Robinson+Cole

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May 4, 2022

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

Re: **Request of Cellco Partnership d/b/a Verizon Wireless for an Order to Approve the Shared Use of an Existing Tower at 7A Old Windsor Road, Bloomfield, Connecticut**

Dear Attorney Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby requests an order from the Siting Council ("Council") to approve the shared use of an existing telecommunications tower located on a 0.93-acre parcel at 7A Old Windsor Road in Bloomfield (the "Property"). The Property is owned by MAZL LLC. The tower is owned by Goosetown Communications ("Goosetown"). Cellco identifies this site as its "Bloomfield 5 Facility". The existing 150-foot monopole tower was approved by the Town of Bloomfield ("Town") in February of 2021 for Goosetown. A copy of the Town's approval is included in Attachment 1.

Cellco requests that the Council find that the proposed shared use of the existing tower satisfies the criteria of C.G.S § 16-50aa and issue an order approving this request. A copy of this filing is being sent to Bloomfield's Town Manager, Sharron Howe and Director of Planning, Justin LaFountain.

Background

Cellco is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. Cellco and Goosetown have agreed to the proposed shared use of the Old Windsor Road tower pursuant to mutually acceptable terms and conditions. Likewise, Goosetown and Cellco have agreed to the proposed installation of equipment on the ground near the base of the tower. Goosetown has authorized Cellco to apply for all necessary permits and approvals that may be required to share the existing tower. (*See* Attachment 2).

Cellco proposes to install nine (9) antennas and nine (9) remote radio heads ("RRHs") on the tower at a centerline height of 137 feet above ground level ("AGL"). Cellco will also install two equipment cabinets and a 50-kW natural gas-fueled backup generator on the ground near the base of the tower. Included in Attachment 3 are Cellco's project plans showing the location of Cellco's proposed site improvements. Attachment 4 contains specifications for Cellco's proposed antennas, RRHs and backup generator.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." Cellco respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing tower is structurally capable of supporting Cellco's antennas, RRHs, antenna platform and related equipment. The proposed shared use of this tower is, therefore, technically feasible. A Structural Analysis Report ("SA") dated April 17, 2023 prepared by for Tower Engineering Solutions ("TES") confirms that the tower can support Cellco's proposed antennas and related equipment. A Mount Analysis ("MA") dated April 17, 2023 was also prepared for the proposed antenna and RRH mounting system. Copies of the SA and MA are included in Attachment 5.

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the shared use of an existing tower, such as the existing Old Windsor Road tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an

order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility. The proposed shared use of the existing tower would have minimal environmental effects, for the following reasons:

1. The proposed installation of nine (9) antennas and nine (9) RRHs on an antenna platform at a height of 137 feet AGL on the existing 150-foot tower would have an insignificant incremental visual impact on the area around the Property. As mentioned above, all of Cellco's equipment will be located within a fenced portion of the Property near the base of the tower. Cellco's shared use of the existing tower would, therefore, not cause any significant change or alteration in the physical or environmental characteristics of the existing facility.

2. Noise associated with Cellco's proposed facility will comply with State and local noise standards. Noise associated with the backup generator is exempt from state and local noise standards.

3. Operation of Cellco's antennas at this site would not exceed the RF emissions standards adopted by the Federal Communications Commission ("FCC"). Included in Attachment 6 of this filing is a Calculated Radio Frequency Emissions Report that demonstrates that the modified facility will operate well within the FCC's safety standards.

4. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the facility other than periodic maintenance visits to the cell site.

The proposed shared use of the existing tower would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. Economic Feasibility. As previously mentioned, Cellco has entered into an agreement with Goosetown for the shared use of the existing tower subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible.

E. **Public Safety Concerns.** As discussed above, the tower is structurally capable of supporting Cellco's antennas, antenna mounting frame, RRHs and all related equipment. Cellco is not aware of any public safety concerns relative to the proposed sharing of the existing Old Windsor Road tower. In fact, the provision of new and improved wireless service through Cellco's shared use of the existing tower would enhance the safety and welfare of area residents and members of the general public traveling through the Town of Bloomfield.

A Certificate of Mailing verifying that a copy of this filing was sent to the municipal officials, the Property owner, and Goosetown, the tower owner is included in Attachment 7.

Conclusion

For the reasons discussed above, the proposed shared use of the existing tower at the Property satisfies the criteria stated in C.G.S. § 16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Very truly yours,

Kenneth C. Baldwin

Enclosures
Copy to:
Sharron Howe, Acting Town Manager
Justin LaFountain, Director of Planning
MAZL, LLC, Property Owner
Goosetown Communications, Tower Owner
Tim Parks

ATTACHMENT 1

BLOOMFIELD ZONING BOARD OF APPEALS

VARIANCE X USE VARIANCE _____

SECTION(S) OF THE ZONING REGULATIONS: Section 8.3 (Setback Requirements for Communications Antenna.)

PURPOSE OF THE VARIANCE: To erect a 149' tall radio tower structure within the required fall zone setback.

PROPERTY LOCATION: 7A Old Windsor Road

APPLICANT: Todd Stacy

OWNER OF RECORD: MAZL LLC

I hereby certify that the Zoning Board of Appeals, at a meeting held on February 1, 2021, approved the application described above. Said approval pertains to the premises as bounded and described in the attached written legal description. If applicable, the following conditions apply:

Shirley P. Williams

Shirley Williams
Secretary – ZBA

(Type or attach a written legal boundary description.)

6/30/21
Date

Signature of Owner of Record

NOTE: Pursuant to Section 8-3d of the Connecticut General Statutes, this variance will not become effective until it has been recorded on the Land Records of the Town of Bloomfield. It is the responsibility of the owner to record this form (which will be mailed to the applicant if it is approved) and pay the recording fee.

No building permits required in connection with the above variance may be issued until this approval has been recorded.

Chair: Jacqueline Isaacson, Commissioner Mark Mitchell, Commissioner Robert Ike, Commissioner Keith Martin and Commissioner Tashna Morris-Daley were present and voted.

Also: Commissioner Marie MacDonald had difficulties with her service, audio issues therefore she was not including in the voting process.

Excused Absences: Commissioner Seth Pitts and Commissioner Shirley Williams

Also present: Mr. Jose Giner Director of Planning & Economic Development

I. Call to Order and Roll Call:

The meeting was called to order at 7:35 p.m.

II. Roll Call:

A quorum was established with 5 members.

III. Public Hearing:

Chair Isaacson read the legal notice for the Request.

a. Request by Todd Stacy, Goosetown Communications, for a Variance of Section 8.3 to allow a 149 foot tall tower structure within the required setbacks for such structures at 7A Old Windsor Road, I-2 zone.

Mr. Todd Stacy stated the proposal is for a new public safety tower. Mr. Giner displayed the diagram/map of the area allowing the Commission to view the area for the proposed tower. And Mr. Stacy indicated on that map the exact location of the proposed tower. He also showed the Commission exactly where the tower would fall from the base if it collapsed. He stated they, "hardly ever see a tower collapse." Although the tower would collapse straight down most zoning plans must show the 149 foot circle which he indicated on the diagram. He also stated they are here applying for a variance because if it fell, it would fall outside of their lot area. And there is no way of positioning it without being in someone else's lot. They would like to build it to enhance coverage for the Bloomfield Fire Department, who is one of their customers. Mr. Stacy stated they want to enhance public safety. They own another tower in Glastonbury which they would like to connect to, offload some data to and operate a multi-state two way radio network where they will also have other public safety customers. Overall, they would enhance coverage for their customers and build the tower.

Commission Questions:

Chair Isaacson asked would it collapse straight down not out, would it collapse within itself, correct? Mr. Stacy answered, correct. Mr. Stacy stated typically they over engineered where factor of safety is two or three times in a 90 plus mile an hour wind speed which is typically applied for a three second gust. He also stated its on the latest wind spec revision for towers which would be stamped by a professional engineer and checked by a third-party engineer. Any time new antennas or any modifications are made to power they would be reviewed by an engineer. He also stated that all of their employees including himself would be working in that building.

Commissioner Ike asked Mr. Stacy how far would the proposed project be from Blue Hills Avenue, Old Windsor Road and Dunkin Donuts? Mr. Stacy answered by indicating on the map where Dunkin Donuts is located and where the proposed project would be located.

Commissioner Mitchell asked Mr. Stacy were there any other Bloomfield Businesses that they serviced? Mr. Stacy answered stating Bloomfield Fire Department and Blue Hills Avenue Fire Department are currently the only ones they have serviced. They have had some limited work with the Public Works Department. Currently they are not

doing business with the Public Works Department because they moved over to Motorola. Motorola is one of their vendors that work with them. Public Works is currently working directly with Motorola.

Public Questions:

Mr. Stephen Thompson located at 815 Guerdat Road, Torrington, CT, stated he works in the building in Bloomfield. They are new to the area, they chose Bloomfield because they really like the community and one of their primary goals is to get more customers in the area. He stated that the building they are in and in that part of Town, there is very poor Verizon and ATT coverage. He also stated it is their goal to get carriers onto the tower for better coverage in the area. However, it is difficult to get them to buy onto it before it is built. After it has been built they might show interest in it. They don't have signatures from them yet but it is a goal of theirs. It would help increase the cell phone coverage to the residents in the Town if they are able to get them onto the tower. Chair Isaacson asked him what building was he speaking about and Mr. Thompson stated the same building which he indicated on the map. Mr. Thompson stated the towers will link together with each other. Whenever a fire fighter keys out onto their radio the system will vote on the best one it can hear and they'll have much better coverage because of the new tower. Overall its not just in one area and it is an important safety aspect. They like the guys at Bloomfield Fire Department and the Blue Hills Fire Department. Mr. Thompson stated they recently built out a six site system for Bloomfield Fire Department and Blue Hills Fire Department and it would be added as a site for them. It would really help their radio system with increased coverage with a taller tower in the area. Chair Isaacson asked do they have a tower there now? Mr. Stacy answered stating currently they are down the road at the Dudley Street Fire Station Four and its only a 70 foot tower. It's very difficult to get better coverage for them in that particular area. And they can not link to other towers. They have to pay a monthly fees to Frontier which would be eliminated by adding this new tower.

Mr. Giner stated it is part of his job as Economic Development Director to do business visitations. When visiting Aramark on West Dudley and Phoenix Crossing, they claim that one thing that is hampering them is the fact that they don't get coverage over there on their cell phones. And it is an issue in that part of the Town. There is a tower near Jacob's Brake Systems and he stated he doesn't know where the other one is located. Mr. Giner stated it is a small lot and there aren't many places you can put a tower because there are setback requirements. Mr. Joseph Gottlieb located at 302 Gair Street, Piermont, NY, 10968 also spoke. He stated Mr. Stacy and Mr. Thompson covered everything and he did not have anything to add.

Mr. Giner received an email from Commissioner Marie MacDonald stating she was in favor of this being approved. She was having some audio issues.

Commissioner Ike made a motion to approve the Request by Todd Stacy, Goosetown Communications, for a Variance of Section 8.3 to allow a 149 foot tall tower structure within the required setbacks for such structures at 7A Old Windsor Road, I-2 zone. Subject to the tower collapsing within itself on the property. Commissioner Mitchel seconded the motion and the Commission voted unanimously to approve the request.

IV. New Business:

Chair Isaacson had changes to the 2021 calendar because of the Jewish holidays. Mr. Giner will send the 2021 calendar to the Commission with the revisions.

V. Public Comments: None

VI. Approval of the Minutes for August 3, 2020:

The approval of the minutes was postponed to the next meeting because the Commission did not receive them. Mr. Giner explained to the Commission that his office is transitioning. There are several people in his office that have retired and he has temporary staff in some positions.

VII. Adjournment:

Commissioner Ike made a motion to adjourn the meeting and Commissioner Martin seconded the motion. The Commission voted unanimously to adjourn the meeting at 8:54 p.m.

THE NEXT MEETINGS IS SCHEDULE FOR TBA.

Town of Bloomfield - Building Department
Certificate of Occupancy

Issued to: Todd Stacy

Permit #: 118839

Location: 7A OLD WINDSOR RD , BLOOMFIELD

For:

150' Monopole Communications Tower

Building Permit

150' Monopole Communications Tower

Issue Date: December 29, 2021

Issued By: Town of Bloomfield, CT
Building Department

Property Owner:

MAZL LLC
58 N. Harrison Ave
Congers, NY 10920

The work described above and covered by the permit # referenced, has been inspected for compliance with, and has been found to substantially comply to the Connecticut State Building Code for the use, occupancy, and division that it is classified.

Building Official:

Code Edition:

Use and Occupancy:

Construction Type:

Design Occupant Load:

Fire suppression system required?

Fire suppression system installed?

Any special stipulations and conditions of the building permit:

ATTACHMENT 2

April 28 2023

Andrew Candiello
Principal Engineer-RE/Regulatory
Cellco Partnership d/b/a Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Re: Letter of Authorization – **Goosetown Network Services with site address of 7A Old Windsor Road, Bloomfield, CT 06002** grants Cellco Partnership d/b/a Verizon Wireless authority to install equipment.

Dear Mr. Candiello:

I, Joseph Gottlieb, hereby authorizes Cellco Partnership d/b/a Verizon Wireless and/or its authorized agents, to file for all necessary permit and approval applications for the installation of antennas and related equipment at an existing telecommunications facility in Bloomfield, CT.

Sincerely,

Joseph Gottlieb
Member

ATTACHMENT 3

SUPPORTING DOCUMENTS

RADIO FREQUENCY (RF) DESIGN DATE: 4/13/23

ANTENNA MOUNT STRUCTURAL ANALYSIS DATE: 4/17/23

ANTENNA SUPPORT STRUCTURE (150'± MONOPOLE) STRUCTURAL ANALYSIS DATE: 4/17/23

verizon

20 ALEXANDER DRIVE, 2nd FLOOR, WALLINGFORD, CT 06492

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

PROJECT TYPE: WIRELESS TELECOMMUNICATIONS COLLOCATION ON EXISTING 150'± MONOPOLE

SITE INFORMATION:

PARENT PARCEL OWNER:	MAZL LLC 58 NORTH HARRISON AVENUE CONGERS, NY 10920
TOWER OWNER:	GOOSETOWN NETWORK SERVICES, LLC 58 NORTH HARRISON AVENUE CONGERS, NY 10920 (845) 268-7500
TOWER OWNER ID:	UNKNOWN
APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE, 2nd FLOOR WALLINGFORD, CT 06492
SITE ADDRESS:	7A OLD WINDSOR ROAD BLOOMFIELD, CT 06002
COUNTY:	HARTFORD COUNTY, CT
SITE CONTROL POINT:	CENTER OF EXISTING MONOPOLE N 41°-51'-19.96" (41.855440°) (NAD '83) W 72°-42'-16.98" (72.704717°) (NAD '83)
JURISDICTION:	CONNECTICUT SITING COUNCIL
TAX ID PARCEL NUMBER:	MAP 16 BLOCK 56
ARCHITECT / ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
POWER COMPANY:	EVERSOURCE ENERGY 247 STATION DRIVE, SE 210 WESTWOOD, MA 02090 (781) 441-3610
TELEPHONE COMPANY:	VERIZON 185 FRANKLIN STREET BOSTON, MA 02107 (800) 941-9900

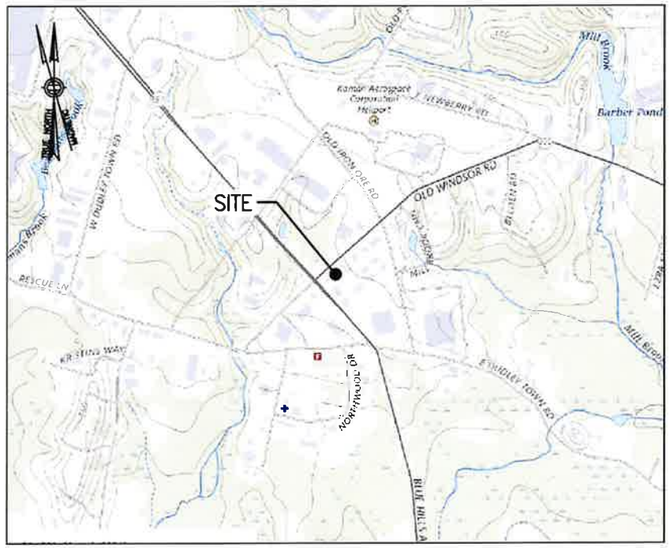
GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
2. NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2022 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

AT LEAST 72 HOURS PRIOR TO DIGGING, THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT 811

VICINITY MAP

SCALE: 1"=1000'



DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE I-91 NORTH. TAKE EXIT 37 FOR CT-305/BLOOMFIELD AVENUE TOWARD WINDSOR CENTER. USE LEFT 2 LANES TO TURN LEFT ONTO CT-305 W/BLOOMFIELD AVENUE. THE SITE WILL BE ON THE LEFT HAND SIDE.

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DO NOT SCALE DRAWINGS

ALL PLANS, EXISTING DIMENSIONS AND CONDITIONS AT THE PROPOSED PROJECT SITE SHALL BE VERIFIED IN THE FIELD DURING THE CONSTRUCTION PHASE. THE PROJECT OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES IMMEDIATELY PRIOR TO PROCEEDING WITH THE PROPOSED WORK AFFECTED BY SUCH DISCREPANCIES. IN THE EVENT OF LACK OF SUCH NOTIFICATION, SUCH DISCREPANCIES SHALL BECOME THE RESPONSIBILITY OF THE PREVAILING CONTRACTOR RESPONSIBLE FOR CONSTRUCTION.

PROJECT DESCRIPTION

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT INSTALLATION AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
2. THIS FACILITY WILL CONSUME NO UNRECOVERABLE ENERGY.
3. NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONSTRUCTION SET SHALL BE IGNORED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:

TITLE SHEET

DRAWING NO:

T01

SCALE: AS SHOWN	DESIGNED BY: MWC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MWC	
	CHECKED BY: CRS	VZW PROJECT NO.: 16433987
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783986

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – VERIZON WIRELESS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – VERIZON WIRELESS
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

5. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

14. SUBCONTRACTOR SHALL NOTIFY CHAPPELL ENGINEERING ASSOCIATES, LLC. 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACK FILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.

15. CONSTRUCTION SHALL COMPLY WITH VERIZON WIRELESS NETWORK STANDARD #NSTD123 TO THE MAXIMUM EXTENT FEASIBLE UNLESS PRECLUDED OR LIMITED BY DESIGN SHOWN ON THESE DRAWINGS.

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.

3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.

6. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

7. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

8. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING, OWNER AND/OR LOCAL UTILITIES.

9. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

10. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

11. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE VERIZON WIRELESS SPECIFICATION FOR SITE SIGNAGE.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS

3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE, WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF .....1½ IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER
   OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....¾ IN.
   BEAMS AND COLUMNS .....1½ IN.

5. A CHAMFER ¾" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAWSET/REDHEAD OR APPROVED EQUAL.

7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIERS PLANT.
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.

8. AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.

9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND VERIZON WIRELESS SPECIFICATION 25252-000-3PS-GET-00001 UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".

2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (⅜"ø) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.

4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE ⅜" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.

5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAWSET/REDHEAD OR APPROVED EQUAL.

6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.

7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL TO EXPOSE NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.

2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.

3. AS AN ALTERNATE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.

4. COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING #1 SIEVE.

5. AS AN ALTERNATE TO ITEMS 2 AND 3, THE SUBGRADE SOILS WITH 5 PASSES OR A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). AND SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

1. HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, VERIZON WIRELESS ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.

2. COORDINATION OF WORK:
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR.

3. CABLE LADDER RACK:
SUBCONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

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

2. SUBCONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR APPROVAL.

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

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

5. EACH END OF EVERY POWER, GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.

6. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, ½ INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS

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

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

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

10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

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

12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #3 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.

13. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.

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

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

16. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

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

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

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

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

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

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

23. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

24. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

25. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

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

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

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

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

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

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

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

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A DIMENSIONALLY SIZE SHALL BE REVIEWED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

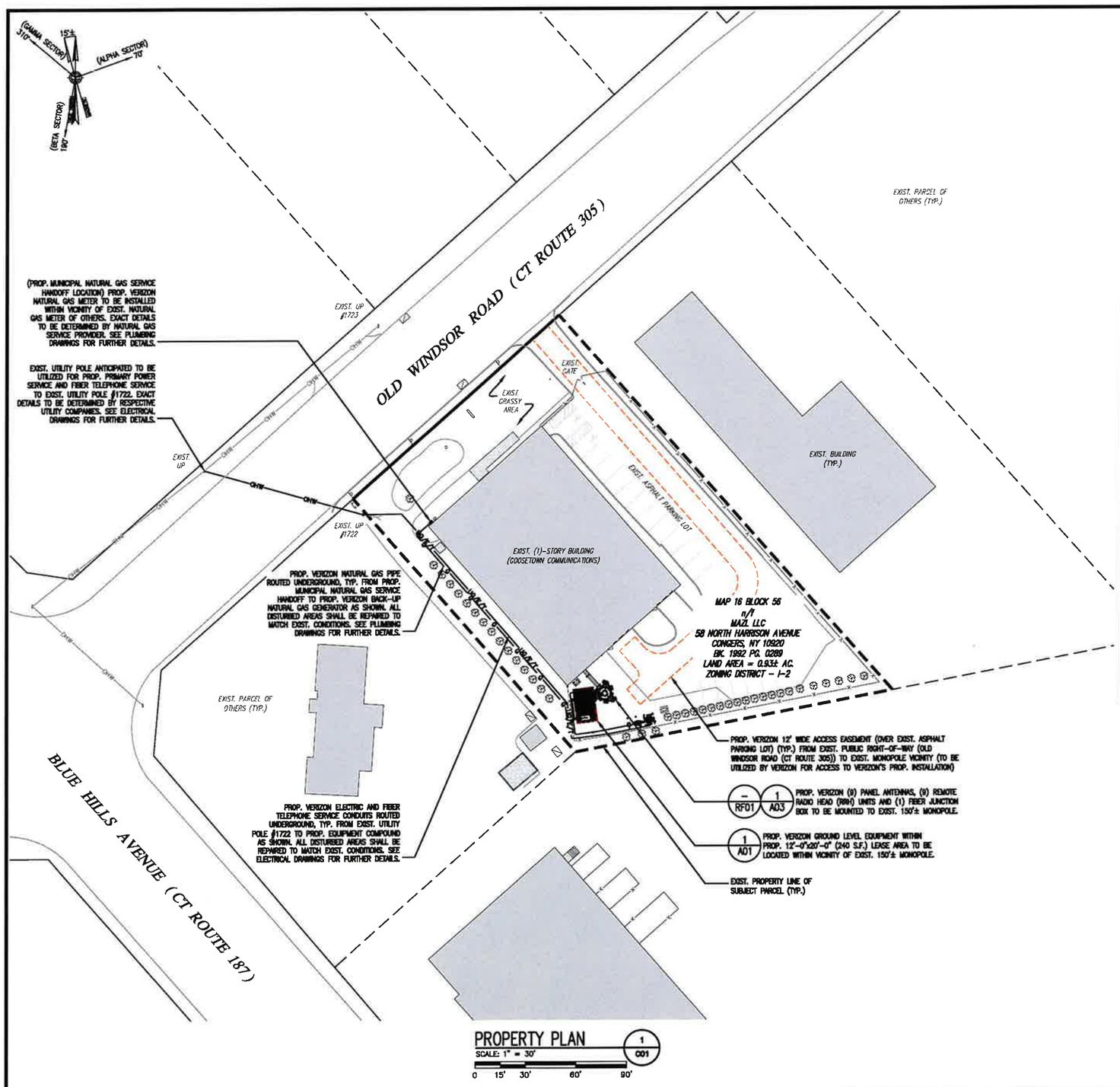
DRAWING TITLE:

GENERAL NOTES

DRAWING NO:

GN01

SCALE: N/A	DESIGNED BY: MBC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MBC	
	CHECKED BY: GRS	VZW PROJECT NO.:
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	16433987
		VZW LOCATION CODE: 783866



GENERAL NOTES:

1.	INITIAL DESIGN VISIT DATE:	1/13/23
2.	VERTICAL DATUM:	NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88)
3.	HORIZONTAL DATUM:	NORTH AMERICAN DATUM OF 1983 (NAD '83)
4.	SITE CONTROL POINT:	CENTER OF EXISTING MONOPOLE LATITUDE: N. 41°-51'-19.96" (41.8554417) (NAD '83) LONGITUDE: W. 72°-42'-16.98" (72.704717) (NAD '83)
5.	PARENT PARCEL OWNER:	MAZL LLC 58 NORTH HARRISON AVENUE CONGERS, NY 10920
6.	TOWER OWNER:	GOOSETOWN NETWORK SERVICES, LLC 58 NORTH HARRISON AVENUE CONGERS, NY 10920 (845) 268-7500
7.	TOWER OWNER ID:	UNKNOWN
8.	SITE ADDRESS:	7A OLD WINDSOR ROAD BLOOMFIELD, CT 06002
9.	APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE, 2nd FLOOR WALLINGFORD, CT 06492
10.	JURISDICTION:	CONNECTICUT SITING COUNCIL
11.	TAX ID:	MAP 16 BLOCK 56
12.	DEED REFERENCE:	BK. 1992 PG. 0289
13.	PLAN REFERENCES:	TOWN OF BLOOMFIELD ASSESSOR/GIS MAPS
14.	ZONING CLASSIFICATION:	I-2 (INDUSTRIAL)

15. ALL UNDERGROUND UTILITY INFORMATION PRESENTED HEREON WAS DETERMINED FROM SURFACE EVIDENCE AND PLANS OF RECORD. ALL UNDERGROUND UTILITIES SHOULD BE LOCATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY SITE WORK. CALL DIGSAFE 1-888-344-7233 A MINIMUM OF 72 HOURS PRIOR TO PLANNED ACTIVITY.
16. THE PROPERTY LINES SHOWN WERE COMPILED UTILIZING TOWN OF BLOOMFIELD ASSESSOR'S PLANS, GIS, RECORDED DEEDS AND PLANS OF REFERENCE AS INDICATED. A COMPLETE BOUNDARY SURVEY WAS NOT UTILIZED IN THE PREPARATION OF THESE PLANS.
17. THE SITE IS LOCATED IN FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOOD HAZARD) AS SHOWN ON FLOOD INSURANCE RATE MAP FOR THE TOWN OF BLOOMFIELD, (MAP NUMBER 09003C0352F) EFFECTIVE 9/26/2008.
18. BEARING SYSTEM OF THIS PLAN IS BASED ON GRID NORTH. TRUE NORTH WAS ESTABLISHED FROM GPS OBSERVATIONS. IT IS NOT INTENDED TO BE AN EXACT REPRESENTATION OF TRUE NORTH.

LEGEND

- PROPERTY LINE (OR STREET)
- ABUTTING PROPERTY LINE
- PROPERTY OFFSET/RADIUS
- EXIST. EASEMENT
- EXIST. CHAIN LINK FENCE
- EXIST. STOCKADE FENCE
- EXIST. EDGE OF PAVEMENT
- EXIST. OVERHEAD UTILITIES
- APPROXIMATE ZONING BOUNDARY
- APPROXIMATE TOWN LINE

CLIENT:
verizon

ARCHITECT/ENGINEER:

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www.chappellengineering.com

SEAL:
STATE OF CONNECTICUT · SCOTT J. BAILEY · 28178 · REGISTERED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR _____ DATE _____

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRADICTORY SIZE SHALL BE REMOVED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

REVISIONS

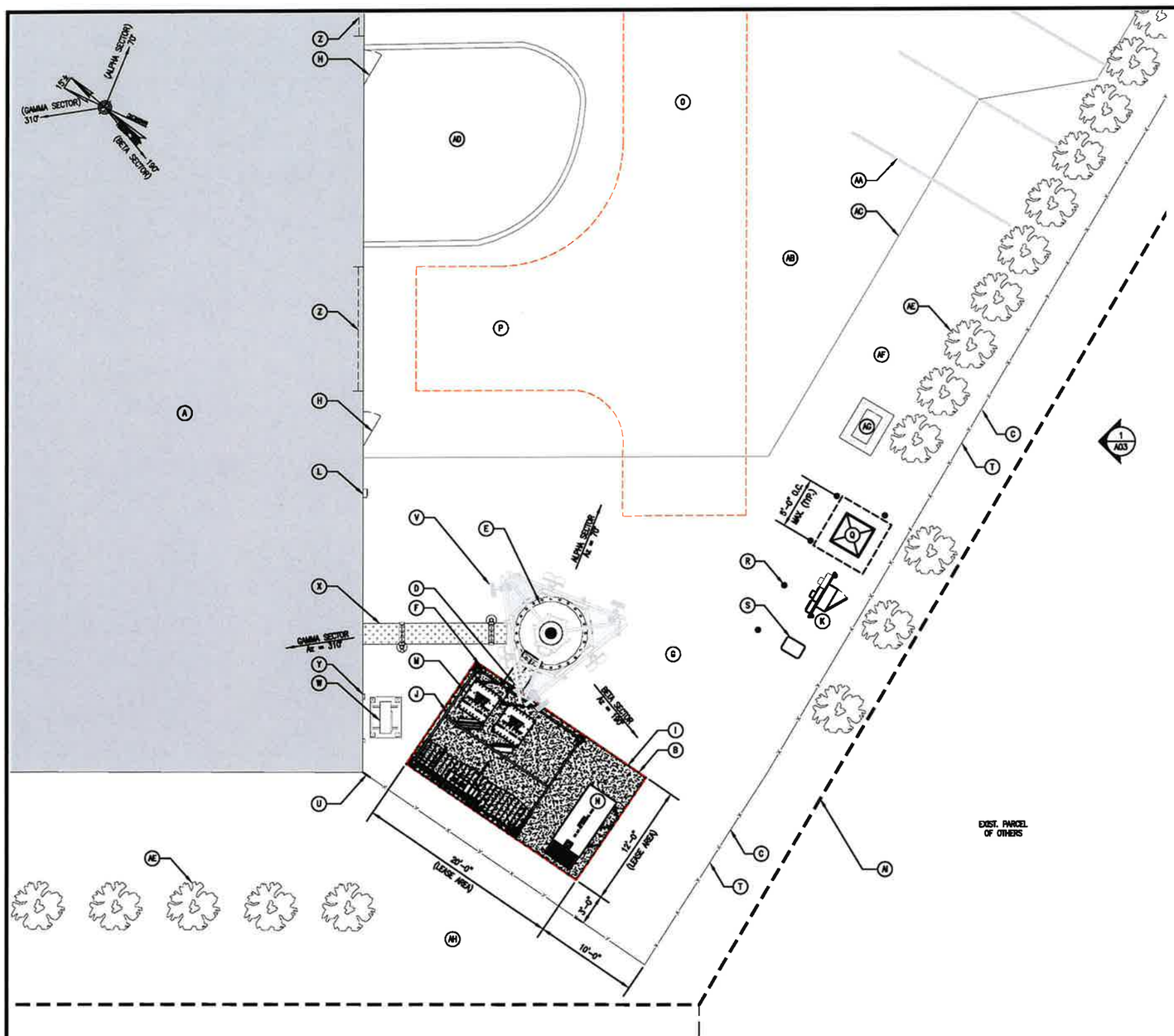
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
PROPERTY PLAN

DRAWING NO:
C01

SCALE: 1" = 30'	DESIGNED BY: NWC	VZW PROJECT CODE: 20222410007
	DRAWN BY: NWC	
	CHECKED BY: GRS	VZW PROJECT NO.: 16433987
CEA PROJECT NO.: 96210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783866



LEGEND

ITEM	DESCRIPTION
A	EXIST. (1)-STORY RUNNING (GOOSETOWN COMMUNICATIONS)
B	LIMITS OF VERIZON'S PROP. 20'-0"x12'-0" (240 S.F.) LEASE AREA/EQUIPMENT PAD (TYP.)
C	EXIST. 7'± CHAIN-LINK FENCE (TYP.)
3 A02 D	PROP. VERIZON (2)-8x12 HYBRID SIGNAL CABLES ROUTED ALONG PROP. OVERHEAD CABLE ICE BRIDGE (TYP.) FROM VERIZON'S PROP. EQUIPMENT PAD TO EXIST. MONOPOLE AS SHOWN.
E	EXIST. 150'± MONOPOLE
3 RF01 F	PROP. VERIZON GPS ANTENNA MOUNTED TO PROP. METAL DECK ICE SHIELD. TOP OF GPS ANTENNA SHALL BE MOUNTED 2'-0" ABOVE TOP OF ICE SHIELD.
G	EXIST. GRAVEL COVER WITHIN EXIST. MONOPOLE VICINITY
H	EXIST. PERSONNEL ACCESS DOOR
6 S01 I	PROP. VERIZON 20'-0"x12'-0" (240 S.F.) REINFORCED CONCRETE EQUIPMENT PAD (TYP.)
1-4 S01 J	PROP. VERIZON 12'-8"x11'-10" (148± S.F.) METAL DECK ICE SHIELD (SHOWN TRANSPARENT FOR CLARITY) ABOVE PROP. EQUIPMENT
2 ED2A K	APPROXIMATE LOCATION OF PROP. TELCO CABINET AND 3-GANG ELECTRIC METER BANK (TO BE EXPANDABLE TO 6-GANG AND DESIGNED TO ACCOMMODATE 800A ELECTRIC SERVICE). EXACT LOCATION, DETAILS AND DESIGN TO BE DETERMINED BY RESPECTIVE UTILITY COMPANIES.
L	EXIST. GOOSETOWN COMMUNICATIONS GENERATOR PLUG
1,2 A02 M	PROP. VERIZON EQUIPMENT CABINET MOUNTED TO PROP. 20'-0"x12'-0" (240 S.F.) REINFORCED CONCRETE PAD (TYP.)
1 ED1 N	PROP. VERIZON 50kW BACK-UP NATURAL GAS GENERATOR MOUNTED TO PROP. 20'-0"x12'-0" (240 S.F.) REINFORCED CONCRETE PAD
O	PROP. VERIZON 12' WIDE ACCESS EASEMENT (OVER EXIST. ASPHALT PARKING LOT) (TYP.) FROM EXIST. PUBLIC RIGHT-OF-WAY (OLD WINDSOR ROAD (CT ROUTE 305)) TO EXIST. MONOPOLE VICINITY (TO BE UTILIZED BY VERIZON FOR ACCESS TO VERIZON'S PROP. INSTALLATION). SEE SHEET C01 FOR CONTINUATION TO OLD WINDSOR ROAD (CT ROUTE 305).
P	PROP. VERIZON 12'x20' PARKING SPACE OR TURN-AROUND AREA
Q	APPROXIMATE LOCATION OF PROP. ELECTRIC TRANSFORMER (EXACT DETAILS AND LOCATION TO BE DETERMINED BY ELECTRIC COMPANY)
4 A02 R	PROP. 6"ø CONCRETE FILLED STEEL BOLLARD (TYP. OF 5)
S	PROP. TELCO HANDHOLE (EXACT DETAILS TO BE DETERMINED BY TELEPHONE COMPANY)
T	EXIST. FENCE TO BE REPAIRED/REHABILITATED BY VERIZON AS REQUIRED.
U	EXIST. FENCE GAP TO BE INFILLED BY VERIZON AS REQUIRED
– RF01 V	PROP. VERIZON (6) PANEL ANTENNAS, (6) RRH UNITS AND (1) FIBER JUNCTION BOX TO BE MOUNTED TO PROP. TRI-SECTOR STEEL MOUNTING PLATFORM ON EXIST. 150'± MONOPOLE
W	EXIST. GOOSETOWN COMMUNICATIONS AC CONDENSING UNIT AND PEDESTAL
X	EXIST. GOOSETOWN COMMUNICATIONS OVERHEAD CABLE ICE BRIDGE (TYP.)
Y	EXIST. GOOSETOWN COMMUNICATIONS AC CONDENSING UNIT DISCONNECT SWITCH
Z	EXIST. OVERHEAD DOOR
AA	EXIST. PARKING STRIPE (TYP.)
AB	EXIST. ASPHALT PARKING LOT
AC	APPROXIMATE EDGE OF EXIST. ASPHALT SURFACE (TYP.)
AD	EXIST. MULCH BED
AE	APPROXIMATE LOCATION OF EXIST. EVERGREEN TREE (TYP.) (ALL TO REMAIN)
AF	EXIST. GRAVEL AREA
AG	EXIST. STORM DRAIN (EXIST. UNDERGROUND DRAIN PIPES (NOT SHOWN FOR CLARITY) SHALL BE IDENTIFIED IN FIELD AND LEFT UNDISTURBED DURING ALL PHASES OF CONSTRUCTION.
AH	EXIST. GRASSY AREA
AI	APPROX. EXIST. PROPERTY LINE (TYP.)

SITE CONTROL POINT:
CENTER OF EXISTING MONOPOLE
N 41°-51'-19.96" (41.855440') (NAD '83)
W 72°-42'-16.96" (72.704717') (NAD '83)
GROUND ELEVATION = 150.0' AMSL (NAVD '88)

PER GOOGLE EARTH

MONOPOLE VICINITY PLAN (1 / A01)
SCALE: 3/16" = 1'-0"
0 5'-4" 10'-8" 16'-0"

CLIENT:
verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:
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REVISIONS

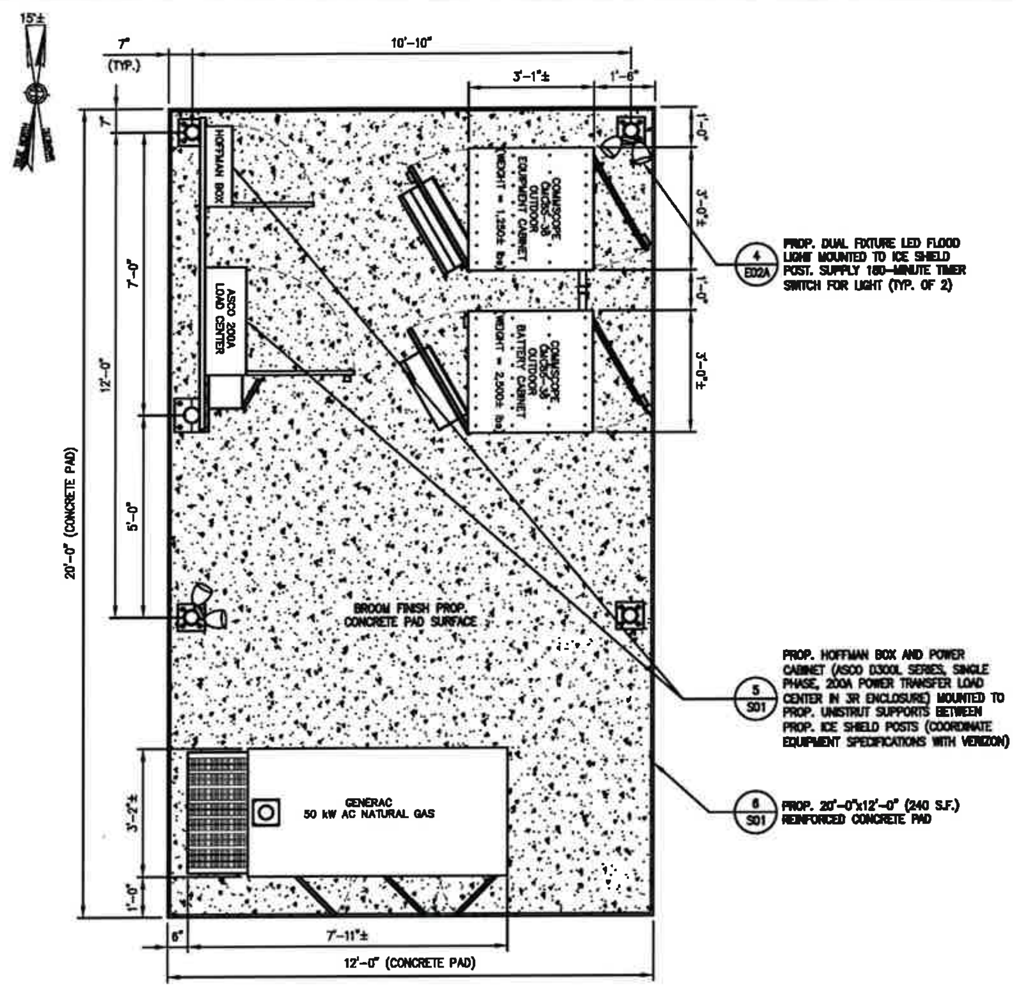
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
MONOPOLE
VICINITY PLAN

DRAWING NO:
A01

SCALE: 3/16" = 1'-0"	DESIGNED BY: MBC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MBC	
	CHECKED BY: GRS	VZW PROJECT NO: 16433987
CEA PROJECT NO: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783866

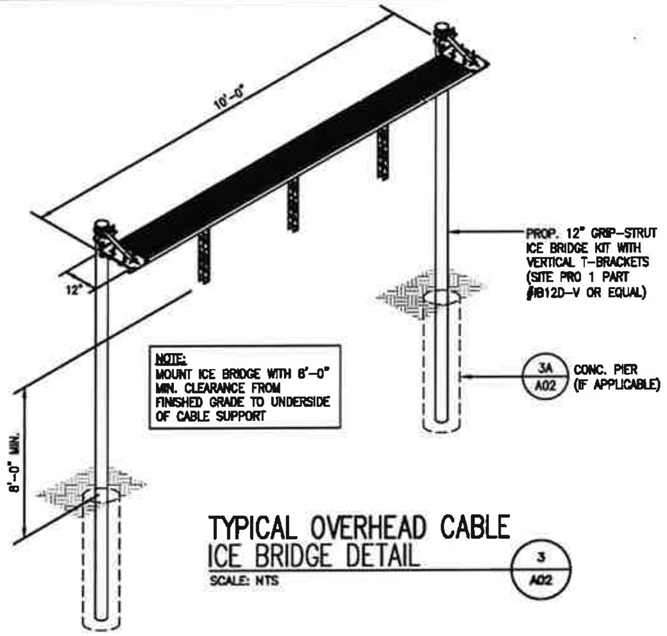


NOTE:
ANTENNAS, CABLE TRAYS, CABLES, CONDUITS, PIPING, ETC. WITHIN VICINITY OF EQUIPMENT PAD NOT SHOWN FOR CLARITY. COORDINATE ALL REQUIRED WORK WITH THAT OF OTHER TRADES.

EQUIPMENT AREA PLAN (1 / A02)

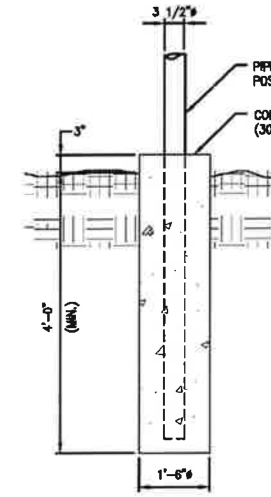
SCALE: ⅛" = 1'-0"

0 2'-0" 4'-0" 6'-0"



TYPICAL OVERHEAD CABLE ICE BRIDGE DETAIL (3 / A02)

SCALE: NTS

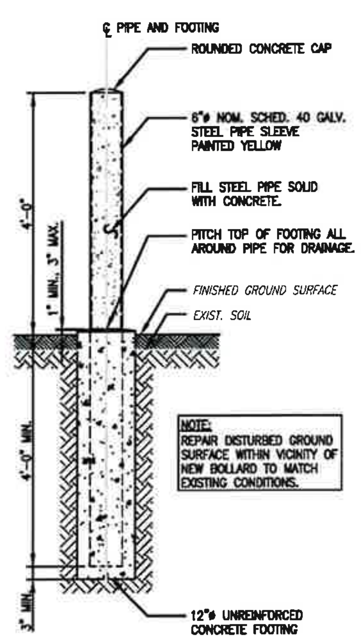


NOTES:

1. FOR EXPOSED LEDGE, PROVIDE GROUT LEVELING PAD. INSTALL (2)-⅝"ø EXPANSION ANCHORS, (6" LONG).
2. FOR BURIED LEDGE AT LESS THAN 3'-6" BELOW FINISH GRADE, CORE 8"ø HOLE INTO LEDGE 18" DEEP. FILL AROUND PIPE WITH NON-SHRINK GROUT. USE COAL TAR ON BURIED LENGTH OF PIPE, AND BACKFILL TO FINISH GRADE
3. FOR CONCRETE, FASTEN BASEPLATE WITH (2)-⅝"ø EXPANSION ANCHORS, (6" LONG).
4. FOR POSTS ON CONCRETE OR EXPOSED LEDGE, PROVIDE 4"x8"x⅜" BASE PLATE WITH (2)-11/16"ø HOLES @ 6" O.C.

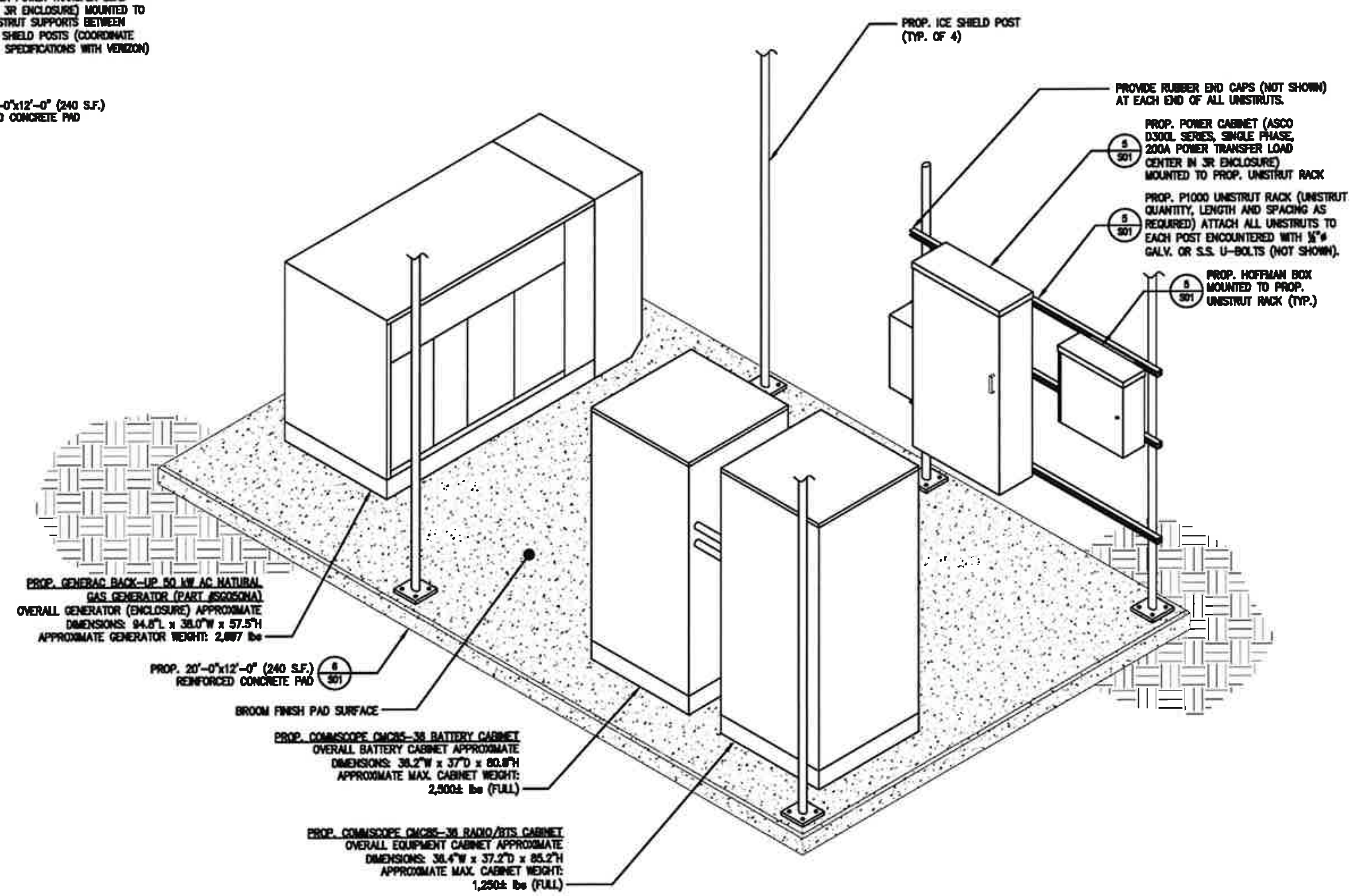
CABLE BRIDGE PIER (3A / A02)

SCALE: NTS



TYPICAL BOLLARD DETAIL (4 / A02)

SCALE: NONE



EQUIPMENT AREA ISOMETRIC VIEW (2 / A02)

SCALE: NOT APPLICABLE

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

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1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

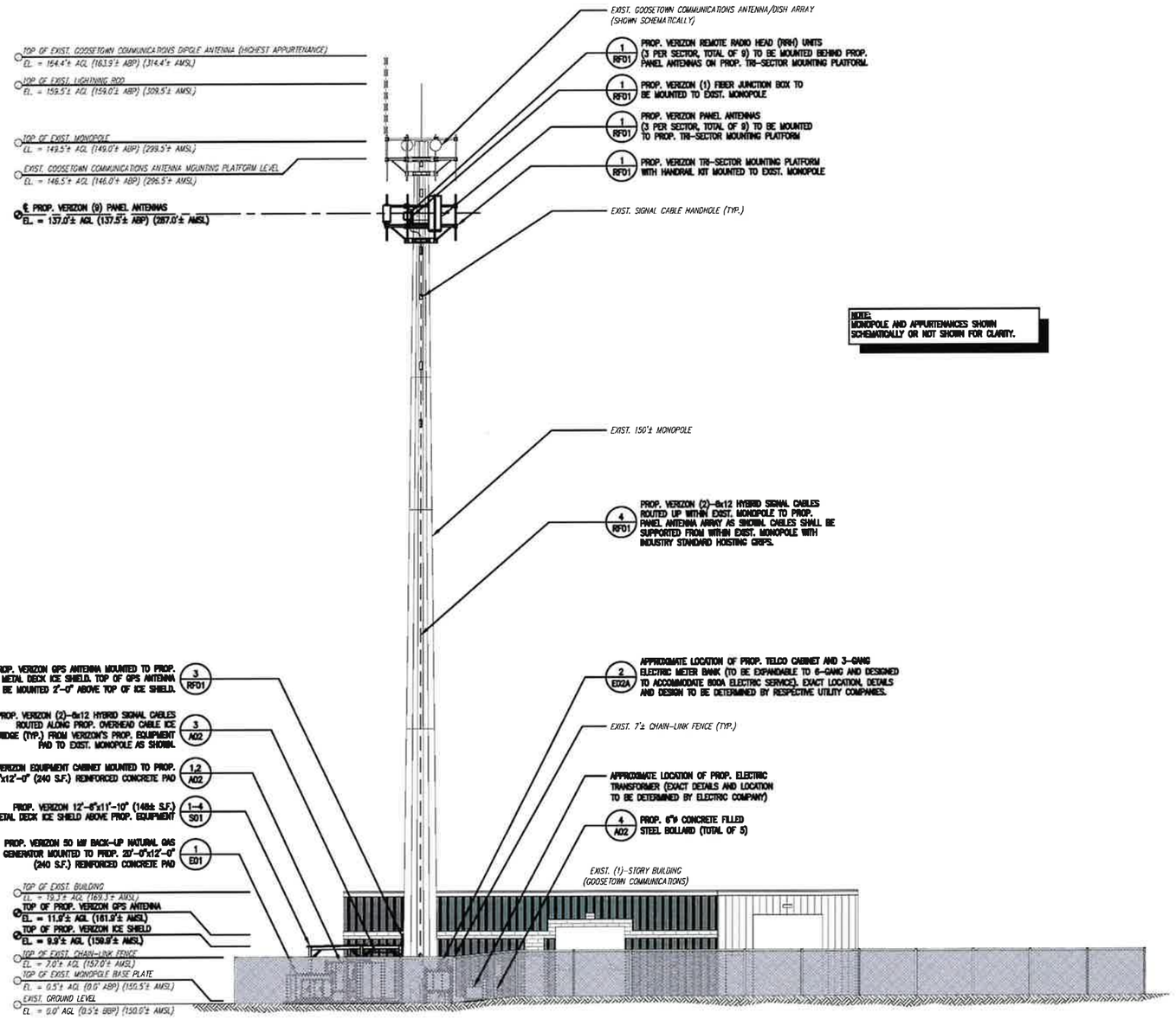
DRAWING TITLE:

EQUIPMENT AREA PLAN & DETAILS

DRAWING NO:

A02

SCALE: AS SHOWN	DESIGNED BY: NWC	VZW PROJECT CODE: 20222410007
	DRAWN BY: NWC	VZW PROJECT NO.: 16433987
	CHECKED BY: GRS	
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783966



SOUTHEAST SITE ELEVATION (1 A03)
SCALE: 1" = 10'
0 5' 10' 20' 30'

NOTE:
MONOPOLE AND APPURTENANCES SHOWN SCHEMATICALLY OR NOT SHOWN FOR CLARITY.

LEGEND

AGL	ABOVE GROUND LEVEL
ABP	ABOVE MONOPOLE BASE PLATE
BBP	BELOW MONOPOLE BASE PLATE
AMSL	ABOVE MEAN SEA LEVEL

CLIENT:
verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
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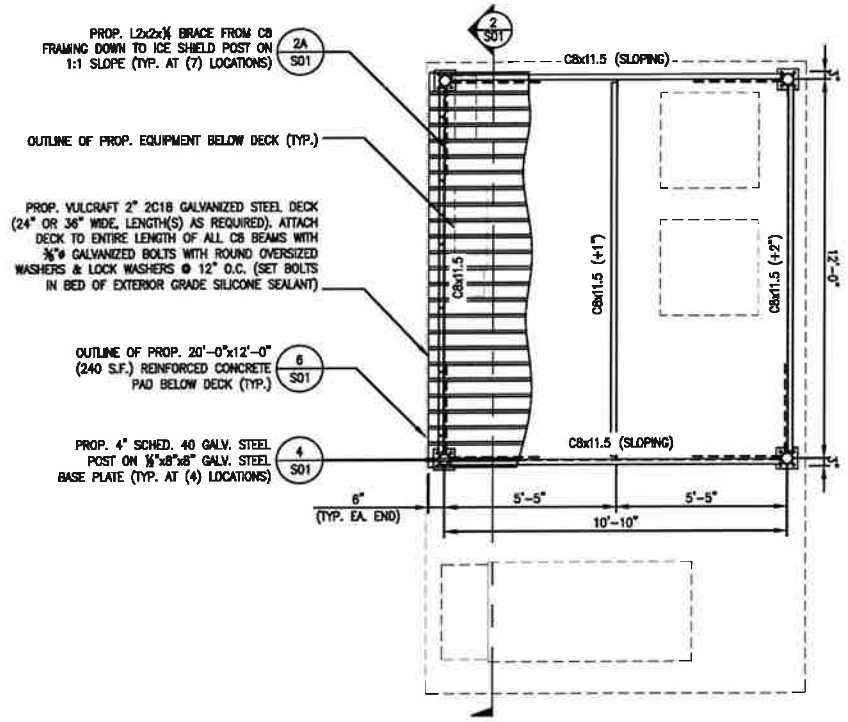
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
SOUTHEAST SITE ELEVATION

DRAWING NO:
A03

SCALE: 1" = 10'	DESIGNED BY: MMC	VZW PROJECT CODE:
	DRAWN BY: MMC	20222410007
	CHECKED BY: GRS	VZW PROJECT NO.:
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	16433687
		VZW LOCATION CODE: 783866

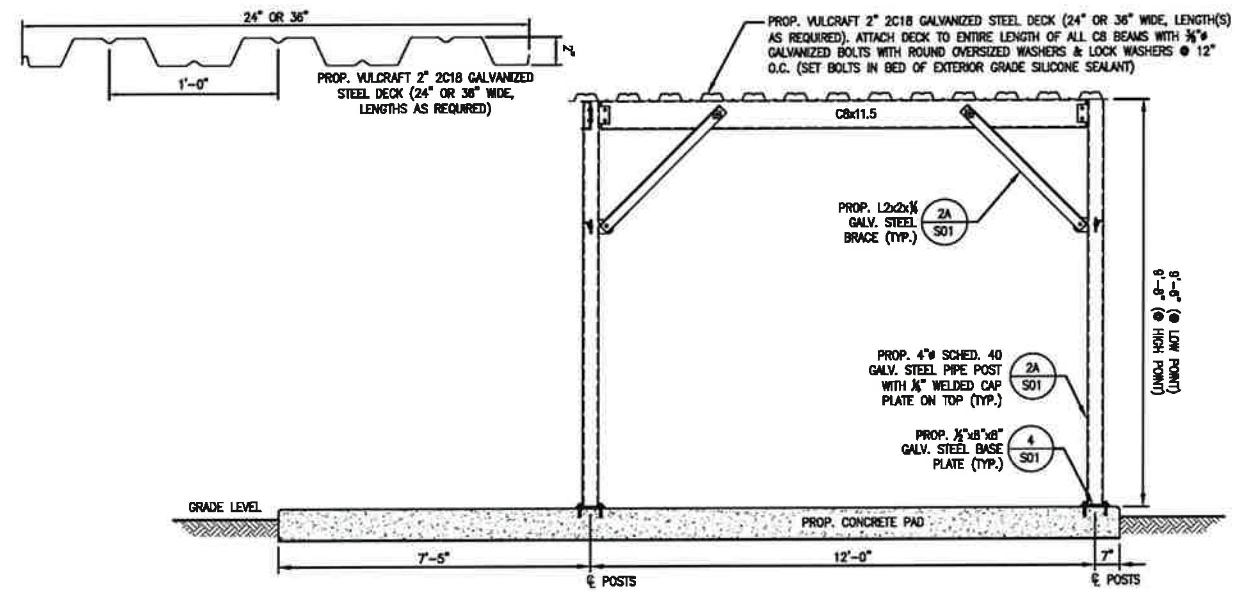


FRAMING PLAN NOTES:
1.) ALL STEEL SHALL BE INSTALLED LEVEL UNLESS OTHERWISE NOTED.
2.) TOP OF NEW STEEL ELEVATION SHALL BE HELD 9'-6" ABOVE EQUIPMENT PAD SURFACE UNLESS OTHERWISE NOTED THUS (±X") INDICATING DISTANCE ABOVE OR BELOW TOP OF STEEL REFERENCE ELEVATION.

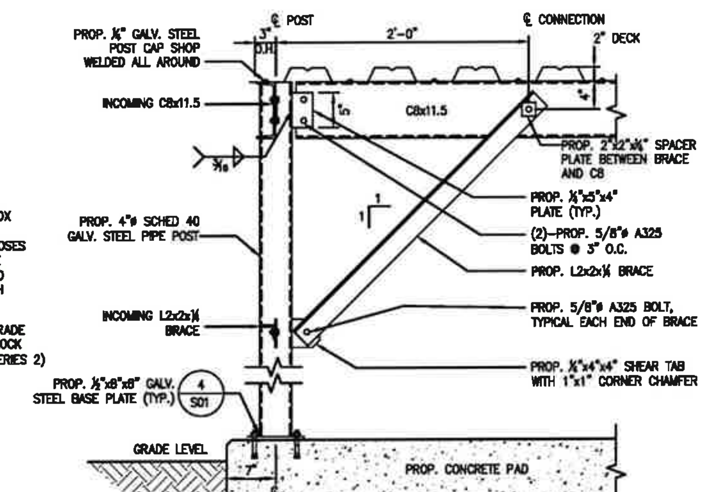
ICE SHIELD FRAMING PLAN (1/S01)
SCALE: 3/8" = 1'-0"

0 2'-8" 5'-4" 8'-0"

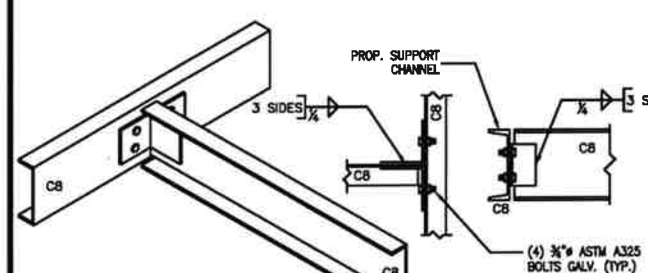
NORTH



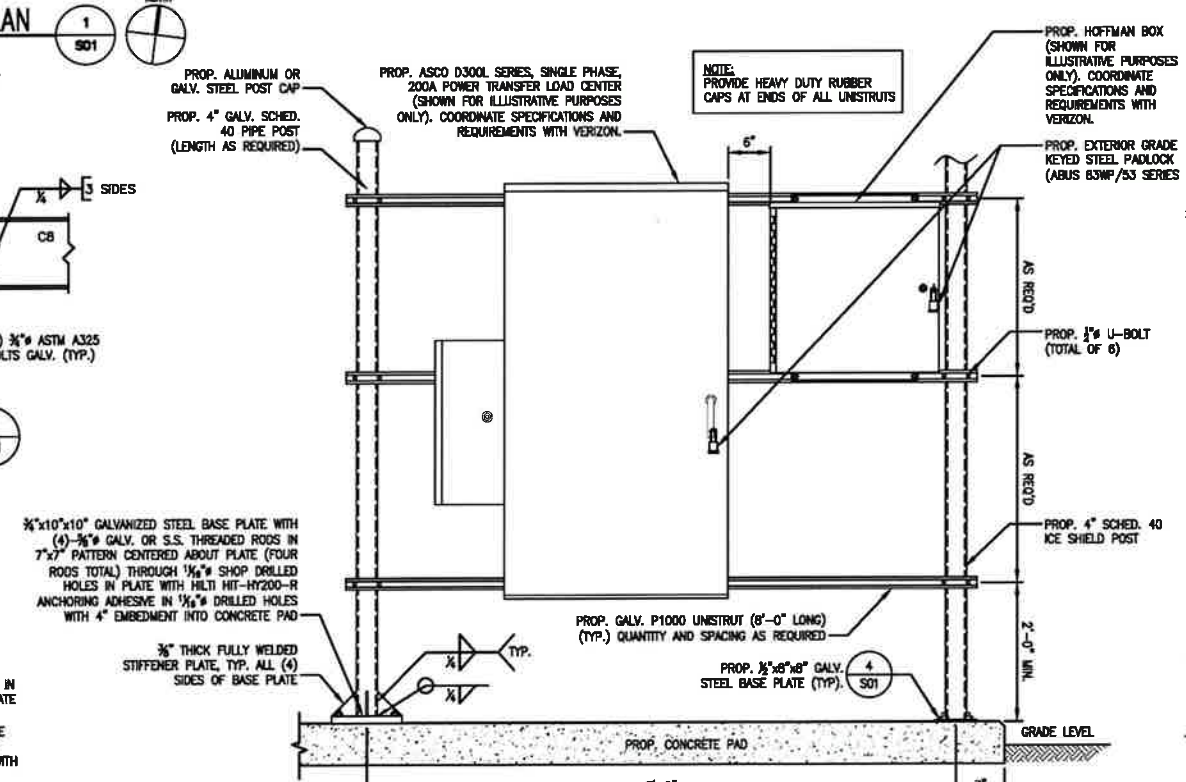
ICE SHIELD SECTION (2/S01)
SCALE: 1/2" = 1'-0"



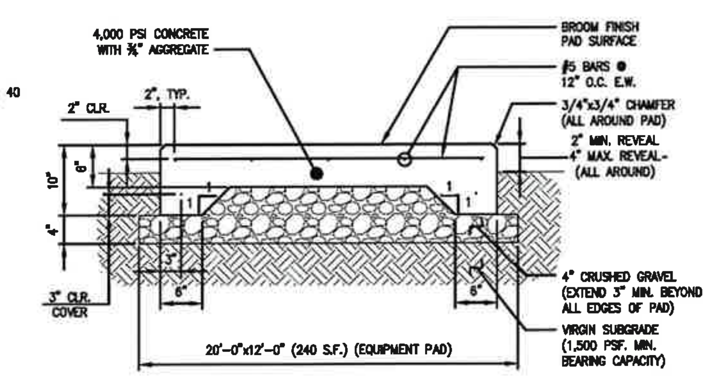
TYPICAL ICE SHIELD POST DETAIL (2A/S01)
SCALE: 1" = 1'-0"



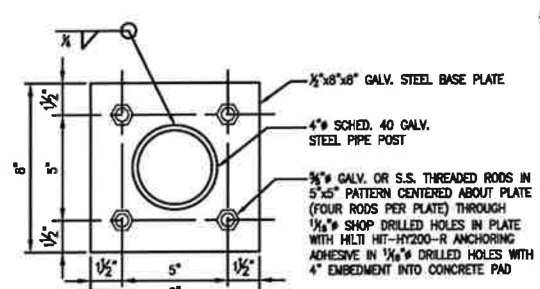
TYPICAL BEAM TO BEAM CONN. (3/S01)
SCALE: NOT TO SCALE



UNISTRUT RACK DETAIL (5/S01)
SCALE: N.T.S.



REINFORCED CONCRETE PAD DETAIL (6/S01)
SCALE: NONE



TYPICAL ICE SHIELD POST BASE PLATE (4/S01)
SCALE: NONE

CLIENT:

verizon✓

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

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REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

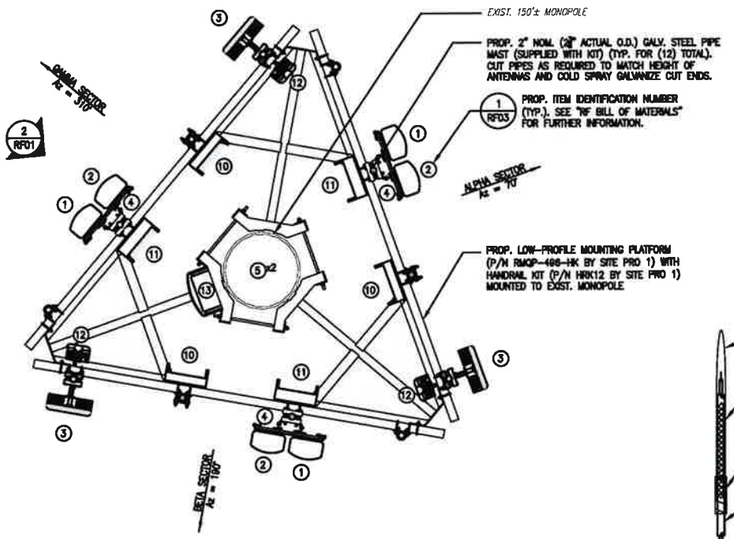
DRAWING TITLE:

ICE SHIELD FRAMING PLAN & STRUCTURAL DETAILS

DRAWING NO:

S01

SCALE: AS SHOWN	DESIGNED BY: MWC DRAWN BY: MWC CHECKED BY: GRS	VZW PROJECT CODE: 20222410007 VZW PROJECT NO.: 18433987
CEA PROJECT NO.: 96210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783866



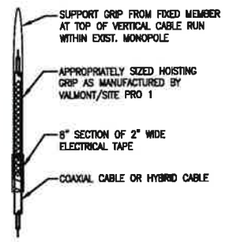
(MONOPOLE PLAN VIEW AT ELEVATION 137.0'± AGL)

ANTENNA MOUNTING PLAN 1 RFD1

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

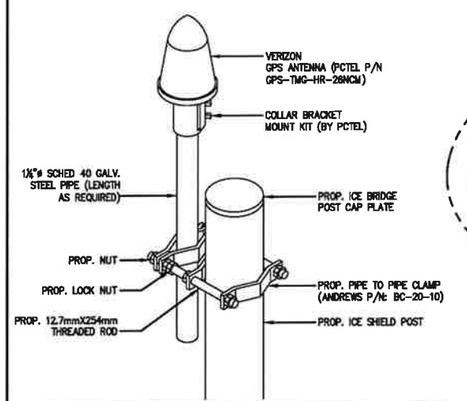
0 2'-0" 4'-0" 6'-0"

NORTH



TYPICAL HOISTING GRIP DETAIL 4 RFD1

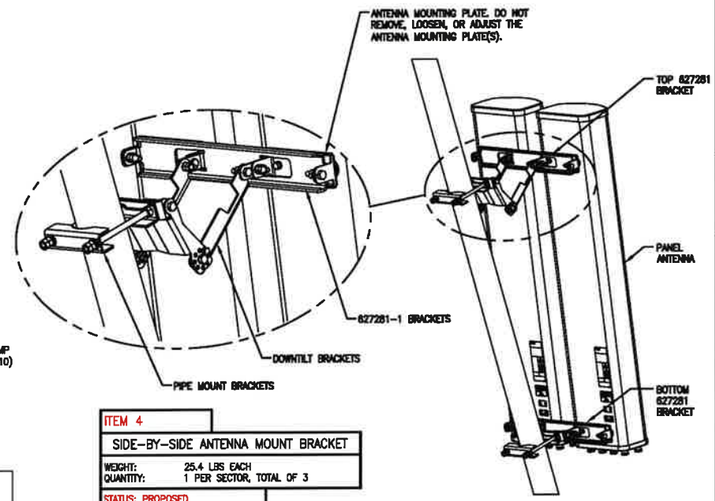
SCALE: NONE



NOTE:
THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1"-1¼" DIAMETER 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 USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.

GPS ANTENNA MOUNTING DETAIL 3 RFD1

SCALE: N.T.S.

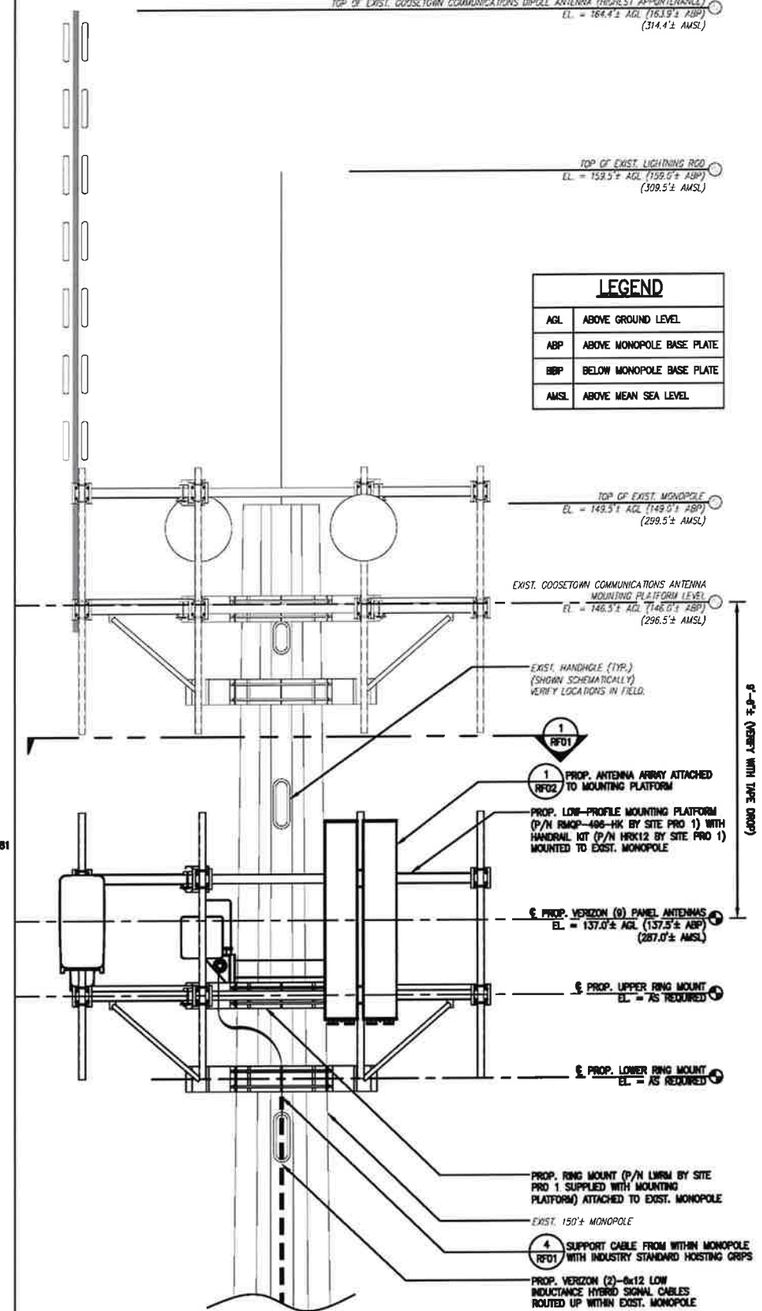


ITEM 4	
SIDE-BY-SIDE ANTENNA MOUNT BRACKET	
WEIGHT:	25.4 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3
STATUS: PROPOSED	

MOUNT ANTENNA IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED PROCEDURE

TYPICAL SIDE-BY-SIDE ANTENNA MOUNT KIT (COMMSCOPE PART #BSAMNT-SBS-1-2) 5 RFD1

SCALE: NOT TO SCALE



ANTENNA MOUNTING PLATFORM MOUNTING DETAIL 2 RFD1

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

LEGEND	
AGL	ABOVE GROUND LEVEL
ABP	ABOVE MONOPOLE BASE PLATE
BBP	BELOW MONOPOLE BASE PLATE
AMSL	ABOVE MEAN SEA LEVEL

CLIENT:
verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
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MARLBOROUGH, MA 01752
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SEAL:

ENGINEER/LAND SURVEYOR DATE

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REVISIONS

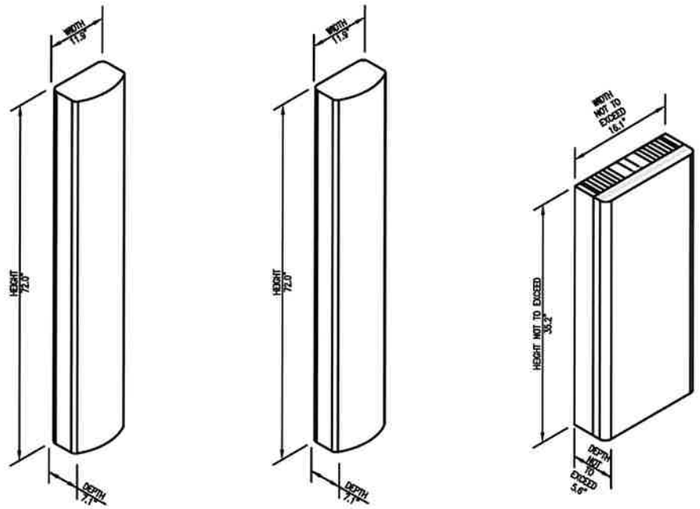
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
ANTENNA MOUNTING PLAN AND DETAILS

DRAWING NO:
RF01

SCALE: AS SHOWN	DESIGNED BY: MMC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MMC	
	CHECKED BY: CRS	VZW PROJECT NO.: 18432987
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783868

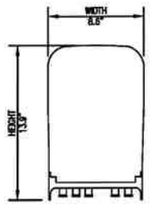


ITEM 1	
LTE (700/850/5G/1900 MHz) PANEL ANTENNA	
DIMENSIONS:	72.0"H x 11.9"W x 7.1"D
WEIGHT:	43.7 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3
STATUS: PROPOSED	

ITEM 2	
LTE (2100/CBRS MHz) PANEL ANTENNA	
DIMENSIONS:	72.0"H x 11.9"W x 7.1"D
WEIGHT:	48.1 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3
STATUS: PROPOSED	

ITEM 3	
MT6407-77A ANTENNA	
MAX. DIMENSIONS:	35.2"H x 16.1"W x 5.6"D
MAX. WEIGHT:	67.1 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3
STATUS: PROPOSED	

TYPICAL PROP. PANEL ANTENNA SPECIFICATIONS (1 RF02)
SCALE: N.T.S.



ITEM 10	
LTE/NR (700/850/5G MHz) REMOTE RADIO HEAD UNIT	
DIMENSIONS:	15.0"H x 15.0"W x 9.0"D
WEIGHT:	70.3 LBS
QUANTITY:	1 PER SECTOR, TOTAL OF 3
STATUS: PROPOSED	

ITEM 11	
LTE/NR (1900/2100 MHz) REMOTE RADIO HEAD UNIT	
DIMENSIONS:	15.0"H x 15.0"W x 10.0"D
WEIGHT:	74.7 LBS
QUANTITY:	1 PER SECTOR, TOTAL OF 3
STATUS: PROPOSED	

ITEM 12	
(BAND 48 (3.5 GHz)) NR AU RRH	
DIMENSIONS:	13.8"H x 8.6"W x 4.2"D
WEIGHT:	18.6 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3
STATUS: PROPOSED	

TYPICAL REMOTE RADIO HEAD (RRH) UNIT DIMENSIONS (2 RF02)
SCALE: N.T.S.

Procedure
Mounting Procedures

4.1 A mounting base is delivered with the unit. The base allows either wall/ladder or pole mounted installaion. See picture to identify the holes for each installation method.

4.2 ***Option 1: Pole Mount***
Using supplied hardware, mount Bracket to 2" to 4" diameter pole.

4.3 ***Option 2: Unistrut***

4.4 ***Option 3: Monopole***
Use 1" stainless steel bands (not supplied) through slots on bracket to mount to Monopole.

Gland/Insert Definitions

5.1 See picture to identify Base Gland Assembly Definitions.

Assembled in unit as shipped:

Qty	Connector Size	Pos	Insert P/N	Insert Hole	Cable Type
2	M75	A	190-0760	42mm	6x12 RL
4	M75	B	190-0738	3x 16.5mm	1x2

Included in kit shipped with unit:

Qty	Connector Size	Insert P/N	Insert Hole	Cable Type	Purpose	Pos
2	M75	190-0750	42mm	6x12 RL	2 glands fit 1 each 6/12 Hyb	B
2	M75	190-0747	2x 24.5mm	2x12 DC	2 glands fit 2 each #6 12 cond DC	B
1	M75	190-0905	2x 10.5mm	2x12 Fiber	1 gland fit 2 x 12 fiber trunk	B
1	M75	190-0912	2x 9.5mm	2 ETH	1 gland fits 2 ethernet cable	B

ITEM 13	
FIBER JUNCTION BOX	
DIMENSIONS:	29.56"H x 16.5"W x 12.6"D
WEIGHT:	32.0 LBS
QUANTITY:	TOTAL OF 1
STATUS: PROPOSED	

TYPICAL FIBER JUNCTION BOX DIMENSIONS, SCHEMATIC AND MOUNTING PROCEDURE (3 RF02)
SCALE: N.T.S.

CLIENT:
verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
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ENGINEER/LAND SURVEYOR DATE

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REVISIONS

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0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
ANTENNA DETAILS AND ANCILLARY EQUIPMENT SPECIFICATIONS

DRAWING NO:
RF02

SCALE:	DESIGNED BY: MMC	VZW PROJECT CODE:
AS SHOWN	DRAWN BY: MMC	20222410007
	CHECKED BY: CRS	VZW PROJECT NO.:
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	16433687
98210.413	3/28/23	VZW LOCATION CODE:
		763866

RF BILL OF MATERIALS (PROP. (FINAL) CONFIGURATION)

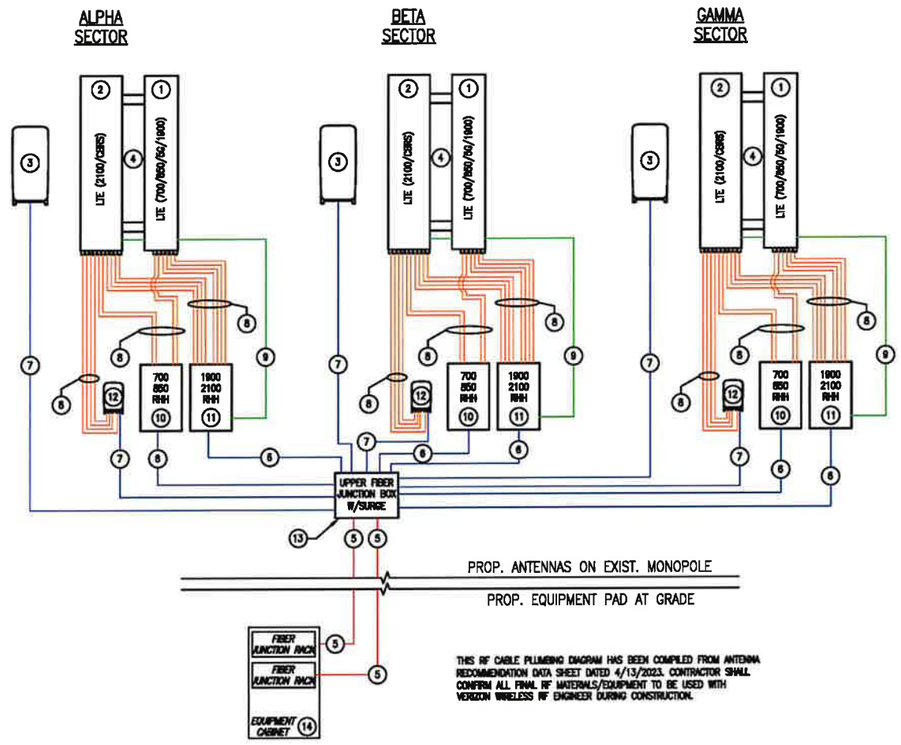
SITE NAME: BLOOMFIELD 5 CT — **A = ALPHA SECTOR B = BETA SECTOR G = GAMMA SECTOR**

	ITEM (SEE PLAN)	DESCRIPTION	BAND	QTY	STATUS	CABLE LENGTH/UNIT SIZE	COMMENTS
1 RF02	①	PANEL ANTENNA	700/850/5G/1900	3 TOTAL (A,B,G)	PROP.	72.0"H x 11.9"W x7.1"D (43.7 lbs, each)	MOUNT TO PROP. SIDE-BY-SIDE MOUNT
	②	PANEL ANTENNA	2100/CBRS	3 TOTAL (A,B,G)	PROP.	72.0"H x 11.9"W x7.1"D (48.1 lbs, each)	MOUNT TO PROP. SIDE-BY-SIDE MOUNT
	③	PANEL ANTENNA	3700-3980	3 TOTAL (A,B,G)	PROP.	35.2"H x 16.1"W x 5.8"D (37.1 lbs, each)	MOUNT TO PROP. PIPE MAST
5 RF01	④	SIDE-BY-SIDE ANTENNA MOUNT KIT	-	3 TOTAL (A,B,G)	PROP.	25.4 lbs, each	MOUNT TO PROP. PIPE MAST
	⑤	6x12 HYBRID SIGNAL CABLE (MAIN LINE)	-	2 TOTAL	PROP.	155 FT.±	ROUTE FROM PROP. EQUIPMENT, ALONG PROP. OVERHEAD CABLE ICE BRIDGE TO EXIST. MONOPOLE AND UP WITHIN MONOPOLE TO PROP. FIBER JUNCTION BOX
	⑥	1x1 HYBRID SIGNAL CABLE (JUMPER)	-	6 TOTAL (2 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. UPPER FIBER JUNCTION BOX TO PROP. RRH UNITS
	⑦	1x2 HYBRID SIGNAL CABLE (JUMPER)	-	6 TOTAL (2 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. UPPER FIBER JUNCTION BOX TO PROP. ANTENNAS/CBRS RRH UNITS
	⑧	7/16" COAXIAL CABLE (JUMPER)	-	48 TOTAL (16 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. PANEL ANTENNAS
	⑨	RET CONTROL CABLE(S) (JUMPER)	-	PER RF REQ.	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. PANEL ANTENNAS
2 RF02	⑩	REMOTE RADIO HEAD (RRH) UNIT	700/850/5G	3 TOTAL (A,B,G)	PROP.	15.0"H x 15.0"W x 9.0"D (70.3 lbs, each)	MOUNT TO PROP. PIPE MAST
	⑪	REMOTE RADIO HEAD (RRH) UNIT	1900/2100	3 TOTAL (A,B,G)	PROP.	15.0"H x 15.0"W x 10.0"D (74.7 lbs, each)	MOUNT TO PROP. PIPE MAST
	⑫	REMOTE RADIO HEAD (RRH) UNIT	BAND 48	3 TOTAL (A,B,G)	PROP.	13.8"H x 8.6"W x 4.2"D (18.8 lbs, each)	MOUNT TO PROP. PIPE MAST
3 RF02	⑬	UPPER FIBER JUNCTION BOX W/SURGE	-	1 TOTAL	PROP.	28.58"H x 16.5"W x 12.6"D (32.0 lbs, each)	MOUNT TO EXIST. MONOPOLE
	⑭	RADIO CABINET/FIBER JUNCTION RACK	-	1 TOTAL	PROP.	28.58"H x 16.5"W x 12.6"D (32.0 lbs, each)	EQUIPMENT CABINET/ROOM INTERFACE

THIS RF BILL OF MATERIALS (BOM) HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 4/13/2023. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF BILL OF MATERIALS (FINAL CONFIGURATION) — 1 RF03
SCALE: NONE

NOTE:
ARRANGEMENT OF ANTENNAS, REMOTE RADIO HEAD (RRH) UNITS, FIBER JUNCTION BOXES AND ALL ASSOCIATED WIRING AND ANCILLARY EQUIPMENT SHOWN SCHEMATICALLY ON THIS PLUMBING DIAGRAM. SEE PROP. ANTENNA ORIENTATION PLAN(S) AND CROSS REFERENCE WITH RF BILL OF MATERIALS FOR PROP. ANTENNA/EQUIPMENT PLACEMENT DETAIL.



THIS RF CABLE PLUMBING DIAGRAM HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 4/13/2023. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF CABLE PLUMBING DIAGRAM (FINAL CONFIGURATION) — 2 RF03
SCALE:

RADIO FREQUENCY (RF) DESIGN NOTES:
1) ALL RADIO FREQUENCY (RF) DESIGN INFORMATION CONTAINED ON THIS SHEET IS SHOWN SCHEMATICALLY.

2) THE GENERAL CONTRACTOR SHALL CONFIRM ALL RF DESIGN ELEMENTS SHOWN (INCLUDING BUT NOT LIMITED TO PANEL ANTENNA MODELS & ARRANGEMENT, AZIMUTHS, REMOTE RADIO HEAD (RRH) UNIT MODELS & ARRANGEMENT AND CABLING DIAGRAMS/SCHEMATICS) WITH THE VERIZON WIRELESS RF ENGINEER AT THE TIME OF CONSTRUCTION.

LEGEND

- RED — = HYBRID CABLE (MAIN LINE)
- PURPLE — = COAXIAL CABLE (MAIN LINE)
- BLUE — = 1x1 HYBRID CABLE (JUMPER)
- ORANGE — = 1/2"ø COAXIAL CABLE (JUMPER)
- GREEN — = RET CONTROL CABLE(S) (JUMPER)

CLIENT:
verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil·Structural·Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR — DATE

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONSTRUCTION SET SHALL BE DISREGARD INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

REVISIONS

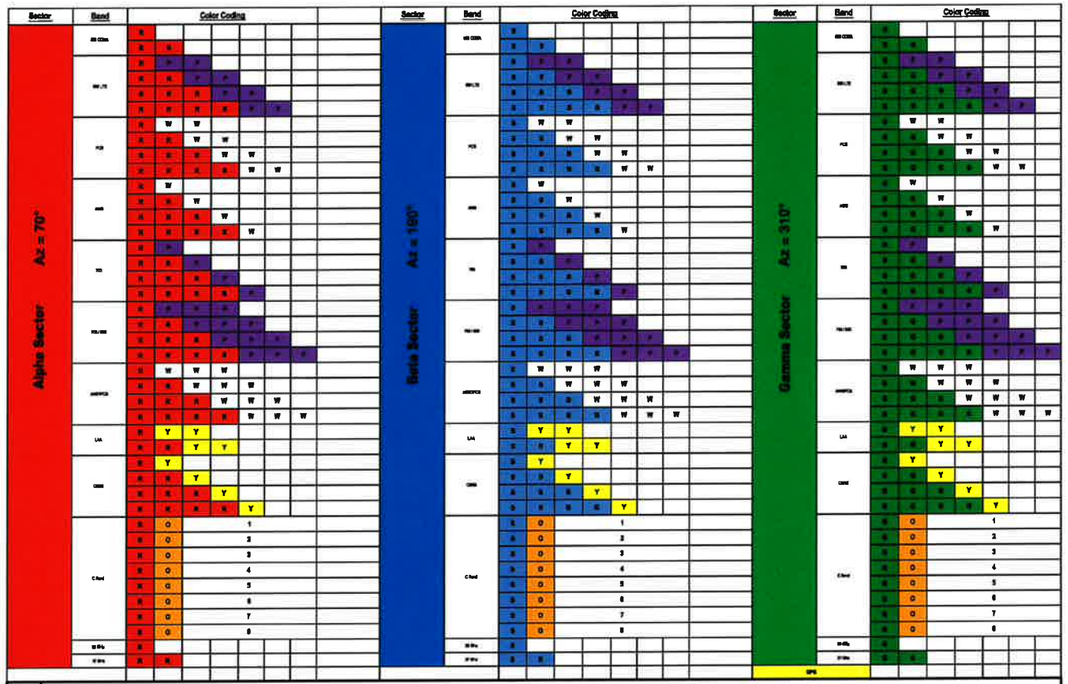
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
RF BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM

DRAWING NO:
RF03

SCALE: AS SHOWN	DESIGNED BY: MRC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MRC	
	CHECKED BY: GRS	VZW PROJECT NO.: 15433867
CEA PROJECT NO.: 96210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783866



Main Line Cable Length/Information

CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR

155'±

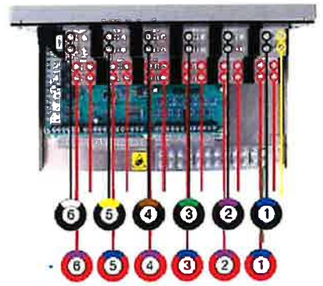
TWO (2) PROPOSED 6x12 HYBRID SIGNAL CABLES

LINE COLOR CODE SPECIFICATIONS 1 RF04

Hybrid Cable on Towers

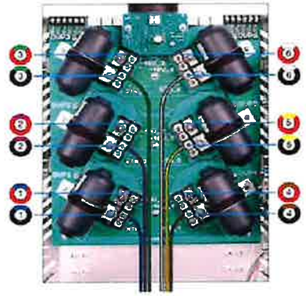
Hybrid Cable 1

Sector	Identification Color	-48V	RTN
700 Alpha	Blue		
AWS Alpha	Violet		
PCS Alpha	Green		
850 Alpha	Brown		
Spare	Yellow		
Spare	White		



Hybrid Cable 2

Sector	Identification Color	-48V	RTN
700 Beta	Blue		
AWS Beta	Violet		
PCS Beta	Green		
850 Beta	Brown		
Spare	Yellow		
Spare	White		



HYBRID CABLE COLOR CODE SPECIFICATIONS 2 RF04

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
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SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONSTRUCTION SIZE SHALL BE REVISED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:

RF COLOR CODE SPECIFICATIONS

DRAWING NO:

RF04

SCALE: N/A	DESIGNED BY: MMC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MMC	
	CHECKED BY: CAS	VZW PROJECT NO.: 18433667
CEA PROJECT NO.: 96210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 763866

GENERAL PLUMBING NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE AND FULLY OPERATING SYSTEM INCLUDING ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY AS INDICATED ON DRAWINGS AND AS DESCRIBED IN THESE SPECIFICATIONS.

2. THE CONTRACTOR SHALL PERFORM ALL CUTTING, DEMOLISHING, REMOVAL, DISPOSAL, PATCHING, SEALING, RESTORATION AND ALL ELSE REQUIRED TO COMPLETE THE PLUMBING INSTALLATION.

3. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE LOCALLY PRESIDING BUILDING CODE AND ALL OTHER AUTHORITIES HAVING JURISDICTION.

4. THIS CONTRACTOR SHALL PAY ALL FEES AND TAXES, OBTAIN ALL PERMITS AND APPROVALS, FILE THE REQUIRED DOCUMENTS AND CAUSE ALL INSPECTIONS.

5. SHOP DRAWINGS OF THE FOLLOWING SHALL BE SUBMITTED TO THE OWNER'S PROJECT REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION:

   A. LAYOUT OF ALL EQUIPMENT
   B. DIMENSIONED AND DETAILED PIPING LAYOUT
   C. MANUFACTURER'S SPECIFICATIONS OF ALL EQUIPMENT SPECIFIED
   D. DETAILED CONTROL WIRING DIAGRAMS

6. ALL PIPE HANGERS SHALL BE ATTACHED TO THE BUILDING/SUPPORT STRUCTURE. PROVIDE TRAPEZE SUPPORTS AS REQUIRED.

7. THE DIGGING OF HANGERS, CHOPPING, CORE DRILLING, WORK IN OTHER TENANT SPACES OR OCCUPIED AREAS, WORK CREATING FUMES ETC. OR WORK DEEMED BY THE OWNER TO BE A NUISANCE TO OTHER TENANTS SHALL BE DONE AFTER WORKING HOURS.

8. ALL PENETRATIONS THROUGH FIRE RATED PARTITIONS AND FLOORS SHALL BE FIRESTOPPED WITH HILTI FIRESTOPPING MATERIAL. PROVIDE PIPE SLEEVES FOR ALL PENETRATIONS SEALED WITH AN APPROVED FIRESTOP.

9. THIS CONTRACTOR SHALL FURNISH A ONE (1) YEAR GUARANTEE ON PARTS AND LABOR OF THE INSTALLATION FROM THE DATE OF OWNER ACCEPTANCE AND A FIVE (5) YEAR COMPRESSOR WARRANTY WHERE AVAILABLE.

10. CONTRACTOR SHALL FURNISH ALL NECESSARY CONTROLS, STARTERS, PUMPS, MOTORS, PANELS AND RELAYS ETC. FOR A FULLY FUNCTIONING SYSTEM.

11. BAKELITE LABELS SHALL BE INSTALLED AT ALL NEW EQUIPMENT FOR IDENTIFICATION PURPOSES.

12. ANY REQUIRED SHUTDOWNS OF BASE BUILDING SYSTEMS FOR CONNECTION OF TENANT SYSTEMS MUST BE PRIOR APPROVED AND COORDINATED WITH ALL APPROPRIATE BUILDING/PROPERTY REPRESENTATIVES. THIS CONTRACTOR SHALL ASSUME ALL FEES REQUIRED BY THE OWNER TO ARRANGE AND SUPERVISE THE SHUTDOWN(S).

13. THE CONTRACTOR SHALL VISIT THE LOCATIONS OF ALL PROPOSED WORK AND BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING AND FORECASTED CONDITIONS AND LIMITATIONS.

14. VERIFY ALL EXISTING CONDITIONS. ALL NEW PIPING AND EQUIPMENT SHALL BE COORDINATED WITH ALL EXISTING DUCTWORK, PIPING, ELECTRICAL AND GENERAL SITE CONDITIONS.

15. ALL EXISTING EQUIPMENT, DUCTWORK, PIPING, ELECTRICAL AND GENERAL SITE CONDITIONS SHOWN ARE APPROXIMATE AND EXACT CONDITIONS MUST BE VERIFIED IN THE FIELD THROUGHOUT CONSTRUCTION.

16. ALL WORK SHALL CONFORM TO THE GOVERNING BASE BUILDING/PROPERTY STANDARDS.

17. THE CONTRACTOR SHALL COORDINATE WITH THE BASE BUILDING/PROPERTY MANAGEMENT AS TO THE DELIVERY OF EQUIPMENT AND SCHEDULING OF WORK SO AS TO NOT INTERFERE WITH THE OPERATION OF THE OCCUPIED FACILITIES. ANY REQUIRED SHUTDOWNS OF THE EXISTING BASE BUILDING/PROPERTY SYSTEMS OR WORK OUTSIDE OF THE DEMISING AREA SHALL BE STRICTLY COORDINATED WITH ALL APPROPRIATE BUILDING/PROPERTY REPRESENTATIVES.

18. ALL ANCILLARY POWER AND LINE VOLTAGE WIRING SHALL BE DONE BY A LICENSED AND INSURED ELECTRICAL CONTRACTOR BASED UPON THE DIAGRAMS FURNISHED BY THE MECHANICAL CONTRACTOR.

GENERAL PLUMBING NOTES (CONTINUED):

19. ALL MATERIAL AND APPARATUS SHALL BE NEW AND IN FIRST CLASS CONDITION. ALL MATERIAL AND APPARATUS SHALL HAVE MARKINGS OR A NAMEPLATE IDENTIFYING THE MANUFACTURER AND PROVIDING SUFFICIENT REFERENCE TO ESTABLISH QUALITY, SIZE AND CAPACITY. ALL WORKMANSHIP SHALL BE OF THE FINEST POSSIBLE BY EXPERIENCED MECHANICS OF THE PROPER TRADE. IN GENERAL, ALL MATERIALS AND EQUIPMENT SHALL BE OF COMMERCIAL SPECIFICATION GRADE IN QUALITY. LIGHT DUTY AND RESIDENTIAL TYPE EQUIPMENT WILL NOT BE CONSIDERED ACCEPTABLE. ALL HOISTS, SCAFFOLDS, STAGING, RUNWAYS, TOOLS, MACHINERY AND EQUIPMENT REQUIRED FOR THE PERFORMANCE OF THE WORK SHALL BE FURNISHED BY THIS CONTRACTOR. MATERIAL AND EQUIPMENT SHALL BE STORED AND MAINTAINED IN CLEAN CONDITION AND PROTECTED FROM WEATHER, MOISTURE AND PHYSICAL DAMAGE.

20. THE CONTRACTOR SHALL PERSONALLY INSPECT THE SITE OF THE PROPOSED WORK DURING THE CUSTOMER'S BID WALK OR AS OTHERWISE ARRANGED WITH APPROPRIATE BUILDING/PROPERTY REPRESENTATIVES AND BECOME FULLY INFORMED AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE DONE. FAILURE TO DO SO WILL NOT BE CONSIDERED SUFFICIENT JUSTIFICATION TO REQUEST OR OBTAIN EXTRA COMPENSATION OVER AND ABOVE THE CONTRACT PRICE.

21. DIRT AND REFUSE RESULTING FROM THE PERFORMANCE OF THE WORK SHALL BE REMOVED FROM THE PREMISES DAILY TO PREVENT ACCUMULATION. THE CONTRACTOR SHALL COOPERATE IN MAINTAINING REASONABLY CLEAN PREMISES AT ALL TIMES THROUGHOUT CONSTRUCTION. IMMEDIATELY PRIOR TO FINAL INSPECTION, THE CONTRACTOR SHALL PERFORM A FINAL CLEANUP OF DIRT AND REFUSE RESULTING FROM THE WORK PERFORMED. THE CONTRACTOR SHALL CLEAN ALL MATERIAL AND EQUIPMENT INSTALLED UNDER THE CONTRACT. DIRT, DUST, PLASTER, STAINS AND ALL FOREIGN MATTER SHALL BE REMOVED FROM ALL SURFACES. DAMAGED FINISHES SHALL BE TOUCHED UP AND RESTORED TO THEIR ORIGINAL CONDITION.

22. THE DRAWINGS ARE SCHEMATIC IN NATURE, BUT SHOW THE VARIOUS COMPONENTS OF THE SYSTEMS APPROXIMATELY TO SCALE AND ATTEMPT TO INDICATE HOW THEY ARE TO BE INTEGRATED WITH OTHER PARTS OF THE BUILDING/STRUCTURE. FIGURED DIMENSIONS SHALL BE TAKEN IN PREFERENCE TO SCALED DIMENSIONS. DETERMINE EXACT LOCATIONS BY FIELD MEASUREMENTS, CHECKING THE REQUIREMENTS OF OTHER TRADES AND BY REVIEWING ALL CONTRACT DOCUMENTS. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ERRORS WHICH COULD HAVE BEEN AVOIDED BY PROPER CHECKING AND INSPECTION.

GAS PIPING NOTES:

1. GAS PIPING SHALL BE DESIGNED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE LATEST REVISION AND IN ACCORDANCE WITH NFPA 54.

2. GAS PIPE SIZING SHALL BE BASED ON TABLE M-805.4.1(2) IN THE BOCA NATIONAL MECHANICAL CODE. A MAXIMUM PIPE LENGTH OF 200 FT. SHALL BE USED FOR THIS DESIGN.

3. GAS PIPING SHALL BE OF MATERIAL SPECIFIED ON PLANS WITH ALL INDUSTRY STANDARD FITTINGS. WHERE GAS PIPING CONNECTS TO EQUIPMENT, IT SHALL BE PROVIDED WITH A DRIP LEG THE FULL SIZE OF THE SUPPLY PIPE, A 100% SHUT-OFF GAS COCK AND A UNION.

4. GAS PIPING HANGERS AND SUPPORTS SHALL CONFORM TO THE REQUIREMENTS OF "STANDARD PRACTICE FOR PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN, MANUFACTURE, SELECTION, APPLICATION AND INSTALLATION" (ANSI/MSS SP-58-2009). ALL PIPE SHALL BE SUPPORTED IN A NEAT AND WORKMANLIKE MANNER.

5. PORTIONS OF A GAS PIPING SYSTEM INSTALLED IN CONCEALED LOCATIONS SHALL NOT HAVE UNIONS, TUBE FITTINGS OR RUNNING THREADS. NO GAS VALVES SHALL BE INSTALLED IN ABOVE CEILING OR BELOW GRADE LOCATIONS.

6. ALL GAS VENTS FROM PRESSURE RELIEF OR PRESSURE LIMITING DEVICES SHALL BE PIPED THE FULL OUTLET SIZE AND SHALL BE FITTED WITH AN AGA APPROVED FITTING WITH INSECT SCREEN. PROVIDE CAULKING OR PROPER FLASHING AT VENTS.

7. BRANCH OUTLET PIPES SHALL BE TAKEN FROM THE TOP OR SIDES OF THE HORIZONTAL LINES AND NOT THE BOTTOM.

8. USE DIELECTRIC UNIONS WHERE DISSIMILAR METALS ARE JOINED TOGETHER.

9. INSPECT, TEST AND PURGE THE GAS PIPING SYSTEM IN ACCORDANCE TO NFPA 54 - PART 4 AND ALL LOCAL REQUIREMENTS. MINIMUM REQUIREMENTS SHALL BE 5 PSIG FOR A PERIOD OF 2 HOURS.

PLUMBING PROCEDURAL PREPARATION AND TESTING NOTES:

1. DUE TO THE NATURE OF THIS SYSTEM AND OTHER SIMILAR SYSTEMS IN USE BY THE OWNER, THE CONTRACTOR SHALL PROVIDE THE SYSTEMS AS SPECIFIED. SUBSTITUTIONS SHALL NOT BE CONSIDERED AT THIS TIME UNLESS DIRECTED BY OWNER.

2. ALL WORK WITHIN LIVE ELECTRICAL PANELS SHALL OCCUR DURING HOURS ACCEPTABLE TO THE PANEL OWNER.

3. THE CONTRACTOR SHALL PROVIDE TWO (2) DAYS ADVANCED NOTIFICATION OF ALL DELIVERIES TO THE SITE AND SEVEN (7) DAYS ADVANCED NOTIFICATION OF ANY REQUIRED SERVICE SHUT-DOWNS.

4. THE CONTRACTOR SHALL MAINTAIN INTERFACE WITH THE OWNER AND WITH ALL OF THEIR CONTRACTORS, VENDORS AND ENGINEERING FIRMS.

5. THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING TO BE HELD AT THE JOB SITE OR IN THE AREA WHERE THE INSTALLATION WILL TAKE PLACE.

6. PRIOR TO THE START OF CONSTRUCTION, ALL WORKERS SHALL BE BRIEFED ON ALL SAFETY REQUIREMENTS PERTINENT TO THE WORKING ENVIRONMENT.

7. THE CONTRACTOR SHALL INSURE THE AVAILABILITY AND ACCESSIBILITY OF ADEQUATE ON-SITE FIRE EXTINGUISHERS, SAFETY EQUIPMENT BOARDS AND FIRST AID STATIONS.

8. ALL CONNECTIONS, TEST MEASUREMENTS AND ADJUSTMENTS SHALL BE DIRECTLY WITNESSED BY AN OWNER APPROVED PROJECT SUPERVISOR.

9. PRIOR TO THE START-UP OF THE SYSTEMS, THE CONTRACTOR SHALL CHECK ALL COMPONENTS AND DEVICES, LUBRICATE ITEMS ACCORDINGLY AND TIGHTEN ALL CONNECTIONS. AFTER ALL SYSTEMS HAVE BEEN INSPECTED AND ADJUSTED, CONFIRM ALL OPERATING FEATURES REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND MAKE FINAL ADJUSTMENTS AS NECESSARY.

10. APPROPRIATE FACTORY REPRESENTATIVES SHALL BE ON SITE TO COMMISSION THE SYSTEM.

11. CONTRACTOR SHALL INSPECT AND TEST ALL PIPING AND EQUIPMENT IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS AND EQUIPMENT MANUFACTURER'S INSTRUCTIONS.

12. AUTHORIZED PERSONNEL SHALL CONDUCT CLEANING, PURGING AND TESTING PROCEDURES. TESTING OF PIPING SHALL UTILIZE HYDROSTATIC OR PNEUMATIC MEASURES. OXYGEN OR LP GAS IS NOT TO BE USED.

13. PURGE PIPING WITH INERT GAS PRIOR TO INTRODUCING LP GAS.

14. CONDUCT A FUNCTIONAL TEST OF ALL ISOLATION VALVES, EXCESS FLOW VALVES AND PRESSURE RELIEF VALVES.

15. CONTRACTOR SHALL SUBMIT TO THE OWNER THREE (3) COPIES EACH OF MATERIAL FOR MAINTENANCE AND OPERATION INSTRUCTION MANUALS APPROPRIATELY BOUND INTO MANUAL FORM INCLUDING APPROVED COPIES OF MANUFACTURER'S CATALOG SHEETS, WIRING DIAGRAMS, MAINTENANCE INSTRUCTIONS, OPERATING INSTRUCTIONS AND PARTS LISTS (REVISED IF NECESSARY TO SHOW SYSTEM AND EQUIPMENT AS ACTUALLY INSTALLED). CONTRACTOR SHALL ALSO PROVIDE ADEQUATE VERBAL INSTRUCTIONS OF SYSTEM OPERATION AND RE-START TO OWNER'S REPRESENTATIVE AT THE CONCLUSION OF THE WORK.

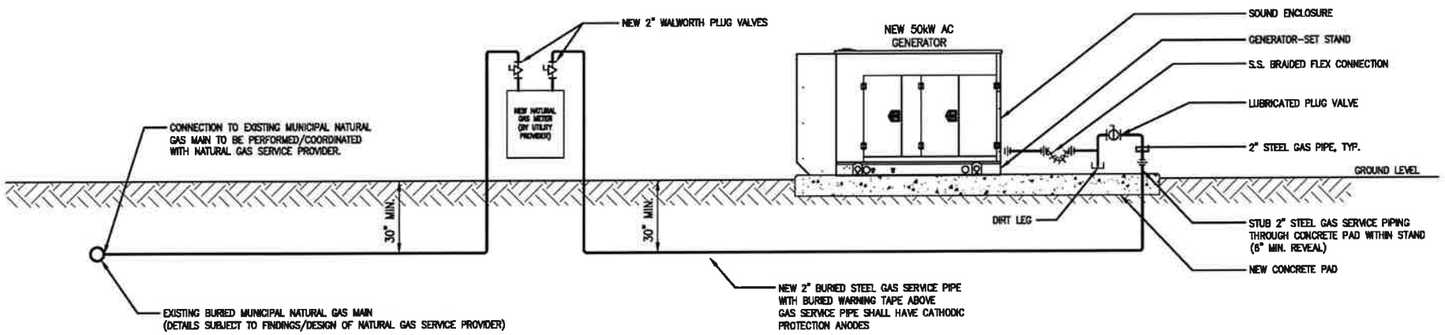
GENERATOR: GENERAC SG050NA (NATURAL GAS)
SUPPLIED BY VERIZON,
INSTALLED BY CONTRACTOR.

CONTRACTOR SHALL OBTAIN FULL SPECIFICATIONS FROM VERIZON WIRELESS PRIOR TO BID.

CONTRACTOR SHALL ARRANGE FOR GENERATOR START-UP SERVICES.

LEGEND

- PLUG VALVE
- UNION
- PIPE DROP
- PIPE RISE
- PUSH BUTTON SWITCH



NOTE:
ALL DETAILS SHOWN SCHEMATICALLY. THE CONTRACTOR SHALL COORDINATE WITH GAS SUPPLIER TO REVIEW ALL COMPONENTS AND PERFORM A PRESSURE TEST TO INSURE A COMPATIBLE FUEL DELIVERY ARRANGEMENT IS MADE TO THE GENERATOR. NATURAL GAS SUPPLIER SHALL ALSO REVIEW ALL SAFETY COMPONENTS TO INSURE THEY MEET THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

NATURAL GAS PIPING SCHEMATIC (1/P01)
SCALE: NOT TO SCALE

CLIENT:
verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:
STATE OF CONNECTICUT
ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONSTRUCTION SET SHALL BE REVISED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

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

REVISIONS

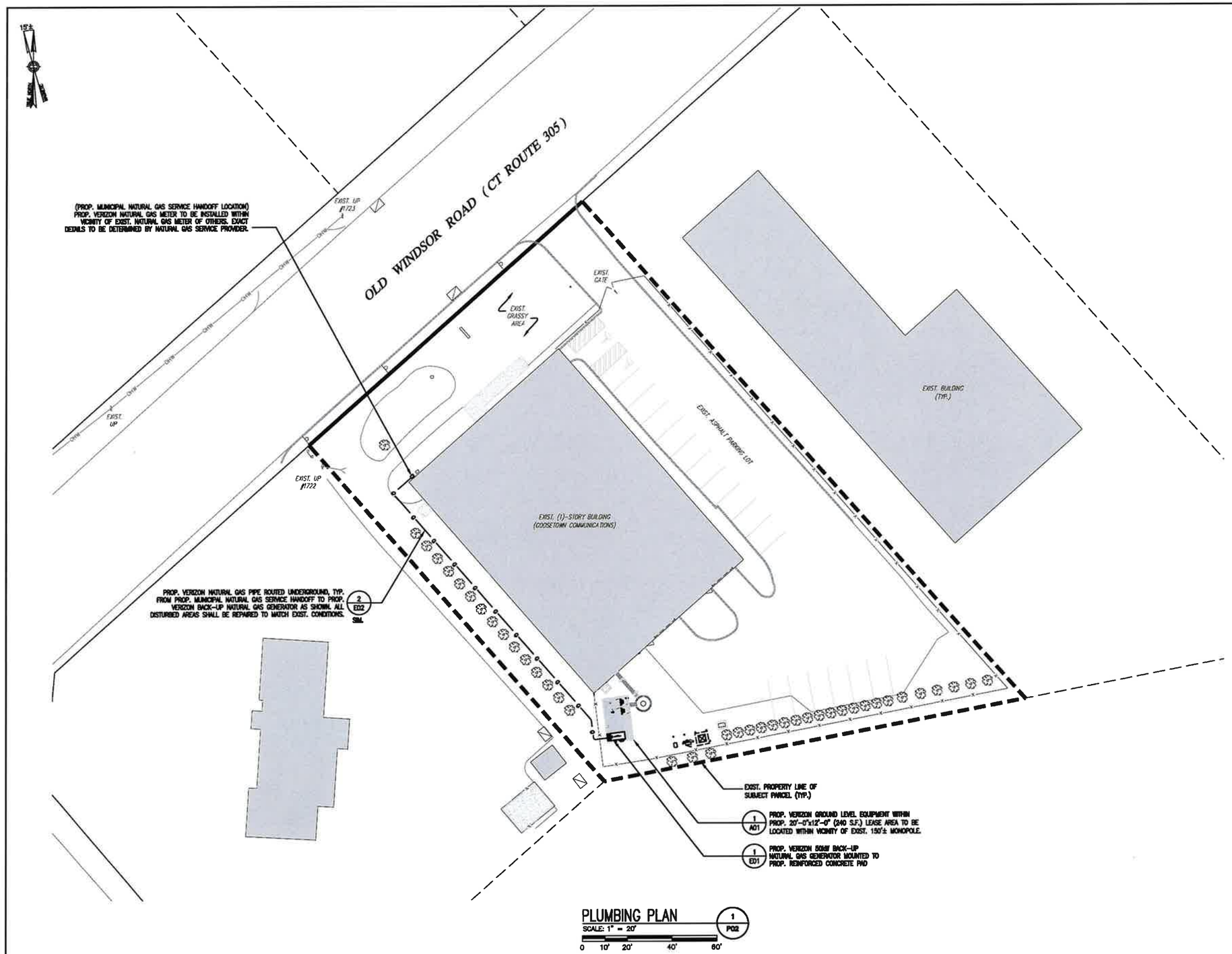
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
PLUMBING NOTES AND SCHEMATIC

DRAWING NO:
P01

SCALE: NOT TO SCALE	DESIGNED BY: MMC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MMC	
	CHECKED BY: GRS	VZW PROJECT NO.: 16433987
CEA PROJECT NO.: 96210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783896



CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
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SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

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REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:

SITE PLUMBING PLAN

DRAWING NO:

P02

SCALE: 1" = 20'	DESIGNED BY: MWC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MWC	
	CHECKED BY: GRS	VZW PROJECT NO.: 16433987
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783868

ELECTRICAL SPECIFICATIONS

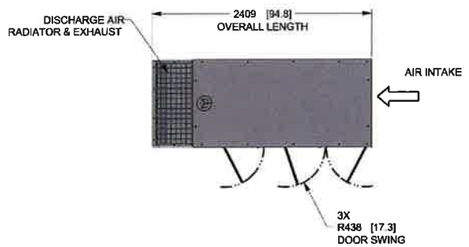
1. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS REQUIRED TO MAKE READY FOR USE THE COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS. MAKE ALL NECESSARY CONNECTIONS AT "PACKAGED" EQUIPMENT.
2. THE ELECTRICAL SYSTEMS SHALL BE SUITABLE IN EVERY WAY FOR THE SERVICE REQUIRED. ALL MATERIAL AND ALL WORK WHICH MAY BE REASONABLY IMPLIED AS BEING INCIDENTAL TO THE WORK SHALL BE FURNISHED AT NO EXTRA COST.
3. FURNISH AND INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL, STATE AND NATIONAL CODES AND STANDARDS, INCLUDING BUT NOT LIMITED TO:
   THE 2022 CONNECTICUT STATE BUILDING CODE
   THE NATIONAL ELECTRICAL CODE (NFPA-70)
   THE CONNECTICUT ELECTRIC CODE
   THE NATIONAL ELECTRICAL SAFETY CODE (ANSI C-2)
   THE LIFE SAFETY CODE (NFPA 101)
   THE STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURE AND ANTENNAS (TIA/EIA-222-G)
4. MATERIALS AND EQUIPMENT SHALL BE NEW, UNUSED AND UNDERWRITERS' LABORATORIES, INC. LISTED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MATERIALS IN A TIMELY FASHION, INCLUDING RESPONSIBILITY FOR DETERMINING AVAILABILITY/LEAD TIME FOR ALL NECESSARY EQUIPMENT.
5. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND PAY ALL FEES FOR PERMITS AND INSPECTIONS. WHERE NEW COMMERCIAL POWER SERVICE IS PROVIDED TO THE SITE, OR EXISTING SERVICE MUST BE MODIFIED, CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH THE ELECTRIC UTILITY, SHALL PERFORM ALL OF HIS WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY, AND SHALL PAY ALL UTILITY SERVICE BACK CHARGES.
6. ALL WIRING OUTSIDE SHALL BE INSTALLED IN HEAVY-GAUGE, (SCHEDULE 40) RIGID STEEL CONDUIT, HOT-DIPPED GALVANIZED INSIDE AND OUTSIDE WITH AN ADDITIONAL FACTORY-APPLIED FINISH INSIDE AND OUTSIDE. CUT ENDS SHALL BE REAMED, THREADED AND COLD GALVANIZED. NO COMPRESSION FITTING WILL BE ACCEPTED.
7. UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 40 AND INSTALLED NOT LESS THAN 30 INCHES BELOW FINISHED GRADE.
8. WIRING INSTALLED IN THE BUILDING THAT IS SHOWN TO BE IN CONDUIT SHALL BE INSTALLED IN EMT. EMT FITTINGS SHALL BE STEEL COMPRESSION TYPE.
9. LIQUID TIGHT, FLEXIBLE METAL CONDUIT SHALL BE USED FOR ALL MOTOR TERMINATIONS AND FOR CONNECTIONS TO EQUIPMENT SUBJECT TO VIBRATION. FLEXIBLE METAL CONDUIT SHALL CONSIST OF A FLEXIBLE, CORROSION RESISTANT METAL CORE WITH AN EXTRUDED, WATERTIGHT, SYNTHETIC JACKET. CONDUITS SMALLER THAN 1-1/2" SHALL HAVE A CONTINUOUS GROUND CONDUCTOR UNDER THE JACKET.
10. NO CONDUIT SMALLER THAN 3/4" ELECTRICAL TRADE SIZE SHALL BE USED, EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS. BOX SIZES SHALL BE 4" SQUARE MINIMUM, BUT NOT LESS THAN THAT REQUIRED BY THE CONNECTICUT ELECTRICAL CODE.
11. FITTINGS AND EXPOSED SWITCH, OUTLET AND CONTROL STATION BOXES AND OTHER EXPOSED BOXES 4" SQUARE SHALL BE CAST OR MALLEABLE IRON WITH CADMIUM-ZINC FINISH AND CAST COVERS WITH STAINLESS STEEL SCREWS.
12. FLUSH SWITCH AND OUTLET BOXES SHALL BE HOT-DIPPED GALVANIZED, PRESSED STEEL WITH NYLON COVER PLATES, COLOR AS DETERMINED BY THE ENGINEER.
13. EXCEPT AS OTHERWISE SHOWN, TERMINAL, JUNCTION AND PULL BOXES LARGER THAT 4" SQUARE SHALL BE SHEET STEEL. STEEL BOXES SHALL BE HOT-DIPPED GALVANIZED. BOXES AND COVERS SHALL BE NOT LESS THAN 14 GAUGE METAL. COVERS SHALL BE GASKETED AND FASTENED WITH STAINLESS STEEL HARDWARE.
14. FITTINGS USED WITH LIQUID TIGHT, FLEXIBLE CONDUIT SHALL BE OF THE SCREW-IN, COMPRESSION TYPE WITH SEALING RING. FITTINGS LARGER THAN 1-1/4" SHALL BE FURNISHED WITH INTEGRAL GROUND LUGS.
15. HANGERS, RODS, BACK PLATES, BEAM CLAMPS, ETC. SHALL BE GALVANIZED IRON OR STEEL. CONDUITS SHALL BE SUPPORTED AT LEAST EVERY 5 FEET.
16. EXPOSED CONDUITS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO WALLS. CONDUIT RUNS SHALL BE STRAIGHT AND TRUE. CONDUIT SHALL BE SUPPORTED BY MEANS OF TWO-HOLE PIPE CLAMPS. BACK PLATES SHALL BE INSTALLED WHERE REQUIRED TO RAISE CONDUITS FROM THE SURFACE. MULTIPLE, HORIZONTAL RUNS SHALL BE SUPPORTED ON TRAPEZE HANGERS WITH STEEL HORIZONTAL MEMBERS AND THREADED RODS NOT LESS THAN 3/8 INCHES IN DIAMETER. HANGERS SHALL BE ATTACHED TO STRUCTURAL STEEL BY MEANS OF BEAM CLAMPS. SPOT TYPE INSERTS SHALL BE USED IN CONCRETE.
17. CONDUIT BENDS SHALL BE CAREFULLY MADE TO PREVENT DISTORTION OF THE CIRCULAR CROSS-SECTION. NO CONDUIT RUN SHALL HAVE MORE THAN THE EQUIVALENT OF THREE 90 DEGREE BENDS BETWEEN PULLING POINTS. CHANGES IN DIRECTION SHALL BE MADE WITH BENDS, STANDARD ELBOWS AND PULLBOXES. BENDS IN PARALLEL RUNS SHALL BE CONCENTRIC.
18. CONDUIT SHALL NOT BE SUPPORTED FROM PIPING, PIPING SUPPORTS, DUCTWORK, SUSPENDED CEILING SUPPORTS OR MECHANICAL EQUIPMENT SUBJECT TO VIBRATION OR REMOVAL.
19. THE ENDS OF ALL CONDUITS SHALL BE TIGHTLY PLUGGED DURING BUILDING CONSTRUCTION UNTIL WIRES ARE TO BE PULLED. SPARE CONDUITS SHALL BE FURNISHED WITH THREADED CAPS.
20. CONDUITS SHALL BE TERMINATED AT UNGASKETED SHEET STEEL BOXES AND ENCLOSURES WITH DOUBLE LOCK NUTS AND SUITABLE BUSHINGS. BUSHINGS INSTALLED ON CONDUITS CONTAINING GROUND WIRES SHALL BE GROUNDING TYPE. CONDUITS SHALL BE TERMINATED AT GASKETED SHEET METAL BOXES AND ENCLOSURES WITH CONDUIT HUBS.
21. CONDUCTORS SHALL BE ANNEALED, 98 PERCENT CONDUCTIVITY, SOFT-DRAWN COPPER. NO CONDUCTOR SMALLER THAT NO. 12 AWG SHALL BE USED, EXCEPT AS OTHERWISE NOTED.
22. WIRE FOR POWER AND LIGHTING BRANCH CIRCUITS SHALL BE 600 VOLT, TYPE THWN. WIRE FOR CONTROL CIRCUITS SHALL BE 600 VOLT, TYPE THWN, NO. 14 AWG, STRANDED. SERVICE CONDUCTORS AND FEEDERS SHALL BE TYPE XHHW. CONDUCTORS NO. 10 AWG AND SMALLER SHALL BE SOLID. NO. 8 AWG AND LARGER SHALL BE STRANDED..
23. ALL CONDUCTORS SHALL BE CAREFULLY HANDLED TO AVOID KINKS OR DAMAGE TO INSULATION. LUBRICATIONS SHALL BE USED TO FACILITATE WIRE PULLING. LUBRICANTS SHALL BE UL LISTED FOR USE WITH THE INSULATION SPECIFIED.
24. ALL EQUIPMENT AND MATERIALS SHALL BE GROUNDED IN STRICT ACCORDANCE WITH THE CONNECTICUT ELECTRICAL CODE, AND THE STANDARD REQUIREMENTS OF VERIZON WIRELESS AND LUCENT.
25. DISCONNECT SWITCHES SHALL BE 480 OR 240 VOLT, HEAVY-DUTY, QUICK-MAKE, QUICK BREAK, VISIBLE BLADE, 2 POLE WITH EXTERNAL OPERATING HANDLE AND FULL COVER INTERLOCK. SWITCHES INSTALLED OUTSIDE SHALL BE NEMA TYPE 3R ENCLOSED.
26. WALL SWITCHES SHALL BE SINGLE POLE 3-WAY OR 4-WAY, INDICATING, TOGGLE-ACTION, FLUSH, QUIET TYPE, SPECIFICATION GRADE, RATED 20 AMPERE, 120-277 VOLT. COLOR AS DETERMINED BY ENGINEER.
27. GENERAL PURPOSE RECEPTACLES SHALL BE DUPLEX, 2 POLE, 3 WIRE, STRAIGHT BLADE, NYLON FACE, GROUNDING TYPE, 20 AMPERE, 125 VOLT, SPECIFICATION GRADE. COLOR AS DETERMINED BY ENGINEER.
28. PANELS SHALL BE PER DIRECTED BY THESE DRAWINGS WITH TYPED DIRECTORIES.
29. CIRCUIT BREAKERS SHALL BE MOLDED CASE, THERMAL-MAGNETIC TYPE WITH RMS SYMMETRICAL INTERRUPTING RATING OF NOT LESS THAN 22,000 AMPERE FOR 240 VOLT BREAKERS. ENCLOSED BREAKERS SHALL HAVE PADLOCKING PROVISIONS AND EXTERNAL OPERATING HANDLE WITH FULL COVER INTERLOCK. BREAKERS SHALL BE 1" MODULES MINIMUM.
30. NAMEPLATES SHALL BE PROVIDED FOR ALL EQUIPMENT INDICATING VOLTAGE, PHASE, USE AND SOURCE OF ORIGIN. DEVICES SHALL BE LABELED INDICATING VOLTAGE AND BRANCH CIRCUIT. BRANCH CONDUCTORS SHALL BE LABELED INDICATING BRANCH CIRCUIT. FEEDER CONDUCTORS SHALL INDICATE PHASE.
31. ALL EXTERIOR CONDUCTOR/LUG TERMINALS SHALL HAVE AN ANTIOXIDANT APPLIED.
32. ALL SPRING TYPE WIRE CONDUCTORS USED IN EXTERIOR BOXES SHALL BE SILICON FILLED.
33. ELECTRICAL CONTRACTOR SHALL AS PART OF HIS WORK INCLUDE ALL FITTINGS, SLEEVES AND MINOR CUTTING REQUIRED FOR HIS WORK, INCLUDING FIRES-STOPPING.
34. THE ELECTRICAL CONTRACTOR, AT HIS OWN EXPENSE, SHALL PROVIDE HIS OWN, WHERE DIRECTED, STORAGE AND OFFICE SPACE.
35. FIVE COPIES OF SHOP DRAWINGS OF ALL EQUIPMENT SHALL BE PROVIDED TO THE ENGINEER.
36. ELECTRICAL CONTRACTOR'S WORK SHALL INCLUDE ALL LABOR AND MATERIALS, SCAFFOLDING TOOL AND TRANSPORTATION NECESSARY FOR COMPLETE INSTALLATION.
37. ELECTRICAL CONTRACTOR TO FURNISH ENGINEER ONE SET OF MYLARS OF "AS BUILT" DRAWINGS.
38. ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY POWER & LIGHTING AS REQ'D.

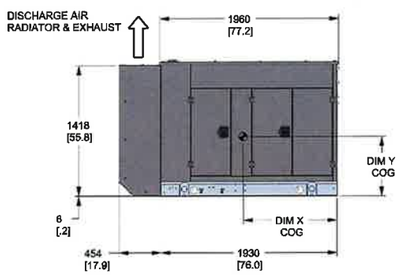
GENERAL NOTES

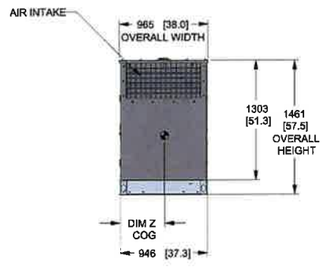
1. CONTRACTOR SHALL VISIT THE SITE TO BECOME AWARE OF THE EXISTING CONDITIONS.
2. BRANCH CIRCUIT RUNS 100 FT AND OVER SHALL BE #10 AWG CONDUCTORS.
3. THESE DRAWINGS ARE DIAGRAMMATIC ONLY. THE EXACT LOCATION, MOUNTING HEIGHT, SIZE OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE COORDINATED AND DETERMINED IN THE FIELD.
4. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE HVAC AND PLUMBING CONTRACTORS AS TO THE EXACT LOCATION OF THEIR RESPECTIVE EQUIPMENT, THE POWER WIRING, THE CONTROL WIRING AND ALL ELECTRICAL CONNECTIONS REQUIRED BY THIS CONTRACTOR FOR COMPLETELY OPERATIVE HVAC AND PLUMBING SYSTEMS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.
5. INTERRUPTIONS TO THE EXISTING ELECTRICAL SERVICE FOR SPLICING CONNECTIONS, RENOVATION OF EXISTING DISTRIBUTION, BRANCH CIRCUITS, INSTALLATION OF NEW ELECTRIC SERVICE, AND SHALL BE AS SHORT AS POSSIBLE, AND TO THE CONVENIENCE OF THE OWNER.
6. ALL CONDUIT SHALL BE SURFACE MOUNTED UNLESS OTHERWISE NOTED. NO INTERIOR HORIZONTAL CONDUIT BELOW 7'-6" AFF IN FINISHED SPACES.
7. ALL WIRING TO BE 3/4"C, 2#12 & 1#12 GROUND, UNLESS OTHERWISE NOTED.
8. NO EX OR ROMEX CABLE IS PERMITTED.
9. ALL WIRING DEVICES AND EQUIPMENT SHALL BE 20A SPECIFICATION GRADE AND UL LISTED.
10. ALL OUTLET AND JUNCTION BOXES SHALL BE SECURELY SURFACE MOUNTED.
11. ALL RECEPTACLE AND EQUIPMENT CIRCUITS SHALL BE GROUNDED USING A FULL SIZE EQUIPMENT GROUNDING CONDUCTOR RUN WITH THE CURRENT CONDUCTORS.
12. ALL WALL PENETRATIONS FOR TELCO, POWER AND GROUNDING SHALL REQUIRE PVC SLEEVES.
13. ALL SWITCHES SHALL BE FORTY-EIGHT (48) INCHES AFF, UNLESS OTHERWISE NOTED.
14. ALL RECEPTACLES SHALL BE EIGHTEEN (18) INCHES AFF, UNLESS OTHERWISE NOTED.
15. ALL WIRING SHALL BE IN METAL RACEWAY & NO. 12 AWG COPPER MIN. UNLESS OTHERWISE NOTED.
16. WIRE COLOR SHALL BE PER STANDARD CODING BY PHASE.
17. FOR UTILITY BILLING, PLEASE SEND TO:
    VERIZON WIRELESS
    20 ALEXANDER DRIVE, 2nd FLOOR
    WALLINGFORD, CT 06492

GROUNDING GENERAL NOTES

1. ALL EXTERIOR CONDUCTORS SHALL BE #2 AWG, SOLID, BARE, TINNED COPPER, UNLESS OTHERWISE NOTED. MINIMUM BEND RADIUS SHALL BE EIGHT (8) INCHES.
2. ALL CONNECTIONS TO HALO GROUND RING AND ALL CABLE TRAY JUMPERS SHALL BE #6 AWG, INSULATED, STRANDED, COPPER WIRE.
3. ALL WIRE-TO-WIRE CONNECTIONS SHALL BE THREE-CLAMP, C TAP COMPRESSION (T&B #54740 ORANGE OR EQUIVALENT). ALL GROUND BAR CONNECTIONS SHALL BE TWO-HOLE, LONG-BARREL TYPE COMPRESSION LUGS (T&B OR EQUIVALENT). ALL OTHER CONNECTIONS TO STEEL SURFACES SHALL USE LUG-TYPE CONNECTORS.
4. MECHANICALLY BOND ANTENNA MOUNTS WITH #2 AWG, BARE, STRANDED CONDUCTORS.
5. ALL GROUNDING WORK SHALL COMPLY WITH VERIZON WIRELESS STANDARDS.
6. CONNECT GROUND CONDUCTOR TO EXISTING GROUNDING SYSTEM. ATTACH TO WALLS, PARAPET, CABLE TRAY, ETC. WITH A CLAMPS AS NECESSARY. REMOVE PAINT, FIREPROOFING, MILL SCALE, ETC. TO ACHIEVE GOOD CAD WELD GROUND CONNECTION.
7. CONNECT TO HALO GROUND USING C-TAP (#54730).
8. CONNECT TO ENCLOSURES USING BLUE GROUND LUGS.







GENERAC 50kW NATURAL GAS GENERATOR (PART #SG050NA)
OVERALL GENERATOR (ENCLOSURE) APPROXIMATE
DIMENSIONS: 94.8"L x 38.0"W x 57.5"H
APPROXIMATE MAX. IN-SERVICE WEIGHT: 2,697 lbs

GENERATOR DETAIL (1 / ED1)
SCALE: NONE

LEGEND

ELECTRICAL SYMBOLS

- (M) METER
- GROUND ROD/TEST (OBSERVATION) WELL
- GROUND ROD
- CADWELD TYPE CONNECTION
- COMPRESSION TYPE CONNECTION
- GROUNDING WIRE
- (1 / ED2) REPRESENTS DETAIL NUMBER
- 1'X4' SURFACE MTD. FLUORESCENT LIGHTING FIXTURE
- SELF CONTAINED EMERG. LIGHTING UNIT
- S 20A-120V-1P TOGGLE SWITCH
- MAGNETIC DOOR SWITCH (DOOR JAMB TYPE)
- 20A-120V QUADRAPLEX RECEPTACLE, GROUNDING TYPE, 2-CKT. NO.
- WP/GFI 20A-120V DUPLEX RECEPTACLE, GROUNDING TYPE. WP = WEATHERPROOF GFI = GROUND FAULT
- TL SIMPLEX RECEPTACLE, GROUNDING TYPE. TL = TWIST LOCK
- JUNCTION BOX
- PANELBOARD 'P1'
- *Φ MOTOR - NUMERAL DENOTES HORSEPOWER
- WEATHER PROOF DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH - '3R' & '1' - NEMA ENCLOSURE
- *ΦH THERMOSTAT *ΦH - HI TEMPERATURE ALARM THERMOSTAT
- *ΦH/LO HUMIDISTAT *ΦH/LO - HI/LO HUMIDITY ALARM HUMIDISTAT
- COMBINATION SMOKE/HEAT DETECTOR WITH MINI HORN SIMPLEX CAT.#2098-9696 WITH FORM A & C CONTACTS
- P1-2 HOMERUN TO PANEL (FURNISH & INSTALLED BY MECHANICAL)
- SURGE ARRESTOR - JOSLYN CAT. NO. 1455-85
- AFF ABOVE FINISHED FLOOR
- * MOTORIZED DAMPER
- 4#12-3/4"C EXPOSED CONDUIT 2#12-3/4"C.
- ATC ALARM TERMINAL CABINET

* EQUIPMENT FURNISHED AND INSTALLED BY OTHERS AND WIRED BY THIS CONTRACTOR

ABBREVIATIONS

AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
GPS	GLOBAL POSITIONING SYSTEM
PCS	PERSONAL COMMUNICATION SYSTEM
RWY	RACEWAY
TYP.	TYPICAL
RGS	RIGID GALVANIZED STEEL
EMT	ELECTRICAL METALLIC TUBING
DWG	DRAWING
EMT	INTERIOR GROUND RING (HALO)
GEN	GENERATOR
GR	GROWTH
CGBE	COAX GROUND BAR EXTERNAL
CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
MGB	MASTER GROUND BAR
PVC	RIGID (SCH. 40) POLYVINYL CHLORIDE CONDUIT
EBH	ETHERNET BACK HAUL

CLIENT:
verizon
"Excellent Better Network"

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:
STATE OF CONNECTICUT
JOSEPH J. CHAPPELL
LICENSED PROFESSIONAL ENGINEER
ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A DIFFERENTLY SIZE SHALL BE CONSIDERED INVALID. ALL ERR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, ERR SCALES SHALL SUPERSEDE WRITTEN SCALES.

REVISIONS

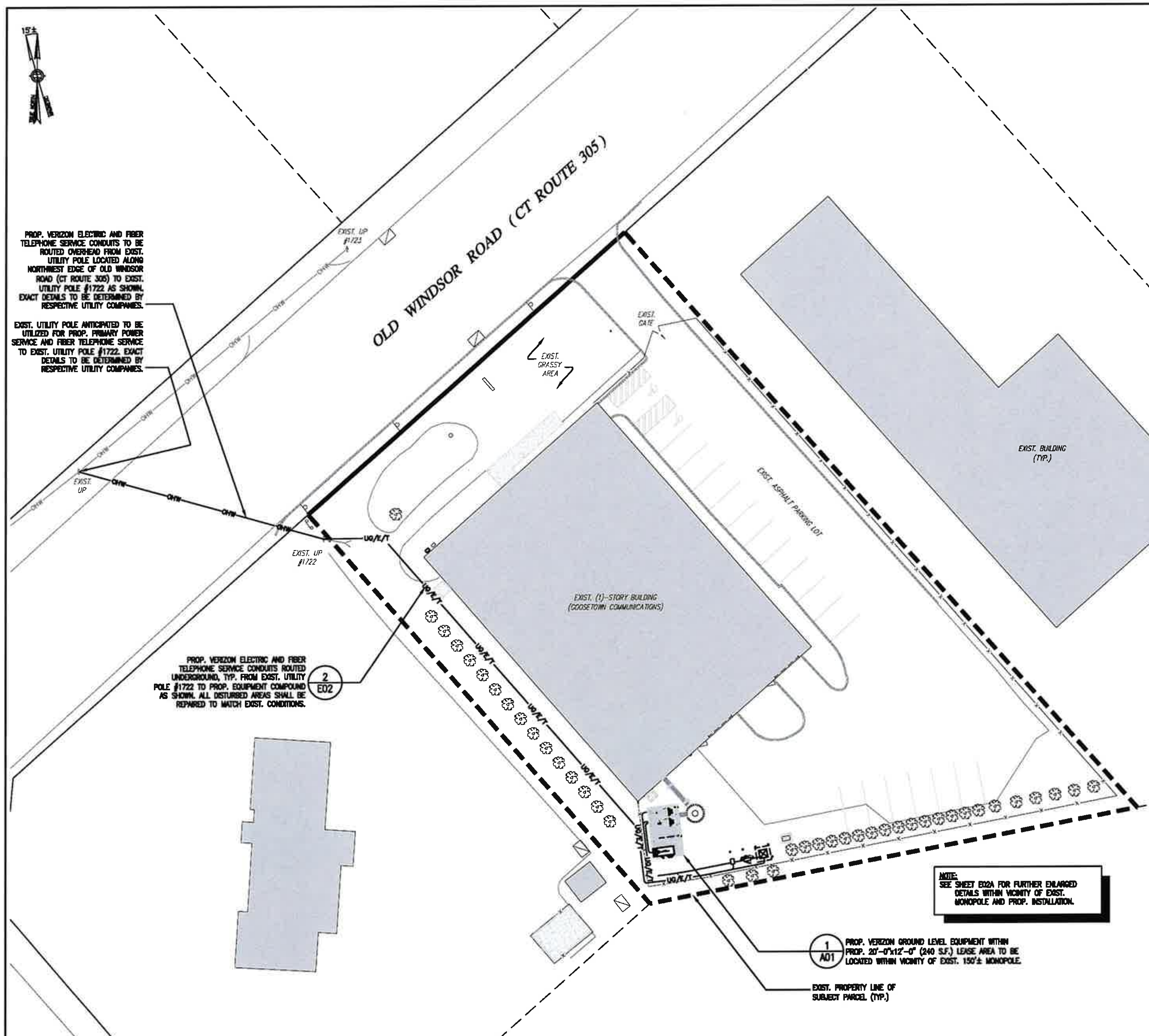
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
ELECTRICAL SPECIFICATIONS AND NOTES

DRAWING NO:
E01

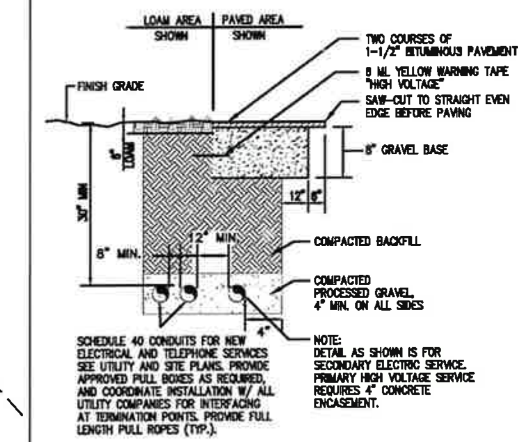
SCALE: AS SHOWN	DESIGNED BY: MWC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MWC	
	CHECKED BY: GBS	VZW PROJECT NO: 18433967
CEA PROJECT NO: 06210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783866



SITE UTILITY PLAN (1/E02)

SCALE: 1" = 20'

0 10' 20' 40' 80'



TYPICAL BURIED CONDUIT DETAIL (2/E02)

SCALE: NONE

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC

R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

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

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

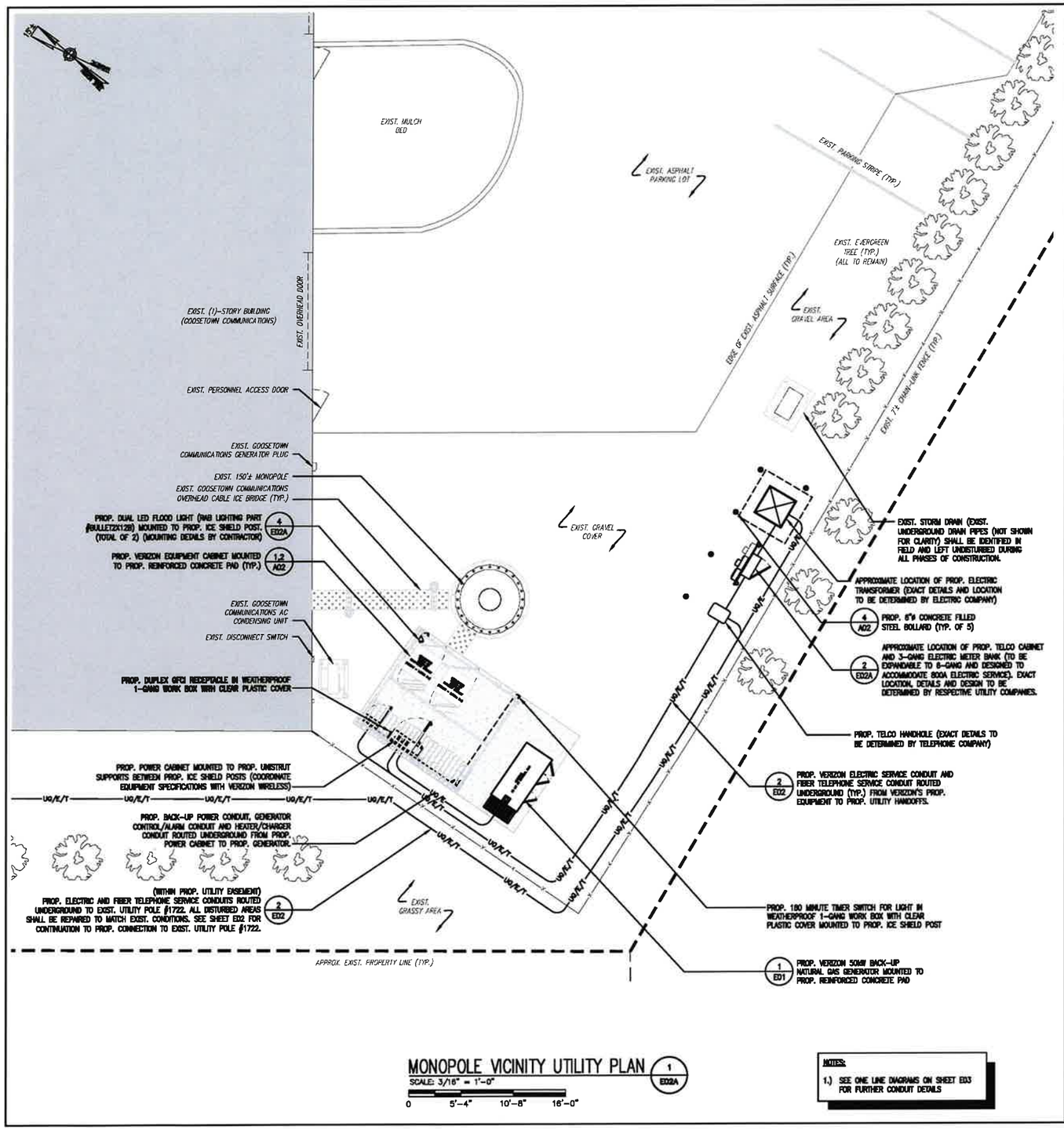
DRAWING TITLE:

SITE UTILITY PLAN & DETAILS

DRAWING NO:

E02

SCALE: AS NOTED	DESIGNED BY: MMC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MMC	VZW PROJECT NO.: 16433987
CEA PROJECT NO.: 96210.413	CHECKED BY: GRS	VZW LOCATION CODE: 783866
	ORIGINAL ISSUE DATE: 3/28/23	



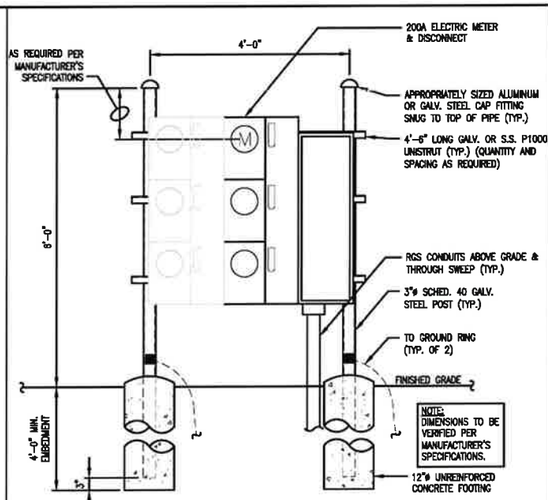
MONOPOLE VICINITY UTILITY PLAN 1 E02A

SCALE: 3/16" = 1'-0"

0 5'-4" 10'-8" 16'-0"

NOTES:

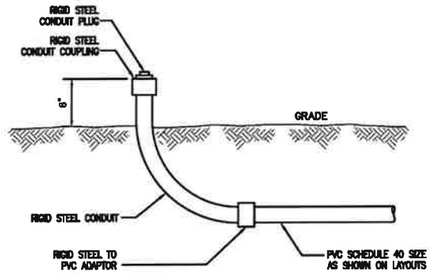
1.) SEE ONE LINE DIAGRAMS ON SHEET E03 FOR FURTHER CONDUIT DETAILS



ELECTRIC METER UNISTRUT RACK 2 E02A

SCALE: 3/4"=1'-0"

0 1'-4" 2'-8" 4'-0"



TYPICAL CONDUIT STUB-UP DETAIL 3 E02A

SCALE: NONE

RAB LIGHTING – BULLET2X12B
24W
BLACK

MOUNT PER MANUFACTURER'S SPECIFICATIONS

TYPICAL LED FLOOD LIGHT DETAIL 4 E02A

SCALE: N.T.S.

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC

Civil, Structural, Land Surveying

R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

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REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

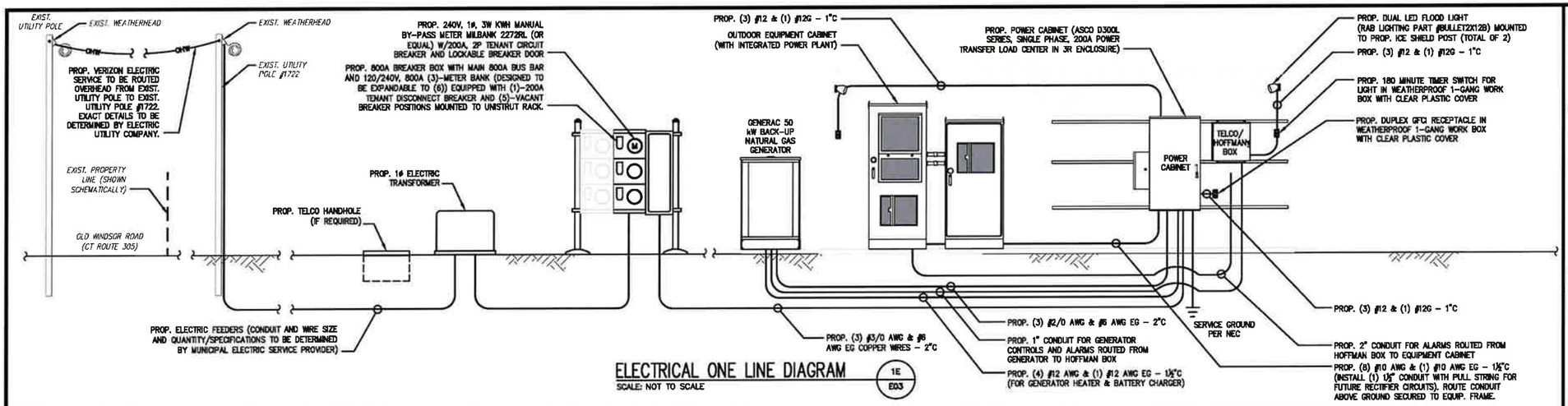
DRAWING TITLE:

MONOPOLE VICINITY UTILITY PLAN & DETAILS

DRAWING NO:

E02A

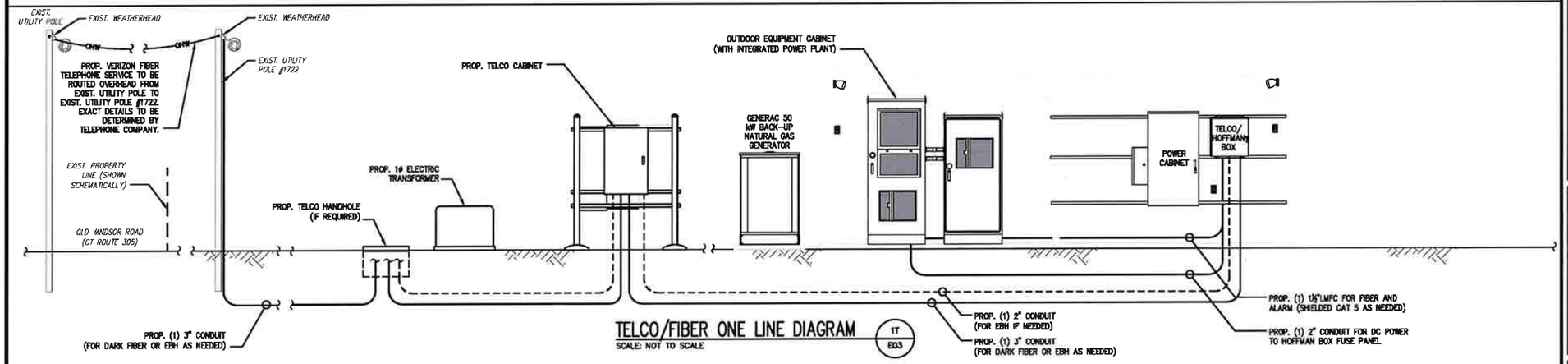
SCALE: AS SHOWN	DESIGNED BY: MWC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MWC	
	CHECKED BY: CRS	VZW PROJECT NO.: 16433987
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783866



ELECTRICAL ONE LINE DIAGRAM

SCALE: NOT TO SCALE

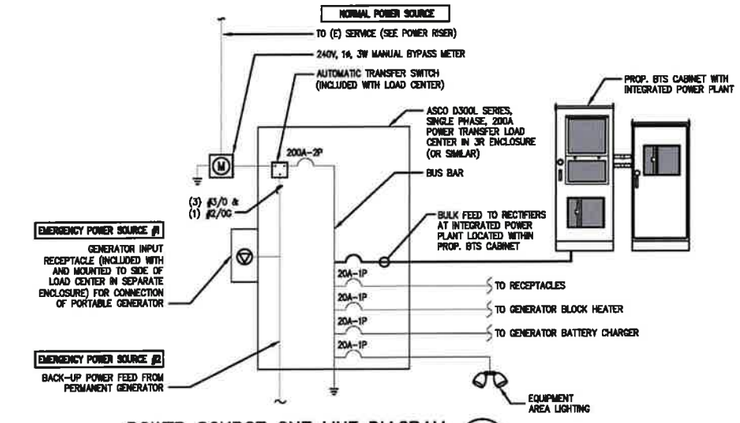
1E / E03



TELCO/FIBER ONE LINE DIAGRAM

SCALE: NOT TO SCALE

1T / E03



POWER SOURCE ONE LINE DIAGRAM

SCALE: NOT TO SCALE

2 / E03

ASCO D300L SERIES, SINGLE PHASE, 200A POWER TRANSFER LOAD CENTER IN 3R ENCLOSURE

ELECTRICAL PANEL SCHEDULE

65,000 A.I.C. NEMA 3R

CKT #	DESCRIPTION	AMP	AMP	DESCRIPTION	CKT #
1	RECTIFIER #1	30	30	FUTURE RECTIFIER	2
3					4
5	RECTIFIER #2	30	30	FUTURE RECTIFIER	6
7					8
9	RECTIFIER #3	30	20	PAD LIGHTING	10
11			–	BLANK	12
13	RECTIFIER #4	30	–	BLANK	14
15			–	BLANK	16
17	GFCI RECEPTACLE/LIGHT	20	–	BLANK	18
19	GENERATOR BLOCK HEATER	20	–	BLANK	20
21	GENERATOR BATTERY CHARGER	20	–	BLANK	22
23	BLANK	–	–	BLANK	24
25	BLANK	–	–	BLANK	26
27	BLANK	–	–	BLANK	28
29	BLANK	–	–	BLANK	30

ELECTRICAL PANEL SCHEDULE

SCALE: NTS

3 / E03

ONE-LINE DIAGRAM NOTES:

1) PROVIDE WEATHER TIGHT SEAL CONNECTORS ON ALL CONNECTIONS INSIDE AND OUT.

2) COORDINATE ANY FURTHER MISCELLANEOUS WIRING AND CONDUIT REQUIREMENTS WITH VERIZON WIRELESS AND ELECTRIC COMPANY.

3) ALL CONDUIT ROUTING SHOWN ON THESE DIAGRAMS IS SCHEMATIC IN NATURE AND INTENDED TO CONVEY GENERAL INTENT ONLY.

4) ALL PROPOSED UTILITY DESIGN ELEMENTS SHOWN ARE SUBJECT TO CHANGE BASED ON FINAL DESIGN TO BE PROVIDED BY UTILITY PROVIDERS AND VERIZON WIRELESS. CONTRACTOR SHALL OBTAIN A COPY OF THE FINAL UTILITY DESIGN BY UTILITY COMPANY PRIOR TO COMMENCEMENT OF WORK.

UTILITY CONTACTS

ELECTRICAL: EVERSOURCE ENERGY
247 STATION DRIVE, SE 210
WESTWOOD, MA 02090
(781) 441-3610

TELEPHONE: VERIZON
185 FRANKLIN STREET
BOSTON, MA 02107
(800) 941-9900

MAKE ALL CONNECTIONS AS PER UTILITY COMPANY'S REQUIREMENTS.

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

THESE DRAWINGS HAVE BEEN PREPARED IN ARCH D (24"x36") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRADICTORY SIZE SHALL BE REMOVED IMMEDIATELY. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

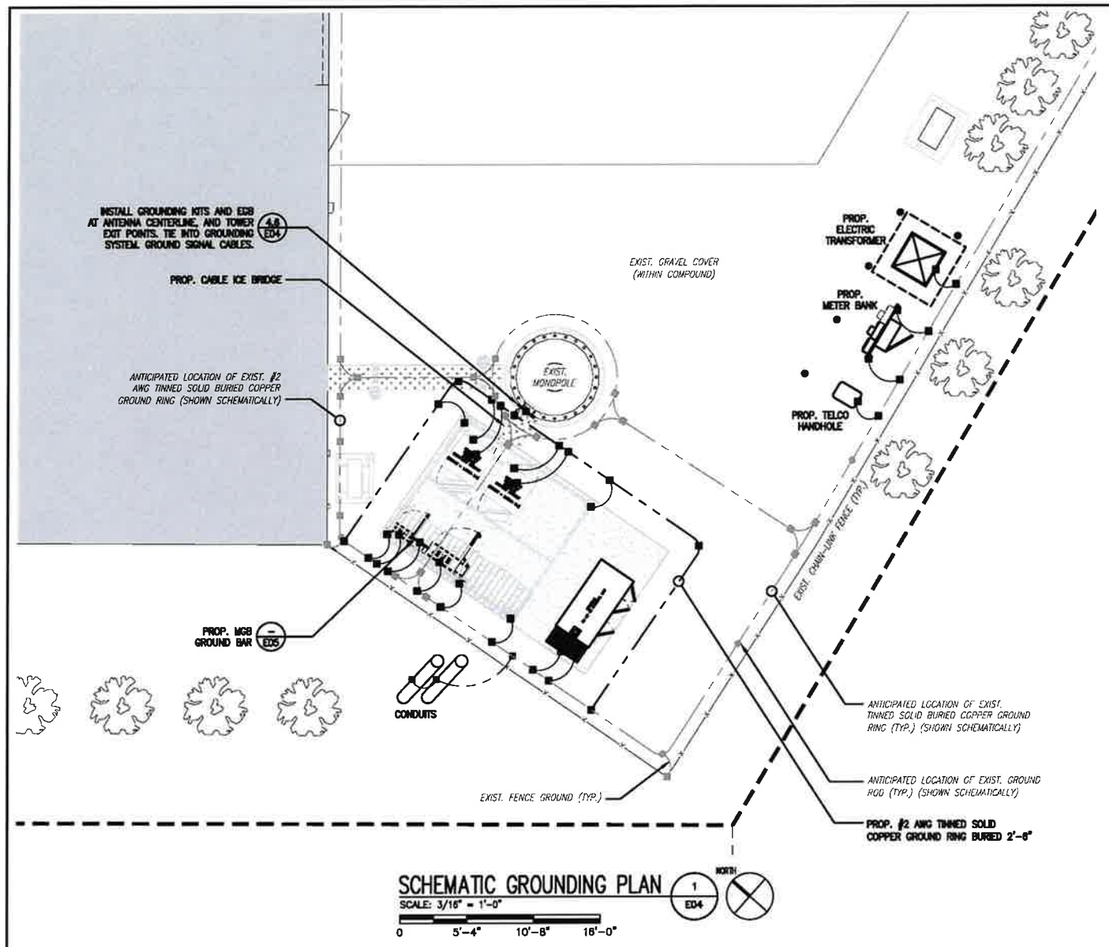
DRAWING TITLE:

ELECTRICAL DIAGRAMS & DETAILS

DRAWING NO:

E03

SCALE: AS SHOWN	DESIGNED BY: MMC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MMC	
	CHECKED BY: CRS	VZW PROJECT NO.: 16433987
CEA PROJECT NO.: 96210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 7830868



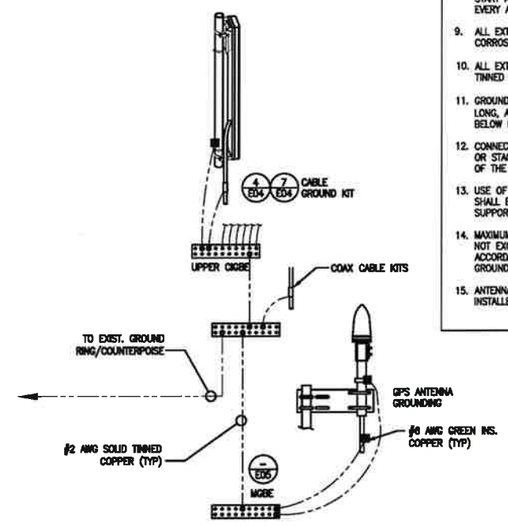
SCHEMATIC GROUNDING PLAN (1 / E04)

SCALE: 3/16" = 1'-0"

0 5'-4" 10'-8" 18'-0"

GROUNDING LEGEND

- EXOTHERMIC GROUND
- GROUND ROD
- TEST WELL
- PROP. #2 AWG EQUIPMENT GROUNDING
- PROP. GROUND HALO
- EXIST. SITE GROUNDING (SHOWN SCHEMATICALLY)



ANTENNA GROUNDING RISER DIAGRAM (2 / E04)

SCALE: NOT TO SCALE

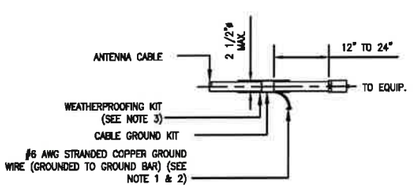
ELECTRICAL AND GROUNDING NOTES:

ELECTRICAL

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND ALL APPLICABLE LOCAL CODES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
3. SERVICE TO EQUIP. SHALL BE 120/240 VAC, 200 AMP, 1ϕ, 60 Hz.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.

GROUNDING

5. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC (CADWELD) CONNECTIONS.
6. ALL GROUND CONNECTIONS BELOW GRADE SHALL BE EXOTHERMIC (CADWELD).
7. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR & EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
8. ALL EXOTHERMIC CONNECTIONS TO THE GROUND RODS SHALL START AT THE TOP & HAVE A VERTICAL SEPARATION OF 6" FOR EVERY ADDITIONAL CONNECTION.
9. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
10. ALL EXTERIOR GROUND CONDUCTORS SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
11. GROUND RODS SHALL BE COPPER CLAD STEEL, 5/8"ϕ 10-FT. LONG, AND SHALL BE DRIVEN VERTICALLY WITH THEIR TOPS 48" BELOW FINAL GRADE.
12. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
13. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
14. MAXIMUM RESISTANCE OF THE COMPLETED GROUND SYSTEM SHALL NOT EXCEED 5 OHMS. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SPECIFICATION FOR FACILITY GROUNDING, USING FALL OF POTENTIAL METHOD.
15. ANTENNA GROUND KITS SHALL BE FURNISHED BY VERIZON AND INSTALLED BY CONTRACTOR.



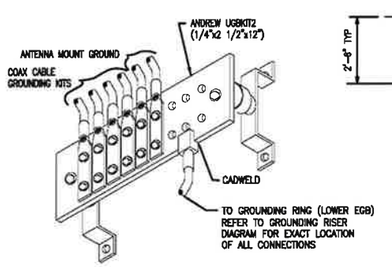
CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE SUPPLIED WITH KIT. COLD SHRINK SHALL NOT BE USED.

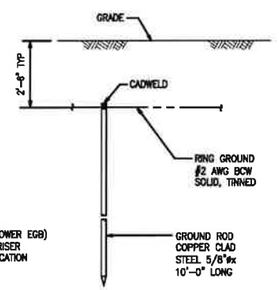
DETAIL (3 / E04)

SCALE: NOT TO SCALE



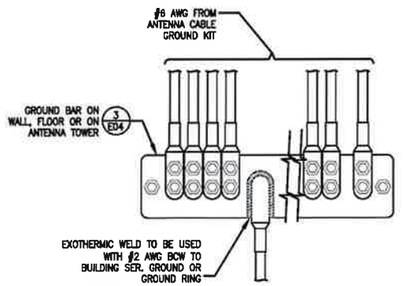
GROUND BAR (EGB) (4 / E04)

SCALE: NOT TO SCALE



GROUND ROD (5 / E04)

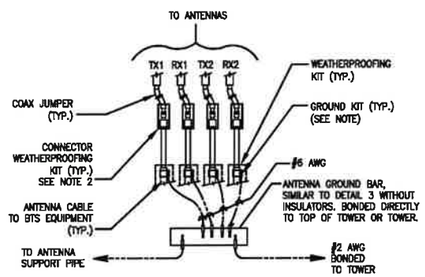
SCALE: NOT TO SCALE



INSTALLATION OF GROUND WIRE TO GROUND BAR

DETAIL (6 / E04)

SCALE: NOT TO SCALE



CONNECTION OF GROUND WIRE TO GROUNDING BAR, TOWER

DETAIL (7 / E04)

SCALE: NOT TO SCALE

CLIENT:

verizon

ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:

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REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

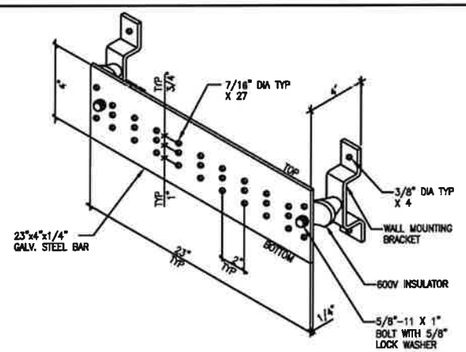
DRAWING TITLE:

SCHEMATIC GROUNDING PLAN & DETAILS

DRAWING NO:

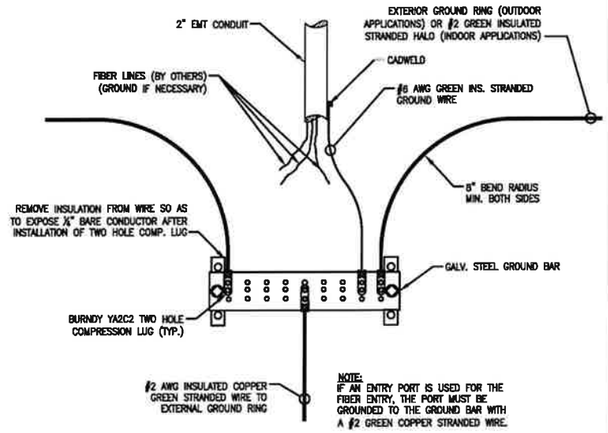
E04

SCALE: AS SHOWN	DESIGNED BY: MWC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MWC	
	CHECKED BY: CPS	VZW PROJECT NO.: 16432987
CEA PROJECT NO.: 96210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783868

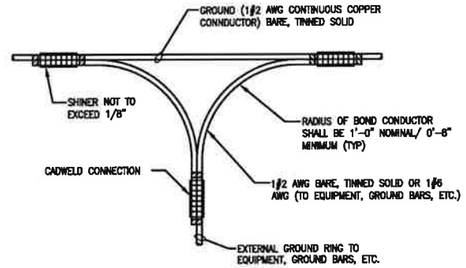


1. SURFACE PREPERATION: ALL CONNECTIONS MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE MADE BARE TO ENSURE PROPER CONTACT. NO WASHERS SHALL BE ALLOWED BETWEEN THE ITEMS BEING GROUNDED. ALL CONNECTIONS SHALL HAVE AN ANTI-OXIDANT AGENT APPLIED PRIOR TO INSTALLATION.
2. BUSS PREPERATION: ALL GALV. STEEL BUSSES SHALL BE CLEANED, POLISHED AND AN ANTI-OXIDANT APPLIED. NO FINGERPRINTS OR DISCOLORED STEEL WILL BE PERMITTED.
3. TERMINATIONS: ALL EQUIPMENT TERMINATIONS SHALL BE MADE WITH A BURNDY TWO HOLE COMPRESSION LUG WITH 10-24x3/4" LONG S.S. SCREWS, NUTS AND LOCK WASHERS. ALL BUSS TERMINATIONS SHALL BE MADE WITH A CAD-WELD OR BURNDY YC2C2 2 HOLE COMPRESSION LUG OR EQUAL. ALL INTERIOR HALO ATTACHMENTS SHALL BE MADE USING A BURNDY YC2C2 COMPRESSION LUG.

TYP. INTERIOR & EXTERIOR GROUND BAR
SCALE: N.T.S.

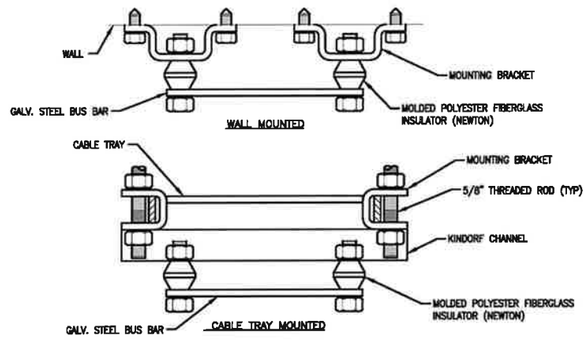


INTERIOR GROUNDING AT TELCO ENTRY
SCALE: N.T.S.

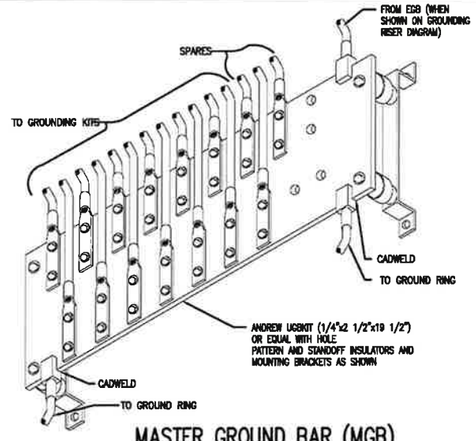


NOTE: ALL CONNECTION TO GROUND SHALL BE NON-DIRECTIONAL

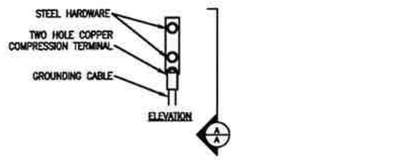
NON-DIRECTIONAL SPLICE
SCALE: N.T.S.



BUS BAR MOUNTING
SCALE: N.T.S.

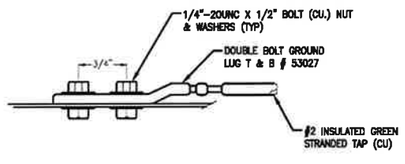


MASTER GROUND BAR (MGB)
SCALE: NOT TO SCALE

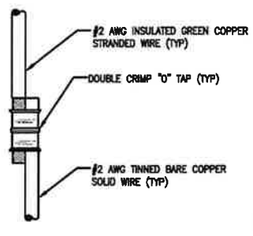


NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

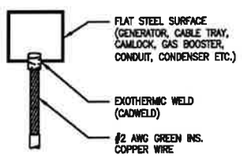
TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



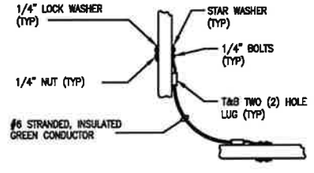
TYPICAL EQUIPMENT GROUND CONNECTION
SCALE: N.T.S.



TYPICAL GROUND CONNECTION SPLICE DETAIL
SCALE: N.T.S.



TYP. CADWELD #2 GREEN TO FLAT STEEL SURFACE
SCALE: NOT TO SCALE



CABLE TRAY GROUNDING
SCALE: N.T.S.

CLIENT:
verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil-Structural-Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SEAL:

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:
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REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	3/28/23
1	REVISED TSA REFERENCE DATE	4/11/23
2	ISSUED FOR CONSTRUCTION (FINAL)	4/14/23

PROJECT NAME:
BLOOMFIELD 5 CT
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

DRAWING TITLE:
GROUNDING DETAILS

DRAWING NO:
E05

SCALE: AS SHOWN	DESIGNED BY: MMC	VZW PROJECT CODE: 20222410007
	DRAWN BY: MMC	
	CHECKED BY: CRS	VZW PROJECT NO.: 16432687
CEA PROJECT NO.: 98210.413	ORIGINAL ISSUE DATE: 3/28/23	VZW LOCATION CODE: 783886

ATTACHMENT 4

NHH-65B-R2B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- Separate RS-485 RET input/output for low and high band
- One RET for low band and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	2
RF Connector Quantity, total	6

Remote Electrical Tilt (RET) Information

RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male
Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 3
Internal RET	High band (1) | Low band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W

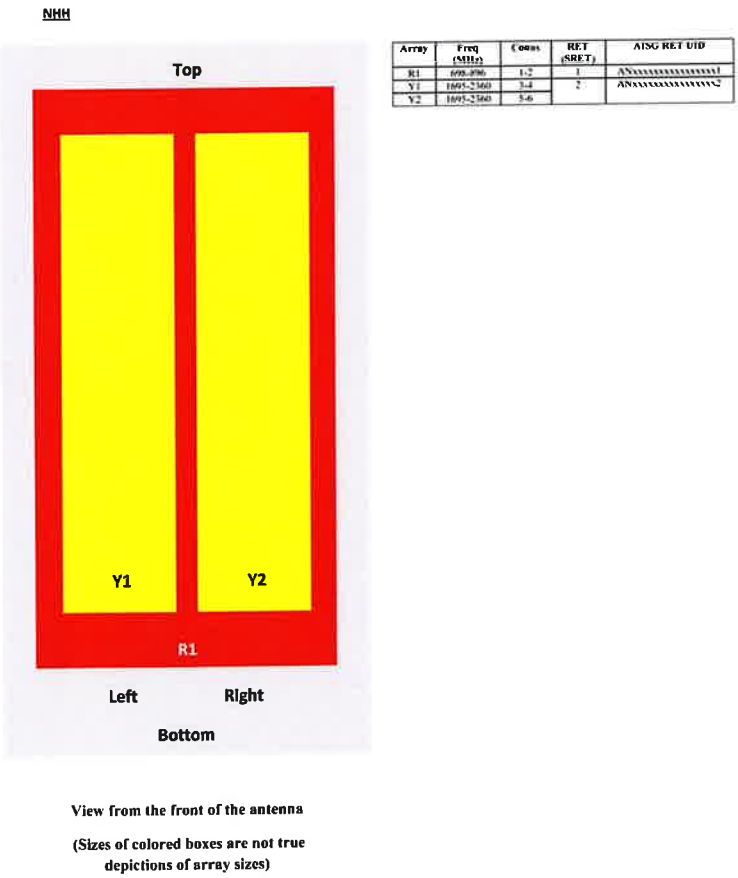
NHH-65B-R2B

Protocol	3GPP/AISG 2.0 (Single RET)

Dimensions

Width	301 mm | 11.85 in
Depth	180 mm | 7.087 in
Length	1828 mm | 71.969 in
Net Weight, without mounting kit	19.8 kg | 43.651 lb

Array Layout



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-896	1-2	1	AN
Y1	1695-2360	3-4	2	AN
Y2	1695-2360	5-6		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz

NHH-65B-R2B

Polarization	±45°
Total Input Power, maximum	900 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain, dBi	14.9	15	17.7	17.9	18.4	18.7
Beamwidth, Horizontal, degrees	65	60	71	69	64	57
Beamwidth, Vertical, degrees	12.4	11.2	5.7	5.2	4.9	4.6
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	13	14	18	18	19	18
Front-to-Back Ratio at 180°, dB	30	29	31	30	29	31
Isolation, Cross Polarization, dB	25	25	25	25	25	25
Isolation, Inter-band, dB	30	30	30	30	30	30
VSWR | Return loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port at 50°C, maximum, watts	300	300	300	300	300	300

Electrical Specifications, BASTA

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain by all Beam Tilts, average, dBi	14.5	14.5	17.3	17.7	18.1	18.5
Gain by all Beam Tilts Tolerance, dB	±0.6	±1.1	±0.4	±0.4	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.4 7 ° | 14.6 14 ° | 14.3	0 ° | 14.7 7 ° | 14.7 14 ° | 14.1	0 ° | 17.2 4 ° | 17.3 7 ° | 17.3	0 ° | 17.6 4 ° | 17.7 7 ° | 17.7	0 ° | 18.0 4 ° | 18.2 7 ° | 18.1	0 ° | 18.3 4 ° | 18.5 7 ° | 18.6
Beamwidth, Horizontal Tolerance, degrees	±2	±2.1	±3	±4.1	±6.5	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.7	±0.7	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	13	14	16	16	17	15
Front-to-Back Total Power at 180° ± 30°, dB	23	22	27	27	25	25
CPR at Boresight, dB	22	21	23	23	22	19

NHH-65B-R2B

CPR at Sector, dB	10	7	16	13	11	4

Mechanical Specifications

Effective Projective Area (EPA), frontal	0.26 m² | 2.799 ft²
Effective Projective Area (EPA), lateral	0.22 m² | 2.368 ft²
Wind Loading @ Velocity, frontal	278.0 N @ 150 km/h (62.5 lbf @ 150 km/h)
Wind Loading @ Velocity, lateral	230.0 N @ 150 km/h (51.7 lbf @ 150 km/h)
Wind Loading @ Velocity, maximum	537.0 N @ 150 km/h (120.7 lbf @ 150 km/h)
Wind Loading @ Velocity, rear	282.0 N @ 150 km/h (63.4 lbf @ 150 km/h)
Wind Speed, maximum	241 km/h | 149.75 mph

Packaging and Weights

Width, packed	409 mm | 16.102 in
Depth, packed	299 mm | 11.772 in
Length, packed	1952 mm | 76.85 in
Weight, gross	32.3 kg | 71.209 lb

Regulatory Compliance/Certifications

Agency	**Classification**
CHINA-ROHS	Below maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
ROHS	Compliant

Included Products

BSAMNT-3	–	Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

NHHSS-65B-R2BT4

10-port sector antenna, 2x 698–896, 4x 1695–2200 and 4x 3100-4200 MHz, 65° HPBW, 2x RETs and 2x SBTs. Both high bands share the same electrical tilt.

- Perfect antenna to add 3.5GHz CBRS to macro sites
- Low band and mid band performance mirrors the performance of existing NHH hex port antennas
- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One LB RET and one HB RET. Both high bands are controlled by one RET to ensure same tilt level for 4x MIMO

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, mid band	4
RF Connector Quantity, low band	2
RF Connector Quantity, total	10

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	4x 8 pin connector as per IEC 60130-9 Daisy chain in: Male / Daisy chain out: Female Pin3: RS485A(AISG_B), Pin5: RS485B(AISG_A), Pin6: DC 10~30V, Pin7: DC_ Return

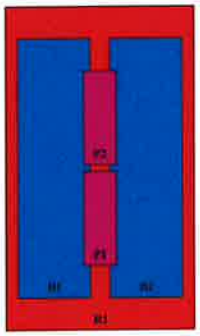
NHHSS-65B-R2BT4

RET Interface, quantity	2 female | 2 male
Input Voltage	10–30 Vdc
Internal RET	High band (1) | Low band (1)
Power Consumption, active state, maximum	10 W
Power Consumption, idle state, maximum	2 W
Protocol	3GPP/AISG 2.0 (Single RET)

Dimensions

Width	301 mm | 11.85 in
Depth	181 mm | 7.126 in
Length	1828 mm | 71.969 in
Net Weight, without mounting kit	23.1 kg | 50.927 lb

Array Layout

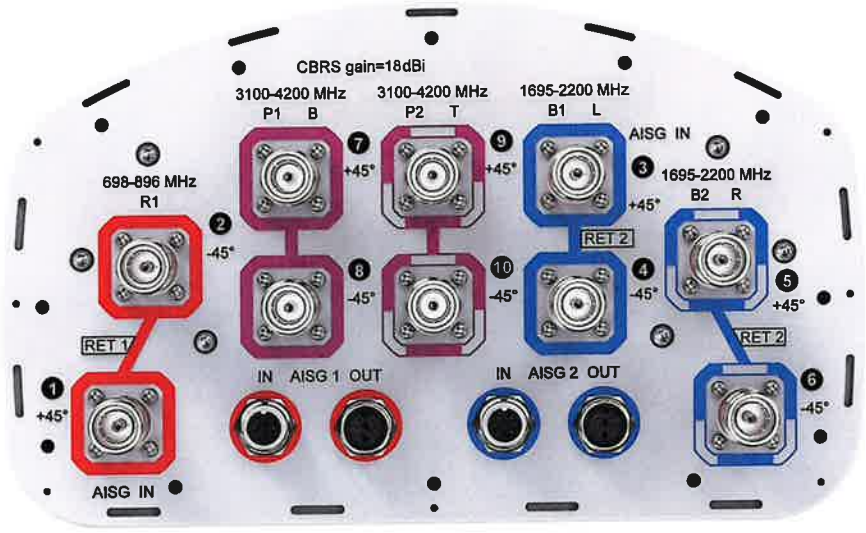


Array ID	Frequency (MHz)	RF Connector	RET (SRET)	AISG No.	AISG RET UID
R1	698-896	1 - 2	1	AISG1	CPxxxxxxxxxxxxxxR1
R1	1695-2200	3 - 4	2	AISG2	CPxxxxxxxxxxxxxxB1
R2	1695-2200	5 - 6			
P1	3100-4200	7 - 8	N/A	NA	N/A
P2	3100-4200	9 - 10			

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

NHHSS-65B-R2BT4



Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2200 MHz | 3100 – 4200 MHz | 698 – 896 MHz
Polarization	±45°
Total Input Power, maximum	1,000 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2200**	**3100–3550**	**3550–3700**	**3700–4200**
Gain, dBi	14.8	15.2	17.4	17.8	18	17.7	17.3	17.9
Beamwidth, Horizontal, degrees	65	62	66	61	64	54	64	60
Beamwidth, Vertical, degrees	13	11.6	5.5	5.2	4.9	5.7	5.3	4.9
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	4	4	4
USLS (First Lobe), dB	15	15	16	18	18	16	17	18
Front-to-Back Ratio at 180°, dB	26	29	31	28	27	30	33	29
Isolation, Cross Polarization, dB	25	25	25	25	25	25	25	25
Isolation, Inter-band, dB	25	25	25	25	25	28	28	28
VSWR | Return loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-140	-140	-140

NHHSS-65B-R2BT4

Input Power per Port at 50°C, maximum, watts	300	300	300	300	300	100	100	100

Electrical Specifications, BASTA

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2200**	**3100–3550**	**3550–3700**	**3700–4200**
Gain by all Beam Tilts, average, dBi	14.6	14.8	17	17.5	17.7	17.3	17	17.2
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.4	±0.6	±0.3	±0.4	±0.6	±0.7	±0.8
Gain by Beam Tilt, average, dBi	0° | 14.6 7° | 14.6 14° | 14.4	0° | 15.0 7° | 14.9 14° | 14.5	0° | 16.9 3° | 17.0 7° | 16.8	0° | 17.4 3° | 17.5 7° | 17.4	0° | 17.5 3° | 17.8 7° | 17.6			
Beamwidth, Horizontal Tolerance, degrees	±1.7	±1.3	±7.2	±3.1	±6.2	±10	±6.7	±10.5
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.8	±0.2	±0.2	±0.4	±0.4	±0.3	±0.4
USLS, beampeak to 20° above beampeak, dB	18	16	14	15	17	14		
Front-to-Back Total Power at 180° ± 30°, dB	22	25	25	25	24	26	25	24
CPR at Boresight, dB	24	17	16	21	19	15	17	14
CPR at Sector, dB	12	6	11	10	8	8	9	7

Mechanical Specifications

Wind Loading @ Velocity, frontal	278.0 N @ 150 km/h (62.5 lbf @ 150 km/h)
Wind Loading @ Velocity, lateral	230.0 N @ 150 km/h (51.7 lbf @ 150 km/h)
Wind Loading @ Velocity, maximum	537.0 N @ 150 km/h (120.7 lbf @ 150 km/h)
Wind Loading @ Velocity, rear	287.0 N @ 150 km/h (64.5 lbf @ 150 km/h)
Wind Speed, maximum	241 km/h | 149.75 mph

Packaging and Weights

Width, packed	1973 mm | 77.677 in
Depth, packed	441 mm | 17.362 in
Length, packed	337 mm | 13.268 in
Weight, gross	35.1 kg | 77.382 lb

Regulatory Compliance/Certifications

Agency	**Classification**
CHINA-ROHS	Above maximum concentration value

NHHSS-65B-R2BT4

ROHS	Compliant/Exempted

Included Products

BSAMNT-3	–	Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

SAMSUNG

SAMSUNG C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

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

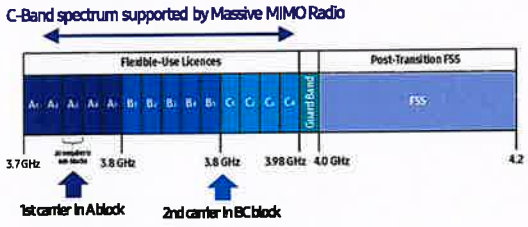
Model Code : MT6407-77A

Points of Differentiation

Wide Bandwidth

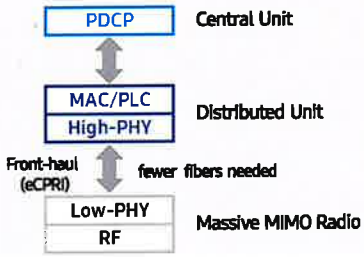
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

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



Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.
It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.



Enhanced Performance

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

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

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

Well Matched Design

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

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

Technical Specifications

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

SAMSUNG

About Samsung Electronics Co., Ltd.

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

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

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

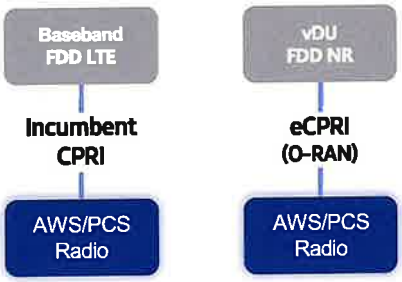
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

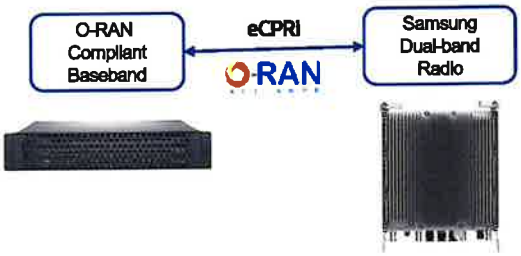
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



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.

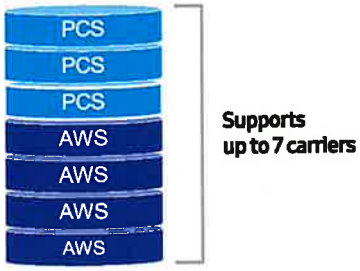
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



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.



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.

Technical Specifications

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

SAMSUNG

700/850MHZ MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

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

Model Code	RF4440d-13A

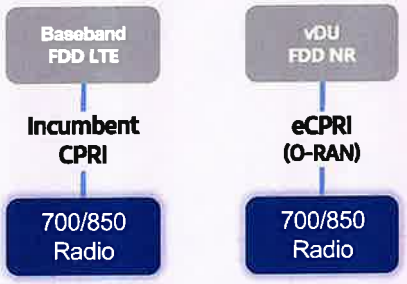
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

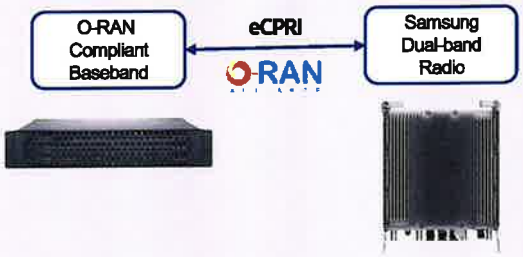
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

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

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



Optimum Spectrum Utilization

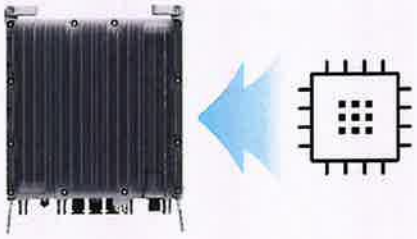
The number of required carriers varies according to site (region). The ability to support many carriers is essential for using all frequencies that the operator has available.

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

Secured Integrity

Access to sensitive data is allowed only to authorized software.

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



Technical Specifications

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

Specifications

The table below outlines the main specifications of the RRH.

Table 1. Specifications

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

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

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

SG050NA | 4.5L | 50 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary

GENERAC | INDUSTRIAL POWER

Standby Power Rating
50 kW, 63 kVA, 60 Hz

Demand Response Rating
50 kW, 63 kVA, 60 Hz

Prime Power Rating
45 kW, 56 kVA, 60 Hz

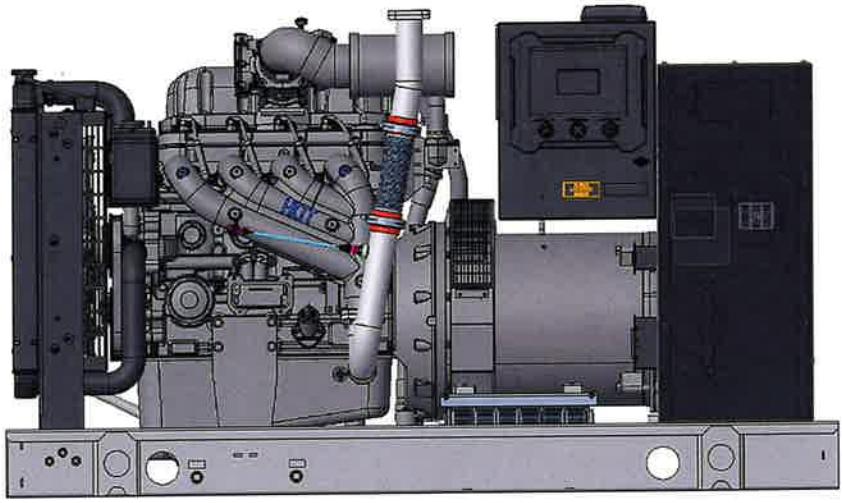


Image used for illustration purposes only

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

UL2200, UL6200, UL1236, UL489

CSA C22.2

BS5514 and DIN 6271

SAE J1349

NFPA 37, 70, 99, 110

NEC700, 701, 702, 708

ISO 3046, 7637, 8528, 9001

NEMA ICS10, MG1, 250, ICS6, AB1

ANSI C62.41

IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Powering Ahead

Generac ensures superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and you'll find them on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise to ensure reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so you don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

SG050NA | 4.5L | 50 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary

GENERAC | INDUSTRIAL POWER

STANDARD FEATURES

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Critical Silencer
- Oil Temperature Sender with Alarm
- Air Filter Restriction Indicator

Fuel System

- Fuel Line - NPT Connection
- Primary and Secondary Fuel Shutoff

Cooling System

- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

Electrical System

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Brushless Excitation
- Sealed Bearing
- Full Load Capacity Alternator

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby Rated Units)
- 1 Year Limited Warranty (Prime Rated Units)

ENCLOSURE (If Selected)

- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuated Enclosures)
- Gasketed Doors
- Stamped Air-Intake Louvers
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM

Power Zone Pro® Controller

- NFPA 110 Level 1 Compliant
- Engine Protective Functions
- Alternator Protective Functions
- Digital Engine Governor Control
- Digital Voltage Regulator
- Multiple Programmable Inputs and Outputs
- Remote Display Capability
- Remote Communication via Modbus® RTU, Modbus TCP/IP, and Ethernet 10/100
- Alarm and Event Logging with Real Time Stamping
- Expandable Analog and Digital Inputs and Outputs
- Remote Wireless Software Update Capable
- Wi-Fi, Bluetooth, BMS, and Remote Telemetry
- Built-In Programmable Logic Eliminates the Need for External Controllers Under Most Conditions
- Programmable I/O Channel Properties
- Built-In Diagnostics

Alarms and Warnings

- High/Low Oil Pressure
- High/Low Coolant Level
- High/Low Coolant Temperature
- Sender/Sensor Failure
- High/Low Oil Temperature
- Over Total kW
- Over/Under Speed
- Over/Under Voltage
- Over/Under Frequency
- Over Current
- High/Low Battery Voltage
- Battery Charger Current
- Phase to Phase and Phase to Neutral Short Circuits (I^2T Algorithm)

4.3 Inch Color Touch Screen Display

- Resistive Color Touch Screen
- Easily Identifiable Icons
- Multi-Lingual
- On Screen Editable Parameters
- Key Function Monitoring
- Three Phase Voltage, Amperage, kW, kVA, and kVAr
- Selectable Line to Line or Line to Neutral Measurements
- Frequency
- Engine Speed
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Battery Voltage
- Hourmeter
- Warning and Alarm Indication
- Diagnostics
- Maintenance Events/Information

SG050NA | 4.5L | 50 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary

GENERAC | INDUSTRIAL POWER

CONFIGURABLE OPTIONS

ENGINE SYSTEM

- Heater with Shutoff Valves
- Fluid Containment Pan
- Engine Coolant Heater
- Oil Heater
- Level 1 Fan and Belt Guards (Enclosed Units Only)
- Radiator Duct Adapter (Open Set Only)

ELECTRICAL SYSTEM

- 10A UL Listed Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM

- Alternator Upsizing
- Anti-Condensation Heater
- Tropical Coating

CIRCUIT BREAKER OPTIONS

- Main Line Circuit Breaker
- 2nd Main Line Circuit Breaker
- 3rd Main Line Circuit Breaker
- Shunt Trip and Auxiliary Contact
- Electronic Trip Breakers

GENERATOR SET

- Demand Response Rating
- Extended Factory Testing (3-Phase Only)
- 8 Position Load Center

ENCLOSURE

- Weather Protected Enclosure
- Level 1 Sound Attenuated
- Level 2 Sound Attenuated
- Level 2 Sound Attenuated with Motorized Dampers
- Steel Enclosure
- Aluminum Enclosure
- Up to 200 MPH Wind Load Rating (Contact Factory for Availability)
- AC/DC Enclosure Lighting Kit
- Enclosure Heaters

CONTROL SYSTEM

- NFPA 110 Compliant 21-Light Remote Annunciator
- Remote Relay Assembly (8 or 16)
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- 10A Run Relay
- Ground Fault Indication and Protection Functions
- 120V GFCI and 240V Outlets
- 100 dB Alarm Horn

WARRANTY (Standby Gensets Only)

- 2 Year Extended Limited Warranty
- 5 Year Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

CONTROL SYSTEM

- Spare Inputs (x4) / Outputs (x4)
- Battery Disconnect Switch

GENERATOR SET

- Special Testing
- Battery Box

SG050NA | 4.5L | 50 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary

GENERAC | INDUSTRIAL POWER

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	4
Type	In-Line
Displacement - in^3 (L)	275.0 (4.5)
Bore - in (mm)	4.5 (114.0)
Stroke - in (mm)	4.25 (107.95)
Compression Ratio	9.94:1
Intake Air Method	Naturally Aspirated
Number of Main Bearings	5
Connecting Rods	Forged Steel, Fractured Split, Bushingless
Cylinder Head	Cast Iron
Cylinder Liners	Cast Iron
Ignition	Coil Near Plug Solid State Inductive
Piston Type	Cast Aluminum Flat Top
Crankshaft Type	Forged Steel
Lifter Type	Hydraulic
Intake Valve Material	Stainless Steel
Exhaust Valve Material	Stainless Steel
Hardened Valve Seats	High Steel Iron Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear Driving
Oil Filter Type	Full-Flow Spin-On Cartridge
Crankcase Capacity - qt (L)	21 (20)

Cooling System

Cooling System Type	Pressurized Closed
Fan Type	Pusher
Fan Speed - RPM	2,100
Fan Diameter - in (mm)	20 (508)

Fuel System

Fuel Type	Natural Gas, Propane
Fuel Injection	Electronic
Fuel Shut Off	Dual
NG Operating Fuel Pressure - in H_2O (kPa)	5 - 14 (1.2 - 3.5)
LP Operating Fuel Pressure - in H_2O (kPa)	7 - 14 (1.7 - 3.5)

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	35 A
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	K0050124Y21
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5% (3-Phase)
Telephone Interference Factor (TIF)	<50
Standard Excitation	Synchronous Brushless
Bearings	Sealed Ball
Coupling	Direct via Flexible Disc
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

SG050NA | 4.5L | 50 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary

GENERAC | INDUSTRIAL POWER

OPERATING DATA

POWER RATINGS

		Natural Gas				LP Vapor			
		Standby/Demand Response		Prime		Standby/Demand Response		Prime	
Alternator	Voltage	Power	Amps	Power	Amps	Power	Amps	Power	Amps
A0050044N21	Single-Phase 120/240 VAC @1.0pf	48 kW/48 kVA	200	45 kW/45 kVA	188	50 kW/50 kVA	208	45 kW/45 kVA	188
A0060044N21	Single-Phase 120/240 VAC @1.0pf	50 kW/50 kVA	208	45 kW/45 kVA	188	50 kW/50 kVA	208	45 kW/45 kVA	188
K0050124Y21	Three-Phase 120/208 VAC @0.8pf	48 kW/60 kVA	167	45 kW/56 kVA	156	50 kW/63 kVA	174	45 kW/56 kVA	156
K0060124Y21	Three-Phase 120/208 VAC @0.8pf	50 kW/63 kVA	174	45 kW/56 kVA	156	50 kW/63 kVA	174	45 kW/56 kVA	156
K0050124Y21	Three-Phase 120/240 VAC @0.8pf	48 kW/60 kVA	144	45 kW/56 kVA	135	50 kW/63 kVA	150	45 kW/56 kVA	135
K0060124Y21	Three-Phase 120/240 VAC @0.8pf	50 kW/63 kVA	150	45 kW/56 kVA	135	50 kW/63 kVA	150	45 kW/56 kVA	135
K0050124Y21	Three-Phase 277/480 VAC @0.8pf	50 kW/63 kVA	75	45 kW/56 kVA	68	50 kW/63 kVA	75	45 kW/56 kVA	68
K0060124Y21	Three-Phase 277/480 VAC @0.8pf	50 kW/63 kVA	75	45 kW/56 kVA	68	50 kW/63 kVA	75	45 kW/56 kVA	68

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

277/480 VAC	30%	208/240 VAC	30%
K0050124Y21	98	K0050124Y21	75
K0060124Y21	124	K0060124Y21	95

SG050NA | 4.5L | 50 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary

GENERAC | INDUSTRIAL POWER

OPERATING DATA

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m^3/hr)	
Percent Load	Standby
25%	204 (5.8)
50%	343 (9.7)
75%	456 (12.9)
100%	621 (17.6)

Propane Vapor – scfh (m^3/hr)	
Percent Load	Standby
25%	102.6 (2.9)
50%	175.9 (5.0)
75%	237.5 (6.7)
100%	293.2 (8.3)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Air Flow (Fan Air Flow Across Radiator)	scfm (m^3/min)	2,470 (69.9)
Coolant Flow	gpm (Lpm)	38 (142.7)
Coolant System Capacity	gal (L)	3 (11.4)
Max. Operating Ambient Temperature	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)	See Bulletin No. 0199270SSD	
Maximum Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power scfm (m^3/min)	115 (3.3)

ENGINE

		Standby
Rated Engine Speed	RPM	1,800
Horsepower at Rated kW**	hp	76
Piston Speed	ft/min (m/min)	1,275 (389)
BMEP	psi (kPa)	124 (855)

EXHAUST

		Standby
Exhaust Flow (Rated Output)	scfm (m^3/min)	332 (9.4)
Maximum Exhaust Backpressure	inHg (kPa)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,100 (593)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Prime - See Bulletin 0187510SSB

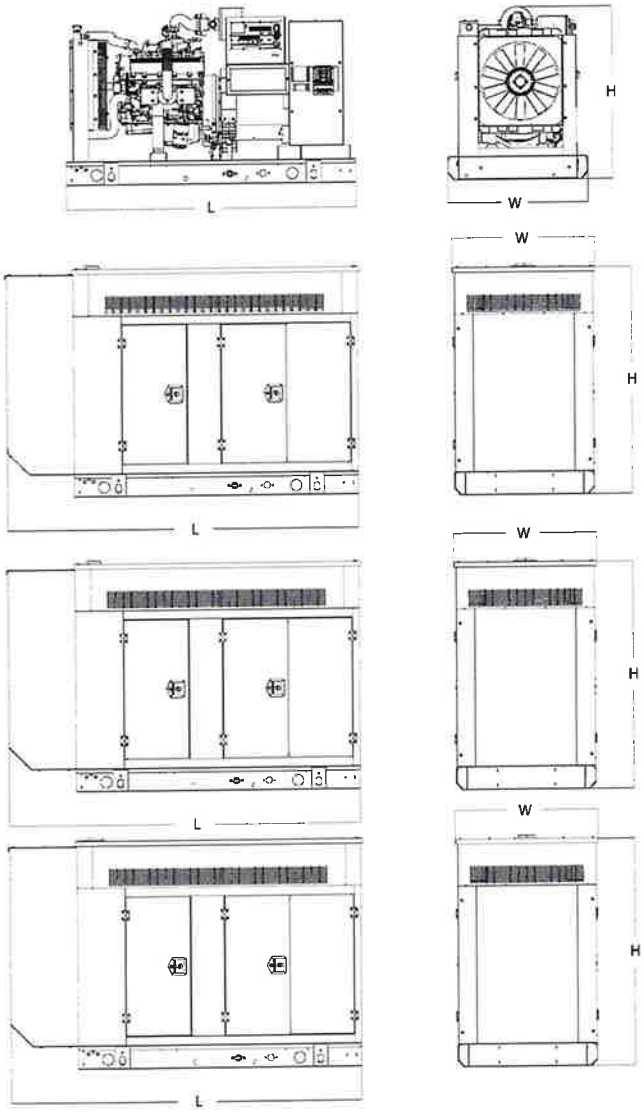
SG050NA | 4.5L | 50 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary

GENERAC | INDUSTRIAL POWER

DIMENSIONS AND WEIGHTS*



OPEN SET (Includes Exhaust Flex)

L x W x H - in (mm)	76.0 (1,930) x 37.4 (950) x 46.3 (1,176)
Weight - lbs (kg)	2,256 (1,023)

WEATHER PROTECTED ENCLOSURE

L x W x H - in (mm)	94.8 (2,407) x 37.4 (950) x 69.1 (1,755)
Weight - lbs (kg)	Steel: 2,697 (1,223) Aluminum: 1,754 (795)

LEVEL 1 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	94.8 (2,407) x 37.4 (950) x 69.1 (1,755)
Weight - lbs (kg)	Steel: 2,776 (1,259) Aluminum: 2,508 (1,138)

LEVEL 2 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	94.8 (2,407) x 37.4 (950) x 69.1 (1,755)
Weight - lbs (kg)	Steel: 2,928 (1,328) Aluminum: 2,574 (1,168)

* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

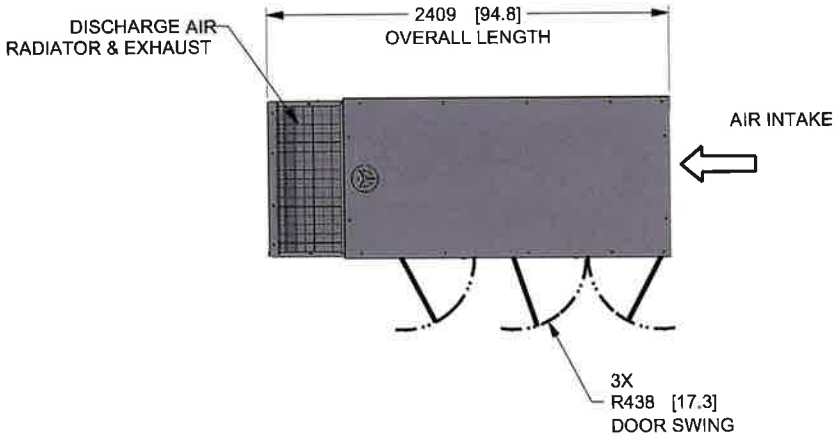
Specification characteristics may change without notice. Please contact a Generac Power Systems Industrial Dealer for detailed installation drawings.

SPEC SHEET

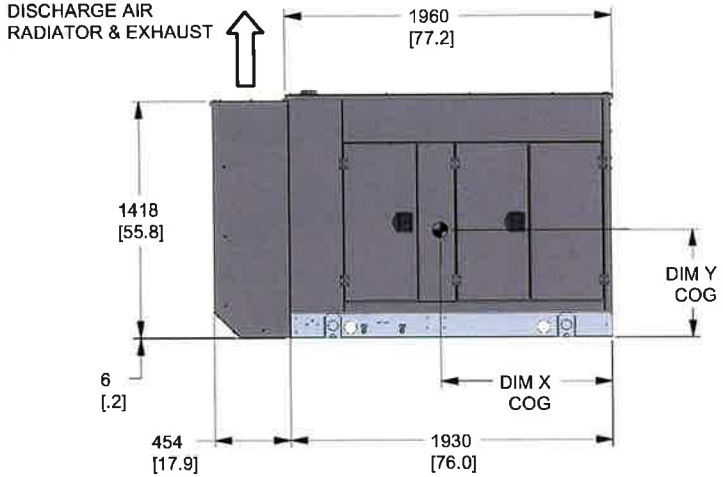
Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53189
P: (262) 544-4811

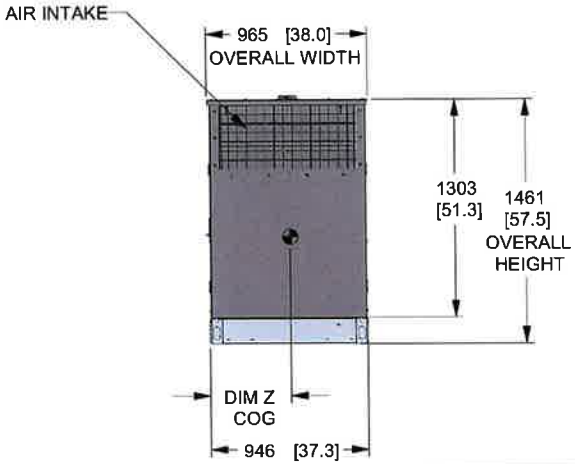
Part No. A0000310340
Rev. 1 07/15/19

SH	REV	WINDCHILL VERSION
1/1		



FOR ALL STUB-UP, WEIGHT AND COG DETAILS, SEE
CORRESPONDING OPEN SET DRAWING PER UNIT CONFIGURATION.





DRAWING CREATED FROM PRO/ENGINEER
3D FILE, ECO MODIFICATION TO BE
APPLIED TO SOLID MODEL ONLY.

DIMENSIONS ARE IN MILLIMETERS [INCHES]

INSTALLATION DRAWING

ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

TITLE
INSTALL G4.5 G26 N/A ENCLOSED SSS
G4.5L 60Hz
SG35, SG40, SG45, SG50

ISSUE DATE:

SIZE	CAGE NO	DWG NO	REV
B	N/A	A0000529382	1

SCALE	0.035	WT-KG	804.509	SHEET	1 of 1

ATTACHMENT 5

Chappell Engineering Associates, LLC

verizon

Tower Structural Analysis

Verizon New Site Build

Structural Analysis Report

Site Name: Bloomfield 5 CT

Address:

7A Old Windsor Road

Bloomfield, CT 06002

April 17, 2023 (Revision 2)

201 Boston Post Road West, Suite 101
Marlborough, Massachusetts 01752

CHAPPELL
ENGINEERING
ASSOCIATES, LLC
Civil • Structural • Land Surveying

April 17, 2023

verizon
20 Alexander Drive, 2nd Floor
Wallingford, CT 06492

Reference:	**Tower Structural Analysis**
Tower Data:	149ft Valmont Monopole
Build Date:	2021
Tower Address:	7A Old Windsor Road, Bloomfield, CT 06002

Dear Sirs:

Chappell Engineering Associates, LLC has performed a structural analysis of the above-referenced tower to evaluate the effect of the proposed **Verizon New Site Build** on the subject structure.

This analysis has been performed in accordance with the 2022 Connecticut State Building Code (2021 International Building Code) with Connecticut Amendments based upon an ultimate 3-second gust wind speed of 135mph converted to a nominal 3-second gust wind speed of 105mph per section 1609.3.1 as required for use in the TIA-222 Standard per Exception #5 of Section 1609.1.1. A structure class II (Structures that due to height, use or location represent a substantial hazard to human life and/or damage to property in the event of failure and/or used for services that may be provided by other means) has been assigned to the structure. The tower has been modeled as being located in an exposure B category.

The proposed Verizon antenna configuration is detailed on the Lease Exhibit Drawings and are included in this structural report.

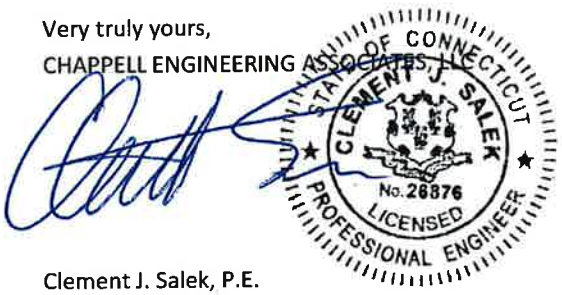
Based on the results of the analysis, it has been determined that the structure is:

Structurally Acceptable – Tower Rating: 41.9% (Baseplate)

The antenna tower is structurally able to withstand the proposed cellular equipment installation as detailed in the lease exhibit drawings provided.

If you have any questions, please do not hesitate to call.

Very truly yours,
CHAPPELL ENGINEERING ASSOCIATES, LLC



Clement J. Salek, P.E.

R.K. Executive Centre ■ 201 Boston Post Road West ■ Suite 101 ■ Marlborough, MA 01752
t. 508.481.7400 ■ www.chappellengineering.com ■ f. 508.481.7406

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Tower Information 1
Analysis Criteria 1
Analysis Results 3
Conclusions and Recommendations 4
Limitations 4

Appendices:

Appendix A – Site Location Map
Appendix B – Proposed Antenna Plan
Appendix C – Calculations
Appendix D – Photos

Introduction

The subject tower has been modeled using tnxTower software developed by Tower Numerics, Inc. tnxTower is a general-purpose modeling, analysis, and design program created specifically for the analysis and design of communication towers using the TIA-222-H Standard, as well as any of the previous TIA/EIA Standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD Specifications.

This particular tower analysis has been performed by Chappell Engineering Associates, LLC to determine the structural capacity of the tower under the current ***TIA-222-H*** Standard given the proposed antenna loading detailed in this report.

Tower Information

	SOURCE	INFORMATION
Structure	Valmont	Valmont Structures dated 06-08-2021 Engineering File Number 468082
Foundation	Valmont	Valmont Structures dated 06-08-2021 Engineering File Number 468082
Current Inventory	Chappell Engineering Associates	Site Visit 01-23-2023
Proposed Condition	Verizon	Proposed Antenna Configuration Sheets

Analysis Criteria

Table 1: Antenna Loads

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert ft*	*Azimuth Adjustment °*	*Placement ft*		*C_AA_A Front ft^2*	*C_AA_A Side ft^2*	*Weight K*
12' Dipole Antenna	C	None		0.0000	156.00	No Ice 1/2" Ice 1" Ice	2.25 3.94 5.63	2.25 3.94 5.63	0.04 0.06 0.08
Lightning Rod	C	None		0.0000	153.00	No Ice 1/2" Ice 1" Ice	0.38 0.99 1.60	0.38 0.99 1.60	0.01 0.01 0.01
PiROD 15' Platform with handrail	C	None		0.0000	147.50	No Ice 1/2" Ice 1" Ice	33.80 43.60 53.40	33.80 43.60 53.40	2.04 2.75 3.45
Universal Ring Mount	C	None		0.0000	143.50	No Ice 1/2" Ice 1" Ice	2.50 3.00 3.50	2.50 3.00 3.50	0.42 0.60 0.78
PiROD 15' Platform with handrail	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice	33.80 43.60 53.40	33.80 43.60 53.40	2.04 2.75 3.45
Universal Ring Mount	C	None		0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.50 3.00 3.50	2.50 3.00 3.50	0.42 0.60 0.78

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Commscope NHH-65B-R2B	A	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	8.33 8.88 9.43	5.45 5.96 6.50	0.05 0.10 0.16
Commscope NHHSS-65B-R2BT4	A	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	8.29 8.84 9.40	5.34 5.79 6.26	0.05 0.10 0.16
Samsung MT6407-77A	A	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	5.51 5.85 6.19	1.92 2.19 2.46	0.09 0.12 0.15
Commscope NHH-65B-R2B	B	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	8.33 8.88 9.43	5.45 5.96 6.50	0.05 0.10 0.16
Commscope NHHSS-65B-R2BT4	B	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	8.29 8.84 9.40	5.34 5.79 6.26	0.05 0.10 0.16
Samsung MT6407-77A	B	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	5.51 5.85 6.19	1.92 2.19 2.46	0.09 0.12 0.15
Commscope NHH-65B-R2B	C	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	8.33 8.88 9.43	5.45 5.96 6.50	0.05 0.10 0.16
Commscope NHHSS-65B-R2BT4	C	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	8.29 8.84 9.40	5.34 5.79 6.26	0.05 0.10 0.16
Samsung MT6407-77A	C	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	5.51 5.85 6.19	1.92 2.19 2.46	0.09 0.12 0.15
(3) Samsung RRH B5/B13	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice	2.19 2.39 2.59	1.18 1.34 1.50	0.07 0.09 0.11
(3) Samsung RRH B2/B66A	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice	2.19 2.39 2.59	1.46 1.62 1.80	0.08 0.10 0.12
(3) Samsung RRH CBRS RT4401	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice	1.16 1.31 1.47	0.57 0.69 0.82	0.02 0.03 0.04
Rayco Fiber Junction Box	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice	2.93 3.16 3.40	2.30 2.50 2.72	0.03 0.05 0.08

Table 2: Dish Antenna Loads

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
2.5' Dish w/Radome	A	Paraboloid w/Radome	From Face	4.00 4.00 0.00	Worst		148.00	2.50	No Ice 1/2" Ice 1" Ice	4.91 5.24 5.57	0.05 0.08 0.10
2.5' Dish w/Radome	C	Paraboloid w/Radome	From Face	4.00 6.00 0.00	Worst		148.00	2.50	No Ice 1/2" Ice 1" Ice	4.91 5.24 5.57	0.05 0.08 0.10

Analysis Results

Section No.	Elevation ft	Component Type	Size	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	149 - 103	Pole	TP42.34x27.5x0.25	-11.82	2011.98	20.7	Pass
L2	103 - 78.9	Pole	TP49.4x40.0657x0.313	-16.76	3034.61	22.5	Pass
L3	78.9 - 39.32	Pole	TP63.1x46.7242x0.375	-28.15	4503.63	23.9	Pass
L4	39.32 - 0	Pole	TP73x59.507x0.438	-48.62	6261.68	25.8	Pass

The following table summarizes the **foundation capacity** analysis:

LOAD	ORIGINAL DESIGN FOUNDATION LOADS	PROPOSED FOUNDATION LOADS	FACTOR OF SAFETY	PASS/FAIL
Overturning (ft-k)	5,699.8 ft-k	2338 ft-k	2.4	Pass
Shear (k)	52.9 k	25.0 k	2.1	Pass

Conclusions and Recommendations

Under the proposed loading considered in the analysis, the existing structure is rated at **41.9% (Baseplate).** As such, it conforms to the loading criteria set forth in the **IBC/TIA-222 Rev H**.

Limitations

Any future modifications made to the structure or to the listed appurtenances for which Chappell Engineering was not made aware of shall invalidate this report. Modifications made to the structure which have occurred after the date of this analysis shall invalidate this report. Modifications include (but are not limited to):

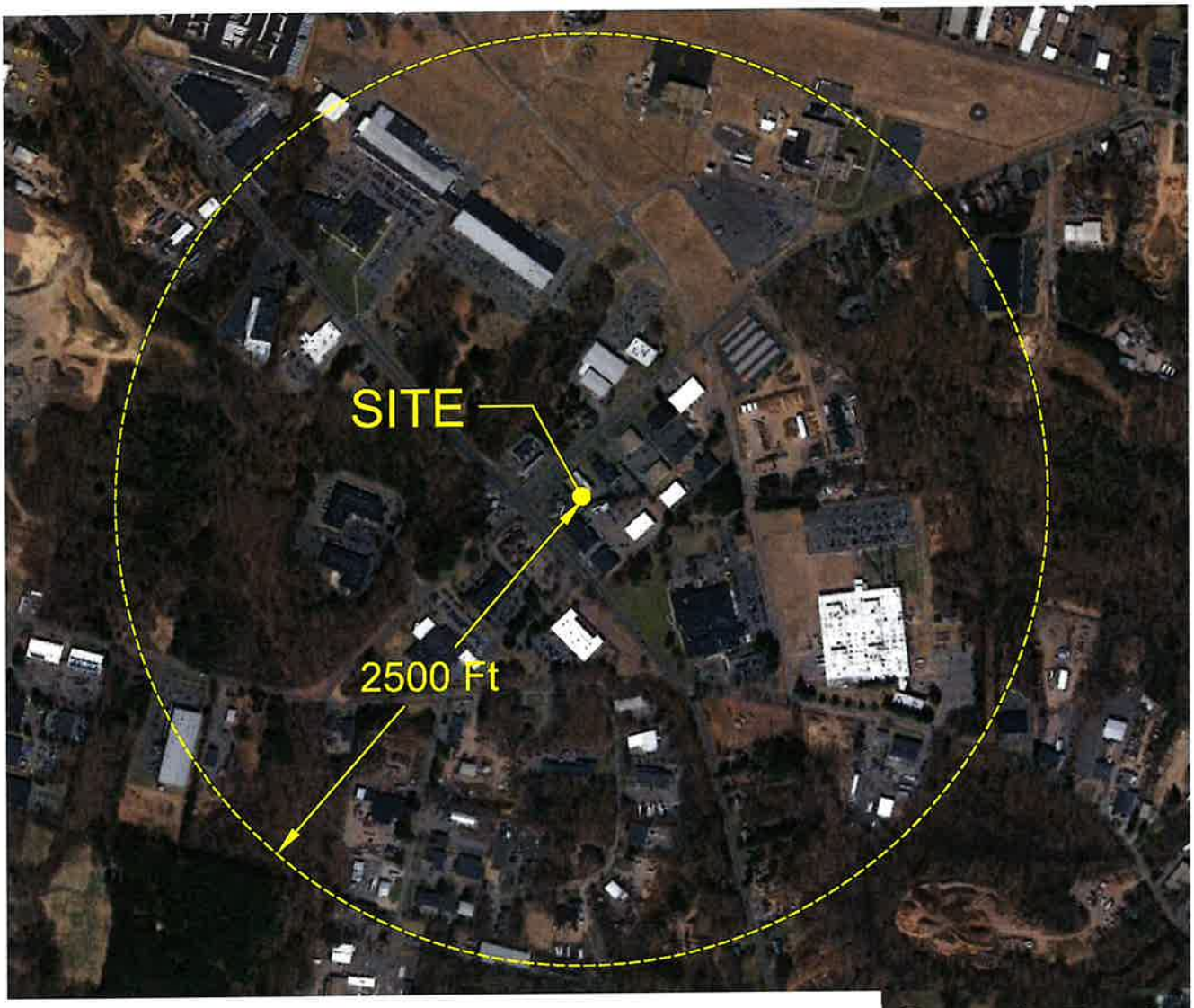
1. The addition of or reconfiguration of antennas or other appurtenances
2. The addition of or reconfiguration of coax cables or other feed lines
3. Modifications to the structure
4. Local damage or structural deficiencies not specifically identified in this report

Appendix A – Site Location Map

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural Land Surveying

201 BOSTON POST ROAD WEST
MARLBOROUGH, MA 01752
P. (508) 481-7400
F. (508) 481-7406
www.chappellengineering.com

TITLE: 7A Old Windsor Rd, Bloomfield, CT 06002			PAGE:
PROJECT #: Bloomfield 5 CT New Site Build (96210.413)			
DATE: March 14, 2023	BY: CJS	CHK: JMF	



EXPOSURE CATEGORY MAP
SCALE: NTS

2.6.5 EXPOSURE CATEGORIES

2.6.5.1 GENERAL

AN EXPOSURE CATEGORY THAT ADEQUATELY REFLECTS THE CHARACTERISTICS OF GROUND SURFACE IRREGULARITIES AT THE SITE SHALL BE DETERMINED. ACCOUNT SHALL BE TAKEN OF VARIATIONS IN GROUND SURFACE ROUGHNESS THAT ARISE FROM NATURAL TOPOGRAPHY AND VEGETATION AS WELL AS FROM CONSTRUCTED FEATURES. THE EXPOSURE CATEGORY FOR A STRUCTURE SHALL BE ASSESSED AS BEING ONE OF THE FOLLOWING:

1. **EXPOSURE B:** URBAN AND SUBURBAN AREAS, WOODED AREAS, OR OTHER TERRAIN WITH NUMEROUS CLOSELY SPACED OBSTRUCTIONS HAVING THE SIZE OF SINGLE-FAMILY DWELLINGS OR LARGER. USE OF THIS EXPOSURE SHALL BE LIMITED TO THOSE AREAS FOR WHICH TERRAIN REPRESENTATIVE OF EXPOSURE B SURROUNDS THE STRUCTURE IN ALL DIRECTIONS FOR A DISTANCE OF AT LEAST 2,630 FT [800 M] OR TEN TIMES THE HEIGHT OF THE STRUCTURE, WHICHEVER IS GREATER.
2. **EXPOSURE C:** OPEN TERRAIN WITH SCATTERED OBSTRUCTIONS HAVING HEIGHTS GENERALLY LESS THAN 30 FT [9.1 M]. THIS CATEGORY INCLUDES FLAT, OPEN COUNTRY, GRASSLANDS AND SHORELINES IN HURRICANE PRONE REGIONS.
3. **EXPOSURE D:** FLAT, UNOBSTRUCTED SHORELINES EXPOSED TO WIND FLOWING OVER OPEN WATER (EXCLUDING SHORELINES IN HURRICANE PRONE REGIONS) FOR A DISTANCE OF AT LEAST 1 MILE [1.61 KM]. SHORELINES IN EXPOSURE D INCLUDE INLAND WATERWAYS, LAKES AND NON-HURRICANE COASTAL AREAS. EXPOSURE D EXTENDS INLAND A DISTANCE OF 660 FT [200 M] OR TEN TIMES THE HEIGHT OF THE STRUCTURE, WHICHEVER IS GREATER. SMOOTH MUD FLATS, SALT FLATS AND OTHER SIMILAR TERRAIN SHALL BE CONSIDERED AS EXPOSURE D.

2.6.6.2 TOPOGRAPHIC CATEGORIES

THE TOPOGRAPHIC CATEGORY FOR A STRUCTURE SHALL BE ASSESSED AS BEING ONE OF THE FOLLOWING:

CATEGORY 1: NO ABRUPT CHANGES IN GENERAL TOPOGRAPHY, E.G. FLAT OR ROLLING TERRAIN,NO WIND SPEED-UP CONSIDERATION SHALL BE REQUIRED.

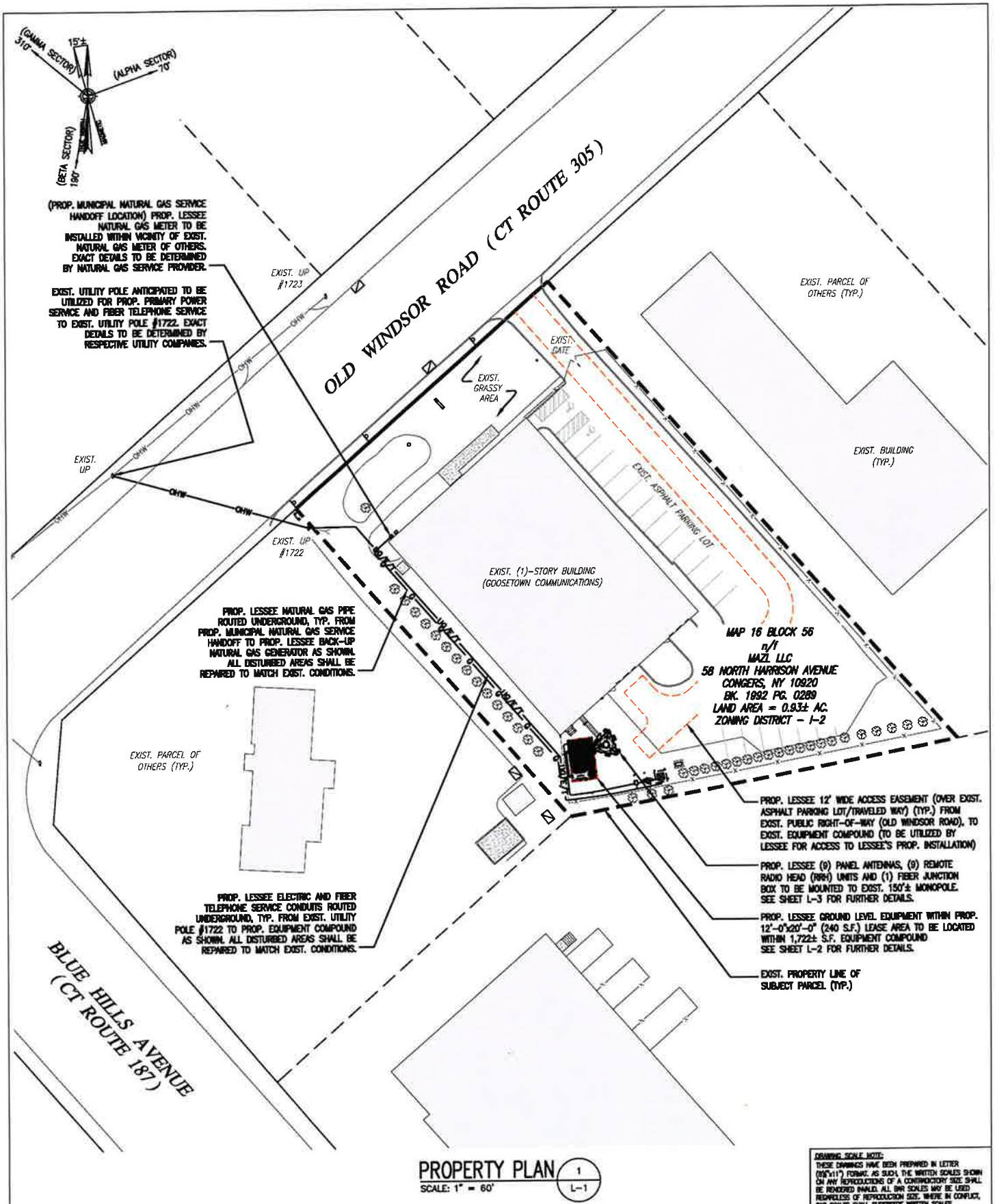
CATEGORY 2: STRUCTURES LOCATED AT OR NEAR THE CREST OF AN ESCARPMENT. WIND SPEED-UP SHALL BE CONSIDERED TO OCCUR IN ALL DIRECTIONS. STRUCTURES LOCATED VERTICALLY ON THE LOWER HALF OF AN ESCARPMENT OR HORIZONTALLY BEYOND 8 TIMES THE HEIGHT OF THE ESCARPMENT FROM ITS CREST, SHALL BE PERMITTED TO BE CONSIDERED AS TOPOGRAPHIC CATEGORY 1.

CATEGORY 3: STRUCTURES LOCATED IN THE UPPER HALF OF A HILL. WIND SPEED-UP SHALL BE CONSIDERED TO OCCUR IN ALL DIRECTIONS. STRUCTURES LOCATED VERTICALLY ON THE LOWERHALF OF A HILL SHALL BE PERMITTED TO BE CONSIDERED AS TOPOGRAPHIC CATEGORY 1.

CATEGORY 4: STRUCTURES LOCATED IN THE UPPER HALF OF A RIDGE. WIND SPEED-UP SHALL BE CONSIDERED TO OCCUR IN ALL DIRECTIONS. STRUCTURES LOCATED VERTICALLY ON THE LOWER HALF OF A RIDGE SHALL BE PERMITTED TO BE CONSIDERED AS TOPOGRAPHIC CATEGORY 1.

CATEGORY 5: WIND SPEED-UP CRITERIA BASED ON A SITE-SPECIFIC INVESTIGATION.

Appendix B – Proposed Antenna Information



PROPERTY PLAN 1
SCALE: 1" = 60' L-1

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN LETTER (8½"x11") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRADICTORY SIZE SHALL BE RENDERED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/1/23	REVISED PER LL COMMENTS	NWC	GRS	GRS
0	1/20/23	ISSUED FOR REVIEW	NWC	GRS	GRS

SCALE: 1" = 60' | DESIGNED BY: GRS | DRAWN BY: NWC

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

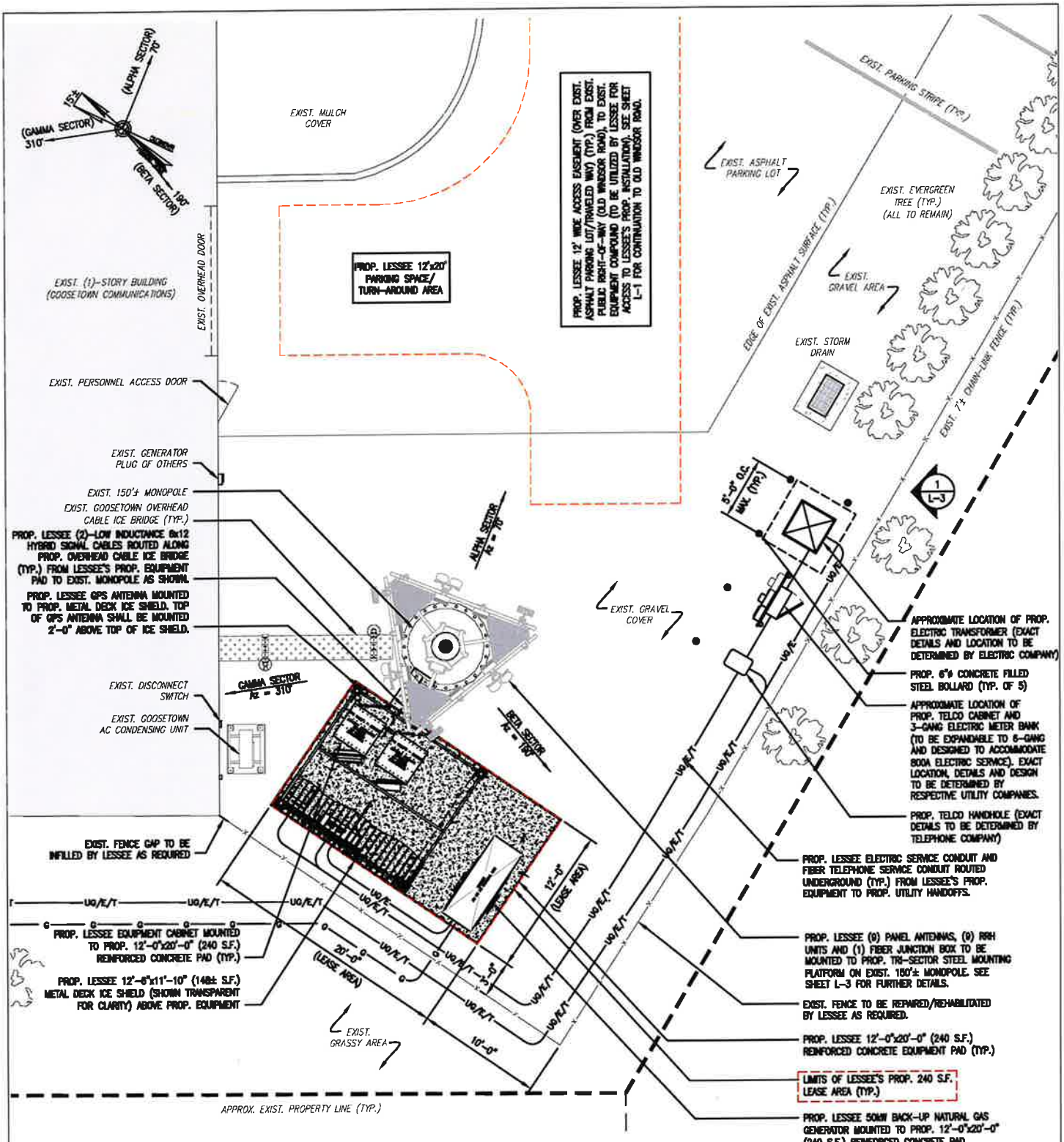
LEASE EXHIBIT
NOT FOR CONSTRUCTION

LEASE AREA

EQUIPMENT LEASE AREA: 12'-0"x20'-0" (240 S.F.)

TOTAL = 240 S.F.

PROJECT NO.	DRAWING NAME	DATE	LOC. CODE	REV
98210.413	L-1	2/1/23	783886	1



SITE CONTROL POINT:
CENTER OF EXISTING MONOPOLE
N 41°-51'-19.96" (41.855440') (NAD '83)
W 72°-42'-16.98" (72.704717') (NAD '83)
GROUND ELEVATION = 150.0' AMSL (NAVD '88)
PER GOOGLE EARTH

EQUIPMENT COMPOUND PLAN

1 L-2

SCALE: 3/32" = 1'-0"

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN LETTER (8½"x11") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRADICTORY SIZE SHALL BE REGARDED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/1/23	REVISED PER LL COMMENTS	NWC	GRS	GRS
0	1/20/23	ISSUED FOR REVIEW	NWC	GRS	GRS

SCALE: 3/32" = 1'-0" | DESIGNED BY: GRS | DRAWN BY: NWC

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

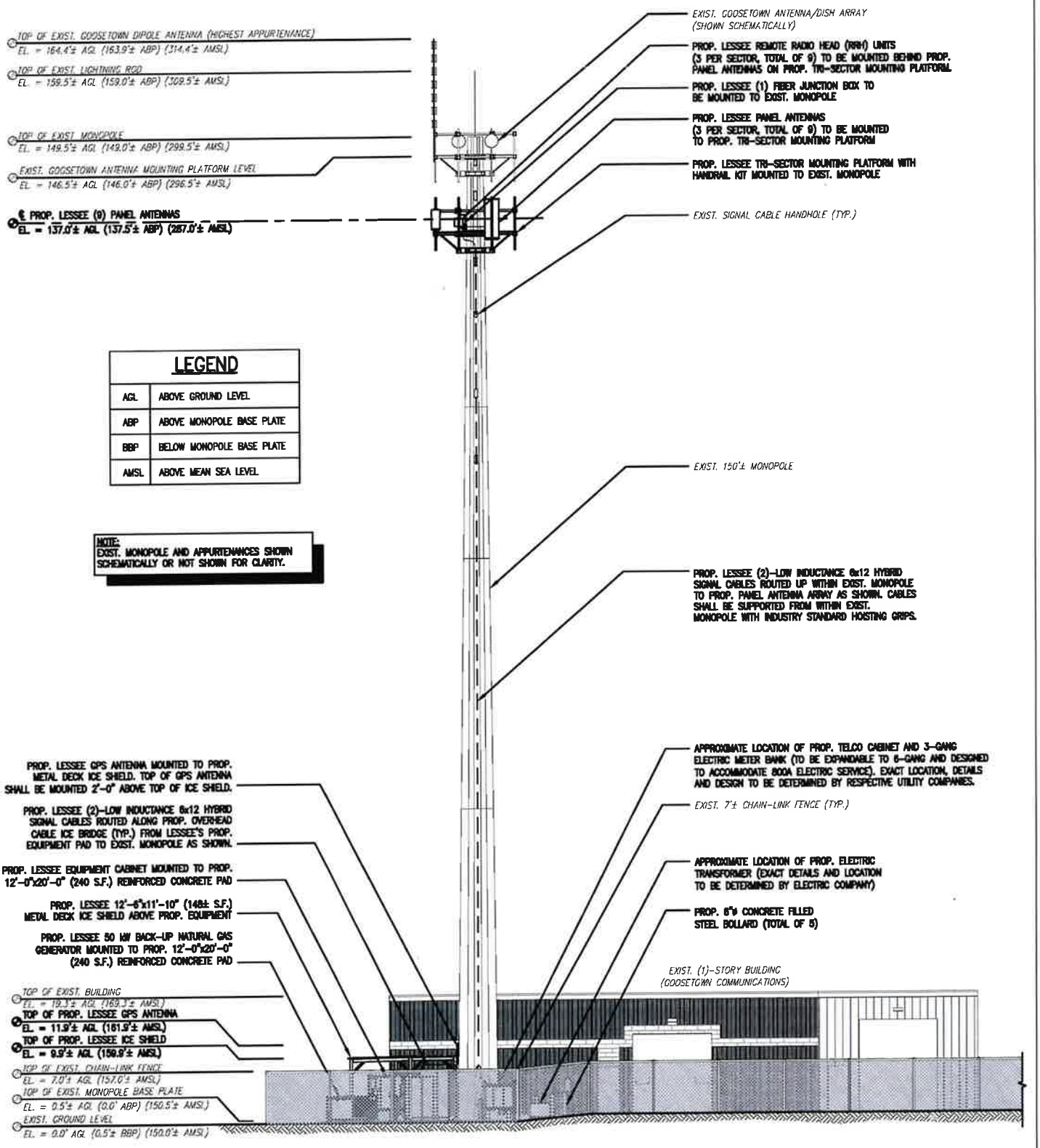
LEASE EXHIBIT
NOT FOR CONSTRUCTION

LEASE AREA

EQUIPMENT LEASE AREA: 12'-0"x20'-0" (240 S.F.)

TOTAL = 240 S.F.

PROJECT NO.	DRAWING NAME	DATE	LOC. CODE	REV
96210.413	L-2	2/1/23	783866	1



LEGEND	
AGL	ABOVE GROUND LEVEL
ABP	ABOVE MONOPOLE BASE PLATE
BBP	BELOW MONOPOLE BASE PLATE
AMSL	ABOVE MEAN SEA LEVEL

NOTE:
EXIST. MONOPOLE AND APPURTENANCES SHOWN SCHEMATICALLY OR NOT SHOWN FOR CLARITY.

NOTE:
EXIST. EVERGREEN TREES (ALL TO REMAIN) NOT SHOWN FOR CLARITY.

SOUTHEAST EQUIPMENT COMPOUND ELEVATION (1 / L-3)

SCALE: 1" = 20'

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN LETTER (8½"x11") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRADICTORY SIZE SHALL BE REGARDED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/1/23	REVISED PER LL COMMENTS	NWC	GRS	GRS
0	1/20/23	ISSUED FOR REVIEW	NWC	GRS	GRS

SCALE: 1" = 20' | DESIGNED BY: GRS | DRAWN BY: NWC

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

LEASE EXHIBIT
NOT FOR CONSTRUCTION

LEASE AREA

EQUIPMENT LEASE AREA: 12'-0"x20'-0" (240 S.F.)

TOTAL = 240 S.F.

PROJECT NO.	DRAWING NAME	DATE	LOC. CODE	REV
98210.413	L-3	2/1/23	783866	1

verizon
fuze | RFDS

EAST > North East > New England > New England West > BLOOMFIELD 5 CT

RF Submit by: Brauer, Mark - mark.brauer2@verizonwireless.com - 4/13/2023, 11:25:24 AM

EE Submit by: , - -

Project Details

FUZE Project ID: 16433987
Project Name: BLOOMFIELD 5 CT
Project Alt Name: BLOOMFIELD 5 CT - MKT 66 - MC
Project Type: Initial Build
Modification Type:
Designed Sector Carrier 4G: 18
Designed Sector Carrier 5G: 3
Additional Sector Carrier 4G: N/A
Additional Sector Carrier 5G: N/A
FP Solution Type & Tech Type: MCR;4G_700,4G_850,4G_AWS,4G_CBRS,4G_PCS,5G_L-Sub6
Carrier Aggregation: false
MPT Id:
eCIP-0: false
Suffix:

Location Information

Site ID: 616946037
E-NodeB ID: 068538,0689551
MDG Location ID: 5000920838
PSLC: 783866
Switch Name: Windsor 1
Tower Owner:
Tower Type: Monopole
Site Type: MACRO
Site Sub Type: TRADITIONAL
Street Address: 7A Old Windsor Road
City: Bloomgfield
State: CT
Zip Code: 06002
County: Hartford
Latitude: 41.855561 / 41° 51' 20.0196" N
Longitude: -72.704708 / 72° 42' 16.9488" W

RFDS Project Scope: New build monopole
Update 01/23/2023 - Antenna centerline updated per LEs REV 0 dated 01/20/23
Update 04/13/2023 - corrected antenna quantity

Antenna Summary

Added

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity	Item ID
					5G	Samsung	MT6407-77A	137	138.5	70(0444) 190(0445) 310(0446)		false	PHYSICAL	3	
LTE	LTE 5G	LTE				CommScope	NHH-65B-R2B	137	140	70(01) 190(02) 310(03) 70(0444) 190(0445) 310(0446)		true	PHYSICAL	3	000000001900056292
			LTE	LTE		CommScope	NHHSS-65B-R2BT4	137	140	70(01) 190(02) 310(03) 70(19) 190(20) 310(21)		true	PHYSICAL	3	000000001900055945

Removed

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity	Item ID

No data available

Retained

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity	Item ID

No data available

Added: 9 **Removed:** 0 **Retained:** 0

Equipment Summary

Added

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity	Item ID
RRU	Tower			LTE	LTE			Samsung	B2/B66A RRH ORAN (RF4439d-25A)			PHYSICAL	3	
RRU	Tower	LTE	LTE 5G					Samsung	B5/B13 RRH ORAN (RF4440d-13A)			PHYSICAL	3	
RRU	Tower					LTE		Samsung	CBRS RRH - RT4401-48A			PHYSICAL	3	000000001900167
RRU	Tower						5G	Samsung	MT6407-77A			PHYSICAL	0	
Hybrid Cable	Tower							N/A	6x12 Hybriflex			PHYSICAL	2	
Mount	Tower							Commscope	BASMNT-SBS-1-2			PHYSICAL	3	
OVP Box	Tower							N/A	12 OVP			PHYSICAL	1	

Removed

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity	Item ID

No data available

Retained

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity	Item ID

No data available.

Service Info

CBRS 3_5 GHz

		0002	
Sector	**19**	**20**	**21**
Azimuth	70	190	310
Cell / ENode B ID	068538	068538	068538
Antenna Model	NHHSS-65B-R2BT4	NHHSS-65B-R2BT4	NHHSS-65B-R2BT4
Antenna Make	CommScope	CommScope	CommScope
Antenna Centerline(Ft)	137	137	137
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	4	4	4
Tip Height	140	140	140
Regulatory Power	34.98	34.98	34.98
DLEARFCN	55790	55790	55790
Channel Bandwidth(MHz)	10	10	10
Total ERP (W)	47.97	47.97	47.97
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A
Number of Tx, Rx Lines	4,4	4,4	4,4
Position			
Transmitter Id	15085554	15085555	15085556
Source	ATOLL_API	ATOLL_API	ATOLL_API

700 MHz LTE

		0002	
Sector	**01**	**02**	**03**
Azimuth	70	190	310
Cell / ENode B ID	068538	068538	068538
Antenna Model	NHH-65B-R2B	NHH-65B-R2B	NHH-65B-R2B
Antenna Make	CommScope	CommScope	CommScope
Antenna Centerline(Ft)	137	137	137
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	4	4	4
Tip Height	140	140	140
Regulatory Power	73.41	73.41	73.41
DLEARFCN	5230	5230	5230
Channel Bandwidth(MHz)	10	10	10
Total ERP (W)	660.69	660.69	660.69
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH ORAN (RF4440d-13A)	B5/B13 RRH ORAN (RF4440d-13A)	B5/B13 RRH ORAN (RF4440d-13A)
Number of Tx, Rx Lines	4,4	4,4	4,4
Position			
Transmitter Id	15085545	15085548	15085551
Source	ATOLL_API	ATOLL_API	ATOLL_API

B50 MHz LTE

		0002	
Sector	**01**	**02**	**03**
Azimuth	70	190	310
Cell / ENode B ID	068538	068538	068538
Antenna Model	NHH-65B-R2B	NHH-65B-R2B	NHH-65B-R2B
Antenna Make	CommScope	CommScope	CommScope
Antenna Centerline(Ft)	137	137	137
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	4	4	4
Tip Height	140	140	140
Regulatory Power	317.55	317.55	317.55
DLEARFCN	2450	2450	2450
Channel Bandwidth(MHz)	10	10	10
Total ERP (W)	714.5	714.5	714.5
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH ORAN (RF4440d-13A)	B5/B13 RRH ORAN (RF4440d-13A)	B5/B13 RRH ORAN (RF4440d-13A)
Number of Tx, Rx Lines	4,4	4,4	4,4
Position			
Transmitter Id	15085542	15085543	15085544
Source	ATOLL_API	ATOLL_API	ATOLL_API

B50 MHz 5GNR

		0002	
Sector	**0444**	**0445**	**0446**
Azimuth	70	190	310
Cell / ENode B ID	0689551	0689551	0689551
Antenna Model	NHH-65B-R2B	NHH-65B-R2B	NHH-65B-R2B
Antenna Make	CommScope	CommScope	CommScope
Antenna Centerline(Ft)	137	137	137
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	4	4	4
Tip Height	140	140	140
Regulatory Power	317.55	317.55	317.55
DLEARFCN	2450	2450	2450
Channel Bandwidth(MHz)	10	10	10
Total ERP (W)	714.5	714.5	714.5
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH ORAN (RF4440d-13A)	B5/B13 RRH ORAN (RF4440d-13A)	B5/B13 RRH ORAN (RF4440d-13A)
Number of Tx, Rx Lines	4,4	4,4	4,4
Position			
Transmitter Id	15085542	15085543	15085544
Source	ATOLL_API	ATOLL_API	ATOLL_API

1900 MHz LTE

	0002		
Sector	**01**	**02**	**03**
Azimuth	70	190	310
Cell / ENode B ID	068538	068538	068538
Antenna Model	NHH-65B-R2B	NHH-65B-R2B	NHH-65B-R2B
Antenna Make	CommScope	CommScope	CommScope
Antenna Centerline(Ft)	137	137	137
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	2	2	2
Tip Height	140	140	140
Regulatory Power	254.54	254.54	254.54
DLEARFCN	1050	1050	1050
Channel Bandwidth(MHz)	10	10	10
Total ERP (W)	1396.37	1396.37	1396.37
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 Lines	4,4	4,4	4,4
Position			
Transmitter Id	15085546	15085549	15085552
Source	ATOLL_API	ATOLL_API	ATOLL_API

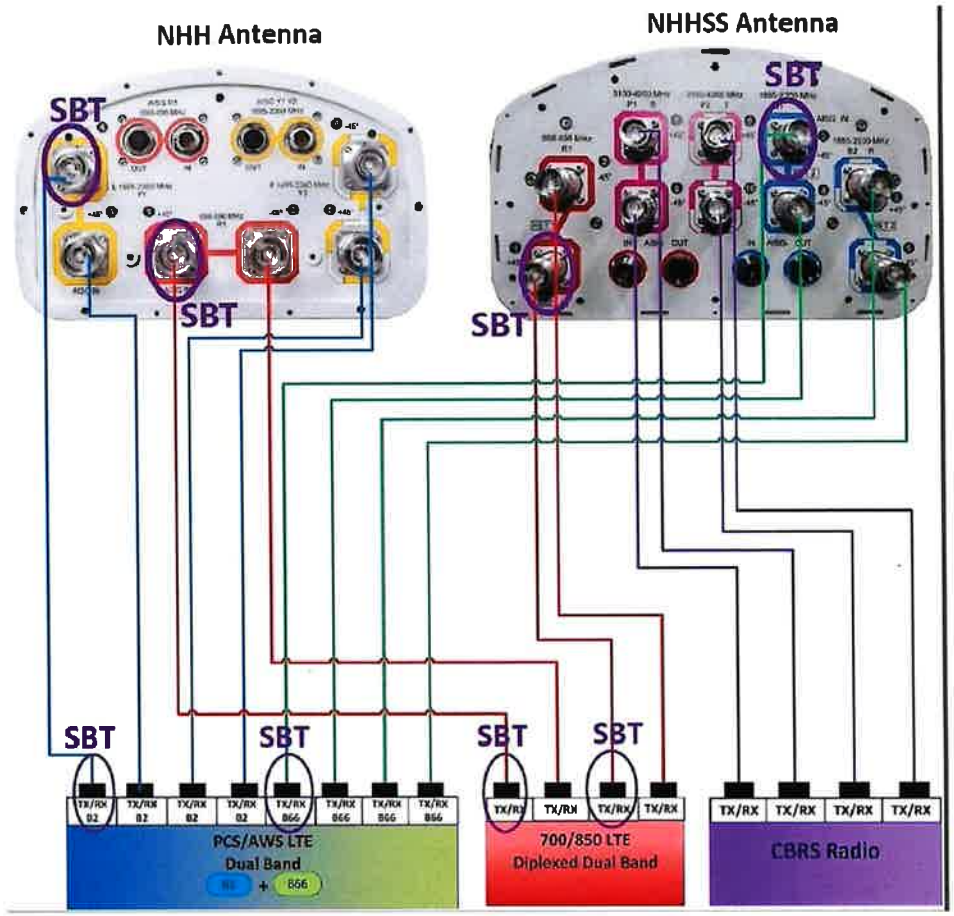
2100 MHz LTE

	0002		
Sector	**01**	**02**	**03**
Azimuth	70	190	310
Cell / ENode B ID	068538	068538	068538
Antenna Model	NHHSS-65B-R2BT4	NHHSS-65B-R2BT4	NHHSS-65B-R2BT4
Antenna Make	CommScope	CommScope	CommScope
Antenna Centerline(Ft)	137	137	137
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	2	2	2
Tip Height	140	140	140
Regulatory Power	138.91	138.91	138.91
DLEARFCN	2050	2050	2050
Channel Bandwidth(MHz)	20	20	20
Total ERP (W)	1524.05	1524.05	1524.05
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 Lines	4,4	4,4	4,4
Position			
Transmitter Id	15085547	15085550	15085553
Source	ATOLL_API	ATOLL_API	ATOLL_API

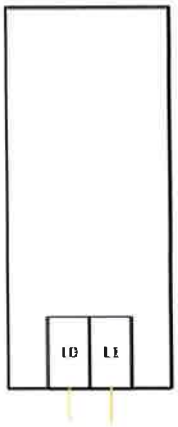
nL-Sub6

Sector	**0444**	**0445**	**0446**
Azimuth	70	190	310
Cell / ENode B ID	0689551	0689551	0689551
Antenna Model	MT6407-77A	MT6407-77A	MT6407-77A
Antenna Make	Samsung	Samsung	Samsung
Antenna Centerline(Ft)	137	137	137
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	1	1	1
Tip Height	138.5	138.5	138.5
Regulatory Power	1273.96	1273.96	1273.96
DLEARFCN	648672	648672	648672
Channel Bandwidth(MHz)	60	60	60
Total ERP (W)	22130.95	22130.95	22130.95
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	MT6407-77A	MT6407-77A	MT6407-77A
Number of Tx, Rx Lines	2,2	2,2	2,2
Position			
Transmitter Id	15085557	15085558	15085559
Source	ATOLL_API	ATOLL_API	ATOLL_API

Service Comments


NHH Antenna
NHHSS Antenna
SBT
SBT
SBT
SBT
SBT
SBT
SBT
SBT
TX/RX
PCS/AWS LTE
Dual Band
+
866
700/850 LTE
Diplexed Dual Band
CBRS Radio

Sub 6

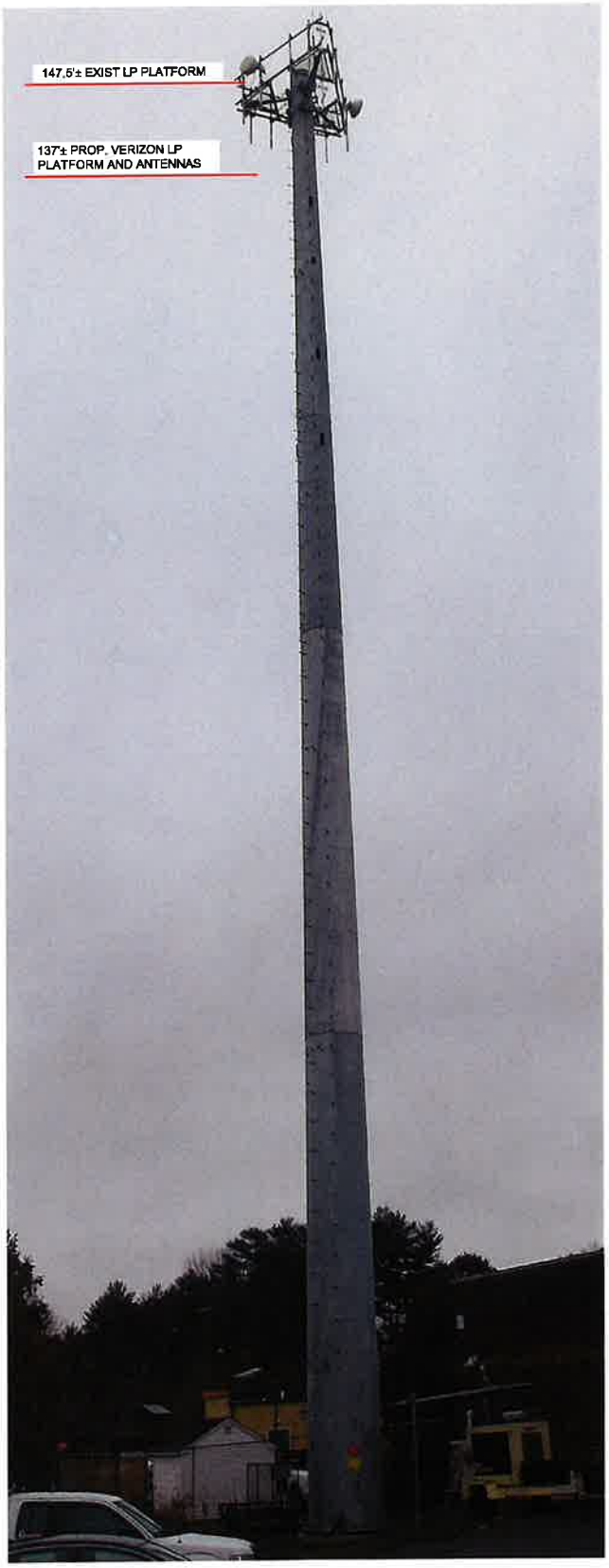

LB
LE

Appendix C – Calculations

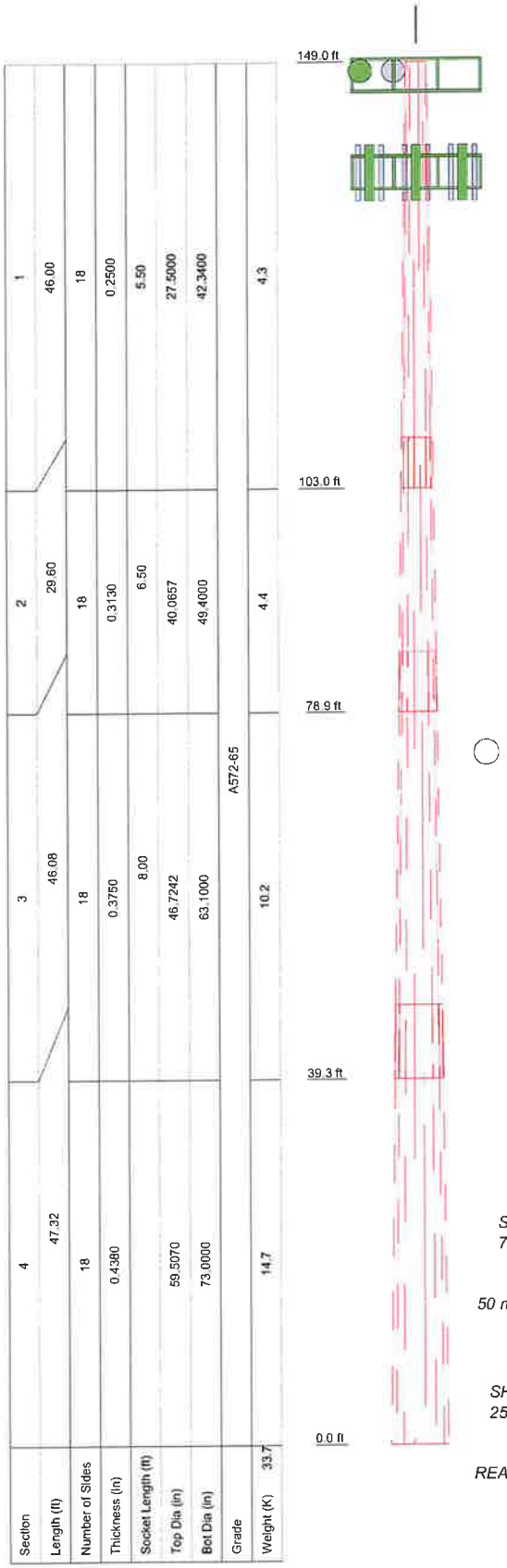
CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural Land Surveying

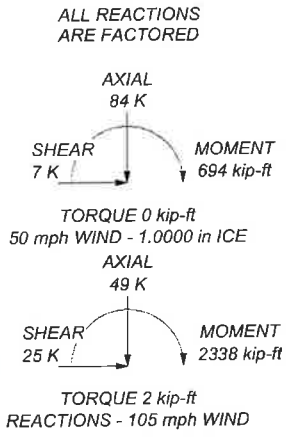
201 BOSTON POST ROAD WEST
MARLBOROUGH, MA 01752
P. (508) 481-7400
F. (508) 481-7406
www.chappellengineering.com

TITLE: 7A Old Windsor Rd, Bloomfield, CT 06002			PAGE:
PROJECT #: Bloomfield 5 CT New Site Build (96210.413)			
DATE: March 14, 2023	BY: CJS	CHK: JMF	



TOWER PICTURE 2
SCALE: N.T.S. SDC





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' Dipole Antenna	156	Samsung MT6407-77A	137
Lightning Rod	153	Commscope NHH-65B-R2B	137
2.5' Dish w/Radome	148	Commscope NHHSS-65B-R2BT4	137
2.5' Dish w/Radome	148	Samsung MT6407-77A	137
PiROD 15' Platform with handrail	147.5	(3) Samsung RRH B5/B13	137
Universal Ring Mount	143.5	(3) Samsung RRH B2/B66A	137
Commscope NHH-65B-R2B	137	(3) Samsung RRH CBRS RT4401	137
Commscope NHHSS-65B-R2BT4	137	Rayco Fiber Junction Box	137
Samsung MT6407-77A	137	PiROD 15' Platform with handrail	137
Commscope NHH-65B-R2B	137	Universal Ring Mount	133
Commscope NHHSS-65B-R2BT4	137		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

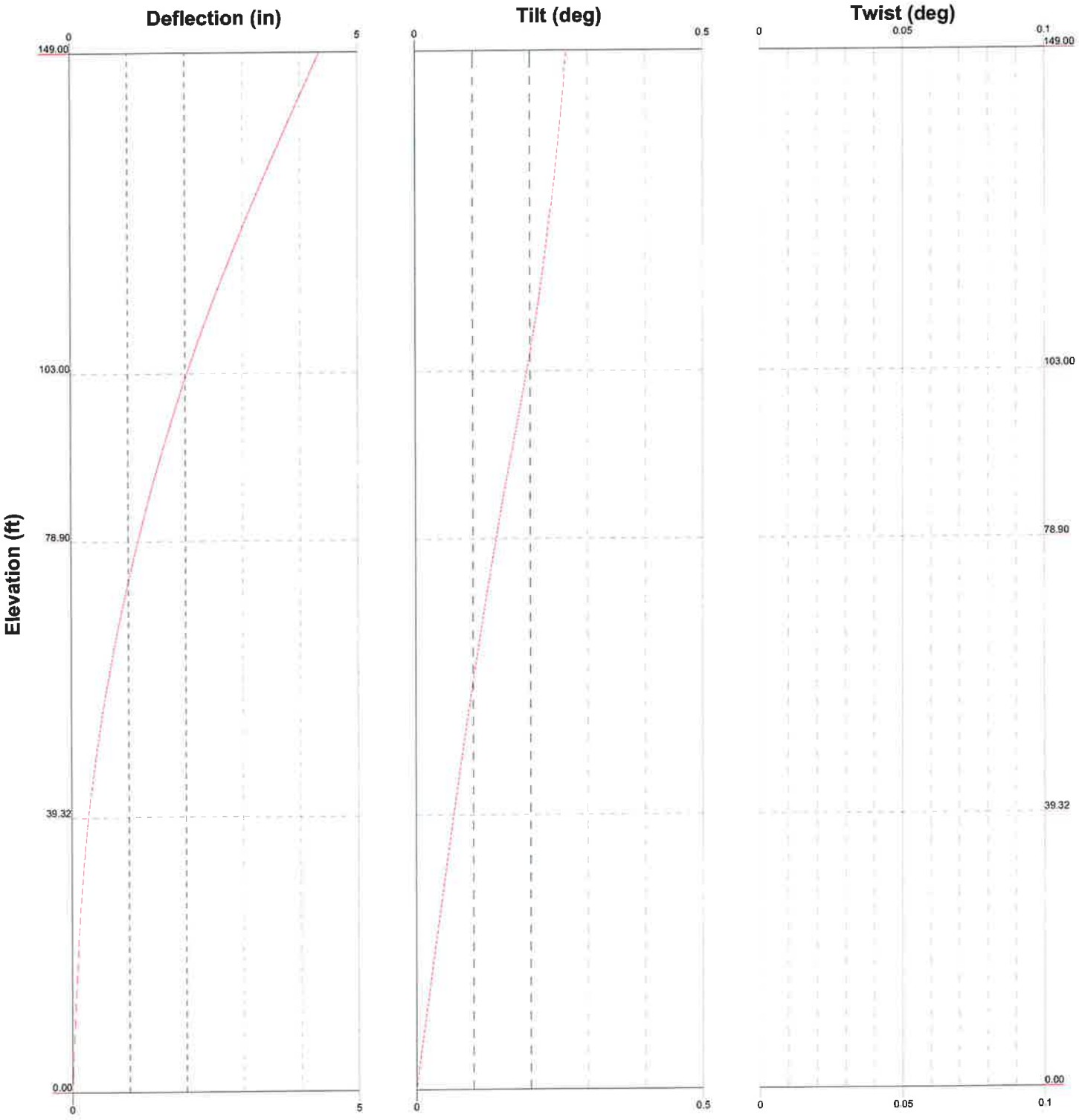
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 135 mph ultimate wind.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. TOWER RATING: 41.9%

Chappell Engineering Assoc, LLC
201 Boston Post Road West
Marlborough, MA 01752
Phone: (508) 481-7400
FAX: (508) 481-7406

Job: Bloomfield 5 CT 96210.413			
Project: 7A Old Windsor Rd, Bloomfield CT 06002			
Client: Verizon NSB 96210.413	Drawn by: CJS	App'd:	
Code: TIA-222-H	Date: 04/03/23	Scale: NTS	
Path:		Dwg No. E-1	

TIA-222-H - Service - 60 mph

Maximum Values



Chappell Engineering Assoc, LLC
201 Boston Post Road West
Marlborough, MA 01752
Phone: (508) 481-7400
FAX: (508) 481-7406

Job: Bloomfield 5 CT 96210.413			
Project: 7A Old Windsor Rd, Bloomfield CT 06002			
Client: Verizon NSB 96210.413	Drawn by: CJS	App'd:	
Code: TIA-222-H	Date: 04/03/23	Scale: NTS	
Path:		Dwg No. E-5	

tnxTower	Job	Page
	Bloomfield 5 CT 96210.413	1 of 7
Chappell Engineering Assoc, LLC 201 Boston Post Road West Marlborough, MA 01752 Phone: (508) 481-7400 FAX: (508) 481-7406	Project 7A Old Windsor Rd, Bloomfield CT 06002	Date 17:15:14 04/03/23
	Client Verizon NSB 96210.413	Designed by CJS

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Ultimate wind speed of 135mph (Basic wind speed of 105 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	149.00-103.00	46.00	5.50	18	27.5000	42.3400	0.2500	1.0000	A572-65 (65 ksi)
L2	103.00-78.90	29.60	6.50	18	40.0657	49.4000	0.3130	1.2520	A572-65 (65 ksi)
L3	78.90-39.32	46.08	8.00	18	46.7242	63.1000	0.3750	1.5000	A572-65 (65 ksi)
L4	39.32-0.00	47.32		18	59.5070	73.0000	0.4380	1.7520	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	27.9242	21.6229	2028.5415	9.6738	13.9700	145.2070	4059.7522	10.8135	4.4000	17.6
	42.9932	33.3984	7475.1715	14.9420	21.5087	347.5414	14960.1789	16.7024	7.0118	28.047
L2	42.4449	39.4927	7884.7337	14.1122	20.3534	387.3924	15779.8424	19.7501	6.5007	20.769
	50.1621	48.7661	14845.2728	17.4259	25.0952	591.5583	29710.0793	24.3877	8.1435	26.018
L3	49.7906	55.1672	14972.8045	16.4540	23.7359	630.8082	29965.3107	27.5888	7.5635	20.169

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L4	64.0734	74.6584	37110.5722	22.2674	32.0548	1157.7228	74269.9754	37.3363	10.4456	27.855
	62.7413	82.1184	36199.0344	20.9695	30.2295	1197.4719	72445.7004	41.0670	9.7023	22.151
	74.1261	100.8766	67103.6613	25.7595	37.0840	1809.5044	134295.619 3	50.4479	12.0771	27.573

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 149.00-103.00				1	1	1		
L2 103.00-78.90				1	1	1		
L3 78.90-39.32				1	1	1		
L4 39.32-0.00				1	1	1		

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	1.7500 in
Number of bolts	24
Embedment length	57.0000 in
f'_c	5 ksi
Grout space	2.0000 in
Base plate grade	A572-50
Base plate thickness	2.2500 in
Bolt circle diameter	80.0000 in
Outer diameter	84.3000 in
Inner diameter	54.7500 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
7/8	A	No	Inside Pole	149.00 - 0.00	3	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
Step Bolts	B	No	CaAa (Out Of Face)	149.00 - 0.00	1	No Ice	0.03	0.50
						1/2" Ice	0.13	1.00
						1" Ice	0.23	1.50
RFS Hybriflex Cable 1.25in	B	No	Inside Pole	138.00 - 0.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
12' Dipole Antenna	C	None		0.0000	156.00	No Ice	2.25	2.25	0.04
						1/2" Ice	3.94	3.94	0.06
						1" Ice	5.63	5.63	0.08
Lightning Rod	C	None		0.0000	153.00	No Ice	0.38	0.38	0.01
						1/2" Ice	0.99	0.99	0.01
						1" Ice	1.60	1.60	0.01
PiROD 15' Platform with handrail	C	None		0.0000	147.50	No Ice	33.80	33.80	2.04
						1/2" Ice	43.60	43.60	2.75
						1" Ice	53.40	53.40	3.45
Universal Ring Mount	C	None		0.0000	143.50	No Ice	2.50	2.50	0.42
						1/2" Ice	3.00	3.00	0.60
						1" Ice	3.50	3.50	0.78
PiROD 15' Platform with handrail	C	None		0.0000	137.00	No Ice	33.80	33.80	2.04
						1/2" Ice	43.60	43.60	2.75
						1" Ice	53.40	53.40	3.45
Universal Ring Mount	C	None		0.0000	133.00	No Ice	2.50	2.50	0.42
						1/2" Ice	3.00	3.00	0.60
						1" Ice	3.50	3.50	0.78
Commscope NHH-65B-R2B	A	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	8.33	5.45	0.05
						1/2" Ice	8.88	5.96	0.10
						1" Ice	9.43	6.50	0.16
Commscope NHHSS-65B-R2BT4	A	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	8.29	5.34	0.05
						1/2" Ice	8.84	5.79	0.10
						1" Ice	9.40	6.26	0.16
Samsung MT6407-77A	A	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	5.51	1.92	0.09
						1/2" Ice	5.85	2.19	0.12
						1" Ice	6.19	2.46	0.15
Commscope NHH-65B-R2B	B	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	8.33	5.45	0.05
						1/2" Ice	8.88	5.96	0.10
						1" Ice	9.43	6.50	0.16
Commscope NHHSS-65B-R2BT4	B	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	8.29	5.34	0.05
						1/2" Ice	8.84	5.79	0.10
						1" Ice	9.40	6.26	0.16
Samsung MT6407-77A	B	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	5.51	1.92	0.09
						1/2" Ice	5.85	2.19	0.12
						1" Ice	6.19	2.46	0.15
Commscope NHH-65B-R2B	C	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	8.33	5.45	0.05
						1/2" Ice	8.88	5.96	0.10
						1" Ice	9.43	6.50	0.16
Commscope NHHSS-65B-R2BT4	C	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	8.29	5.34	0.05
						1/2" Ice	8.84	5.79	0.10
						1" Ice	9.40	6.26	0.16
Samsung MT6407-77A	C	From Face	3.00 0.00 0.00	0.0000	137.00	No Ice	5.51	1.92	0.09
						1/2" Ice	5.85	2.19	0.12
						1" Ice	6.19	2.46	0.15
(3) Samsung RRH B5/B13	C	None		0.0000	137.00	No Ice	2.19	1.18	0.07
						1/2" Ice	2.39	1.34	0.09
						1" Ice	2.59	1.50	0.11
(3) Samsung RRH B2/B66A	C	None		0.0000	137.00	No Ice	2.19	1.46	0.08
						1/2" Ice	2.39	1.62	0.10
						1" Ice	2.59	1.80	0.12
(3) Samsung RRH CBRS RT4401	C	None		0.0000	137.00	No Ice	1.16	0.57	0.02
						1/2" Ice	1.31	0.69	0.03
						1" Ice	1.47	0.82	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Rayco Fiber Junction Box	C	None		0.0000	137.00	No Ice	2.93	2.30	0.03
						1/2" Ice	3.16	2.50	0.05
						1" Ice	3.40	2.72	0.08

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
2.5' Dish w/Radome	A	Paraboloid w/Radome	From Face	4.00 4.00 0.00	Worst		148.00	2.50	No Ice 1/2" Ice 1" Ice	4.91 5.24 5.57	0.05 0.08 0.10
2.5' Dish w/Radome	C	Paraboloid w/Radome	From Face	4.00 6.00 0.00	Worst		148.00	2.50	No Ice 1/2" Ice 1" Ice	4.91 5.24 5.57	0.05 0.08 0.10

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 90 deg - No Ice
5	0.9 Dead+1.6 Wind 90 deg - No Ice
6	1.2 Dead+1.6 Wind 180 deg - No Ice
7	0.9 Dead+1.6 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 103	4.339	12	0.2620	0.0019
L2	108.5 - 78.9	2.269	12	0.2057	0.0006
L3	85.4 - 39.32	1.381	12	0.1556	0.0003
L4	47.32 - 0	0.423	12	0.0799	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
156.00	12' Dipole Antenna	12	4.339	0.2620	0.0019	185367
153.00	Lightning Rod	12	4.339	0.2620	0.0019	185367
148.00	2.5' Dish w/Radome	12	4.284	0.2609	0.0019	185367
147.50	PiROD 15' Platform with handrail	12	4.257	0.2603	0.0018	185367
143.50	Universal Ring Mount	12	4.039	0.2558	0.0017	168516
137.00	PiROD 15' Platform with handrail	12	3.687	0.2482	0.0014	77236
133.00	Universal Ring Mount	12	3.473	0.2434	0.0013	57927

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	149 - 103	23.824	2	1.4388	0.0104
L2	108.5 - 78.9	12.459	2	1.1299	0.0030
L3	85.4 - 39.32	7.583	2	0.8547	0.0017
L4	47.32 - 0	2.325	2	0.4388	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
156.00	12' Dipole Antenna	2	23.824	1.4388	0.0104	33796
153.00	Lightning Rod	2	23.824	1.4388	0.0104	33796
148.00	2.5' Dish w/Radome	2	23.524	1.4326	0.0102	33796
147.50	PiROD 15' Platform with handrail	2	23.374	1.4295	0.0101	33796
143.50	Universal Ring Mount	2	22.176	1.4047	0.0092	30723
137.00	PiROD 15' Platform with handrail	2	20.244	1.3632	0.0078	14081
133.00	Universal Ring Mount	2	19.072	1.3364	0.0070	10561

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual / Allowable Ratio Bolt Tension	Actual / Allowable Ratio Bolt Compression	Actual / Allowable Ratio Plate Stress	Actual / Allowable Ratio Stiffener Stress	Controlling Condition	Ratio
in		in	K	K	ksi	ksi		
2.2500	24	1.7500	56.74	60.48	17.502		Bolt T	0.42
			135.30	224.59	45.000			✔
			0.42	0.27	0.39			

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	149 - 103 (1)	TP42.34x27.5x0.25	46.00	0.00	0.0	31.9905	-11.82	2011.98	0.006
L2	103 - 78.9 (2)	TP49.4x40.0657x0.313	29.60	0.00	0.0	46.7297	-16.76	3034.61	0.006
L3	78.9 - 39.32 (3)	TP63.1x46.7242x0.375	46.08	0.00	0.0	71.2745	-28.15	4503.63	0.006
L4	39.32 - 0 (4)	TP73x59.507x0.438	47.32	0.00	0.0	100.877 0	-48.62	6261.68	0.008

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	149 - 103 (1)	TP42.34x27.5x0.25	335.01	1670.72	0.201	0.00	1670.72	0.000
L2	103 - 78.9 (2)	TP49.4x40.0657x0.313	643.55	2938.71	0.219	0.00	2938.71	0.000
L3	78.9 - 39.32 (3)	TP63.1x46.7242x0.375	1290.24	5554.43	0.232	0.00	5554.43	0.000
L4	39.32 - 0 (4)	TP73x59.507x0.438	2337.97	9360.08	0.250	0.00	9360.08	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u	ϕT_n	Ratio $\frac{T_u}{\phi T_n}$
	ft		K	K		kip-ft	kip-ft	
L1	149 - 103 (1)	TP42.34x27.5x0.25	12.06	1005.99	0.012	1.87	3345.54	0.001
L2	103 - 78.9 (2)	TP49.4x40.0657x0.313	14.67	1517.30	0.010	1.86	5884.60	0.000
L3	78.9 - 39.32 (3)	TP63.1x46.7242x0.375	19.31	2251.81	0.009	1.86	11122.50	0.000
L4	39.32 - 0 (4)	TP73x59.507x0.438	24.98	3130.84	0.008	1.86	18743.00	0.000

Pole Interaction Design Data

Section No.	Elevation	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	ft								
L1	149 - 103 (1)	0.006	0.201	0.000	0.012	0.001	0.207 ✔	1.000	4.8.2 ✔
L2	103 - 78.9 (2)	0.006	0.219	0.000	0.010	0.000	0.225 ✔	1.000	4.8.2 ✔
L3	78.9 - 39.32 (3)	0.006	0.232	0.000	0.009	0.000	0.239 ✔	1.000	4.8.2 ✔
L4	39.32 - 0 (4)	0.008	0.250	0.000	0.008	0.000	0.258 ✔	1.000	4.8.2 ✔

tnxTower	Job	Page
	Bloomfield 5 CT 96210.413	7 of 7
Chappell Engineering Assoc, LLC 201 Boston Post Road West Marlborough, MA 01752 Phone: (508) 481-7400 FAX: (508) 481-7406	Project 7A Old Windsor Rd, Bloomfield CT 06002	Date 17:15:14 04/03/23
	Client Verizon NSB 96210.413	Designed by CJS

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	149 - 103	Pole	TP42.34x27.5x0.25	1	-11.82	2011.98	20.7	Pass
L2	103 - 78.9	Pole	TP49.4x40.0657x0.313	2	-16.76	3034.61	22.5	Pass
L3	78.9 - 39.32	Pole	TP63.1x46.7242x0.375	3	-28.15	4503.63	23.9	Pass
L4	39.32 - 0	Pole	TP73x59.507x0.438	4	-48.62	6261.68	25.8	Pass
							Summary	
						Pole (L4)	25.8	Pass
						Base Plate	41.9	Pass
						RATING =	**41.9**	**Pass**

Appendix D – Photos


KOHLER

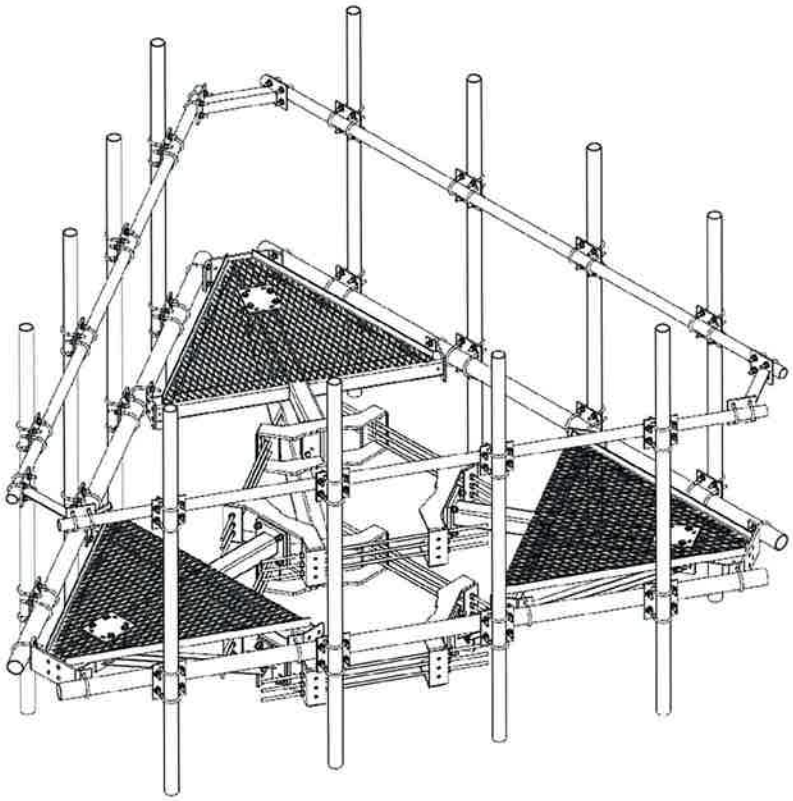

KOHLER


STOP

verizon

20 Alexander Drive
Wallingford, CT 06492

MOUNT ANALYSIS
BLOOMFIELD 5 CT



Address:
7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002
LOCATION CODE: 783866

Date:
APRIL 17, 2023 (REV. 3)

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying

R.K. Executive Centre ■ 201 Boston Post Road West ■ Suite 101 ■ Marlborough, MA 01752
t. 508.481.7400 ■ www.chappellengineering.com ■ f. 508.481.7406

CHAPPELL
ENGINEERING
ASSOCIATES, LLC
Civil • Structural • Land Surveying

April 17, 2023

verizon

20 Alexander Drive
2nd Floor
Wallingford, CT 06492

RE:

Applicant Site Name:	Bloomfield 5 CT
Location Code:	783866
Site Address:	7A Old Windsor Road, Bloomfield, CT 06002

To whom it may concern:

Chappell Engineering Associates, LLC has performed a structural analysis of the proposed Verizon braced low-profile antenna mounting platform being proposed at the existing 150'+/- monopole located at the above-referenced address at approximately 137 ft AGL to analyze the effect of the proposed Verizon antenna installation on the subject platform. Our analysis has been performed in accordance with the 2022 Connecticut State Building Code (2021 International Building Code) with Connecticut Amendments.

The proposed antenna support structure will consist of one (1) low-profile antenna frame supporting twelve (12) individual antenna pipes mounts. Our analysis has considered the following total major equipment loads indicated on the antenna design summary (included in this report) to be installed on the proposed low-profile antenna frame:

Appurtenance	Size (HxWXD)(in)	Weight	Location	Status
(3) NHH-65B-R2B Panel Antennas	72.0x11.9x7.1	43.7lbs	Face of Mount	Proposed
(3) NHHSS-65B-R2BT4 Panel Antennas	72.0x11.9x7.1	48.1lbs	Face of Mount	Proposed
(3) Samsung MT6407-77A Panel	35.2x16.1x5.6	88lbs	Face of Mount	Proposed
(3) Samsung B5/B13 RRH ORAN (RF4440d)	15.0x15.0x9.0	70lbs	Face of Mount	Proposed
(3) Samsung B2/B66A RRH ORAN (RF4439d)	15.0x15.0x10.0	75lbs	Face of Mount	Proposed
(3) RT4401-48A RRH	13.9x8.6x4.2	18.6lbs	Face of Mount	Proposed
(1) Fiber Junction Box	29.6x16.5x12.6	32lbs	Face of Mount	Proposed

The proposed antennas and ancillary hardware are shown on the enclosed Lease Exhibits.

We have modeled the entire low-profile antenna frame under both wind and wind/ice loads. Our analysis and results are included in this report.

Based upon our analysis of the antenna mounts being proposed, **we consider the proposed RMQP-496-HK low-profile mounting frame assembly has adequate capacity** to support the proposed antenna configuration as shown. **The maximum percentage stress capacity as determined by our analysis are the antenna mounting pipes supporting the combined dual-mount antennas with a capacity of 53%.** Our analysis assumes the proposed antenna mounting platform will be properly installed and maintained according to manufacturers' recommendations.

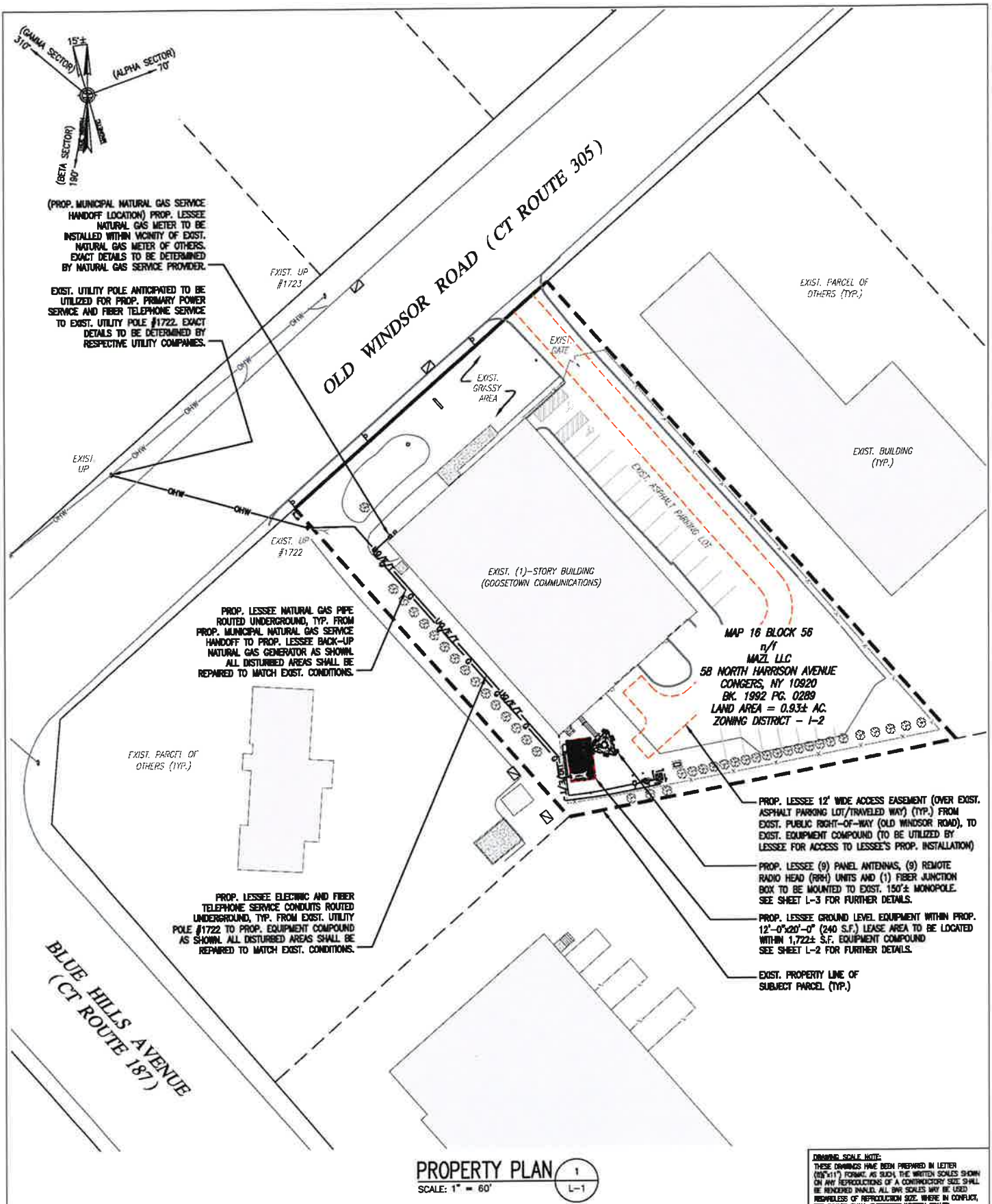
If you have any questions regarding this matter, please do not hesitate to call.

Very truly yours,
CHAPPELL ENGINEERING ASSOCIATES, LLC

STATE OF CONNECTICUT
CLEMENT J. SALEK
No. 26376
LICENSED PROFESSIONAL ENGINEER

Clement J Salek, P.E.
CJS/cjs

Appendix A – Lease Exhibit Drawings



PROPERTY PLAN

SCALE: 1" = 60'

1 / L-1

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN LETTER (8½"x11") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRADICTORY SIZE SHALL BE RENDERED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/1/23	REVISED PER LL COMMENTS	NWC	GRS	GRS
0	1/20/23	ISSUED FOR REVIEW	NWC	GRS	GRS

SCALE: 1" = 60' | DESIGNED BY: GRS | DRAWN BY: NWC

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

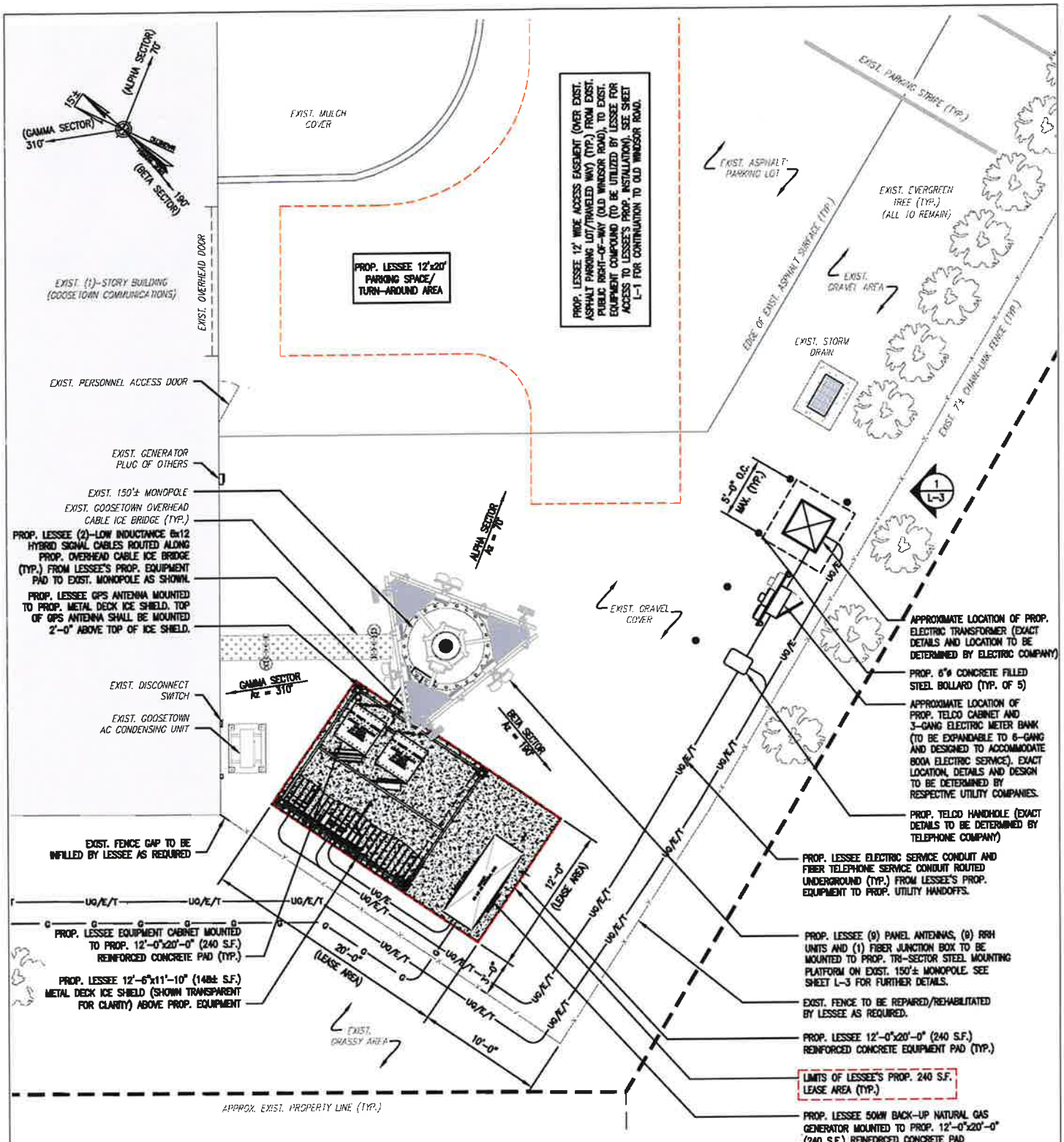
LEASE EXHIBIT
NOT FOR CONSTRUCTION

LEASE AREA

EQUIPMENT LEASE AREA: 12'-0"x20'-0" (240 S.F.)

TOTAL = 240 S.F.

PROJECT NO.	DRAWING NAME	DATE	LOC. CODE	REV
98210.413	L-1	2/1/23	783866	1



SITE CONTROL POINT:
CENTER OF EXISTING MONOPOLE
N 41°-51'-19.96" (41.855440') (NAD '83)
W 72°-42'-16.98" (72.704717') (NAD '83)
GROUND ELEVATION = 150.0' AMSL (NAVD '88)
PER GOOGLE EARTH

EQUIPMENT COMPOUND PLAN 1 L-2

SCALE: 3/32" = 1'-0"

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN LETTER (8½"x11") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRACTORY SIZE SHALL BE REMOVED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/1/23	REVISED PER LL COMMENTS	NWC	GRS	GRS
0	1/20/23	ISSUED FOR REVIEW	NWC	GRS	GRS

SCALE: 3/32" = 1'-0" | DESIGNED BY: GRS | DRAWN BY: NWC

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

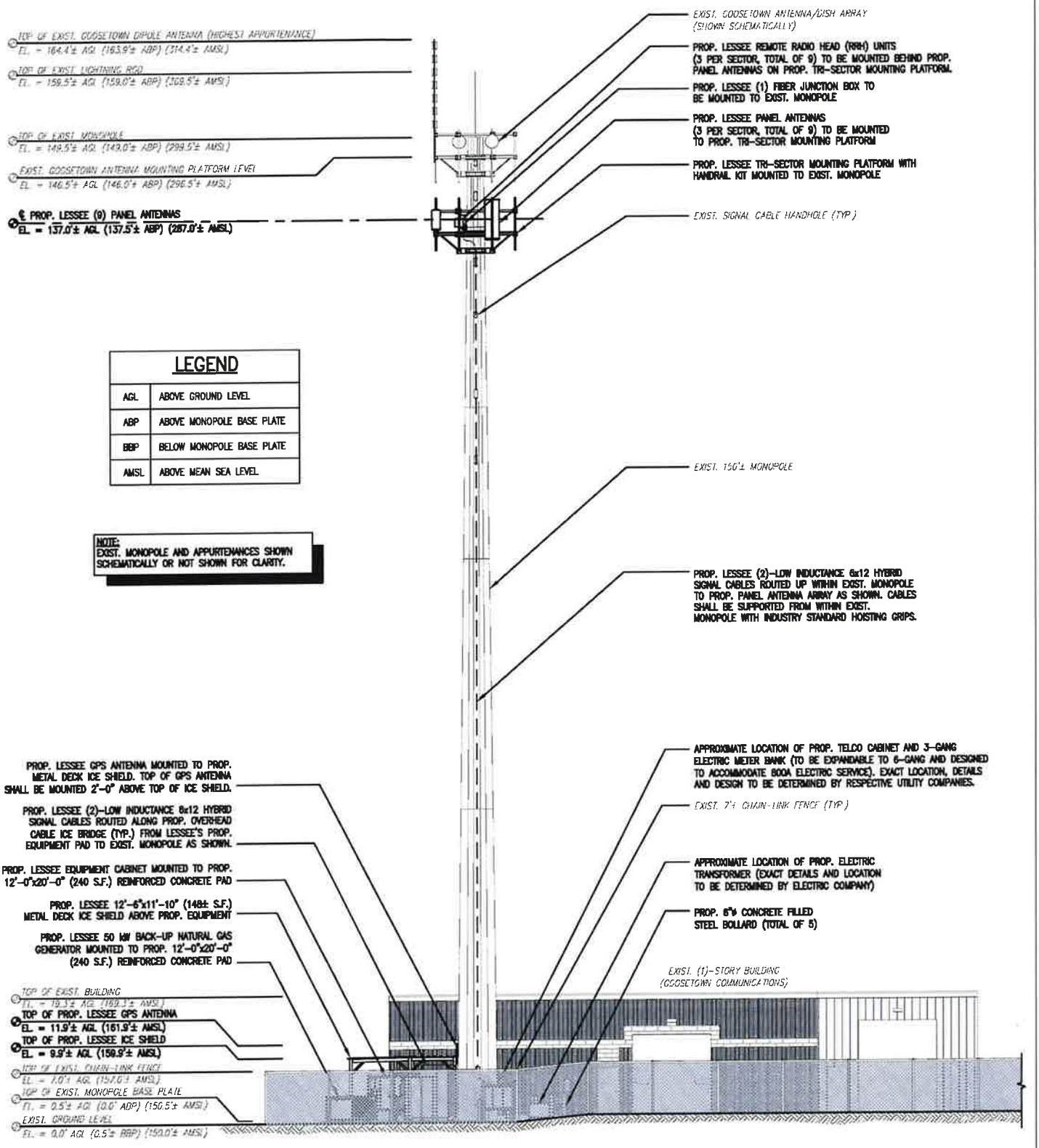
LEASE EXHIBIT
NOT FOR CONSTRUCTION

LEASE AREA

EQUIPMENT LEASE AREA: 12'-0"x20'-0" (240 S.F.)

TOTAL = 240 S.F.

PROJECT NO.	DRAWING NAME	DATE	LOC. CODE	REV
98210.413	L-2	2/1/23	783866	1



LEGEND	
AGL	ABOVE GROUND LEVEL
ABP	ABOVE MONOPOLE BASE PLATE
BBP	BELOW MONOPOLE BASE PLATE
AMSL	ABOVE MEAN SEA LEVEL

NOTE:
EXIST. MONOPOLE AND APPURTENANCES SHOWN SCHEMATICALLY OR NOT SHOWN FOR CLARITY.

NOTE:
EXIST. EVERGREEN TREES (ALL TO REMAIN) NOT SHOWN FOR CLARITY.

SOUTHEAST EQUIPMENT COMPOUND ELEVATION (1 / L-3)

SCALE: 1" = 20'

DRAWING SCALE NOTE:
THESE DRAWINGS HAVE BEEN PREPARED IN LETTER (8½"x11") FORMAT. AS SUCH, THE WRITTEN SCALES SHOWN ON ANY REPRODUCTIONS OF A CONTRADICTORY SIZE SHALL BE RENDERED INVALID. ALL BAR SCALES MAY BE USED REGARDLESS OF REPRODUCTION SIZE. WHERE IN CONFLICT, BAR SCALES SHALL SUPERSEDE WRITTEN SCALES.

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil · Structural · Land Surveying

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/1/23	REVISED PER LL COMMENTS	NWC	GRS	GRS
0	1/20/23	ISSUED FOR REVIEW	NWC	GRS	GRS

SCALE: 1" = 20' | DESIGNED BY: GRS | DRAWN BY: NWC

BLOOMFIELD 5 CT

7A OLD WINDSOR ROAD
BLOOMFIELD, CT 06002

LEASE EXHIBIT
NOT FOR CONSTRUCTION

LEASE AREA

EQUIPMENT LEASE AREA: 12'-0"x20'-0" (240 S.F.)

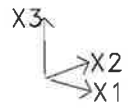
TOTAL = 240 S.F.

PROJECT NO.	DRAWING NAME	DATE	LOC. CODE	REV
98210.413	L-3	2/1/23	783866	1

Appendix B – Mount Analysis

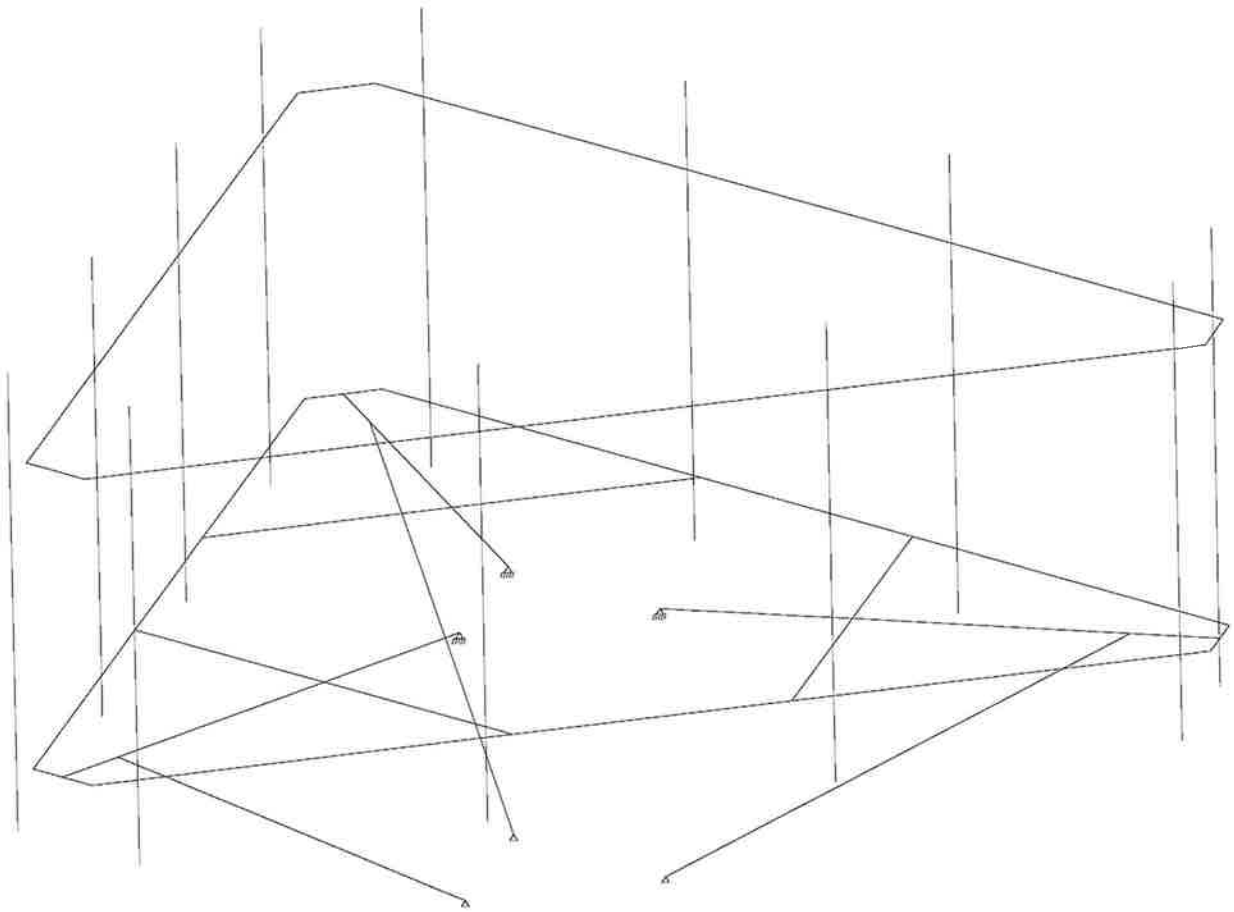
Bloomfield 5 CT Mount Analysis

View: Steel Beam Design



SCALE = 1:27

DATE: 2/20/23

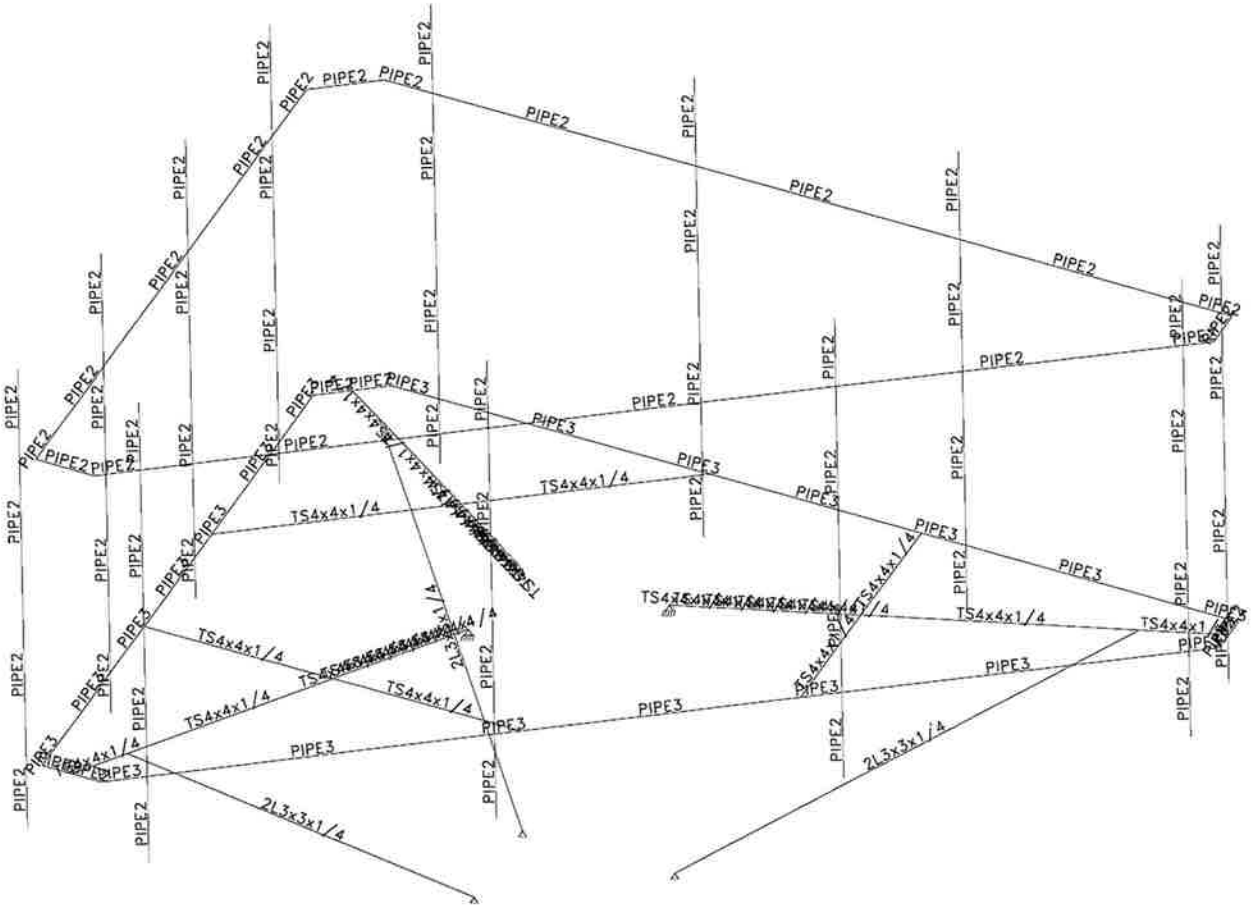


Bloomfield 5 CT Mount Analysis

View: Steel Beam Design

SCALE = 1:27

DATE: 2/20/23



Bloomfield 5 CT Mount Analysis

Prepared by:

Load no. 1: Front No Ice (units - kips ft.)

/ JOINT LOADS
/ BEAM LOADS
/ JOINT LOADS
/ BEAM LOADS
/ JOINT LOADS

/ BEAM LOADS
/ JOINT LOADS
/ JOINT LOADS
/ JOINT LOADS
/ JOINT LOADS

FX2 0.073 FX3 -0.045 N 70 26
FX2 0.025 FX3 -0.045 N 84 54 76 38
FX2 0.047 FX3 -0.023 N 132
FX2 0.047 FX3 -0.023 N 133 135
FX2 0.22 FX3 -0.045 N 28 27

FX2 0.143 FX3 -0.045 N 48 47 64 63
FX2 0.57 FX3 -0.084 N 126 131 127 136 125 134
/ END

F O R C E S U M M A T I O N

FX1=0. kip
FX2=4.819 kip
FX3=-1.113 kip

Load no. 2: Side No Ice (units - kips ft.)

/ JOINT LOADS
/ BEAM LOADS
/ JOINT LOADS
/ BEAM LOADS
/ JOINT LOADS

/ BEAM LOADS
/ JOINT LOADS
/ BEAM LOADS
/ JOINT LOADS
/ JOINT LOADS

/ JOINT LOADS
FX1 0.025 FX3 -0.044 N 70 26 76 38 84 54
FX1 0.047 FX3 -0.023 N 132 135 133
FX1 0.143 FX3 -0.045 N 28 27 48 47 64 63
FX1 0.057 FX3 -0.084 N 126 127 125

FX1 0.057 FX3 -0.084 N 131 136 134
/ END

F O R C E S U M M A T I O N

FX1=1.491 kip
FX2=0. kip
FX3=-1.107 kip

Load no. 3: Front Ice (units - kips ft.)
/ JOINT LOADS / BEAM LOADS / JOINT LOADS / BEAM LOADS / JOINT LOADS
/ JOINT LOADS / BEAM LOADS / JOINT LOADS / JOINT LOADS / JOINT LOADS
FX2 0.021 FX3 -0.075 N 70 26 FX2 0.01 FX3 -0.075 N 76 38 84 54 FX2 0.016 FX3 -0.049 N 132 135 133 FX2 0.065 FX3 -0.156 N 28 27 48 47 64 63 FX2 0.02 FX3 -0.123 N 126 127 125 134 131 136
/ END
F O R C E S U M M A T I O N FX1=0. kip FX2=0.64 kip FX3=-2.271 kip

Load no. 4: Side Ice (units - kips ft.)
/ JOINT LOADS / BEAM LOADS / JOINT LOADS / BEAM LOADS / JOINT LOADS
/ BEAM LOADS / JOINT LOADS / JOINT LOADS / JOINT LOADS FX1 0.01 FX3 -0.075 N 70 26 38 76 84 54
FX1 0.01 FX3 -0.049 N 132 135 133 FX1 0.048 FX3 -0.156 N 28 27 48 47 64 63 FX1 0.014 FX3 -0.123 N 126 127 125 134 131 136 / END
F O R C E S U M M A T I O N FX1=0.462 kip FX2=0. kip FX3=-2.271 kip

Load no. 5: Selfweight (units - kips ft.)

```
/ BEAM LOADS
SELF  X3 -1. B 1 TO 138 142 TO 150
/ GLOBAL LOADS
/ GLOBAL LOADS
/ GLOBAL LOADS
DIST FX3 -0.003 PLANE -7.25 4.763 0.   -1.805 4.763 0.   -5.028 -0.818
0.   PT -0.5 0.866 BEAMS
DIST FX3 -0.003 PLANE 1.805 4.763 0.   7.25 4.763 0.   7.75 3.897 0.   PT
3.223 5.581 BEAMS
DIST FX3 -0.003 PLANE -3.222 -3.945 0.   3.222 -3.945 0.   0.5 -8.66
0.   PT 2.722 4.715 BEAMS
/ END

F O R C E   S U M M A T I O N

FX1=0. kip
FX2=0. kip
FX3=-1.4597 kip
```

Load no. 6: Front Frame Ice (units - kips ft.)

```
/ BEAM LOADS
DIST GL FX2 -0.002 B 1 4 5 13 TO 35 BY 2 49 TO 51 55 56 63 64 66 71 TO 74
76 TO 81 83 TO 88 90 TO 115 117 133 TO 135 142 TO 150
/ END

F O R C E   S U M M A T I O N

FX1=0. kip
FX2=-0.3127 kip
FX3=0. kip
```

Load no. 7: Side Frame Ice (units - kips ft.)

```
/ BEAM LOADS
/ BEAM LOADS
DIST GL FX1 -0.002 B 4 5 13 TO 35 BY 2 50 51 63 64 66 71 72 TO 78 BY 2
79 TO 81 83 TO 88 90 91 93 94 TO 100 BY 2 101 TO 115 117 133 TO 135
142 TO 150
/ END

F O R C E   S U M M A T I O N

FX1=-0.2564 kip
FX2=0. kip
FX3=0. kip
```

Load no. 8: Front Frame No Ice (units - kips ft.)

```
/ BEAM LOADS
/ BEAM LOADS
DIST GL FX2 -0.005 B 1 4 5 13 TO 35 BY 2 49 TO 51 55 56 63 64 66 71 TO 74
76 TO 81 83 TO 88 90 TO 115 117 133 TO 135 142 TO 150
/ END
```

F O R C E S U M M A T I O N

FX1=0. kip
FX2=-0.7817 kip
FX3=0. kip

Load no. 9: Side Frame No Ice (units - kips ft.)

```
/ BEAM LOADS
/ BEAM LOADS
/ BEAM LOADS
DIST GL FX1 -0.005 B 4 5 13 TO 35 BY 2 50 51 63 64 66 71 72 TO 78 BY 2
79 TO 81 83 TO 88 90 91 93 94 TO 100 BY 2 101 TO 115 117 133 TO 135
142 TO 150
/ END STATIC
```

F O R C E S U M M A T I O N

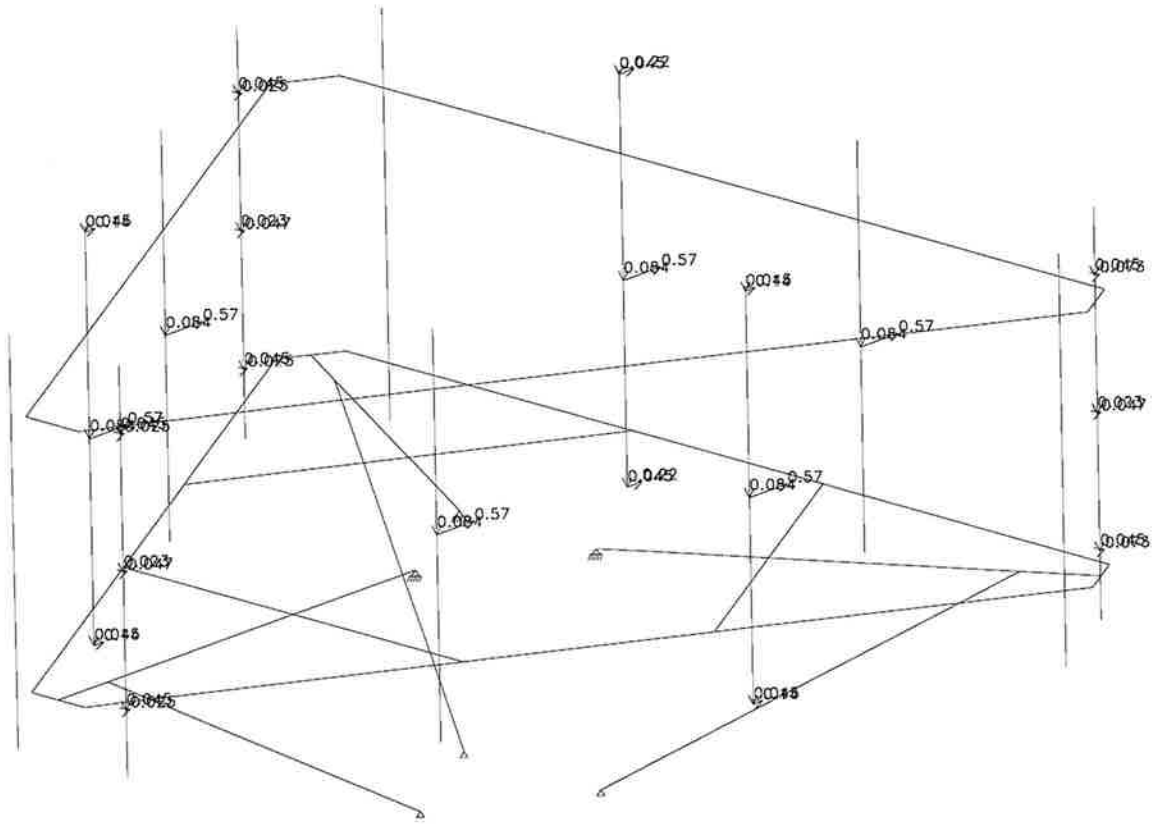
FX1=-0.6411 kip
FX2=0. kip
FX3=0. kip

Bloomfield 5 CT Mount Analysis

Load 1: Front No Ice

X3
X2
X1

SCALE = 1:30	UNITS: kip ft	DATE: 2/20/23

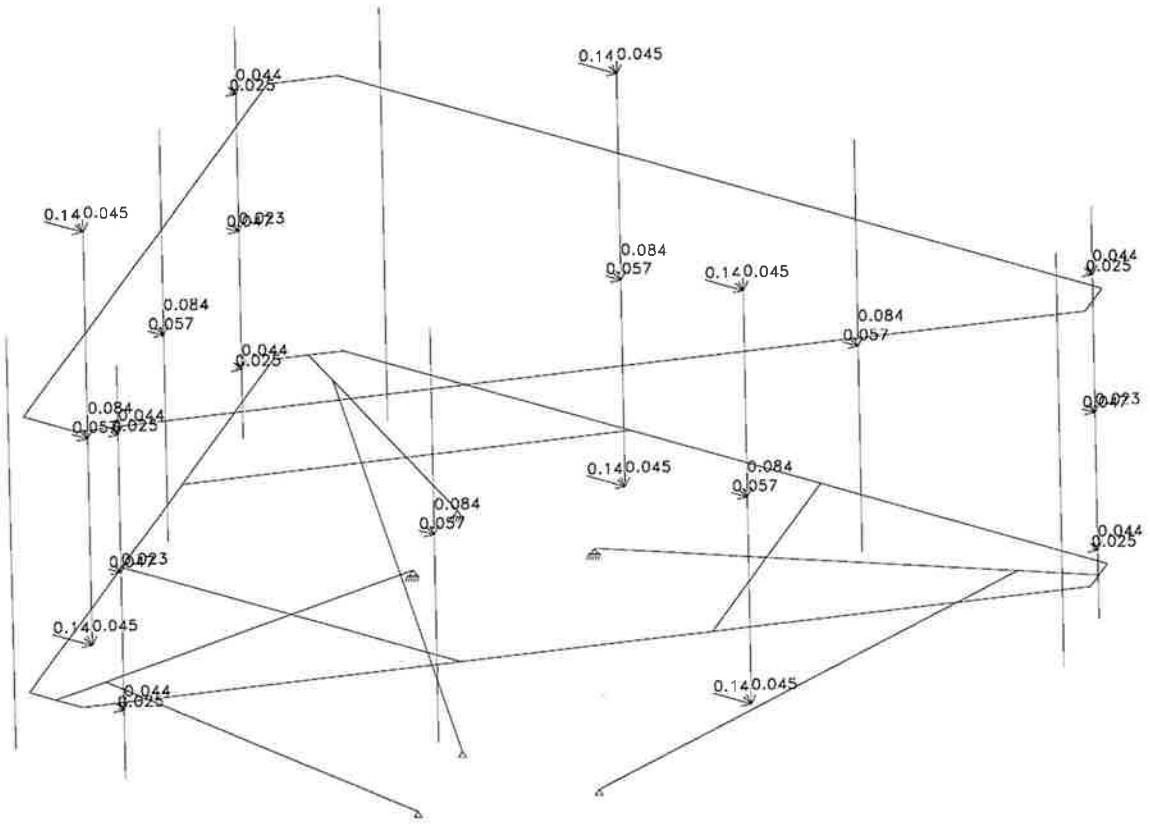


Bloomfield 5 CT Mount Analysis

Load 2: Side No Ice

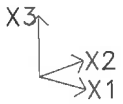
X3
X2
X1

SCALE = 1:30 | UNITS: kip ft | DATE: 2/20/23

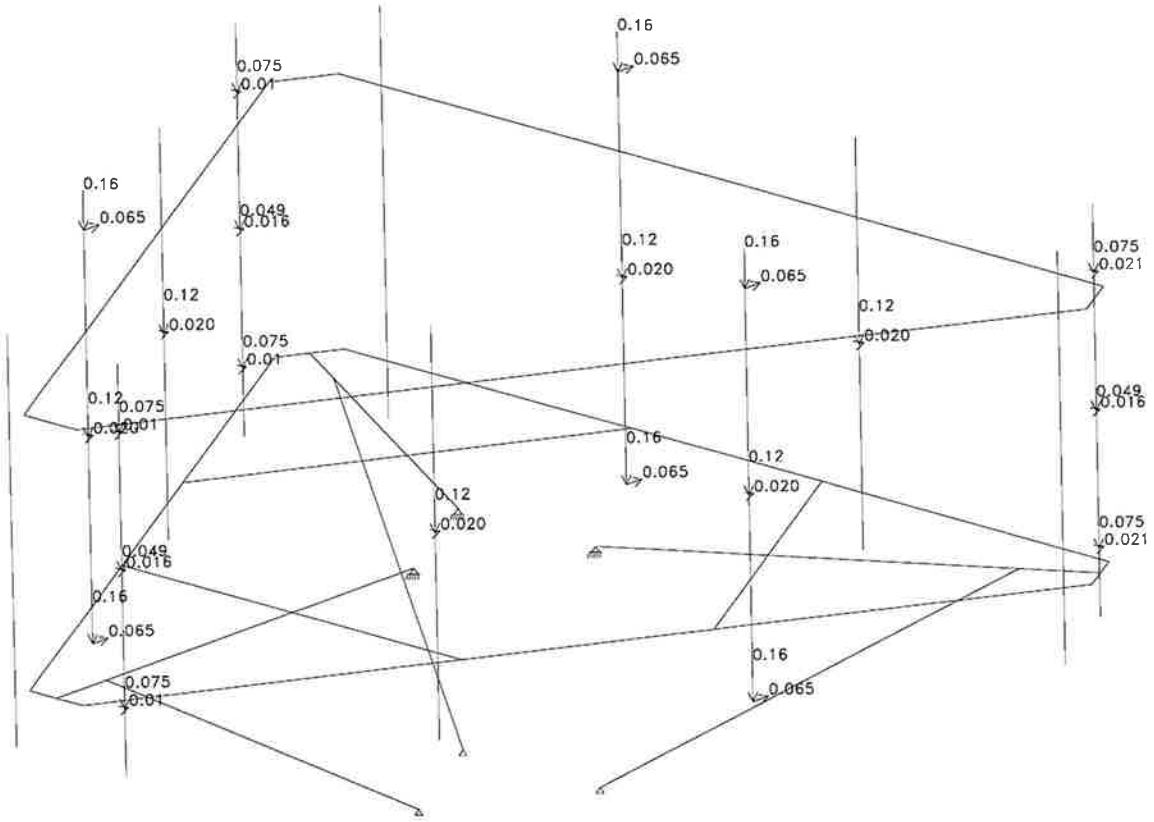


Bloomfield 5 CT Mount Analysis

Load 3: Front Ice

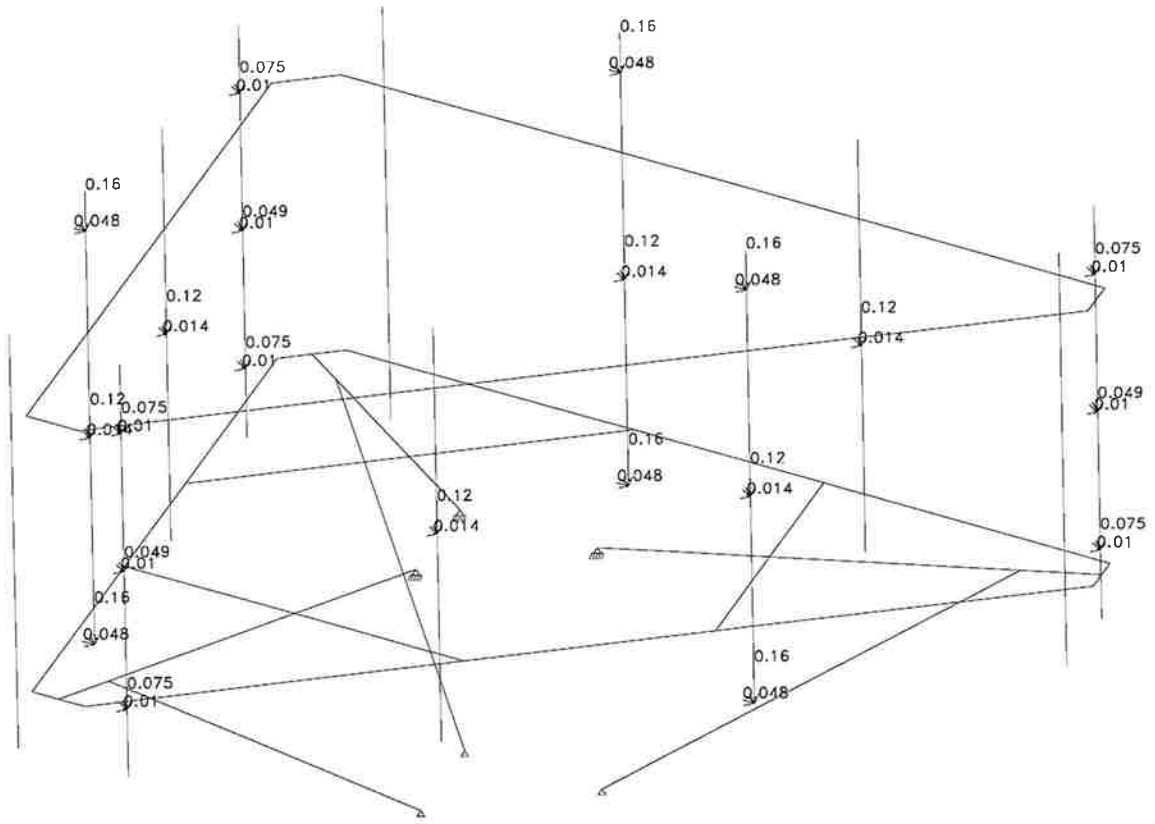


SCALE = 1:30 | UNITS: kip ft | DATE: 2/20/23



Bloomfield 5 CT Mount Analysis

Load 4: Side Ice



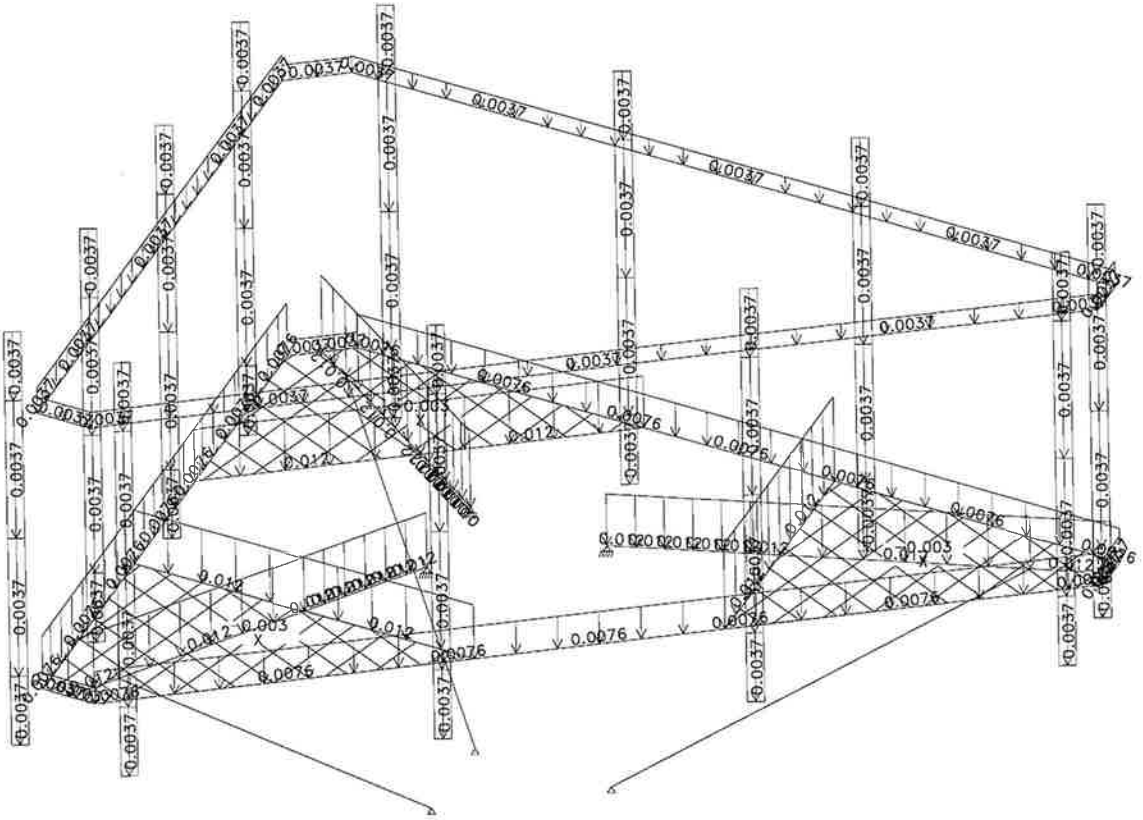
SCALE = 1:30	UNITS: kip ft	DATE: 2/20/23

Bloomfield 5 CT Mount Analysis

Load 5: Selfweight

X3
X2
X1

SCALE = 1:30	UNITS: kip ft	DATE: 2/20/23

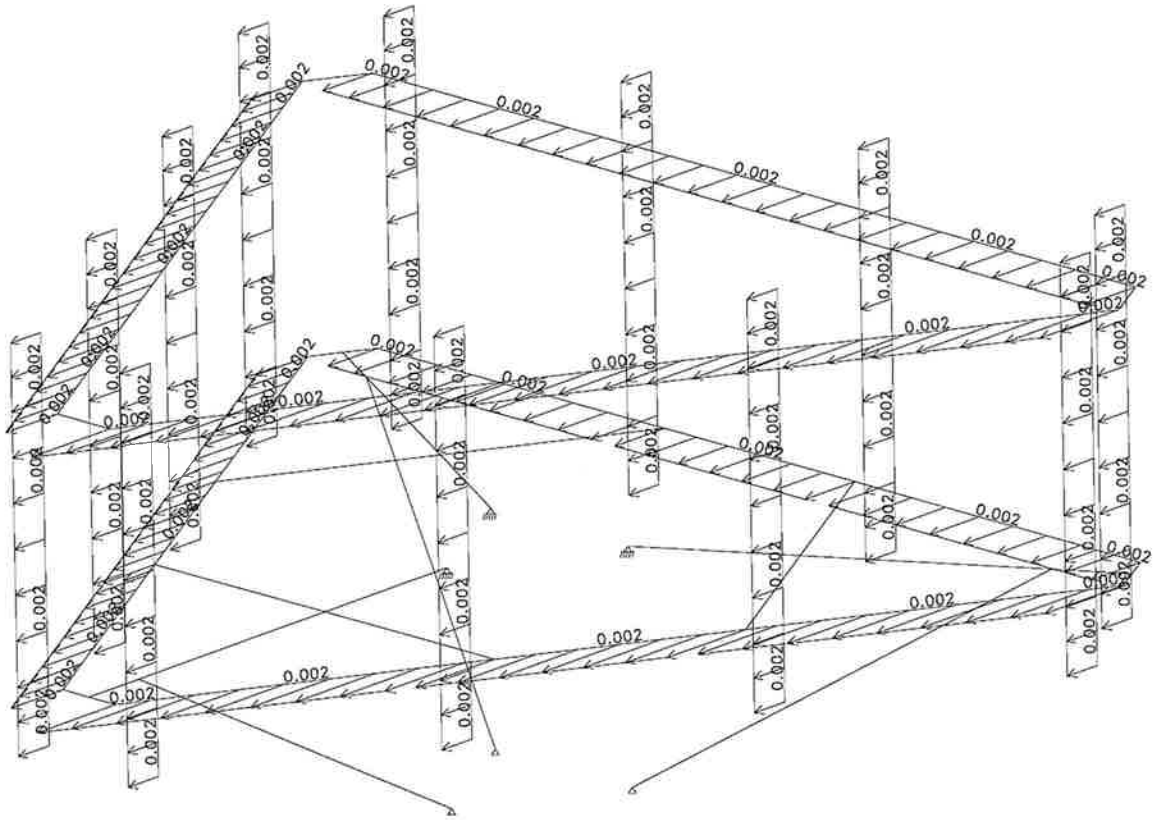


Bloomfield 5 CT Mount Analysis

Load 6: Front Frame Ice

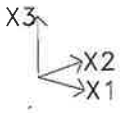
X3
X2
X1

SCALE = 1:30 | UNITS: kip ft | DATE: 2/20/23

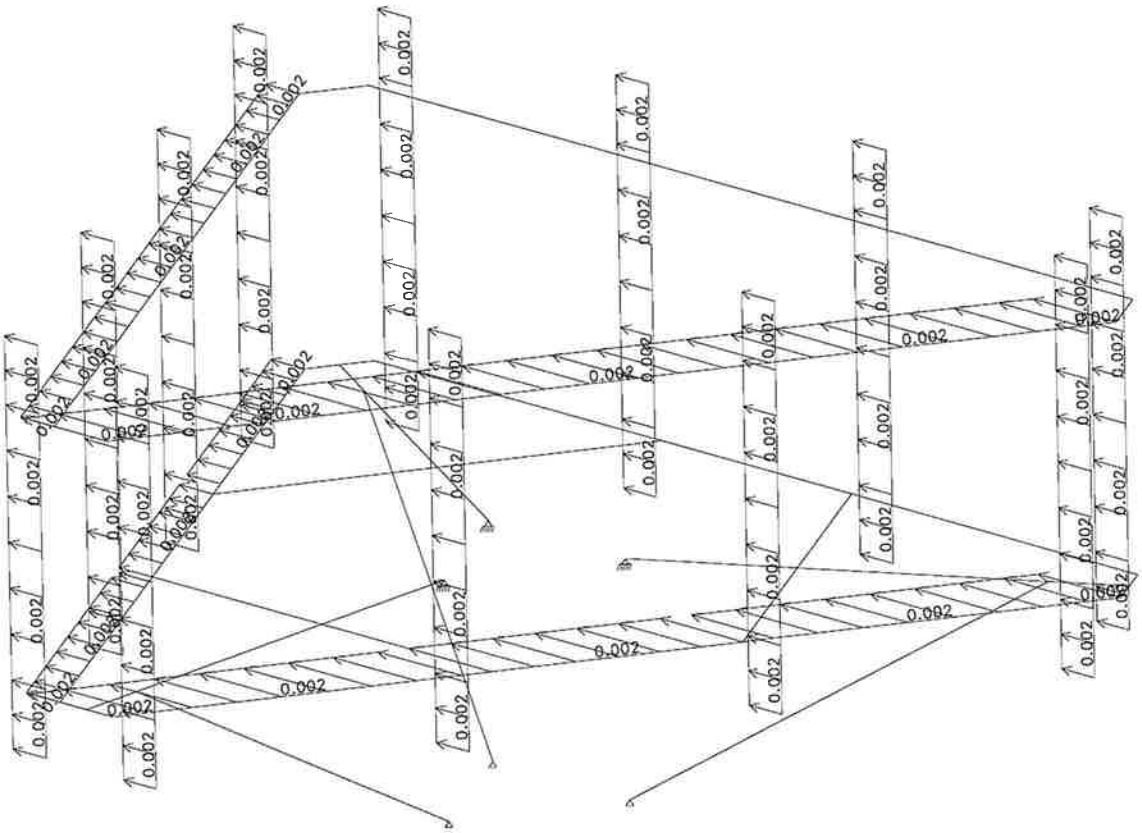


Bloomfield 5 CT Mount Analysis

Load 7: Side Frame Ice



SCALE = 1:30	UNITS: kip ft	DATE: 2/20/23

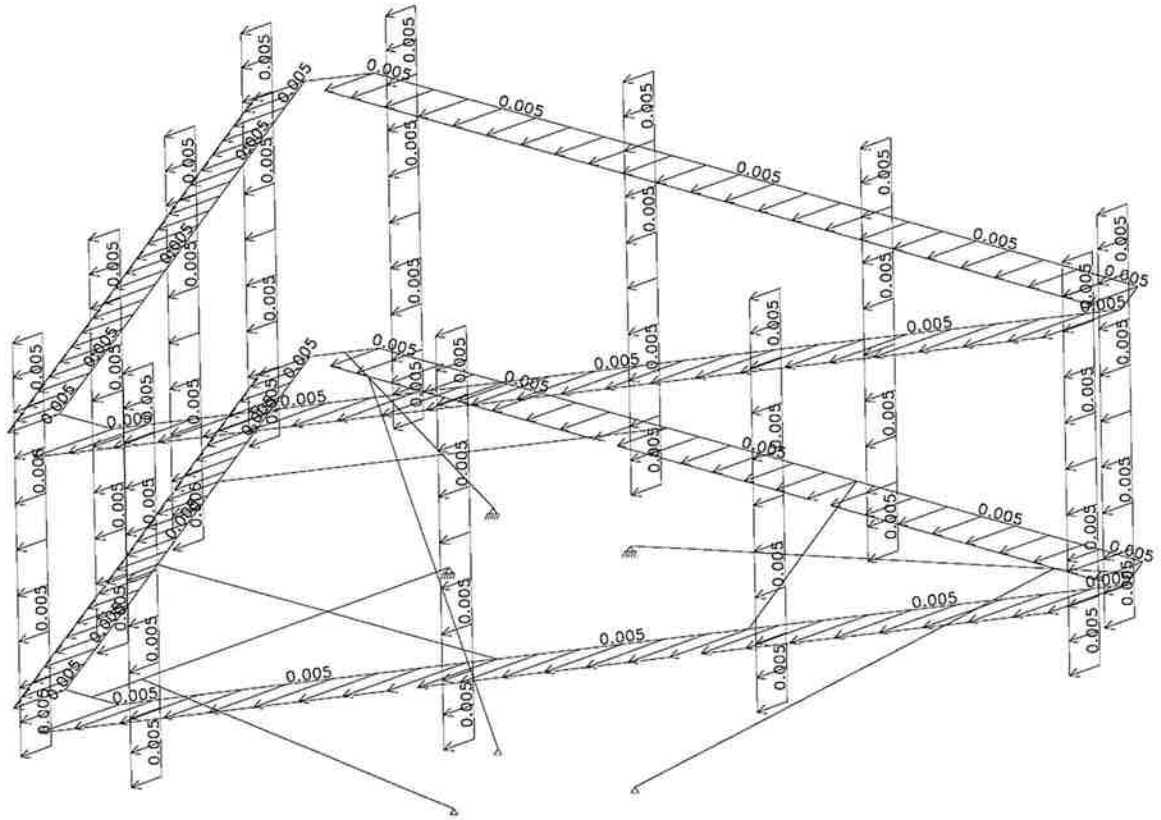


Bloomfield 5 CT Mount Analysis

Load 8: Front Frame No Ice

X3
X2
X1

SCALE = 1:30	UNITS: kip ft	DATE: 2/20/23

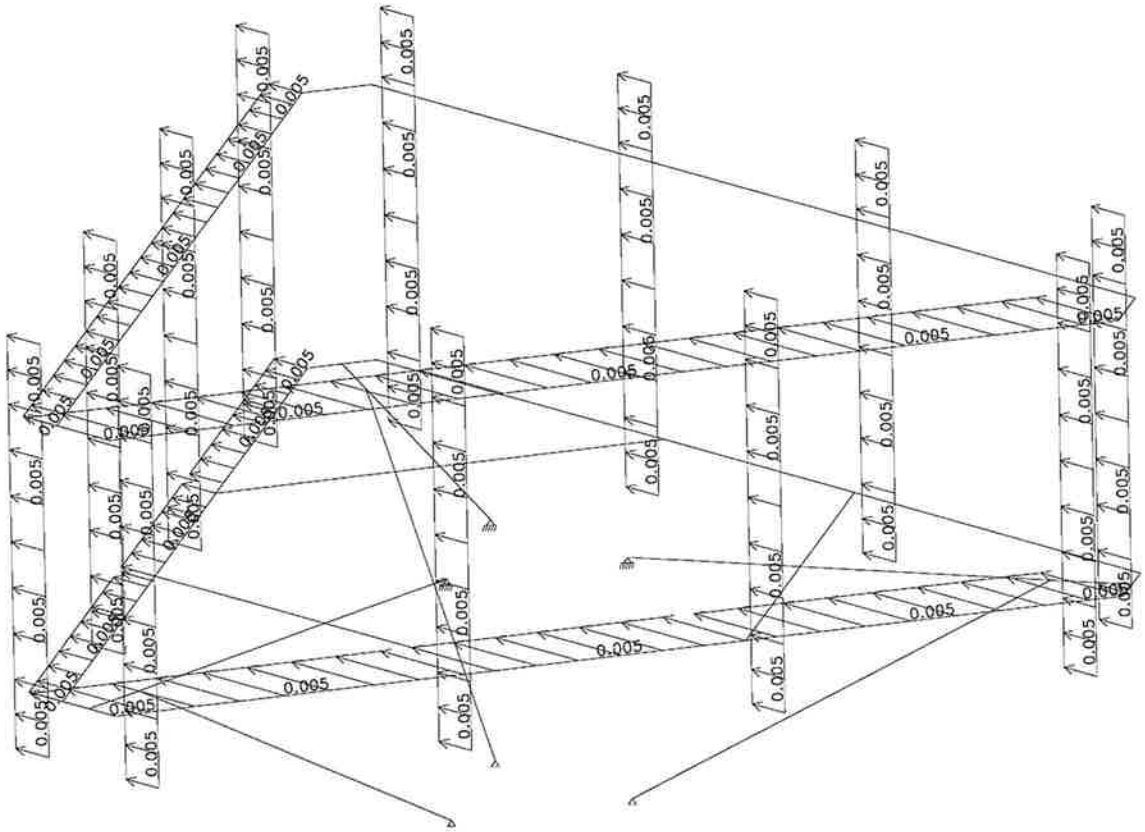


Bloomfield 5 CT Mount Analysis

Load 9: Side Frame No Ice

X3
X2
X1

SCALE = 1:30	UNITS: kip ft	DATE: 2/20/23

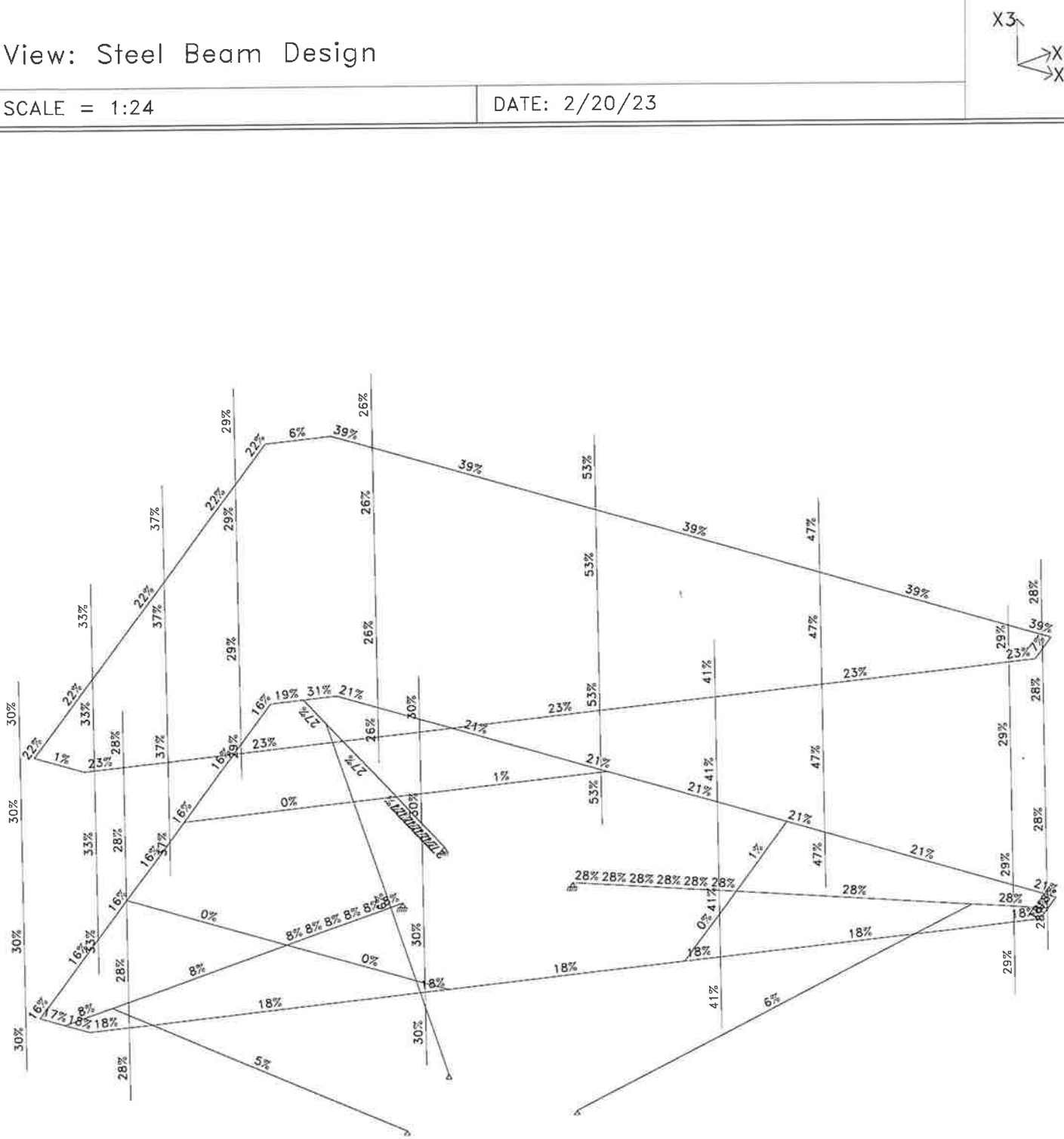


Bloomfield 5 CT Mount Analysis

View: Steel Beam Design

SCALE = 1:24

DATE: 2/20/23



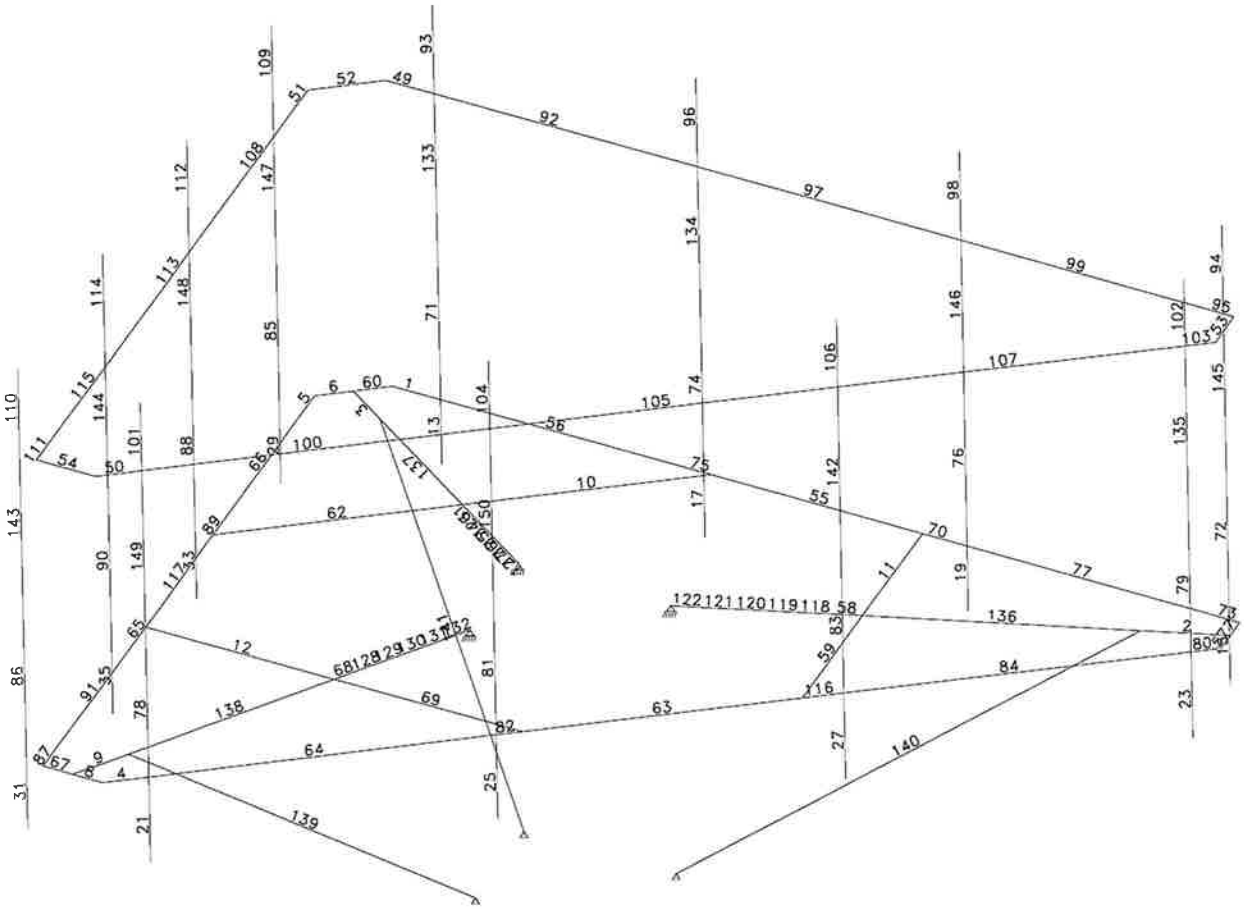
Actual/allowable Moment+Axial

Bloomfield 5 CT Mount Analysis

View: Steel Beam Design

SCALE = 1:27

DATE: 2/20/23



Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Results Summary Table

Beam	Section	Com	Defl L/	Slen	CAPACITY Axial	Dir	Shear	Mom	LTB	Combined Axial+Mom	
1	PIPE 3	1	518	150	0.01	MJ	0.02	0.14	0.14	0.21	
						MI	0.03	0.07	0.00		
2	TS 4x4x1/4	1	2962	57	0.02	MJ	0.03	0.08	0.08	0.28	
						MI	0.03	0.21	0.00		
3	TS 4x4x1/4	1	3294	57	0.02	MJ	0.03	0.08	0.08	0.27	
						MI	0.03	0.20	0.00		
6	PIPE 2	1	7444	8	-0.01	MJ	0.04	0.14	0.14	0.19	
						MI	0.02	0.05	0.00		
7	PIPE 2	1	9999	8	0.00	MJ	0.05	0.15	0.15	0.18	
						MI	0.01	0.03	0.00		
8	PIPE 2	1	9999	8	0.01	MJ	0.04	0.13	0.13	0.18	
						MI	0.05	0.14	0.00		
9	TS 4x4x1/4	4	3861	46	0.02	MJ	0.03	0.07	0.07	0.08	
						MI	0.00	0.03	0.00		
10	TS 4x4x1/4	3	9999	26	0.01	MI	0.00	0.00	0.00	0.01	
11	TS 4x4x1/4	4	9999	26	0.01	MI	0.00	0.00	0.00	0.01	
12	TS 4x4x1/4	1	9999	26	0.00	MI	0.00	0.00	0.00	0.00	
49	PIPE 2	1	403	201	-0.06	MJ	0.02	0.17	0.17	0.39	***
						MI	0.01	0.19	0.00		
52	PIPE 2	1	9999	15	0.00	MJ	0.02	0.06	0.06	0.06	
53	PIPE 2	1	9999	15	0.00	MJ	0.02	0.07	0.07	0.07	
54	PIPE 2	2	9999	15	0.00	MJ	0.00	0.01	0.01	0.01	
57	PIPE 2	1	6219	8	-0.01	MJ	0.03	0.15	0.15	0.18	
						MI	0.01	0.03	0.00		
59	TS 4x4x1/4	1	9999	26	0.00	MI	0.00	0.00	0.00	0.00	
60	PIPE 2	1	4173	8	-0.01	MJ	0.04	0.27	0.27	0.31	
						MI	0.02	0.05	0.00		
62	TS 4x4x1/4	1	9999	26	0.00	MI	0.00	0.00	0.00	0.00	
67	PIPE 2	1	9999	8	0.01	MJ	0.03	0.11	0.11	0.17	
						MI	0.05	0.14	0.00		
69	TS 4x4x1/4	1	9999	26	0.00	MI	0.00	0.00	0.00	0.00	
80	PIPE 3	4	643	150	0.01	MJ	0.02	0.13	0.13	0.18	
						MI	0.01	0.06	0.00		
87	PIPE 3	4	645	150	0.01	MJ	0.02	0.13	0.13	0.16	
						MI	0.01	0.05	0.00		
93	PIPE 2	1	177	88	-0.02	MJ	0.01	0.21	0.21	0.26	***
						MI	0.00	0.04	0.00		
94	PIPE 2	1	157	88	-0.03	MJ	0.01	0.20	0.20	0.28	***
						MI	0.00	0.08	0.00		
96	PIPE 2	1	87	69	-0.01	MJ	0.01	0.14	0.14	0.53	***
						MI	0.04	0.39	0.00		
98	PIPE 2	1	92	91	0.00	MJ	0.01	0.15	0.15	0.47	***
						MI	0.03	0.32	0.00		
101	PIPE 2	1	427	86	-0.01	MJ	0.01	0.13	0.13	0.28	
						MI	0.01	0.14	0.00		
102	PIPE 2	1	193	91	-0.01	MJ	0.01	0.08	0.08	0.29	***
						MI	0.02	0.27	0.00		
103	PIPE 2	4	680	205	-0.06	MJ	0.02	0.16	0.16	0.23	***
						MI	0.01	0.06	0.00		
104	PIPE 2	1	225	68	0.00	MJ	0.01	0.08	0.08	0.30	***
						MI	0.03	0.26	0.00		
106	PIPE 2	1	175	69	-0.01	MJ	0.01	0.10	0.10	0.41	***
						MI	0.04	0.34	0.00		
109	PIPE 2	1	227	91	-0.01	MJ	0.01	0.07	0.07	0.29	***
						MI	0.02	0.26	0.00		
110	PIPE 2	1	411	87	-0.01	MJ	0.01	0.14	0.14	0.30	
						MI	0.01	0.16	0.00		
111	PIPE 2	3	686	209	-0.06	MJ	0.02	0.16	0.16	0.22	***
						MI	0.01	0.06	0.00		
112	PIPE 2	1	195	66	0.00	MJ	0.00	0.05	0.05	0.37	***
						MI	0.04	0.32	0.00		
114	PIPE 2	1	214	74	-0.01	MJ	0.01	0.12	0.12	0.33	***
						MI	0.03	0.27	0.00		

Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Results Summary Table

					CAPACITY						
Beam	Section	Com	Defl L/	Slen	Axial	Dir	Shear	Mom	LTB	Combined Axial+Mom	
139	2L 3x3x1/4	4	9999	91	-0.05	MI	0.00	0.00	0.00	0.05	
140	2L 3x3x1/4	4	9999	90	-0.06	MI	0.00	0.00	0.00	0.06	
141	2L 3x3x1/4	3	9999	90	-0.06	MI	0.00	0.00	0.00	0.06	

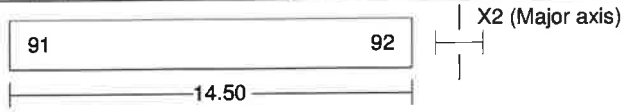
Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 49 - 95

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Beam: 49, 92, 97, 99, 95



CONSTRAINTS

- Sections : Check
- Steel Grade: A500C

DESIGN DATA

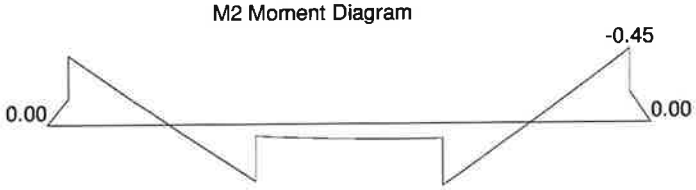
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: PIPE 2

Ix = 0.67 Iy = 0.67in4 Zx = 0.76 Zy = 0.76in3 Area = 1.07
D = 2.37 t = 0.15in
J = 1.33 Cw = 0.00in6

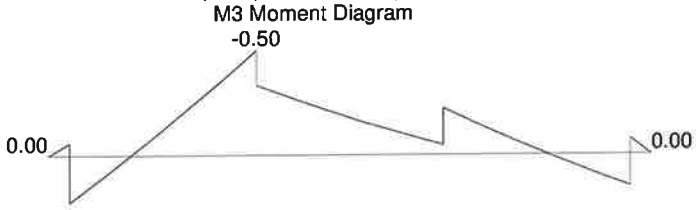
DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = 0.09 (tens.), -0.27 (compr.) Max. SHEAR Force = 0.37

M3 Moment Diagram



Max. AXIAL Force = 0.09 (tens.), -0.27 (compr.) Max. SHEAR Force = 0.17

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios: Compact Non-Compact
d/t= 15.46 < 45.0 71.7 (Fy= 46.0 R = 0.005)

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.17 Vn = 17.81	0.01
M3 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.50 Mn = 2.92	0.19
V3 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.37 Vn = 17.81	0.02

Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 49 - 95

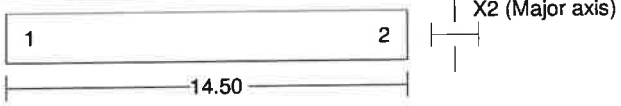
*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M2 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.45 Mn = 2.92	0.17
Deflection	$\frac{defl.}{L / 240} < 1.00$		defl = 0.43143	0.60
Axial Force (E2-1)	$\frac{Pu}{0.85AgFcr} < 1.00$	(kL/r)x =192 (kL/r)y =192 λc = 2.43	Pu = 0.27 Ag = 1.07 Fcr = 6.83	0.04
Combined Forces (compress.) (H1-1b)	$\frac{Pu}{2\phi Pn} + \frac{Mux}{\phi Mnx} + \frac{Muy}{\phi Mny} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 8.38 Pey = 8.38	Mux = 0.46 Muy = 0.51 B1x = 1.03 B1y = 1.03	0.39

Detailed Results Table for Beam 1 - 73

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Beam: 1, 56, 75, 55, 70, 77, 73



CONSTRAINTS

- Sections : Check
- Steel Grade: A500C

DESIGN DATA

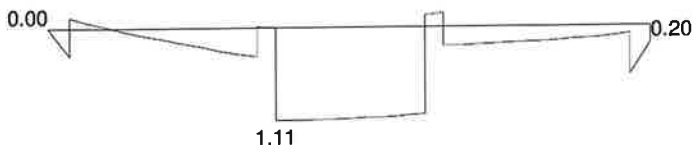
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: PIPE 3

Ix = 3.02 Iy = 3.02in4 Zx = 2.33 Zy = 2.33in3 Area = 2.23
D = 3.50 t = 0.22in
J = 6.03 Cw = 0.00in6

DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = 0.52 (tens.), -0.33 (compr.) Max. SHEAR Force = 0.76

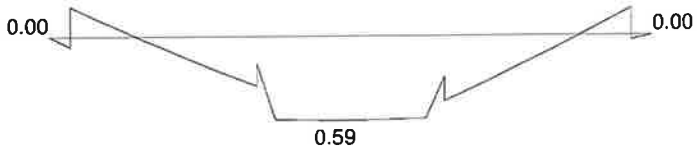
Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 1 - 73

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

M3 Moment Diagram



Max. AXIAL Force = 0.52 (tens.), -0.33 (compr.) Max. SHEAR Force = 0.89

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios: Compact Non-Compact
d/t= 16.16 < 45.0 71.7 (Fy= 46.0 R = -0.005)

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 1.34	Vu = 0.89 Vn = 36.95	0.03
M3 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 2.33	M = 0.59 Mn = 8.95	0.07
V3 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 1.34	Vu = 0.76 Vn = 36.95	0.02
M2 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 2.33	M = 1.11 Mn = 8.95	0.14
Deflection	$\frac{defl.}{L / 240} < 1.00$		defl = 0.33567	0.46
Axial Force (D1-1)	$\frac{Pu}{0.90AgFy} < 1.00$	(kL/r)x =61 (kL/r)y =61	Pu = 0.52 Ag = 2.23 Fy = 46.00	0.01
Combined Forces (compress.) (H1-1b)	$\frac{Pu}{2\phi Pn} + \frac{Mux}{\phi Mnx} + \frac{Muy}{\phi Mny} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 172.22 Pey = 172.22	Mux = 1.12 Muy = 0.59 B1x = 1.00 B1y = 1.00	0.21

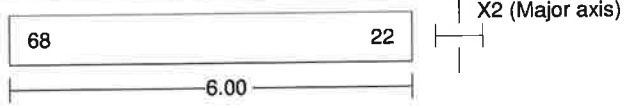
Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 93 - 13

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Beam: 93, 71, 133, 13



CONSTRAINTS

- Sections : Check
- Steel Grade: A500C

DESIGN DATA

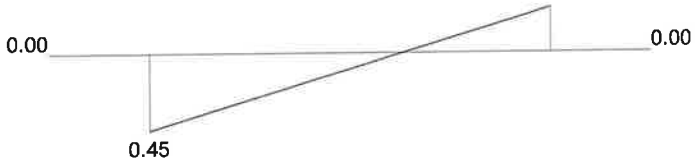
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: PIPE 2

Ix = 0.67 Iy = 0.67in4 Zx = 0.76 Zy = 0.76in3 Area = 1.07
D = 2.37 t = 0.15in
J = 1.33 Cw = 0.00in6

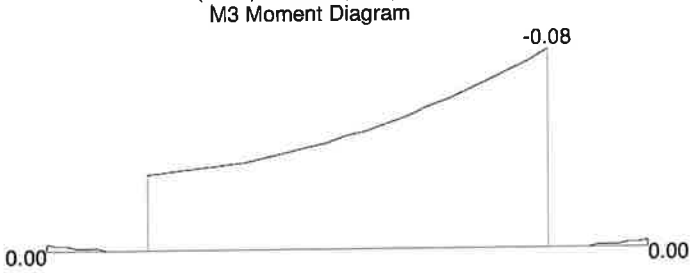
DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = 0.00 (tens.), -0.52 (compr.) Max. SHEAR Force = 0.18

M3 Moment Diagram



Max. AXIAL Force = 0.00 (tens.), -0.52 (compr.) Max. SHEAR Force = 0.02

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios: Compact Non-Compact
d/t= 15.46 < 45.0 71.7 (Fy= 46.0 R = 0.010)

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M3 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.08 Mn = 2.92	0.03
V3 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.18 Vn = 17.81	0.01
M2 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.45 Mn = 2.92	0.17

Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 93 - 13

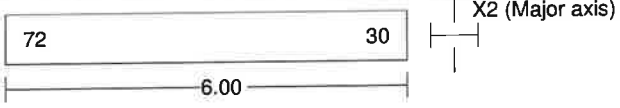
*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

DESIGN	EQUATION	FACTORS	VALUES	RESULT
Deflection	defl. / L / 240 < 1.00		defl = 0.40660	1.36
Axial Force (E2-1)	Pu / 0.85AgFcr < 1.00	(kL/r)x =88 (kL/r)y =88 λc = 1.11	Pu = 0.52 Ag = 1.07 Fcr = 27.37	0.02
Combined Forces (compress.) (H1-1b)	Pu/2φPn + Mux/φMnx + Muy/φMny < 1.00	Cmx = 1.00 Cmy = 1.00 Pex = 39.88 Pey = 39.88	Mux = 0.46 Muy = 0.09 B1x = 1.01 B1y = 1.01	0.22

Detailed Results Table for Beam 96 - 17

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Beam: 96, 74, 134, 17



CONSTRAINTS

- Sections : Check
- Steel Grade: A500C

DESIGN DATA

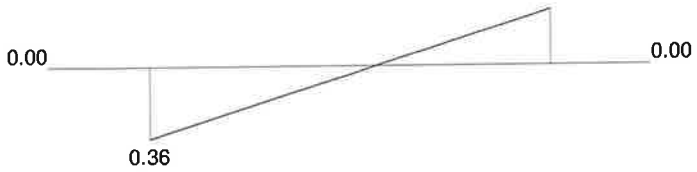
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: PIPE 2

Ix = 0.67 Iy = 0.67in4 Zx = 0.76 Zy = 0.76in3 Area = 1.07
D = 2.37 t = 0.15in
J = 1.33 Cw = 0.00in6

DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = 0.10 (tens.), -0.05 (compr.) Max. SHEAR Force = 0.16

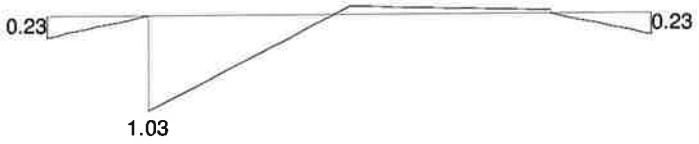
Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 96 - 17

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

M3 Moment Diagram



Max. AXIAL Force = 0.10 (tens.), -0.05 (compr.) Max. SHEAR Force = 0.57

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios: Compact Non-Compact
d/t= 15.46 < 45.0 71.7 (Fy= 46.0 R = -0.002)

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.57 Vn = 17.81	0.04
M3 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 1.03 Mn = 2.92	0.39
V3 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.16 Vn = 17.81	0.01
M2 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.36 Mn = 2.92	0.14
Deflection	$\frac{defl.}{L / 240} < 1.00$		defl = 0.82553	2.75
Axial Force (D1-1)	$\frac{Pu}{0.90AgFy} < 1.00$	(kL/r)x =31 (kL/r)y =31	Pu = 0.10 Ag = 1.07 Fy = 46.00	0.00
Combined Forces (compress.) (H1-1b)	$\frac{Pu}{2\phi Pn} + \frac{Mux}{\phi Mnx} + \frac{Muy}{\phi Mny} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 321.36 Pey = 321.36	Mux = 0.36 Muy = 1.03 B1x = 1.00 B1y = 1.00	0.53

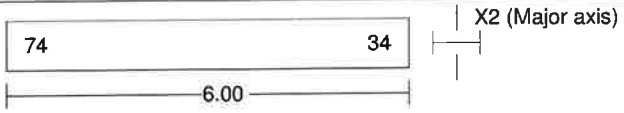
Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 98 - 19

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Beam: 98, 76, 146, 19



CONSTRAINTS

- Sections : Check
- Steel Grade: A500C

DESIGN DATA

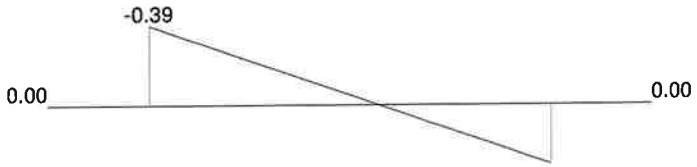
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: PIPE 2

Ix = 0.67 Iy = 0.67in4 Zx = 0.76 Zy = 0.76in3 Area = 1.07
D = 2.37 t = 0.15in
J = 1.33 Cw = 0.00in6

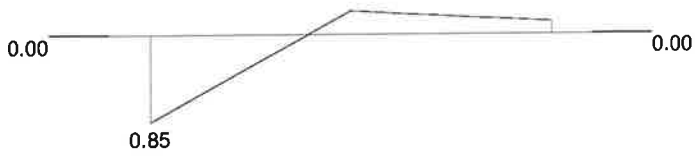
DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = 0.17 (tens.), 0.00 (compr.) Max. SHEAR Force = 0.17

M3 Moment Diagram



Max. AXIAL Force = 0.17 (tens.), 0.00 (compr.) Max. SHEAR Force = 0.54

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios: Compact Non-Compact
d/t= 15.46 < 45.0 71.7 (Fy= 46.0 R = -0.003)

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.54 Vn = 17.81	0.03
M3 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.85 Mn = 2.92	0.32
V3 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.17 Vn = 17.81	0.01

Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 98 - 19

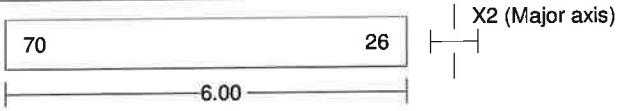
*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M2 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.39 Mn = 2.92	0.15
Deflection	$\frac{defl.}{L / 240} < 1.00$		defl = 0.78578	2.62
Axial Force (D1-1)	$\frac{Pu}{0.90AgFy} < 1.00$	(kL/r)x =91 (kL/r)y =91	Pu = 0.17 Ag = 1.07 Fy = 46.00	0.00
Combined Forces (compress.) (H1-1b)	$\frac{Pu}{2\phi Pn} + \frac{Mux}{\phi Mnx} + \frac{Muy}{\phi Mny} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 37.29 Pey = 37.29	Mux = 0.39 Muy = 0.85 B1x = 1.00 B1y = 1.00	0.47

Detailed Results Table for Beam 94 - 15

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Beam: 94, 72, 145, 15



CONSTRAINTS

- Sections : Check
- Steel Grade: A500C

DESIGN DATA

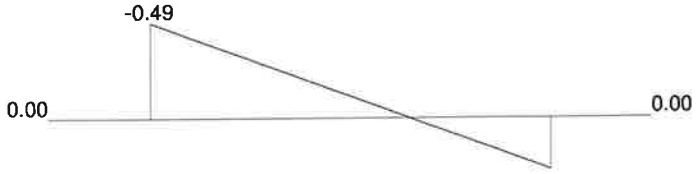
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: PIPE 2

Ix = 0.67 Iy = 0.67in4 Zx = 0.76 Zy = 0.76in3 Area = 1.07
D = 2.37 t = 0.15in
J = 1.33 Cw = 0.00in6

DESIGN COMBINATION = 1

M2 Moment Diagram



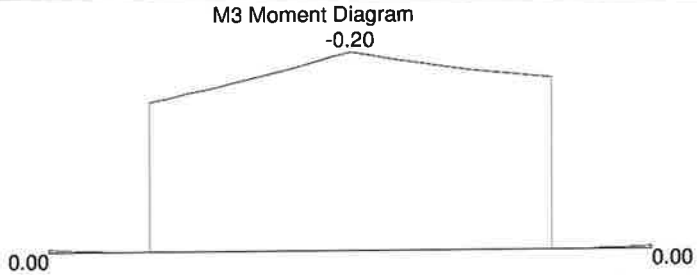
Max. AXIAL Force = 0.00 (tens.), -0.66 (compr.) Max. SHEAR Force = 0.19

Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 94 - 15

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*



Max. AXIAL Force = 0.00 (tens.), -0.66 (compr.) Max. SHEAR Force = 0.03

SECTION CLASSIFICATION: *** COMPACT ***

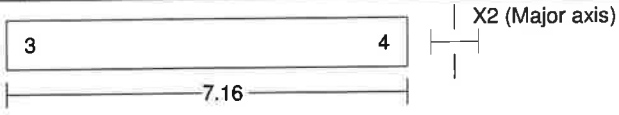
Limiting Ratios: Compact Non-Compact
d/t= 15.46 < 45.0 71.7 (Fy= 46.0 R = 0.013)

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M3 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.20 Mn = 2.92	0.08
V3 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 0.64	Vu = 0.19 Vn = 17.81	0.01
M2 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 0.76	M = 0.49 Mn = 2.92	0.19
Deflection	$\frac{defl.}{L / 240} < 1.00$		defl = 0.45714	1.52
Axial Force (E2-1)	$\frac{Pu}{0.85AgFcr} < 1.00$	(kL/r)x =88 (kL/r)y =88 λc = 1.11	Pu = 0.66 Ag = 1.07 Fcr = 27.37	0.03
Combined Forces (compress.) (H1-1b)	$\frac{Pu}{2\phi Pn} + \frac{Mux}{\phi Mnx} + \frac{Muy}{\phi Mny} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 39.88 Pey = 39.88	Mux = 0.50 Muy = 0.21 B1x = 1.02 B1y = 1.02	0.28

Detailed Results Table for Beam 2 - 122

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Beam:
2, 136, 58,
118, 119, 120,
121, 122



CONSTRAINTS

- Sections : Check
- Steel Grade: A500B

DESIGN DATA

- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 2 - 122

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

INTERMEDIATE SUPPORTS

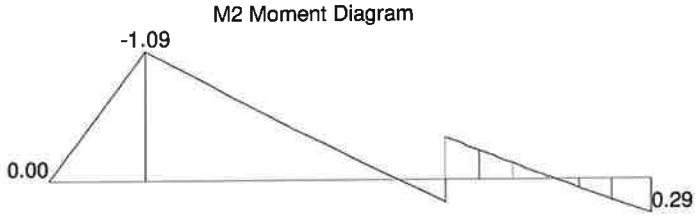
L =	1.17	4.71	5.12	5.50	5.92	6.29	6.71
Lat.-Tors.							
Compress.	X	X	X	X	X	X	X

Section: TS 4x4x1/4

Ix = 8.22 Iy = 8.22in4 Zx = 4.97 Zy = 4.97in3 Area = 3.59
h = 4.00 b = 4.00in t = 0.25in
J = 13.50 Cw = 0.00in6

DESIGN COMBINATION = 1

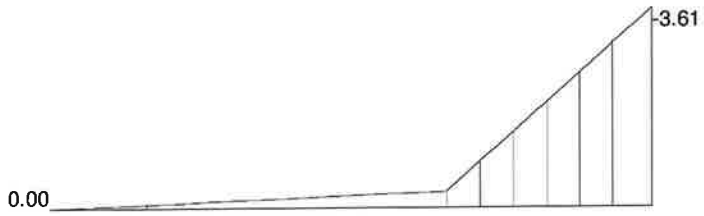
M2 Moment Diagram



Moments at Intermediate Supports:
-1.08 0.19 -0.14 0.07
-0.24 -0.02 0.18

Max. AXIAL Force = 2.60 (tens.) Max. SHEAR Force = 0.95

M3 Moment Diagram



Moments at Intermediate Supports:
-0.07 -0.29 -1.36 -2.43
-0.85 -1.92 -3.00

Max. AXIAL Force = 2.60 (tens.) Max. SHEAR Force = 1.36

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios:		Compact	Non-Compact	
d/t= 13.13	<	35.2	35.2	(Fy= 46.0 R = -0.016)
b/t= 13.13	<	28.1	35.2	

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 1.79	Vu = 1.36 Vn = 49.60	0.03
M3 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 4.97	M = 3.61 Mn = 19.07	0.21
V3 Shear (F2-1)	Vu/(.9*Vn)<1.00 Vn=0.6*Fy*Av	Av = 1.79	Vu = 0.95 Vn = 49.60	0.02

Bloomfield 5 CT Mount Analysis **Code:** AISC-LRFD

Prepared by: **Date:** 2/20/23

Detailed Results Table for Beam 2 - 122

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M2 Moment (A-F1-1) without LTB	$\frac{M}{0.9Mn} < 1.00$	Z = 4.97	M = 1.09 Mn = 19.07	0.06
Deflection	$\frac{defl.}{L / 240} < 1.00$		defl = 0.02900	0.08
Axial Force (D1-1)	$\frac{Pu}{0.90AgFy} < 1.00$	(kL/r)x =28 (kL/r)y =57	Pu = 2.60 Ag = 3.59 Fy = 46.00	0.02
Lateral Torsional Buckling	$\frac{M}{0.9Mn} < 1.00$ Critical Segment from 0.00 to 7.16 on -z flange Segment End Moments: 0.00 and 0.29	Lb = 7.16 Lp = 14.40	M = 1.09 Mn = 19.07	0.06
Combined Forces (tension) (H1-1b)	$\frac{Pu}{2\phi Pn} + \frac{Mux}{\phi Mnx} + \frac{Muy}{\phi Mny} < 1.00$		Mux = 1.09 Muy = 3.61	0.28

ATTACHMENT 6

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

Calculated Radio Frequency Emissions Report

verizon

Bloomfield 5

7A Old Windsor Road, Bloomfield, CT 06002

April 28, 2023

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Verizon's antenna arrays to be mounted at 137' AGL on an existing monopole tower located at 7A Old Windsor Road in Bloomfield, CT. The coordinates of the monopole tower are 41° 51' 20.0196" N, 72° 42' 16.9488" W.

Verizon is proposing the following:

1) Install fifteen (15) multi-band antennas (five (5) per sector) to support its commercial LTE network.

This report considers the planned antenna configuration for Verizon[1] to derive the resulting % MPE of its proposed installation.

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 attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C 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 C 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 referenced to Verizon's Radio Frequency Design Sheet updated 01/23/2023.

3. RF Exposure Prediction Methods

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

$$\text{PowerDensity} = \left(\frac{EIRP}{\pi \times R^2}\right) \times \text{Off BeamLoss}$$

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 70°	700	160	14.9	4944	NHH-65B-R2B	65	0	5.99	137
		850	160	15.0	5060		60			
		1900	160	17.9	9866		69			
		2100	240	18.0	15143	NHHSS-65B-R2BT4	64	0	5.99	137
		3500	20	17.7	1178		54			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	137
	Beta / 190°	700	160	14.9	4944	NHH-65B-R2B	65	0	5.99	137
		850	160	15.0	5060		60			
		1900	160	17.9	9866		69			
		2100	240	18.0	15143	NHHSS-65B-R2BT4	64	0	5.99	137
		3500	20	17.7	1178		54			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	137
	Gamma / 310°	700	160	14.9	4944	NHH-65B-R2B	65	0	5.99	137
		850	160	15.0	5060		60			
		1900	160	17.9	9866		69			
		2100	240	18.0	15143	NHHSS-65B-R2BT4	64	0	5.99	137
		3500	20	17.7	1178		54			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	137

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

[2] Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 01/23/2023.

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

5. Calculation Results

The calculated power density results are shown in Figure 1 below. 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 ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

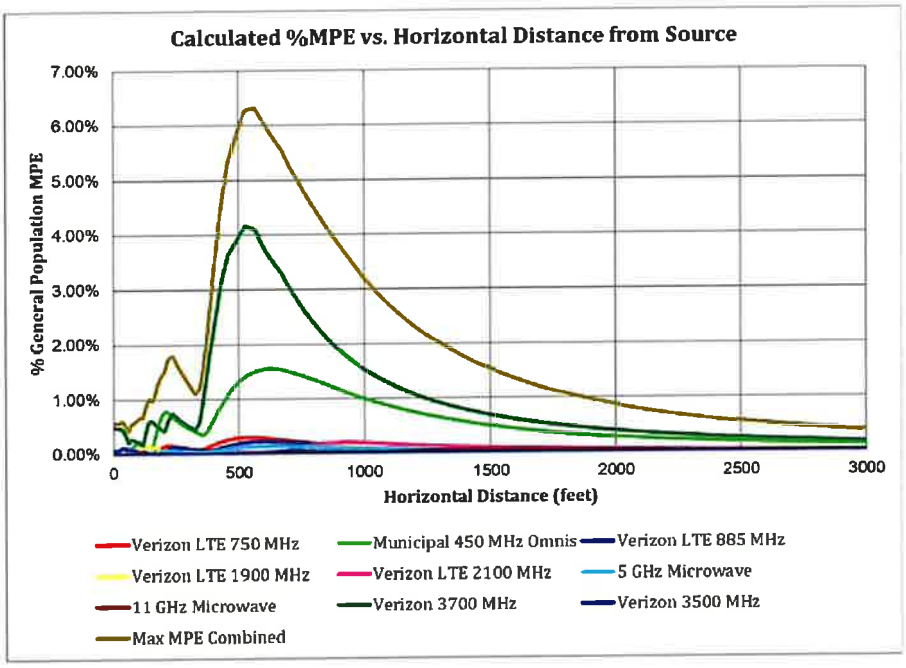

Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (6.31% of the General Population limit) is calculated to occur at a horizontal distance of 567 feet from antennas. Please note that the percent of MPE calculations close to the site take into account 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 1500 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, RF levels become calculated solely 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. The highest percent of MPE value was calculated to occur at a horizontal distance of 567 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower 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
11 GHz Microwave	1	2.2	149.0	567	0.000023	1.000	0.00%
5 GHz Microwave	1	0.5	149.0	567	0.001363	1.000	0.14%
Municipal 450 MHz Omnis	3	110.0	149.0	567	0.004496	0.300	1.50%
Verizon 3500 MHz	1	20.0	137.0	567	0.000181	1.000	0.02%
Verizon 3700 MHz	1	200.0	137.0	567	0.040903	1.000	4.09%
Verizon LTE 1900 MHz	1	160.0	137.0	567	0.000125	1.000	0.01%
Verizon LTE 2100 MHz	1	240.0	137.0	567	0.000304	1.000	0.03%
Verizon LTE 750 MHz	1	160.0	137.0	567	0.001489	0.500	0.30%
Verizon LTE 885 MHz	1	160.0	137.0	567	0.001269	0.567	0.22%
						Total	**6.31%**

Table 2: Maximum Percent of General Population Exposure Values

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna 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 in consideration of all transmitters is calculated to be **6.31% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 567 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. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

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April 27, 2023
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April 28, 2023
Date

Attachment A: References

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

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

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

(A) Limits for Occupational/Controlled Exposure[4]

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[5]

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

[4] 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.

[5] 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.

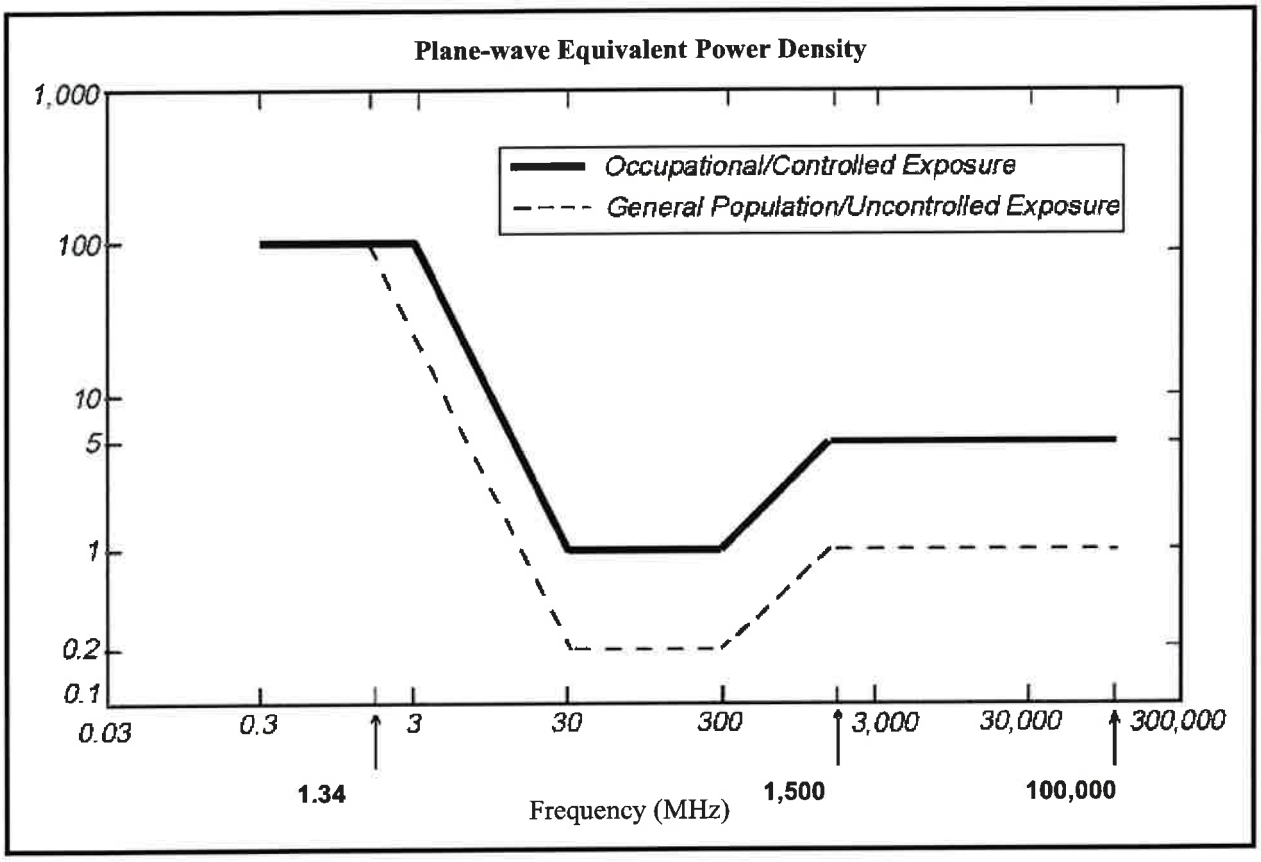
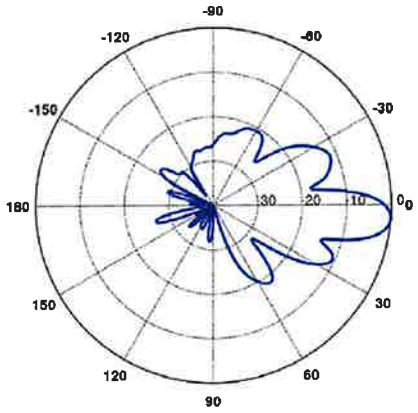


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

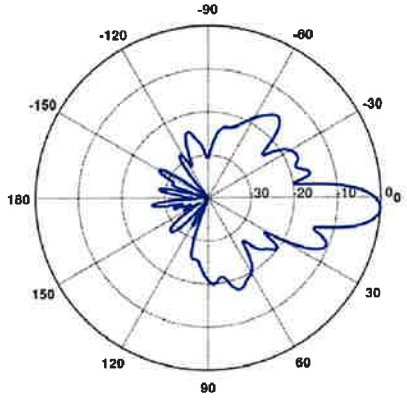
700 MHz

Manufacturer:	CommScope
Model #:	NHH-65B-R2B
Frequency Band:	698-806
Gain:	14.9
Vertical Beamwidth:	12.4°
Horizontal Beamwidth:	65°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 11.85" x 7.1"



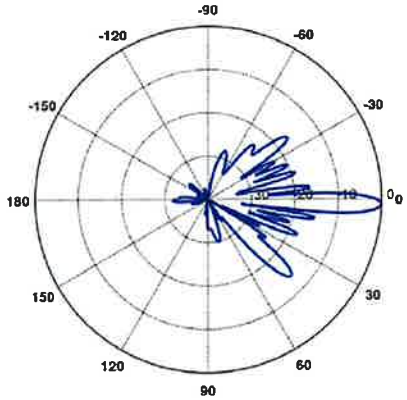
850 MHz

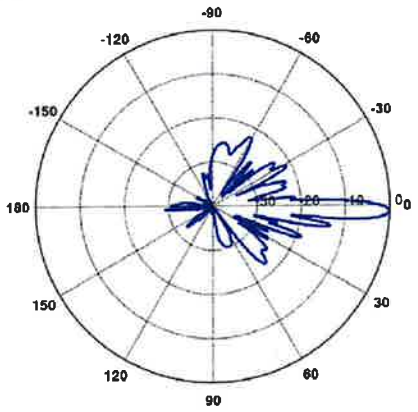
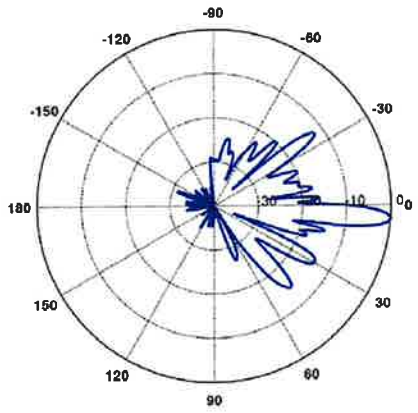
Manufacturer:	CommScope
Model #:	NHH-65B-R2B
Frequency Band:	806-896
Gain:	15.0
Vertical Beamwidth:	11.2°
Horizontal Beamwidth:	60°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 11.85" x 7.1"



1900 MHz

Manufacturer:	CommScope
Model #:	NHH-65B-R2B
Frequency Band:	1850-1990
Gain:	17.9
Vertical Beamwidth:	5.2°
Horizontal Beamwidth:	69°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 11.85" x 7.1"



2100 MHz Manufacturer: CommScope Model #: NHHSS-65B-R2BT4 Frequency Band: 1920-2200 MHz Gain: 18.0 dBi Vertical Beamwidth: 4.9° Horizontal Beamwidth: 64° Polarization: ±45° Dimensions (L x W x D): 71.9" x 11.8" x 7.1"	
3500 MHz Manufacturer: CommScope Model #: NHHSS-65B-R2BT4 Frequency Band: 3100-3550 MHz Gain: 17.7 dBi Vertical Beamwidth: 5.7° Horizontal Beamwidth: 54° Polarization: ±45° Dimensions (L x W x D): 71.9" x 11.8" x 7.1"	

ATTACHMENT 7

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