BUILDING PERMIT

PERMIT NO: 2020-0179

PROJECT: SMALL WIRELESS FACILITY (EXISTING POLE)

ISSUE DATE: 10/14/2020 EXPIRATION DATE: 10/14/2021

PROPERTY ADDRESS: 1 ARTHUR AVE R.O.W.

PROPERTY OWNER: VILLAGE OF CLARENDON HILLS

UTILITY POLE OWNER: COMMONWEALTH EDISON

CONTRACTOR: CONCORDIA WIRELESS

A copy of the approved plans must be on site at all times. 24 Hours advance notice required for all building inspections. To schedule an inspection, please call 630-286-5410. Please do not leave any requests on the voicemail as they will not be scheduled until you speak directly with someone in the Community Development Department.

Dan Ungerleider

DAN UNGERLEIDER, AICP
COMMUNITY DEVELOPMENT DIRECTOR

VILLAGE OF CLARENDON HILLS
COMMUNITY DEVELOPMENT

1 N. Prospect Avenue
Clarendon Hills, Illinois 60514
630.286.5410

MEMORANDUM

TO: Permit File – BPA26075

FROM: Dan Ungerleider, Community Development Director

DATE: October 14, 2020

RE: **1 ARTHUR AVENUE - CONCORDIA WIRELESS/VERIZON WIRELESS**
SMALL WIRELESS FACILITY ON AN EXISTING COMED UTILITY POLE AT THE NORTHEAST CORNER OF BURLINGTON AND ARTHUR AVENUES

The submitted application and plans for the subject facility have been reviewed for compliance with Village Ordinance, and based on the information contained therein:

(x) Permit Application and Plans Submitted to the Village of Clarendon Hills Community Development Department, submitted electronically on 8/7/2020 are **APPROVED. The Permit will be issued subject to the applicant agreeing to comply with the requirements noted below by signing this memorandum and making it part of the permit documents.**

A. Compliance with the conditions and comments listed in the attached 10/6/2020 report from Village Consultant MSA Municipal Services Associates, Inc., included but not limited to:

a. The antennas and equipment shall be painted a neutral color to blend in with the surrounding environment and mitigate visual obstruction.

b. Prior to installation, Concordia Wireless provide to the Village of Clarendon Hills Community Development Department a plan for traffic safety for implementation during the installation of the small cell as it is likely that construction vehicles will block portions of Arthur Avenue and Burlington Avenue.

B. Any work discovered in the field discovered during inspections not indicated on the plans will trigger a stop-work order and require the submittal of revisions to approved plans.

C. A complete set of the Village approved plans shall always remain on-site during construction/installation.

D. Required Inspections: Final Inspection by Community Development and Public Works.

Marisa Lewis Green 10/14/2020
Signature (Concordia Wireless) Date

Marisa C. Lewis Green
Print Name

MSA *MUNICIPAL SERVICES ASSOCIATES, INC.*

October 6, 2020

Mr. Dan Ungerleider
Director of Community Development
Village of Clarendon Hills
1 North Prospect Avenue
Clarendon Hills, Illinois 60514

Dear Mr. Ungerleider:

At the direction of the Village of Clarendon Hills, Municipal Services Associates, Inc. (MSA) has reviewed the revised plans submitted by Chicago SMSA Limited Partnership d/b/a Verizon Wireless ("Verizon") for a cellular facility in a right-of-way located on the northeast corner of Arthur Avenue and Burlington Avenue. The address shown on Verizon's plans indicates that the pole will be installed at Burlington Avenue and Arthur Avenue, however, the actual installation will be located at 1 Arthur Avenue.

The revised project includes the extension of an existing Commonwealth Edison utility pole in order to accommodate a new canister-shaped radome antenna. The pole will also include three (3) antenna/radio units, an antenna mount, two (2) power units, diplexers, a breaker box, new secondary power service wires, a fiber optic cable, and a fiber optic cable interface box. The project also allows for two future combination antenna/radio units, two (2) remote radio units (RRUs), a radio mount, and additional diplexers.

There will be a change to the height of the new pole. With the proposed extension, the utility pole which is presently 29.58' (9.02 meters) above ground level (AGL), will be 34.75' (10.59 meters) AGL. The extension will be 5.166' (1.73 meters) in height. The antenna centerline will be located at 36.58' (11.15 meters). With the antenna, the total height of the pole will be 37.58'(11.46 meters) AGL. Verizon has also included a structural evaluation that is required under the Illinois Small Wireless Facilities Deployment Act (SWFDA).

Existing Facilities: The existing utility pole at this location lack the height to accommodate a small cell antenna, radios, and related equipment. The current pole has a crossbar supported by an angular brace which contains conductors. The crossbar is mounted at 29.58' (9.02 meters) AGL, and the angular brace is mounted at 26.08' (7.95 meters) AGL. A street light is also mounted on the pole. The top of the street light is located at 24.92' (7.60 meters) AGL. An existing neutral electric wire is also located at this elevation.

3 Golf Center, # 311 ● Hoffman Estates, Illinois 60169
TEL-847-882-7773 FAX-847-310-9275 MOBILE-847-867-6117
E-Mail: MSASchapman@cs.com
www.msatelecom.com

An existing AT&T communications line is mounted on the pole at 19.67' (6.00 meters) AGL. A guy wire connection is located at 18.92' (5.77 meters) AGL. A Comcast telecommunications cable is also mounted at the same elevation as the guy wire. Other than a Comcast cable riser which extends from grade to a height of 10.42' (3.18 meters) AGL, there are no other existing utilities or appurtenances on the pole.

FCC 2014 Authorization Order "Shot Clock" Period of Review: Concordia Wireless, representative for Verizon Wireless, submitted its application for a permit to the Village on August 7, 2020. A letter sent to Owen Nason, Site Development Specialist for Concordia Wireless was sent by MSA on August 26, 2020, and clarified on September 3, 2020, requesting additional information from Concordia Wireless or Verizon Wireless. The application review period was tolled until September 14, 2020 when Concordia Wireless responded with the remaining information requested by MSA.

The review period for Eligible Facilities Requests such as that proposed by Concordia Wireless and Verizon Wireless is sixty (60) days per the requirements of the FCC Declaratory Order and ninety (90) days per SWFDA. The project application review period was tolled for a period of eleven (11) days. As of the date of this report, forty-seven (47) days have elapsed.

The proposed project does not require a Special Use Permit as the project is not subject to the Village's Zoning Ordinance due to its location in a public right-of-way. The location of the proposed project in the public right-of-way also classifies it as a Permitted Use under SWFDA (see 50 ILCS 840/15(c)). Other than issuance of required building permits, MSA recommends no additional action from the Village.

Proposed Project Modifications – Radios

Verizon proposes the addition of three (3) Ericsson series 6701 "Streetmacro" radios. These radios actually are dual radio units which operate on two (2) separate transmission and reception bands, and which contain integrated antennas. These radios operate at sub-millimeter wave levels of 27.5 GigaHertz (GHz) to 28.35 GHz. They are considered to be Fifth Generation (5G) radios. The three (3) Series 6701 radio/antenna units will be mounted to the circumference of the pole at 33.16' (10.11 meters) with equal space separation around the pole shaft. These radios have dimensions of 20.1" (.511 meters) in height, 7.9" (.200 meters) in width, and 4.9" (.125 meters) in depth. Each radio weighs 30.8 pounds (14.0 kilograms). A fourth Ericsson Series 4408 Citizens Broadband Radio Service (CBRS) radio will be mounted at 33.16' (10.11 meters). This radio operates in the 3.55 - 3.700 GHz range and is also considered to be a 5G radio. The Series 4408 CBRS radio has dimensions of 8.39" (.213 meters) in height, 7.87" (.200 meters) in width, and 4.13" (.105 meters) in depth. The radio weighs 10.1 pounds (4.59 kilograms).

The project envisions locations for radios to be installed in the future. These radios will be mounted between 13.33' (4.06 meters) and 16.25' (4.95 meters) AGL. The future radios include Ericsson Series 4449 and 8843 radios. These radios operate in the 750-850 MHz, and 1.9 GHz-2.1 GHz bandwidth blocks, respectively. These are 4G/LTE frequencies that are intended to provide 4G/LTE service for those continuing to use 4G phones and other devices. The Series 4449 radios are 17.9" (.455 meters) in height, 13.19" (.335 meters) in width, and 9.45" (.240 meters) in depth, and it weighs 70.55 pounds (32.07 kilograms). The Series 8843 radios are 14.96" (.380 meters) in height, 13.19" (.335 meters) in width, and 10.9" (.277 meters) in depth, and it weighs 71.87 pounds (32.67 kilograms).

Another set of radios to be installed will be Ericsson Series 2205 and 2208 radios that will be housed in two (2) dual radio support boxes to be mounted opposite each other on the pole shaft. Each box will contain a Series 2205 and Series 2208 radio. The radios operate in the 3.55 - 3.700 GHz radios and will provide 5G service. The radio support box housing these radios will be mounted at 13.33' (4.06 meters) AGL. Dimensions for the radio support box are 17.1" (.435 meters) in height, 7.9" (.200 meters) in width, and 5.3" (.134 meters) in depth. The box weighs 21.6 pounds (9.8 kilograms). A power supply unit will be located next to each radio inside its support box. The power supply unit measures 13" (.331 meters) in height, 11.4" (.290 meters) in width, and 3.9" (.099 meters) in depth. Each power supply weighs 22.05 pounds (10.02 kilograms).

A unit of four (4) diplexers, shown on the plans as a dual-band combiner, will be mounted at 16.0' (4.88 meters) AGL and adjacent to the radio support boxes. The diplexer unit has dimensions of 7.32" (.187 meters) in height, 6.14" (.156 meters) in width, and 6.4" (.163 meters) in depth. The diplexer unit weighs 6.9 pounds (3.13 kilograms).

Verizon proposes to install a fiber enclosure box and a breaker box beneath the radio support boxes. Both boxes will be mounted on the pole at 11.0' (3.35 meters) AGL. The dimensions for the fiber enclosure box are 16.0" (.407 meters) in height, 10.0" (.254 meters) in width, and 6.0" (.152 meters) in depth. The fiber enclosure box weighs 12 pounds (5.4 kilograms). The breaker box will contain two (2) 20-Amp circuits and a 60-amp circuit. The breaker box is designed to accommodate up to four (4) additional 15-Amp circuits for future use. The dimensions of the breaker box are 12.6" (.321 meters) in height, 8.9" (.226 meters) in width, and 4.3" (.109 meters) in depth. The breaker box weighs 9.8 pounds (4.45 kilograms).

The following are the points on the pole at which the small cell, street light, and related equipment will be mounted:

Small Cell/Light Component	Prior Installation Height	New Installation Height
Total Height with Antenna:	-----	37.58' (11.46 meters) AGL
Antenna Centerline Height:	-----	36.58' (11.15 meters) AGL
Antenna Base Height:	-----	35.75' (10.90 meters) AGL
Ericsson CBRS Radio	-----	33.16' (10.11 meters) AGL
Ericsson 6701 Radios	-----	33.16' (10.11 meters) AGL
Top of Pole:	29.58' (14.38 meters) AGL	34.75' (10.59 meters) AGL
Street Light Extension Arm and Luminaire:	24.92' (07.60 meters) AGL	24.92' (07.60 meters) AGL
Bottom of Street Light Arm	22.58' (06.88 meters) AGL	22.58' (06.88 meters) AGL
New Fiber Optic Cable	-----	18.92' (05.77 meters) AGL
Fiber "Meet Me" Point	-----	18.92' (05.77 meters) AGL
Four (4) Pack of Diplexers	-----	16.00' (04.88 meters) AGL
Two (2) Power Units	-----	14.00' (04.27 meters) AGL
Ericsson 2205 and 2208 Radios	-----	13.33' (04.06 meters) AGL
Ericsson 4449 and 8843 Radios:	-----	13.33' (04.06 meters) AGL
Bottom of Future Equipment Mount:	-----	13.33' (04.06 meters) AGL
Service Disconnect Breaker Box:	-----	11.00' (03.35 meters) AGL
Fiber Enclosure Box:	-----	11.00' (03.35 meters) AGL

Verizon also proposes a cylindrically-shaped radome antenna manufactured by JMA Wireless. The JMA antenna is 24.0" (.731 meters) in height and 14.6" (.372 meters) in width. The JMA antenna weighs 30.0 pounds (13.6 kilograms).

The JMA "Cantenna," has 18 ports. Four (4) ports support frequencies in the 698-960 MHz block, eight (8) ports support 1.698 -2.69 GHz frequency blocks, four (4) ports support 3.400 - 4.200 GHz frequency blocks, and two (2) ports support 5.150-5.925 GHz frequency blocks. The latter two (2) sets of frequency blocks are used to provide 5G services. The "Cantenna" will support all of the Ericsson radios other than the 6701 Streetmacro series that contain their own antennas.

Grounding: Verizon proposes grounding of its "Cantenna" to a home run ground wire using #4 copper green insulated wire. The CBRS radio, Ericsson 6701 radios, and antenna pipe mounts are also grounded to the home run ground wire by separate #4 copper green insulated wires. As the home run ground wire descends the pole shaft, the diplexer unit, radio support boxes, including the future Ericsson 4449 and 8843 radios, Ericsson 2205 and 2208 radios to be installed initially, along with the fiber enclosure box, and the breaker box will be grounded to the home run ground wire by separate #4 copper green insulated wires.

The home run ground wire will be connected at just below ground level to a #2 tinned solid bare copper conductor wire measuring 12" (.305 meters) in length. The #2 conductor wire will be attached to an 8' (2.44 meters) ground rod buried at a depth of 9' (2.74 meters) below ground level. Verizon's grounding plan was comprehensive and acceptable.

Structural Evaluation: Verizon included a structural evaluation prepared by Concordia Wireless, Inc., of Carol Stream, Illinois on June 23, 2020. The evaluation indicated that the modified utility pole intended to hold the small cell would be sufficient to support Verizon's proposed loads, including those of the mast arm and luminaire. (1).

The pole was subjected to the American National Standards Institute (ANSI) C2-2017 Rule 250B and Rule 250C standards. The ANSI 250B standards utilize criteria of wind speeds of 39.53-MPH with ice of up to 1/2" in thickness (2). The ANSI 250C standards utilize criteria of a wind speed of 90-MPH, a maximum wind speed of 92.91-MPH, and wind pressure of 20.74 pounds per square foot (PSF)(3). Based on the results of the tests, the pole received a combined strength factor rating of 98.3% under heavy load standards under the ANSI 250B and ANSI 250C standards (4)

These ratings indicate that the pole would be adequate to support the radome antenna, combined antenna/radio units, as well as radios mounted on the lower section of the pole, and the fiber enclosure box, breaker box, diplexers, and cabling. It should be noted that higher structure rating percentages indicate less capacity on the pole to accommodate additional antennas, radios, and other equipment, and for such equipment to withstand high wind speeds and loads. The structural evaluation is attached.

Requested Information of Applicant

A letter from Municipal Services Associates, Inc. to Mr. Owen Nason, Site Acquisition Specialist for Concordia Wireless, Inc., originally sent on August 26, 2020, and revised on September 3, 2020, requested additional information from Concordia and Verizon Wireless regarding the following:

- A statement indicating that Verizon will comply with the applicable requirements fo 50 ILCS 840/15(d)(6) per the requirements of the Small Wireless Facilities Deployment Act.

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(1) Concordia Wireless, Inc., Structural Calculations Modification, Project No. 20171626078, 1 Arthur Avenue, June 23, 2020, at 2 .
(2) *Ibid,* O-Calc Pro Analysis Report, NESC Rule 250B at 1.
(3) *Ibid,* O-Calc Pro Analysis Report, NESC Rule 250C at 1.
(4) *Ibid,* at 2.

- A proposed schedule for the installation and completion of the small wireless facility covered by the application, if approved, in accordance with 50 ILCS 835/15(d)(2)(E).

- Before-and-After photographs of the proposed small wireless facility as it will appear on the utility pole (Application Checklist - Item #2)

- An emergency contingency plan which shall specify the nature of any potential emergencies, including, without limitation, construction and hazardous materials emergencies, and the intended response by the applicant. The intended response shall include notification to the Village and shall promote protection of the safety and convenience of the public (Application Checklist - Item #7). Please indicate if this has already been provided to the Village.

- Documentation establishing that the proposed installation will comply with all ordinances of general application pertaining to installations in the Right-of-Way and Right-of-Way usage. (Application Checklist - Item #14)

- Proof of minimum mandatory insurance, including self-insured retentions. (Application Checklist - Item #15). Please indicate if this has already been provided to the Village.

Mr. Nason responded to the Village's Request for Information on September 14, 2020, and clarified information requested by the Village concerning the proposed electrical contractor. Mr. Nason responded to that request on September 29, 2020. Concordia submitted all of the information required of it for a small cell antenna permit application. No additional information was required, and Concordia and Verizon's submission of requested information as part of the permitting and review process was found to be acceptable. As of October 6, 2020, the application was complete.

Radio Frequency Emissions Safety Compliance: The FCC completely occupies the field as to setting RF safety standards in the United States. The Village is not permitted to set its own standards regardless of whether higher, lower, or even the same as the FCC's standards. The Commission derives its authority under a provision of the National Environmental Policy Act (NEPA) of 1969.

The Commission permits the Village to determine if a proposed wireless project meets the required FCC 47 CFR § 1.1307 et seq. (the "FCC rules") and FCC Office of Engineering and Technology Bulletin 65 ("OET 65") RF safety requirements. The actual standards set by the Commission are found in the FCC Office of Engineering and Technology Bulletin 65, titled "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields."

A website containing the bulletin is at
http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf.

Under the FCC rules, certain types of wireless projects are deemed to be "categorically excluded," thus not subject to further RF evaluation under the rules due to identified factors including: whether the antenna supporting structure is a building or is shared to perform some other function, and the lowest portion of the transmitting antenna is at least 10 meters (32.8 feet) above ground.

The proposed project will be operated as a Broadband Personal Communications Services, and that the lowest point of the antenna will be located at 34.58' (10.54 meters), a point that is 1.68' (.512 meters) above the threshold ceiling for regulation of RF exposure of 32.8' (10.00 meters). The proposed project qualifies for categorical exclusion under the FCC rules because the lowest point of each transmitting antenna is greater than 10 meters above ground.

Radio Frequency Interference Issues: The use of panel antennas, small cell antennas, and other forms of wireless telecommunications create a concern that radio frequencies used by cellular and wireless providers might interfere with radio frequencies used for local government public safety and public services communications. Verizon Wireless and other wireless Internet providers may be using a radio frequency spectrum that had been previously used for analog television transmission. Other frequencies formerly used for television transmission will be allocated by the FCC to local governments for public safety uses.

To address this concern, Verizon Wireless provided a statement that it would comply with the requirements of 50 ILCS 840/15(d)(6), a statute within the Illinois Small Wireless Facilities Deployment Act concerning radio frequency interference with public safety responders. Verizon's statement is attached.

Regulatory Summary

The proposed project includes modification of an existing utility pole. The modifications include addition of a radome antenna, three (3) combination antenna/radio units, a Citizens Broadband Radio Service radio unit, four (4) radios reserved for future use and radio power supplies enclosed in two (2) radio support boxes, a unit of four (4) diplexers, a fiber optic cable, fiber optic enclosure box, a breaker box, along with jumper cables, ground wiring, and a ground rod. The proposed project is consistent with the definition of an *Eligible Facilities Request* as stated in 47 CFR §1.6100(b)(3).

Having reviewed the current project plans for this site, MSA's opinions as the Village's technology expert are as follows:

1. The instant project is a "collocation of new transmission equipment" within the meaning of 47 CFR §1.61000(b)(2); and

2. The instant project is a Small Wireless Facilities project as defined by the Federal Communications Commission Declaratory Ruling and Third Report and Order In the Matter of Accelerating Broadband Deployment by Removing Barriers to Infrastructure Investment, Dockets 17-79 and 17-84, Released September 27, 2018. The project is subject to the fees and timetables specified in the Declaratory Ruling, and is also subject to the Spectrum Act at 47 CFR §1.61000. Under the Declaratory Ruling, the Village cannot subject the proposed project to zoning regulations, and must allow the placement of the proposed project.

3. The Illinois Small Wireless Facilities Deployment Act (50 ILCS 840 *et seq.*) (SWFDA)is applicable with respect to its requirements that do not conflict with those of the FCC Declaratory Ruling. To that end, the instant project is consistent with the definition of a Small Wireless Facility under SWFDA, and that its location in a public Right-of-Way exempt it from local zoning regulations and classifies it as a permitted use. The instant project meets the height and volume requirements established by SWFDA and is consistent with design standards established by the Village of Clarendon Hills that are in accordance with requirements set by SWFDA and the FCC Declaratory Order.

Recommendations

Verizon's small cell project located at 1 Arthur Avenue, is the wireless provider's first installation of 5G service in Clarendon Hills. The frequencies that Verizon will use for 5G service will provide substantial increases in wireless capacity and signal delivery speed and throughput.

The proposed modifications to Verizon's small cell project located at 1 Arthur Avenue, are a clear indication of Verizon's intention to provide 5G services to Metra commuters, residences, and vehicular traffic, in Clarendon Hills. Verizon's small cell installation is intended to improve cellular performance in the surrounding area at and near the Metra station, and to provide a wider availability of signal channels and radio frequency spectrums in order to meet ever-expanding demand. None of the proposed antennas and radios operate at frequencies that are considered by the wireless industry or the FCC to be classified as "Millimeter Wave" frequencies, although the Ericsson Series 6701 "Streetmacro" combination antenna/radio units operate at sub-millimeter wave levels of 27.5 GHz to 28.35 GHz.

MSA recommends that the antennas and equipment be painted a neutral color in order to blend in with the surrounding environment and mitigate visual obstruction. MSA also recommends that if it has not already done so, that Concordia Wireless provide a plan for traffic safety for implementation during the installation of the small cell as it is likely that construction vehicles will block portions of Arthur Avenue and Burlington Avenue.

Should the Village have any questions concerning this report, or if any additional background is needed, please contact me at your first opportunity.

Sincerely,

Stuart Chapman

Stuart Chapman, President
Municipal Services Associates, Inc.

Attachments

cc: Kevin Barr, Village Manager
Brendan McLaughlin, Director of Public Works
Zach Creer, Assistant to the Village Manager
Owen Nason, Concordia Wireless, Representative for Verizon Wireless (ls./att.)

Concordia Wireless, Inc.
ConcordiaWireless.Com

August 7, 2020

Dan Ungerleider, AICP
Community Development Director
Village of Clarendon Hills
1 North Prospect Avenue
Clarendon Hills, IL 60514

Submitted electronically on 8/7/2020 to dungerleider@clarendonhills.us.

Re: Verizon / ComEd Pole – Consolidated Small Wireless Facilities Permit Applications

Dear Mr. Ungerleider,

The enclosed package contains documents & plans necessary to reapply to the Village of Clarendon Hills for a Small Wireless Facilities Permit for the site referenced below:

Verizon Location #: 456201
Site Name: Burlington & Arthur SC
Closest Address: 1 Arthur Ave
City: Clarendon Hills
State / Zip code: IL 60514

Verizon Wireless proposes to collocate a small wireless facility on an existing COMED Utility Pole located in the public R.O.W.

Referencing 18-07-20, An Ordinance Amending the Village Code of the Village of Clarendon Hills Relative to the Permitting, Regulation and Deployment of Small Wireless Facilities. Concordia Wireless, Inc. as Agent to Verizon Wireless respectfully submits to the Village of Clarendon Hills for review and granting of a permit package containing the following:

- Village of Clarendon Hills Small Wireless Facilities Permit Application;
- Stamped Construction Drawings. The CDs include the equipment type and model numbers for the antenna and all other wireless equipment associated with the small wireless facility;
- Maps and photographs of the pole proposed for collocation; and,
- Site Specific Structural Analysis (Passing) of the pole proposed for collocation.

Concordia Wireless, Inc.
ConcordiaWireless.Com

The small wireless facility installation takes approximately eight (8) weeks, with construction activities commencing in the beginning of 4Q2020. Construction activities would not be of disturbance to any parties traveling in or about the area. By installing the small wireless facility, it would improve Verizon Wireless' Network performance and contribute to enhancing data transfer speeds by way of the small wireless facility offloading service from other sites.

If you should have questions or comments regarding this submittal, please do not hesitate to give me a call. I can be reached at (224) 239-0831.

Sincerely,

Owen Nason
Site Acquisition Specialist II
C: (224) 239-0831
Concordia Wireless, Inc. as Agent to Verizon Wireless

Burlington & Arthur SC 456201

Village of Clarendon Hills
1 North Prospect Avenue
Clarendon Hills, Illinois 60514

Community Development Department
630-286-5410
www.clarendonhills.us

SMALL WIRELESS FACILITIES PERMIT APPLICATION

APPLICANT INFORMATION

Applicant Name:	Date of Application:
Owen Nason	8/6/2020

Applicant is a: ☐ Wireless Provider ☑ Representative ☐ Other (please specify):
Concordia Wireless as agent for Chicago SMSA limited partnership d/b/a Verizon Wireless

WIRELESS PROVIDER INFORMATION

Wireless Provider Name:
Chicago SMSA limited partnership d/b/a Verizon Wireless

Wireless Provider Address:
1515 Woodfield Rd, Suite 1000

City:	State:	ZIP Code:
Schaumburg	IL	60173

Phone:	Email:
(847) 706-7600	edwardrios1@verizonwireless.com

CONTACT PERSON FOR THIS PROJECT

Contact Person Name:
Owen Nason Concordia Wireless as agent for Chicago SMSA limited partnership d/b/a Verizon Wireless

Contact Person Address:
361 Randy Road, Ste 101

City:	State:	ZIP Code:
Carol Stream	IL	60188

Phone:	Email:
(224) 239-0831	onason@concordiawireless.com

PROPOSED SITE LOCATION

Property Address:
1 Arthur Ave, Clarendon Hills, IL 60514

Closest Intersection (Distance and Direction from):	Right of Way ☒
Pole is located on the north side of Burlington Ave - Approx 32 feet northast from the intersection of Burlington Ave and Arthur Ave	Private Property ☐
Zoning District: N/A. Public ROW	PIN (if not right-of-way):

Village of Clarendon Hills
1 North Prospect Avenue
Clarendon Hills, Illinois 60514

Community Development Department
630-286-5410
www.clarendonhills.us

EXISTING UTILITY POLE/WIRELESS SUPPORT STRUCTURE INFORMATION			
Does the Project Involve a New Pole? Yes ☐ No ☒			
Pole/Structure ID Number:	Height of Pole/Wireless Support Structure (feet): 29'-7"	Pole Color:	Pole Type:
Existing Attachment(s) on Utility Pole/Wireless Support Structure? (*e.g.*, banners, light fixtures) Yes ■ No ☐ If yes, please specify: streetlight			
Owner of Pole/Wireless Support Structure: COMED			
Name of Pole/Wireless Support Structure Representative: Manny Alonso			
Address: Three Lincoln Centre			
City: Oakbrook Terrace	State: IL	ZIP Code: 60181	
Office Phone: 630-437-2214	Cell Phone:	E-mail: manny.alonso@ComEd.com	
NOTE: If the proposed Small Wireless Facility is to be attached to an existing pole owned by an entity other than the Village, the Applicant/Wireless Provider must, with the application, provide legally competent evidence of the consent of the Owner of the Pole to the proposed collocation. Permission Received: Yes ☐ No ☐			

PROPERTY OWNER INFORMATION (IF PROPERTY NOT VILLAGE-OWNED RIGHT-OF-WAY)		
Property Owner Name:		
Property Owner Address:		
City:	State:	ZIP Code:
Phone:	Email:	
NOTE: If the Small Wireless Facility is to be attached to an existing or new pole or wireless support structure located on property that is not Village-owned right-of-way, the Applicant/Wireless Provider must provide legally competent evidence of the consent of the Private Property Owner to the proposed collocation. Permission Received: Yes ☐ No ☐		

CONTRACTOR INFORMATION	
Name of Contractor:	Type of Contractor:
1. Meade	General and Electric
2.	
3.	
All contractors performing work in the Village must be [licensed/registered] by the Village prior to the issuance of any permit. Please provide appropriate proof of contractor licensing.	

OTHER APPROVALS
If any of the Projects are situated within rights-of-way of the Illinois Department of Transportation or of the DuPage County Highway Department, then additional permits from those entities must be obtained and provided as part of this application before a permit may issue.

APPLICATION CHECKLISTS AND REQUIREMENTS

Each Application must be accompanied by the following to be deemed complete:

1. Site specific structural integrity and, for a Village utility pole, make-ready analysis prepared by a structural engineer, as that term is defined in Section 4 of the Structural Engineering Practice Act of 1989, including a certification by the structural engineer that the utility pole or wireless support structure meets the requirements of the applicable code;

2. The location where each proposed small wireless facility, utility pole or wireless support structure would be installed and digital photographs of the location and its immediate surroundings depicting the utility poles or structures on which each proposed small wireless facility would be mounted or location where utility poles or structures would be installed. The photographs shall include a digital photo simulation of the proposed location providing "before and after" views, demonstrating the true visual impact of the proposed wireless facilities on the surrounding environment;

3. Specifications and drawings prepared by a structural engineer, as that term is defined in Section 4 of the Structural Engineering Practice Act of 1989, for each proposed small wireless facility covered by the application as it is proposed to be installed, including a certification by the structural engineer that the drawings and specifications comply with all applicable codes, rules and regulations;

4. The equipment type and model numbers for the antennas and all other equipment associated with the small wireless facility;

5. A proposed schedule for the installation and completion of each small wireless facility, utility pole and wireless support structure covered by the application, if approved;

6. A traffic control plan demonstrating the protective measures and devices that will be employed consistent with the Illinois Manual of Uniform Traffic Control Devices, to prevent injury or damage to persons or property and to minimize disruptions to efficient pedestrian and vehicular traffic. If it is claimed that no traffic control plan is necessary, a statement setting forth the basis for no traffic control;

7. An emergency contingency plan which shall specify the nature of any potential emergencies, including, without limitation, construction and hazardous materials emergencies, and the intended response by the applicant. The intended response shall include notification to the Village and shall promote protection of the safety and convenience of the public;

8. Copies of all licenses, permits and approvals required by or from the Village (i.e. zoning approval, where required), other agencies and units of government with jurisdiction over the design, construction, location and operation of said small wireless facility. The applicant shall maintain such licenses, permits and approvals in full force and effect and provide evidence of renewal or extension thereof when granted;

9. In the event the small wireless facility is proposed to be attached to an existing utility pole or wireless support structure owned by an entity other than the Village, legally competent evidence of the consent of the owner of such pole or wireless support structure to the proposed collocation;

10. In the event the small wireless facility is to be located on private property outside of the right-of-way, legally competent evidence of the consent of the owner of such property to the proposed collocation;

11. Application Fee(s);

APPLICATION CHECKLISTS AND REQUIREMENTS (continued)

12. If the proposed installation includes ground-mounted equipment, compliance with any applicable Village standards, including, where required: a landscape plan showing specific landscape materials, method of fencing, finished color and, if applicable, the method of camouflage or concealment;

13. Copy of existing Master Pole Attachment Agreement with the Village relative to Small Wireless Facilities, if any, if seeking to locate on a Village owned utility pole or wireless support structure;

14. Sufficiently detailed documentation establishing that the proposed installation will comply with all ordinances of general application pertaining to installations in the right-of-way, right-of-way usage and the National Electric Code; and

15. Proof of minimum mandatory insurance, including self-insured retentions.

Village of Clarendon Hills
1 North Prospect Avenue
Clarendon Hills, Illinois 60514

Community Development Department
630-286-5410
www.clarendonhills.us

ATTESTATION, ACKNOWLEDGMENT & SIGNATURE

I attest, to the best of my knowledge and belief, that the information stated in this application and in all supporting plans and documents is true and accurate. In addition, to the best of my knowledge and belief, the proposed collocation of the small wireless facility sought by this application complies with the written design standards established by the Village, and with the various other requirements set forth in the Small Wireless Facilities Deployment Act (P.A. 100-585), Chapter 60 of the Village Code as may be amended from time to time, and other applicable provisions of the Village Code.

This is an application only. Completion of this application does NOT entitle the applicant to commence construction. I, the applicant, agree to conform to all applicable laws of the Village. I also agree that all work performed will be in accordance with the plans and specifications as set forth in the approved permit. I understand that the approval of this application and issuance of a permit does not obviate the need to comply with all applicable laws and ordinances. I agree to hold harmless and indemnify the Village for any claim against the Village as the result of any act of commission or omission by or on behalf of the undersigned, his/her agent, principle, contractor, subcontractor or supplier. I, the undersigned, am the duly authorized and contracted representative of the applying entity/owner of the small wireless facility.

Signature of Applicant: Owen Nason	Date: 8/7/2020
Printed Name of Applicant: Owen Nason	Title: Site Acquisition Specialist II

State of ILLINOIS County of DUPAGE

Signed and sworn (or affirmed) to before me on 7th day of July 2020 by OWEN NASON.

Vafa Askarova
Signature of Notary Public

VAFA ASKAROVA
Official Seal
Notary Public - State of Illinois
My Commission Expires Jan 3, 2023

****FOR ADMINISTRATIVE USE ONLY****

Date Application was submitted: AUGUST 21, 2020

Application Is: ☒ Complete / ☐ Incomplete as of _____

If incomplete, date the Applicant was notified: _____

Missing documents or information:

Date Application was ☒ approved / ☐ denied _____

See 10/14/2020 memorandum to file from Community Development Director Dan Ungerleider for detailed review and conditions of permit issuance.

VILLAGE OF CLARENDON HILLS

APPROVED

This approval does not relieve applicant from responsibility of conforming with provisions of Building and Zoning Ordinances

Dan Ungerleider
2020.10.15
16:24:54 -05'00'

CHICAGO SMSA

limited partnership
d/b/a VERIZON WIRELESS

MODIFICATION

Project Number	Location Number	Site Name	Site Address
20171626078	456201	BURLINGTON AND ARTHUR SC	1 ARTHUR AVE CLARENDON HILLS, IL 60514

SCOPE OF WORK

(1) FUTURE LESSEE CANISTER ANTENNA
(3) NEW LESSEE RADIOS W/INTEGRATED ANTENNAS
(1) FUTURE ERICSSON RADIO 4449
(1) FUTURE ERICSSON RADIO 8843
(1) FUTURE CBRS RADIO
MOUNTED ON A 29'-7" HIGH EXISTING UTILITY POLE
POWER: OVERHEAD DROP
FIBER: OVERHEAD DROP

DRIVING DIRECTIONS

DRIVING DIRECTIONS FROM 1515 WOODFIELD RD, SCHAUMBURG

1. HEAD NORTH 0.2 MI
2. TURN RIGHT ONTO WOODFIELD RD 0.2 MI
3. TURN LEFT ONTO E HIGGINS RD 0.3 MI
4. USE THE RIGHT 2 LANES TO TURN RIGHT ONTO FRONTAGE RD 0.1 MI
5. USE THE LEFT 2 LANES TO TAKE THE INTERSTATE 290 E RAMP TO CHICAGO 0.4 MI
6. KEEP RIGHT AT THE FORK TO STAY ON I-290 E, FOLLOW SIGNS FOR CHICAGO 4.4 MI
7. TAKE EXIT 10A TOWARD IL-83 S 0.4 MI
8. MERGE ONTO IL-83 S 7.3 MI
9. TAKE THE US 34/OGDEN AVE EXIT 0.3 MI
10. TURN RIGHT ONTO US-34 W/E OGDEN AVE 0.8 MI
11. TURN LEFT ONTO WOODSTOCK AVE 0.5 MI
12. TURN RIGHT ONTO E CHICAGO AVE 436 FT
13. TURN LEFT ONTO ARTHUR AVE 0.5 MI

DESTINATION WILL BE ON THE LEFT

TOTAL TRAVEL ESTIMATE: 20.3 MI, 38 MINS

PROFESSIONAL LICENSURE

I CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF THE GOVERNING LOCAL BUILDING CODE.

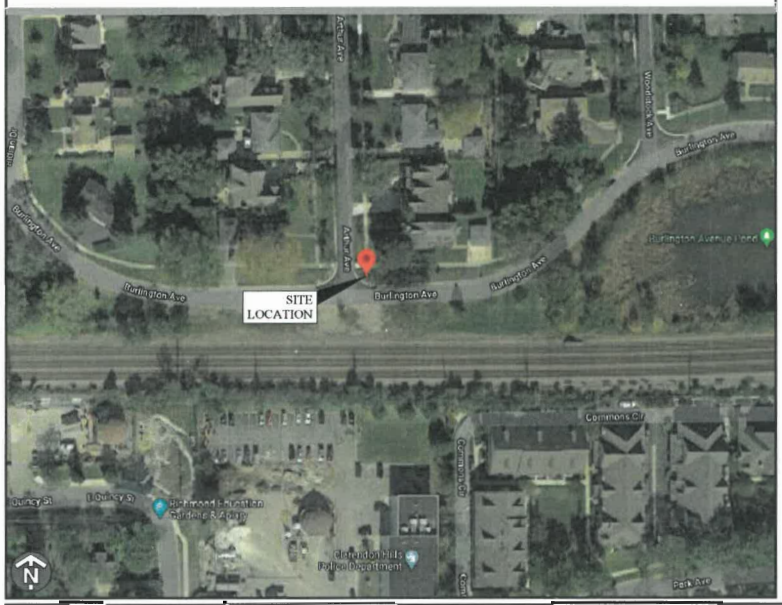
STATE OF ILLINOIS
NABI R. FAKRODDIN
3377
ST. CHARLES
LICENSED STRUCTURAL ENGINEER

LICENSED STRUCTURAL ENGINEER -
STATE OF ILLINOIS - LICENSE # 081-3377

EXPIRES: 11/30/20

SIGNED: 06/22/20

AERIAL MAP



SHEET INDEX

NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
SP-1	GENERAL NOTES
SP-2	GENERAL NOTES AND SPECIFICATIONS
LP-1	MAP & EXHIBIT PHOTOS
A-0	SITE PLAN
A-1	TRAFFIC CONTROL PLAN
A-2	EXISTING POLE W/PROPOSED EQUIPMENT ELEVATION
A-3A	SCHEMATIC DIAGRAM
A-3B	FIBER CONNECTION DETAILS
A-3C	RFDS SHEETS
A-3D	RFDS SHEETS
A-3E	RFDS SHEETS
A-4A	EQUIPMENT SPECIFICATIONS
A-4B	EQUIPMENT SPECIFICATIONS
A-4C	EQUIPMENT SPECIFICATIONS
A-4D	EQUIPMENT SPECIFICATIONS
A-4E	EQUIPMENT SPECIFICATIONS
A-5	EQUIPMENT MOUNTING DETAILS
A-5A	ANTENNA MOUNT & POLE EXTENSION DETAILS
A-5B	EQUIPMENT MOUNTING DETAILS
E-1	ELECTRICAL DIAGRAM & DETAILS
G-1	GROUNDING DETAILS

811
Know what's below. Call before you dig.
CALL J.U.L.I.E. FOR UNDERGROUND UTILITIES PRIOR TO DIGGING
811 OR 1-800-892-0123

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS AT THE PROJECT SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GC SHALL CONTACT THE A&E FIRM PRIOR TO BIDWALK AND CONSTRUCTION START TO CONFIRM THAT DRAWINGS ARE THE MOST RECENT SET.

PROJECT INFORMATION

APPLICANT:	CHICAGO SMSA LIMITED PARTNERSHIP d.b.a. VERIZON WIRELESS 1515 WOODFIELD ROAD SUITE 1000 SCHAUMBURG, IL 60173
SITE ACQUISITION:	CONCORDIA WIRELESS, INC. 361 RANDY ROAD UNIT 101 CAROL STREAM, IL 60188
CONTACT:	MARISA GREEN PHONE: (847) 981-0801
POLE OWNER:	COMED

LATITUDE:	N 41° 47' 45.23" (NAD 83) N 41.795897 (NAD 83)
LONGITUDE:	W 87° 57' 53.01" (NAD 83) W 87.964725 (NAD 83)
GROUND ELEV:	736.30' AMSL (NAVD 88) (PER 1A LETTER DATED 2-12-2018)
SITE TYPE:	UTILITY POLE
JURISDICTION:	VILLAGE OF CLARENDON HILLS
COUNTY:	DUPAGE
R.O.W.:	VILLAGE OF CLARENDON HILLS
UTILITIES:	
POWER:	COMED (ACC#: 31711-60047)
FIBER:	MCI METRO ATS

PROJECT MANAGER CONTACT:	VERIZON WIRELESS EDWARD RIOS 1515 WOODFIELD ROAD SUITE 1000 SCHAUMBURG, IL 60173 PHONE: (312) 914-3875
ENGINEERING & SURVEYING CONTACT:	CONCORDIA WIRELESS, INC. GM SADAT, PE PHONE: (847) 981-0801 FAX: (847) 981-0803
CONTACT:	PATRYK STELMASZAK PHONE: (847) 981-0801

CODES:

1. INTERNATIONAL BUILDING CODE 2015
2. NATIONAL ELECTRIC CODE (NEC)
3. AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION
5. TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL TOWER AND ANTENNA SUPPORTING STRUCTURES
6. TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
7. ANSI C2 2007 (NESC 2007)
8. COMED TPA SPEC (C-7526)

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

CONCORDIA, LTD
A PROFESSIONAL DESIGN FIRM
LICENSE # 3323-011- D.B.A.
CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

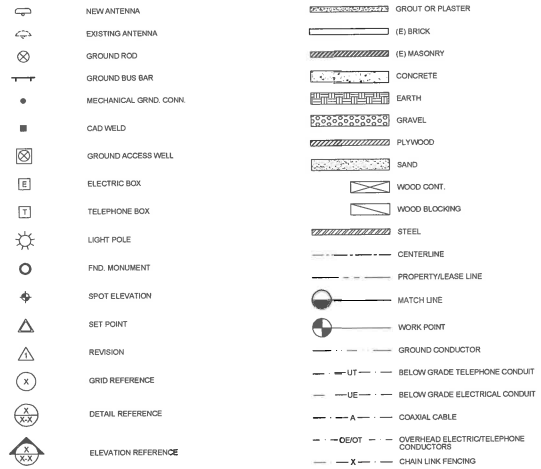
DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

No.	Revision/Issue	Date	Initial
1	90% REVIEW	02/16/18	MK
2	90% REVISION	04/04/18	JR
3	FINAL	11/12/18	AM
4	VILLAGE COMMENTS	12/17/18	RE
5	ANTENNA SWAP	02/14/19	AM
6	FINAL (RFDS REV)	04/25/19	AM
7	EQUIPMENT REDESIGN	05/29/20	SHK/RE
8	FINAL	06/22/20	AAS/AK

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1



1 PROJECT SYMBOLS
SCALE: NTS

ABV.	ABOVE
ADD'L	ADDITIONAL
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
ALUM.	ALUMINUM
ALT.	ALTERNATE
ANT.	ANTENNA
APPRX.	APPROXIMATE(LY)
ARCH.	ARCHITECT(URAL)
AWG.	AMERICAN WIRE GAUGE
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BM.	BEAM
BTCW.	BARE TINNED COPPER WIRE
B.O.F.	BOTTOM OF FOOTING
B/U	BACK-UP CABINET
CAB.	CABINET
CANT.	CANTILEVER(ED)
C.I.P.	CAST IN PLACE
CLG.	CEILING
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION(OR)
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
DBL.	DOUBLE
DEPT.	DEPARTMENT
DIA.	DIAMETER
DIAG.	DIAGONAL
DIM.	DIMENSION
DWG.	DRAWING(S)
DWL.	DOWEL(S)
EA.	EACH
EL.	ELEVATION
ELEC.	ELECTRICAL
ELEV.	ELEVATOR
EMT.	ELECTRICAL METALLIC TUBING
ENG.	ENGINEER
EQ.	EQUAL
EXP.	EXPANSION
EXIST.(E)	EXISTING
EXT.	EXTERIOR
FAB.	FABRICATION(OR)
F.F.	FINISH FLOOR
F.G.	FINISH GRADE
FIN.	FINISH(ED)
FLR.	FLOOR
FDN.	FOUNDATION
F.O.C.	FACE OF CONCRETE
F.O.M.	FACE OF MASONRY
F.O.S.	FACE OF STUD
F.O.W.	FACE OF WALL
F.S.	FINISH SURFACE
FT.(')	FOOT(FEET)
FTG.	FOOTING
G.	GROWTH (CABINET)
GA.	GAUGE
GI.	GALVANIZE(D)
G.F.I.	GROUND FAULT CIRCUIT INTERRUPTER
GPS	GLOBAL POSITIONING SYSTEM
GND.	GROUND
HGR.	HANGER
HT.	HEIGHT
IGCB.	ISOLATED COPPER GROUND BUS
IN.(")	INCH(ES)
INT.	INTERIOR
LB.(#)	POUND(S)
L.F.	LINEAR FEET (FOOT)
L.	LONG(ITUDINAL)
MAS.	MASONRY
MAX.	MAXIMUM
MDCMC	METRICOM DESIGNATED CONSTRUCTION MANAGEMENT & CONTRACTING
MECH.	MECHANICAL
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MTL.	METAL
(N)	NEW
NO.(#)	NUMBER
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OPNG.	OPENING
PCS	PERSONAL COMMUNICATION SERVICES
PLY.	PLYWOOD
PRC	PRIMARY RADIO CABINET
P.S.F.	POUNDS PER SQUARE FOOT
P.S.I.	POUNDS PER SQUARE INCH
P.T.	PRESSURE TREATED
PWR.	POWER (CABINET)
QTY.	QUANTITY
RAD.(R)	RADIUS
REF.	REFERENCE
REINF.	REINFORCEMENT(ING)
REQ'D.	REQUIRED
RGS.	RIGID GALVANIZED STEEL
SCH.	SCHEDULE
SHT.	SHEET
SIM.	SIMILAR
SPEC.	SPECIFICATION(S)
SQ.	SQUARE
S.S.	STAINLESS STEEL
STD.	STANDARD
STL.	STEEL
STRUC.	STRUCTURAL
TEMP.	TEMPORARY
THK.	THICKNESS)
T.O.A.	TOP OF ANTENNA
T.O.C.	TOP OF CURB
T.O.F.	TOP OF FOUNDATION
T.O.P.	TOP OF PLATE (PARAPET)
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
TYP.	TYPICAL
U.G.	UNDER GROUND
U.L.	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
V.I.F.	VERIFY IN FIELD
W	WIDE(WIDTH)
W/	WITH
WAP.	WIRED ACCESSED POINT
WCS	WIRELESS COMMUNICATION SERVICE
WT.	WEIGHT
℄	CENTERLINE
℔	PLATE

2 PROJECT ABBREVIATIONS
SCALE: NTS

1. REPRESENTATIVES OF THE OWNER MUST BE NOTIFIED AT LEAST TWO FULL DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

2. DO NOT EXCAVATE OR DISTURB BEYOND THE PROPERTY LINES OR LEASE LINES, UNLESS OTHERWISE NOTED.

3. DO NOT SCALE BUILDING DIMENSIONS FROM DRAWINGS.

4. ANY DRAIN AND/OR FIELD TILE ENCOUNTERED DURING CONSTRUCTION SHALL BE RETURNED TO ITS ORIGINAL CONDITION PRIOR TO COMPLETION OF WORK. SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-CONSTRUCTED DRAWINGS AND ISSUED TO ARCHITECT/ENGINEER AT COMPLETION OF PROJECT.

5. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS, AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ARCHITECT/ENGINEER AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING UTILITIES.

6. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHOULD BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS/HER OWN RISK AND EXPENSE. CONTRACTOR SHALL CALL J.U.L.I.E. AT 1-(800)-892-0123 FOR UTILITY LOCATIONS 48 HOURS PRIOR TO START OF CONSTRUCTION.

7. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS TO BE DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISH ELEVATIONS PRIOR TO FINAL INSPECTION OF WORK.

8. THE BUILDING DEPARTMENT ISSUING THE BUILDING PERMIT SHALL BE NOTIFIED AT LEAST TWO WORKING DAYS PRIOR TO THE COMMENCEMENT OF WORK OR AS STIPULATED BY THE CODE ENFORCEMENT OFFICIAL HAVING JURISDICTION.

9. GRADING OF THE SITE WORK AREA IS TO BE SMOOTH AND CONTINUOUS IN SLOPE AND IS TO FEATHER INTO EXISTING GRADES AT THE GRADING LIMITS.

10. ALL EXCAVATIONS FOR THE INSTALLATION OF FOUNDATIONS, UTILITIES, ETC., SHALL BE PROPERLY LAID BACK OR BRACED IN ACCORDANCE WITH CORRECT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.

11. STRUCTURAL FILLS SUPPORTING PAVEMENTS SHALL BE COMPACTED TO 100% OF MAXIMUM STANDARD PROCTOR DRY DENSITY.

12. NEW GRADES NOT IN BUILDING AND DRIVEWAY IMPROVEMENT AREA TO BE ACHIEVED BY FILLING WITH APPROVED CLEAN FILL AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.

13. ALL FILL SHALL BE PLACED IN UNIFORM LIFTS. THE LIFTS THICKNESS SHOULD NOT EXCEED THAT WHICH CAN BE PROPERLY COMPACTED THROUGHOUT ITS ENTIRE DEPTH WITH THE EQUIPMENT AVAILABLE.

14. ANY FILLS PLACED ON EXISTING SLOPES THAT ARE STEEPER THAN 10 HORIZONTAL TO 1 VERTICAL SHALL BE PROPERLY BENCHED INTO THE EXISTING SLOPE AS DIRECTED BY A GEOTECHNICAL ENGINEER.

15. THE GRADES WITHIN THE FENCED-IN AREA ARE TO BE ACHIEVED BY COMPACTING CLEAN FILL TO A DENSITY OF 90% OF STANDARD PROCTOR COVERING THE AREA WITH 6 MIL VISQUENE (1' OVERLAP AT SEAMS) FOR WEED SUPPRESSION, THEN ACHIEVING FINISH GRADE BY ADDING 6" OF 3/4" CRUSHED STONE-NO FINES.

16. CONTRACTOR SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SO THAT NO PAPERS, TRASH, WEEDS, BRUSH OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE.

17. ALL TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH THE IMPROVEMENTS SHALL BE PROTECTED.

18. GC TO HIRE JULIE PUBLIC & PRIVATE LOCATE SERVICE IN ORDER TO LOCATE AND PROTECT ANY AND ALL SURFACE UTILITIES. DO NOT SCALE OFF THESE PLANS FOR ANY BELOW GRADE UTILITIES.

19. THESE PLANS MAY NOT CONTAIN OR REVEAL ALL SUBSURFACE UTILITIES; GC IS RESPONSIBLE OF LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION

3 GENERAL NOTES
SCALE: NTS

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

CONCORDIA, LTD
A PROFESSIONAL DESIGN FIRM
LICENSE # 3323-011- D.B.A.
CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
SP-1

GENERAL NOTES:

1. CONTRACTOR TO FURNISH AND INSTALL THE FOLLOWING:

   THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS.
   IT IS THE POSITION OF VERIZON WIRELESS TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.

2. VERIZON WIRELESS FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE VERIZON WIRELESS WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, , UNCRATED, PROTECTED AND INSTALLED BY THE

   CONTRACTOR WITH ALL APPURTENCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING UP.

3. ALL EQUIPMENT FURNISHED AND WORK PERFORMED UNDER THE CONTRACT DOCUMENTS SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS OR WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE, UNLESS NOTED OTHERWISE. ANY FAILURE OF EQUIPMENT OR WORK DUE TO DEFECTS IN MATERIALS OR WORKMANSHIP SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE OWNER.

4. ALL WORK, MATERIAL, AND EQUIPMENT SHALL COMPLY WITH ALL REQUIREMENTS OF THE LATEST EDITIONS AND INTERIM AMENDMENTS OF THE NATIONAL ELECTRICAL CODE (NEC). NATIONAL ELECTRICAL SAFETY CODE, OSHA, AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES. ALL ELECTRICAL EQUIPMENT PROVIDED UNDER THIS CONTRACT SHALL BE NEW (EXCEPT WHERE OTHERWISE NOTED) AND SHALL COMPLY WITH THE REQUIREMENTS OF THE UNDERWRITERS' LABORATORIES (U.L.) AND BEAR THE U.L. LABEL.

5. VERIZON WIRELESS OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO THE OWNER OR HIS ARCHITECT/ENGINEER.

6. THE CONTRACTOR SHALL SUPPORT, BRACE AND SECURE EXISTING STRUCTURE AS REQUIRED. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF ANY EXISTING STRUCTURES DURING CONSTRUCTION. FIELD VERIFY ALL EXISTING DIMENSIONS WHICH AFFECT THE NEW CONSTRUCTION.

7. THE CONTRACTOR SHALL NOT ALLOW OR CAUSE ANY OF THE WORK TO BE COVERED UP OR ENCLOSED UNTIL IT HAS BEEN INSPECTED BY THE GOVERNING AUTHORITIES. ANY WORK THAT IS ENCLOSED OR COVERED UP BEFORE SUCH INSPECTION AND TEST SHALL BE UNCOVERED AT THE CONTRACTOR'S EXPENSE; AFTER IT HAS BEEN INSPECTED, THE CONTRACTOR SHALL RESTORE THE WORK TO ITS ORIGINAL CONDITION AT HIS OWN EXPENSE.

8. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS, AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ARCHITECT/ENGINEER AND OWNER (VERIZON WIRELESS) ASSUME NO RESPONSIBILITY WHATEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL SAID UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING AFFECTED UTILITIES.

GENERAL NOTES (CONT'D):

9. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHOULD BE IMMEDIATELY REPORTED TO THE PROJECT MANAGER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS OWN RISK AND EXPENSE.

10. CONTRACTORS SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SUCH THAT NO PAPERS, TRASH, DEBRIS, WEEDS, BRUSH, OR ANY OTHER DEPOSITS REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE PROPERLY DISPOSED OF OFF-SITE BY THE CONTRACTOR.

11 ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY THE CONTRACTOR WITH LOCAL GAS, ELECTRIC, TELEPHONE, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.

12 DURING CONSTRUCTION, THE CONTRACTOR SHALL AT ALL TIMES MAINTAIN THE UTILITIES OF THE BUILDING/SITE WITHOUT INTERRUPTION. SHOULD IT BE NECESSARY TO INTERRUPT ANY SERVICE OR UTILITY, THE CONTRACTOR SHALL SECURE PERMISSION IN WRITING FROM THE BUILDING/PROPERTY OWNER FOR SUCH INTERRUPTION, AT LEAST 72 HOURS IN ADVANCE. ANY INTERRUPTION SHALL BE MADE WITH A MINIMUM AMOUNT OF INCONVENIENCE TO THE BUILDING/PROPERTY OWNER AND ANY SUCH SHUTDOWN TIME SHALL BE COORDINATED WITH THE BUILDING/PROPERTY OWNER.

13. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION.

14. CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS BUILT DRAWINGS TO VERIZON WIRELESS'S ' PROJECT ENGINEER.

15. GC WILL NOT START THE CONSTRUCTION UNTIL AFTER THEY RECEIVE THE PRE CON PACKAGE AND HAVE A PRE CON WALK WITH THE PROJECT MANAGER.

DIVISION 2 - SITE WORK:

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
   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 THE PROJECT MANAGER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO:

   A. FALL PROTECTION
   B. CONFINED SPACE
   C. ELECTRICAL SAFETY
   D. TRENCHING AND EXCAVATION

2. REMOVE FROM SITE/OWNER'S PROPERTY ALL WASTE MATERIALS, UNUSED EXCAVATED MATERIAL INCLUDING MATERIAL CLASSIFIED UNSATISFACTORY, CONTAMINATED OR DANGEROUS TRASH AND DEBRIS, AND DISPOSE OF IN A LEGAL MANNER.

3. 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.

4. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE BUILDING OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED, AND COVERED WITH MULCH

5. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, AS REQUIRED DURING CONSTRUCTION.

6. CONTRACTOR IS RESPONSIBLE FOR LAYOUT AND CONSTRUCTION STAKING. CONTRACTOR SHALL ESTABLISH GRADE AND LINE STAKES PRIOR TO CONSTRUCTION.

7. CONCORDIA DOES NOT GUARANTEE OR WARRANT THAT THE AFOREMENTIONED EASEMENTS ARE SUFFICIENT FOR CONSTRUCTION TRAFFIC. GC SHALL CONSULT WITH A VERIZON REPRESENTATIVE AND LANDLORD WITH EXACT LOGISTICS TO FACILITATE CONSTRUCTABILITY OF THE SITE AND DELIVERY OF CRITICAL MATERIALS SUCH AS THE TOWER, STEEL, CONCRETE AND CRANES TO THE PROPOSED LEASE AREA. GC SHALL RESTORE SITE TO ORIGINAL CONDITIONS AND REPLACE ANY AND ALL DISTURBED TREES OR LANDSCAPING.

8. CONCORDIA IS NOT RESPONSIBLE FOR THE MAINTENANCE AND/OR OPERATIONAL FEASIBILITY.

9. SCOPE OF WORK FOR THESE PLANS DOES NOT INVOLVE VALUE ENGINEERING AS WELL AS MAINTAINABILITY OPERATIONS OF THE SITE, ACCESS OR UTILITIES.

DIVISION 3 - CONCRETE:

1. MINIMUM ALLOWABLE CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH THE AMERICAN SOCIETY FOR TESTING AND MATERIALS METHODS STANDARDS ASTM C172, ASTM C31 AND ASTM C39 UNLESS OTHERWISE NOTED.

2. CONCRETE FOR ALL FOUNDATIONS: 540 LBS PER CUBIC YARD OF CONCRETE MINIMUM CEMENT CONTENT FOR 1-INCH MAXIMUM SIZE AGGREGATE, SLUMP RANGE 3 INCHES TO 5 INCHES, TOTAL AIR CONTENT 4 PERCENT TO 7 PERCENT BY VOLUME. AIR ENTRAINING ADMIXTURE REQUIRED TO CONTROL TOTAL AIR CONTENT. WATER REDUCING ADMIXTURE PERMITTED TO OBTAIN SLUMP OVER 3-INCHES.

3. ALL CONCRETE CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI 318) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE AND (ACI 301) STANDARD SPECIFICATION FOR STRUCTURAL CONCRETE.

4. REBARS SHALL BE ASTM A-615 DEFORMED TYPE WITH MINIMUM YIELD STRENGTH OF 60,000 PSI (40,000 PSI GRADE MAY BE USED FOR TIES & STIRRUPS).

   WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185.

5. DETAILING SHALL BE IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE OF DETAILING REINFORCED CONCRETE STRUCTURES (ACI STD-315 LATEST EDITION).

6. CHAMFER ALL EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.

7. REINFORCING STEEL SHALL BE ACCURATELY PLACED AND ADEQUATELY SECURED IN POSITION. LOCATION OF REINFORCEMENT SHALL BE INDICATED ON THE DRAWINGS. THE FOLLOWING MINIMUM COVER (INCHES) FOR REINFORCEMENT SHALL BE PROVIDED, EXCEPT AS NOTED ON DRAWINGS.

   MINIMUM COVER (INCHES)
   CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ... 3"
   EXPOSED TO EARTH OR WEATHER:
   #6 THROUGH #18 ... 2"
   #5 BAR AND SMALLER ... 1-1/2"

8. TESTS
   CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER AS THE WORK PROGRESSES. FAILURE TO DETECT ANY DEFECTIVE WORK OR MATERIAL SHALL NOT IN ANY WAY PREVENT LATER REJECTION WHEN SUCH DEFECT IS DISCOVERED NOR SHALL IT OBLIGATE THE ENGINEER FOR FINAL ACCEPTANCE.

   A. FIVE CONCRETE TEST CYLINDERS SHALL BE TAKEN OF THE TOWER PIER FOUNDATION. TWO SHALL BE TESTED @ THREE DAYS, TWO @ TWENTY-EIGHT DAYS. THE FIFTH CYLINDER SHALL BE KEPT SEPARATELY, IF REQUIRED TO BE USED IN THE FUTURE.

   B. ONE ADDITIONAL TEST CYLINDER SHALL BE TAKEN DURING COLD WEATHER AND CURED ON SITE UNDER SAME CONDITIONS AS CONCRETE IT REPRESENTS.

   C. ONE SLUMP TEST SHALL BE TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN.

9. PLACING CONCRETE
   A. THE ENGINEER SHALL BE NOTIFIED NOT LESS THAT 24 HOURS IN ADVANCE OF CONCRETE PLACEMENT, UNLESS INSPECTION IS WAIVED IN EACH CASE, PLACING OF CONCRETE SHALL BE PERFORMED ONLY IN THE PRESENCE OF THE ENGINEER. CONCRETE SHALL NOT BE PLACED UNTIL ALL FORMWORK, EMBEDDED PARTS, STEEL REINFORCEMENT, FOUNDATION SURFACES AND JOINTS INVOLVED IN THE PLACING HAVE BEEN APPROVED, AND UNTIL FACILITIES ACCEPTABLE TO THE VERIZON WIRELESS REPRESENTATIVE HAVE BEEN PROVIDED AND MADE READY FOR ACCOMPLISHMENT OF THE WORK AS SPECIFIED. CONCRETE MAY NOT BE ORDERED FOR PLACEMENT UNTIL ALL ITEMS HAVE BEEN APPROVED AND VERIZON WIRELESS HAS PERFORMED A FINAL INSPECTION AND GIVEN APPROVAL TO START PLACEMENT IN WRITING.

   B. PLACEMENT OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301.

10. PROTECTION
    A. IMMEDIATELY AFTER PLACEMENT, THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING, EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.

    B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR A PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.

    C. ALL CONCRETE SHALL BE WATER CURED BY CONTINOUS (NOT PERIODIC) FINE MIST SPRAYING OR SPRINKLING ALL EXPOSED SURFACES. WATER SHALL BE CLEAN AND FREE FROM ACID, ALKALI, SALTS, OIL SEDIMENT, AND ORGANIC MATTER. SUCCESSFUL CURING SHALL BE OBTAINED BY USE OF AN AMPLE WATER SUPPLY UNDER PRESSURE IN PIPES, WITH ALL NECESSARY APPLIANCES OF SPRINKLERS, AND SPRAYING DEVICES.

DIVISION 5 - STRUCTURAL STEEL:

1. DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE LATEST AISC MANUAL OF STEEL CONSTRUCTION (ASD), AWS D1.1, AND THE BASIC BUILDING CODE. STRUCTURAL STEEL SHALL BE AS FOLLOWS:

   A. ASTM A36, GRADE 36; ROLLED STEEL, RODS, PLATES, U-BOLTS AND ANCHOR BOLTS.
   B. ASTM A325 BOLTS, BEARING TYPE
   C. ALL STEEL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.

2. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.

3. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND VERIZON PROJECT MANAGER IN WRITING

4. TIGHTEN HIGH STRENGTH BOLTS TO A SNUG TIGHT CONDITION WHERE ALL PLIES IN A JOINT ARE IN FIRM CONTACT BY EITHER

   A. A FEW IMPACTS OF A IMPACT WRENCH
   B. THE FULL EFFORT OF A PERSON USING A SPUD WRENCH.

5. WELDING
   A. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS. CERTIFICATION DOCUMENTS SHALL BE MADE AVAILABLE FOR ENGINEER'S AND/OR OWNER'S REVIEW IF REQUESTED.
   B. WELDING ELECTRODES FOR MANUAL SHIELDED METAL ARC WELDING SHALL CONFORM TO ASTM A-233, E70 SERIES. BARE ELECTRODES AND GRANULAR FLUX USED IN THE SUBMERGED ARC PROCESS SHALL CONFORM TO AISC SPECIFICATIONS.
   C. FIELD WELDING SHALL BE DONE AS PER AWSD1.1 REQUIREMENTS VISUAL INSPECTION IS ACCEPTABLE.

6. PROTECTION
   A. UPON COMPLETION OF ERECTION INSPECT ALL GALVANIZED STEEL AND PAINT ANY FIELD CUTS, WELDS, OR GALVANIZED BREAKS WITH ZINC BASED PAINT. COLOR TO MATCH THE GALVANIZING PROCESS.

DIVISION 13 - SPECIAL CONSTRUCTION

ANTENNA INSTALLATION

WORK INCLUDED:

1. A. ANTENNAS AND COAXIAL CABLES ARE FURNISHED BY VERIZON WIRELESS UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND PROPERTY.

   B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND VERIZON WIRELESS SPECIFICATIONS.

   C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

   D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT TEST.

   E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.

   F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURERS REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.

   G. ANTENNA AND COAXIAL CABLE GROUNDING:
      1. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTOR/SPLICE WEATHERPROOFING KIT #ZZ1213 OR EQUAL.
      2. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS).

CONTRACTOR SHALL FIELD LOCATE ALL BELOW GRADE GROUND LINES AND UTILITY LINES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR RELOCATION OF ALL UTILITIES AND GROUND LINES THAT MAY BECOME DISTRUBED OR CONFLICTING IN THE COURSE OF CONTSTRUCTION.

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

CONCORDIA, LTD
A PROFESSIONAL DESIGN FIRM
LICENSE # 3323-011- D.B.A.
CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

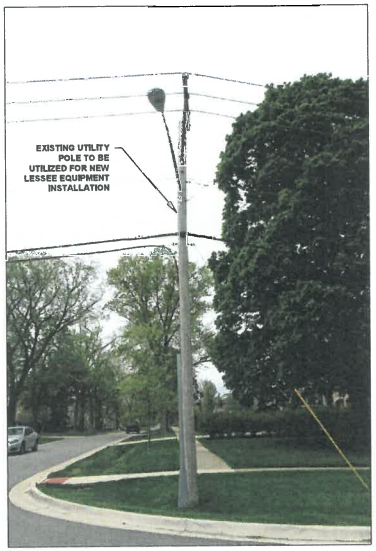
PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

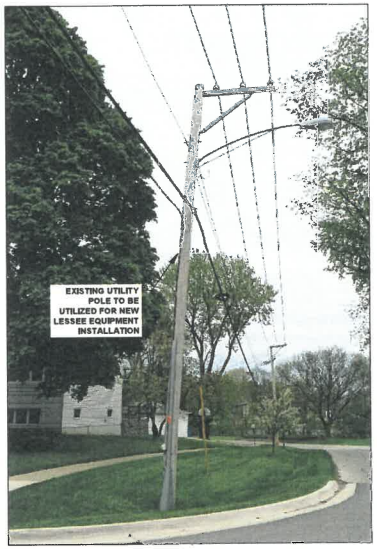
SHEET TITLE:
GENERAL NOTES & SPECIFICATIONS

SHEET NUMBER:
SP-2

1 AERIAL MAP
SCALE: N.T.S.

2 DUPAGE COUNTY GIS MAP
SCALE: N.T.S.





3 EXHIBIT PHOTOS OF UTILITY POLE
SCALE: N.T.S.

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1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
MAPS & EXHIBIT PHOTOS

SHEET NUMBER:
LP-1

LEGEND & SYMBOLS

- UTILITY POLE
- SIGN
- TELCO PEDESTAL
- FIRE HYDRANT
- LIGHT STANDARD
- INLET
- CATCH BASIN
- MANHOLE
- TRAFFIC SIGNAL
- BUFFALO BOX
- VALVE BOX
- HANDICAPPED PARKING SPACE
- TREE
- TREE LINE
- CHAIN LINK FENCE
- OHW — OVERHEAD WIRES
- OE — OVERHEAD ELECTRIC WIRES
- OF — OVERHEAD FIBER OPTIC WIRES
- LOT LINE
- PROPERTY LINE
- CENTER LINE

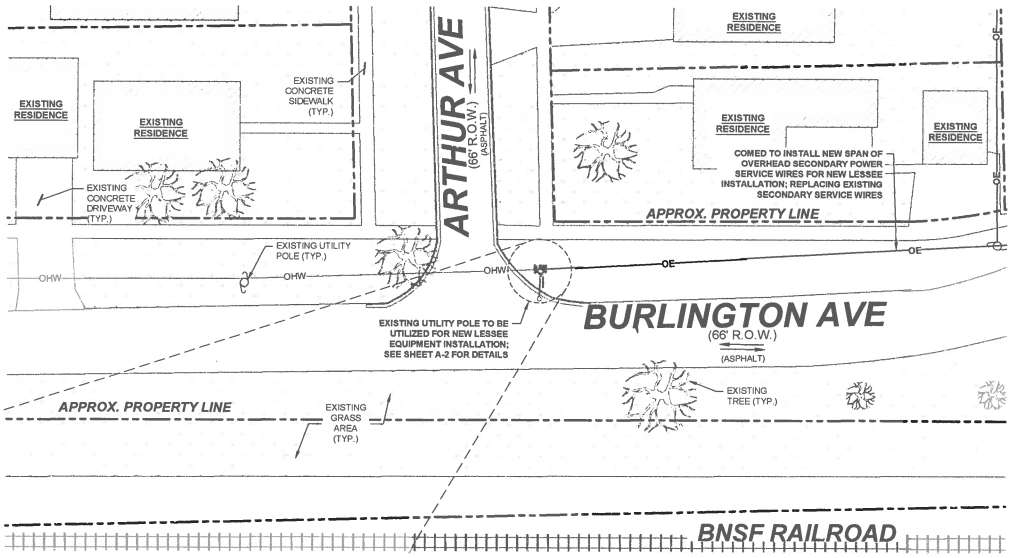
GC TO RESTORE THE SITE TO IT'S ORIGINAL CONDITION AFTER CONSTRUCTION COMPLETION

IMPORTANT NOTES:

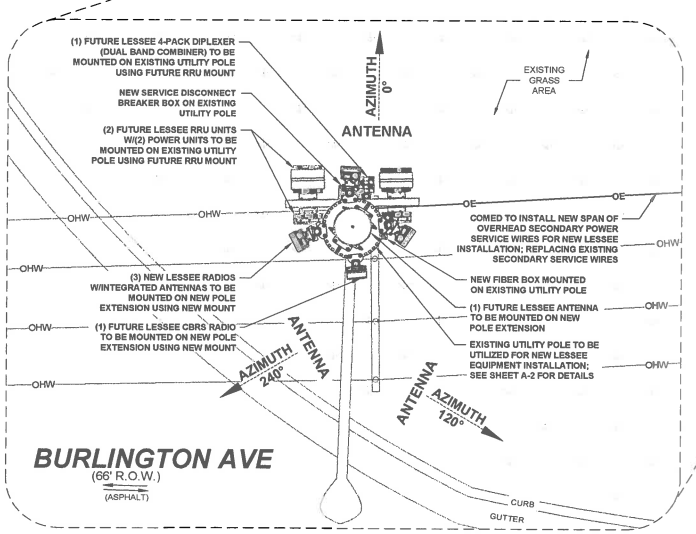
1. GC TO HIRE PUBLIC JULIE & PRIVATE LOCATE SERVICE IN ORDER TO LOCATE AND PROTECT ANY AND ALL SURFACE UTILITIES. DO NOT SCALE OFF THESE PLANS FOR ANY BELOW GRADE UTILITIES.

2.THESE PLANS MAY NOT CONTAIN OR REVEAL ALL SUBSURFACE UTILITIES; GC IS RESPONSIBLE OF LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION

3. GC WILL NOT START CONSTRUCTION UNTIL AFTER THEY RECEIVE THE PRE CON PACKAGE AND HAVE A PRE CON WALK WITH THE PM.



1 OVERALL SITE PLAN
SCALE: 1"=20' (1"=40' IF 11X17 SHEET SIZE)



2 UTILITY POLE DETAIL
SCALE: 1/2"=1'-0" (1/2" = 2'-0" IF 11X17 SHEET SIZE)

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361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0601

DRAWN BY: MK	CHECKED BY: GMS
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PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

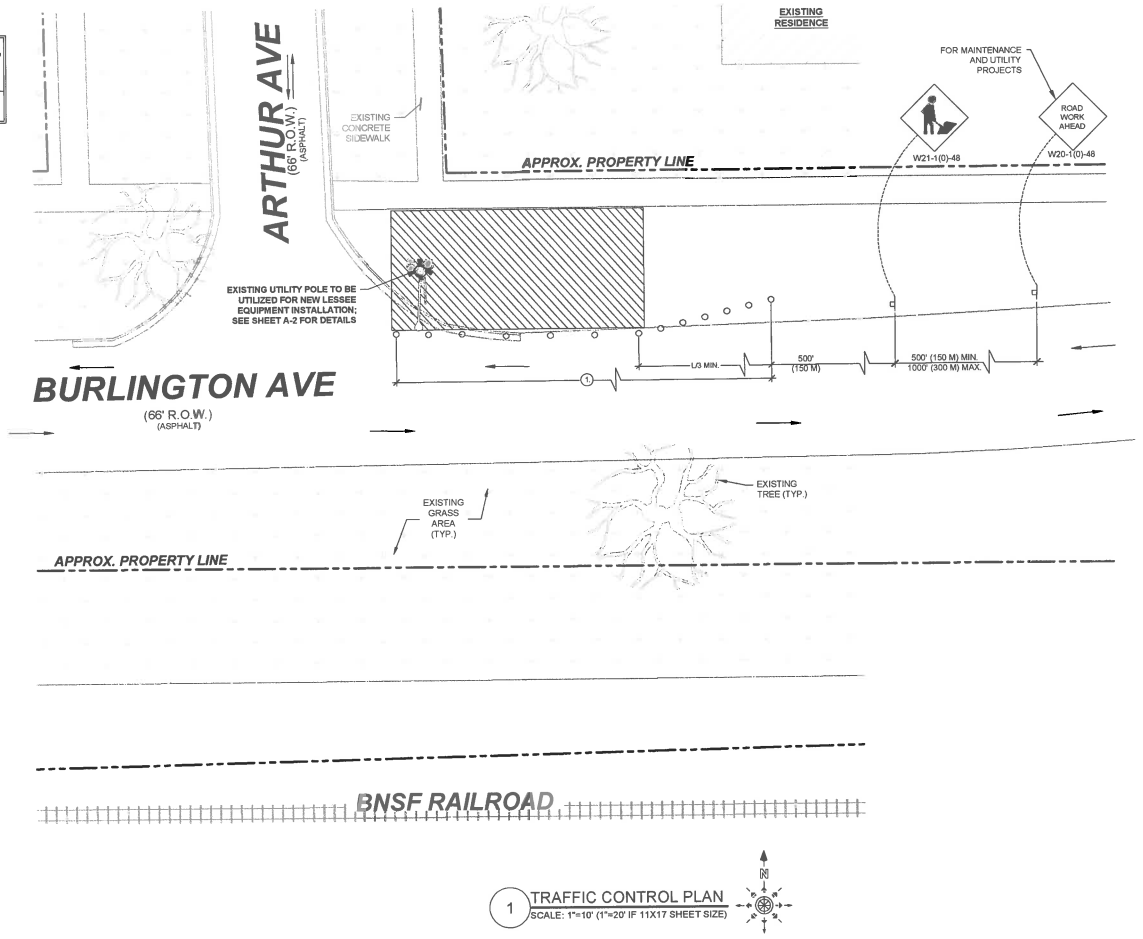
SHEET TITLE
SITE PLAN

SHEET NUMBER
A-0

LEGEND & SYMBOLS

- UTILITY POLE
- SIGN
- TELCO PEDESTAL
- FIRE HYDRANT
- LIGHT STANDARD
- INLET
- CATCH BASIN
- MANHOLE
- TRAFFIC SIGNAL
- BUFFALO BOX
- VALVE BOX
- HANDICAPPED PARKING SPACE
- TREE
- TREE LINE
- CHAIN LINK FENCE
- WROUGHT IRON FENCE
- OHW — OVERHEAD WIRES
- OE — OVERHEAD ELECTRICAL WIRES
- OF — OVERHEAD FIBER OPTIC WIRES
- LOT LINE
- PROPERTY LINE
- CENTER LINE
- BARRICADE OR DRUM WITH FLASHING LIGHT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- CONE, DRUM OR BARRICADE (NOT REQUIRED FOR MOVING OPERATIONS)
- TYPE III BARRICADE WITH FLASHING LIGHTS
- WORK AREA
- DETECTABLE PEDESTRIAN CHANELLIZING BARRICADE

OFF-RD OPERATIONS, 2L, 2W, 15' (4.5 M) TO 24" (600 MM) FROM PAVEMENT EDGE
STANDARD 701006-05



1 TRAFFIC CONTROL PLAN
SCALE: 1"=10' (1"=20' IF 11X17 SHEET SIZE)

TYPICAL APPLICATION
UTILITY APPLICATIONS
CULVERT EXTENSIONS
SIDE SLOPE CHANGES
GUARDRAIL INSTALLATION AND MAINTENANCE
DELINEATOR INSTALLATION
LANDSCAPING OPERATIONS
SHOULDER REPAIR
SIGN INSTALLATION AND MAINTENANCE

NOTE:
1. WHEN THE WORK OPERATION EXCEEDS ONE HOUR, CONES, DRUMS OR BARRICADES SHALL BE PLACED AT 25' (8 M) CENTERS FOR L/3 DISTANCE, AND AT 50' (15 M) CENTERS THROUGH THE REMAINDER OF THE WORK AREA.

STANDARD 701006-05 NOTES:
THIS STANDARD IS USED WHERE ANY VEHICLES, EQUIPMENT, WORKERS OR THEIR ACTIVITIES WILL ENCROACH IN THE AREA 15' (4.5 M) TO 24 (600) FROM THE EDGE OF PAVEMENT.

CALCULATE "L" AS FOLLOWS:

SPEED LIMIT:	FORMULAS ENGLISH	(METRIC)
40 MPH (70KM/H) OR LESS:	$L=\frac{WS^2}{2.5}$	$L=\frac{WS^2}{155}$
45 MPH (80 KM/H) OR GREATER:	L=(W)(S)	L=0.65(W)(S)

W=WIDTH OF OFFSET IN FEET (METERS).
S= NORMAL POSTED SPEED MPH (KM/H).

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

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PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
TRAFFIC CONTROL PLAN

SHEET NUMBER:
A-1

NOTES:

1. GC TO TERMINATE ALL UNUSED PORTS WITH LOADS OF RETURN LOSS>32dB
2. GROUNDING NOT SHOWN FOR CLARITY; SEE SHEET G-1 FOR DETAILS
3. * GC TO REPLACE EXISTING (6) SLOT BREAKER PANEL (MODEL#: QC6-12L-100RB) WITH NEW (8) SLOT BREAKER PANEL (MODEL#: QC8-16L100RB) TO ACCOMMODATE ADDITIONAL EQUIPMENT WHEN APPLICABLE
4. ** MAINTAIN 6'-0" MIN. CLEARANCE BELOW SECONDARY SERVICE WIRES PER COMED SPEC C-7526

NOTE:
NEW SMALL CELL INSTALLATION REQUIRES "MAKE READY" CHANGES TO POLE; MAKE READY WORK TO BE PERFORMED BY COMED & AT&T PRIOR TO LESSEE EQUIPMENT ATTACHMENT

LEGEND:
- EQUIPMENT TO BE REMOVED
- EQUIPMENT TO BE INSTALLED
- FUTURE EQUIPMENT

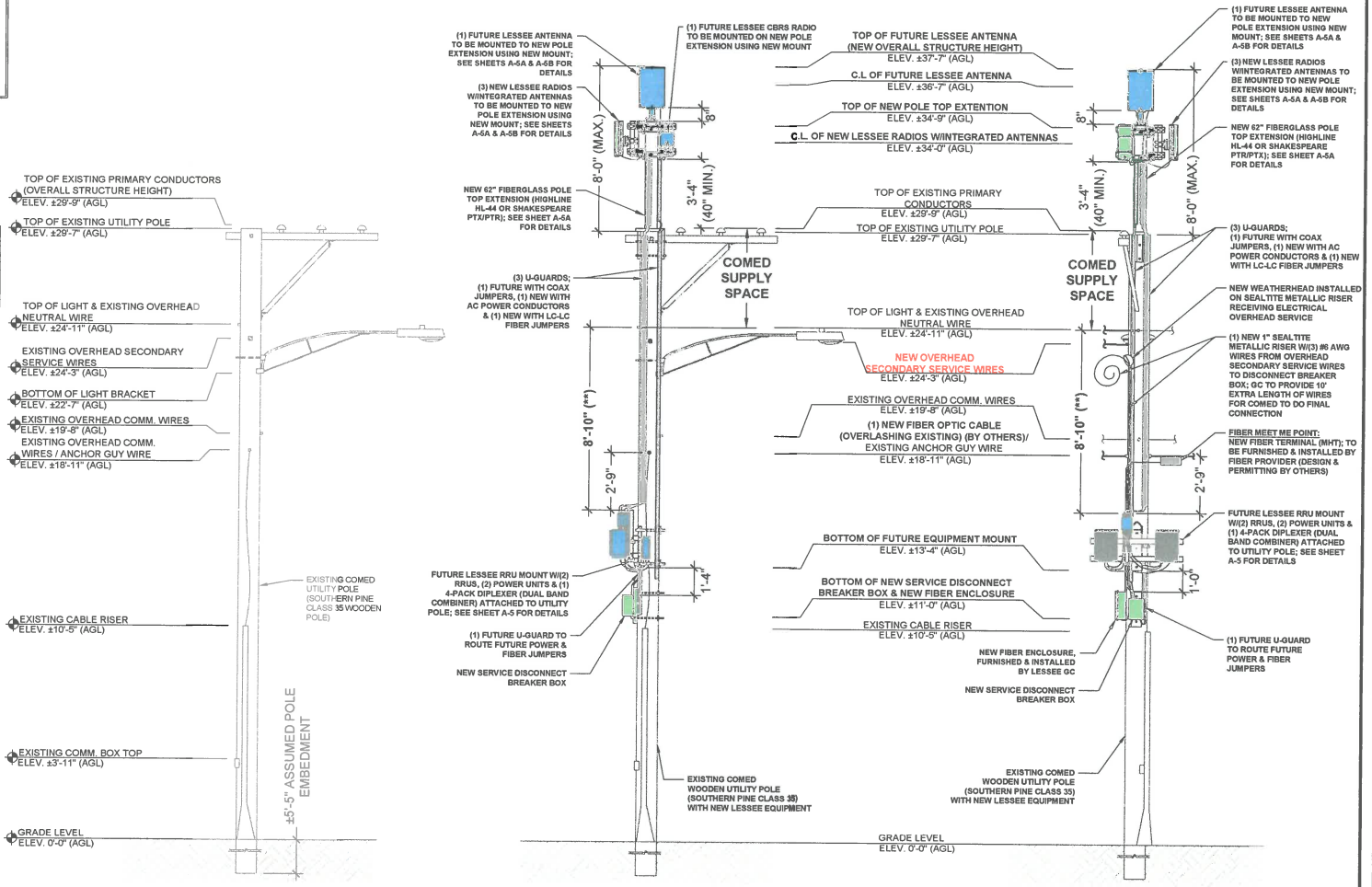
NOTE:
GC TO ATTEMPT TO USE EXISTING CABLE JUMPERS, RISERS AND CIRCUIT BREAKERS WHENEVER POSSIBLE.

C-7526 NOTES:

ALL VERTICAL RUNS OF COMMUNICATION CONDUCTORS PASSING THROUGH THE COMED SUPPLY SPACE SHALL BE INSTALLED AS FOLLOWS:

- COMMUNICATION CABLES THAT ARE METAL SHEATHED MUST HAVE A NON-METALLIC COVERING FROM 40 INCHES ABOVE TO 6 FEET BELOW THE SUPPLY CONDUCTORS.
- INSULATED COMMUNICATION CONDUCTORS MUST HAVE A NON-METALLIC COVERING FROM 40 INCHES ABOVE TO 6 FEET BELOW THE SUPPLY CONDUCTORS.
- COMMUNICATION GROUNDING CONDUCTORS MUST HAVE A NON-METALLIC COVERING FROM 40 INCHES ABOVE TO 6 FEET BELOW THE SUPPLY CONDUCTORS.
- COMMUNICATION CONDUCTORS MUST MAINTAIN A CLEARANCE TO THROUGH-BOLTS AND OTHER METAL OBJECTS EQUAL TO 1/8 OF THE POLE CIRCUMFERENCE, BUT NOT LESS THAN 2 INCHES. THIS CLEARANCE CAN BE REDUCED TO 1 INCH FOR EFFECTIVELY GROUNDED CONDUCTORS.

REFERENCE - NESC RULE 239H.



1 POLE EXISTING ELEVATION - WEST
SCALE: 3/8"=1'-0" 3/8"=2'-0" IF 11X17 SHEET SIZE)

2 POLE PROPOSED ELEVATION - WEST
SCALE: 3/8"=1'-0" 3/8"=2'-0" IF 11X17 SHEET SIZE)

3 POLE PROPOSED ELEVATION - NORTH
SCALE: 3/8"=1'-0" 3/8"=2'-0" IF 11X17 SHEET SIZE)

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1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
EXIST. POLE W/PROPOSED EQUIPMENT ELEVATION

SHEET NUMBER
A-2

RF EMISSIONS REPORT REQUIRED

☐ YES ☐ NO DATE OF REPORT:_____

RF CONFIG: TEMPLATE 4

NOTES:

* GC TO REFER TO RFDS SHEET FOR FINAL EQUIPMENT CONFIGURATION

** IF COAX JUMPER LENGTH IS LESS THAN 6' IN LENGTH; GC TO PROVIDE ONLY (1) LINE IDENTITY TAG NEAR RRU CONNECTOR.

◀ INDICATES LOCATION OF TAGS

LEGEND

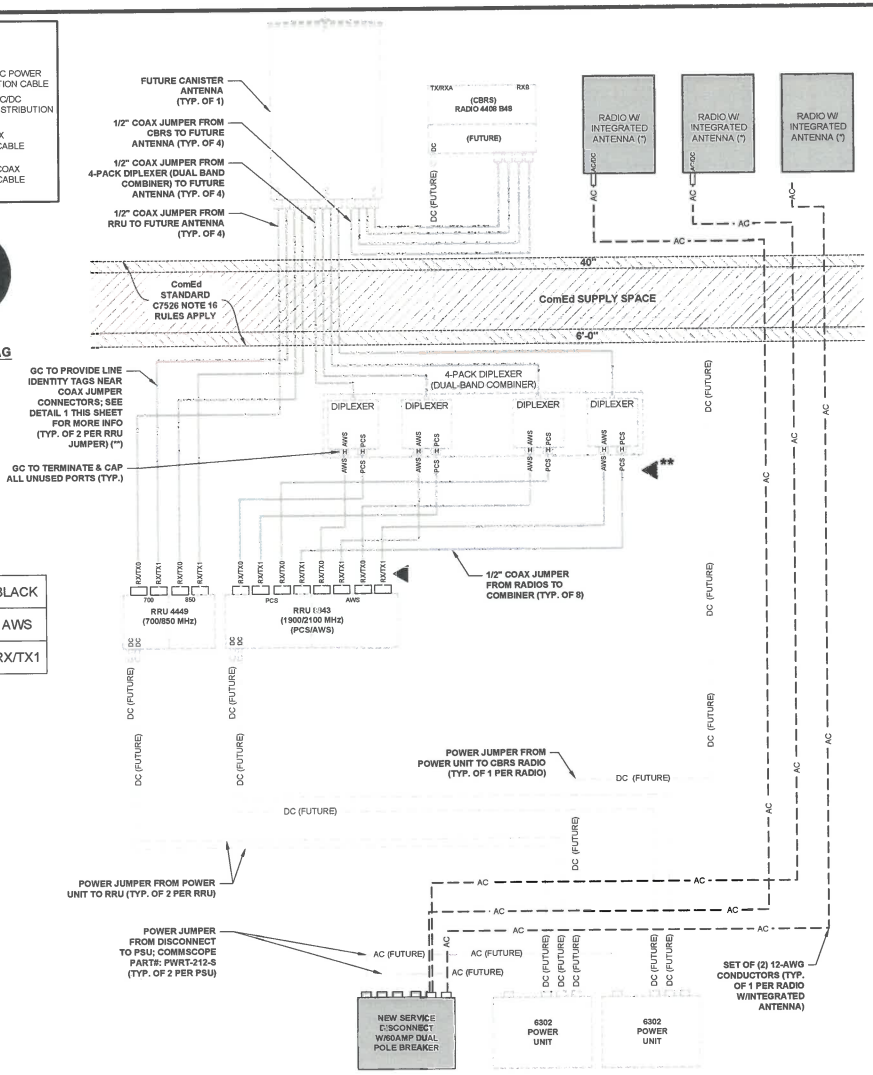
- NEW AC/DC POWER DISTRIBUTION CABLE
- FUTURE AC/DC POWER DISTRIBUTION CABLE
- NEW COAX JUMPER CABLE
- FUTURE COAX JUMPER CABLE

700
RX/TX0

TYP. LINE IDENTITY TAG

TAG COLOR	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK
TECHNOLOGY	700	700	850	850	PCS	PCS	PCS	PCS	AWS	AWS	AWS	AWS
LINE IDENTITY	RX/TX0	RX/TX1	RX/TX0	RX/TX1	RX/TX0	RX/TX1	RX/TX0	RX/TX1	RX/TX0	RX/TX1	RX/TX0	RX/TX1

1 LINE IDENTITY TAG SCHEDULE



2 NEW EQUIPMENT SCHEMATIC DIAGRAM

SCALE: N.T.S.

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

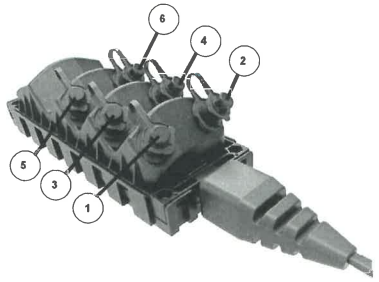
CONCORDIA, LTD
A PROFESSIONAL DESIGN FIRM
LICENSE # 3323-011- D.B.A.
CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

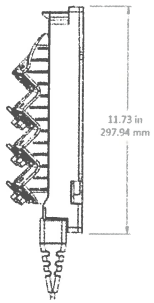
DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

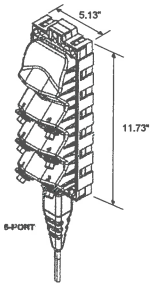
PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

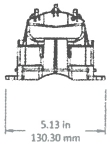
SHEET TITLE:
SCHEMATIC DIAGRAM

SHEET NUMBER:
A-3A







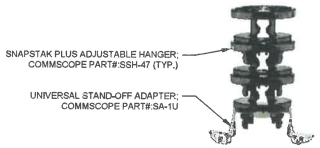


COMMSCOPE PART: MHT - 06H200U - A0500F			
PORT POSITION	FIBER PAIR	FIBER STRAND	BAND
1	1	1/2	700/850/1900/2100/CBRS/ 28/39 GHZ*
2	2	3/4	28/39 GHZ*
3	3	5/6	SPARE
4	4	7/8	SPARE
5	NOT USED	NOT USED	NOT USED
6	NOT USED	NOT USED	NOT USED

Dimensions

Cable Length	152.40 m | 500.00 ft
Depth	89.00 mm | 3.50 in
Height	298.00 mm | 11.73 in
Outer Cable Dimensions	4.5 x 8.1 mm (1.78 x 0.32 in)
Weight, without cable	0.99 kg | 2.18 lb
Width	130.30 mm | 5.13 in

1 MHT SPECIFICATIONS & PORT ASSIGNMENT



PART #	DESCRIPTION
SA-1U	UNIVERSAL STAND-OFF ADAPTER. 1 HANGER POINT. SPLIT FOOT DESIGN SLIDES BEHIND EXISTING ROUND MEMBER CLAMPS
SSH-47	SNAPSTAK® PLUS ADJUSTABLE HANGER FOR 4MM TO 7MM CABLE - NO GROMMETS REQUIRED

2 FIBER CABLE MOUNTING ASSEMBLY

LENGTH M (FT)	MMID Nsap	PART NUMBER	DESCRIPTION
1 (3)	11353467	DFJ-2S320-1M	2F SINGLE-MODE JUMPER, HMFOC TO LCD, 1 METERS
3 (10)	11353468	DFJ-2S320-3M	2F SINGLE-MODE JUMPER, HMFOC TO LCD, 3 METERS
4 (13)	11353469	DFJ-2S320-4M (LOADED IN VZ PEOPLESOFT)	2F SINGLE-MODE JUMPER, HMFOC TO LCD, 4 METERS
5 (16)	11353470	DFJ-2S320-5M	2F SINGLE-MODE JUMPER, HMFOC TO LCD, 5 METERS
10 (33)	11353471	DFJ-2S320-10M	2F SINGLE-MODE JUMPER, HMFOC TO LCD, 10 METERS
		FA-FWS-E-250 ***	FULL AXS WEATHERPROOFING

NOTE:

*** GC TO PROVIDE CABLE PROTECTION FOR EXPOSED FIBER CABLES ONLY

3 FIBER OPTIC DROP CABLE - ORDERING CHART

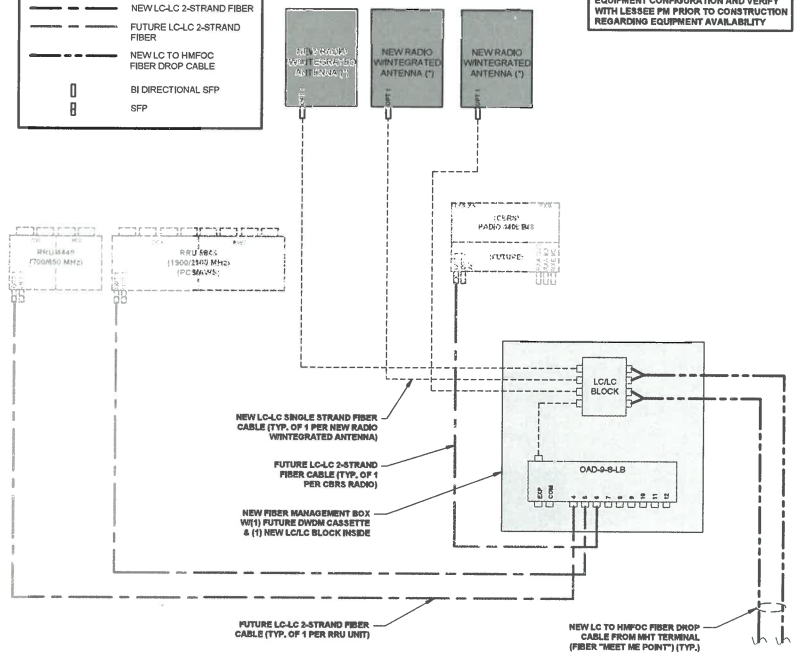
LEGEND

- NEW LC-LC SINGLE STRAND FIBER
- FUTURE LC-LC SINGLE STRAND FIBER
- NEW LC-LC 2-STRAND FIBER
- FUTURE LC-LC 2-STRAND FIBER
- NEW LC TO HMFOC FIBER DROP CABLE
- BI DIRECTIONAL SFP
- SFP

ALL CABLES TO BE OUTDOOR RATED

NOTE:

* GC TO REFER TO RFDS SHEET FOR FINAL EQUIPMENT CONFIGURATION AND VERIFY WITH LESSEE PM PRIOR TO CONSTRUCTION REGARDING EQUIPMENT AVAILABILITY



4 NEW FIBER SCHEMATIC DIAGRAM

SCALE: N.T.S.

Remote	Product Number	Cassette	Assignments
SFP+ R4 192.1 CPRI&10GbE DWDM -40/+85C	RDH102406/21	OAD-9-S-LB	700/850 (FUTURE)
SFP+ R5 192.3 CPRI&10GbE DWDM -40/+85C	RDH102406/23		AWS/PCS (FUTURE)
SFP+ R6 192.5 CPRI&10GbE DWDM -40/+85C	RDH102406/25		CBRS (FUTURE)
SFP+ R7 192.7 CPRI&10GbE DWDM -40/+85C	RDH102406/27		FUTURE
SFP+ R8 192.9 CPRI&10GbE DWDM -40/+85C	RDH102406/29		FUTURE
SFP+ R9 193.1 CPRI&10GbE DWDM -40/+85C	RDH102406/31		FUTURE
SFP+ R10 193.3 CPRI&10GbE DWDM -40/+85C	RDH102406/33		FUTURE
SFP+ R11 193.5 CPRI&10GbE DWDM -40/+85C	RDH102406/35		FUTURE
SFP+ R12 193.7 CPRI&10GbE DWDM -40/+85C	RDH102406/37		FUTURE

5 DWDM CASSETTE PORT ASSIGNMENT

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

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361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
FIBER CONNECTION DETAILS

SHEET NUMBER:
A-3B

verizon
fuze | RFDS

GLS > Upper Midwest > Illinois/Wisconsin > Northern IL > BURLINGTON AND ARTHUR SC - A

Patel, Vivek - vivek.patel2@verizonwireless.com - 6/3/2020 12:31:38

Project Details

Carrier Aggregation: false
MPT Id: 765546
eCIP-0: false
Project Name: Small Cell - New
FUZE Project ID: 12410155
Designed Sector Carrier 4G: N/A
Designed Sector Carrier 5G: 12
Additional Sector Carrier 4G: N/A
Additional Sector Carrier 5G: N/A
SiteTraker Project Id: a4K0H000000bP1mUAE
RFDS Project Scope: NA METRA SC Capacity Plan METRA SC Capacity Plan
Suffix: REV2

Location Information

Site ID: 616062877
E-NodeB ID: 904222
PSLC: 456201
Switch Name:
Tower Owner:
Tower Type: Utility pole/tower
Site Type: NODE
Street Address: 1 Arthur Ave
City: Clarendon Hills
State: IL
Zip Code: 60514
County: DuPage
Latitude: 41.79589722 / 41° 47' 45.23" N
Longitude: -87.964725 / 87° 57' 53.01" W

Antenna Summary

Added

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	N77	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
							5G				ERICSSON		34					PHYSICAL	3
LTE	LTE	LTE	LTE					LTE			JMA		36.5			false	false	LEASE	1

Removed

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	N77	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity

No data available

Retained

700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	N77	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity

No data available.

Added: 4 | Removed: 0 | Retained: 0

Equipment Summary

Added

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	N77	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Diplexer	Tower												CommScope	DTIC-A-P-45F			LEASE	1
RRU	Tower									LTE			Ericsson	4408			LEASE	1
RRU	Tower	LTE	LTE										Ericsson	4449			LEASE	1
RRU	Tower			LTE	LTE								Ericsson	8843			LEASE	1
RRU	Tower						5G						Ericsson	SM6701_28 AC			PHYSICAL	3

Removed

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	N77	Make	Model	Cable Length	Cable Size	Install Type	Quantity

No data available.

Retained

Equipment Type	Location	700	850	1900	AWS	AWS3	28 GHz	31 GHz	39 GHz	CBRS	LAA	N77	Make	Model	Cable Length	Cable Size	Install Type	Quantity

No data available

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

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UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

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PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
RFDS SHEETS

SHEET NUMBER:
A-3C

Service Info

28 GHz

Sector	
Azimuth	
Cell / ENode B ID	
Antenna Model	
Antenna Make	
Antenna Centerline(Ft)	
Mechanical Down-Tilt(Deg.)	
Electrical Down-Tilt	
Tip Height	
Regulatory Power	
TMA Make	
TMA Model	
RRU Make	
RRU Model	
Number of Tx, Rx Lines	
Position	
Source	

Service Comments

Callsigns Per Antenna

Sector	Antenna Make	Antenna Model	Ant CL Height AGL	Tip Height	Azimuth (TN)	Electrical Tilt	Mechanical Tilt	Gain	Beamwidth	Regulatory Power	Callsigns						
											700	850	1900	2100	28 GHz	31 GHz	39 GHz
0902	ERICSSON	VZ-AM6701_T8	34	34.9	120	0	0	26.698	106.5	160.25					WRBA760 WRBA761		
0903	ERICSSON	VZ-AM6701_T8	34	34.9	0	0	0	26.698	106.5	160.25					WRBA760 WRBA761		
0923	ERICSSON	VZ-AM6701_T8	34	34.9	240	0	0	26.698	106.5	160.25					WRBA760 WRBA761		

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

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CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 961-0801

DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
RFDS SHEETS

SHEET NUMBER:
A-3D

Callsigns

Callsign	Market	Radio Code	Market Number	Block	State	County	Licensee Name	Wholly Owned	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq Mi	Status	Action	Approved for Insvc
WRBA760	Chicago, IL	UU	BTA078	L1	IL	DuPage	Cellco Partnership	Yes	75.000	27850.000-27925.000	.000-.000	.000-.000	.000-.000	163.25		2799.78	Active	added	Yes
WRBA761	Chicago, IL	UU	BTA078	L2	IL	DuPage	Cellco Partnership	Yes	125.000	27925.000-28050.000	.000-.000	.000-.000	.000-.000	163.25		2799.78	Active	added	Yes
WQGB264	Chicago, IL	AW	CMA003	A	IL	DuPage	Cellco Partnership	Yes	20.000	1710.000-1720.000	2110.000-2120.000	.000-.000	.000-.000		1640	2799.78	Active		Yes
WQGA932	Chicago-Gary-Kenosha, IL-IN-WI	AW	BEA064	B	IL	DuPage	Cellco Partnership	Yes	20.000	1720.000-1730.000	2120.000-2130.000	.000-.000	.000-.000		1640	2799.78	Active		Yes
KNKA200	Chicago, IL	CL	CMA003	B	IL	DuPage	Chicago SMSA LP	No	25.000	835.000-845.000	880.000-890.000	846.500-849.000	891.500-894.000		400	2799.78	Active		Yes
KNLF297	Chicago	CW	MTA003	B	IL	DuPage	Cellco Partnership	Yes	10.000	1880.000-1885.000	1960.000-1965.000	.000-.000	.000-.000		1640	2799.78	Active		Yes
WPOH948	Chicago, IL	LD	BTA078	A	IL	DuPage	Cellco Partnership	Yes	300.000	29100.000-29250.000	31075.000-31225.000	.000-.000	.000-.000			2799.78	Active		No
WPLM403	Chicago, IL	LD	BTA078	B	IL	DuPage	Cellco Partnership	Yes	150.000	31000.000-31075.000	31225.000-31300.000	.000-.000	.000-.000			2799.78	Active		No
WRBF857	Chicago, IL	UU	PEA003	10-A	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39050.000-39100.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBF863	Chicago, IL	UU	PEA003	10-B	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39750.000-39800.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBG986	Chicago, IL	UU	PEA003	2-A	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	38650.000-38700.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBG987	Chicago, IL	UU	PEA003	2-B	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39350.000-39400.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBD825	Chicago, IL	UU	PEA003	3-A	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	38700.000-38750.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBD827	Chicago, IL	UU	PEA003	3-B	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39400.000-39450.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBE514	Chicago, IL	UU	PEA003	5-A	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	38800.000-38850.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBE517	Chicago, IL	UU	PEA003	5-B	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39500.000-39550.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBE762	Chicago, IL	UU	PEA003	6-A	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	38850.000-38900.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBE763	Chicago, IL	UU	PEA003	6-B	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39550.000-39600.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBE558	Chicago, IL	UU	PEA003	7-A	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	38900.000-38950.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBE559	Chicago, IL	UU	PEA003	7-B	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39600.000-39650.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBF554	Chicago, IL	UU	PEA003	9-A	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39000.000-39050.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
WRBF559	Chicago, IL	UU	PEA003	9-B	IL	DuPage	Straight Path Spectrum, LLC	Yes	50.000	39700.000-39750.000	.000-.000	.000-.000	.000-.000			2799.78	Active		No
[illegible]	Chicago, IL	UU	PEA003	32	IL	DuPage	Cellco Partnership	Yes	400.000	37600.000-38000.000	.000-.000	.000-.000	.000-.000			2799.78	Active		Yes
WQJQ691	Great Lakes	WU	REA003	C	IL	DuPage	Cellco Partnership	Yes	22.000	746.000-757.000	776.000-787.000	.000-.000	.000-.000		1000	2799.78	Active		Yes

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

CONCORDIA, LTD
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CONCORDIA WIRELESS, INC.
361 RANDY ROAD
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DRAWN BY: MK	CHECKED BY: GMS
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PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

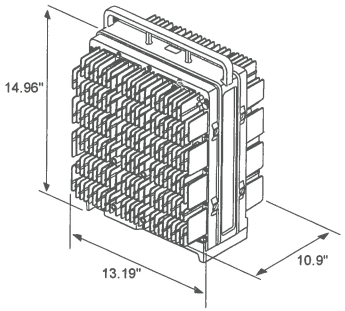
SHEET TITLE:
RFDS SHEETS

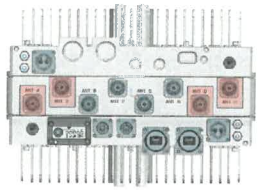
SHEET NUMBER:
A-3E

RADIO 8843 – B2 + B66A (PREV 4443)
4TX 4RX PER BAND

Dimensions		
Depth	277 mm	10.9 in
Height	380 mm	14.96 in
Width	335 mm	13.19 in
Weight	32.6 kg	71.87 lb

Description	Value
Frequency	1850–1910 MHz uplink 1930–1990 MHz downlink B2
	1710–1780 MHz uplink 2110–2180 MHz downlink B66A
Maximum nominal output power	4x40 W (B2) + 4x40 W (B66A) or 2x60 W (B2) + 2x80 W (B66A) or 4x20 W (B2) + 4x60 W (B66A) (License key is required for total power over 4x5 W.)



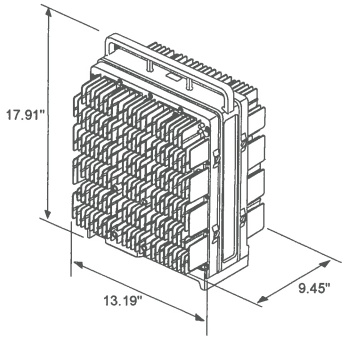


1 ERICSSON RADIO 8843 (AWS/PCS)
N.T.S.

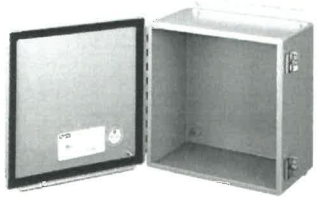
RADIO 4449 – B13 + B5
4TX 4RX PER BAND

Dimensions		
Depth	240 mm	9.45 in
Height	455 mm	17.91 in
Width	335 mm	13.19 in
Weight	32 kg	70.55 lb

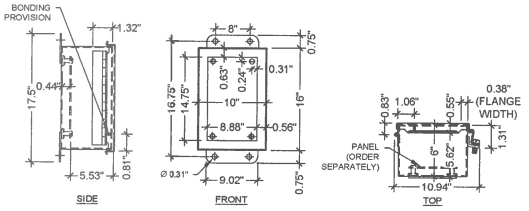
Description	Value
Frequency	824–849 MHz uplink 869–894 MHz downlink B5 for LTE
	777–787 MHz uplink 746–756 MHz downlink B13 for LTE
Maximum nominal output power	B5: 4x40 W, B13: 4x40 W B5: 2x60 W, B13: 2x60 W (License key is required for total power over 2x10 W.)



2 ERICSSON RADIO 4449 (700/850)
N.T.S.

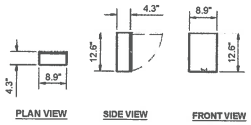


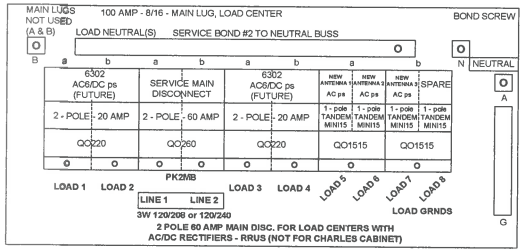
Description	HOFFMAN A16106CH
Height	406.4 mm / 16.0 in
Width	254.0 mm / 10.0 in
Depth	152.4 mm / 6.0 in
Weight	5.4 kg / 12.0 lbs



3 HOFFMAN T12 FIBER BOX
N.T.S.

9.77 LBS





4 SQUARE D LOAD CENTER PART#: QO816L100RB
N.T.S.

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

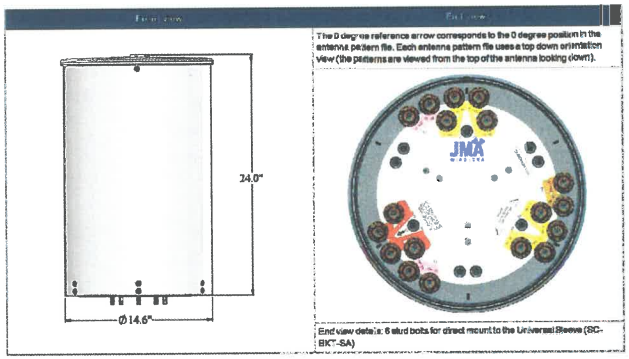
CONCORDIA, LTD
A PROFESSIONAL DESIGN FIRM
LICENSE # 3323-011- D.B.A.
CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
EQUIPMENT SPECIFICATIONS

SHEET NUMBER:
A-4A



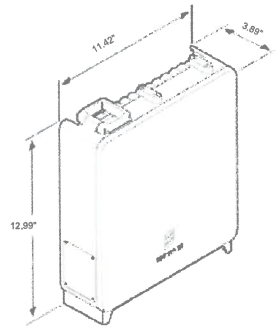
Mechanical specifications	
Dimensions height/diameter, Inches (mm)	24.0/14.6 (609.6/370.8)
Antenna volume (cubic feet)	2.32
No. of RF input ports, connector type, and location	18 x 4.3-10 female, bottom
RF connector torque	96 lbf-in (10.85 N-m or 8 lbf-ft)
Net antenna weight, lb (kg)	30 (13.6)
Rate wind survival speed, mph (km/h)	150 (241)
Frontal wind loading @ 160 km/h, lbf (N)	30 (133)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	1.17/0.69

18-port cylinder antenna 698-5925 MHz:

4 ports 698-960, 8 ports 1695-2690 MHz, 4 ports 3400-4200 MHz, and 2 ports 5150-5925 MHz

- Small Cell multi-port cylinder antenna, suitable for multi-carrier applications
- 4x4 MIMO-capable 698-4200 MHz
- Symmetrical pattern performance across all 1695-2690 MHz ports
- Excellent cross-polar discrimination for MIMO performance

1 JMA WIRELESS CX18OMI236-1Cxy CYLINDER ANTENNA
N.T.S.



Description	Value
Power Input	200-250 VAC (Line-Neutral or Line-Line) (1)
Total Power output	2300 W
Maximum power on one output port	815 W

Dimensions	Value
Height	330 mm / 12.99 in
Width	290 mm / 11.417 in
Depth	99 mm / 3.898 in

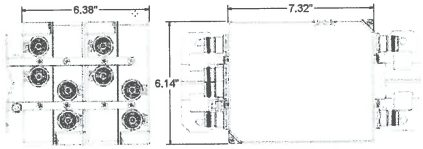
Weight	Value
Power 6302	10 kg / 22.046 lbs

Color	Value
Gray	NCS S 1002-B

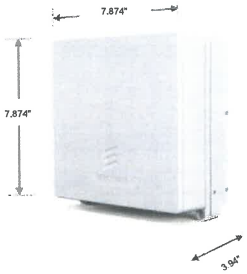
(1) When connecting Power 6302 Line-Line the N/L2 connector pin is not allowed to be connected to the High Leg Delta.

2 ERICSSON - 6302 POWER UNIT
N.T.S.

Mechanical specifications	
Connector RF	4.3-10 (F)
Ground stud	M8 x 1 (hex nut included)
Connectors quantity	12
Dimensions, excluding brackets and connectors L x W x H mm (in)	186 x 155 x 162 (7.32 x 6.14 x 6.4)
Weight: kg (lbs.)	6.9 (15.2)
Mounting	Pole/wall bracket supplied, including two metal clamps for 45-178 mm diameter pole



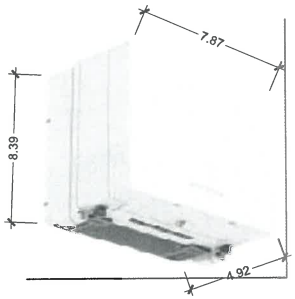
3 JMA WIRELESS DUAL-BAND COMBINER (DBC-A-P-4SF)
N.T.S.



Description	Radio 2205 B46 (LAA)
Frequency Band	Unlicensed band in 5GHz 3GPP: B46A & B46D
IBW	60MHz
Carrier Capacity	Up to 3 LTE carriers 20MHz each
Output Power	2x500mW FCC approval to 2x316mW
Output/Input	2TX/2RX
Volume	4L / 0.1412 cu. ft
Dimensions (HxWxD)	7.874 in x 7.874 in x 3.94 in
Weight	4 Kg / 8.82 lbs
Radio Interface	2x10G CPRI
Power Supply	AC or DC

Description	Radio 2208 B48 (CBRS)
Frequency Band	CBRS: 3550 to 3700 MHz
IBW	60MHz
Carrier Capacity	60 MHz LTE
Output Power	2x10W
Output/Input	2TX/2RX
Volume	4.41L / 0.156 cu. ft
Dimensions (HxWxD)	8.425 in x 7.874 in x 4.05 in
Weight	4.85 Kg / 1.69 lbs
Radio Interface	2x10G CPRI
Power Supply	AC or DC

4 RADIO 2208 B48 (CBRS) & 2205 B46 (LAA)
N.T.S.



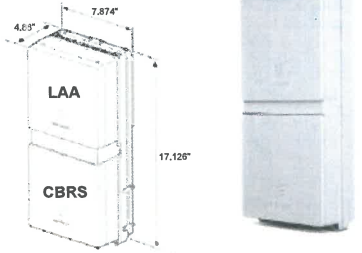
Description	Radio 4408
Maximum nominal output power	4 X 5 W
Number of carriers per radio	6
Frequency	B48 3550-3700 MHz for UL and DL
Dimensions with Cover, Single Radio	
Height (A)	8.39 in
Width (B)	7.87 in
Depth (C)	4.13 in
Dimensions with Antenna, Single Radio	
Height (A)	8.39 in
Width (B)	7.87 in
Depth (C)	4.92 in
Weight with Cover, Single Radio	10.14 lbs
Weight with Antenna, Single Radio	11.02 lbs
DC Power Supply	
Nominal Voltage	-48V
Minimum circuit breaker Single Radio	6A
Maximum circuit breaker Single Radio	32A
AC Power Supply	
Nominal Voltage	100-250VAC
Minimum circuit breaker Single Radio	4A
Maximum circuit breaker Single Radio	16A
RF Connector Type	NEX10 female

5 RADIO 4408 B48 (CBRS)
N.T.S.

INSTALLATION TIPS FOR DUAL RADIO SUPPORT UNIT (4402 & 4408)

BEFORE ASSEMBLING, TAKE DOWN THE DECORATE COVER AND AIR GUIDE FROM DUAL MSUP SUPPORT
BEFORE ASSEMBLING, REMOVE TWO PIECES OF METAL PARTS FROM RADIO CORE (NEAR TOP OF UNIT HELD BY T10 TORX SCREWS)
INSTALL CBRS RADIOS BELOW LAA RADIOS.

Description	Dual Radio
Height	435 mm / 17.126 in
Width	200 mm / 7.874 in
Depth of Radio 2203	124 mm / 4.882 in
Depth of Radio 2203 B3	134 mm / 5.275 in
Weight with antenna	9.8 kg / 21.6 lbs



6 ERICSSON 6503 - DUAL RADIO SUPPORT UNIT
N.T.S.

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

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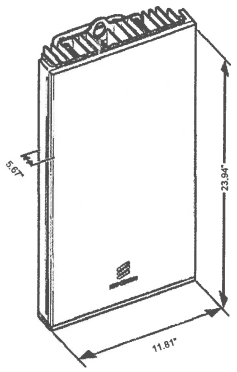
CLARENDON HILLS, IL 60514

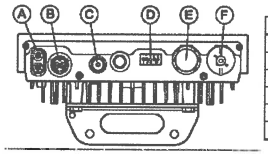
SHEET TITLE:
EQUIPMENT SPECIFICATIONS

SHEET NUMBER:
A-4B

NOTE:

* GC TO REFER TO RFDS SHEET FOR FINAL EQUIPMENT CONFIGURATION AND VERIFY WITH LESSEE PM PRIOR TO CONSTRUCTION REGARDING EQUIPMENT AVAILABILITY

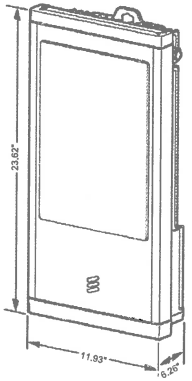


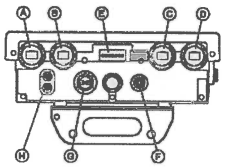


Port	Description
A	Grounding Point
B	100-250 V AC Power Supply
C	External Alarm Interface
D	Optical Indicators
E	Optical Cable 1
F	Optical Cable 2

Specifications	
Depth	5.67"
Height	23.94"
Width	11.81"
Weight	30.86 lbs
Frequency	27.5-28.3GHz
Operating Bandwidth	400MHz
EIRP (total)	55dBm
Cooling	Passive
Installation Type	Pole/Wall
Power Consumption	Max: 205W
Power	AC
CPRI/TN Ports	2x10G CPRI

1 ERICSSON - AIR 5121 RADIO W/ANTENNA *
N.T.S.





Port	Description
A	Optical Cable 1
B	Optical Cable 2
C	Optical Cable 3
D	Optical Cable 4
E	Optical Indicators
F	External Alarm and Fan Control
G	-48 V DC Power Supply
H	Grounding Point

Specifications	
Depth	6.26"
Height	23.62"
Width	11.93"
Weight	30.86 lbs
Frequency	37-40GHz
Operating Bandwidth	800MHz
EIRP (total)	60dBm
Cooling	Passive
Installation Type	Pole/Wall
Power Consumption	Max: ~421W
Power	AC/DC
CPRI/TN Ports	4x10G CPRI

2 ERICSSON - AIR 5331 RADIO W/ANTENNA *
N.T.S.

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

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PROJECT #: 20171626078
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BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
EQUIPMENT SPECIFICATIONS

SHEET NUMBER:
A-4C

NOTE:

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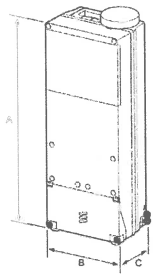
Streetmacro 6701



Dimensions, Weight, and Color

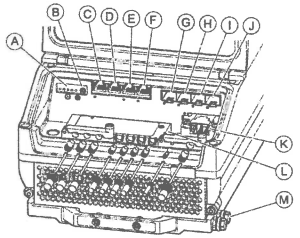
Dimensions	
Height (A)	511 mm
Width (B)	200 mm
Depth (C)	125 mm
Weight	14 kg
Color	Gray Reference number: NCS S 1002-B

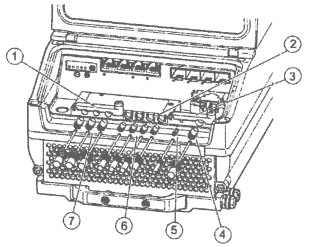
Technical Data

Description	Value
Frequency	B261 (27.5–28.35 GHz)
Number of carriers	Config mode 2: Up to 8 Config mode 1: Up to 16
Operating bandwidth	Config mode 2: 800 MHz Config mode 1: 1600 MHz
Component carrier bandwidth	50MHz, 100 MHz
EIRP(1)	Config mode 2: 53 dBm per RF beam in boresight , 56 dBm per radio Config mode 1: 47 dBm per RF beam in boresight , 53 dBm per radio
$EIS_{REFSENS\_50M}$	Config mode 2: -109 dBm Config mode 1: -106 dBm

(1) The MaxTxPower can be configured up to 10 dB lower than the stated EIRP without product performance being degraded. If the MaxTxPower is configured lower than the given power limit here, significant performance degradation will occur.

Connection Interfaces





Position	Description
1	Shield terminal for electrical cables
2	Four cable holders for optical cables
3	Shield terminal for GNSS antenna and power cables
4	Cable grommet for power cable
5	Cable grommet for GNSS antenna cable
6	Cable grommets for four optical cables
7	Cable grommets for TN A, SYNC, and ALARM cables

Position	Marking	Connector	Description	Optical Indicator(1)
A	!	-	Fault Optical indicator, red	Yes
	✓	-	Operation Optical indicator, green	Yes
	🔧	-	Maintenance Optical indicator, blue For information on the maintenance button, see Indicators, Buttons, and Switches.	Yes
	◁	-	Status Optical indicator, yellow	Yes
	✾	-	Fan unit fault Optical indicator, yellow	
B			Maintenance button For information on the maintenance button, see Indicators, Buttons, and Switches.	Yes
C	SYNC	RJ-45	Synchronization interface	Yes
D	ALARM/EC	RJ-45	EC light and two external alarm inputs	Yes
E	TN A(2)	RJ-45	100 Mbps/1 Gbps Ethernet transport interface External interface for site LAN, electrical	Yes
F	LMT	RJ-45	LMT A interface(3)(4) LMT B interface(4)(5) Sync test interface(6),(7) Internal and external interfaces	Yes
G, H	TN/IDL B TN/IDL C	SFP+(8)	TN 1 Gbps/10 Gbps Ethernet transport interface External interface, optical IDL Inter Digital Link, Elastic RAN connection Internal interface, streetmacro to streetmacro	Yes
I,J	A B		External radio interface, not in use	Yes
K	100–250 V ~	100–250 V AC power connector	100–250 V AC Power	Yes
L		QMA(9)	GNSS antenna cable connector	
M	⏚	Dual lug with two M6 screws	Ground	

(1) For more information on optical indicators, see Indicators, Buttons, and Switches
(2) Supports synchronization over the transport network.
(3) RS-232 interface. Accessed with the LMT splitter cable.
(4) For more information about the LMT interfaces, see Connect Client.
(5) 100 Mbps electrical Ethernet interface
(6) Compliant with 1PPS 50-Ω phase synchronization measurement interface. Accessed with an adaptor.
(7) For more information about the sync test interface, see Manage Network Synchronization.
(8) SFP+ is needed for transmission rates above 2.5 Gbps.
(9) On the GNSS receiver unit

1 ERICSSON - STREETMACRO 6701 RADIO W/ANTENNA *
N.T.S.

CHICAGO SMSA
limited partnership
d/b/a VERIZON WIRELESS

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A-4D

NEW CONFIG												
Cat	Item	Model	Dimensions (inches)			Volume	Area	Weight	Number	Total Volume	Total Weight	Note
			H	W	D	CU FT	SQ FT	Lb	(per site)	CU FT	Lb	
Antennas	Amphenol	QXW-632x634xBF-EDIN	23.2	12	7.1	1.14	1.9	11	0	0.00	0.00	
	Amphenol	CUUX063X06Fxyz0	24.3	12.1	7	1.19	2.0	13	0	0.00	0.00	
	Amphenol	CWT070X06F00-1	24	14.6 (Dia)		2.33	n/a	28.70	0	0.00	0.00	
	Amphenol	CUT070X06F00-1	24	14.6 (Dia)		2.33	n/a	22.00	0	0.00	0.00	
	Kathrein	840-10794	24.6	16 (Dia)		2.86	n/a	39.90	0	0.00	0.00	
	Kathrein	840-10510	24	16 (Dia)		2.79	n/a	45.00	0	0.00	0.00	
	Kathrein	840-10515	24	16 (Dia)		2.79	n/a	50.00	0	0.00	0.00	
	JMA	CX18OMI236-1Cxy	24	14.6 (Dia)		2.33	n/a	30.00	1	2.33	30.00	Future
	JMA	CX04OMI236-1C	27.5	14 (Dia)		2.45	n/a	38.60	0	0.00	0.00	
	JMA	XGU-165	12	12.6	5.6	0.49	1.1	10.80	0	0.00	0.00	
Radio / Antenna *	Ericsson	AIR 5331 (**)	23.62	11.93	6.26	1.02	2.0	30.86	0	0.00	0.00	
	Ericsson	AIR 5121 (**)	23.94	11.81	5.67	0.93	2.0	30.86	0	0.00	0.00	
	Ericsson	STREETMACRO 6701 (**)	21.20	8.10	5.10	0.51	1.2	31.00	3	1.52	93.00	New
	Ericsson	DUAL RADIO SUPPORT (6503)	17.13	7.87	5.28	0.41	0.9	21.60	0	0.00	0.00	
Radio *	Ericsson RRUS11	B13	19.7	17	7.2	1.40	2.3	51.00	0	0.00	0.00	
	Ericsson RRUS12	B5	20.4	18.5	7.5	1.64	2.6	58.00	0	0.00	0.00	
	Ericsson RRUS 32	B66A	23.07	12.05	7	1.13	1.9	52.90	0	0.00	0.00	
	Ericsson RRUS 32	B2	23.07	12.05	7	1.13	1.9	52.90	0	0.00	0.00	
	Ericsson	4449	17.91	13.19	9.45	1.29	1.6	70.55	1	1.29	70.55	Future
	Ericsson	8843	17.91	13.19	10.9	1.49	1.6	71.87	1	1.49	71.87	Future
	Ericsson	4408 (CBRS)	8.39	7.87	4.92	0.19	0.5	11.02	1	0.19	11.02	Future
	Ericsson	2208 (CBRS)	7.87	7.87	3.94	0.14	0.4	8.82	0	0.00	0.00	
	Ericsson	2205 (LAA)	7.87	7.87	3.94	0.14	0.4	8.82	0	0.00	0.00	
Power Unit *	Ericsson	6302	12.99	11.42	3.90	0.33	BEHIND RRU	22.05	2	0.67	44.09	Future
	Ericsson	PSU AC 02	7.06	13	2.7	0.14	BEHIND RRU	11.50	0	0.00	0.00	
	Ericsson	PSU AC 08	7.07	10.8	2.7	0.12	BEHIND RRU	11.50	0	0.00	0.00	
Disconnect	Square D	QO816L100RB	12.6	8.9	4.3	0.28	0.8	9.77	1	0.28	9.77	New
Fiber box	NRG Term Box	NHC12128002	12.13	12.13	8.13	0.69	1.0	10	0	0.00	0.00	
	Hoffman	A16106CH (**)	16	10	6	0.56	1.1	12	1	0.56	12.00	New
	Charles CFIT	M12LUFBRLT	12	9	6.1	0.38	0.8	10	0	0.00	0.00	
	CWDM Rittal	AE 1032.500	11.81	7.87	4.72	0.25	0.6	7.93	0	0.00	0.00	
	Ericsson	6389	13.78	12.01	3.98	0.38	1.1	17.64	0	0.00	0.00	
Fiber Terminal (On pole)	Commscope	MHT-06H200U-A0500F	11.73	5.13	3.5	0.12	0.4	2.18	0	0.00	0.00	
Splitter *	Commscope	S-3CPUSE-H-Di6	6.5	2.87	1.93	0.02	0.1	2.38	0	0.00	0.00	
	Commscope	S-2CPUSE-H-Di6	6.14	2.87	0.98	0.01	0.1	0.84	0	0.00	0.00	
	Commscope	S-2-CPUSE-H-43-i6	6.02	2.6	0.98	0.01	0.1	0.64	0	0.00	0.00	
Diplexer *	Commscope	CBC1921X-DS-2X	7.6	7.6	5.5	0.18	0.4	14.2	0	0.00	0.00	
	Commscope	CBC1923Q-43	4.5	8.3	3.3	0.07	0.3	8	0	0.00	0.00	
Triplexer *	Commscope	CBC61923T-DS-43	6.9	7.8	4.5	0.14	0.4	14.3	0	0.00	0.00	
Quadplexer *	Commscope	CBC781921WT-DS	7	11.14	4.72	0.21	0.5	20.1	0	0.00	0.00	
Coupler *	Commscope	CBC78-DF-2X	7.9	5.9	5.7	0.15	0.3	13.9	0	0.00	0.00	
Combiner *	Microlab 4X4	CM-88D	4.99	8.29	1.39	0.03	0.3	4.9	0	0.00	0.00	
	Microlab 3X2	CM-79	3.2	6.85	1.48	0.02	0.2	2.4	0	0.00	0.00	
	JMA	DBC-A-P-45F	7.32	6.14	6.38	0.17	0.3	15.2	1	0.17	15.20	Future
										8.49	357.50	
							(*) Total Volume (CU FT) :			5.14		

1 PROPOSED EQUIPMENT SPECIFICATIONS

ALL ITEMS MARKED WITH A (*) TO ADD UP TO A VOLUME < 25 CU. FT.

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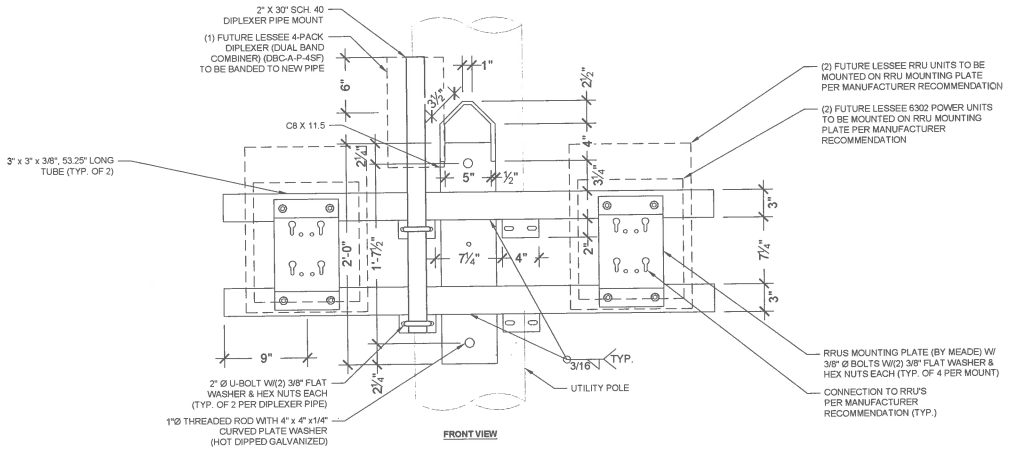
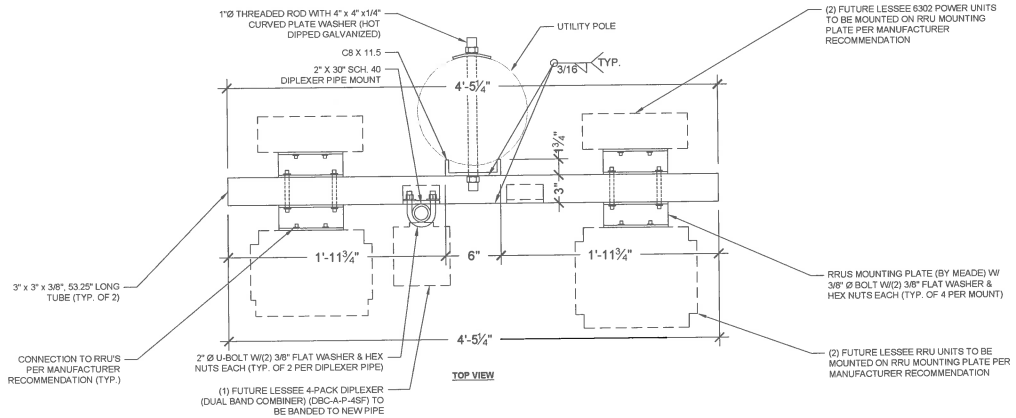
SHEET NUMBER:
A-4E



FRONT VIEW



TOP VIEW

1 SIDE-BY-SIDE RRU MOUNT CONNECTION
SCALE: 2"=1"

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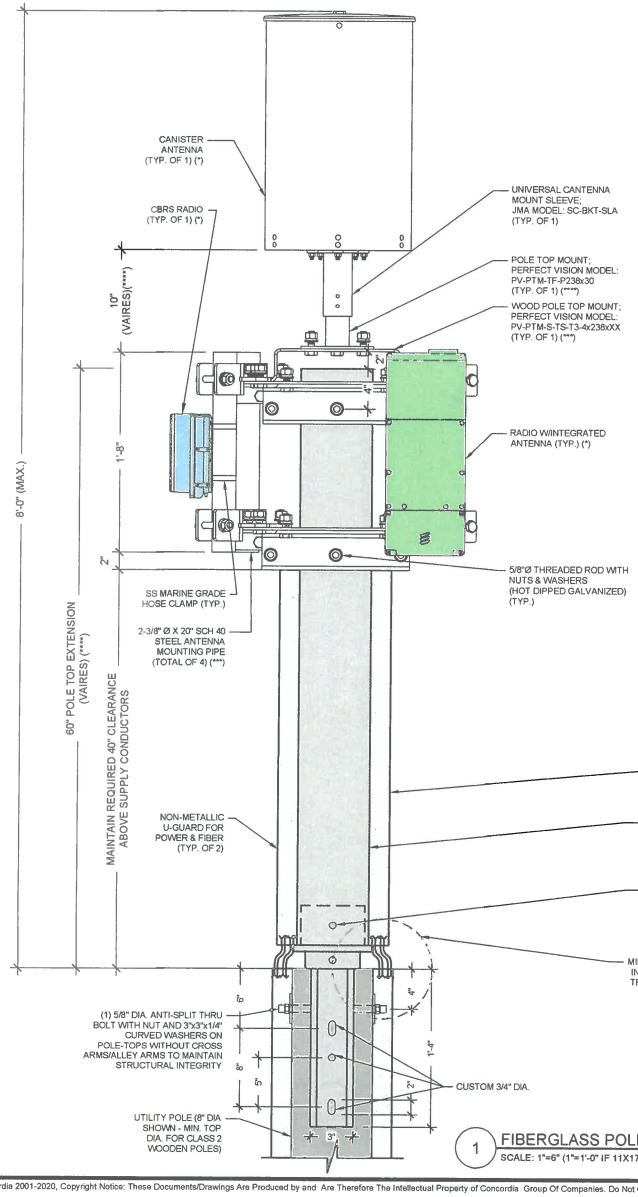
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

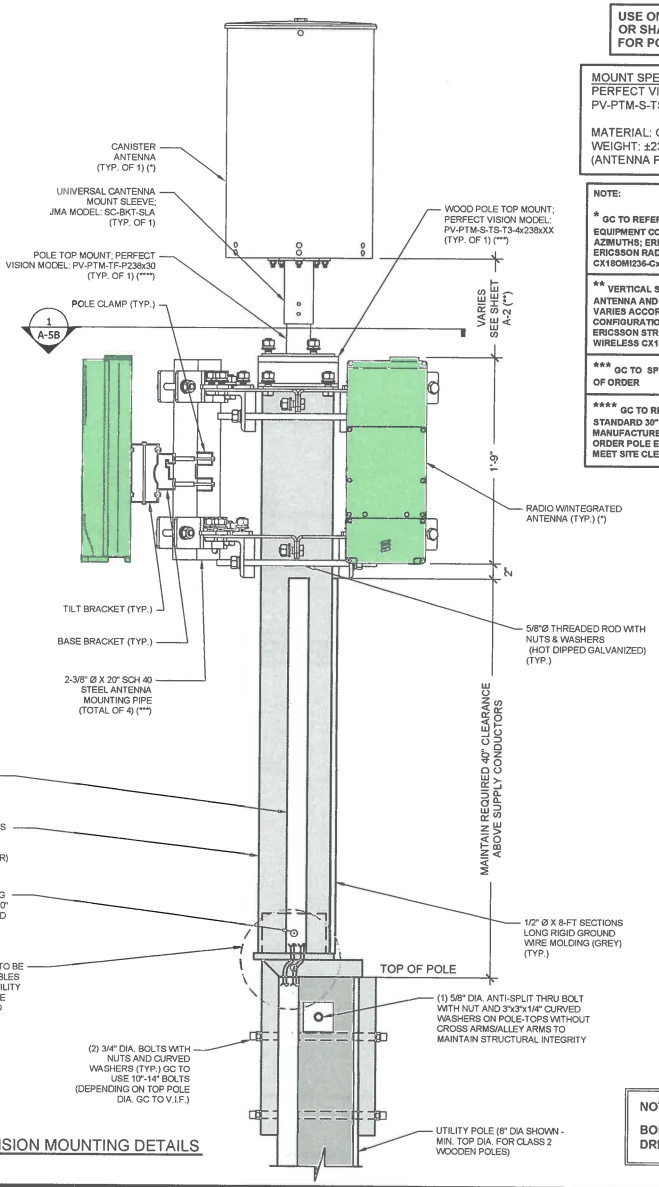
SHEET TITLE:
EQUIPMENT MOUNTING DETAILS

SHEET NUMBER:
A-5



1 FIBERGLASS POLE TOP EXTENSION MOUNTING DETAILS

SCALE: 1"=6" (1"=1'-0" IF 11X17 SHEET SIZE)



USE ONLY HIGHLINE HL-44 OR SHAKESPEARE PTX/PTR FOR POLE-TOP EXTENSIONS

MOUNT SPECIFICATIONS:
PERFECT VISION MODEL#:
PV-PTM-S-TS-T3-4x238xXX (***)

MATERIAL: GALVANIZED STEEL
WEIGHT: ±235 LBS
(ANTENNA PIPE HARDWARE INCLUDED)

NOTE:

*** GC TO REFER TO RFDS SHEET FOR FINAL EQUIPMENT CONFIGURATION AND ANTENNA AZIMUTHS; ERICSSON STREET MACRO 6701, ERICSSON RADIO 4408 AND JMA WIRELESS CX180MI236-Cxy UNITS SHOWN**

**** VERTICAL SEPARATION BETWEEN CANISTER ANTENNA AND RADIO W/INTEGRATED ANTENNA VARIES ACCORDING TO THE FINAL EQUIPMENT CONFIGURATION; SEPARATION BETWEEN ERICSSON STREET MACRO 6701 AND JMA WIRELESS CX180MI236-Cxy UNITS SHOWN**

***** GC TO SPECIFY PIPE LENGTH AT THE TIME OF ORDER**

****** GC TO REVIEW SITE CONDITIONS & CUT STANDARD 30" PIPE PROVIDED BY MANUFACTURER TO REQUIRED LENGTH & ORDER POLE EXTENSION ACCORDINGLY TO MEET SITE CLEARANCES (MAY VARY PER SITE)**

NOTE:

BOLT HOLE LAYOUT TO BE DRILLED IN THE FIELD BY GC

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361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (647) 981-0801

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CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
ANTENNA MOUNT & POLE EXTENSION DETAILS

SHEET NUMBER:
A-5A

MOUNT SPECIFICATIONS:
PERFECT VISION MODEL#:
PV-PTM-S-TS-T3-4x238xXX (**)

MATERIAL: GALVANIZED STEEL
WEIGHT: ±235 LBS
(ANTENNA PIPE HARDWARE INCLUDED)

WHEN USING POLE TOP EXTENSION:

- **USE ONLY HIGHLINE HL-44 OR SHAKESPEARE PTX/PTR**

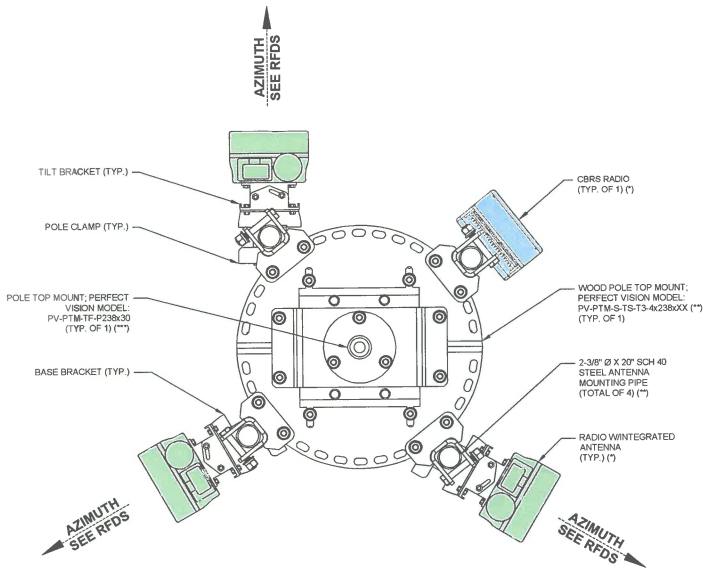
SHOWN SETUP IS SUBJECT TO CHANGE BASED ON RFDS SHEET AND RF DESIGN. ANTENNA PIPE POSITION TO BE ADJUSTED IN THE FIELD BY GC TO BEST FOLLOW EQUIPMENT MANUFACTURER'S SPACING RECOMMENDATIONS

NOTE:

*** GC TO REFER TO RFDS SHEET FOR FINAL EQUIPMENT CONFIGURATION AND ANTENNA AZIMUTHS; ERICSSON STREET MACRO 6701 AND ERICSSON RADIO 4408 UNITS SHOWN**

**** GC TO SPECIFY PIPE LENGTH AT THE TIME OF ORDER**

***** GC TO REVIEW SITE CONDITIONS & CUT STANDARD 30" PIPE PROVIDED BY MANUFACTURER TO REQUIRED LENGTH & ORDER POLE EXTENSION ACCURATELY TO MEET SITE CLEARANCES (VARIES PER SITE)**



1 RADIOS W/INTEGRATED ANTENNAS & CBRS RADIO TYPICAL MOUNTING DETAIL (PLAN VIEW)
SCALE: 1"=6" (1"=1'-0" IF 11X17 SHEET SIZE)

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361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 961-0801

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CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
EQUIPMENT MOUNTING DETAILS

SHEET NUMBER:
A-5B

ABBREVIATIONS	
AIC	AMPERE INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
C	CONDUIT
CAB	CABINET
DISC	DISCONNECT SWITCH
DWG	DRAWING
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
GEN	GENERATOR
GND	GROUND
GPS	GLOBAL POSITIONING SYSTEM
O/H	OVERHEAD
PCS	PERSONAL COMMUNICATION SYSTEM
PVC	POLYVINYL CHLORIDE
RGS	RIGID GLAVANIZED STEEL
TYP	TYPICAL
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND GAS
UW	UNDERGROUND WATER
SS	STORM SEWER

CODES AND STANDARDS	
NEC	NATIONAL ELECTRICAL CODE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
UL	UNDERWRITERS LABORATORIES, INC.
IBC	INTERNATIONAL BUILDING CODE
BOCA	BUILDING OFFICIAL AND CODE ADMINISTRATORS
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
ASTM	AMERICAN SOCIETY FIR TESTING MATERIALS

UTILITY CONTACTS:

POWER: COMED
ACCOUNT #: 31711-60047
CONTACT: MATEO ALVARADO
PHONE #: (630) 808-1686

FIBER: MCI METRO ATS
CONTACT: BOB BONCZKOWSKI
PHONE #: (630) 432-9594

GENERAL ELECTRICAL NOTES

1. COMPLY WITH NATIONAL ELECTRIC CODE, LATEST EDITION.
2. ALL ELECTRICAL MATERIALS, EQUIPMENT AND INSTALLATION PROCEDURES TO CONFORM WITH LOCAL JURISDICTION REQUIREMENTS.
3. ELECTRICAL CONTRACTOR SHALL PERFORM ALL VERIFICATION TESTS AND EXAMINATION WORK PRIOR TO ORDERING OF ELECTRICAL EQUIPMENT AND ACTUAL CONSTRUCTION. ELECTRICAL CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT & DISCREPANCIES.
4. ELECTRICAL PLANS, DETAILS, AND DIAGRAMS ARE DIAGRAMMATIC ONLY. FIELD CONDITIONS DICTATE THE AMOUNT AND LOCATION OF EQUIENT.
5. ALL MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, NFPA, AND "UL" LISTED.
6. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY UBC, NEC, LESSEE, AND ALL APPLICABLE LOCAL CODES.
7. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE A MINIMUM INTERRUPTING RATING OF 20,000 AIC UNLESS OTHERWISE NOTED.
8. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
9. PROVIDE LESSEE WITH ONE SET OF COMPLETE ELECTRICAL "AS-BUILT" DRAWINGS AT THE COMPLETION OF THE JOB SHOWING ACTUAL ROUTINGS AND WIRING CONNECTIONS.
10. LABEL ALL ELECTRICAL EQUIPMENT PER LESSEE SPECIFICATIONS.
11. ALL SINGLE-PHASE SELF-CONTAINED METER CONNECTION DEVICES MUST INCLUDE HORN TYPE BY-PASS PROVISION SO THAT SERVICE WILL NOT BE INTERRUPTED WHEN A METER IS REMOVED FROM THE SOCKET.
12. ALL CONDUITS & CONDUCTORS FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE.

CONDUCTOR NOTES:

1. ALL WIRING CONDUCTORS SHALL BE COPPER, THHN/THWN DUAL RATED 600 VOLTS INSULATION, UNLESS OTHERWISE NOTED.
2. CONDUCTORS SHALL BE 12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE.
3. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER UNLESS OTHERWISE NOTED.

CONDUIT MATERIAL SCHEDULE:

UNLESS NOTED OTHERWISE, ALL CONDUIT RUNS SHALL CONFORM TO THE FOLLOWING:

1. ALL ABOVE GRADE, EXTERIOR CONDUITS AND BUSHINGS SHALL BE RGS.
2. ALL BELOW GRADE HORIZONTAL CONDUITS SHALL BE HDPE SCHEDULE 40; UNDER A ROAD SHALL BE HDPE SCHEDULE 80.
3. ALL BELOW GRADE 45° & 90° BENDS SHALL BE STEEL W/THREADED CONNECTIONS.
4. ALL BELOW GRADE TO ABOVE GRADE RISERS SHALL BE STEEL W/THREADED CONNECTIONS.
5. SEAL TIGHT FLEXIBLE CONDUIT MAY BE USED WHERE CODE PERMITS.

SERVICE EQUIPMENT NOTES:

1. SERVICE EQUIPMENT SHALL HAVE A SHORT CIRCUIT TO WITHSTAND RATING THAT IS EQUAL TO OR EXCEEDS THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SUPPLY TERMINAL. THE INSTALLATION SHALL BE FREE FROM ANY SHORT CIRCUITS AND GROUNDS.
2. ALL ELECTRICAL EQUIPMENT SHALL BE ANCHORED TO WITHSTAND 80 M.P.H. WIND SPEED, EXPOSURE C.
3. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.

UTILITY COORDINATION NOTES:

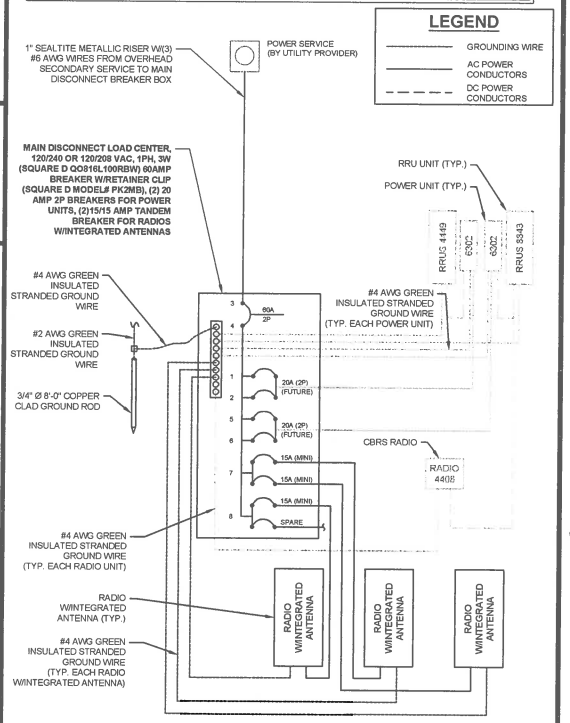
1. PROVIDE POWER AND TELEPHONE TO SERVICE POINTS PER UTILITY COMPANY REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL CONTACT UTILITY SERVICE PLANNERS AND OBTAIN ALL SERVICE REQUIREMENTS AND INCLUDE COSTS FOR SUCH IN HIS BID.
2. PROVIDE DAILY UPDATES TO PM UNTIL FINAL ELECTRICAL SERVICE IS AFFECTED.
3. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE PROPERTY OWNER & NECESSARY UTILITY COMPANIES FOR THE LOCATION OF ALL EXISTING BELOW GRADE UTILITIES PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE COSTS ASSOCIATED WITH EXISTING BELOW GRADE UTILITIES.
4. ELECTRICAL CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. ELECTRICAL CONTRACTOR SHALL INCLUDE IN THE BID ANY EXCESS FACILITY CHARGES ASSOCIATED W/ PROVIDING ELECTRICAL SERVICE FROM LOCAL UTILITY COMPANY.
5. ELECTRICAL CONTRACTOR TO VERIFY LOCAL UTILITY REQUIREMENTS FOR DEPTH, SIZE & SEPARATION OF CONDUIT PRIOR TO INSTALLATION. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES.
6. ELECTRICAL CONTRACTOR TO CALL DIGGER. (312) 744-7000 AT 48 HOURS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NONPUBLIC UTILITIES.
7. ALL UTILITY LOCATIONS AND CONNECTIONS TO BE VERIFIED WITH LESSEE REPRESENTATIVE.
8. SEE SINGLE-LINE DIAGRAM FOR UTILITY CONDUITS & CONDUCTOR SIZES.

NOTES ON FIBER & POWER COORDINATION

ROUTING SHOWN IS BASED ON ASSUMPTIONS MADE FROM VISUAL FIELD OBSERVATIONS OF EXISTING POLES & TRANSFORMERS. THESE PLANS MAY OR MAY NOT REFLECT AND/OR CONTAIN THE FINAL SCENARIO FOR POWER OR FIBER ROUTING. THE ELECTRICAL DESIGN SHOWN IS FOR PERMITTING PURPOSES ONLY AND IS NOT FOR CONSTRUCTION. ADDITIONAL TRANSFORMERS MAY BE REQUIRED. LONGER LEAD TIMES MAY BE POSSIBLE. CONCORDIA IS NOT RESPONSIBLE FOR CODE COMPLIANCE OR COMPLIANCE WITH POWER CODE. ELECTRICIAN IS REQUIRED TO CONFIRM COMPLIANCE OF SITE WITH LOCAL, COUNTY, STATE AND/OR NATIONAL ELECTRICAL CODES. THE MOST RESTRICTIVE OF SUCH CODES SHALL GOVERN AND BE APPLICABLE. THE DESIGN SHOWN ON THESE PLANS IS SUBJECT TO VERIFICATION AND APPROVAL BY VERIZON WIRELESS AND THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING FINAL SCENARIO & CODE COMPLIANCE & IS RESPONSIBLE FOR COORDINATING WITH VERIZON WIRELESS'S POWER COORDINATOR. ELECTRICAL CONTRACTOR SHALL BID ON THESE PLANS USING THE WORST CASE SCENARIO.

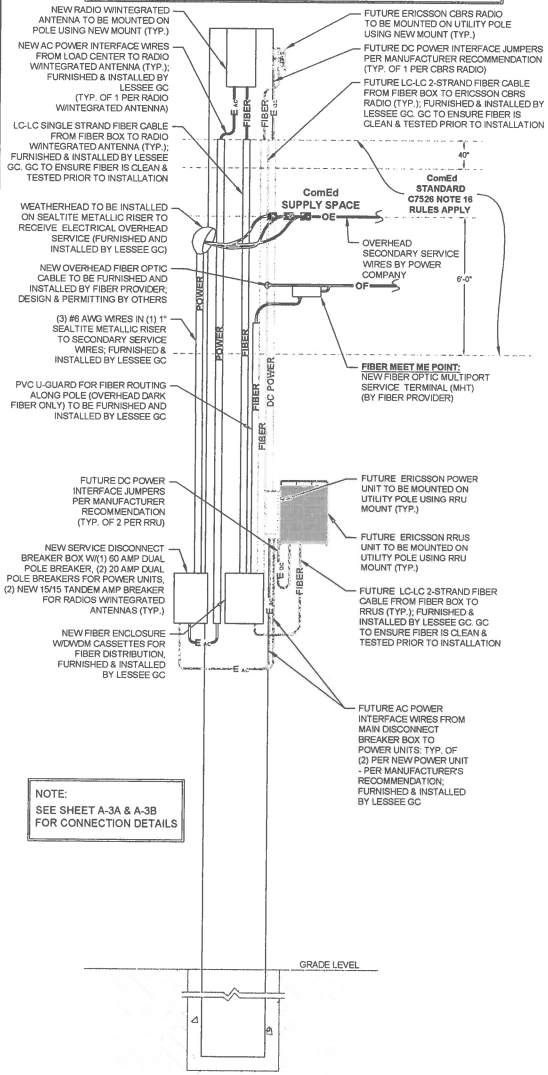
ATTENTION ELECTRICAL CONTRACTOR:

1.) ELECTRICAL CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY ELECTRICAL CONTRACTOR.
2.) ELECTRICAL CONTRACTOR TO VERIFY LOCAL UTILITY REQUIREMENTS FOR DEPTH, TYPE, SIZE & SEPARATION OF CONDUIT PRIOR TO INSTALLATION . NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES
3.) ELECTRICAL CONTRACTOR TO CALL UTILITY LOCATE HOTLINE FOR UNDERGROUND UTILITY LOCATIONS 48 HRS. PRIOR TO EXCAVATING. SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NONPUBLIC UTILITIES.



1 ELECTRICAL SCHEMATIC
SCALE: N.T.S.

ELECTRICAL SERVICE:
60A 120/208 OR 120/240V, SINGLE PHASE, 3 WIRE (NO HIGH-LEG CONNECTION)



NOTE:
SEE SHEET A-3A & A-3B FOR CONNECTION DETAILS

2 TYPICAL INSTALLATION - ELECTRICAL RISER DIAGRAM
SCALE: N.T.S.

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DRAWN BY: MK	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
ELECTRICAL DIGRAM & DETAILS

SHEET NUMBER:
E-1

BURNDY CONNECTIONS
OR APPROVED EQUAL

"C" CONNECTOR
HYPRESS

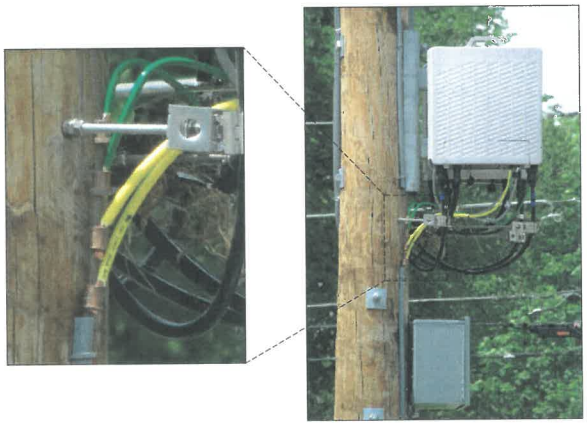
TYPE YGHC

BOND JUMPER
FIELD FABRICATED
GREEN STRANDED INSULATED
TYPE 2-YA-2

COPPER LUGS
TWO HOLE - LONG BARREL LENGTH

TYPE YA-2

1 GROUNDING CONNECTION DETAILS
SCALE: NTS



SAMPLE GROUNDING INSTALLATION PHOTOS

SYMBOLS LEGEND:

5/8" DIAMETER x 8'-0" LONG COPPER GLAD GROUND ROD (HARGER-5810)	⊗
#2 AWS TNND SOLID BARE COPPER WIRE MINIMUM 42" BELOW GRADE (HARGER-L2)	G
GROUND WIRE (ABOVE GRADE)	—— G ——
EXOTHERMIC WELD CONNECTION	■
MECHANICAL CONNECTION	□
C-CRIMP CONNECTION	△
HYPRESS LUG CONNECTION	▲

GROUNDING ELECTRODE SYSTEM NOTES:

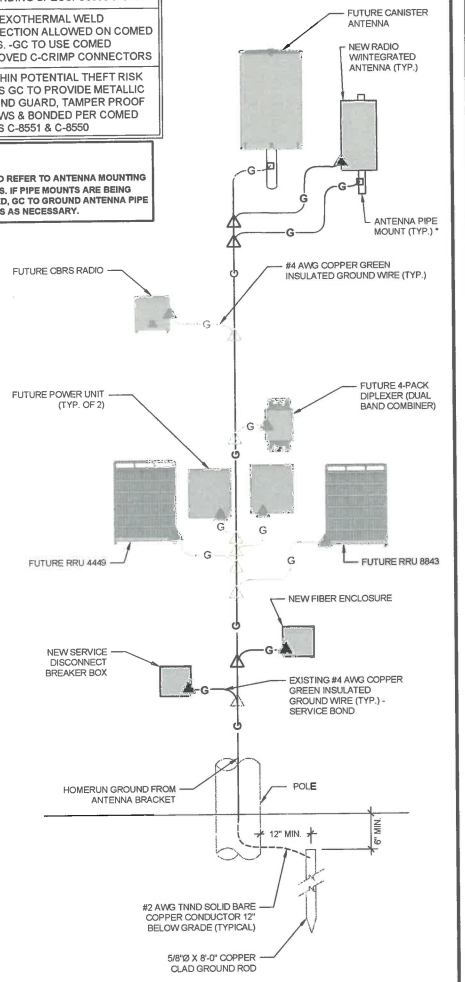
1. ALL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE, SPLICES, ETC. ALL CABLE TO GROUND RODS, GROUND RODS SPLICES AND LIGHTNING PROTECTION SYSTEM AS INDICATED. GROUND FOUNDATION ONLY AS INDICATED BY PM. ALL MATERIALS USED (MOLDS, WELDING, METAL, TOOLS, ETC) SHALL BE EXOTHERMIC PROCESS AND INSTALLED PER MANUFACTURERS RECOMMENDATION AND PROCEDURES.
2. ALL EXOTHERMIC CONNECTIONS ON GALVANIZED SURFACES SHALL BE CLEANED THOROUGHLY AND COLORED TO MATCH SURFACE WITH (2) TWO COATS OF SHERWIN-WILLIAMS GALVITE (WHITE) PAINT B50W3 (OR EQUAL) OR SHERWIN- WILLIAMS SILVERBRITE (ALUMINUM) B59S11 (OR EQUAL).
3. ALL ELECTRICAL & MECHANICAL GROUND CONNECTIONS SHALL HAVE ANTI-OXIDANT COMPOUND APPLIED TO CONNECTION.
4. UTILITY COMPANY COORDINATION: ELECTRICAL CONTRACTOR SHALL CONFIRM THAT ALL WORK IS IN ACCORDANCE WITH THE RULES OF THE LOCAL UTILITY COMPANY BEFORE SUBMITTING THE BID, THE CONTRACTOR SHALL CHECK WITH THE UTILITY COMPANIES SUPPLYING SERVICE TO THIS PROJECT AND SHALL DETERMINE FROM THEM ALL EQUIPMENT AND CHARGE WHICH THEY WILL REQUIRE AND SHALL INCLUDE THE COST IN THE BID.
5. GROUND TEST: GROUND TEST SHALL BE PERFORMED AS REQUIRED BY LESSEE STANDARD PROCEDURES. GROUND GRID RESISTANCE SHALL NOT EXCEED 5 OHMS.
6. CONTRACTOR SHALL SUBMIT THE GROUND RESISTANCE TEST REPORT AS FOLLOWS:

1. ONE (1) COPY TO OWNER REPRESENTATIVE
2. ONE (1) COPY TO ENGINEER
3. ONE (1) COPY TO KEEP INSIDE EQUIPMENT ENCLOSURE

7. GROUND RODS WILL BE 5/8" X 8 FOOT COPPER CLAD NOT LESS THAN 8 FOOT OR MORE THAN 15 FOOT APART. ALL CONNECTIONS TO THE GROUND RING, AND PERIPHERAL EQUIPMENT WILL BE MADE VIA CADWELD PROCESS UNLESS OTHERWISE SPECIFIED. ALL WIRING USED IN THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE SPECIFIED. ALL GROUND LEADS DENOTED BY (a) SHALL BE INSTALLED IN 1/2" SCHEDULE 40 PVC ABOVE GRADE.

NOTE:
1. GC TO FOLLOW COMED GROUNDING SPECS: C8550 & C7976
2. NO EXOTHERMAL WELD CONNECTION ALLOWED ON COMED POLES. -GC TO USE COMED APPROVED C-CRIMP CONNECTORS
3. WITHIN POTENTIAL THEFT RISK AREAS GC TO PROVIDE METALLIC GROUND GUARD, TAMPER PROOF SCREWS & BONDED PER COMED SPECS C-8551 & C-8550

NOTE:
*** GC TO REFER TO ANTENNA MOUNTING DETAILS. IF PIPE MOUNTS ARE BEING UTILIZED, GC TO GROUND ANTENNA PIPE MOUNTS AS NECESSARY.**



2 TYPICAL EQUIPMENT GROUNDING SCHEMATIC
SCALE: NTS

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DRAWN BY: MK	CHECKED BY: GMS
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PROJECT #: 20171626078
LOCATION #: 456201
BURLINGTON AND ARTHUR SC
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
G-1

Concordia Wireless, Inc.
ConcordiaWireless.Com

Passing @ 98.3%

Structural Calculations
MODIFICATION

Analysis of Existing Wooden Utility Pole for the additional loads due to the attachment of new Lessee equipment

Project #
20171626078

Location #
456201

Site Name:
BURLINGTON & ARTHUR SC

Site Address
1 ARTHUR AVE
CLARENDON HILLS, IL 60514

Prepared For:

CHICAGO SMSA
d/b/a VERIZON WIRELESS

Prepared By:

CONCORDIA WIRELESS

June 23, 2020

I certify that these calculations were prepared by me or under my supervision and to the best of my knowledge and belief comply with the requirements of the local building code

LIC. EXP. 11-30-2020

Nabi R. Fakroddin, P.E., S.E.
Licensed Structural Engineer
Expires: 11-30-2020

361 Randy Road, Unit 101, Carol Stream, IL 60188 | 847-981-0801 | 847-589-0643 fax

PURPOSE

The purpose of this analysis was to verify the structural adequacy of an existing utility pole to resist new and existing equipment loads.

DESCRIPTION

Based on measurements taken in the field, the existing pole is 35-ft long, class 4 of assumed Southern Yellow Pine. The analysis was performed assuming an embedment of 5'-5"; thus, the pole extends approximately 29'-7" above grade. We assumed the pole embedment is sufficient to support all loads.

ANALYSIS PROCEDURE AND RESULTS

The pole was subjected to the ANSI C2-2017 (NESC 2017) Code standards. The following loading cases were considered:

1. Rule 250B - Grade C: Forces due to a wind speed of 40 mph in conjunction with 0.50-inch ice build-up around all elements (i.e. Heavy Loading District).

2. Rule 250C - Grade C: Forces due to a wind speed of 90 mph (i.e. Extreme Wind).

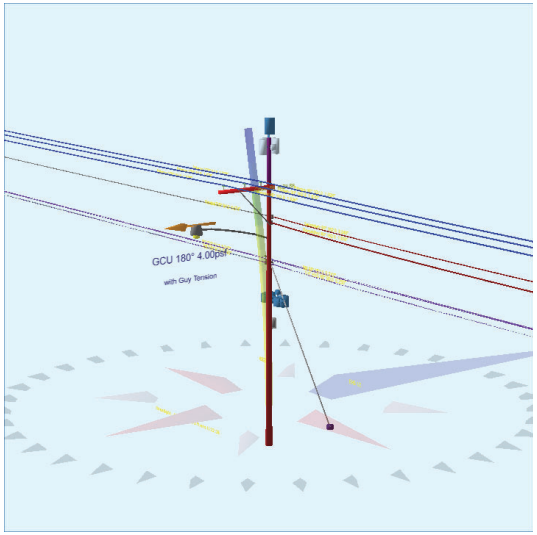
   Pole Rating: 98.3%

CONCLUSION

Based on the performed calculations, the utility pole is structurally acceptable to resist the loads imposed by the existing and the proposed equipment.

NEW CONFIG												
Cat	Item	Model	Dimensions (inches)			Volume	Area	Weight	Number	Total Volume	Total Weight	Note
			H	W	D	CU FT	SQ FT	Lb	(per site)	CU FT	Lb	
Antennas	Amphenol	QXW-632x634xBF-EDIN	23.2	12	7.1	1.14	1.9	11	0	0.00	0.00	
	Amphenol	CUUX063X06Fxyz0	24.3	12.1	7	1.19	2.0	13	0	0.00	0.00	
	Amphenol	CWT070X06F00-1	24	14.6 (Dia)		2.33	n/a	28.70	0	0.00	0.00	
	Amphenol	CUT070X06F00-1	24	14.6 (Dia)		2.33	n/a	22.00	0	0.00	0.00	
	Kathrein	840-10794	24.6	16 (Dia)		2.86	n/a	39.90	0	0.00	0.00	
	Kathrein	840-10510	24	16 (Dia)		2.79	n/a	45.00	0	0.00	0.00	
	Kathrein	840-10515	24	16 (Dia)		2.79	n/a	50.00	0	0.00	0.00	
	JMA	CX18OMI236-1Cxy	24	14.6 (Dia)		2.33	n/a	30.00	1	2.33	30.00	Future
	JMA	CX04OMI236-1C	27.5	14 (Dia)		2.45	n/a	38.60	0	0.00	0.00	
	JMA	XGU-165	12	12.6	5.6	0.49	1.1	10.80	0	0.00	0.00	
Radio / Antenna *	Ericsson	AIR 5331 (**)	23.62	11.93	6.26	1.02	2.0	30.86	0	0.00	0.00	
	Ericsson	AIR 5121 (**)	23.94	11.81	5.67	0.93	2.0	30.86	0	0.00	0.00	
	Ericsson	STREETMACRO 6701 (**)	21.20	8.10	5.10	0.51	1.2	31.00	3	1.52	93.00	New
	Ericsson	DUAL RADIO SUPPORT (6503)	17.13	7.87	5.28	0.41	0.9	21.60	0	0.00	0.00	
Radio *	Ericsson RRUS11	B13	19.7	17	7.2	1.40	2.3	51.00	0	0.00	0.00	
	Ericsson RRUS12	B5	20.4	18.5	7.5	1.64	2.6	58.00	0	0.00	0.00	
	Ericsson RRUS 32	B66A	23.07	12.05	7	1.13	1.9	52.90	0	0.00	0.00	
	Ericsson RRUS 32	B2	23.07	12.05	7	1.13	1.9	52.90	0	0.00	0.00	
	Ericsson	4449	17.91	13.19	9.45	1.29	1.6	70.55	1	1.29	70.55	Future
	Ericsson	8843	17.91	13.19	10.9	1.49	1.6	71.87	1	1.49	71.87	Future
	Ericsson	4408 (CBRS)	8.39	7.87	4.92	0.19	0.5	11.02	1	0.19	11.02	Future
	Ericsson	2208 (CBRS)	7.87	7.87	3.94	0.14	0.4	8.82	0	0.00	0.00	
	Ericsson	2205 (LAA)	7.87	7.87	3.94	0.14	0.4	8.82	0	0.00	0.00	
Power Unit *	Ericsson	6302	12.99	11.42	3.90	0.33	BEHIND RRU	22.05	2	0.67	44.09	Future
	Ericsson	PSU AC 02	7.06	13	2.7	0.14	BEHIND RRU	11.50	0	0.00	0.00	
	Ericsson	PSU AC 08	7.07	10.8	2.7	0.12	BEHIND RRU	11.50	0	0.00	0.00	
Disconnect	Square D	QO816L100RB	12.6	8.9	4.3	0.28	0.8	9.77	1	0.28	9.77	New
Fiber box	NRG Term Box	NHC12128002	12.13	12.13	8.13	0.69	1.0	10	0	0.00	0.00	
	Hoffman	A16106CH (**)	16	10	6	0.56	1.1	12	1	0.56	12.00	New
	Charles CFIT	M12LUFBRLT	12	9	6.1	0.38	0.8	10	0	0.00	0.00	
	CWDM Rittal	AE 1032.500	11.81	7.87	4.72	0.25	0.6	7.93	0	0.00	0.00	
	Ericsson	6389	13.78	12.01	3.98	0.38	1.1	17.64	0	0.00	0.00	
Fiber Terminal (On pole)	Commscope	MHT-06H200U-A0500F	11.73	5.13	3.5	0.12	0.4	2.18	0	0.00	0.00	
Splitter *	Commscope	S-3CPUSE-H-Di6	6.5	2.87	1.93	0.02	0.1	2.38	0	0.00	0.00	
	Commscope	S-2CPUSE-H-Di6	6.14	2.87	0.98	0.01	0.1	0.84	0	0.00	0.00	
	Commscope	S-2-CPUSE-H-43-i6	6.02	2.6	0.98	0.01	0.1	0.64	0	0.00	0.00	
Diplexer *	Commscope	CBC1921X-DS-2X	7.6	7.6	5.5	0.18	0.4	14.2	0	0.00	0.00	
	Commscope	CBC1923Q-43	4.5	8.3	3.3	0.07	0.3	8	0	0.00	0.00	
Triplexer *	Commscope	CBC61923T-DS-43	6.9	7.8	4.5	0.14	0.4	14.3	0	0.00	0.00	
Quadplexer *	Commscope	CBC781921WT-DS	7	11.14	4.72	0.21	0.5	20.1	0	0.00	0.00	
Coupler *	Commscope	CBC78-DF-2X	7.9	5.9	5.7	0.15	0.3	13.9	0	0.00	0.00	
Combiner *	Microlab 4X4	CM-88D	4.99	8.29	1.39	0.03	0.3	4.9	0	0.00	0.00	
	Microlab 3X2	CM-79	3.2	6.85	1.48	0.02	0.2	2.4	0	0.00	0.00	
	JMA	DBC-A-P-4SF	7.32	6.14	6.38	0.17	0.3	15.2	1	0.17	15.20	Future
										8.49	**357.50**	
							(*) Total Volume (CU FT) :			**5.14**		

Pole Num:	**456201**	Pole Length / Class:	**35 / 4**	Code:	**NESC**	Structure Type:	**Guyed Tangent**
Aux Data 1	**Unset**	Species:	**SOUTHERN PINE**	NESC Rule:	**Rule 250B**	Status	**Guy Wires Adequate**
Aux Data 2	**Unset**	Setting Depth (ft):	**5.42**	Construction Grade:	**C**	Pole Strength Factor:	**0.85**
Aux Data 3	**Unset**	G/L Circumference (in):	**31.86**	Loading District:	**Heavy**	Transverse Wind LF:	**1.75**
Aux Data 4	**Unset**	G/L Fiber Stress (psi):	**8,000**	Ice Thickness (in):	**0.50**	Wire Tension LF:	**1.30**
Aux Data 5	**Unset**	Allowable Stress (psi):	**6,800**	Wind Speed (mph):	**39.53**	Vertical LF:	**1.90**
Aux Data 6	**Unset**	Fiber Stress Ht. Reduc:	**No**	Wind Pressure (psf):	**4.00**		
Latitude:	**0**	Longitude:		**0**	Elevation:		**0M**



Pole Capacity Utilization (%)		Height (ft)	Wind Angle (deg)
Maximum	**72.3**	0.0	180.0
Groundline	**72.3**	0.0	180.0
Vertical	**4.2**	21.92	270.0

Pole Moments (ft-lb)		Load Angle (deg)	Wind Angle (deg)
Max Cap Util	**41,104**	183.9	180.0
Groundline	**41,104**	183.9	180.0
GL Allowable	**58,025**		

Guy System Component Summary				Load From Worst Wind Angle on Pole		Individual Maximum Load With Overload Applied	
Description	**Lead Length (ft)**	**Lead Angle (deg)**	**Height (ft)**	**Nominal Capacity (%)**	**Wind Angle (deg)**	**Max* Load Capacity (%)**	**Wind Angle (deg)**
Expanding - 12" - Soil Class 3	13.0	90.0		**4.2**	180.0	**7.2**	270.0
EHS 1/2 (Down)			18.9	**6.9**	180.0	**11.8**	270.0
			System Capacity Summary:	**Adequate**		**Adequate**	

Groundline Load Summary - Reporting Angle Mode: Load - Reporting Angle: 183.9°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
Powers	640	46.3	**24,133**	58.7	**41.6**	**2,743**	1,645	20	**2,763**	**40.6**
Comms	423	30.6	**8,868**	21.6	**15.3**	**1,008**	1,183	15	**1,023**	**15.0**
GuyBraces	-51	-3.7	**-998**	-2.4	**-1.7**	**-114**	2,110	26	**-87**	**-1.3**
GenericEquipments	188	13.6	**4,342**	10.6	**7.5**	**494**	1,251	15	**509**	**7.5**
Pole	145	10.5	**2,304**	5.6	**4.0**	**262**	1,320	16	**278**	**4.1**
Crossarms	2	0.1	**367**	0.9	**0.6**	**42**	76	1	**43**	**0.6**
Streetlights	32	2.3	**1,973**	4.8	**3.4**	**224**	162	2	**226**	**3.3**
Insulators	4	0.3	**115**	0.3	**0.2**	**13**	82	1	**14**	**0.2**
Pole Load	1,381	100.0	**41,104**	100.0	**70.8**	**4,672**	7,828	97	**4,769**	**70.1**
Pole Reserve Capacity			**16,921**		**29.2**	**2,128**			**2,031**	**29.9**

Load Summary by Owner - Reporting Angle Mode: Load - Reporting Angle: 183.9°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
<Undefined>	1,197	86.6	**37,865**	92.1	**65.3**	**4,304**	6,423	80	**4,383**	**64.5**
Verizon	40	2.9	**935**	2.3	**1.6**	**106**	86	1	**107**	**1.6**
Pole	145	10.5	**2,304**	5.6	**4.0**	**262**	1,320	16	**278**	**4.1**
Totals:	1,381	100.0	**41,104**	100.0	**70.8**	**4,672**	7,828	97	**4,769**	**70.1**

Detailed Load Components:

Power		Owner	Height (ft)	Horiz. Offset (in)	Cable Diameter (in)	Sag at Max Temp (ft)	Cable Weight (lbs/ft)	Lead/Span Length (ft)	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment* (ft-lb)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	88.18	1.0260	1.69	0.745	162.0	90.0	162.0	4,170	-10,917	1,899	2,843	-6,174
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	88.18	1.0260	0.78	0.745	94.0	270.0	94.0	4,170	10,917	1,102	1,650	13,669
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	20.78	1.0260	1.69	0.745	162.0	90.0	162.0	4,170	-10,917	425	2,843	-7,648
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	20.78	1.0260	0.78	0.745	94.0	270.0	94.0	4,170	10,917	247	1,650	12,814
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	50.32	1.0260	1.69	0.745	162.0	90.0	162.0	4,170	-10,917	1,076	2,843	-6,998
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	50.32	1.0260	0.78	0.745	94.0	270.0	94.0	4,170	10,917	624	1,650	13,191

Neutral	AAC 250 KCM 19 STRAND VALERIAN	24.92	6.11	0.5740	0.75	0.234	94.0	270.0	94.0	1,400	3,068	-41	1,073	4,100
Secondary	TRIPLEX 6 AWG	24.92	6.11	0.5800	2.01	0.113	162.0	90.0	162.0	500	-1,096	-61	1,856	699
Secondary	TRIPLEX 1/0	24.25	6.15	1.0300	2.17	0.399	162.0	90.0	162.0	1,200	-2,559	-7	2,321	-245
										Totals:	**-587**	**5,264**	**18,730**	**23,407**

Comm		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Cable Diameter (in)**	**Sag at Max Temp (ft)**	**Cable Weight (lbs/ft)**	**Lead/Span Length (ft)**	**Span Angle (deg)**	**Wire Length (ft)**	**Tension (lbs)**	**Tension Moment* (ft-lb)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Overlashed Bundle	6M		19.67	6.41	0.2420	6.35	0.104	162.0	90.0	162.0	1,200	-2,076	36	1,316	-723
CATV	CATV .75		19.64	5.87	1.0700		0.900	162.0	90.0	162.0			93	388	481
CATV	CATV .50		19.65	6.68	0.5700		0.600	162.0	90.0	162.0			80	388	469
CATV	CATV .50		19.60	6.55	0.5700		0.600	162.0	90.0	162.0			79	388	466
Overlashed Bundle	6M		19.67	6.41	0.2420	2.25	0.104	94.0	270.0	94.0	1,200	2,076	21	764	2,860
CATV	CATV .75		19.64	6.95	1.0700		0.900	94.0	270.0	94.0			64	225	289
CATV	CATV .50		19.65	6.14	0.5700		0.600	94.0	270.0	94.0			43	225	268
CATV	CATV .50		19.60	6.27	0.5700		0.600	94.0	270.0	94.0			44	225	269
Overlashed Bundle	1/4" EHS		18.92	6.46	0.2500	3.14	0.121	90.0	90.0	90.0	250	-416	-2	695	277
CATV	CATV .50		18.89	6.46	0.5700		0.600	90.0	90.0	90.0			-3	199	196
Overlashed Bundle	6M		18.92	6.46	0.2420	0.86	0.104	94.0	270.0	94.0	1,500	2,496	2	761	3,258
CATV	CATV .50		18.90	6.46	0.5700		0.600	94.0	270.0	94.0			5	243	248
Telco	P3-750JCA		18.89	6.47	0.8200		0.197	94.0	270.0	94.0			0	243	243
											Totals:	**2,080**	**462**	**6,059**	**8,601**

GenericEquipment		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Cylinder	OMNI ANTENNA		36.58	1.07	0.0	0.0	10.00	24.60	--	16.00	--	2	698	700
Box	Bracket 01B		34.75	0.04	180.0	0.0	34.00	18.00	2.00	--	3.00	0	146	146
Box	PANEL ANTENNA		34.00	12.21	0.0	0.0	30.86	23.62	6.26	--	11.93	-60	743	684
Box	Bracket 02A		34.00	6.08	0.0	0.0	34.00	12.00	2.00	--	3.00	-33	16	-17
Box	PANEL ANTENNA		34.00	12.21	180.0	0.0	30.86	23.62	6.26	--	11.93	60	743	803
Box	Bracket 02A		34.00	6.08	180.0	0.0	34.00	12.00	2.00	--	3.00	33	16	49
Box	PANEL ANTENNA		34.00	12.21	270.0	0.0	30.86	23.62	6.26	--	11.93	4	390	394
Box	Bracket 02A		34.00	6.08	270.0	0.0	34.00	12.00	2.00	--	3.00	2	63	66
Cylinder	HL-44	Verizon	32.33	0.32	0.0	0.0	25.00	66.00	--	7.00	--	1	724	726
Box	TRIPLEX		15.00	14.38	20.0	0.0	21.60	7.32	6.38	--	6.14	-47	53	5
Cylinder	Radio Mount 01		14.50	5.72	0.0	90.0	40.00	53.25	--	3.00	--	-36	112	76
Box	RRU UNIT		14.00	22.63	50.0	0.0	92.00	17.08	12.75	--	13.50	-228	243	14
Box	POWER BOX		14.00	18.20	85.0	0.0	22.20	12.99	3.89	--	11.42	-10	56	46
Box	RRU UNIT		14.00	22.63	310.0	0.0	92.00	17.08	12.75	--	13.50	-194	242	48

Box	POWER BOX		14.00	18.20	280.0	0.0	22.20	12.99	3.89	--	11.42	-7	57	50
Cylinder	Radio Mount 01		14.00	5.75	0.0	90.0	40.00	53.25	--	3.00	--	-36	108	72
Box	Fiber Box	Verizon	11.13	8.92	90.0	0.0	10.00	16.00	7.00	--	10.00	-1	97	96
Box	Breaker Box	Verizon	11.00	6.58	0.0	0.0	10.00	12.60	4.30	--	8.90	-10	96	85
Box	Bracket 02A		34.00	6.08	90.0	0.0	34.00	12.00	2.00	--	3.00	-2	63	61
Box	CBRS RADIO		34.00	11.54	90.0	0.0	11.02	8.40	4.92	--	7.90	-1	109	108
											Totals:	**-565**	**4,776**	**4,212**

Crossarm		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Offset	ALLEY ARM 3-1/2 X 4-1/2 X 6		28.88	5.63	90.0	90.0	40.00	5.50	4.50	96.00	301	55	356
										Totals:	**301**	**55**	**356**

Streetlight		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
General	Streetlight - 10 ft. Arm		22.38	3.76	180.0	180.0	85.00	24.00	20.00	3.00	120.00	1,197	716	1,914
											Totals:	**1,197**	**716**	**1,914**

Insulator		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Pin	Pin Insulator - 5 kV		29.10	88.00	176.3	0.0	6.00	3.50	7.50	0	37	37
Pin	Pin Insulator - 5 kV		29.10	20.00	164.3	0.0	6.00	3.50	7.50	0	37	37
Pin	Pin Insulator - 5 kV		29.10	50.00	173.6	0.0	6.00	3.50	7.50	0	37	37
J-Hook	J-Hook		19.67	0.00	180.0	180.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		24.92	0.00	0.0	0.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		24.25	0.00	90.0	90.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		18.92	0.00	90.0	90.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		18.92	0.00	270.0	270.0	5.00	3.00	0.00	0	0	0
									Totals:	**0**	**111**	**111**

Guy Wire and Brace		**Owner**	**Attach Height (ft)**	**End Height (ft)**	**Lead/Span Length (ft)**	**Wire Diameter (in)**	**Percent Solid (%)**	**Lead Angle (deg)**	**Incline Angle (deg)**	**Wire Weight (lbs/ft)**	**Rest Length (ft)**	**Stretch Length (in)**
EHS 1/2	Down		18.92	0.00	13.00	0.5	75.00	90.0	55.3	0.517	27.44	0.16

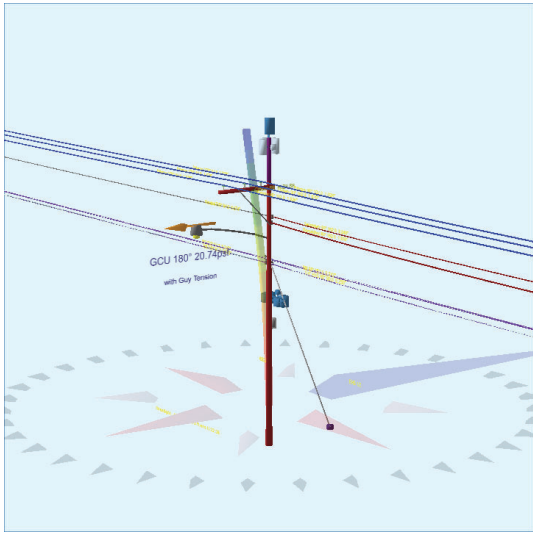
Guy Wire and Brace (Loads and Reactions)		**Elastic Modulus (psi)**	**Rated Tensile Strength (lbs)**	**Guy Strength Factor**	**Allowable Tension (lbs)**	**Initial Tension (lbs)**	**Loaded Tension*[2] (lbs)**	**Maximum Tension[2] (lbs)**	**Applied Tension[3] (lbs)**	**Vertical Load (lbs)**	**Shear Load In Guy Dir (lbs)**	**Shear Load At Report Angle (lbs)**	**Moment at GL[3] (ft-lb)**
EHS 1/2	Down	2.30e+7	26,900	0.90	24,210	700	2,865	2,604	1,676	1,378	954	-65	-968
									Totals:	**1,378**	**954**	**-65**	**-968**

Anchor/Rod Load Summary	Owner	Rod Length AGL (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2] (%)
Expanding - 12" - Soil Class 3		0.00	13.00	90.0	40,000	1.00	40,000	2,865	1,676	7.2

Pole Buckling

Buckling Constant	Buckling Column Height* (ft)	Buckling Section Height (% Buckling Col. Hgt.)	Buckling Section Diameter (in)	Minimum Buckling Diameter at GL (in)	Diameter at Tip (in)	Diameter at GL (in)	Modulus of Elasticity (psi)	Pole Density (pcf)	Ice Density (pcf)	Pole Tip Height (ft)	Buckling Load Capacity at Height (lbs)	Buckling Load Applied at Height (lbs)	Buckling Load Factor of Safety
0.71	21.93	33.79	9.28	4.58	6.69	10.15	2.13e+6	60.00	57.00	29.58	187,451	**1863.88**	**23.81**

Pole Num:	**456201**	Pole Length / Class:	**35 / 4**	Code:	**NESC**	Structure Type:	**Guyed Tangent**
Aux Data 1	**Unset**	Species:	**SOUTHERN PINE**	NESC Rule:	**Rule 250C**	Status	**Guy Wires Adequate**
Aux Data 2	**Unset**	Setting Depth (ft):	**5.42**	Construction Grade:	**C**	Pole Strength Factor:	**0.75**
Aux Data 3	**Unset**	G/L Circumference (in):	**31.86**	Loading District:	**Special**	Transverse Wind LF:	**0.87**
Aux Data 4	**Unset**	G/L Fiber Stress (psi):	**8,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.00**
Aux Data 5	**Unset**	Allowable Stress (psi):	**6,000**	Wind Speed (mph):	**90.00**	Vertical LF:	**1.00**
Aux Data 6	**Unset**	Fiber Stress Ht. Reduc:	**No**	Wind Pressure (psf):	**20.74**	Max 250C Wind (mph)	**92.91**
Latitude:		**0**	Longitude:		**0**	Elevation:	**0M**



Pole Capacity Utilization (%)		Height (ft)	Wind Angle (deg)
Maximum	**98.3**	0.0	180.0
Groundline	**98.3**	0.0	180.0
Vertical	**1.8**	20.92	270.0

Pole Moments (ft-lb)		Load Angle (deg)	Wind Angle (deg)
Max Cap Util	**49,975**	182.2	180.0
Groundline	**49,975**	182.2	180.0
GL Allowable	**51,199**		

Guy System Component Summary				Load From Worst Wind Angle on Pole		Individual Maximum Load With Overload Applied	
Description	**Lead Length (ft)**	**Lead Angle (deg)**	**Height (ft)**	**Nominal Capacity (%)**	**Wind Angle (deg)**	**Max* Load Capacity (%)**	**Wind Angle (deg)**
Expanding - 12" - Soil Class 3	13.0	90.0		**3.4**	180.0	**8.9**	270.0
EHS 1/2 (Down)			18.9	**5.6**	180.0	**14.7**	270.0
			System Capacity Summary:	**Adequate**		**Adequate**	

Groundline Load Summary - Reporting Angle Mode: Load - Reporting Angle: 182.2°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
Powers	685	35.1	**21,811**	43.6	**42.6**	**2,427**	339	4	**2,431**	**40.5**
Comms	432	22.1	**8,952**	17.9	**17.5**	**996**	357	4	**1,000**	**16.7**
GuyBraces	-19	-1.0	**-382**	-0.8	**-0.8**	**-43**	1,130	14	**-28**	**-0.5**
GenericEquipments	439	22.5	**11,820**	23.7	**23.1**	**1,315**	659	8	**1,323**	**22.1**
Pole	326	16.7	**4,730**	9.5	**9.2**	**526**	695	9	**535**	**8.9**
Crossarms	5	0.2	**310**	0.6	**0.6**	**35**	40	0	**35**	**0.6**
Streetlights	76	3.9	**2,447**	4.9	**4.8**	**272**	85	1	**273**	**4.6**
Insulators	9	0.5	**287**	0.6	**0.6**	**32**	43	1	**32**	**0.5**
Pole Load	1,952	100.0	**49,975**	100.0	**97.6**	**5,560**	3,347	41	**5,601**	**93.4**
Pole Reserve Capacity			**1,224**		**2.4**	**440**			**399**	**6.6**

Load Summary by Owner - Reporting Angle Mode: Load - Reporting Angle: 182.2°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
<Undefined>	1,534	78.6	**42,930**	85.9	**83.9**	**4,776**	2,607	32	**4,808**	**80.1**
Verizon	92	4.7	**2,315**	4.6	**4.5**	**258**	45	1	**258**	**4.3**
Pole	326	16.7	**4,730**	9.5	**9.2**	**526**	695	9	**535**	**8.9**
Totals:	1,952	100.0	**49,975**	100.0	**97.6**	**5,560**	3,347	41	**5,601**	**93.4**

Detailed Load Components:

Power		Owner	Height (ft)	Horiz. Offset (in)	Cable Diameter (in)	Sag at Max Temp (ft)	Cable Weight (lbs/ft)	Lead/Span Length (ft)	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment* (ft-lb)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	88.18	1.0260	2.27	0.745	162.0	90.0	162.0	4,170	-4,690	441	3,109	-1,139
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	88.18	1.0260	1.07	0.745	94.0	270.0	94.0	4,170	4,690	256	1,872	6,818
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	20.78	1.0260	2.27	0.745	162.0	90.0	162.0	4,170	-4,690	99	3,109	-1,481
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	20.78	1.0260	1.07	0.745	94.0	270.0	94.0	4,170	4,690	58	1,872	6,620
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	50.32	1.0260	2.27	0.745	162.0	90.0	162.0	4,170	-4,690	250	3,109	-1,330
Primary	AAC 795.0 KCM 37 STRAND ARBUTUS		29.73	50.32	1.0260	1.07	0.745	94.0	270.0	94.0	4,170	4,690	145	1,872	6,707

Neutral	AAC 250 KCM 19 STRAND VALERIAN	24.92	6.11	0.5740	1.24	0.234	94.0	270.0	94.0	1,400	1,318	-6	858	2,170
Secondary	TRIPLEX 6 AWG	24.92	6.11	0.5800	2.47	0.113	162.0	90.0	162.0	500	-471	-5	1,439	964
Secondary	TRIPLEX 1/0	24.25	6.15	1.0300	2.41	0.399	162.0	90.0	162.0	1,200	-1,099	-1	2,477	1,377
										Totals:	**-252**	**1,239**	**19,719**	**20,706**

Comm		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Cable Diameter (in)**	**Sag at Max Temp (ft)**	**Cable Weight (lbs/ft)**	**Lead/Span Length (ft)**	**Span Angle (deg)**	**Wire Length (ft)**	**Tension (lbs)**	**Tension Moment* (ft-lb)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Overlashed Bundle	6M		19.67	6.41	0.2420	7.01	0.104	162.0	90.0	162.0	1,200	-892	4	793	-94
CATV	CATV .75		19.64	5.87	1.0700		0.900	162.0	90.0	162.0			36	792	828
CATV	CATV .50		19.65	6.68	0.5700		0.600	162.0	90.0	162.0			27	792	819
CATV	CATV .50		19.60	6.55	0.5700		0.600	162.0	90.0	162.0			27	790	817
Overlashed Bundle	6M		19.67	6.41	0.2420	2.69	0.104	94.0	270.0	94.0	1,200	892	3	478	1,373
CATV	CATV .75		19.64	6.95	1.0700		0.900	94.0	270.0	94.0			24	478	502
CATV	CATV .50		19.65	6.14	0.5700		0.600	94.0	270.0	94.0			14	478	492
CATV	CATV .50		19.60	6.27	0.5700		0.600	94.0	270.0	94.0			15	477	491
Overlashed Bundle	1/4" EHS		18.92	6.46	0.2500	3.31	0.121	90.0	90.0	90.0	250	-179	0	421	242
CATV	CATV .50		18.89	6.46	0.5700		0.600	90.0	90.0	90.0			-1	420	420
Overlashed Bundle	6M		18.92	6.46	0.2420	1.70	0.104	94.0	270.0	94.0	1,500	1,072	0	512	1,584
CATV	CATV .50		18.90	6.46	0.5700		0.600	94.0	270.0	94.0			1	512	513
Telco	P3-750JCA		18.89	6.47	0.8200		0.197	94.0	270.0	94.0			0	511	511
											Totals:	**893**	**151**	**7,455**	**8,499**

GenericEquipment		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Cylinder	OMNI ANTENNA		36.58	1.07	0.0	0.0	10.00	24.60	--	16.00	--	1	1,756	1,757
Box	Bracket 01B		34.75	0.04	180.0	0.0	34.00	18.00	2.00	--	3.00	0	364	364
Box	PANEL ANTENNA		34.00	12.21	0.0	0.0	30.86	23.62	6.26	--	11.93	-31	1,853	1,821
Box	Bracket 02A		34.00	6.08	0.0	0.0	34.00	12.00	2.00	--	3.00	-17	39	22
Box	PANEL ANTENNA		34.00	12.21	180.0	0.0	30.86	23.62	6.26	--	11.93	31	1,853	1,884
Box	Bracket 02A		34.00	6.08	180.0	0.0	34.00	12.00	2.00	--	3.00	17	39	57
Box	PANEL ANTENNA		34.00	12.21	270.0	0.0	30.86	23.62	6.26	--	11.93	1	972	973
Box	Bracket 02A		34.00	6.08	270.0	0.0	34.00	12.00	2.00	--	3.00	1	158	158
Cylinder	HL-44	Verizon	32.33	0.32	0.0	0.0	25.00	66.00	--	7.00	--	1	1,794	1,794
Box	TRIPLEX		15.00	14.38	20.0	0.0	21.60	7.32	6.38	--	6.14	-25	112	87
Cylinder	Radio Mount 01		14.50	5.72	0.0	90.0	40.00	53.25	--	3.00	--	-19	239	220
Box	RRU UNIT		14.00	22.63	50.0	0.0	92.00	17.08	12.75	--	13.50	-116	515	399
Box	POWER BOX		14.00	18.20	85.0	0.0	22.20	12.99	3.89	--	11.42	-4	119	115
Box	RRU UNIT		14.00	22.63	310.0	0.0	92.00	17.08	12.75	--	13.50	-106	514	408

Box	POWER BOX		14.00	18.20	280.0	0.0	22.20	12.99	3.89	--	11.42	-5	122	117
Cylinder	Radio Mount 01		14.00	5.75	0.0	90.0	40.00	53.25	--	3.00	--	-19	230	211
Box	Fiber Box	Verizon	11.13	8.92	90.0	0.0	10.00	16.00	7.00	--	10.00	0	205	205
Box	Breaker Box	Verizon	11.00	6.58	0.0	0.0	10.00	12.60	4.30	--	8.90	-5	203	198
Box	Bracket 02A		34.00	6.08	90.0	0.0	34.00	12.00	2.00	--	3.00	-1	158	157
Box	CBRS RADIO		34.00	11.54	90.0	0.0	11.02	8.40	4.92	--	7.90	0	272	271
											Totals:	**-298**	**11,519**	**11,221**

Crossarm		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Offset	ALLEY ARM 3-1/2 X 4-1/2 X 6		28.88	5.63	90.0	90.0	40.00	5.50	4.50	96.00	159	135	295
										Totals:	**159**	**135**	**295**

Streetlight		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Height (in)**	**Unit Depth (in)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
General	Streetlight - 10 ft. Arm		22.38	3.76	180.0	180.0	85.00	24.00	20.00	3.00	120.00	631	1,692	2,323
											Totals:	**631**	**1,692**	**2,323**

Insulator		**Owner**	**Height (ft)**	**Horiz. Offset (in)**	**Offset Angle (deg)**	**Rotate Angle (deg)**	**Unit Weight (lbs)**	**Unit Diameter (in)**	**Unit Length (in)**	**Offset Moment* (ft-lb)**	**Wind Moment* (ft-lb)**	**Moment at GL* (ft-lb)**
Pin	Pin Insulator - 5 kV		29.10	88.00	176.3	0.0	6.00	3.50	7.50	0	91	91
Pin	Pin Insulator - 5 kV		29.10	20.00	164.3	0.0	6.00	3.50	7.50	0	91	91
Pin	Pin Insulator - 5 kV		29.10	50.00	173.6	0.0	6.00	3.50	7.50	0	91	91
J-Hook	J-Hook		19.67	0.00	180.0	180.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		24.92	0.00	0.0	0.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		24.25	0.00	90.0	90.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		18.92	0.00	90.0	90.0	5.00	3.00	0.00	0	0	0
J-Hook	J-Hook		18.92	0.00	270.0	270.0	5.00	3.00	0.00	0	0	0
									Totals:	**0**	**272**	**272**

Guy Wire and Brace		**Owner**	**Attach Height (ft)**	**End Height (ft)**	**Lead/Span Length (ft)**	**Wire Diameter (in)**	**Percent Solid (%)**	**Lead Angle (deg)**	**Incline Angle (deg)**	**Wire Weight (lbs/ft)**	**Rest Length (ft)**	**Stretch Length (in)**
EHS 1/2	Down		18.92	0.00	13.00	0.5	75.00	90.0	55.3	0.517	27.44	0.13

Guy Wire and Brace (Loads and Reactions)		**Elastic Modulus (psi)**	**Rated Tensile Strength (lbs)**	**Guy Strength Factor**	**Allowable Tension (lbs)**	**Initial Tension (lbs)**	**Loaded Tension*[2] (lbs)**	**Maximum Tension[2] (lbs)**	**Applied Tension[3] (lbs)**	**Vertical Load (lbs)**	**Shear Load In Guy Dir (lbs)**	**Shear Load At Report Angle (lbs)**	**Moment at GL[3] (ft-lb)**
EHS 1/2	Down	2.30e+7	26,900	0.90	24,210	700	3,547	3,547	1,349	1,109	768	-29	-362
									Totals:	**1,109**	**767**	**-29**	**-362**

Anchor/Rod Load Summary	Owner	Rod Length AGL (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2] (%)
Expanding - 12" - Soil Class 3		0.00	13.00	90.0	40,000	1.00	40,000	3,547	1,349	8.9

Pole Buckling

Buckling Constant	Buckling Column Height* (ft)	Buckling Section Height (% Buckling Col. Hgt.)	Buckling Section Diameter (in)	Minimum Buckling Diameter at GL (in)	Diameter at Tip (in)	Diameter at GL (in)	Modulus of Elasticity (psi)	Pole Density (pcf)	Ice Density (pcf)	Pole Tip Height (ft)	Buckling Load Capacity at Height (lbs)	Buckling Load Applied at Height (lbs)	Buckling Load Factor of Safety
0.71	20.94	33.62	9.32	3.72	6.69	10.15	2.13e+6	60.00	57.00	29.58	184,871	**1859.52**	**55.56**

POLE EXTENSION DESIGN

CONTROLING DESIGN CODES

1) TIA-EIA-222-G (FOR WIND LOAD ON ANTENNAS AND ANTENNA SUPPORTING STRUCTURES)

DESIGN WIND PRESSURE

ELEVATION C/L ANTENNA:	$E := 36.58\,ft$
BASIC WIND SPEED	$V := 90mph$
EXPOSURE	C
IMPORTANCE FACTOR	$I := 1.0$
TOPOGRAPHIC FACTOR	$Kzt := 1.0$
WIND DIRECTION FACTOR	$Kd := 0.95$
GUST RESPONSE FACTOR STRUCTURE	$Gh := 1.0$

$$Kz := 2.01 \cdot \left(\frac{E}{900\,ft}\right)^{\left(\frac{2}{9.5}\right)} = 1.02$$ Velocity Pressure Coefficient

$$q_z := 0.00256 \cdot V^2 \cdot Kz \cdot Kzt \cdot Kd \cdot I \cdot \frac{psf}{mph^2} = 20.17 \cdot psf$$

EFFECTIVE WIND PRESSURE ON POLE STRUCTURE

$$p := \max\left(20psf, q_z \cdot Gh\right) = 20.17 \cdot psf$$

ANTENNA GROUP 1 LOADING

ANTENNA GROUP 1: (3) PANEL ANTENNA (LARGEST ANTENNA)
(1) CANISTER ANTENNA
(1) CBRS RADIO

NUMBER OF FLAT ANT: $N1 := 4$

NUMBER OF ROUND ANT: $N1r := 1$

SIZE OF FLAT ANT: $H1 := \frac{(3 \cdot 24 + 1 \cdot 8.4)\text{in}}{N1} = 1.67\ \text{ft}$ $W1 := \frac{(3 \cdot 12 + 1 \cdot 7.9)\text{in}}{N1} = 0.91\ \text{ft}$

$D1 := \frac{(3 \cdot 6.5 + 1 \cdot 4.92)\text{in}}{N1r} = 2.04\ \text{ft}$

SIZE OF ROUND ANT: $H1r := \frac{(1 \cdot 24)\text{in}}{N1r} = 2\ \text{ft}$ $W1r := \frac{(1 \cdot 14.6)\text{in}}{N1r} = 1.22\ \text{ft}$

$D1r := \frac{(1 \cdot 14.6)\text{in}}{N1r} = 1.22\ \text{ft}$

WEIGHT OF ANTENNAS: $WT1_{antenna} := (3 \cdot 31 + 1 \cdot 11.02)\text{lb} = 104.02\ \text{lb}$

EFFECTIVE ANTENNA AREA $A1_{ant.flat} := 0.8 N1\, H1 \cdot W1$ $A1_{ant.flat} = 4.9\ \text{ft}^2$

$A1_{ant.round} := N1r\, H1r \cdot W1r$ $A1_{ant.round} = 2.43\ \text{ft}^2$

FORCE COEFFICIENTS PER TIA-222-G

Cf (ROUND MEMBER) $Cf_{round} := 1.2$ TIA-222-G, Tbl. 2-8a

Cf (FLAT MEMBER) $Cf_{flat} := 1.4$

ANTENNA GROUP 1 WIND LOAD $WL1_{antenna} := p \cdot \left(Cf_{flat} \cdot A1_{ant.flat} + Cf_{round} \cdot A1_{ant.round}\right) = 197.37\ \text{lb}$

$WL1_{antenna} = 197\ \text{lb}$

WEIGHT OF ANTENNAS: $WT1_{antenna} = 104.02\ \text{lb}$

ANTENNA CONNECTION TO EXTENSION POLE

WEIGHT OF 2" DIA. X 40" SCH 40 MOUNTING PIPE	$WT_{pipe} := 15lb$	Weight of (1) Pipe, (4) pipes considered
WOOD POLE TOP MOUNT WEIGHT	$WT_{TMOUNT} := 40lb$	(2) considered
U-BOLT & HARDWARE WEIGHT	$WT_{hrdw} := 10lb$	Weight of (1) Assembly, (6) considered
WEIGHT OF ANTENA GROUP	$WT_{ant.MAX} := WT1_{antenna} + WT_{pipe} \cdot 4 + WT_{hrdw} \cdot 6 + WT_{TMOUNT} = 264.02\,lb$	
TOTAL LOAD IN CONNECTION TO POLE EXTENSION	$F_{conn} := \sqrt{WT_{ant.MAX}^2 + WL1_{antenna}^2} = 329.64\,lb$	
5/8" DIA. THREADED FASTENER AVAILABLE TENSILE STRENGTH	$R_{bt\_allow} := 5.9kip$	AISC ASD Manual, 9th Edition, Tbl. I-B
5/8" DIA. THREADED FASTENER AVAILABLE SHEAR STRENGTH	$R_{bV\_allow} := 3.1kip$	AISC ASD Manual, 9th Edition, Tbl. I-D
	$IC := \frac{F_{conn}}{\min(R_{bt\_allow}, R_{bV\_allow})} = 0.11$	< 1.0 OK

EXTENSION POLE CHECK

HIGHLINE HL-44 OR APPROVED EQUIVALENT

WIND LOAD FROM ANTENNA GROUP

$WL1_{antenna} = 197\,lb$

EQUIVALENT WIND LOAD FROM ANTENNA AT 31 IN ABOVE EXTENSION POLE CONNECTION

$WL1_{antenna.eq} := \frac{68in}{31in} \cdot WL1_{antenna} = 432.94\,lb$ < 1,000 lb OK

THE HIGHLINE HL-44 EXTENSION POLE IS ADEQUATE TO TAKE THE LOAD PER HIGHLINE PRODUCTS POLE TOP EXTENSION TESTING TEST #1 CANTILEVER TEST

EXTENSION POLE CONNECTION TO EXISTING POLE CHECK

Ca (EXTENSION POLE)

$Cf_{round} = 1.2$

EXTENSION POLE SIZE

$HP := 72in \quad WP := 7.125in$

EXTENSION POLE EFFECTIVE AREA

$A2_{pole} := Cf_{round} \cdot HP \cdot WP = 4.28\,ft^2$

EXTENSION POLE WIND LOAD

$F_{POLE} := p \cdot A2_{pole} = 86.25\,lb$

3/4" DIA. THREADED FASTENER AVAILABLE TENSILE STRENGTH

$R_{bt\_allow} := 8.4kip$ AISC ASD Manual, 9th Edition, Tbl. I-B

3/4" DIA. THREADED FASTENER AVAILABLE SHEAR STRENGTH

$R_{bv\_allow} := 8.8kip$ AISC ASD Manual, 9th Edition, Tbl. I-D

$d_1 := 84in \quad d_2 := 48in \quad d_3 := 8in$

MOMENT IN CONNECTION

$M_r := WL1_{antenna} \cdot (d_1) + F_{POLE} \cdot (d_2) = 1726.56\,lb \cdot ft$

SHEAR/TENSION IN BOLTS

$R_{TP} := \frac{M_r}{d_3} = 2589.84\,lb$

TOTAL SHEAR PER BOLT

$V_{max} := R_{TP} = 2589.84\,lb$

$IC_v := \frac{V_{max}}{R_{bv\_allow}} = 0.29$ <1.0 OK

BOLTS AVAILABLE SHEAR STRENGTH FOR SAWN LUMBER

$Z_{perp} := 1.6 \cdot 2000lb = 3200\,lb$

$IC := \frac{V_{max}}{\min(R_{bv\_allow}, Z_{perp})} = 0.81$ < 1.0 OK

ADDITIONAL EQUIPMENT FIBER BOX AND BREAKER BOX

ADDITIONAL EQUIPMENT: (1) FIBER ENCLOSURE
(1) BREAKER BOX

NUMBER OF EQ: $N3 := 2$

SIZE OF EQ: $H3 := \frac{(1 \cdot 12.6 + 1 \cdot 12.13)in}{N3}$ $W3 := \frac{(1 \cdot 8.9 + 1 \cdot 12.13)in}{N3}$

WEIGHT OF RF EQ: $WT3_{antenna} := (1 \cdot 10 + 1 \cdot 10)lb$

EFFECTIVE EQUIPMENT AREA $A3_{antenna} := H3 \cdot W3 \cdot N3$ $A3_{antenna} = 1.81\ ft^2$

ADNL EQUIPMENT WIND LOAD $WL3_{antenna} := p \cdot Cf_{flat} \cdot A3_{antenna}$ $WL3_{antenna} = 51\ lb$

TOTAL WEIGHT OF ADTL EQUIPMENT $WT_{adtl} := WT3_{antenna} + 2 \cdot 20lb = 60\ lb$

TOTAL WIND LOAD ON ADTL EQUIPMENT $WL_{adtl} := WL3_{antenna} = 51\ lb$

TOTAL LOAD IN CONNECTION TO EXISTING POLE $F_{conn} := \sqrt{WT_{adtl}^2 + WL_{adtl}^2} = 78.75\ lb$

TOTAL SHEAR PER BOLT $V_{max} := F_{conn} \cdot 0.5 = 39.37\ lb$

5/8" DIA. THREADED FASTENER AVAILABLE TENSILE STRENGTH $R_{bt\_allow} := 5.9kip$ AISC ASD Manual, 9th Edition, Tbl. I-B

5/8" DIA. THREADED FASTENER AVAILABLE SHEAR STRENGTH $R_{bv\_allow} := 3.1kip$ AISC ASD Manual, 9th Edition, Tbl. I-D

BOLTS AVAILABLE SHEAR STRENGTH FOR SAWN LUMBER $Z_{perp} := 1.6 \cdot 760lb = 1216\ lb$

$$IC := \frac{V_{max}}{\min(R_{bv\_allow}, Z_{perp})} = 0.03 \quad < 1.0\ OK$$

RRU MOUNT CONNECTION TO NEW WOODEN UTILITY POLE

ANTENNA GROUP 4 — (2) RADIO UNITS, (1) DIPLEXER, (2) POWER UNITS

NUMBER OF ANT: $N4 := 5$

SIZE OF ANT:

$$H4 := \frac{(2\cdot 17.1 + 1\cdot 6.4 + 2\cdot 13)\text{in}}{N4} = 1.11\ \text{ft}$$

$$W4 := \frac{(2\cdot 13.5 + 1\cdot 7.32 + 2\cdot 11.42)\text{in}}{N4} = 0.95\ \text{ft}$$

$$D4 := \frac{(2\cdot 12.75 + 1\cdot 6.14 + 2\cdot 3.89)\text{in}}{N4} = 0.66\ \text{ft}$$

WEIGHT OF ANTENNAS: $WT4_{antenna} := [2\cdot(72 + 10) + 1\cdot 15.2 + 2\cdot 22.1]\text{lb} = 223.4\ \text{lb}$

EFFECTIVE ANTENNA AREA $A4_{antenna} := N4(H4\cdot W4)$ $A4_{antenna} = 5.29\ \text{ft}^2$

ANTENNA GROUP 4 WIND LOAD $WL4_{antenna} := p\cdot Cf_{flat}\cdot A4_{antenna}$

$WL4_{antenna} = 149\ \text{lb}$

WEIGHT OF ANTENNAS: $WT4_{antenna} = 223.4\ \text{lb}$

WEIGHT OF 2" DIA. X 30" SCH 40 MOUNTING PIPE $WT_{pipe2} := 10\text{lb}$ Weight of (1) Pipe, (2) pipes considered

WEIGHT OF 2 3/8" DIA. X 24" SCH 40 MOUNTING PIPE $WT_{pipe2.3} := 7.5\text{lb}$ Weight of (1) Pipe, (2) pipes considered

WEIGHT OF 3" X 3" X3/8" X 53.25" LONG TUBE $WT_{TUBE} := 33\text{lb}$ Weight of (1) Tube, (2) tubes considered

BRACKETS WEIGHT $WT_{bracket} := 20\text{lb}$ Weight of (1) Bracket, (8) Brackets considered

WEIGHT OF ANTENA GROUP $WT_{ant.MAX} := WT4_{antenna} + WT_{pipe2}\cdot 2 + 2WT_{TUBE} + 2WT_{pipe2.3} \ldots + WT_{bracket}\cdot 8 = 484.4\ \text{lb}$

TOTAL LOAD IN CONNECTION TO POLE $F_{conn} := \sqrt{WT_{ant.MAX}^2 + WL4_{antenna}^2} = 506.9\ \text{lb}$

5/8" DIA. THREADED FASTENER AVAILABLE TENSILE STRENGTH

$R_{bt\_allow} := 5.9kip$ AISC ASD Manual, 9th Edition, Tbl. I-B

5/8" DIA. THREADED FASTENER AVAILABLE SHEAR STRENGTH

$R_{bV\_allow} := 3.1kip$ AISC ASD Manual, 9th Edition, Tbl. I-D

$$IC := \frac{F_{conn}}{\min\left(R_{bt\_allow}, R_{bV\_allow}\right)} = 0.16 \quad < 1.0 \text{ OK}$$

$d_1 := \frac{53.25in}{2} = 2.22\,ft$ Antenna Center Line to Bracket Attachment Center

$d_2 := 19.5in$ Distance between Bracket Bolts

MOMENT IN CONNECTION

$M_r := WL4_{antenna} \cdot \left(d_1\right) = 331.34\,lb \cdot ft$

SHEAR/TENSION IN BOLTS

$R_{TP} := \frac{M_r}{d_2} = 203.9\,lb$

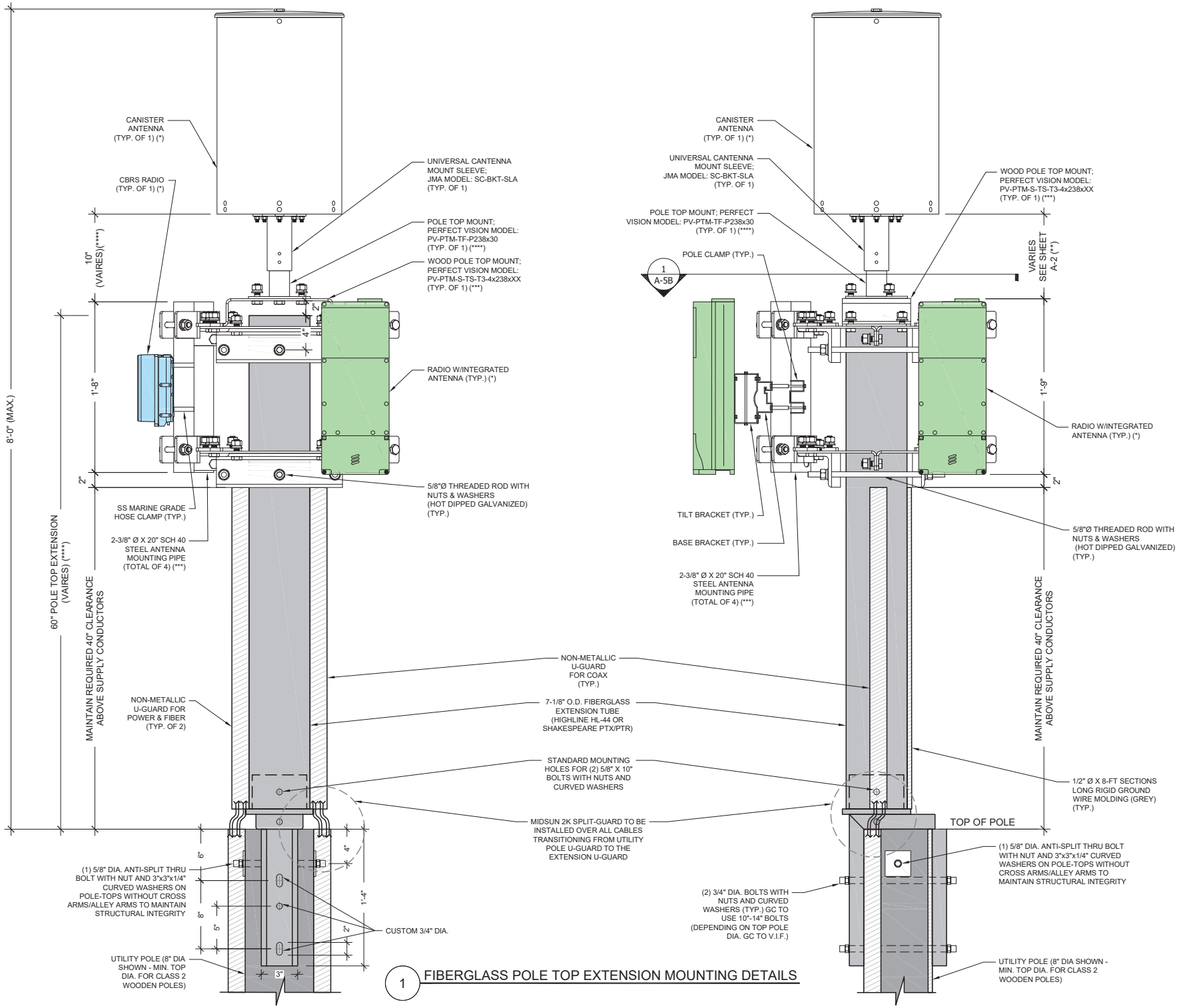
TOTAL SHEAR PER BOLT

$V_{max} := \sqrt{R_{TP}^{\,2} + WL4_{antenna}^{\,2}} = 252.74\,lb$

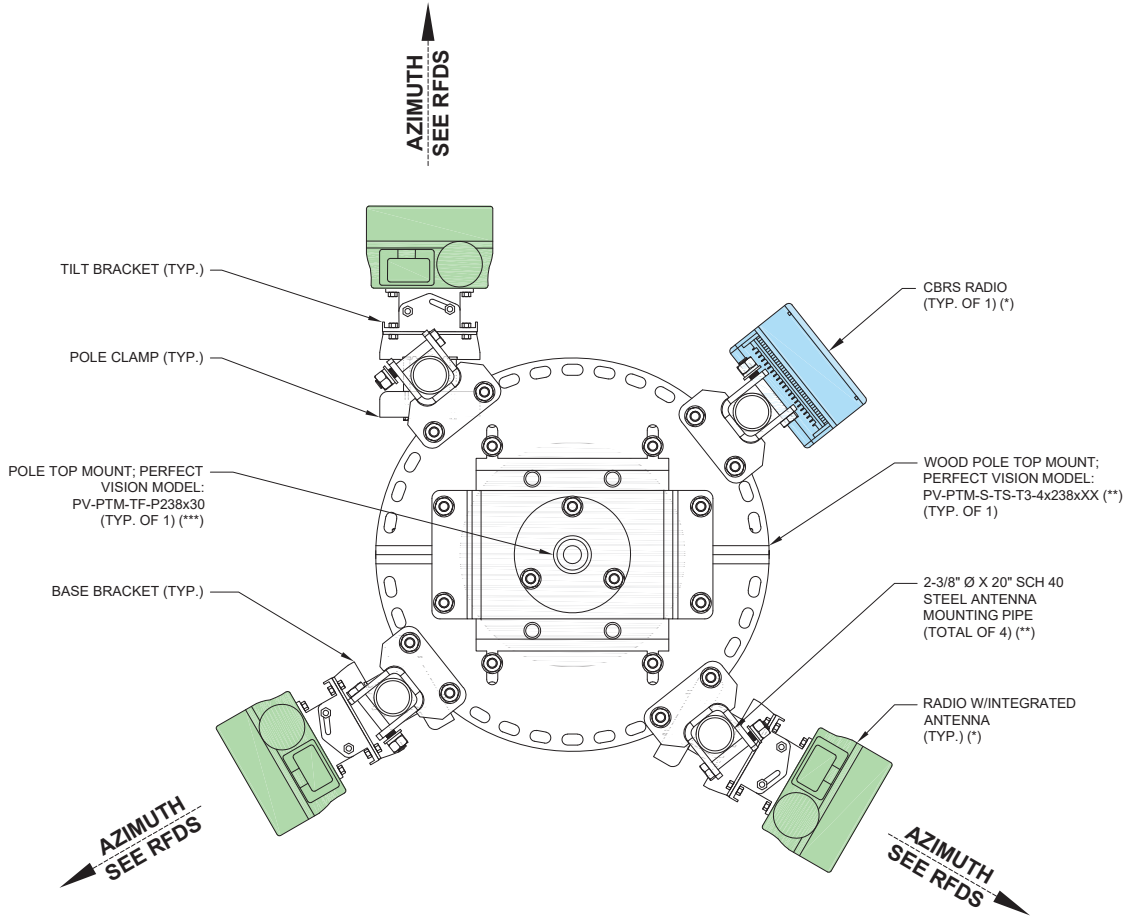
BOLTS AVAILABLE SHEAR STRENGTH FOR SAWN LUMBER

$Z_{perp} := 1.6 \cdot 760lb = 1216\,lb$

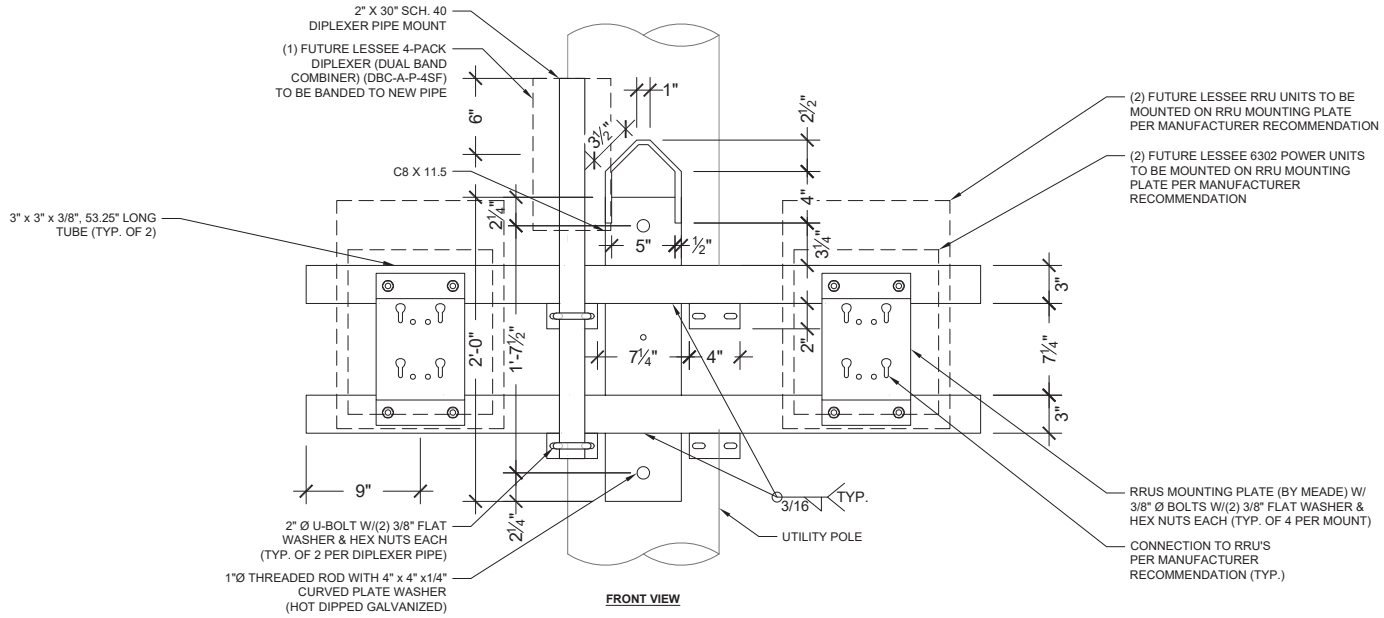
$$IC := \frac{V_{max}}{\min\left(R_{bV\_allow}, Z_{perp}\right)} = 0.21 \quad < 1.0 \text{ OK}$$

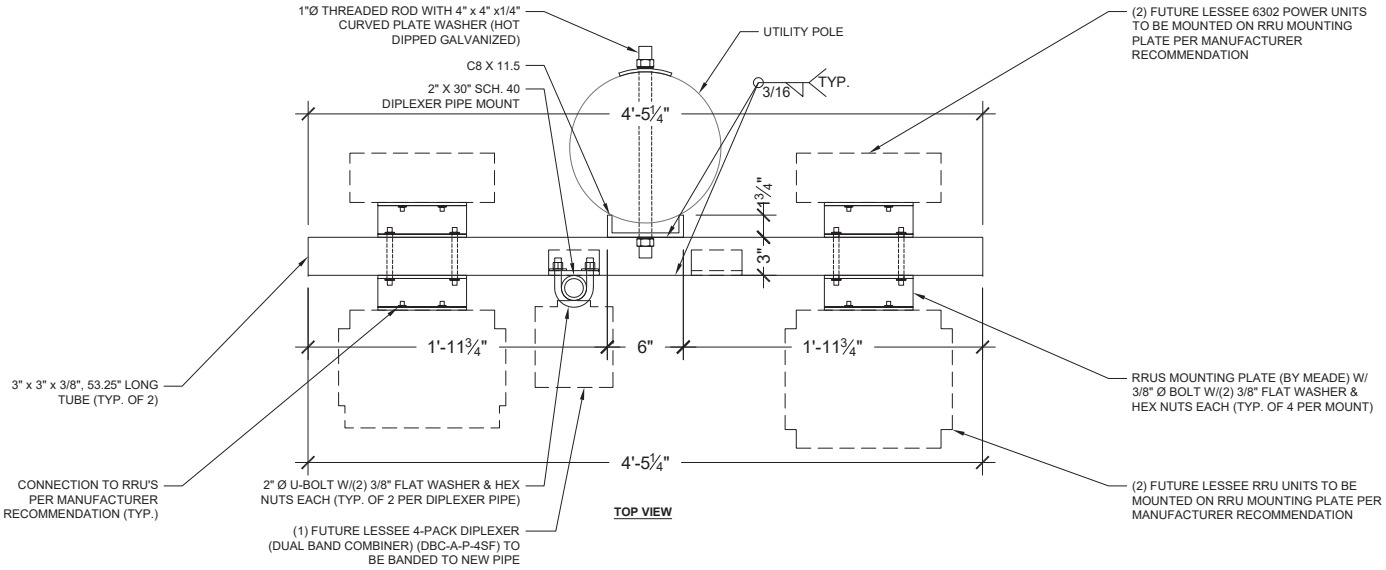


1 FIBERGLASS POLE TOP EXTENSION MOUNTING DETAILS



RADIOS W/INTEGRATED ANTENNAS & CBRS RADIO TYPICAL MOUNTING DETAIL (PLAN VIEW)





SIDE-BY-SIDE RRU MOUNT CONNECTION

BOLTS

Table 12B BOLTS: Reference Lateral Design Values, Z, for Single Shear (two member) Connections[1,2]

for sawn lumber or SCL main member with 1/4" ASTM A 36 steel side plate

Thickness Main Member t_m in.	Thickness Side Member t_s in.	Bolt Diameter D in.	G=0.67 Red Oak $Z_{\parallel}$ lbs.	G=0.67 Red Oak $Z_{\perp}$ lbs.	G=0.55 Mixed Maple Southern Pine $Z_{\parallel}$ lbs.	G=0.55 Mixed Maple Southern Pine $Z_{\perp}$ lbs.	G=0.50 Douglas Fir-Larch $Z_{\parallel}$ lbs.	G=0.50 Douglas Fir-Larch $Z_{\perp}$ lbs.	G=0.49 Douglas Fir-Larch(N) $Z_{\parallel}$ lbs.	G=0.49 Douglas Fir-Larch(N) $Z_{\perp}$ lbs.	G=0.46 Douglas Fir(S) Hem-Fir(N) $Z_{\parallel}$ lbs.	G=0.46 Douglas Fir(S) Hem-Fir(N) $Z_{\perp}$ lbs.	G=0.43 Hem-Fir $Z_{\parallel}$ lbs.	G=0.43 Hem-Fir $Z_{\perp}$ lbs.	G=0.42 Spruce-Pine-Fir $Z_{\parallel}$ lbs.	G=0.42 Spruce-Pine-Fir $Z_{\perp}$ lbs.	G=0.37 Redwood (open grain) $Z_{\parallel}$ lbs.	G=0.37 Redwood (open grain) $Z_{\perp}$ lbs.	G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods $Z_{\parallel}$ lbs.	G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods $Z_{\perp}$ lbs.	G=0.35 Northern Species $Z_{\parallel}$ lbs.	G=0.35 Northern Species $Z_{\perp}$ lbs.
1-1/2	1/4	1/2	730	420	620	350	580	310	580	310	550	290	520	280	510	270	470	240	460	240	450	230
		5/8	910	480	780	400	730	360	720	360	690	340	650	320	640	320	590	290	580	280	560	270
		3/4	1090	550	940	450	870	420	860	410	820	390	780	360	770	360	710	320	690	320	680	310
		7/8	1270	600	1090	510	1020	470	1010	450	960	430	910	410	900	400	820	370	810	360	790	350
		1	1460	660	1250	550	1170	510	1150	500	1100	480	1040	450	1030	450	940	400	930	400	900	390
1-3/4	1/4	1/2	810	460	690	370	640	340	630	330	600	310	570	290	560	280	510	250	500	250	490	240
		5/8	1020	520	870	430	800	390	790	380	750	360	710	340	700	330	640	300	630	290	610	280
		3/4	1220	590	1040	480	960	440	950	430	900	410	860	380	840	370	770	330	750	330	730	320
		7/8	1420	650	1210	540	1130	490	1110	480	1050	450	1000	420	980	420	890	380	880	370	850	360
		1	1630	710	1380	580	1290	540	1270	520	1200	500	1140	470	1120	460	1020	410	1000	410	980	400
2-1/2	1/4	1/2	930	600	860	470	830	410	820	400	780	380	740	350	720	340	650	300	640	290	620	280
		5/8	1370	670	1150	530	1050	470	1040	470	980	430	920	400	910	390	810	340	800	330	770	320
		3/4	1640	750	1370	590	1270	530	1250	520	1180	490	1110	450	1090	440	980	380	960	370	930	360
		7/8	1910	820	1600	650	1480	590	1450	570	1370	530	1290	490	1270	480	1140	420	1120	410	1080	400
		1	2190	880	1830	700	1690	640	1660	620	1570	580	1480	540	1450	530	1300	460	1280	450	1240	440
3-1/2	1/4	1/2	930	620	860	550	830	510	820	510	800	480	770	450	770	430	720	370	720	360	710	350
		5/8	1370	860	1260	690	1210	610	1200	600	1160	550	1130	500	1120	490	1060	420	1050	410	1020	400
		3/4	1900	990	1740	760	1670	680	1660	660	1580	610	1480	560	1450	540	1290	460	1260	450	1220	440
		7/8	2530	1070	2170	840	1990	740	1950	710	1840	660	1720	610	1690	590	1510	510	1480	500	1430	470
		1	2980	1150	2480	890	2270	800	2230	770	2100	730	1970	660	1930	650	1720	560	1690	540	1630	530
5-1/4	1/4	5/8	1370	860	1260	760	1210	710	1200	700	1160	670	1130	640	1120	630	1060	580	1050	560	1030	540
		3/4	1900	1140	1740	1000	1670	940	1660	930	1610	860	1560	770	1550	760	1460	640	1450	620	1420	600
		7/8	2530	1460	2320	[illegible]	2220	1050	2200	1010	2140	920	2070	840	2050	820	1940	700	1920	680	1890	640
		1	3260	1660	2980	1270	2860	1130	2840	1080	2750	1010	2670	920	2640	890	2490	750	2450	730	2360	710
5-1/2	1/4	5/8	1370	860	1260	760	1210	710	1200	700	1160	670	1130	640	1120	630	1060	580	1050	570	1030	560
		3/4	1900	1140	1740	1000	1670	940	1660	930	1610	890	1560	810	1550	790	1460	660	1450	640	1420	620
		7/8	2530	1460	2320	1240	2220	1090	2200	1050	2140	960	2070	880	2050	860	1940	730	1920	710	1890	660
		1	3260	1730	2980	1320	2860	1170	2840	1130	2750	1050	2670	950	2640	930	2490	780	2470	760	2420	740
7-1/2	1/4	5/8	1370	860	1260	760	1210	710	1200	700	1160	670	1130	640	1120	630	1060	580	1050	570	1030	560
		3/4	1900	1140	1740	1000	1670	940	1660	930	1610	890	1560	850	1550	840	1460	760	1450	750	1420	740
		7/8	2530	1460	2320	1280	2220	1210	2200	1180	2140	1130	2070	1080	2050	1070	1940	960	1920	930	1890	870
		1	3260	1820	2980	1590	2860	1500	2840	1470	2750	1400	2670	1270	2640	1230	2490	1030	2470	1000	2420	960
9-1/2	1/4	3/4	1900	1140	1740	1000	1670	940	1660	930	1610	890	1560	850	1550	840	1460	760	1450	750	1420	740
		7/8	2530	1460	2320	1280	2220	1210	2200	1180	2140	1130	2070	1080	2050	1070	1940	980	1920	970	1890	930
		1	3260	1820	2980	1590	2860	1500	2840	1470	2750	1420	2670	1350	2640	1330	2490	1220	2470	1200	2420	1180
11-1/2	1/4	7/8	2530	1460	2320	1280	2220	1210	2200	1180	2140	1130	2070	1080	2050	1070	1940	980	1920	970	1890	930
		1	3260	1820	2980	1590	2860	1500	2840	1470	2750	1420	2670	1350	2640	1330	2490	1220	2470	1200	2420	1180
13-1/2	1/4	1	3260	1820	2980	1590	2860	1500	2840	1470	2750	1420	2670	1350	2640	1330	2490	1220	2470	1200	2420	1180

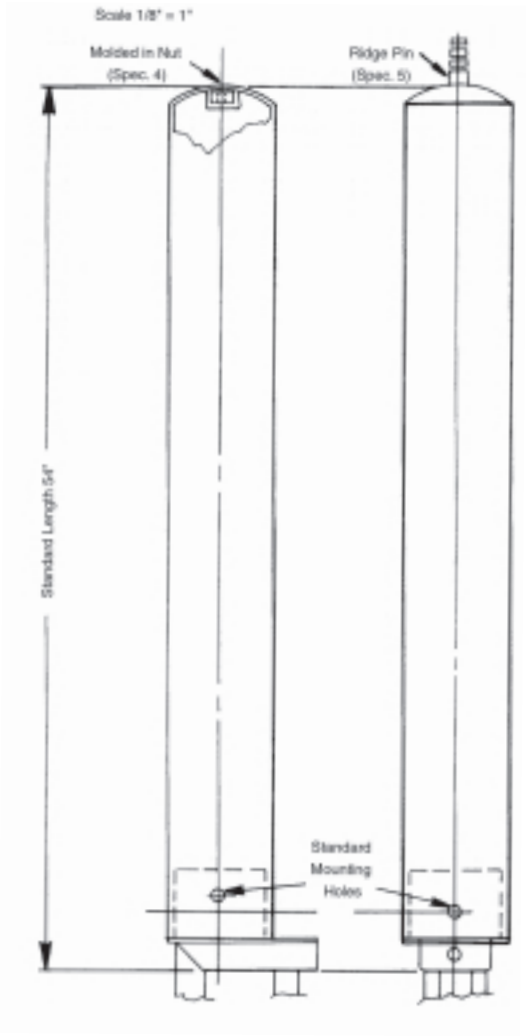
1. Tabulated lateral design values, Z, for bolted connections shall be multiplied by all applicable adjustment factors (see Table 11.3.1).
2. Tabulated lateral design values, Z, are for "full-body diameter" bolts (see Appendix Table L1) with bolt bending yield strength, F_{yb}, of 45,000 psi and dowel bearing strength, F_e, of 87,000 psi for ASTM A36 steel.

HL-44 Fiberglass Pole Top Extensions

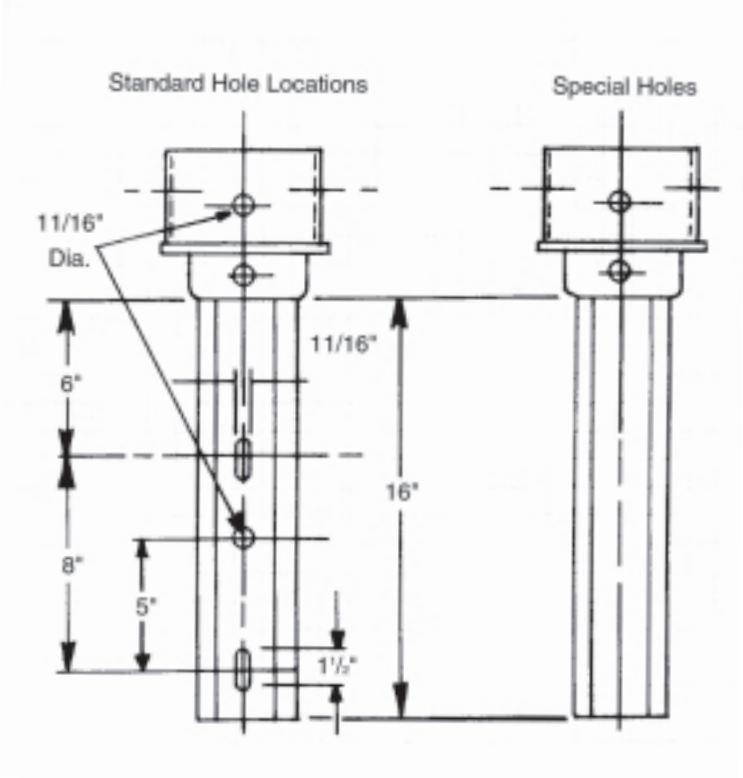
PRODUCT FEATURES

- Reduces costs.
  - Pole top extension installation costs are much less than the removal and replacement of existing pole.
  - The installation of a pole top reduces the number of personnel and amount of equipment needed to remove a pole.
  - Existing wiring and top equipment can be left untouched.
- Holes drilled to customer specifications.
- State of the art manufacturing technology.
- Stronger than the pole.
- Tens of thousands in service.
- Wide variety of brackets available.
- Excellent weatherability, UV protected.

Tube Sketch



Bracket Sketch



Comes in standard brown.

CUSTOMER NAME _____

Tube & Bracket Specifications

All pole top extensions are customer specific–please ✓check boxes for each specification needed.

1. **Length:** Standard is 54”
   ☐ 54” ☐ 36” ☐ 48” ☐ 60” ☐ 72” ☐ 92” ☐ 120” ☐ Other _____

2. **Drilled Holes In Tube:** Standard hole diameter is 11/16”, other diameters are available at extra cost
   ☐ No Holes in Tube ☐ Other (mark above tube sketch with hole position dimensions)

3. **Bracket Style:** Standard is B bracket. Additional styles available.
   ☐ 6”-12” Diameter poles (B bracket) ☐ 6 1/2” - 9” Diameter poles (A bracket)

4. **Cap Type:**
   ☐ Plain ☐ Molded in nut 3/4” ☐ Ridge pin 3/4”

Comments: _____

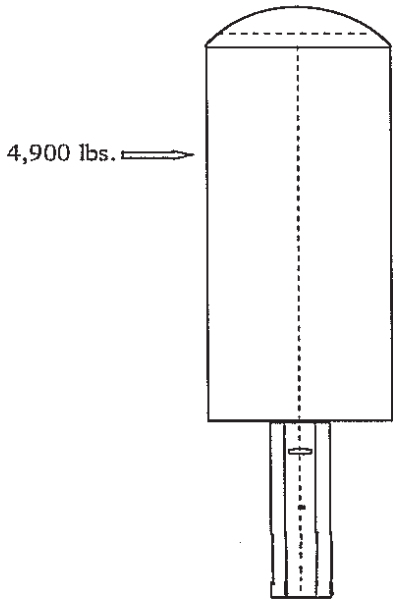
HIGHLINE PRODUCTS
800 South Street, Suite 255
Waltham, MA 02453-1480

Highline Products Pole Top Extension Testing

Highline Products has been manufacturing and selling Pole-Top extension for over 40 years. The following results are from testing preformed by various Electric Utilities.

Test #1 Cantilever Pull Test

54" Pole Top Extension with a force applied 31" from the bottom of the pole top and the force parallel to the conductors. Deflection measurements were taken.



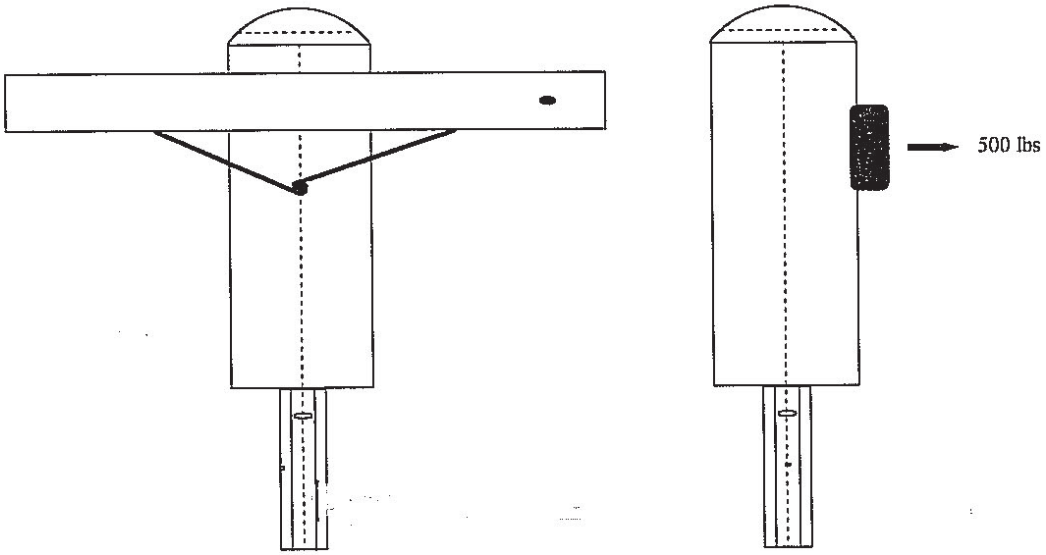
Lbs.	Deflection
200	0.000"
500	.354"
1000	.679"
1500	.989"
2000	1.294"
2500	1.594"
3000	1.889"
3500	2.179"
4000	2.399"
4500	2.849"
4900	3.629"

Comments: The pole top hold down in line with the force failed by shear at 4900 pounds. Initial composite crackling was heard at 2500 pounds but no damage to the pole top was detected after the test.

Test #2- Crossarm- Cantilever torsion
54" Poletop Extension with a 8ft Crossarm mounted 40" above mounting brace. Force was applied at the end of the Crossarm, where dead end insulator would be mounted, 42" from pole centerline. Deflection measurements were taken of the crossarm.

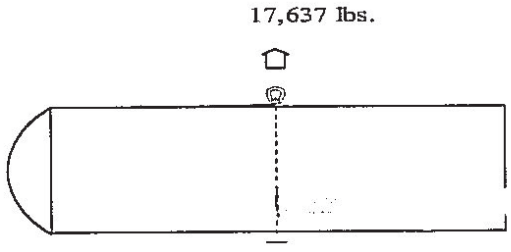
Lbs.	Deflection
100	0.000"
200	8.000"
300	14.000"
400	19.590"
500	21.000"

Comments: The 8ft cross arm bolting and braces bent during this torsional test with no detectable deflection of the pole top extension and no permanent deformation in the support bracket.



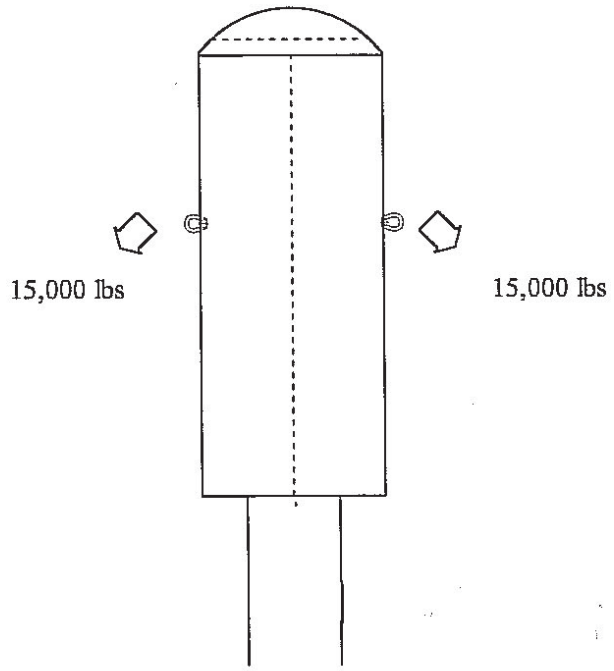
Test #3- Shear test on bolt holes

An 8,000kg (17,637 lbs) load was applied to 5/8" thru bolt pass through pole top extension. No significant damage noticed, just minor scratches.



Test #4- Guying

A 54" pole top extension was tested using (2) standard guy fixtures on opposite sides of the extension. A load of 15,000 lbs was applied on each guying fixture. No hole elongation or damage was noted to the fiberglass, but there was noticeable bending to bolts.



Over the past 40 years Highline Products has sold thousands of Pole Top Extensions with no known failures or issues. Generally, the pole top extension is stronger than the mounting equipment.

The fiberglass tube manufactured by Highline is circularly wound using high-grade fiberglass and epoxy resin for superior strength and durability. Black carbon pigment is added to for additional UV protection. The outer surface has a minimum of 10mils of resin and is then painted with a high quality polyurethane paint. This combination offers the best protection available against the elements and results in a superior looking product.

LIMITATIONS

The recommendations contained within this report were developed using general project information provided by the owner, manufacturer, general field observations, reference information and laboratory testing data, as applicable. All recommendations pertain only to the proposed structure construction, location, and loading as described in this report. Concordia
Wireless assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

1. Missing, corroding, and/or deteriorating members
2. Improper manufacturing and/or construction
3. Improper maintenance

Concordia Wireless assumes no responsibility for modifications completed prior to or hereafter in which Concordia Wireless was not directly involved. These modifications include but are not limited to the following:

1. Replacing or strengthening bracing members
2. Reinforcing or extending vertical members
3. Installing or removing antenna mounting gates or side arms
4. Changing loading configurations

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

verizon

1515 E Woodfield Rd
Suite 1000
Schaumburg, IL 60173

July 10, 2020

Village of Clarendon Hills
One North Prospect Avenue
Clarendon Hills, Illinois 60514

Re: Certification Letter to The Village of Clarendon Hills Ordinance No. 18-07-20
Proposed Verizon Wireless Small Wireless Facility Collocation
Project Name: WINDSOR & EAST
Location ID: 456606
Address: 3200 East Ave, Berwyn IL 60402

To Whom It May Concern:

This Letter serves as certification that to the best of Verizon Wireless' knowledge, the proposed small wireless facility collocation complies with all the requirements, including the written design standards, as set forth by The Village of Clarendon Hills Ordinance No. 18-07-20.

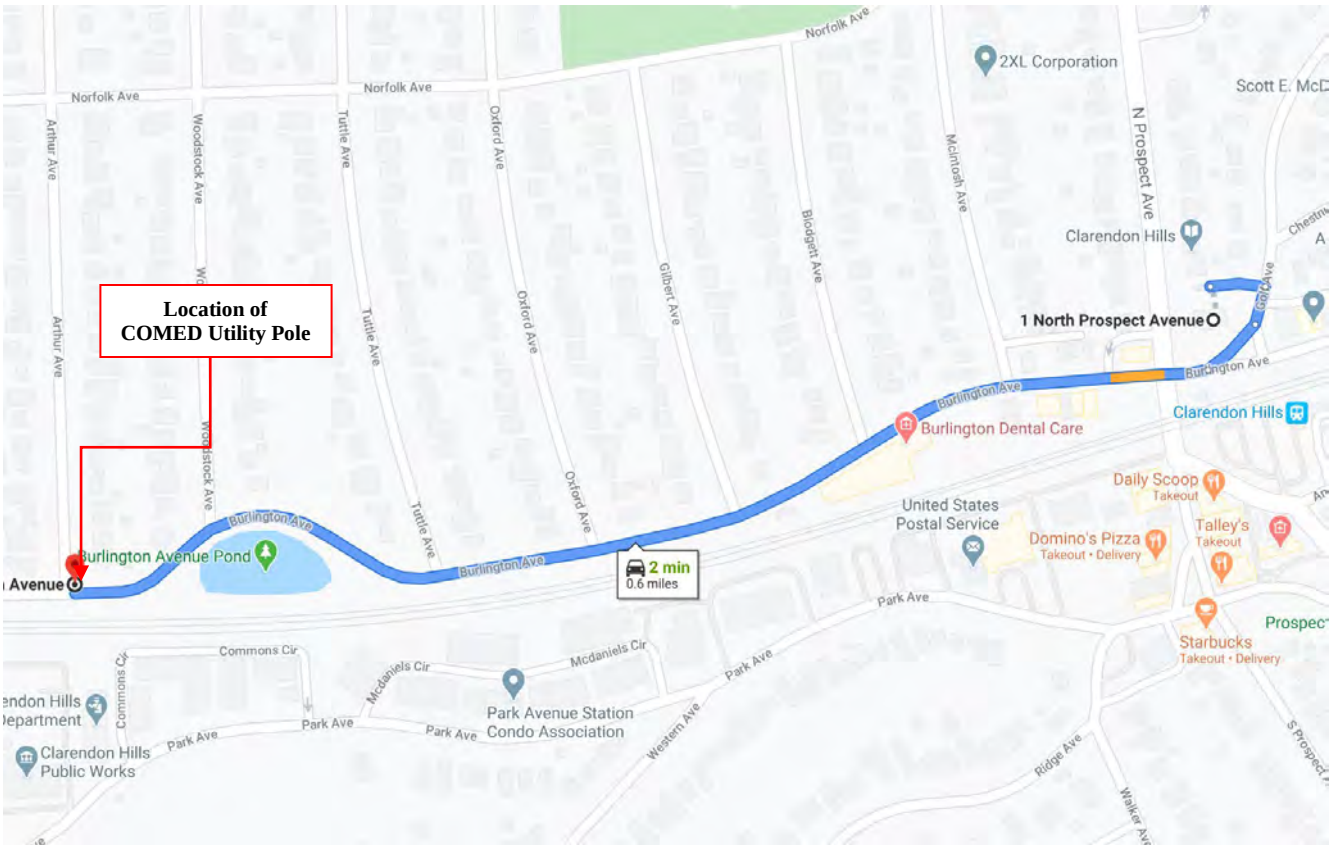
Should you have any additional questions or concerns, please contact me at (847) 706-7600.

Thank you for your attention to this matter.

Sincerely,

Edward Rios
Verizon Wireless
Engineer III Specialist - Real Estate/Regulatory

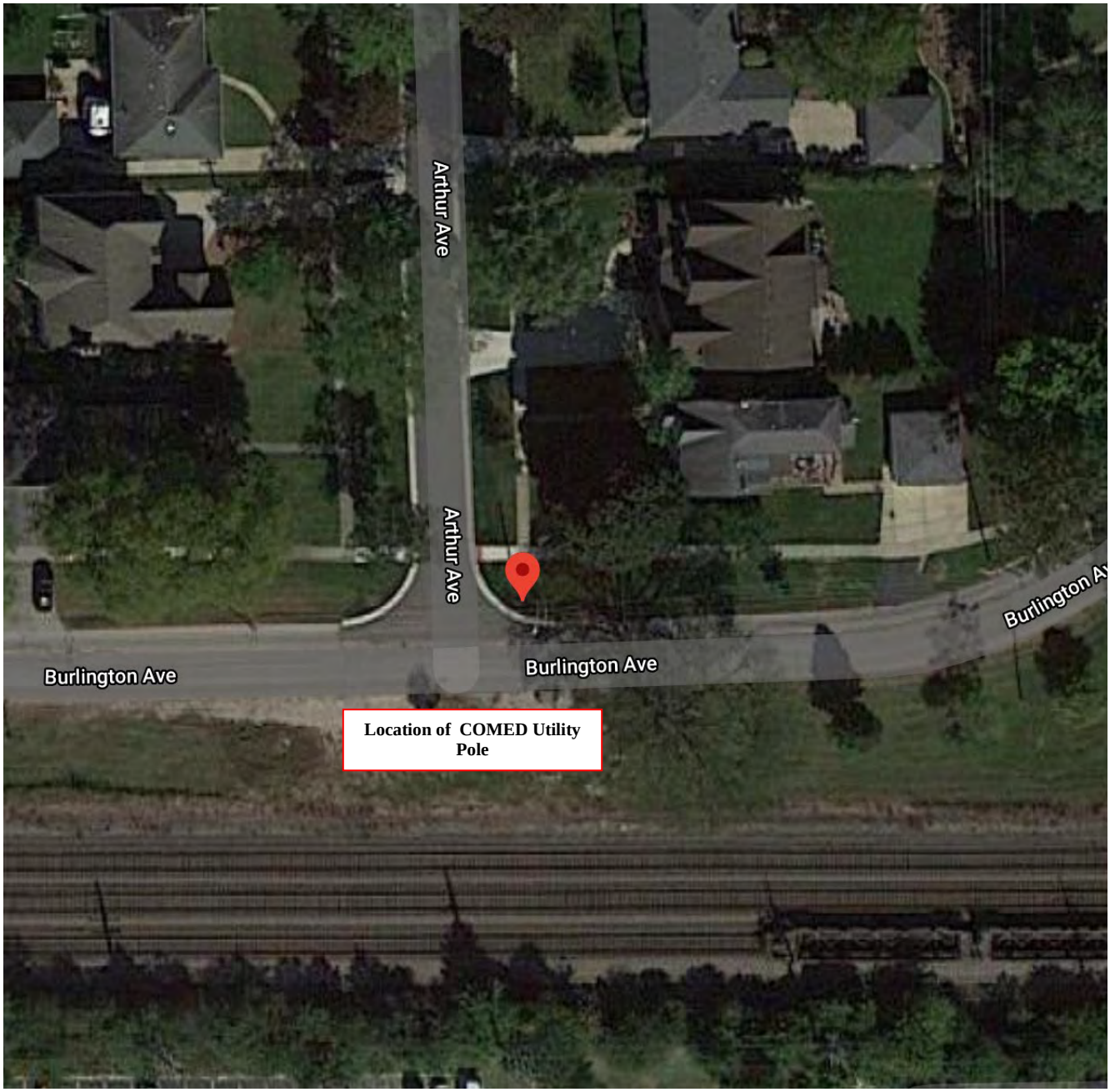
STREET MAP ATTACHMENT



From 1 North Prospect Ave
to 1 Arthur Ave, Clarendon Hills, IL 60514

Burlington & Arthur SC 456201

AERIAL PHOTO ATTACHMENT



SITE PHOTOS

View of Utility Pole (Looking Northwest)

SITE PHOTOS

View of Utility Pole (Looking Northeast)

SITE PHOTOS

View of Utility Pole (Looking Southeast)

SITE PHOTOS

View of Utility Pole (Closeup view)