Robinson+Cole

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Also admitted in Massachusetts

Via Electronic and U.S. Mail

April 29, 2026

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

Re: **Cellco Partnership d/b/a Verizon Wireless – Petition for a Declaratory Ruling on the Need to Obtain a Certificate for the Installation of a Wireless Telecommunications Facility at 230 Farmington Avenue, Hartford, Connecticut**

Dear Attorney Bachman:

Enclosed is an original and fifteen (15) copies of a Petition for Declaratory Ruling ("Petition") filed on behalf of Cellco Partnership d/b/a Verizon Wireless for the installation of a wireless telecommunications facility at 230 Farmington Avenue, in Hartford, Connecticut. Also enclosed is a $625.00 check representing the Petition filing fee.

Thank you in advance for your assistance and cooperation.

Sincerely,

Kenneth C. Baldwin

Enclosures

34468362-v1

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	PETITION NO. ____
D/B/A VERIZON WIRELESS FOR A	:	
DECLARATORY RULING ON THE NEED	:	
TO OBTAIN A SITING COUNCIL	:	
CERTIFICATE FOR THE INSTALLATION	:	
OF A WIRELESS TELECOMMUNICATIONS	:	
FACILITY AT 230 FARMINGTON AVENUE,	:	
HARTFORD, CONNECTICUT	:	APRIL 29, 2026

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A."), Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Petition") that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required under Section 16-50k(a) of the Connecticut General Statutes ("C.G.S.") for the installation of a wireless telecommunications facility on the roof of the Laurels Condominium building at 230 Farmington Avenue in Hartford, Connecticut (the "Property"). *See* Attachment 1 –Site Schematic. The Property is owned by Laurelhart Condominium Association, Inc. (the "Property Owner"). T-Mobile currently maintains a wireless network facility also on the roof of the Laurels Condominium building.

The Property is surrounded by residential condominiums, apartment buildings and commercial uses. Cellco refers to its proposed facility as its "Hartford 11 CT Relo" cell site.

II. Proposed Construction Activity

A. Cellco's Proposed Hartford 16 Facility

The Hartford 11 CT Relo Facility will consist of the installation of nine (9) panel type antennas and nine (9) remote radio heads ("RRHs") attached to individual pipe masts on steel ballast mounting frames on the roof on the of the building. Equipment associated with the antennas will be located on a steel platform, also on the roof of the building. (*See* Cellco's Project Plans included in Attachment 2).

Cellco will provide wireless telecommunications services in its 700 MHz, 850 MHz, 1900 MHz, 2100 MHz and C-Band (3730 MHz and 3625 MHz) frequency ranges from the proposed Hartford 11 CT Relo Facility. Specifications for Cellco's antennas and remote radio heads are included in Attachment 3. The Hartford 11 CT Relo Facility will be capable of providing 5G wireless service.

Cellco's project engineer, Centek Engineering ("Centek"), prepared Structural Analysis Reports (collectively the "SA") that confirm the steel equipment platform, antenna masts and ballast supports, connections and host structure, are structurally capable of supporting Cellco's wireless facility. *See* Attachment 4.

III. Discussion

A. The Proposed Facility Will Not Have A Substantial Adverse Environmental Effect

The Public Utility Environmental Standards Act (the "Act"), C.G.S. § 16-50g et seq., provides for the orderly and environmentally compatible development of telecommunications facilities in the state to avoid "a significant impact on the environment and ecology of the State of Connecticut." C.G.S. § 16-50g. To achieve these goals, the Act established the Council and requires a Certificate of Environmental Compatibility and Public Need for the construction of

cellular telecommunication towers "that may, as determined by the council, have a substantial adverse environmental effect". C.G.S. § 16-50k(a).

1. Physical Environmental Effects

Cellco respectfully submits that the proposed facility will not involve a significant impact on the physical and environmental characteristics of the Property or the surrounding community. All improvements associated with the Hartford 11 CT Relo Facility will be located on the roof of the existing seven-story condominium building. No ground disturbance, tree removal or site grading is required to develop or maintain the Hartford 11 CT Relo Facility.

2. Visual Effects

Included in Attachment 5 is a Visibility Assessment and Photo Simulations of the proposed roof-top improvements. Visual effects associated with the proposed Hartford 11 CT Relo Facility would not have an adverse impact on existing views of the building or the character of the surrounding urban environment area.

3. FCC Compliance

Radio frequency ("RF") emissions from the Hartford 11 CT Relo Facility will not exceed the maximum permissible exposure limits established by the Federal Communications Commission ("FCC"). Included in Attachment 6 is a Cumulative Radio Frequency Emissions Report confirming that the proposed facility, together with the existing T-Mobile antennas, will operate well within the FCC safety standards.

4. FAA Notification Not Required

Cellco's proposed facility improvements will not extend above the height of the tallest existing rooftop penthouse. Therefore, no Federal Airways and Airspace Report will need to be prepared, and no FAA notification is required.

B. Notice to the Town, Property Owner and Abutting Landowners

On April 29, 2026, a copy of this Petition was sent to Hartford's Mayor, Arun Arulampalam; Owen Deutsch, Hartford's Director of Planning; and Laurelhart Condominium Association, Inc., the Owner of the Property. Copies of the letters sent to these public officials and the Property owner are included in Attachment 7.

A copy of this Petition was also sent to the owners of land considered to abut the Property. A sample abutter's notice letter and the list of those abutting landowners to whom notice was sent is included in Attachment 8.

IV. Conclusion

Based on the information provided above, Cellco respectfully requests that the Council issue a determination, in the form of a declaratory ruling, that the installation described above, will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

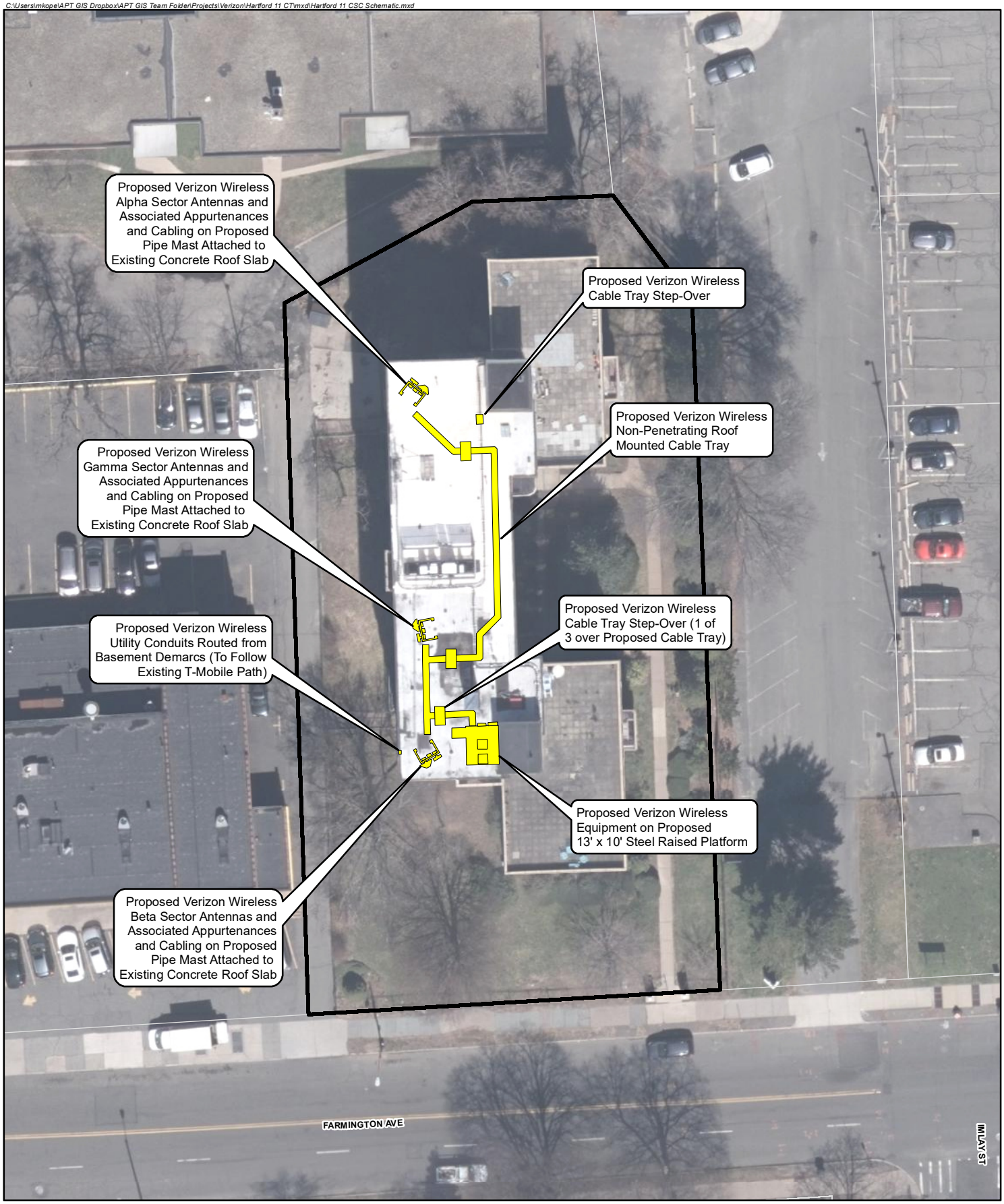
CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By 

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
One State Street
Hartford, CT 06103
(860) 275-8200
Its Attorneys

ATTACHMENT 1

C:\Users\mkope\APT GIS Dropbox\APT GIS Team Folder\Projects\Verizon\Hartford 11 CT\mxd\Hartford 11 CSC Schematic.mxd



Legend

- Proposed Verizon Wireless Equipment
- Subject Property
- Approximate Parcel Boundary

N

40 20 0 40 Feet

Site Schematic

Proposed Wireless Telecommunications Facility
Hartford 11 CT RELO
230 Farmington Avenue
Hartford, Connecticut

verizon

APT ENGINEERING & ENVIRONMENTAL

Map Notes:
Base Map Source: CTECO 2023 Aerial Imagery
Map Scale: 1 inch = 40 feet
Map Date: April 2026

ATTACHMENT 2

verizon

HARTFORD 11 CT RELO
230 FARMINGTON AVENUE
HARTFORD, CT 06105

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE VERIZON WIRELESS CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

SITE LOCATION MAP

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. INSTALL (3) PROPOSED SAMSUNG MT6413-77A ANTENNAS
2. INSTALL (6) PROPOSED JMA MX10FRO660-03 ANTENNAS
3. INSTALL (3) PROPOSED JMA 91900314 SIDE-BY-SIDE ANTENNA MOUNTS
4. INSTALL (3) PROPOSED RAYCAP OVP-6, TYP (1) PER SECTOR
5. INSTALL (3) PROPOSED 6x12 HYBRID CABLES, TYP (1) PER SECTOR
6. INSTALL (3) PROPOSED SAMSUNG RF4439d-25A RADIOS
7. INSTALL (3) PROPOSED SAMSUNG RF4461d-13A RADIOS
8. INSTALL (3) PROPOSED SAMSUNG RT4423-48A RADIOS
9. INSTALL (3) PROPOSED ANTENNA STEEL FRAMES, TYP. (1) PER SECTOR
10. INSTALL CABLE TRAYS AND STEP OVERS AS SHOWN HEREIN. FINAL LOCATION OF STEP-OVERS TO BE COORDINATED WITH PROPERTY OWNER
11. INSTALL NEW EQUIPMENT PLATFORM AND ASSOCIATED CABINETS

PROJECT SUMMARY (STRUCTURAL)

FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 AND S-2 FOR ADDITIONAL DETAILS. FOR REQUIRED SPECIAL INSPECTIONS, NOTES, AND REQUIREMENTS, SEE SHEET(S) N-2 FOR ADDITIONAL DETAILS.

1. PROPOSED ELEVATED STEEL EQUIPMENT PLATFORM AND ANTENNA SECTOR FRAMES TO BE INSTALLED ON ROOFTOP.

PROJECT INFORMATION

SITE NAME:	HARTFORD 11 CT RELO
SITE ADDRESS:	230 FARMINGTON AVENUE HARTFORD, CT 06105
APPLICANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
CONTACT PERSON:	BRYAN SARCHI AIROSMITH DEVELOPMENT. INC. (480) 734-4970
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT. 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
SITE COORDINATES:	LATITUDE: 41°-46'-05.01" N LONGITUDE: 72°-41'-45.75" W GROUND ELEVATION: ±67.58' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FAA-2C SURVEY PREPARED BY CENTEK ENGINEERING, DATED 03/05/26.

SHEET INDEX

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
(203) 488-0580
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com
Centered on Solutions®

VERIZON WIRELESS
SITE NAME: HARTFORD 11 CT RELO
230 FARMINGTON AVENUE
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

TITLE SHEET

T-1

SHEET NO. 1 OF 17

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- ULTIMATE DESIGN SPEED: 120 MPH (Vult)
  (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

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25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE----ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX
2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ANTENNA/APPURTENANCE SCHEDULE

SECTOR	(P) ANTENNA (QTY)	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(P) RRU (QTY)	(P) OVP/HYBRID (QTY)
A1	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	40°	(P) SAMSUNG: RT4423-48A (1), (P) SAMSUNG: RF4461d-13A (1)	(P) RAYCAP: OVP-6 (3) (P) HYBRID 6x12 (3) HYBRID LENGTH: ALPHA: ±200' BETA: ±40' GAMMA: ±60'
A2	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	40°	(P) SAMSUNG: BS/B66A RRH ORAN (RF4439d-25A) (1)	
A3	(P) SAMSUNG: MT6413-77A (1)	28.9 x 15.75 x 5.51	±81'-10"	40°		
B1	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	150°	(P) SAMSUNG: RT4423-48A (1), (P) SAMSUNG: RF4461d-13A (1)	
B2	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	150°	(P) SAMSUNG: BS/B66A RRH ORAN (RF4439d-25A) (1)	
B3	(P) SAMSUNG: MT6413-77A (1)	28.9 x 15.75 x 5.51	±81'-10"	150°		
C1	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	255°	(P) SAMSUNG: RT4423-48A (1), (P) SAMSUNG: RF4461d-13A (1)	
C2	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	255°	(P) SAMSUNG: BS/B66A RRH ORAN (RF4439d-25A) (1)	
C3	(P) SAMSUNG: MT6413-77A (1)	28.9 x 15.75 x 5.51	±81'-10"	255°		

NOTE:
ALL HYBRID/COAX LENGTHS TO BE MEASURED AND VERIFIED IN FIELD BEFORE ORDERING

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CLIENT REVIEW

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SPECIFICATIONS, NOTES AND ANT. SCHEDULE

N-1

SHEET NO. 2 OF 17

MODIFICATION INSPECTION REPORT REQUIREMENTS

PRE-CONSTRUCTION		DURING CONSTRUCTION		POST-CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	–	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
X	EOR APPROVED STEEL SHOP DRAWINGS	–	EARTHWORK BACKFILL MATERIAL AND COMPACTION	–	POST–INSTALLED ANCHOR ROD PULL–OUT TEST
X	EOR APPROVED POST–INSTALLED ANCHOR MPII	–	REBAR AND FORMWORK GEOMETRY VERIFICATION	–	PHOTOGRAPHS
–	EOR APPROVED FRP SHOP DRAWINGS	–	CONCRETE TESTING	X	STEEL INSPECTION
–	EOR APPROVED FRP CALCULATIONS	X	STEEL INSPECTION		
–	FABRICATION INSPECTION	X	POST INSTALLED ANCHOR ROD VERIFICATION		
–	FABRICATOR CERTIFIED WELDER INSPECTION	–	BASE PLATE GROUT VERIFICATION		
X	MATERIAL CERTIFICATIONS	–	CONTRACTOR'S CERTIFIED WELD INSPECTION		
		–	ON–SITE COLD GALVANIZED VERIFICATION		
		–	CONTRACTOR AS–BUILT REDLINE DRAWINGS		
		–	HOST BUILDING (BEARING WALL/PARAPET ETC..)		
			INTEGRITY VERIFICATION PRIOR TO ANY INSTALLATIONS		
		–	HOST BUILDING (ROOF OPENING)		
			FRAMING VERIFICATION PRIOR TO ANY INSTALLATIONS		

NOTES

1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS
2. (X) DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT
3. (–) DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT
4. EOR – ENGINEER OF RECORD
5. MPII – MANUFACTURER'S PRINTED INSTALLATION GUIDELINES

MODIFICATION INSPECTION NOTES:

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).
2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.
3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.
4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.
5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:
   - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   - WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON–SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE MI UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:
   - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   - WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:
   - CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   - WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS–BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:
   - PRE–CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   - DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   - POST–CONSTRUCTION: FINAL CONDITION OF THE SITE.

SLAB DRILLING NOTES

1. NO DRILLING OF SLAB WILL BE PERMITTED WITHOUT THE ENGINEER'S APPROVAL. X–RAY ALL CONCRETE AT AREAS REQUIRING PENETRATIONS/POST INSTALLED ANCHORS PRIOR TO CUTTING/DEMO.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PRODUCING AN OPENING OF THE SPECIFIED SIZE IN THE EXISTING CONCRETE SLAB. AS PART OF THIS RESPONSIBILITY, THE CONTRACTOR SHALL USE ALL POSSIBLE MEANS TO ENSURE THAT THE STEEL REINFORCING ELEMENTS OF THE CONCRETE SLAB ARE NOT DAMAGED DURING THE CONSTRUCTION. ALL DAMAGE SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL TAKE ALL MEANS NECESSARY OR AS DIRECTED BY THE ENGINEER TO PROTECT THE PROPERTY AND INHABITANTS OF THE BUILDING DURING THE CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERTY OR HARM TO THE INHABITANTS CAUSED BY THE CONSTRUCTION OPERATIONS.
4. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED SEQUENCE OF OPERATIONS OF CUTTING OPERATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF THE MEANS AND METHODS OF LOCATING THE STEEL REINFORCEMENTS WITHIN THE AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF CONCRETE SLAB, LIST OF EQUIPMENT TO BE USED, MEANS OF PROTECTING THE BUILDING FROM HARM, AND LIST OF PRODUCTS TO BE USED TO REPAIR ANY DAMAGED CONCRETE.
5. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE ENGINEER BEFORE PROCEEDING AND SHALL NOTIFY THE ENGINEER AT LEAST 24 HOURS PRIOR TO THE START OF ANY WORK.
6. THE LOCATION OF EACH SLAB PENETRATION SHALL BE AS SHOWN ON THE PLANS BUT MAY BE VARIED AS NEEDED AND AS APPROVED BY THE ENGINEER SO AS TO AVOID ALL SLAB EMBEDMENTS, INCLUDING REINFORCING BARS AND POST–TENSIONING STRANDS, THE CONTRACTOR SHALL DRILL A PILOT HOLE AT THE SELECTED LOCATION OF EACH HOLE TO VERIFY THE SLAB THICKNESS AND TO COORDINATE THE RESULTING LOCATION OF THE PENETRATION BETWEEN FLOORS.
7. THE CONTRACTOR SHALL EMPLOY THE SERVICES OF AN APPROVED TESTING LABORATORY TO LOCATE ALL STEEL REINFORCING WITHIN THE POST–TENSIONED FLOOR SLAB. AS PART OF THIS WORK, THE TESTING LABORATORY AND CONTRACTOR SHALL BE PROVIDED WITH COPIES OF THE ORIGINAL STRUCTURAL PLANS OF THE BUILDING FOR HELP IN LOCATING ANY EMBEDDED ITEMS. THE TESTING LABORATORY AND CONTRACTOR SHALL CLEARLY MARK THE LOCATIONS OF ALL EMBEDDED STEEL ITEMS.
9. IF DURING ANY DRILLING OR CUTTING OPERATION, IT BECOMES APPARENT THAT ANY EMBEDDED STEEL ITEM HAS BEEN HIT, DAMAGED, OR CUT; DRILLING SHALL IMMEDIATELY CEASE AND THE ENGINEER NOTIFIED. THE ENGINEER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXTENT OF ANY DAMAGE THAT MAY HAVE OCCURRED AND THE MEANS OF REPAIRING THE DAMAGE.THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL REPAIRS NEEDED AS THE RESULT OF THE DRILLING OR CUTTING OPERATIONS.

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

HOST STRUCTURE & EQUIPMENT PLATFORM

A STRUCTURAL ANALYSIS OF THE HOST STRUCTURE & EQUIPMENT PLATFORM WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND WAS FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA–2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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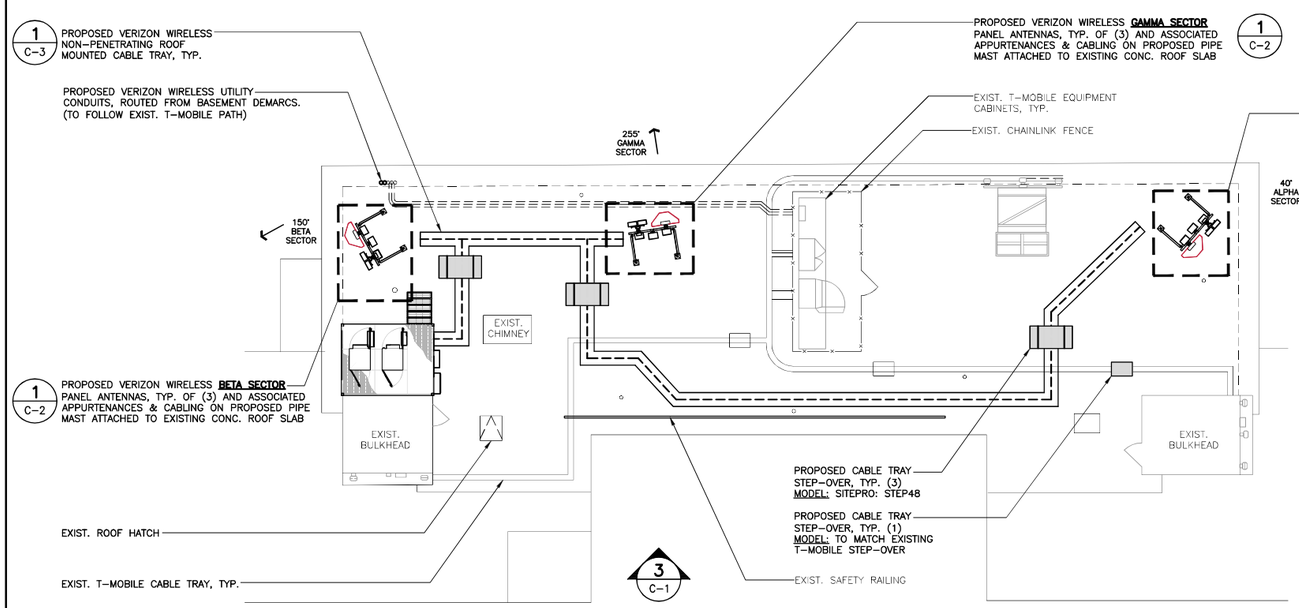
MODIFICATION INSPECTION REQUIREMENTS

N-2

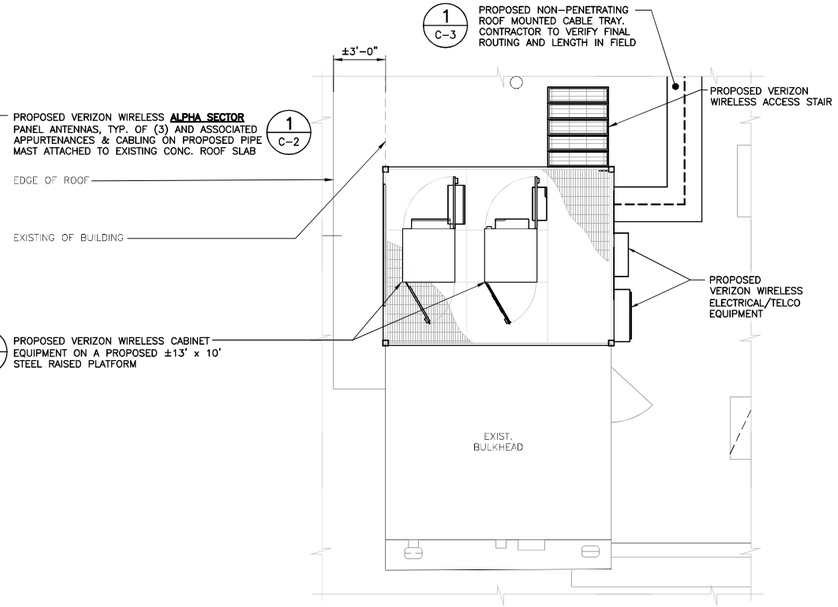
SHEET NO. 3 OF 17



1 C-1 ROOF PLAN - PROPOSED CONDITIONS

SCALE: 1" = 8'

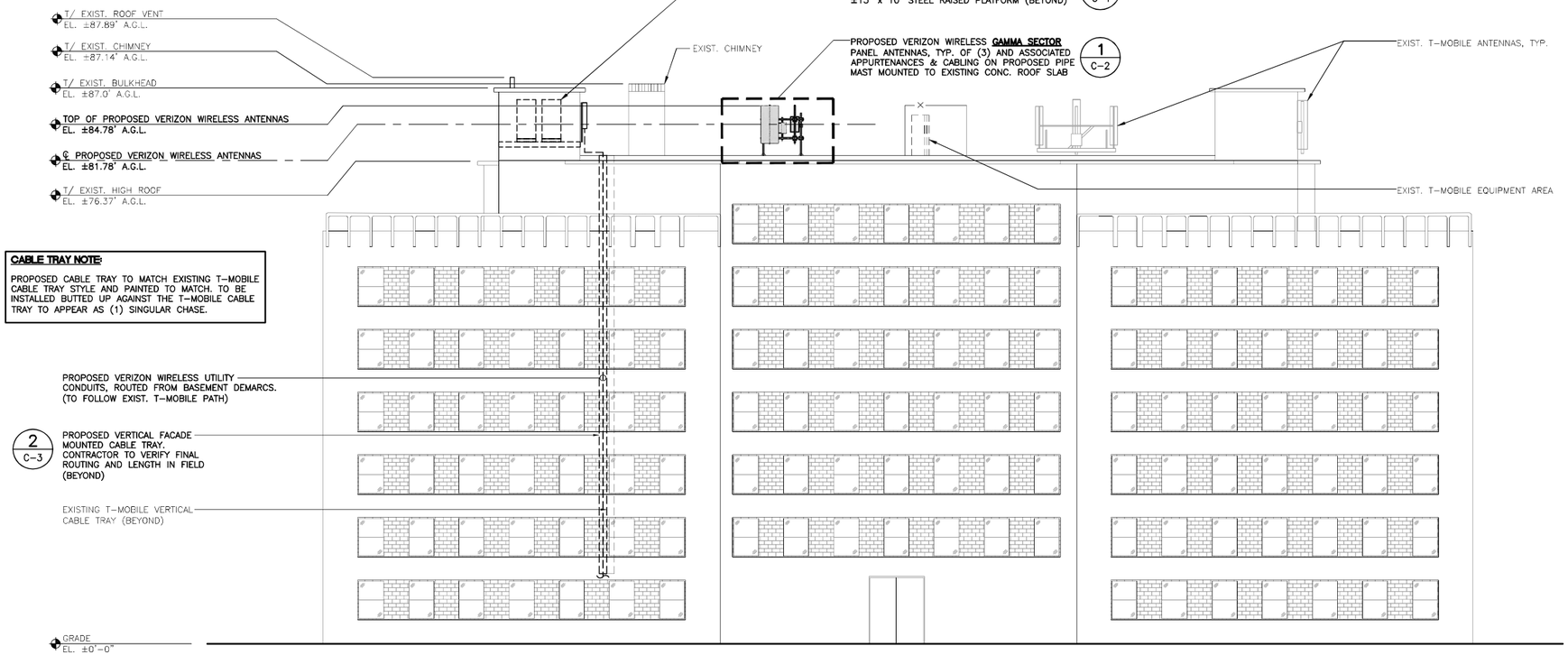
APPROXIMATE NORTH



2 C-1 EQUIPMENT PLAN - PROPOSED CONDITIONS

SCALE: 1" = 8'

APPROXIMATE NORTH



3 C-1 BUILDING ELEVATION - PROPOSED CONDITIONS

SCALE: 1" = 10'

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW
1	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY

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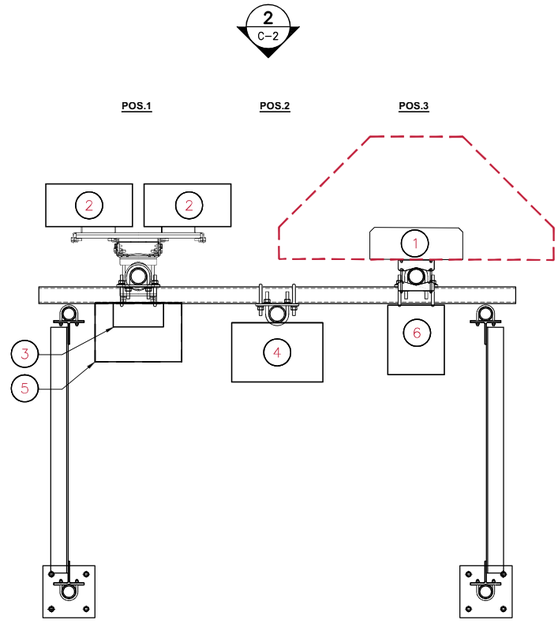
ROOF PLAN, EQUIPMENT PLAN AND ELEVATION

C-1

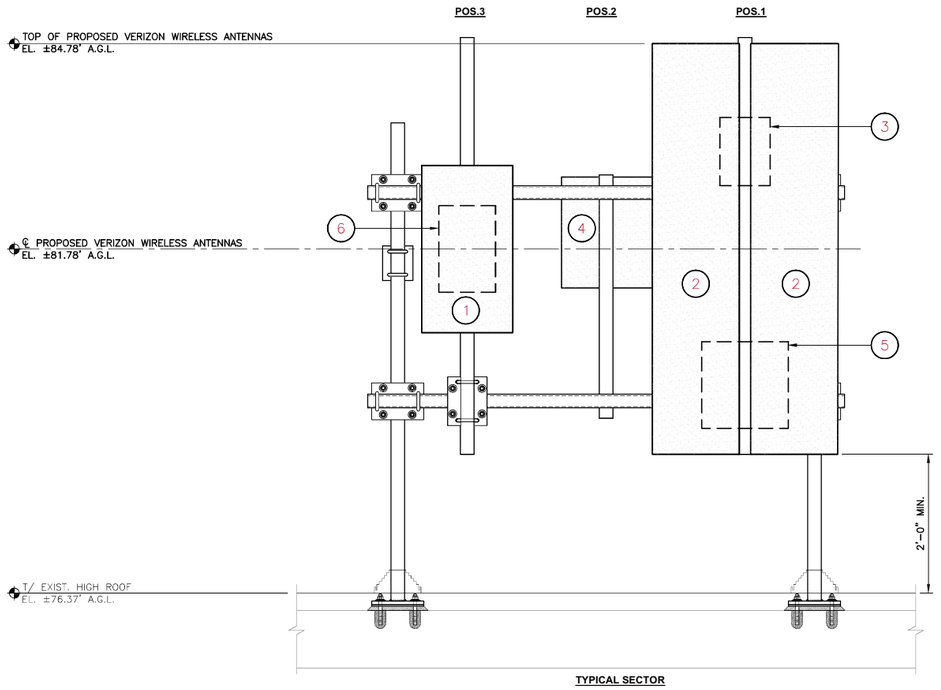
SHEET NO. 4 OF 17

KEY/LEGEND

	(E/P) RF EQUIPMENT	QTY.
1	(P) SAMSUNG: MT6413-77A W/ INTEGRATED RRU	3
2	(P) JMA: MX10FRO660-03	6
3	(P) SAMSUNG: RADIO: RT4423-48A	3
4	(P) SAMSUNG: RADIO: RF4439D-25A	3
5	(P) SAMSUNG: RADIO: RF4461d-13A	3
6	(P) RAYCAP: OVP-6 (1 PER SECTOR)	3



1 C-2 **ANTENNA SECTOR MOUNTING CONFIGURATION PLAN - PROPOSED**
SCALE: 1" = 1' - 0"



2 C-2 **ANTENNA SECTOR MOUNTING ELEVATION - PROPOSED**
SCALE: 1" = 1' - 0"

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CONSTRUCTION
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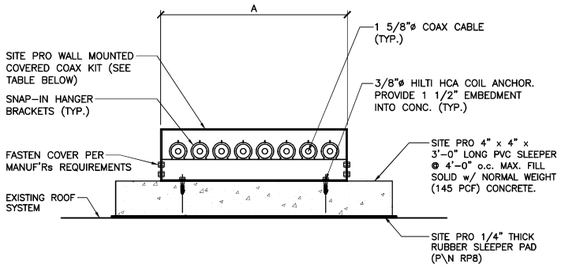
ANTENNA PLAN AND ELEVATION

C-2

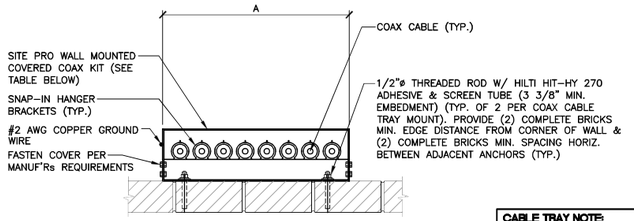
SHEET NO. 5 OF 17



NO. CABLES	SITE PRO ROOF MOUNTED COVERED COAX KIT (P/N)	A	SITE PRO COAX 0°-45° SPLICE
4	WMC4	11 1/2"	SP1573
8	WMC8	21 1/2"	SP1574
12	WMC12	31"	SP1597

1 C-3 ROOF MOUNTED CABLE SUPPORT

SCALE: NOT TO SCALE



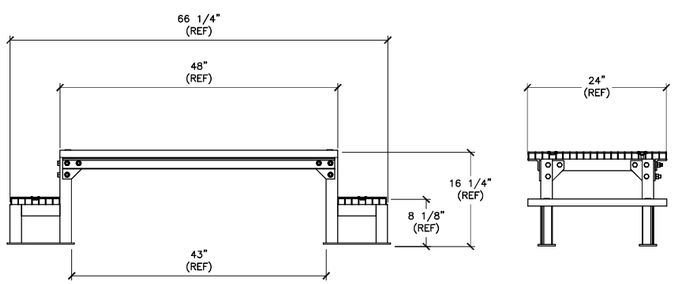
NO. CABLES	SITE PRO WALL MOUNTED COVERED COAX KIT (P/N)	A
4	WMC4	11 1/2"
8	WMC8	21 1/2"
12	WMC12	31"

CABLE TRAY NOTE:

PROPOSED CABLE TRAY TO MATCH EXISTING T-MOBILE CABLE TRAY STYLE AND PAINTED TO MATCH. TO BE INSTALLED BUTTED UP AGAINST THE T-MOBILE CABLE TRAY TO APPEAR AS (1) SINGULAR CHASE.

2 C-3 VERTICAL/HORIZ. COAX CABLE TRAY ATTACHMENT DETAIL (BRICK WALL)

SCALE: NOT TO SCALE

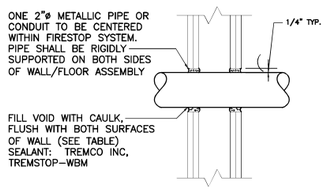


SITEPRO1: STEP-48

3 C-3 ROOF MOUNTED GALVANIZED STEP-OVER DETAIL

SCALE: NOT TO SCALE

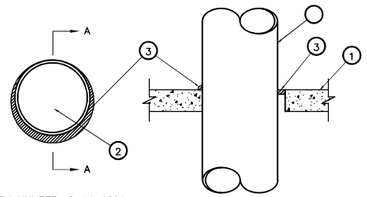
PIPE OR CONDUIT	ANNULAR SPACE IN.	MIN. FILL MATERIAL THICKNESS	F RATING HR
PIPE	3/4"	1 1/4"	2
CONDUIT	3/4"	3/4"	1



UL SYSTEM NUMBER: WL1051
F RATING – 1 & 2 HR.

4 C-3 PIPE AND CONDUIT PENETRATION DETAIL IN GYPSUM WALLBOARD

SCALE: NOT TO SCALE



UL SYSTEM NUMBER: C-AJ-1291
F RATING – 2-HR

SECTION A-A

6 C-3 METAL PIPE THROUGH CONCRETE FLOOR/ WALL OR BLOCK WALL

SCALE: NOT TO SCALE

NOTES:

1. FLOOR OR WALL ASSEMBLY – MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 30-7/8 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

   A. STEEL FLOOR UNIT/FLOOR ASSEMBLY (NOT SHOWN) – AS AN ALTERNATE TO ITEM 1, THE FLOOR ASSEMBLY MAY CONSIST OF A FLUTED STEEL FLOOR UNIT/ CONCRETE FLOOR ASSEMBLY. THE FLOOR ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL FLOOR CEILING DESIGN IN THE FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   B. CONCRETE – MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT ON NORMAL WEIGHT (100-150 PCF) CONCRETE, AS MEASURED FROM THE TOP PLANE OF THE FLOOR UNITS.

   C. STEEL FLOOR AND FORM UNITS* – COMPOSITE OR NON-COMPOSITE 1-1/2 TO 3 IN. DEEP FLUTED GALV STEEL UNITS AS SPECIFIED IN THE INDIVIDUAL FLOOR-CEILING DESIGN. MAX DIAM OF OPENING IS 30-7/8 IN.

2. THROUGH-PENETRANT – ONE METALLIC PIPE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. TO MAX 7/8 IN. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:

   A. STEEL PIPE NOM 30 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

   B. IRON PIPE NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.

   C. COPPER PIPE NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

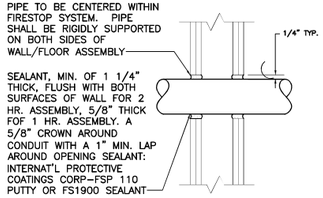
   D. COPPER TUBING NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

   E. CONDUIT NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT.

   F. CONDUIT NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT).

3. FILL, VOID OR CAVITY MATERIAL* – SEALANT – MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. AT THE POINT CONTACT LOCATION BETWEEN PIPE AND CONCRETE, A MIN 1/4 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE/PIPE INTERFACE ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL.

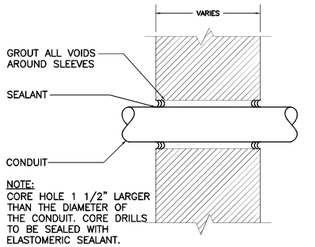
MAX. DIA. OF THROUGH PENETRANT	NOMINAL ANNULAR SPACE IN.	FILL MATERIAL TYPE
1"	1/2"	FSP 1100 PUTTY
2"	1"	FS 1900 SEALANT



UL SYSTEM NUMBER:
WL2038
F RATING – 1 & 2 HR.

5 C-3 PVC CONDUIT PENETRATION DETAIL IN GYPSUM WALLBOARD

SCALE: NOT TO SCALE

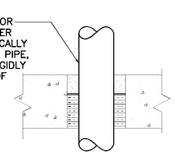


7 C-3 PIPE AND CONDUIT PENETRATION DETAIL IN NON-RATED PARTITION

SCALE: NOT TO SCALE

FLOOR OR WALL	MIN. THICK.	MAX. PIPE DIA.	MIN. ANNULAR SPACE	MAX. ANNULAR SPACE	MIN. FILL MAT. THICK.	MIN. FORM. MAT. THICK.	F RATING
F	3 3/4"	1 1/2"	3/8"	2 1/8"	1"	2 3/4"	2
F	3 3/4"	6"	3/8"	3/4"	1"	2 3/4"	2
F	3 3/4"	6"	3/8"	1"	2"	1 3/4"	2
F	4 1/2"	1 1/2"	3/8"	2 1/8"	1"	3 1/2"	3
F	4 1/2"	6"	3/8"	3/4"	1"	3 1/2"	3
F	4 1/2"	6"	3/8"	1"	2"	2 1/2"	3
W	5 1/2"	1 1/2"	3/8"	2 1/8"	1"	3 1/2"	3
W	5 1/2"	6"	3/8"	3/4"	1"	3 1/2"	3
W	6 1/2"	1 1/2"	3/8"	2 1/8"	2"	2 1/2"	3
W	6 1/2"	6"	3/8"	1"	2"	2 1/2"	3

THROUGH PENETRANTS
ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL.



FORMING MATERIAL SHALL BE A MIN. OF 1 1/2" THICK OF MIN. 4.0 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED IN OPENING, USG INTERIORS-TYPE SAF

THICKNESS OF SEALANT APPLIED FLUSH W/THE TOP SURFACE OF BOTH SIDES OF FLOOR/WALL (SEE TABLE), USG INTERIORS-TYPE SS

UL SYSTEM NUMBER: CAJ1020

F RATING – 3 HR.

8 C-3 PIPE AND CONDUIT PENETRATION DETAIL IN CONCRETE OR MASONRY

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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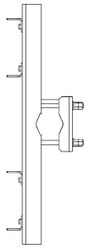
DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

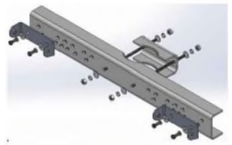
TYPICAL EQUIPMENT DETAILS

C-3

SHEET NO. 6 OF 17



PLAN VIEW



ANTENNA MOUNT ISOMETRIC

DUAL ANTENNA MOUNTING KIT	
EQUIPMENT	DESCRIPTION
MOUNT MAKE: JMA MODEL: 91900314	• SIDE-BY-SIDE MOUNTING KIT, ACCOMMODATES (2) COMPATABLE ANTENNAS • 2 BRACKETS REQUIRED FOR 4'-6' ANTENNAS • 3 BRACKETS REQUIRED FOR 6'-8' ANTENNAS

1 RF-1 **PROPOSED DUAL ANTENNA MOUNT DETAIL**
SCALE: NOT TO SCALE

MX10FRO660-03

ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: JMA MODEL: MX10FRO660-03	70.9"H x 15.0"W x 7.4"D	±57.3 LBS.

NOTES:
1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

2 RF-1 **SECTOR ANTENNA DETAIL**
NOT TO SCALE

MT6413-77A

ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: MT6413-77A	28.90"H x 15.75"W x 5.51"D	±57.3 LBS.

NOTES:
1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. ANTENNA HAS ITS OWN BUILT-IN RRU.

3 RF-1 **PROPOSED ANTENNA DETAIL**
SCALE: NOT TO SCALE

RVZDC-6627-PF-48

OVER VOLTAGE PROTECTION BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: RVZDC-6627-PF-48	29.5"H x 16.5"W x 12.6"D	32 LBS.

NOTES:
1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. PROVIDES DC SURGE PROTECTION FOR 12 REMOTE RADIO UNITS.

4 RF-1 **PROPOSED OVER-VOLTAGE PROTECTION BOX**
SCALE: NOT TO SCALE

RT4423-48A

REMOTE RADIO UNIT (RRU)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RT4423-48A	8.7"H x 11.8"W x 5"D	±18.7 LBS.

NOTES:
1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

5 RF-1 **PROPOSED REMOTE RADIO UNIT DETAIL**
SCALE: NOT TO SCALE

RF4461d-13A

REMOTE RADIO UNIT (RRU)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF4461d-13A	14.96"H x 14.96"W x 10.23"D	79.1 LBS.

NOTES:
1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

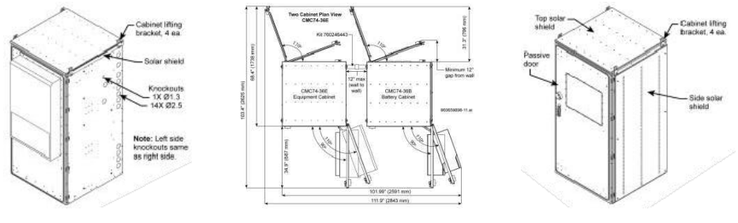
6 RF-1 **PROPOSED REMOTE RADIO UNIT DETAIL**
SCALE: NOT TO SCALE

RF4439d-25A

REMOTE RADIO UNIT (RRU)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF4439d-25A	14.96"H x 14.96"W x 10.04"D	74.7 LBS.

NOTES:
1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

7 RF-1 **PROPOSED REMOTE RADIO UNIT DETAIL**
SCALE: NOT TO SCALE



EQUIPMENT / BATTERY CABINET & BATTERY CABINET		
CABINET TYPE	DIMENSIONS	TOTAL WEIGHT WITH EQUIPMENT & BATTERIES
VERIZON EQUIPMENT CABINET	76"H x 38"W x 38"D	NOT TO EXCEED 2,200 LBS.
VERIZON BATTERY CABINET	76"H x 38"W x 38"D	NOT TO EXCEED 2,200 LBS.

NOTES:
1. CONTRACTOR TO CONFIRM CABINET MAKE/MODEL/SUBMODEL AND ALL OPTIONAL FEATURES AND QUANTITIES WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING. IF CABINET SPECIFICATIONS EXCEED THE ABOVE DIMENSION & WEIGHT LIMITATIONS, CONTACT THE ENGINEER OR RECORD PRIOR TO ORDERING.

8 RF-1 **EQUIPMENT CABINET / BATTERY CABINET**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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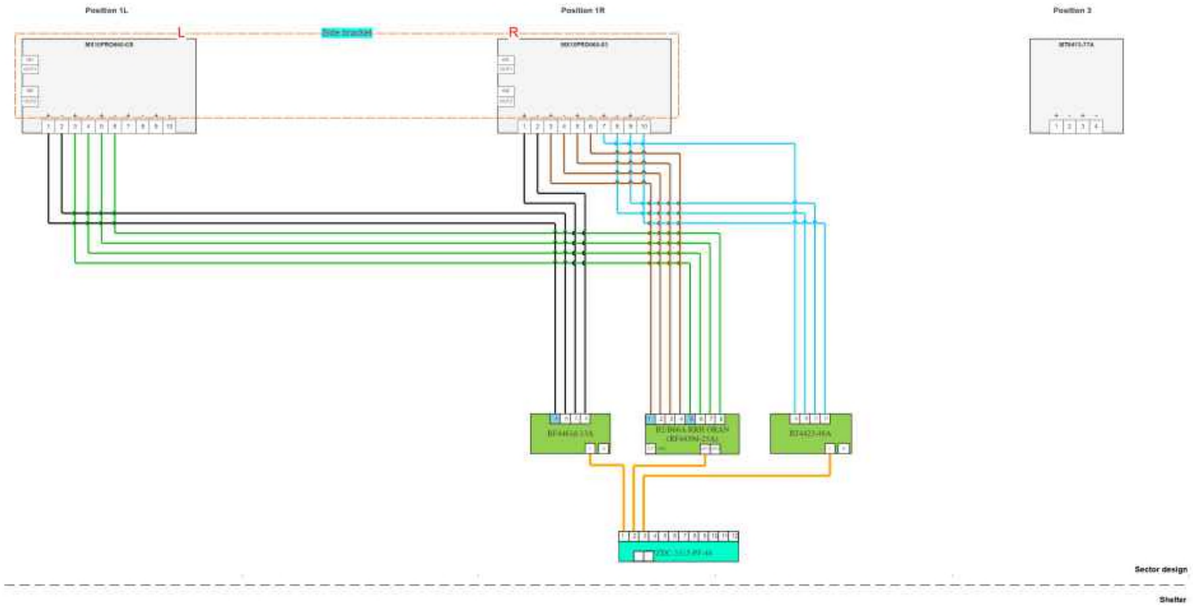
DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

RF EQUIPMENT DETAILS

RF-1

SHEET NO. 7 OF 17



Alpha
(Proposed)

Legends

RET dc signal capable port

700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC
Coax
Coax Jumper
Sectors Shared Equipments

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions

TYPICAL SECTOR

1 / RF-2 **PROPOSED RF PLUMBING DIAGRAM**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
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RF PLUMBING DIAGRAM

RF-2

SHEET NO. 8 OF 17

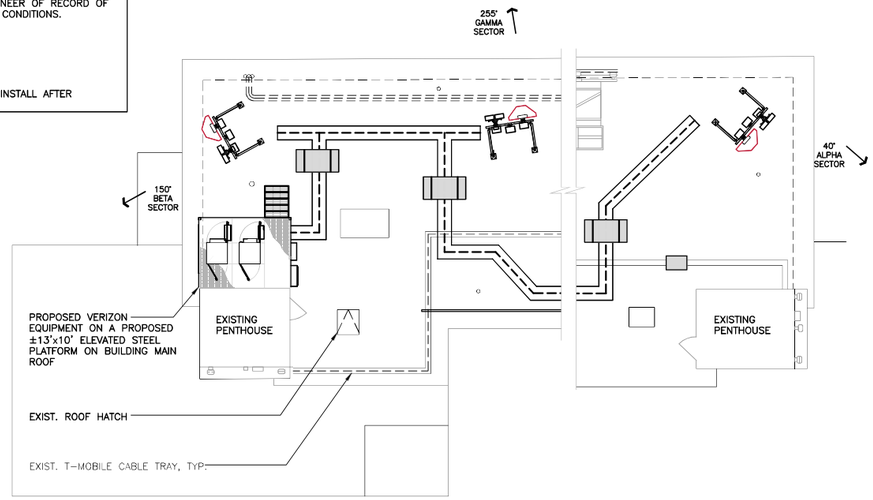
PLAN NOTES AND LEGEND

1. VERIFY ALL DIMENSIONS, ELEVATIONS, EXISTING FRAMING MEMBER SIZES AND GENERAL CONDITIONS PRIOR TO COMMENCEMENT OF WORK. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND EXISTING CONDITIONS.

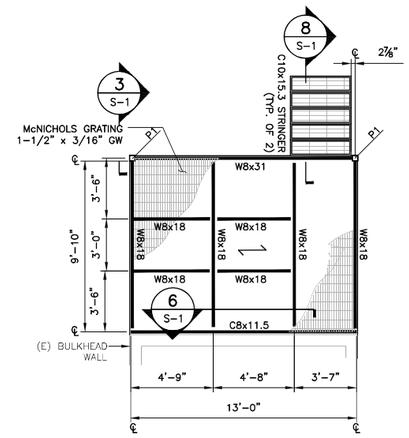
P1 INDICATES HSS4x4x1/4 ASTM A500 GR. B (F_y = 46ksi) STEEL POST.

INDICATES SPAN DIRECTION.

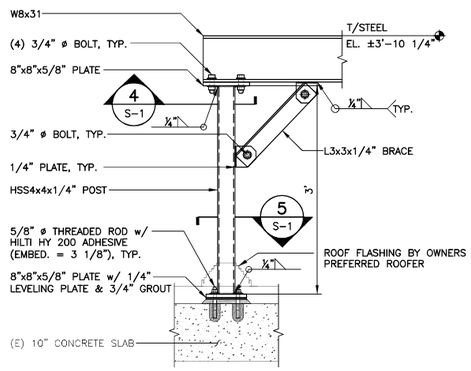
K.B. INDICATES L3x3x1/4 ASTM A36 (Fy=36 KSI) STEEL ANGLE. INSTALL AFTER EQUIPMENT CABINETS ARE SET.



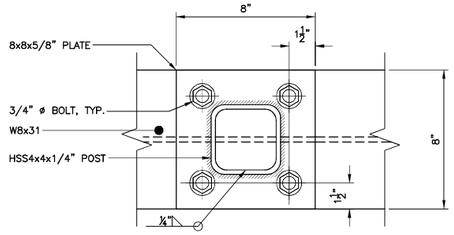
1 S-1 **PROPOSED ROOF PLAN**
SCALE: 1" = 10'-0"



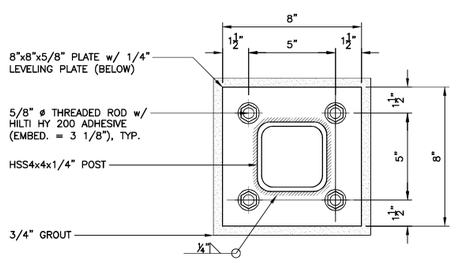
2 S-1 **FRAMING PLAN**
SCALE: 1/4" = 1'-0"



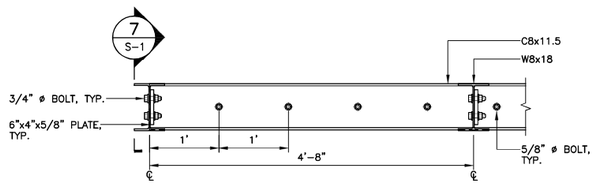
3 S-1 **POST SECTION**
SCALE: 1" = 1'-0"



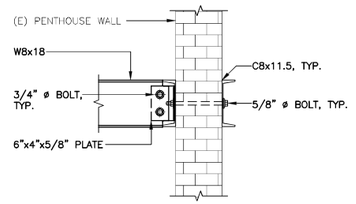
4 S-1 **TOP PLATE SECTION**
SCALE: 3" = 1'-0"



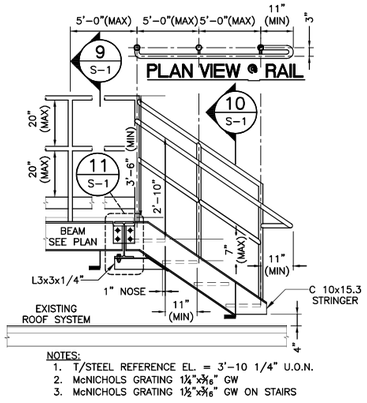
5 S-1 **BASEPLATE SECTION**
SCALE: 3" = 1'-0"



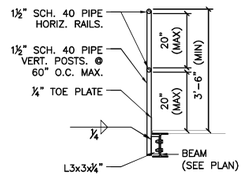
6 S-1 **WALL CONNECTION SECTION**
SCALE: 1" = 1'-0"



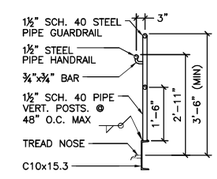
7 S-1 **WALL CONNECTION ELEVATION**
SCALE: 1" = 1'-0"



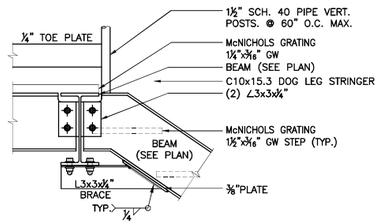
8 S-1 **STAIR SECTION**
SCALE: ½" = 1'-0"



9 S-1 **RAIL SECTION**
SCALE: ½" = 1'- 0"



10 S-1 **STAIR RAIL SECTION**
SCALE: ½" = 1'- 0"



11 S-1 **STAIR CONNECTION**
SCALE: ¾" = 1'- 0"

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
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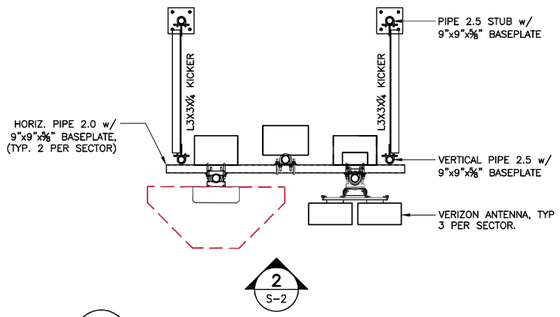
EQUIPMENT PLATFORM DETAILS

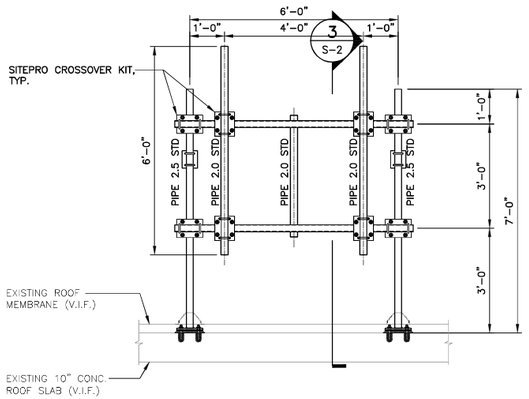
S-1

SHEET NO. 9 OF 17



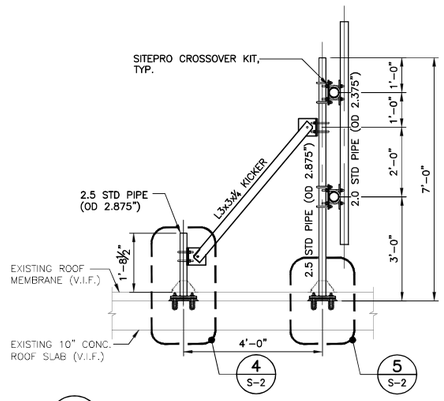
1 S-2 TYPICAL ANTENNA FRAME PLAN VIEW

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



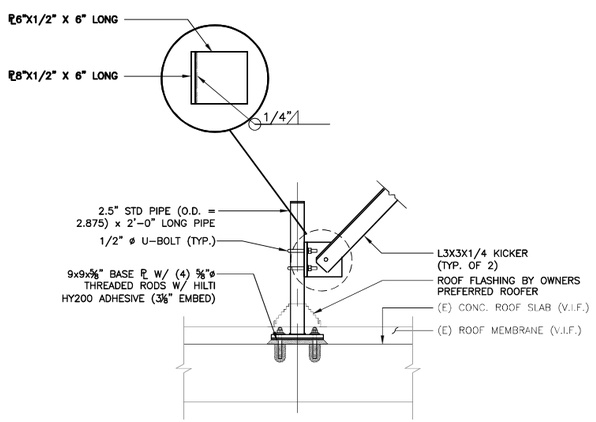
2 S-2 TYPICAL ANTENNA FRAME DETAIL

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



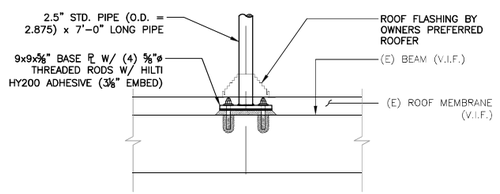
3 S-2 TYPICAL ANTENNA FRAME PLAN VIEW

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



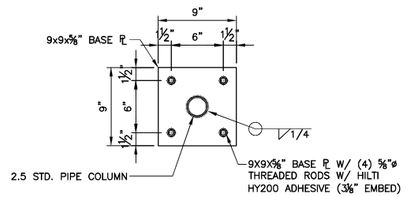
4 S-2 KICKER POST CONNECTION DETAIL

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



5 S-2 ANTENNA FRAME POST CONNECTION DETAIL

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



6 S-2 ANTENNA FRAME BASEPLATE DETAIL

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

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

HOST STRUCTURE & EQUIPMENT PLATFORM

A STRUCTURAL ANALYSIS OF THE HOST STRUCTURE & EQUIPMENT PLATFORM WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND WAS FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

SLAB DRILLING NOTES

1. NO DRILLING OF SLAB WILL BE PERMITTED WITHOUT THE ENGINEER'S APPROVAL. X-RAY ALL CONCRETE AT AREAS REQUIRING PENETRATIONS/POST INSTALLED ANCHORS PRIOR TO CUTTING/DEMO.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PRODUCING AN OPENING OF THE SPECIFIED SIZE IN THE EXISTING CONCRETE SLAB. AS PART OF THIS RESPONSIBILITY, THE CONTRACTOR SHALL USE ALL POSSIBLE MEANS TO ENSURE THAT THE STEEL REINFORCING ELEMENTS OF THE CONCRETE SLAB ARE NOT DAMAGED DURING THE CONSTRUCTION. ALL DAMAGE SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL TAKE ALL MEANS NECESSARY OR AS DIRECTED BY THE ENGINEER TO PROTECT THE PROPERTY AND INHABITANTS OF THE BUILDING DURING THE CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERTY OR HARM TO THE INHABITANTS CAUSED BY THE CONSTRUCTION OPERATIONS.
4. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED SEQUENCE OF OPERATIONS OF CUTTING OPERATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF THE MEANS AND METHODS OF LOCATING THE STEEL REINFORCEMENTS WITHIN THE AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF CONCRETE SLAB, LIST OF EQUIPMENT TO BE USED, MEANS OF PROTECTING THE BUILDING FROM HARM, AND LIST OF PRODUCTS TO BE USED TO REPAIR ANY DAMAGED CONCRETE.
5. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE ENGINEER BEFORE PROCEEDING AND SHALL NOTIFY THE ENGINEER AT LEAST 24 HOURS PRIOR TO THE START OF ANY WORK.
6. THE LOCATION OF EACH SLAB PENETRATION SHALL BE AS SHOWN ON THE PLANS BUT MAY BE VARIED AS NEEDED AND AS APPROVED BY THE ENGINEER SO AS TO AVOID ALL SLAB EMBEDMENTS, INCLUDING REINFORCING BARS AND POST-TENSIONING STRANDS. THE CONTRACTOR SHALL DRILL A PILOT HOLE AT THE SELECTED LOCATION OF EACH HOLE TO VERIFY THE SLAB THICKNESS AND TO COORDINATE THE RESULTING LOCATION OF THE PENETRATION BETWEEN FLOORS.
7. THE CONTRACTOR SHALL EMPLOY THE SERVICES OF AN APPROVED TESTING LABORATORY TO LOCATE ALL STEEL REINFORCING WITHIN THE POST-TENSIONED FLOOR SLAB. AS PART OF THIS WORK, THE TESTING LABORATORY AND CONTRACTOR SHALL BE PROVIDED WITH COPIES OF THE ORIGINAL STRUCTURAL PLANS OF THE BUILDING FOR HELP IN LOCATING ANY EMBEDDED ITEMS. THE TESTING LABORATORY AND CONTRACTOR SHALL CLEARLY MARK THE LOCATIONS OF ALL EMBEDDED STEEL ITEMS.
9. IF DURING ANY DRILLING OR CUTTING OPERATION, IT BECOMES APPARENT THAT ANY EMBEDDED STEEL ITEM HAS BEEM HIT, DAMAGED, OR CUT; DRILLING SHALL IMMEDIATELY CEASE AND THE ENGINEER NOTIFIED. THE ENGINEER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXTENT OF ANY DAMAGE THAT MAY HAVE OCCURRED AND THE MEANS OF REPAIRING THE DAMAGE.THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL REPAIRS NEEDED AS THE RESULT OF THE DRILLING OR CUTTING OPERATIONS.

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
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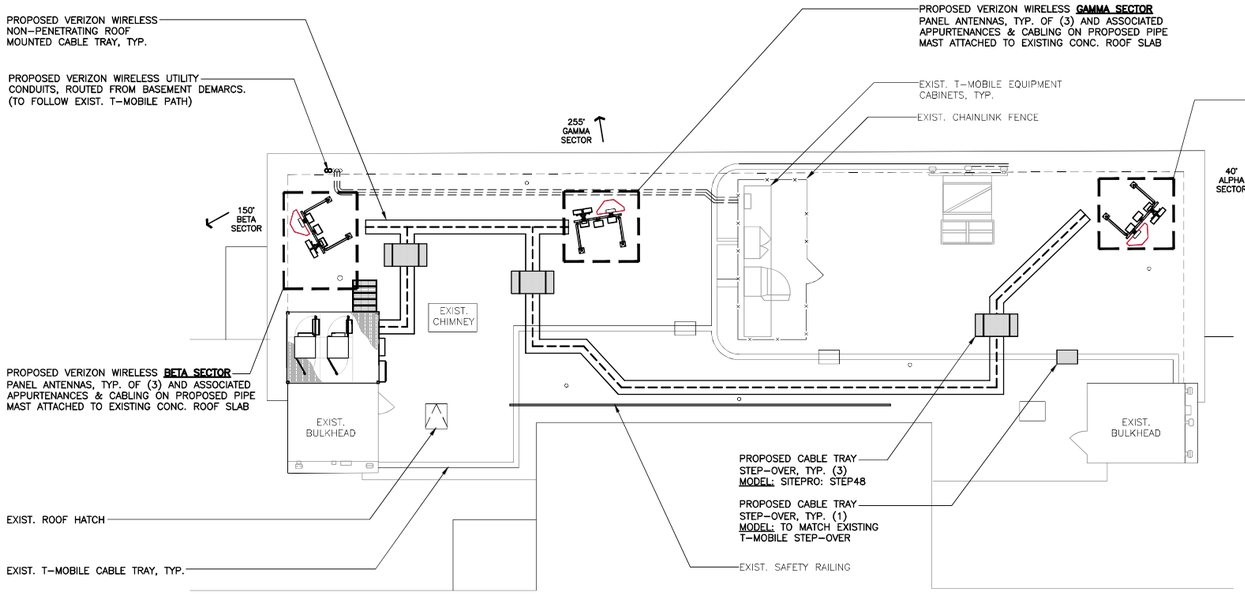
ANTENNA FRAME DETAILS

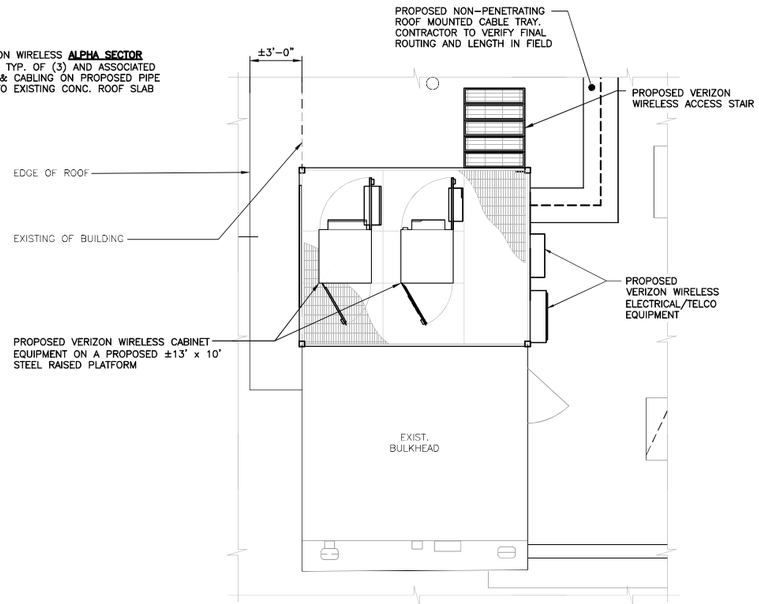
S-2

SHEET NO. 10 OF 17



1 E-1 **ELECTRICAL ROOF PLAN - PROPOSED CONDITIONS**
SCALE: 1" = 8'

APPROXIMATE NORTH



2 E-1 **ELECTRICAL EQUIPMENT PLAN - PROPOSED CONDITIONS**
SCALE: 1" = 8'

APPROXIMATE NORTH

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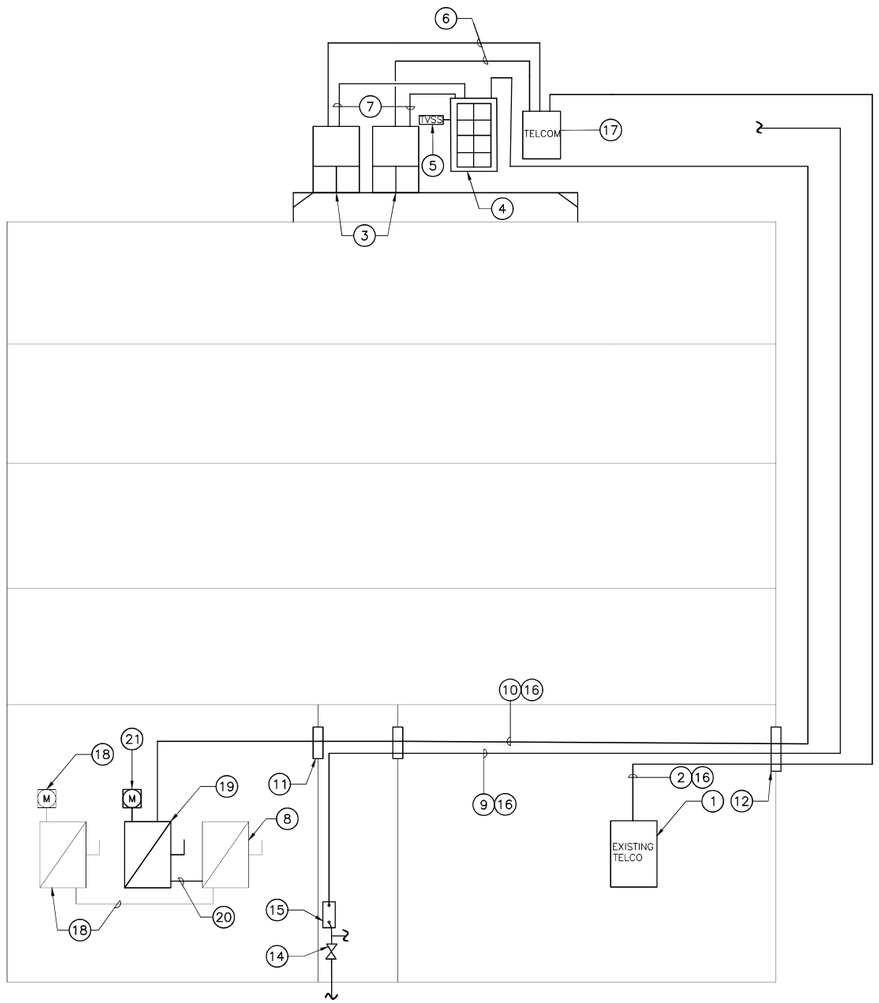
ELECTRICAL ROOF AND EQUIPMENT PLANS

E-1

SHEET NO. 11 OF 17



1 E-2 **ELECTRICAL RISER DIAGRAM**
SCALE: NOT TO SCALE

RISER DIAGRAM NOTES

1. EXISTING TELCO DEMARC LOCATED IN BASEMENT TRASH ROOM.
2. 2" CONDUIT WITH FIBER TELCO CABLES ROUTED FROM RADIO EQUIPMENT TO EXISTING TELCO DEMARC IN BUILDING. PROVIDE FINAL TELCO CONNECTIONS AS SPECIFIED BY MANUFACTURER AND TELEPHONE SERVICE PROVIDER. VERIFY DEMARC LOCATION IN FIELD.
3. VERIZON WIRELESS EQUIPMENT CABINET.
4. VERIZON WIRELESS DISTRIBUTION PANEL: 120/208, 3 PHASE, 200A, 30 POSITION, 65KAIC, 200A MCB, NEMA-3R SURFACE MOUNT, FRONT TRIM HINGED TO CABINET, BOLT ON BREAKERS. PROVIDE LABEL INDICATING "FOR VERIZON WIRELESS USE ONLY".
5. RAYCAP AM4100-V-07 SURGE PROTECTOR. INSTALL WIRING AND CIRCUIT BREAKER AS SPECIFIED BY MANUFACTURER.
6. TELCO CONDUITS AND CONDUCTORS ROUTED TO EQUIPMENT CABINET PER MANUFACTURERS SPECIFICATIONS.
7. POWER CONDUITS AND CONDUCTORS ROUTED TO EQUIPMENT CABINET PER MANUFACTURERS SPECIFICATIONS.
8. EXISTING SERVICE DISCONNECT TO REMAIN.
9. 1" PVC CONDUIT WITH (1) #4/0 AWG GROUNDING ELECTRODE CONDUCTOR BONDED TO STREET SIDE OF WATER MAIN SHUT OFF VALVE AND TO MAIN EQUIPMENT GROUND BAR ON EQUIPMENT PLATFORM. REFER TO WATER MAIN GROUNDING DETAIL.
10. (4) # 350 KCMIL, (1) # 1/0 AWG GROUND, 3" CONDUIT. (LENGTH NOT TO EXCEED 325'.)
11. TYPICAL FLOOR/WALL PENETRATION. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL PENETRATIONS ARE FIREPROOF AND FIRE RATING OF WALLS AND FLOORS IS MAINTAINED.
12. EXTERIOR WALL PENETRATION. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR ENSURING PENETRATION IS THOROUGHLY WATERPROOF.
13. ROUTE CONDUITS ALONG ROOF ON SLEEPERS. ALL CONDUITS MUST BE ELEVATED MORE THAN 3-1/2" ABOVE ROOF (LESS THAN 3-1/2" WILL REQUIRE SIGNIFICANT INCREASE IN CONDUCTOR SIZE DUE TO DERATING REQUIREMENTS). COORDINATE ROUTING WITH CIVIL DRAWINGS AND WITH OWNER.
14. EXISTING WATER MAIN LOCATED IN BASEMENT.
15. GROUND BAR AND GROUNDING ELECTRODE CONDUCTOR AS SHOWN ON WATER MAIN GROUNDING DETAIL.
16. COORDINATE CONDUIT ROUTING IN FIELD WITH BUILDING MANAGER AND CONSTRUCTION MANAGER PRIOR TO START OF CONSTRUCTION. CONDUITS TO BE CONCEALED ON THE EXTERIOR OF THE BUILDING. COORDINATE REQUIREMENTS WITH BUILDING OWNER AND CONSTRUCTION MANAGER.
17. VERIZON WIRELESS TELCO BACKBOARD.
18. EXISTING T-MOBILE DISCONNECT AND SUBMETER.
19. NEW 240V, 200A RATED, THREE PHASE, HEAVY DUTY, NEMA 1 FUSED DISCONNECT WITH (3) 200A FUSES.
20. (4) # 3/0 AWG, (1) # 6 AWG GROUND, 2" CONDUIT. CONDUCTORS TO TAP OFF LOAD SIDE OF DISCONNECT SWITCH. MAXIMUM CODUCTOR LENGTH OF 10'.
21. 3 PHASE 200A, 208V RATED SUBMETER INSTALLED IN OWNER APPROVED LOCATION. PROVIDE WITH ALL REQUIRED SENSOR AND POWER WIRING. (VERIS INDUSTRIES MODEL H-8163 OR APPROVED EQUAL)

GENERAL NOTES:

1. COORDINATE ALL SHUTDOWNS WITH OWNER AND ALL AFFECTED PARTIES. PROVIDE TEMPORARY POWER AS REQUIRED.
2. CONTRACTOR TO COORDINATE ALL CONDUIT ROUTING AND INSTALLATION REQUIREMENTS IN THE FIELD WITH BUILDING OWNER AND WIRELESS CARRIER'S CONSTRUCTION MANAGER PRIOR TO INSTALLATION.
3. COORDINATE WITH BUILDING OWNER FOR ALL WORK IN OCCUPIED AREAS.
4. RESTORE ALL DISTURBED AREAS TO PRE-CONSTRUCTION CONDITION.
5. PRIOR TO INSTALLATION, VERIFY EXISTING AVAILABLE ELECTRICAL CAPACITY.
6. ALL WORK SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS. COORDINATE WITH BUILDING OFFICIAL, BUILDING OWNER, AND CONSTRUCTION MANAGER FOR ANY ADDITIONAL REQUIREMENTS.
7. COORDINATE WITH CONSTRUCTION MANAGER FOR LOCATION, LAYOUT, AND MOUNTING REQUIREMENTS FOR ALL ELECTRICAL EQUIPMENT.
8. COORDINATE ELECTRICAL SERVICE AND DISTRIBUTION EQUIPMENT INTERRUPTING RATING WITH AVAILABLE FAULT CURRENT FROM UTILITY COMPANY. EQUIPMENT SHALL NOT BE RATED LESS THAN 65 KAIC.
9. ALL TELEPHONE AND ELECTRIC UTILITY WORK MUST BE COORDINATED WITH EACH UTILITY COMPANY, AND ALL EQUIPMENT MUST BE UTILITY COMPANY APPROVED. CONTRACTOR SHALL PROVIDE ALL ELEMENTS NOT PROVIDED BY UTILITY COMPANIES.
10. ALL CONDUITS ROUTED ACROSS ROOF SHALL BE ELEVATED ABOVE ROOF MORE THAN 3 1/2" ON 4x4 SLEEPERS, OR CONDUIT AND CONDUCTOR SIZE SHALL BE SIGNIFICANTLY INCREASED.
11. PROVIDE ALL NEC REQUIRED SIGNAGE AT SERVICE AND DISTRIBUTION EQUIPMENT.
12. CONTRACTOR TO VERIFY EXACT CONFIGURATION OF EXISTING ELECTRICAL DISTRIBUTION SYSTEM IN FIELD PRIOR TO START OF CONSTRUCTION.

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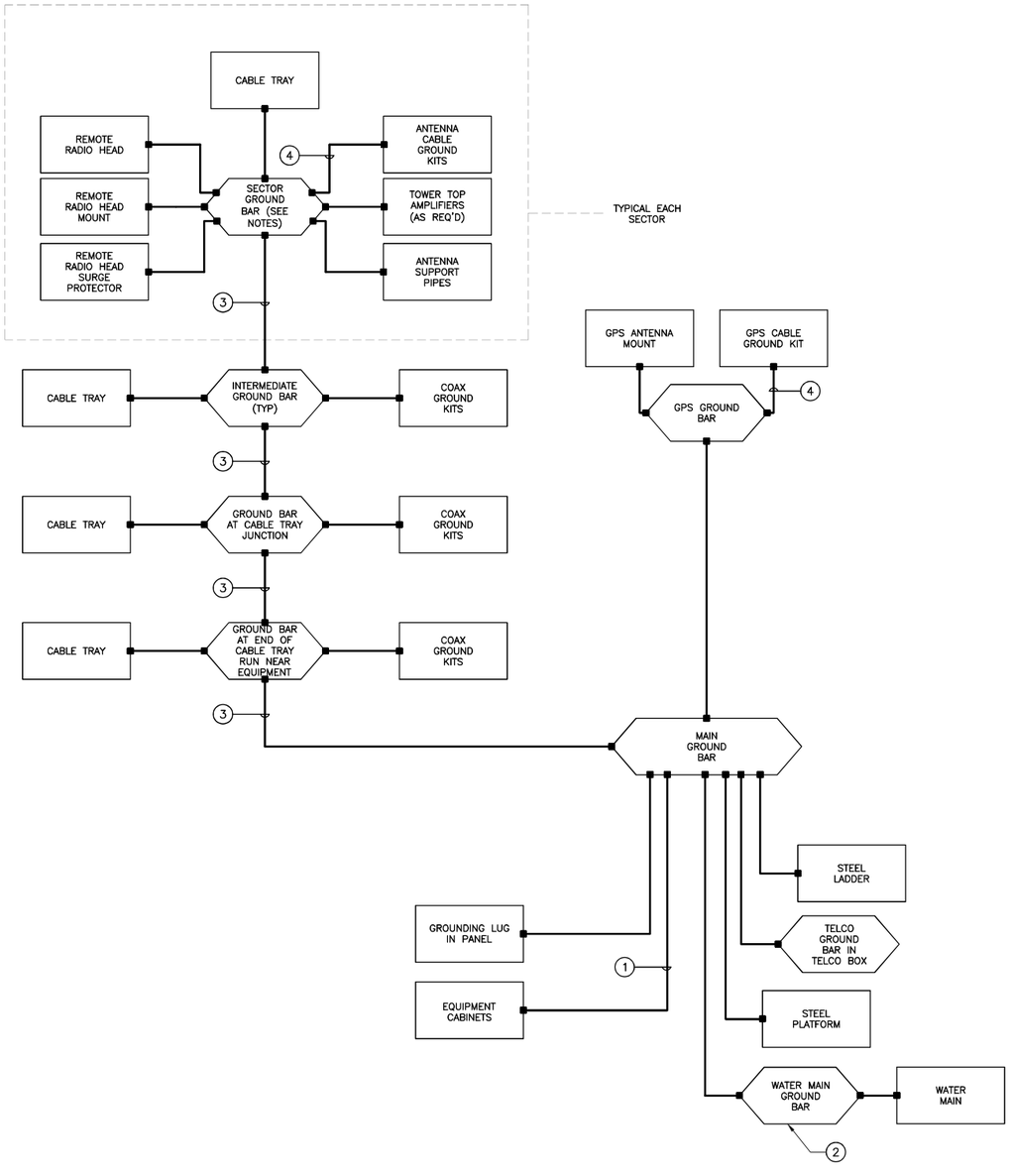
ELECTRICAL RISER DIAGRAM

E-2

SHEET NO. 12 OF 17



1 / E-3 **GROUNDING SCHEMATIC DIAGRAM**
SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

1. PER MANUFACTURE'S SPECIFICATIONS
2. PER DETAILS
3. #2/0 GREEN INSULATED
4. #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. BOND CABLE TRAY SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
7. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
8. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
9. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

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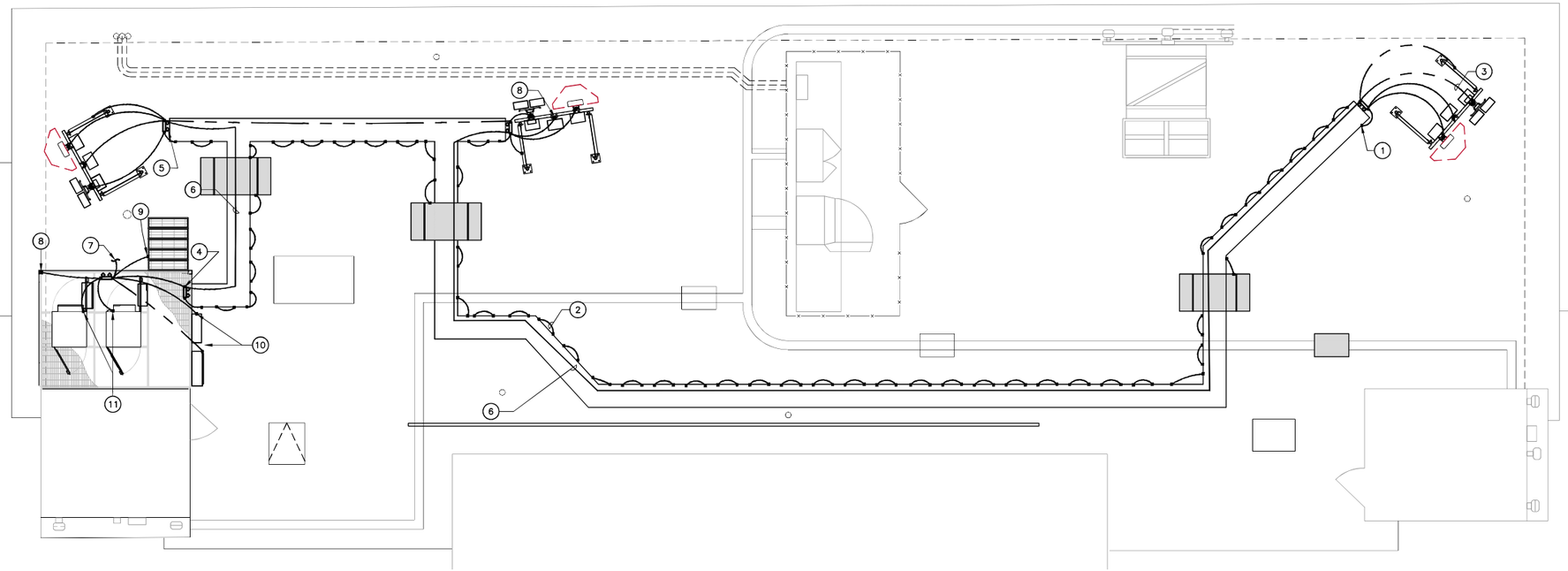
ELECTRICAL GROUNDING SCHEMATIC DIAGRAM

E-3

SHEET NO. 13 OF 17

GROUNDING PLAN NOTES:

1. BOND GROUND BAR TO CABLE TRAY. TYPICAL FOR EACH GROUND BAR TO BE BONDED TO EACH NEARBY SECTION OF CABLE TRAY. ALL CABLE TRAY RUNS MUST BE BONDED AT EACH END TO A GROUND BAR.
2. BOND ALL CABLE TRAY SECTIONS TOGETHER TYP.
3. BOND ANTENNAS AND ANTENNA MOUNTING PIPES TO SECTOR GROUND BAR (TYP).
4. GROUND BAR AT END OF CABLE TRAY RUN TYP.
5. SECTOR GROUND BAR TYP.
6. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
7. BOND MAIN GROUND BAR TO BUILDING WATER MAIN PER DETAILS.
8. BOND STEEL PLATFORM TO MAIN GROUND BAR. (TYP EACH CORNER).
9. BOND STEEL LADDER TO MAIN GROUND BAR.
10. BOND ELECTRICAL PANEL AND TELCO BOARD TO MAIN GROUND BAR.
11. BOND EQUIPMENT CABINETS TO MAIN GROUND BAR.



1 / E-4 **ROOFTOP GROUNDING PLAN**
SCALE: 1/4" = 1'

APPROXIMATE NORTH

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
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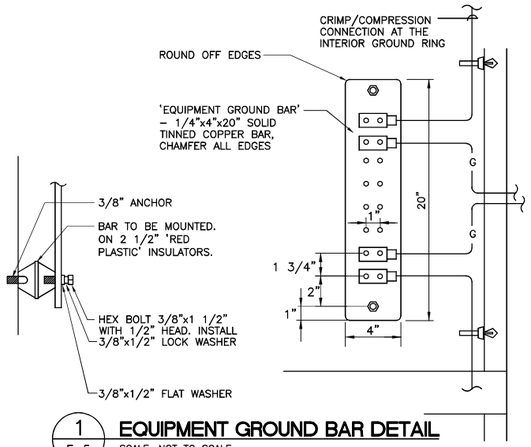
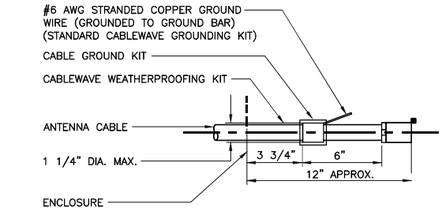
ELECTRICAL GROUNDING PLAN

E-4

SHEET NO. 14 OF 17



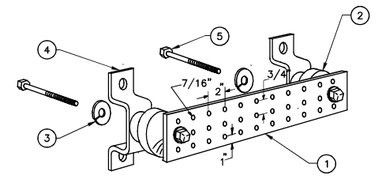
1 E-5 **EQUIPMENT GROUND BAR DETAIL**
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

2 E-5 **ANTENNA CABLE GROUNDING DETAIL**
SCALE: NOT TO SCALE

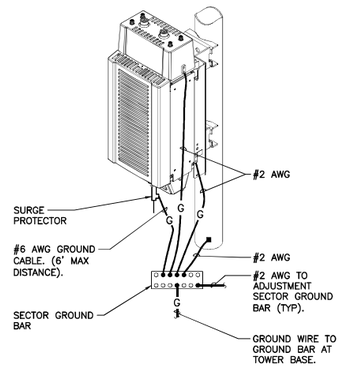


NOTES

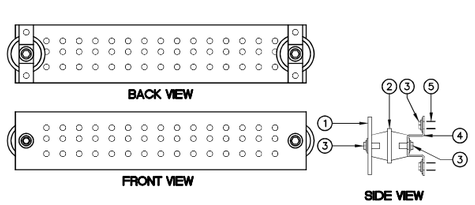
1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061–4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015–8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A–6056.
5. 5/8–11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

3 E-5 **GROUND BAR DETAIL**
SCALE: NOT TO SCALE

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



4 E-5 **RRH POLE MOUNT GROUNDING**
SCALE: NOT TO SCALE

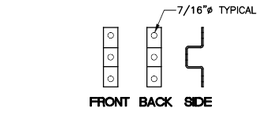


TYPICAL GROUND BAR ASSEMBLY
N.T.S.

TYPICAL GROUND BAR - DIMENSIONS
N.T.S.

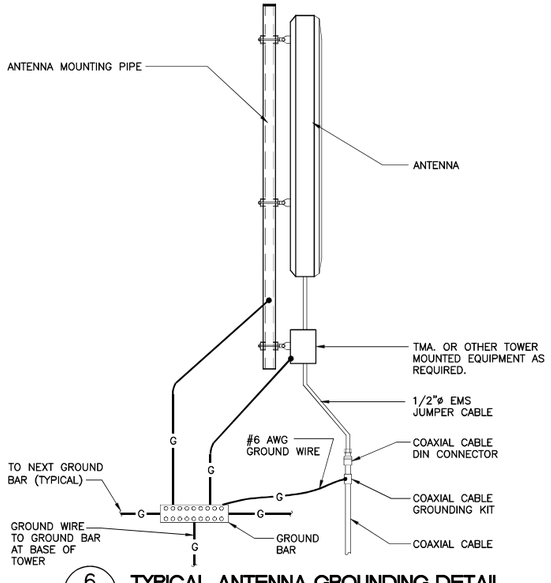
NOTES

1. HIGH CONDUCTIVITY TINNED COPPER BAR 1"–8"Lx4"Wx1/4"D.
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872–1A.
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET.
5. STAINLESS STEEL TYPE 304 HARDWARE – 3/8"ø EXPANSION BOLT FOR CONCRETE.

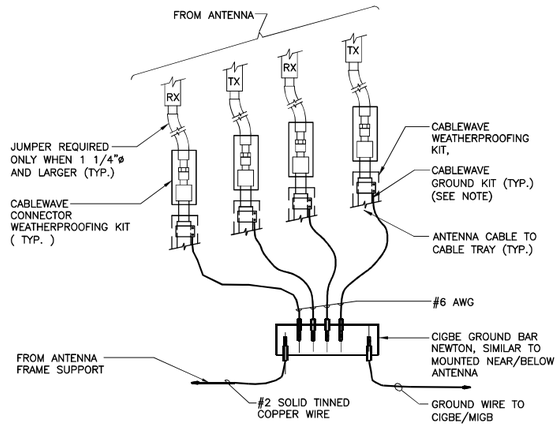


BRACKET FOR GROUND BAR-DIMENSIONS
N.T.S.

5 E-5 **MASTER/EQUIPMENT GROUND BAR DETAILS**
SCALE: NOT TO SCALE



6 E-5 **TYPICAL ANTENNA GROUNDING DETAIL**
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

7 E-5 **CONNECTION OF GROUND WIRES TO GROUND BAR**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA–2C SURVEY

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SITE NAME: HARTFORD 11 CT RELO
230 FARMINGTON AVENUE
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

TYPICAL ELECTRICAL DETAILS

E-5

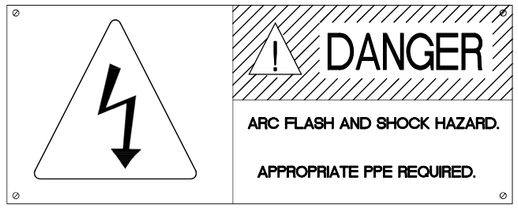
SHEET NO. 16 OF 17

NOTES:

1. REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE WARNING LABEL ON ALL SERVICE EQUIPMENT IN ACCORDANCE WITH CURRENT NEC REQUIREMENTS.
3. PROVIDE FAULT SHORT CIRCUIT AND COORDINATION STUDY TO ENSURE COMPLIANCE WITH NEC REQUIREMENTS.

1 E-6 DETAIL OF TYPICAL FAULT CURRENT SIGN

SCALE: NOT TO SCALE

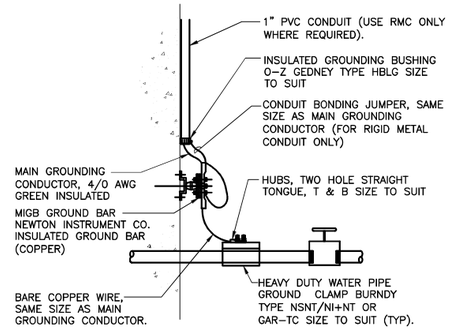


NOTES:

1. REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE WARNING LABEL ON ALL SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS IN ACCORDANCE WITH NEC REQUIREMENTS.

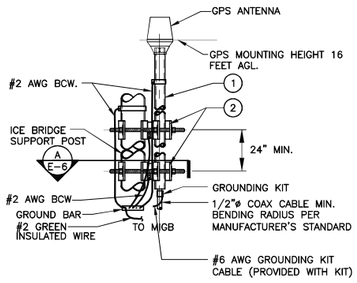
2 E-6 DETAIL OF TYPICAL FLASH PROTECTION WARNING SIGN

SCALE: NOT TO SCALE

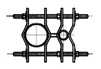


3 E-6 WATER MAIN GROUNDING DETAIL

SCALE: NOT TO SCALE



GPS ANTENNA MOUNTING BRACKET



A E-6 **SECTION** NOT TO SCALE

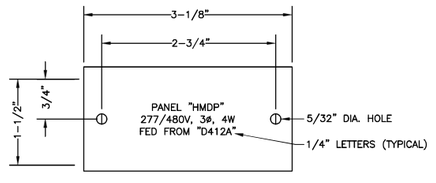
BILL OF MATERIALS		
ITEM	DESCRIPTION	QUANTITY
1	2-1/2"ø SCH. 40 x 8'-0" LG. MAX SS OR GALV. PIPE	1
2	UNIVERSAL CLAMP SET.	2

NOTES

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 2-1/2" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 24 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.

4 E-6 GPS GROUNDING/MOUNTING BRACKET DETAIL

SCALE: NOT TO SCALE



NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" WHITE PLASTIC WITH BLACK CENTER LAMINATION. FACE TO BE WHITE, ENGRAVED LETTERS TO BE BLACK.
3. SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD BRASS SCREWS.

5 E-6 DETAIL OF TYPICAL NAMEPLATE

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CLIENT REVIEW
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CONSTRUCTION
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DATE:	11/21/2025
SCALE:	AS NOTED
JOB NO.	25000.03

TYPICAL ELECTRICAL DETAILS

E-6

SHEET NO. 16 OF 17

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL 200A DISCONNECT FOR OWNER AND ASSOCIATED DISTRIBUTION AND SUBMETERING EQUIPMENT.
2. NEW SITE TELEPHONE SERVICE AS SPECIFIED BY TELEPHONE COMPANY.
3. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, RECEPTACLES, EQUIPMENT, LIGHTING FIXTURES, ETC. AS INDICATED OR NOTED ON PLANS.
4. CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, INTERIOR GROUNDING RING, GROUND BARS, ETC.
5. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
6. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.

B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:

1. TELEPHONE CABLES.

C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.

D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

E. CONTRACTOR SHALL COORDINATE WITH TELEPHONE UTILITY COMPANY FOR LOCATION OF TELEPHONE SERVICE AND TO DETERMINE ANY REQUIRED EQUIPMENT TO BE INSTALLED BY CONTRACTOR.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY THAT MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED CELLULAR SITE.

F. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

H. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

I. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

J. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

K. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

L. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

M. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

N. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

O. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.

B. THE INTERIOR OF RACEWAYS/ ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.

D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS

E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2,3]
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

[1] PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

[2] UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

[3] WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16114

1.01. CABLE TRAY

A. CABLE TRAY SHALL BE SOLID SIDE BAR, 18" WIDE (NEWTON INSTRUMENT COMPANY, INC.). TRAY SHALL BE INSTALLED AS SHOWN ON CONTRACT DOCUMENTS.

B. CROSSWISE RUNS SHALL BE COORDINATED WITH THE SPECIFIC EQUIPMENT THE TRAY SHALL SERVE.

C. ALL PROTRUDING CABLE TRAY SUPPORT RODS SHALL BE FILED SMOOTH WITH NO SHARP EDGES. ALL SUPPORT RODS SHALL BE CAD-PLATED FOR RUST RESISTANCE AND A MINIMUM 1/2" DIAMETER.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

1. 15 MINUTE TIMER SWITCH – INTERMATIC #FF15M (INTERIOR LIGHTS)
2. DUPLEX RECEPTACLE – P&S #2095 (GFCI) SPECIFICATION GRADE
3. SINGLE POLE SWITCH – P&S #CSB20AC2 (20A–120V HARD USE) SPECIFICATION GRADE
4. DUPLEX RECEPTACLE – P&S #5362 (20A–120V HARD USE) SPECIFICATION GRADE

B. PLATES – ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
3. REFER TO PANEL SCHEDULE "BRANCH CIRCUIT" DATA FOR EQUIPMENT GROUND CONDUCTOR SIZE FOR EACH BRANCH CIRCUIT.
4. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW
0	12/18/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY

PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
(203) 488-0580
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com
Centered on Solutions℠

VERIZON WIRELESS

SITE NAME: HARTFORD 11 CT RELO

230 FARMINGTON AVENUE
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

ELECTRICAL SPECIFICATIONS

E-7

SHEET NO. 17 OF 17

ATTACHMENT 3

MX10FRO660-03

NWAV™ X-Pol Ten-Port Antenna

X-Pol Ten-Port 6 ft, 60° Fast Roll Off, with Smart Bias Ts, 698-4200 MHz:

2 ports 698-894 MHz, 4 ports 1695-2200 MHz, and 4 ports 3400-4200 MHz

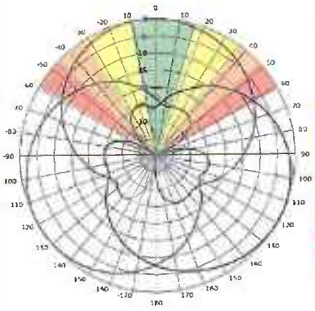
- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for high band & ease 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

nwav

Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors

Non-FRO antenna



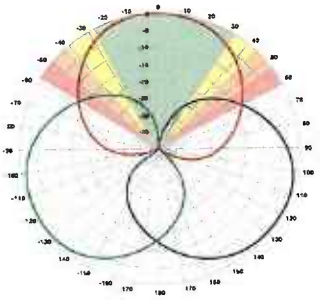
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

JMA FRO antenna



Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-806	806-894	1695-1880	1850-1990	1920-2200
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	15.0	15.1	17.6	18.0	18.2
Horizontal beamwidth (HBW), degrees[1]	62.5	57.0	55.0	55.0	55.5
Front-to-back ratio, co-polar power @180°± 30°, dB	>23.7	>21.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>17.8	>14.2	>18	>18	>15
Vertical beamwidth (VBW), degrees[1]	13.6	11.8	6.0	5.5	5.5
Electrical downtilt (EDT) range, degrees	2-14		0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-16.5	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	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				

MX10FRO660-03

NWAV™ X-Pol Ten-Port Antenna

[1] 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	64	62	60	58
Front-to-back ratio, co-polar power @180°± 30°, dB	>23	>23	>23	>22
Vertical beamwidth (VBW), degrees[1]	20	19.6	19.3	18.5
Electrical downtilt (EDT) range, degrees	2-12			
First upper side lobe (USLS) suppression, dB[1]	≤-15	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB[1]	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			

[1] Typical value over frequency and tilt

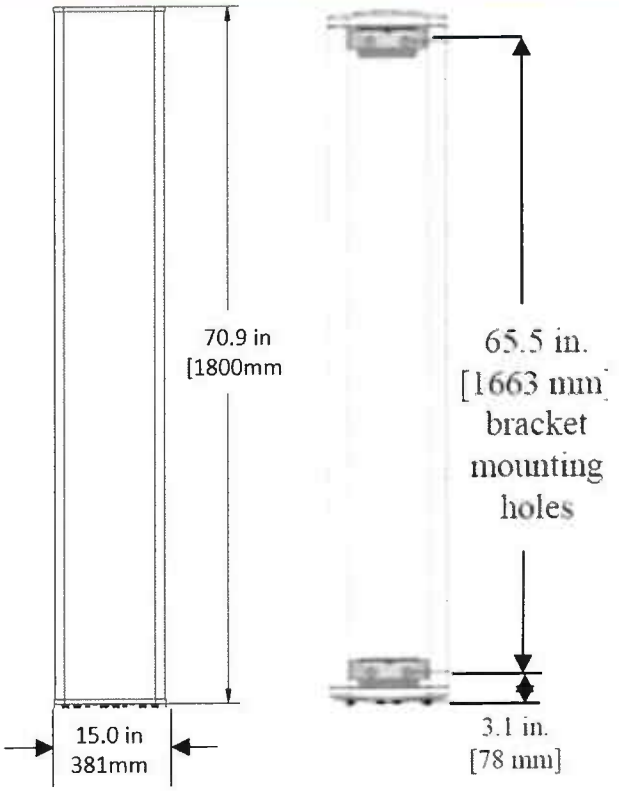
Ordering information	
Antenna model	**Description**
MX10FRO660-03	6F X- Pol 10 Port FRO 60º 2-14º/ 0-9º/ 2-12º, 4.3-10 & SBTs
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations
91900314-02	Dual Mount Bracket (see 91900314 bracket document for details)

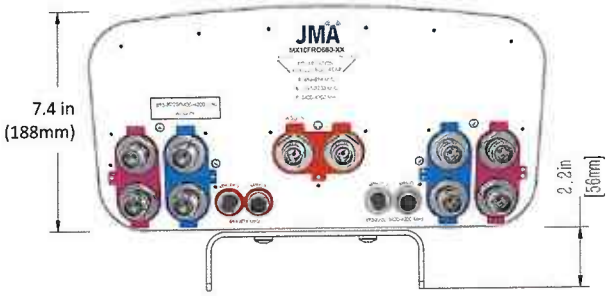
MX10FRO660-03

NWAV™ X-Pol Ten-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	70.9/ 15.0/ 7.4 (1800/ 381.0/ 188.0)
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)	57.3 (26)
Shipping weight, lb (kg)	89.1 (40.4)
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 wind loading @ 150 km/h, lbf (N)	157.3 (699.7), 56.9 (253.1)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	1.71
EPA frontal and lateral, ft^2, (m^2)	7.1 (0.66), 3.6 (0.33)

Front view | **Back view** | **Bottom view**





MX10FRO660-03

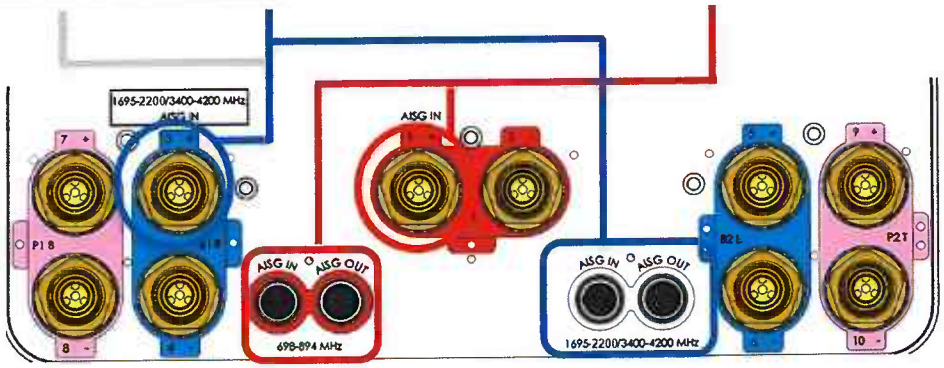
NWAV™ X-Pol Ten-Port Antenna

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 RFport bias-ts
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 698-894 MHz	1
Total no. of internal RETs 1695-2200 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	1695-2200	3-6	698-894	1-2



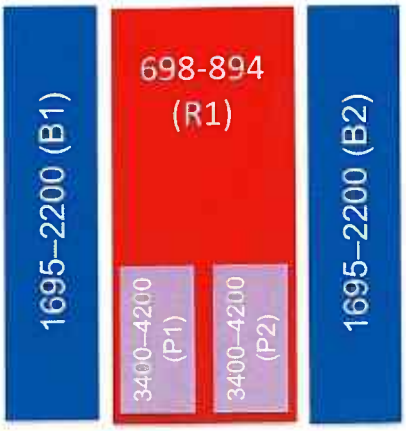
Note: The RET Device for 3400-4200 MHz is connected via the 1695-2200 Port 3 Bias T port or 1695-2200/3400-4200 MHz AISG ports.

Array topology

5 sets of radiating arrays

R1: 698-894 MHz
B1: 1695-2200 MHz
B2: 1695-2200 MHz
P1: 3400-4200 MHz
P2: 3400-4200 MHz

Band	RF port
698-894	1-2
1695-2200	3-4
1695-2200	5-6
3400-4200	7-8
3400-4200	9-10

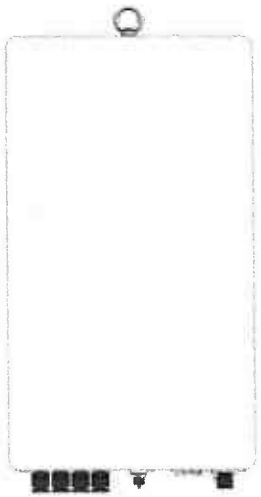


C-band 64T64R

SAMSUNG

Gen 2

Gen 2 : Higher conducted power radio with reduced size/volume/weight vs Gen 1 and also SOC embedded for flexibility to support new features



※ Preliminary Design: External appearance and mechanical design can be subject to change

Gen 2. 64T64R C-band MMU Dimensions	
Size (WxHxD)	**400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)**
Weight	**26kg (57.3 lb)**

Item	Gen 2 64T64R (MT6413-77A)
Air Technology	NR n77/TDD
Frequency	3700 – 3980 MHz
IBW	200 MHz
OBW	200 MHz
Carrier Bandwidth	20(HW ready)/40/60/80/100 MHz
# of Carriers	2 carriers
Layer	DL : 16L, UL : 16RX (8L)
RF Chain	64T64R
Antenna Configuration	4V16H with 192 AE
EIRP	80.5 dBm @320W (55 dBm + 25.5 dBi)
Conductive Power	320W
Spectrum Analyzer	TX/RX support
RX Sensitivity	Typical -97.8dBm @(1Rx, 18.36MHz with 30kHz,51RBs)
Modulation	DL 256QAM support, (DL 1024QAM with 1~2dB power back-off)
Function Split	DL/UL option 7-2x
Input Power	-48 VDC (-38 VDC to -57 VDC)
Power Consumption	1,287W (100% load, room temp.)
Size (WHD)	**400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)**
Volume	**41.1L**
Weight	**26kg (57.3 lb)**
Operating Temperature	-40℃ - 55℃ (w/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 38.104 FCC 47 CFR 27.53 : < -13dBm/MHz < -40 dBm/MHz @ above 4 GHz <-50 dBm /MHz @ 4,040 ~ 4,050 MHz, <-60 dBm /MHz @ above 4,050 MHz
Optic Interface	15km, 4 ports (25Gbps x 4), SFP28, single mode, Bi-di (Option: Duplex)
Mounting Options	Pole, wall
NB-IoT	Not support
External Alarm	4RX
Fronthaul Interface	eCPRI

SAMSUNG

Samsung Micro Radio

CBRS(N48) 4T4R Micro Radio

Samsung's CBRS 4T4R Micro Radio provides mobile operators with a cost-effective solution to fill coverage gaps encountered when Macro Radios are in use.

Model Code RT4423-48A(DC)
RT4423-48B(AC)

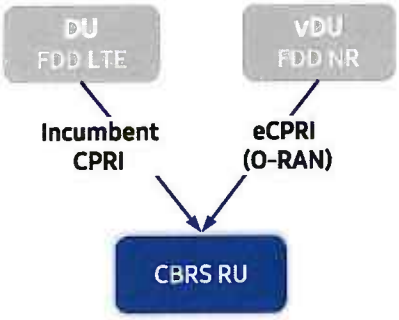
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Dual Personality

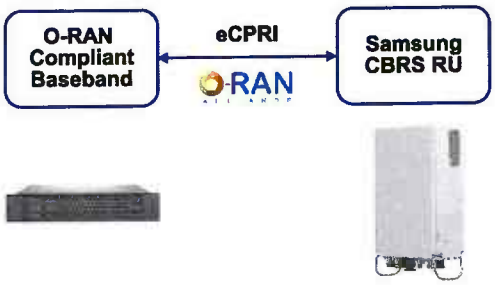
The new CBRS Radio supports existing CPRI and advanced eCPRI interfaces providing installation options for both legacy LTE and NR network equipment.



O-RAN Compliant

A standardized O-RAN radio supports implementing cost-effective networks capable of enhanced data throughput without compromising existing or new network investments.

Samsung O-RAN products ensure state-of-the-art O-RAN technology will accelerate efforts for creating solid O-RAN ecosystems.



High Capacity

The number of carriers required varies according to site(region). Supporting multiple carriers is essential to customers as they seek to utilize all frequencies available to them.

The new CBRS radio can support up to 5 carriers which is and increase of 3 carriers over the capacity of the previous CBRS product.

Compact and Easy Installation

New CBRS RU is compact in it's design with a volume of 6L and weighing only about 7kg.

This compact design allows for various installation options including, tower, rooftop, pole, wall and shroud.

A clip on antenna is available providing flexibility to installation requirements.

w/o Clip-on antenna

w/Clip-on antenna

Technical Specifications

Item	Specification
Tech	LTE / NR
Band	B48, n48 / TDD
Frequency Band	3,550 – 3,700 MHz
RF Power	20 W (5 W x 4 Ports)
IBW/OBW	150MHz / 100MHz
Installation	Pole, Wall, Side by side (max 3 radio)
Size/ Weight	**[Radio]** w/o Clip-on antenna : 8.7 x 11.8 x 3.6 inch, 5.97L, 7kg w/ Clip-on antenna : 8.7 x 11.8 x 5.0 inch, 8.42L, 8.5kg *AC and DC type have same size and weight **[Bracket Weight]** Tilting & Swivel (EP97-02038A) : 2.51kg Fixed (EP97-02037A) : 1.31kg Side by side (EP97-02089A) : 8.0kg

700/850 4T4R Macro 320W ORU - New Filter (RF4461d-13A)

SAMSUNG

Specifications

Item	Specification	
Air Interface	LTE, NR(HW resource ready)	
Band	Band13 (700MHz)	Band5 (850MHz)
Frequency	DL: 746~756MHz UL: 777~787MHz	DL: 869~894MHz UL: 824~849MHz
IBW	10MHz	25MHz
OBW	10MHz	25MHz
Carrier Bandwidth	LTE/NR 5*/10MHz	LTE 5/10MHz NR 5/10/15/20MHz
# of carriers	2C*	3C
Total # of carriers	4C + B13 (SDL) 1C	
RF Chain	4T4R/2T4R/2T2R/1T2R 2T2R+2T2R bi-sector	
RF Output Power	Total : 320W	
	4 x 40W or 2 x 60W	4 x 40W or 2 x 60W
Spectrum Analyzer	TX/RX Support	
RX Sensitivity	Typ. -104.5dBm @1Rx (25RBs 5MHz)	
Modulation	256QAM support, (1024QAM with 1~2dB power back-off)	
Input Power	-48VDC (-38VDC to -57VDC)	
Power Consumption	1,165 Watt @ 100% RF load, room temperature	
Size (WHD)	380 x 380 x 260 mm (14.96 x 14.96 x 10.23 inch)	
Volume	37.5 L	
Weight (W/o Solar Shield & finger guard)	35.9 kg (79.1 lb)	
Operating Temperature	-40℃ (-40℉) ~ 55℃ (131℉) (Without solar load)	
Cooling	Natural convection	
Unwanted Emission	3GPP 36.104 FCC 47 CFR 27.53 c), f) -	3GPP 36.104 FCC 47 CFR 22.917 -69 dBm/100 kHz per path @ 896 ~901MHz
CPRI Cascade	Not supported	
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP+, single mode, Duplex (Option: Bi-di)	
RET & TMA Interface	AISG 3.0	
Bias-T	4 ports (2 ports per band)	
Mounting Options	Pole, wall	
NB-IoT	2GB+2IB or 4IB	2SA+2GB or 2GB+2IB or 4GB
PIM Cancellation	Support	
# of antenna port	4	
External Alarm	4	
Fronthaul Interface	Opt. 8 CPRI / Opt. 7-2x selectable (not simultaneous support)	
CPRI compression	Not Support	

* 5MHz supporting in B13(700MHz) depends on 3GPP std. and UE capability.
External filters in interferer and victim sides for Mexican boarder to support 5MHz service need to be considered
** Finger guard is not needed.

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

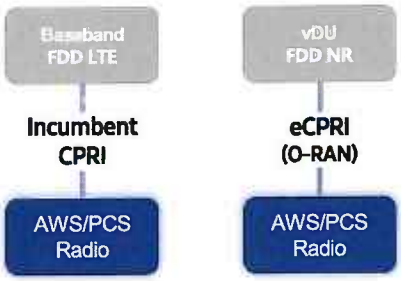
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

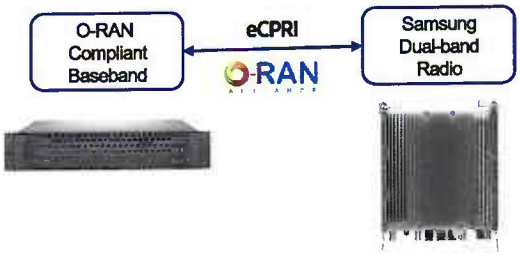
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



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.

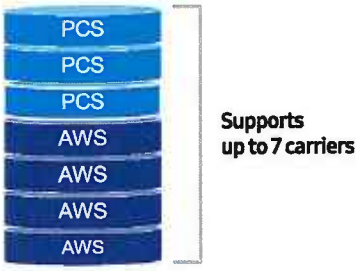
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



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.



Supports up to 7 carriers

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

ATTACHMENT 4

Project

Structural Analysis Report
Equipment Platform
Proposed Verizon Wireless Equipment Installation
Site Ref: Hartford 11 CT Relo
230 Farmington Avenue
Hartford, CT 06105

Centek Project No.: **25000.03**

Date Issued: **March 10, 2026**

Prepared For

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Prepared By

Centek Engineering, Inc.
Christian M. Tomaso, EIT
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Branford, CT 06405
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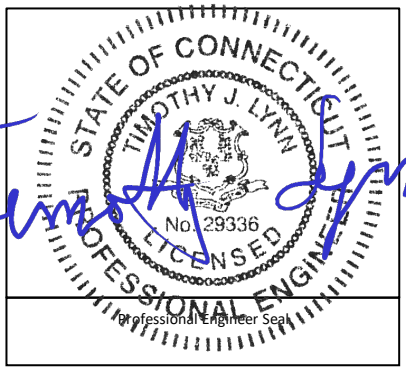
F: 203.488.8587
www.centekeng.com



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Centered on Solutions℠

Table of Contents

1.00 REPORT

1.01 INTRODUCTION

This Structural Analysis Report was prepared to address the structural viability of installing Verizon's proposed equipment platform on the rooftop located at 230 Farmington Avenue in Hartford, Connecticut.

The proposed equipment to be supported by the proposed 13'x10' equipment platform. For further details on the configuration of the equipment and platform refer to the latest revision of Construction Drawings prepared by Centek Engineering, job no. 25000.03.

The host's structure geometry and member size information were obtained through a site visit to investigate the current conditions, performed by Centek Engineering personnel on 04/25/2025.

1.02 PRIMARY ASSUMPTIONS USED IN THE ANALYSIS

- The host structure's theoretical capacity does not include any assessment of the condition of the host structure.
- The proposed equipment platform carries horizontal and vertical loads due to the weight of equipment, and wind and transfers into the host structure.
- The structure is in a plumb condition.
- Loading for equipment is as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All members are assumed to be as observed during mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 ASTM A153 Standards.
- All members' protective coatings are in good condition.

1.03 ANTENNA AND EQUIPMENT SUMMARY

Appurtenance / Equipment	Weight	Mount Type
(1) Equipment Cabinet	2,000 MAX	Equipment Platform
(1) Battery Cabinet	2,000 MAX	

Equipment – Indicates equipment to be installed.

1.04 ANALYSIS

The equipment platform was analyzed using a comprehensive computer program titled Risa3D. The program analyzes the platform using the worst-case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

1.05 DESIGN LOADING

Loading was determined per the requirements of the 2021 International Building Code amended by the 2022 Connecticut State Building Code and ASCE 7 – 16 "Minimum Design Loads for Buildings and Other Structures".

Wind Speed:	V_{ult} = 120 mph	*Appendix P of the 2022 CSBC.*
Risk Category:	II	*2021 IBC; Table 1604.05*
Exposure Category:	Surface Roughness B	*ASCE 7-16; Section 26.7.2*
Dead Load:	Equipment and framing self-weight	*Identified within SAR design calculations*

1.06 REFERENCE STANDARDS

2021 International Building Code amended by the 2022 Connecticut State Building Code

- AISC 360 – 16: Specification for Structural Steel Buildings
- ASCE/SEI 7 – 16: Minimum Design Loads and Associated Criteria for Building and Other Structures

1.07 RESULTS

Member stresses and design reactions were calculated utilizing the structural analysis software RISA 3D. The platform and connections were found to be structurally acceptable as presented in the following table:

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	W8x18 (Main Platform Framing)	17.6%	**PASS**
	HSS4x4x1/4" (Platform Column)	24.3%	**PASS**
	L3x3x1/4" (Platform Brace)	9.7%	**PASS**
	C8X11.5 (Connection to Penthouse)	15.8%	**PASS**
	5/8" Ø Thru-Bolt (Connection to Penthouse)	39.2%	**PASS**
	5/8" Ø Threaded Rod w/ Hilti HY200 Adhesive (Connection to Slab)	8.9%	**PASS**

1.08 CONCLUSION

This analysis finds the proposed platform, connections and host structure to **HAVE SUFFICIENT CAPACITY** to accommodate the structural loading of the proposed antenna and equipment configuration.

The analysis is based, in part, on the information provided to this office by Verizon Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

Prepared by:

Christian Tomaso, EIT
Structural Engineer

2.00 CONDITIONS AND SOFTWARE

2.01 STANDARD ENGINEERING CONDITIONS

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, and other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

2.02 GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

<u>Modeling Features:</u>

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids.
- Versatile general truss generator
- Powerful graphics select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking.
- Saved selections to quickly recall desired selections.
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.

- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets.
- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units' systems & conversions at any time.
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files.
- Export DXF, SDNF and ProSteel 3D files.

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations.
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis.
- Physical member modeling that does not require members to be broken up at intermediate joints.
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently.
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress, and design
- Automatic Top of Member offset modeling.
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms
- Enforced joint displacements.
- 1-Way members, for tension only bracing, slipping, etc.
- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape.
- Inactive members, plates, and diaphragms allow you to quickly remove parts of structures from consideration.
- Story drift calculations provide relative drift and ratio to height.
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary "true to scale" rendering, even when drawing
- High-speed redraw algorithm for instant refreshing.
- Dynamic scrolling stops right where you want.

- Plot & print virtually everything with color coding & labeling.
- Rotate, zoom, pan, scroll and snap views.
- Saved views to quickly restore frequent or desired views.
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete hot rolled steel, cold formed steel, and wood.
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000, EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases.
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn.
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members.
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes.
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths.
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool.

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated.
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location.
- Saved solutions quickly restore analysis and design results.

3.00 CALCULATIONS

Design Wind Load on Other Structures: (Based on IBC 2021, CSBC 2022 and ASCE 7-16)

Wind Speed =	$V := 120$	*mph*	(User Input)	(CSBC Appendix P)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$		(User Input)	
Height Above Grade =	$Z := 90$	*ft*	(User Input)	
Structure Type =	$Structuretype := 1$		(User Input)	
Structure Height =	$Height := 6$	*ft*	(User Input)	
Horizontal Dimension of Structure =	$Width := 1.33$	*ft*	(User Input)	

Terrain Exposure Constants:

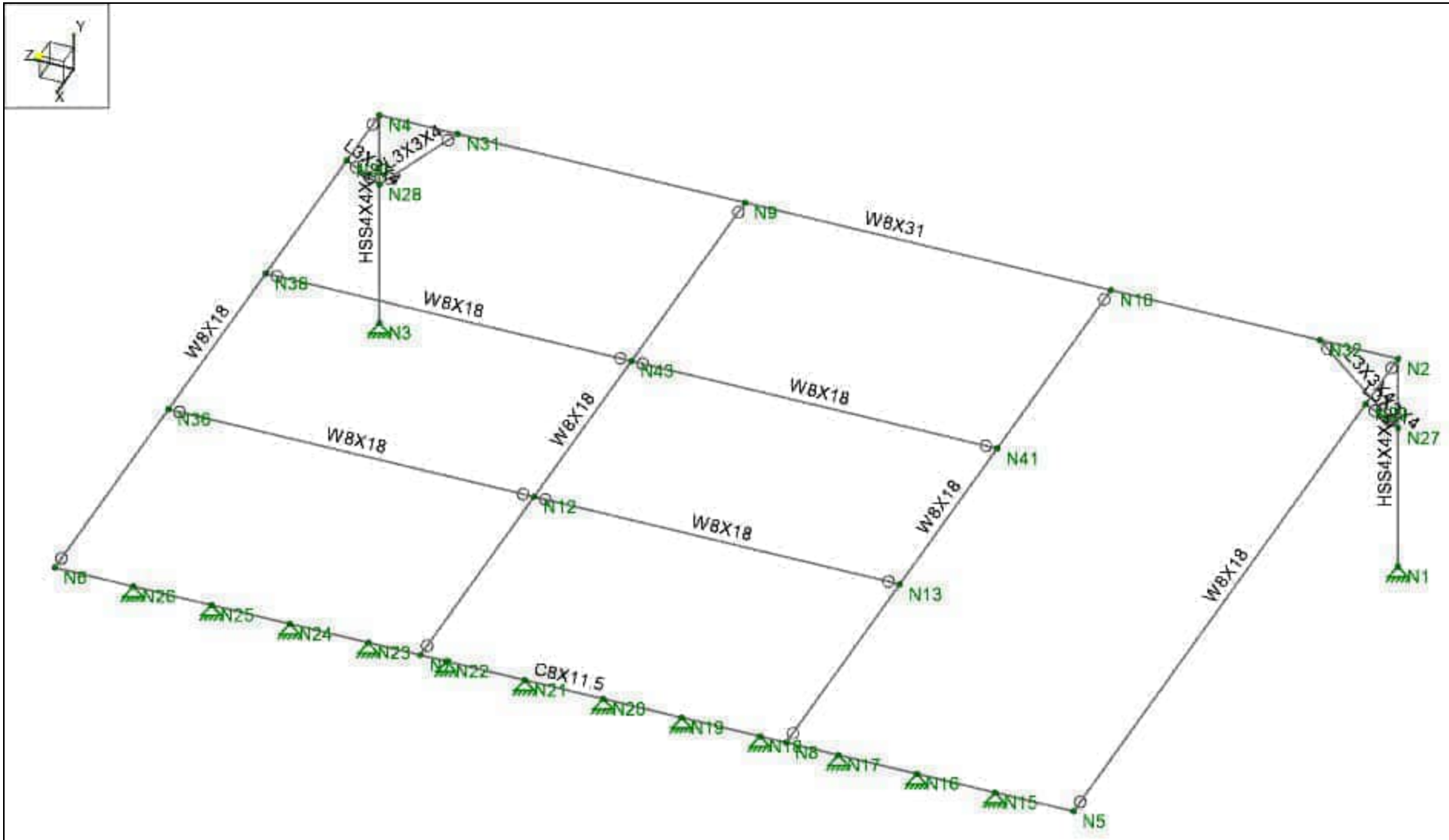
Nominal Height of the Atmospheric Boundary Layer = $zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 1.2 \cdot 10^{3}$ (Table 26.11-1)

3-Sec Gust Speed Power Law Exponent = $\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 7$ (Table 26.11-1)

Integral Length Scale Factor = $l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 320$ (Table 26.11-1)

Integral Length Scale Power Law Exponent = $E := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.333$ (Table 26.11-1)

Turbulence Intensity Factor =	$c := \begin{cases} \text{if } Exp = B \\ \quad 0.3 \\ \text{if } Exp = C \\ \quad 0.2 \\ \text{if } Exp = D \\ \quad 0.15 \end{cases} = 0.3$	(Table 26.11-1)
Exposure Constant =	$Z_{min} := \begin{cases} \text{if } Exp = B \\ \quad 30 \\ \text{if } Exp = C \\ \quad 15 \\ \text{if } Exp = D \\ \quad 7 \end{cases} = 30$	(Table 26.11-1)
Exposure Coefficient =	$K_z := \begin{cases} \text{if } 15 \le Z \le zg \\ \quad 2.01 \cdot \left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \\ \text{if } Z < 15 \\ \quad 2.01 \cdot \left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \end{cases} = 0.96$	(Table 26.10-1)
Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 31.81$	(Eq. 26.10-2)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.11.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.11.4)
Equivalent Height of Structure =	$z := \begin{cases} \text{if } Z_{min} > 0.6 \cdot Height \\ \quad Z_{min} \\ \text{else} \\ \quad 0.6 \cdot Height \end{cases} = 30$	(Sec 26.11.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.305$	(Eq. 26.11-7)
Integral Length Scale of Turbulence =	$L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 309.993$	(Eq. 26.11-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \cdot \left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.971$	(Eq. 26.11-8)
Gust Response Factor =	$G := 0.925 \cdot \left(\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right) = 0.908$	(Eq. 26.11-6)
Force Coefficient =	$C_f = 1.359$	(Fig 29.4-1 - 29.4-4)
Wind Force =	$F := q_z \cdot G \cdot C_f = 39$	psf



Envelope Only Solution

RISA A NEMETSCHEK COMPANY	Centek Engineering	Proposed Equipment Platform	
	CMT		Nov 20, 2025 at 02:31 PM
	25000.03		Proposed Equipment Platform.r3d

Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 16th (360-22): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 16th (360-22): ASD
Cold Formed Steel	AISI S100-20: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18 / SDPWS-21 ASD
Temperature	< 100F
Concrete	ACI 318-19 (22)
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-20: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-22
Risk Category	I or II
Drift Cat	Other

Model Settings (Continued)

Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_1 (g)	1
SD_1 (g)	1
SD_s (g)	1
T_L (sec)	5
T Z (sec)	
T X (sec)	
C_tZ	0.02
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	1	
2	N2	0	3	1	
3	N3	0	0	14	
4	N4	0	3	14	
5	N5	10	3	1	
6	N6	10	3	14	
7	N7	10	3	9.333333	
8	N8	10	3	4.666667	
9	N9	0	3	9.333333	
10	N10	0	3	4.666667	
11	N12	6.5	3	9.333333	
12	N13	6.5	3	4.666667	
13	N15	10	3	2	
14	N16	10	3	3	
15	N17	10	3	4	
16	N18	10	3	5	
17	N19	10	3	6	
18	N20	10	3	7	
19	N21	10	3	8	
20	N22	10	3	9	
21	N23	10	3	10	
22	N24	10	3	11	
23	N25	10	3	12	
24	N26	10	3	13	
25	N27	0	2	1	
26	N28	0	2	14	
27	N29	1	3	1	
28	N30	1	3	14	
29	N31	0	3	13	
30	N32	0	3	2	
31	N41	3.5	3	4.666667	
32	N43	3.5	3	9.333333	
33	N36	6.5	3	14	
34	N38	3.5	3	14	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]
1	N3	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction
3	N26	Reaction	Reaction	Reaction
4	N25	Reaction	Reaction	Reaction
5	N24	Reaction	Reaction	Reaction
6	N23	Reaction	Reaction	Reaction
7	N22	Reaction	Reaction	Reaction
8	N21	Reaction	Reaction	Reaction
9	N20	Reaction	Reaction	Reaction
10	N19	Reaction	Reaction	Reaction
11	N18	Reaction	Reaction	Reaction
12	N17	Reaction	Reaction	Reaction
13	N16	Reaction	Reaction	Reaction
14	N15	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
5	A500 Gr.C	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	Column	HSS4X4X4	Column	Tube	A500 Gr.C	Typical	3.37	7.8	7.8	12.8
2	Channel	C8X11.5	Beam	Channel	A572 Gr.50	Typical	3.37	1.31	32.5	0.13
3	Beam 1	W8X18	Beam	Wide Flange	A992	Typical	5.26	7.97	61.9	0.172
4	Brace	L3X3X4	VBrace	Single Angle	A572 Gr.50	Typical	1.44	1.23	1.23	0.031
5	Beam 2	W8X31	VBrace	Wide Flange	A992	Typical	9.13	37.1	110	0.536

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2	Column	Column	Tube	A500 Gr.C	Typical
2	M2	N3	N4	Column	Column	Tube	A500 Gr.C	Typical
3	M3	N4	N6	Beam 1	Beam	Wide Flange	A992	Typical
4	M4	N2	N5	Beam 1	Beam	Wide Flange	A992	Typical
5	M5	N9	N7	Beam 1	Beam	Wide Flange	A992	Typical
6	M6	N10	N8	Beam 1	Beam	Wide Flange	A992	Typical
7	M7	N4	N2	Beam 2	VBrace	Wide Flange	A992	Typical
8	M8	N6	N5	Channel	Beam	Channel	A572 Gr.50	Typical
9	M10	N12	N13	Beam 1	Beam	Wide Flange	A992	Typical
10	M11	N28	N30	Brace	VBrace	Single Angle	A572 Gr.50	Typical
11	M12	N28	N31	Brace	VBrace	Single Angle	A572 Gr.50	Typical
12	M13	N27	N29	Brace	VBrace	Single Angle	A572 Gr.50	Typical
13	M14	N27	N32	Brace	VBrace	Single Angle	A572 Gr.50	Typical
14	M20	N43	N41	Beam 1	Beam	Wide Flange	A992	Typical
15	M17	N36	N12	Beam 1	Beam	Wide Flange	A992	Typical
16	M18	N38	N43	Beam 1	Beam	Wide Flange	A992	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	Column	3	Lbyy	N/A	N/A	Lateral
2	M2	Column	3	Lbyy	N/A	N/A	Lateral
3	M3	Beam 1	10	1	N/A	N/A	Lateral
4	M4	Beam 1	10	1	N/A	N/A	Lateral
5	M5	Beam 1	10	1	N/A	N/A	Lateral
6	M6	Beam 1	10	1	N/A	N/A	Lateral
7	M7	Beam 2	13	Segment	N/A	N/A	Lateral
8	M8	Channel	13	Segment	N/A	N/A	Lateral
9	M10	Beam 1	4.667	Lbyy	N/A	N/A	Lateral
10	M11	Brace	1.414	Lbyy	N/A	N/A	Lateral
11	M12	Brace	1.414	Lbyy	N/A	N/A	Lateral
12	M13	Brace	1.414	Lbyy	N/A	N/A	Lateral
13	M14	Brace	1.414	Lbyy	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
14	M20	Beam 1	4.667	Lbyy	N/A	N/A	Lateral
15	M17	Beam 1	4.667	Lbyy	N/A	N/A	Lateral
16	M18	Beam 1	4.667	Lbyy	N/A	N/A	Lateral

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M10	Y	-0.5	3.833
2	M10	Y	-0.5	0.834
3	M20	Y	-0.5	3.833
4	M20	Y	-0.5	0.834
5	M17	Y	-0.5	3.833
6	M17	Y	-0.5	0.834
7	M18	Y	-0.5	0.834
8	M18	Y	-0.5	3.833

Member Point Loads (BLC 4 : Wind X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M10	X	-0.186	0.834
2	M10	X	-0.186	3.833
3	M10	Y	0.382	0.834
4	M10	Y	0.382	3.833
5	M20	X	-0.186	0.834
6	M20	Y	-0.382	3.833
7	M20	Y	-0.382	0.834
8	M20	X	-0.186	3.833
9	M17	X	-0.186	0.834
10	M17	Y	0.382	0.834
11	M17	X	-0.186	3.833
12	M17	Y	0.382	3.833
13	M18	Y	-0.382	3.833
14	M18	Y	-0.382	0.834
15	M18	X	-0.186	3.833
16	M18	X	-0.186	0.834

Member Point Loads (BLC 5 : Wind Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M10	Z	-0.181	0.834
2	M10	Z	-0.181	3.833
3	M10	Y	0.361	0.834
4	M10	Y	-0.361	3.833
5	M20	Y	-0.361	3.833
6	M20	Y	0.361	0.834
7	M20	Z	-0.181	0.834
8	M20	Z	-0.181	3.833
9	M17	Y	0.361	0.834
10	M17	Y	-0.361	3.833
11	M17	Z	-0.181	0.834
12	M17	Z	-0.181	3.833
13	M18	Y	0.361	0.834
14	M18	Y	-0.361	3.833
15	M18	Z	-0.181	3.833
16	M18	Z	-0.181	0.834

Member Distributed Loads (BLC 2 : Dead Load)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M7	Y	-0.015	-0.015	0	%100
2	M3	Y	-0.015	-0.015	0	%100
3	M8	Y	-0.015	-0.015	0	%100
4	M4	Y	-0.015	-0.015	0	%100

Member Distributed Loads (BLC 7 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M3	Y	-0.02	-0.02	0	2
2	M3	Y	-0.02	-0.028	2	4
3	M3	Y	-0.028	-0.028	4	6
4	M3	Y	-0.028	-0.02	6	8
5	M3	Y	-0.02	-0.02	8	10
6	M4	Y	-0.018	-0.018	0	2
7	M4	Y	-0.018	-0.019	2	4
8	M4	Y	-0.019	-0.019	4	6
9	M4	Y	-0.019	-0.018	6	8
10	M4	Y	-0.018	-0.018	8	10
11	M5	Y	-0.041	-0.041	0	2
12	M5	Y	-0.041	-0.055	2	4
13	M5	Y	-0.055	-0.055	4	6
14	M5	Y	-0.055	-0.041	6	8
15	M5	Y	-0.041	-0.041	8	10
16	M6	Y	-0.037	-0.038	0	2
17	M6	Y	-0.038	-0.048	2	4
18	M6	Y	-0.048	-0.048	4	6
19	M6	Y	-0.048	-0.038	6	8
20	M6	Y	-0.038	-0.037	8	10

Member Distributed Loads (BLC 8 : BLC 3 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M3	Y	-0.061	-0.061	0	2
2	M3	Y	-0.061	-0.083	2	4
3	M3	Y	-0.083	-0.083	4	6
4	M3	Y	-0.083	-0.061	6	8
5	M3	Y	-0.061	-0.061	8	10
6	M4	Y	-0.053	-0.055	0	2
7	M4	Y	-0.055	-0.056	2	4
8	M4	Y	-0.056	-0.056	4	6
9	M4	Y	-0.056	-0.055	6	8
10	M4	Y	-0.055	-0.053	8	10
11	M5	Y	-0.122	-0.122	0	2
12	M5	Y	-0.122	-0.166	2	4
13	M5	Y	-0.166	-0.166	4	6
14	M5	Y	-0.166	-0.122	6	8
15	M5	Y	-0.122	-0.122	8	10
16	M6	Y	-0.11	-0.114	0	2
17	M6	Y	-0.114	-0.144	2	4
18	M6	Y	-0.144	-0.144	4	6
19	M6	Y	-0.144	-0.114	6	8
20	M6	Y	-0.114	-0.11	8	10

Member Distributed Loads (BLC 9 : BLC 6 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M5	Y	-0.056	-0.051	0	2.333
2	M5	Y	-0.051	-0.04	2.333	4.667
3	M5	Y	-0.04	-0.022	4.667	7
4	M6	Y	-0.056	-0.051	0	2.333
5	M6	Y	-0.051	-0.04	2.333	4.667
6	M6	Y	-0.04	-0.022	4.667	7
7	M3	Y	-0.041	-0.041	0	2
8	M3	Y	-0.041	-0.055	2	4
9	M3	Y	-0.055	-0.055	4	6
10	M3	Y	-0.055	-0.041	6	8
11	M3	Y	-0.041	-0.041	8	10
12	M5	Y	-0.041	-0.041	0	2
13	M5	Y	-0.041	-0.055	2	4
14	M5	Y	-0.055	-0.055	4	6
15	M5	Y	-0.055	-0.041	6	8
16	M5	Y	-0.041	-0.041	8	10

Nodal Loads and Enforced Displacements

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed	Area(Member)
1	Self Weight	DL	-1			
2	Dead Load	DL		8	4	1
3	Snow Load	SL				1
4	Wind X	WLX		16		
5	Wind Z	WLZ		16		
6	Live Load	RLL				2
7	BLC 2 Transient Area Loads	None			20	
8	BLC 3 Transient Area Loads	None			20	
9	BLC 6 Transient Area Loads	None			16	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	IBC 21/ASCE ASD 1	Yes	Y	DL	1										
2	IBC 21/ASCE ASD 2	Yes	Y	DL	1	LL	1	LLS	1						
3	IBC 21/ASCE ASD 3 (a)	Yes	Y	DL	1	RLL	1								
4	IBC 21/ASCE ASD 3 (b)	Yes	Y	DL	1	SL	1	SLN	1						
5	IBC 21/ASCE ASD 4 (a)	Yes	Y	DL	1	LL	0.75	LLS	0.75	RLL	0.75				
6	IBC 21/ASCE ASD 4 (b)	Yes	Y	DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75		
7	IBC 21/ASCE ASD 5 (a) (a)	Yes	Y	DL	1	WLX	0.6								
8	IBC 21/ASCE ASD 5 (a) (b)	Yes	Y	DL	1	WLZ	0.6								
9	IBC 21/ASCE ASD 5 (a) (c)	Yes	Y	DL	1	WLX	-0.6								
10	IBC 21/ASCE ASD 5 (a) (d)	Yes	Y	DL	1	WLZ	-0.6								
11	IBC 21/ASCE ASD 6 (a) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	RLL	0.75		
12	IBC 21/ASCE ASD 6 (a) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RLL	0.75		
13	IBC 21/ASCE ASD 6 (a) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
14	IBC 21/ASCE ASD 6 (a) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
15	IBC 21/ASCE ASD 6 (b) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
16	IBC 21/ASCE ASD 6 (b) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
17	IBC 21/ASCE ASD 6 (b) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
18	IBC 21/ASCE ASD 6 (b) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
19	IBC 21/ASCE ASD 6 (c) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75				
20	IBC 21/ASCE ASD 6 (c) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75				
21	IBC 21/ASCE ASD 6 (c) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75				
22	IBC 21/ASCE ASD 6 (c) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75				
23	IBC 21/ASCE ASD 7 (a)	Yes	Y	DL	0.6	WLX	0.6								
24	IBC 21/ASCE ASD 7 (b)	Yes	Y	DL	0.6	WLZ	0.6								
25	IBC 21/ASCE ASD 7 (c)	Yes	Y	DL	0.6	WLX	-0.6								
26	IBC 21/ASCE ASD 7 (d)	Yes	Y	DL	0.6	WLZ	-0.6								

Envelope Node Reactions

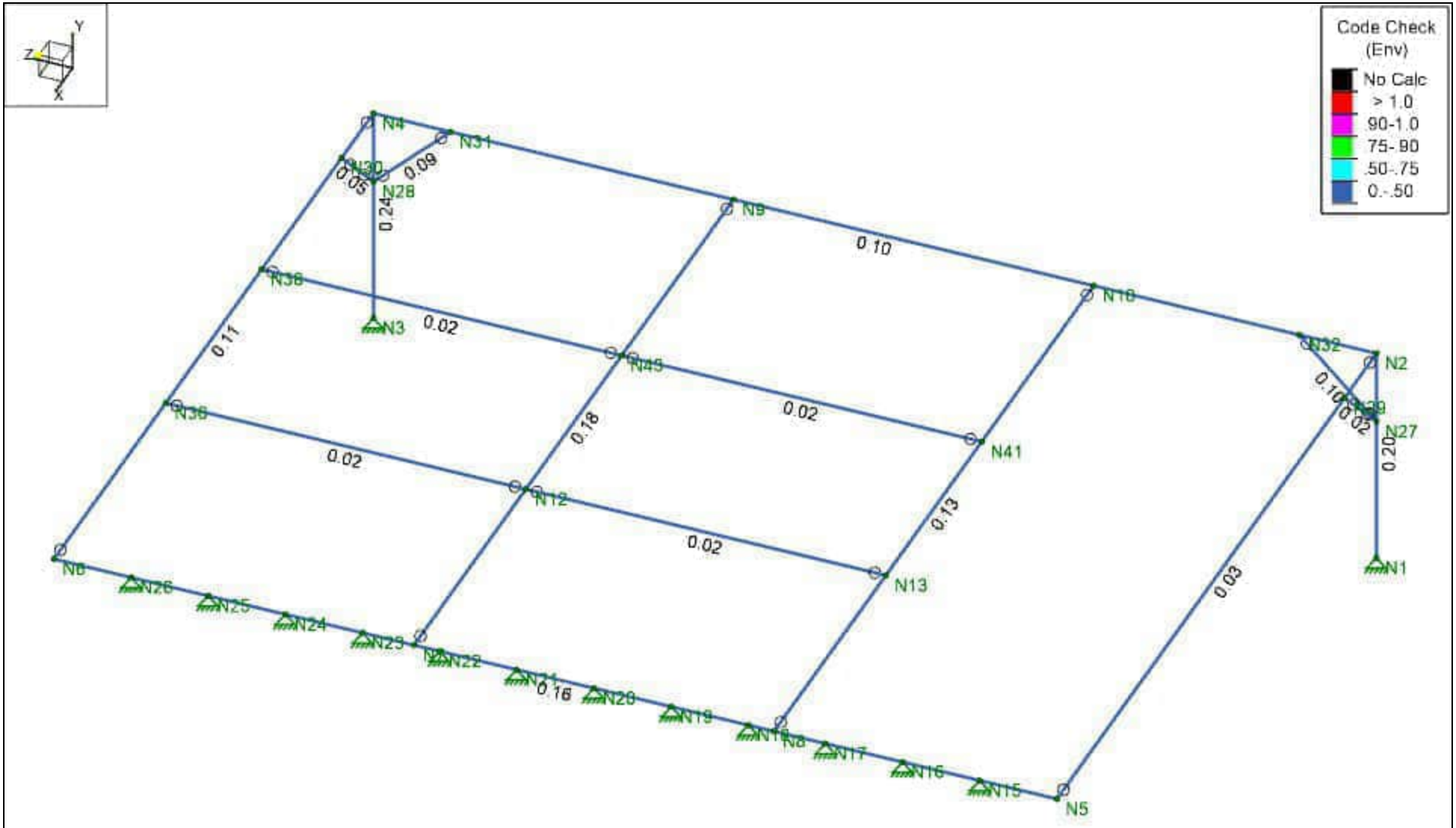
	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	0.402	15	3.4	4	-0.155	24	0	26	0	26	0	26
2		min	0.1	25	1.221	24	-0.926	18	0	1	0	1	0	1
3	N1	max	0.149	4	2.733	4	0.968	16	0	26	0	26	0	26
4		min	0.041	25	0.84	26	0.1	26	0	1	0	1	0	1
5	N26	max	-0.011	23	2.064	18	0.145	24	0	26	0	26	0	26
6		min	-0.846	17	0.629	24	-0.144	26	0	1	0	1	0	1
7	N25	max	0.568	17	-0.24	24	0	24	0	26	0	26	0	26
8		min	0.015	23	-0.821	18	0	26	0	1	0	1	0	1
9	N24	max	-0.03	24	-0.042	23	0	8	0	26	0	26	0	26
10		min	-0.1	18	-0.145	4	0	26	0	1	0	1	0	1
11	N23	max	0.17	23	0.781	4	0.048	8	0	26	0	26	0	26
12		min	-0.202	9	0.269	23	-0.048	26	0	1	0	1	0	1
13	N22	max	0.354	23	1.546	4	0.097	8	0	26	0	26	0	26
14		min	-0.49	9	0.526	23	-0.097	26	0	1	0	1	0	1
15	N21	max	0.078	9	-0.014	23	0	8	0	26	0	26	0	26
16		min	-0.057	23	-0.061	4	0	26	0	1	0	1	0	1
17	N20	max	0.019	23	0.016	7	0	8	0	26	0	26	LOCKED	
18		min	-0.022	9	0.008	25	0	10	0	1	0	1	LOCKED	
19	N19	max	0.023	25	0	26	0	8	0	26	0	26	0	26
20		min	-0.03	7	-0.036	4	0	10	0	1	0	1	0	1
21	N18	max	0.177	7	1.079	4	0.097	8	0	26	0	26	0	26
22		min	-0.127	25	0.278	26	-0.097	10	0	1	0	1	0	1
23	N17	max	0.066	23	0.513	4	0.048	8	0	26	0	26	0	26
24		min	-0.082	17	0.135	26	-0.048	10	0	1	0	1	0	1
25	N16	max	0.173	4	-0.111	26	0	24	0	26	0	26	0	26
26		min	0.029	23	-0.409	4	0	10	0	1	0	1	0	1
27	N15	max	-0.064	23	0.957	4	0	26	0	26	0	26	0	26
28		min	-0.254	4	0.292	23	0	4	0	1	0	1	0	1
29	Totals:	max	0.893	7	11.595	4	0.869	8						
30		min	-0.893	25	4.617	26	-0.869	10						

Envelope AISC 16TH (360-22): ASD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M2	HSS4X4X4	0.243	2	18	0.057	3	z	18	96.851	100.898	11.702	11.702	1.409	H1-1b
2	M1	HSS4X4X4	0.201	2	16	0.059	3	z	16	96.851	100.898	11.702	11.702	1.407	H1-1b
3	M5	W8X18	0.176	5	18	0.057	10	y	4	78.606	157.485	11.627	42.415	1	H1-1b
4	M8	C8X11.5	0.158	0.948	17	0.045	4.875	y	4	8.091	100.898	3.098	23.834	3	H1-1b
5	M6	W8X18	0.134	5	16	0.041	0	y	4	78.606	157.485	11.627	42.415	1	H1-1b
6	M3	W8X18	0.109	5.938	18	0.034	1.042	y	18	78.606	157.485	11.627	42.415	1	H1-1b
7	M7	W8X31	0.099	4.74	4	0.046	11.917	y	4	176.421	273.353	35.124	75.767	1.092	H1-1b
8	M14	L3X3X4	0.097	0.663	16	0.001	1.414	y	4	38.158	43.114	1.56	3.471	1.136	H2-1
9	M12	L3X3X4	0.093	0.663	18	0.002	1.414	y	15	38.158	43.114	1.56	3.471	1.136	H2-1

Envelope AISC 16TH (360-22): ASD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
10	M11	L3X3X4	0.045	0.663	15	0.01	1.414	y	10	38.158	43.114	1.56	3.471	1.136	H2-1
11	M4	W8X18	0.027	5.417	4	0.015	10	y	4	78.606	157.485	11.627	42.415	1	H1-1b
12	M20	W8X18	0.024	2.333	7	0.021	4.667	y	7	135.369	157.485	11.627	42.239	1.009	H1-1b
13	M18	W8X18	0.024	2.333	7	0.021	4.667	y	7	135.369	157.485	11.627	42.239	1.009	H1-1b
14	M10	W8X18	0.024	2.333	9	0.022	4.667	y	9	135.369	157.485	11.627	42.239	1.009	H1-1b
15	M17	W8X18	0.024	2.333	9	0.023	4.667	y	9	135.369	157.485	11.627	42.239	1.009	H1-1b
16	M13	L3X3X4	0.017	0.663	4	0.004	1.414	y	16	38.158	43.114	1.56	3.471	1.136	H2-1



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

RISA A NEMETSCHEK COMPANY	Centek Engineering	Proposed Equipment Platform	
	CMT		Nov 20, 2025 at 02:31 PM
	25000.03		Proposed Equipment Platform.r3d

Antenna Mast Connection:

Anchor Data: 5/8" Diameter Thru-Bolt

Number of Anchor Bolts =	$N := 1$	(User Input)
Diameter of Bolts =	$D := 0.625 \cdot in$	(User Input)
Bolt Spacing Horizontal =	$Sp_H := 12 \cdot in$	(User Input)
Allowable Tension =	$T_{all} := 13.8 \cdot kip$	(User Input)
Allowable Shear =	$V_{all} := 8.29 \cdot kip$	(User Input)

Design Reactions: Envelope

Tension X =	$Tension_x := 0.66 \cdot kip$	(User Input)
Shear Y =	$Shear_y := 2.712 \cdot kip$	(User Input)
Shear Z =	$Shear_z := 0.145 \cdot kip$	(User Input)

Anchor Check:

Max Tension Force = $$T_{Max} := \frac{Tension_x}{N} = 0.66\ kip$$

Max Shear Force = $$V_{Max} := \frac{Shear_y + Shear_z}{N} = 2.86\ kip$$

Condition 1 = $$Condition1 := \text{if}\left(\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}} \le 1.0\ ,\ \text{“OK”}\ ,\ \text{“NG”}\right) = \text{“OK”}$$

% of Capacity = $$\max\left(\frac{T_{Max}}{T_{all}}, \frac{V_{Max}}{V_{all}}, \left(\frac{\frac{T_{Max}}{T_{all}} + \frac{V_{Max}}{V_{all}}}{1.0}\right)\right) = 39.2\%$$

CENTEK engineering Centered on Solutions℠	Subject:	Connection to Host Building
	Location:	Hartford, CT
	Rev. 0: 10/3/25	Prepared by: C.M.T. Checked by: T.J.L. Job No. 25000.03

Antenna Mount Connection:

Anchor Data: 5/8" Diameter Threaded Rod w/ Hilti HY270 Adhesive

Number of Anchor Bolts =	$N := 4$	(User Input)
Diameter of Bolts =	$D := 0.625 \cdot in$	(User Input)
Bolt Spacing Horz =	$Sp_H := 6 \cdot in$	(User Input)
Bolt Spacing Vertical =	$Sp_V := 6 \cdot in$	(User Input)
Allowable Tension =	$T_n := 1.38 \cdot kip$	(User Input)
Allowable Shear =	$V_n := 2.79 \cdot kip$	(User Input)

Design Reactions: Envelope

Force X =	$F_x := 0.264 \cdot kip$	(User Input)
Force Y =	$F_y := 0.0 \cdot kip$	(User Input)
Force Z =	$F_z := 0.732 \cdot kip$	(User Input)

Anchor Check:

Max Tension Force = $T_{Max} := \frac{F_y}{N} = 0\ lbf$

Max Shear Force = $V_{Max} := \frac{F_x + F_z}{N} = 249\ lbf$

Condition 1 = $Condition1 := \text{if}\left(\frac{T_{Max}}{T_n} + \frac{V_{Max}}{V_n} \le 1.0, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

% of Capacity = $\max\left(\frac{T_{Max}}{T_n}, \frac{V_{Max}}{V_n}, \left(\frac{\frac{T_{Max}}{T_n} + \frac{V_{Max}}{V_n}}{1.0}\right)\right) = 8.9\%$

NPP RFDS

NORTHEAST > North East > New England > Windsor-3 > HARTFORD 11 CT RELO

Brauer, Mark - mark.brauer2@verizonwireless.com - 20260120_105532

Project Details		Location Information	
Carrier Aggregation	N	Site Id	617470668
Ecip	N	Search Ring#	
Project Name	TRADITIONAL RELO	E-NodeB ID#	null
Project Alt Name	MACRO - INITIAL BUILD - RELOC	PSLC#	0
Project Id	17358498	Switch Name	Windsor-3
Designed Sector Carrier 4G	15	Tower Type	
Designed Sector Carrier 5G	9	Site Type	MACRO
Additional Sector Carrier 4G	0	Street Address	230 Farmington Avenue
Additional Sector Carrier 5G	0	City	Hartford
Suffix		State	CT
FP Solution Type & Tech Type	MCR;4G_700;5G_850;4G_850;4G_AWS;4G _CBRS;5G_L-Sub6;5G_PCS;4G_PCS	Zip Code	06105
		County	Hartford
		Latitude	41.768075/ 41° 46' 5.070"
		Longitude	-72.69596/ 72° 41' 45.456"

Project Scope

Preliminary new build, antenna heights and azimuth may change with site visit and drawings.
Update - 05/06/2025 - Update to antenna layout
Update - 06/05/2025 - Update to gamma azimuth to 255 from 260 to alleviate T-Mobile "concerns"
Update - 11/25/2025 - updated antenna bracket to JMA model - also updated antenna centerline per CDs REV A dated 11/21/25
Update - 01/20/2026 - Revise RFDS & CD to show (1) 6x12 hybrid & (1) 6-OVP at each sector.

Antenna Summary

Added Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit
					5G	Samsung	MT6413-77A	81.8	83	40(A),150(B),255(C)	PHYSICAL	3
LTE	5G,LTE	5G,LTE	LTE	LTE		JMA	MX10FRO660-03	81.8	84.8	40(A),150(B),255(C)	PHYSICAL	6

Removed Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit

Retained Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit

Added: 9	Removed: 0	Retained: 0

Non Antenna Summary

Added Non Antenna

Equipment Type	Location	700	850	1900	AWS	CBRS	Make	Model	Install Type	Quantity
OVP	Shelter	LTE	LTE,5G	LTE,5G	LTE			RVZDC-4520-RM-48	PHYSICAL	1
Hybrid Cable	Tower	LTE	LTE,5G				RFS	"6x12 Hybriflex"	PHYSICAL	3
Mount	Tower	LTE	LTE,5G	LTE,5G	LTE		JMA	91900314 (Side-By-Side Bracket)	PHYSICAL	3
RRU	Tower			5G,LTE	LTE		Samsung	B2/B66A RRH ORAN (RF4439d-25A)	PHYSICAL	3
OVP	Tower	LTE	LTE,5G	LTE,5G	LTE		6x6 Hybrid	OVP-6 (12 CPRI)	PHYSICAL	3
RRU	Tower	LTE	5G,LTE				Samsung	RF4461d-13A	PHYSICAL	3
RRU	Tower					LTE	Samsung	RT4423-48A	PHYSICAL	3

Removed Non Antenna

Equipment Type	Location	700	850	1900	AWS	CBRS	Make	Model	Install Type	Quantity

Retained Non Antenna

Equipment Type	Location	700	850	1900	AWS	CBRS	Make	Model	Install Type	Quantity

Added: 19	Removed: 0	Retained: 0

Services		
700 LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	5230	5230	5230
Mech Down-tilt	0	0	0
Elect Down-tilt	10	10	12
Tip Height	84.8	84.8	84.8
Regulatory Power	178.14 (W/MHz) ERP	178.14 (W/MHz) ERP	178.14 (W/MHz) ERP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1L	1L	1L
Transmitter Id	23140318	23140322	23140326
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
850 LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	2450	2450	2450
Mech Down-tilt	0	0	0
Elect Down-tilt	10	10	12
Tip Height	84.8	84.8	84.8
Regulatory Power	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140321	23140325	23140329
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
850 NR		**0002 (9070198)**

Sector	0463	0464	0465
Azimuth	40	150	255
Cell/Enodeb-Id	0689552	0689552	0689552
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	174800	174800	174800
Mech Down-tilt	0	0	0
Elect Down-tilt	10	10	12
Tip Height	84.8	84.8	84.8
Regulatory Power	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140321	23140325	23140329
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
1900 LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	1050	1050	1050
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	4	4	4
Position	1L	1L	1L
Transmitter Id	23140319	23140323	23140327
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
1900 NR		**0002 (9070198)**

Sector	0463	0464	0465
Azimuth	40	150	255
Cell/Enodeb-Id	0689552	0689552	0689552
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	395000	395000	395000
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	4	4	4
Position	1L	1L	1L
Transmitter Id	23140319	23140323	23140327
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
AWS LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	2050	2050	2050
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	146.13 (W/MHz) EIRP	146.13 (W/MHz) EIRP	146.13 (W/MHz) EIRP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140320	23140324	23140328
Source	VZNPP	VZNPP	VZNPP
Bandwidth	20	20	20
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
CBRS LTE		**0002 (9070198)**

Sector	19	20	21
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	55790, 55940	55790, 55940	55790, 55940
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	4.92 (W/MHz) EIRPSD, 4.92 (W/MHz) EIRPSD	4.92 (W/MHz) EIRPSD, 4.92 (W/MHz) EIRPSD	4.92 (W/MHz) EIRPSD, 4.92 (W/MHz) EIRPSD
Transmitter Max Power	31.01 dBm	31.01 dBm	31.01 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RT4423-48A	RT4423-48A	RT4423-48A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140330	23140331	23140332
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10, 20	10, 20	10, 20
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
CBAND NR		**0002 (9070198)**

Sector	0463	0464	0465
Azimuth	40	150	255
Cell/Enodeb-Id	0689552	0689552	0689552
Antenna Model	MT6413-77A	MT6413-77A	MT6413-77A
Antenna Make	Samsung	Samsung	Samsung
Centerline	81.8	81.8	81.8
DLEARFCN	650006, 655324	650006, 655324	650006, 655324
Mech Down-tilt	0	0	0
Elect Down-tilt	2	2	2
Tip Height	83	83	83
Regulatory Power	1170.73 (W/MHz) EIRP, 1549.91 (W/MHz) EIRP	1170.73 (W/MHz) EIRP, 1549.91 (W/MHz) EIRP	1170.73 (W/MHz) EIRP, 1549.91 (W/MHz) EIRP
Transmitter Max Power	54.49 dBm	54.49 dBm	54.49 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	MT6413-77A	MT6413-77A	MT6413-77A
Number of Tx,Rx	2 , 2	2 , 2	2 , 2
Operational Port Count	64	64	64
Position	3	3	3
Transmitter Id	23140315	23140316	23140317
Source	VZNPP	VZNPP	VZNPP
Bandwidth	100, 60	100, 60	100, 60
Ant. Dimensions H x W x D(inch)	29.53 x 15.75 x 5.51	29.53 x 15.75 x 5.51	29.53 x 15.75 x 5.51
Weight(lb)	55.1	55.1	55.1

Callsigns Per Antenna

Sector	Make	Model	Ant CL Height AG	Ant Tip Height	Azimuth	Elect Down-tilt	Mech Down-tilt	Gain	Bandwidth	Regulatory Power	700	850	1900	2100	28 GHz	31 GHz	39 GHz	LSub-6	CBRS
01	JMA	MX10FRO660-03	81.8	84.8	40	10	0	11.95	60.8	178.14	WQJQ689								
02	JMA	MX10FRO660-03	81.8	84.8	150	10	0	11.95	60.8	178.14	WQJQ689								
03	JMA	MX10FRO660-03	81.8	84.8	255	12	0	11.95	60.2	178.14	WQJQ689								
01	JMA	MX10FRO660-03	81.8	84.8	40	10	0	12.85	56.8	333.29		KNKA404							
02	JMA	MX10FRO660-03	81.8	84.8	150	10	0	12.85	56.8	333.29		KNKA404							
03	JMA	MX10FRO660-03	81.8	84.8	255	12	0	12.75	57.1	333.29		KNKA404							
0463	JMA	MX10FRO660-03	81.8	84.8	40	10	0	12.85	56.8	333.29		KNKA404							
0464	JMA	MX10FRO660-03	81.8	84.8	150	10	0	12.85	56.8	333.29		KNKA404							
0465	JMA	MX10FRO660-03	81.8	84.8	255	12	0	12.75	57.1	333.29		KNKA404							
01	JMA	MX10FRO660-03	81.8	84.8	40	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
02	JMA	MX10FRO660-03	81.8	84.8	150	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
03	JMA	MX10FRO660-03	81.8	84.8	255	6	0	16.15	51	292.25			KNLH251,WPOJ730						
0463	JMA	MX10FRO660-03	81.8	84.8	40	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
0464	JMA	MX10FRO660-03	81.8	84.8	150	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
0465	JMA	MX10FRO660-03	81.8	84.8	255	6	0	16.15	51	292.25			KNLH251,WPOJ730						
01	JMA	MX10FRO660-03	81.8	84.8	40	5	0	15.95	53.1	146.13				WQGA906,WQGB276					
02	JMA	MX10FRO660-03	81.8	84.8	150	5	0	15.95	53.1	146.13				WQGA906,WQGB276					
03	JMA	MX10FRO660-03	81.8	84.8	255	6	0	16.15	53.3	146.13				WQGA906,WQGB276					
0463	Samsung	MT6413-77A	81.8	83	40	2	0	23.15	98	1170.73								WRNE581,WRNE582,WRNE583,WRNE584,WRNE585	
0464	Samsung	MT6413-77A	81.8	83	150	2	0	23.15	98	1170.73								WRNE581,WRNE582,WRNE583,WRNE584,WRNE585	
0465	Samsung	MT6413-77A	81.8	83	255	2	0	23.15	98	1170.73								WRNE581,WRNE582,WRNE583,WRNE584,WRNE585	
0463	Samsung	MT6413-77A	81.8	83	40	2	0	23.15	98	1549.91								WRNE585,WRNE586,WRNE587,WRNE58	

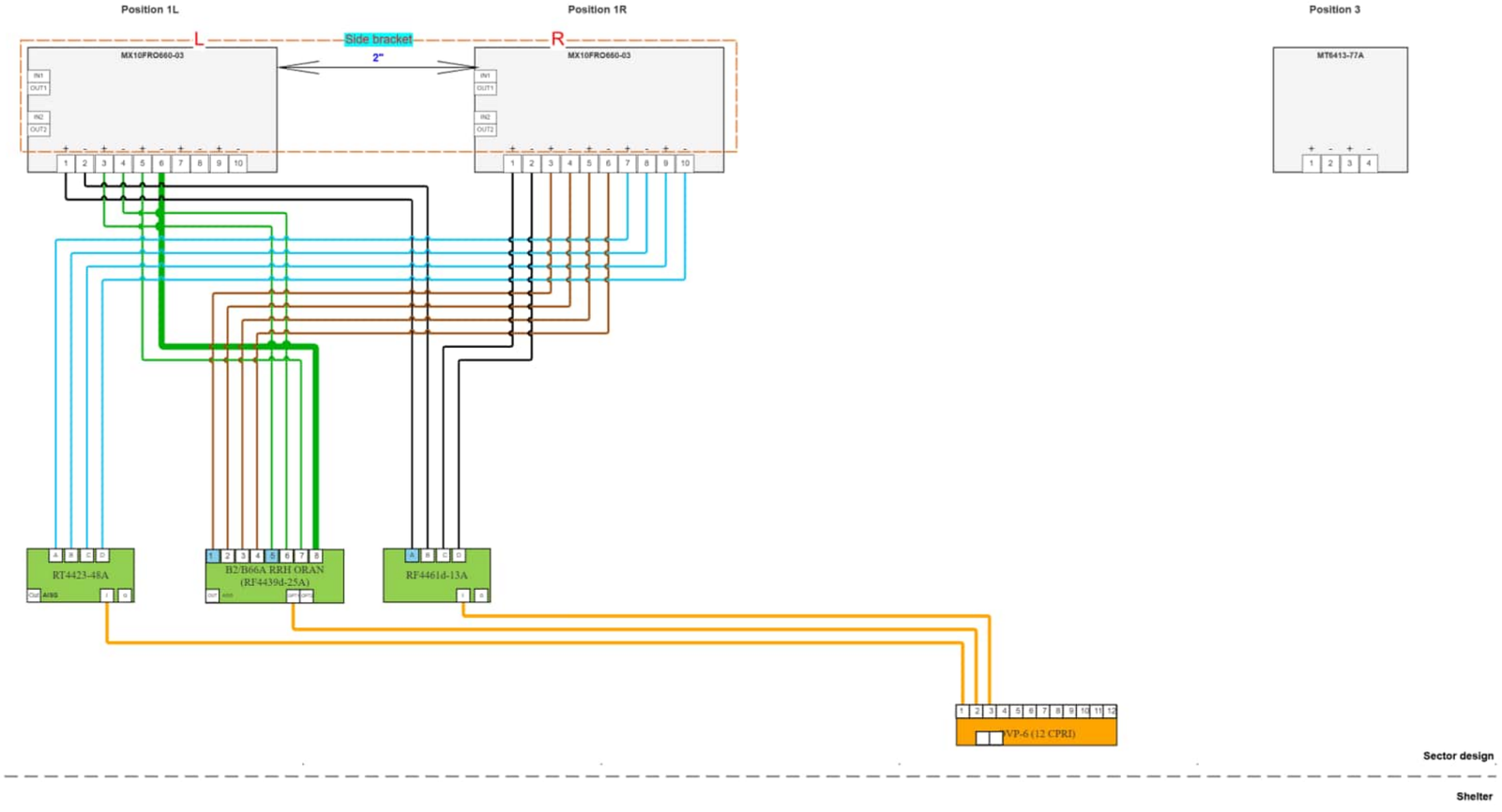
0464	Samsung	MT6413-77A	81.8	83	150	2	0	23.15	98	1549.91								WRNE585,WRNE586,WRNE587,WRNE58	
0465	Samsung	MT6413-77A	81.8	83	255	2	0	23.15	98	1549.91								WRNE585,WRNE586,WRNE587,WRNE58	
19	JMA	MX10FRO660-03	81.8	84.8	40	5	0	12.25	62.1	4.92									
20	JMA	MX10FRO660-03	81.8	84.8	150	5	0	12.25	62.1	4.92									
21	JMA	MX10FRO660-03	81.8	84.8	255	6	0	12.25	62.5	4.92									

Callsigns

Callsign	Market	Radio Code	Market #	Block	State	County	License Name	Wholly Owner	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq. mil	Status	Action	Approve for Insvc
WQJQ689	Northeast	WU	REA001	C	CT	9003	Cellco Partnership	Yes	22.000	746.000 - 757.000	776.000 - 787.000	0.000 - 0.000	0.000 - 0.000	178.14	1000	1223.64	proposed	added	1
KNKA404	Hartford-New Britain-Bristol, CT	CL	CMA032	A	CT	9003	Cellco Partnership	Yes	25.000	824.000 - 835.000	869.000 - 880.000	845.000 - 846.500	890.000 - 891.500	333.29	1000	1223.64	proposed	added	1
WPOJ730	Hartford, CT	CW	BTA184	C	CT	9003	Cellco Partnership	Yes	10.000	1895.000 1900.000	1975.000 1980.000	0.000 - 0.000	0.000 - 0.000	292.25	1640	1223.64	proposed	added	1
KNLH251	Hartford, CT	CW	BTA184	F	CT	9003	Cellco Partnership	Yes	10.000	1890.000 1895.000	1970.000 1975.000	0.000 - 0.000	0.000 - 0.000	292.25	1640	1223.64	proposed	added	1
CBRS_CALLSIGN	UNLICENSE	3.5 GHz	UNLICENSE	UNLICENSE	CT	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSED - UNLICENSE	UNLICENSED - UNLICENSE	UNLICENSED - UNLICENSE	UNLICENSED - UNLICENSE	4.92		1223.64	proposed	added	
WRLD515	D09003 - Hartford, CT	PL	D09003	1	CT	9003	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 3650.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	4.92	501	1223.64	proposed	added	1
WRLD514	D09003 - Hartford, CT	PL	D09003	1	CT	9003	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 3650.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	4.92	501	1223.64	proposed	added	1
WRLD513	D09003 - Hartford, CT	PL	D09003	1	CT	9003	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 3650.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	4.92	501	1223.64	proposed	added	1
WQGB276	Hartford-New Britain-Bristol, CT	AW	CMA032	A	CT	9003	Cellco Partnership	Yes	20.000	1710.000 1720.000	2110.000 2120.000	0.000 - 0.000	0.000 - 0.000	146.13	1640	1223.64	proposed	added	1
WRNE581	New York, NY	PM	PEA001	A1	CT	9003	Cellco Partnership	Yes	20.000	3700.000 3720.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1
WRNE582	New York, NY	PM	PEA001	A2	CT	9003	Cellco Partnership	Yes	20.000	3720.000 3740.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1
WRNE583	New York, NY	PM	PEA001	A3	CT	9003	Cellco Partnership	Yes	20.000	3740.000 3760.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1
WRNE584	New York, NY	PM	PEA001	A4	CT	9003	Cellco Partnership	Yes	20.000	3760.000 3780.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1

WRNE585	New York, NY	PM	PEA001	A5	CT	9003	Cellco Partnership	Yes	20.000	3780.000 3800.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1
WQGA906	New York-No. New Jer.-Long Island, NY-NJ-CT-PA-MA-	AW	BEA010	B	CT	9003	Cellco Partnership	Yes	20.000	1720.000 1730.000	2120.000 2130.000	0.000 - 0.000	0.000 - 0.000	146.13	1640	1223.64	proposed	added	1
WRNE586	New York, NY	PM	PEA001	B1	CT	9003	Cellco Partnership	Yes	20.000	3800.000 3820.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1
WRNE587	New York, NY	PM	PEA001	B2	CT	9003	Cellco Partnership	Yes	20.000	3820.000 3840.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1
WRNE588	New York, NY	PM	PEA001	B3	CT	9003	Cellco Partnership	Yes	20.000	3840.000 3860.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1

Alpha
(Proposed)



Legends

RET dc signal capable port

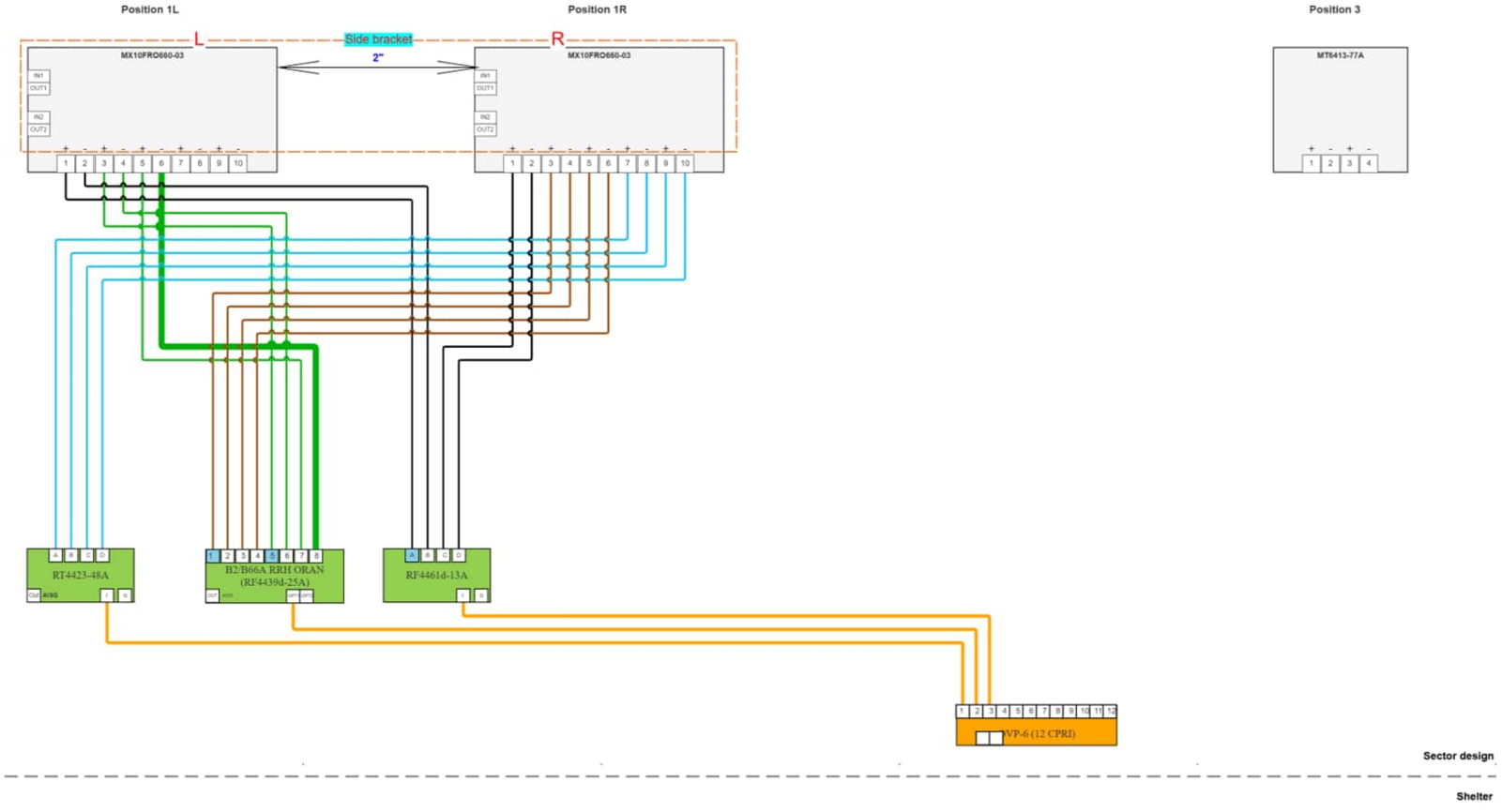
700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC

Coax
Coax Jumper
Sectors Shared Equipments
Enable Terminal Load

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions

Beta
(Proposed)



Legends

RET dc signal capable port

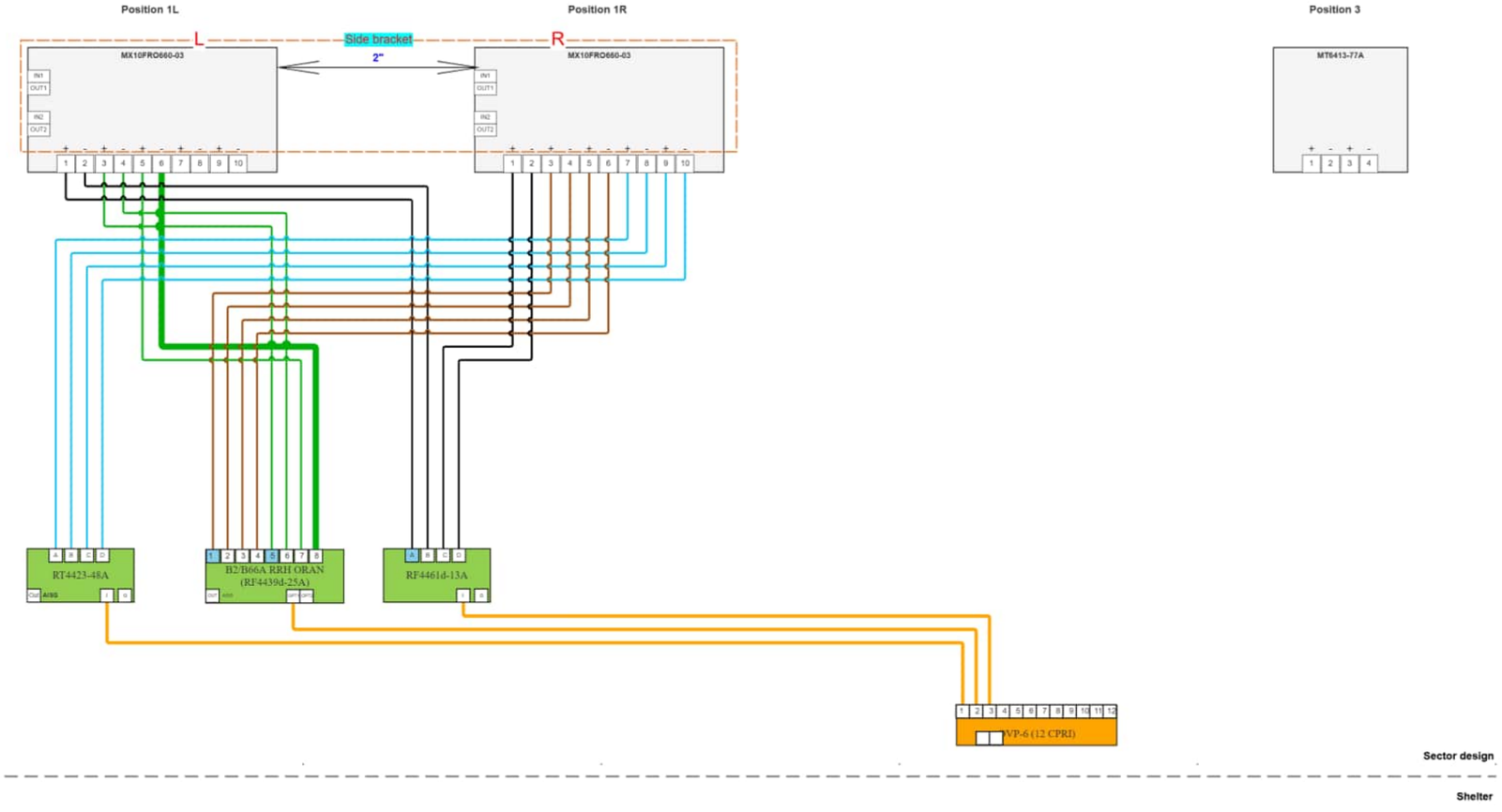
700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC

Coax
Coax Jumper
Sectors Shared Equipments
Enable Terminal Load

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions

Gamma
(Proposed)



Legends

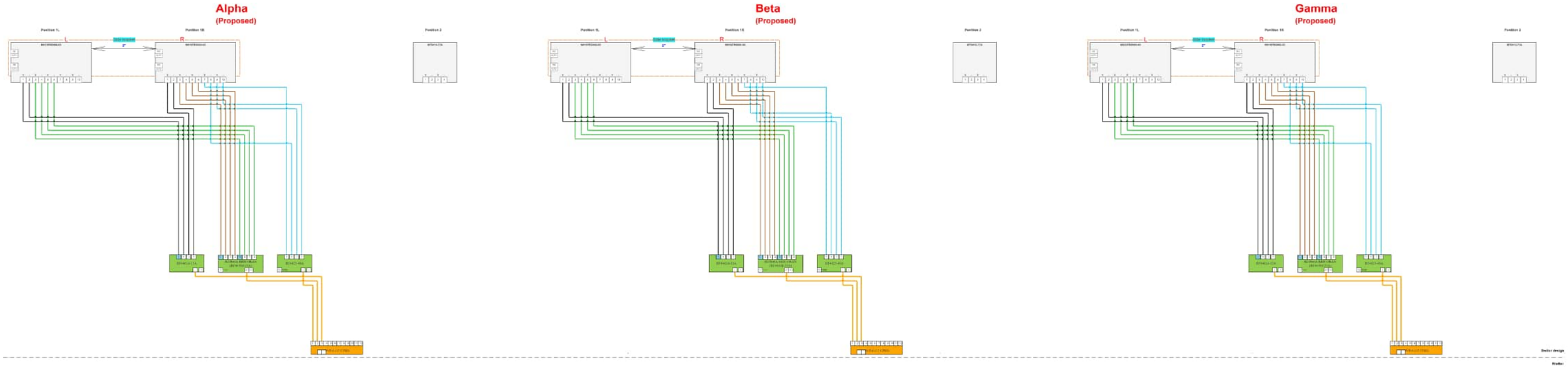
RET dc signal capable port

700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC

Coax
Coax Jumper
Sectors Shared Equipments
Enable Terminal Load

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions


Alpha
(Proposed)
Position 1L
Position 1R
Position 2
L
R
Beta
(Proposed)
Position 1L
Position 1R
Position 2
L
R
Gamma
(Proposed)
Position 1L
Position 1R
Position 2
L
R

Project

Structural Analysis Report
Antenna Mounts
Proposed Verizon Wireless Antenna Installation
Site Ref: Hartford 11 CT Relo
230 Farmington Avenue
Hartford, CT 06105

Centek Project No.: 25000.03

Date Issued: March 10, 2026

Prepared For

Verizon Wireless
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Wallingford, CT 06492

Prepared By

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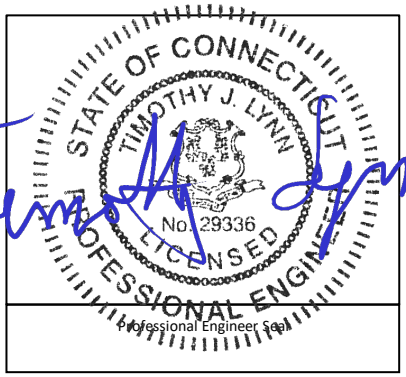

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Table of Contents

1.00 REPORT

1.01 INTRODUCTION

This Mount Analysis Report was prepared to address the structural viability of installing Verizon's proposed antenna configurations on the rooftop located at 230 Farmington Avenue in Hartford, Connecticut.

The proposed antenna configurations are to be supported by the proposed steel frames anchored to the existing roof slab. The antennas are connected to the frames via pipe masts. For further details on the configuration of the proposed antenna mounts and equipment, refer to the latest revision Construction Drawings prepared by Centek Engineering, job no. 25000.03

The host's structure geometry and member size information were obtained through a site visit to investigate the current conditions, performed by Centek Engineering personnel on 04/25/2025.

1.02 PRIMARY ASSUMPTIONS USED IN THE ANALYSIS

- The host structure's theoretical capacity does not include any assessment of the condition of the host structure.
- The proposed antenna frames carry horizontal and vertical loads due to the weight of equipment, and wind and transfers into the host structure.
- The structure is in a plumb condition.
- Loading for equipment is as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All members are assumed to be as observed during mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 ASTM A153 Standards.
- All members' protective coatings are in good condition.

1.03 ANTENNA AND EQUIPMENT SUMMARY

Sector	Appurtenance/Equipment	Rad Center Elevation (A.G.L.)	Mount Type
All Sectors	**(3) Samsung MT6413-77A Antennas** **(6) JMA MX10FRO660-03 Antennas** **(3) Samsung RF4439d-25A Radios** **(3) Samsung RF4461d-13A Radios** **(3) Samsung RT4423-48A Radios** **(3) Raycap OVP-6**	±81-ft	Pipe Masts on Steel Frame

Equipment – Indicates equipment to be installed.

1.04 ANALYSIS

The steel frames and pipe masts were analyzed using a comprehensive computer program titled Risa3D. The program analyzes the frames and masts using the worst-case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

1.05 DESIGN LOADING

Loading was determined per the requirements of the 2021 International Building Code amended by the 2022 Connecticut State Building Code and ASCE 7 – 16 "Minimum Design Loads for Buildings and Other Structures".

Wind Speed:	V_{ult} = 120 mph	*Appendix P of the 2022 CSBC.*
Risk Category:	II	*2021 IBC; Table 1604.05*
Exposure Category:	Surface Roughness B	*ASCE 7-16; Section 26.7.2*
Dead Load:	Equipment and framing self-weight	*Identified within SAR design calculations*

1.06 REFERENCE STANDARDS

2021 International Building Code amended by the 2022 Connecticut State Building Code

- AISC 360 – 16: Specification for Structural Steel Buildings
- ASCE/SEI 7 – 16: Minimum Design Loads and Associated Criteria for Building and Other Structures

1.07 RESULTS

Member stresses and design reactions were calculated utilizing the structural analysis software RISA 3D. The standoff mounts, pipe masts and connections were found to be structurally acceptable as presented in the following table:

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	Pipe 2.5 STD. (Column)	31.0%	**PASS**
	Pipe 2.0 STD. (Horizontal)	41.9%	**PASS**
	Pipe 2.0 STD. (Pipe Mast)	21.9%	**PASS**
	L3x3x1/4" (Kickback)	15.9%	**PASS**
	5/8" Ø Threaded Rod w/ Hilti HY200 Adhesive (Connection to Host Structure)	14.9%	**PASS**

1.08 CONCLUSION

This analysis finds the proposed frames, pipe masts, connections and host structure to **HAVE SUFFICIENT CAPACITY** to accommodate the structural loading of the proposed antenna and equipment configuration.

The analysis is based, in part, on the information provided to this office by Verizon Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

Prepared by:

Christian Tomaso, EIT
Structural Engineer

2.00 CONDITIONS AND SOFTWARE

2.01 STANDARD ENGINEERING CONDITIONS

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, and other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

2.02 GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

<u>Modeling Features:</u>

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids.
- Versatile general truss generator
- Powerful graphics select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking.
- Saved selections to quickly recall desired selections.
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets.

- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units' systems & conversions at any time.
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files.
- Export DXF, SDNF and ProSteel 3D files.

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations.
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis.
- Physical member modeling that does not require members to be broken up at intermediate joints.
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently.
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress, and design
- Automatic Top of Member offset modeling.
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms
- Enforced joint displacements.
- 1-Way members, for tension only bracing, slipping, etc.
- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape.
- Inactive members, plates, and diaphragms allow you to quickly remove parts of structures from consideration.
- Story drift calculations provide relative drift and ratio to height.
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary "true to scale" rendering, even when drawing
- High-speed redraw algorithm for instant refreshing.
- Dynamic scrolling stops right where you want.
- Plot & print virtually everything with color coding & labeling.
- Rotate, zoom, pan, scroll and snap views.

- Saved views to quickly restore frequent or desired views.
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete hot rolled steel, cold formed steel, and wood.
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000, EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases.
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn.
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members.
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes.
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths.
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool.

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated.
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location.
- Saved solutions quickly restore analysis and design results.

3.00 CALCULATIONS

Design Wind Load on Other Structures: (Based on IBC 2021, CSBC 2022 and ASCE 7-16)

Wind Speed =	$V := 120$	*mph*	(User Input)	(CSBC Appendix P)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$		(User Input)	
Height Above Grade =	$Z := 90$	*ft*	(User Input)	
Structure Type =	$Structuretype := 1$		(User Input)	
Structure Height =	$Height := 6$	*ft*	(User Input)	
Horizontal Dimension of Structure =	$Width := 1.33$	*ft*	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = $zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 1.2 \cdot 10^{3}$ (Table 26.11-1)

3-Sec Gust Speed Power Law Exponent = $\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 7$ (Table 26.11-1)

Integral Length Scale Factor = $l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 320$ (Table 26.11-1)

Integral Length Scale Power Law Exponent = $E := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.333$ (Table 26.11-1)

Turbulence Intensity Factor =	$c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.3$	(Table 26.11-1)
Exposure Constant =	$Z_{min} := \begin{cases} 30 & \text{if } Exp = B \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases} = 30$	(Table 26.11-1)
Exposure Coefficient =	$K_z := \begin{cases} 2.01 \cdot \left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01 \cdot \left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 0.96$	(Table 26.10-1)
Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 31.81$	(Eq. 26.10-2)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.11.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.11.4)
Equivalent Height of Structure =	$z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{else} \end{cases} = 30$	(Sec 26.11.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.305$	(Eq. 26.11-7)
Integral Length Scale of Turbulence =	$L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 309.993$	(Eq. 26.11-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \cdot \left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.971$	(Eq. 26.11-8)
Gust Response Factor =	$G := 0.925 \cdot \left(\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right) = 0.908$	(Eq. 26.11-6)
Force Coefficient =	$C_f = 1.359$	(Fig 29.4-1 - 29.4-4)
Wind Force =	$F := q_z \cdot G \cdot C_f = 39$	psf

Development of Wind & Ice Load on Antennas:

Antenna Data:

Antenna Model =	Samsung MT6413-77A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 29.53$	in	(User Input)
Antenna Width =	$W_{ant} := 15.75$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.51$	in	(User Input)
Antenna Weight =	$WT_{ant} := 55.1$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.2$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.2$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 127$	lbs	

Wind Load (Side):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.1$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.1$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 44$	lbs	

Gravity Load (without ice):

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 55$	lbs	

Development of Wind & Ice Load on Antennas:

Antenna Data:

Antenna Model =	JMA MX10FRO660-03		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 70.9$	in	(User Input)
Antenna Width =	$W_{ant} := 15.0$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.4$	in	(User Input)
Antenna Weight =	$WT_{ant} := 57.3$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 7.4$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 290$	lbs	

Wind Load (Side):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.6$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 143$	lbs	

Gravity Load (without ice):

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 57$	lbs	

Development of Wind & Ice Load on Antennas:

Antenna Data:

Antenna Model =	Samsung RF4439d-25A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 14.96$	in	(User Input)
Antenna Width =	$W_{ant} := 14.96$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10.04$	in	(User Input)
Antenna Weight =	$WT_{ant} := 74.7$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.6$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 61$	lbs	

Wind Load (Side):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 1$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 41$	lbs	

Gravity Load (without ice):

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 75$	lbs	

Development of Wind & Ice Load on Antennas:

Antenna Data:

Antenna Model =	Samsung RF4461d-13A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 14.96$	in	(User Input)
Antenna Width =	$W_{ant} := 14.96$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10.23$	in	(User Input)
Antenna Weight =	$WT_{ant} := 74.7$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.6$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 61$	lbs	

Wind Load (Side):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.1$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.1$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 42$	lbs	

Gravity Load (without ice):

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 75$	lbs	

Development of Wind & Ice Load on Antennas:

Antenna Data:

Antenna Model =	Samsung RT4423-48A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 11.8$	in	(User Input)
Antenna Width =	$W_{ant} := 8.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 22.4$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.7$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 28$	lbs	

Wind Load (Side):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 0.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 16$	lbs	

Gravity Load (without ice):

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 22$	lbs	

Development of Wind & Ice Load on Antennas:

Antenna Data:

Antenna Model =	Raycap RVZDC-6627-PF-48		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 29.5$	in	(User Input)
Antenna Width =	$W_{ant} := 16.5$	in	(User Input)
Antenna Thickness =	$T_{ant} := 12.6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 32$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front):

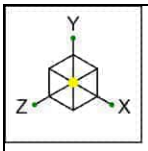
Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.4$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.4$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 133$	lbs	

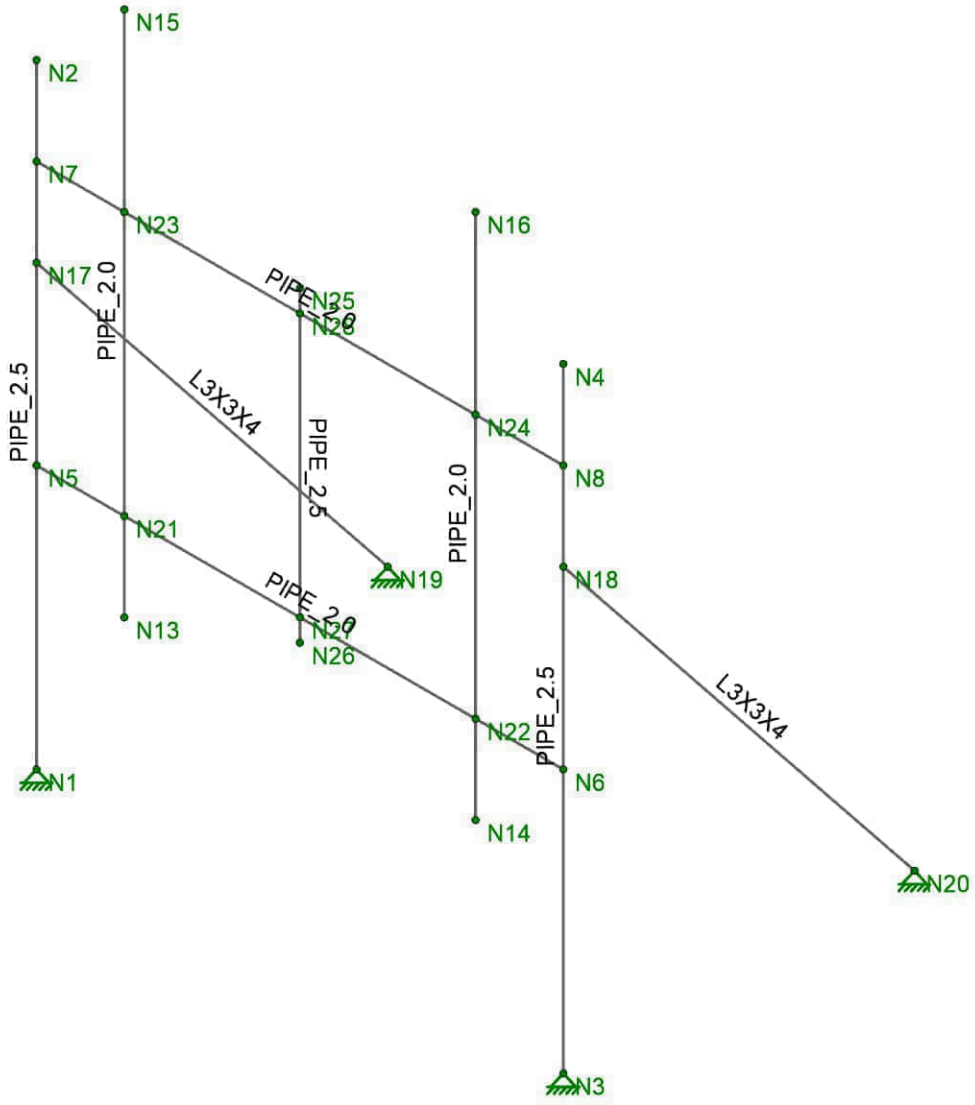
Wind Load (Side):

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 2.6$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 2.6$	sf	
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 101$	lbs	

Gravity Load (without ice):

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 32$	lbs	





Envelope Only Solution

IRISA	Centek Engineering	Antenna Frames	SK-1
	CMT		Feb 17, 2026 at 08:14 AM
	25000.03		Antenna Frames.r3d

Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 16th (360-22): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 16th (360-22): ASD
Cold Formed Steel	AISI S100-20: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18 / SDPWS-21 ASD
Temperature	< 100F
Concrete	ACI 318-19 (22)
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-20: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-22
Risk Category	I or II
Drift Cat	Other

Model Settings (Continued)

Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_1 (g)	1
SD_1 (g)	1
SD_s (g)	1
T_L (sec)	5
T Z (sec)	
T X (sec)	
C_tZ	0.02
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	0	7	0	
3	N3	6	0	0	
4	N4	6	7	0	
5	N5	0	3	0	
6	N6	6	3	0	
7	N7	0	6	0	
8	N8	6	6	0	
9	N13	1	2	0	
10	N14	5	2	0	
11	N15	1	8	0	
12	N16	5	8	0	
13	N17	0	5	0	
14	N18	6	5	0	
15	N19	0	0	-4	
16	N20	6	0	-4	
17	N21	1	3	0	
18	N22	5	3	0	
19	N23	1	6	0	
20	N24	5	6	0	
21	N25	3	6.25	0	
22	N26	3	2.75	0	
23	N27	3	3	0	
24	N28	3	6	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]
1	N20	Reaction	Reaction	Reaction
2	N19	Reaction	Reaction	Reaction
3	N3	Reaction	Reaction	Reaction
4	N1	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
5	A500 Gr.C	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2	180	Column	Column	HSS Pipe	A53 Gr.B	Typical
2	M2	N3	N4	270	Column	Column	HSS Pipe	A53 Gr.B	Typical
3	M3	N5	N6	180	Horz	Beam	HSS Pipe	A53 Gr.B	Typical
4	M4	N7	N8	180	Horz	Beam	HSS Pipe	A53 Gr.B	Typical
5	M5	N13	N15		Pipe	Column	HSS Pipe	A53 Gr.B	Typical
6	M6	N14	N16		Pipe	Column	HSS Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
7	M7	N18	N20		Brace	VBrace	Single Angle	A36 Gr.36	Typical
8	M8	N17	N19		Brace	VBrace	Single Angle	A36 Gr.36	Typical
9	M9	N25	N26		Column	Column	HSS Pipe	A53 Gr.B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	Column	7	Lbyy	N/A	N/A	Lateral
2	M2	Column	7	Lbyy	N/A	N/A	Lateral
3	M3	Horz	6	Lbyy	N/A	N/A	Lateral
4	M4	Horz	6	Lbyy	N/A	N/A	Lateral
5	M5	Pipe	6	Lbyy	N/A	N/A	Lateral
6	M6	Pipe	6	Lbyy	N/A	N/A	Lateral
7	M7	Brace	6.403	Lbyy	N/A	N/A	Lateral
8	M8	Brace	6.403	Lbyy	N/A	N/A	Lateral
9	M9	Column	3.5	Lbyy	N/A	N/A	Lateral

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M5	Y	-0.055	%50
2	M6	Y	-0.058	0.5
3	M6	Y	-0.058	5.5
4	M6	Y	-0.075	%75
5	M6	Y	-0.075	%50
6	M6	Y	-0.023	%25
7	M9	Y	-0.032	%50

Member Point Loads (BLC 3 : Wind X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M5	X	-0.044	%50
2	M6	X	-0.143	0.5
3	M6	X	-0.143	5.5
4	M6	X	-0.041	%75
5	M6	X	-0.042	%50
6	M6	X	-0.016	%25
7	M9	X	-0.101	%50

Member Point Loads (BLC 4 : Wind Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M5	Z	-0.127	%50
2	M6	Z	-0.29	0.5
3	M6	Z	-0.29	5.5
4	M9	Z	-0.133	%50

Member Distributed Loads (BLC 3 : Wind X)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M5	X	-0.008	-0.008	0	%100
2	M6	X	-0.008	-0.008	0	%100
3	M1	X	-0.008	-0.008	0	%100
4	M2	X	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 3 : Wind X) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
5	M7	X	-0.01	-0.01	0	%100
6	M8	X	-0.01	-0.01	0	%100
7	M9	X	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 4 : Wind Z)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M5	Z	-0.008	-0.008	4.25	6
2	M1	Z	-0.008	-0.008	0	%100
3	M2	Z	-0.008	-0.008	0	%100
4	M7	Z	-0.01	-0.01	0	%100
5	M4	Z	-0.008	-0.008	0	%100
6	M3	Z	-0.008	-0.008	0	%100
7	M8	Z	-0.01	-0.01	0	%100

Member Area Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	DL	-1		
2	Dead Load	DL		7	
3	Wind X	WLX		7	7
4	Wind Z	WLZ		4	7

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	IBC 24/ASCE ASD 1a	Yes	Y	DL	1						
2	IBC 24/ASCE ASD 2a	Yes	Y	DL	1	LL	1	LLS	1		
3	IBC 24/ASCE ASD 5a (a)	Yes	Y	DL	1	WLX	0.6				
4	IBC 24/ASCE ASD 5a (b)	Yes	Y	DL	1	WLZ	0.6				
5	IBC 24/ASCE ASD 5a (c)	Yes	Y	DL	1	WLX	-0.6				
6	IBC 24/ASCE ASD 5a (d)	Yes	Y	DL	1	WLZ	-0.6				
7	IBC 24/ASCE ASD 6a (1) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75
8	IBC 24/ASCE ASD 6a (1) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75
9	IBC 24/ASCE ASD 6a (1) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75
10	IBC 24/ASCE ASD 6a (1) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75
11	IBC 24/ASCE ASD 7a (a)	Yes	Y	DL	0.6	WLX	0.6				
12	IBC 24/ASCE ASD 7a (b)	Yes	Y	DL	0.6	WLZ	0.6				
13	IBC 24/ASCE ASD 7a (c)	Yes	Y	DL	0.6	WLX	-0.6				
14	IBC 24/ASCE ASD 7a (d)	Yes	Y	DL	0.6	WLZ	-0.6				

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N20	max	0.037	3	0.534	4	0.41	4	0	14	0	14	0	14
2		min	-0.037	5	-0.508	14	-0.407	14	0	1	0	1	0	1
3	N19	max	0.036	11	0.305	4	0.257	4	0	14	0	14	0	14
4		min	-0.037	5	-0.28	14	-0.254	14	0	1	0	1	0	1
5	N3	max	0.228	11	0.889	6	0.04	12	0	14	0	14	0	14
6		min	-0.235	5	-0.295	12	-0.043	6	0	1	0	1	0	1
7	N1	max	0.24	3	0.587	3	0.01	13	0	14	0	14	0	14

Envelope Node Reactions (Continued)

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
8		min	-0.232	13	-0.241	13	-0.013	3	0	1	0	1	0	1
9	Totals:	max	0.536	11	0.618	5	0.714	4						
10		min	-0.536	5	0.371	11	-0.714	6						

Envelope AISC 16TH (360-22): ASD Member Steel Code Checks

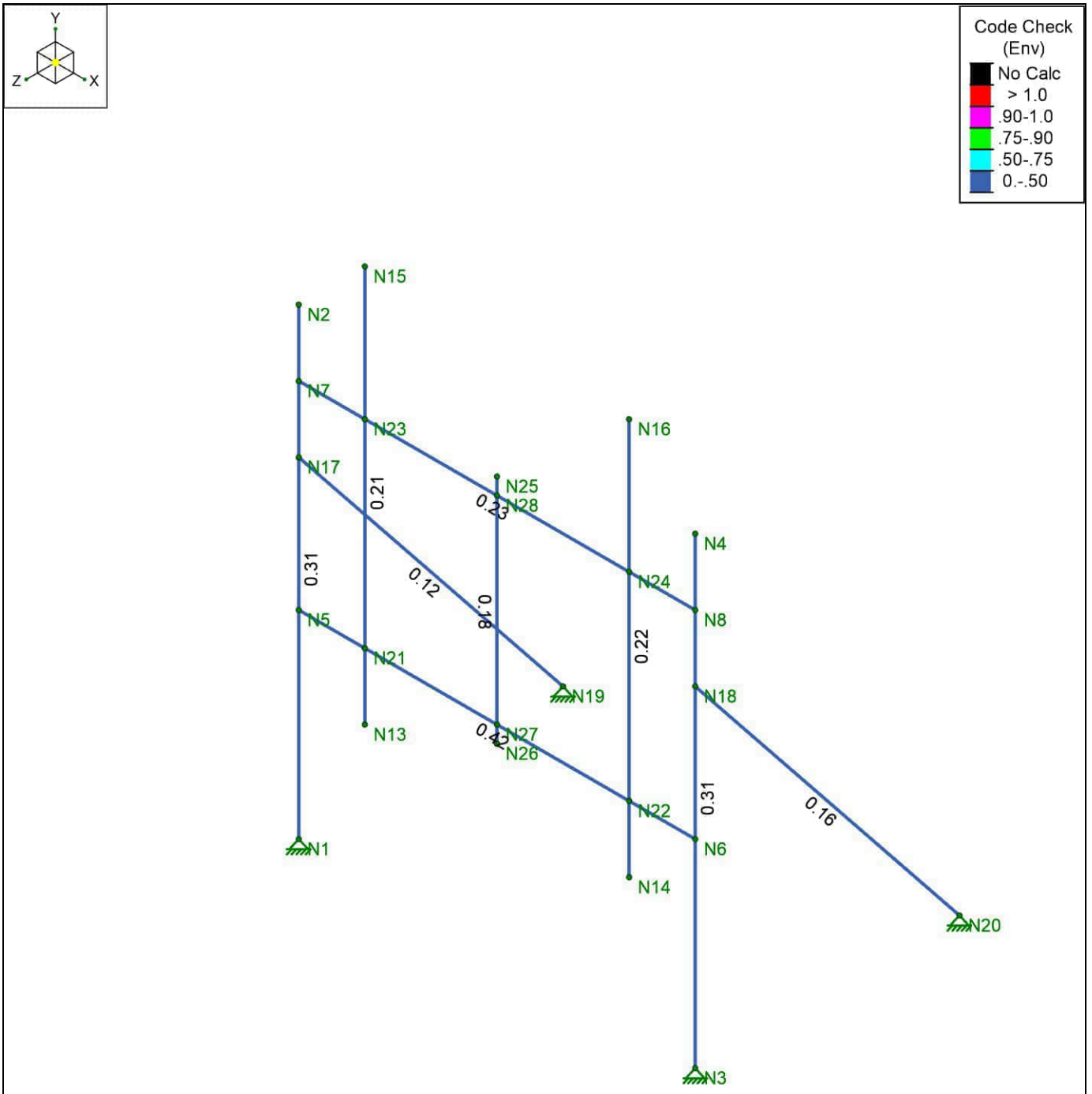
	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M1	PIPE_2.5	0.31	2.99	3	0.039	5.031		6	22.596	33.743	2.393	2.393	1	H1-1b
2	M2	PIPE_2.5	0.308	2.99	5	0.061	5.031		6	22.596	33.743	2.393	2.393	1	H1-1b
3	M3	PIPE_2.0	0.419	6	5	0.097	0		3	13.883	21.377	1.245	1.245	1	H1-1b
4	M4	PIPE_2.0	0.23	5	3	0.102	6		4	13.883	21.377	1.245	1.245	1	H1-1b
5	M5	PIPE_2.0	0.213	1	3	0.027	1		3	13.883	21.377	1.245	1.245	1	H1-1b
6	M6	PIPE_2.0	0.219	4	4	0.036	4		6	13.883	21.377	1.245	1.245	1	H1-1b
7	M7	L3X3X4	0.159	0	4	0.005	0	y	6	12.517	31.042	1.123	2.226	1.5	H2-1
8	M8	L3X3X4	0.124	0	12	0.004	6.403	z	5	12.517	31.042	1.123	2.223	1.489	H2-1
9	M9	PIPE_2.5	0.181	3.245	3	0.033	3.245		3	30.524	33.743	2.393	2.393	1	H1-1b

Envelope Member End Reactions

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
1	M1	I	max	0.587	3	0.245	3	0.013	3	0	14	0	14	0	14
2			min	-0.241	13	-0.23	13	-0.01	13	0	1	0	1	0	1
3		J	max	0	14	0	3	0	6	0	14	0	14	0	14
4			min	0	1	0	5	0	4	0	1	0	1	0	1
5	M2	I	max	0.889	6	0.044	6	0.241	5	0	14	0	14	0	14
6			min	-0.295	12	-0.04	12	-0.226	11	0	1	0	1	0	1
7		J	max	0	14	0	6	0	5	0	14	0	14	0	14
8			min	0	1	0	4	0	3	0	1	0	1	0	1
9	M3	I	max	0.309	11	0.4	13	0.071	14	0.025	4	0.03	3	0.396	13
10			min	-0.349	5	-0.549	3	-0.072	4	-0.022	14	-0.03	5	-0.502	3
11		J	max	0.298	13	0.566	5	0.146	4	0.033	12	0.029	5	0.353	11
12			min	-0.371	3	-0.294	11	-0.144	14	-0.036	6	-0.028	3	-0.509	5
13	M4	I	max	0.156	5	0.016	11	0.122	6	0.022	14	0.052	12	-0.02	14
14			min	-0.109	11	-0.127	5	-0.121	12	-0.023	4	-0.053	6	-0.054	4
15		J	max	0.182	3	0.173	4	0.232	4	0.064	6	0.076	4	-0.029	14
16			min	-0.102	13	0.063	14	-0.233	6	-0.063	12	-0.076	6	-0.097	4
17	M5	I	max	0	14	0	11	0	6	0	14	0	14	0	14
18			min	0	1	0	5	0	4	0	1	0	1	0	1
19		J	max	0	14	0	5	0	4	0	14	0	14	0	14
20			min	0	1	0	3	0	6	0	1	0	1	0	1
21	M6	I	max	0	14	0	6	0	4	0	14	0	14	0	14
22			min	0	1	0	12	0	6	0	1	0	1	0	1
23		J	max	0	14	0	5	0	4	0	14	0	14	0	14
24			min	0	1	0	3	0	6	0	1	0	1	0	1
25	M7	I	max	0.629	12	0.046	6	0.024	4	0	14	0.029	11	0.205	6
26			min	-0.646	6	-0.028	12	-0.024	14	0	1	-0.042	5	-0.193	12
27		J	max	0.673	4	0.005	11	0.037	5	0	14	0	14	0	14
28			min	-0.651	14	-0.018	5	-0.037	3	0	1	0	1	0	1
29	M8	I	max	0.354	12	0.023	6	0.018	6	0	14	0.058	12	0.126	3
30			min	-0.373	6	-0.005	12	-0.017	12	0	1	-0.072	6	-0.116	13
31		J	max	0.398	4	0.014	12	0.037	5	0	14	0	14	0	14
32			min	-0.377	14	-0.027	6	-0.036	11	0	1	0	1	0	1
33	M9	I	max	0	14	0	3	0	4	0	14	0	14	0	14
34			min	0	1	0	5	0	6	0	1	0	1	0	1
35		J	max	0	14	0	5	0	6	0	14	0	14	0	14

Envelope Member End Reactions (Continued)

Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
36			min	0	1	0	3	0	4	0	1	0	1	0	1



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

RISA	Centek Engineering	Antenna Frames	SK-2
	CMT		Feb 17, 2026 at 08:15 AM
	25000.03		Antenna Frames.r3d

CENTEK engineering Centered on Solutions℠	Subject:	Connection to Host Building
	Location:	Hartford, CT
	Rev. 0: 02/17/26	Prepared by: C.M.T. Checked by: T.J.L. Job No. 25000.03

Antenna Mount Connection:

Anchor Data:

5/8" Diameter Threaded Rod w/ Hilti HY200 Adhesive

Number of Anchor Bolts =	$N := 4$	(User Input)
Diameter of Bolts =	$D := 0.625 \cdot in$	(User Input)
Bolt Spacing Horz =	$Sp_H := 6 \cdot in$	(User Input)
Bolt Spacing Vertical =	$Sp_V := 6 \cdot in$	(User Input)
Design Tension =	$T_n := 1.38 \cdot kip$	(User Input)
Design Shear =	$V_n := 2.79 \cdot kip$	(User Input)

Design Reactions:

Envelope

Force X =	$F_x := 0.223 \cdot kip$	(User Input)
Force Y =	$F_y := 0.507 \cdot kip$	(User Input)
Force Z =	$F_z := 0.411 \cdot kip$	(User Input)

Anchor Check:

Max Tension Force = $T_{Max} := \frac{F_y}{N} = 126.75\ lbf$

Max Shear Force = $V_{Max} := \frac{F_x + F_z}{N} = 158.5\ lbf$

Condition 1 = $Condition1 := \text{if}\left(\frac{T_{Max}}{T_n} + \frac{V_{Max}}{V_n} \le 1.0\ ,\ \text{“OK”}\ ,\ \text{“NG”}\right) = \text{“OK”}$

% of Capacity = $\max\left(\frac{T_{Max}}{T_n}, \frac{V_{Max}}{V_n}, \left(\frac{\frac{T_{Max}}{T_n} + \frac{V_{Max}}{V_n}}{1.0}\right)\right) = 14.9\%$

NPP RFDS

NORTHEAST > North East > New England > Windsor-3 > HARTFORD 11 CT RELO

Brauer, Mark - mark.brauer2@verizonwireless.com - 20260120_105532

Project Details		Location Information	
Carrier Aggregation	N	Site Id	617470668
Ecip	N	Search Ring#	
Project Name	TRADITIONAL RELO	E-NodeB ID#	null
Project Alt Name	MACRO - INITIAL BUILD - RELOC	PSLC#	0
Project Id	17358498	Switch Name	Windsor-3
Designed Sector Carrier 4G	15	Tower Type	
Designed Sector Carrier 5G	9	Site Type	MACRO
Additional Sector Carrier 4G	0	Street Address	230 Farmington Avenue
Additional Sector Carrier 5G	0	City	Hartford
Suffix		State	CT
FP Solution Type & Tech Type	MCR;4G_700;5G_850;4G_850;4G_AWS;4G _CBRS;5G_L-Sub6;5G_PCS;4G_PCS	Zip Code	06105
		County	Hartford
		Latitude	41.768075/ 41° 46' 5.070"
		Longitude	-72.69596/ 72° 41' 45.456"

Project Scope

Preliminary new build, antenna heights and azimuth may change with site visit and drawings.
Update - 05/06/2025 - Update to antenna layout
Update - 06/05/2025 - Update to gamma azimuth to 255 from 260 to alleviate T-Mobile "concerns"
Update - 11/25/2025 - updated antenna bracket to JMA model - also updated antenna centerline per CDs REV A dated 11/21/25
Update - 01/20/2026 - Revise RFDS & CD to show (1) 6x12 hybrid & (1) 6-OVP at each sector.

Antenna Summary

Added Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit
					5G	Samsung	MT6413-77A	81.8	83	40(A),150(B),255(C)	PHYSICAL	3
LTE	5G,LTE	5G,LTE	LTE	LTE		JMA	MX10FRO660-03	81.8	84.8	40(A),150(B),255(C)	PHYSICAL	6

Removed Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit

Retained Antenna

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Center line	Tip Height	Azimuth	Install Type	Quantit

Added: 9	Removed: 0	Retained: 0

Non Antenna Summary

Added Non Antenna

Equipment Type	Location	700	850	1900	AWS	CBRS	Make	Model	Install Type	Quantity
OVP	Shelter	LTE	LTE,5G	LTE,5G	LTE			RVZDC-4520-RM-48	PHYSICAL	1
Hybrid Cable	Tower	LTE	LTE,5G				RFS	"6x12 Hybriflex"	PHYSICAL	3
Mount	Tower	LTE	LTE,5G	LTE,5G	LTE		JMA	91900314 (Side-By-Side Bracket)	PHYSICAL	3
RRU	Tower			5G,LTE	LTE		Samsung	B2/B66A RRH ORAN (RF4439d-25A)	PHYSICAL	3
OVP	Tower	LTE	LTE,5G	LTE,5G	LTE		6x6 Hybrid	OVP-6 (12 CPRI)	PHYSICAL	3
RRU	Tower	LTE	5G,LTE				Samsung	RF4461d-13A	PHYSICAL	3
RRU	Tower					LTE	Samsung	RT4423-48A	PHYSICAL	3

Removed Non Antenna

Equipment Type	Location	700	850	1900	AWS	CBRS	Make	Model	Install Type	Quantity

Retained Non Antenna

Equipment Type	Location	700	850	1900	AWS	CBRS	Make	Model	Install Type	Quantity

Added: 19	Removed: 0	Retained: 0

Services		
700 LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	5230	5230	5230
Mech Down-tilt	0	0	0
Elect Down-tilt	10	10	12
Tip Height	84.8	84.8	84.8
Regulatory Power	178.14 (W/MHz) ERP	178.14 (W/MHz) ERP	178.14 (W/MHz) ERP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1L	1L	1L
Transmitter Id	23140318	23140322	23140326
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
850 LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	2450	2450	2450
Mech Down-tilt	0	0	0
Elect Down-tilt	10	10	12
Tip Height	84.8	84.8	84.8
Regulatory Power	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140321	23140325	23140329
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
850 NR		**0002 (9070198)**

Sector	0463	0464	0465
Azimuth	40	150	255
Cell/Enodeb-Id	0689552	0689552	0689552
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	174800	174800	174800
Mech Down-tilt	0	0	0
Elect Down-tilt	10	10	12
Tip Height	84.8	84.8	84.8
Regulatory Power	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD	333.29 (W/MHz) ERPSD
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RF4461d-13A	RF4461d-13A	RF4461d-13A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140321	23140325	23140329
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
1900 LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	1050	1050	1050
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	4	4	4
Position	1L	1L	1L
Transmitter Id	23140319	23140323	23140327
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
1900 NR		**0002 (9070198)**

Sector	0463	0464	0465
Azimuth	40	150	255
Cell/Enodeb-Id	0689552	0689552	0689552
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	395000	395000	395000
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP	292.25 (W/MHz) EIRP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	4	4	4
Position	1L	1L	1L
Transmitter Id	23140319	23140323	23140327
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10	10	10
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
AWS LTE		**0002 (9070198)**

Sector	01	02	03
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	2050	2050	2050
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	146.13 (W/MHz) EIRP	146.13 (W/MHz) EIRP	146.13 (W/MHz) EIRP
Transmitter Max Power	46.0 dBm	46.0 dBm	46.0 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)	B2/B66A RRH ORAN (RF4439d-25A)
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140320	23140324	23140328
Source	VZNPP	VZNPP	VZNPP
Bandwidth	20	20	20
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
CBRS LTE		**0002 (9070198)**

Sector	19	20	21
Azimuth	40	150	255
Cell/Enodeb-Id	068017	068017	068017
Antenna Model	MX10FRO660-03	MX10FRO660-03	MX10FRO660-03
Antenna Make	JMA	JMA	JMA
Centerline	81.8	81.8	81.8
DLEARFCN	55790, 55940	55790, 55940	55790, 55940
Mech Down-tilt	0	0	0
Elect Down-tilt	5	5	6
Tip Height	84.8	84.8	84.8
Regulatory Power	4.92 (W/MHz) EIRPSD, 4.92 (W/MHz) EIRPSD	4.92 (W/MHz) EIRPSD, 4.92 (W/MHz) EIRPSD	4.92 (W/MHz) EIRPSD, 4.92 (W/MHz) EIRPSD
Transmitter Max Power	31.01 dBm	31.01 dBm	31.01 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	RT4423-48A	RT4423-48A	RT4423-48A
Number of Tx,Rx	4 , 4	4 , 4	4 , 4
Operational Port Count	0	0	0
Position	1R	1R	1R
Transmitter Id	23140330	23140331	23140332
Source	VZNPP	VZNPP	VZNPP
Bandwidth	10, 20	10, 20	10, 20
Ant. Dimensions H x W x D(inch)	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4	70.9 x 15.0 x 7.4
Weight(lb)	57.3	57.3	57.3

Services		
CBAND NR		**0002 (9070198)**

Sector	0463	0464	0465
Azimuth	40	150	255
Cell/Enodeb-Id	0689552	0689552	0689552
Antenna Model	MT6413-77A	MT6413-77A	MT6413-77A
Antenna Make	Samsung	Samsung	Samsung
Centerline	81.8	81.8	81.8
DLEARFCN	650006, 655324	650006, 655324	650006, 655324
Mech Down-tilt	0	0	0
Elect Down-tilt	2	2	2
Tip Height	83	83	83
Regulatory Power	1170.73 (W/MHz) EIRP, 1549.91 (W/MHz) EIRP	1170.73 (W/MHz) EIRP, 1549.91 (W/MHz) EIRP	1170.73 (W/MHz) EIRP, 1549.91 (W/MHz) EIRP
Transmitter Max Power	54.49 dBm	54.49 dBm	54.49 dBm
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	MT6413-77A	MT6413-77A	MT6413-77A
Number of Tx,Rx	2 , 2	2 , 2	2 , 2
Operational Port Count	64	64	64
Position	3	3	3
Transmitter Id	23140315	23140316	23140317
Source	VZNPP	VZNPP	VZNPP
Bandwidth	100, 60	100, 60	100, 60
Ant. Dimensions H x W x D(inch)	29.53 x 15.75 x 5.51	29.53 x 15.75 x 5.51	29.53 x 15.75 x 5.51
Weight(lb)	55.1	55.1	55.1

Callsigns Per Antenna

Sector	Make	Model	Ant CL Height AG	Ant Tip Height	Azimuth	Elect Down-tilt	Mech Down-tilt	Gain	Bandwidth	Regulatory Power	700	850	1900	2100	28 GHz	31 GHz	39 GHz	LSub-6	CBRS
01	JMA	MX10FRO660-03	81.8	84.8	40	10	0	11.95	60.8	178.14	WQJQ689								
02	JMA	MX10FRO660-03	81.8	84.8	150	10	0	11.95	60.8	178.14	WQJQ689								
03	JMA	MX10FRO660-03	81.8	84.8	255	12	0	11.95	60.2	178.14	WQJQ689								
01	JMA	MX10FRO660-03	81.8	84.8	40	10	0	12.85	56.8	333.29		KNKA404							
02	JMA	MX10FRO660-03	81.8	84.8	150	10	0	12.85	56.8	333.29		KNKA404							
03	JMA	MX10FRO660-03	81.8	84.8	255	12	0	12.75	57.1	333.29		KNKA404							
0463	JMA	MX10FRO660-03	81.8	84.8	40	10	0	12.85	56.8	333.29		KNKA404							
0464	JMA	MX10FRO660-03	81.8	84.8	150	10	0	12.85	56.8	333.29		KNKA404							
0465	JMA	MX10FRO660-03	81.8	84.8	255	12	0	12.75	57.1	333.29		KNKA404							
01	JMA	MX10FRO660-03	81.8	84.8	40	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
02	JMA	MX10FRO660-03	81.8	84.8	150	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
03	JMA	MX10FRO660-03	81.8	84.8	255	6	0	16.15	51	292.25			KNLH251,WPOJ730						
0463	JMA	MX10FRO660-03	81.8	84.8	40	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
0464	JMA	MX10FRO660-03	81.8	84.8	150	5	0	15.95	52.3	292.25			KNLH251,WPOJ730						
0465	JMA	MX10FRO660-03	81.8	84.8	255	6	0	16.15	51	292.25			KNLH251,WPOJ730						
01	JMA	MX10FRO660-03	81.8	84.8	40	5	0	15.95	53.1	146.13				WQGA906,WQGB276					
02	JMA	MX10FRO660-03	81.8	84.8	150	5	0	15.95	53.1	146.13				WQGA906,WQGB276					
03	JMA	MX10FRO660-03	81.8	84.8	255	6	0	16.15	53.3	146.13				WQGA906,WQGB276					
0463	Samsung	MT6413-77A	81.8	83	40	2	0	23.15	98	1170.73								WRNE581,WRNE582,WRNE583,WRNE584,WRNE585	
0464	Samsung	MT6413-77A	81.8	83	150	2	0	23.15	98	1170.73								WRNE581,WRNE582,WRNE583,WRNE584,WRNE585	
0465	Samsung	MT6413-77A	81.8	83	255	2	0	23.15	98	1170.73								WRNE581,WRNE582,WRNE583,WRNE584,WRNE585	
0463	Samsung	MT6413-77A	81.8	83	40	2	0	23.15	98	1549.91								WRNE585,WRNE586,WRNE587,WRNE58	

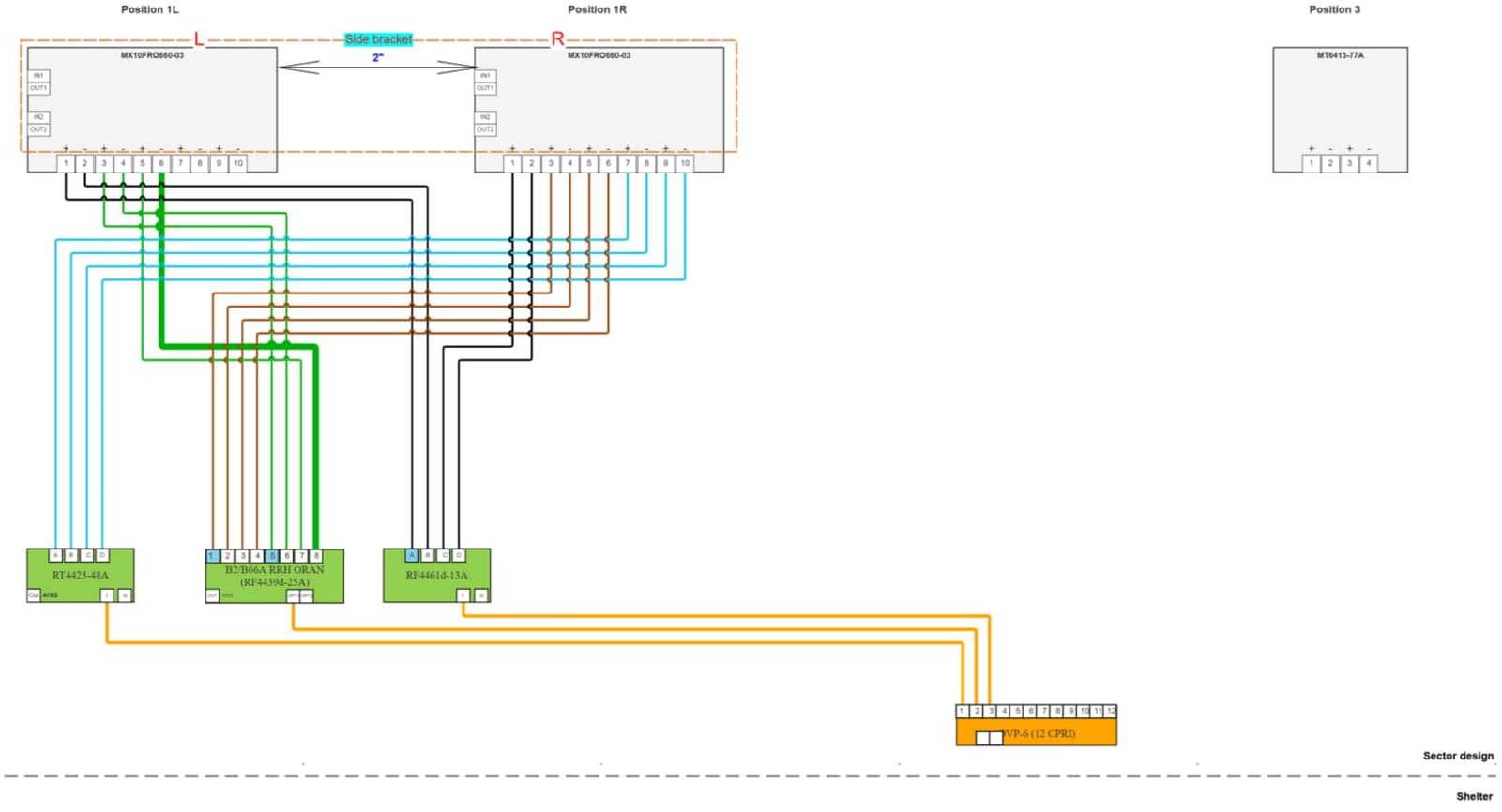
0464	Samsung	MT6413-77A	81.8	83	150	2	0	23.15	98	1549.91								WRNE585,WRNE586,WRNE587,WRNE58	
0465	Samsung	MT6413-77A	81.8	83	255	2	0	23.15	98	1549.91								WRNE585,WRNE586,WRNE587,WRNE58	
19	JMA	MX10FRO660-03	81.8	84.8	40	5	0	12.25	62.1	4.92									
20	JMA	MX10FRO660-03	81.8	84.8	150	5	0	12.25	62.1	4.92									
21	JMA	MX10FRO660-03	81.8	84.8	255	6	0	12.25	62.5	4.92									

Callsigns

Callsign	Market	Radio Code	Market #	Block	State	County	License Name	Wholly Owner	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq. mil	Status	Action	Approve for Insvc
WQJQ689	Northeast	WU	REA001	C	CT	9003	Cellco Partnership	Yes	22.000	746.000 - 757.000	776.000 - 787.000	0.000 - 0.000	0.000 - 0.000	178.14	1000	1223.64	proposed	added	1
KNKA404	Hartford-New Britain-Bristol, CT	CL	CMA032	A	CT	9003	Cellco Partnership	Yes	25.000	824.000 - 835.000	869.000 - 880.000	845.000 - 846.500	890.000 - 891.500	333.29	1000	1223.64	proposed	added	1
WPOJ730	Hartford, CT	CW	BTA184	C	CT	9003	Cellco Partnership	Yes	10.000	1895.000 1900.000	1975.000 1980.000	0.000 - 0.000	0.000 - 0.000	292.25	1640	1223.64	proposed	added	1
KNLH251	Hartford, CT	CW	BTA184	F	CT	9003	Cellco Partnership	Yes	10.000	1890.000 1895.000	1970.000 1975.000	0.000 - 0.000	0.000 - 0.000	292.25	1640	1223.64	proposed	added	1
CBRS_CALLSIGN	UNLICENSE	3.5 GHz	UNLICENSE	UNLICENSE	CT	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSED - UNLICENSE	UNLICENSED - UNLICENSE	UNLICENSED - UNLICENSE	UNLICENSED - UNLICENSE	4.92		1223.64	proposed	added	
WRLD515	D09003 - Hartford, CT	PL	D09003	1	CT	9003	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 3650.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	4.92	501	1223.64	proposed	added	1
WRLD514	D09003 - Hartford, CT	PL	D09003	1	CT	9003	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 3650.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	4.92	501	1223.64	proposed	added	1
WRLD513	D09003 - Hartford, CT	PL	D09003	1	CT	9003	Verizon Wireless Network Procurement LP	Yes	100.000	3550.000 3650.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	4.92	501	1223.64	proposed	added	1
WQGB276	Hartford-New Britain-Bristol, CT	AW	CMA032	A	CT	9003	Cellco Partnership	Yes	20.000	1710.000 1720.000	2110.000 2120.000	0.000 - 0.000	0.000 - 0.000	146.13	1640	1223.64	proposed	added	1
WRNE581	New York, NY	PM	PEA001	A1	CT	9003	Cellco Partnership	Yes	20.000	3700.000 3720.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1
WRNE582	New York, NY	PM	PEA001	A2	CT	9003	Cellco Partnership	Yes	20.000	3720.000 3740.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1
WRNE583	New York, NY	PM	PEA001	A3	CT	9003	Cellco Partnership	Yes	20.000	3740.000 3760.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1
WRNE584	New York, NY	PM	PEA001	A4	CT	9003	Cellco Partnership	Yes	20.000	3760.000 3780.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1170.73	1640	1223.64	proposed	added	1

WRNE585	New York, NY	PM	PEA001	A5	CT	9003	Cellco Partnership	Yes	20.000	3780.000 3800.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1
WQGA906	New York-No. New Jer.-Long Island, NY-NJ-CT-PA-MA-	AW	BEA010	B	CT	9003	Cellco Partnership	Yes	20.000	1720.000 1730.000	2120.000 2130.000	0.000 - 0.000	0.000 - 0.000	146.13	1640	1223.64	proposed	added	1
WRNE586	New York, NY	PM	PEA001	B1	CT	9003	Cellco Partnership	Yes	20.000	3800.000 3820.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1
WRNE587	New York, NY	PM	PEA001	B2	CT	9003	Cellco Partnership	Yes	20.000	3820.000 3840.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1
WRNE588	New York, NY	PM	PEA001	B3	CT	9003	Cellco Partnership	Yes	20.000	3840.000 3860.000	0.000 - 0.000	0.000 - 0.000	0.000 - 0.000	1549.91	1640	1223.64	proposed	added	1

Alpha
(Proposed)



Legends

RET dc signal capable port

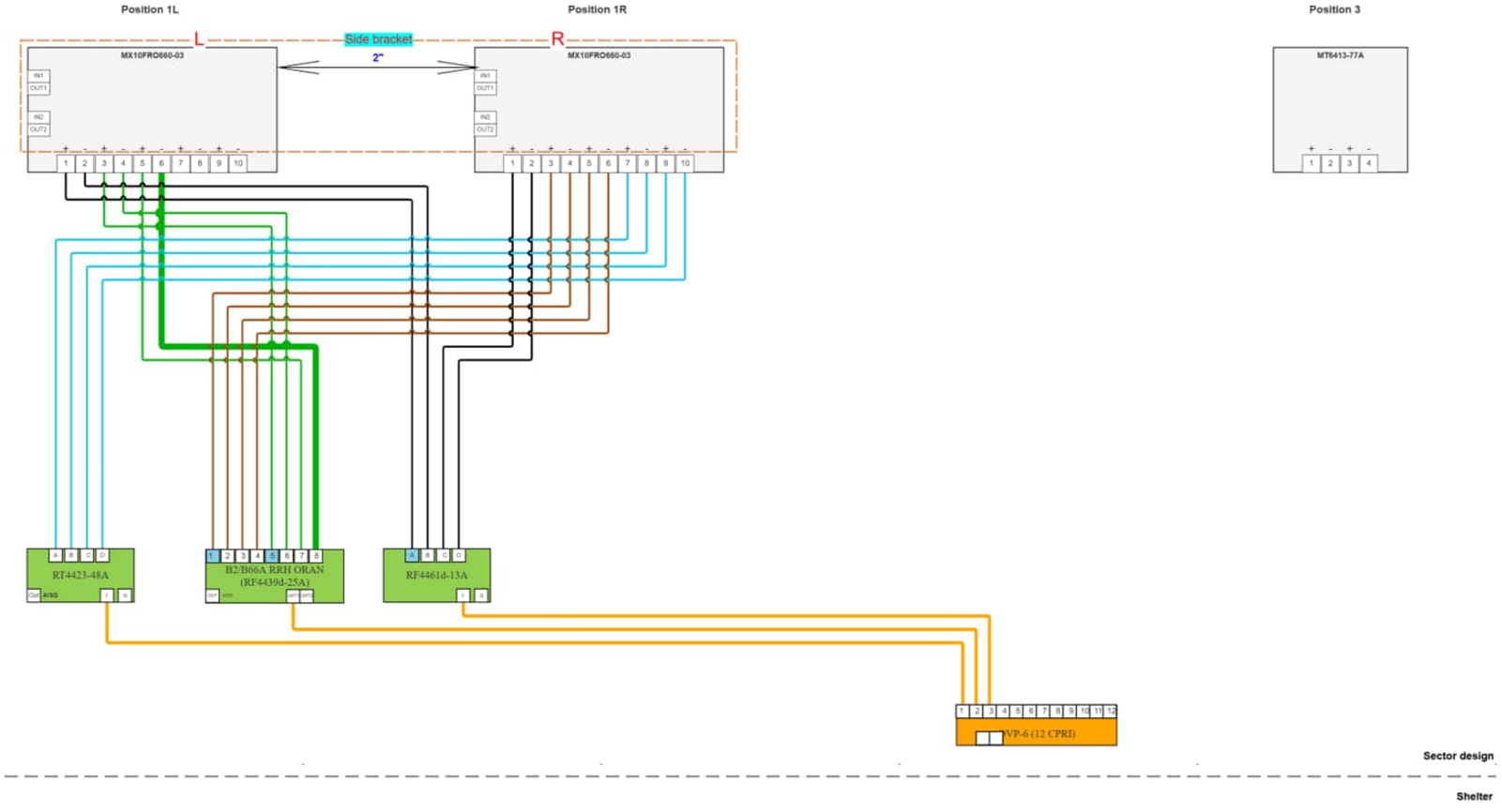
700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC

Coax
Coax Jumper
Sectors Shared Equipments
Enable Terminal Load

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions

Beta
(Proposed)



Legends

RET dc signal capable port

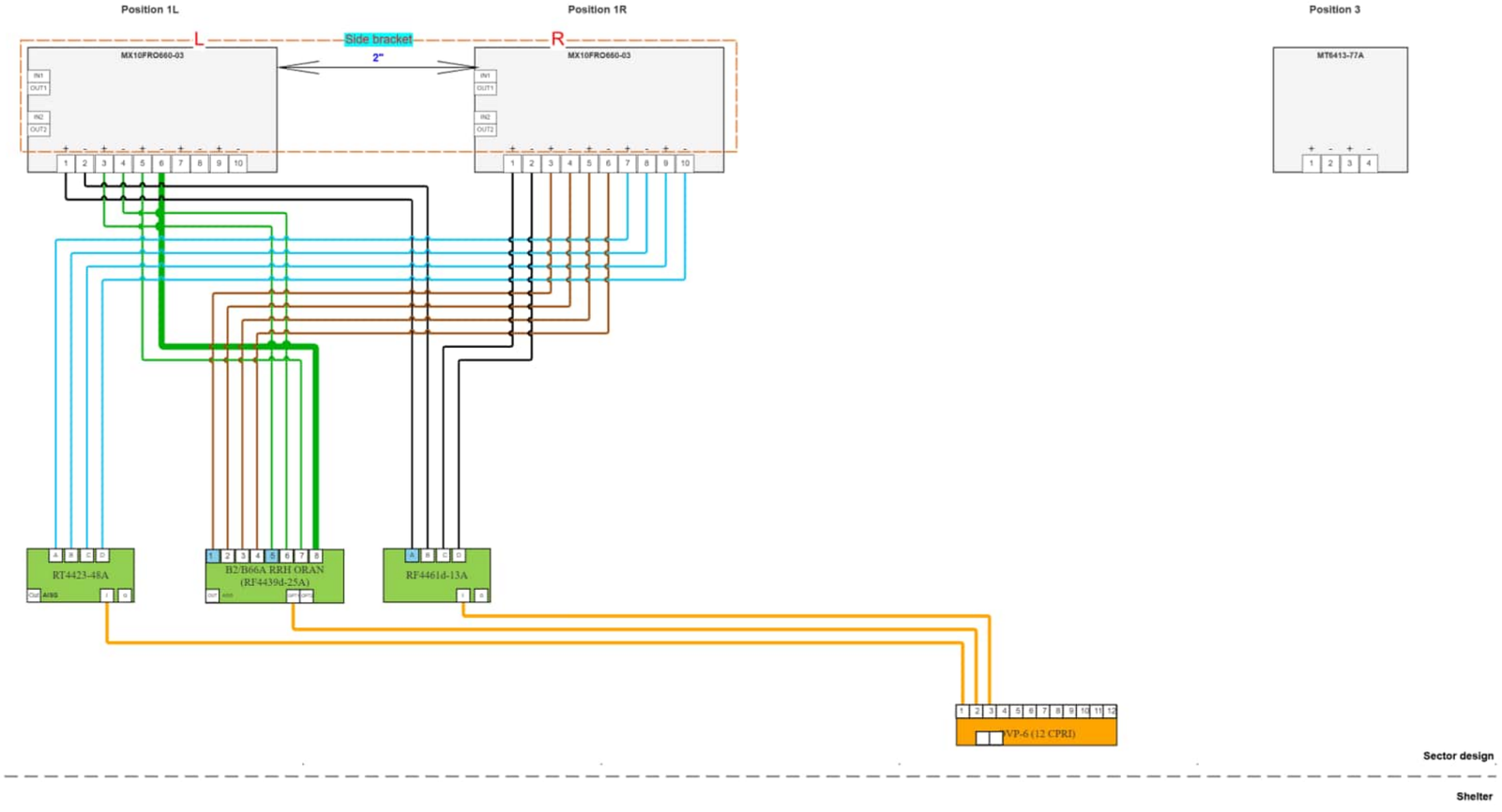
700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC

Coax
Coax Jumper
Sectors Shared Equipments
Enable Terminal Load

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions

Gamma
(Proposed)



Legends

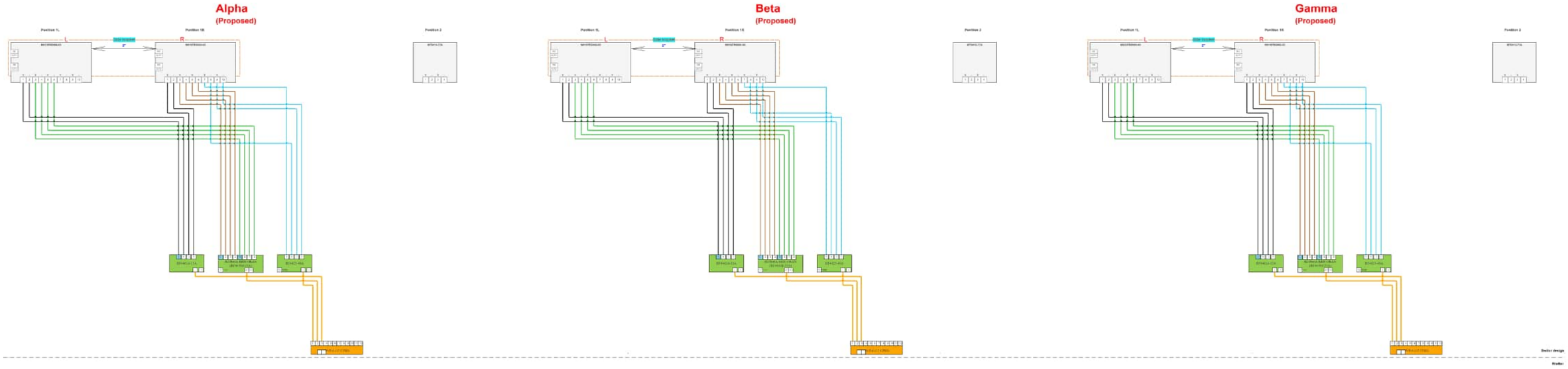
RET dc signal capable port

700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC

Coax
Coax Jumper
Sectors Shared Equipments
Enable Terminal Load

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions


Alpha
(Proposed)
Position 1L
Position 1R
Position 2
L
R
Beta
(Proposed)
Position 1L
Position 1R
Position 2
L
R
Gamma
(Proposed)
Position 1L
Position 1R
Position 2
L
R

ATTACHMENT 5

APT ENGINEERING & ENVIRONMENTAL

VISIBILITY ASSESSMENT

HARTFORD 11 CT RELO

230 FARMINGTON AVENUE
HARTFORD, CT

PREPARED FOR:

verizon

PREPARED BY:
All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385

Cellco Partnership, d/b/a Verizon Wireless is seeking approval for modifications to an existing wireless communications facility ("Facility") at 230 Farmington Avenue in Hartford, Connecticut ("Site"). All the request of Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") completed this visibility assessment and prepared computer-generated photo-simulations depicting the Facility.

Project Undertaking

The modifications would be made to a rooftop Facility on a multi-story apartment building, which currently hosts T-Mobile antennas and equipment. According to the Site Plans (prepared by Centek Engineering, last revised April 1, 2026), Verizon Wireless proposes to install new rooftop telecommunications equipment consisting of three (3) antenna sectors identified as Alpha, Beta, and Gamma. All three sectors would each include three (3) panel antennas and associated appurtenances and cabling. Two existing bulkheads rise to a height of ±87.0 feet above ground level ("AGL"), and a chimney rises to ±87.14 AGL. The top of Verizon's proposed antennas would be ±84.78 AGL. Verizon's equipment cabinet would be installed on a proposed 13-foot-by-13-foot raised steel framing next to the existing bulkhead in the southern portion of the roof. A proposed vertical façade-mounted cable tray on the east side of the building would be butted up against the existing T-Mobile cable tray and painted to match.

Project Vicinity

The subject building is situated on the northern side of Farmington Avenue within a block of development between Laurel Street to the west and Sigourney Street to the east. The immediately surrounding development to the west, north, and east is dominated by commercial and apartment buildings with associated parking lots.

Prominent surrounding structures include Hartford High School and The Mark Twain House & Museum ±0.24 miles and ±0.20 miles, respectively, to the southwest; the Cathedral of St Joseph ±0.18 miles to the east; and West Middle Community School ±0.07 miles to the north. Interstate 84 lies ±0.25 miles to the south.

Field Reconnaissance

APT completed field reconnaissance in the project vicinity to record existing conditions, inventory visible and non-visible locations, and provide photographic documentation from publicly accessible areas. The field reconnaissance was completed on April 21, 2026.

Photographic Documentation and Simulations

During the field reconnaissance, APT obtained photographs from representative locations where the existing building is currently visible. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") technology. Photographs were taken with a Canon EOS 6D digital camera body[1] and Canon EF 24 to 105 millimeter ("mm") zoom lens. APT used a standard focal length of 50mm to present a consistent field of view.

APT used a standard focal length of 50mm in the photographs included in this assessment to present a consistent field of view.

Photographic simulations were generated to portray scaled renderings of the proposed Facility from five (5) locations presented herein. Using field data, Site Plan information and 3-dimensional (3D) modeling software, spatially referenced models of the Facility were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo-simulations were created by

[1] The Canon EOS 6D is a full-framed camera which includes a lens receptor of the same size as the film used in 35mm cameras. As such, the images produced are comparable to those taken with a conventional 35mm camera.

combining a 3D-generated rendering with a corresponding "existing conditions" photo and merging the two using Adobe Photoshop image editing software. The associated "proposed conditions" image provides the viewer with an accurate representation of the Facility by ensuring consistency in scale, perspective, and alignment between the photograph and the 3D model. This is achieved by matching focal lengths, camera angles, and geographic reference points, allowing for a precise overlay of the rendered elements onto the real-world imagery.

For presentation purposes in this report, the photographs were produced in an approximate 6.75-inch by 10-inch format. Reproducing the images in this format size presents sufficiently large views while also providing key contextual landscape elements (existing developments, street signs, utility poles, etc.) so that the viewer can interpret the proportionate scale of each object within the scene. Photo-documentation of the field reconnaissance and photo-simulations of the proposed Facility are presented in the attachments at the end of this report. The photo-simulations are intended to provide the reader with a general understanding of the different view characteristics associated with the Facility from various locations. Photographs were taken from publicly accessible areas and unobstructed view lines were chosen wherever possible.

Table – Photo Locations

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	IMLAY STREET - THE UNIVERSITY CENTER REAR PARKING AREA	NW	+/- 0.11 MILE
2	SIGOURNEY STREET	WNW	+/- 0.13 MILE
3	NILES STREET AT SIGUORNEY STREET	SW	+/- 0.12 MILE
4	NILES STREET	S	+/- 470 FEET
5	LAUREL STREET	NE	+/- 0.11 MILE

Conclusions

As illustrated in the attached photo simulations, the proposed antennas would be visible from select nearby vantage points, with visibility generally limited to the immediate area surrounding the Site. This includes West Middle Community School (see Photo 4, taken from the street near the school entrance). Views beyond approximately 0.15 mile are largely screened by a combination of multi-story buildings, existing infrastructure, and mature tree cover, which collectively provide substantial obstruction of direct lines of sight to the subject building. Based on these conditions, it is our opinion that the proposed Facility would not result in an adverse visual impact on views of the host building or the overall character of the surrounding urban environment.

Limitations

The photo-simulations provide a representation of the Facility under similar settings as those encountered during the field review and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the field review included partially cloudy skies.

ATTACHMENTS

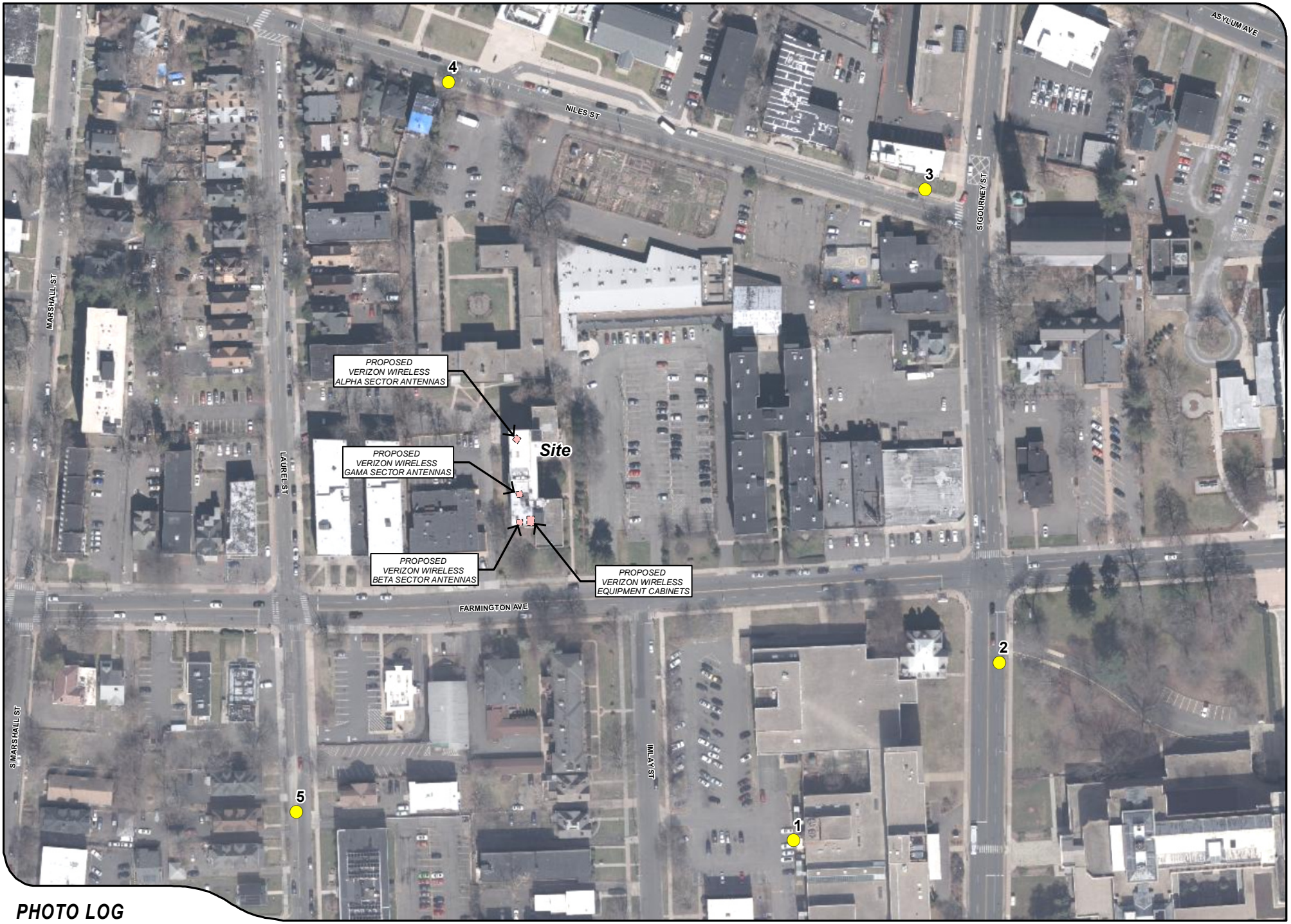


PHOTO LOG

Legend

- Photographic Location
- Proposed Verizon Wireless Equipment

N W E S

200 100 0 200 Feet

APT ENGINEERING & ENVIRONMENTAL

verizon

EXISTING

PHOTOGRAPHED ON 4/21/2025

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	IMLAY STREET - THE UNIVERSITY CENTER REAR PARKING AREA	NW	+/- 0.11 MILE

APT ENGINEERING & ENVIRONMENTAL

verizon

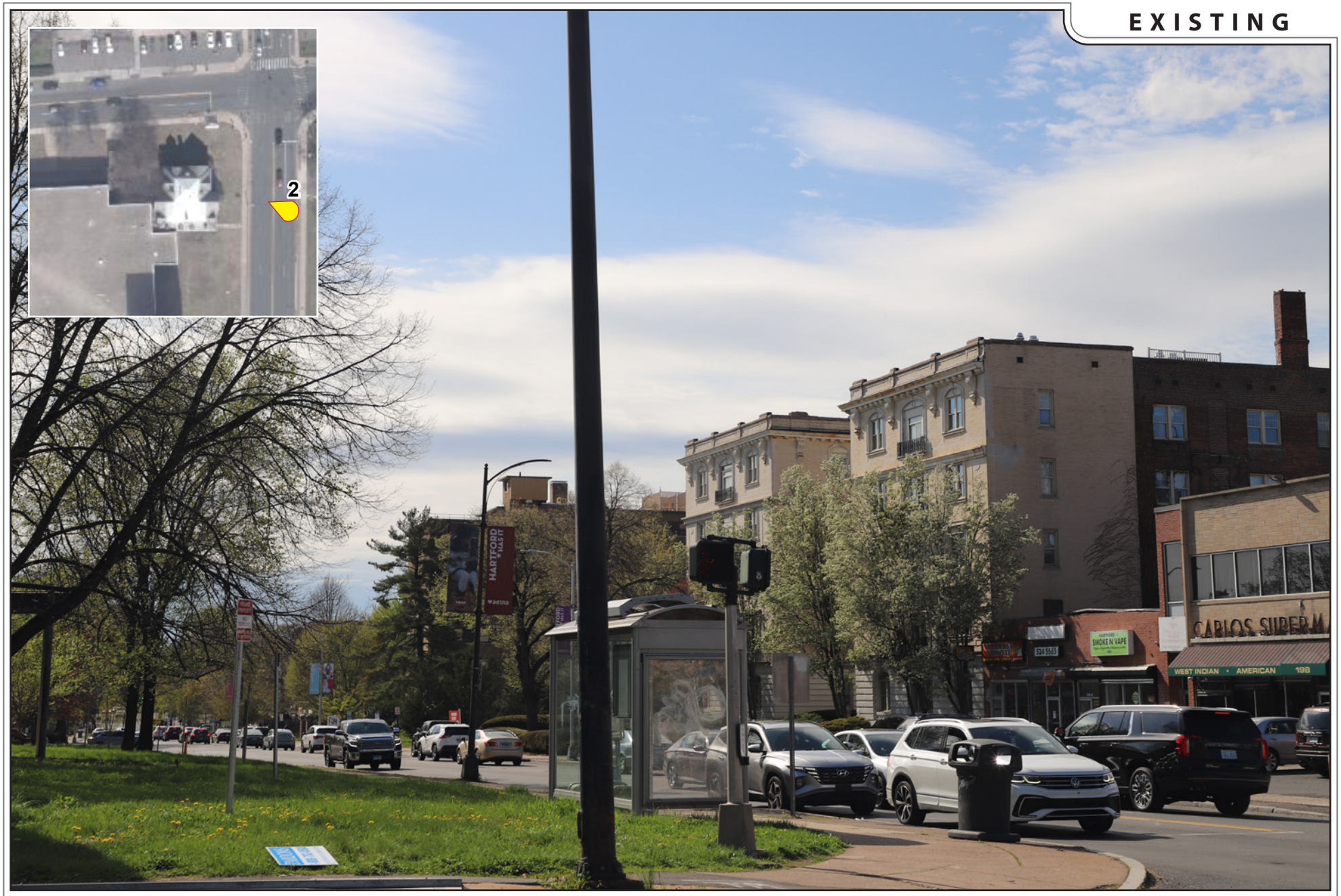
PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	IMLAY STREET - THE UNIVERSITY CENTER REAR PARKING AREA	NW	+/- 0.11 MILE

APT ENGINEERING & ENVIRONMENTAL

verizon

EXISTING



PHOTOGRAPHED ON 4/21/2025

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**SIGUORNEY STREET**	**WNW**	**+/- 0.13 MILE**

APT ENGINEERING & ENVIRONMENTAL

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**SIGUORNEY STREET**	**WNW**	**+/- 0.13 MILE**

APT ENGINEERING & ENVIRONMENTAL

verizon

EXISTING

PHOTOGRAPHED ON 4/21/2025

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**NILES STREET AT SIGUORNEY STREET**	**SW**	**+/- 0.12 MILE**

APT ENGINEERING & ENVIRONMENTAL

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**NILES STREET AT SIGUORNEY STREET**	**SW**	**+/- 0.12 MILE**

APT ENGINEERING & ENVIRONMENTAL

verizon

EXISTING

PHOTOGRAPHED ON 4/21/2025

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**NILES STREET**	**S**	**+/- 470 FEET**

APT ENGINEERING & ENVIRONMENTAL

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**NILES STREET**	**S**	**+/- 470 FEET**

APT ENGINEERING & ENVIRONMENTAL

verizon

EXISTING

PHOTOGRAPHED ON 4/21/2025

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	**LAUREL STREET**	**NE**	**+/- 0.11 MILE**

APT ENGINEERING & ENVIRONMENTAL

verizon

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	LAUREL STREET	NE	+/- 0.11 MILE

APT ENGINEERING & ENVIRONMENTAL

verizon

ATTACHMENT 6

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

Hartford 11 CT Relo

230 Farmington Ave

Hartford, CT 06105

April 24, 2026

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the installation of Verizon's antenna arrays to be mounted at 81.8' above ground level (AGL) on a rooftop located at 230 Farmington Avenue, Hartford, CT. The coordinates[1] of the facility are 41° 46' 5.01" N, 72° 41' 45.75" W.

Verizon is proposing to initially install nine (9) directional antennas (three sectors, three antennas per sector) to support its 4G LTE and 5G NR networks.

This report considers the proposed antenna configuration for Verizon, in addition to generic equipment configuration for T-Mobile currently located on the rooftop, to calculate the resulting percentage Maximum Permissible Exposure (% MPE) at ground level around the existing facility. The parameters considered in this analysis for T-Mobile are based on the construction drawings and reasonable assumptions when the information is unavailable/unattainable.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the documents referenced in Attachment A of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As defined in Verizon's Construction Drawings prepared by Centek Engineering, INC., dated 4/1/2026 (Rev. 3) for the subject location.

3. RF Exposure Calculation Methods

The results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{GRF^2 \times \text{EIRP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{\left(H^2 + V^2\right)}$

H = Horizontal Distance from antenna

V = Vertical Distance from center of antenna

Off Beam Loss is determined by the selected antenna patterns

GRF = Ground reflection factor of 1.6

These calculations assume that the antennas are operating at full power and 100 percent capacity, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not considered. As a result, the calculated power density and corresponding % MPE levels reported below are more conservative (higher) than the actual signal levels will be from the final installation.

The percentage of MPE values presented in this report reflect levels that one may encounter from one sector of a carrier's antennas. Most carriers use 3 or 4 sectors per site with azimuths approximately 90 or 120 degrees apart, respectively; therefore, one could not be standing in the main beam of multiple sectors at the same time. In cases where antenna models are not uniform across all sectors, the antenna model with the highest gain and/or electrical down-tilt was used in the calculations. This results in a conservative or "worst case" assumption for percent of MPE calculations.

4. Antenna Inventory

Table 1 below outlines the proposed antenna configurations for Verizon. The associated data model and antenna patterns for these specific antenna models are included in Attachment C.

Operator	Sector / Azimuth	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. / Elec. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 40°	750	160	15	5060	MX10FRO660-03	62.5	0/10	5.9	81.8
		850	160	15.1	5177		57	0/10		
		1900	160	18	10095		55	0/5		
		2100	240	18.2	15857		55.5	0/5		
		3500	20	13.8	480		62	0/5		
		3700	320	25.5	113540	MT6413-77A	-	0/2	2.5	81.8
	Beta / 150°	750	160	15	5060	MX10FRO660-03	62.5	0/10	5.9	81.8
		850	160	15.1	5177		57	0/10		
		1900	160	18	10095		55	0/5		
		2100	240	18.2	15857		55.5	0/5		
		3500	20	13.8	480		62	0/5		
		3700	320	25.5	113540	MT6413-77A	-	0/2	2.5	81.8
	Gamma / 255°	750	160	15	5060	MX10FRO660-03	62.5	0/12	5.9	81.8
		850	160	15.1	5177		57	0/12		
		1900	160	18	10095		55	0/6		
		2100	240	18.2	15857		55.5	0/6		
		3500	20	13.8	480		62	0/6		
		3700	320	25.5	113540	MT6413-77A	-	0/2	2.5	81.8

Table 1: Proposed Antenna Inventory [2] [3]

[2] Antenna configuration is in reference to Verizon's Radio Frequency Design Sheet dated 01/20/2026 and the Construction Drawings prepared by Centek Engineering, INC., dated 4/1/2026 (Rev. 3).

[3] Transmit power assumes 0 dB of cable loss.

5. Calculated % MPE Results

The calculated % MPE results for the proposed and generic antenna configurations are shown in Figure 1 below. Each frequency band and technology is calculated as well as the resulting cumulative percent of MPE. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 2 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

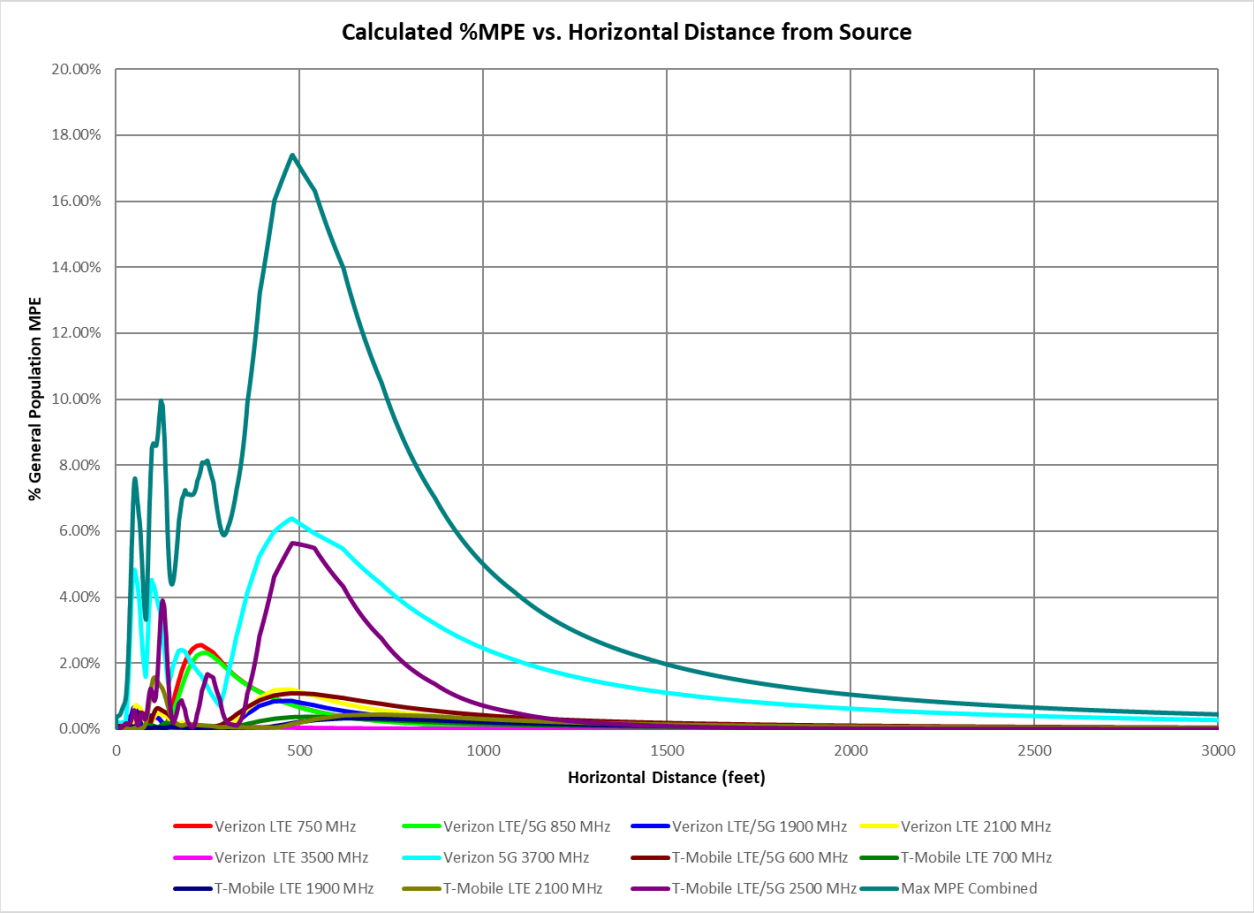


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (**17.40%** of the General Population limit) is calculated to occur at a horizontal distance of 480 feet away from the site. Please note that the percent of MPE calculations close to the site consider off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 650 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, power density levels vary based on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. Additionally, a six-foot height offset was considered in this analysis to account for the height of a person standing at ground level. As a result, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the final installation. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the site out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
T-Mobile LTE 1900 MHz	1	160.0	82.0	480	0.001874	1.000	0.19%
T-Mobile LTE 2100 MHz	1	240.0	82.0	480	0.001581	1.000	0.16%
T-Mobile LTE 700 MHz	1	80.0	82.0	480	0.001703	0.467	0.36%
T-Mobile LTE/5G 2500 MHz	1	320.0	82.0	480	0.056386	1.000	5.64%
T-Mobile LTE/5G 600 MHz	1	240.0	82.0	480	0.004357	0.400	1.09%
Verizon LTE 3500 MHz	1	20.0	81.8	480	0.000456	1.000	0.05%
Verizon 5G 3700 MHz	1	320.0	81.8	480	0.063797	1.000	6.38%
Verizon LTE 2100 MHz	1	240.0	81.8	480	0.011990	1.000	1.20%
Verizon LTE 750 MHz	1	160.0	81.8	480	0.003725	0.500	0.75%
Verizon LTE/5G 1900 MHz	1	160.0	81.8	480	0.008565	1.000	0.86%
Verizon LTE/5G 850 MHz	1	160.0	81.8	480	0.004180	0.567	0.74%
						Total	**17.40%**

Table 2: Maximum Percent of General Population Exposure Values [4] [5] [6]

[4] Frequencies listed are representative of the operating band and are not the specific operating frequency.

[5] The total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

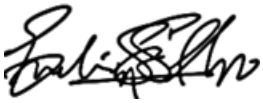
[6] Due to limited available information for T-Mobile, the antenna model and power used in this analysis are based on a standard deployment configuration commonly observed for T-Mobile in Connecticut.

6. Conclusion

The above analysis concludes that RF exposure levels from Verizon's proposed equipment configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE at ground level in consideration of all transmitters is calculated to be **17.40 % of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 480 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.1, ANSI/IEEE Std. C95.3, and FCC OET Bulletin 65 Edition 97-01.



April 23, 2026

Report Prepared By: Evelio Sotolongo
Senior RF Engineer
C Squared Systems, LLC — Date

April 24, 2026

Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC — Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2019, IEEE Standard Safety Levels With Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2021, IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields With Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure [7]

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

(B) Limits for General Population/Uncontrolled Exposure [8]

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

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[7] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[8] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

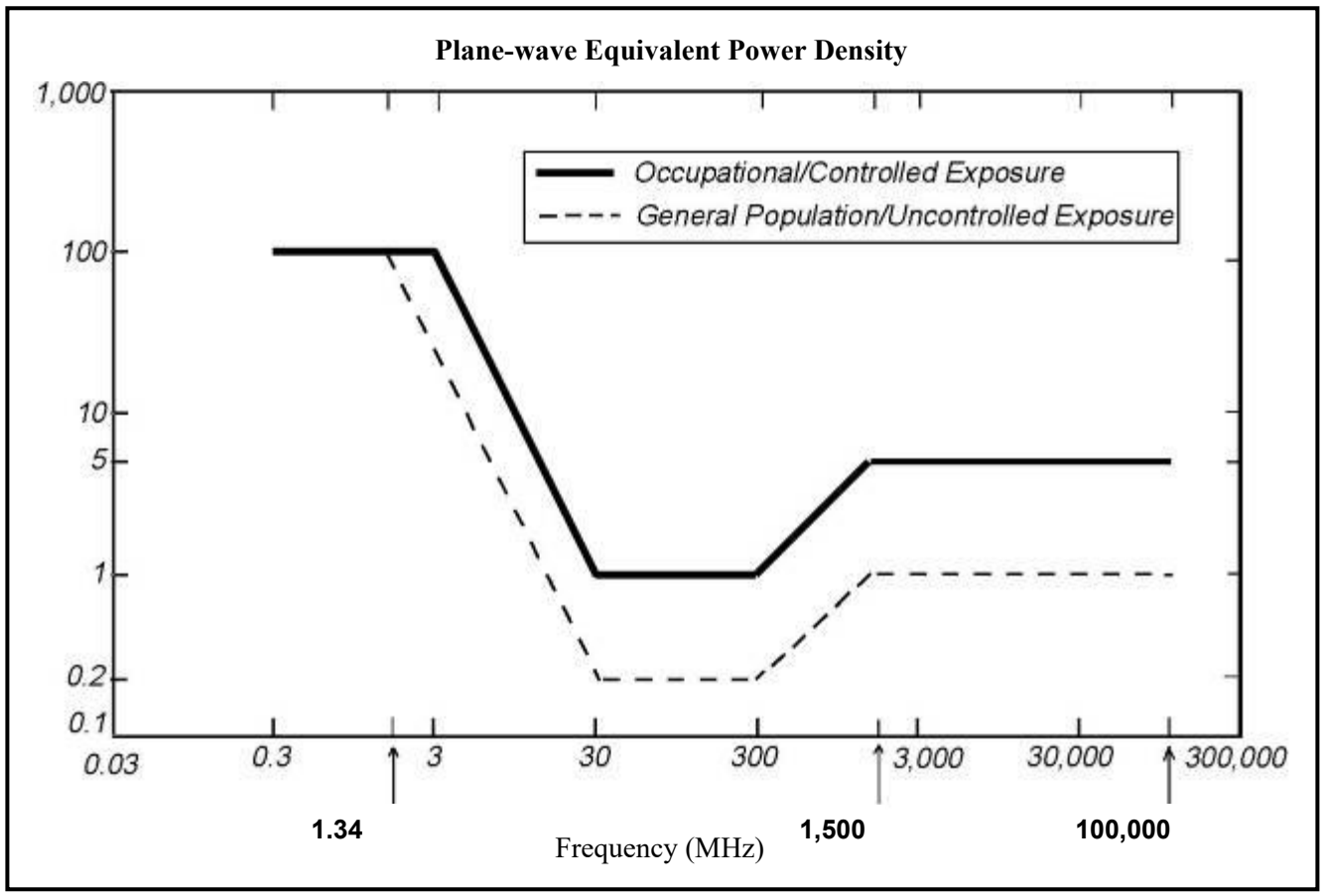
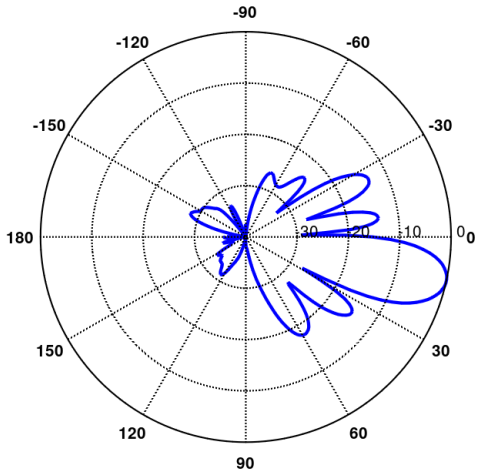


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

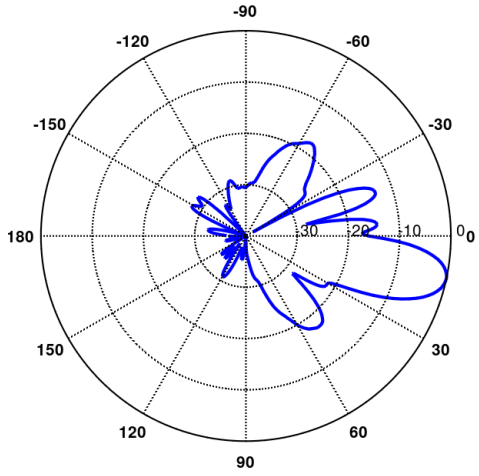
750 MHz

Manufacturer:	JMA
Model #:	MX10FRO660-03
Frequency Band:	698 - 806 MHz
Gain:	15.0 dBi
Electrical Down-Tilt:	12.0°
Vertical Beamwidth:	13.6°
Horizontal Beamwidth:	62.5°
Polarization:	±45°
Dimensions (L x W x D):	70.9” x 15.0” x 7.4”



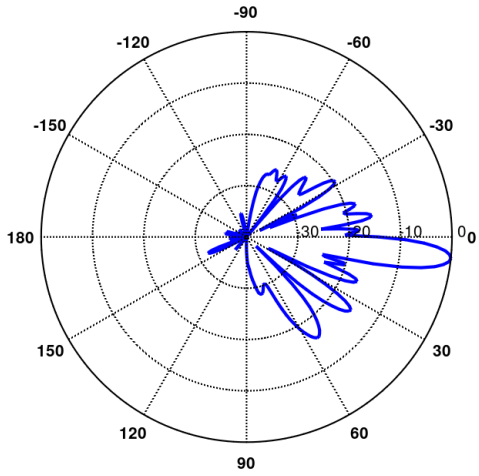
850 MHz

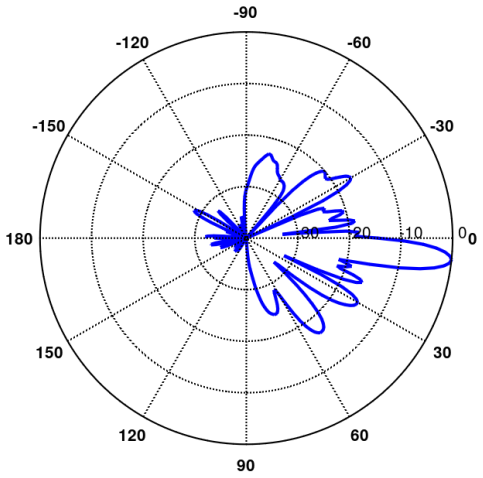
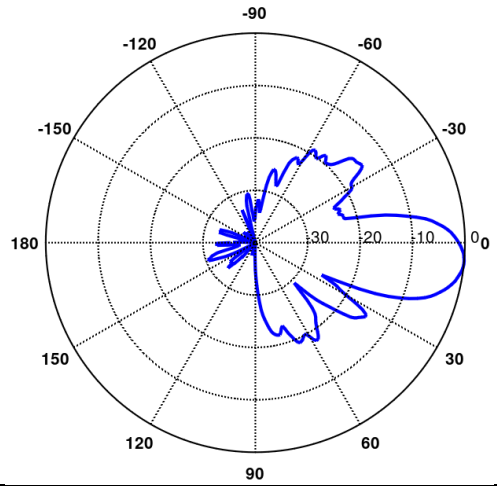
Manufacturer:	JMA
Model #:	MX10FRO660-03
Frequency Band:	806 - 894 MHz
Gain:	15.1 dBi
Electrical Down-Tilt:	12.0°
Vertical Beamwidth:	11.8°
Horizontal Beamwidth:	57.0°
Polarization:	±45°
Dimensions (L x W x D):	70.9” x 15.0” x 7.4”



1900 MHz

Manufacturer:	JMA
Model #:	MX10FRO660-03
Frequency Band:	1850 - 1990 MHz
Gain:	18.0 dBi
Electrical Down-Tilt:	6.0°
Vertical Beamwidth:	5.5°
Horizontal Beamwidth:	55.0°
Polarization:	±45°
Dimensions (L x W x D):	70.9” x 15.0” x 7.4”



2100 MHz Manufacturer: JMA Model #: MX10FRO660-03 Frequency Band: 1920 - 2200 MHz Gain: 18.2 dBi Electrical Down-Tilt: 6.0° Vertical Beamwidth: 5.5° Horizontal Beamwidth: 55.5° Polarization: ±45° Dimensions (L x W x D): 70.9” x 15.0” x 7.4”	
3500 MHz Manufacturer: JMA Model #: MX10FRO660-03 Frequency Band: 3400 - 3550 MHz Gain: 13.8 dBi Electrical Down-Tilt: 6.0° Vertical Beamwidth: 19.6° Horizontal Beamwidth: 62.0° Polarization: ±45° Dimensions (L x W x D): 70.9” x 15.0” x 7.4”	
3700 MHz Manufacturer: SAMSUNG Model #: MT6413-77A Frequency Band: 3700-3980 MHz Gain: 25.5 dBi Electrical Down-Tilt: 2° Vertical Beamwidth: N/A° Horizontal Beamwidth: N/A° Polarization: N/A° Dimensions (L x W x D): 29.53” x 15.75” x 5.51”	N/A

ATTACHMENT 7

Robinson+Cole

KENNETH C. BALDWIN

One State Street
Hartford, CT 06103
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

April 29, 2026

Via Certificate of Mailing

Arun Arulampalam, Mayor
City of Hartford
550 Main Street
Hartford, CT 06103

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 230 Farmington Avenue, Hartford, Connecticut**

Dear Mayor Arulampalam:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval for the installation of a wireless telecommunications facility on the roof of the building at 230 Farmington Avenue in Hartford (the "Property").

The facility will consist of the installation of nine (9) panel type antennas and nine (9) remote radio heads attached to new pipe masts and antenna support structures extending approximately 8.4' above the existing roof parapet. Equipment associated with the antennas will be placed on a steel platform also on the roof of the building. T-Mobile currently maintains a wireless facility on the roof of the building.

A copy of the Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

34457802-v1

Robinson+Cole

KENNETH C. BALDWIN

One State Street
Hartford, CT 06103
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

April 29, 2026

Via Certificate of Mailing

Owen Deautsch, Director of Planning
City of Hartford
550 Main Street
Hartford, CT 06103

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 230 Farmington Avenue, Hartford, Connecticut**

Dear Mr. Deautsch:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval for the installation of a wireless telecommunications facility on the roof of the building at 230 Farmington Avenue in Hartford (the "Property").

The facility will consist of the installation of nine (9) panel type antennas and nine (9) remote radio heads attached to new pipe masts and antenna support structures extending approximately 8.4' above the existing roof parapet. Equipment associated with the antennas will be placed on a steel platform also on the roof of the building. T-Mobile currently maintains a wireless facility on the roof of the building.

A copy of the Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

34457811-v1

Robinson+Cole

KENNETH C. BALDWIN

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Hartford, CT 06103
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kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

April 29, 2026

Via Certificate of Mailing

Laurelhart Condominium Association, Inc.
c/o White and Katzman
111 Robert Street, Suite G1
East Hartford, CT 06108-3666

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 230 Farmington Avenue, Hartford, Connecticut**

Dear Sir or Madam:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval for the installation of a wireless telecommunications facility on the roof of the building at 230 Farmington Avenue in Hartford (the "Property").

The facility will consist of the installation of nine (9) panel type antennas and nine (9) remote radio heads attached to new pipe masts and antenna support structures extending approximately 8.4' above the existing roof parapet. Equipment associated with the antennas will be placed on a steel platform also on the roof of the building. T-Mobile currently maintains a wireless facility on the roof of the building.

A copy of the Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

34457828-v1

ATTACHMENT 8

Robinson+Cole

KENNETH C. BALDWIN

One State Street
Hartford, CT 06103
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

April 29, 2026

Via Certificate of Mailing

«Name_and_Address»

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for the Installation of a Wireless Telecommunications Facility at 230 Farmington Avenue, Hartford, Connecticut**

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") seeking approval for the installation of a wireless telecommunications facility on the roof of a six story building at 230 Farmington Avenue in Hartford (the "Property"). T-Mobile currently maintains a facility on the roof of the building at the Property.

The proposed Cellco facility will consist of the installation of nine (9) panel type antennas and nine (9) remote radio heads on the roof of the building. Equipment associated with the antennas will be placed on a steel platform on the roof of the building. *See* attached project plans.

This notice is being sent to you because you are listed on the City Assessor's records as an owner of land that abuts the Property. If you have any questions regarding the Petition, the Council's process for reviewing the Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,

Kenneth C. Baldwin

Attachment

34457835-v1

verizon

HARTFORD 11 CT RELO
230 FARMINGTON AVENUE
HARTFORD, CT 06105

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
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13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE VERIZON WIRELESS CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO "EXTRA" WILL BE ALLOWED FOR MISSED ITEMS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE: BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

SITE LOCATION MAP

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. INSTALL (3) PROPOSED SAMSUNG MT6413-77A ANTENNAS
2. INSTALL (6) PROPOSED JMA MX10FRO660-03 ANTENNAS
3. INSTALL (3) PROPOSED JMA 91900314 SIDE-BY-SIDE ANTENNA MOUNTS
4. INSTALL (3) PROPOSED RAYCAP OVP-6, TYP (1) PER SECTOR
5. INSTALL (3) PROPOSED 6x12 HYBRID CABLES, TYP (1) PER SECTOR
6. INSTALL (3) PROPOSED SAMSUNG RF4439d-25A RADIOS
7. INSTALL (3) PROPOSED SAMSUNG RF4461d-13A RADIOS
8. INSTALL (3) PROPOSED SAMSUNG RT4423-48A RADIOS
9. INSTALL (3) PROPOSED ANTENNA STEEL FRAMES, TYP. (1) PER SECTOR
10. INSTALL CABLE TRAYS AND STEP OVERS AS SHOWN HEREIN. FINAL LOCATION OF STEP-OVERS TO BE COORDINATED WITH PROPERTY OWNER
11. INSTALL NEW EQUIPMENT PLATFORM AND ASSOCIATED CABINETS

PROJECT SUMMARY (STRUCTURAL)

FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 AND S-2 FOR ADDITIONAL DETAILS. FOR REQUIRED SPECIAL INSPECTIONS, NOTES, AND REQUIREMENTS, SEE SHEET(S) N-2 FOR ADDITIONAL DETAILS.

1. PROPOSED ELEVATED STEEL EQUIPMENT PLATFORM AND ANTENNA SECTOR FRAMES TO BE INSTALLED ON ROOFTOP.

PROJECT INFORMATION

SITE NAME:	HARTFORD 11 CT RELO
SITE ADDRESS:	230 FARMINGTON AVENUE HARTFORD, CT 06105
APPLICANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
CONTACT PERSON:	BRYAN SARCHI AIROSMITH DEVELOPMENT. INC. (480) 734-4970
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT. 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
SITE COORDINATES:	LATITUDE: 41°-46'-05.01" N LONGITUDE: 72°-41'-45.75" W GROUND ELEVATION: ±67.58' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FAA-2C SURVEY PREPARED BY CENTEK ENGINEERING, DATED 03/05/26.

SHEET INDEX

SHEET. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	3
N-1	SPECIFICATIONS, NOTES, AND ANT. SCHEDULE	3
N-2	MODIFICATION INSPECTION REQUIREMENTS	3
C-1	ROOF PLAN, EQUIPMENT PLAN, AND ELEVATION	3
C-2	ANTENNA PLAN AND ELEVATION	3
C-3	TYPICAL EQUIPMENT DETAILS	3
RF-1	RF EQUIPMENT DETAILS	3
RF-2	RF PLUMBING DIAGRAM	3
S-1	EQUIPMENT PLATFORM DETAILS	3
S-2	ANTENNA FRAME DETAILS	3
E-1	ELECTRICAL ROOF AND EQUIPMENT PLANS	3
E-2	ELECTRICAL RISER DIAGRAM	3
E-3	ELECTRICAL GROUNDING SCHEMATIC DIAGRAM	3
E-4	ELECTRICAL GROUNDING PLAN	3
E-5	TYPICAL ELECTRICAL DETAILS	3
E-6	TYPICAL ELECTRICAL DETAILS	3
E-7	ELECTRICAL SPECIFICATIONS	3

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	TJR		CONSTR. DRAWINGS - REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
0	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CONSTRUCTION
1	11/17/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
(203) 488-0580
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com
Centered on Solutions

VERIZON WIRELESS

SITE NAME: HARTFORD 11 CT RELO

230 FARMINGTON AVENUE
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

TITLE SHEET

T-1

SHEET NO. 1 OF 17

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- ULTIMATE DESIGN SPEED: 120 MPH (Vult)
  (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

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STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX
2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ANTENNA/APPURTENANCE SCHEDULE

SECTOR	(P) ANTENNA (QTY)	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(P) RRU (QTY)	(P) OVP/HYBRID (QTY)
A1	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	40°	(P) SAMSUNG: RT4423-48A (1), (P) SAMSUNG: RF4461d-13A (1)	(P) RAYCAP: OVP-6 (3) (P) HYBRID 6x12 (3) HYBRID LENGTH: ALPHA: ±200' BETA: ±40' GAMMA: ±60'
A2	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	40°	(P) SAMSUNG: B5/B66A RRH ORAN (RF4439d-25A) (1)	
A3	(P) SAMSUNG: MT6413-77A (1)	28.9 x 15.75 x 5.51	±81'-10"	40°		
B1	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	150°	(P) SAMSUNG: RT4423-48A (1), (P) SAMSUNG: RF4461d-13A (1)	
B2	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	150°	(P) SAMSUNG: B5/B66A RRH ORAN (RF4439d-25A) (1)	
B3	(P) SAMSUNG: MT6413-77A (1)	28.9 x 15.75 x 5.51	±81'-10"	150°		
C1	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	255°	(P) SAMSUNG: RT4423-48A (1), (P) SAMSUNG: RF4461d-13A (1)	
C2	(P) JMA: MX10FRO660-03 (1)	70.9 x 15.0 x 7.4	±81'-10"	255°	(P) SAMSUNG: B5/B66A RRH ORAN (RF4439d-25A) (1)	
C3	(P) SAMSUNG: MT6413-77A (1)	28.9 x 15.75 x 5.51	±81'-10"	255°		

NOTE:
ALL HYBRID/COAX LENGTHS TO BE MEASURED AND VERIFIED IN FIELD BEFORE ORDERING

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
0	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CONSTRUCTION
A	11/13/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CLIENT REVIEW

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SCALE: AS NOTED
JOB NO. 25000.03

SPECIFICATIONS, NOTES AND ANT. SCHEDULE

N-1

SHEET NO. 2 OF 17

MODIFICATION INSPECTION REPORT REQUIREMENTS

PRE-CONSTRUCTION		DURING CONSTRUCTION		POST-CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	–	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
X	EOR APPROVED STEEL SHOP DRAWINGS	–	EARTHWORK BACKFILL MATERIAL AND COMPACTION	–	POST-INSTALLED ANCHOR ROD PULL-OUT TEST
X	EOR APPROVED POST-INSTALLED ANCHOR MPII	–	REBAR AND FORMWORK GEOMETRY VERIFICATION	–	PHOTOGRAPHS
–	EOR APPROVED FRP SHOP DRAWINGS	–	CONCRETE TESTING	X	STEEL INSPECTION
–	EOR APPROVED FRP CALCULATIONS	X	STEEL INSPECTION		
–	FABRICATION INSPECTION	X	POST INSTALLED ANCHOR ROD VERIFICATION		
–	FABRICATOR CERTIFIED WELDER INSPECTION	–	BASE PLATE GROUT VERIFICATION		
X	MATERIAL CERTIFICATIONS	–	CONTRACTOR'S CERTIFIED WELD INSPECTION		
		–	ON-SITE COLD GALVANIZED VERIFICATION		
		–	CONTRACTOR AS-BUILT REDLINE DRAWINGS		
		–	HOST BUILDING (BEARING WALL/PARAPET ETC..) INTEGRITY VERIFICATION PRIOR TO ANY INSTALLATIONS		
		–	HOST BUILDING (ROOF OPENING) FRAMING VERIFICATION PRIOR TO ANY INSTALLATIONS		
NOTES	1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS				
	2. (X) DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT				
	3. (–) DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT				
	4. EOR – ENGINEER OF RECORD				
	5. MPII – MANUFACTURER'S PRINTED INSTALLATION GUIDELINES				

MODIFICATION INSPECTION NOTES:

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).
2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.
3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.
4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.
5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:
   - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   - WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON-SITE INSPECTIONS.
   - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON-SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE MI UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:
   - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   - WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON-SITE INSPECTIONS.
   - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:
   - CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   - WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS-BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:
   - PRE-CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   - DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   - POST-CONSTRUCTION: FINAL CONDITION OF THE SITE.

SLAB DRILLING NOTES

1. NO DRILLING OF SLAB WILL BE PERMITTED WITHOUT THE ENGINEER'S APPROVAL. X-RAY ALL CONCRETE AT AREAS REQUIRING PENETRATIONS/POST INSTALLED ANCHORS PRIOR TO CUTTING/DEMO.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PRODUCING AN OPENING OF THE SPECIFIED SIZE IN THE EXISTING CONCRETE SLAB. AS PART OF THIS RESPONSIBILITY, THE CONTRACTOR SHALL USE ALL POSSIBLE MEANS TO ENSURE THAT THE STEEL REINFORCING ELEMENTS OF THE CONCRETE SLAB ARE NOT DAMAGED DURING THE CONSTRUCTION. ALL DAMAGE SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL TAKE ALL MEANS NECESSARY OR AS DIRECTED BY THE ENGINEER TO PROTECT THE PROPERTY AND INHABITANTS OF THE BUILDING DURING THE CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERTY OR HARM TO THE INHABITANTS CAUSED BY THE CONSTRUCTION OPERATIONS.
4. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED SEQUENCE OF OPERATIONS OF CUTTING OPERATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF THE MEANS AND METHODS OF LOCATING THE STEEL REINFORCEMENTS WITHIN THE AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF CONCRETE SLAB, LIST OF EQUIPMENT TO BE USED, MEANS OF PROTECTING THE BUILDING FROM HARM, AND LIST OF PRODUCTS TO BE USED TO REPAIR ANY DAMAGED CONCRETE.
5. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE ENGINEER BEFORE PROCEEDING AND SHALL NOTIFY THE ENGINEER AT LEAST 24 HOURS PRIOR TO THE START OF ANY WORK.
6. THE LOCATION OF EACH SLAB PENETRATION SHALL BE AS SHOWN ON THE PLANS BUT MAY BE VARIED AS NEEDED AND AS APPROVED BY THE ENGINEER SO AS TO AVOID ALL SLAB EMBEDMENTS, INCLUDING REINFORCING BARS AND POST-TENSIONING STRANDS, THE CONTRACTOR SHALL DRILL A PILOT HOLE AT THE SELECTED LOCATION OF EACH HOLE TO VERIFY THE SLAB THICKNESS AND TO COORDINATE THE RESULTING LOCATION OF THE PENETRATION BETWEEN FLOORS.
7. THE CONTRACTOR SHALL EMPLOY THE SERVICES OF AN APPROVED TESTING LABORATORY TO LOCATE ALL STEEL REINFORCING WITHIN THE POST-TENSIONED FLOOR SLAB. AS PART OF THIS WORK, THE TESTING LABORATORY AND CONTRACTOR SHALL BE PROVIDED WITH COPIES OF THE ORIGINAL STRUCTURAL PLANS OF THE BUILDING FOR HELP IN LOCATING ANY EMBEDDED ITEMS. THE TESTING LABORATORY AND CONTRACTOR SHALL CLEARLY MARK THE LOCATIONS OF ALL EMBEDDED STEEL ITEMS.
9. IF DURING ANY DRILLING OR CUTTING OPERATION, IT BECOMES APPARENT THAT ANY EMBEDDED STEEL ITEM HAS BEEN HIT, DAMAGED, OR CUT; DRILLING SHALL IMMEDIATELY CEASE AND THE ENGINEER NOTIFIED. THE ENGINEER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXTENT OF ANY DAMAGE THAT MAY HAVE OCCURRED AND THE MEANS OF REPAIRING THE DAMAGE.THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL REPAIRS NEEDED AS THE RESULT OF THE DRILLING OR CUTTING OPERATIONS.

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

HOST STRUCTURE & EQUIPMENT PLATFORM

A STRUCTURAL ANALYSIS OF THE HOST STRUCTURE & EQUIPMENT PLATFORM WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND WAS FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/23/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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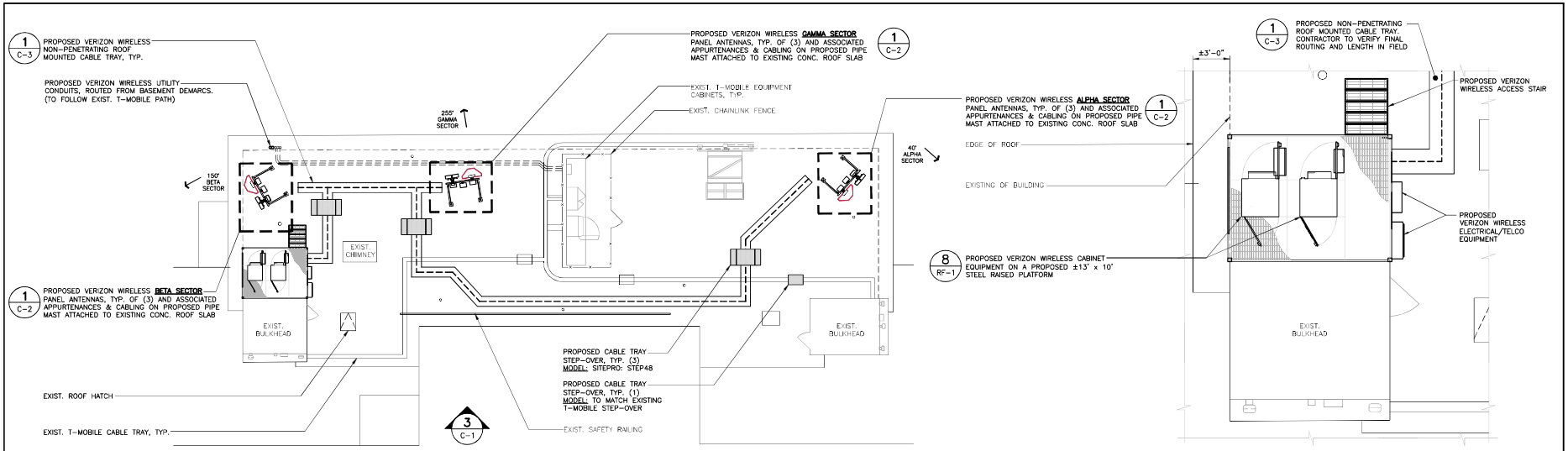
MODIFICATION INSPECTION REQUIREMENTS

N-2

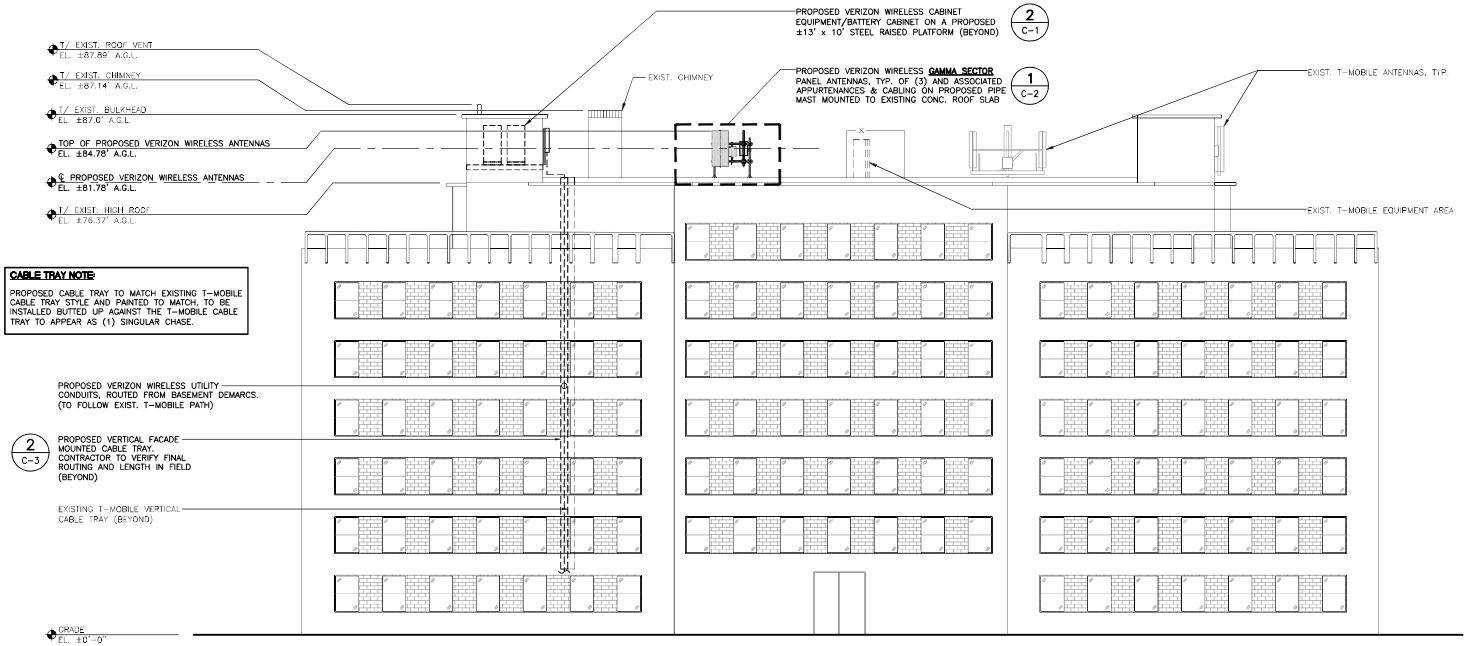


1 C-1 **ROOF PLAN - PROPOSED CONDITIONS**
SCALE: 1" = 8'

APPROXIMATE NORTH

2 C-1 **EQUIPMENT PLAN - PROPOSED CONDITIONS**
SCALE: 1" = 8'

APPROXIMATE NORTH



3 C-1 **BUILDING ELEVATION - PROPOSED CONDITIONS**
SCALE: 1" = 10'

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
1	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
3	01/26/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
4	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
5	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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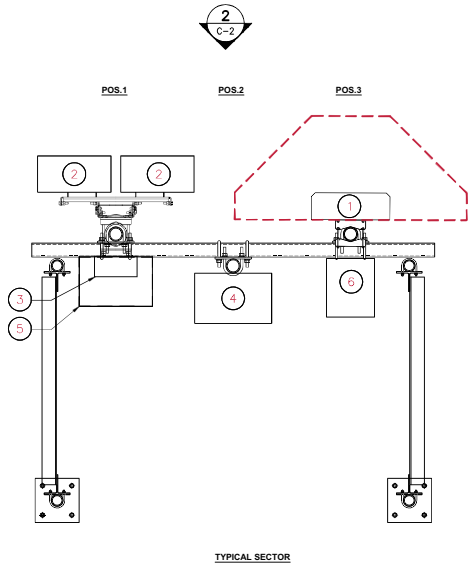
ROOF PLAN, EQUIPMENT PLAN AND ELEVATION

C-1

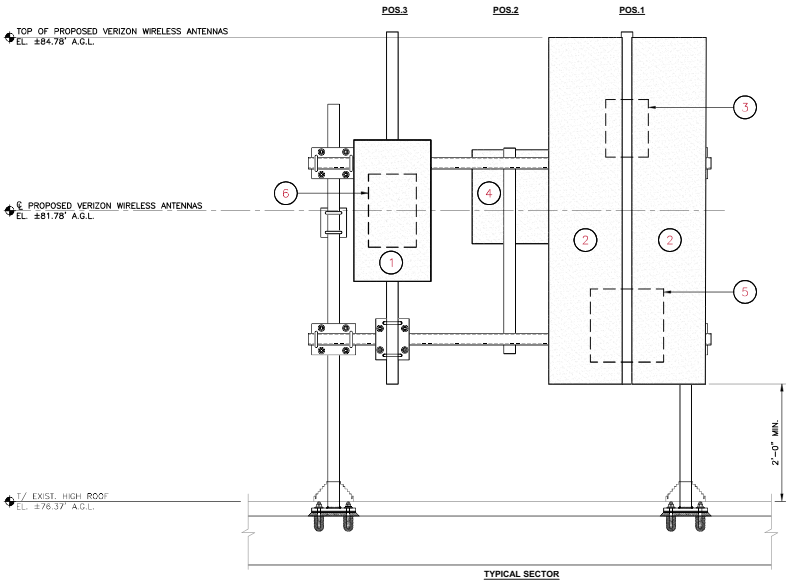
SHEET NO. 4 OF 17

KEY/LEGEND

	(E/P) RF EQUIPMENT	QTY.
1	(P) SAMSUNG: MT6413-77A W/ INTEGRATED RRU	3
2	(P) JMA: MX10FRO660-03	6
3	(P) SAMSUNG: RADIO: RT4423-48A	3
4	(P) SAMSUNG: RADIO: RF4439D-25A	3
5	(P) SAMSUNG: RADIO: RF4461d-13A	3
6	(P) RAYCAP: OVP-6 (1 PER SECTOR)	3



1 C-2 **ANTENNA SECTOR MOUNTING CONFIGURATION PLAN - PROPOSED**
SCALE: 1" = 1' - 0"



2 C-2 **ANTENNA SECTOR MOUNTING ELEVATION - PROPOSED**
SCALE: 1" = 1' - 0"

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	12/19/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
A	12/12/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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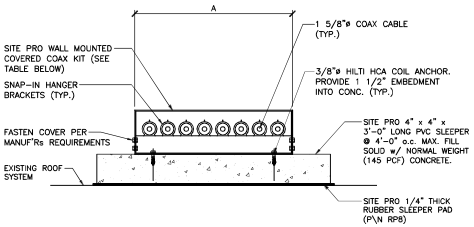
ANTENNA PLAN AND ELEVATION

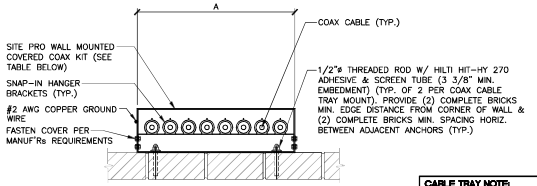
C-2

SHEET NO. 5 OF 17



NO. CABLES	SITE PRO ROOF MOUNTED COVERED COAX KIT (P/N)	A	SITE PRO COAX 0°-45° SPLICE
4	WMC4	11 1/2"	SP1573
8	WMC8	21 1/2"	SP1574
12	WMC12	31"	SP1597

1 C-3 ROOF MOUNTED CABLE SUPPORT
SCALE: NOT TO SCALE

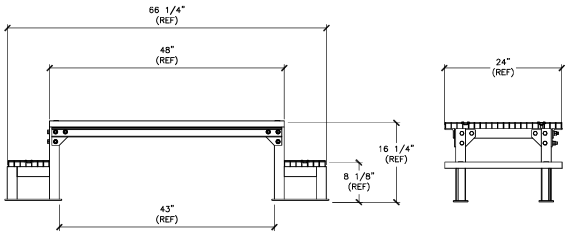


NO. CABLES	SITE PRO WALL MOUNTED COVERED COAX KIT (P/N)	A
4	WMC4	11 1/2"
8	WMC8	21 1/2"
12	WMC12	31"

CABLE TRAY NOTE:

PROPOSED CABLE TRAY TO MATCH EXISTING T-MOBILE CABLE TRAY STYLE AND PAINTED TO MATCH. TO BE INSTALLED BUTTED UP AGAINST THE T-MOBILE CABLE TRAY TO APPEAR AS (1) SINGULAR CHASE.

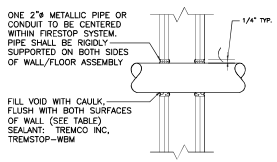
2 C-3 VERTICAL/HORIZ. COAX CABLE TRAY ATTACHMENT DETAIL (BRICK WALL)
SCALE: NOT TO SCALE



SITEPRO1: STEP-48

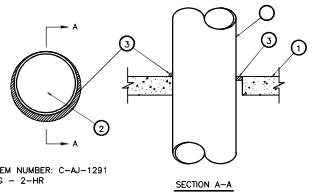
3 C-3 ROOF MOUNTED GALVANIZED STEP-OVER DETAIL
SCALE: NOT TO SCALE

PIPE OR CONDUIT	ANNULAR SPACE IN.	MIN. FILL MATERIAL THICKNESS	F RATING HR
PIPE	3/4"	1 1/4"	2
CONDUIT	3/4"	3/4"	1



UL SYSTEM NUMBER: WL1051
F RATING – 1 & 2 HR.

4 C-3 PIPE AND CONDUIT PENETRATION DETAIL IN GYPSUM WALLBOARD
SCALE: NOT TO SCALE



UL SYSTEM NUMBER: C-AJ-1291
F RATING – 2-HR

SECTION A-A

6 C-3 METAL PIPE THROUGH CONCRETE FLOOR/ WALL OR BLOCK WALL
SCALE: NOT TO SCALE

NOTES:

1. FLOOR OR WALL ASSEMBLY – MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 30-7/8 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

   A. STEEL FLOOR UNIT/FLOOR ASSEMBLY (NOT SHOWN) – AS AN ALTERNATE TO ITEM 1, THE FLOOR ASSEMBLY MAY CONSIST OF A FLUTED STEEL FLOOR UNIT/ CONCRETE FLOOR ASSEMBLY. THE FLOOR ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL FLOOR CEILING DESIGN IN THE FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   B. CONCRETE – MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE, AS MEASURED FROM THE TOP PLANE OF THE FLOOR UNITS.

   C. STEEL FLOOR AND FORM UNITS* – COMPOSITE OR NON-COMPOSITE 1-1/2 TO 3 IN. DEEP FLUTED GALV STEEL UNITS AS SPECIFIED IN THE INDIVIDUAL FLOOR-CEILING DESIGN. MAX DIAM OF OPENING IS 30-7/8 IN.

2. THROUGH-PENETRANT – ONE METALLIC PIPE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. TO MAX 7/8 IN. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:

   A. STEEL PIPE NOM 30 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

   B. IRON PIPE NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.

   C. COPPER PIPE NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

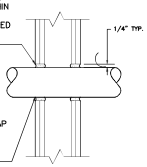
   D. COPPER TUBING NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

   E. CONDUIT NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT.

   F. CONDUIT NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT).

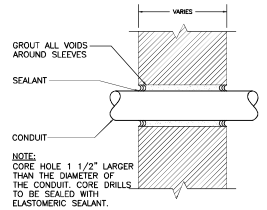
3. FILL, VOID OR CAVITY MATERIAL* – SEALANT – MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. AT THE POINT CONTACT LOCATION BETWEEN PIPE AND CONCRETE, A MIN 1/4 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE/PIPE INTERFACE ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL.

MAX. DIA. OF THROUGH PENETRANT	NOMINAL ANNULAR SPACE IN.	FILL MATERIAL TYPE
1"	1/2"	FSP 1100 PUTTY
2"	1"	FS 1900 SEALANT



UL SYSTEM NUMBER: WL2038
F RATING – 1 & 2 HR.

5 C-3 PVC CONDUIT PENETRATION DETAIL IN GYPSUM WALLBOARD
SCALE: NOT TO SCALE

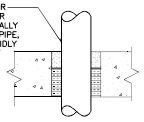


7 C-3 PIPE AND CONDUIT PENETRATION DETAIL IN NON-RATED PARTITION
SCALE: NOT TO SCALE

FLOOR OR WALL	MIN. THICK.	MAX. PIPE DIA.	MIN. ANNULAR SPACE	MAX. ANNULAR SPACE	MIN. FILL MAT. THICK.	MIN. FORM. MAT. THICK.	F RATING
F	3 3/4"	1 1/2"	3/8"	2 1/8"	1"	2 3/4"	2
F	3 3/4"	6"	3/8"	1"	1"	2 3/4"	2
F	3 3/4"	6"	3/8"	1"	2"	1 3/4"	2
F	4 1/2"	1 1/2"	3/8"	2 1/8"	1"	3 1/2"	3
F	4 1/2"	6"	3/8"	3/4"	1"	3 1/2"	3
F	4 1/2"	6"	3/8"	1"	2"	2 1/2"	3
W	5 1/2"	1 1/2"	3/8"	2 1/8"	1"	3 1/2"	3
W	5 1/2"	6"	3/8"	3/4"	1"	3 1/2"	3
W	6 1/2"	1 1/2"	3/8"	2 1/8"	2"	2 1/2"	3
W	6 1/2"	6"	3/8"	1"	2"	2 1/2"	3

THROUGH PENETRANTS
ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL.

FORMING MATERIAL SHALL BE A MIN. OF 1 1/2" THICK OF MIN. 4.0 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED IN OPENING, USG INTERIORS-TYPE SAF



THICKNESS OF SEALANT APPLIED FLUSH W/THE TOP SURFACE OF BOTH SIDES OF FLOOR/WALL (SEE TABLE), USG INTERIORS-TYPE SS

UL SYSTEM NUMBER: CAJ1020

F RATING – 3 HR.

8 C-3 PIPE AND CONDUIT PENETRATION DETAIL IN CONCRETE OR MASONRY
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
A	11/21/2025	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW
B	12/18/2025	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
1	01/20/2026	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
2	02/10/2026	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
3	04/01/2026	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY

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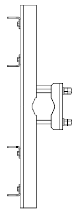
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

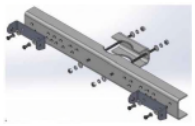
TYPICAL EQUIPMENT DETAILS

C-3

SHEET NO. 6 OF 17



PLAN VIEW



ANTENNA MOUNT ISOMETRIC

DUAL ANTENNA MOUNTING KIT	
EQUIPMENT	DESCRIPTION
MOUNT MAKE: JMA MODEL: 91900314	• SIDE-BY-SIDE MOUNTING KIT, ACCOMMODATES (2) COMPATABLE ANTENNAS • 2 BRACKETS REQUIRED FOR 4'-6' ANTENNAS • 3 BRACKETS REQUIRED FOR 6'-8' ANTENNAS

1 RF-1 **PROPOSED DUAL ANTENNA MOUNT DETAIL**
SCALE: NOT TO SCALE

MX10FRO660-03

ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: JMA MODEL: MX10FRO660-03	70.9"H x 15.0"W x 7.4"D	±57.3 LBS.
NOTES: 1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.		

2 RF-1 **SECTOR ANTENNA DETAIL**
NOT TO SCALE

MT6413-77A

ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: MT6413-77A	28.90"H x 15.75"W x 5.51"D	±57.3 LBS.
NOTES: 1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING. 2. ANTENNA HAS ITS OWN BUILT-IN RRU.		

3 RF-1 **PROPOSED ANTENNA DETAIL**
SCALE: NOT TO SCALE

RVZDC-6627-PF-48

OVER VOLTAGE PROTECTION BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: RVZDC-6627-PF-48	29.5"H x 16.5"W x 12.6"D	32 LBS.
NOTES: 1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING. 2. PROVIDES DC SURGE PROTECTION FOR 12 REMOTE RADIO UNITS.		

4 RF-1 **PROPOSED OVER-VOLTAGE PROTECTION BOX**
SCALE: NOT TO SCALE

RT4423-48A

REMOTE RADIO UNIT (RRU)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RT4423-48A	8.7"H x 11.8"W x 5"D	±18.7 LBS.
NOTES: 1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.		

5 RF-1 **PROPOSED REMOTE RADIO UNIT DETAIL**
SCALE: NOT TO SCALE

RF4461d-13A

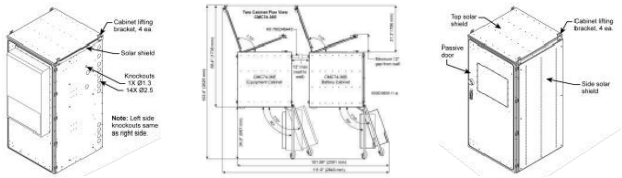
REMOTE RADIO UNIT (RRU)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF4461d-13A	14.96"H x 14.96"W x 10.23"D	79.1 LBS.
NOTES: 1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.		

6 RF-1 **PROPOSED REMOTE RADIO UNIT DETAIL**
SCALE: NOT TO SCALE

RF4439d-25A

REMOTE RADIO UNIT (RRU)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF4439d-25A	14.96"H x 14.96"W x 10.04"D	74.7 LBS.
NOTES: 1. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONFIRM FINAL EQUIPMENT MAKE/MODEL AND QUANTITY SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.		

7 RF-1 **PROPOSED REMOTE RADIO UNIT DETAIL**
SCALE: NOT TO SCALE



EQUIPMENT / BATTERY CABINET & BATTERY CABINET		
CABINET TYPE	DIMENSIONS	TOTAL WEIGHT WITH EQUIPMENT & BATTERIES
VERIZON EQUIPMENT CABINET	76"H x 38"W x 38"D	NOT TO EXCEED 2,200 LBS.
VERIZON BATTERY CABINET	76"H x 38"W x 38"D	NOT TO EXCEED 2,200 LBS.
NOTES: 1. CONTRACTOR TO CONFIRM CABINET MAKE/MODEL/SUBMODEL AND ALL OPTIONAL FEATURES AND QUANTITIES WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING. IF CABINET SPECIFICATIONS EXCEED THE ABOVE DIMENSION & WEIGHT LIMITATIONS, CONTACT THE ENGINEER OR RECORD PRIOR TO ORDERING.		

8 RF-1 **EQUIPMENT CABINET / BATTERY CABINET**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	12/31/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
-1	12/23/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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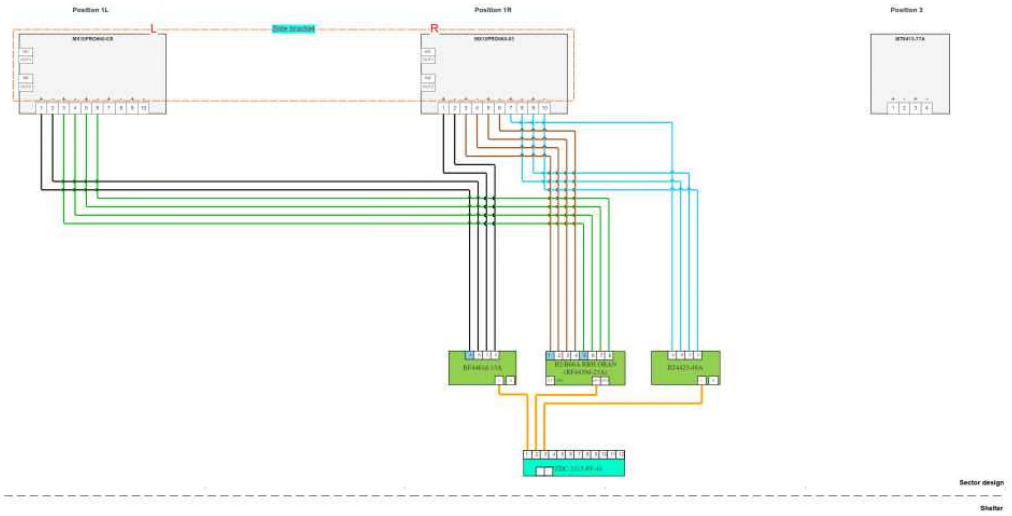
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

RF EQUIPMENT DETAILS

RF-1

SHEET NO. 7 OF 17



Alpha
(Proposed)

Legends

RET dc signal capable port

700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC

Coax
Coax Jumper
Sectors Shared Equipments

Notes:

-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions

TYPICAL SECTOR

1 / RF-2 **PROPOSED RF PLUMBING DIAGRAM**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS -- REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS -- REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS -- REVISED PER CLIENT COMMENTS
0	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS -- ISSUED FOR CONSTRUCTION
A	11/13/25	ZRKW	TJR	CONSTR. DRAWINGS -- ISSUED FOR CLIENT REVIEW

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RF PLUMBING DIAGRAM

RF-2

SHEET NO. 8 OF 17

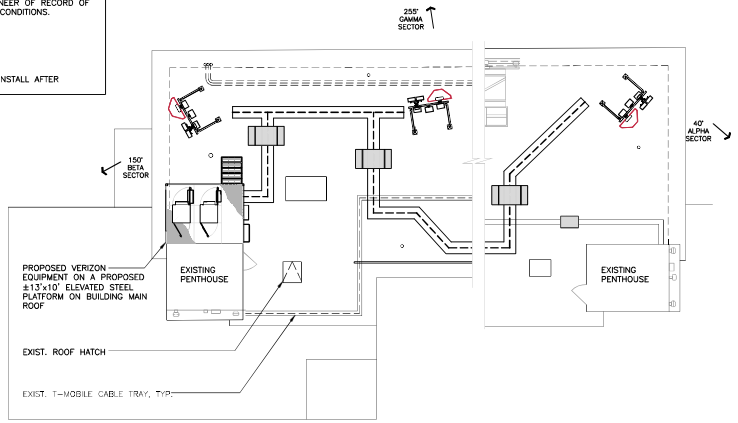
PLAN NOTES AND LEGEND

1. VERIFY ALL DIMENSIONS, ELEVATIONS, EXISTING FRAMING MEMBER SIZES AND GENERAL CONDITIONS PRIOR TO COMMENCEMENT OF WORK. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND EXISTING CONDITIONS.

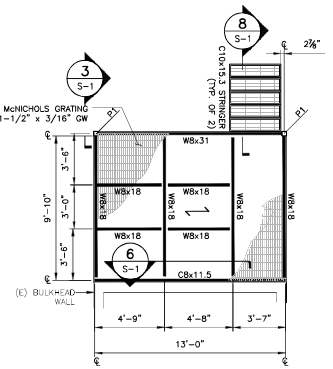
INDICATES HSS4x4x1/4 ASTM A500 GR. B (F_y = 46ksi) STEEL POST.

INDICATES SPAN DIRECTION.

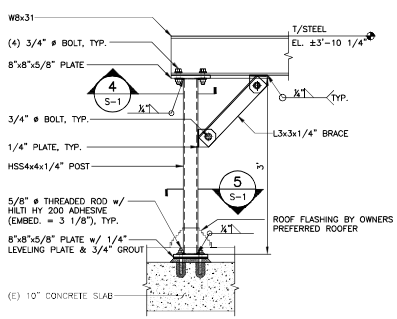
K.B. INDICATES L3x3x1/4 ASTM A36 (Fy=36 KSI) STEEL ANGLE. INSTALL AFTER EQUIPMENT CABINETS ARE SET.



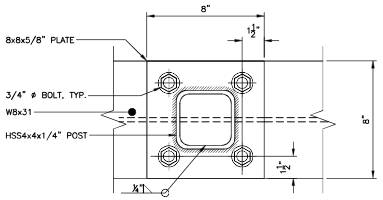
1 S-1 **PROPOSED ROOF PLAN**
SCALE: 1" = 10'-0"



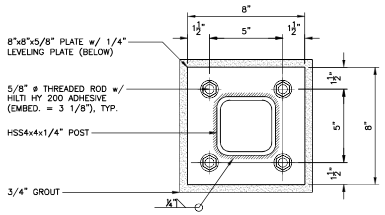
2 S-1 **FRAMING PLAN**
SCALE: 1/4" = 1'-0"



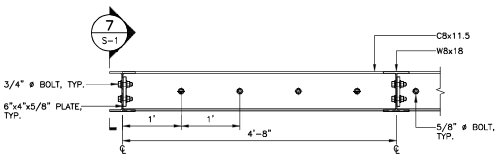
3 S-1 **POST SECTION**
SCALE: 1" = 1'-0"



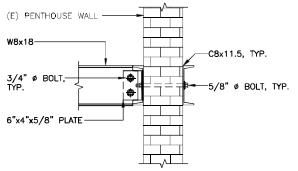
4 S-1 **TOP PLATE SECTION**
SCALE: 3" = 1'-0"



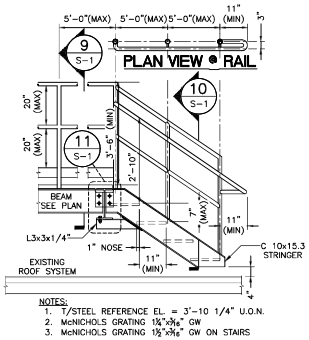
5 S-1 **BASEPLATE SECTION**
SCALE: 3" = 1'-0"



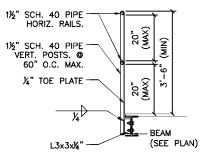
6 S-1 **WALL CONNECTION SECTION**
SCALE: 1" = 1'-0"



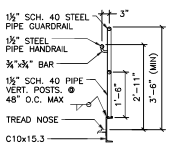
7 S-1 **WALL CONNECTION ELEVATION**
SCALE: 1" = 1'-0"



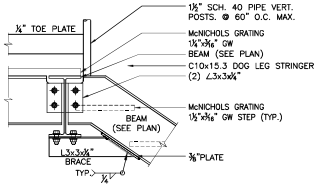
8 S-1 **STAIR SECTION**
SCALE: ½" = 1'-0"



9 S-1 **RAIL SECTION**
SCALE: ½" = 1'- 0"



10 S-1 **STAIR RAIL SECTION**
SCALE: ½" = 1'- 0"



11 S-1 **STAIR CONNECTION**
SCALE: ¾" = 1'- 0"

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
4	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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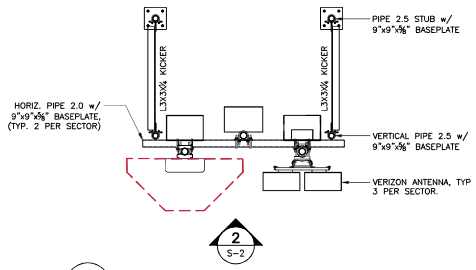
EQUIPMENT PLATFORM DETAILS

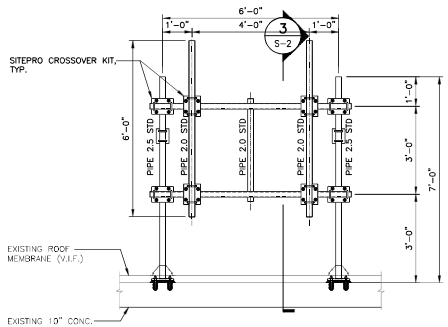
S-1

SHEET NO. 9 OF 17



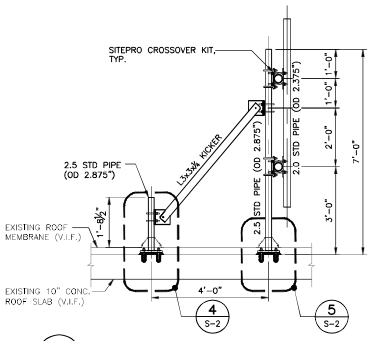
1 S-2 TYPICAL ANTENNA FRAME PLAN VIEW

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



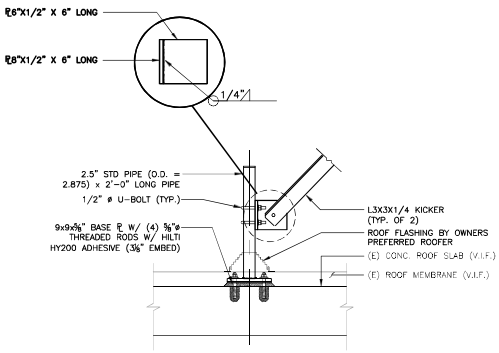
2 S-2 TYPICAL ANTENNA FRAME DETAIL

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



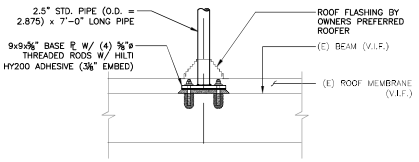
3 S-2 TYPICAL ANTENNA FRAME PLAN VIEW

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



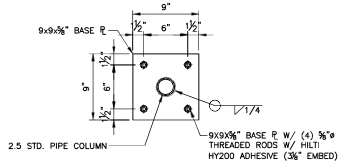
4 S-2 KICKER POST CONNECTION DETAIL

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



5 S-2 ANTENNA FRAME POST CONNECTION DETAIL

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



6 S-2 ANTENNA FRAME BASEPLATE DETAIL

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

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

HOST STRUCTURE & EQUIPMENT PLATFORM

A STRUCTURAL ANALYSIS OF THE HOST STRUCTURE & EQUIPMENT PLATFORM WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND WAS FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 25000.03) DATED 03/10/26 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

SLAB DRILLING NOTES

1. NO DRILLING OF SLAB WILL BE PERMITTED WITHOUT THE ENGINEER'S APPROVAL. X-RAY ALL CONCRETE AT AREAS REQUIRING PENETRATIONS/POST INSTALLED ANCHORS PRIOR TO CUTTING/DEMO.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PRODUCING AN OPENING OF THE SPECIFIED SIZE IN THE EXISTING CONCRETE SLAB. AS PART OF THIS RESPONSIBILITY, THE CONTRACTOR SHALL USE ALL POSSIBLE MEANS TO ENSURE THAT THE STEEL REINFORCING ELEMENTS OF THE CONCRETE SLAB ARE NOT DAMAGED DURING THE CONSTRUCTION. ALL DAMAGE SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL TAKE ALL MEANS NECESSARY OR AS DIRECTED BY THE ENGINEER TO PROTECT THE PROPERTY AND INHABITANTS OF THE BUILDING DURING THE CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERTY OR HARM TO THE INHABITANTS CAUSED BY THE CONSTRUCTION OPERATIONS.
4. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED SEQUENCE OF OPERATIONS OF CUTTING OPERATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF THE MEANS AND METHODS OF LOCATING THE STEEL REINFORCEMENTS WITHIN THE AND APPROVAL. THE SEQUENCE OF OPERATIONS SHALL INCLUDE A DESCRIPTION OF CONCRETE SLAB, LIST OF EQUIPMENT TO BE USED, MEANS OF PROTECTING THE BUILDING FROM HARM, AND LIST OF PRODUCTS TO BE USED TO REPAIR ANY DAMAGED CONCRETE.
5. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE ENGINEER BEFORE PROCEEDING AND SHALL NOTIFY THE ENGINEER AT LEAST 24 HOURS PRIOR TO THE START OF ANY WORK.
6. THE LOCATION OF EACH SLAB PENETRATION SHALL BE AS SHOWN ON THE PLANS BUT MAY BE VARIED AS NEEDED AND AS APPROVED BY THE ENGINEER SO AS TO AVOID ALL SLAB EMBEDMENTS, INCLUDING REINFORCING BARS AND POST-TENSIONING STRANDS. THE CONTRACTOR SHALL DRILL A PILOT HOLE AT THE SELECTED LOCATION OF EACH HOLE TO VERIFY THE SLAB THICKNESS AND TO COORDINATE THE RESULTING LOCATION OF THE PENETRATION BETWEEN FLOORS.
7. THE CONTRACTOR SHALL EMPLOY THE SERVICES OF AN APPROVED TESTING LABORATORY TO LOCATE ALL STEEL REINFORCING WITHIN THE POST-TENSIONED FLOOR SLAB. AS PART OF THIS WORK, THE TESTING LABORATORY AND CONTRACTOR SHALL BE PROVIDED WITH COPIES OF THE ORIGINAL STRUCTURAL PLANS OF THE BUILDING FOR HELP IN LOCATING ANY EMBEDDED ITEMS. THE TESTING LABORATORY AND CONTRACTOR SHALL CLEARLY MARK THE LOCATIONS OF ALL EMBEDDED STEEL ITEMS.
9. IF DURING ANY DRILLING OR CUTTING OPERATION, IT BECOMES APPARENT THAT ANY EMBEDDED STEEL ITEM HAS BEEN HIT, DAMAGED, OR CUT; DRILLING SHALL IMMEDIATELY CEASE AND THE ENGINEER NOTIFIED. THE ENGINEER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXTENT OF ANY DAMAGE THAT MAY HAVE OCCURRED AND THE MEANS OF REPAIRING THE DAMAGE.THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL REPAIRS NEEDED AS THE RESULT OF THE DRILLING OR CUTTING OPERATIONS.

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1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
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-1	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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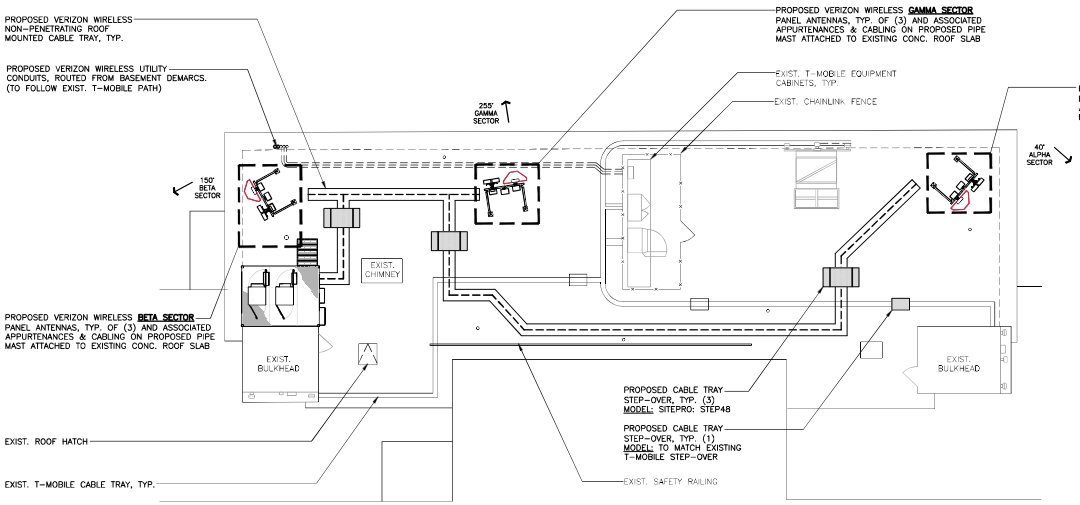
ANTENNA FRAME DETAILS

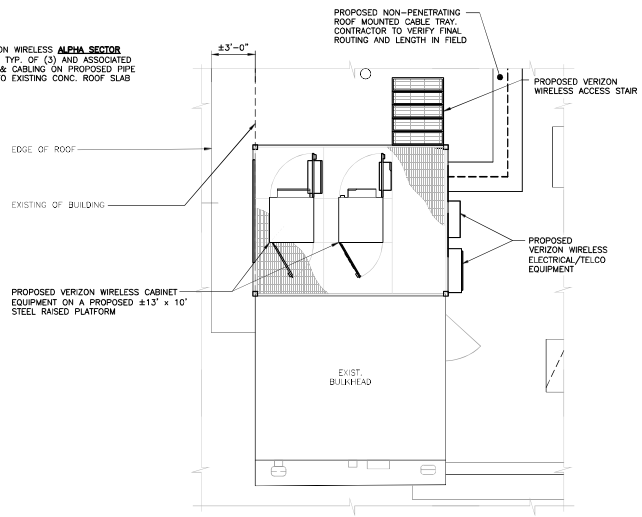
S-2

SHEET NO. 10 OF 17



1 E-1 **ELECTRICAL ROOF PLAN - PROPOSED CONDITIONS**
SCALE: 1" = 8'

APPROXIMATE NORTH



2 E-1 **ELECTRICAL EQUIPMENT PLAN - PROPOSED CONDITIONS**
SCALE: 1" = 8'

APPROXIMATE NORTH

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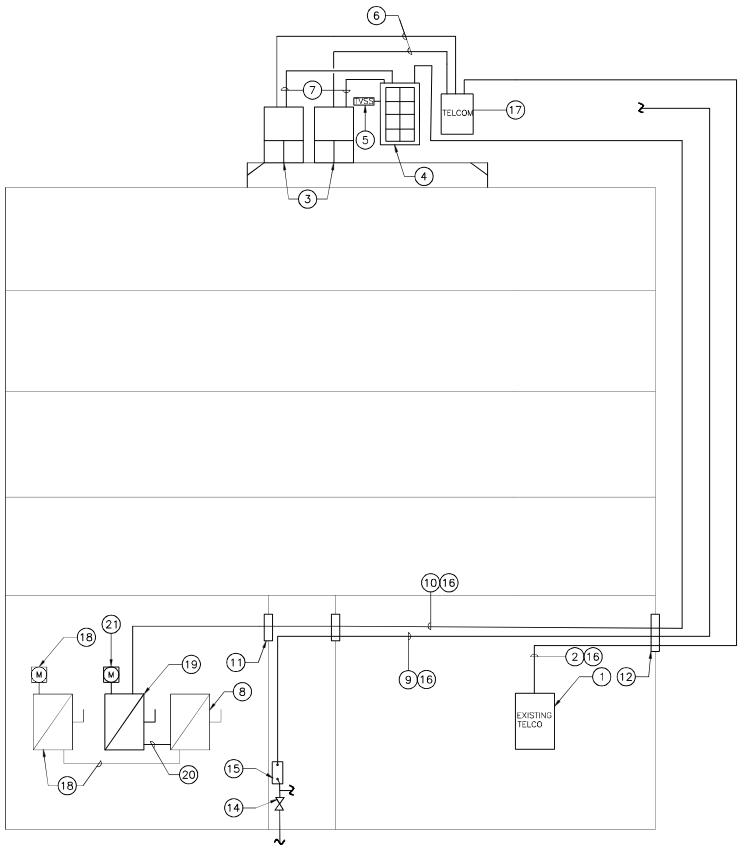
ELECTRICAL ROOF AND EQUIPMENT PLANS

E-1

SHEET NO. 11 OF 17



1 E-2 **ELECTRICAL RISER DIAGRAM**
SCALE: NOT TO SCALE

RISER DIAGRAM NOTES

1. EXISTING TELCO DEMARC LOCATED IN BASEMENT TRASH ROOM.
2. 2" CONDUIT WITH FIBER TELCO CABLES ROUTED FROM RADIO EQUIPMENT TO EXISTING TELCO DEMARC IN BUILDING. PROVIDE FINAL TELCO CONNECTIONS AS SPECIFIED BY MANUFACTURER AND TELEPHONE SERVICE PROVIDER. VERIFY DEMARC LOCATION IN FIELD.
3. VERIZON WIRELESS EQUIPMENT CABINET.
4. VERIZON WIRELESS DISTRIBUTION PANEL: 120/208, 3 PHASE, 200A, 30 POSITION, 65KAIC, 200A MCB, NEMA-3R SURFACE MOUNT, FRONT TRIM HINGED TO CABINET, BOLT ON BREAKERS. PROVIDE LABEL INDICATING "FOR VERIZON WIRELESS USE ONLY".
5. RAYCAP AM4100-V-07 SURGE PROTECTOR. INSTALL WIRING AND CIRCUIT BREAKER AS SPECIFIED BY MANUFACTURER.
6. TELCO CONDUITS AND CONDUCTORS ROUTED TO EQUIPMENT CABINET PER MANUFACTURERS SPECIFICATIONS.
7. POWER CONDUITS AND CONDUCTORS ROUTED TO EQUIPMENT CABINET PER MANUFACTURERS SPECIFICATIONS.
8. EXISTING SERVICE DISCONNECT TO REMAIN.
9. 1" PVC CONDUIT WITH (1) #4/0 AWG GROUNDING ELECTRODE CONDUCTOR BONDED TO STREET SIDE OF WATER MAIN SHUT OFF VALVE AND TO MAIN EQUIPMENT GROUND BAR ON EQUIPMENT PLATFORM. REFER TO WATER MAIN GROUNDING DETAIL.
10. (4) # 350 KCMIL, (1) # 1/0 AWG GROUND, 3" CONDUIT. (LENGTH NOT TO EXCEED 325'.)
11. TYPICAL FLOOR/WALL PENETRATION. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL PENETRATIONS ARE FIREPROOF AND FIRE RATING OF WALLS AND FLOORS IS MAINTAINED.
12. EXTERIOR WALL PENETRATION. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR ENSURING PENETRATION IS THOROUGHLY WATERPROOF.
13. ROUTE CONDUITS ALONG ROOF ON SLEEPERS. ALL CONDUITS MUST BE ELEVATED MORE THAN 3-1/2" ABOVE ROOF (LESS THAN 3-1/2" WILL REQUIRE SIGNIFICANT INCREASE IN CONDUCTOR SIZE DUE TO DERATING REQUIREMENTS). COORDINATE ROUTING WITH CIVIL DRAWINGS AND WITH OWNER.
14. EXISTING WATER MAIN LOCATED IN BASEMENT.
15. GROUND BAR AND GROUNDING ELECTRODE CONDUCTOR AS SHOWN ON WATER MAIN GROUNDING DETAIL.
16. COORDINATE CONDUIT ROUTING IN FIELD WITH BUILDING MANAGER AND CONSTRUCTION MANAGER PRIOR TO START OF CONSTRUCTION. CONDUITS TO BE CONCEALED ON THE EXTERIOR OF THE BUILDING. COORDINATE REQUIREMENTS WITH BUILDING OWNER AND CONSTRUCTION MANAGER.
17. VERIZON WIRELESS TELCO BACKBOARD.
18. EXISTING T-MOBILE DISCONNECT AND SUBMETER.
19. NEW 240V, 200A RATED, THREE PHASE, HEAVY DUTY, NEMA 1 FUSED DISCONNECT WITH (3) 200A FUSES.
20. (4) # 3/0 AWG, (1) # 6 AWG GROUND, 2" CONDUIT. CONDUCTORS TO TAP OFF LOAD SIDE OF DISCONNECT SWITCH. MAXIMUM CODUCTOR LENGTH OF 10'.
21. 3 PHASE 200A, 208V RATED SUBMETER INSTALLED IN OWNER APPROVED LOCATION. PROVIDE WITH ALL REQUIRED SENSOR AND POWER WIRING. (VERIS INDUSTRIES MODEL H-8163 OR APPROVED EQUAL)

GENERAL NOTES:

1. COORDINATE ALL SHUTDOWNS WITH OWNER AND ALL AFFECTED PARTIES. PROVIDE TEMPORARY POWER AS REQUIRED.
2. CONTRACTOR TO COORDINATE ALL CONDUIT ROUTING AND INSTALLATION REQUIREMENTS IN THE FIELD WITH BUILDING OWNER AND WIRELESS CARRIER'S CONSTRUCTION MANAGER PRIOR TO INSTALLATION.
3. COORDINATE WITH BUILDING OWNER FOR ALL WORK IN OCCUPIED AREAS.
4. RESTORE ALL DISTURBED AREAS TO PRE-CONSTRUCTION CONDITION.
5. PRIOR TO INSTALLATION, VERIFY EXISTING AVAILABLE ELECTRICAL CAPACITY.
6. ALL WORK SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS. COORDINATE WITH BUILDING OFFICIAL, BUILDING OWNER, AND CONSTRUCTION MANAGER FOR ANY ADDITIONAL REQUIREMENTS.
7. COORDINATE WITH CONSTRUCTION MANAGER FOR LOCATION, LAYOUT, AND MOUNTING REQUIREMENTS FOR ALL ELECTRICAL EQUIPMENT.
8. COORDINATE ELECTRICAL SERVICE AND DISTRIBUTION EQUIPMENT INTERRUPTING RATING WITH AVAILABLE FAULT CURRENT FROM UTILITY COMPANY. EQUIPMENT SHALL NOT BE RATED LESS THAN 65 KAIC.
9. ALL TELEPHONE AND ELECTRIC UTILITY WORK MUST BE COORDINATED WITH EACH UTILITY COMPANY, AND ALL EQUIPMENT MUST BE UTILITY COMPANY APPROVED. CONTRACTOR SHALL PROVIDE ALL ELEMENTS NOT PROVIDED BY UTILITY COMPANIES.
10. ALL CONDUITS ROUTED ACROSS ROOF SHALL BE ELEVATED ABOVE ROOF MORE THAN 3 1/2" ON 4x4 SLEEPERS, OR CONDUIT AND CONDUCTOR SIZE SHALL BE SIGNIFICANTLY INCREASED.
11. PROVIDE ALL NEC REQUIRED SIGNAGE AT SERVICE AND DISTRIBUTION EQUIPMENT.
12. CONTRACTOR TO VERIFY EXACT CONFIGURATION OF EXISTING ELECTRICAL DISTRIBUTION SYSTEM IN FIELD PRIOR TO START OF CONSTRUCTION.

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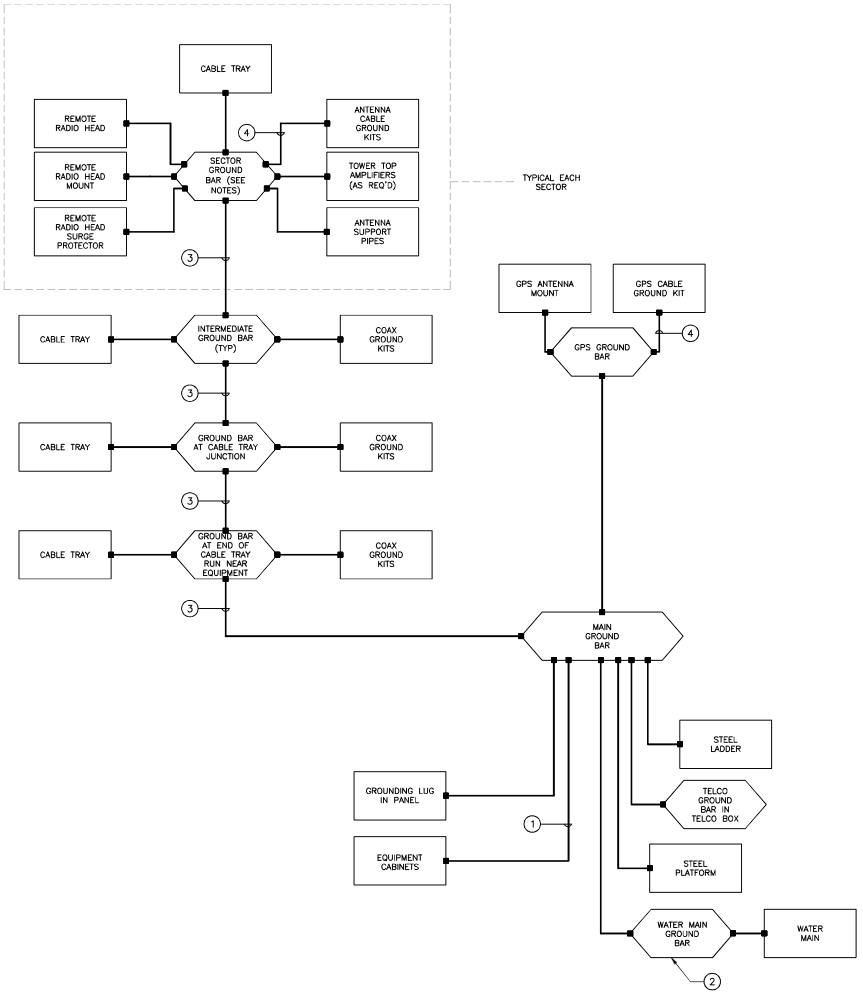
ELECTRICAL RISER DIAGRAM

E-2

SHEET NO. 12 OF 17



1 / E-3 **GROUDING SCHEMATIC DIAGRAM**
SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

1. PER MANUFACTURE'S SPECIFICATIONS
2. PER DETAILS
3. #2/0 GREEN INSULATED
4. #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. BOND CABLE TRAY SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
7. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
8. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
9. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

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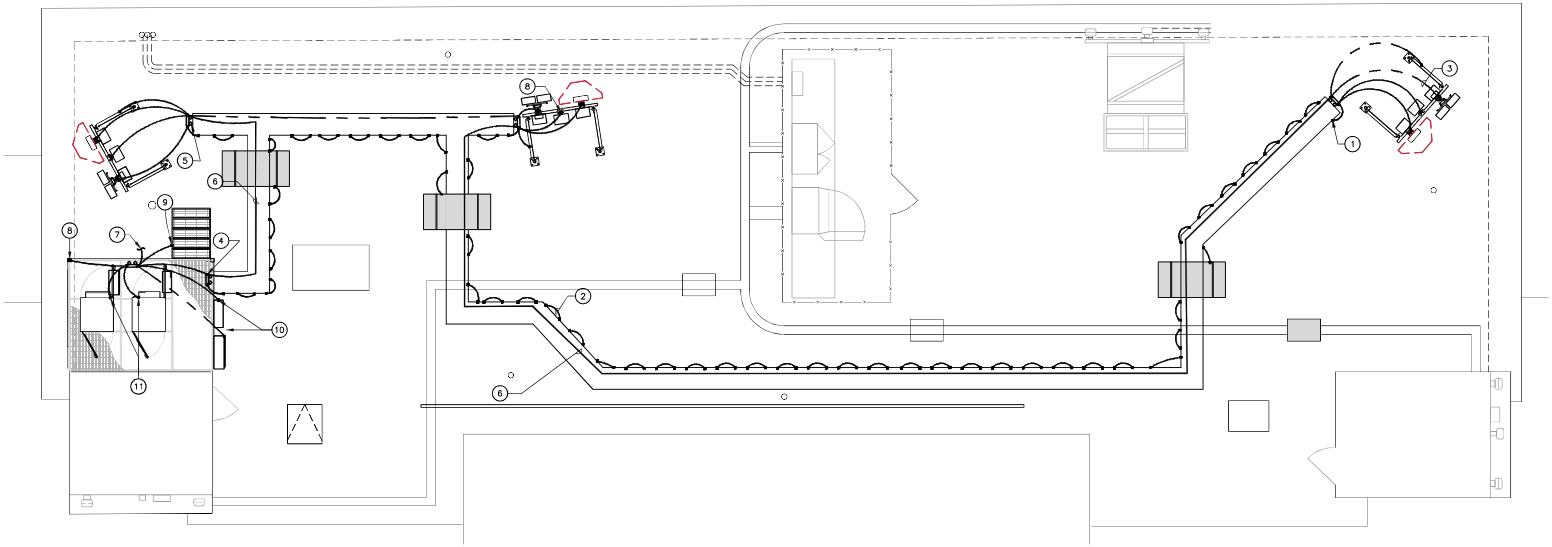
ELECTRICAL GROUNDING SCHEMATIC DIAGRAM

E-3

SHEET NO. 13 OF 17

GROUNDING PLAN NOTES:

1. BOND GROUND BAR TO CABLE TRAY. TYPICAL FOR EACH GROUND BAR TO BE BONDED TO EACH NEARBY SECTION OF CABLE TRAY. ALL CABLE TRAY RUNS MUST BE BONDED AT EACH END TO A GROUND BAR.
2. BOND ALL CABLE TRAY SECTIONS TOGETHER TYP.
3. BOND ANTENNAS AND ANTENNA MOUNTING PIPES TO SECTOR GROUND BAR (TYP).
4. GROUND BAR AT END OF CABLE TRAY RUN TYP.
5. SECTOR GROUND BAR TYP.
6. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
7. BOND MAIN GROUND BAR TO BUILDING WATER MAIN PER DETAILS.
8. BOND STEEL PLATFORM TO MAIN GROUND BAR. (TYP EACH CORNER).
9. BOND STEEL LADDER TO MAIN GROUND BAR.
10. BOND ELECTRICAL PANEL AND TELCO BOARD TO MAIN GROUND BAR.
11. BOND EQUIPMENT CABINETS TO MAIN GROUND BAR.



1 E-4 **ROOFTOP GROUNDING PLAN**
SCALE: 1/4" = 1'

APPROXIMATE NORTH

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1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
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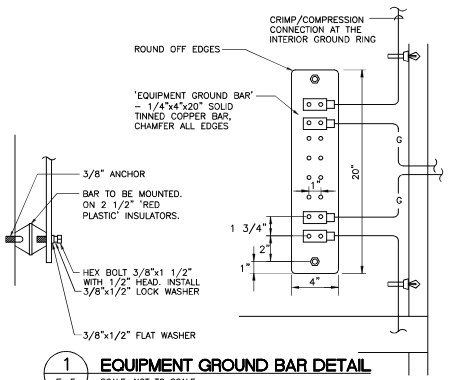
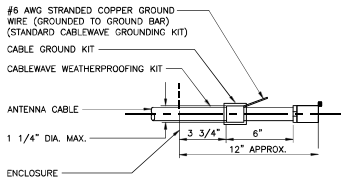
ELECTRICAL GROUNDING PLAN

E-4

SHEET NO. 14 OF 17



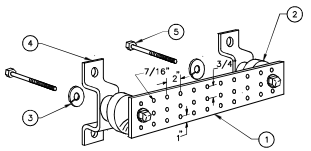
1 E-5 **EQUIPMENT GROUND BAR DETAIL**
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

2 E-5 **ANTENNA CABLE GROUNDING DETAIL**
SCALE: NOT TO SCALE

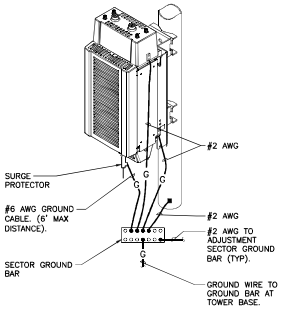


NOTES

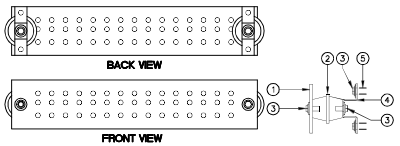
1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

3 E-5 **GROUND BAR DETAIL**
SCALE: NOT TO SCALE

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



4 E-5 **RRH POLE MOUNT GROUNDING**
SCALE: NOT TO SCALE

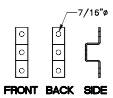


TYPICAL GROUND BAR ASSEMBLY
N.T.S.

TYPICAL GROUND BAR - DIMENSIONS
N.T.S.

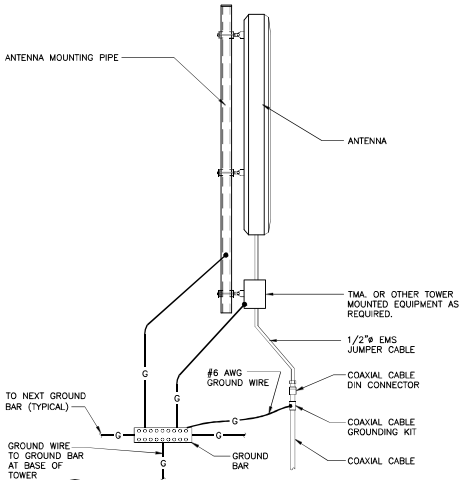
NOTES

1. HIGH CONDUCTIVITY TINNED COPPER BAR 1'-8"Lx4"Wx1/4"D.
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872-1A.
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET.
5. STAINLESS STEEL TYPE 304 HARDWARE – 3/8"ø EXPANSION BOLT FOR CONCRETE.

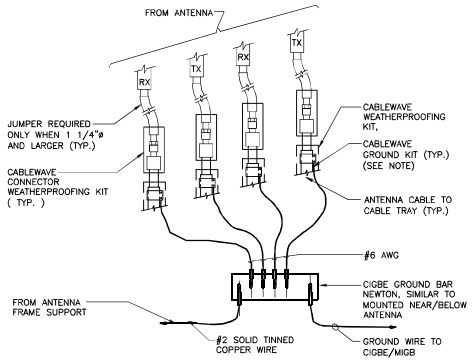


BRACKET FOR GROUND BAR-DIMENSIONS
N.T.S.

5 E-5 **MASTER/EQUIPMENT GROUND BAR DETAILS**
SCALE: NOT TO SCALE



6 E-5 **TYPICAL ANTENNA GROUNDING DETAIL**
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

7 E-5 **CONNECTION OF GROUND WIRES TO GROUND BAR**
SCALE: NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-5

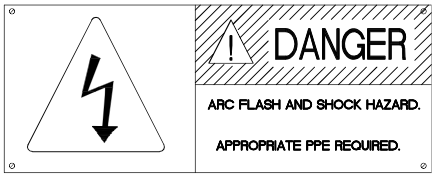
SHEET NO. 18 OF 17

NOTES:

1. REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE WARNING LABEL ON ALL SERVICE EQUIPMENT IN ACCORDANCE WITH CURRENT NEC REQUIREMENTS.
3. PROVIDE FAULT SHORT CIRCUIT AND COORDINATION STUDY TO ENSURE COMPLIANCE WITH NEC REQUIREMENTS.

1 E-6 DETAIL OF TYPICAL FAULT CURRENT SIGN

SCALE: NOT TO SCALE

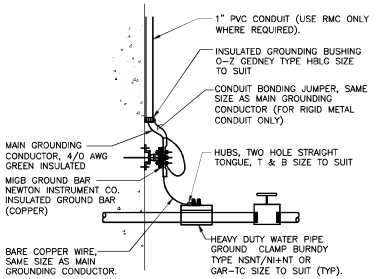


NOTES:

1. REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE WARNING LABEL ON ALL SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS IN ACCORDANCE WITH NEC REQUIREMENTS.

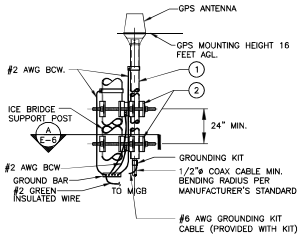
2 E-6 DETAIL OF TYPICAL FLASH PROTECTION WARNING SIGN

SCALE: NOT TO SCALE



3 E-6 WATER MAIN GROUNDING DETAIL

SCALE: NOT TO SCALE



GPS ANTENNA MOUNTING BRACKET

A E-6 SECTION NOT TO SCALE

BILL OF MATERIALS

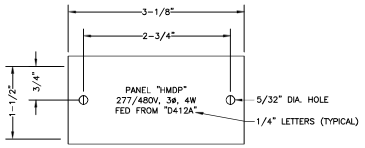
ITEM	DESCRIPTION	QUANTITY
1	2-1/2"ø SCH. 40 x 8'-0" LG. MAX SS OR GALV. PIPE	1
2	UNIVERSAL CLAMP SET.	2

NOTES

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 2-1/2" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 24 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.

4 E-6 GPS GROUNDING/MOUNTING BRACKET DETAIL

SCALE: NOT TO SCALE



NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" WHITE PLASTIC WITH BLACK CENTER LAMINATION. FACE TO BE WHITE, ENGRAVED LETTERS TO BE BLACK.
3. SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD BRASS SCREWS.

5 E-6 DETAIL OF TYPICAL NAMEPLATE

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
1	01/20/26	ZRKW	TJR	CONSTR. DRAWINGS – REVISED PER CLIENT COMMENTS
0	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS – ISSUED FOR CLIENT REVIEW

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VERIZON WIRELESS

SITE NAME: HARTFORD 11 CT RELO

230 FARMINGTON AVENUE
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

TYPICAL ELECTRICAL DETAILS

E-6

SHEET NO. 18 OF 17

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL 200A DISCONNECT FOR OWNER AND ASSOCIATED DISTRIBUTION AND SUBMETERING EQUIPMENT.
2. NEW SITE TELEPHONE SERVICE AS SPECIFIED BY TELEPHONE COMPANY.
3. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, RECEPTACLES, EQUIPMENT, LIGHTING FIXTURES, ETC. AS INDICATED OR NOTED ON PLANS.
4. CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, INTERIOR GROUNDING RING, GROUND BARS, ETC.
5. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
6. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.

B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:

1. TELEPHONE CABLES.

C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.

D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

E. CONTRACTOR SHALL COORDINATE WITH TELEPHONE UTILITY COMPANY FOR LOCATION OF TELEPHONE SERVICE AND TO DETERMINE ANY REQUIRED EQUIPMENT TO BE INSTALLED BY CONTRACTOR.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY THAT MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED CELLULAR SITE.

F. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

H. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

I. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

J. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

K. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

L. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

M. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

N. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

O. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.

B. THE INTERIOR OF RACEWAYS/ ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.

D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS

E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2]
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

[1] PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

[2] UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

[3] WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16114

1.01. CABLE TRAY

A. CABLE TRAY SHALL BE SOLID SIDE BAR, 18" WIDE (NEWTON INSTRUMENT COMPANY, INC.). TRAY SHALL BE INSTALLED AS SHOWN ON CONTRACT DOCUMENTS.

B. CROSSWISE RUNS SHALL BE COORDINATED WITH THE SPECIFIC EQUIPMENT THE TRAY SHALL SERVE.

C. ALL PROTRUDING CABLE TRAY SUPPORT RODS SHALL BE FILED SMOOTH WITH NO SHARP EDGES. ALL SUPPORT RODS SHALL BE CAD-PLATED FOR RUST RESISTANCE AND A MINIMUM 1/2" DIAMETER.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

1. 15 MINUTE TIMER SWITCH - INTERMATIC #FF15M (INTERIOR LIGHTS)
2. DUPLEX RECEPTACLE - P&S #2095 (GFCI) SPECIFICATION GRADE
3. SINGLE POLE SWITCH - P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE
4. DUPLEX RECEPTACLE - P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE

B. PLATES - ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
3. REFER TO PANEL SCHEDULE "BRANCH CIRCUIT" DATA FOR EQUIPMENT GROUND CONDUCTOR SIZE FOR EACH BRANCH CIRCUIT.
4. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
3	04/01/26	TJR		CONSTR. DRAWINGS - REVISED TO REFLECT FAA-2C SURVEY
2	01/22/26	ZRKW	TJR	CONSTR. DRAWINGS - REVISED PER CLIENT COMMENTS
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0	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CONSTRUCTION
A	11/21/25	ZRKW	TJR	CONSTR. DRAWINGS - ISSUED FOR CLIENT REVIEW

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VERIZON WIRELESS

SITE NAME: HARTFORD 11 CT RELO

230 FARMINGTON AVENUE
HARTFORD, CT 06105

DATE: 11/21/2025
SCALE: AS NOTED
JOB NO. 25000.03

ELECTRICAL SPECIFICATIONS

E-7

SHEET NO. 17 OF 17

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

250 CONSTITUTION PLAZA
HARTFORD, CONNECTICUT

	Property Address	**Owner's and Mailing Address**
1.	35, 37, 39 and 41 Niles Street	Farmington Imlay LLC 91 South Main Street Wallingford, CT 06492
2.	240-248 Farmington Avenue	Vouthounes and Daughters LLC 16 Pheasant Drive Rocky Hill, CT 06067
3.	214 Farmington Avenue	The Conferences of Churches Inc. 224 Farmington Avenue Hartford, CT 06106
4.	239 Farmington Avenue, Unit G1	Angel Figueroa Dethomas 239 Farmington Avenue, Unit G1 Hartford, CT 06105
5.	237 Farmington Avenue, Unit F3	Tara Spain 237 Farmington Avenue, Unit F3 Apt. C Hartford, CT 06105
6.	235 Farmington Avenue, Unit A1	HEMC Property Management, LLC 47 Montowese Avenue North Haven, CT 06473
7.	235 Farmington Avenue, Unit A2	Jay Johnson 235 B Farmington Avenue, Unit A2 Hartford, CT 06105
8.	235 Farmington Avenue, Unit A3	William Lohnes 235 Farmington Avenue Hartford, CT 06105
9.	77 Imlay Street, Unit B-1	Jane Tkach 77 Imlay Street, Unit B-1 Hartford, CT 06105

	Property Address	Owner's and Mailing Address
10.	75 Imlay Street, Unit C-3	Credit Suisse First Boston Morr Securities Corp. 6200 S. Quebec Street Greenwood Village, CO 80111
11.	69 Imlay Street, Unit D-1	John Zhong Chen 11 Huntington Drive West Hartford, CT 06117
12.	71 Imlay Street, Unit D-2	Anthony Mosley 73 Imlay Street Hartford, CT 06105
13.	71 Imlay Street, Unit D-3	Brittney Nicole Daggs 71-B Imlay Street, Unit D-3 Hartford, CT 06105
14.	239 Farmington Avenue, Unit G-2	Stephen Weaver 2391 Farmington Avenue, Unit G-2 Hartford, CT 06105
15.	239 Farmington Avenue, Unit G-3	Dalos and Stern LLC 2389 Main Street, Suite 100 Glastonbury, CT 06033
16.	237 Farmington Avenue, Unit F-1	Kevin Larsen 91 Catherine Drive Meriden, CT 06450
17.	237 Farmington Avenue, Unit B	Kazi Shamim Hossain 237B Farmington Avenue Hartford, CT 06105
18.	79 Imlay Street, Unit B-2	Hewan Essue 79A Imlay Street, Unit B2 Hartford, CT 06105
19.	79 Imlay Street, Unit B-3	Hasvik LLC 418 Pleasant Valley Road South Windsor, CT 06074
20.	73 Imlay Street, Unit C-1	Anthony Mosley 73 Imlay Street, Unit C-1 Hartford, CT 06105

	Property Address	Owner's and Mailing Address
21.	75 Imlay Street, Unit C-2	Kelvin Sanchez 75 Imlay Street, Unit C-2 Hartford, CT 06105
22.	67 Imlay Street, Unit E-1	Orlando Velazco 67 Imlay Street, Unit E-1 Hartford, CT 06105
23.	67 Imlay Street, Unit E-2	Nicolas Houghton 67B Imlay Street Hartford, CT 06105
24.	235 Farmington Avenue	Farmington PL Condo Box 55071 #16230 Boston, MA 02205