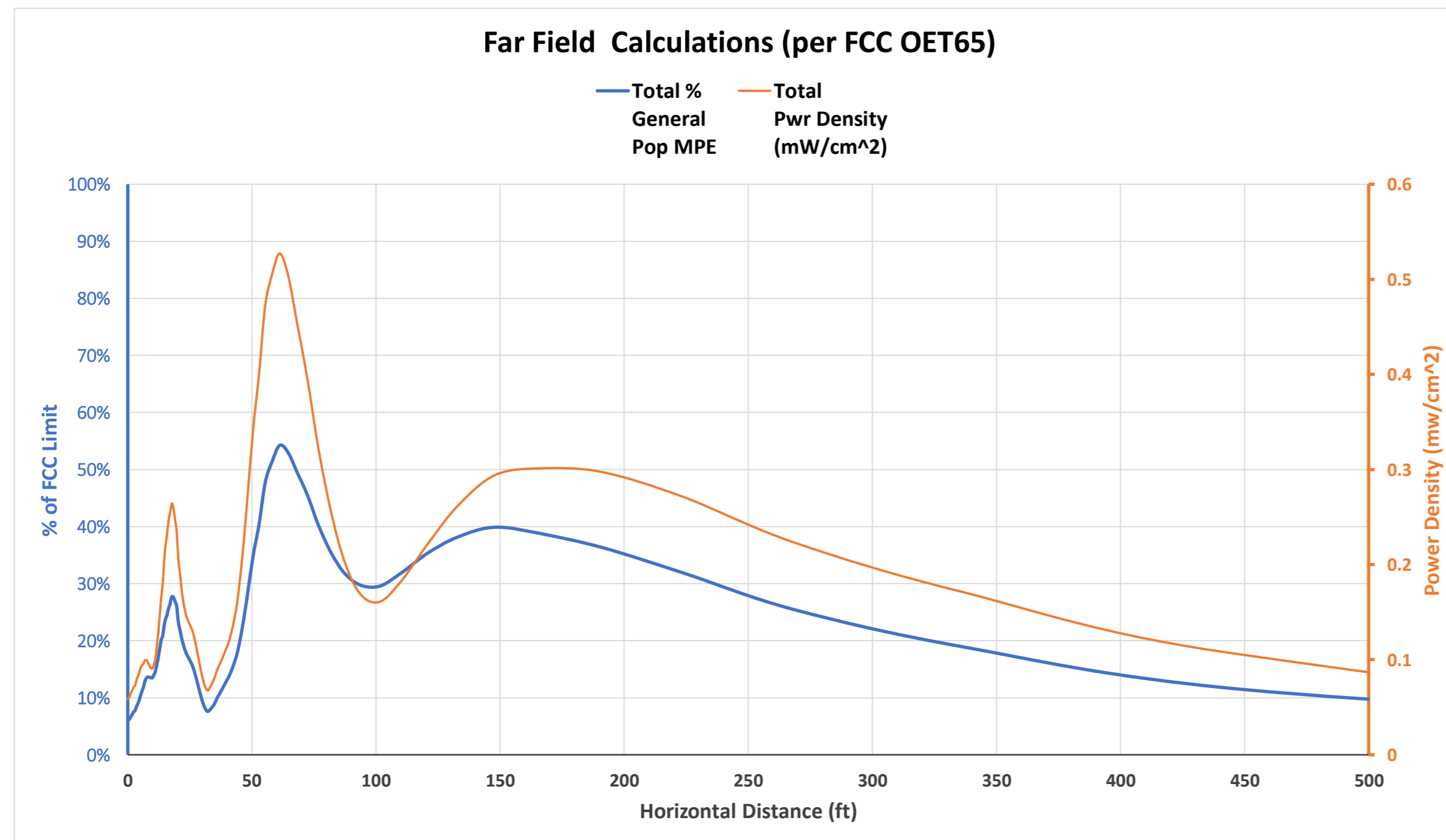


## Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B13(700MHz), B5(850MHz)
Frequency Band	DL: 746 – 756MHz, UL: 777 – 787MHz DL: 869 – 894MHz, UL: 824 – 849MHz
RF Power	(B13) 4 × 40W or 2 × 60W (B5) 4 × 40W or 2 × 60W
IBW/OBW	(B13) 10MHz / 10MHz (B5) 25MHz / 25MHz
Installation	Pole, Wall
Size/Weight	14.96 x 14.96 x 9.05inch (33.2L) / 70.33 lb

# **ATTACHMENT 3**

Location	CHESHIRE EAST CT					
Date	11/14/2022					
Band	C-Band	CBRS	AWS	PCS	850-LTE	700
Operating Frequency (MHz)	3,700	3,550	2,145	1,970	880	746
General Population MPE (mW/cm <sup>2</sup> )	1	1	1	1	0.586666667	0.497333333
ERP Per Transmitter (Watts)	21,878	22	1,530	2,138	1,023	1,012
Number of Transmitters	2	4	4	4	4	4
Antenna Centerline (feet)	29.5	29.5	29.5	29.5	29.5	29.5
Total ERP (Watts)	43,755	89	6,122	8,552	4,093	4,046
Total ERP (dBm)	76	50	68	69	66	66
Maximum % of General Population Limit	54.2%					



Angle Below Horizon	Power Density (mW/cm <sup>2</sup> )						Percent of General Population MPE							Distance	Total Pwr Density (mW/cm <sup>2</sup> )	Total % General Pop MPE		
	C-Band	CBRS	AWS	PCS	850-LTE	700 MHz	39GHz	28GHz	C-Band	CBRS	AWS	PCS	Cellular				CDMA	700 MHz
90	0.055556923	0.000106031	0.001382189	0.000507888	4.42351E-05	0.001150187	0.00%	0.00%	5.56%	0.01%	0.14%	0.05%	0.01%	0.00%	0.23%	0	0.058747452	5.99%
89	0.055540001	0.000124538	0.001863954	0.000496176	5.20756E-05	0.001382407	0.00%	0.00%	5.55%	0.01%	0.19%	0.05%	0.01%	0.00%	0.28%	0.410194026	0.059459151	6.09%
88	0.056781767	0.000136743	0.002512107	0.000507269	5.43548E-05	0.001738758	0.00%	0.00%	5.68%	0.01%	0.25%	0.05%	0.01%	0.00%	0.35%	0.820638083	0.061730998	6.35%
87	0.058015895	0.000163773	0.003157739	0.000553362	4.94966E-05	0.002236542	0.00%	0.00%	5.80%	0.02%	0.32%	0.06%	0.01%	0.00%	0.45%	1.231582813	0.064178808	6.65%
86	0.059240643	0.000205739	0.00378834	0.000621798	4.62007E-05	0.002809635	0.00%	0.00%	5.92%	0.02%	0.38%	0.06%	0.01%	0.00%	0.56%	1.643280081	0.066712355	6.96%
85	0.060454222	0.000235571	0.004337663	0.000695755	5.27783E-05	0.003447123	0.00%	0.00%	6.05%	0.02%	0.43%	0.07%	0.01%	0.00%	0.69%	2.055983593	0.069223112	7.27%
84	0.061654798	0.000257432	0.004740194	0.000727774	6.48628E-05	0.004036426	0.00%	0.00%	6.17%	0.03%	0.47%	0.07%	0.01%	0.00%	0.81%	2.469949529	0.071481487	7.56%
83	0.061410071	0.000274749	0.005176888	0.000724885	6.74945E-05	0.004723563	0.00%	0.00%	6.14%	0.03%	0.52%	0.07%	0.01%	0.00%	0.95%	2.885437181	0.072377651	7.72%
82	0.064009397	0.000286378	0.005650319	0.000687501	1.81248E-05	0.00539851	0.00%	0.00%	6.40%	0.03%	0.57%	0.07%	0.00%	0.00%	1.09%	3.302709616	0.076050229	8.15%
81	0.066677305	0.000291524	0.006163214	0.000653142	0.000143221	0.006166066	0.00%	0.00%	6.67%	0.03%	0.62%	0.07%	0.02%	0.00%	1.24%	3.722034348	0.080094472	8.64%
80	0.067833012	0.000289826	0.00656538	0.00063602	0.000264527	0.007202301	0.00%	0.00%	6.78%	0.03%	0.66%	0.06%	0.05%	0.00%	1.45%	4.143684047	0.082791223	9.03%
79	0.068965412	0.000268737	0.006989732	0.00064515	0.000362794	0.008803624	0.00%	0.00%	6.90%	0.03%	0.70%	0.06%	0.06%	0.00%	1.77%	4.567937265	0.086035449	9.52%
78	0.070072396	0.000232939	0.00743663	0.000718748	0.000453498	0.011004673	0.00%	0.00%	7.01%	0.02%	0.74%	0.07%	0.08%	0.00%	2.21%	4.995079199	0.089918884	10.14%
77	0.069532212	0.000196283	0.007551187	0.000897874	0.000541022	0.014067477	0.00%	0.00%	6.95%	0.02%	0.76%	0.09%	0.09%	0.00%	2.83%	5.425402491	0.092786055	10.74%
76	0.067382391	0.000147653	0.007662591	0.001231901	0.000675422	0.017562105	0.00%	0.00%	6.74%	0.01%	0.77%	0.12%	0.12%	0.00%	3.53%	5.859208067	0.094662063	11.29%
75	0.063771369	9.4476E-05	0.007593726	0.001760578	0.000926093	0.021411934	0.00%	0.00%	6.38%	0.01%	0.76%	0.18%	0.16%	0.00%	4.31%	6.296806022	0.095558175	11.79%
74	0.061719366	5.76922E-05	0.007182087	0.002526102	0.001263136	0.02608865	0.00%	0.00%	6.17%	0.01%	0.72%	0.25%	0.22%	0.00%	5.25%	6.738516565	0.098837034	12.61%
73	0.057007345	4.13644E-05	0.006633764	0.003605457	0.001725677	0.030336185	0.00%	0.00%	5.70%	0.00%	0.66%	0.36%	0.29%	0.00%	6.10%	7.184671014	0.099349792	13.12%
72	0.052619999	3.64625E-05	0.005983841	0.005037097	0.002249984	0.033665184	0.00%	0.00%	5.26%	0.00%	0.60%	0.50%	0.38%	0.00%	6.77%	7.635612861	0.099592567	13.52%

71	0.04635305	3.95161E-05	0.005151189	0.006578211	0.002806125	0.036484506	0.00%	0.00%	4.64%	0.00%	0.52%	0.66%	0.48%	0.00%	7.34%	8.091698912	0.097412597	13.63%
70	0.039875837	5.14524E-05	0.00443138	0.008351016	0.003402033	0.038613571	0.00%	0.00%	3.99%	0.01%	0.44%	0.84%	0.58%	0.00%	7.76%	8.553300505	0.09472529	13.61%
69	0.034280067	7.529E-05	0.003989063	0.009909943	0.004037107	0.039909089	0.00%	0.00%	3.43%	0.01%	0.40%	0.99%	0.69%	0.00%	8.02%	9.020804823	0.092200559	13.54%
68	0.030836843	0.000102274	0.003845024	0.010967292	0.004798423	0.040280983	0.00%	0.00%	3.08%	0.01%	0.38%	1.10%	0.82%	0.00%	8.10%	9.494616307	0.090830839	13.49%
67	0.029702318	0.000110532	0.003789828	0.012128856	0.005673081	0.039702742	0.00%	0.00%	2.97%	0.01%	0.38%	1.21%	0.97%	0.00%	7.98%	9.975158181	0.091107358	13.52%
66	0.030633633	0.000103967	0.00373274	0.013098694	0.006717801	0.040015538	0.00%	0.00%	3.06%	0.01%	0.37%	1.31%	1.15%	0.00%	8.05%	10.4628741	0.094302373	13.95%
65	0.034617014	0.000100227	0.003673828	0.013530664	0.007591337	0.039383994	0.00%	0.00%	3.46%	0.01%	0.37%	1.35%	1.29%	0.00%	7.92%	10.95822997	0.098897064	14.41%
64	0.04488059	0.000120991	0.003295245	0.013307242	0.008771769	0.03785199	0.00%	0.00%	4.49%	0.01%	0.33%	1.33%	1.50%	0.00%	7.61%	11.46171583	0.108227828	15.27%
63	0.058143337	0.000175872	0.002693575	0.012460327	0.009452106	0.03635215	0.00%	0.00%	5.81%	0.02%	0.27%	1.25%	1.61%	0.00%	7.31%	11.97384806	0.119277368	16.27%
62	0.075267594	0.000227669	0.001788287	0.011445573	0.009741743	0.034884957	0.00%	0.00%	7.53%	0.02%	0.18%	1.14%	1.66%	0.00%	7.01%	12.49517164	0.133355824	17.55%
61	0.097359133	0.000228598	0.000859421	0.010218948	0.009759001	0.031945291	0.00%	0.00%	9.74%	0.02%	0.09%	1.02%	1.66%	0.00%	6.42%	13.02626271	0.150370393	18.95%
60	0.120170937	0.000195207	0.000180148	0.009568171	0.00937191	0.027914484	0.00%	0.00%	12.02%	0.02%	0.02%	0.96%	1.60%	0.00%	5.61%	13.56773133	0.167400856	20.22%
59	0.138315029	0.000155441	7.70369E-05	0.009613884	0.008354068	0.023275527	0.00%	0.00%	13.83%	0.02%	0.01%	0.96%	1.42%	0.00%	4.68%	14.12022455	0.179790986	20.92%
58	0.166563236	0.000118107	0.000656763	0.010558656	0.007287991	0.018097113	0.00%	0.00%	16.66%	0.01%	0.07%	1.06%	1.24%	0.00%	3.64%	14.68442977	0.203281865	22.67%
57	0.187034183	9.62979E-05	0.001769091	0.012104601	0.00606666	0.013120523	0.00%	0.00%	18.70%	0.01%	0.18%	1.21%	1.03%	0.00%	2.64%	15.26107844	0.220191356	23.77%
56	0.200394875	8.76158E-05	0.003074085	0.014253322	0.004930776	0.009287884	0.00%	0.00%	20.04%	0.01%	0.31%	1.43%	0.84%	0.00%	1.87%	15.85095015	0.232028557	24.49%
55	0.21451972	9.37914E-05	0.004239322	0.016691552	0.004202385	0.00703878	0.00%	0.00%	21.45%	0.01%	0.42%	1.67%	0.72%	0.00%	1.42%	16.45487715	0.246785551	25.69%
54	0.219105597	9.36158E-05	0.004747693	0.019574153	0.004184871	0.007025603	0.00%	0.00%	21.91%	0.01%	0.47%	1.96%	0.71%	0.00%	1.41%	17.07374941	0.254731534	26.48%
53	0.223581268	7.94568E-05	0.004734396	0.02241119	0.004575769	0.009025382	0.00%	0.00%	22.36%	0.01%	0.47%	2.24%	0.78%	0.00%	1.81%	17.70852018	0.264407462	27.68%
52	0.212717133	6.2878E-05	0.004108012	0.025051398	0.005355884	0.012700845	0.00%	0.00%	21.27%	0.01%	0.41%	2.51%	0.91%	0.00%	2.55%	18.36021222	0.259996149	27.66%
51	0.193082704	4.74722E-05	0.003479947	0.028039668	0.005844832	0.017051929	0.00%	0.00%	19.31%	0.01%	0.35%	2.80%	1.00%	0.00%	3.43%	19.02992478	0.247546552	26.89%
50	0.175083861	2.77934E-05	0.003229054	0.030568604	0.005423439	0.021344023	0.00%	0.00%	17.51%	0.00%	0.32%	3.06%	0.92%	0.00%	4.29%	19.71884133	0.235676775	26.11%
49	0.141350682	1.41577E-05	0.004227923	0.031719578	0.003726718	0.02434042	0.00%	0.00%	14.14%	0.00%	0.42%	3.17%	0.64%	0.00%	4.89%	20.42823834	0.205379479	23.26%
48	0.119367225	1.57972E-05	0.007633335	0.03295449	0.002387337	0.025877079	0.00%	0.00%	11.94%	0.00%	0.76%	3.30%	0.41%	0.00%	5.20%	21.15949504	0.188235263	21.61%
47	0.089741456	2.53331E-05	0.014415254	0.032735773	0.006683774	0.026243591	0.00%	0.00%	8.97%	0.00%	1.44%	3.27%	1.14%	0.00%	5.28%	21.91410452	0.169845182	20.11%
46	0.06585767	3.5506E-05	0.02479908	0.030877054	0.010462489	0.024810557	0.00%	0.00%	6.59%	0.00%	2.48%	3.09%	1.78%	0.00%	4.99%	22.69368621	0.156842356	18.93%
45	0.044025894	5.18089E-05	0.038863095	0.027844388	0.013327136	0.022373727	0.00%	0.00%	4.40%	0.01%	3.89%	2.78%	2.27%	0.00%	4.50%	23.5	0.146486051	17.85%
44	0.027433469	8.31719E-05	0.05421381	0.02395026	0.015463556	0.019692955	0.00%	0.00%	2.74%	0.01%	5.42%	2.40%	2.64%	0.00%	3.96%	24.33496237	0.140837222	17.16%
43	0.015216152	0.000129718	0.06731844	0.020106401	0.016723743	0.016532366	0.00%	0.00%	1.52%	0.01%	6.73%	2.01%	2.85%	0.00%	3.32%	25.20066469	0.136026821	16.45%
42	0.008236828	0.000184695	0.074402782	0.016857356	0.016473604	0.013860858	0.00%	0.00%	0.82%	0.02%	7.44%	1.69%	2.81%	0.00%	2.79%	26.0993941	0.130016124	15.56%
41	0.00535333	0.000245087	0.073190248	0.014779288	0.015836262	0.011082919	0.00%	0.00%	0.54%	0.02%	7.32%	1.48%	2.70%	0.00%	2.23%	27.03365757	0.120487134	14.28%
40	0.007959269	0.000310863	0.064077031	0.012939058	0.014551301	0.008647754	0.00%	0.00%	0.80%	0.03%	6.41%	1.29%	2.48%	0.00%	1.74%	28.00620943	0.108485276	12.75%
39	0.014537234	0.000401955	0.049924186	0.010802177	0.012431125	0.006584335	0.00%	0.00%	1.45%	0.04%	4.99%	1.08%	2.12%	0.00%	1.32%	29.02008318	0.094681013	11.01%
38	0.024741279	0.000543398	0.033056079	0.008403334	0.010362172	0.005005556	0.00%	0.00%	2.47%	0.05%	3.31%	0.84%	1.77%	0.00%	1.01%	30.07862836	0.082111818	9.45%
37	0.034967472	0.000698812	0.01735775	0.006091072	0.008216614	0.003978271	0.00%	0.00%	3.50%	0.07%	1.74%	0.61%	1.40%	0.00%	0.80%	31.18555331	0.071309991	8.11%
36	0.04499617	0.000821999	0.006591811	0.005299136	0.00622593	0.003794947	0.00%	0.00%	4.50%	0.08%	0.66%	0.53%	1.06%	0.00%	0.76%	32.34497513	0.067729993	7.60%
35	0.055197675	0.000896637	0.00111622	0.006822606	0.004709225	0.004549367	0.00%	0.00%	5.52%	0.09%	0.11%	0.68%	0.80%	0.00%	0.91%	33.56147816	0.07329173	8.12%
34	0.057525643	0.000978492	4.52575E-05	0.011773104	0.003482492	0.006107896	0.00%	0.00%	5.75%	0.10%	0.00%	1.18%	0.59%	0.00%	1.23%	34.84018276	0.079912885	8.85%
33	0.057142036	0.001017775	0.00081806	0.019860273	0.002944316	0.00837502	0.00%	0.00%	5.71%	0.10%	0.08%	1.99%	0.50%	0.00%	1.68%	36.18682665	0.090157479	10.07%
32	0.052863705	0.000985947	0.001199463	0.029186841	0.0035825	0.01045172	0.00%	0.00%	5.29%	0.10%	0.12%	2.92%	0.61%	0.00%	2.10%	37.60786143	0.098270176	11.14%
31	0.051099524	0.000869186	0.00060848	0.038058034	0.005005477	0.01242931	0.00%	0.00%	5.11%	0.09%	0.06%	3.81%	0.85%	0.00%	2.50%	39.11056784	0.108070011	12.42%
30	0.056581987	0.000800524	7.91603E-05	0.041087308	0.006511887	0.013449568	0.00%	0.00%	5.66%	0.08%	0.01%	4.11%	1.11%	0.00%	2.70%	40.70319398	0.118510434	13.67%
29	0.075141635	0.000718748	0.000816037	0.038628704	0.007886954	0.0129393	0.00%	0.00%	7.51%	0.07%	0.08%	3.86%	1.34%	0.00%	2.60%	42.39512225	0.136131378	15.48%
28	0.109133168	0.000614685	0.00284306	0.030198562	0.008109338	0.011587425	0.00%	0.00%	10.91%	0.06%	0.28%	3.02%	1.38%	0.00%	2.33%	44.19707194	0.162486238	17.99%
27	0.165512848	0.00047811	0.005183951	0.01909243	0.007583337	0.00922278	0.00%	0.00%	16.55%	0.05%	0.52%	1.91%	1.29%	0.00%	1.85%	46.12134688	0.207073457	22.17%
26	0.239013321	0.000338157	0.006827336	0.008921782	0.005747127	0.00637459	0.00%	0.00%	23.90%	0.03%	0.68%	0.89%	0.98%	0.00%	1.28%	48.18214028	0.267223212	27.77%
25	0.321095856	0.000212976	0.007988475	0.002226713	0.00353723	0.003914397	0.00%	0.00%	32.11%	0.02%	0.80%	0.22%	0.60%	0.00%	0.79%	50.39591263	0.338975648	34.54%
24	0.383146429	0.000108159	0.009315239	2.31416E-05	0.001494147	0.002626606	0.00%	0.00%	38.31%	0.01%	0.93%	0.00%	0.25%	0.00%	0.53%	52.78186419	0.396713721	40.04%
23	0.455506109	3.22991E-05	0.010822396	0.001022171	0.001316809	0.003269824	0.00%	0.00%	45.55%	0.00%	1.08%	0.10%	0.22%	0.00%	0.66%	55.3625306	0.471969608	47.62%
22	0.480716486	5.05341E-07	0.012238219	0.0031836	0.002647998	0.006575354	0.00%	0.00%	48.07%	0.00%	1.22%	0.32%	0.45%	0.00%	1.32%	58.16454106	0.505362163	51.39%
21	0.493624272	2.59473E-05	0.012001229	0.0055517	0.003423144	0.012572645	0.00%	0.00%	49.36%	0.00%	1.20%	0.56%	0.58%	0.00%	2.53%	61.21959302	0.527198937	54.23%
20	0.460088684	0.000110799	0.00996944	0.008787616	0.004622429	0.021820852	0.00%	0.00%	46.01%	0.01%	1.00%	0.88%	0.79%	0.00%	4.39%	64.56571936	0.505399819	53.07%
19	0.389064869	0.000224759	0.007513654	0.013869203	0.010024222	0.033577795	0.00%	0.00%	38.91%	0.02%	0.75%	1.39%	1.71%	0.00%	6.75%	68.24895563	0.454274503	49.53%
18	0.305283204	0.000343083	0.005761454	0.020736354	0.017608873	0.046852532	0.00%	0.00%	30.53%	0.03%								



<b>degree below horizon</b>	<b>AT1K02 (39GHz)</b>	<b>AT1K01 (28GHz)</b>	<b>MT6407-77A (3,730MHz)</b>	<b>XXDWMM- 12.5-65 (3,550MHz)</b>	<b>AWS (2,155MHz)</b>	<b>PCS (1,962MHz)</b>
0	0.08	0.08	0.4	0.29	1	0.19
1	0.39	0.39	0	0.09	0.1	0
2	0.3	0.3	0.1	0	0	0.39
3	0	0	0.2	0	0.8	1.59
4	0.31	0.31	0.4	0.09	2.5	3.59
5	0.42	0.42	1.1	0.29	5.4	6.59
6	0.13	0.13	1.8	0.59	10.1	10.89
7	0.44	0.44	2.9	1	17.8	17.59
8	0.36	0.36	4.4	1.5	20.6	30.79
9	0.09	0.09	6.1	2	16.4	31.29
10	0.4	0.4	8.5	2.59	15.8	31.1
11	0.52	0.52	11.8	3.19	18	31.9
12	0.26	0.26	16.7	3.89	23.4	21.5
13	0.57	0.57	28.8	4.79	25.7	16.39
14	0.51	0.51	24	5.79	20.6	13.59
15	0.26	0.26	16.3	7.1	18.3	12.2
16	0.58	0.58	12.8	8.5	17.7	11.89
17	1.07	1.07	10.8	10.19	18.1	12.59
18	0.55	0.55	9.5	12.1	18.2	14.09
19	0.58	0.58	8.9	14.39	17.5	16.29
20	1.08	1.08	8.6	17.89	16.7	18.7
21	0.59	0.59	8.7	24.6	16.3	21.1
22	0.65	0.65	9.2	42.09	16.6	23.9
23	1.22	1.22	9.8	24.4	17.5	29.2
24	0.99	0.99	10.9	19.5	18.5	46
25	0.8	0.8	12	16.89	19.5	26.5
26	1.11	1.11	13.6	15.2	20.5	20.79
27	1.12	1.12	15.5	14	22	17.79
28	0.95	0.95	17.6	13.2	24.9	16.09
29	1.25	1.25	19.5	12.8	30.6	15.3
30	2.03	2.03	21	12.6	41	15.3
31	3.32	3.32	21.7	12.5	32.4	15.89
32	5.21	5.21	21.8	12.2	29.7	17.29
33	7.88	7.88	21.7	12.3	31.6	19.2
34	11.74	11.74	21.9	12.7	44.4	21.7
35	16.19	16.19	22.3	13.3	30.7	24.29
36	14.94	14.94	23.4	13.89	23.2	25.6
37	15.07	15.07	24.7	14.8	19.2	25.2
38	16.33	16.33	26.4	16.09	16.6	24
39	15.38	15.38	28.9	17.59	15	23.1

40	15.03	15.03	31.7	18.89	14.1	22.5
41	15.75	15.75	33.6	20.1	13.7	22.1
42	17.49	17.49	31.9	21.5	13.8	21.7
43	20.55	20.55	29.4	23.2	14.4	21.1
44	21.87	21.87	27	25.29	15.5	20.5
45	20.56	20.56	25.1	27.5	17.1	20
46	20.35	20.35	23.5	29.29	19.2	19.7
47	21.02	21.02	22.3	30.9	21.7	19.59
48	21.62	21.62	21.2	33.09	24.6	19.7
49	20.49	20.49	20.6	33.7	27.3	20
50	20.28	20.28	19.8	30.9	28.6	20.29
51	20.83	20.83	19.5	28.7	28.4	20.79
52	22.1	22.1	19.2	27.6	27.8	21.4
53	22.84	22.84	19.1	26.7	27.3	22
54	23.96	23.96	19.3	26.1	27.4	22.7
55	25.61	25.61	19.5	26.2	28	23.5
56	24.75	24.75	19.9	26.6	29.5	24.29
57	24.54	24.54	20.3	26.29	32	25.1
58	24.84	24.84	20.9	25.5	36.4	25.79
59	25.6	25.6	21.8	24.4	45.8	26.29
60	25.03	25.03	22.5	23.5	42.2	26.4
61	24.18	24.18	23.5	22.9	35.5	26.2
62	23.83	23.83	24.7	23	32.4	25.79
63	23.88	23.88	25.9	24.2	30.7	25.5
64	24.25	24.25	27.1	25.9	29.9	25.29
65	24.7	24.7	28.3	26.79	29.5	25.29
66	24.47	24.47	28.9	26.7	29.5	25.5
67	24.47	24.47	29.1	26.5	29.5	25.9
68	24.68	24.68	29	26.9	29.5	26.4
69	25.07	25.07	28.6	28.29	29.4	26.9
70	25.64	25.64	28	30	29	27.7
71	26.36	26.36	27.4	31.2	28.4	28.79
72	27.24	27.24	26.9	31.6	27.8	30
73	28.26	28.26	26.6	31.1	27.4	31.5
74	28.68	28.68	26.3	29.7	27.1	33.09
75	28.98	28.98	26.2	27.6	26.9	34.7
76	29.37	29.37	26	25.7	26.9	36.29
77	29.83	29.83	25.9	24.5	27	37.7
78	30.36	30.36	25.9	23.79	27.1	38.7
79	30.94	30.94	26	23.2	27.4	39.2
80	30.89	30.89	26.1	22.9	27.7	39.29
81	30.44	30.44	26.2	22.9	28	39.2
82	30.13	30.13	26.4	23	28.4	39

83	29.93	29.93	26.6	23.2	28.8	38.79
84	29.81	29.81	26.6	23.5	29.2	38.79
85	29.76	29.76	26.7	23.9	29.6	39
86	29.78	29.78	26.8	24.5	30.2	39.5
87	29.85	29.85	26.9	25.5	31	40
88	29.97	29.97	27	26.29	32	40.4
89	30.13	30.13	27.1	26.7	33.3	40.5
90	30.33	30.33	27.1	27.4	34.6	40.4

<b>850-LTE (880MHz)</b>	<b>850-CDMA (869MHz)</b>	<b>700-LTE (746MHz)</b>
2.79	0	4.8
1.89	0.02	3.6
1.19	0.14	2.6
0.59	0.36	1.8
0.29	0.68	1.2
0.09	1.1	0.7
0	1.63	0.3
0.09	2.28	0.1
0.29	3.06	0
0.69	3.96	0
1.19	5.05	0.2
1.79	6.3	0.5
2.59	7.76	1
3.59	9.52	1.6
4.69	11.54	2.3
5.89	14.03	3.3
7.49	17.05	4.4
9.29	20.58	5.7
11.6	23.59	7.3
14.5	23.39	9.2
18.29	21.14	11.5
20	19.1	14.3
21.5	17.69	17.5
24.9	16.78	20.9
24.7	16.27	22.2
21.29	16.09	20.8
19.5	16.19	19
18.6	16.55	17.7
18.6	17.14	17
19	17.99	16.8
20.1	19.1	16.9
21.5	20.51	17.5
23.2	22.33	18.5
24.29	24.6	19.7
23.79	27.59	21.3
22.7	31.9	22.8
21.7	38.48	23.8
20.7	41.89	23.8
19.89	35.75	23
19.29	32.01	22

18.79	29.87	21
18.6	28.59	20.1
18.6	27.83	19.3
18.7	27.45	18.7
19.2	27.45	18.1
20	27.71	17.7
21.2	28.25	17.4
23.29	29.03	17.3
27.9	30.1	17.5
26.1	31.47	17.9
24.6	33.18	18.6
24.4	35.42	19.7
24.9	38.33	21.1
25.7	42.61	22.7
26.2	49.79	23.9
26.29	53.07	24
25.7	45.53	22.9
24.9	41.16	21.5
24.2	38.77	20.2
23.7	37.04	19.2
23.29	35.74	18.5
23.2	34.89	18
23.29	34.18	17.7
23.5	33.65	17.6
23.9	33.31	17.5
24.6	33.07	17.4
25.2	32.91	17.4
26	32.75	17.5
26.79	32.73	17.5
27.6	32.76	17.6
28.4	32.89	17.8
29.29	33.11	18.1
30.3	33.28	18.5
31.5	33.64	19
32.9	33.8	19.7
34.29	34.16	20.6
35.7	34.42	21.5
36.7	34.79	22.5
37.5	35.13	23.6
38.5	35.47	24.6
39.9	35.69	25.5
42.59	35.96	26.2
51.59	36.1	26.8

45.9	36.44	27.4
46.09	36.61	28.1
47	36.69	28.8
47.59	36.85	29.7
47.3	36.89	30.7
46.9	37.29	31.8
47.09	37.43	32.8
47.8	37.72	33.6

# **ATTACHMENT 4**



**STRUCTURAL ANALYSIS REPORT  
95'± MONO-PINE TOWER  
CHESHIRE, CONNECTICUT**

Prepared for  
Verizon Wireless



**Verizon Site Ref:**

**470656; Cheshire East CT**

Site Address: 185 Academy Road, Cheshire, CT 06410

FUZE ID: 15372347

Location Code: 470656

Project Code: 20171649710

APT Filing No. CT141NB9650

Rev 0: October 31, 2022





**Structural Analysis Report  
95' ± Mono-pine Tower  
Cheshire, Connecticut  
prepared for  
Verizon Wireless**

**EXECUTIVE SUMMARY:**

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of a pending 95' ± mono-pine tower structure to support a proposed Verizon equipment installation.

The proposed Verizon installation consists of six (6) proposed panel antennas, three (3) new LSub6 antennas with integrated Radio Heads, the installation of six (6) dual-band Remote Radio Heads (RRHs) & one (1) 12 OVP to be supported by three (3) proposed Commscope Double T-Arm 6' (P/N MTC4074M6996). The proposed Verizon equipment shall be fed by one (1) new 12x24 hybrid cable routed within the host tower. Additional reference can be made to the table on the following page.

The results of this analysis indicate that the mono-pine structure meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with Verizon's proposed equipment installation.

Evaluation of the pending foundation was limited to a comparison of the base reactions calculated under the proposed loading against the design reactions indicated within original design documents prepared by Sabre Industries. Reactions imposed by the proposed installation are less than the published design reactions, indicating that the foundation is adequately sized.

The steel component structure usage is summarized in the table below:

Elevation/Component	Capacity
49.25'-95' (L1)	48%
1' - 49.25' (L2)	51%
Anchor Bolts	35%
Base Plate	47%

**INTRODUCTION:**

A structural analysis of the subject communications tower was performed by APT for Verizon Wireless. The pending tower will be located at 185 Academy Road, Cheshire, Connecticut.

The following information was utilized in the preparation of this analysis:

- RFDS detailing Verizon's proposed equipment changes, latest version.
- Structural Design Report, prepared for Diamond Communications, LLC., by Sabre Industries, (Sabre Job No: 488746 - Revision A), signed and sealed by Robert Beacom, P.E. (CT P.E No. 28396); dated 10/04/21.
- Construction Drawings prepared by APT (Project No. CT141NB9650), marked Rev. 1 dated 10/31/22.

The structure is a 95' ±, galvanized steel, 18-sided mono-pine tower structure designed and manufactured by Sabre Industries.

The analysis was conducted using the following antenna inventory (proposed equipment changes shown in **bold** text, reserved equipment shown in *italics*):

Carrier	Antenna and Appurtenance Make/Model	Elevation	Status	Mount Type	Coax/Feed-Line
Verizon	<b>3) JMA MX10FIT665-02 panel antennas</b> <sup>(5)</sup> <b>3) JMA MX06FIT665-02 panel antennas</b> <sup>(5)</sup> <b>3) Samsung MT6407-77A</b> Panel Antennas w/ Integrated RRHs <b>3) Samsung B2/B66a (RF4439d-25A) RRHs,</b> <b>3) Samsung B5/B13 (RF4440d-13A) RRHs,</b> <b>3) Samsung CBRS RT4401-48A RRHs,</b> <b>1) RVZDC-6627-PF-48 (12OVP)</b>	90' ±	P P P P P P P	Three (3) Commscope Double T-Arm 6' (P/N MTC4074M6996) w/ three (3) SitePRO1 Back to Back Pipe Mount (P/N BBPM-K2) & nine (9) P2.5 STD x 8'-0"L antenna mounting pipes.	(1) 12x24 L.I. Hybrid Cable

Notes:

1. ETR = Existing to Remain; ERL= Existing to be Relocated; **P** = Proposed; *R* =Reserved.
2. Elevations are measured above ground level (AGL). Tower is approximately 1' above grade.
3. All feed-lines noted above shall be routed within interior of the pole unless otherwise noted.
4. Proposed Verizon side-by- side antennas to utilize Dual Mount Antenna Brackets (JMA P/N 91900314-02)
5. Branch EPA and loading provided by Sabre Industries.

**STRUCTURAL ANALYSIS:**

**Methodology:**

This structural analysis has been prepared in accordance with the ANSI/TIA-222-H standard entitled "Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures"; American Institute of Steel Construction (AISC) Manual of Steel Construction, and the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code utilizing the following criteria:

- Load Case 1: 120 mph 3-second gust) wind speed
- Load Case 2: 50mph (3-second gust) wind speed w/ 1.00" ice thickness
- Risk Category: II
- Exposure Category: C
- Topographic Category 1

**Analysis Results:**

The analysis was conducted in accordance with the criteria outlined above with the aforementioned loading. The following table summarizes the results of the analysis:

Elevation/Component	Capacity
49.25'-95' (L1)	48%
1' – 49.25' (L2)	51%
Anchor Bolts	35%
Base Plate	47%

**Foundation:**

Evaluation of the pending foundation was limited to a comparison of the base reactions calculated under the proposed loading against the design reactions indicated within original design documents prepared by Sabre Industries. Reactions imposed by the proposed installation are less than the published design reactions, indicating that the foundation is adequately sized.

The calculated base reactions with the proposed equipment loading are indicated within the table below:

Load Effect	Original Design (TIA-222-H)	Calculated Reactions	Result
Compression	51.93 k	27 k	PASS
Base Shear	71.24 k	40 k	PASS
Overturning Moment	4,728.52 ft-k	2,434 ft-k	PASS

**CONCLUSIONS:**

In conclusion, our analysis indicates that the pending mono-pine tower structure located at 185 Academy Road, Cheshire, Connecticut, meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with Verizon's proposed equipment installation.

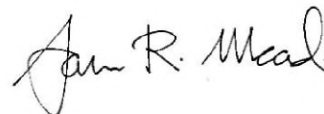
Sincerely,  
**All-Points Technology Corp. P.C.**



Michael S. Trodden, P.E.  
Senior Structural Engineer



Prepared By:  
**All-Points Technology Corp. P.C.**



Jason R. Mead  
Department Manager -  
Structural Services

**LIMITATIONS:**

This report is based on the following:

1. Tower/structure is properly installed and maintained.
2. All members and components are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower/structure is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
7. Material yield stress values as follows:

Monopole: A572 Gr. 65  
Base plate: A572 Gr. 50  
Anchor bolts: A615 Gr. 75

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing members in any manner.
3. Adding or relocating antennas.
4. Installing antenna mounts or waveguide cables.
5. Extending tower.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

# ***Appendix A***

*Design Criteria*

(Add) APPENDIX P MUNICIPALITY – SPECIFIC STRUCTURAL DESIGN PARAMETERS

Municipality	Basic Design Wind Speeds, $V$ (mph)				Allowable Stress Design Wind Speeds, $V_{asd}$ (mph)				Ground Snow Load $P_g$ (psf)	MCE Ground Accelerations		Wind-Borne Debris Region <sup>1</sup>		Hurricane- Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		$S_S$ (g)	$S_I$ (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Andover	110	120	130	135	85	93	101	105	30	0.193	0.055		Yes	
Ansonia	110	120	130	135	85	93	101	105	30	0.202	0.054		Yes	
Ashford	110	120	130	135	85	93	101	105	35	0.181	0.055		Yes	
Avon	110	120	125	130	85	93	97	101	35	0.180	0.054		Yes	
Barkamsted	110	115	125	130	85	89	97	101	35	0.170	0.054		Yes	
Beacon Falls	110	120	130	135	85	93	101	105	30	0.199	0.054		Yes	
Berlin	110	120	130	135	85	93	101	105	30	0.201	0.055		Yes	
Bethany	110	120	130	135	85	93	101	105	30	0.199	0.054		Yes	
Bethel	110	120	125	130	85	93	97	101	30	0.223	0.056		Yes	
Bethlehem	110	120	125	130	85	93	97	101	35	0.186	0.054		Yes	
Bloomfield	110	120	130	135	85	93	101	105	30	0.182	0.055		Yes	
Bolton	110	120	130	135	85	93	101	105	30	0.191	0.055		Yes	
Bozrah	115	125	135	140	89	97	105	108	30	0.197	0.054		Yes	
Branford	115	125	135	135	89	97	105	105	30	0.201	0.053	Type B	Yes	
Bridgeport	110	120	130	135	85	93	101	105	30	0.211	0.054	Type B	Yes	
Bridgewater	110	120	125	130	85	93	97	101	35	0.201	0.055		Yes	
Bristol	110	120	130	130	85	93	101	101	35	0.188	0.054		Yes	
Brookfield	110	120	125	130	85	93	97	101	30	0.210	0.055		Yes	
Brooklyn	115	125	135	135	89	97	105	105	35	0.184	0.054		Yes	
Burlington	110	120	125	130	85	93	97	101	35	0.180	0.054		Yes	
Canaan	105	115	125	130	81	89	97	101	40	0.166	0.054		Yes	
Canterbury	115	125	135	140	89	97	105	108	30	0.187	0.054		Yes	
Canton	110	120	125	130	85	93	97	101	35	0.177	0.054		Yes	
Chaplin	115	125	130	135	89	97	101	105	35	0.184	0.055		Yes	
Cheshire	110	120	130	135	85	93	101	105	30	0.200	0.055		Yes	
Chester	115	125	135	140	89	97	105	108	30	0.213	0.055		Yes	
Clinton	115	125	135	140	89	97	105	108	30	0.205	0.054	Type B	Yes	
Colchester	115	125	135	135	89	97	105	105	30	0.205	0.055		Yes	
Colebrook	105	115	125	130	81	89	97	101	40	0.165	0.054		Yes	
Columbia	115	125	130	135	89	97	101	105	30	0.195	0.055		Yes	

## Ice

---

**Results:**

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Tue Sep 27 2022

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

## Snow

---

**Results:**

Ground Snow Load,  $p_g$  : 30 lb/ft<sup>2</sup>  
Elevation: 240.1 ft

**Data Source:** ASCE/SEI 7-16, Table 7.2-8

**Date Accessed:** Tue Sep 27 2022

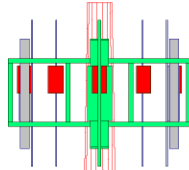
Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

# ***Appendix B***

*Tower Schematic*



95.0 ft



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Top Branches	95.5	Samsung B2/B66A RRH (RF4439d-25A) (Verizon)	90
Top Branches	90.5	Samsung B5/B13 RRH (RF4440d-13A) (Verizon)	90
(3) P2.5 Std x 8.0' Pipe Mount (Verizon)	90	Samsung B5/B13 RRH (RF4440d-13A) (Verizon)	90
(2) P2.5 Std x 8.0' Pipe Mount (Verizon)	90	Samsung B5/B13 RRH (RF4440d-13A) (Verizon)	90
(2) P2.5 Std x 8.0' Pipe Mount (Verizon)	90	Samsung B5/B13 RRH (RF4440d-13A) (Verizon)	90
JMA MX06FIT665-02 (Verizon)	90	MTC4074M6xxx w/o pipes (Verizon)	90
JMA MX06FIT665-02 (Verizon)	90	(3) P2.5 Std x 8.0' Pipe Mount (Verizon)	90
JMA MX10FIT665-02 (Verizon)	90	(3) P2.5 Std x 8.0' Pipe Mount (Verizon)	90
JMA MX10FIT665-02 (Verizon)	90	Branches	85.5
JMA MX10FIT665-02 (Verizon)	90	Branches	80.5
MT6407-77A (Verizon)	90	Branches	75.5
MT6407-77A (Verizon)	90	Branches	70.5
MT6407-77A (Verizon)	90	Branches	65.5
CBRS RT4401-48A RRH (Verizon)	90	Branches	60.5
CBRS RT4401-48A RRH (Verizon)	90	Branches	55.5
CBRS RT4401-48A RRH (Verizon)	90	Branches	50.5
Raycap RDC-6627-PF-48 OVP (Verizon)	90	Branches	45.5
Samsung B2/B66A RRH (RF4439d-25A) (Verizon)	90	Branches	40.5
Samsung B2/B66A RRH (RF4439d-25A) (Verizon)	90	Branches	35.5
Samsung B2/B66A RRH (RF4439d-25A) (Verizon)	90	Branches	31.5

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

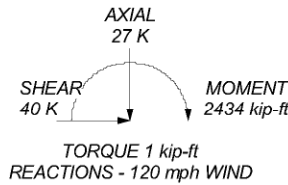
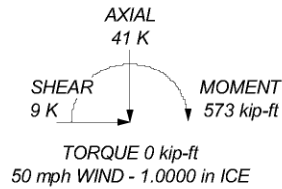
1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 50.7%

Section	1	2
Length (ft)	45.75	53.25
Number of Sides	18	18
Thickness (in)	0.2500	0.3750
Socket Length (ft)	5.00	33.0648
Top Dia (in)	16.0000	56.0100
Bot Dia (in)	35.7200	
Grade	A572-65	A572-65
Weight (K)	3.2	9.5

49.3 ft

1.0 ft

ALL REACTIONS ARE FACTORED



**All-Points Technology Corporation, P.C.**

567 Vauxhall Street Ext., Suite 311

Waterford, CT 06385

Phone: (860) 663-1697

FAX:

Job: **95' Mono-pine Tower**

Project: **470656\_Cheshire East CT**

Client: Verizon

Drawn by: JRM

App'd:

Code: TIA-222-H

Date: 10/31/22

Scale: NTS

Path:

Dwg No. E-1

# *Appendix C*

*Calculations*

<b>tnxTower</b>  <b>All-Points Technology Corporation, P.C.</b> 567 Vauxhall Street Ext., Suite 311 Waterford, CT 06385 Phone: (860) 663-1697 FAX:	<b>Job</b> 95' Mono-pine Tower	<b>Page</b> 1 of 5
	<b>Project</b> 470656_Cheshire East_CT	<b>Date</b> 11:39:46 10/31/22
	<b>Client</b> Verizon	<b>Designed by</b> JRM

## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 883.00 ft.

Basic wind speed of 120 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub>	Weight
								plf
HB158-U12S24-xxx -LI (Verizon)	C	No	Yes	Inside Pole	95.00 - 6.00	1	No Ice	3.20
							1/2" Ice	3.20
							1" Ice	3.20

## Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
			ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	95.00-49.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.15
L2	49.25-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.14

<b>tnxTower</b>  <b>All-Points Technology Corporation, P.C.</b> 567 Vauxhall Street Ext., Suite 311 Waterford, CT 06385 Phone: (860) 663-1697 FAX:	<b>Job</b>	95' Mono-pine Tower	<b>Page</b>	2 of 5
	<b>Project</b>	470656_Cheshire East_CT	<b>Date</b>	11:39:46 10/31/22
	<b>Client</b>	Verizon	<b>Designed by</b>	JRM

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

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	95.00-49.25	A	1.077	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.15
L2	49.25-1.00	A	0.970	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.14

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
(3) P2.5 Std x 8.0' Pipe Mount (Verizon)	A	From Face	3.50	0.0000	90.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
(3) P2.5 Std x 8.0' Pipe Mount (Verizon)	B	From Face	3.50	0.0000	90.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
(3) P2.5 Std x 8.0' Pipe Mount (Verizon)	C	From Face	3.50	0.0000	90.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
(2) P2.5 Std x 8.0' Pipe Mount (Verizon)	A	From Face	2.00	0.0000	90.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
(2) P2.5 Std x 8.0' Pipe Mount (Verizon)	B	From Face	2.00	0.0000	90.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
(2) P2.5 Std x 8.0' Pipe Mount (Verizon)	C	From Face	2.00	0.0000	90.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
JMA MX06FIT665-02 (Verizon)	A	From Face	4.00	0.0000	90.00	No Ice	8.15	7.34	0.05
			0.00			1/2" Ice	8.60	7.78	0.11
			0.00			1" Ice	9.06	8.24	0.18
JMA MX06FIT665-02 (Verizon)	B	From Face	4.00	0.0000	90.00	No Ice	8.15	7.34	0.05
			0.00			1/2" Ice	8.60	7.78	0.11
			0.00			1" Ice	9.06	8.24	0.18
JMA MX06FIT665-02 (Verizon)	C	From Face	4.00	0.0000	90.00	No Ice	8.15	7.34	0.05
			0.00			1/2" Ice	8.60	7.78	0.11
			0.00			1" Ice	9.06	8.24	0.18
JMA MX10FIT665-02 (Verizon)	A	From Face	4.00	0.0000	90.00	No Ice	8.09	5.47	0.05
			0.00			1/2" Ice	8.54	5.92	0.10
			0.00			1" Ice	9.00	6.38	0.16
JMA MX10FIT665-02 (Verizon)	B	From Face	4.00	0.0000	90.00	No Ice	8.09	5.47	0.05
			0.00			1/2" Ice	8.54	5.92	0.10
			0.00			1" Ice	9.00	6.38	0.16
JMA MX10FIT665-02 (Verizon)	C	From Face	4.00	0.0000	90.00	No Ice	8.09	5.47	0.05
			0.00			1/2" Ice	8.54	5.92	0.10
			0.00			1" Ice	9.00	6.38	0.16
MT6407-77A (Verizon)	A	From Face	4.00	0.0000	90.00	No Ice	4.71	1.84	0.09
			0.00			1/2" Ice	5.00	2.07	0.12

<b>tnxTower</b>  <b>All-Points Technology Corporation, P.C.</b> 567 Vauxhall Street Ext., Suite 311 Waterford, CT 06385 Phone: (860) 663-1697 FAX:	<b>Job</b>	95' Mono-pine Tower	<b>Page</b>	3 of 5
	<b>Project</b>	470656_Cheshire East_CT	<b>Date</b>	11:39:46 10/31/22
	<b>Client</b>	Verizon	<b>Designed by</b>	JRM

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
MT6407-77A (Verizon)	B	From Face	0.00		0.0000	90.00	1" Ice	5.29	2.30	0.15
			4.00				No Ice	4.71	1.84	0.09
			0.00				1/2" Ice	5.00	2.07	0.12
			0.00				1" Ice	5.29	2.30	0.15
MT6407-77A (Verizon)	C	From Face	4.00		0.0000	90.00	No Ice	4.71	1.84	0.09
			0.00				1/2" Ice	5.00	2.07	0.12
			0.00				1" Ice	5.29	2.30	0.15
			0.00				No Ice	1.00	0.50	0.02
CBRS RT4401-48A RRH (Verizon)	A	From Face	4.00		0.0000	90.00	1/2" Ice	1.12	0.60	0.03
			0.00				1" Ice	1.26	0.71	0.04
			0.00				No Ice	1.00	0.50	0.02
			0.00				1/2" Ice	1.12	0.60	0.03
CBRS RT4401-48A RRH (Verizon)	B	From Face	4.00		0.0000	90.00	1" Ice	1.26	0.71	0.04
			0.00				No Ice	1.00	0.50	0.02
			0.00				1/2" Ice	1.12	0.60	0.03
			0.00				1" Ice	1.26	0.71	0.04
CBRS RT4401-48A RRH (Verizon)	C	From Face	4.00		0.0000	90.00	No Ice	1.00	0.50	0.02
			0.00				1/2" Ice	1.12	0.60	0.03
			0.00				1" Ice	1.26	0.71	0.04
			0.00				No Ice	4.06	3.10	0.03
Raycap RDC-6627-PF-48 OVP (Verizon)	C	From Face	2.00		0.0000	90.00	1/2" Ice	4.32	3.34	0.07
			0.00				1" Ice	4.58	3.58	0.11
			0.00				No Ice	1.88	1.26	0.10
			0.00				1/2" Ice	2.05	1.41	0.12
Samsung B2/B66A RRH (RF4439d-25A) (Verizon)	A	From Face	2.00		0.0000	90.00	1" Ice	2.22	1.56	0.14
			0.00				No Ice	1.88	1.26	0.10
			0.00				1/2" Ice	2.05	1.41	0.12
			0.00				1" Ice	2.22	1.56	0.14
Samsung B2/B66A RRH (RF4439d-25A) (Verizon)	B	From Face	2.00		0.0000	90.00	No Ice	1.88	1.26	0.10
			0.00				1/2" Ice	2.05	1.41	0.12
			0.00				1" Ice	2.22	1.56	0.14
			0.00				No Ice	1.88	1.26	0.10
Samsung B2/B66A RRH (RF4439d-25A) (Verizon)	C	From Face	2.00		0.0000	90.00	1/2" Ice	2.05	1.41	0.12
			0.00				1" Ice	2.22	1.56	0.14
			0.00				No Ice	1.88	1.14	0.08
			0.00				1/2" Ice	2.05	1.28	0.10
Samsung B5/B13 RRH (RF4440d-13A) (Verizon)	A	From Face	2.00		0.0000	90.00	1" Ice	2.22	1.42	0.12
			0.00				No Ice	1.88	1.14	0.08
			0.00				1/2" Ice	2.05	1.28	0.10
			0.00				1" Ice	2.22	1.42	0.12
Samsung B5/B13 RRH (RF4440d-13A) (Verizon)	B	From Face	2.00		0.0000	90.00	No Ice	1.88	1.14	0.08
			0.00				1/2" Ice	2.05	1.28	0.10
			0.00				1" Ice	2.22	1.42	0.12
			0.00				No Ice	1.88	1.14	0.08
Samsung B5/B13 RRH (RF4440d-13A) (Verizon)	C	From Face	2.00		0.0000	90.00	1/2" Ice	2.05	1.28	0.10
			0.00				1" Ice	2.22	1.42	0.12
			0.00				No Ice	7.20	5.40	1.37
			0.00				1/2" Ice	9.00	6.40	1.83
MTC4074M6xxx w/o pipes (Verizon)	C	From Face	2.00		0.0000	90.00	1" Ice	10.80	7.40	2.28
			0.00				No Ice	25.00	25.00	0.25
			0.00				1/2" Ice	27.00	27.00	0.45
			0.00				1" Ice	29.00	29.00	0.65
Top Branches	C	None			0.0000	90.50	No Ice	25.00	25.00	0.25
							1/2" Ice	27.00	27.00	0.45
							1" Ice	29.00	29.00	0.65
							No Ice	50.00	50.00	0.50
Branches	C	None			0.0000	85.50	1/2" Ice	56.00	56.00	0.70
							1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
Branches	C	None			0.0000	80.50	1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
							1" Ice	62.00	62.00	0.90
Branches	C	None			0.0000	75.50	No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
							1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
Branches	C	None			0.0000	70.50	1/2" Ice	56.00	56.00	0.70
							1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70

<b>tnxTower</b>  <b>All-Points Technology Corporation, P.C.</b> 567 Vauxhall Street Ext., Suite 311 Waterford, CT 06385 Phone: (860) 663-1697 FAX:	<b>Job</b>	95' Mono-pine Tower	<b>Page</b>	4 of 5
	<b>Project</b>	470656_Cheshire East_CT	<b>Date</b>	11:39:46 10/31/22
	<b>Client</b>	Verizon	<b>Designed by</b>	JRM

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						ft
Branches	C	None			0.0000	65.50	1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
Branches	C	None			0.0000	60.50	1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
Branches	C	None			0.0000	55.50	1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
Branches	C	None			0.0000	50.50	1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
Branches	C	None			0.0000	45.50	1" Ice	62.00	62.00	0.90
							No Ice	50.00	50.00	0.50
							1/2" Ice	56.00	56.00	0.70
Branches	C	None			0.0000	40.50	1" Ice	62.00	62.00	0.90
							No Ice	55.56	55.56	0.50
							1/2" Ice	61.56	61.56	0.70
Branches	C	None			0.0000	35.50	1" Ice	67.56	67.56	0.90
							No Ice	55.56	55.56	0.50
							1/2" Ice	61.56	61.56	0.70
Branches	C	None			0.0000	31.50	1" Ice	67.56	67.56	0.90
							No Ice	44.45	44.45	0.40
							1/2" Ice	49.23	49.23	0.56
							1" Ice	54.00	54.00	0.72

### Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	95 - 49.25	6.384	59	0.6243	0.0020
L2	54.25 - 1	1.956	59	0.3467	0.0003

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

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
95.50	Top Branches	59	6.384	0.6243	0.0020	42611
90.50	Top Branches	59	5.825	0.5933	0.0018	42611
90.00	(3) P2.5 Std x 8.0' Pipe Mount	59	5.764	0.5899	0.0017	42611
85.50	Branches	59	5.211	0.5590	0.0015	22427
80.50	Branches	59	4.611	0.5247	0.0013	14693
75.50	Branches	59	4.030	0.4905	0.0011	10926
70.50	Branches	59	3.478	0.4564	0.0009	8696
65.50	Branches	59	2.959	0.4225	0.0007	7222
60.50	Branches	59	2.483	0.3887	0.0005	6175
55.50	Branches	59	2.055	0.3551	0.0003	5479
50.50	Branches	59	1.681	0.3218	0.0002	5627

<b>tnxTower</b>  <b>All-Points Technology Corporation, P.C.</b> 567 Vauxhall Street Ext., Suite 311 Waterford, CT 06385 Phone: (860) 663-1697 FAX:	<b>Job</b>	95' Mono-pine Tower	<b>Page</b>	5 of 5
	<b>Project</b>	470656_Cheshire East_CT	<b>Date</b>	11:39:46 10/31/22
	<b>Client</b>	Verizon	<b>Designed by</b>	JRM

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
45.50	Branches	59	1.361	0.2886	0.0001	6256
40.50	Branches	59	1.089	0.2557	0.0001	7047
35.50	Branches	51	0.867	0.2235	0.0000	8069
31.50	Branches	51	0.715	0.1983	0.0000	9127

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	95 - 49.25	28.044	18	2.6884	0.0090
L2	54.25 - 1	8.688	18	1.5372	0.0014

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

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
95.50	Top Branches	18	28.044	2.6884	0.0090	9857
90.50	Top Branches	18	25.606	2.5619	0.0080	9857
90.00	(3) P2.5 Std x 8.0' Pipe Mount	18	25.336	2.5478	0.0079	9857
85.50	Branches	18	22.924	2.4212	0.0070	5187
80.50	Branches	18	20.301	2.2805	0.0059	3398
75.50	Branches	18	17.765	2.1395	0.0049	2526
70.50	Branches	18	15.349	1.9984	0.0039	2010
65.50	Branches	18	13.083	1.8569	0.0030	1669
60.50	Branches	18	10.996	1.7151	0.0022	1427
55.50	Branches	18	9.121	1.5728	0.0016	1265
50.50	Branches	18	7.482	1.4301	0.0010	1299
45.50	Branches	18	6.075	1.2870	0.0006	1444
40.50	Branches	18	4.876	1.1434	0.0003	1626
35.50	Branches	2	3.870	1.0001	0.0000	1862
31.50	Branches	2	3.181	0.8858	0.0000	2106

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\theta P_{allow}$ K	% Capacity	Pass Fail	
L1	95 - 49.25	Pole	TP35.72x16x0.25	1	-11.49	1546.47	47.7	Pass	
L2	49.25 - 1	Pole	TP56.01x33.0648x0.375	2	-27.21	3873.84	50.7	Pass	
							Summary		
							Pole (L2)	50.7	Pass
							<b>RATING =</b>	<b>50.7</b>	<b>Pass</b>

Anchor Bolt and Base Plate Analysis (Non-Grouted Base Plate):

Circular base analysis methodology to TIA-222-H Annex Q.

Input Data:

Ref: Tower design calculations - Sabire Industries; Job No. 488746 - Revision A), dated 10.04.21.

Tower Reactions (1.2DL +1.0WL):

Overturning Moment =	$M_u := 2434 \cdot \text{ft} \cdot \text{kip}$	(Input From tnxTower)
Axial Force =	$R_u := 27.0 \cdot \text{kip}$	(Input From tnxTower)
Shear Force =	$V_u := 40.0 \cdot \text{kip}$	(Input From tnxTower)

Anchor Bolt Data:

Anchor Bolt Grade =	ASTM A615 Gr. 75	(User Input)
Number of Anchor Bolts =	$N := 16$	(User Input)
Diameter of Bolt Circle =	$D_{BC} := 62.75 \cdot \text{in}$	(User Input)
Bolt "Column" Distance =	$l_{ar} := 1.0 \text{ in}$	(Defined as anchor rod projection from supporting structure to bottom of leveling nut)
Bolt Ultimate Stress =	$F_{ub} := 100 \cdot \text{ksi}$	(User Input)
Bolt Yield Stress =	$F_{yb} := 75 \cdot \text{ksi}$	(User Input)
Bolt Modulus of Elasticity =	$E := 29000 \cdot \text{ksi}$	(User Input)
Nominal Diameter of Anchor Bolts =	$D := 2.25 \text{ in}$	(User Input)
Threads per Inch =	$n := 4.5$	(User Input)
Anchor Rod Correction Factor =	$n_c := 1.02$	(User Input - Table Q-1)

Base Plate Data:

ASTM A572-50

Plate Yield Stress =	$F_{yP} := 50 \cdot \text{ksi}$	(User Input)
Base Plate Thickness =	$t_{TP} := 2.00 \text{ in}$	(User Input)
Base Plate Diameter =	$D_{OD} := 68.50 \cdot \text{in}$	(User Input)
Outer Pole Diameter =	$D_T := 56.010 \cdot \text{in}$	(Flat to Flat - User Input)



Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =:  $R_{bc} := \frac{D_{BC}}{2} = 31.375 \text{ in}$

Distance to Bolts =  $i := 1 \dots N$

$$d_i := \begin{cases} \theta \leftarrow 2 \cdot \pi \cdot \left( \frac{i}{N} \right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{cases}$$

$d_1 = 12.01 \text{ in}$   
 $d_2 = 22.19 \text{ in}$   
 $d_3 = 28.99 \text{ in}$   
 $d_4 = 31.38 \text{ in}$   
 $d_5 = 28.99 \text{ in}$   
 $d_6 = 22.19 \text{ in}$

Outer Pole Radius =  $R_{pole} := \frac{D_T}{2} = 28 \text{ in}$

$w_1 := 0.25 \text{ in}$

$D_e := D_T + w_1 = 56.26 \text{ in}$

$\theta_1 := \frac{\pi}{N} = 0.196 \text{ rad}$

$\theta_2 := \begin{cases} \text{if } (12) (t_{TP}) \geq D_{BC} \\ \text{asin} \left( \frac{(12) (t_{TP})}{D_{BC}} \right) \\ \text{else} \\ \theta_1 \end{cases} = 0.196 \text{ rad}$

$\theta_3 := \text{acos} \left( \frac{D_{BC} + D_e}{2 \cdot D_{BC}} \right) = 0.32 \text{ rad}$

$\theta_{min} := \min(\theta_1, \theta_2, \theta_3) = 0.196 \text{ rad}$

$x := 0.50 \cdot (D_{BC} - D_e) = 3.245 \text{ in}$

$B_{et} := D_{BC} \cdot \sin(\theta_{min}) = 12.242 \text{ in}$

$D_{oe} := \begin{cases} \text{if } D_{BC} + 6 (t_{TP}) \leq D_{OD} \\ D_{BC} + 6 (t_{TP}) \\ \text{else} \\ D_{OD} \end{cases} = 68.5 \text{ in}$

$B_{er} := (D_{oe} - D_e) \cdot \sin(\theta_{min}) = 2.388 \text{ in}$

Effective Width of Baseplate for Bending =  $B_{eff} := B_{et} + B_{er} = 14.63 \text{ in}$

### Anchor Bolt Properties:

Nominal Unthreaded Area of Bolt =  $A_g := \frac{\pi}{4} \cdot D^2 = 3.976 \text{ in}^2$

Net Area of Bolt =  $A_n := \frac{\pi}{4} \cdot \left( D - \frac{0.9743 \cdot \text{in}}{n} \right)^2 = 3.248 \text{ in}^2$

Tensile Root Diameter =  $D_{rt} := D - \frac{0.9743 \cdot \text{in}}{n} = 2.033 \text{ in}$

Plastic Section Modulus of Bolt =  $Z_x := \frac{D_{rt}^3}{6} = 1.401 \text{ in}^3$

Rod Radius of Gyration =  $r := \frac{D_{rt}}{4} = 0.508 \text{ in}$

Rod Critical Compression Stress =  $F_{cr} = 74.95 \text{ ksi}$

### Anchor Bolt Forces:

Maximum Bolt Tension Force =  $P_{ut} := \left( \frac{(n_c) \cdot \pi \cdot M_u}{N \cdot D_{BC}} - \frac{R_u}{N} \right) = 91.53 \text{ kip}$

Maximum Bolt Compression Force =  $P_{uc} := \left( \frac{(n_c) \cdot \pi \cdot M_u}{N \cdot D_{BC}} + \frac{R_u}{N} \right) = 94.91 \text{ kip}$

Maximum Bolt Shear Force =  $V_u := \frac{V_u}{N} = 2.5 \text{ kip}$

Bolt Bending Moment =  $M_u := 0.65 \cdot V_u \cdot l_{ar} = 1.625 \text{ in} \cdot \text{kip}$

### Anchor Bolt Strengths:

Bolt Design Tension Strength =  $\phi_t R_{nt} := 0.75 \cdot F_{ub} \cdot A_n = 243.58 \text{ kip}$

Bolt Design Compression Yield Strength =  $\phi_c R_{nc} := 0.90 \cdot F_{yb} \cdot A_g = 268.39 \text{ kip}$

Bolt Design Shear Rupture Strength =  $\phi_v R_{nv} := 0.75 \cdot 0.5 \cdot F_{ub} \cdot A_g = 149.1 \text{ kip}$

Bolt Design Shear Yield Strength =  $\phi_c R_{nvc} := 0.90 \cdot 0.6 \cdot 0.75 \cdot F_{yb} \cdot A_g = 120.77 \text{ kip}$

Bolt Design Buckling Strength =  $\phi_c R_{nb} := 0.90 \cdot F_{cr} \cdot A_g = 268.22 \text{ kip}$

Bolt Design Flexural Strength =  $\phi M_n := 0.90 \cdot F_{yb} \cdot Z_x = 94.6 \text{ in} \cdot \text{kip}$

Anchor Rod Usage =

Note:

Per TIA-222-H Section 4.9.9 when the anchor rod projection ( $l_{ar}$ ) exceeds  $1(d)$  but is not more than 3 in., it shall be permitted to consider ( $l_{ar}$ ) less than or equal to  $1(d)$  when 5,000 psi min. 7 day strength non shrink, non metallic grout is installed between the supporting structure and the leveling nuts, otherwise all interaction equations shall be investigated based on ( $l_{ar}$ ).

$$Usage1 := \begin{cases} \text{if } l_{ar} \leq 1.0 \cdot D & \\ \max \left( \left( \frac{P_{ut}}{\phi_t R_{nt}} \right)^2 + \left( \frac{V_u}{\phi_v R_{nv}} \right)^2 \right) & \\ \left( \frac{P_{uc}}{\phi_c R_{nc}} \right) + \left( \frac{V_u}{\phi_c R_{nvc}} \right)^2 & \\ \text{also if } 1.0 \cdot D < l_{ar} \leq 4.0 \cdot D & \\ \max \left( \left( \frac{P_{ut}}{\phi_t R_{nt}} \right) + \left( \frac{M_u}{\phi_t M_n} \right) \right)^2 + \left( \frac{V_u}{\phi_v R_{nv}} \right)^2 & \\ \left( \frac{P_{uc}}{\phi_c R_{nc}} \right) + \left( \frac{M_u}{\phi_t M_n} \right) + \left( \frac{V_u}{\phi_c R_{nvc}} \right)^2 & \\ \text{else} & \\ \max \left( \left( \frac{P_{ut}}{\phi_t R_{nt}} \right) + \left( \frac{M_u}{\phi_t M_n} \right) \right)^2 + \left( \frac{V_u}{\phi_v R_{nv}} \right)^2 & \\ \left( \frac{P_{uc}}{\phi_c R_{nb}} \right) + \left( \frac{M_u}{\phi_t M_n} \right) + \left( \frac{V_u}{\phi_c R_{nvc}} \right)^2 & \end{cases} = 0.35$$

Base Plate Analysis:

Plate Plastic Section Modulus =  $Z_p := \frac{B_{eff} \cdot t_{TP}^2}{4} = 14.63 \text{ in}^3$

Plate Bending Moment =  $M_p := P_{uc} \cdot x = 307.98 \text{ in} \cdot \text{kip}$

Available Plate Bending Strength =  $\phi M_n := 0.90 \cdot F_{yf} \cdot Z_p = 658.34 \text{ in} \cdot \text{kip}$

Plate Flexural Usage =  $Usage2 := \frac{M_p}{\phi M_n} = 0.47$

Plate Thickness Required =  $t_{TP} := \sqrt{\frac{4 \cdot P_{uc} \cdot x}{0.9 \cdot F_{yf} \cdot B_{eff}}} = 1.368 \text{ in}$

Anchor Bolt and Base Plate Analysis Summary:

Anchor Bolt Usage  
(% of Capacity) = Usage1 = 35%

Base Plate Bending Usage  
(% of Capacity) = Usage2 = 47%



**MOUNT ANALYSIS REPORT  
95'± MONO-PINE TOWER  
CHESHIRE, CONNECTICUT**

Prepared for  
Verizon Wireless



**Verizon Site Ref:**

**470656; Cheshire East CT**

Site Address: 185 Academy Road, Cheshire, CT 06410

FUZE ID: 15372347

Location Code: 470656

Project Code: 20171649710

APT Filing No. CT141NB9650

~~Rev 0: October 24, 2022~~

Rev 1: October 31, 2022



**Mount Analysis Report  
95-ft± Mono-pine Tower  
Cheshire, Connecticut  
prepared for  
Verizon Wireless**

**EXECUTIVE SUMMARY:**

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of a proposed antenna mount assembly to support a proposed Verizon equipment installation. This evaluation was limited to the proposed mount assembly and its connection to the existing host tower structure.

The proposed Verizon installation consists of six (6) proposed panel antennas, three (3) new LSub6 antennas with integrated Radio Heads, the installation of six (6) dual-band Remote Radio Heads (RRHs) & one (1) 12 OVP to be supported by three (3) proposed Commscope Double T-Arm 6' (P/N MTC4074M6996). The proposed Verizon equipment shall be fed by one (1) new 12x24 hybrid cable routed within the host tower. Additional reference can be made to the table on the following page.

The results of this analysis indicate that the proposed antenna mount assembly meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with Verizon's proposed equipment installation.

The mount assembly component usage is summarized in the table below:

Mount Assembly Component	Usage (%)
Members (Tube Standoff Arm)	20%
Connection (Plate)	32%

**INTRODUCTION:**

A structural analysis of the proposed antenna mount assembly was performed by APT for the purpose of supporting the proposed Verizon Wireless equipment installation. The subject host structure is a mono-pine tower designed by Sabre Industries located at 185 Academy Road in Cheshire, Connecticut.

The following information was utilized in the preparation of this analysis:

- RFDS detailing Verizon's proposed equipment changes, latest version.
- Construction Drawings prepared by APT (APT Project No. CT141NB9650), marked Rev 1, dated October 31, 2022.
- Structural Design Report prepared for Diamond Communications, LLC., by Sabre Industries, (Sabre Job No: 488746 - Revision A), signed and sealed by Robert Beacom, P.E. (CT P.E No. 28396); dated 10/04/21.
- Assembly Drawings for the Double T-Arm 6' (P/N: MTC4074M6996) prepared by Commscope, Inc., dated August 8, 2019.

The analysis was conducted using the following antenna inventory (proposed equipment shown in **bold** text):

Carrier	Antenna and Appurtenance Make/Model	Elevation	Status	Mount Type	Coax/Feed-Line
Verizon	(3) <b>JMA MX10FIT665-02 panel antennas</b> <sup>(6)</sup> (3) <b>JMA MX06FIT665-02 panel antennas</b> <sup>(6)</sup> (3) <b>Samsung MT6407-77A</b> Panel Antennas w/ Integrated RRHs (3) <b>Samsung B2/B66a (RF4439d-25A) RRHs,</b> (3) <b>Samsung B5/B13 (RF4440d-13A) RRHs,</b> (3) <b>Samsung CBRS RT4401-48A RRHs,</b> (1) <b>RVZDC-6627-PF-48 (12OVP)</b>	90' ±	P P P P P P	Three (3) <b>Commscope</b> Double T-Arm 6' (P/N MTC4074M6996) w/ three (3) <b>SitePRO1</b> Back to Back Pipe Mount (P/N BBPM-K2) & nine (9) <b>P2.5 STD x</b> 8'-0"L antenna mounting pipes.	(1) 12x24 L.I. Hybrid Cable

Notes:

- ETR = Existing to Remain; ERL= Existing to be Relocated; **P** = Proposed; F = Future; R= Reserved.
- Proposed antennas to utilize Dual Mount Antenna Brackets (JMA P/N 91900314-02)

**STRUCTURAL ANALYSIS:**

**Antenna Frame Analysis Criteria:**

The structural analysis has been prepared in accordance with the ANSI/TIA-222-H standard entitled "Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures"; American Institute of Steel Construction (AISC) Manual of Steel Construction, and the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code utilizing the following criteria:

- Load Case 1: 120 mph 3-second gust) wind speed
- Load Case 2: 50mph (3-second gust) wind speed w/ 1.00" ice thickness
- Load Case 3: 30mph (3-second gust) Maintenance wind speed.
- Risk Category: II
- Exposure Category: C
- Topographic Category 1
- Maintenance Live Load,  $L_v = 250 \text{ lbs} / L_m = 500 \text{ lbs}$

**ANALYSIS RESULTS:**

The analysis of the antenna mount assembly was conducted in accordance with the criteria outlined herein with the aforementioned proposed equipment loading. The following table summarizes the results of the analysis:

Mount Assembly Component	Usage (%)
Members (Tube Standoff Arm)	20%
Connection (Plate)	32%

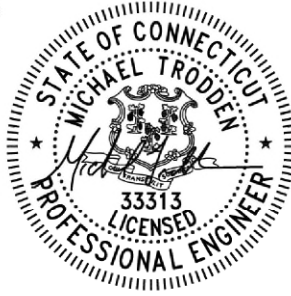
**CONCLUSIONS AND RECOMMENDATIONS:**

In conclusion, we find that the proposed mount assembly located at 185 Academy Road in Cheshire, Connecticut meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard under the proposed equipment loading.

Sincerely,  
**All-Points Technology Corp. P.C.**



Michael S. Trodden, P.E.  
Senior Structural Engineer



**LIMITATIONS:**

This report is based on the following:

1. Tower/structure is properly installed and maintained.
2. With the exception of the anchor bolts, all members are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower/structure is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
7. Mount Assembly material yield stress values as follows:
  - Tubes: ASTM A500 Gr. B (46 KSI)
  - Pipes: ASTM A53 Gr. B (35 KSI)
  - End Connection Plates: ASTM A572 Gr. 50 (50 KSI)
  - Misc. Steel: ASTM A36 (36 KSI)

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing members in any manner.
3. Installing antenna mounts.
4. Extending tower/structure.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication, and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.



# ***Appendix A***

*Design Criteria*

(Add) APPENDIX P MUNICIPALITY – SPECIFIC STRUCTURAL DESIGN PARAMETERS

Municipality	Basic Design Wind Speeds, $V$ (mph)				Allowable Stress Design Wind Speeds, $V_{asd}$ (mph)				Ground Snow Load $P_g$ (psf)	MCE Ground Accelerations		Wind-Borne Debris Region <sup>1</sup>		Hurricane- Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		$S_S$ (g)	$S_I$ (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Andover	110	120	130	135	85	93	101	105	30	0.193	0.055		Yes	
Ansonia	110	120	130	135	85	93	101	105	30	0.202	0.054		Yes	
Ashford	110	120	130	135	85	93	101	105	35	0.181	0.055		Yes	
Avon	110	120	125	130	85	93	97	101	35	0.180	0.054		Yes	
Barkamsted	110	115	125	130	85	89	97	101	35	0.170	0.054		Yes	
Beacon Falls	110	120	130	135	85	93	101	105	30	0.199	0.054		Yes	
Berlin	110	120	130	135	85	93	101	105	30	0.201	0.055		Yes	
Bethany	110	120	130	135	85	93	101	105	30	0.199	0.054		Yes	
Bethel	110	120	125	130	85	93	97	101	30	0.223	0.056		Yes	
Bethlehem	110	120	125	130	85	93	97	101	35	0.186	0.054		Yes	
Bloomfield	110	120	130	135	85	93	101	105	30	0.182	0.055		Yes	
Bolton	110	120	130	135	85	93	101	105	30	0.191	0.055		Yes	
Bozrah	115	125	135	140	89	97	105	108	30	0.197	0.054		Yes	
Branford	115	125	135	135	89	97	105	105	30	0.201	0.053	Type B	Yes	
Bridgeport	110	120	130	135	85	93	101	105	30	0.211	0.054	Type B	Yes	
Bridgewater	110	120	125	130	85	93	97	101	35	0.201	0.055		Yes	
Bristol	110	120	130	130	85	93	101	101	35	0.188	0.054		Yes	
Brookfield	110	120	125	130	85	93	97	101	30	0.210	0.055		Yes	
Brooklyn	115	125	135	135	89	97	105	105	35	0.184	0.054		Yes	
Burlington	110	120	125	130	85	93	97	101	35	0.180	0.054		Yes	
Canaan	105	115	125	130	81	89	97	101	40	0.166	0.054		Yes	
Canterbury	115	125	135	140	89	97	105	108	30	0.187	0.054		Yes	
Canton	110	120	125	130	85	93	97	101	35	0.177	0.054		Yes	
Chaplin	115	125	130	135	89	97	101	105	35	0.184	0.055		Yes	
Cheshire	110	120	130	135	85	93	101	105	30	0.200	0.055		Yes	
Chester	115	125	135	140	89	97	105	108	30	0.213	0.055		Yes	
Clinton	115	125	135	140	89	97	105	108	30	0.205	0.054	Type B	Yes	
Colchester	115	125	135	135	89	97	105	105	30	0.205	0.055		Yes	
Colebrook	105	115	125	130	81	89	97	101	40	0.165	0.054		Yes	
Columbia	115	125	130	135	89	97	101	105	30	0.195	0.055		Yes	

## Ice

---

**Results:**

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Tue Sep 27 2022

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

# ***Appendix B***

*Mount Analysis*



Project ID: CT141NB9650  
 Site Name: Cheshire East CT  
 Date: 10/24/2022

(Based on ANSI/TIA-222-H)

<u>Site Name:</u>	Cheshire East CT
<u>Site Address:</u>	185 Academy Road Cheshire, CT 06410
<u>Site County:</u>	New Haven

Design Criteria

Risk Category =	II	Sect. 2.2 & Table 2-1
Exposure Category =	C	Section 2.6.5
Ultimate Design Wind Speed, V =	120 mph	2022 CSBC, Appendix P
Design Wind Speed with Ice, V <sub>i</sub> =	50 mph	Fig. B-9
Design Ice Thickness, t <sub>i</sub> =	1.00 in	Fig. B-9
Importance Factor, I =	1.00	Table 2-3
Basic Wind Speed, V <sub>m</sub> =	30 mph	Section 16.3
Maintenance Load, L <sub>m</sub> =	500.0 lbs	Section 16.3
<u>Assembly</u> Maintenance Load, L <sub>v</sub> =	250.0 lbs	Section 16.3

Wind Pressure Analysis:

$$q_z = 0.00256K_zK_{zt}K_sK_eK_dV^2$$

Section 2.6.11.6

K<sub>z</sub>:

See Next Sheet

	z <sub>g</sub> =	900	Table 2-4
	α =	9.5	Table 2-4
	K <sub>zmin</sub> =	0.85	Table 2-4
<u>K<sub>zt</sub>:</u>	K <sub>zt</sub> =	1.00	Section 2.6.6
<u>K<sub>s</sub>:</u>	K <sub>s</sub> =	1.00	Section 2.6.7
<u>K<sub>e</sub>:</u>	K <sub>e</sub> =	1.00	Section 2.6.8
<u>K<sub>d</sub>:</u>	K <sub>d</sub> =	0.95	Section 16.6

<b>q<sub>z</sub>' =</b>	<b>35.02</b>	<b>psf</b>
<b>q<sub>zi</sub>' =</b>	<b>6.08</b>	<b>psf</b>
<b>q<sub>zm</sub>' =</b>	<b>2.19</b>	<b>psf</b>

$$F = q_z G_h (EPA)_A = q_z G_h K_a [(EPA)_N \cos^2(\Theta) + (EPA)_T \sin^2(\Theta)]$$

Section 2.6.11.2

G <sub>h</sub> =	1.00	Section 16.6
K <sub>a</sub> =	0.90	Section 16.6

**Design Criteria:** (From Previous Sheet)

$q'_i = 35.02$  psf  
 $q_{hl} = 6.08$  psf  
 $q_{hw} = 2.19$  psf  
 $t_i = 1.00$  in

$G_n = 1.00$  Section 16.6  
 $K_z = 0.90$  Section 16.6

$Z_g = 900$  Table 2-4  
 $\alpha = 9.5$  Table 2-4  
 $K_{zmin} = 0.85$  Table 2-4

$I = 1.00$  Table 2-3  
 $K_{yt} = 1.00$  Section 2.6.6

Description	Elev. z, ft	$K_z$	$q_w$ , psf	Dimensions			Flat Panel Front Coefficient			Flat Panel Side Coefficient			Front Wind			Side Wind		
				Height, in	Width, in	Depth, in	Wght., lbs	Area, ft <sup>2</sup>	Aspect Ratio	Ca	C <sub>Az</sub>	Area, ft <sup>2</sup>	Aspect Ratio	Ca	C <sub>Az</sub>	Force, lbs	Force, lbs	Weight, lbs
MT16407-77A	90.0	1.238	43.35	35.1	16.1	5.5	87.1	3.92	2.187	1.20	4.70	1.344	6.374	1.37	1.844	184.0	72.0	87.1
MX10FIT665-02	90.0	1.238	43.35	70.9	12.2	7.5	86.9	6.01	5.811	1.35	8.09	3.693	9.453	1.48	5.472	316.0	214.0	86.9
MX06FIT665-02	90.0	1.238	43.35	71.3	12.2	10.7	84.5	6.04	5.844	1.35	8.15	5.298	6.664	1.39	7.338	318.0	287.0	84.5
B2/66a Samsung RRH	90.0	1.238	43.35	15.0	15.0	10.0	97.5	1.56	1.000	1.20	1.88	1.046	1.494	1.20	1.255	74.0	49.0	97.5
BS/813 Samsung RRH	90.0	1.238	43.35	15.0	15.0	9.1	82.0	1.56	1.000	1.20	1.88	0.948	1.648	1.20	1.138	74.0	45.0	82.0
CBRS RT1401-48A Samsung RRH	90.0	1.238	43.35	10.6	8.9	3.0	11.0	0.66	1.191	1.20	0.79	0.221	3.533	1.25	0.275	31.0	11.0	11.0
12 OVP	90.0	1.238	43.35	29.5	16.5	12.6	32.0	3.38	1.788	1.20	4.06	2.581	2.341	1.20	3.098	159.0	121.0	32.0

Description	Elev. z, ft	$K_z$	$q_w$ , psf	Dimensions with Ice			Flat Panel Front Coefficient			Flat Panel Side Coefficient			Front Wind			Side Wind		
				Ice Thick, t <sub>iv</sub> , in	Height, in	Depth, in	Ice Wght., lbs	Area, ft <sup>2</sup>	Aspect Ratio	Ca	C <sub>Az</sub>	Area, ft <sup>2</sup>	Aspect Ratio	Ca	C <sub>Az</sub>	Force, lbs	Force, lbs	Weight, lbs
MT16407-77A	90.0	1.238	7.526	1.11	37.33	16.98	76.0	4.74	2.20	0.70	3.316	2.002	2.20	0.70	1.401	23.0	10.0	163.1
MX10FIT665-02	90.0	1.238	7.526	1.11	73.11	14.32	126.9	7.32	5.11	0.76	5.545	4.930	5.11	0.76	3.737	38.0	26.0	213.8
MX06FIT665-02	90.0	1.238	7.526	1.11	73.51	16.23	143.4	7.36	4.53	0.75	5.482	6.591	4.53	0.75	4.911	38.0	34.0	227.9
B2/66a Samsung RRH	90.0	1.238	7.526	1.11	17.21	18.05	37.1	2.06	0.98	0.70	1.440	1.464	0.95	0.70	1.025	10.0	7.0	134.6
BS/813 Samsung RRH	90.0	1.238	7.526	1.11	17.21	17.54	36.1	2.06	0.98	0.70	1.440	1.352	0.98	0.70	0.946	10.0	7.0	118.1
CBRS RT1401-48A Samsung RRH	90.0	1.238	7.526	1.11	12.81	9.39	15.1	0.99	1.36	0.70	0.692	0.464	1.56	0.70	0.325	5.0	3.0	26.1
12 OVP	90.0	1.238	7.526	1.11	31.71	20.76	78.0	4.12	1.53	0.70	2.884	3.262	1.53	0.70	2.283	20.0	16.0	110.0

Description	Elev. z, ft	$K_z$	$q_w$ , psf	Dimensions			Flat Panel Front Coefficient			Flat Panel Side Coefficient			Front Wind			Side Wind		
				Height, in	Width, in	Depth, in	Wght., lbs	Area, ft <sup>2</sup>	Aspect Ratio	Ca	C <sub>Az</sub>	Area, ft <sup>2</sup>	Aspect Ratio	Ca	C <sub>Az</sub>	Force, lbs	Force, lbs	Weight, lbs
MT16407-77A	90.0	1.238	2.71	35.1	16.1	5.5	87.1	3.92	2.187	1.20	4.70	1.344	6.374	1.37	1.844	12.0	5.0	87.1
MX10FIT665-02	90.0	1.238	2.71	70.9	12.2	7.5	86.9	6.01	5.811	1.35	8.09	3.693	9.453	1.48	5.472	20.0	14.0	86.85
MX06FIT665-02	90.0	1.238	2.71	71.3	12.2	10.7	84.5	6.04	5.844	1.35	8.15	5.298	6.664	1.39	7.338	20.0	18.0	84.45
B2/66a Samsung RRH	90.0	1.238	2.71	15.0	15.0	10.0	97.5	1.56	1.000	1.20	1.88	1.046	1.494	1.20	1.255	5.0	4.0	97.5
BS/813 Samsung RRH	90.0	1.238	2.71	15.0	15.0	9.1	82.0	1.56	1.000	1.20	1.88	0.948	1.648	1.20	1.138	5.0	3.0	82
CBRS RT1401-48A Samsung RRH	90.0	1.238	2.71	10.6	8.9	3.0	11.0	0.66	1.191	1.20	0.79	0.221	3.533	1.25	0.275	2.0	1.0	11
12 OVP	90.0	1.238	2.71	29.5	16.5	12.6	32.0	3.38	1.788	1.20	4.06	2.581	2.341	1.20	3.098	10.0	8.0	32.0



Based on ANSI/TIA-222-H

Project ID: CT141NB9650  
 Site Name: Cheshire East CT  
 Date: 10/24/2022

Design Criteria: (From Previous Sheet)

$q_d = 35.02$  psf  
 $q_e = 6.08$  psf  
 $q_w = 2.19$  psf  
 $t_i = 1.00$  in

$G_H = 1.00$  Section 16.6  
 $K_s = 0.90$  Section 16.6

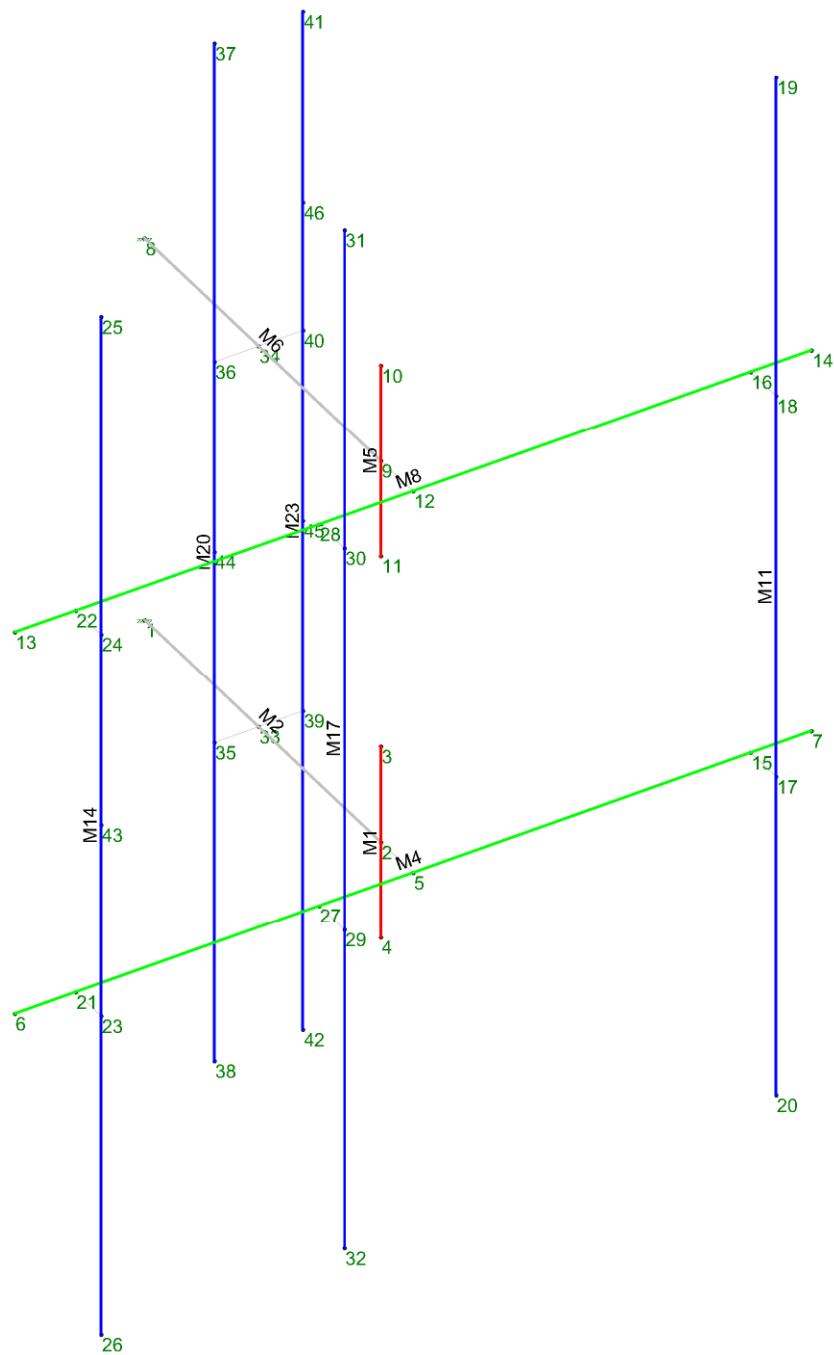
$Z_s = 900$  Table 2.4  
 $\alpha = 9.5$  Table 2.4  
 $K_{min} = 0.85$  Table 2.4

$I = 1.00$  Table 2.3  
 $K_{vt} = 1.00$  Section 16.6

Description	Elev. z, ft	$K_z$	$q_z$ , psf	Ice Thick., $t_{ip}$ , in	$q_{ip}$ , psf	$q_{wp}$ , psf	Dimensions			Loading, No Ice			With Ice			Maintenance					
							Width or Dia., in	Depth, in	Thickness, in	$r_s$	Weight, lbs/ft	Flat or Round	Ca	Wind, lbs/ft	Width or Dia., in	Dc, in	Weight, lbs/ft	Ca	Wind, lbs/ft	Ca	Wind, lbs/ft
HSS4x4	90.0	1.238	43.35	1.11	7.53	2.71	4.000	4.000	0.250	0.14	12.20	HSS	1.25	16.26	6.21	5.657	9.13	1.20	4.21	1.25	1.02
2.0" STD	90.0	1.238	43.35	1.11	7.53	2.71	2.375	2.375	-	-	3.65	ROUND	1.20	9.27	4.59	2.375	4.70	1.20	3.11	1.20	0.58
2.5" STD	90.0	1.238	43.35	1.11	7.53	2.71	2.875	2.875	-	-	5.79	ROUND	1.20	11.22	5.09	2.875	5.38	1.20	3.45	1.20	0.70
3.0" STD	90.0	1.238	43.35	1.11	7.53	2.71	3.500	3.500	-	-	7.58	ROUND	1.20	13.66	5.71	3.500	6.22	1.20	3.87	1.20	0.85
4.0" STD	90.0	1.238	43.35	1.11	7.53	2.71	4.500	4.500	-	-	10.80	ROUND	1.20	17.56	6.71	4.500	7.57	1.20	4.55	1.20	1.10



Section Sets  
3.5' STD  
3.0' STD  
4.0' STD  
TOS/SLAB/UA  
R/S/D



APT  
MST  
CHESHIRE EAST

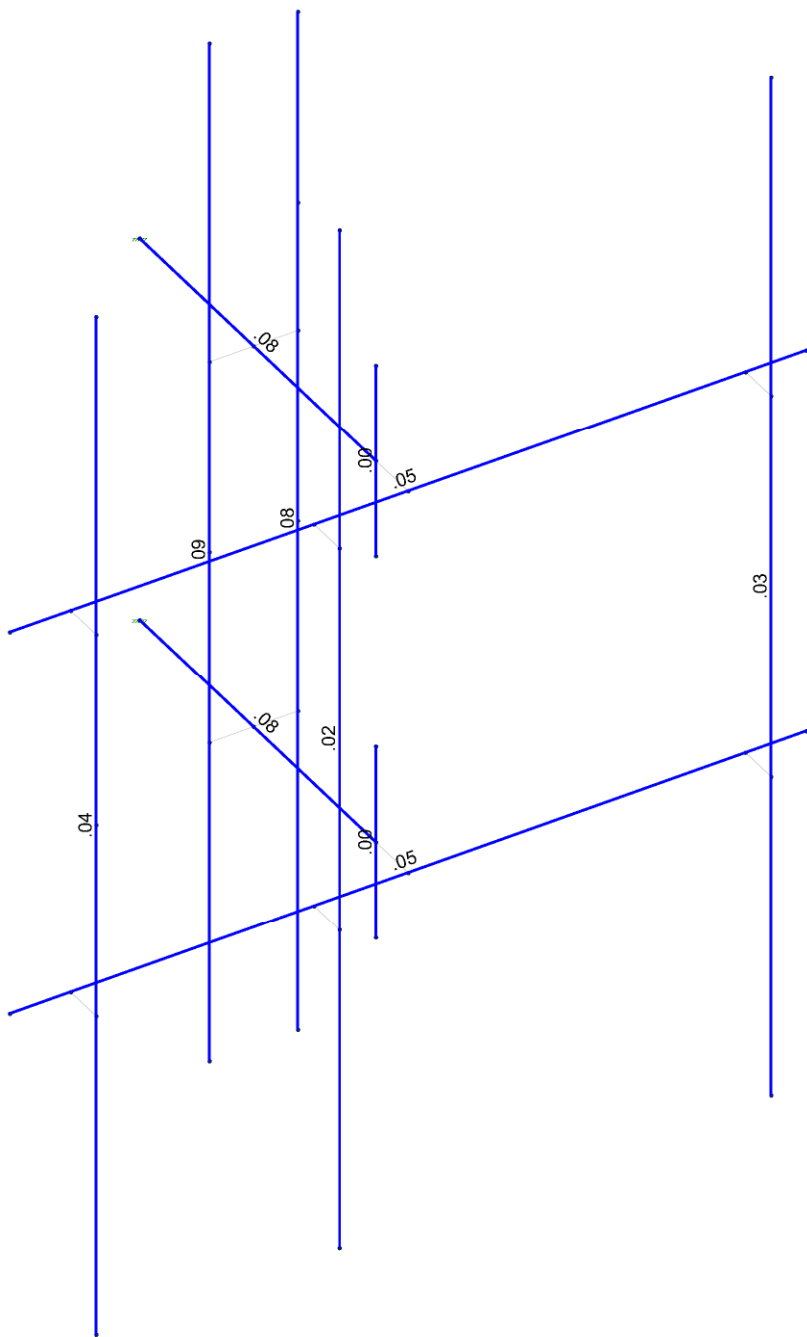
MTC4074M6996  
NODE & MEMBER LABELS

Cheshire East - MTC4074M6996.r3d





Code Check  
(10-11)  
No Check  
> 1.0  
50-1.0  
75-90  
90-75  
0-50



Member Code Checks Displayed  
Results for LC 1, 1.4DL

APT	MTC4074M6996 BENDING STRESSES	
MST		
CHESHIRE EAST		Cheshire East - MTC4074M6996.r3d



Company : APT  
 Designer : MST  
 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

Checked By: \_\_\_\_\_

### Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	2.5" STD	PIPE 2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
2	3.0" STD	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	4.0" STD	PIPE 4.0	Column	Pipe	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
4	HSS4x4x1/4	HSS4x4x4	Beam	SquareTube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8

### Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	4.0" STD	18									Lateral
2	M2	HSS4x4x1/4	34.8			Lbyy						Lateral
3	M4	3.0" STD	72			Lbyy						Lateral
4	M5	4.0" STD	18									Lateral
5	M6	HSS4x4x1/4	34.8			Lbyy						Lateral
6	M8	3.0" STD	72			Lbyy						Lateral
7	M11	2.5" STD	96									Lateral
8	M14	2.5" STD	96									Lateral
9	M17	2.5" STD	96									Lateral
10	M20	2.5" STD	96									Lateral
11	M23	2.5" STD	96									Lateral

### Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(Memb...	Surfac...
1	DL	DL		-1.05		4	4			
2	WLX	WLX				4	4	9		
3	WLZ	WLZ				4	4	9		
4	DLi	OL1				4	4	11		
5	WLXi	WL+X				4	4	9		
6	WLZi	WL+Z				4	4	9		
7	Lv	LL								
8	WLXm	WL-X				4	4	9		
9	WLZm	WL-Z				4	4	9		
10	Lm (1)	OL2					1			
11	Lm (2)	OL3					1			
12	Lm (3)	OL4					1			
13	Lm (4)	OL5					1			

### Load Combinations

	Description	S...	PDelta	S...	BLC Fa...	BLC Fa...	BLC Fa...	BLC Fa...	B...	Fa...	Fa...	Fa...	Fa...	Fa...	Fa...	Fa...
1	1.4DL	Yes	Y		DL 1.4											
2																
3	1.2DL + WLX	Yes	Y		DL 1.2	WLX	1									



Company : APT  
 Designer : MST  
 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

Checked By: \_\_\_\_\_

**Load Combinations (Continued)**

	Description	S...	PDelta	S...	BLC Fa...	BLC	Fa...	BLC Fa...	BLC Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
4	1.2DL + 0.75WLX + 0.25...	Yes	Y		DL	1.2	WLX	.75	WLZ	.25										
5	1.2DL + 0.25WLX + 0.75...	Yes	Y		DL	1.2	WLX	.25	WLZ	.75										
6	1.2DL + WLZ	Yes	Y		DL	1.2	WLZ	1												
7	1.2DL + 0.25WL-X + 0.7...	Yes	Y		DL	1.2	WLX	-.25	WLZ	.75										
8	1.2DL + 0.75WL-X + 0.2...	Yes	Y		DL	1.2	WLX	-.75	WLZ	.25										
9	1.2DL + WL-X	Yes	Y		DL	1.2	WLX	-1												
10	1.2DL + 0.75WL-X + 0.2...	Yes	Y		DL	1.2	WLX	-.75	WLZ	-.25										
11	1.2DL + 0.25WL-X + 0.7...	Yes	Y		DL	1.2	WLX	-.25	WLZ	-.75										
12	1.2DL + WL-Z	Yes	Y		DL	1.2	WLZ	-1												
13	1.2DL + 0.25WLX + 0.75...	Yes	Y		DL	1.2	WLX	.25	WLZ	-.75										
14	1.2DL + 0.75WLX + 0.25...	Yes	Y		DL	1.2	WLX	.75	WLZ	-.25										
15																				
16	1.2DL + DLi + WLXi	Yes	Y		DL	1.2	OL1	1	WL...	1										
17	1.2DL + DLi + 0.75WLXi	Yes	Y		DL	1.2	OL1	1	WL...	.75	W...	.25								
18	1.2DL + DLi + 0.25WLXi	Yes	Y		DL	1.2	OL1	1	WL...	.25	W...	.75								
19	1.2DL + DLi + WLZi	Yes	Y		DL	1.2	OL1	1	WL...	1										
20	1.2DL + DLi + 0.25WL-Xi	Yes	Y		DL	1.2	OL1	1	WL...	-.25	W...	.75								
21	1.2DL + DLi + 0.75WL-Xi	Yes	Y		DL	1.2	OL1	1	WL...	-.75	W...	.25								
22	1.2DL + DLi + WL-Xi	Yes	Y		DL	1.2	OL1	1	WL...	-1										
23	1.2DL + DLi + 0.75WL-Xi	Yes	Y		DL	1.2	OL1	1	WL...	-.75	W...	-.25								
24	1.2DL + DLi + 0.25WL-Xi	Yes	Y		DL	1.2	OL1	1	WL...	-.25	W...	-.75								
25	1.2DL + DLi + WL-Zi	Yes	Y		DL	1.2	OL1	1	WL...	-1										
26	1.2DL + DLi + 0.25WLXi	Yes	Y		DL	1.2	OL1	1	WL...	.25	W...	-.75								
27	1.2DL + DLi + 0.75WLXi	Yes	Y		DL	1.2	OL1	1	WL...	.75	W...	-.25								
28																				
29	1.2DL + 1.5Lm(1) + WLX...	Yes	Y		DL	1.2	OL2	1.5	WL...	1										
30	1.2DL + 1.5Lm(1) + 0.75...	Yes	Y		DL	1.2	OL2	1.5	WL...	.75	W...	.25								
31	1.2DL + 1.5Lm(1) + 0.25...	Yes	Y		DL	1.2	OL2	1.5	WL...	.25	W...	.75								
32	1.2DL + 1.5Lm(1) + WLZ...	Yes	Y		DL	1.2	OL2	1.5	WL...	1										
33	1.2DL + 1.5Lm(1) + 0.25...	Yes	Y		DL	1.2	OL2	1.5	WL...	-.25	W...	.75								
34	1.2DL + 1.5Lm(1) + 0.75...	Yes	Y		DL	1.2	OL2	1.5	WL...	-.75	W...	.25								
35	1.2DL + 1.5Lm(1) + WL-...	Yes	Y		DL	1.2	OL2	1.5	WL...	-1										
36	1.2DL + 1.5Lm(1) + 0.75...	Yes	Y		DL	1.2	OL2	1.5	WL...	-.75	W...	-.25								
37	1.2DL + 1.5Lm(1) + 0.25...	Yes	Y		DL	1.2	OL2	1.5	WL...	-.25	W...	-.75								
38	1.2DL + 1.5Lm(1) + WL-...	Yes	Y		DL	1.2	OL2	1.5	WL...	-1										
39	1.2DL + 1.5Lm(1) + 0.25...	Yes	Y		DL	1.2	OL2	1.5	WL...	.25	W...	-.75								
40	1.2DL + 1.5Lm(1) + 0.75...	Yes	Y		DL	1.2	OL2	1.5	WL...	.75	W...	-.25								
41																				
42	1.2DL + 1.5Lm(2) + WLX...	Yes	Y		DL	1.2	OL3	1.5	WL...	1										
43	1.2DL + 1.5Lm(2) + 0.75...	Yes	Y		DL	1.2	OL3	1.5	WL...	.75	W...	.25								
44	1.2DL + 1.5Lm(2) + 0.25...	Yes	Y		DL	1.2	OL3	1.5	WL...	.25	W...	.75								
45	1.2DL + 1.5Lm(2) + WLZ...	Yes	Y		DL	1.2	OL3	1.5	WL...	1										
46	1.2DL + 1.5Lm(2) + 0.25...	Yes	Y		DL	1.2	OL3	1.5	WL...	-.25	W...	.75								
47	1.2DL + 1.5Lm(2) + 0.75...	Yes	Y		DL	1.2	OL3	1.5	WL...	-.75	W...	.25								
48	1.2DL + 1.5Lm(2) + WL-...	Yes	Y		DL	1.2	OL3	1.5	WL...	-1										
49	1.2DL + 1.5Lm(2) + 0.75...	Yes	Y		DL	1.2	OL3	1.5	WL...	-.75	W...	-.25								
50	1.2DL + 1.5Lm(2) + 0.25...	Yes	Y		DL	1.2	OL3	1.5	WL...	-.25	W...	-.75								
51	1.2DL + 1.5Lm(2) + WL-...	Yes	Y		DL	1.2	OL3	1.5	WL...	-1										
52	1.2DL + 1.5Lm(2) + 0.25...	Yes	Y		DL	1.2	OL3	1.5	WL...	.25	W...	-.75								
53	1.2DL + 1.5Lm(2) + 0.75...	Yes	Y		DL	1.2	OL3	1.5	WL...	.75	W...	-.25								
54																				
55	1.2DL + 1.5Lm(3) + WLX...	Yes	Y		DL	1.2	OL4	1.5	WL...	1										
56	1.2DL + 1.5Lm(3) + 0.75...	Yes	Y		DL	1.2	OL4	1.5	WL...	.75	W...	.25								
57	1.2DL + 1.5Lm(3) + 0.25...	Yes	Y		DL	1.2	OL4	1.5	WL...	.25	W...	.75								
58	1.2DL + 1.5Lm(3) + WLZ...	Yes	Y		DL	1.2	OL4	1.5	WL...	1										
59	1.2DL + 1.5Lm(3) + 0.25...	Yes	Y		DL	1.2	OL4	1.5	WL...	-.25	W...	.75								
60	1.2DL + 1.5Lm(3) + 0.75...	Yes	Y		DL	1.2	OL4	1.5	WL...	-.75	W...	.25								





Company : APT  
 Designer : MST  
 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

Checked By: \_\_\_\_\_

**Joint Reactions (By Combination) (Continued)**

LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]	
22	7	8	-602.65	539.06	586.98	-52.91	-1624.76	919.31
23	7	Totals:	-442.84	1106.61	1115.09			
24	7	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
25	8	1	-230.46	593.7	216.08	-64.44	-1083.96	956.87
26	8	8	-1098.08	512.91	155.61	-62.63	-850.13	929.73
27	8	Totals:	-1328.54	1106.61	371.7			
28	8	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
29	9	1	-425.59	606.77	60.07	-69.3	-765.37	971.17
30	9	8	-1345.8	499.84	-60.07	-67.47	-463.08	934.93
31	9	Totals:	-1771.39	1106.61	0			
32	9	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
33	10	1	-230.46	592.6	-94.67	-72.13	-135.28	956.52
34	10	8	-1098.08	514.01	-277.02	-70.51	224.42	930.08
35	10	Totals:	-1328.54	1106.61	-371.7			
36	10	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
37	11	1	159.79	564.27	-404.17	-77.78	1125.89	927.2
38	11	8	-602.64	542.34	-710.92	-76.6	1600.54	920.38
39	11	Totals:	-442.85	1106.61	-1115.09			
40	11	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
41	12	1	354.91	550.11	-558.92	-80.62	1756.97	912.53
42	12	8	-354.91	556.5	-927.86	-79.65	2289.17	915.52
43	12	Totals:	0	1106.61	-1486.79			
44	12	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
45	13	1	550.03	537.03	-402.9	-75.76	1440.37	898.21
46	13	8	-107.19	569.58	-712.19	-74.81	1904.14	910.29
47	13	Totals:	442.84	1106.61	-1115.09			
48	13	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
49	14	1	940.26	510.88	-90.85	-66.03	806.77	869.55
50	14	8	388.28	595.72	-280.85	-65.1	1133.58	899.83
51	14	Totals:	1328.54	1106.61	-371.7			
52	14	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			
53	16	1	823.83	977.77	162.7	-184.83	-282.03	1678
54	16	8	-487.75	1007.94	-162.7	-180.78	441.61	1691.03
55	16	Totals:	336.08	1985.71	0			
56	16	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
57	17	1	785.1	980.84	193.67	-184.49	-390.33	1680.23
58	17	8	-533.04	1004.87	-123.9	-180.42	326.14	1691.13
59	17	Totals:	252.06	1985.71	69.77			
60	17	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
61	18	1	707.64	986.98	255.6	-183.82	-606.87	1684.7
62	18	8	-623.62	998.73	-46.29	-179.7	95.26	1691.34
63	18	Totals:	84.02	1985.71	209.31			
64	18	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
65	19	1	668.92	990.05	286.57	-183.48	-715.12	1686.93
66	19	8	-668.92	995.66	-7.49	-179.34	-20.16	1691.45
67	19	Totals:	0	1985.71	279.08			
68	19	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
69	20	1	630.19	992.98	255.44	-184.08	-647.6	1689.11
70	20	8	-714.21	992.74	-46.13	-179.91	55.92	1691.6
71	20	Totals:	-84.02	1985.71	209.31			
72	20	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
73	21	1	552.73	998.83	193.18	-185.3	-512.57	1693.48
74	21	8	-804.79	986.89	-123.41	-181.07	208.03	1691.91
75	21	Totals:	-252.06	1985.71	69.77			
76	21	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
77	22	1	514	1001.75	162.06	-185.91	-445.06	1695.67
78	22	8	-850.08	983.96	-162.06	-181.65	284.07	1692.06



Company : APT  
 Designer : MST  
 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

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**Joint Reactions (By Combination) (Continued)**

LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]	
79	22	Totals:	-336.08	1985.71	0			
80	22	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
81	23	1	552.73	998.68	131.09	-186.24	-336.86	1693.44
82	23	8	-804.78	987.03	-200.86	-182.01	399.45	1691.95
83	23	Totals:	-252.06	1985.71	-69.77			
84	23	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
85	24	1	630.18	992.54	69.15	-186.92	-120.4	1688.97
86	24	8	-714.2	993.17	-278.46	-182.73	630.24	1691.74
87	24	Totals:	-84.02	1985.71	-209.31			
88	24	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
89	25	1	668.91	989.47	38.18	-187.26	-12.15	1686.74
90	25	8	-668.91	996.24	-317.26	-183.09	745.66	1691.64
91	25	Totals:	0	1985.71	-279.08			
92	25	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
93	26	1	707.64	986.55	69.31	-186.65	-79.61	1684.55
94	26	8	-623.62	999.17	-278.62	-182.51	669.66	1691.49
95	26	Totals:	84.02	1985.71	-209.31			
96	26	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
97	27	1	785.1	980.7	131.57	-185.44	-214.55	1680.18
98	27	8	-533.04	1005.02	-201.34	-181.36	517.63	1691.18
99	27	Totals:	252.06	1985.71	-69.77			
100	27	COG (in):	X: 32.54	Y: 19.76	Z: 5.16			
101	29	1	768.83	923.99	-230.73	447.88	555.98	1717.38
102	29	8	-655.34	932.62	230.73	449.23	-477.59	1720.93
103	29	Totals:	113.49	1856.61	0			
104	29	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
105	30	1	756.29	924.78	-220.8	448.05	515.72	1718.25
106	30	8	-671.17	931.83	244.6	449.42	-521.45	1721.25
107	30	Totals:	85.12	1856.61	23.81			
108	30	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
109	31	1	731.21	926.37	-200.92	448.4	435.19	1719.99
110	31	8	-702.83	930.24	272.34	449.79	-609.17	1721.89
111	31	Totals:	28.37	1856.61	71.42			
112	31	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
113	32	1	718.66	927.17	-190.98	448.58	394.93	1720.86
114	32	8	-718.66	929.44	286.21	449.98	-653.02	1722.22
115	32	Totals:	0	1856.61	95.23			
116	32	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
117	33	1	706.12	927.88	-201.01	448.27	415.62	1721.71
118	33	8	-734.5	928.73	272.43	449.67	-628.01	1722.56
119	33	Totals:	-28.37	1856.61	71.42			
120	33	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
121	34	1	681.04	929.31	-221.06	447.65	456.98	1723.4
122	34	8	-766.16	927.3	244.86	449.05	-577.99	1723.26
123	34	Totals:	-85.12	1856.61	23.81			
124	34	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
125	35	1	668.5	930.02	-231.08	447.34	477.67	1724.24
126	35	8	-781.99	926.58	231.08	448.74	-552.99	1723.6
127	35	Totals:	-113.49	1856.61	0			
128	35	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
129	36	1	681.04	929.23	-241.02	447.17	517.92	1723.37
130	36	8	-766.16	927.38	217.21	448.55	-509.14	1723.28
131	36	Totals:	-85.12	1856.61	-23.81			
132	36	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
133	37	1	706.12	927.64	-260.89	446.82	598.42	1721.63
134	37	8	-734.5	928.97	189.47	448.18	-421.44	1722.64
135	37	Totals:	-28.37	1856.61	-71.42			



Company : APT  
 Designer : MST  
 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

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**Joint Reactions (By Combination) (Continued)**

LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]	
136	37	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
137	38	1	718.67	926.85	-270.83	446.65	638.68	1720.76
138	38	8	-718.67	929.76	175.61	447.99	-377.58	1722.32
139	38	Totals:	0	1856.61	-95.23			
140	38	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
141	39	1	731.21	926.13	-260.81	446.95	618.01	1719.91
142	39	8	-702.84	930.48	189.39	448.3	-402.58	1721.97
143	39	Totals:	28.37	1856.61	-71.42			
144	39	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
145	40	1	756.29	924.7	-240.76	447.57	576.66	1718.22
146	40	8	-671.17	931.9	216.95	448.92	-452.59	1721.28
147	40	Totals:	85.12	1856.61	-23.81			
148	40	COG (in):	X: 36.19	Y: 18.62	Z: -10.27			
149	42	1	768.83	923.92	138.74	-216.67	-271.91	1717.35
150	42	8	-655.34	932.69	-138.74	-215.32	348.25	1720.95
151	42	Totals:	113.49	1856.61	0			
152	42	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
153	43	1	756.29	924.71	148.69	-216.5	-312.17	1718.22
154	43	8	-671.18	931.9	-124.88	-215.13	304.39	1721.28
155	43	Totals:	85.12	1856.61	23.81			
156	43	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
157	44	1	731.21	926.3	168.58	-216.15	-392.7	1719.97
158	44	8	-702.84	930.31	-97.16	-214.76	216.67	1721.92
159	44	Totals:	28.37	1856.61	71.42			
160	44	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
161	45	1	718.67	927.09	178.53	-215.98	-432.96	1720.84
162	45	8	-718.67	929.52	-83.3	-214.57	172.81	1722.24
163	45	Totals:	0	1856.61	95.23			
164	45	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
165	46	1	706.13	927.81	168.5	-216.28	-412.26	1721.68
166	46	8	-734.5	928.8	-97.08	-214.87	197.8	1722.59
167	46	Totals:	-28.37	1856.61	71.42			
168	46	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
169	47	1	681.04	929.24	148.45	-216.88	-370.86	1723.37
170	47	8	-766.16	927.37	-124.64	-215.48	247.78	1723.28
171	47	Totals:	-85.12	1856.61	23.81			
172	47	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
173	48	1	668.5	929.95	138.42	-217.18	-350.16	1724.22
174	48	8	-781.99	926.66	-138.42	-215.78	272.77	1723.63
175	48	Totals:	-113.49	1856.61	0			
176	48	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
177	49	1	681.04	929.16	128.47	-217.35	-309.9	1723.35
178	49	8	-766.16	927.45	-152.28	-215.97	316.62	1723.31
179	49	Totals:	-85.12	1856.61	-23.81			
180	49	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
181	50	1	706.13	927.57	108.58	-217.7	-229.39	1721.61
182	50	8	-734.5	929.04	-180	-216.35	404.32	1722.66
183	50	Totals:	-28.37	1856.61	-71.42			
184	50	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
185	51	1	718.67	926.78	98.63	-217.88	-189.14	1720.73
186	51	8	-718.67	929.83	-193.85	-216.54	448.18	1722.34
187	51	Totals:	0	1856.61	-95.23			
188	51	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
189	52	1	731.21	926.06	108.66	-217.57	-209.83	1719.89
190	52	8	-702.84	930.55	-180.08	-216.23	423.2	1722
191	52	Totals:	28.37	1856.61	-71.42			
192	52	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			



Company : APT  
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 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

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**Joint Reactions (By Combination) (Continued)**

LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]	
193	53	1	756.29	924.63	128.71	-216.97	-251.21	1718.2
194	53	8	-671.17	931.98	-152.52	-215.63	373.23	1721.3
195	53	Totals:	85.12	1856.61	-23.81			
196	53	COG (in):	X: 36.19	Y: 18.62	Z: 5.48			
197	55	1	768.84	924	388.31	-529.83	-829.98	1717.38
198	55	8	-655.35	932.61	-388.31	-528.46	904.47	1720.93
199	55	Totals:	113.49	1856.61	0			
200	55	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
201	56	1	756.3	924.8	398.26	-529.67	-870.25	1718.25
202	56	8	-671.18	931.81	-374.46	-528.29	860.62	1721.25
203	56	Totals:	85.12	1856.61	23.81			
204	56	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
205	57	1	731.21	926.39	418.16	-529.35	-950.8	1720
206	57	8	-702.84	930.22	-346.74	-527.94	772.92	1721.89
207	57	Totals:	28.37	1856.61	71.42			
208	57	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
209	58	1	718.67	927.18	428.11	-529.19	-991.08	1720.87
210	58	8	-718.67	929.43	-332.89	-527.76	729.07	1722.21
211	58	Totals:	0	1856.61	95.23			
212	58	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
213	59	1	706.13	927.89	418.08	-529.48	-970.36	1721.71
214	59	8	-734.5	928.72	-346.66	-528.05	754.04	1722.56
215	59	Totals:	-28.37	1856.61	71.42			
216	59	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
217	60	1	681.05	929.32	398.02	-530.06	-928.92	1723.4
218	60	8	-766.16	927.29	-374.21	-528.64	803.99	1723.25
219	60	Totals:	-85.12	1856.61	23.81			
220	60	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
221	61	1	668.5	930.04	387.99	-530.35	-908.2	1724.25
222	61	8	-781.99	926.57	-387.99	-528.93	828.96	1723.6
223	61	Totals:	-113.49	1856.61	0			
224	61	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
225	62	1	681.04	929.25	378.04	-530.52	-867.93	1723.38
226	62	8	-766.16	927.36	-401.84	-529.11	872.8	1723.28
227	62	Totals:	-85.12	1856.61	-23.81			
228	62	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
229	63	1	706.13	927.66	358.14	-530.84	-787.4	1721.63
230	63	8	-734.5	928.95	-429.56	-529.46	960.48	1722.64
231	63	Totals:	-28.37	1856.61	-71.42			
232	63	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
233	64	1	718.67	926.86	348.19	-531	-747.13	1720.76
234	64	8	-718.67	929.75	-443.41	-529.63	1004.32	1722.32
235	64	Totals:	0	1856.61	-95.23			
236	64	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
237	65	1	731.21	926.15	358.22	-530.71	-767.84	1719.92
238	65	8	-702.84	930.46	-429.64	-529.34	979.36	1721.97
239	65	Totals:	28.37	1856.61	-71.42			
240	65	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
241	66	1	756.3	924.72	378.28	-530.13	-809.26	1718.23
242	66	8	-671.18	931.89	-402.09	-528.75	929.43	1721.28
243	66	Totals:	85.12	1856.61	-23.81			
244	66	COG (in):	X: 36.19	Y: 18.62	Z: 14.37			
245	68	1	492.6	924.19	77.33	-168.16	-133.74	1303.44
246	68	8	-379.11	932.42	-77.33	-166.81	210.39	1307.08
247	68	Totals:	113.49	1856.61	0			
248	68	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
249	69	1	480.07	924.99	87.28	-167.98	-173.99	1304.32





Company : APT  
 Designer : MST  
 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

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**Joint Reactions (By Combination) (Continued)**

LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]	
250	69	8	-394.95	931.62	-63.47	-166.62	166.53	1307.42
251	69	Totals:	85.12	1856.61	23.81			
252	69	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
253	70	1	455	926.57	107.17	-167.63	-254.5	1306.09
254	70	8	-426.63	930.04	-35.75	-166.24	78.79	1308.09
255	70	Totals:	28.37	1856.61	71.42			
256	70	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
257	71	1	442.47	927.37	117.12	-167.45	-294.76	1306.98
258	71	8	-442.47	929.24	-21.89	-166.05	34.93	1308.42
259	71	Totals:	0	1856.61	95.23			
260	71	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
261	72	1	429.94	928.08	107.09	-167.75	-274.06	1307.84
262	72	8	-458.31	928.53	-35.67	-166.35	59.92	1308.79
263	72	Totals:	-28.37	1856.61	71.42			
264	72	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
265	73	1	404.87	929.51	87.04	-168.36	-232.67	1309.56
266	73	8	-489.99	927.09	-63.23	-166.96	109.92	1309.51
267	73	Totals:	-85.12	1856.61	23.81			
268	73	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
269	74	1	392.34	930.23	77.01	-168.66	-211.98	1310.42
270	74	8	-505.82	926.38	-77.01	-167.27	134.92	1309.87
271	74	Totals:	-113.49	1856.61	0			
272	74	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
273	75	1	404.87	929.44	67.06	-168.84	-171.73	1309.53
274	75	8	-489.99	927.17	-90.87	-167.46	178.78	1309.53
275	75	Totals:	-85.12	1856.61	-23.81			
276	75	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
277	76	1	429.94	927.85	47.17	-169.2	-91.24	1307.76
278	76	8	-458.31	928.76	-118.59	-167.84	266.49	1308.86
279	76	Totals:	-28.37	1856.61	-71.42			
280	76	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
281	77	1	442.47	927.05	37.22	-169.37	-50.99	1306.88
282	77	8	-442.47	929.56	-132.45	-168.04	310.36	1308.53
283	77	Totals:	0	1856.61	-95.23			
284	77	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
285	78	1	455	926.34	47.25	-169.07	-71.68	1306.02
286	78	8	-426.63	930.27	-118.67	-167.73	285.37	1308.17
287	78	Totals:	28.37	1856.61	-71.42			
288	78	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
289	79	1	480.07	924.91	67.3	-168.46	-113.05	1304.3
290	79	8	-394.95	931.7	-91.11	-167.12	235.39	1307.44
291	79	Totals:	85.12	1856.61	-23.81			
292	79	COG (in):	X: 25.48	Y: 18.62	Z: 3.66			
293	81	1	354.92	552.29	62.62	-65.23	-140.19	913.24
294	81	8	-354.92	554.32	-62.62	-63.86	140.03	914.8
295	81	Totals:	0	1106.61	0			
296	81	COG (in):	X: 31.37	Y: 19.04	Z: 3.44			

**Envelope AISC 14th(360-10): LRFD Steel Code Checks**

Member	Shape	Code Che...	Loc[in]	LC	Shear Check	Loc[...	Dir	LC	phi*Pnc ...	phi*Pnt [...]	phi*Mn y-y...	phi*Mn z-z...	Cb	Eqn	
1	M1	PIPE 4.0	.001	9	9	.000	9	9	92571.33	93240	10631.25	10631.25	1.56	H1-1b	
2	M2	HSS4x4x4	.184	34.8	6	.063	34.8	y	61	134692....	139518	16180.5	16180.5	1.47	H1-1b
3	M4	PIPE 3.0	.189	36	3	.062	36		61	53775.84	65205	5748.75	5748.75	1.76	H1-1b
4	M5	PIPE_4.0	.001	9	9	.000	9		9	92571.33	93240	10631.25	10631.25	1.56	H1-1b
5	M6	HSS4x4x4	.199	34.8	12	.063	34.8	y	64	134692....	139518	16180.5	16180.5	1.47	H1-1b



Company : APT  
 Designer : MST  
 Job Number : CHESHIRE EAST  
 Model Name : MTC4074M6996

Checked By: \_\_\_\_\_

**Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)**

Member	Shape	Code Che...	Loc[in]	LC	Shear Check	Loc[ji...	Dir	LC	phi*Pnc	...phi*Pnt [...	phi*Mn y-y...	phi*Mn z-z...	Cb	Eqn
6	M8	PIPE_3.0	.189	36	9	.062	36	42	53775.84	65205	5748.75	5748.75	1.76	H1-1b
7	M11	PIPE_2.5	.135	66	38	.049	30	32	30038.46	50715	3596.25	3596.25	1.11	H1-1b
8	M14	PIPE_2.5	.121	66	58	.053	30	64	30038.46	50715	3596.25	3596.25	1.67	H1-1b
9	M17	PIPE_2.5	.075	66	58	.051	30	64	30038.46	50715	3596.25	3596.25	1.12	H1-1b
10	M20	PIPE_2.5	.170	30	61	.058	30	61	30038.46	50715	3596.25	3596.25	4.95	H1-1b
11	M23	PIPE_2.5	.163	30	35	.052	30	61	30038.46	50715	3596.25	3596.25	4.9	H1-1b



Project ID: CT141NB9650  
 Site Name: Cheshire East CT  
 Date: 10/24/2022

## PROPOSED CONNECTION CHECK

>> Max Reactions per RISA Output: N8, LC12  
 (Axial) Fx = 354.9 lbs Mx = 79.7 lbs-ft  
 Fy = 556.5 lbs My = 2289.2 lbs-ft  
 Fz = 927.9 lbs Mz = 915.5 lbs-ft

>> Existing Connection:

	L, in		W, in		
Member Size =	4	x	4		
	L, in		W, in		t, in
Plate =	9	x	9	x	0.625
Bolt Spac. =	7 in			Fy =	50 ksi
Bolt Dia =	0.625 in			Grade =	A325 (Assume)
# of Bolts =	4				

>> Check Existing Bolts: Assume 5/8" DIA A325 Bolts

Tall =	20700 lbs	Vall =	12400 lbs
T <sub>My</sub> =	1962.2 lbs	V <sub>Fyz</sub> =	270.49 lbs
T <sub>Mz</sub> =	784.73 lbs	V <sub>MX</sub> =	68.27 lbs
T <sub>Fa</sub> =	88.73 lbs		
Ft =	2835.6 lbs	Fv =	338.8 lbs

**>> Bolt Interaction:**  
 0.137 + 0.027 = 0.164 < 1.0, OK

>> Check Existing Plate:

Sx = 0.5859 in<sup>3</sup>

Flange Arm = 1.5 in *(Face of Member to Centerline of Bolt)*

f<sub>act.</sub> = 14.52 ksi      f<sub>all</sub> = 45.00 ksi

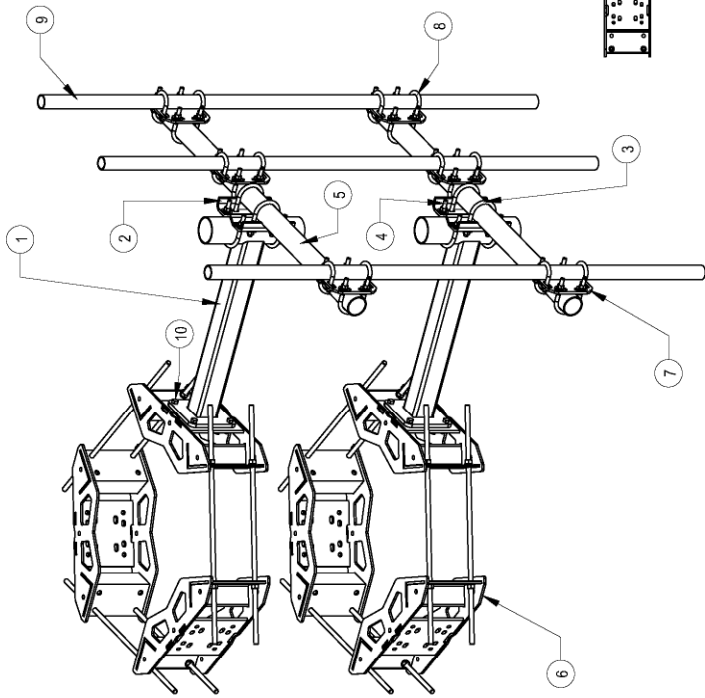
**>> Plate Interaction:** 0.323 < 1.0, OK

# ***Appendix C***

*References*

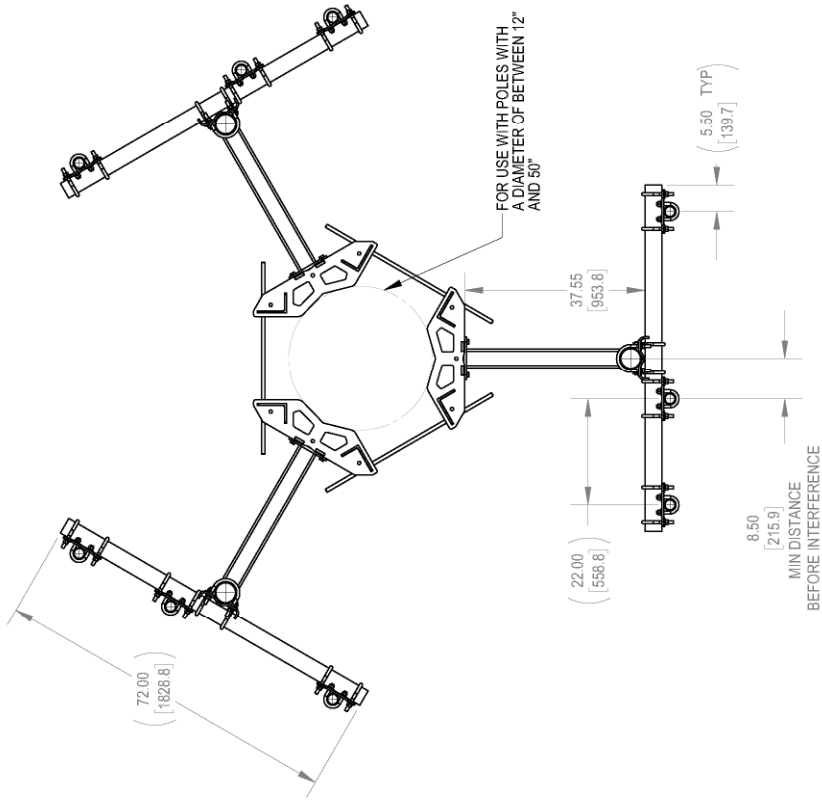
NOTES:

- 1.0 GENERAL
- 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
- 1.2 FOR PATENTS, SEE WWW.CS-PAT.COM
- 2.0 DESIGN NOTES
- 3.0 MANUFACTURING/SPECIAL REQUIREMENTS
- 4.0 TEST
- 5.0 PACKAGING



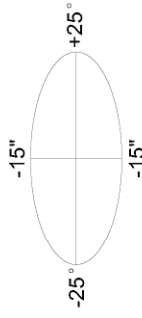
ONLY 1 OF 3 SECTORS SHOWN FOR CLARITY

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	MT197-01	36" SINGLE SUPPORT ARM	6	57.29 LBS
2	MT216-13	CENTER BRACKET	6	11.80 LBS
3	GUB-53560	5/8" X 3-5/8" X 6" GALV U-BOLT	48	1.30 LBS
4	GUB-5456	5/8" X 4-5/8" X 6 1/2" GALV U-BOLT	12	1.43 LBS
5	MT54772	Ø 3.50" O.D X 72" PIPE	6	36.08 LBS
6	MC-RM1550-3	12" - 50" O.D RINGMOUNT	2	230.13 LBS
7	XPU02	PLATE, CROSSOVER, 1.9-4.5" X 1.9-4.5" OD	18	6.93 LBS
8	GUB52440	5/8" X 2-1/2" X 4" GALV U-BOLT	36	0.89 LBS
9	MT-651-96	PLAIN END PIPE 2-3/8" OD X 96"	9	29.07 LBS
10	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	24	0.28 LBS



FOR USE WITH POLES WITH A DIAMETER OF BETWEEN 12" AND 50"

**TIEBACK ANGLE RANGE DETAIL**  
 +/- 15" VERTICAL TRAVEL FROM CENTER  
 +/- 25 DEGREES HORIZONTAL PIVOT



**COMMSCOPE, INC. OF NORTH CAROLINA**

TOLERANCES  
 1 PLACE .X ± .25  
 2 PLACE .XX ± 0.12  
 3 PLACE .XXX ± 0.06  
 ANGLES ± 2°

FINISH  
 GALV A123

MATERIAL  
 A1011(A)1018

NAME	DATE	TITLE
CE ES	07/19/19	
RW ES	07/25/2019	
RV	07/25/2019	
AD	07/25/2019	
RE	08/02/2019	

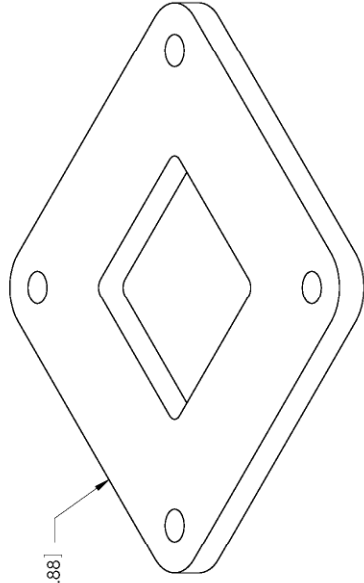
SCALE	DOCUMENT NO.
1:24	MTC4074M6996

DENSITY	lbs/in <sup>3</sup>	lbs	ft <sup>3</sup>
MASS	1634.79		
VOLUME	15060.51		
SURFACE AREA	86860.85		

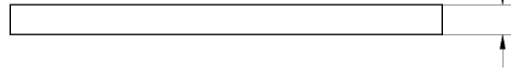
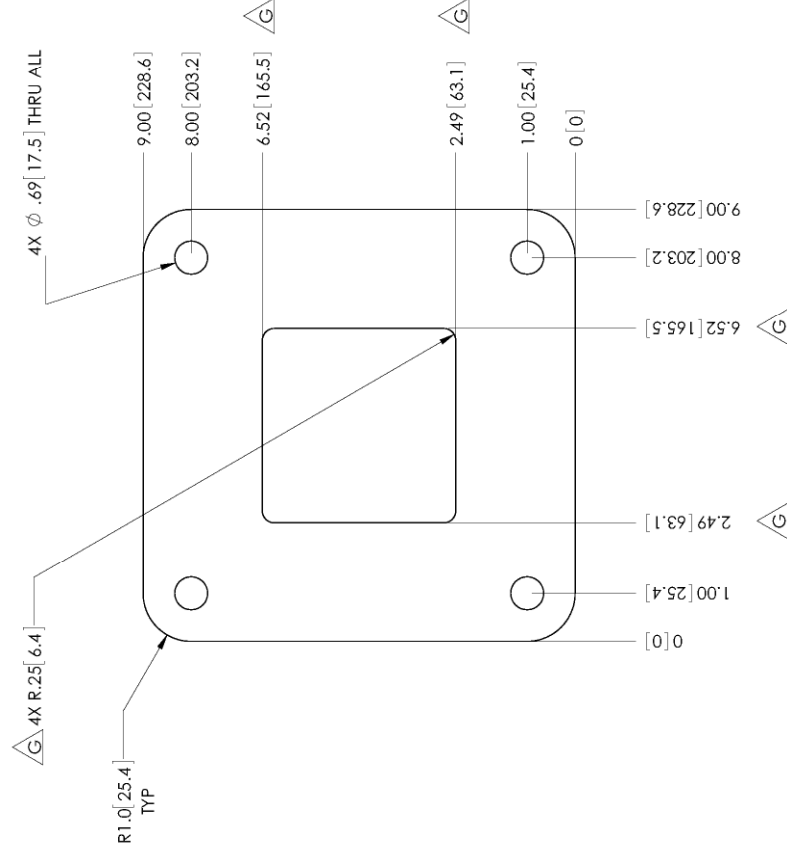
HEIGHT	LENGTH	WIDTH

REV.	ECN	DESCRIPTION	BY	DATE
A	8000036044	INITIAL RELEASE	ES	7/19/2019

NOTES:  
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.



MATL: FPS .625 [15.88]



REV.	ZONE	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	TDW	12/31/99
B		REVISED & REDRAWN	MFS	08/28/00
C		MOVED CENTER HOLES INWARD .25"	LAP	09/25/00
D		REVISED & REDRAWN	LAP	03/12/01
E		UPDATE MATL FROM .625 THK	ACG	04/23/07
F		ADDED 4 X .4" CENTER SQUARE AND RADII	ODL	11/28/17
G		CHANGED INSIDE RADIUS TO .25"	MRC	01/04/18

**COMMSCOPE, INC. OF NORTH CAROLINA**

TOLERANCES  
 0 PLACE X ± .25  
 1 PLACE X ± .06  
 2 PLACE XX ± .03  
 ANGLES ± 2°

FINISH: NONE  
 MATERIAL: A572 GR 50

NAME: ACG  
 DATE: 01/17/05  
 TITLE: MOUNT PLATE

CE: ACG  
 RW: [blank]  
 RV: [blank]  
 AD: [blank]  
 RE: TP  
 ECN: 8000026566

SCALE: 1:2  
 DOCUMENT NO.: MT196.07

SIZE: WORK AREA  
 HEIGHT: [blank]  
 LENGTH: [blank]  
 WIDTH: [blank]

DENSITY: 11.10  
 MASS: [blank]  
 VOLUME: [blank]  
 SURFACE AREA: [blank]

REVISIONS:  
 REVISION: [blank]  
 STATUS: [blank]  
 VERSION: [blank]  
 DRAWING: [blank]  
 SHEET: 1 OF 1

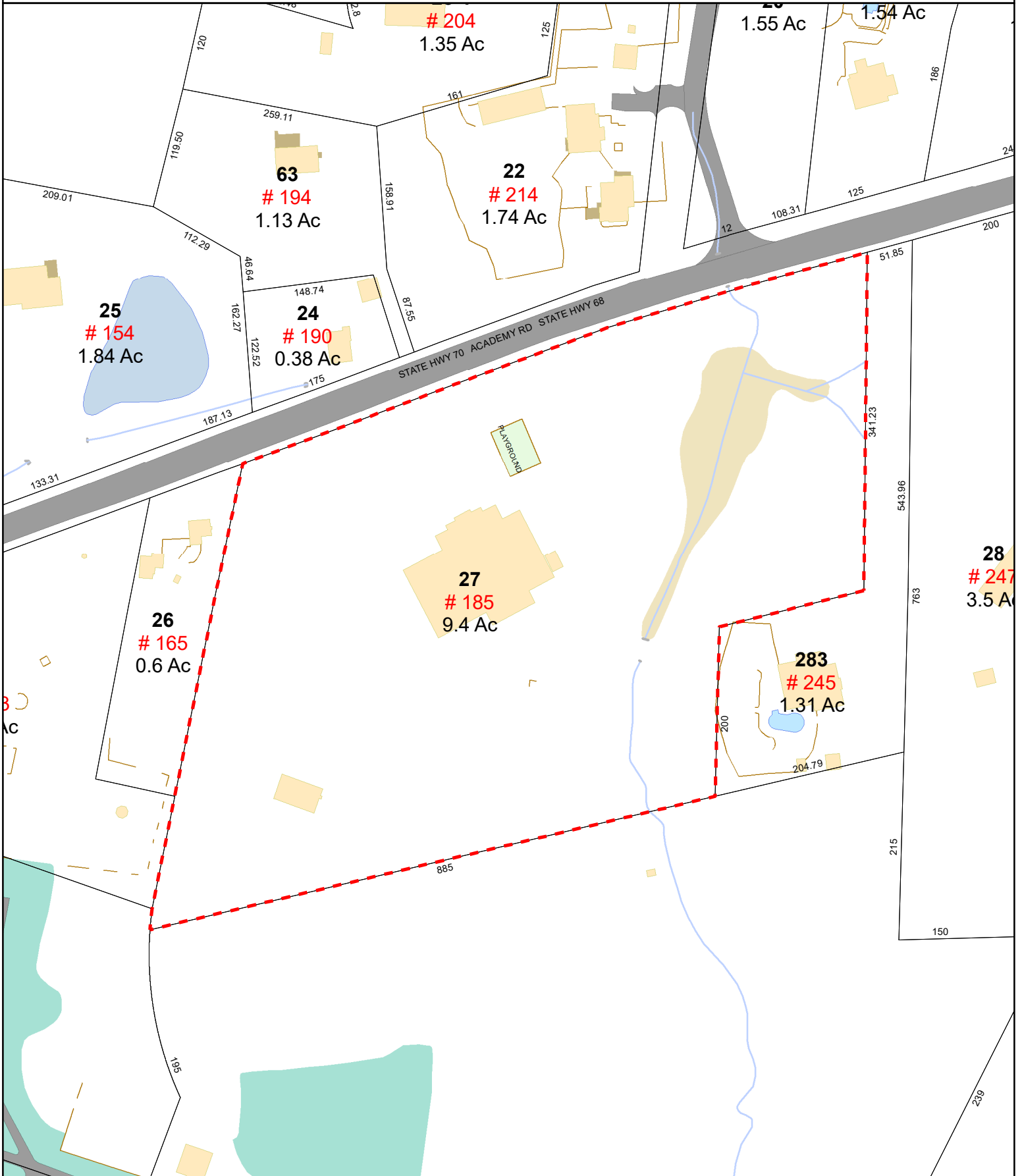
# **ATTACHMENT 5**

# Town of Cheshire, Connecticut - Assessment Parcel Map

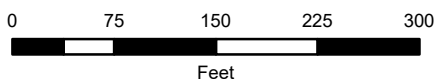


Parcel: 00602900

Location: 185 ACADEMY RD



Approximate Scale: 1 inch = 142 feet



Map Produced: June 2022

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Cheshire and its mapping contractors assume no legal responsibility for the information contained herein.





# Town of Cheshire, CT

## Property Listing Report

Map Block Lot **58 27**

Building # **1** Unique Identifier **00602900**

### Property Information

Property Location	<b>185 ACADEMY RD</b>
Mailing Address	<b>185 ACADEMY RD CHESHIRE CT 06410</b>
Land Use	<b>Church - Sanctuary (Chapel)</b>
Zoning Code	<b>R-40</b>
Neighborhood	<b>I-1B</b>

Owner	<b>CHESHIRE UNITED METHODIST</b>
Co-Owner	<b>CHURCH</b>
Book / Page	<b>1141/0126</b>
Land Class	<b>Commercial</b>
Census Tract	<b>3433</b>
Acreage	<b>9.4</b>

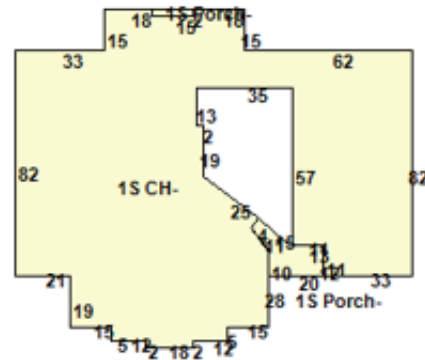
### Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	<b>1808244</b>	<b>1265770</b>
Outbuildings	<b>22560</b>	<b>15790</b>
Land	<b>597860</b>	<b>418500</b>
<b>Total</b>	<b>2428664</b>	<b>1700060</b>

### Utility Information

Electric	<b>No</b>
Gas	<b>No</b>
Sewer	<b>No</b>
Public Water	<b>No</b>
Well	<b>No</b>



### Primary Construction Details

Year Built	<b>1986</b>
Building Desc.	<b>Commercial</b>
Building Style	
Stories	<b>1.00</b>
Exterior Walls	<b>Concrete Block</b>
Exterior Walls 2	
Interior Walls	<b>Drywall</b>
Interior Walls 2	
Interior Floors 1	<b>Composite</b>
Interior Floors 2	

Heating Fuel	<b>Oil</b>
Heating Type	<b>Hot Water</b>
AC Type	
Bedrooms	<b>0</b>
Full Bathrooms	<b>0</b>
Half Bathrooms	<b>0</b>
Extra Fixtures	<b>0</b>
Total Rooms	<b>0</b>
Bath Style	<b>NA</b>
Kitchen Style	
Occupancy	<b>0</b>

Building Use	<b>Church - Sanctuary</b>
Building Condition	<b>Excellent</b>
Frame Type	<b>Average</b>
Fireplaces	<b>0</b>
Bsmt Gar	<b>0</b>
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	<b>25</b>
Roof Style	<b>HIP</b>
Roof Cover	<b>Wood</b>



# Town of Cheshire, CT

Property Listing Report

Map Block Lot **58 27**

Building # **1**

Unique Identifier

**00602900**

## Detached Outbuildings

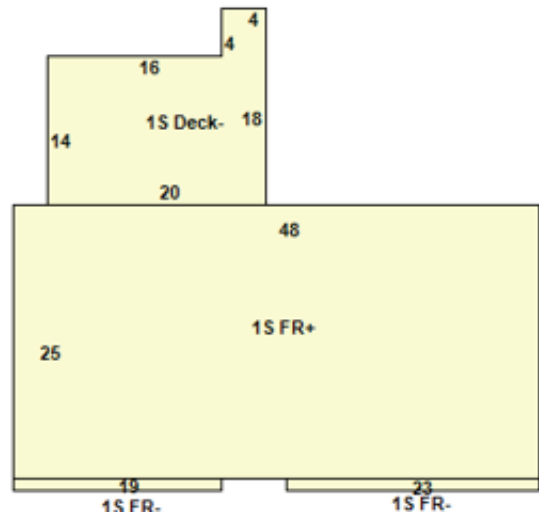
Type	Description	Area (sq ft)	Condition	Year Built
Paving	Paving	30000	Excellent	1986
Shed	Frame	240	Good	2013
Poles	Light Fixtures	1	Good	2013

## Attached Extra Features

Type	Description	Area (sq ft)	Condition	Year Built
Porch	Open	301	Excellent	1987
Porch	Open	28	Good	1987

## Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
CHESHIRE UNITED METHODIST	1141_ 126	1/11/1996	0



**Primary Construction Details**

Year Built	1971
Building Desc.	Single Family
Building Style	Raised Ranch
Stories	1.00
Exterior Walls	Vinyl
Exterior Walls 2	
Interior Walls	Drywall
Interior Walls 2	
Interior Floors 1	Hardwood
Interior Floors 2	

Heating Fuel	Oil
Heating Type	FHA
AC Type	
Bedrooms	3
Full Bathrooms	2
Half Bathrooms	1
Extra Fixtures	0
Total Rooms	7
Bath Style	NA
Kitchen Style	Typical
Occupancy	1

Building Use	Residential
Building Condition	Very Good
Frame Type	Wood Frame
Fireplaces	1
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	0
Roof Style	Gable
Roof Cover	Asphalt



**Attached Extra Features**

Type	Description	Area (sq ft)	Condition	Year Built
Deck	Wood	291	Average	2012

# **ATTACHMENT 6**



CHESHIRE EAST  
Certificate of Mailing — Firm

Name and Address of Sender  Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	TOTAL NO. of Pieces Listed by Sender  3	TOTAL NO. of Pieces Received at Post Office™  3 NM	Affix Stamp Here Postmark with Date of Receipt.			
	Postmaster, per (name of receiving employee)		 			
USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)		Postage	Fee	Special Handling	Parcel Airlift
1.	Sean M. Kimball, Town Manager Town of Cheshire 84 South Main Street Cheshire, CT 06410					
2.	Michael Glidden, Town Planner Town of Cheshire 84 South Main Street Cheshire, CT 06410					
3.	Cheshire United Methodist Church 185 Academy Road Cheshire, CT 06410					
4.						
5.						
6.						