

Dane County, Wisconsin

Wireless Communications Site Review

New Lattice Tower

CityScape

CONSULTANTS, INC.

2423 S. Orange Avenue, #317

Orlando, FL 32806

Tel: 877.438.2851 Fax: 877.220.4593

January 27, 2022

Zoning & Land Regulation Committee
Dane County Planning & Development
210 Martin Luther King Jr. Blvd.
Madison, WI 53703

APPLICANT/PROVIDER: Bug Tussel Wireless/Cloud 1, LLC

SITE NAME: "Primrose"

ADDRESS: 9108 Ridge Drive, Town of Primrose, WI

LATITUDE: 42°-52'-58.23" N LONGITUDE: 089°-41'-30.48" W

STRUCTURE PROPOSED: 195-foot Self-Supporting Lattice Tower

Dear Committee Members,

At your request, on behalf of Dane County ("County"), CityScape Consultants, Inc. ("CityScape"), in its capacity as telecommunications consultant for the County, has considered the merits of the above-referenced application submitted by Bug Tussel Wireless and Cloud 1 ("Applicant" or "Bug Tussel"), to construct a new wireless telecommunications support structure and associated ground equipment compound approximately 2,169 feet (0.411 mile) northeast of the intersection of County Road G and Ridge Drive in the Town of Primrose, *see Figure 1*.

This application for a new wireless communications facility is proposed to provide fixed wireless internet service to an area of southwestern Dane County in and near the Town of Primrose, Wisconsin. The Applicant's application documents indicate that the tower will accommodate additional equipment by other wireless carriers.

This is the second CUP application that Bug Tussel has submitted for a wireless internet facility to serve essentially the same geographical area; the facility location currently proposed is approximately 341 feet southeast of the previously-proposed site. The first application was denied by the Town of Primrose in January 2021. Since the towns of Dane County have binding authority over Conditional Use Permits, the application was not referred to the County for action.

CityScape has determined that the area of Dane County Bug Tussel intends to serve also has a demonstrable lack of personal wireless service from any provider, and the primary interest is in providing state-of-the-art wireless communications services to a rural unserved area, both fixed and mobile. Currently, as stated by the Applicant and verified by CityScape, the area's existing infrastructure is insufficient to address the wireless communications service needs of the citizens in the area.

The Applicant is requesting to construct a one hundred ninety five (195) foot *self-supporting lattice* tower, 199 feet including lightning rod, on a property that is zoned FP-35 (General Farmland

Preservation District) which requires a Conditional Use Permit. The County Ordinance limits the height of such a structure to one hundred ninety five (195) feet. Thus, a height variance is not required, and neither FAA-regulated aviation lighting nor marking is required.

The application indicates that the facility will meet all federal (FCC) standards and regulations and that it will meet all federal, state and local building codes and regulations. According to the Applicant's application documents, the Applicant's antennas will be at an elevation of one hundred eighty nine (189) feet above ground. Up to three future collocators' antennas would be at 177, 160, and 148 feet, see *Figure 2* (the minimum is three total users, including the primary per County Code). CityScape believes this proposed new tower will encourage collocation by mobile communications providers who also wish to serve this area in need of personal wireless service.

The proposal has been evaluated from the following perspectives:

- Whether the proposed facility, as specified, is justified due to technological reasons and is essential for the Applicant to provide its telecommunications service; and,
- Whether the proposed facility will follow the requirements of Federal Law, Wisconsin State Law, the Dane County Ordinance and all other pertinent rules and regulations.

Fixed Wireless Internet

Fixed wireless internet service, such as proposed by Bug Tussel, is a means to provide internet or wireless data to a fixed location such as a home or business. Instead of the end user device being a mobile device (like a smartphone or tablet), fixed wireless service utilizes a small outdoor/rooftop antenna which communicates with the provider's antennas that are mounted on towers, buildings or other elevated structures in the area. The height and location of these structures are critical to provide sufficient wireless network coverage. Generally, the higher the antenna is mounted on the support structure, the farther the wireless signal penetrates a geographic area. Fixed wireless is a practicable internet alternative in rural areas, especially where *wired* infrastructure, i.e. fiber or coaxial cable, for communications consumer/subscriber use doesn't reach. In order to be eligible for service from a Wireless Internet Service Provider ("WISP"), a home or business location must receive a sufficient signal from the nearest base station, which a WISP technician does assess prior to installing the necessary equipment.

The terms "fixed wireless internet" and "fixed wireless broadband" are often used interchangeably. In 2015 the FCC, in attempting to define a service offering high-quality video streaming with sufficient additional bandwidth for web-browsing and other internet functions, declared that only Internet Service Providers ("ISPs") providing minimum data transfer speeds of 25 Mbps download and 3 Mbps upload qualify as "broadband" providers, whether wired or wireless. However, it was not long after the FCC established this benchmark that industry observers considered it outdated. Further, the COVID-19 pandemic significantly increased the demand for faster home internet speed for both business and personal use, which led Congress to allocate \$65 billion for nationwide broadband improvements in its \$1.2 infrastructure bill. Amid fear that new broadband service in unserved and underserved areas

would not bring satisfactory data speeds to meet demand, the FCC currently is under pressure to increase the broadband download standard to 100 Mbps and increase the upload standard to at least 20 Mbps.

Unlike wired internet, fixed wireless internet utilizes over-the-air radio spectrum technology, much like broadcast TV and radio (except that the internet is a two-way connection). As such, wireless service has been subject to challenges not experienced by wired service. These challenges include 1) terrain and physical obstruction blockage in the path between the base station and the subscriber location, 2) limited radio spectrum which, in turn, limits maximum data transfer speeds, and 3) potential interference from other wireless networks. Every ISP technology has its pros and cons; however, driven by technological advancements, WISPs today are able to design their networks to overcome these factors in circumstances where heretofore had not been possible.

New Site Justification and Coverage

In order for the wireless communications facility to be justified, its need, location and height must be addressed. The application proposes to construct a new one hundred ninety five (195) foot (199 feet to top of lightning rod) *self-supporting lattice* tower, *see Figure 2*. The local authority has certain rights in regards to the height, location, type and appearance of the support structure as well as the ability to assure the proposed facility is following FCC safety specifications and local building codes. While the County has the discretion to regulate the above, and while Bug Tussel is not deemed a Personal Wireless or Mobile Service Provider (which enjoys special protection from overreaching local and state regulations as per federal law), the County does recognize, through its stated purpose and intent of the Ordinance, the importance of access to broadband internet services. CityScape is satisfied there is sufficient evidence of need and that the location was selected within the parameters of wireless network design and in accordance with FCC requirements.

The Applicant provided a site search ring, *see Figure 3* and propagation/coverage maps. This information is critical in determining if the proposed location and height are justified. The site proposed by the Applicant is within its search ring. While collocation on an existing structure is preferred over new construction, currently the Applicant states this is not an option. CityScape has verified that there are no existing tall structures either in the search ring or beyond it. Searching both public and private tower databases, Cityscape has determined and plotted on a Google Earth map all existing structures of any height within a 7.5 mile radius of the proposed site, *see Figure 4*. The nearest structure is 3.52 miles southwest of the proposed site which is far beyond the search ring. The first coverage map in *Figure 5* shows the existing Bug Tussel service coverage without the proposed site, and the second coverage map shows the coverage with the proposed site. As can be seen, there is an unmistakable lack of reliable wireless internet service coverage in the Primrose area. CityScape agrees that the location of the proposed new site is justified and that the proposed antenna height will provide the minimum needed wireless service for the area, both for the Applicant and for potential future personal wireless collocators.

Ground Equipment

The Applicant proposes to construct a fifty foot by fifty foot (50' X 50') fenced compound within a larger one hundred foot by one hundred foot (100' x 100') lease area, *see Figure 6*. The 50' x 50' compound will encompass the tower and Applicant's equipment and allow space for at least two future additional wireless providers. Two concrete equipment pads, each with its own waveguide bridge, are proposed, both to be used by the Applicant. It should be noted that for collocation requests under Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 ("the Act") and the FCC rules implementing that Act, such requests are eligible for administrative approval if they meet certain requirements, among them if they do not entail excavation or deployment beyond the *current boundaries of the leased property surrounding the tower and any access or utility easements currently related to the site*. As noted above, the Applicant's lease area spreads beyond the proposed equipment compound; thus, according to the Act, if a future collocater's deployment area doesn't extend beyond the lease area or easements established by Bug Tussel, this specific requirement is met.

Landscape Buffering

The Applicant does not appear to address whether additional landscaping will be employed to visually obscure the fenced tower and equipment area. The County does have the right under its Ordinance to require, unless shown to be unreasonable, visual screening or landscaping that it deems necessary to minimize the aesthetic impact of the facility.

New Tower Collocation Policy

According to the site plan drawing, the tower will support three (3) additional collocations (four total carriers), which exceeds the Ordinance requirement.

Photo Simulations and Other Requirements

The Applicant provided the required FCC Compliance Statement within the application submittal package. Also included within the package were:

1. Photo Simulations
 2. FAA Determination of No Hazard – *No lighting or marking are required for aviation safety.*
 3. NEPA Report
 4. Fall-Zone Certification Letter – *However, this letter should be revised for the currently proposed center of radiation antenna heights of 189, 177, 160 and 148 feet for the Applicant and future collocators.*
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Conclusions and Recommendations

In conclusion, it is the opinion of the undersigned that the Applicant has justified the need for a new fixed wireless internet antenna support structure of one hundred ninety five (195) feet at the proposed location, and the application has complied with the County Tower Ordinance as well as all applicable state and federal requirements. The proposal facility would be available to personal wireless carriers as a collocation site in an area needing such service. CityScape Consultants, as the wireless expert for the County, recommends a tower be approved at the proposed location at the height of 195 foot overall height.

Should the Zoning and Land Regulation Committee (“Committee”) approve the Conditional Use Permit application, CityScape recommends the following conditions:

1. At time of permitting, the Applicant shall provide an approved and stamped tower design from a Wisconsin-licensed Structural Engineer certifying that the tower will support the antennas and equipment of at least three (3) total wireless carriers; and,
2. The Applicant shall provide visual screening and/or landscaping to minimize the aesthetic impact of the tower and compound; and,
3. The Applicant shall provide a new fall-zone certification letter for a 195-foot tower; and,
4. The proposed structure shall not be lighted nor shall it be painted a color incompatible with the environment.

If the Applicant or subsequent owner of the tower should request a tower height increase after the facility is built, the tower would require lighting per FAA requirements; however, this would be a “substantial change” and thus cannot be approved administratively under Section 6409(a) of the Middle Class Tax Relief and Job Creation Act. An application for such an increase is subject to review and approval by the Committee.

I certify that, to the best of my knowledge, all the information included herein is accurate at the time of this report. CityScape only works for public entities and has unbiased opinions. All recommendations are based on technical merits without prejudice per prevailing laws and codes.

Respectfully submitted,



B. Benjamin Evans
Senior Project Engineer
CityScape Consultants, Inc.

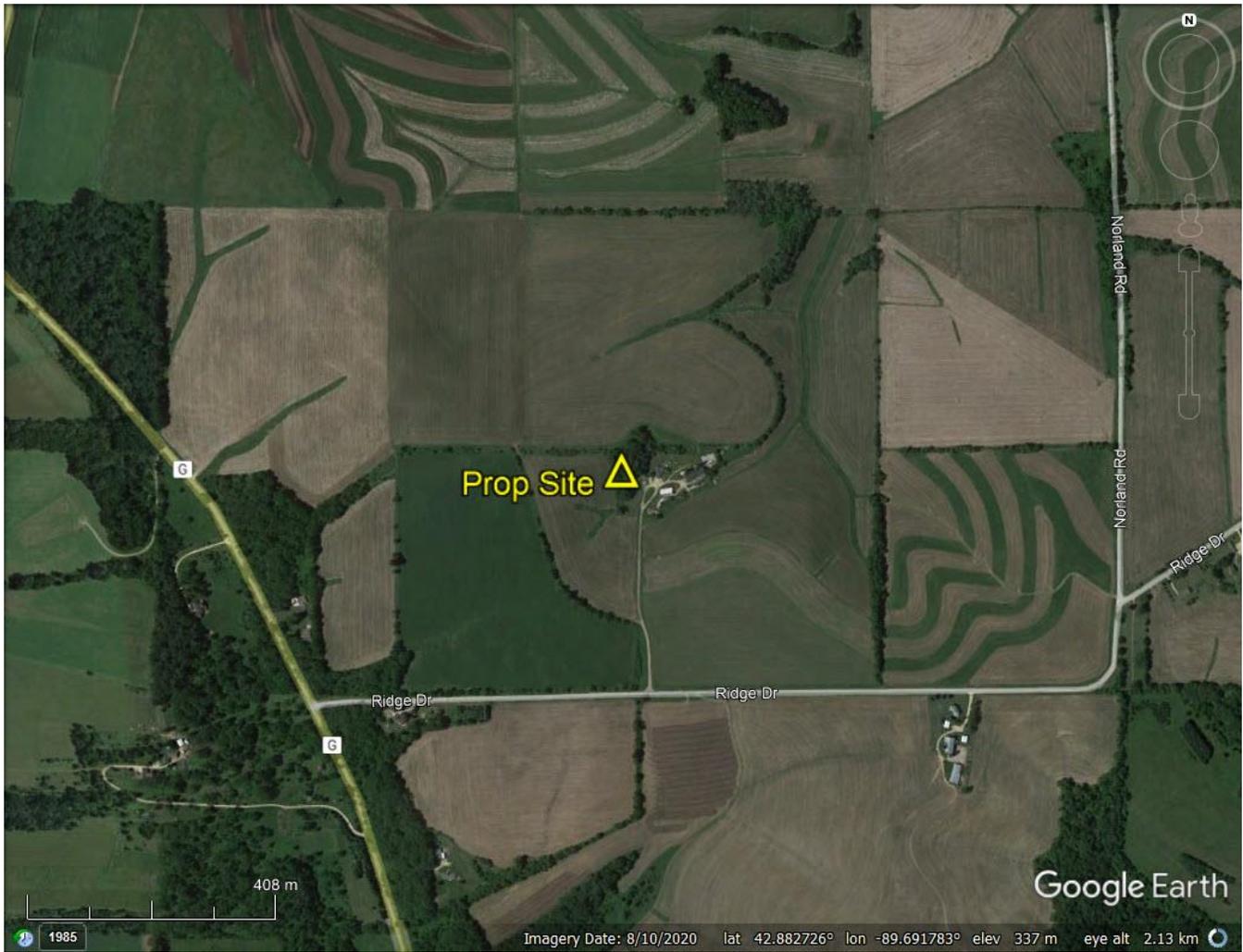


Figure 1 – Site Location Map

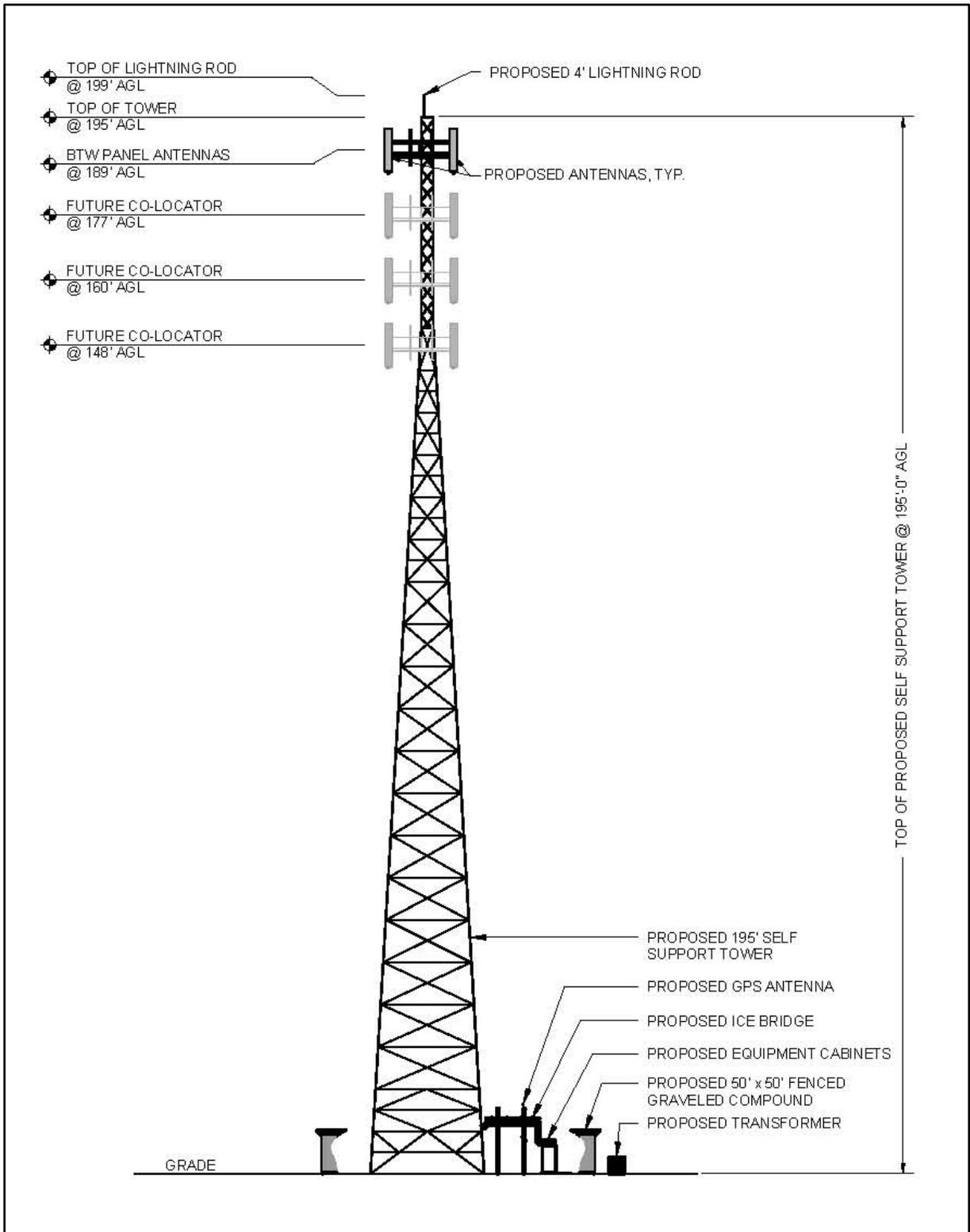


Figure 2 – Tower Sketch

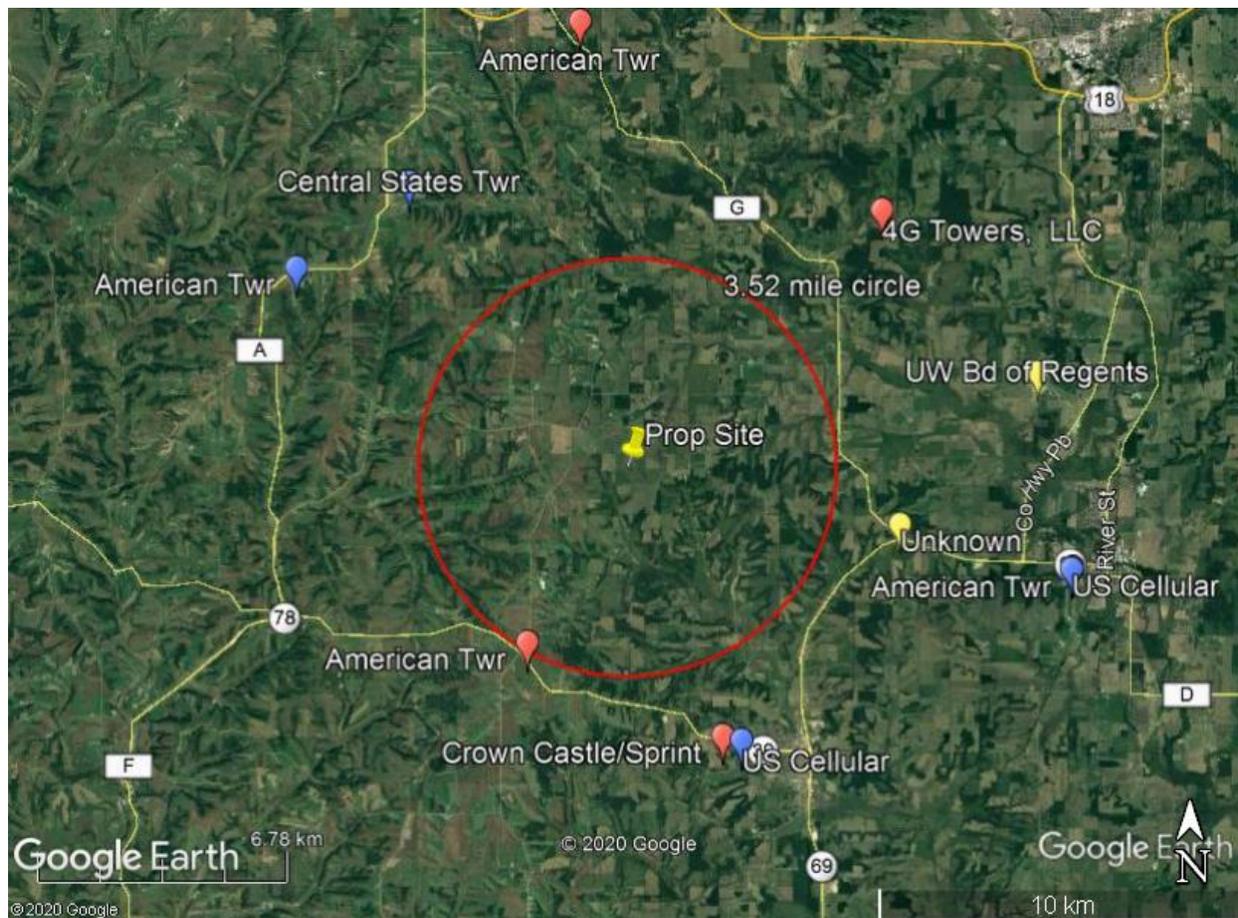


Figure 4 – Google Map of Proposed Site and Nearest Antenna Structures

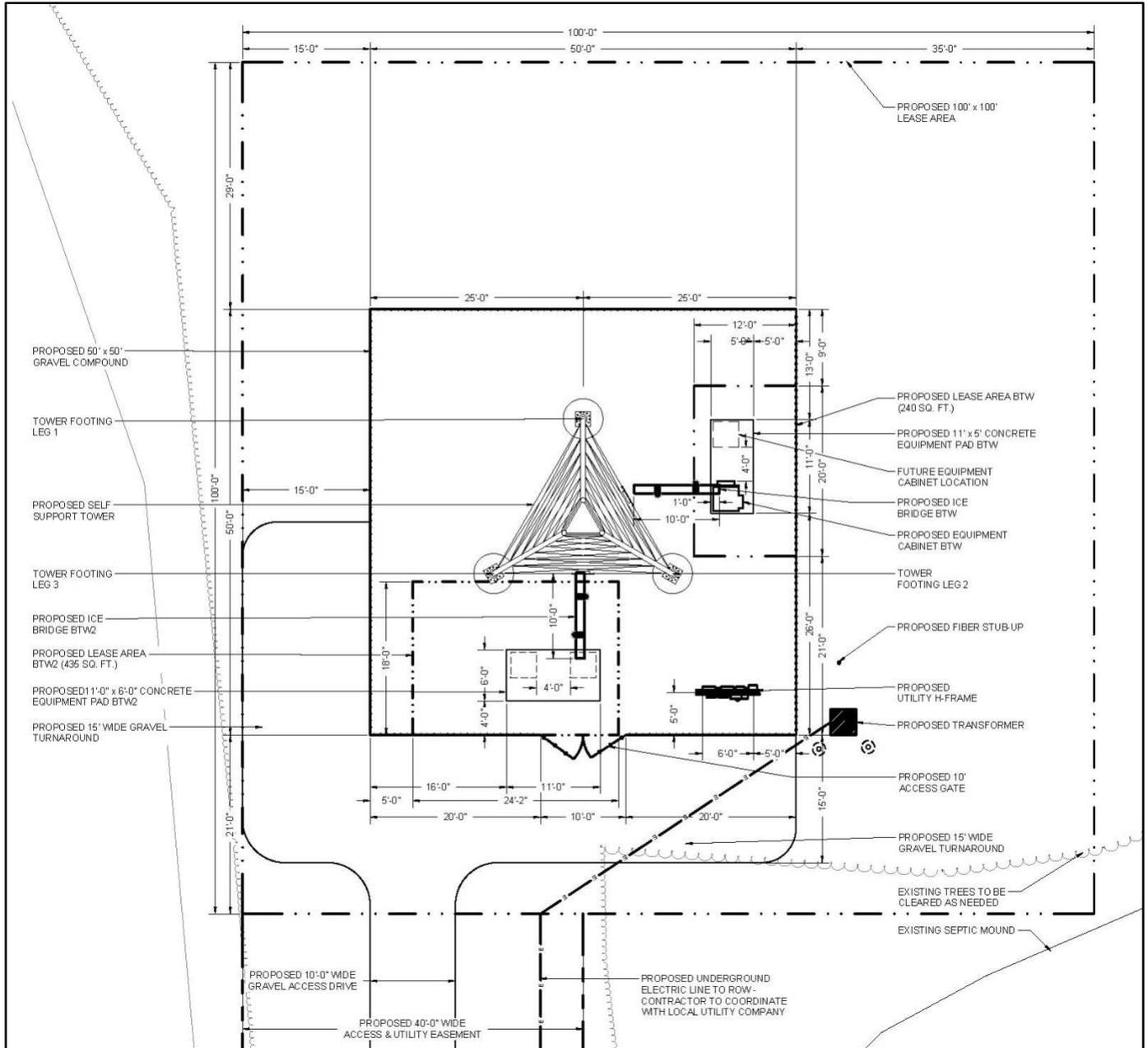


Figure 6 – Leased & Ground Compound Areas