

**Conditional Use Permit  
US Cellular/ Faith Lutheran Church  
Village of Germantown**



February 9, 2023

RE: New Communication Facility CUP Application

Applicant: United States Cellular Operating Company, LLC

Property Owners: Faith Lutheran Church

Address: W172N11187 Division Road Germantown WI. 53022



3311 109<sup>th</sup> Street

Urbandale, IA 50322

Dear Village of Germantown Planning Board

On behalf of United States Cellular Operating Company, LLC, I Michael Doran hereby submits a CUP Application for a Communications Tower (WTF) on the property within the Village of Germantown, the tax parcel # 281967 and is owned by Faith Lutheran Church

The Zoning narrative is attached covering the Village of Germantown 17.56 - WIRELESS COMMUNICATION FACILITIES. (Cr. Ord. #37-99) and WI State Statute 66.0404. Documentation is included showing the need for the new tower based on the standards set forth in applicable ordinances and statutes.

Enclosed items with this letter are the following items:

- Germantown WI Uniform permit application
- Zoning Narrative (see immediately following pages) explaining how our proposed project complies with the State Statute 66.0404 and Germantown Zoning Ordinance. 7.56 - WIRELESS COMMUNICATION FACILITIES. (Cr. Ord. #37-99)
- Photo sims
- Propagation maps
- Site Survey
- Surrounding Tower Affidavit
- RF Statement
- Collocation affidavit
- RF Propagation Maps
- FAA Determination of No Hazard Letter.
- Structural Analysis and tower design  
Legal Description
- Full Set of construction and equipment drawing/specification's

Please do not hesitate to call for any clarifications or additional questions related to any of the administrative review process materials. So that we can monitor various internal and external deadlines, including but not limited to the deadline for approval of this application under Section 66.0404(2)(d) of Wisconsin statutes, please confirm that this application is complete or, if it is not complete, please provide a detailed description of the required information that is incomplete pursuant to Section 66.0404(2)(c) of Wisconsin statutes.

Sincerely,

***Michael Doran***

Site Development Agent on behalf United States Cellular Operating Company, LLC

Phone: 217-622-1377 | Email: [mdoran@maguiredevcorp.com](mailto:mdoran@maguiredevcorp.com)



**Village of**  
 ★ ★ ★  
**Germantown**  
 ...Willkommen

**Fee must accompany application**

\$1460 Paid \_\_\_\_\_ Date \_\_\_\_\_

## CONDITIONAL USE PERMIT APPLICATION

Pursuant to Section 17.42 of the Municipal Code

**Please read and complete this application carefully. All applications must be signed and dated.**

**1 APPLICANT OR AGENT**

U. S Cellular/Michael Doran (Agent)

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8410 W Bryn Mawr Ave

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Chicago IL. 60631

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Phone (217)-622-1377

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Fax ( N/A)

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E-Mail mdoran@maguiredevcorp.com

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**PROPERTY OWNER**

Faith Lutheran Church

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W172N11183 Division Rd

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Germantown WI. 53022

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Tanner Hahn POC

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Phone ( 608)415-0857

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tannerhahn1919@gmail.com

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**2 TO WHOM SHOULD THE PERMIT BE ISSUED?**

United States Cellular Operating Company LLC

<b>3 PROPERTY ADDRESS</b>	<b>TAX KEY NUMBER</b>
W172N11183 Division Rd Germantown WI. 53022	281967

**4 DESCRIPTION OF EXISTING OPERATION**

Briefly describe the use as it exists today, including use, size, number of employees, hours of operation, etc. If this permit involves new construction, describe the current status of the property, e.g. "vacant." Use additional pages as necessary.

The Subject proerty is used as a Church and School . The WTF is located away from the church and School. Hour of operation are Monday thru Friday 8am to 12pm and Sunday 8 am to 11:30  
 Employees Varies

**5 DESCRIPTION OF PROPOSED OPERATION**

Write the name of the proposed conditional use exactly as it appears in the Municipal Code.

The purposed CUP is for a Wireless telecommunication facility

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Describe the proposed use, including size, number of employees, hours of operation and extent of any new construction/alterations.

We are seeking a CUP for a wireless telecommunication site and for the purpose of continuing enhanced seamless wireless coverage for the people of Germantown. The number of employees typically ther is 2 engineers overseeing the site however many people working with US Cellular would be working in the background to support the site IE sales, engineering.

**6 METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY – REQUIRED**

Attach pages as necessary

Please see attached

**7 SUPPORTING DOCUMENTATION:**

- Site Plan and elevations for new construction (can be conceptual)
- Photos of existing use and/or proposed use operating elsewhere
  - Photo sims \_\_\_\_\_
  - \_\_\_\_\_

**8 READ AND INITIAL THE FOLLOWING:**

- MD I understand that the Village is under no obligation to issue a Conditional Use Permit and will do so only if the applicant successfully demonstrates that the proposed use is harmonious with the neighborhood and the long range goals of the Village.
- MD I will notify the Village if any aspects of the conditional use changes. I understand that failure to do so may result in the revocation of the CUP.
- MD I understand that a Conditional Use Permit is valid only if the conditions and restrictions of the permit are met. I understand that failure to comply with any aspect of the permit may result in revocation.
- MD I understand that Village Staff is required to post one or more signs along the street frontage of and/or on the property subject of this application that indicate to nearby property owners and the general public that a public hearing of my application will be held before the Village Plan Commission and/or Village Board prior to action being taken on this application; I hereby grant Village Staff permission to enter onto the property for the expressed purpose of installing said sign(s) provided Village Staff is responsible for installing, maintaining and removing said signs in a reasonable manner and timeframe.

**9 SIGNATURES – ALL APPLICATIONS MUST BE SIGNED BY OWNER!**

Michael Doran                      2/9/23  
 Applicant                                      Date

Tan Hu                                      2/3/22  
 Owner    Date

**Zoning Narrative****CUP Application for a New Communication Tower**

## Village of Germantown

This zoning narrative is included to state how our application complies with the WI. Statute 66.0404 and the Village of Germantown 's Zoning Ordinance. I have portions of the WI. Statute 66.0404 below and state how it relates to our specific zoning request, and also the Village of Germantown 7.56 - WIRELESS COMMUNICATION FACILITIES. (Cr. Ord. #37-99)

1. Faith Lutheran Church is the property "Landlord", United States Cellular Operating Company, LLC "tenant", (USC) and together are requesting that the Village of Germantown consider granting a Conditional Use Permit authorizing construction of a new multi-tenant 190' telecommunication tower facility?
2. The project comprises construction of a multi-tenant 190' tall monopole and support equipment to be placed within a 75' x 75' fenced compound, with vegetative buffer. Additionally, a 30' wide access and utility easement will run between the tower compound and access to Division Rd. and will meet all applicable requirements of state and local law. See WI 66.0404 section 4 (g), the enclosed Engineered fall zone letter, and the enclosed CDs for details
3. The property owners have entered into an Option and Lease Agreement with United States Cellular Operating Company, LLC (USC) permitting the construction of the project in the leased area as described herein. which details the terms and conditions for usage of the 75' x 75' lease area. The lease area will be accessed from Division Rd. a 7' chain link fence topped by 1' of barbed wire for security will surround the compound. Because of the location in an M2 zoned area there will be a landscaping plan. This is a multi- tenant communications facility and is designed for 3 tenants.
4. The subject property is zoned M2 and is consistent with allowing a WTF to located on the parcel and use with the current Village of Germantown Comprehensive plan and Land Use.
5. The location will meet the needs of USC to provide wireless services to the south East sector of the village of Germantown and surrounding area. This will enhance coverage and capacity and be of used for a public purpose and benefit, it will be compatible with surrounding land uses as it is zoned M2, it will not disturb the tenor of, or harm neighboring properties, and it aligns with state priorities. This facility is an essential service and would benefit the greater public and satisfy the public interest requirements and help enhance E-911 services in the area by providing adequate coverage serving the public and promoting the general welfare of the public.

**Zoning Narrative | Page 2 of 6**

6§. Section 66.0404 of Wisconsin Statutes, Wisconsin's cellular tower siting law, has had the impact of altering local Authority to regulate cell tower siting and imposes limits on the manner and extent to which a municipality can use its zoning authority to regulate the siting and modification of mobile service facilities. The law states that if a political Subdivision has in effect on July 2, 2013, an ordinance that applies to new mobile service support structures and facilities, or the substantial modification of an existing structure and mobile service facilities, then a community can rely upon its local ordinance, but only to the extent that it is not inconsistent with the State law (66.0404(2)1.). If the local ordinance is inconsistent, it does not apply and cannot be enforced. Thus, 66.0404 substantially limits the ability of a community to use its zoning authority to regulate Cell Towers.

**WISCONSIN STATUTE SECTION 66.0404**

As part of the 2013 Biennial Budget Act, the Wisconsin legislature enacted Wisconsin Statute Section 66.0404, which is the operative law regulating mobile communication structures and facilities (the "State Statute"). This law is the State's effort to create a standardized regulatory framework pertaining to these facilities and provides a 90-day period to review a completed application. The law has had the impact of altering local authority to regulate cell tower siting and imposes limits on the manner and extent to which a municipality can use its zoning authority to regulate the siting and modification of mobile service facilities. To the extent any local regulation conflicts with the State Statute, the conflicting regulations do not apply. See Wis. Stat. 66.0404(2)(h) and (i). The State Statute prohibits certain local regulations, including but not limited to:

- A. Imposing environmental testing, sampling, or monitoring requirements, or other compliance measures for radio frequency emissions, on mobile service facilities or mobile radio service providers (See Wis. Stat. 66.0404(4)(a));
- B. Prohibiting the placement of a mobile service support structure in particular locations within the Town (See Wis. Stat. 66.0404(4)(c));
- C. Charging a mobile radio service provider, a fee in excess of one of the following amounts: (i) for a permit for class 2 collocation, the lesser of \$500 or the amount charged by a political subdivision for a building permit for any other type of commercial development or land use development; and (ii) \$3,000 for a permit for construction of a new mobile service support structure (See Wis. Stat. 66.0404(4)(d));
- D. Disapproving an application based solely on aesthetic concerns (See Wis. Stat. 66.0404(4)(g));
- E. Enacting or enforcing an ordinance related to radio frequency signal strength or the adequacy of mobile service quality concerns (See Wis. Stat. 66.0404(4)(h));
- F. Imposing a surety requirement, unless the requirement is competitively neutral, nondiscriminatory, and commensurate with the historical record for surety requirements for other facilities and structures in the political subdivision which fall into disuse. There is a rebuttable presumption that a surety requirement of \$20,000 or less complies with this requirement (See Wis. Stat. 66.0404(4)(i));

- G. Disapproving an application based solely on the height of the mobile service support structure or on whether the structure requires lighting (*See Wis. Stat. 66.0404(4)(L)*);
- H. Limiting the duration of any permit that is granted (*See Wis. Stat. 66.0404(4)(n)*);
- I. Disapproving an application based on an assessment by the political subdivision of the suitability of other locations for conducting the activity (*See Wis. Stat. 66.0404(4)(p)*);
- J. Imposing a setback or fall zone requirement for a mobile service support structure that is different from a requirement that is imposed on other types of commercial structures (*See Wis. Stat. 66.0404(4)(r)*); and
- K. Limiting the height of the structure to under 200 feet (*See Wis. Stat. 66.0404(4)(u)*).

Further, the State Statute sets forth the following parameters with respect to applications and their approvals. Responses demonstrating compliance with the State Statute are in **blue text**.

- A. Per Wis. Stat. 66.0404(2)(b)(1-3) and (5-6), an application for a new mobile service support structure (such as the Tower), must include:
  - 1. The name and business address of, and the contact individual for the applicant. *See CUP Application Form and Zoning Narrative.*
  - 2. The location of the proposed or affected support structure. *See Site Plan, CUP Application Form and Zoning Narrative.*
  - 3. The location of the proposed mobile service facility. *See Site Plan.*
  - 4. If the application is to construct a new mobile service support structure, a construction plan which describes the proposed mobile service support structure and the equipment and network components, including antennas, transmitters, receivers, base stations, power supplies, cabling, and related equipment to be placed on or around the new mobile service support structure. *See Site Plan and Construction Drawings.*
  - 5. If an application is to construct a new mobile service support structure, an explanation as to why the applicant chose the proposed location and why the applicant did not choose collocation, including a sworn statement from an individual who has responsibility over the placement of the mobile service support structure attesting that collocation within the applicant's search ring would not result in the same mobile service functionality, coverage, and capacity; is technically infeasible; or is economically burdensome to the mobile service provider. *See surrounding tower affidavit. And RF Statement*

- B. Per Wis. Stat. 66.0404(2)(c), if an applicant submits to a political subdivision an application for a permit for a new mobile service support structure, which contains all of the information required under Wis. Stat. 66.0404(2)(b), the political subdivision shall consider the application complete. If the political subdivision does not believe that the application is complete, the political subdivision shall notify the applicant in writing, within 10 days of receiving the application, that the application is not complete. The written notification shall specify in detail the required information that was incomplete. An applicant may resubmit an application as often as necessary until it is complete.
  
- C. Per Wis. Stat. 66.0404(2)(d), within 90-days of receiving a complete application, a political subdivision must complete its review, make a final decision on the request and notify the applicant in writing of its final decision along with an explanation of substantial evidence supporting the decision if the decision is to disapprove an application. If the 90-day period lapses, the application is deemed to be approved, unless the political subdivision and applicant agree in writing to extend the 90-day period.

Per Wis. Stat. 66.0404 States that a zoning ordinance does not apply to a particular structure if the applicant provides an engineering certification showing that the fall or collapse area is smaller than the setback required in the ordinance

- The Village of Germantown Zoning Ordinance. 7.56 - WIRELESS COMMUNICATION FACILITIES. (Cr. Ord. #37-99) is below in *Blue Italic's* and how we have met the ordinance will be in black font

*17.56 - WIRELESS COMMUNICATION FACILITIES. (Cr. Ord. #37-99)*

**6. STATEMENT OF PURPOSE AND INTENT.**

- *The purpose of this section is to provide standards and criteria for the placement, construction and maintenance of wireless communication facilities in the Village of Germantown. The intent of this section is to:*

- *Strike a balance between the interests of the wireless communication service providers, the consumers of those services and the Village of Germantown.*

No response required

- *Restrict the location of towers to nonresidential areas and minimize the total number of towers throughout the Village.*

There were no leasable structures with-in a 1-mile radius of US Cellular RF desired location.

- *Protect residential areas and land uses from potential adverse impacts of towers and antennas.*

The location of this proposed Telecommunication site is located in a an M2 district and is 800' from the nearest residential structure to the East 1,300' to the north 1,900' to the South and West is primarily office building.

- *Encourage location and co-location of new antennas on existing towers and other appropriate structures.*

If colocation were available, we would have reviewed it as a potential candidate however there weren't any structures with in a 1-mile area.

- *Encourage users of towers and antennas to configure them in a way that minimizes their adverse visual impact by careful design, siting, landscaping, screening and camouflaging techniques.*

We will be landscaping around the lease area fence the village of Germantown's Ordinance. The monopole will be gray in color. It will also promote colocation

Please See Wis. Stat. 66.0404(4)(g));

*Protect property values and the public health, safety and welfare.*

The design and construction of the proposed Wireless telecommunication Facility (WTF) does not create any substantial adverse effect, including value and injury (public safety) to the surrounding properties. In reference to property values, there are no known studies that could accurately measure the value of real-estate based off the placement of a WTF. One might say, it could promote development due to the very nature of the technology. Addressing safety, the WTF as mentioned above is quite a distance from the nearest home and meets the required setbacks from property lines so as to not affect the surrounding area. The proposed monopole will be engineered for a height of tower fall zone, the WTF will comply with all applicable structural engineering requirements and, if approved, the tower could be reviewed by the Village for certifications and inspections. The WTF will be unstaffed, and will typically require one or two routine visits a month by a service technician. Hence, the Facility will not have a material impact on parking or traffic.

Over half of all "911" calls are placed on wireless networks. Wireless providers, such as U.S. Cellular, offer "E-911" service which is particularly helpful in locating users who are unable to articulate their exact location. Accordingly, reliable wireless infrastructure provides wireless service that is an essential part of the community's everyday life including emergency and non-emergency communication needs.

- *Encourage users of towers and antennas to locate them, to the extent possible, in areas where the impact on the community is minimal.*

The Applicant has been sensitive in the selection and design of the proposed Facility by locating the proposed WTF on this property the Applicant believes this area with the limited view (see photo simulations) and tree height canopy surrounding the Wireless Telecommunication Facility (WTF) on three sides and being greater than 600' from the any major roadway, we would suggest that this would be in harmony, not only with the intent of the Ordinance, but also with the surrounding area and the land uses near the subject property as people use cell phones in their homes and businesses which is a majority of this area. The granting of the CUP being sought will not affect the normal and orderly development of the surrounding area. To the contrary, reliable utility networks such as electric, gas, water, and wireless networks are essential to the development and well-being of every community.

- *Avoid potential damage to adjacent properties from tower failure through careful engineering and siting of tower structures.*

Please see submitted with this application is the structural analysis for the 190' monopole

- *Enable wireless communication service providers to provide their services to their customers in a prompt, effective and efficient manner.*

With the CUP approval US Cellular can keep up with the changing technologies quickly so as to keep the Village of Germantown up to date with the most current technologies because US Cellular owns the tower.

*Create clear and objective approval criteria for towers and accessory structures.*

No response required

- *Ensure that all wireless communication providers are given an equal opportunity to compete in the local market.*

The Proposed 190’ monopole will be built to accommodate 3 additional carriers so as to limit the need for a new WTF in this area.

*DEFINITIONS. Intentionally Deleted*

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**7. APPLICABILITY OF REGULATIONS.**

- *Facilities Regulated by this Section . Except as provided in subsection (3)(b) of this section, the regulation contained in this chapter shall apply to all wireless communication facilities in the Village of Germantown.*
- *Facilities Exempt from this Section . The following wireless communication facilities are exempt from the provisions of this section, except the regulations contained in subparagraph (c) of this subsection.*

- *A ground or building mounted receive-only radio or television antenna which does not exceed 25 feet in height and which is used solely by the occupants of a dwelling located in a residential zoning district.*

The proposed WTF is 190’ and will need to go thru the CUP process.

- *A ground or building mounted receive-only radio or television satellite dish which does not exceed 36 inches in diameter; which does not project beyond the roof line and which is used solely by the occupants of a dwelling located in a residential zoning district.*

N/A

- *A citizen band radio tower and antenna which does not exceed 35 feet in height.*

N/A

- *A ham radio tower and antenna which does not exceed 75 feet in height.*

N/A

- *Microwave dishes for private home use.*

N/A

- *Governmentally owned and operated receive and/or transmit telemetry station antenna for supervisory control and data acquisition (SCADA) systems for water, flood alert, traffic control devises and signals, stormwater, pump stations and/or irrigation systems, with heights not exceeding 35 feet.*

N/A

- *Towers, equipment facilities and antennas that existed prior to the effective date of this chapter (October 4, 1999).*

N/A

Regulation of Exempt Facilities. **N/A** Notwithstanding subparagraph (a) of this subsection, exempt facilities shall be subject to the following rules and regulations.

- *In residential districts there shall be no more than one antenna support structure per tax parcel.*

The Proposed WTF is on M2 zoned property

- *Towers shall be designed to prevent children and trespassers from climbing on those structures. Ladder rungs shall be at least 20 feet above the ground.*

The WTF will have a 7’ high fence with a 1’ of barbed wire at the top. There will not be climbing pegs lower that 20’ on the monopole, see page 13 Sheet C7 for fence detail.

- *Towers and antennas constructed and maintained in the Village of Germantown shall comply with all other applicable local, State and Federal laws.*

The Facility will be designed and constructed to meet all applicable governmental and industry safety guidelines. The Applicant will comply with FCC and FAA rules concerning construction requirements, safety standards, interference protection, power and height limitations, and radio frequency standards. The Facility will NOT interfere with any other radio devices such as TV’s, radios or other cellular phones. Furthermore, the Facility will not interfere with any household products such as microwave ovens. The Applicant is licensed and regulated by the Federal Communications Commission (“FCC”), which imposes strict health, safety, and interference standards. The proposed Facility will comply with all rules and guidelines that regulate such installations including FCC guidelines with regard to human exposure to RF emissions. The FCC is the governing body that has jurisdiction over this area (RF emissions). It is therefore the belief of the Applicant that the proposed Facility will be operated so that public health, safety, and welfare will be protected.

- *Pre-existing towers and equipment shall not be exempt from the conditional use permit on file and the licensing requirements of section 22.06 of this Code.*

N/A

## 9 COMPLIANCE WITH ZONING REGULATIONS.

- Permitted Uses . *The following uses are deemed permitted uses that require Village Plan Commission approval.*
  - *Antennas on Existing Towers. The attachment of a new antenna on an existing tower may be allowed, to minimize adverse visual impacts associated with the proliferation and clustering of towers, provided that:*

U S Cellular is proposing a new structure

- *A tower which is modified or reconstructed to accommodate the location of an additional antenna shall be of the same type and height as the existing tower.*

No response required

- *An existing tower may be modified or rebuilt to accommodate the colocation or additional antenna and may be moved onsite within 50 feet of its existing location, but the relocation may only occur one time per communication tower.*

No response required

- *After a tower is rebuilt to accommodate co-location, only one tower may remain on site.*

No response required

- *When relocating a tower on-site, the revised location of the tower shall be a minimum distance of the height of the tower, to the property line of residential units or residentially zoned lands*

No response required

- *Public Safety Communication Facilities. (Cr. Ord. #29-07) The construction of a new or the replacement of an existing wireless communication facility owned by the Village of Germantown, Washington County, or other municipal government that will be used primarily for public safety communication systems provided that plans for such facilities meet the following requirements of this section:*

- *Subsection (4)(b)1. through 3.*
- *Subsection (5)(c), (d), and (f) through (m).*
- *Subsection (6).*

- Conditional Uses . The installation of towers and antennas, including the placement of accessory buildings or equipment, may be allowed by Conditional Use Permit in all agricultural, institutional, business and industrial zoning districts. The applicant shall submit a conditional use permit in accordance with the application procedure described in section 17.42 of this chapter. In addition to the requirements detailed in section

No Response required

- 17.42 of this chapter, the conditional use permit shall not be granted until each of the following requirements are met.
- Antennas or Towers on Existing Structures. An antenna or tower may be situated on the roof of a commercial, industrial, professional, institutional or municipal structure provided that such device is installed and maintained in accordance with applicable state or local building codes, and complies with current standards of the FAA, FCC and any other agency of the State or Federal government with the authority to regulate antennas.

The Proposed WTF follows all FCC and FAA guidelines under penalties by law.

- Plans, Specifications and Statements. The applicant for a permit to construct a new tower or equipment faci provide the following:
- Wisconsin Professional Engineer stamped Plans and Specifications for construction of the tower.

I have made part of this application a full set of CD's. signed by a Licensed State of Wisconsin engineer

- A written statement by an electrical engineer licensed to practice in the State of Wisconsin that the reception and transmission functions of the proposed tower, antenna or equipment facility will not interfere with the usual and customary transmission and reception of radio, television or other services on adjacent properties.

WI 66.0404 prohibits this please see above B

- A copy of the FAA determination, the FCC license and the State of Wisconsin Department of Commerce building plan approval indicating that the proposed tower, antenna or equipment facility complies with rules administered be those agencies.

I have included in the application the FAA opinion letter

- For towers, a written statement from the applicant's engineer indicating:
- The types of antennas that may be accommodated by the tower.

Please review pages 18 thru 24 in the CD's

- The tower's capacity for such antennas.

Please review the structural analysis included in the submission. The proposed WTF will be able have 3 additional carriers with equal loading as applicant

- The failure characteristics of the tower.

Please review the structural analysis included in the submission.

- The adequacy of its setback in event of failure.

This site meets the height of tower setbacks from property lines Please see attached CD's sheet

- Site and Landscaping Plans. The applicant shall provide the Plan Commission and Village Board with site plans and landscaping plans drawn to scale of 1" = 20'. Those plans should specify the location of any tower, building, parking, landscaping, fencing and other accessory uses. The landscape plan shall indicate the size, number and type of planting for the proposed site.

Please reference sheets 6,7, and 16 on the submitted CD's.

- List of Other Antenna Facilities. The applicant shall provide the Plan Commission and Village Board with a list of the applicant's existing towers and antennas located in the Village of Germantown and within 10 miles of the Village limits. The list should identify the location, height and design of each tower and location of each antenna. The Plan Commission and Village Board may share such information with other applicants applying for a Conditional Use Permit to construct, install or alter wireless communication facilities.

If future applicants were interested in locating a new WTF within the Village of Germantown, they would not consider a WTF outside a 3-mile radius and more specifically only consider a colocation on an existing structure should it be with a 1-mile radius of their RF desired location with the Germantown jurisdiction. Having said that WI 66.0404 prohibits Jurisdictions from advising new WTF applicants from collocating on other structures. I have provide a link that provides the Village of Germantown Planning Department a 3 mile radius of All towers location, size and type <https://www.antennasearch.com/>

**Disapproving an application based on an assessment by the political subdivision of the suitability of other locations for conducting the activity (See Wis. Stat. 66.0404(4)(p));**

- Affidavit Regarding Other Towers. The applicant for a Conditional Use Permit to construct a new tower shall execute an affidavit stating whether any other wireless communication tower is located within any portion of the area of a radius of 2,000 feet from the location of the proposed new tower, which lies outside of the corporate limits of the Village of Germantown.

Please find as part of this submission the surrounding tower affidavit.

Co-location Statement for Towers. The applicant shall demonstrate, to the reasonable satisfaction of the Plan Commission and Village Board, that no existing tower or alternative tower structure can accommodate the applicant's proposed antenna. Upon a showing by the applicant that any one of the following circumstances enumerated below exist, the applicant shall be deemed to have satisfactorily demonstrated the need for a new tower. In evaluating such circumstances, the Village may employ the services of a consulting expert. The expense for which shall be compensated to the Village by the applicant as an administrative cost of processing the application.

Please find as part of this submission the surrounding tower affidavit

- No tower or alternative tower structure exists in a geographic area where it is necessary to place an antenna in order to provide effective wireless communication services.

Please find as part of this submission the surrounding tower affidavit

- Existing towers or alternative tower structures are not of sufficient height to meet applicant's engineering requirements.

The Tower on the Village property is 160' and has an available rad center of 60' I've included as part of this submission an RF statement stating why the existing tower could not work for US Cellular objective for this area of Germantown.

- Existing towers or alternative tower structures do not have sufficient strength to support applicant's pro and related equipment.

The Tower on the Village property is 160' base on its present loading would likely need modification and furthermore WI 66.0404 restricts Jurisdictions from advising carriers to use a certain existing tower over building a new tower.

- Applicant's proposed antenna would cause interference with another antenna already located on an existing tower or structure or that the antenna on the existing tower or structure would cause interference with applicant's proposed antenna.

N/A

- The charges for the use of an existing tower or alternative tower structure are unreasonable. Charges for use of an existing tower or structure shall be deemed unreasonable if those charges exceed the (cost of constructing a wireless communication facility) (then reasonable market rates for co-location).

N/A

- The applicant demonstrates that there are other reasonable factors that render an existing tower or alternative tower structure unsuitable.

Please see as part of this submission US Cellular's RF engineers letter pertaining to the tower located on Village property.

- Reservation of Antenna Space on Towers. Unless, specifically waived by the Village, new towers shall be designed to accommodate at least 2 other wireless communication service providers at market rate.

Please see sheet 17 of the submitted CD's. The proposed monopole design tower will allow 3 additional carriers with similar loading capacity.

- Liability Insurance Coverage. The applicant shall annually furnish a certificate of general liability insurance coverage for a minimum of \$1,000,000.00 for the tower site. The insurance coverage may be reviewed by the Plan Commission and Village Board to determine the sufficiency of such amount. The proof of insurance shall be placed on file with the Village Clerk's office.

U S Cellular under the terms of the lease agreement with Faith Lutheran Church must at all times carry an insurance policy of 1 M. That being stated US Cellular will provide the Village of Germantown a copy of their insurance policy annually.

- OTHER REQUIREMENTS. (Am. Ord. #29-07) Except as may otherwise be provided in subsection (4)(a) herein, all wireless communication facilities shall meet the following requirements:
- Tower and Antenna Height . No tower shall exceed 150 feet in height. No antenna support structure, including any antenna or other device attached thereto, shall extend more than 20 feet above the highest point of the building or structure to which the antenna support structure is attached.

L. Under the Wis. Stat. 66.0404(4)(u).a Jurisdiction may not regulate the height of a tower under 200'

- Tower Separation. No new tower shall be constructed within 2,000 feet of an existing tower. The distance shall be measured in a straight line between the base of the existing tower and the proposed location for the base of the new tower.

As made part of the CUP submission please see the "surrounding tower affidavit" and US Cellular's RF engineer's statement would conclude that we do meet the tower separation.

- Advertising Signs . No person shall place any advertising sign on any tower, antenna support structure or antenna. Nor, shall anyone place a flag, decorative sign, streamer, pennant, ribbon, spinner or other moving object on a tower, antenna support structure or antenna, unless such object is an integral part of the facility design which is calculated to screen, conceal or camouflage the nature of the structure,

such as a flag on a flag pole which is itself a camouflaged wireless communications facility, or in which such a facility is concealed.

US Cellular will affirm that no advertising or advertising signs will be made part of this WTF site.

- Lighting . No tower, antenna support structure or antenna shall be artificially illuminated. This subsection does not prohibit the use of motion detectors and associated lighting nor the use of outdoor lights when the wireless communication provider's personnel are present. This subsection is not intended to prohibit any lighting required by any local, State or Federal law, rule or regulation. If lighting is required by such law, rule or regulation, the operator and owner shall choose the lighting which causes the least disturbance to the occupants of the adjacent properties.

- The Proposed Telecommunication Tower will not have a light on it as its below the FAA required 200'

- Points of Visual Interest . No wireless communication facility shall be located so as to obstruct the view of a point of visual interest from a residential zoning within 1,000 feet of the wireless communication facility.

The WTF is not located in area that would be considered to have a visual interest.

- Tower Color . The tower shall have a galvanized steel finish or shall be painted in a neutral color so as to reduce visual obtrusiveness or to camouflage the tower. Antennas and antenna support structures shall be of a neutral color which is identical to, or closely compatible with, the color of the tower or alternative support structure

The Support Structure will be made of steel and be gray in color.

M Disapproving an application based solely on aesthetic concerns (See Wis. Stat. 66.0404(4)(g));

- Ladders. Towers shall be designed to prevent children and trespassers from climbing on those structures. Ladder rungs on towers shall be placed a minimum of 20 feet above the ground.

The WTF will have a locked gate and Barbed wire around the top of the fence there also will be no ladder or climbing pegs lower than 20'

- Fencing . A wireless communications facility shall be enclosed by a security fence not less than 6 feet in height and secured so that it is not accessible by the general public. Fence design, materials and colors shall reflect the character of the surrounding area as determined by the Plan Commission and Village Board.

- Please see sheet C7 of the submitted CD's which shows the WTF fence design and that it meets your specifications

- Electrical fencing is prohibited within the Village of Germantown.

US Cellular does not use electric fencing

- [ Conditional Use Permit .] A conditional use permit for siting a wireless communications facility in lands carrying an agricultural zoning classification shall provide conditions requiring sufficient screening or camouflage so as to eliminate visual obtrusiveness.

As stated below US Cellular will follow The Village of Germantown's landscaping requirements to the letter.

- Landscaping . A buffer of plant materials of sufficient maturity and size to immediately and effectively screen the equipment cabinets, structures or buildings from public view and from adjacent properties shall be provided.
- US Cellular will follow the Village of Germantown landscaping requirement Please see sheet LP in the submitted CDs for the details
- The minimum buffer shall consist of a landscaped strip at least 5 feet in width outside the entire perimeter of the wireless communications facility.

Please see Sheet LP in the submitted CD's for the landscaping that will be used at the WTF

- In locations where the visual impact of the tower would be minimal, the landscaping requirement may be reduced or waived with the approval of the Plan Commission and Village Board.

The location of the WTF would require landscaping on all sides of the leased area.

- Existing mature tree growth and natural land forms shall be preserved to the maximum extent possible. In some cases, such towers sited on large, wooded lots, natural growth around the property perimeter may be a sufficient buffer.

There are large mature trees to the East and South of the proposed WTF. There will not be any trees being taken down for this WTF

- All landscaping requirements detailed here shall be properly maintained in perpetuity.

U S Cellular will maintain the landscaping around the WTF please see sheet LP for landscaping information

- Buildings, Enclosures and Associated Devices .

There will not be any buildings at this site.

- All buildings, enclosures, equipment and other associated devices shall be placed in close proximity to the base of the tower located on the wireless communications site. If the wireless communications facility does not have a tower, the buildings, equipment and other associated devices shall be placed in close proximity to the alternative tower structure. If the wireless communications facility has a roof mounted antenna support structure, an equipment enclosure may be located on the roof provided that such enclosure is placed as unobtrusively as possible and in compliance with all applicable building and zoning rules and regulations.

There will not be any buildings at this site.

- All buildings and enclosures shall be kept locked at all times. Each building and enclosure shall have a label attached to it the label shall give the name, address and telephone number of the person who should be contacted in the event of an emergency.

There no buildings with the lease area. There will be a sign on the front gate stating ownership Site Number and a phone number to call in case of an emergency.

- The aggregate floor area of all buildings and enclosures shall not exceed 400 square feet per tower. The total height of the structures shall not exceed 15 feet in height. A greater height and size, may be approved by the Village Board, if necessary to fulfill special considerations of the tower site. The construction materials shall consist of a brick exterior on all sides of the structures, However, different materials may be approved by the Village Board if they are determined to be more compatible with the surrounding land uses. (Am. Ord. #5-02)

The WTF area will consist of a 70 Sq.ft cement pad with outdoor cabinets. The height of the equipment will no more than 10' in height.

- *Building Permit Required . After the conditional use permit and final site plans are approved, no tower or any type of structure shall be constructed until a building permit is reviewed, approved and issued from the Village Building Inspection Department.*

Once the CUP has been approved U S Cellular will follow the building departments guidelines for the issuance of a building permit to construct the WTF.

- *Setbacks . All wireless communications facilities regulated by this section shall meet the required setback as determined by the Village Board and made a condition of the approved site plan. (Cr. Ord. #5-02)*

The WTF meets the setback standards as they relate to the Village of Germantown's wireless code.

- *MAINTENANCE AND OPERATIONAL REQUIREMENTS.*
- *General Requirements . The wireless communication facility shall be maintained in accordance with all applicable local, State and Federal regulations. If the Building Inspector concludes that a tower or any other part of a wireless communication facility fails to comply with such codes and constitutes a danger to persons or property in the vicinity, the Village Building Inspector shall notify the owner or operator of the wireless communication facility of such fact. The notice shall be in writing and shall require the owner or operator to bring the facility into compliance with such codes within 30 days of the date of service of the notice. If the owner or operator fails to bring the wireless communication facility into compliance within the time provided, the Village Building Inspector may order the tower or other wireless communication facility to be removed to the extent necessary to protect persons or property in the vicinity. The cost of removing the tower or other portion of the wireless communication facility shall be at the owner's expense. The owner and the operator shall be responsible to maintain the premises upon which the wireless communication facility is located in a clean and sanitary condition.*

US Cellular will the stricly follow the requirements set down by the Building Inspector Code. Furthermore the Facility will be designed and constructed to meet all applicable governmental and industry safety guidelines. The Applicant will comply with FCC and FAA rules concerning construction requirements, safety standards, interference protection, power and height limitations, and radio frequency standards. The Facility will NOT interfere with any other radio devices such as TV's, radios or other cellular phones. Furthermore, the Facility will not interfere with any household products such as microwave ovens. The Applicant is licensed and regulated by the Federal Communications Commission ("FCC"), which imposes strict health, safety, and interference standards. The proposed Facility will comply with all rules and guidelines that regulate such installations including FCC guidelines with regard to human exposure to RF emissions. The FCC is the governing body that has jurisdiction over this area (RF emissions). It is therefore the belief of the Applicant that the proposed Facility will be operated so that public health, safety, and welfare will be protected.

- *Operator Interference . Operation of a tower facility shall be undertaken so as not to interfere with any other form of wireless communication. In the event any complaints of interference are received, and they are reasonably suspected by the Village to be caused by the tower, the Village shall notify the applicant and property owner. The applicant shall have a period of 30 days to investigate said complaints and respond to the Village of Germantown. In the event that it is determined that the tower is the source of interference, the applicant shall have 10 days to correct all problems.*

A Jurisdiction may not: Impose environmental testing, sampling, or monitoring requirements, or other compliance measures for radio frequency emissions, on mobile service facilities or mobile radio service providers (See Wis. Stat. 66.0404(4)(a));

- Outdoor Storage Prohibited . No person shall store any vehicles, equipment or other goods on the site of the wireless communication facility except in an enclosed building. This section does not apply to overnight storage of vehicles or equipment necessary for the construction or repair of the wireless communication facility.

US Cellular will not allow nor would the Faith Lutheran Church allow any storage, any vehicles, equipment or other goods on the site

ABANDONED TOWERS AND ANTENNAS.

- 
- Evidence of Abandonment . An antenna or tower shall be deemed abandoned if any of the following shall occur:
- The antenna or tower is not operated for 6 continuous months.

No response required

- 
- The owner or operator has notified the Village of Germantown that it has ceased operations of the antenna or tower.

US Cellular or their assignee or collateral assignee, will notify the Village of Germantown should US Cellular or their assignee or collateral assignee cease operations.

- Notification of Abandonment . The owner or operator of a wireless communication facility shall notify the Village Planning Department in writing whenever an antenna or tower is abandoned or its use discontinued. Such notice shall be given to the Planning Department within 30 days of such abandonment or discontinuance.

US Cellular or their assignee or collateral assignee, will follow the Village of Germantown’s abandonment notification.

- Removal of Abandoned Towers and Antennas . The owner and operator of an abandoned tower or antenna shall remove it from the wireless communications facility within 6 months after the tower or antenna is abandoned or its use discontinued. If the owner fails to remove the antenna, tower, or any other structure within that time, the Village shall remove the antenna, tower or any other structure at the owner's and operator's expense. In the event that the cost of removal is not paid, the Village may assess the cost of such removal against the property upon which the wireless communications facility is located.

US Cellular will follow the Village of Germantown’s removal as stated above.

- Site Restoration . Whenever a tower is removed from a wireless communications facility, the remainder of the site restored to its preexisting condition and all buildings, equipment and other devices accessory to the tower shall removed from the site.

Under the terms of the Ground Lease with Faith Lutheran Church US Cellular is required to remove all above ground equipment. US Cellular will follow the Village of Germantown’s removal as stated above.

*[ Irrevocable Letter of Credit .] An applicant shall provide, as a condition of issuance of a conditional use permit, an irrevocable letter of credit or cash in the amount of \$25,000.00 to guaranty facilities removal and site restoration.*

- A. US Cellular will follow the wis Statute 66.0404 which states Imposing a surety requirement, unless the requirement is competitively neutral, nondiscriminatory, and commensurate with the historical record for surety requirements for other facilities and structures in the political subdivision which fall into disuse. There is a rebuttable presumption that a surety requirement of \$20,000 or less complies with this requirement (See Wis. Stat. 66.0404(4)(i));

**USC will Provide a surety bond for 20,000.**

- *LEGAL NONCONFORMING FACILITIES. Preexisting towers, antenna support structures, antennas or wireless communication facilities which do not conform to the requirements of this chapter, shall be permitted to continue in accordance with the provisions of the zoning code of the Village of Germantown which deals with nonconforming buildings, structures and uses.*

No response required

- *ENFORCEMENT. The provisions of this chapter shall be enforced by the Planning Department and the Village Building Inspector. Any person who violates any provision of this chapter shall, upon a conviction be subject to a penalty as detailed in section 25.04 of the Germantown Municipal Code.*
- *State law references—Regulation of antennas, Wis. Stats. §§ 61.35, 62.23(7)(he), (7)(hf).*



NOTE: THIS PHOTO SIMULATION IS A VISUAL INTERPRETATION OF THE PROPOSED DESIGN. FINAL CONSTRUCTION MAY DIFFER FROM WHAT IS PRESENTED HERE.



# GERMANTOWN

PHOTO LOCATIONS





BEFORE



AFTER

NOTE: THIS PHOTO SIMULATION IS A VISUAL INTERPRETATION OF THE PROPOSED DESIGN. FINAL CONSTRUCTION MAY DIFFER FROM WHAT IS PRESENTED HERE.

# GERMANTOWN

View from North looking South



**TERRA**  
CONSULTING GROUP

600 Busse Highway, Park Ridge, IL 60068  
Phone: 847.698.6400 Fax: 847.698.6401  
TCG #: 10-079





BEFORE



AFTER

NOTE: THIS PHOTO SIMULATION IS A VISUAL INTERPRETATION OF THE PROPOSED DESIGN. FINAL CONSTRUCTION MAY DIFFER FROM WHAT IS PRESENTED HERE.

# GERMANTOWN

View from East looking West



**TERRA**  
CONSULTING GROUP

600 Busse Highway, Park Ridge, IL 60068  
Phone: 847.698.6400 Fax: 847.698.6401  
TCG #: 10-079





BEFORE



AFTER

NOTE: THIS PHOTO SIMULATION IS A VISUAL INTERPRETATION OF THE PROPOSED DESIGN. FINAL CONSTRUCTION MAY DIFFER FROM WHAT IS PRESENTED HERE.

# GERMANTOWN

View from South looking North



**TERRA**  
CONSULTING GROUP

600 Busse Highway, Park Ridge, IL 60068  
Phone: 847.698.6400 Fax: 847.698.6401  
TCG #: 10-079





BEFORE



AFTER

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# GERMANTOWN

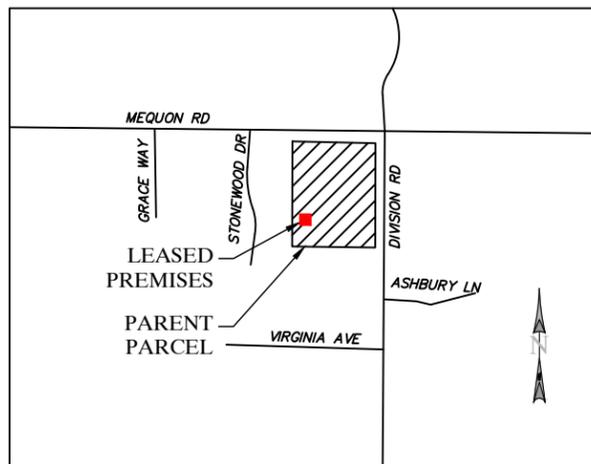
View from West looking East



**TERRA**  
CONSULTING GROUP

600 Busse Highway, Park Ridge, IL 60068  
Phone: 847.698.6400 Fax: 847.698.6401  
TCG #: 10-079





**VICINITY MAP**

NOT TO SCALE

**GENERAL NOTES**

NO SEARCH OF PUBLIC RECORDS HAS BEEN COMPLETED BY XCEL CONSULTANTS TO DETERMINE ANY DEFECTS AND/OR AMBIGUITIES IN THE TITLE OF THE PARENT PARCEL.

THIS SURVEY IS FOR THE PROPOSED LEASED PREMISES AND THE PROPOSED EASEMENTS ONLY, AND ONLY A PARTIAL BOUNDARY SURVEY OF THE PARENT PARCEL HAS BEEN PERFORMED.

THIS PLAT IS NOT INTENDED FOR LAND TRANSFER.

THIS PROPERTY IS SUBJECT TO ANY RECORDED EASEMENTS AND/OR RIGHTS OF WAY SHOWN HEREON OR NOT.

XCEL CONSULTANTS HAS RECEIVED AND REVIEWED THE TITLE COMMITMENT PREPARED BY STEWART TITLE GUARANTY COMPANY, FILE NUMBER 22111495W, DATED AUGUST 24, 2022 AT 8:00 AM, PREPARED FOR THE SUBJECT PROPERTY, TO DETERMINE THE IMPACTS OF EXISTING TITLE EXCEPTIONS.

BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE "X" (AREA OF MINIMAL FLOOD HAZARD) OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 55131C0357D AND 55131C0376D, WHICH BOTH BEAR AN EFFECTIVE DATE OF NOVEMBER 20, 2013 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE AND AN ELEVATION CERTIFICATE MAY BE NEEDED TO VERIFY THIS DETERMINATION OR APPLY FOR A VARIANCE FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

NO WETLANDS AREAS HAVE BEEN INVESTIGATED BY THIS SURVEY

THERE WERE NO STREAMS, DRAINAGE DITCHES OR PIPES, OR RIVERS RUNNING THROUGH OR BORDERING THE PARENT PARCEL, LEASED PREMISES NOR NEW EASEMENTS AT THE TIME OF SURVEY.

THE LOCATION OF THE UTILITIES SHOWN HEREON ARE FROM OBSERVED EVIDENCE OF ABOVE GROUND APPURTENANCES AND PER WISCONSIN ONE CALL "DIGGERS HOTLINE" LOCATED REQUEST PLANNING PRINTS TICKET #20223421464. UTILITY SERVICE FOR THIS PROPERTY ARE PROVIDED BY WE ENERGIES, ELECTRIC AND GAS, TIME WARNER CABLE, VILLAGE OF GERMANTOWN, AT&T DISTRIBUTION, AND CENTURYLINK. ONLY UTILITY MAPS PROVIDED BY SAID COMPANIES ARE SHOWN HEREON. BEFORE DIGGING IN THIS AREA CALL DIGGERS HOTLINE AT 811.

**\* FAA COORDINATE POINT**

NAD 83  
 LATITUDE: 43°13'09.0304" (43.21917510)  
 LONGITUDE: -88°07'30.1608" (-88.12504468)  
 NAVD88 ELEVATION: 878.87± AMSL

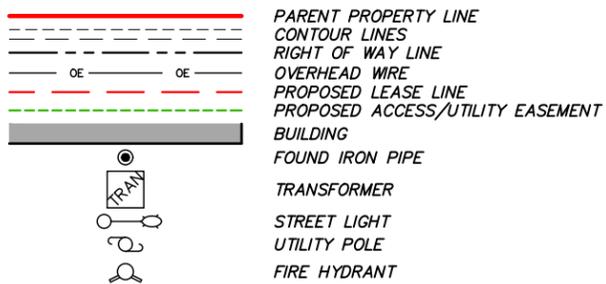
TO: U.S. CELLULAR; STEWART TITLE GUARANTY COMPANY

I, DAN J. KUEHL, A WISCONSIN PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE INFORMATION SHOWN HEREON WAS COMPILED USING DATA FROM AN ACTUAL FIELD SURVEY MADE UNDER MY DIRECT SUPERVISION AND THAT THE FIELD SURVEY AND THE COMPILATION OF INFORMATION SHOWN HEREIN WERE CONDUCTED IN ACCORDANCE WITH THE WISCONSIN MINIMUM STANDARDS OF PRACTICE. THE FIELD WORK WAS COMPLETED ON AUGUST 17, 2022.

*Dan J. Kuehl*  
 SEPTEMBER 26, 2022  
 DAN J. KUEHL  
 LICENSE NUMBER 3104-8  
 MY LICENSE RENEWAL DATE IS JANUARY 31, 2024  
 SHEETS COVERED BY THIS SEAL B-1, B-2, B-3, AND B-4

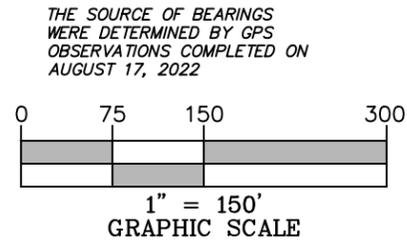


**LEGEND**

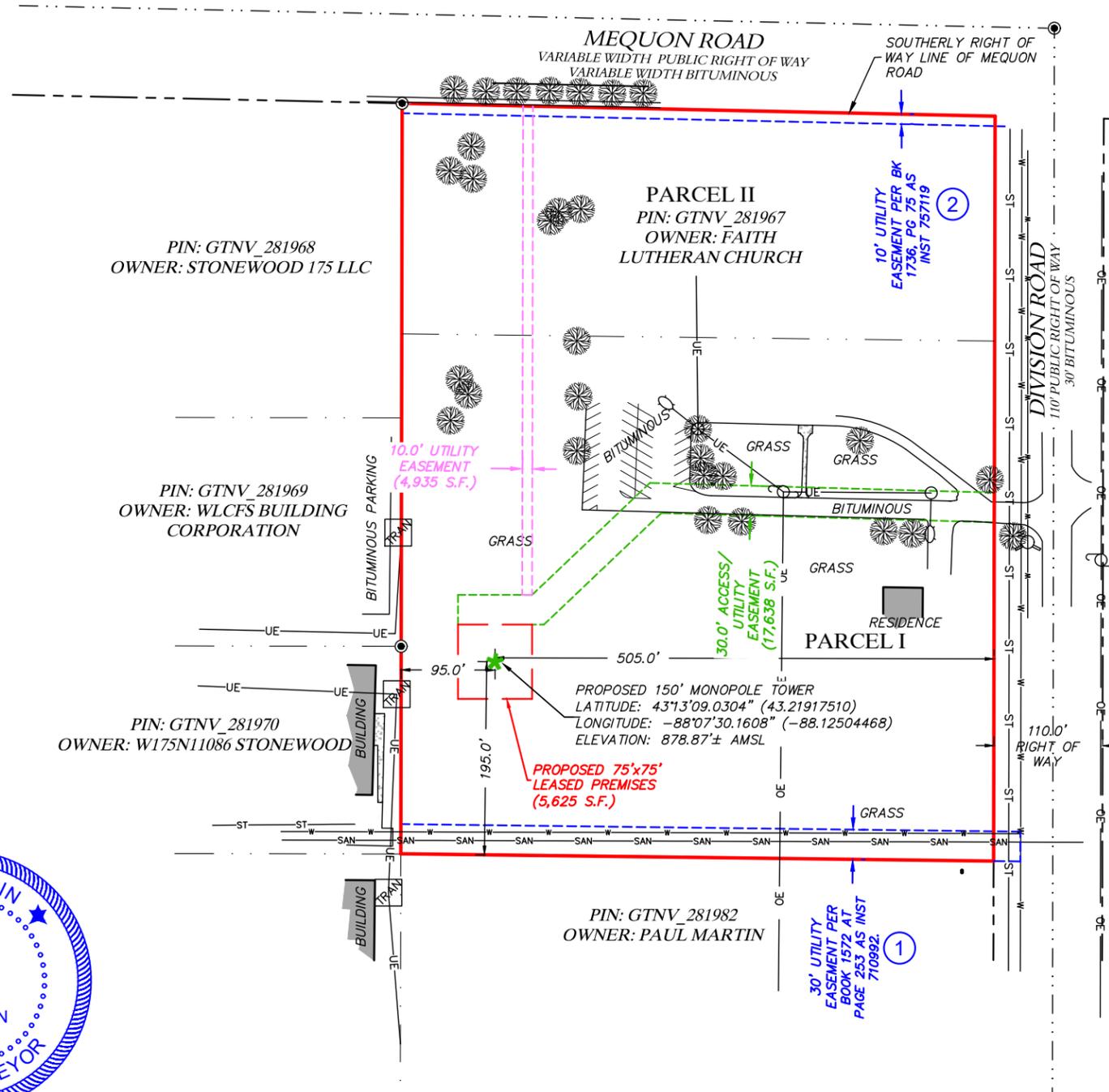


**GLOBAL POSITIONING SYSTEMS NOTE**

1. RANDOM TRAVERSE CONTROL MONUMENTS WERE SET USING GPS METHODS. A PORTION OF THE TOPOGRAPHY AND FOUND BOUNDARY MONUMENTS WERE ALSO LOCATED USING GPS METHODS.
2. THE TYPE OF GPS UTILIZES AS NETWORK ADJUSTED REAL TIME KINEMATIC (HYPER SR NETWORK), NAD 83 WISCONSIN STATE PLANE (WASHINGTON).
3. TOPCON HIPER SR RECEIVERS WERE USED TO PERFORM THE SURVEY.



THE SOURCE OF BEARINGS WERE DETERMINED BY GPS OBSERVATIONS COMPLETED ON AUGUST 17, 2022



**SURVEY**



8410 W. Bryn Mawr Avenue  
 Suite 700  
 Chicago, IL 60631



**XCEL** Consultants  
 8300 42ND STREET WEST  
 ROCK ISLAND, IL 61201  
 (O) 309-787-9988  
 (F) 309-756-5540  
 (E) XCEL@XCELCONSULTANTSINC.COM

XCEL PROJECT NUMBER: 224240

**SURVEY**

REV.	DATE	DESCRIPTION

**SITE NAME:**  
 GERMANTOWN

**SITE NUMBER:** 784809

W172N11083 DIVISION ROAD  
 GERMANTOWN, WI 53022

**OWNER:** FAITH LUTHERAN CHURCH  
**PARCEL #:** GTNV\_281967

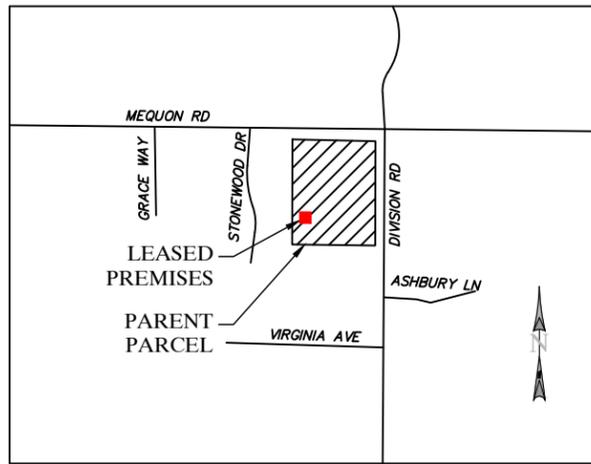
WASHINGTON COUNTY  
 WISCONSIN

**DRAWN BY:** KJM  
**CHECKED BY:** BCH  
**SURVEY DATE:** 8/17/2022  
**PLAT DATE:**

**SHEET TITLE:**  
**SURVEY**  
 THIS DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT PARCEL

**SHEET NUMBER:**

**B-1**

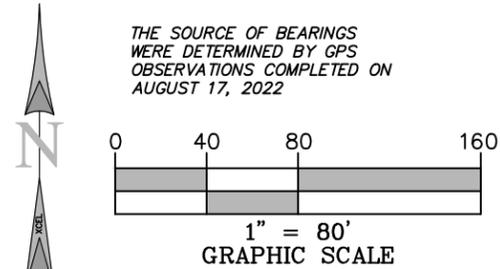


**VICINITY MAP**  
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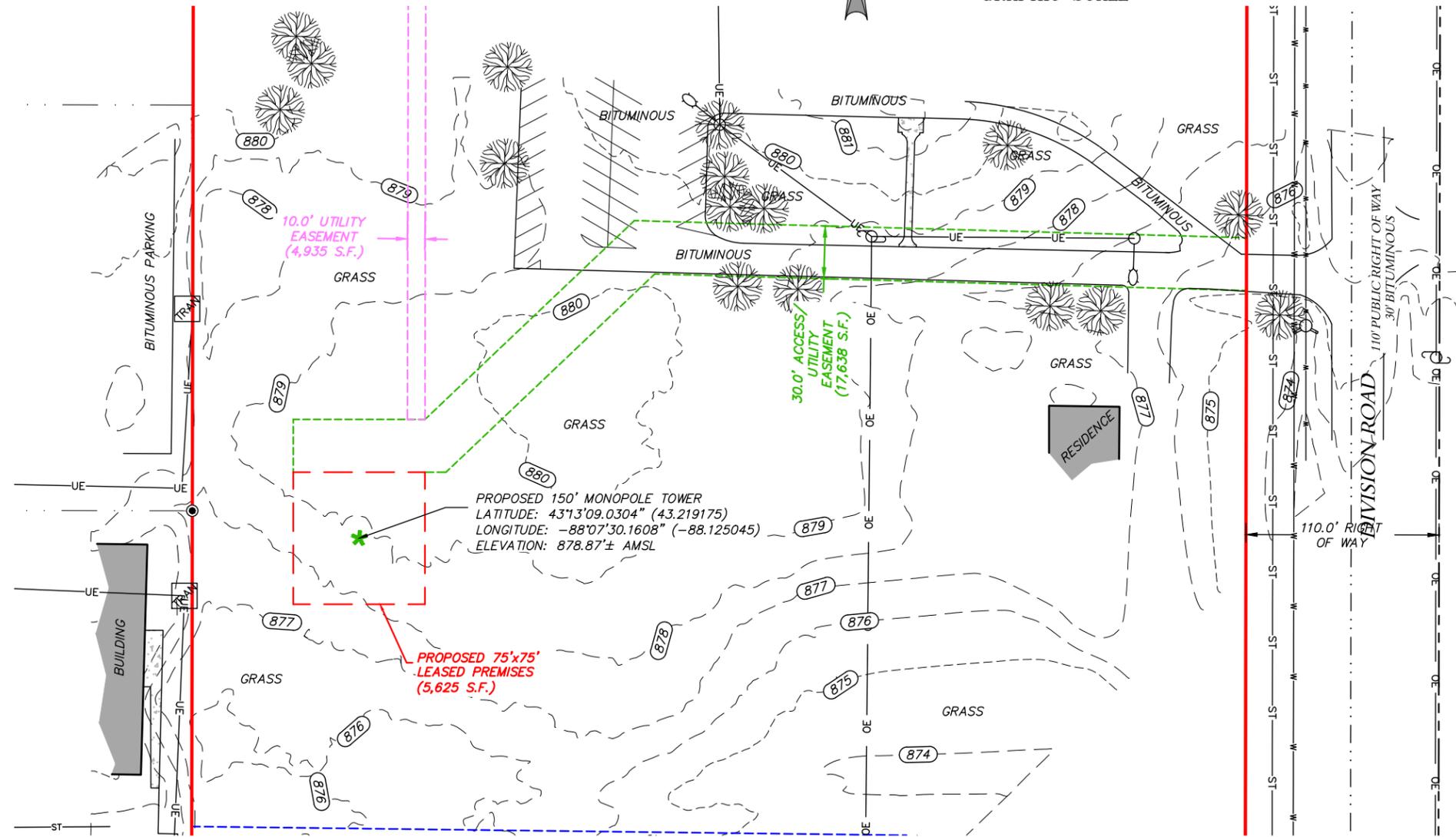


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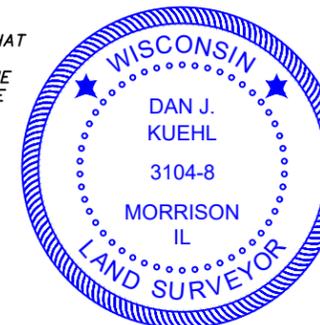
**LEGEND**

- PARENT PROPERTY LINE
- CONTOUR LINES
- RIGHT OF WAY LINE
- OVERHEAD WIRE
- PROPOSED LEASE LINE
- PROPOSED ACCESS/UTILITY EASEMENT
- BUILDING
- FOUND IRON PIPE
- TRANSFORMER
- STREET LIGHT
- UTILITY POLE
- FIRE HYDRANT

TO: U.S. CELLULAR; STEWART TITLE GUARANTY COMPANY

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*Dan J. Kuehl*  
SEPTEMBER 26, 2022  
DAN J. KUEHL  
LICENSE NUMBER 3104-B  
MY LICENSE RENEWAL DATE IS JANUARY 31, 2024  
SHEETS COVERED BY THIS SEAL B-1, B-2, B-3, AND B-4



8410 W. Bryn Mawr Avenue  
Suite 700  
Chicago, IL 60631



SURVEYED BY:  
**XCEL** Consultants  
8300 42ND STREET WEST  
ROCK ISLAND, IL 61201  
(O) 309-787-9988  
(F) 309-756-5540  
(E) XCEL@XCELCONSULTANTSINC.COM

XCEL PROJECT NUMBER: 224240

**SURVEY**

REV.	DATE	DESCRIPTION

**SITE NAME:**  
GERMANTOWN

SITE NUMBER: 784809

W172N11083 DIVISION ROAD  
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OWNER: FAITH LUTHERAN  
CHURCH  
PARCEL #: GTNV\_281967

WASHINGTON COUNTY  
WISCONSIN

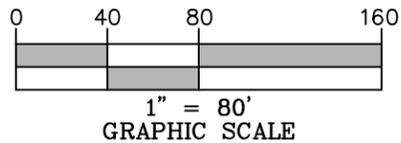
DRAWN BY: KJM  
CHECKED BY: BCH  
SURVEY DATE: 8/17/2022  
PLAT DATE:

SHEET TITLE:  
**SURVEY**  
THIS DOES NOT REPRESENT A  
BOUNDARY SURVEY OF THE  
PARENT PARCEL

SHEET NUMBER:  
**B-2**



THE SOURCE OF BEARINGS  
WERE DETERMINED BY GPS  
OBSERVATIONS COMPLETED ON  
AUGUST 17, 2022.



AERIAL PER XCEL CONSULTANTS,  
INC. FLOWN DRONE ON AUGUST 17,  
2022.



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SEPTEMBER 26, 2022

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8410 W. Bryn Mawr Avenue  
Suite 700  
Chicago, IL 60631



600 Busse Highway  
Park Ridge, IL 60068  
Ph: 847/698-6400  
Fax: 847/698-6401

SURVEYED BY:



XCEL PROJECT NUMBER: 224240

**SURVEY**

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BOUNDARY SURVEY OF THE  
PARENT PARCEL

**SHEET NUMBER:**

**B-3**

**REPORT OF TITLE:**

XCEL CONSULTANTS HAS RECEIVED AND REVIEWED THE TITLE COMMITMENT PREPARED BY STEWART TITLE GUARANTY COMPANY, FILE NUMBER 22111495W, DATED AUGUST 24, 2022 AT 8:00 AM, PREPARED FOR THE SUBJECT PROPERTY, TO DETERMINE THE IMPACTS OF EXISTING TITLE EXCEPTIONS.

**SURVEY MATTERS OR EASEMENTS LISTED IN SCHEDULE 'B':**

1. SANITARY SEWER AND WATER MAIN EASEMENT BETWEEN FAITH LUTHERAN CHURCH AND THE VILLAGE OF GERMANTOWN DATED OCTOBER 26, 1995 AND RECORDED FEBRUARY 26, 1996 IN BOOK 1572 AT PAGE 253 AS INSTRUMENT 710992. LIES ON PROPERTY - AS SHOWN
2. AMERITECH EXCLUSIVE EASEMENT BETWEEN FAITH LUTHERAN CHURCH AND WISCONSIN BELL, INC. A.K.A AMERITECH WISCONSIN DATED SEPTEMBER 18, 1997 AND RECORDED SEPTEMBER 18, 1997 IN BOOK 1736 AT PAGE 75 AS INSTRUMENT 757119. LIES ON PROPERTY - AS SHOWN
3. RIGHT-OF-WAY GRANT BETWEEN FAITH LUTHERAN CHURCH AND WISCONSIN BELL, INC DATED JUNE 9, 1986 AND RECORDED JULY 16, 1986 IN BOOK 899 AT PAGE 531 AS INSTRUMENT 494984. DOES NOT LIE ON PROPERTY

**PARENT PARCEL:**

**PARCEL I:**  
THAT PART OF THE NORTHEAST ONE-QUARTER (1/4) OF THE NORTHEAST ONE-QUARTER (1/4) OF SECTION TWENTY-EIGHT (28), IN TOWNSHIP NINE (9) NORTH, RANGE TWENTY (20) EAST, IN THE VILLAGE OF GERMANTOWN, COUNTY OF WASHINGTON, STATE OF WISCONSIN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 28; THENCE SOUTH ON THE EAST LINE OF THE NORTHEAST 1/4 OF SAID SECTION 316.50 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE CONTINUING SOUTH 524.83 FEET; THENCE NORTH 89°26' WEST 660.03 FEET; THENCE NORTH 531.17 FEET; THENCE SOUTH 88°53' EAST 660.13 FEET TO THE POINT OF BEGINNING. EXCEPTING THEREFROM THOSE LANDS CONVEYED TO THE STATE OF WISCONSIN, DEPARTMENT OF TRANSPORTATION IN A WARRANTY DEED RECORDED ON APRIL 29, 1996 IN VOLUME 1590 OF RECORDS, AT PAGE 642, AS DOCUMENT NO. 716269.

**PARCEL II:**  
THAT PART OF THE NORTHEAST ONE-QUARTER (1/4) OF THE NORTHEAST ONE-QUARTER (1/4) OF SECTION TWENTY-EIGHT (28), IN TOWNSHIP NINE (9) NORTH, RANGE TWENTY (20) EAST, IN THE VILLAGE OF GERMANTOWN, COUNTY OF WASHINGTON, STATE OF WISCONSIN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 28; THENCE SOUTH ON THE EAST LINE OF THE NORTHEAST 1/4 OF SAID SECTION 316.50 FEET; THENCE NORTH 88°53' WEST 660.13 FEET; THENCE NORTH 316.50 FEET TO THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION; THENCE SOUTH 88°53' EAST ON SAID NORTH LINE 660.13 FEET TO THE POINT OF BEGINNING. EXCEPTING THEREFROM THAT PORTION THEREOF CONVEYED TO WASHINGTON COUNTY, WISCONSIN, FOR HIGHWAY PURPOSES AS LONG AS SO USED, AS DESCRIBED BY DEED RECORDED IN WASHINGTON COUNTY REGISTRY IN VOLUME 210 OF DEEDS ON PAGE 197, AS DOCUMENT NO. 232686.

EXCEPTING THEREFROM THOSE LANDS CONVEYED TO THE STATE OF WISCONSIN, DEPARTMENT OF TRANSPORTATION IN A WARRANTY DEED RECORDED ON APRIL 29, 1996 IN VOLUME 1590 OF RECORDS, AT PAGE 642, AS DOCUMENT NO. 716269.

LESS THAT PORTION CONVEYED TO THE STATE OF WISCONSIN IN BOOK 1590 AT PAGE 642.

**LEASED PREMISES:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE S00°06'40"E, ALONG THE WEST LINE OF DIVISION ROAD, 379.93 FEET; THENCE N88°23'59"W, 348.73 FEET; THENCE S46°31'53"W, 164.29 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE S00°00'00"W, 30.00 FEET TO THE POINT OF BEGINNING FOR THE LEASE AREA HEREIN INTENDED TO BE DESCRIBED; THENCE N90°00'00"E, 75.00 FEET; THENCE S00°00'00"W, 75.00 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE N00°00'00"E, 75.00 FEET TO THE POINT OF BEGINNING, CONTAINING 5,625 SQUARE FEET.

**ACCESS/UTILITY EASEMENT:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE S00°06'40"E, ALONG THE WEST LINE OF DIVISION ROAD, 379.93 FEET TO THE POINT OF BEGINNING FOR THE EASEMENT AREA HEREIN INTENDED TO BE DESCRIBED; THENCE N88°23'59"W, 348.73 FEET; THENCE S46°31'53"W, 164.29 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE S00°00'00"W, 30.00 FEET; THENCE N90°00'00"E, 86.96 FEET; THENCE N46°31'53"E, 163.80 FEET; THENCE S88°23'59"E, 337.07 FEET TO THE SAID WEST LINE OF DIVISION ROAD; THENCE N00°06'40"E, ALONG THE SAID WEST LINE, 30.01 FEET TO THE POINT OF BEGINNING, CONTAINING 17,638 SQUARE FEET.

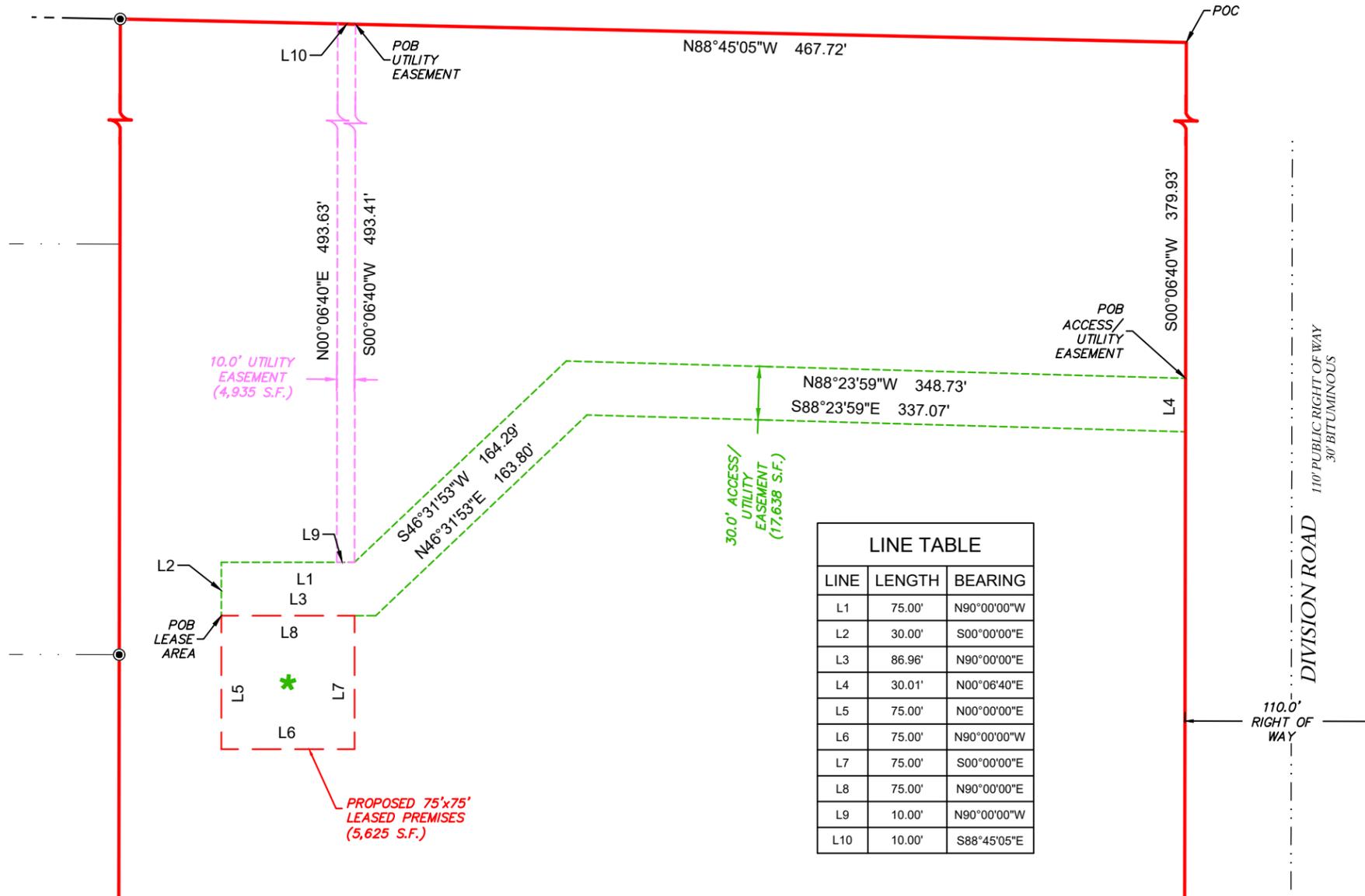
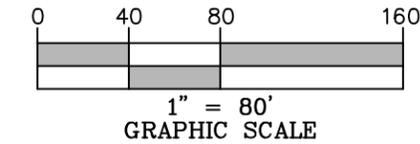
**UTILITY EASEMENT:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE N88°45'05"W, ALONG THE NORTH LINE OF SAID LAND, 467.72 FEET TO THE POINT OF BEGINNING FOR THE EASEMENT AREA HEREIN INTENDED TO BE DESCRIBED; THENCE S00°06'40"W, 493.41 FEET; THENCE S90°00'00"W, 10.00 FEET; THENCE N00°06'40"E, 493.63 FEET TO THE NORTH LINE OF SAID LAND; THENCE S88°45'05"E, 10.00 FEET TO THE POINT OF BEGINNING, CONTAINING 4,935 SQUARE FEET.

**LEGEND:**

- PARENT PROPERTY LINE
- - - - - RIGHT OF WAY LINE
- - - - - PROPOSED LEASE LINE
- - - - - PROPOSED ACCESS/UTILITY EASEMENT

THE SOURCE OF BEARINGS WERE DETERMINED BY GPS OBSERVATIONS COMPLETED ON AUGUST 17, 2022



LINE TABLE		
LINE	LENGTH	BEARING
L1	75.00'	N90°00'00"W
L2	30.00'	S00°00'00"E
L3	86.96'	N90°00'00"E
L4	30.01'	N00°06'40"E
L5	75.00'	N00°00'00"E
L6	75.00'	N90°00'00"W
L7	75.00'	S00°00'00"E
L8	75.00'	N90°00'00"E
L9	10.00'	N90°00'00"W
L10	10.00'	S88°45'05"E

**UTILITY EASEMENT:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE N88°45'05"W, ALONG THE NORTH LINE OF SAID LAND, 467.72 FEET TO THE POINT OF BEGINNING FOR THE EASEMENT AREA HEREIN INTENDED TO BE DESCRIBED; THENCE S00°06'40"W, 493.41 FEET; THENCE S90°00'00"W, 10.00 FEET; THENCE N00°06'40"E, 493.63 FEET TO THE NORTH LINE OF SAID LAND; THENCE S88°45'05"E, 10.00 FEET TO THE POINT OF BEGINNING, CONTAINING 4,935 SQUARE FEET.

TO: U.S. CELLULAR; STEWART TITLE GUARANTY COMPANY

I, DAN J. KUEHL, A WISCONSIN PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE INFORMATION SHOWN HEREON WAS COMPILED USING DATA FROM AN ACTUAL FIELD SURVEY MADE UNDER MY DIRECT SUPERVISION AND THAT THE FIELD SURVEY AND THE COMPILATION OF INFORMATION SHOWN HEREIN WERE CONDUCTED IN ACCORDANCE WITH THE WISCONSIN MINIMUM STANDARDS OF PRACTICE. THE FIELD WORK WAS COMPLETED ON AUGUST 17, 2022.

*Dan J. Kuehl*  
SEPTEMBER 26, 2022  
DAN J. KUEHL  
LICENSE NUMBER 3104-8  
MY LICENSE RENEWAL DATE IS JANUARY 31, 2024  
SHEETS COVERED BY THIS SEAL B-1, B-2, B-3, AND B-4



8410 W. Bryn Mawr Avenue  
Suite 700  
Chicago, IL 60631



600 Busse Highway  
Park Ridge, IL 60068  
Ph: 847/698-6400  
Fax: 847/698-6401

SURVEYED BY:  
**XCEL** Consultants  
8300 42ND STREET WEST  
ROCK ISLAND, IL 61201  
(O) 309-781-9988  
(F) 309-756-5540  
(E) XCEL@XCELCONSULTANTSINC.COM

XCEL PROJECT NUMBER: 224240

**SURVEY**

REV.	DATE	DESCRIPTION

**SITE NAME:**  
GERMANTOWN

**SITE NUMBER:** 784809

W172N11083 DIVISION ROAD  
GERMANTOWN, WI 53022

**OWNER:** FAITH LUTHERAN CHURCH  
PARCEL #: GTNV\_281967

WASHINGTON COUNTY  
WISCONSIN

**DRAWN BY:** KJM  
**CHECKED BY:** BCH  
**SURVEY DATE:** 8/17/2022  
**PLAT DATE:**

**SHEET TITLE:**  
**SURVEY**  
THIS DOES NOT REPRESENT A  
BOUNDARY SURVEY OF THE  
PARENT PARCEL

**SHEET NUMBER:**  
**B-4**



**AFFIDAVIT**

I/WE Thaddeus Johnson  
being first duly sworn on oath, state as follows:

I/WE are the duly designated representatives of the US Cellular, that has submitted this form for the purpose to construct a telecommunications facility upon the following property:

**W172N11187 Division Road Germantown WI. 53022**

**Pin #281967**

I/WE hereby certify and swear that in conjunction with the issuance of an approved Zoning and Land Use Permit to establish a telecommunications facility on the subject property, I/WE did look and review the entire search area in a 1-mile radius for other Towers and/or Structures which could be used in lieu of building a new structure other than the 160' monopole listed below which due to the height and the existing loading this tower would not be a viable candidate, and we found no other structures found within a 1-mile radius

**1) Village of Germantown 160' monopole 1,710' east**

**2)US Cellular monopole 71'tower 1.27 MI. North**

See attached map

Thaddeus Johnson

Agent of US Cellular



STATE OF IOWA

COUNTY OF POLK

On January 24, 2023, before me, LORI GERMAN, Notary Public, personally appeared Thaddeus Johnson, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same of his own free will.

WITNESS my hand and official seal.

Lori German  
Notary Public

(SEAL)



My commission expires: 07/02/2024







COLOCATION AFFIDAVIT

United States Cellular Operating Company, LLC
8410 Bryn Mawr Ave
Chicago IL 60631
RE: Collocations on U.S. Cellular Towers structures,

To whom it may concern:

Please take this letter as US Cellular's intent to allow collocation on their towers once constructed

The proposed tower will accommodate another carrier's telecommunications ground equipment and tower antennas of comparable weight and size and surface area to the telecommunication's facilities installed by applicant on the tower within six months of the completion of tower construction.

Additional companies interested in sharing shall be required to enter into an agreement with United States Cellular Operating Company, LLC and be required to follow its standard collocation procedure.

Regards,

[Handwritten signature of Thaddeus Johnson]

Thaddeus Johnson

Agent of US Cellular

STATE OF IOWA

COUNTY OF POLK

On January 24, 2023, before me, LORI GERMAN, Notary Public, personally appeared Thaddeus Johnson, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same of his own free will.

WITNESS my hand and official seal.

[Handwritten signature of Lori A German]

(SEAL)

Notary Public

My commission expires: 07/02/2024



# ENGINEERING STATEMENT

I, Ashutosh Pandey, am a Radio Frequency Engineer for US Cellular. US Cellular is the wireline operator of the domestic public cellular radio telecommunications system that serves WI market.

US Cellular desires to build a 185-foot cellular tower at W172N11187 Division Rd, Wisconsin. The proposed tower is needed to meet current and future wireless data and voice service needs in the area. The proposed tower will provide new coverage and capacity to Residential area around Mequon Rd and Hwy 41 in order to meet current and future mobile data demands. A secondary benefit will be an improvement with deep in-building signal for the College.

The location and height of the proposed tower meets US Cellular's current and future capacity objectives for the area. The proposed site location is in an area of town currently being served by no other site and is not able to effectively keep up with the increasing demand of wireless services. The minimum required height of 185' will help the signals propagate over trees and terrain and help In Building coverage in Campus.

The included before and after coverage map shows deep in-building coverage in the area in yellow and red on road. The new coverage/capacity will help the much-needed area as marked in blue, with the site we get inbuilding and on road coverage/capacity.

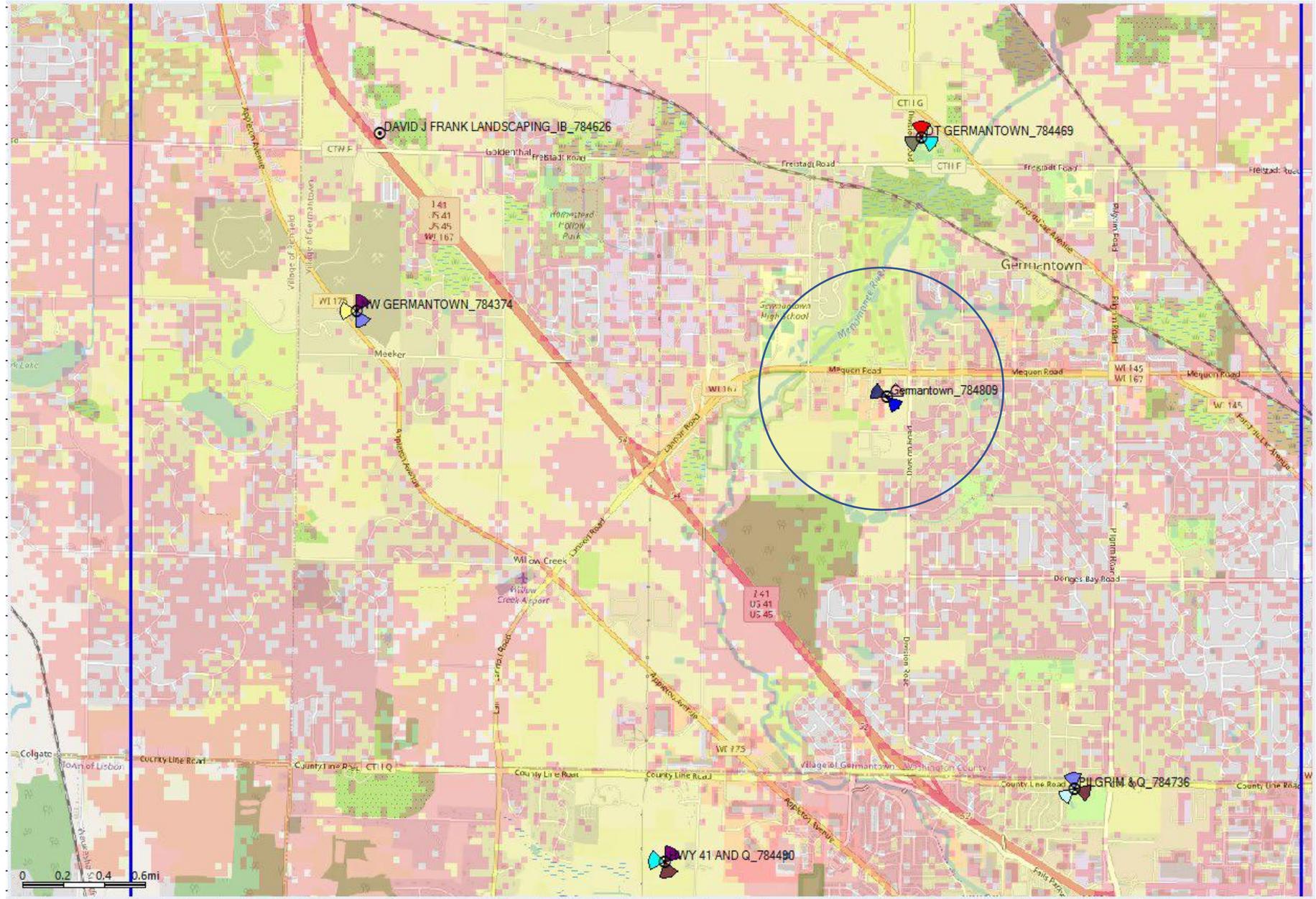
Sincerely : Ashutosh Pandey RF Engineer - US Cellular



Germantown existing coverage with new site

LTE: Downlink Coverage

- In Building
- On Road

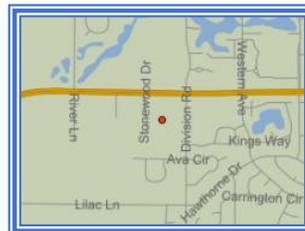


**OPINION LETTER**

August 31, 2022

**FAA and FCC Not Required**

Kathy Mayhew  
US Cellular Corporation  
3806 Thirlane Road, NW  
Roanoke, VA 24019



RE: **784809 - Germantown, WI Airspace Analysis**  
**Latitude (NAD-83): 43° 13' 09.03" N**  
**Longitude (NAD-83): 88° 07' 30.16" W**  
**Ground Elevation: 879.0 ft. GE**  
**Tower tip height: 199.0 ft. AGL**  
**Overall height: 1078.0 ft. AMSL**

Dear Ms. Mayhew,

Our airspace analysis results for the 784809 - Germantown, WI site are as follows:

1. **Per AIRSPACE, filing an FAA Form 7460-1 is not required for the proposed height of 199.0 ft. AGL (1078.0 ft. AMSL). The maximum allowable height for not filing an FAA Form 7460-1 is 200 ft. AGL.**
2. **FCC's TOWAIR Determination indicates that this Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided. The maximum allowable height for not filing an ASR is 200 ft AGL.**
3. The proposed site is 7.22 nm NW from the nearest public landing facility – MWC: Lawrence J Timmerman. At an overall height of 1078.0 ft. AMSL, it does not exceed FAR 77.9 (a) or FAR 77.9 (b) Notice Criteria for MWC airport. This airport has both Circling and Straight-In Instrument approach procedures. It does not exceed any glide slopes of MWC airport. MWC: Lawrence J Timmerman is an airport type landing facility associated with the city of Milwaukee, WI.
4. The proposed site is not within any of the instrument approach procedures of MWC airport.
5. The nearest private landing facility is WI77: Willow Creek, which is an airport type landing facility not eligible for study under FAR Part 77 sub-Part C. It is 1.71 nm SW from the proposed site.
6. The proposed 199.0 ft. AGL height would not adversely affect low altitude en route airways and/ or VFR routes in the area.
7. The nearest AM tower is WAUK, which is 8.01 mi (12885 meters) away bearing 349.85°. WAUK AM is operating a directional type antenna system. As noted per the FCC AM Tower Locator and per FCC regulation 13-115, Section 1.30002, the structure will not require a 'Proof of Performance' measurement study before and after construction.
8. Marking and lighting are not required for the proposed height of 199.0 ft. AGL.
9. All Wireless Applications Corp. analyses are based on the latest AIRSPACE, FAA Notice Criteria Tool and FCC TOWAIR programs.

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

Thank you.

Ronald W. Lageson, Jr.  
425-643-5000 (office)  
425-649-5675 (fax)





**Structural Design Report**

190' Monopole

Site: Germantown, WI

Site Number: 784809

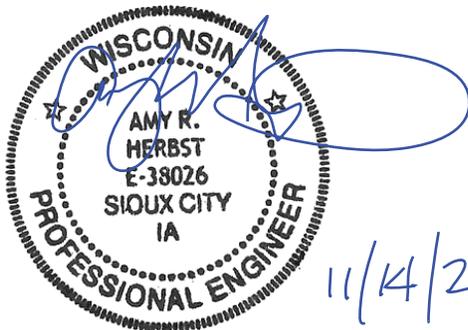
Prepared for: US CELLULAR CORP

by: Sabre Industries™

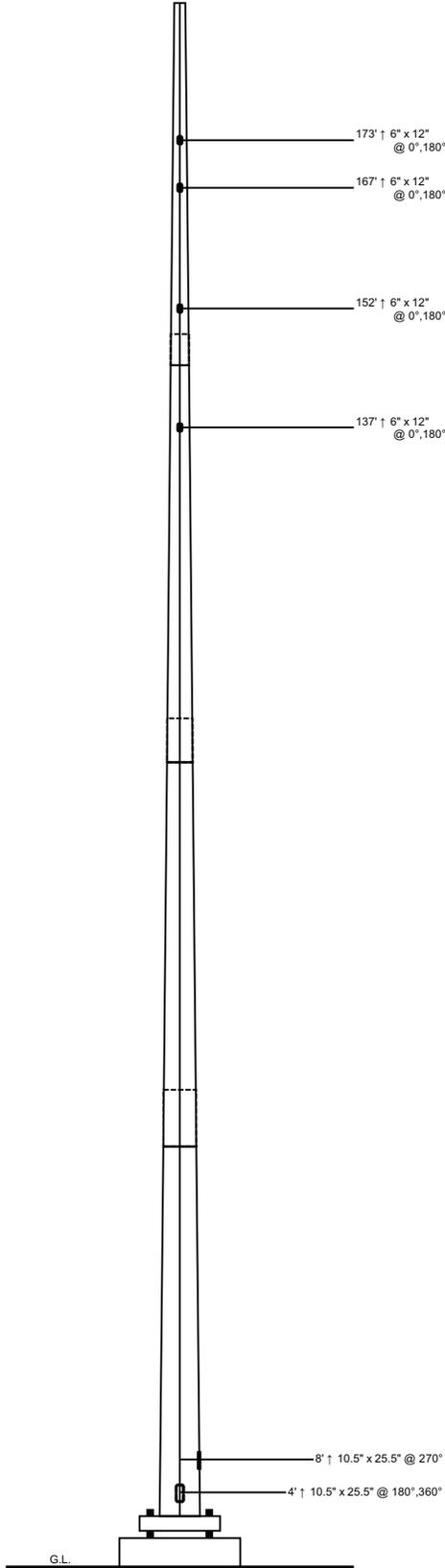
Job Number: 515837

**November 14, 2022**

<b>Monopole Profile.....</b>	<b>1</b>
<b>Pole Calculations.....</b>	<b>2-19</b>



Length (ft)	53'-3"	53'-6"	53'-6"	45'-3"
Number Of Sides	18	18	18	18
Thickness (in)	7/16"	3/8"	3/8"	1/4"
Lap Splice (ft)	7'-0"	5'-6"	5'-6"	A
Top Diameter (in)	47.84"	37.25"	26.17"	16.5"
Bottom Diameter (in)	60.96"	50.44"	39.36"	27.65"
Taper (in/ft)		0.2465		
Grade		A572-65		
Weight (lbs)	16196	11632	7501	3005
Overall Steel Height (ft)				



### Designed Appurtenance Loading

Elev	Description	Tx-Line
185	(1) 30,000 sq. in. EPA 6,000# (no ice)	(4) 1 1/4"
169	(1) 25,000 sq. in. antenna loading (at top)	(3) 1 1/4"
154	(1) 25,000 sq. in. antenna loading (at top)	(3) 1 1/4"
139	(1) 25,000 sq. in. antenna loading (at top)	(3) 1 1/4"

### Design Criteria - ANSI/TIA-222-H

Wind Speed (No Ice)	106 mph
Wind Speed (Ice)	40 mph
Design Ice Thickness	1.50 in
Risk Category	II
Exposure Category	C
Topographic Factor Procedure	Method 1 (Simplified)
Topographic Category	1
Ground Elevation	879 ft
Seismic Importance Factor, Ie	1.00
0.2-sec Spectral Response, Ss	0.071 g
1-sec Spectral Response, S1	0.046 g
Site Class	D (DEFAULT)
Seismic Design Category	B
Basic Seismic Force-Resisting System	Telecommunication Tower (Pole: Steel)

### Limit State Load Combination Reactions

Load Combination	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
1.2 D + 1.0 Wo	62.21	43.57	6400.92	18.94	11.64
0.9 D + 1.0 Wo	46.7	43.48	6281.56	18.5	11.32
1.2 D + 1.0 Di + 1.0 Wi	105.73	11.36	1820.13	5.79	3.58
1.2 D + 1.0 Ev + 1.0 Eh	62.94	1.55	254.46	0.82	0.51
0.9 D - 1.0 Ev + 1.0 Eh	45.83	1.56	249.36	0.79	0.49
1.0 D + 1.0 Wo (Service @ 60 mph)	51.9	12.49	1832.22	5.58	3.37

### Base Plate Dimensions

Shape	Diameter	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Round	73.75"	2.25"	68"	20	2.25"

### Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
84"	2.25"	2.625"	2422	A615-75	Galv

### Material List

Display	Value
A	4' - 0"

### Notes

- 1) Antenna Feed Lines Run Inside Pole
- 2) All dimensions are above ground level, unless otherwise specified.
- 3) Weights shown are estimates. Final weights may vary.
- 4) Full Height Step Bolts
- 5) This tower design and, if applicable, the foundation design(s) shown on the following page(s) also meet or exceed the requirements of the 2015 International Building Code.
- 6) Tower Rating: 94.1%

 <p><b>Sabre Industries</b> 7101 Southbridge Drive P.O. Box 658 Sioux City, IA 51102-0658 Phone: (712) 258-6690 Fax: (712) 279-0814</p> <p><small>Information contained herein is the sole property of Sabre Communications Corporation, constitutes a trade secret as defined by Iowa Code Ch. 550 and shall not be reproduced, copied or used in whole or part for any purpose whatsoever without the prior written consent of Sabre Communications Corporation.</small></p>	Job:	<b>515837</b>
	Customer:	US CELLULAR CORP
	Site Name:	Germantown, WI 784809
	Description:	190' Monopole
	Date:	11/14/2022

Tel:(416)736-7453 Fax:(416)736-4372 Web:www.guymast.com

Processed under license at:

Sabre Towers and Poles on: 14 nov 2022 at: 12:33:54  
 =====

190' Monopole / Germantown, WI

\* All pole diameters shown on the following pages are across corners.  
 See profile drawing for widths across flats.

POLE GEOMETRY

=====

ELEV	SECTION NAME	No. SIDE	OUTSIDE DIAM	THICK -NESS	RESISTANCES	SPLICE TYPE	...OVERLAP... LENGTH	w/t RATIO
ft			in	in	◆*Pn kip		ft	
189.0			16.75	0.250	958.0 317.9			
	A	18	27.07	0.250	1522.7 825.9			10.4
147.7			27.07	0.250	1522.7 825.9			
	A/B	18	27.58	0.375	2368.8 1297.4	SLIP	4.00	1.77
143.7			27.58	0.375	2368.8 1297.4			
	B	18	38.58	0.375	3283.7 2535.3			11.8
99.7			38.58	0.375	3283.7 2535.3			
	B/C	18	39.21	0.438	3938.9 3082.5	SLIP	5.50	1.71
94.2			39.21	0.438	3938.9 3082.5			
	C	18	49.45	0.438	4784.3 4743.7			14.7
53.2			49.45	0.438	4784.3 4743.7			
	C/D	18	50.34	0.438	4845.7 4892.8	SLIP	7.00	1.69
46.2			50.34	0.438	4845.7 4892.8			
	D	18	61.90	0.438	5560.4 6926.7			19.1
0.0								

POLE ASSEMBLY

=====

SECTION NAME	BASE ELEV	BOLTS NUMBER	AT BASE TYPE	OF SECTION DIAM	STRENGTH	THREADS IN SHEAR PLANE	CALC BASE ELEV
	ft			in	ksi		ft

A	143.750	0	A325	0.00	92.0	0	143.750
B	94.250	0	A325	0.00	92.0	0	94.250
C	46.250	0	A325	0.00	92.0	0	46.250
D	0.000	0	A325	0.00	92.0	0	0.000

POLE SECTIONS

=====

SECTION NAME	No. of SIDES	LENGTH ft	OUTSIDE DIAMETER		BEND RAD in	MAT- ERIAL ID	FLANGE ID		FLANGE WELD ..GROUP.ID..	
			BOT * in	TOP * in			BOT	TOP	BOT	TOP
A	18	45.25	28.08	16.75	0.625	1	0	0	0	0
B	18	53.50	39.96	26.57	0.625	2	0	0	0	0
C	18	53.50	51.22	37.83	0.625	3	0	0	0	0
D	18	53.25	61.90	48.58	0.625	4	0	0	0	0

\* - Diameter of circumscribed circle

MATERIAL TYPES

=====

TYPE OF SHAPE	TYPE NO	NO OF ELEM.	ORIENT & deg	HEIGHT in	WIDTH in	.THICKNESS.		IRREGULARITY .PROJECTION. % OF ORIENT AREA	
						WEB in	FLANGE in	deg	deg
PL	1	1	0.0	28.08	0.25	0.250	0.250	0.00	0.0
PL	2	1	0.0	39.96	0.38	0.375	0.375	0.00	0.0
PL	3	1	0.0	51.22	0.44	0.438	0.438	0.00	0.0
PL	4	1	0.0	61.90	0.44	0.438	0.438	0.00	0.0

& - With respect to vertical

MATERIAL PROPERTIES

=====

MATERIAL TYPE NO.	ELASTIC MODULUS ksi	UNIT WEIGHT pcf	.. STRENGTH ..		THERMAL COEFFICIENT /deg
			Fu ksi	Fy ksi	
1	29000.0	490.0	80.0	65.0	0.00001170
2	29000.0	490.0	80.0	65.0	0.00001170
3	29000.0	490.0	80.0	65.0	0.00001170
4	29000.0	490.0	80.0	65.0	0.00001170

\* Only 5 condition(s) shown in full

\* Some concentrated wind loads may have been derived from full-scale wind tunnel testing

=====

LOADING CONDITION A =====

106 mph wind with no ice. Wind Azimuth: 0° (1.2 D + 1.0 Wo)

LOADS ON POLE  
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LOAD TYPE	ELEV ft	APPLY.. RADIUS ft	LOAD..AT AZI	LOAD AZI	.....FORCES.....		.....MOMENTS.....	
					HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	184.500	0.00	0.0	0.0	0.0275	0.0151	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.0000	0.5829	0.0000	0.0000
C	184.000	0.00	0.0	0.0	8.7249	7.2000	0.0000	0.0000
C	175.000	0.00	0.0	0.0	0.0303	0.0168	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.0000	0.3992	0.0000	0.0000
C	168.000	0.00	0.0	0.0	7.1450	3.9996	0.0000	0.0000
C	165.000	0.00	0.0	0.0	0.0299	0.0168	0.0000	0.0000
C	155.000	0.00	0.0	0.0	0.0295	0.0168	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.0000	0.3635	0.0000	0.0000
C	153.000	0.00	0.0	0.0	7.0066	3.9996	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0291	0.0168	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.0000	0.3279	0.0000	0.0000
C	138.000	0.00	0.0	0.0	6.8570	3.9996	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0287	0.0168	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0282	0.0168	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0277	0.0168	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0272	0.0168	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0266	0.0168	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0260	0.0168	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0253	0.0168	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0246	0.0168	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0237	0.0168	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0227	0.0168	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0216	0.0168	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0201	0.0168	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0181	0.0168	0.0000	0.0000
D	189.000	0.00	180.0	0.0	0.0406	0.0583	0.0000	0.0000
D	175.250	0.00	180.0	0.0	0.0406	0.0583	0.0000	0.0000
D	175.250	0.00	180.0	0.0	0.0474	0.0692	0.0000	0.0000
D	161.500	0.00	180.0	0.0	0.0474	0.0692	0.0000	0.0000
D	161.500	0.00	180.0	0.0	0.0538	0.0800	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0538	0.0800	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0578	0.2151	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0578	0.2151	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0608	0.1392	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0608	0.1392	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0668	0.1565	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0668	0.1565	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0723	0.1739	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0723	0.1739	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0757	0.3988	0.0000	0.0000
D	94.250	0.00	180.0	0.0	0.0757	0.3988	0.0000	0.0000
D	94.250	0.00	180.0	0.0	0.0771	0.2262	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0771	0.2262	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0807	0.2451	0.0000	0.0000
D	66.917	0.00	180.0	0.0	0.0807	0.2451	0.0000	0.0000
D	66.917	0.00	180.0	0.0	0.0833	0.2640	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0833	0.2640	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0844	0.5523	0.0000	0.0000

D	46.250	0.00	180.0	0.0	0.0844	0.5523	0.0000	0.0000
D	46.250	0.00	180.0	0.0	0.0832	0.2868	0.0000	0.0000
D	34.687	0.00	180.0	0.0	0.0832	0.2868	0.0000	0.0000
D	34.687	0.00	180.0	0.0	0.0820	0.3028	0.0000	0.0000
D	23.125	0.00	180.0	0.0	0.0820	0.3028	0.0000	0.0000
D	23.125	0.00	180.0	0.0	0.0779	0.3189	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0786	0.3349	0.0000	0.0000

LOADING CONDITION M =====

106 mph wind with no ice. Wind Azimuth: 0° (0.9 D + 1.0 Wo)

LOADS ON POLE

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LOAD TYPE	ELEV ft	APPLY.. RADIUS ft	LOAD..AT AZI	LOAD AZI	.....FORCES.....		.....MOMENTS.....	
					HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	184.500	0.00	0.0	0.0	0.0275	0.0113	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.0000	0.4372	0.0000	0.0000
C	184.000	0.00	0.0	0.0	8.7249	5.4000	0.0000	0.0000
C	175.000	0.00	0.0	0.0	0.0303	0.0126	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.0000	0.2994	0.0000	0.0000
C	168.000	0.00	0.0	0.0	7.1450	2.9997	0.0000	0.0000
C	165.000	0.00	0.0	0.0	0.0299	0.0126	0.0000	0.0000
C	155.000	0.00	0.0	0.0	0.0295	0.0126	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.0000	0.2726	0.0000	0.0000
C	153.000	0.00	0.0	0.0	7.0066	2.9997	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0291	0.0126	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.0000	0.2459	0.0000	0.0000
C	138.000	0.00	0.0	0.0	6.8570	2.9997	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0287	0.0126	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0282	0.0126	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0277	0.0126	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0272	0.0126	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0266	0.0126	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0260	0.0126	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0253	0.0126	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0246	0.0126	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0237	0.0126	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0227	0.0126	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0216	0.0126	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0201	0.0126	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0181	0.0126	0.0000	0.0000
D	189.000	0.00	180.0	0.0	0.0406	0.0437	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0539	0.0600	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0578	0.1614	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0578	0.1614	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0608	0.1044	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0608	0.1044	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0668	0.1174	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0668	0.1174	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0723	0.1304	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0723	0.1304	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0757	0.2991	0.0000	0.0000

D	94.250	0.00	180.0	0.0	0.0757	0.2991	0.0000	0.0000
D	94.250	0.00	180.0	0.0	0.0771	0.1697	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0771	0.1697	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0807	0.1838	0.0000	0.0000
D	66.917	0.00	180.0	0.0	0.0807	0.1838	0.0000	0.0000
D	66.917	0.00	180.0	0.0	0.0833	0.1980	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0833	0.1980	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0844	0.4142	0.0000	0.0000
D	46.250	0.00	180.0	0.0	0.0844	0.4142	0.0000	0.0000
D	46.250	0.00	180.0	0.0	0.0832	0.2151	0.0000	0.0000
D	34.687	0.00	180.0	0.0	0.0832	0.2151	0.0000	0.0000
D	34.687	0.00	180.0	0.0	0.0820	0.2271	0.0000	0.0000
D	23.125	0.00	180.0	0.0	0.0820	0.2271	0.0000	0.0000
D	23.125	0.00	180.0	0.0	0.0779	0.2392	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0786	0.2512	0.0000	0.0000

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LOADING CONDITION Y =====

40 mph wind with 1.5 ice. Wind Azimuth: 0° (1.2 D + 1.0 Di + 1.0 Wi)

LOADS ON POLE

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LOAD TYPE	ELEV ft	APPLY.. RADIUS ft	LOAD..AT AZI	LOAD AZI	.....FORCES.....		.....MOMENTS.....	
					HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	184.500	0.00	0.0	0.0	0.0315	0.0271	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.0000	0.5829	0.0000	0.0000
C	184.000	0.00	0.0	0.0	2.1294	17.8932	0.0000	0.0000
C	175.000	0.00	0.0	0.0	0.0344	0.0288	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.0000	0.3992	0.0000	0.0000
C	168.000	0.00	0.0	0.0	1.7362	9.8862	0.0000	0.0000
C	165.000	0.00	0.0	0.0	0.0338	0.0288	0.0000	0.0000
C	155.000	0.00	0.0	0.0	0.0332	0.0288	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.0000	0.3635	0.0000	0.0000
C	153.000	0.00	0.0	0.0	1.6960	9.8317	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0326	0.0288	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.0000	0.3279	0.0000	0.0000
C	138.000	0.00	0.0	0.0	1.6529	9.7723	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0319	0.0288	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0312	0.0288	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0304	0.0288	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0296	0.0288	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0287	0.0288	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0278	0.0288	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0268	0.0288	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0257	0.0288	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0244	0.0288	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0230	0.0288	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0214	0.0288	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0193	0.0288	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0166	0.0288	0.0000	0.0000
D	189.000	0.00	180.0	0.0	0.0120	0.1024	0.0000	0.0000
D	175.250	0.00	180.0	0.0	0.0120	0.1024	0.0000	0.0000
D	175.250	0.00	180.0	0.0	0.0137	0.1203	0.0000	0.0000

D	161.500	0.00	180.0	0.0	0.0137	0.1203	0.0000	0.0000
D	161.500	0.00	180.0	0.0	0.0152	0.1380	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0152	0.1380	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0162	0.2775	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0162	0.2775	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0169	0.2050	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0169	0.2050	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0183	0.2292	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0183	0.2292	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0196	0.2532	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0196	0.2532	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0204	0.4825	0.0000	0.0000
D	94.250	0.00	180.0	0.0	0.0204	0.4825	0.0000	0.0000
D	94.250	0.00	180.0	0.0	0.0207	0.3123	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0207	0.3123	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0215	0.3365	0.0000	0.0000
D	66.917	0.00	180.0	0.0	0.0215	0.3365	0.0000	0.0000
D	66.917	0.00	180.0	0.0	0.0221	0.3602	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0221	0.3602	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0223	0.6516	0.0000	0.0000
D	46.250	0.00	180.0	0.0	0.0223	0.6516	0.0000	0.0000
D	46.250	0.00	180.0	0.0	0.0221	0.3871	0.0000	0.0000
D	11.562	0.00	180.0	0.0	0.0205	0.4211	0.0000	0.0000
D	11.562	0.00	180.0	0.0	0.0204	0.4315	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0204	0.4315	0.0000	0.0000

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LOADING CONDITION AK =====

Seismic - Azimuth: 0° (1.2 D + 1.0 Ev + 1.0 Eh)

LOADS ON POLE

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LOAD TYPE	ELEV ft	APPLY. RADIUS ft	LOAD. AT AZI	LOAD AZI	.....FORCES.....		.....MOMENTS.....	
					HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	184.500	0.00	0.0	0.0	0.0009	0.0153	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.0353	0.5904	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.4359	7.2912	0.0000	0.0000
C	175.000	0.00	0.0	0.0	0.0009	0.0170	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.0201	0.4042	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.2019	4.0503	0.0000	0.0000
C	166.380	0.00	0.0	0.0	0.1580	3.2316	0.0000	0.0000
C	165.000	0.00	0.0	0.0	0.0008	0.0170	0.0000	0.0000
C	155.000	0.00	0.0	0.0	0.0007	0.0170	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.0152	0.3681	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.1674	4.0503	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0006	0.0170	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.0112	0.3320	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.1362	4.0503	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0005	0.0170	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0005	0.0170	0.0000	0.0000
C	121.000	0.00	0.0	0.0	0.2200	8.5081	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0004	0.0170	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0003	0.0170	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0003	0.0170	0.0000	0.0000

C	85.000	0.00	0.0	0.0	0.0002	0.0170	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0002	0.0170	0.0000	0.0000
C	73.000	0.00	0.0	0.0	0.1252	13.3005	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0001	0.0170	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0001	0.0170	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0001	0.0170	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0000	0.0170	0.0000	0.0000
C	26.620	0.00	0.0	0.0	0.0206	16.4585	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0000	0.0170	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0000	0.0170	0.0000	0.0000
D	189.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000
D	0.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000

=====  
LOADING CONDITION AL =====

Seismic - Azimuth: 0° (0.9 D - 1.0 Ev + 1.0 Eh)

LOADS ON POLE  
=====

LOAD TYPE	ELEV ft	APPLY.. RADIUS ft	LOAD.. AZI	AT AZI	.....FORCES.....		.....MOMENTS.....	
					HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	184.500	0.00	0.0	0.0	0.0009	0.0111	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.0353	0.4298	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.4359	5.3088	0.0000	0.0000
C	175.000	0.00	0.0	0.0	0.0009	0.0124	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.0201	0.2942	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.2019	2.9490	0.0000	0.0000
C	166.380	0.00	0.0	0.0	0.1580	2.3530	0.0000	0.0000
C	165.000	0.00	0.0	0.0	0.0008	0.0124	0.0000	0.0000
C	155.000	0.00	0.0	0.0	0.0007	0.0124	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.0152	0.2680	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.1674	2.9490	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0006	0.0124	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.0112	0.2417	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.1362	2.9490	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0005	0.0124	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0005	0.0124	0.0000	0.0000
C	121.000	0.00	0.0	0.0	0.2200	6.1949	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0004	0.0124	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0003	0.0124	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0003	0.0124	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0002	0.0124	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0002	0.0124	0.0000	0.0000
C	73.000	0.00	0.0	0.0	0.1252	9.6842	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0001	0.0124	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0001	0.0124	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0001	0.0124	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0000	0.0124	0.0000	0.0000
C	26.620	0.00	0.0	0.0	0.0206	11.9835	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0000	0.0124	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0000	0.0124	0.0000	0.0000
D	189.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000

D 0.000 0.00 180.0 180.0 0.0000 0.0000 0.0000 0.0000

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190' Monopole / Germantown, WI

MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)

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MAST ELEV ft	.....DEFLECTIONS (ft).....			.....ROTATIONS (deg).....		
	..... HORIZONTAL ALONG	..... ACROSS	DOWN	..... TILT .....	ACROSS	TWIST
189.0	18.94F	0.08B	2.71C	11.64F	0.04B	0.01Q
175.2	16.26F	0.07B	2.17C	11.47F	0.04B	0.01Q
161.5	13.68F	0.06B	1.66C	10.79F	0.04B	0.01Q
147.7	11.29I	0.05B	1.23C	9.71F	0.04B	0.01Q
143.7	10.64I	0.05B	1.13C	9.45F	0.04B	0.01Q
129.1	8.41I	0.04B	0.78C	8.36F	0.04B	0.01Q
114.4	6.46I	0.03B	0.51C	7.16F	0.03B	0.00Q
99.7	4.80I	0.02B	0.32C	5.96F	0.03B	0.00Q
94.2	4.25I	0.02B	0.27C	5.58F	0.03B	0.00Q
80.6	3.05I	0.02B	0.16C	4.62I	0.02B	0.00Q
66.9	2.06I	0.01B	0.09C	3.72I	0.02B	0.00Q
53.2	1.28I	0.01B	0.04C	2.87I	0.01B	0.00Q
46.2	0.95I	0.00B	0.03C	2.47I	0.01B	0.00Q
34.7	0.52I	0.00B	0.01C	1.79I	0.01B	0.00Q
23.1	0.23I	0.00B	0.00C	1.15I	0.01B	0.00Q
11.6	0.06I	0.00B	0.00F	0.56I	0.00B	0.00Q
0.0	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A

MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

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MAST ELEV ft	TOTAL AXIAL kip	SHEAR.w.r.t.WIND.DIR ALONG kip	WIND.DIR ACROSS kip	MOMENT.w.r.t.WIND.DIR ALONG ft-kip	WIND.DIR ACROSS ft-kip	TORSION ft-kip
189.0	0.01 B	0.00 N	0.00 E	0.01 B	0.00 O	0.00 E
175.2	19.91 AF	9.33 W	0.00 E	-91.56 C	0.02 AD	0.02 R
	19.91 AG	9.34 Q	0.00 T	-91.58 C	0.02 AD	0.02 T
161.5	31.90 AG	17.18 Q	0.00 T	-293.10 C	0.08 T	0.07 H
	31.90 AB	17.18 U	0.00 O	-293.12 C	0.08 T	0.07 H
147.7	44.02 AB	24.92 U	0.00 O	-600.91 C	0.14 W	-0.14 O
	44.03 AI	25.17 C	-0.10 F	-600.27 I	0.16 T	-0.15 X
143.7	45.16 AI	25.43 C	-0.10 F	-711.94 C	0.28 F	-0.18 X
	45.18 AA	25.46 Q	0.20 B	-711.46 C	0.28 T	-0.20 O
129.1	58.31 AA	33.22 Q	0.20 B	-1193.14 K	-3.10 B	0.63 Q
	58.31 AA	33.22 Q	0.21 Q	-1193.16 K	-3.10 B	0.64 Q
114.4	61.73 AA	34.25 Q	0.21 Q	-1731.33 F	-6.05 B	1.12 Q
	61.73 AA	34.25 Q	0.23 B	-1731.31 F	-6.05 B	1.12 Q
99.7	65.47 AA	35.33 Q	0.23 B	-2283.54 B	-9.41 B	1.52 Q
	65.47 AA	35.32 Q	0.31 B	-2283.75 B	-9.26 B	1.53 Q
94.2	68.15 AA	35.76 Q	0.31 B	-2494.66 B	-10.94 B	1.65 Q
	68.15 AA	35.80 I	-0.20 I	-2494.79 B	-11.03 B	1.64 Q
80.6	72.45 AA	36.88 I	-0.20 I	-3028.72 B	-13.50 B	1.87 Q
	72.45 AA	36.85 I	0.24 B	-3028.70 B	-13.51 B	1.87 Q
66.9	77.07 AA	37.98 I	0.24 B	-3575.04 F	-16.79 B	2.03 Q
	77.07 AA	37.98 I	0.24 B	-3575.04 F	-16.78 B	2.03 Q
53.2	82.05 AA	39.17 I	0.24 B	-4132.92 F	-20.17 B	2.15 Q
	82.05 AA	39.20 I	0.24 B	-4132.91 F	-20.17 B	2.15 Q
46.2	86.61 AA	39.79 I	0.24 B	-4423.30 I	-21.87 B	2.21 Q
	86.61 AA	39.78 I	0.25 B	-4423.27 I	-21.84 B	2.21 Q
	91.21 AA	40.79 I	0.25 B	-4909.39 I	-24.81 B	2.28 Q

34.7	91.21 AA	40.78 I	0.25 B	-4909.36 I	-24.81 B	2.28 Q
23.1	95.91 AA	41.75 I	0.25 B	-5401.54 I	-27.74 B	2.33 Q
	95.91 AA	41.75 I	0.26 B	-5401.53 I	-27.74 B	2.33 Q
11.6	100.74 AA	42.67 I	0.26 B	-5899.07 I	-30.83 B	2.37 Q
	100.74 AA	42.67 I	0.26 B	-5899.07 I	-30.82 B	2.37 Q
	105.73 AA	43.57 I	0.26 B	-6400.92 I	-33.83 B	2.38 Q
-----						
base	105.73 AA	-43.57 I	-0.26 B	6400.92 I	33.83 B	-2.38 Q
reaction						
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COMPLIANCE WITH 4.8.2 & 4.5.4

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ELEV	AXIAL	BENDING	SHEAR + TORSIONAL	TOTAL	SATISFIED	D/t(w/t)	MAX ALLOWED
ft							
189.00	0.00B	0.000	0.00N	0.00B	YES	10.40A	45.2
175.25	0.02AF	0.20C	0.02W	0.20C	YES	12.79A	45.2
	0.02AG	0.20C	0.02Q	0.20C	YES	12.79A	45.2
161.50	0.02AG	0.46C	0.03Q	0.47C	YES	15.18A	45.2
	0.02AB	0.46C	0.03U	0.47C	YES	15.18A	45.2
147.75	0.03AB	0.73C	0.03U	0.74C	YES	17.58A	45.2
	0.02AI	0.48I	0.02C	0.49I	YES	11.60A	45.2
143.75	0.02AI	0.53C	0.02C	0.54C	YES	12.06A	45.2
	0.02AA	0.55C	0.02Q	0.56C	YES	11.83A	45.2
129.08	0.02AA	0.71K	0.02Q	0.72K	YES	13.53A	45.2
	0.02AA	0.71K	0.02Q	0.72K	YES	13.53A	45.2
114.42	0.02AA	0.83F	0.02Q	0.84F	YES	15.23A	45.2
	0.02AA	0.83F	0.02Q	0.84F	YES	15.23A	45.2
99.75	0.02AA	0.90B	0.02Q	0.91B	YES	16.93A	45.2
	0.02AA	0.77B	0.02Q	0.77B	YES	14.46A	45.2
94.25	0.02AA	0.78B	0.02Q	0.79B	YES	15.01A	45.2
	0.02AA	0.81B	0.02I	0.82B	YES	14.70A	45.2
	0.02AA	0.83B	0.02I	0.84B	YES	16.06A	45.2

80.58	0.02AA	0.83B	0.02I	0.84B	YES	16.06A	45.2
	0.02AA	0.85F	0.02I	0.86F	YES	17.42A	45.2
66.92	0.02AA	0.85F	0.02I	0.86F	YES	17.42A	45.2
	0.02AA	0.87F	0.02I	0.88F	YES	18.78A	45.2
53.25	0.02AA	0.87F	0.02I	0.88F	YES	18.78A	45.2
	0.02AA	0.88I	0.02I	0.89I	YES	19.47A	45.2
46.25	0.02AA	0.90I	0.02I	0.91I	YES	19.12A	45.2
	0.02AA	0.91I	0.02I	0.92I	YES	20.27A	45.2
34.69	0.02AA	0.91I	0.02I	0.92I	YES	20.27A	45.2
	0.02AA	0.92I	0.02I	0.93I	YES	21.42A	45.2
23.12	0.02AA	0.92I	0.02I	0.93I	YES	21.42A	45.2
	0.02AA	0.92I	0.02I	0.93I	YES	22.57A	45.2
11.56	0.02AA	0.92I	0.02I	0.93I	YES	22.57A	45.2
	0.02AA	0.92I	0.02I	0.94I	YES	23.71A	45.2
0.00							

MAXIMUM LOADS ONTO FOUNDATION(w.r.t. wind direction)

=====

DOWN	SHEAR.w.r.t.WIND.DIR		MOMENT.w.r.t.WIND.DIR		TORSION
	ALONG	ACROSS	ALONG	ACROSS	
kip	kip	kip	ft-kip	ft-kip	ft-kip
105.73	43.57	0.26	-6400.92	-33.83	2.38
AA	I	B	I	B	Q

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190' Monopole / Germantown, WI

\*\*\*\*\*

\*\*\*\*\* Service Load Condition \*\*\*\*\*  
 \*\*\*\*\*

\* Only 1 condition(s) shown in full  
 \* Some concentrated wind loads may have been derived from full-scale wind tunnel testing

LOADING CONDITION A =====

60 mph wind with no ice. Wind Azimuth: 0° (1.0 D + 1.0 Wo)

LOADS ON POLE  
 =====

LOAD TYPE	ELEV ft	APPLY. RADIUS ft	LOAD. AZI	AT AZI	LOAD AZI	.....FORCES.....		.....MOMENTS.....	
						HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	184.500	0.00	0.0	0.0	0.0	0.0079	0.0126	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.0	0.0000	0.4858	0.0000	0.0000
C	184.000	0.00	0.0	0.0	0.0	2.5012	6.0000	0.0000	0.0000
C	175.000	0.00	0.0	0.0	0.0	0.0087	0.0140	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.0	0.0000	0.3326	0.0000	0.0000
C	168.000	0.00	0.0	0.0	0.0	2.0483	3.3330	0.0000	0.0000
C	165.000	0.00	0.0	0.0	0.0	0.0086	0.0140	0.0000	0.0000
C	155.000	0.00	0.0	0.0	0.0	0.0085	0.0140	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.0	0.0000	0.3029	0.0000	0.0000
C	153.000	0.00	0.0	0.0	0.0	2.0086	3.3330	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0	0.0083	0.0140	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.0	0.0000	0.2732	0.0000	0.0000
C	138.000	0.00	0.0	0.0	0.0	1.9657	3.3330	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0	0.0082	0.0140	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0	0.0081	0.0140	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0	0.0079	0.0140	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0	0.0078	0.0140	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0	0.0076	0.0140	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0	0.0075	0.0140	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0	0.0073	0.0140	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0	0.0070	0.0140	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0	0.0068	0.0140	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0	0.0065	0.0140	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0	0.0062	0.0140	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0	0.0058	0.0140	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0	0.0052	0.0140	0.0000	0.0000
D	189.000	0.00	180.0	0.0	0.0	0.0117	0.0486	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0	0.0155	0.0667	0.0000	0.0000
D	147.750	0.00	180.0	0.0	0.0	0.0166	0.1793	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0	0.0166	0.1793	0.0000	0.0000
D	143.750	0.00	180.0	0.0	0.0	0.0174	0.1160	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0	0.0174	0.1160	0.0000	0.0000
D	129.083	0.00	180.0	0.0	0.0	0.0192	0.1305	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0	0.0192	0.1305	0.0000	0.0000
D	114.417	0.00	180.0	0.0	0.0	0.0207	0.1449	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0	0.0207	0.1449	0.0000	0.0000
D	99.750	0.00	180.0	0.0	0.0	0.0217	0.3323	0.0000	0.0000
D	94.250	0.00	180.0	0.0	0.0	0.0217	0.3323	0.0000	0.0000
D	94.250	0.00	180.0	0.0	0.0	0.0221	0.1885	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0	0.0221	0.1885	0.0000	0.0000
D	80.583	0.00	180.0	0.0	0.0	0.0231	0.2043	0.0000	0.0000

D	66.917	0.00	180.0	0.0	0.0231	0.2043	0.0000	0.0000
D	66.917	0.00	180.0	0.0	0.0239	0.2200	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0239	0.2200	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0242	0.4602	0.0000	0.0000
D	46.250	0.00	180.0	0.0	0.0242	0.4602	0.0000	0.0000
D	46.250	0.00	180.0	0.0	0.0239	0.2390	0.0000	0.0000
D	34.687	0.00	180.0	0.0	0.0239	0.2390	0.0000	0.0000
D	34.687	0.00	180.0	0.0	0.0235	0.2524	0.0000	0.0000
D	23.125	0.00	180.0	0.0	0.0235	0.2524	0.0000	0.0000
D	23.125	0.00	180.0	0.0	0.0223	0.2657	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0225	0.2791	0.0000	0.0000

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MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)

=====

MAST ELEV ft	DEFLECTIONS (ft)			ROTATIONS (deg)		
	HORIZONTAL ALONG	ACROSS	DOWN	TILT ALONG	ACROSS	TWIST
189.0	5.58B	0.01C	0.23B	3.37B	0.01C	0.00F
175.2	4.77B	0.01C	0.19B	3.33B	0.01C	0.00F
161.5	4.00B	0.01C	0.14B	3.12B	0.01C	0.00F
147.7	3.29B	0.01C	0.11B	2.80B	0.01C	0.00C
143.7	3.09B	-0.01L	0.10B	2.73B	0.01C	0.00C
129.1	2.44B	-0.01L	0.07B	2.41B	0.01C	0.00C
114.4	1.87B	-0.01L	0.04B	2.06B	0.01C	0.00C
99.7	1.38B	0.00L	0.03B	1.71B	0.00C	0.00C
94.2	1.22B	0.00L	0.02B	1.60B	0.00L	0.00C
80.6	0.88B	0.00L	0.01B	1.33B	0.00L	0.00C
66.9	0.59B	0.00L	0.01B	1.07B	0.00L	0.00C
53.2	0.37B	0.00L	0.00B	0.82B	0.00L	0.00C
46.2	0.27B	0.00L	0.00B	0.71B	0.00L	0.00C
34.7	0.15B	0.00L	0.00B	0.51B	0.00L	0.00C
23.1	0.07B	0.00L	0.00B	0.33B	0.00L	0.00C
11.6	0.02B	0.00L	0.00K	0.16B	0.00L	0.00C
0.0	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A

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MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

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MAST	TOTAL	SHEAR.w.r.t.WIND.DIR	MOMENT.w.r.t.WIND.DIR	TORSION
------	-------	----------------------	-----------------------	---------

ELEV ft	AXIAL kip	ALONG kip	ACROSS kip	ALONG ft-kip	ACROSS ft-kip	ft-kip
189.0	0.00 C	0.00 I	0.00 K	0.00 K	0.00 K	0.00 K
	7.21 C	2.68 L	0.00 K	-26.62 E	0.01 K	0.00 K
175.2	7.21 F	2.68 C	0.00 E	-26.63 A	0.01 K	0.00 K
	11.69 F	4.93 C	0.00 E	-85.25 C	0.03 K	0.01 K
161.5	11.69 F	4.93 L	0.00 K	-85.25 C	0.02 K	0.01 K
	16.22 F	7.15 L	0.00 K	-174.43 L	0.07 K	0.02 K
147.7	16.22 B	7.20 E	0.03 C	-174.47 L	0.06 K	0.02 K
	16.96 B	7.28 E	0.03 C	-206.34 K	0.16 K	0.02 K
143.7	16.96 L	7.26 B	0.05 C	-206.40 D	0.12 K	0.02 F
	22.28 L	9.49 B	0.05 C	-344.90 B	-0.83 C	0.03 C
129.1	22.29 K	9.51 B	0.05 C	-344.90 B	-0.82 C	0.03 C
	24.23 K	9.80 B	0.05 C	-499.47 B	-1.58 C	0.05 C
114.4	24.23 K	9.81 B	0.05 C	-499.46 B	-1.59 C	0.05 C
	26.37 K	10.12 B	0.05 C	-657.51 B	-2.31 C	0.07 C
99.7	26.37 K	10.09 B	0.06 C	-657.55 B	-2.28 C	0.07 C
	28.21 K	10.21 B	0.06 C	-717.63 B	-2.59 C	0.08 C
94.2	28.21 K	10.26 B	-0.04 L	-717.63 B	-2.57 C	0.08 C
	30.80 K	10.57 B	-0.04 L	-870.04 B	-2.78 C	0.08 C
80.6	30.80 K	10.57 B	-0.04 L	-870.02 B	-2.77 C	0.08 C
	33.61 K	10.89 B	-0.04 L	-1025.71 B	-2.94 C	0.08 C
66.9	33.61 K	10.89 B	-0.04 L	-1025.70 B	-2.94 C	0.08 C
	36.64 K	11.23 B	-0.04 L	-1184.65 B	3.43 L	0.08 C
53.2	36.64 K	11.22 B	-0.03 L	-1184.64 B	3.43 L	0.08 C
	39.86 K	11.39 B	-0.03 L	-1267.31 B	3.67 L	0.08 C
46.2	39.86 K	11.40 B	-0.03 L	-1267.31 B	3.67 L	0.08 C
	42.65 K	11.69 B	-0.03 L	-1405.79 B	4.03 L	0.08 C
34.7	42.65 K	11.69 B	-0.03 L	-1405.79 B	4.03 L	0.08 C
	45.59 K	11.97 B	-0.03 L	-1546.27 B	4.41 L	0.08 C
23.1						

	45.59 K	11.97 B	-0.03 L	-1546.27 B	4.41 L	0.08 C
11.6	48.71 K	12.23 B	-0.03 L	-1688.49 B	4.79 L	0.08 C
	48.71 K	12.23 B	-0.03 L	-1688.50 B	4.79 L	0.08 C
	51.90 K	12.49 B	-0.03 L	-1832.22 B	5.15 L	0.08 C
-----						
base						
reaction	51.90 K	-12.49 B	0.03 L	1832.22 B	-5.15 L	-0.08 C
-----						

COMPLIANCE WITH 4.8.2 & 4.5.4  
 =====

ELEV ft	AXIAL	BENDING	SHEAR + TORSIONAL	TOTAL	SATISFIED	D/t(w/t)	MAX ALLOWED
189.00	0.00C	0.00K	0.00I	0.00K	YES	10.40A	45.2
	0.01C	0.06E	0.00L	0.06E	YES	12.79A	45.2
175.25	0.01F	0.06A	0.00C	0.06A	YES	12.79A	45.2
	0.01F	0.13C	0.01C	0.14C	YES	15.18A	45.2
161.50	0.01F	0.13C	0.01L	0.14C	YES	15.18A	45.2
	0.01F	0.21L	0.01L	0.22L	YES	17.58A	45.2
147.75	0.01B	0.14L	0.01E	0.15L	YES	11.60A	45.2
	0.01B	0.15K	0.01E	0.16K	YES	12.06A	45.2
143.75	0.01L	0.16D	0.01B	0.17D	YES	11.83A	45.2
	0.01L	0.21B	0.01B	0.21B	YES	13.53A	45.2
129.08	0.01K	0.21B	0.01B	0.21B	YES	13.53A	45.2
	0.01K	0.24B	0.01B	0.25B	YES	15.23A	45.2
114.42	0.01K	0.24B	0.01B	0.25B	YES	15.23A	45.2
	0.01K	0.26B	0.01B	0.27B	YES	16.93A	45.2
99.75	0.01K	0.22B	0.01B	0.23B	YES	14.46A	45.2
	0.01K	0.22B	0.01B	0.23B	YES	15.01A	45.2
94.25	0.01K	0.23B	0.01B	0.24B	YES	14.70A	45.2
	0.01K	0.24B	0.00B	0.25B	YES	16.06A	45.2
80.58	0.01K	0.24B	0.00B	0.25B	YES	16.06A	45.2
	0.01K	0.24B	0.00B	0.25B	YES	17.42A	45.2
66.92							

	0.01K	0.24B	0.00B	0.25B	YES	17.42A	45.2
53.25	0.01K	0.25B	0.00B	0.26B	YES	18.78A	45.2
	0.01K	0.25B	0.00B	0.26B	YES	18.78A	45.2
46.25	0.01K	0.25B	0.00B	0.26B	YES	19.47A	45.2
	0.01K	0.26B	0.00B	0.27B	YES	19.12A	45.2
34.69	0.01K	0.26B	0.00B	0.27B	YES	20.27A	45.2
	0.01K	0.26B	0.00B	0.27B	YES	20.27A	45.2
23.12	0.01K	0.26B	0.00B	0.27B	YES	21.42A	45.2
	0.01K	0.26B	0.00B	0.27B	YES	21.42A	45.2
11.56	0.01K	0.26B	0.00B	0.27B	YES	22.57A	45.2
	0.01K	0.26B	0.00B	0.27B	YES	22.57A	45.2
0.00	0.01K	0.26B	0.00B	0.27B	YES	23.71A	45.2

MAXIMUM LOADS ONTO FOUNDATION(w.r.t. wind direction)

=====

DOWN	SHEAR.w.r.t.WIND.DIR		MOMENT.w.r.t.WIND.DIR		TORSION
kip	ALONG	ACROSS	ALONG	ACROSS	ft-kip
	kip	kip	ft-kip	ft-kip	
51.90	12.49	-0.03	-1832.22	5.15	0.08
K	B	L	B	L	C

=====

**Seismic Load Effects**  
**Equivalent Lateral Force Procedure**  
**ANSI/TIA-222-H**

Parameters	Risk Category	R	S <sub>S</sub>	S <sub>1</sub>	Site Class	T <sub>L</sub> (sec)	Description	h <sub>L</sub> (ft.)	w <sub>i</sub> (kips)	W <sub>n</sub> (kips)	w/h <sub>n</sub> <sup>ke</sup>	Vertical Distribution of Seismic Forces			
												F <sub>sz</sub> or E <sub>h</sub> (kips)	E <sub>v</sub> (kips)	1.2 D + 1.0 E <sub>v</sub> (kips)	0.9 D - 1.0 E <sub>v</sub> (kips)
II	1.500	0.071	0.046	D (default)	12.000	Structure - Section 1	166.38	2.6593	0.0000	0.0000	73,615.5521	0.1580	0.0404	3.2316	2.3530
F <sub>a</sub>	1.600					Step Bolts Load	165.00	0.0140	0.0000	0.0000	381.1500	0.0008	0.0002	0.0170	0.0124
F <sub>v</sub>	2.400					Step Bolts Load	155.00	0.0140	0.0000	0.0000	336.3500	0.0007	0.0002	0.0170	0.0124
S <sub>MS</sub>	0.114					Antenna Load	153.00	3.3330	3.3330	3.3330	78,022.1970	0.1674	0.0507	4.0503	2.9490
S <sub>M1</sub>	0.110					Line Deadload	153.00	0.3029	0.0000	0.0000	7,090.5861	0.0152	0.0046	0.3681	0.2680
S <sub>DS</sub>	0.076					Step Bolts Load	145.00	0.0140	0.0000	0.0000	294.3500	0.0006	0.0002	0.0170	0.0124
S <sub>D1</sub>	0.074					Antenna Load	138.00	3.3330	3.3330	3.3330	63,473.6520	0.1362	0.0507	4.0503	2.9490
T <sub>s</sub>	0.974					Line Deadload	138.00	0.2732	0.0000	0.0000	5,202.8208	0.0112	0.0042	0.3320	0.2417
I <sub>e</sub>	1.000					Step Bolts Load	135.00	0.0140	0.0000	0.0000	255.1500	0.0005	0.0002	0.0170	0.0124
Ω	1.500					Step Bolts Load	125.00	0.0140	0.0000	0.0000	218.7500	0.0005	0.0002	0.0170	0.0124
C <sub>S</sub>	0.030					Structure - Section 2	121.00	7.0014	0.0000	0.0000	102,507.4974	0.2200	0.1064	8.5081	6.1949
E (ksi)	29,000					Step Bolts Load	115.00	0.0140	0.0000	0.0000	185.1500	0.0004	0.0002	0.0170	0.0124
I <sub>top</sub> (in <sup>4</sup> )	431					Step Bolts Load	105.00	0.0140	0.0000	0.0000	154.3500	0.0003	0.0002	0.0170	0.0124
I <sub>bot</sub> (in <sup>4</sup> )	38,985					Step Bolts Load	95.00	0.0140	0.0000	0.0000	126.3500	0.0003	0.0002	0.0170	0.0124
I <sub>avg</sub> (in <sup>4</sup> )	19,708					Step Bolts Load	85.00	0.0140	0.0000	0.0000	101.1500	0.0002	0.0002	0.0170	0.0124
g (in/s <sup>2</sup> )	386.4					Step Bolts Load	75.00	0.0140	0.0000	0.0000	78.7500	0.0002	0.0002	0.0170	0.0124
W <sub>t</sub> (kips)	51.794					Structure - Section 3	73.00	10.9451	0.0000	0.0000	58,326.4379	0.1252	0.1664	13.3005	9.6842
W <sub>u</sub> (kips)	15.999					Step Bolts Load	65.00	0.0140	0.0000	0.0000	59.1500	0.0001	0.0002	0.0170	0.0124
W <sub>L</sub> (kips)	35.795					Step Bolts Load	55.00	0.0140	0.0000	0.0000	42.3500	0.0001	0.0002	0.0170	0.0124
L <sub>p</sub> (in)	2268					Step Bolts Load	45.00	0.0140	0.0000	0.0000	28.3500	0.0001	0.0002	0.0170	0.0124
f <sub>1</sub> (Hertz)	0.243					Step Bolts Load	35.00	0.0140	0.0000	0.0000	17.1500	0.0000	0.0002	0.0170	0.0124
T (sec)	4.122					Structure - Section 4	26.62	13.5438	0.0000	0.0000	9,597.4671	0.0206	0.2059	16.4585	11.9835
k <sub>e</sub>	2.0000					Step Bolts Load	25.00	0.0140	0.0000	0.0000	8.7500	0.0000	0.0002	0.0170	0.0124
V <sub>s</sub> (kips)	1.554					Step Bolts Load	15.00	0.0140	0.0000	0.0000	3.1500	0.0000	0.0002	0.0170	0.0124
Seismic Design Category	B					Σ		51.79	15.9990	724,025.41	1.55	0.79	62.94	45.83	

## Round Base Plate and Anchor Rods, per ANSI/TIA 222-H

### Pole Data

Diameter:	60.960	in (flat to flat)
Thickness:	0.4375	in
Yield (Fy):	65	ksi
# of Sides:	18	"0" IF Round
Strength (Fu):	80	ksi

### Reactions

Moment, Mu:	6400.92	ft-kips
Axial, Pu:	62.21	kips
Shear, Vu:	43.57	kips

### Anchor Rod Data

Quantity:	20	
Diameter:	2.25	in
Rod Material:	A615	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
BC Diam. (in):	68	BC Override: <span style="background-color: yellow;"> </span>

### Plate Data

Diameter (in):	73.75	Dia. Override: <span style="background-color: yellow;"> </span>
Thickness:	2.25	in
Yield (Fy):	50	ksi
Eff Width/Rod:	9.67	in
Drain Hole:	2.625	in. diameter
Drain Location:	28.25	in. center of pole to center of drain hole
Center Hole:	48.5	in. diameter

### Anchor Rod Results

(per 4.9.9)

Maximum Put:	223.58 Kips
$\Phi_t^*R_{nt}$ :	243.75 Kips
Vu:	2.18 Kips
$\Phi_v^*R_{nv}$ :	149.10 Kips
Tension Interaction Ratio:	0.84
Maximum Puc:	229.03 Kips
$\Phi_c^*R_{nc}$ :	268.39 Kips
Vu:	2.18 Kips
$\Phi_c^*R_{ncv}$ :	120.77 Kips
Compression Interaction Ratio:	0.85
Maximum Interaction Ratio:	<b>85.4% Pass</b>

### Base Plate Results

Base Plate (Mu/Z):	42.4 ksi
Allowable $\Phi^*F_y$ :	45.0 ksi (per AISC)
Base Plate Interaction Ratio:	<b>94.1% Pass</b>

THENCE N00°00'00"E, 75.00 FEET TO THE POINT OF BEGINNING, CONTAINING 5,625 SQUARE FEET.

**ACCESS/UTILITY EASEMENT:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE S00°06'40"E, ALONG THE WEST LINE OF DIVISION ROAD, 379.93 FEET TO THE POINT OF BEGINNING FOR THE EASEMENT AREA HEREIN INTENDED TO BE DESCRIBED; THENCE N88°23'59"W, 348.73 FEET; THENCE S46°31'53"W, 164.29 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE S00°00'00"W, 30.00 FEET; THENCE N90°00'00"E, 86.96 FEET; THENCE N46°31'53"E, 163.80 FEET; THENCE S88°23'59"E, 337.07 FEET TO THE SAID WEST LINE OF DIVISION ROAD; THENCE N00°06'40"E, ALONG THE SAID WEST LINE, 30.01 FEET TO THE POINT OF BEGINNING, CONTAINING 17,638 SQUARE FEET.

**UTILITY EASEMENT:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE N88°45'05"W, ALONG THE NORTH LINE OF SAID LAND, 467.72 FEET TO THE POINT OF BEGINNING FOR THE EASEMENT AREA HEREIN INTENDED TO BE DESCRIBED; THENCE S00°06'40"W, 493.41 FEET; THENCE S90°00'00"W, 10.00 FEET; THENCE N00°06'40"E, 493.63 FEET TO THE NORTH LINE OF SAID LAND; THENCE S88°45'05"E, 10.00 FEET TO THE POINT OF BEGINNING, CONTAINING 4,935 SQUARE FEET.

**Parent Parcel I:**

**That part of the Northeast One-quarter (1/4) of the Northeast One-quarter (1/4) of Section Twenty-eight (28), in Township Nine (9) North, Range Twenty (20) East, in the village of Germantown, County of Washington, State of Wisconsin, described as follows: commencing at the Northeast corner of said section 28; thence South on the East line**

**of the Northeast 1/4 of said Section 316.50 feet to the point of beginning of this description; thence c Parcel I:**

**That part of the Northeast One-quarter (1/4) of the Northeast One-quarter (1/4) of Section**

**Twenty-eight (28), in Township Nine (9) North, Range Twenty (20) East, in the village of**

**Germantown, County of Washington, State of Wisconsin, described as follows: commencing at the Northeast corner of said section 28; thence South on the East line of the Northeast 1/4 of said Section 316.50 feet to the point of beginning of this description; thence continuing south 524.83 feet; thence North 89°26' West 660.03 feet;**

**thence North 531.17 feet; thence south 88°53' East 660.13 feet to the point of beginning.**

**Excepting therefrom those lands conveyed to the state of Wisconsin, Department of Transportation in a Warranty Deed recorded on April 29, 1996 in Volume 1590 of Records, at Page 642, as Document No. 716269.**

**Parcel II:**

**That part of the Northeast one-quarter (1/4) of the Northeast one-quarter (1/4) of section**

**Twenty-eight (28), in Township Nine (9) North, Range Twenty (20) East, in the Village of**

**Germantown, County of Washington, state of Wisconsin, described as follows: commencing at the Northeast corner of said section 28; thence south on the East line of the Northeast 1/4 of said Section 316.50 feet; thence North 88°53' West 660.13 feet;**

**thence North 316.50 feet to the North line of the Northeast 1/4 of said section; thence**

**south 88°53' East on said North line 660.13 feet to the point of beginning. Excepting therefrom that portion thereof conveyed to Washington county, Wisconsin, for highway**

**purposes as long as so used, as described by deed recorded i~ Washington county Registry**

**in volume 210 of Deeds on Page 197, as Document No. 232686.**

**Excepting therefrom those lands conveyed to the state of Wisconsin, Department of Transportation in a warranty Deed recorded on April 29, 1996 in volume 1590 of Records, at**

**Page 642, as Document No. 716269.**

**LESS That portion conveyed to the State of Wisconsin in Book 1590 at Page 642.ontinuing south 524.83 feet; thence North 89°26' West 660.03 feet; thence North 531.17 feet; thence south 88°53' East 660.13 feet to the point of beginning.**

**Excepting therefrom those lands conveyed to the state of Wisconsin, Department of Transportation in a Warranty Deed recorded on April 29, 1996 in Volume 1590 of Records, at**

**Page 642, as Document No. 716269.**

**Parcel II:**

**That part of the Northeast one-quarter (1/4) of the Northeast one-quarter (1/4) of section**

**Twenty-eight (28), in Township Nine (9) North, Range Twenty (20) East, in the Village of**

**Germantown, County of Washington, state of Wisconsin, described as follows:**

**commencing at the Northeast corner of said section 28; thence south on the East line of the Northeast 1/4 of said Section 316.50 feet; thence North 88°53' West 660.13 feet;**

**thence North 316.50 feet to the North line of the Northeast 1/4 of said section;**

**thence**

**south 88°53' East on said North line 660.13 feet to the point of beginning. Excepting**

**therefrom that portion thereof conveyed to Washington county, Wisconsin, for highway**

**purposes as long as so used, as described by deed recorded i~ Washington county Registry**

**in volume 210 of Deeds on Page 197, as Document No. 232686.**

**Excepting therefrom those lands conveyed to the state of Wisconsin, Department of Transportation in a warranty Deed recorded on April 29, 1996 in volume 1590 of Records, at**

**Page 642, as Document No. 716269.**

**LESS That portion conveyed to the State of Wisconsin in Book 1590 at Page 642.**

**LEASED PREMISES:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE S00°06'40"E, ALONG THE WEST LINE OF DIVISION ROAD, 379.93 FEET; THENCE N88°23'59"W, 348.73 FEET; THENCE S46°31'53"W, 164.29 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE S00°00'00"W, 30.00 FEET TO THE POINT OF BEGINNING FOR THE LEASE AREA HEREIN INTENDED TO BE DESCRIBED; THENCE N90°00'00"E, 75.00 FEET; THENCE S00°00'00"W, 75.00 FEET; THENCE S90°00'00"W, 75.00 FEET;

**PROJECT TEAM**

**PROJECT CONSULTANT:**  
TERRA CONSULTING GROUP, LTD  
910 E. BROADWAY, SUITE 206  
COLUMBIA, MO 65201  
POC: ERIC WARD  
(573) 777-3535

**SURVEYOR:**  
XCEL CONSULTANTS  
120 10TH AVE. EAST, SUITE 3  
MILAN, IL 61264  
POC: BRIAN HOLLAND  
P:309-787-9988

**STATE MAP**

N.T.S. 

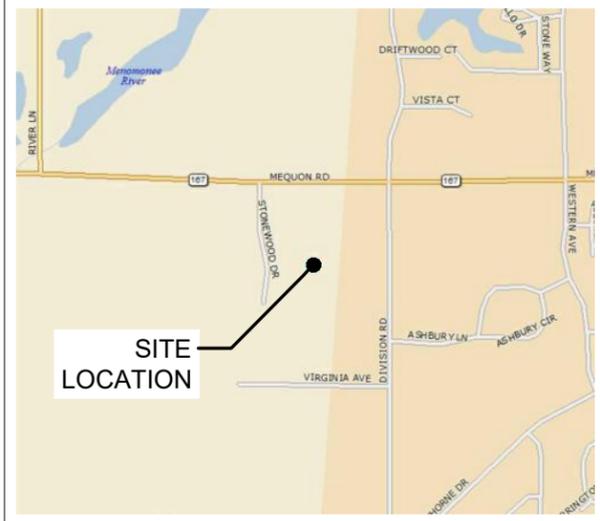


**SITE LOCATION**



**LOCATION MAP**

N.T.S. 



**SITE LOCATION**

**ONE CALL SYSTEM**

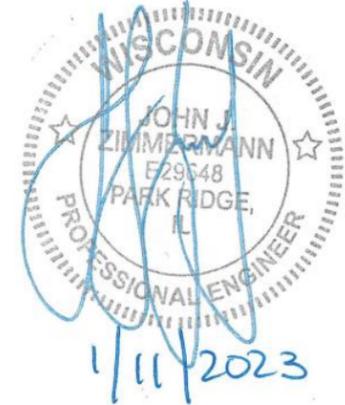


OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED



**SITE NAME: GERMANTOWN**  
**SITE NUMBER: 784809**

PROPOSED ANTENNAS MOUNTED ON A 190' MONOPOLE TOWER WITH PROPOSED 7'-0" X 10'-0" EQUIPMENT PAD AT BASE.



**PROJECT INFORMATION**

**SITE NAME:** GERMANTOWN  
**P.I.N. #:** GTNV\_281967  
**SITE ADDRESS:** W172N11083 DIVISION ROAD GERMANTOWN, WI 53022

**LATITUDE (NAD83):** N 43° 13' 09.0304" (FROM 1A)  
**LONGITUDE (NAD83):** W 88° 07' 30.1608" (FROM 1A)  
**GROUND ELEVATION:** 878.87 FT A.M.S.L. (FROM 1A)

**ZONING JURISDICTION:** CITY OF GERMANTOWN  
**CONSTRUCTION TYPE:** RAW LAND  
**TOWER OWNER:** U.S. CELLULAR

**STRUCTURE TYPE:** MONOPOLE TOWER  
**ANTENNA RAD CENTER:** 185' A.G.L.  
**LOADING TYPE:** 700/2T4R, MIDBAND/2T2R  
**GATE COMBO:** 8722  
**ACCESS ISSUES:** NONE  
**POWER PROVIDER:** TBD  
**FIBER PROVIDER:** CHARTER SPECTRUM

**NOTE:** UTILITY COORDINATION BY OTHERS. DO NOT PROCEED WITH CONSTRUCTION UNTIL POWER / TELCO / FIBER HAVE BEEN CONFIRMED.

**APPLICANT:** U.S. CELLULAR CORPORATION  
8410 WEST BRYN MAWR AVE.  
CHICAGO, IL 60631  
POC: STEVE HATMAKER

**SITE AC MANAGER:** GSS INC.  
3111 109TH STREET  
URBANDALE, IA 50322  
SHAUN HEMSTED  
(515) 331-2103 EXT. 106

**SCOPE OF WORK**

**TOWER SCOPE**  
PROPOSED EQUIPMENT:  
• (3) OCT8-2LX2HX-BW65 ANTENNAS  
• (3) ANTENNA MOUNT; V-FRAME MOUNTING SYSTEM, SABRE P/N: C10857803-5278  
• (2) RRU MOUNT; QUAD COLLAR, SABRE P/N: C10112540  
• (6) RRU MOUNT; COMPACT DUAL TOWER MOUNT, SABRE PN# C10114260  
• (1) 1-1/4" HYBRID CABLE  
• (1) RAYCAP RUSDC-6267-PF-48  
• (5) RADIOS; (3) 4480 B12/B71, (2) 4480 B2/B66  
• (3) GROUND BARS

**LTE JUMPERS:**  
• (10) FIBER JUMPERS FROM RAYCAP TO RADIOS  
• (5) POWER JUMPERS FROM RAYCAP TO RADIOS  
• (20) 1/2" COAX JUMPERS FROM RADIO TO ANTENNA  
• (3) RET JUMPER FROM RADIO TO ANTENNA

**GROUND EQUIPMENT SCOPE**  
PROPOSED EQUIPMENT:  
• (1) 7'x10' CONCRETE PAD  
• (2) EQUIPMENT CABINETS  
• B174 BATTERY CABINET  
• B6160 RBS EQUIPMENT CABINET  
• (2) ICE BRIDGE (30' PROVIDED BY TOWER MFGR)  
• (1) RAYCAP RUSDC-6267-PF-48 (MOUNTED ON H-FRAME)  
• (1) POWER/FIBER JUNCTION BOX (MOUNTED ON UNISTRUT)  
• (2) FIBER JUNCTION BOX (MOUNTED ON UNISTRUT)  
• (1) GROUND BAR (MOUNTED ON H-FRAME)  
• (1) PPC EQUIPMENT CABINET  
• (8) 6" UNITSTRUTS FOR H-FRAME & U-BOLTS FOR MOUNTING  
• (1) 800A, 4-GANG METER BANK (CONTRACTOR TO COORDINATE WITH LOCAL UTILITY PROVIDER)

**STRUCTURAL NOTES**  
STRUCTURAL STATUS:  
1. TOWER SA: N/A  
2. MOUNT SA: N/A  
3. FOUNDATION: N/A  
**\*\*TOWER ERECTION DRAWINGS PROVIDED BY TOWER OWNER**

**SPECIAL NOTES:**  
1. **HANDICAP REQUIREMENTS:** FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION HANDICAPPED ACCESS REQUIREMENTS NOT REQUIRED  
2. **PLUMBING REQUIREMENTS:** FACILITY HAS NO PLUMBING OR REFRIGERANTS.  
3. **FAA & FCC REQUIREMENTS:** THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REQUIREMENTS.  
4. **CONSTRUCTION REQUIREMENTS:** ALL WORK MUST CONFORM TO ALL U.S. CELLULAR CONSTRUCTION INSTALLATION STANDARDS & ALL APPLICABLE CODES AND ORDINANCES.

**SHEET INDEX**

SHEET	DESCRIPTION	REVISION
T-1	TITLE SHEET	1
B-1	SURVEY	-
B-2	SURVEY	-
B-3	SURVEY	-
B-4	SURVEY	-
LP	LOCATION PLAN	1
C-1	ENLARGED SITE PLAN	1
C-2	SITE GRADING PLAN (SHEET 1 OF 1)	1
C-3	CONCRETE SLAB FOUNDATION PLAN	1
C-4	EQUIPMENT CABINET PLAN	1
C-5	EQUIPMENT PAD ELEVATIONS	1
C-6	CABINET DETAILS	1
C-7	FENCE DETAILS	1
C-8	SITE DETAILS	1
C-9	SITE DETAILS	1
L-1	LANDSCAPE PLAN	1
ANT-1	SITE ELEVATION	1
ANT-2	ANTENNA & EQUIPMENT LAYOUT	1
ANT-3	ANTENNA SPECIFICATIONS	1
ANT-4	EQUIPMENT SPECIFICATIONS	1
ANT-5	ANTENNA MOUNTING DETAILS	1
ANT-6	LABELING STANDARDS 1	1
ANT-7	LABELING STANDARDS 2	1
ANT-8	PLUMBING DIAGRAM	1
E-1	UTILITY ROUTING PLAN	1
E-2	UTILITY DETAILS	1
E-3	UTILITY H-FRAME DETAILS	1
E-4	COMPOUND H-FRAME DETAILS	1
G-1	OVERALL GROUNDING SITE PLAN	1
G-2	GROUNDING DETAILS	1
G-3	GROUNDING DETAILS	1
SP-1	GENERAL SPECIFICATIONS	1
SP-2	GENERAL SPECIFICATIONS	1
SP-3	GENERAL SPECIFICATIONS	1
	STRUCTURAL ATTACHMENTS	

**uscellular**  
8410 W. BRYN MAWR AVE.  
CHICAGO, IL 60631  
POC: STEVE HATMAKER

**TERRA CONSULTING GROUP, LTD.**  
600 BUSSE HIGHWAY  
PARK RIDGE, IL 60068  
PH: 847-698-6400  
FAX: 847-698-6401

NO.	DESCRIPTION	DATE	BY
A	ISSUED FOR REVIEW	11/04/22	BJC
B	REVISED PER USCC COMMENTS	12/19/22	JGL
0	ISSUED FOR CONSTRUCTION	12/20/22	EW
1	ADDED LANDSCAPE BUFFER	01/11/23	EW

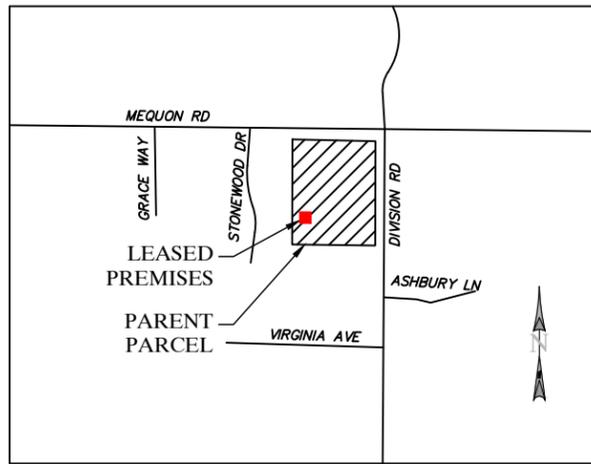
**SITE# 784809**  
**GERMANTOWN**

W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

**DRAWN BY:** BJC  
**CHECKED BY:** EW  
**DATE:** 10/25/22  
**PROJECT #:** 10-079

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**



**VICINITY MAP**

NOT TO SCALE

**GENERAL NOTES**

NO SEARCH OF PUBLIC RECORDS HAS BEEN COMPLETED BY XCEL CONSULTANTS TO DETERMINE ANY DEFECTS AND/OR AMBIGUITIES IN THE TITLE OF THE PARENT PARCEL.

THIS SURVEY IS FOR THE PROPOSED LEASED PREMISES AND THE PROPOSED EASEMENTS ONLY, AND ONLY A PARTIAL BOUNDARY SURVEY OF THE PARENT PARCEL HAS BEEN PERFORMED.

THIS PLAT IS NOT INTENDED FOR LAND TRANSFER.

THIS PROPERTY IS SUBJECT TO ANY RECORDED EASEMENTS AND/OR RIGHTS OF WAY SHOWN HEREON OR NOT.

XCEL CONSULTANTS HAS RECEIVED AND REVIEWED THE TITLE COMMITMENT PREPARED BY STEWART TITLE GUARANTY COMPANY, FILE NUMBER 22111495W, DATED AUGUST 24, 2022 AT 8:00 AM, PREPARED FOR THE SUBJECT PROPERTY, TO DETERMINE THE IMPACTS OF EXISTING TITLE EXCEPTIONS.

BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE "X" (AREA OF MINIMAL FLOOD HAZARD) OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 55131C0357D AND 55131C0376D, WHICH BOTH BEAR AN EFFECTIVE DATE OF NOVEMBER 20, 2013 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE AND AN ELEVATION CERTIFICATE MAY BE NEEDED TO VERIFY THIS DETERMINATION OR APPLY FOR A VARIANCE FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

NO WETLANDS AREAS HAVE BEEN INVESTIGATED BY THIS SURVEY

THERE WERE NO STREAMS, DRAINAGE DITCHES OR PIPES, OR RIVERS RUNNING THROUGH OR BORDERING THE PARENT PARCEL, LEASED PREMISES NOR NEW EASEMENTS AT THE TIME OF SURVEY.

THE LOCATION OF THE UTILITIES SHOWN HEREON ARE FROM OBSERVED EVIDENCE OF ABOVE GROUND APPURTENANCES AND PER WISCONSIN ONE CALL "DIGGERS HOTLINE" LOCATED REQUEST PLANNING PRINTS TICKET #20223421464. UTILITY SERVICE FOR THIS PROPERTY ARE PROVIDED BY WE ENERGIES, ELECTRIC AND GAS, TIME WARNER CABLE, VILLAGE OF GERMANTOWN, AT&T DISTRIBUTION, AND CENTURYLINK. ONLY UTILITY MAPS PROVIDED BY SAID COMPANIES ARE SHOWN HEREON. BEFORE DIGGING IN THIS AREA CALL DIGGERS HOTLINE AT 811.

**\* FAA COORDINATE POINT**

NAD 83  
 LATITUDE: 43°13'09.0304" (43.21917510)  
 LONGITUDE: -88°07'30.1608" (-88.12504468)  
 NAVD88 ELEVATION: 878.87± AMSL

TO: U.S. CELLULAR; STEWART TITLE GUARANTY COMPANY

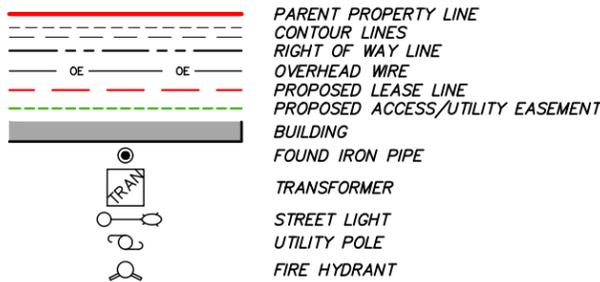
I, DAN J. KUEHL, A WISCONSIN PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE INFORMATION SHOWN HEREON WAS COMPILED USING DATA FROM AN ACTUAL FIELD SURVEY MADE UNDER MY DIRECT SUPERVISION AND THAT THE FIELD SURVEY AND THE COMPILATION OF INFORMATION SHOWN HEREIN WERE CONDUCTED IN ACCORDANCE WITH THE WISCONSIN MINIMUM STANDARDS OF PRACTICE. THE FIELD WORK WAS COMPLETED ON AUGUST 17, 2022.

*Dan J. Kuehl*  
 SEPTEMBER 26, 2022

DAN J. KUEHL  
 LICENSE NUMBER 3104-8  
 MY LICENSE RENEWAL DATE IS JANUARY 31, 2024  
 SHEETS COVERED BY THIS SEAL B-1, B-2, B-3, AND B-4

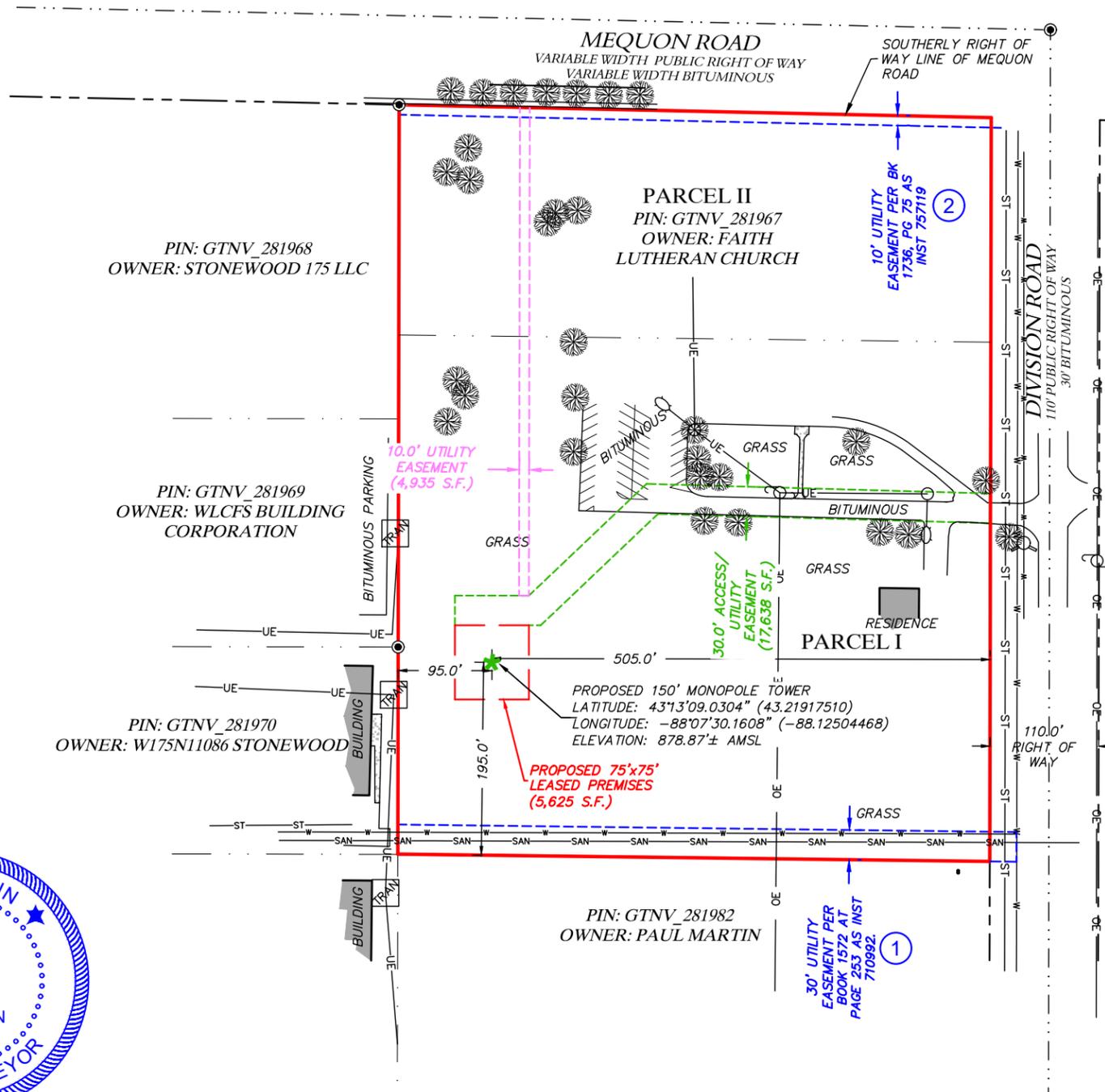
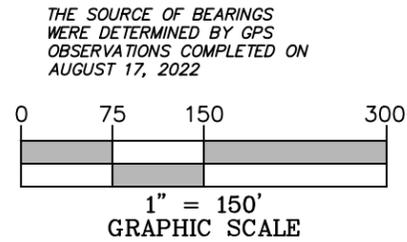


**LEGEND**



**GLOBAL POSITIONING SYSTEMS NOTE**

1. RANDOM TRAVERSE CONTROL MONUMENTS WERE SET USING GPS METHODS. A PORTION OF THE TOPOGRAPHY AND FOUND BOUNDARY MONUMENTS WERE ALSO LOCATED USING GPS METHODS.
2. THE TYPE OF GPS UTILIZES AS NETWORK ADJUSTED REAL TIME KINEMATIC (HYPER SR NETWORK), NAD 83 WISCONSIN STATE PLANE (WASHINGTON).
3. TOPCON HIPER SR RECEIVERS WERE USED TO PERFORM THE SURVEY.



**SURVEY**



8410 W. Bryn Mawr Avenue  
 Suite 700  
 Chicago, IL 60631



SURVEYED BY:  
**XCEL** Consultants  
 8300 42ND STREET WEST  
 ROCK ISLAND, IL 61201  
 (O) 309-787-9988  
 (F) 309-756-5540  
 (E) XCEL@XCELCONSULTANTSINC.COM

XCEL PROJECT NUMBER: 224240

**SURVEY**

REV.	DATE	DESCRIPTION

**SITE NAME:**  
 GERMANTOWN

**SITE NUMBER:** 784809

W172N11083 DIVISION ROAD  
 GERMANTOWN, WI 53022

**OWNER:** FAITH LUTHERAN CHURCH  
**PARCEL #:** GTNV\_281967

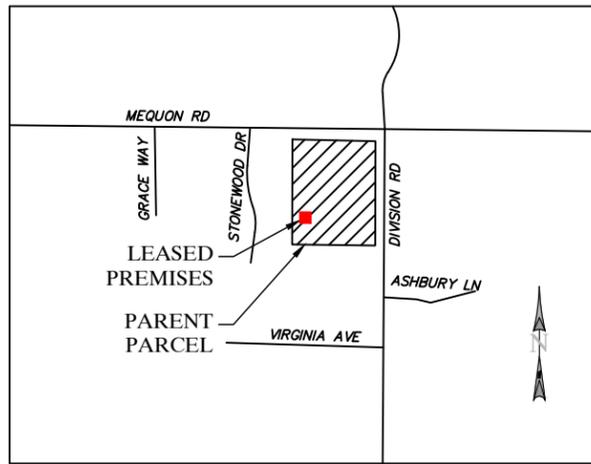
WASHINGTON COUNTY  
 WISCONSIN

**DRAWN BY:** KJM  
**CHECKED BY:** BCH  
**SURVEY DATE:** 8/17/2022  
**PLAT DATE:**

**SHEET TITLE:**  
**SURVEY**  
 THIS DOES NOT REPRESENT A  
 BOUNDARY SURVEY OF THE  
 PARENT PARCEL

**SHEET NUMBER:**

**B-1**

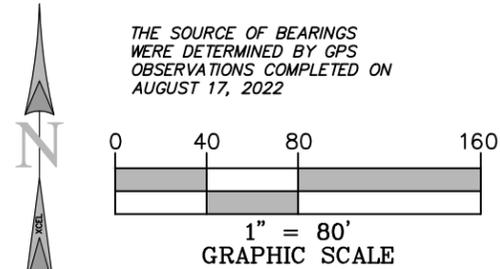


**VICINITY MAP**  
NOT TO SCALE

**GLOBAL POSITIONING SYSTEMS NOTE**

1. RANDOM TRAVERSE CONTROL MONUMENTS WERE SET USING GPS METHODS. A PORTION OF THE TOPOGRAPHY AND FOUND BOUNDARY MONUMENTS WERE ALSO LOCATED USING GPS METHODS.
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3. TOPCON HIPER SR RECEIVERS WERE USED TO PERFORM THE SURVEY.

THE SOURCE OF BEARINGS WERE DETERMINED BY GPS OBSERVATIONS COMPLETED ON AUGUST 17, 2022

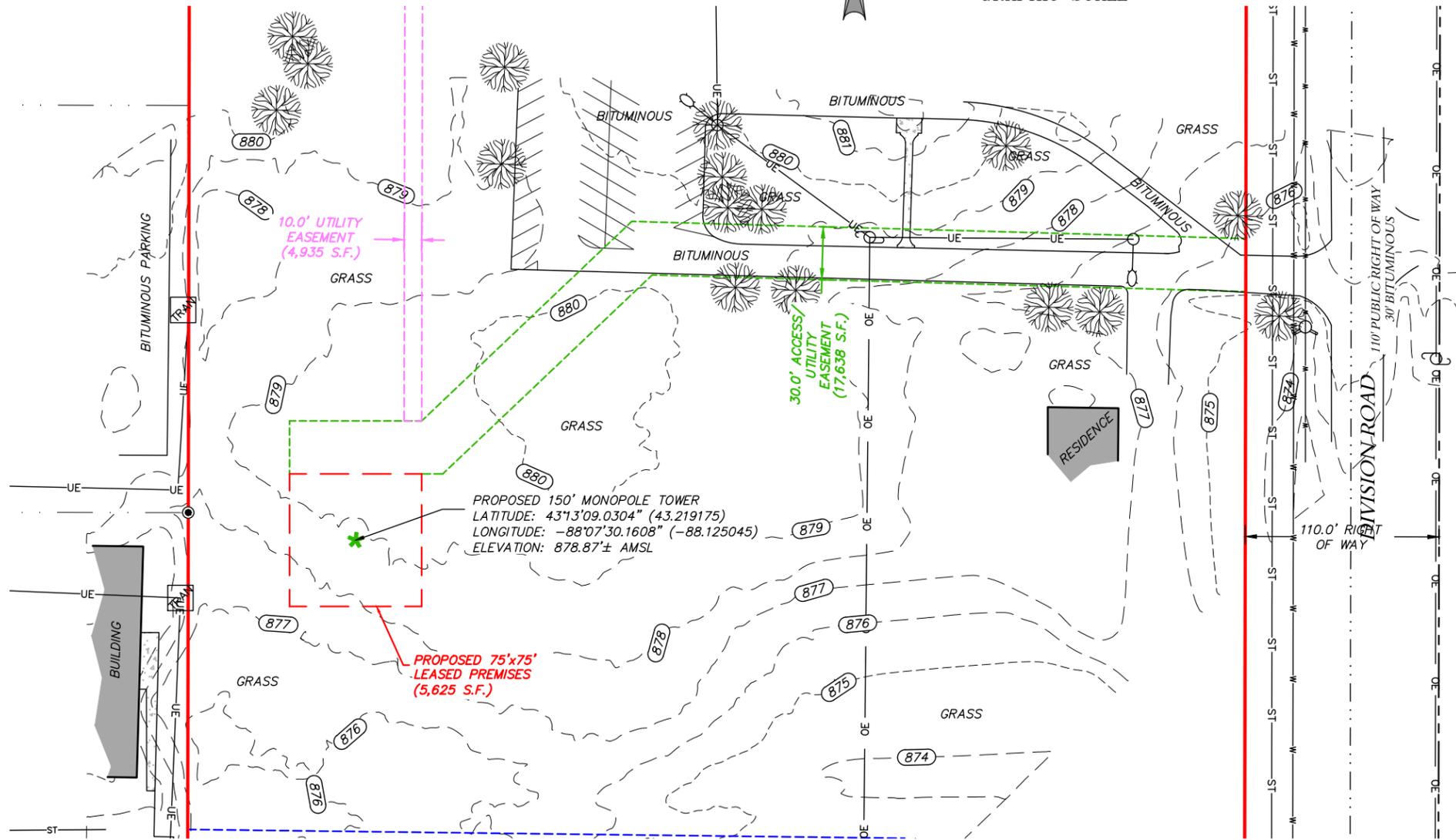


**\* FAA COORDINATE POINT**

NAD 83  
LATITUDE: 43°13'09.0304" (43.21917510)  
LONGITUDE: -88°07'30.1608" (-88.12504468)  
NAVD88 ELEVATION: 878.87± AMSL

**GENERAL NOTES**

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- THIS SURVEY IS FOR THE PROPOSED LEASED PREMISES AND THE PROPOSED EASEMENTS ONLY, AND ONLY A PARTIAL BOUNDARY SURVEY OF THE PARENT PARCEL HAS BEEN PERFORMED.
- THIS PLAT IS NOT INTENDED FOR LAND TRANSFER.
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- XCEL CONSULTANTS HAS RECEIVED AND REVIEWED THE TITLE COMMITMENT PREPARED BY STEWART TITLE GUARANTY COMPANY, FILE NUMBER 22111495W, DATED AUGUST 24, 2022 AT 8:00 AM, PREPARED FOR THE SUBJECT PROPERTY, TO DETERMINE THE IMPACTS OF EXISTING TITLE EXCEPTIONS.
- BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE "X" (AREA OF MINIMAL FLOOD HAZARD) OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 55131C0357D AND 55131C0376D, WHICH BOTH BEAR AN EFFECTIVE DATE OF NOVEMBER 20, 2013 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE AND AN ELEVATION CERTIFICATE MAY BE NEEDED TO VERIFY THIS DETERMINATION OR APPLY FOR A VARIANCE FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
- NO WETLANDS AREAS HAVE BEEN INVESTIGATED BY THIS SURVEY
- THERE WERE NO STREAMS, DRAINAGE DITCHES OR PIPES, OR RIVERS RUNNING THROUGH OR BORDERING THE PARENT PARCEL, LEASED PREMISES NOR NEW EASEMENTS AT THE TIME OF SURVEY.
- THE LOCATION OF THE UTILITIES SHOWN HEREON ARE FROM OBSERVED EVIDENCE OF ABOVE GROUND APPURTENANCES AND PER WISCONSIN ONE CALL "DIGGERS HOTLINE" LOCATED REQUEST PLANNING PRINTS TICKET #20223421464. UTILITY SERVICE FOR THIS PROPERTY ARE PROVIDED BY WE ENERGIES, ELECTRIC AND GAS, TIME WARNER CABLE, VILLAGE OF GERMANTOWN, AT&T DISTRIBUTION, AND CENTURYLINK. ONLY UTILITY MAPS PROVIDED BY SAID COMPANIES ARE SHOWN HEREON. BEFORE DIGGING IN THIS AREA CALL DIGGERS HOTLINE AT 811.



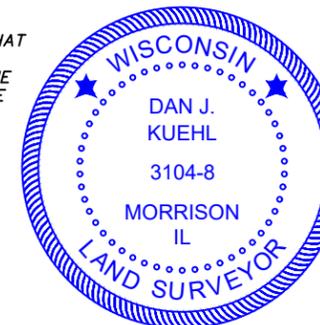
**LEGEND**

- PARENT PROPERTY LINE
- CONTOUR LINES
- RIGHT OF WAY LINE
- OVERHEAD WIRE
- PROPOSED LEASE LINE
- PROPOSED ACCESS/UTILITY EASEMENT
- BUILDING
- FOUND IRON PIPE
- TRANSFORMER
- STREET LIGHT
- UTILITY POLE
- FIRE HYDRANT

TO: U.S. CELLULAR; STEWART TITLE GUARANTY COMPANY

I, DAN J. KUEHL, A WISCONSIN PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE INFORMATION SHOWN HEREON WAS COMPILED USING DATA FROM AN ACTUAL FIELD SURVEY MADE UNDER MY DIRECT SUPERVISION AND THAT THE FIELD SURVEY AND THE COMPILATION OF INFORMATION SHOWN HEREIN WERE CONDUCTED IN ACCORDANCE WITH THE WISCONSIN MINIMUM STANDARDS OF PRACTICE. THE FIELD WORK WAS COMPLETED ON AUGUST 17, 2022.

*Dan Juehl*  
SEPTEMBER 26, 2022  
DAN J. KUEHL  
LICENSE NUMBER 3104-B  
MY LICENSE RENEWAL DATE IS JANUARY 31, 2024  
SHEETS COVERED BY THIS SEAL B-1, B-2, B-3, AND B-4



8410 W. Bryn Mawr Avenue  
Suite 700  
Chicago, IL 60631



SURVEYED BY:  
**XCEL** Consultants  
8300 42ND STREET WEST  
ROCK ISLAND, IL 61201  
(O) 309-787-9988  
(F) 309-756-5540  
(E) XCEL@XCELCONSULTANTSINC.COM

XCEL PROJECT NUMBER: 224240

**SURVEY**

REV.	DATE	DESCRIPTION

**SITE NAME:**  
GERMANTOWN

SITE NUMBER: 784809

W172N11083 DIVISION ROAD  
GERMANTOWN, WI 53022

OWNER: FAITH LUTHERAN  
CHURCH  
PARCEL #: GTNV\_281967

WASHINGTON COUNTY  
WISCONSIN

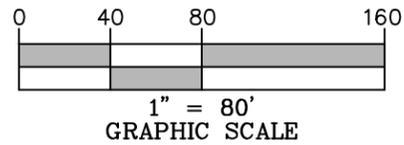
DRAWN BY: KJM  
CHECKED BY: BCH  
SURVEY DATE: 8/17/2022  
PLAT DATE:

SHEET TITLE:  
**SURVEY**  
THIS DOES NOT REPRESENT A  
BOUNDARY SURVEY OF THE  
PARENT PARCEL

SHEET NUMBER:  
**B-2**



THE SOURCE OF BEARINGS  
WERE DETERMINED BY GPS  
OBSERVATIONS COMPLETED ON  
AUGUST 17, 2022.



AERIAL PER XCEL CONSULTANTS,  
INC. FLOWN DRONE ON AUGUST 17,  
2022.



TO: U.S. CELLULAR; STEWART TITLE GUARANTY COMPANY

I, DAN J. KUEHL, A WISCONSIN PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE INFORMATION SHOWN HEREON WAS COMPILED USING DATA FROM AN ACTUAL FIELD SURVEY MADE UNDER MY DIRECT SUPERVISION AND THAT THE FIELD SURVEY AND THE COMPILATION OF INFORMATION SHOWN HEREIN WERE CONDUCTED IN ACCORDANCE WITH THE WISCONSIN MINIMUM STANDARDS OF PRACTICE. THE FIELD WORK WAS COMPLETED ON AUGUST 17, 2022.

SEPTEMBER 26, 2022

DAN J. KUEHL  
LICENSE NUMBER 3104-8  
MY LICENSE RENEWAL DATE IS JANUARY 31, 2024  
SHEETS COVERED BY THIS SEAL B-1, B-2, B-3, AND B-4



8410 W. Bryn Mawr Avenue  
Suite 700  
Chicago, IL 60631



600 Busse Highway  
Park Ridge, IL 60068  
Ph: 847/698-6400  
Fax: 847/698-6401

SURVEYED BY:

**XCEL**  
Consultants  
8300 42ND STREET WEST  
ROCK ISLAND, IL 61201  
(O) 309-787-9988  
(F) 309-756-5540  
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XCEL PROJECT NUMBER: 224240

**SURVEY**

REV.	DATE	DESCRIPTION

**SITE NAME:  
GERMANTOWN**

SITE NUMBER: 784809

W172N11083 DIVISION ROAD  
GERMANTOWN, WI 53022

OWNER: FAITH LUTHERAN  
CHURCH  
PARCEL #: GTNV\_281967

WASHINGTON COUNTY  
WISCONSIN

DRAWN BY: KJM  
CHECKED BY: BCH  
SURVEY DATE: 8/17/2022  
PLAT DATE:

SHEET TITLE:  
**SURVEY**  
THIS DOES NOT REPRESENT A  
BOUNDARY SURVEY OF THE  
PARENT PARCEL

SHEET NUMBER:  
**B-3**

**REPORT OF TITLE:**

XCEL CONSULTANTS HAS RECEIVED AND REVIEWED THE TITLE COMMITMENT PREPARED BY STEWART TITLE GUARANTY COMPANY, FILE NUMBER 22111495W, DATED AUGUST 24, 2022 AT 8:00 AM, PREPARED FOR THE SUBJECT PROPERTY, TO DETERMINE THE IMPACTS OF EXISTING TITLE EXCEPTIONS.

**SURVEY MATTERS OR EASEMENTS LISTED IN SCHEDULE 'B':**

1. SANITARY SEWER AND WATER MAIN EASEMENT BETWEEN FAITH LUTHERAN CHURCH AND THE VILLAGE OF GERMANTOWN DATED OCTOBER 26, 1995 AND RECORDED FEBRUARY 26, 1996 IN BOOK 1572 AT PAGE 253 AS INSTRUMENT 710992. LIES ON PROPERTY - AS SHOWN
2. AMERITECH EXCLUSIVE EASEMENT BETWEEN FAITH LUTHERAN CHURCH AND WISCONSIN BELL, INC. A.K.A AMERITECH WISCONSIN DATED SEPTEMBER 18, 1997 AND RECORDED SEPTEMBER 18, 1997 IN BOOK 1736 AT PAGE 75 AS INSTRUMENT 757119. LIES ON PROPERTY - AS SHOWN
3. RIGHT-OF-WAY GRANT BETWEEN FAITH LUTHERAN CHURCH AND WISCONSIN BELL, INC DATED JUNE 9, 1986 AND RECORDED JULY 16, 1986 IN BOOK 899 AT PAGE 531 AS INSTRUMENT 494984. DOES NOT LIE ON PROPERTY

**PARENT PARCEL:**

**PARCEL I:**  
THAT PART OF THE NORTHEAST ONE-QUARTER (1/4) OF THE NORTHEAST ONE-QUARTER (1/4) OF SECTION TWENTY-EIGHT (28), IN TOWNSHIP NINE (9) NORTH, RANGE TWENTY (20) EAST, IN THE VILLAGE OF GERMANTOWN, COUNTY OF WASHINGTON, STATE OF WISCONSIN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 28; THENCE SOUTH ON THE EAST LINE OF THE NORTHEAST 1/4 OF SAID SECTION 316.50 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE CONTINUING SOUTH 524.83 FEET; THENCE NORTH 89°26' WEST 660.03 FEET; THENCE NORTH 531.17 FEET; THENCE SOUTH 88°53' EAST 660.13 FEET TO THE POINT OF BEGINNING. EXCEPTING THEREFROM THOSE LANDS CONVEYED TO THE STATE OF WISCONSIN, DEPARTMENT OF TRANSPORTATION IN A WARRANTY DEED RECORDED ON APRIL 29, 1996 IN VOLUME 1590 OF RECORDS, AT PAGE 642, AS DOCUMENT NO. 716269.

**PARCEL II:**  
THAT PART OF THE NORTHEAST ONE-QUARTER (1/4) OF THE NORTHEAST ONE-QUARTER (1/4) OF SECTION TWENTY-EIGHT (28), IN TOWNSHIP NINE (9) NORTH, RANGE TWENTY (20) EAST, IN THE VILLAGE OF GERMANTOWN, COUNTY OF WASHINGTON, STATE OF WISCONSIN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 28; THENCE SOUTH ON THE EAST LINE OF THE NORTHEAST 1/4 OF SAID SECTION 316.50 FEET; THENCE NORTH 88°53' WEST 660.13 FEET; THENCE NORTH 316.50 FEET TO THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION; THENCE SOUTH 88°53' EAST ON SAID NORTH LINE 660.13 FEET TO THE POINT OF BEGINNING. EXCEPTING THEREFROM THAT PORTION THEREOF CONVEYED TO WASHINGTON COUNTY, WISCONSIN, FOR HIGHWAY PURPOSES AS LONG AS SO USED, AS DESCRIBED BY DEED RECORDED IN WASHINGTON COUNTY REGISTRY IN VOLUME 210 OF DEEDS ON PAGE 197, AS DOCUMENT NO. 232686.

EXCEPTING THEREFROM THOSE LANDS CONVEYED TO THE STATE OF WISCONSIN, DEPARTMENT OF TRANSPORTATION IN A WARRANTY DEED RECORDED ON APRIL 29, 1996 IN VOLUME 1590 OF RECORDS, AT PAGE 642, AS DOCUMENT NO. 716269.

LESS THAT PORTION CONVEYED TO THE STATE OF WISCONSIN IN BOOK 1590 AT PAGE 642.

**LEASED PREMISES:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE S00°06'40"E, ALONG THE WEST LINE OF DIVISION ROAD, 379.93 FEET; THENCE N88°23'59"W, 348.73 FEET; THENCE S46°31'53"W, 164.29 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE S00°00'00"W, 30.00 FEET TO THE POINT OF BEGINNING FOR THE LEASE AREA HEREIN INTENDED TO BE DESCRIBED; THENCE N90°00'00"E, 75.00 FEET; THENCE S00°00'00"W, 75.00 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE N00°00'00"E, 75.00 FEET TO THE POINT OF BEGINNING, CONTAINING 5,625 SQUARE FEET.

**ACCESS/UTILITY EASEMENT:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE S00°06'40"E, ALONG THE WEST LINE OF DIVISION ROAD, 379.93 FEET TO THE POINT OF BEGINNING FOR THE EASEMENT AREA HEREIN INTENDED TO BE DESCRIBED; THENCE N88°23'59"W, 348.73 FEET; THENCE S46°31'53"W, 164.29 FEET; THENCE S90°00'00"W, 75.00 FEET; THENCE S00°00'00"W, 30.00 FEET; THENCE N90°00'00"E, 86.96 FEET; THENCE N46°31'53"E, 163.80 FEET; THENCE S88°23'59"E, 337.07 FEET TO THE SAID WEST LINE OF DIVISION ROAD; THENCE N00°06'40"E, ALONG THE SAID WEST LINE, 30.01 FEET TO THE POINT OF BEGINNING, CONTAINING 17,638 SQUARE FEET.

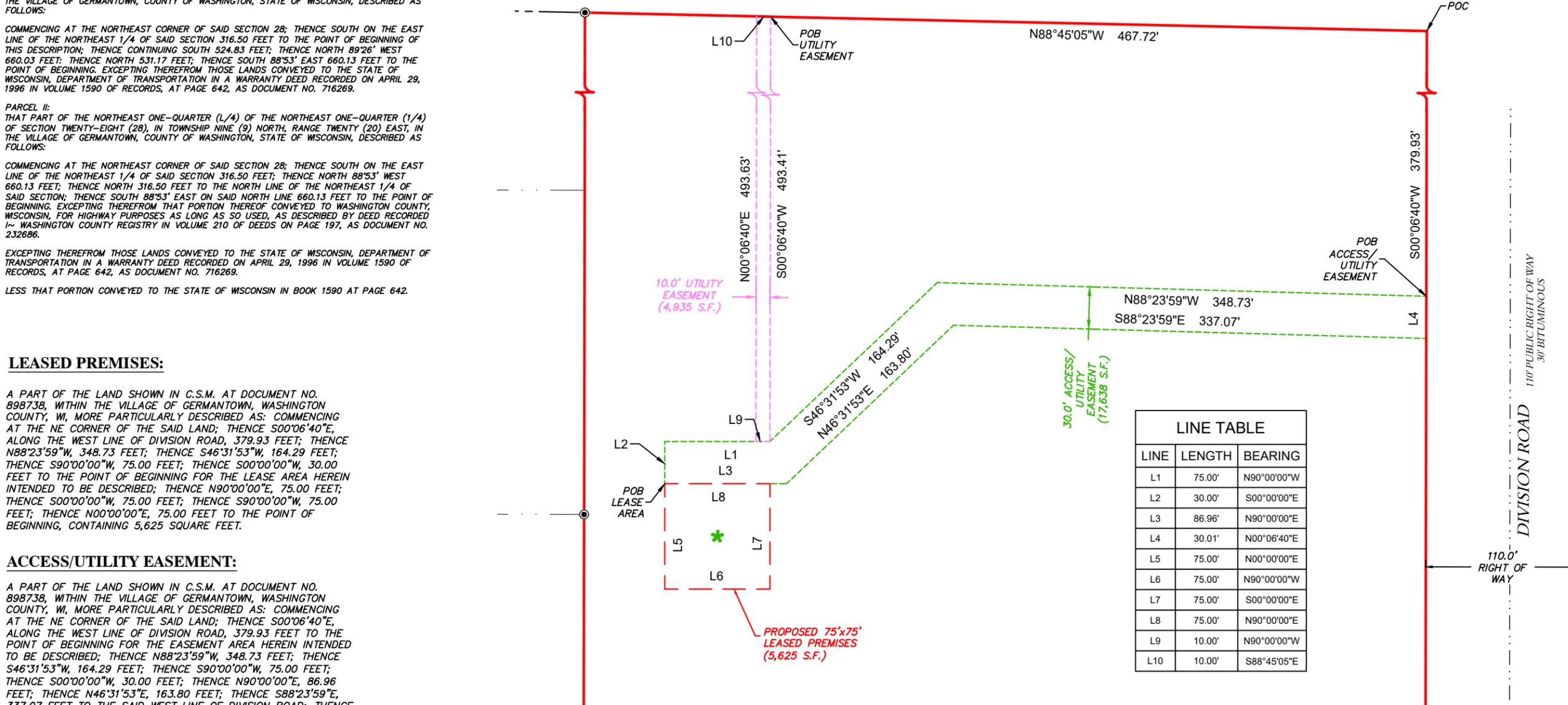
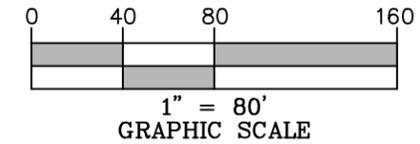
**UTILITY EASEMENT:**

A PART OF THE LAND SHOWN IN C.S.M. AT DOCUMENT NO. 898738, WITHIN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WI, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE NE CORNER OF THE SAID LAND; THENCE N88°45'05"W, ALONG THE NORTH LINE OF SAID LAND, 467.72 FEET TO THE POINT OF BEGINNING FOR THE EASEMENT AREA HEREIN INTENDED TO BE DESCRIBED; THENCE S00°06'40"W, 493.41 FEET; THENCE S90°00'00"W, 10.00 FEET; THENCE N00°06'40"E, 493.63 FEET TO THE NORTH LINE OF SAID LAND; THENCE S88°45'05"E, 10.00 FEET TO THE POINT OF BEGINNING, CONTAINING 4,935 SQUARE FEET.

**LEGEND:**

- PARENT PROPERTY LINE
- - - - - RIGHT OF WAY LINE
- - - - - PROPOSED LEASE LINE
- - - - - PROPOSED ACCESS/UTILITY EASEMENT

THE SOURCE OF BEARINGS WERE DETERMINED BY GPS OBSERVATIONS COMPLETED ON AUGUST 17, 2022

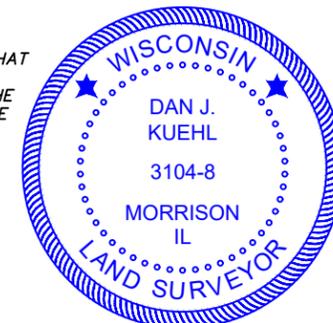


LINE TABLE		
LINE	LENGTH	BEARING
L1	75.00'	N90°00'00"W
L2	30.00'	S00°00'00"E
L3	86.96'	N90°00'00"E
L4	30.01'	N00°06'40"E
L5	75.00'	N00°00'00"E
L6	75.00'	N90°00'00"W
L7	75.00'	S00°00'00"E
L8	75.00'	N90°00'00"E
L9	10.00'	N90°00'00"W
L10	10.00'	S88°45'05"E

TO: U.S. CELLULAR; STEWART TITLE GUARANTY COMPANY

I, DAN J. KUEHL, A WISCONSIN PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE INFORMATION SHOWN HEREON WAS COMPILED USING DATA FROM AN ACTUAL FIELD SURVEY MADE UNDER MY DIRECT SUPERVISION AND THAT THE FIELD SURVEY AND THE COMPILATION OF INFORMATION SHOWN HEREIN WERE CONDUCTED IN ACCORDANCE WITH THE WISCONSIN MINIMUM STANDARDS OF PRACTICE. THE FIELD WORK WAS COMPLETED ON AUGUST 17, 2022.

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 DAN J. KUEHL  
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 MY LICENSE RENEWAL DATE IS JANUARY 31, 2024  
 SHEETS COVERED BY THIS SEAL B-1, B-2, B-3, AND B-4  
 SEPTEMBER 26, 2022



8410 W. Bryn Mawr Avenue  
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 Chicago, IL 60631



600 Busse Highway  
 Park Ridge, IL 60068  
 Ph: 847/698-6400  
 Fax: 847/698-6401

SURVEYED BY:



XCEL PROJECT NUMBER: 224240

**SURVEY**

REV.	DATE	DESCRIPTION

**SITE NAME:**  
 GERMANTOWN

**SITE NUMBER:** 784809

W172N11083 DIVISION ROAD  
 GERMANTOWN, WI 53022

**OWNER:** FAITH LUTHERAN CHURCH  
 PARCEL #: GTNV\_281967

WASHINGTON COUNTY  
 WISCONSIN

**DRAWN BY:** KJM  
**CHECKED BY:** BCH  
**SURVEY DATE:** 8/17/2022  
**PLAT DATE:**

**SHEET TITLE:**

**SURVEY**  
 THIS DOES NOT REPRESENT A  
 BOUNDARY SURVEY OF THE  
 PARENT PARCEL

**SHEET NUMBER:**

**B-4**

**LEGEND**

- RIGHT OF WAY LINE
- EASEMENT LINE
- LOT LINE
- CENTERLINE
- PROPERTY LINE
- UGE (UGE) PROP. POWER LINE
- UGF (UGF) PROP. FIBER LINE
- BUILDING
- OVERHEAD ELECTRIC LINE
- FOUND MONUMENT
- TRANSFORMER
- STREET LIGHT
- UTILITY POLE
- FIRE HYDRANT

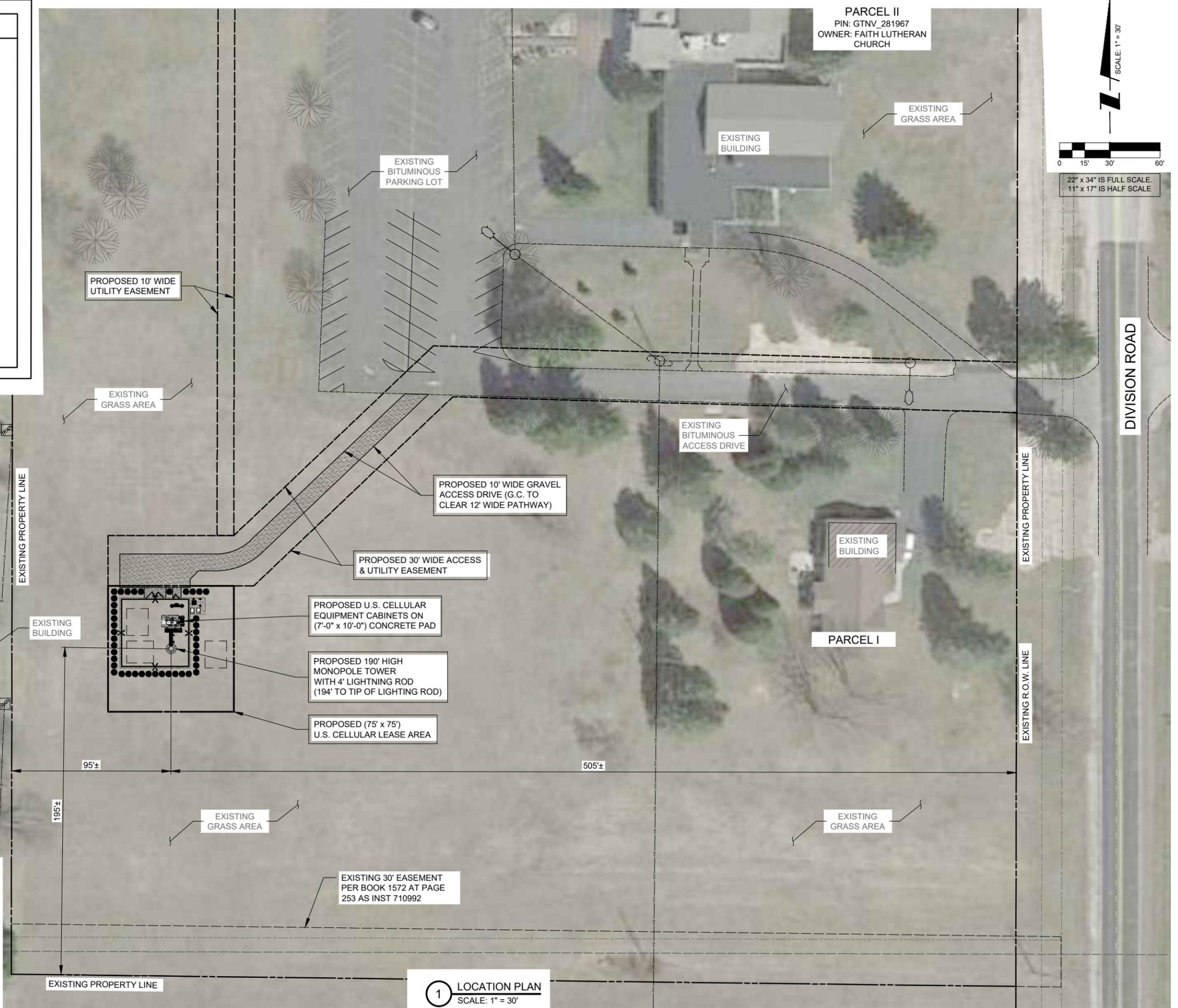
NOTE:  
AERIAL IMAGE TAKEN FROM GOOGLE EARTH.  
G.C. TO FIELD VERIFY EXISTING CONDITIONS  
PRIOR TO START OF CONSTRUCTION.



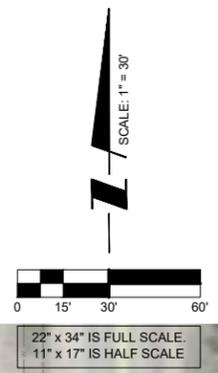
OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED

**SURVEY PERFORMED BY:**

8300 42ND STREET WEST  
ROCK ISLAND, IL 61201  
(O) 309-787-9988  
(F) 309-756-5540  
(E) XCEL@XCELCONSULTANTSINC.COM



PARCEL II  
PIN: GTNV\_281967  
OWNER: FAITH LUTHERAN CHURCH



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POC: STEVE HATMAKER

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600 BUSSE HIGHWAY  
PARK RIDGE, IL 60068  
PH: 847-698-6400  
FAX: 847-698-6401

NO.	DESCRIPTION	DATE	BY
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B	REVISED PER USCC COMMENTS	12/19/22	JGL
0	ISSUED FOR CONSTRUCTION	12/20/22	EW
1	ADDED LANDSCAPE BUFFER	01/11/23	EW

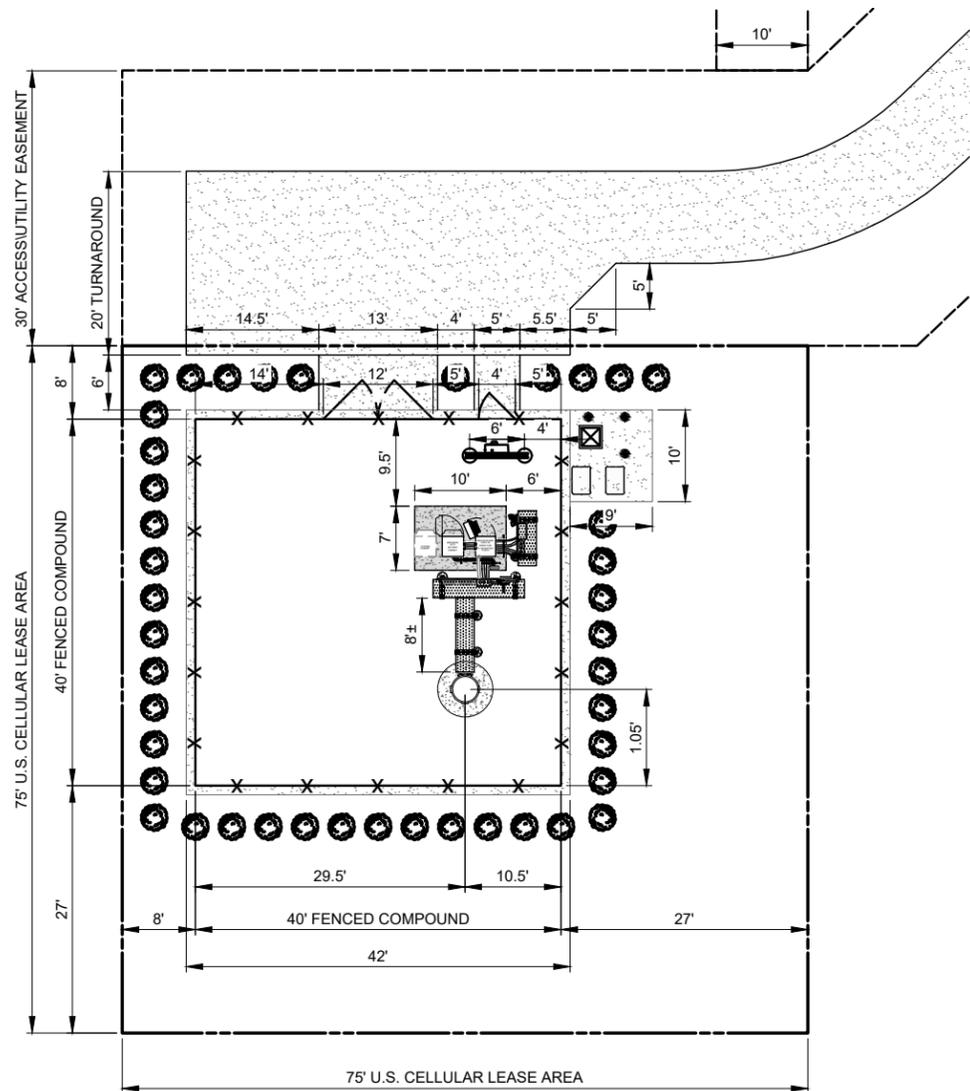
**SITE# 784809**  
**GERMANTOWN**

W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

DRAWN BY: BJC  
CHECKED BY: EW  
DATE: 10/25/22  
PROJECT #: 10-079

SHEET TITLE  
**LOCATION PLAN**

SHEET NUMBER  
**LP**



**2 SITE DIMENSION PLAN**  
SCALE: 1" = 10'

**PAVEMENT MATERIAL**

**ACCESS ROAD + GRAVEL WALKWAY (HATCHED)**

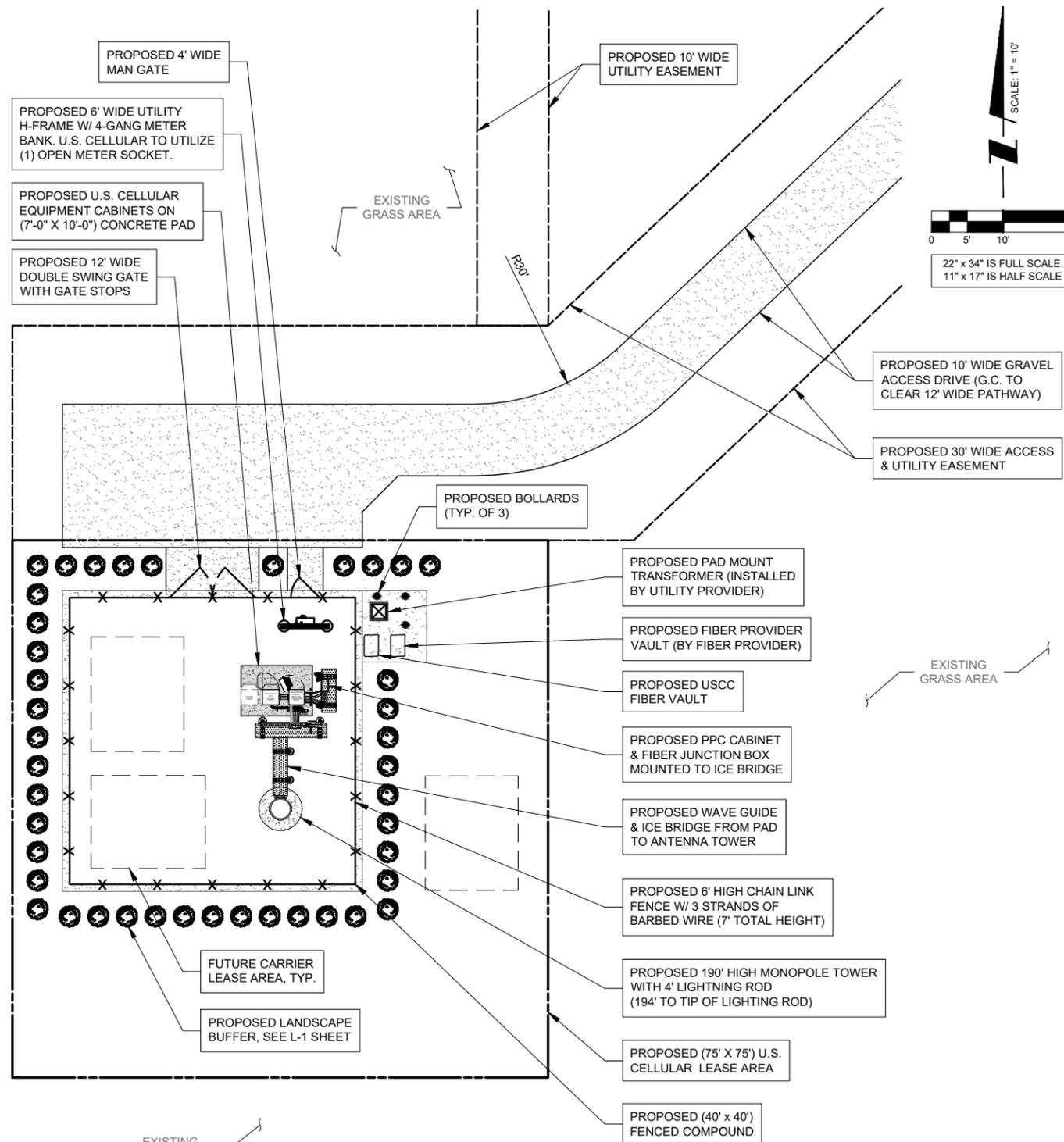
310 S.Y. FINISH AGGREGATE 4" MIN. OF 3/4" (WELL GRADED) CRUSHED AGGREGATE BASE COURSE, 6" MIN. OF 3" BREAKER RUN AGGREGATE BASE COURSE, WOVEN MIRAFI HP270 OR EQUAL

**FENCED COMPOUND + GRAVEL UTILITY AREA**

208 S.Y. 3" MIN. OF 3/4" CRUSHED AGGREGATE WITHOUT FINES, 4 OZ. SPUNBOUNDED WEED BARRIER FABRIC, 6" MIN. OF 3/4" CRUSHED AGGREGATE W/ FINES, 18" MIN. SELECT FILL IN 8" LIFTS



OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED



**1 ENLARGED SITE PLAN**  
SCALE: 1" = 10'

**NOTE:**

- THE CONTRACTOR SHALL INCLUDE AS PART OF THE BID, THE COST OF REMOVAL OF ANY SURFACE VEGETATION AND ORGANIC SOILS OR OTHER DELETERIOUS MATERIALS AND THE REPLACEMENT WITH ENGINEERED BACKFILL FOR THE AGGREGATE ACCESS DRIVE AND LEASE SITE, IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
- CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING PAVEMENT. CONTRACTOR SHALL PHOTOGRAPH AND VIDEOTAPE EXISTING PAVEMENT PRIOR TO CONSTRUCTION. ANY DAMAGE CAUSED DURING CONSTRUCTION SHALL BE REPLACED TO EXISTING OR BETTER CONDITION AT NO ADDITIONAL COST.
- BEFORE AND DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL AS NECESSARY IN THE FORM OF SILT FENCES FOR THE SITE AND BALES AROUND ANY EXISTING MANHOLES, INLETS, OR CATCHBASINS SUSCEPTIBLE TO EROSION. EROSION CONTROL MEASURES SHALL BE PERIODICALLY INSPECTED TO ENSURE PROPER FUNCTION. EROSION CONTROL SHALL BE REMOVED UPON COMPLETION OF WORK.

- THE CONTRACTOR WILL, UPON BECOMING AWARE OF SUBSURFACE OR LATENT PHYSICAL CONDITIONS DIFFERING FROM THOSE DISCLOSED BY THE ORIGINAL SOIL INVESTIGATION WORK, PROMPTLY NOTIFY THE OWNER VERBALLY AND IN WRITING, AS TO THE NATURE OF THE DIFFERING CONDITIONS. NO CLAIM BY THE CONTRACTOR FOR ANY CONDITIONS DIFFERING FROM THOSE ANTICIPATED IN THE PLANS AND SPECIFICATIONS AND DISCLOSED BY THE SOIL STUDIES WILL BE ALLOWED UNLESS THE CONTRACTOR HAS SO NOTIFIED THE OWNER, VERBALLY AND IN WRITING, AS REQUIRED ABOVE, OF SUCH DIFFERING SUBSURFACE CONDITIONS.
- CONTRACTOR TO PROVIDE APPROXIMATE 50'X50' STAGING AREA AND TEMPORARY ROAD. CONTRACTOR SHALL COORDINATE WITH ANTENNA CONTRACTOR, A STAGING AREA AND TEMPORARY ROAD THAT IS ACCEPTABLE TO THE OWNER. STAGING AREA AND TEMPORARY ROAD SHALL BE RESTORED TO EXISTING CONDITIONS AS NECESSARY UPON COMPLETION OF THE PROJECT.

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**GERMANTOWN**

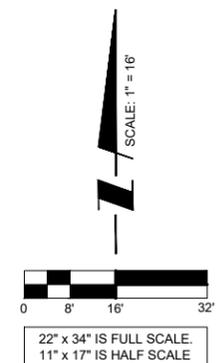
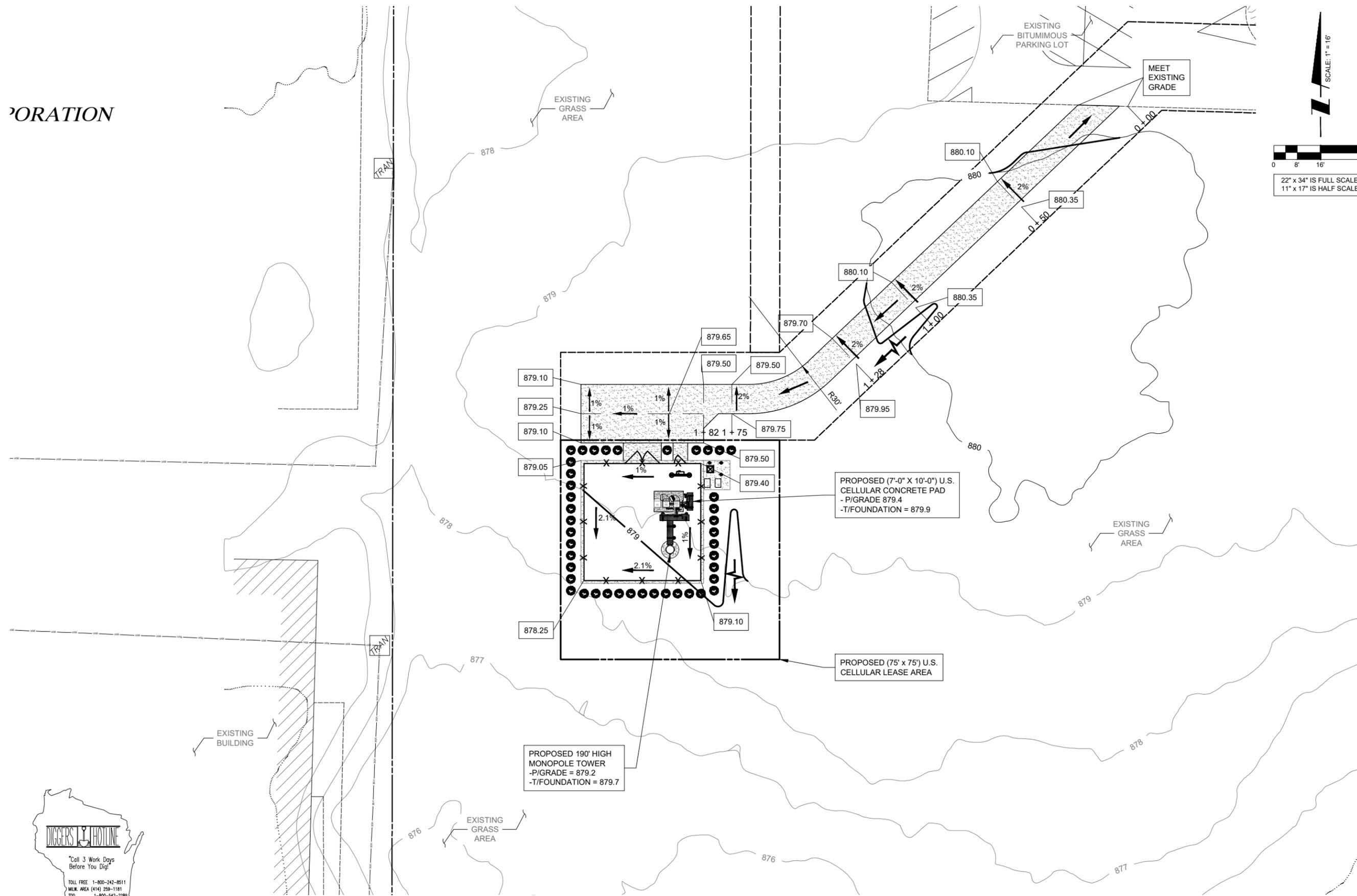
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SHEET TITLE  
**ENLARGED SITE PLAN**

SHEET NUMBER  
**C-1**

ORATION



OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED

1 SITE GRADING PLAN  
SCALE: 1" = 16'

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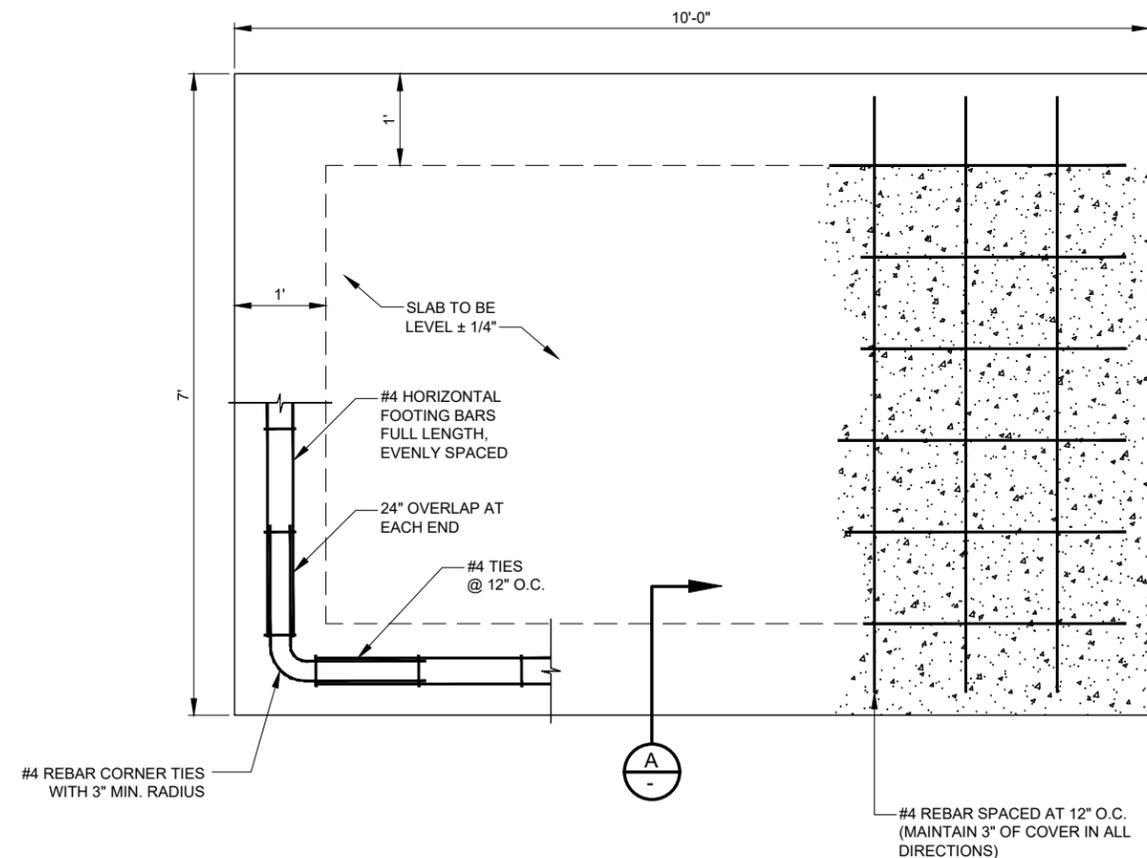
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SHEET TITLE  
**SITE GRADING PLAN**

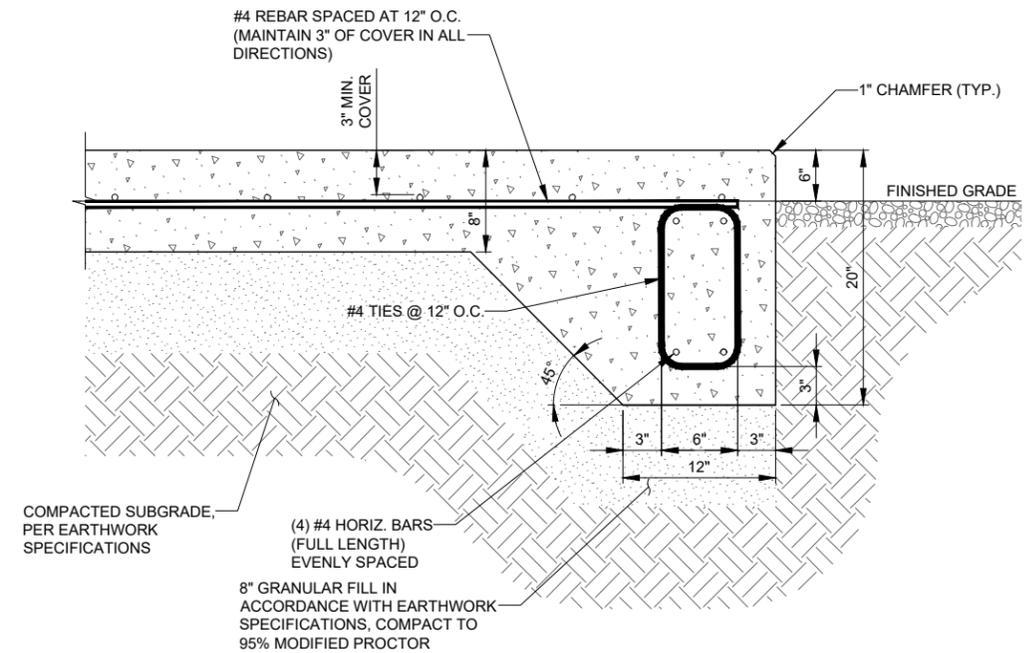
SHEET NUMBER  
**C-2**



1 EQUIPMENT FOUNDATION PLAN  
N.T.S.

CONCRETE AND REINFORCING NOTES:

1. ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH LOCAL BUILDING CODE REQUIREMENTS AND MOST CURRENT VERSION OF ACI STANDARDS.
2. ALL CONCRETE UNLESS SPECIFICALLY NOTED SHALL BE NORMAL WEIGHT(145 PCF) AND SHALL ACHIEVE A 28-DAY COMPRESSIVE STRENGTH ( $f_c$ ) OF 4,000 PSI. EXPOSED EXTERIOR CONCRETE TO BE AIR ENTRAINED WITH 6% +/- 1 % AIR CONTENT. CONTRACTOR TO PERFORM CONCRETE SLUMP TEST (4" MAX SLUMP). NO WATER TO BE ADDED AFTER SLUMP HAS BEEN MEASURED.
3. ALL CONCRETE REINFORCING SHALL BE ASTM A615 GRADE 60 AND PLACED IN ACCORDANCE WITH ACI STANDARDS
4. REMOVE ALL ORGANIC MATERIAL, SOFT AND/OR UNSUITABLE SOILS WITHIN FOUNDATION FOOTPRINT. DO NOT UTILIZE THESE SOILS FOR BACKFILL.
5. CONSULT GEOTECHNICAL INVESTIGATION REPORT FOR ANTICIPATED SOIL CONDITIONS AND CONSTRUCTION CONSIDERATIONS.
6. FOUNDATION DESIGN BASED ON A PRESUMPTIVE SOIL BEARING CAPACITY OF 2000 PSF AND MAX. PLASTICITY INDEX OF 20, CONTRACTOR TO CONFIRM BEARING SOILS MEET THESE CONDITIONS BEFORE INSTALLATION.
7. SOILS NOT MEETING THE DESIGN BEARING STRENGTH SHALL BE UNDERCUT AND REPLACED WITH 3-INCH BREAKER STONE. UNDERCUT ONE FOOT ON EACH SIDE OF THE FOOTING FOR EVERY FOOT IN DEPTH. CONSULT WITH ENGINEER FOR REQUIRED UNDERCUT DEPTH.
8. CONTRACTOR TO ENSURE POSITIVE DRAINAGE FROM ALL FOUNDATIONS.



A TYPICAL FOUNDATION SECTION  
N.T.S.

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SITE# 784809  
GERMANTOWN

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DIVISION ROAD,  
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DRAWN BY:	BJC
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PROJECT #:	10-079

SHEET TITLE  
CONCRETE SLAB  
FOUNDATION PLAN

SHEET NUMBER  
**C-3**

**EQUIPMENT KEY NOTES:**

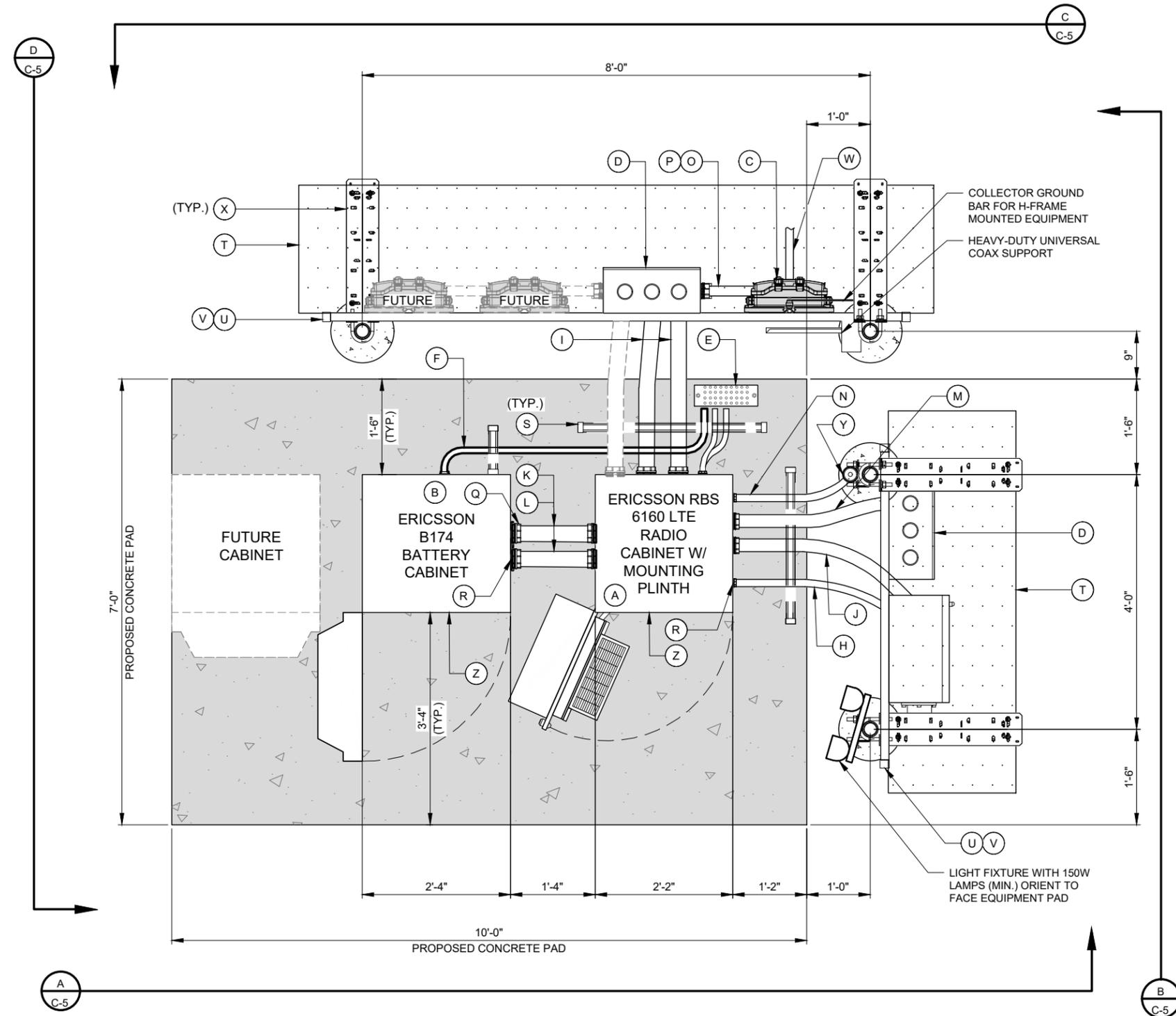
- (A) ERICSSON RBS 6160 EQUIPMENT CABINET WITH MOUNTING PLINTH
- (B) ERICSSON B174 BATTERY CABINET
- (C) RAYCAP SPD RUSDC-6267-PF-48 SECURED TO H-FRAME AT EQUIPMENT PAD
- (D) 12" x 12" x 6" FIBER/POWER JUNCTION BOX SECURED TO UNISTRUT
- (E) MASTER GROUND BAR (MGB) MOUNTED TO CONCRETE PAD ON INSULATORS. MGB SHALL BE BONDED TO THE EQUIPMENT GROUND RING.

**CONDUITS:**

- (F) 3/4" (1" O.D.) LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR GROUND LEAD BETWEEN CABINET AND MGB (TYP.)
- (G) 1" CONDUIT W/ CAT-5 FOR ALARM TO RBS 6160 CABINET
- (H) 1" (1-1/4" O.D.) LIQUID TIGHT FLEXIBLE METALLC CONDUIT FROM PPC TO RBS 6161 RADIO CABINET FOR ALARM CABLING
- (I) PROPOSED 2-1/2" CONDUIT FOR FIBER & 2-1/2" CONDUIT FOR POWER TO JUNCTION BOX
- (J) PROPOSED 2" (2-3/8" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM PPC TO RBS 6160 RADIO CABINET FOR POWER
- (K) 3" (3.460" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM BATTERY BACKUP CABINET TO EQUIPMENT CABINET PLINTH FOR CAT5, ALARM CABLING AND BATTERY BACKUP CABINET GROUNDING
- (L) 3" (3.460" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM BATTERY BACKUP CABINET TO EQUIPMENT CABINET PLINTH FOR AC POWER
- (M) 2" (2-3/8" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM FIBER JUNCTION BOX TO RBS 6160 RADIO CABINET FOR FIBER OPTIC; LB TO BE INSTALLED ABOVE GRADE FOR TRANSITION FROM PVC TO LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT.
- (N) 1" (1-1/4" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM EQUIPMENT CABINET PLINTH TO UNISTRUT RACK FOR GPS CABLING
- (O) 1-1/2" (1.9" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM JUNCTION BOX TO RAYCAP SPD FOR POWER CABLING (TYP. PER RAYCAP SPD)
- (P) 1-1/4" (1.66" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM JUNCTION BOX TO RAYCAP SPD FOR FIBER CABLING (TYP. PER RAYCAP SPD)
- (Q) LIQUID-TIGHT CONDUIT FITTING (TYP.)
- (R) ROXTEC SEALING SYSTEM (OR APPROVED EQUAL) AT CONDUIT STUB-UP AREA FOR RODENT PROTECTION.
- (S) UNISTRUT CONDUIT TIE DOWN

**EQUIPMENT PAD RACK KEY NOTES:**

- (T) 2'-0" WIDE ICE BRIDGE, 30' LENGTH PROVIDED
- (U) P-1000T GALV. UNISTRUT OR APPROVED EQUIV.; UNISTRUT TO BE CUT TO LENGTH TO ENSURE PROPER FASTENING TO POST WITHOUT EXCESS
- (V) UNISTRUT END CAP AT EACH END OF UNISTRUT; SITE PRO 1 #: UNICAP OR APPROVED EQUIV.
- (W) HYBRID CABLE; MAINTAIN MINIMUM BEND RADIUS
- (X) HEAVY-DUTY UNIVERSAL COAX SUPPORT BRACKET
- (Y) GPS ANTENNA SECURED TO ICE BRIDGE POST
- (Z) ISOLATION MAT UNDER CABINETS



**1** EQUIPMENT CABINET PLAN  
N.T.S.

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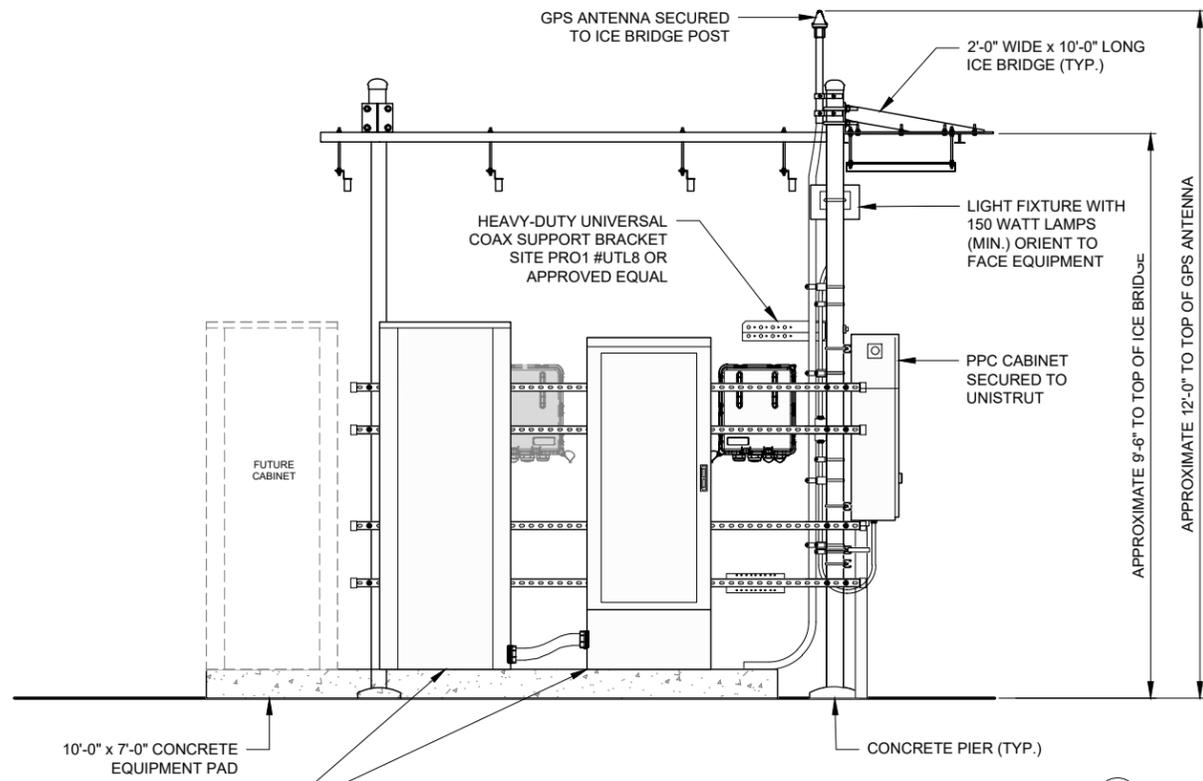
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**GERMANTOWN**

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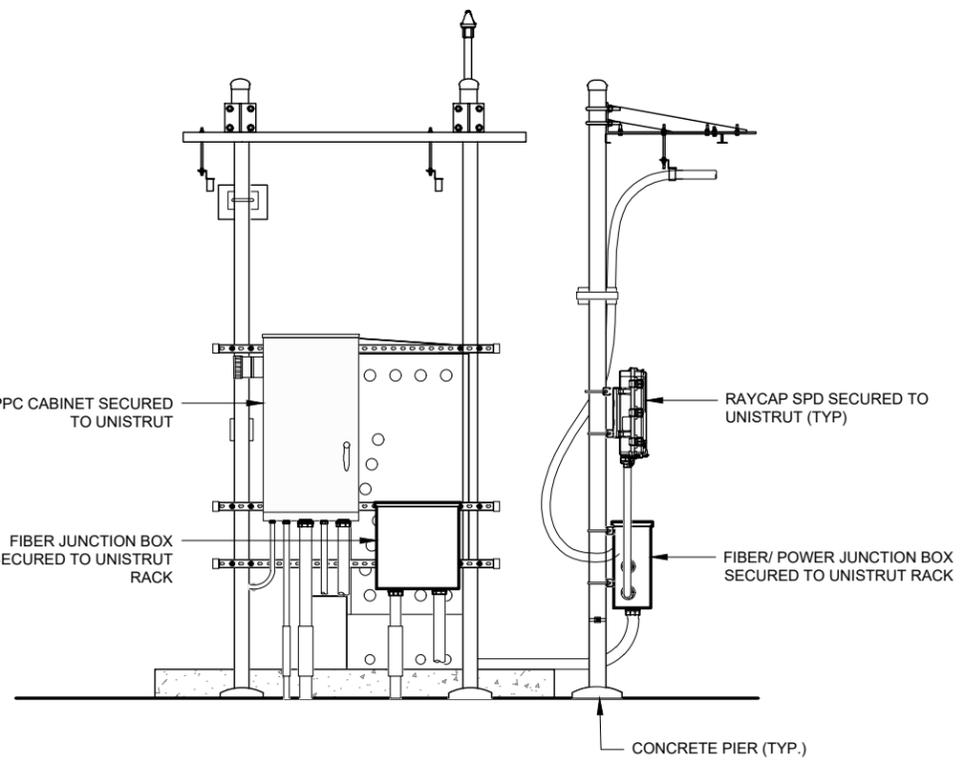
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**EQUIPMENT CABINET PLAN**

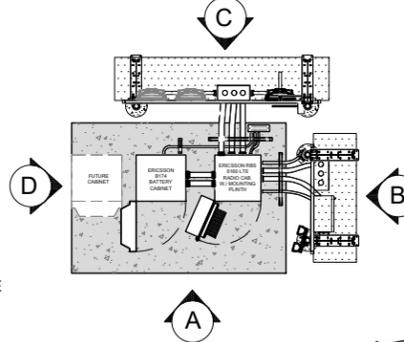
SHEET NUMBER  
**C-4**



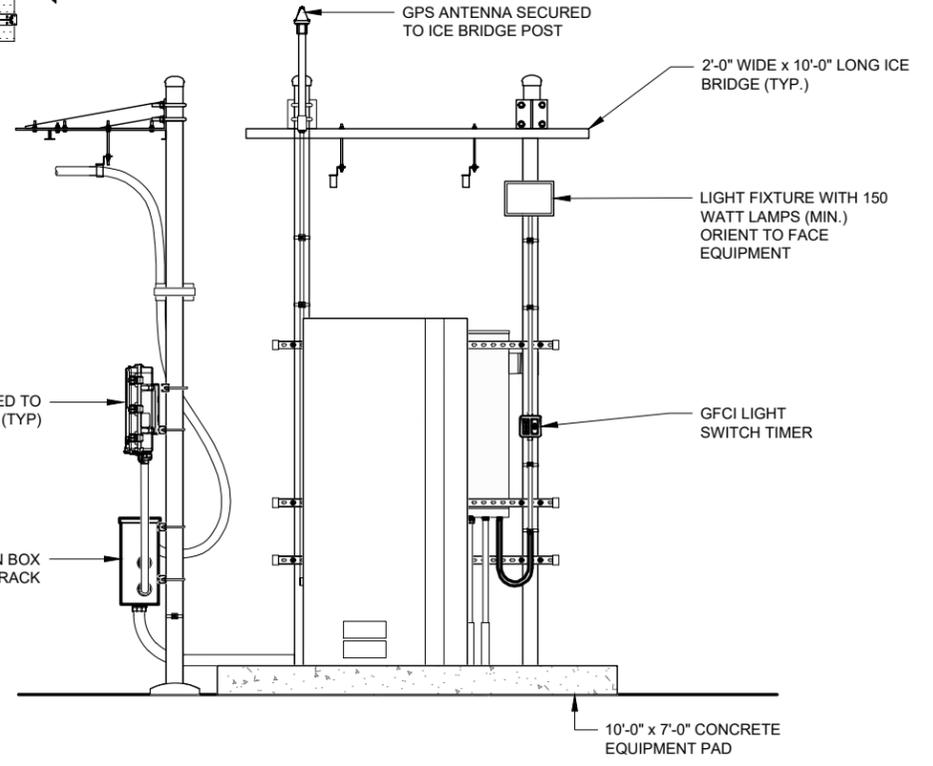
**A** EQUIPMENT PAD ELEVATION  
N.T.S.



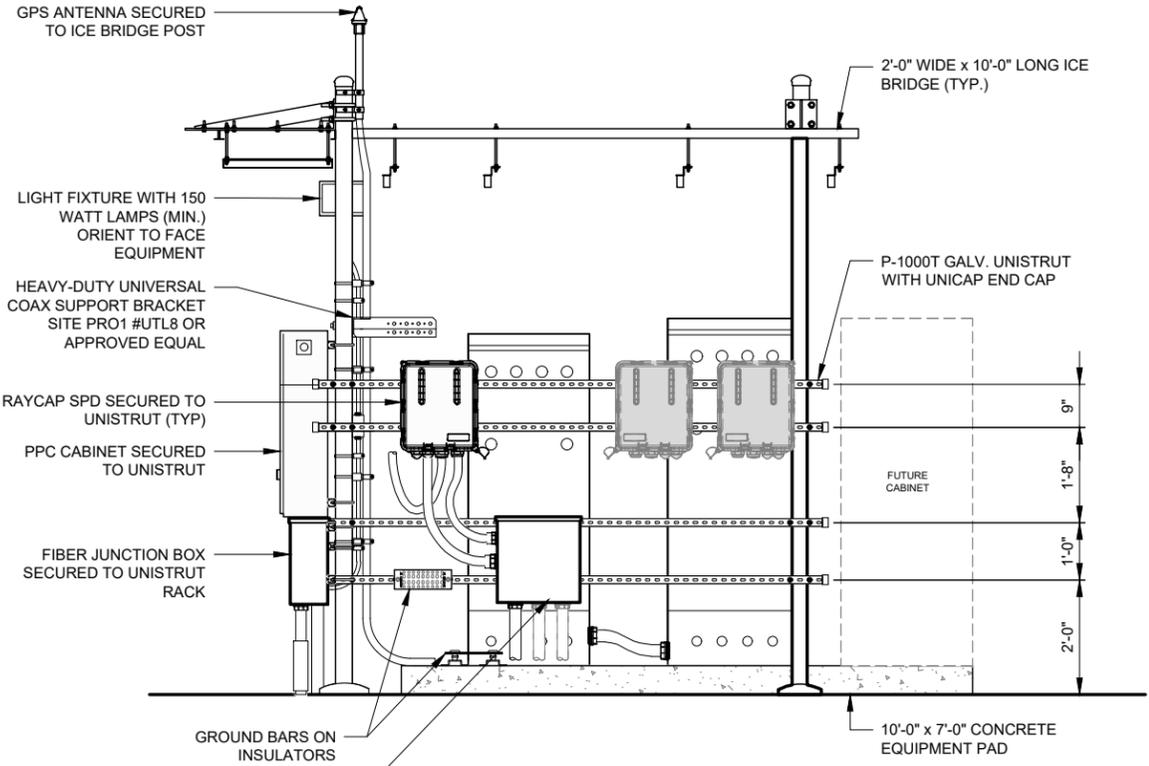
**B** EQUIPMENT PAD ELEVATION  
N.T.S.



**C** EQUIPMENT PAD ELEVATION  
N.T.S.



**D** EQUIPMENT PAD ELEVATION  
N.T.S.



**C** EQUIPMENT PAD ELEVATION  
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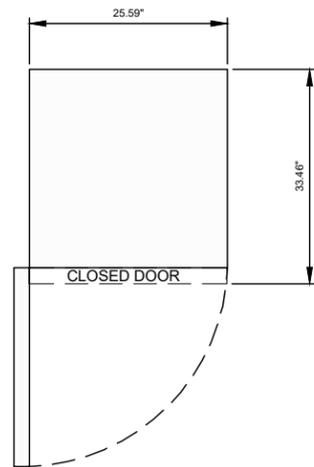
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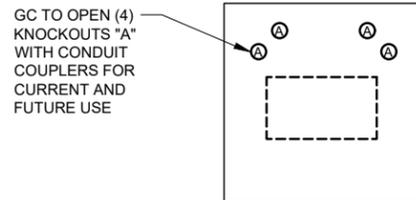
SHEET TITLE  
**EQUIPMENT PAD ELEVATIONS**

SHEET NUMBER  
**C-5**

- NOTES:
- GC TO INSTALL POWER CABLE FROM PPC CABINET TO ENCLOSURE 6160.
  - ERICSSON TO VERIFY AC POWER AT ENCLOSURE PRIOR TO POWERING CABINET.
  - GC TO WIRE AC OUTLET TO PPC AT INITIAL INSTALLATION.
  - ERICSSON 12" BASE/PLINTH, PN# SXX 125 509/1, TO BE INCLUDED IN ERICSSON BOM.



TOP VIEW

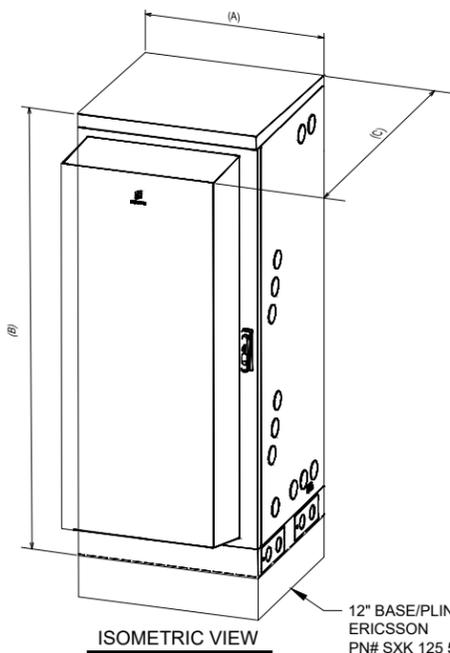


GC TO OPEN (4) KNOCKOUTS "A" WITH CONDUIT COUPLERS FOR CURRENT AND FUTURE USE

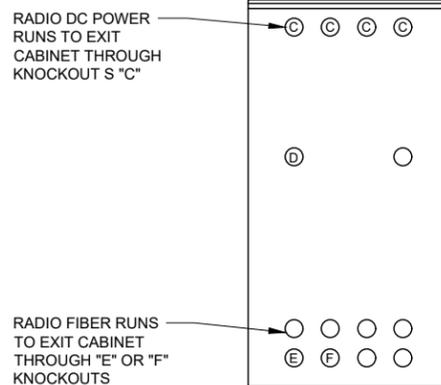
NOTE: ALL UNUSED OPENINGS MUST BE FILLED/SEALED TO DISCOURAGE RODENTS / PESTS AND ENSURE CABINET ENVIRONMENTAL COOLING & HEATING

BOTTOM VIEW  
KNOCKOUT INSTRUCTIONS

Dimensions	
Width (A)	650 mm / 25.5906 in
Height (B)	1450 mm / 57.08661 in (without base frame) 1600 mm / 62.99213 in (without base frame)
Depth (C)	850 mm / 33.4646 in
Weight	
Empty enclosure	176 kg / 388.014 lb



ISOMETRIC VIEW

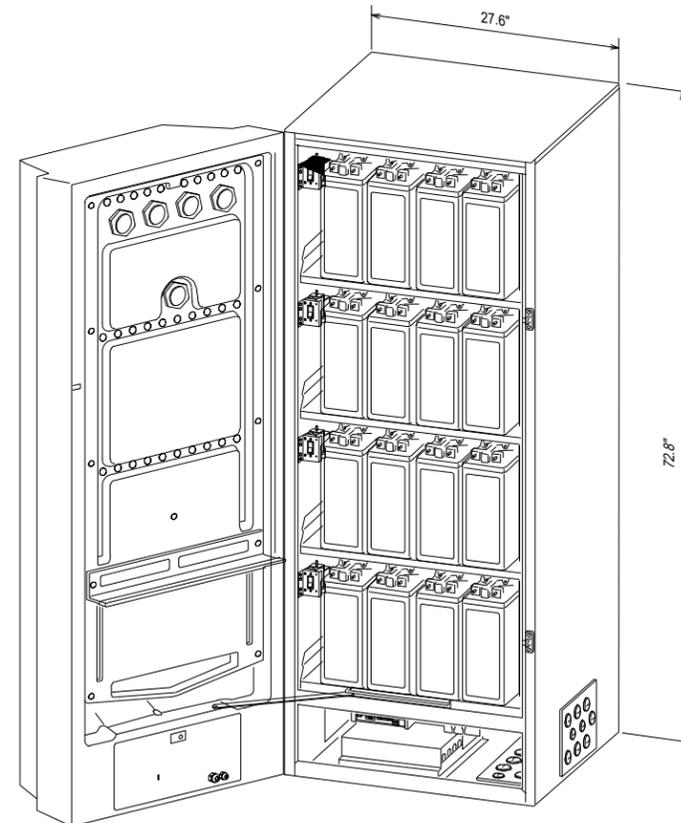
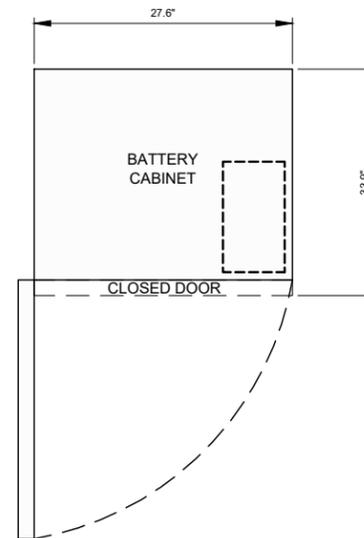


RADIO DC POWER RUNS TO EXIT CABINET THROUGH KNOCKOUT S "C"

NOTE: \*#10 AWG POWER CABLE TO BE PROVIDED BY USCC TO BE USED FOR RADIO DC POWER JUMPERS (TOWER TOP & BOTTOM)

RADIO FIBER RUNS TO EXIT CABINET THROUGH "E" OR "F" KNOCKOUTS

BACK VIEW  
KNOCKOUT INSTRUCTIONS



**MANUFACTURER:** ERICSSON  
**MODEL:** B174  
**DIMENSION:** 72.8" x 27.6" x 33.9" (H x W x D)  
**DESCRIPTION:** A -48 V/840 AH OUTDOOR BATTERY BACKUP SYSTEM

**CLEARANCE REQUIREMENTS:**

- FRONT = 28"
- REAR = 8"
- LEFT = 39"
- RIGHT = 10"

**NOTE:**

- CONTRACTOR TO INSTALL 1/2" THICK SKIRTBOARD RUBBER MAT BENEATH CABINET; PAD TO HAVE A 1/2" SMALLER FOOTPRINT THAN THE CABINET, PERIMETER OF PAD TO BE SEALED WITH OUTDOOR GRADE 100% SILICONE CAULK.
- ATTACHED TO PROPOSED HSS PER MANUFACTURER RECOMMENDATIONS.
- CONTRACTOR TO VERIFY EQUIPMENT REQUIREMENTS WITH ERICSSON PRIOR TO INSTALLATION.

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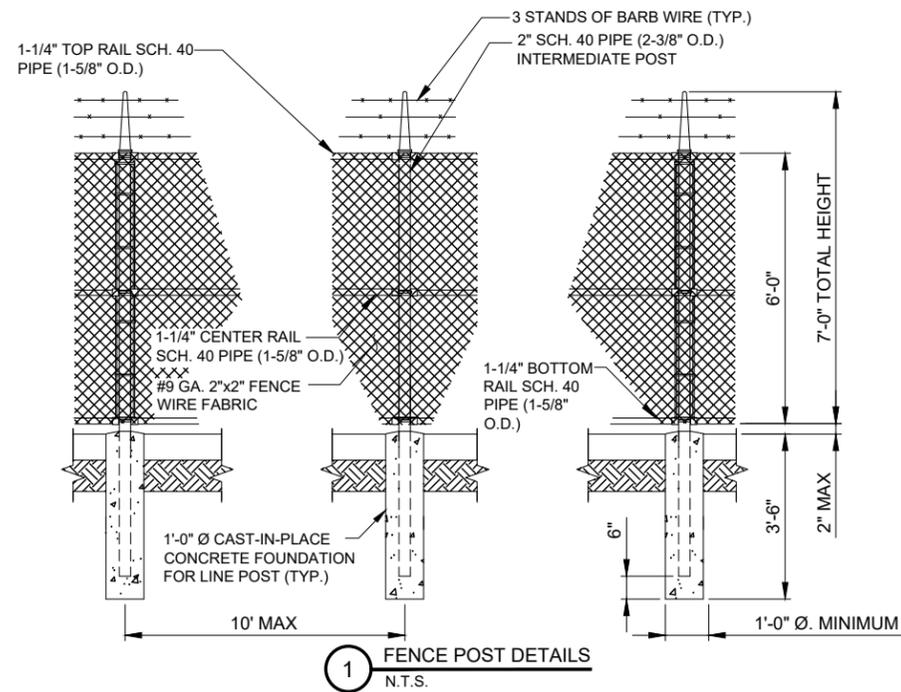
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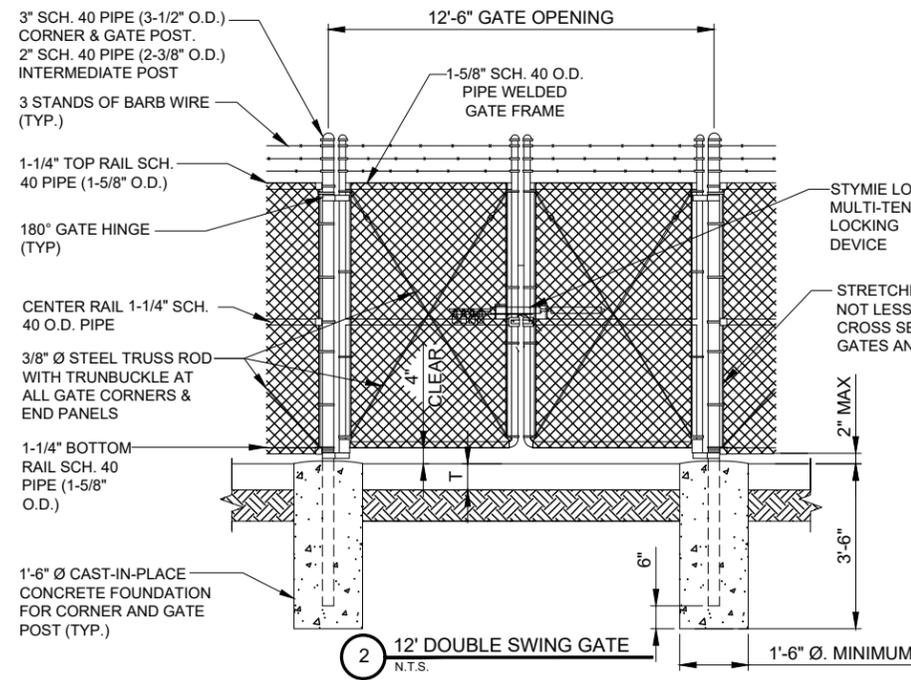
SHEET TITLE  
**CABINET DETAILS**

SHEET NUMBER

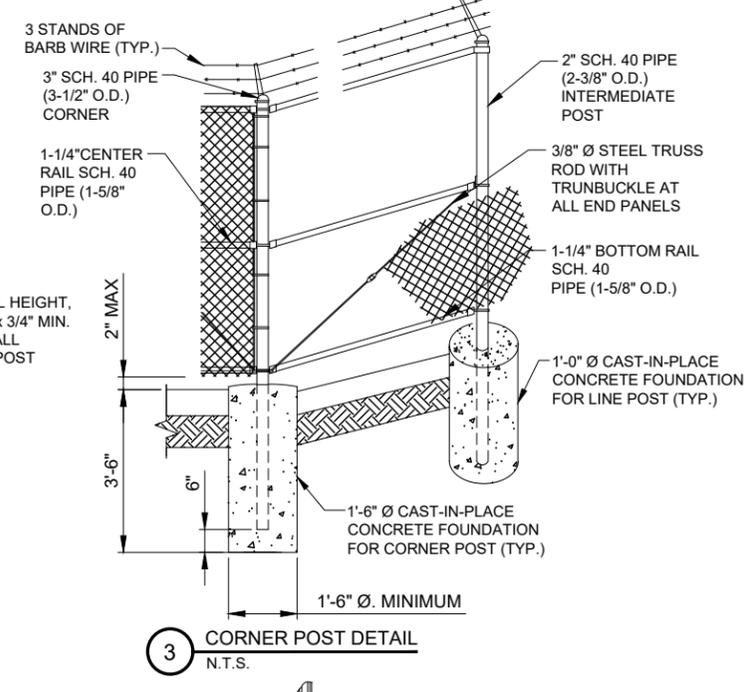
**C-6**



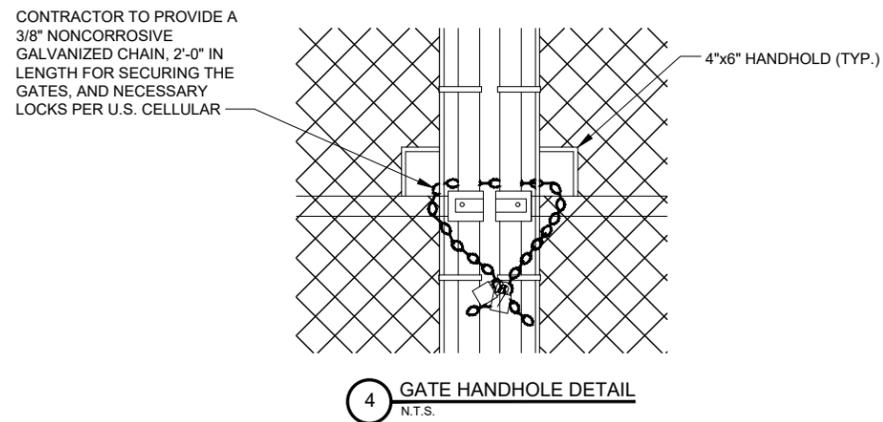
1 FENCE POST DETAILS  
N.T.S.



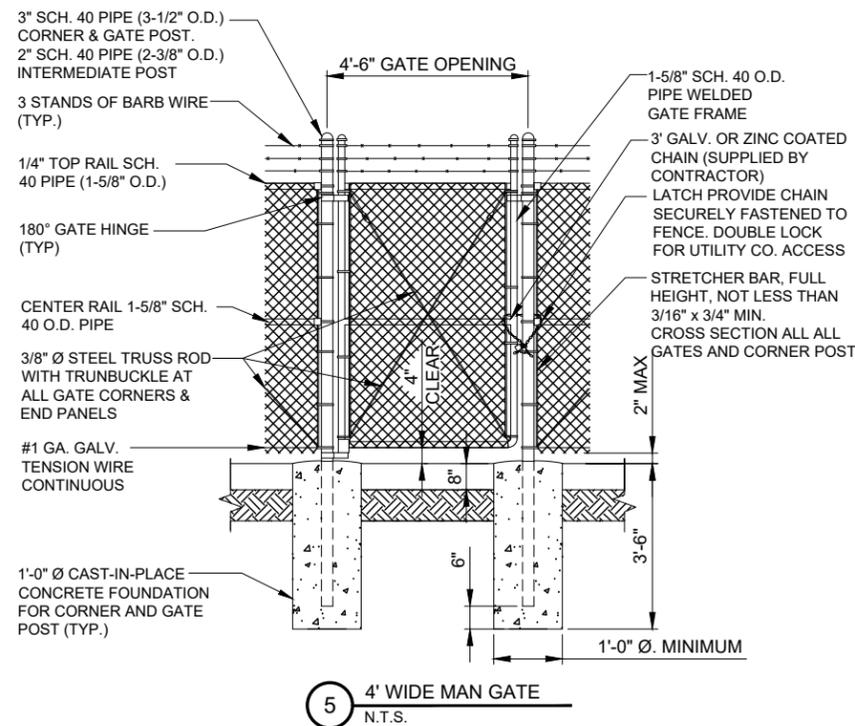
2 12' DOUBLE SWING GATE  
N.T.S.



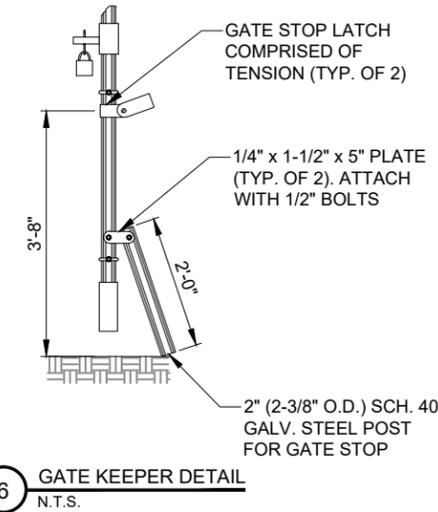
3 CORNER POST DETAIL  
N.T.S.



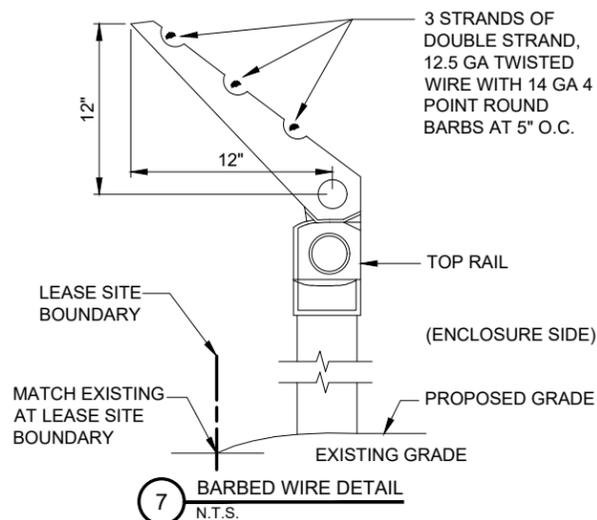
4 GATE HANDHOLE DETAIL  
N.T.S.



5 4' WIDE MAN GATE  
N.T.S.



6 GATE KEEPER DETAIL  
N.T.S.



7 BARBED WIRE DETAIL  
N.T.S.

**NOTE:**  
G.C. TO ORDER  
BROWN PRIVACY  
SLATS WITH FENCE

- FENCING NOTES:
1. ALL STEEL MATERIAL SHALL BE HOT-DIPPED GALVANIZED AND CONFORM TO FEDERAL SPECIFICATION RR-F-191.
  2. GATE HINGE BOLTS SHALL HAVE THEIR THREADS PEENED OR WELDED TO PREVENT UNAUTHORIZED REMOVAL.
  3. THE FENCE SHALL BE GROUNDED AS SHOWN IN ELECTRICAL DETAILS
  4. ALL FENCING AND RELATED ASSEMBLIES SHALL BE GALVANIZED ZINC FINISH (BARB WIRE-ASTM A585 FABRIC-ASTM A392-84 FRAME WORK-ASTM F669-81)
  5. 2. ALL CONCRETE FOOTINGS SHALL BE 6.1 BAG MIX 3000 PSI CONCRETE
  6. ALL CORNER POST SHALL HAVE BARB WIRE/ ARMS LEANING OUT.
  7. ALL GATE FABRIC, POSTS AND HARDWARE SHALL HAVE A GALVANIZED FINISH CONFORMING TO ASTM A153 OR 120/123

GENERAL NOTES

1) G.C. IS RESPONSIBLE TO PAY AND SCHEDULE THIRD PARTY INSPECTIONS FOR BOTH TOWER AND BUILDING FOUNDATIONS. CAPITAL TELECOM GETS COPIES AT CLOSE OUT.

COPIES OF THE REPORT ARE ISSUED TO THE CONTRACTOR FOR CONVENIENCE ONLY. THE REPORT IS NOT A PART OF THE CONTRACT DOCUMENTS. NEITHER THE OWNER NOR THE ENGINEER/ARCHITECT GUARANTEE THE ACCURACY OR VALIDITY OF THE DATA CONTAINED THEREIN, NOR DO THEY ASSUME ANY RESPONSIBILITY FOR THE CONTRACTOR'S USE OR INTERPRETATION OF THE DATA CONTAINED THEREIN.

GEOTEXTILE PARAMETERS		
PROPERTY	MINIMUM VALUE (a)	TEST METHOD
GRAB STRENGTH	180 LBS.	ASTM D-4632-91
PUNCTURE STRENGTH	75 LBS.	ASTM D-4833-88
BURST STRENGTH	290 LBS.	ASTM D-3786
TRAPEZOIDAL TEAR	50 LBS.	ASTM D-4571-87

(a) ALL VALUES REPRESENT MINIMUM ROLL VALUES

NOTES:  
THE FABRIC SHOULD BE PLACED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. INTERSECTIONS OF SHEETS MUST BE SEWN OR SUFFICIENTLY OVERLAPPED (AT LEAST 24 INCHES) OR AS SPECIFIED BY THE MANUFACTURER). THE GEOTEXTILE SHEETS SHOULD ALSO BE PLACED TAUT TO REDUCE WRINKLES OR FOLDS. CARE MUST BE EXERCISED TO PREVENT PHYSICAL DAMAGE OF THE GEOTEXTILE PRIOR TO, DURING AND AFTER INSTALLATION. UTILITIES SHOULD BE INSTALLED BEFORE PLACING THE FABRIC.

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600 BUSSE HIGHWAY  
PARK RIDGE, IL 60068  
PH: 847-698-6400  
FAX: 847-698-6401

REVISIONS		NO.	DATE	BY	DESCRIPTION
		A	11/04/22	BJC	ISSUED FOR REVIEW
		B	12/19/22	JGL	REVISED PER USCC COMMENTS
		0	12/20/22	EW	ISSUED FOR CONSTRUCTION
		1	01/11/23	EW	ADDED LANDSCAPE BUFFER

**SITE# 784809**  
**GERMANTOWN**

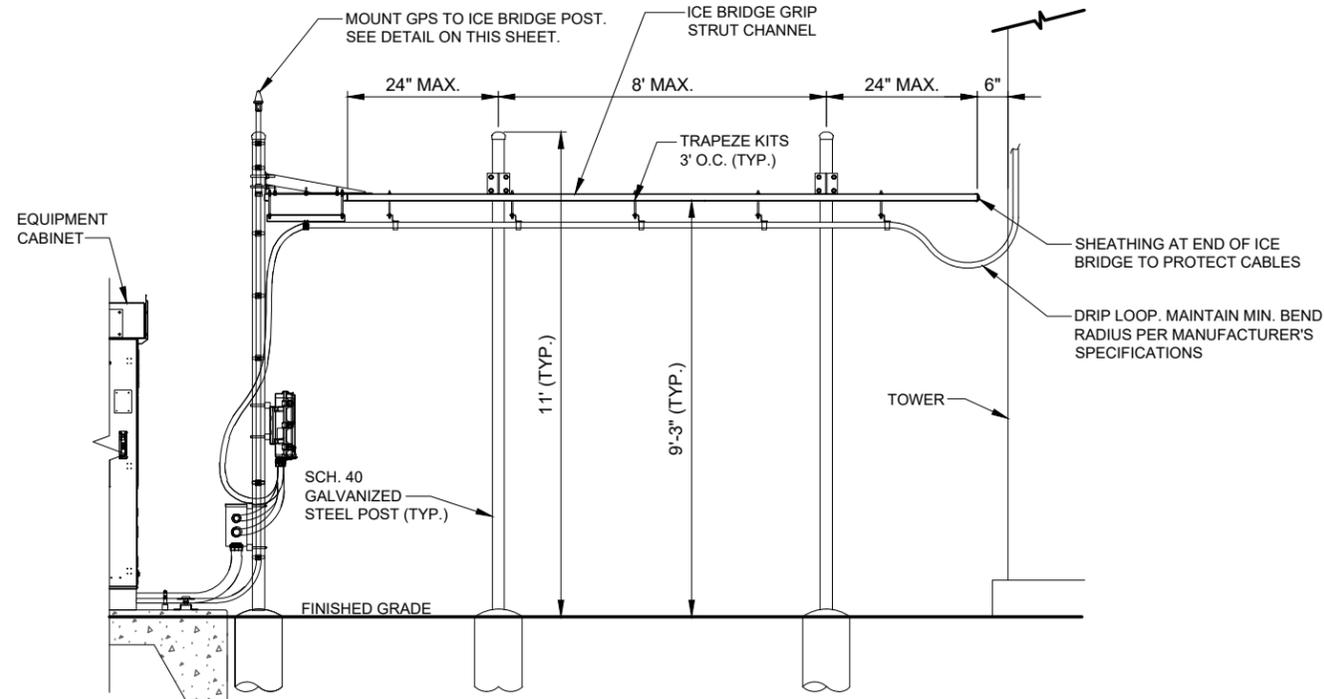
W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

DRAWN BY: BJC  
CHECKED BY: EW  
DATE: 10/25/22  
PROJECT #: 10-079

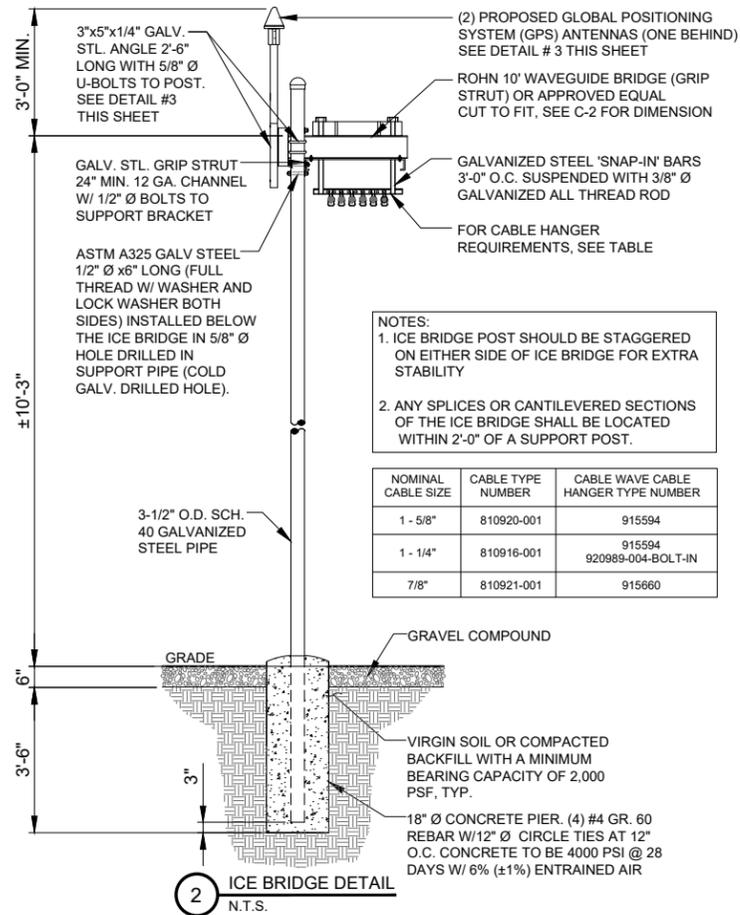
SHEET TITLE  
**FENCE DETAILS**

SHEET NUMBER

**C-7**

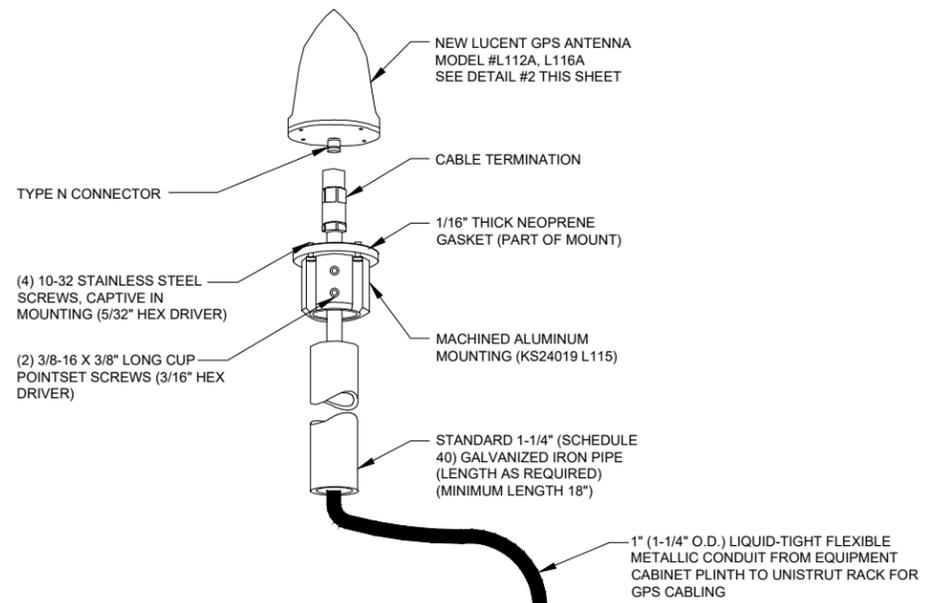


**1** ICE BRIDGE INSTALLATION DETAIL  
N.T.S.



- NOTES:**
- ICE BRIDGE POST SHOULD BE STAGGERED ON EITHER SIDE OF ICE BRIDGE FOR EXTRA STABILITY
  - ANY SPLICES OR CANTILEVERED SECTIONS OF THE ICE BRIDGE SHALL BE LOCATED WITHIN 2'-0" OF A SUPPORT POST.

NOMINAL CABLE SIZE	CABLE TYPE NUMBER	CABLE WAVE CABLE HANGER TYPE NUMBER
1 - 5/8"	810920-001	915594
1 - 1/4"	810916-001	915594 920989-004-BOLT-IN
7/8"	810921-001	915660



**3** TYPICAL GPS DETAIL  
N.T.S.

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**SITE# 784809**  
**GERMANTOWN**

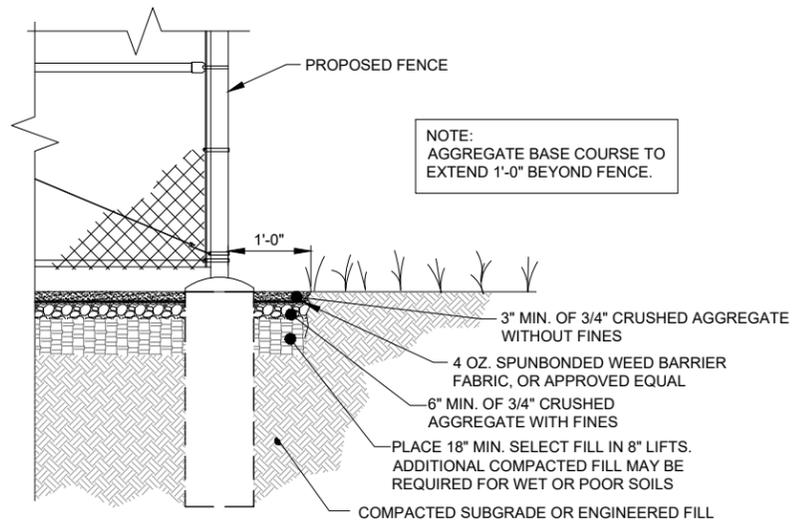
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SHEET TITLE  
**SITE DETAILS**

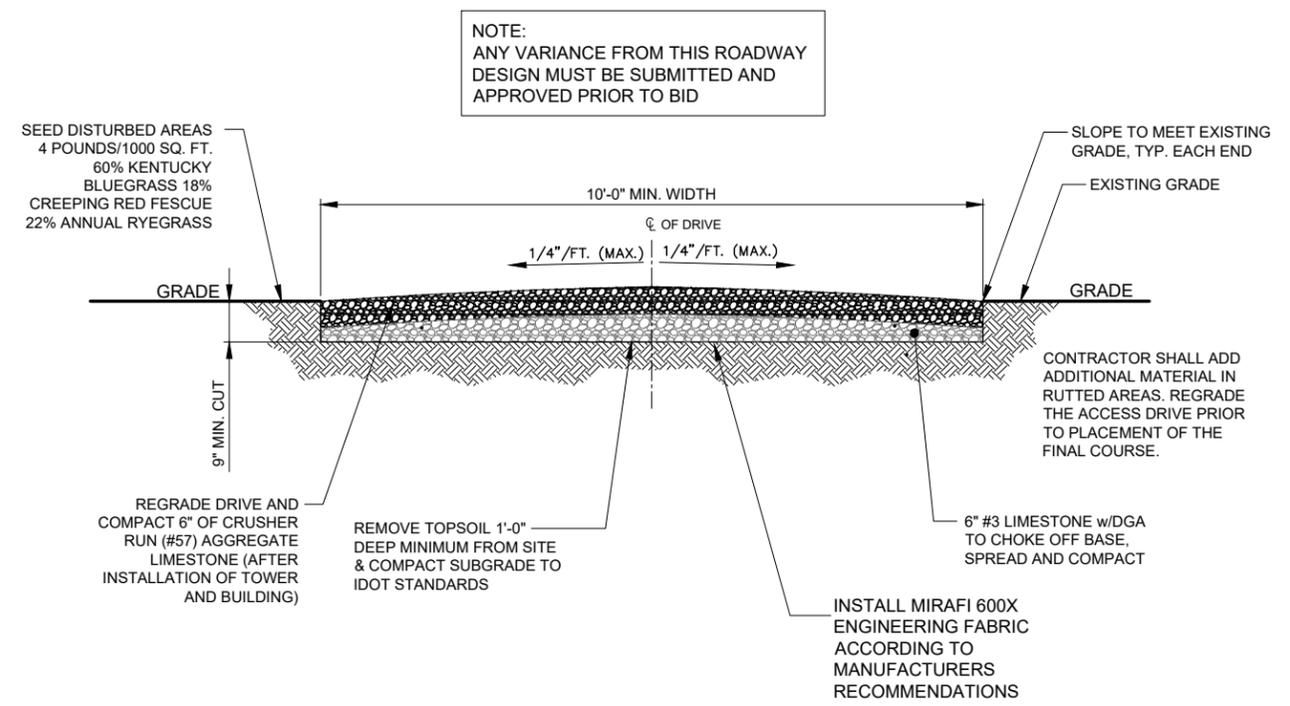
SHEET NUMBER

**C-8**

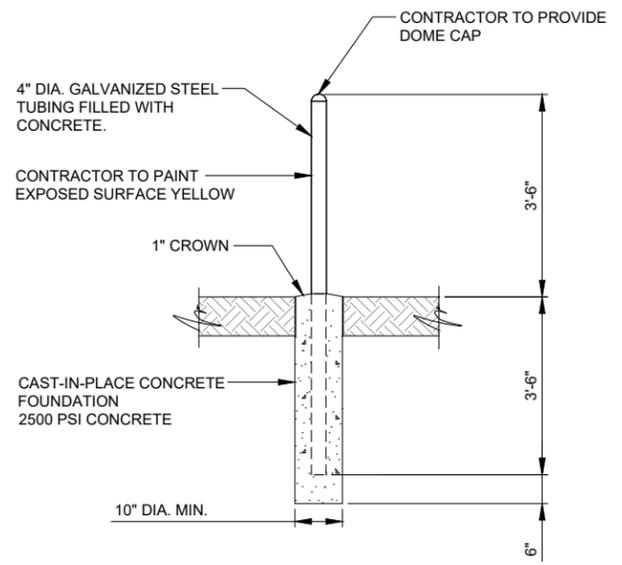


1 AGGREGATE CROSS-SECTION  
N.T.S.

NOTE:  
G.C. TO CLEAR 12' WIDE PATH FOR GRAVEL ACCESS DRIVE



3 GRAVEL ROAD SECTION - CROWN  
SCALE: N.T.S.

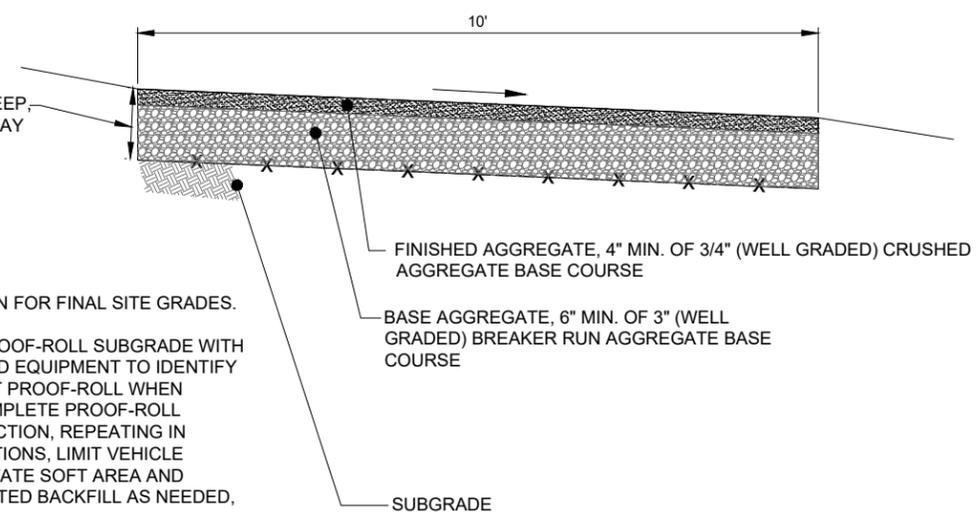


2 BOLLARD DETAIL  
N.T.S.

REMOVE TOPSOIL 10" DEEP, SPREAD ALONG DRIVEWAY

NOTES:

- REFER TO GRADING PLAN FOR FINAL SITE GRADES.
- CONTRACTOR SHALL PROOF-ROLL SUBGRADE WITH HEAVY PNEUMATIC-TIRED EQUIPMENT TO IDENTIFY SOFT POCKETS. DO NOT PROOF-ROLL WHEN SUBGRADE IS WET. COMPLETE PROOF-ROLL SUBGRADE IN ONE DIRECTION, REPEATING IN PERPENDICULAR DIRECTIONS, LIMIT VEHICLE SPEED TO 3 mph. EXCAVATE SOFT AREA AND REPLACE WITH COMPACTED BACKFILL AS NEEDED, AND RE-PROOF-ROLL.



3 GRAVEL ROAD SECTION - SLOPE  
SCALE: N.T.S.

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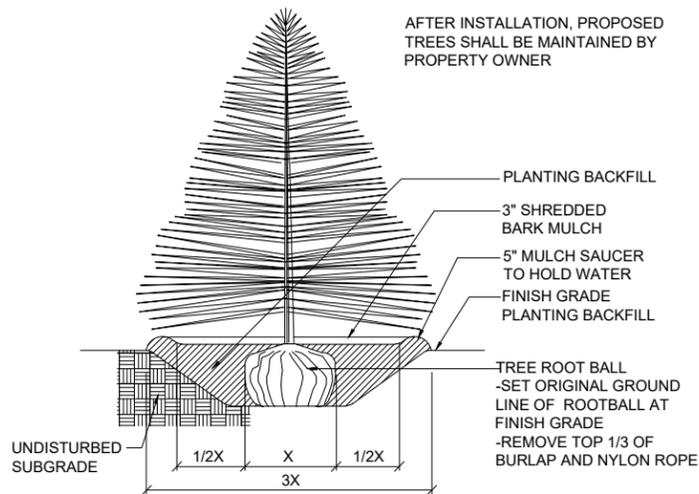
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SHEET TITLE  
SITE DETAILS

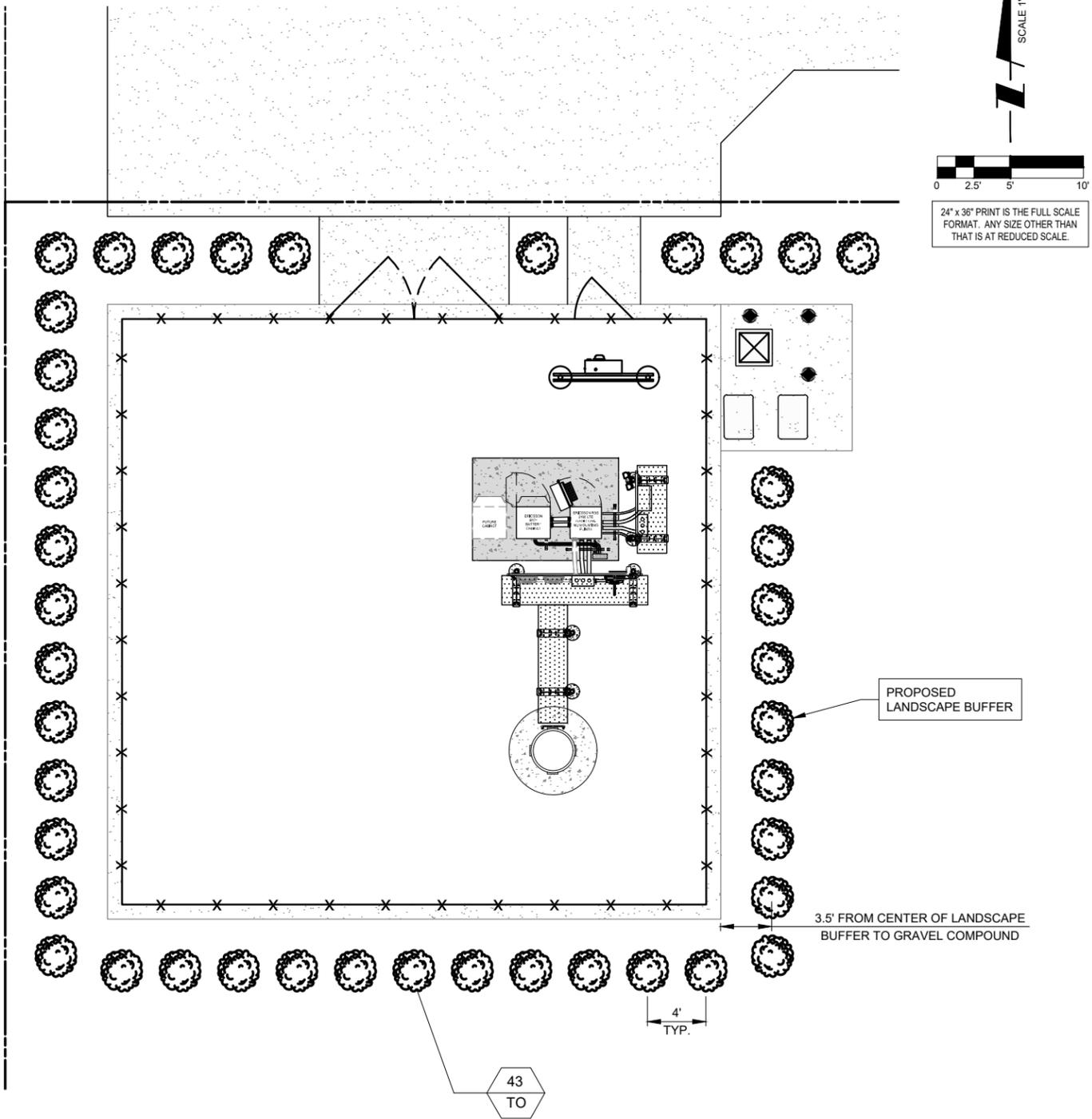
SHEET NUMBER  
**C-9**

# GENERAL LANDSCAPE NOTES

- PRUNE NEWLY INSTALLED SHRUBS. WORK SHALL BE DONE BY EXPERIENCED PERSONNEL TO THE ACCEPTED HORTICULTURAL AND ARBORICULTURAL STANDARDS. PRUNING SHALL RESULT IN A LOOSE OUTLINE CONFORMING TO THE GENERAL SHAPE OF THE SHRUB TYPE. DO NOT USE HEDGE SHEARS.
- ALL PLANTING STOCK SHALL BE NURSERY-GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICE. PLANTS SHALL BE FREE OF DISEASE, INSECTS EGGS, LARVAE AND DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS OR DISFIGUREMENT. THEY SHALL HAVE SOUND, HEALTHY VIGOROUS AND UNIFORM GROWTH TYPICAL OF THE SPECIES AND VARIETY, WELL-FORMED, FREE FROM IRREGULARITIES, WITH THE MINIMUM QUALITY AND SIZE CONFORMING TO AMERICAN STANDARD FOR NURSERY STOCK.
- GUARENTEE: WARRANT ALL PLANT MATERIAL TO BE TRUE TO BOTANICAL NAME AND SPECIFIED SIZE. AFTER COMPLETION OF PLANTING, ALL PLANT MATERIALS SHALL BE WARRANTED AGAINST DEFECTS, INCLUDING DEATH AND UNSATISFACTORY GROWTH FOR A WARRANTY PERIOD OF ONE YEAR. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR DEFECTS RESULTING FROM NEGLECT CONTRACTORS CONTROL WHICH RESULT FROM NATURAL CAUSES SUCH AS FLOODS STORMS, FIRES OR VANDALISM.  
REPLACEMENTS: DURING THE WARANTY PERIOD, REPLACE ONE TIME, AT NO ADDITIONAL COST TO THE OWNER, PLANT MATERIALS THAT ARE DEAD, OR IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN AN UNHEALTHY OR UNSIGHTLY CONDITION. REJECTED PLANT MATERIALS SHALL BE REMOVED FROM THE SITE AT CONTRACTOR'S EXPENSE. REPLACEMENTS ARE TO BE MADE NO LATER THAN THE SUBSEQUENT PLANTING SEASON. RESTORE AREAS DISTURBED BY REPLACEMENT OPERATIONS.
- MULCHING SHALL BE DONE WITHIN 48 HOURS AFTER PLANTING. MULCH SHRUB BEDS TO A UNIFORM DEPTH OF THREE INCHES. MULCH SHALL BE CLEAN COMPOSTED PINE BARK MULCH FREE OF FOREIGN MATERIAL AND LARGE PIECES OVER THREE INCHES LONG. DO NOT MULCH TREE AND SHRUB PLANTING PITS.
- TOPSOIL SHALL CONSIST OF FERTILE FRIABLE NATURAL LOAM, CONTAINING A LIBERAL AMOUNT OF HUMUS AND SHALL BE SUBJECT TO INSPECTION AND APPROVAL. IT SHALL BE FREE OF ADMIXTURES OF SUBSOIL AND FREE OF CRAB GRASS, ROOTS, STICKS AND OTHER EXTRANEIOUS MATTER, AND SHALL NOT BE USED FOR PLANTING OPERATIONS WHILE IN A FROZEN OR MUDDY CONDITIONS.
- REPAIR ALL TURF AREAS BY SEEDING. SEEDING INSTALLATION SHALL BE EXECUTED ONLY AFTER ALL FINISH GRADING HAS BEEN COMPLETED. NO SEEDING WORK SHALL BE DONE PAST SEPTEMBER 15, UNLESS APPROVED BY THE OWNER'S REPRESENTATIVE.  
SEED: SEED MIX SHALL MATCH EXISTING TURF, OR BE A 50/50 MIX OF CERTIFIED IMPROVED BLEND OF BLUEGRASS AND CERTIFIED IMPROVED PERENNIAL RYE. MIX SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO PLANTING. SEEDING SHALL BE APPLIED AT A MINIMUM RATE OF 120 POUNDS PER ACRE. FUTERRA BLANKET, OR EQUAL, SHALL BE USED FOR EROSION CONTROL MULCH WHERE NECESSARY IN LIEU OF HYDRO MULCH.



2 EVERGREEN TREE PLANTING SCALE: NTS



## PLANT LIST

SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	COMMENTS
TO	THUJA OCCIDENTALIS	AMERICAN ARBORVITAE	43	4 FT. HT. MIN.	B & B (BALLED & BURLAPPED)

1 LANDSCAPE PLAN SCALE: 1" = 5'

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 600 BUSSE HIGHWAY  
 PARK RIDGE, IL 60068  
 PH: 847-698-6400  
 FAX: 847-698-6401

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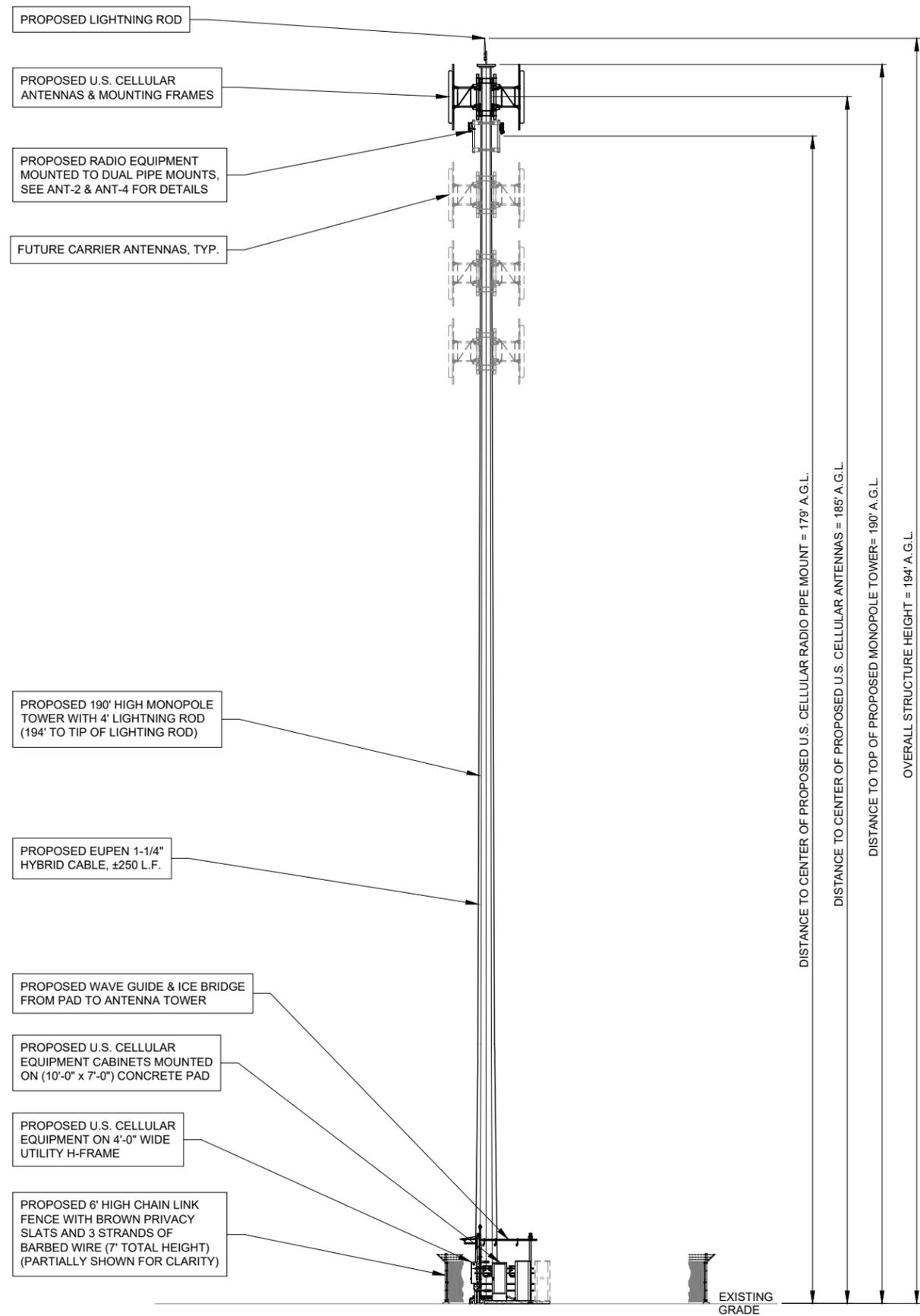
SITE# 784809  
 GERMANTOWN

W172N11083  
 DIVISION ROAD,  
 GERMANTOWN, WI 53022

DRAWN BY:	BJC
CHECKED BY:	EW
DATE:	10/25/22
PROJECT #:	10-079

SHEET TITLE  
 LANDSCAPE PLAN

SHEET NUMBER  
**L-1**



0 1/2" 1" 2"  
 SCALE: 3/32" = 1'-0"  
 22" x 34" PRINT IS THE FULL SCALE  
 FORMAT. ANY SIZE OTHER THAN  
 THAT IS AT REDUCED SCALE.

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

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SHEET TITLE  
**SITE ELEVATION**

SHEET NUMBER  
**ANT-1**

QTY.	EUPEN CABLE LENGTH	LENGTH (FT.)
1	HYBRID CABLE QTY.	-
-	ICE BRIDGE LENGTH	25'
-	BASE OF TOWER TO RAYCAP SPD	178'
-	TOTAL LENGTH OF CABLE	203'
-	<b>CABLE LENGTH TO BE ORDERED</b>	<b>250'</b>

1. TYPICAL CABLE LENGTH = 410' MAX
2. LOW INDUCTANCE CABLE = 550' MAX
3. CABLE LENGTH TO BE ROUNDED UP TO NEAREST 50' LENGTH

QTY.	FIBER JUMPER CABLE INFO (RAYCAP TO RADIO)	LENGTH (FT.)
4	ALPHA	25'
4	BETA	25'
2	GAMMA	25'

1. STANDARD JUMPER LENGTH = 32.8' (10m)

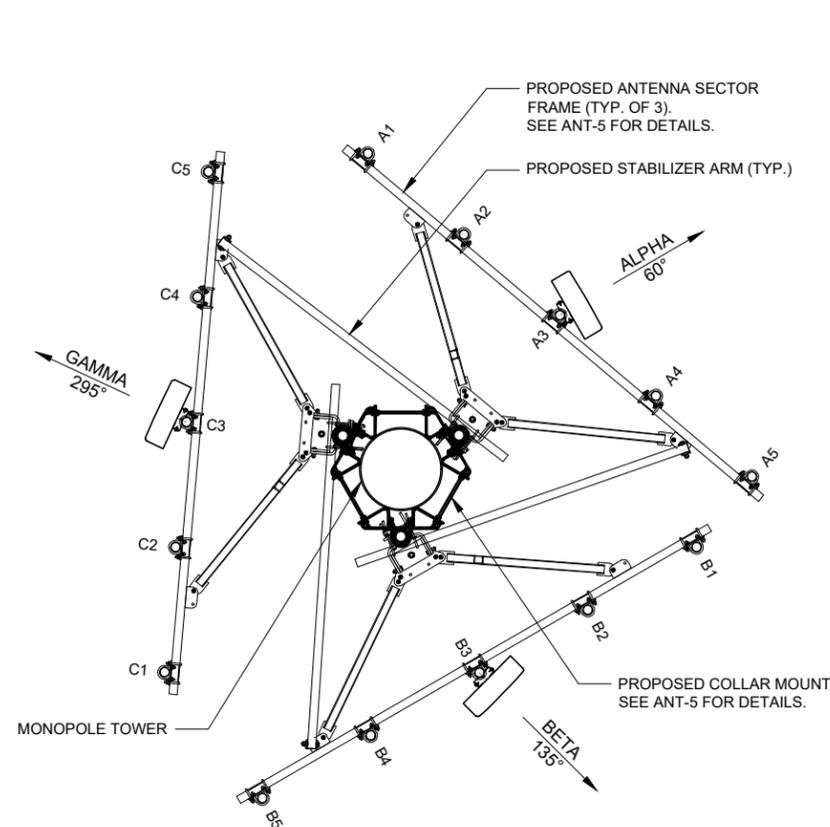
QTY.	RET CABLE INFO (RADIO TO ANTENNA)	LENGTH (FT.)
1	ALPHA	32.8'
1	BETA	32.8'
1	GAMMA	32.8'

1. STANDARD RET CABLE LENGTH = 32.8' (10m)
2. RF APPROVAL REQ'D FOR ADDITIONAL CABLE LENGTH

QTY.	COAX JUMPER CABLE INFO (RADIO TO ANTENNA)	LENGTH (FT.)
6	ALPHA	25'
6	BETA	25'
8	GAMMA	25'

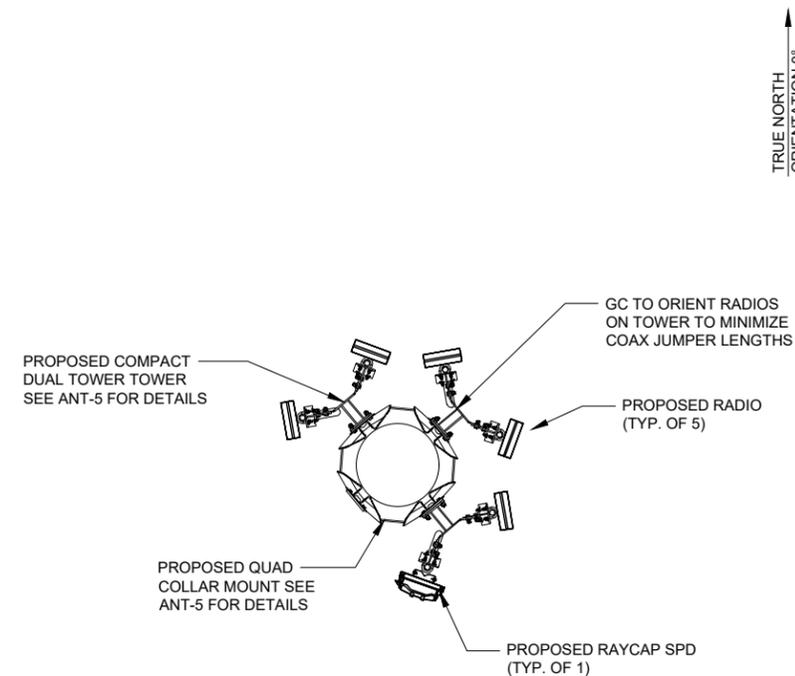
1. JUMPER CABLES TO BE SAME LENGTH FOR ALL SECTORS
2. APPROVED JUMPER LENGTH:
  - SEPARTE ANXILLARY MOUNT = 25'
  - ANTENNA MOUNT = 15'
3. JUMPER CABLES ARE PRE-ORDERED BY U.S. CELLULAR

**1** CABLING INFORMATION  
SCALE: N.T.S.



**2** ANTENNA LAYOUT - 185' A.G.L.  
SCALE: N.T.S.

G.C. TO ROTATE SECTOR FRAMES TO AZIMUTHS: 40°, 150°, AND 275°



**3** EQUIPMENT LAYOUT - 179' A.G.L.  
SCALE: N.T.S.

**PROPOSED ANTENNA KEY - 784809 GERMANTOWN**

Mainline Cable & Distribution	Antenna CL (ft AGL)	Technology	Antenna Make / Model	Ant. QTY	Azimuth	Mech Downtilt	Elec. LB-TILT	Elec. MB-TILT	RRU Make/Model	RRU QTY	Distribution Box Make/Model	OVP QTY	Hybrid Cable Make/Model	Hybrid Cable Count	Hybrid Cable Size	Hybrid Cable Length	Fiber Jumper QTY	Fiber Jumper Length	Pwr Jumper QTY	Power Jumper Length	RET Jumper QTY (Radio to Ant.)	RET Jumper Length, Ft (Radio to Ant.)	RF Jumper QTY	RF Jumper Length (Ft)					
																					1	32.8'	4	25'					
Mainline Cable & Distribution																													
Alpha Sector	A1	-	-	-	-	-	-	-	-	-	RUSDC -6267-PF-48	1	EUPEN 114-12AWG6-2X12MM5	1	1-1/4"	250'	-	-	-	-	-	-	-						
	A2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
	A3	185	PCS/AWS/LTE	DENGYO / OCT8-2LX2HX-BW65	1	60	0	2	2	4480 B12/B71	1	-	-	-	-	-	2	25'	1	32.8'	1	32.8'	4	25'					
	A4	-	-	-	-	-	-	-	-	*4480 B2/B66	1	-	-	-	-	-	2	25'	1	32.8'	-	-	2	25'					
	A5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Beta Sector	B1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	B2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	B3	185	PCS/AWS/LTE	DENGYO / OCT8-2LX2HX-BW65	1	135	0	2	2	4480 B12/B71	1	-	-	-	-	2	25'	1	32.8'	1	32.8'	4	25'						
	B4	-	-	-	-	-	-	-	-	4480 B2/B66	*SHARED	-	-	-	-	-	-	-	-	-	-	2	25'						
	B5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Gamma Sector	G1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	G2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	G3	185	PCS/AWS/LTE	DENGYO / OCT8-2LX2HX-BW65	1	295	0	2	2	4480 B12/B71	1	-	-	-	-	2	25'	1	32.8'	1	32.8'	4	25'						
	G4	-	-	-	-	-	-	-	-	4480 B2/B66	1	-	-	-	-	2	25'	1	32.8'	-	-	4	25'						
	G5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
<b>Antenna Total</b>				<b>3</b>	<b>RRU Total</b>				<b>5</b>	<b>Distro Box Total</b>			<b>1</b>	<b>Hybrid Cable Total</b>			<b>1</b>	<b>Jumper Totals</b>		<b>10</b>	<b>Power Jumper</b>		<b>5</b>	<b>RET Jumper</b>		<b>3</b>	<b>RF Jumper</b>		<b>20</b>

NOTE: RADIOS ARE SHARED ACROSS MULTIPLE SECTORS, SEE PLUMBING DIAGRAM ON SHEET ANT-8 FOR DETAILS

**4** PROPOSED ANTENNA AND EQUIPMENT LOADING  
SCALE: N.T.S.

PLUMBING DIAGRAM: W5.DX1050

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SHEET TITLE  
**ANTENNA & EQUIPMENT LAYOUT**

SHEET NUMBER  
**ANT-2**



Base Station Antennas

Frequency Range	617-894x2 1695-2400x2
Polarization	±45°
Half-Power Beam Width	65°
Electrical Downtilt	2° - 12°x4

Type OCT8-2LX2HX-BW65

**Base Station Antenna**

8-ports 617-894 / 617-894 / 1695-2400 / 1695-2400 MHz 65°, 16 / 16 / 18 / 18 dBi, 2°-12° / 2°-12° / 2°-12° / 2°-12° Tilt Antenna With 4 Integrated RCUs.



**Electrical Specifications**

Frequency Range(MHz)	2x617-894			2x1695-2400		
	617-698	698-824	824-894	1695-1920	1920-2180	2300-2400
Polarization	±45°					
Horizontal 3dB Beamwidth(°)	70	63	60	66	63	58
Vertical 3dB Beamwidth(°)	10.4	9.1	8.0	5.5	5	4.3
Gain (dBi)	15.0	15.5	16.0	17.6	18.0	18.1
Electrical Downtilt	2°-12°			2°-12°		
Upper Sidelobe Suppression(dB)	First	≥16	≥16	≥16	≥16	≥16
Front-to-Back Ratio Total Power, ±30° (dB)		≥23	≥24	≥25	≥25	≥25
Cross polar ratio	Main direction(dB)	≥17	≥17	≥17	≥17	≥17
	±60° (dB)	≥7	≥7	≥7	≥7	≥7
Isolation ports	≥25 dB					
Isolation Frequency	≥30 dB					
VSWR	< 1.5					
Intermodulation IM3	< -150 dBc(2x43dBm carrier)					
Impedance	50 Ω					
Max. Power per Input (at 50°C ambient temperature)	500 W			300 W		
Lightning Protection	DC Ground					



**Mechanical Specifications**

Radome Material	Fiberglass
Connector Type and Location	4.3-10x8 ,Bottom iRCU in:1 x 8 pin male iRCU out:1 x 8 pin female
Dimensions,HxWxD(mm)/(inches)	2438 x 499 x 180 / 95.9 x 19.6 x 7.1
Packing Size(mm)/(inches)	2750 x 620 x 325 / 108.3 x 24.4 x 12.8
Weight ,w/o Mounting kit(kg)/(lbs)	47 / 103.4
Weight w/ Downtilt Bracket(kg)/(lbs)	54/ 118.8
Weight w/ Fixed Bracket(kg)/(lbs)	52 / 114.4
Packing Weight (w/ Downtilt Bracket) (kg)/(lbs)	64/ 140.8
Packing Weight (w/ Fixed Bracket) (kg)/(lbs)	62 / 136.4
Max. Wind Velocity(mph)	150
Mounting hardware	± 50 mm ~ ± 115 mm
Operational Temperature(°C)	-40 to +65
Operational Humidity(%)	<95
Wind Load at 100mph (Frontal/lateral/Rearside(N))	1416/280/1027

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OCT8-2LX2HX-BW65 A06



Base Station Antennas

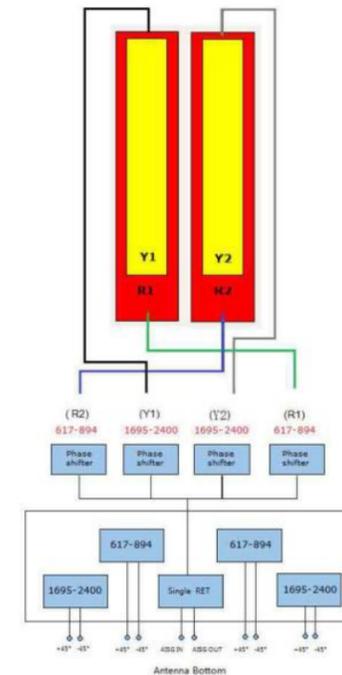
Frequency Range	617-894x2 1695-2400x2
Polarization	±45°
Half-Power Beam Width	65°
Electrical Downtilt	2° - 12°x4

Type OCT8-2LX2HX-BW65

**Integrated RET Properties**

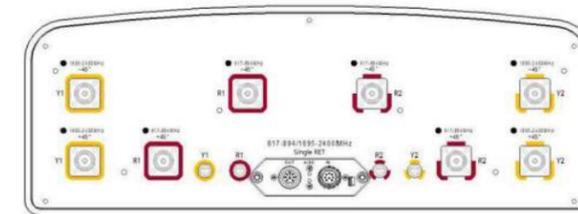
RET Type	4x Type 1 Single RET
Protocols	Compliant to AISG 2.0/3GPP
Input voltage range	+10~+30VDC(pin 6)
Power consumption	<2W(stand by);<13W(motor activated)
Connectors	AISG 2 x 8 pin connector acc. To IEC 60130-9 Acc.to AISG Daisy chain in:male Daisy chain out:female
	Antenna Two motor shaft(Embedded motor)
Hardware interface	AISG RS485A/B(pin5/pin3);Power supply(pin6); DC return(pin7)Acc.to AISG
Adjustment time(full range)	40 sec(typically,depending on antenna)
Adjustment Cycles	≥10000
Torque Max	≥160mN.m
Lightning Protection Rating	IEC 61000-4-5 Current Pulse Profile,8/20 μs 10 Repetitions Min.@ 6kA IEC 61312-1 Annex B Current Pulse Profile, 10/350 μs,200 Repetitions Min. @ 0.6kA

**COMPREHENSIVE TILT CONFIGURATION**



Frequency Range	Array	RET Unique ID
617-894MHz	R1	NDPMXXXXXXXX-6088R1
617-894MHz	R2	NDPMXXXXXXXX-6088R2
1695-2400MHz	Y1	NDPMXXXXXXXX-1724Y1
1695-2400MHz	Y2	NDPMXXXXXXXX-1724Y2

Note: (1) Physical RET Unit containing (4) Single RET



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FAX: 847-698-6401

NO.	DESCRIPTION	BY	DATE	REASON
			DATE	
A	ISSUED FOR REVIEW	BJC	11/04/22	
B	REVISED PER USCC COMMENTS	JGL	12/19/22	
O	ISSUED FOR CONSTRUCTION	EW	12/20/22	
1	ADDED LANDSCAPE BUFFER	EW	01/11/23	

**SITE# 784809**  
**GERMANTOWN**

W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

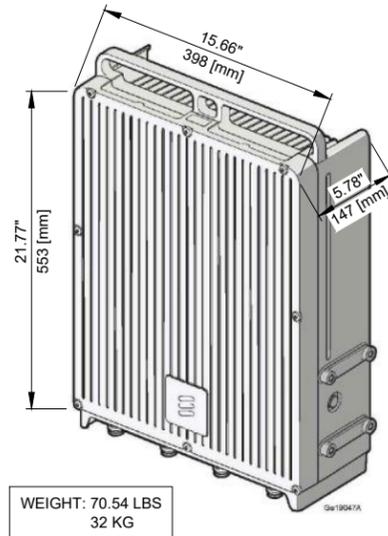
DRAWN BY:	BJC
CHECKED BY:	EW
DATE:	10/25/22
PROJECT #:	10-079

SHEET TITLE  
**ANTENNA SPECIFICATIONS**

SHEET NUMBER

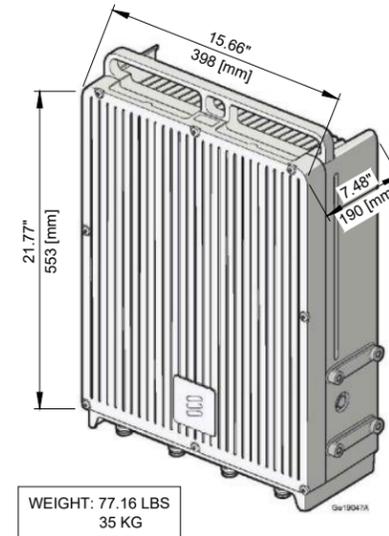
**ANT-3**

SUPPLIED BY U.S. CELLULAR



1 RADIO 4480 44B2/B25 44B66A C - MID BAND - DETAILS  
SCALE: NTS

SUPPLIED BY U.S. CELLULAR



2 RADIO 4480 44B71 44B85A C - LOW BAND - DETAILS  
SCALE: NTS

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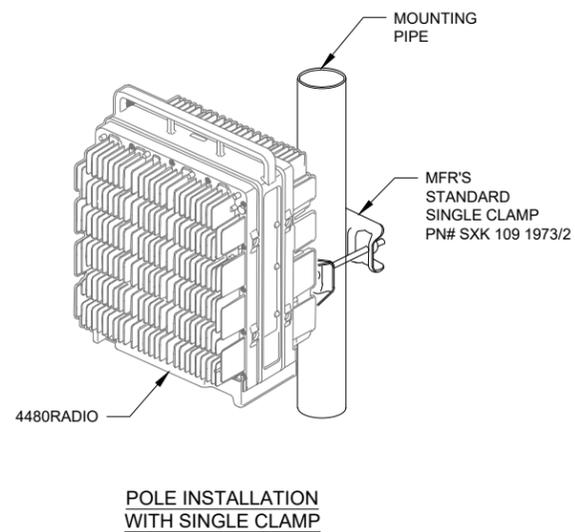
DRAWN BY:	BJC
CHECKED BY:	EW
DATE:	10/25/22
PROJECT #:	10-079

SHEET TITLE  
**EQUIPMENT  
SPECIFICATIONS**

SHEET NUMBER  
**ANT-4**

SUPPLIED BY U.S. CELLULAR

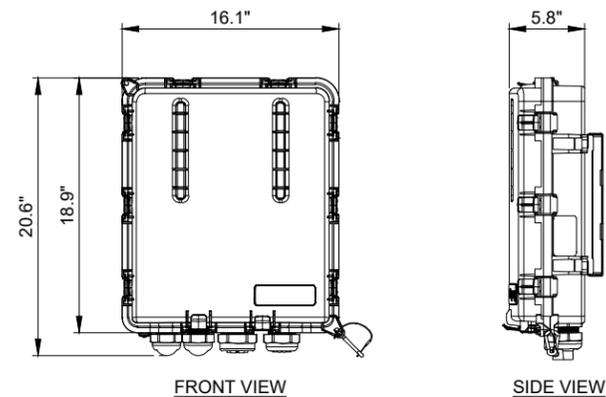
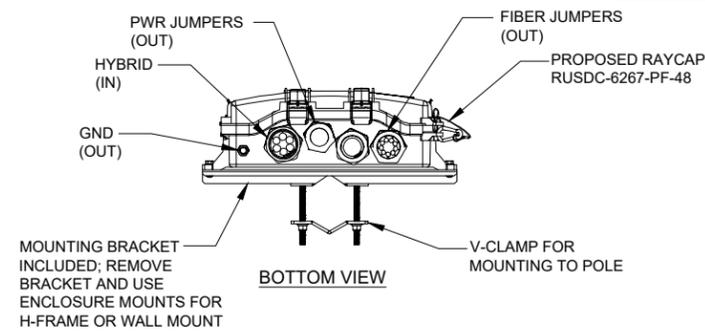
NOTES:  
1. MOUNTING HARDWARE INCLUDED WITH UNIT.  
2. EQUIPMENT INFORMATION OBTAINED FROM MANUFACTURERS PRODUCT DATA SHEET, SUBJECT TO CHANGE. CONTRACTOR TO VERIFY



POLE INSTALLATION  
WITH SINGLE CLAMP

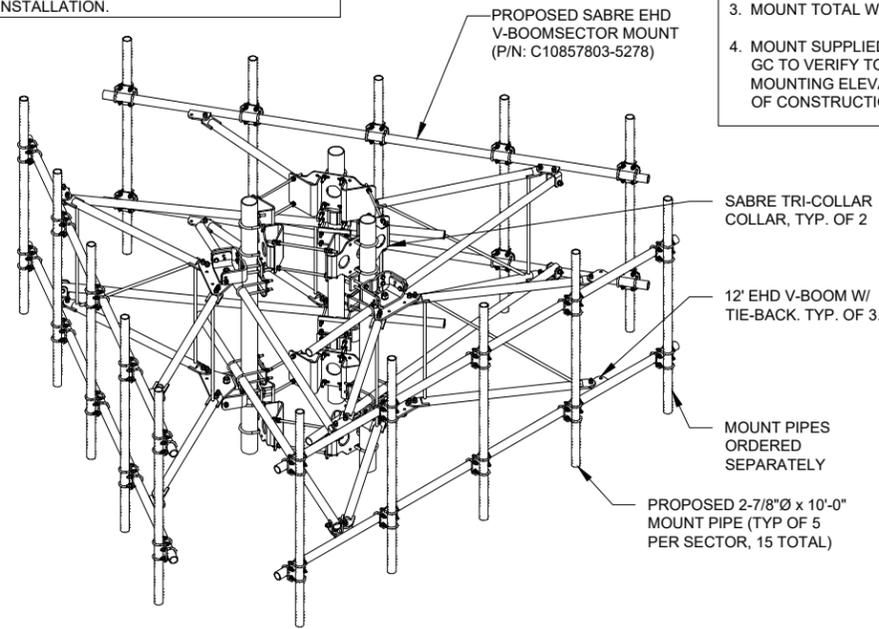
3 RADIO MOUNT DETAIL (4480)  
SCALE: N.T.S.

SUPPLIED BY U.S. CELLULAR



4 RAYCAP SURGE PROTECTOR DEVICE (SPD)  
SCALE: N.T.S.

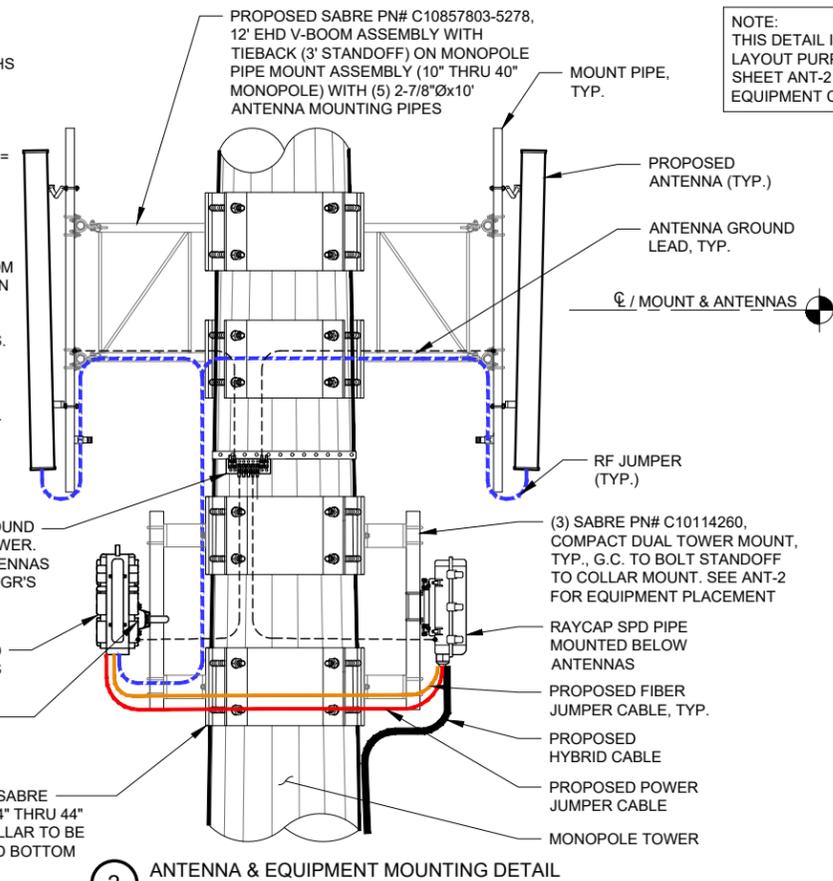
- NOTE:
1. INSTALL MOUNT TO TOWER AS SHOWN, SO THAT WELDED STANDOFF DIAGONAL IS SLOPING DOWNWARD FROM TOWER END TO FACE PIPE END.
  2. INSTALL PRODUCT EXACTLY AS SHOWN IN DRAWING WITH ALL BOLTS FACING UPWARDS.
  3. SEE MANUFACTURER'S DRAWINGS FOR GUIDE DURING INSTALLATION.



1 ANTENNA MOUNT DETAIL - 10" TO 40" MONOPOLE  
N.T.S.

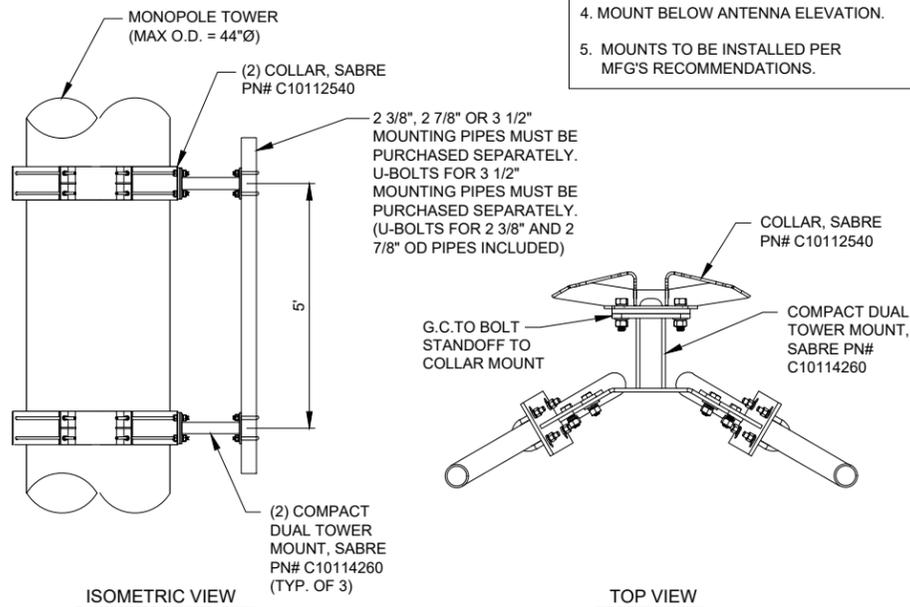
- NOTES:
1. THE SABRE V-FRAME MOUNTING SYSTEM IS MODEL #C10857803-5278.
  2. COLLAR FITS 10" TO 40" DIAMETER POLES.
  3. MOUNT TOTAL WEIGHT: 3345 LBS
  4. MOUNT SUPPLIED BY US CELLULAR. GC TO VERIFY TOWER DIAMETER AT MOUNTING ELEVATION PRIOR TO START OF CONSTRUCTION.

- NOTES:
1. PRE-MADE 1/2" COAX JUMPERS WILL BE USED. ENSURE ALL MATCHING COAX JUMPER LENGTHS PER RADIO.
  2. MAXIMUM JUMPER LENGTH = 20', IF JUMPER > 20', CONTRACTOR TO USE DIRECT CONNECT COMMSCOPE VXL5-50 (MINIMUM BEND RADIUS = 5").
  3. CONTRACTOR TO SEAL UNUSED LOW-BAND PORTS ON ANTENNAS.
  4. TOWER TOP FIBER/POWER CONNECTIONS FROM RAYCAP TO RRH RUNS SHOULD BE SHIELDED IN 1" INNERDUCT (75' PROVIDED IN HYBRID KIT).
  5. ANTENNAS TO BE CENTERED ON MOUNT PIPES.
  6. CABLE & JUMPER ROUTING SHOWN AS A SCHEMATIC ONLY. G.C. TO USED BEST PRACTICE WHEN SECURING CABLES/JUMPERS.
  7. REFER TO PLUMBING DIAGRAM BY U.S. CELLULAR FOR CABLE QUANTITIES.



2 ANTENNA & EQUIPMENT MOUNTING DETAIL  
N.T.S.

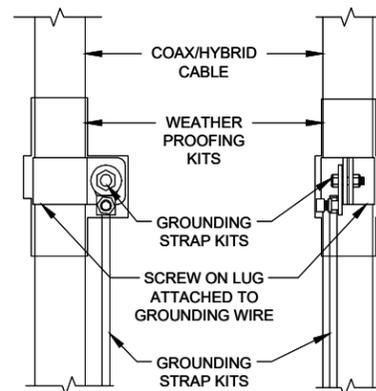
- NOTE:  
MOUNT ALLOWS FOR ±30° VERTICAL TILT ADJUSTMENT



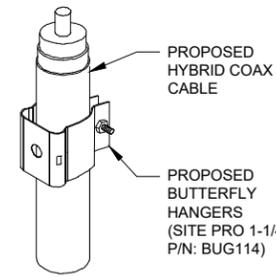
3 TYPICAL RAYCAP SPD & RADIO DUAL PIPE MOUNT  
N.T.S.

- NOTES:
1. COMPACT DUAL TOWER MOUNT, SABRE PN# C10114260
  2. QUAD COLLAR, SABRE PN# C10112540. FITS 14" THRU 44" DIA POLES.
  3. MOUNTS SUPPLIED BY US CELLULAR.
  4. MOUNT BELOW ANTENNA ELEVATION.
  5. MOUNTS TO BE INSTALLED PER MFG'S RECOMMENDATIONS.

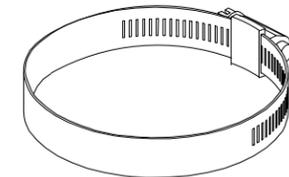
- NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
  2. THIS DETAIL IS TYPICAL FOR EACH COAX CABLE WHERE IT IS SPECIFIED TO BE GROUNDED
  3. CABLE TO BE GROUNDED AT ANTENNA LEVEL AND PRIOR TO ENTERING EQUIPMENT CABINET.
  4. CABLE ALSO TO BE GROUNDED TO GROUND BAR AT TOWER BASE IF APPLICABLE.
  5. USE ONLY TIN PLATED GROUNDING KITS.



4 COAX / HYBRID CABLE GROUND KIT DETAIL  
N.T.S.

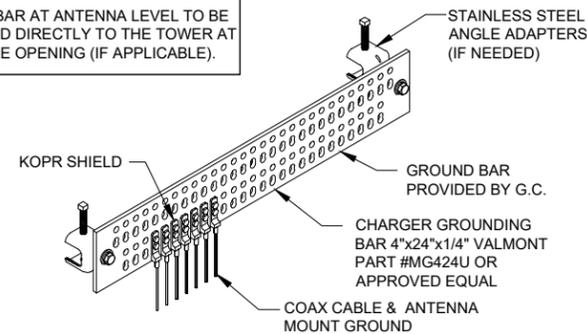


5 BUTTERFLY HANGER DETAIL  
N.T.S.

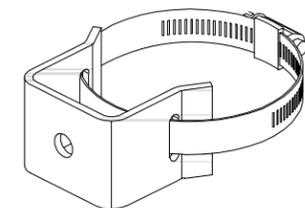


7 ROUND MEMBER ADAPTER DETAIL  
N.T.S.

- NOTE:  
GROUND BAR AT ANTENNA LEVEL TO BE GROUNDED DIRECTLY TO THE TOWER AT HAND HOLE OPENING (IF APPLICABLE).



6 GROUND BAR AT ANTENNA LEVEL  
N.T.S.



8 UNIVERSAL STANDOFF DETAIL  
N.T.S.

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1	ADDED LANDSCAPE BUFFER	01/11/23	EW

**SITE# 784809**  
**GERMANTOWN**

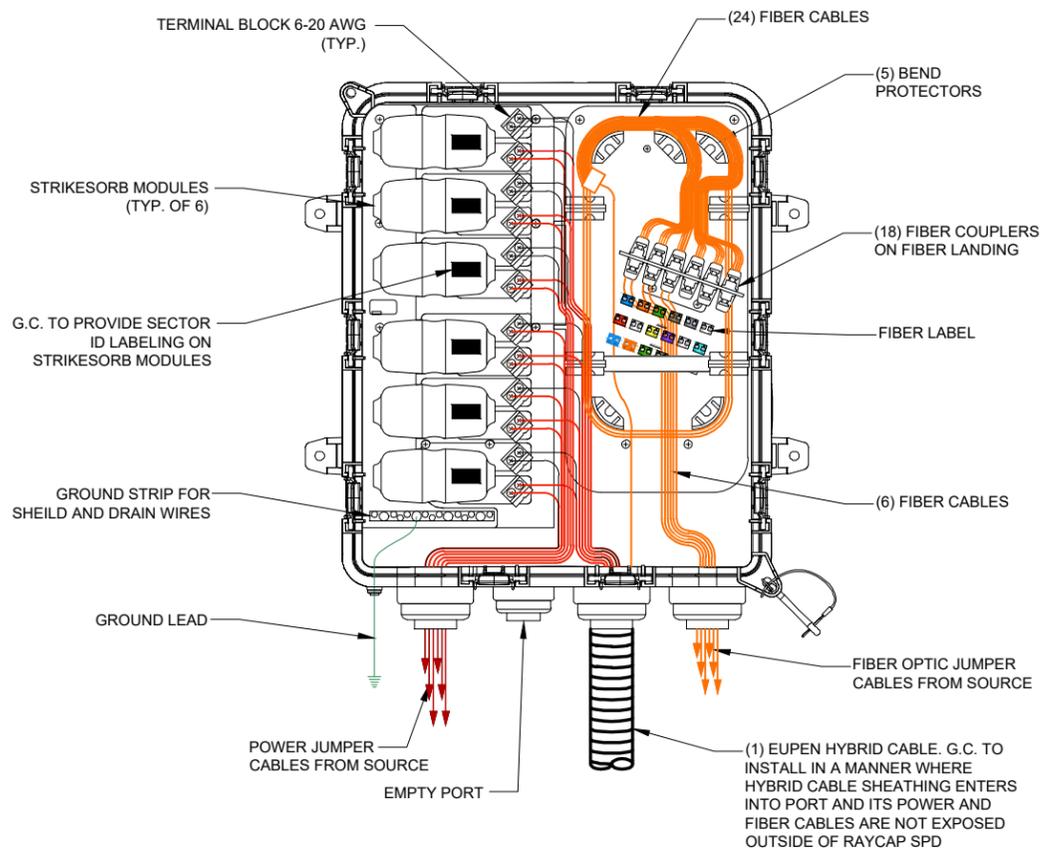
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DIVISION ROAD,  
GERMANTOWN, WI 53022

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CHECKED BY: EW  
DATE: 10/25/22  
PROJECT #: 10-079

SHEET TITLE  
**ANTENNA MOUNTING DETAILS**

SHEET NUMBER

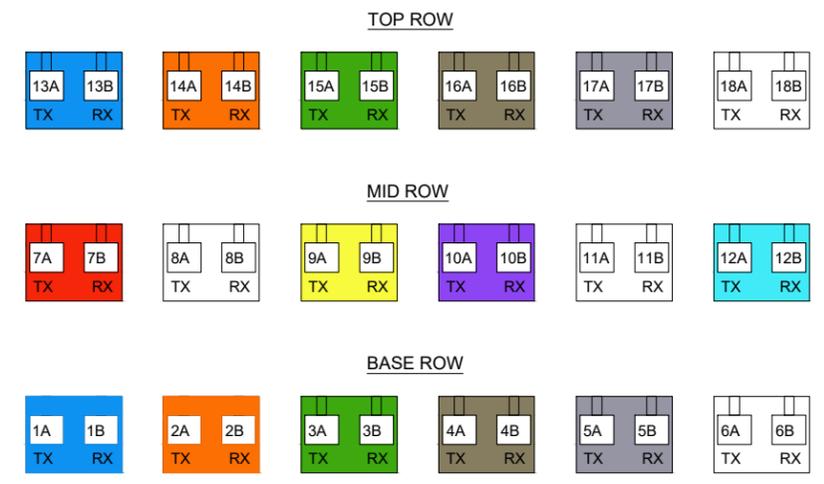
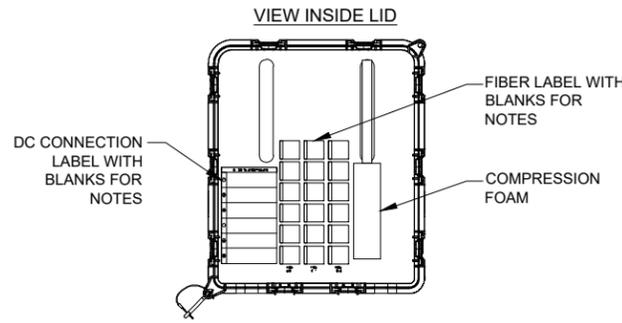
**ANT-5**



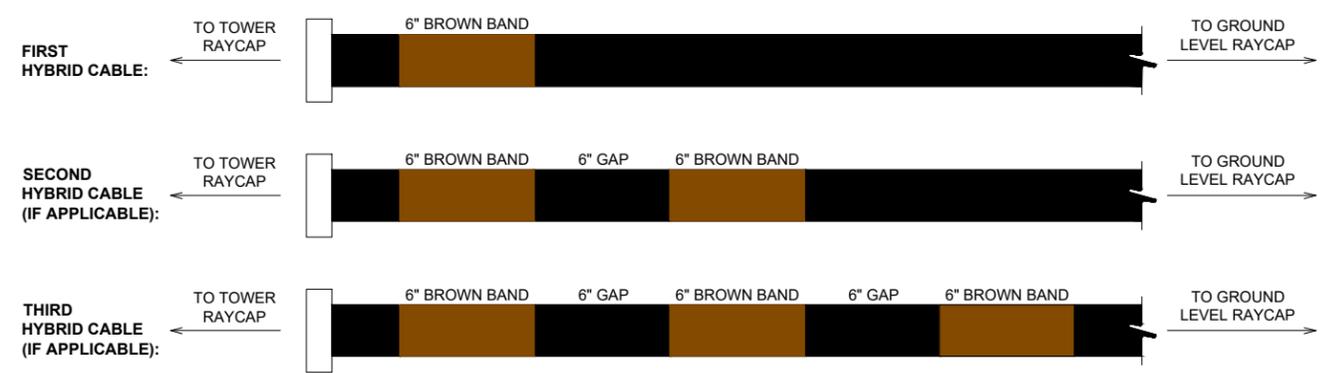
1 RAYCAP SURGE PROTECTOR DEVICE (SPD) CABLING  
SCALE: N.T.S.

**NOTE:**  
REFER TO USCC DOCUMENT "TOWER MOUNTED EQUIPMENT AND TOWER CABLE STANDARDS AT CELL SITES" FOR COMPLETE COLOR CODING STANDARDS.

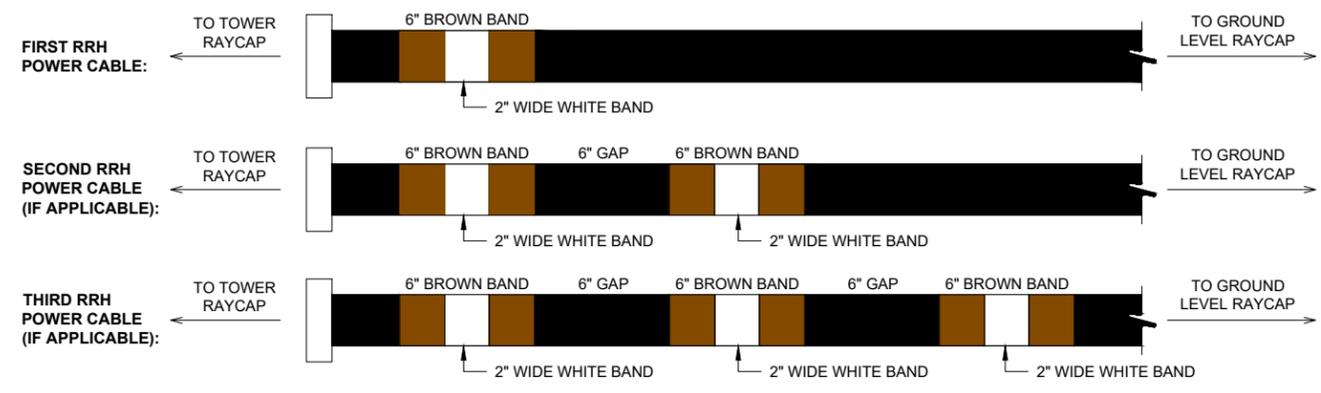
CONNECTOR 13 13A: BLUE TX 13B: BLUE RX WITH TRACERS	CONNECTOR 14 14A: ORANGE TX 14B: ORANGE RX WITH TRACERS	CONNECTOR 15 15A: GREEN TX 15B: GREEN RX WITH TRACERS	CONNECTOR 16 16A: BROWN TX 16B: BROWN RX WITH TRACERS	CONNECTOR 17 17A: SLATE TX 17B: SLATE RX WITH TRACERS	CONNECTOR 18 18A: WHITE TX 18B: WHITE RX WITH TRACERS
CONNECTOR 7 7A: RED TX 7B: RED RX	CONNECTOR 8 8A: BLACK TX 8B: BLACK RX	CONNECTOR 9 9A: YELLOW TX 9B: YELLOW RX	CONNECTOR 10 10A: VIOLET TX 10B: VIOLET RX	CONNECTOR 11 11A: ROSE TX 11B: ROSE RX	CONNECTOR 12 12A: AQUA TX 12B: AQUA RX
CONNECTOR 1 1A: BLUE TX 1B: BLUE RX	CONNECTOR 2 2A: ORANGE TX 2B: ORANGE RX	CONNECTOR 3 3A: GREEN TX 3B: GREEN RX	CONNECTOR 4 4A: BROWN TX 4B: BROWN RX	CONNECTOR 5 5A: SLATE TX 5B: SLATE RX	CONNECTOR 6 6A: WHITE TX 6B: WHITE RX



2 FIBER CABLE LABELING  
SCALE: N.T.S.



3 HYBRID CABLE BANDING  
SCALE: N.T.S.



4 POWER CABLE BANDING  
SCALE: N.T.S.

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SHEET TITLE  
LABELING STANDARDS 1

SHEET NUMBER  
**ANT-6**

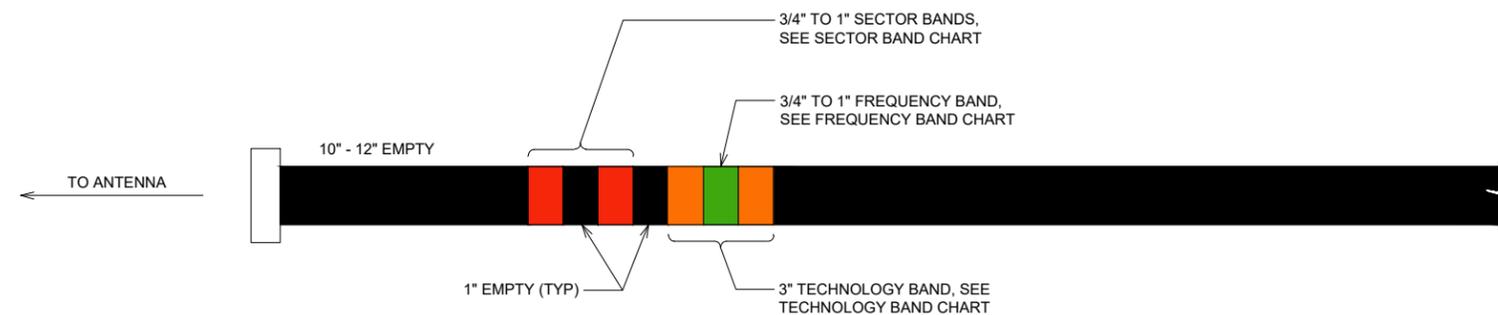
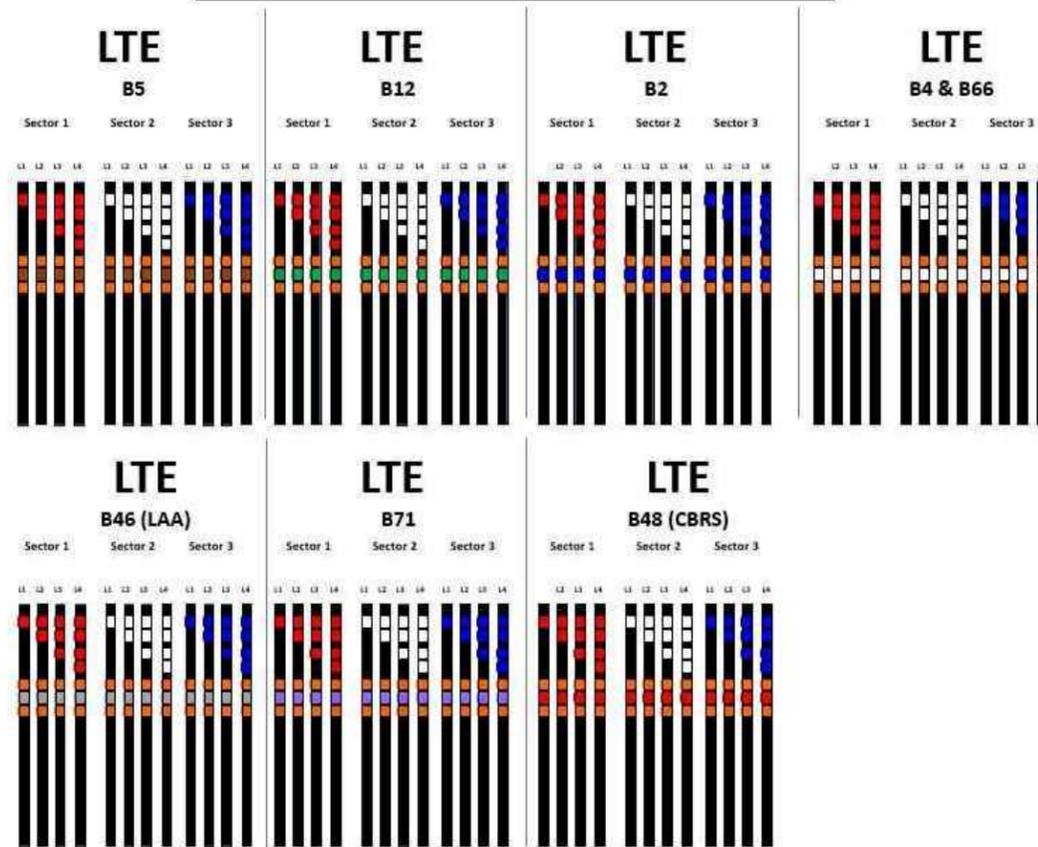
SECTOR BAND	ASSIGNED COLOR	LINE 1	LINE 2	LINE 3	LINE 4
ALPHA (SECTOR 1)	RED	1 RED BAND	2 RED BAND	3 RED BAND	4 RED BAND
BETA (SECTOR 2)	WHITE	1 WHITE BAND	2 WHITE BAND	3 WHITE BAND	4 WHITE BAND
GAMMA (SECTOR 3)	BLUE	1 BLUE BAND	2 BLUE BAND	3 BLUE BAND	4 BLUE BAND
DELTA (SECTOR 4, IF APPLICABLE)	GREEN	1 GREEN BAND	2 GREEN BAND	3 GREEN BAND	4 GREEN BAND
EPSILON (SECTOR 5, IF APPLICABLE)	VIOLET	1 VIOLET BAND	2 VIOLET BAND	3 VIOLET BAND	4 VIOLET BAND
ZETA (SECTOR 6, IF APPLICABLE)	BROWN	1 BROWN BAND	2 BROWN BAND	3 BROWN BAND	4 BROWN BAND

### FREQUENCY BAND

FREQUENCY	FREQUENCY BAND
700 (B12)	GREEN
800 (B5)	BROWN
1900 (B2)	BLUE
2100 (B4 & B66)	WHITE
5100 (B46) - LAA	GREY
600 (B71)	VIOLET
3500 (B45) - CBRS	RED

### USC COAX COLOR CODE STANDARD

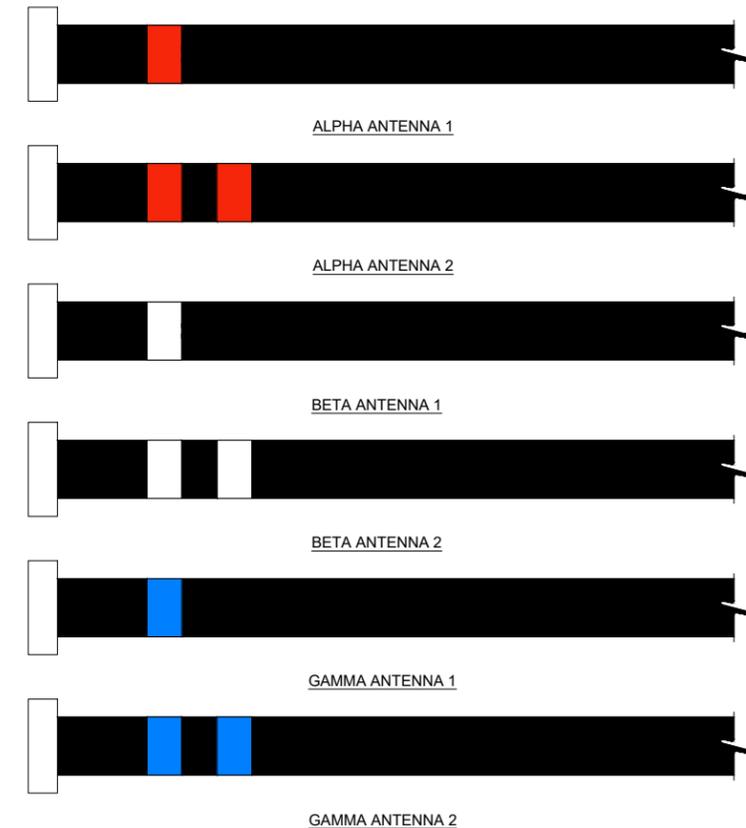
## USC COAX Color Code Standard



1 COAX CABLE BANDING  
SCALE: N.T.S.

### RET SECTOR BAND

SECTOR	LINE 1 - FIRST TECHNOLOGY	LINE 2 - FIRST TECHNOLOGY
ALPHA	(1) RED BAND	(2) RED BAND
BETA	(1) WHITE BAND	(2) WHITE BAND
GAMMA	(1) BLUE BAND	(2) BLUE BAND



2 RED CABLE BANDING  
SCALE: N.T.S.

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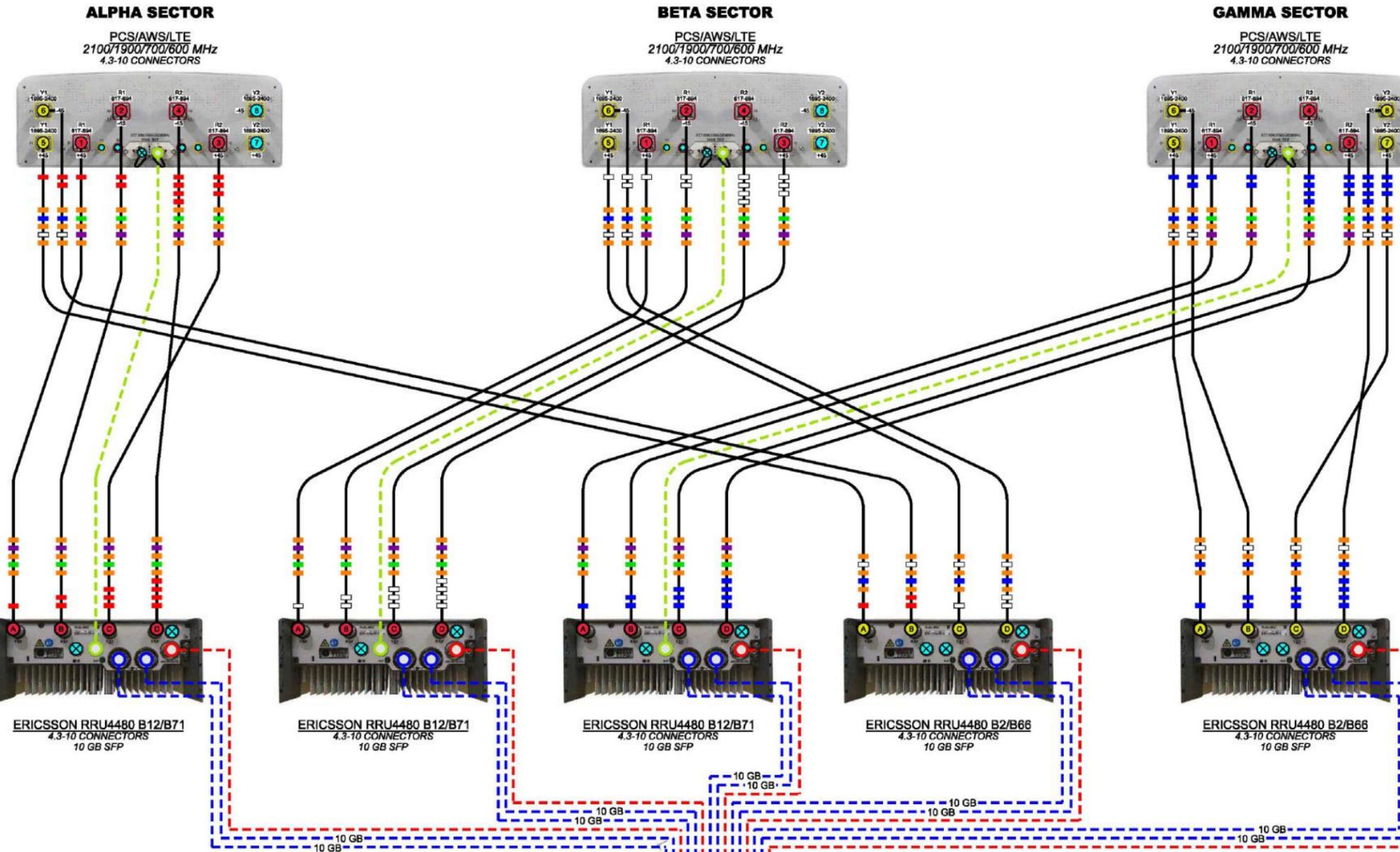
SHEET TITLE  
LABELING  
STANDARDS 2

SHEET NUMBER

**ANT-7**



**E// B12/B71 2T4R / B2/B66 2T2R**



**CABLE LEGEND**

	EUPEN HYBRID CABLE
	1/2" COAX JUMPER
	FIBER JUMPER
	POWER JUMPER
	RET JUMPER
	MID BAND PORT
	LOW BAND PORT
	WEATHERPROOF CAP

- NOTES:**
1. G.C. TO INSTALL WEATHERPROOF CAP AT BOTH UN-USED HIGH BAND PORTS ON ANTENNAS.
  2. G.C. TO INSTALL TERMINATION LOADS AT UN-USED JUMPER PORTS ON RADIO UNITS WHEN SPECIFIED, ROSENBURGER #L-2-DM-01
  3. EXCESS JUMPER AND RET CABLES TO BE SECURED AND ROUTED WITH GROMMETS WITH SNAP-INS.
  4. ALL JUMPERS BETWEEN RADIO UNITS & ANTENNAS MUST BE SAME LENGTH.

**PLUMBING DIAGRAM: W5.DX1050  
2T2R DESIGN: Yes-5**

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- NOTES:**
1. ALL JUMPERS BETWEEN RADIO UNITS & ANTENNAS MUST BE THE SAME LENGTH. CONTRACTOR TO INSTALL WEATHERPROOF CAP ON ALL UN-USED PORTS.

DATE CREATED: 01/24/2022

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**SITE# 784809  
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DRAWN BY:	BJC
CHECKED BY:	EW
DATE:	10/25/22
PROJECT #:	10-079

SHEET TITLE  
**PLUMBING  
DIAGRAM**

SHEET NUMBER

**ANT-8**

**ELECTRICAL - GENERAL NOTES:**

THE GENERAL NOTES AND ACCOMPANYING DRAWINGS ARE TO INDICATE THE PROVISIONS AND REQUIREMENTS N BY THE ELECTRICAL CONTRACTOR OF ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO INSTALL THE ELECTRICAL WORK COMPLETE IN CONNECTION WITH THIS ALLTEL (THE OWNER) SITE AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

1. THE INSTALLATION, PROVISIONS, AND CONNECTION OF A GROUND ROD (ELECTRODE) SYSTEM AS INDICATED IN THE DRAWINGS.
2. THE INSTALLATION AND PROVISION OF AN ELECTRICAL SERVICE (OVERHEAD OR UNDERGROUND) AND ALL CONDUIT AND WIRE ASSOCIATED WITH IT AS INDICATED AND/OR REQUIRED ON PLANS.
3. THE INSTALLATION, PROVISION OF CONDUIT AND CONNECTIONS FOR LOCAL FIBER SERVICE.
4. CONDUITS SHALL BE PVC SCHED. 40 UNLESS OTHERWISE NOTED.
5. ALL FISH LINE SHALL BE LEFT IN CONDUITS (PVC) FOR FUTURE USE.
6. THE CONTRACTOR SHALL FURNISH AND INSTALL ELECTRICAL SERVICE ENTRANCE CONDUCTORS, CONDUIT AND METER SOCKET AND MAKE THE NECESSARY CONNECTION TO THE SERVICE EQUIPMENT WITHIN THE CABINETS.

PRIOR TO THE SUBMISSION OF BIDS, THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL DETAILS AND SCHEDULES ON THE DRAWINGS AND SPECIFICATIONS PROVIDED BY THE OWNER, FOR MEANING OF ABBREVIATIONS AND ADDITIONAL REQUIREMENTS AND INFORMATION, CHECK STRUCTURAL AND OTHER MECHANICAL AND ELECTRICAL DRAWINGS FOR SCALE, SPACE LIMITATIONS, BEAMS, DOOR SWINGS, WINDOWS, COORDINATION, AND ADDITIONAL INFORMATION, ETC. REPORT ANY DISCREPANCIES, CONFLICTS, ETC. TO THE OWNER BEFORE SUBMITTING BID.

UNLESS OTHERWISE NOTED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE NECESSARY MOTOR STARTERS, DISCONNECTS, CONTROLS, ETC. FOR ALL EQUIPMENT FURNISHED BY OTHERS (FBO). ALL ASSOCIATED EQUIPMENT SHALL BE INSTALLED AND COMPLETELY WIRED BY THE ELECTRICAL CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S WIRE DIAGRAMS AND AS REQUIRED FOR A COMPLETE OPERATING INSTALLATION. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE CHARACTERISTICS AND REQUIREMENTS OF (FBO) EQUIPMENT PRIOR TO ROUGH-IN OF OF CONDUIT AND WIRINGS TO AVOID CONFLICT.

**CONTRACTOR RESPONSIBILITIES**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND SECURING ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS, AND PAYMENT OF ALL FEES.
2. THE INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE: STATE, LOCAL, AND NATIONAL CODES AS WELL AS THE LATEST ISSUE OF THE VARIOUS APPLICABLE STANDARD SPECIFICATIONS OF THE FOLLOWING RECOGNIZED AUTHORITIES:

NEC	NATIONAL ELECTRIC CODE
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
UL	UNDERWRITERS LABORATORY, INC.

3. PRIOR TO COMMENCING WORK, THE ELECTRICAL CONTRACTOR SHALL CONFORM TO THE LOCAL UTILITY COMPANY'S REGULATIONS AND SHALL GET THE APPROVAL FROM SAME, BEFORE SUBMITTING HIS BID, TO DETERMINE FROM EACH UTILITY ADDITIONAL COSTS THEY MAY REQUIRE, AND SHALL BE INCLUDED IN HIS BID FOR CONTRACT.

**UTILITY CONTACTS:**

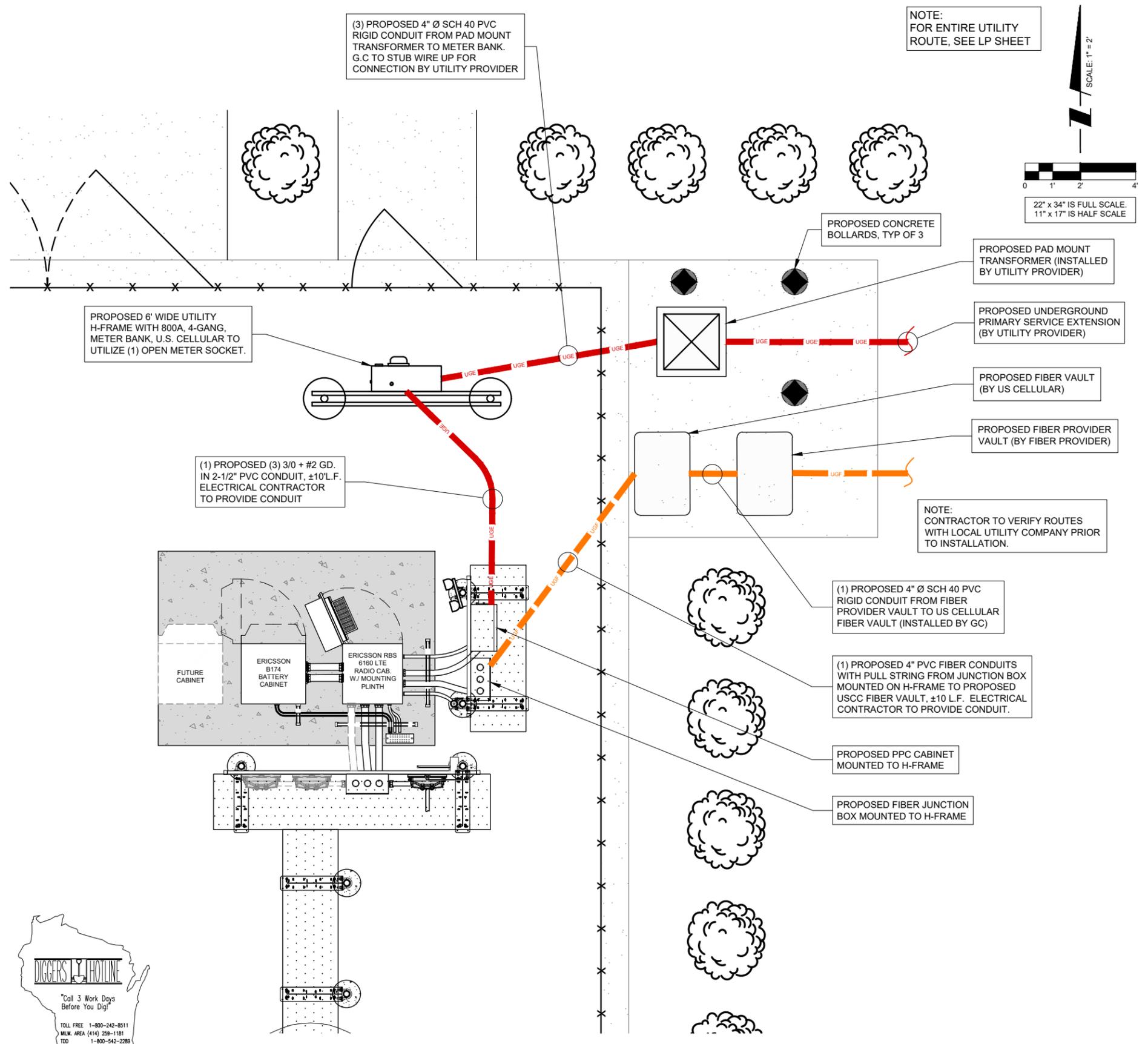
POWER CO  
COORDINATED  
BY OTHERS

FIBER CO  
COORDINATED  
BY OTHERS

ELECTRICAL CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR ENTRY INTO FENCED AREA BY EITHER MAILING A KEY TO A SLAVE LOCKED CHAIN AT THE FENCE GATE OR CALLING AND LEAVING A COMBINATION.

FOR CONTINUATION AND CONNECTION OF ELECTRIC AND TELEPHONE SERVICE, COORDINATE WITH ELECTRIC AND PHONE COMPANY

**NOTE:**  
UTILITY COORDINATION BY OTHERS  
DO NOT PROCEED WITH CONSTRUCTION  
UNTIL POWER / FIBER HAVE BEEN  
CONFIRMED.



OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED

**1** UTILITY ROUTING PLAN  
SCALE: 1" = 2'

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1	ADDED LANDSCAPE BUFFER	01/11/23	EW

**SITE# 784809**  
**GERMANTOWN**

W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

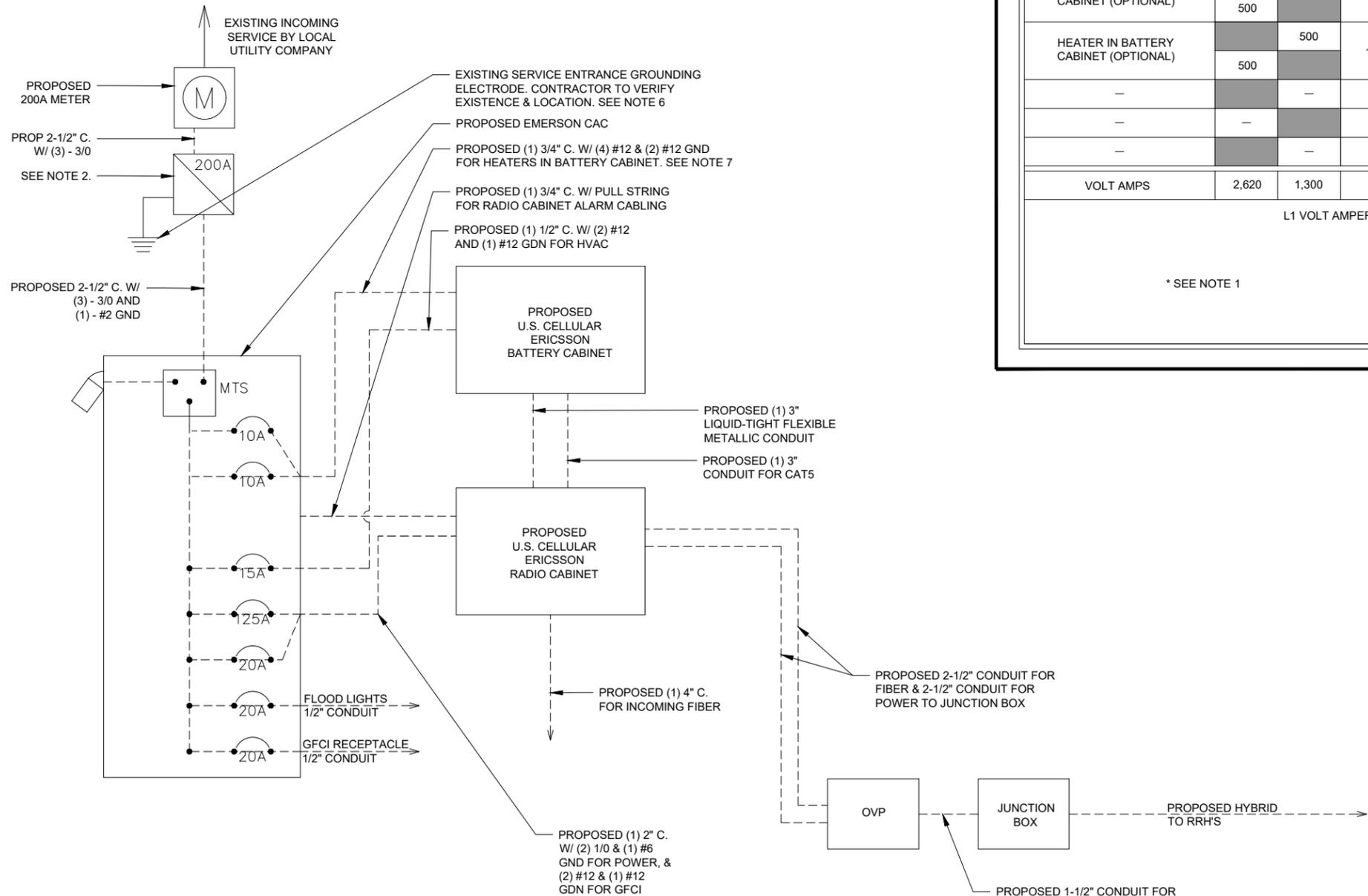
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PROJECT #:	10-079

SHEET TITLE  
**UTILITY ROUTING PLAN**

SHEET NUMBER  
**E-1**

**NOTES:**

- FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT, REFER TO VENDOR PRINTS PROVIDED BY EQUIPMENT MANUFACTURER.
- 200A RATED DISCONNECT FUSED AT 200A. IF NOT EXISTING, INSTALL 200A SERVICE ENTRANCE RATED DISCONNECT FUSED AT 200A.
- SOME BREAKERS NOT SHOWN IN ONE LINE DIAGRAM FOR CLARITY.
- CONTRACTOR TO VERIFY LOAD CENTER PANEL CAPACITY AND EXISTING LOADING IS WITHIN RATED LIMITS.
- THE BREAKERS AND CONDUCTORS SIZES SHOWN ARE BASED ON TYPICAL EQUIPMENT CONFIGURATIONS AT SIMILAR SITES. THE CONTRACTOR WILL VERIFY THE WIRING REQUIREMENTS WITH THE CABINET INSTALLATION GUIDE AND INCLUDED EQUIPMENT.
- GEC AND N-G BOND ARE SIZED FOR A SINGLE 200A SERVICE ONLY. IF ALL METERS SHARE A COMMON N-G BOND, THE CONTRACTOR WILL INSTALL (1) 3/0 COPPER GEC AND N-G BOND INSTEAD.
- THE WIRING DIAGRAMS PROVIDED TO TERRA INDICATE THAT A NEUTRAL IS NOT REQUIRED FOR THE BATTERY CABINET HEATERS. THE CONTRACTOR SHOULD CONFIRM THIS WITH THE INSTALLATION DOCUMENTS PROVIDED WITH BATTERY CABINET BEFORE PULLING CONDUCTORS.



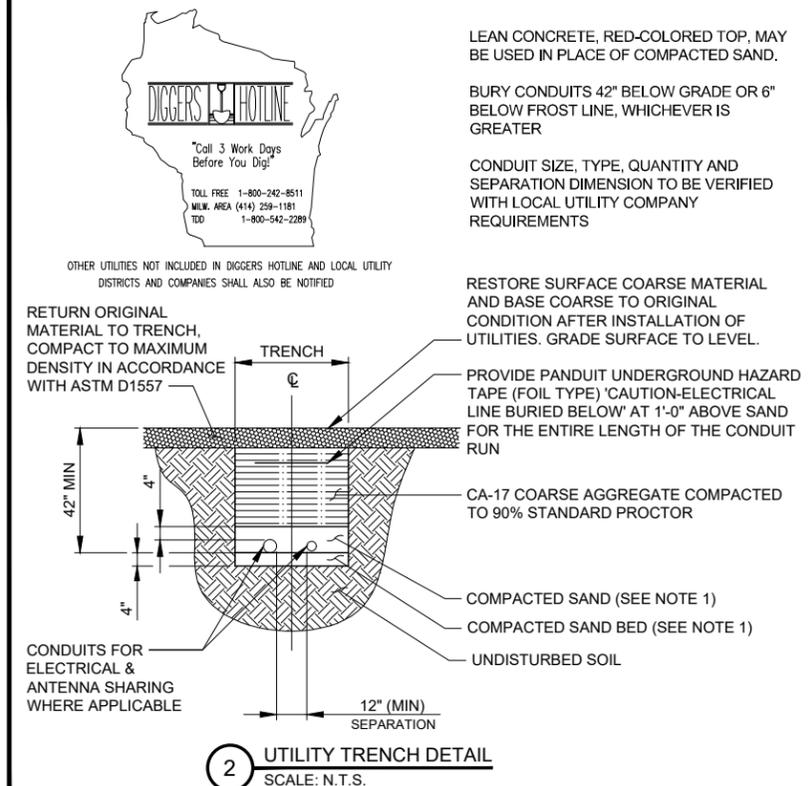
**1 ONE-LINE DIAGRAM**  
SCALE: N.T.S.

**NOTES:**

- LOADING SHOWN IS BASED ON MAXIMUM BREAKER LOADING. CONTRACTOR TO VERIFY LOADING AND CAPACITIES OF ALL EQUIPMENT AND NOTIFY TERRA OF ANY DISCREPANCIES.
- CONTRACTOR TO VERIFY THE SIZE OF ALL BREAKERS SHOWN AND WITH MANUFACTURER SPECIFICATIONS.

**200A 120/240VAC POWER PANEL SCHEDULE**

LOAD SERVED	VOLT AMPERES (WATTS)		TRIP	CKT#	PHASE	CKT#	TRIP	VOLT AMPERES (WATTS)		LOAD SERVED	
	L1	L2						L1	L2		
SURGE SUPPRESSOR	0		60A	1	A	2	125A	12960*		PROPOSED 6160 RADIO CABINET	
		0		3	B	4			12960*		
GFCI RECEPTACLE	180		20A	5	A	6	20A	180		PROPOSED 6160 GFCI	
FLOOD LIGHTS		300	20A	7	B	8	-	-	-	-	
BATTERY CABINET HVAC	1440		15A	9	A	10	-	-	-	-	
HEATER IN BATTERY CABINET (OPTIONAL)		500	10A	11	B	12	-	-	-	-	
	500			13	A	14	-	-	-	-	
HEATER IN BATTERY CABINET (OPTIONAL)		500	10A	15	B	16	-	-	-	-	
	500			17	A	18	-	-	-	-	
				19	B	20	-	-	-	-	
				21	A	22	-	-	-	-	
				23	B	24	-	-	-	-	
<b>VOLT AMPS</b>	<b>2,620</b>	<b>1,300</b>						<b>13,140</b>	<b>12,960</b>	<b>VOLT AMPS</b>	
<b>L1 VOLT AMPERES</b>				<b>15,760</b>		<b>14,260</b>		<b>L2 VOLT AMPERES</b>			
<b>* SEE NOTE 1</b>				<b>15,760</b>		<b>MAX VOLT AMPERES</b>					
				<b>131.3</b>		<b>TOTAL AMPS</b>					
				<b>164.2</b>		<b>AMPS X 125%</b>					



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

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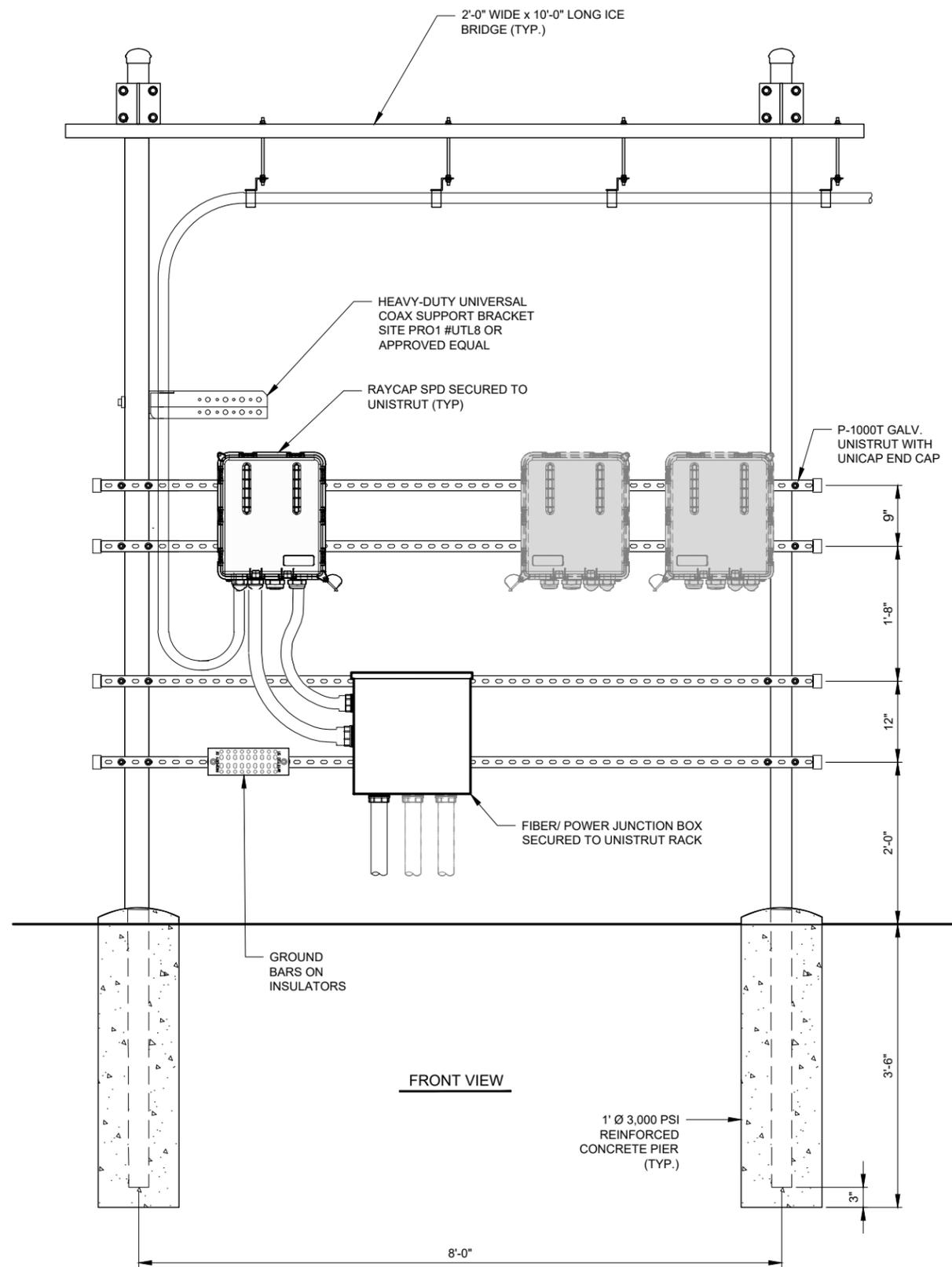
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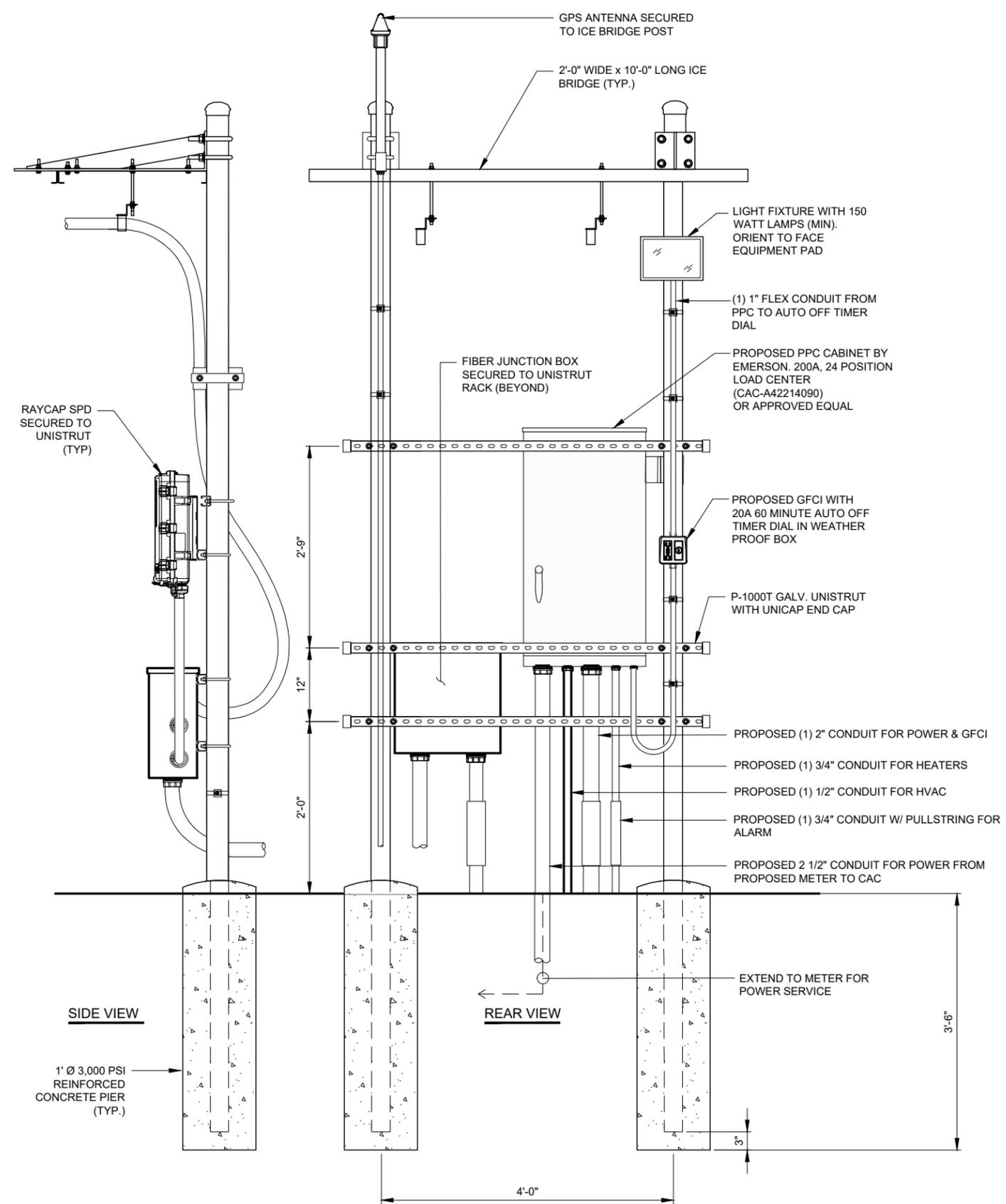
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SHEET TITLE  
**UTILITY DETAILS**

SHEET NUMBER  
**E-2**



1 8'-0" EQUIPMENT H-FRAME DETAIL  
N.T.S.



2 4'-0" PPC CABINET H-FRAME DETAIL  
N.T.S.

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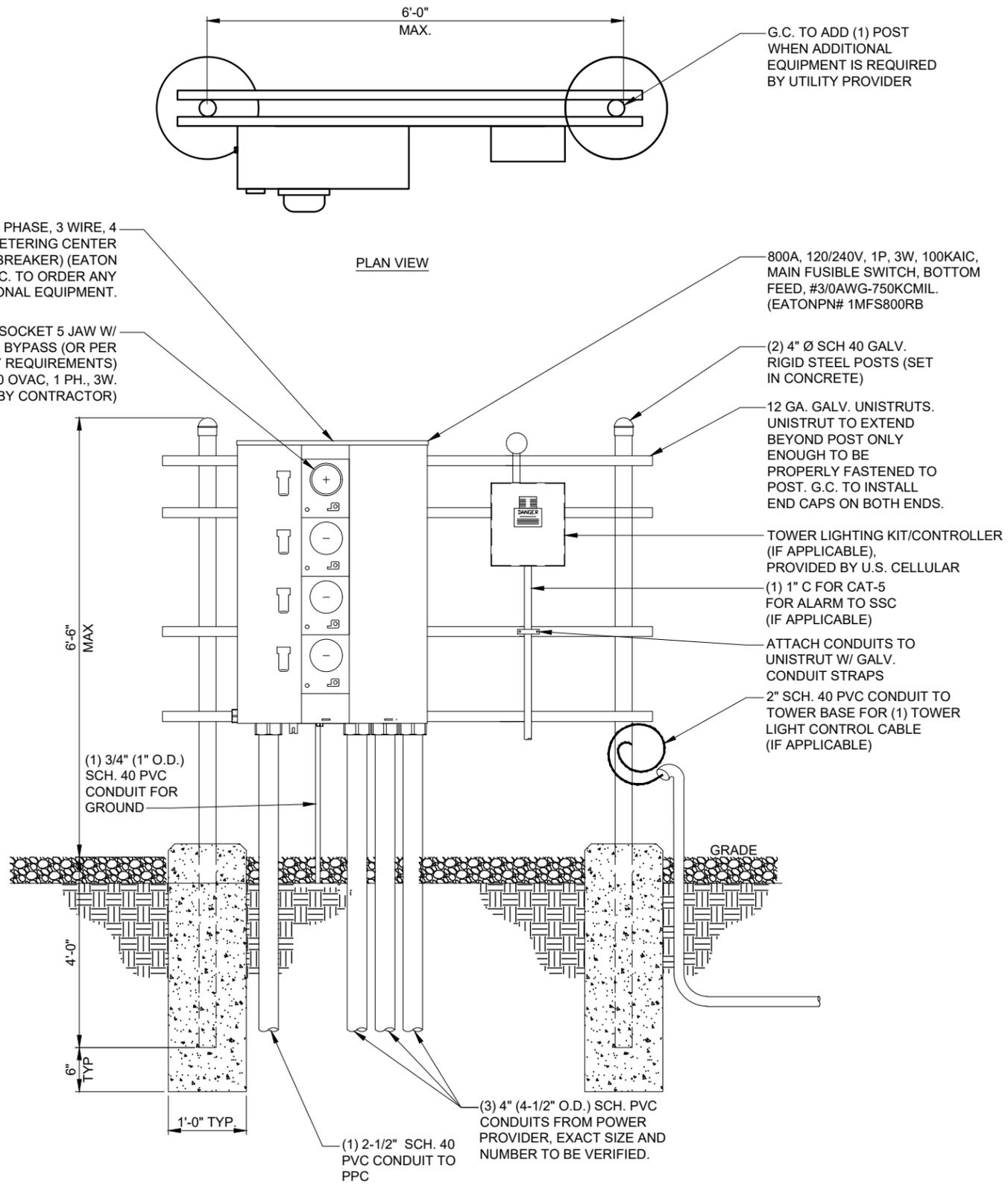
SHEET TITLE  
**EQUIPMENT & CAC**  
**H-FRAME DETAILS**

SHEET NUMBER  
**E-3**

NOTES:  
 1. PER 2020 NEC CODE, SCHEDULE 80 PVC CONDUIT TO BE USED FOR ALL CONDUITS EXPOSED ABOVE GRADE.  
 2. G.C. TO PROVIDE A SLIP JOINT CONNECTION AT ALL ABOVE GRADE UTILITY CONNECTIONS AT H-FRAME.

NOTE:  
 G.C. SHALL FURNISH, INSTALL & ENGRAVE PLASTIC LABELS WITH ARC FLASH INFORMATION BASED ON UTILITY TRANSFORMER SIZE. INFORMATION TO BE OBTAINED FROM LOCATION UTILITY COMPANY.

NOTES:  
 1. UTILITY COORDINATION NOT BY TERRA CONSULTING GROUP.  
 2. ALL METERING EQUIPMENT TO BE APPROVED FOR INSTALLATION BY LOCAL UTILITY COMPANY PRIOR TO ORDERING METERING EQUIPMENT.  
 3. METERING EQUIPMENT SHALL MEET ALL NEC REQUIREMENTS AS ADOPTED BY INDIVIDUAL STATE ELECTRICAL STANDARDS PRIOR TO ORDERING OF EQUIPMENT.



UTILITY H-FRAME FRONT - ELECTRICAL SIDE

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SHEET TITLE  
**COMPOUND  
 H-FRAME DETAILS**

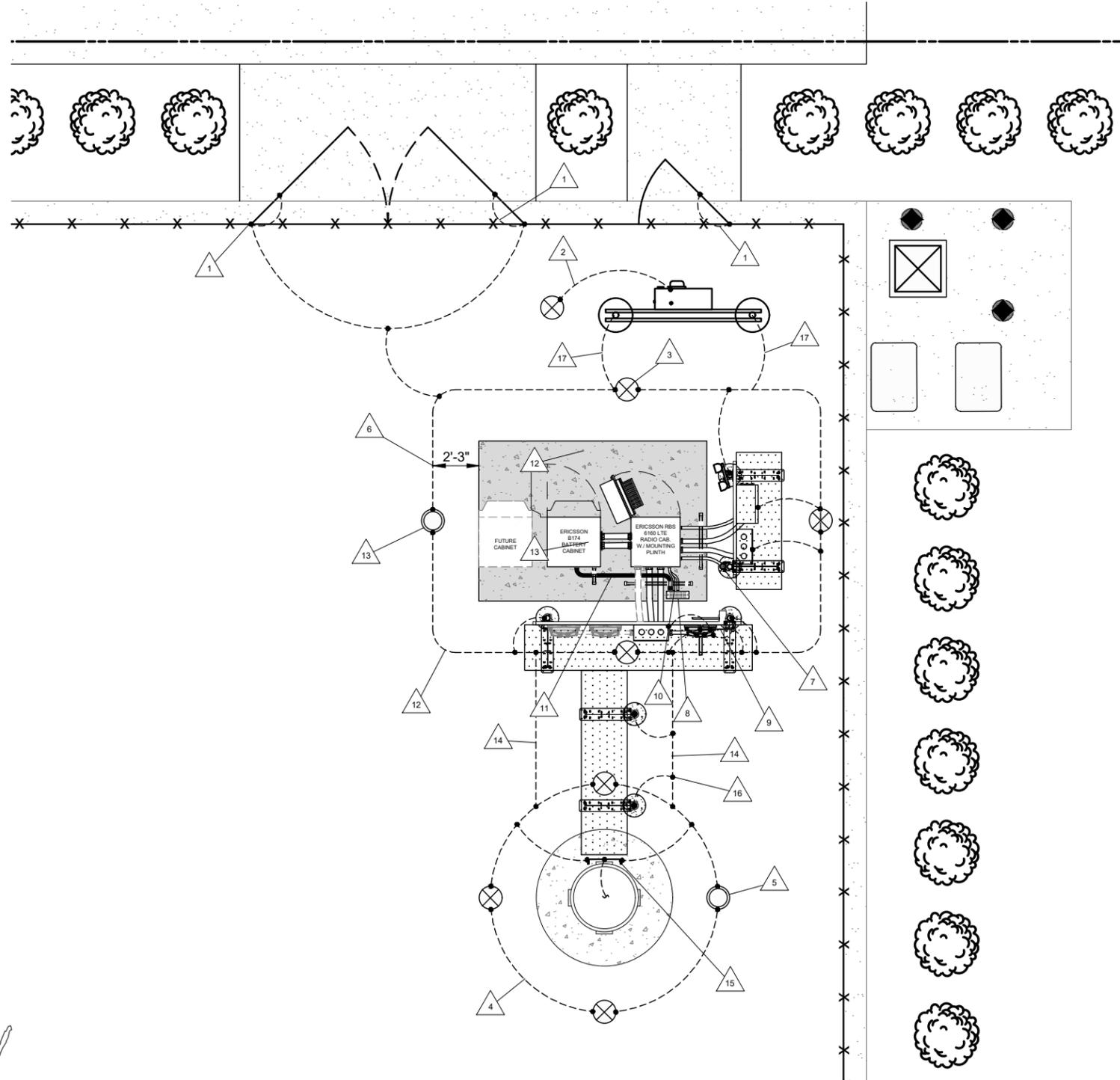
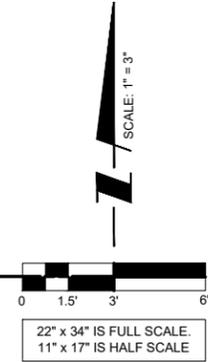
SHEET NUMBER  
**E-4**

**GROUNDING ELECTRODE SYSTEM NOTES:**

1. ALL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS OR COMPRESSION CRIMPED. 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 BY EXOTHERMIC PROCESS AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND PROCEDURES. GROUND CONDUCTOR SHALL HAVE A MINIMUM 24" BENDING RADIUS.
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. FENCE/GATE: GROUND FENCE POSTS WITHIN 6 FEET OF PAD AND 25 FEET OF TOWER AS INDICATED ON DRAWINGS. GROUND EACH GATE POSTGROUND CONNECTIONS TO FENCE POSTS SHALL BE MADE BY THE EXOTHERMIC PROCESS AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES. ALL OTHER CONNECTIONS FOR THE GROUND GRID SYSTEM SHALL BE MADE BY THE EXOTHERMIC PROCESS, AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES.
6. 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 CHARGES WHICH THEY WILL REQUIRE AND SHALL INCLUDE THE COST IN THE BID.
7. GROUND TEST: GROUND TESTS SHALL BE PERFORMED AS REQUIRED BY LESSEE STANDARD PROCEDURES. GROUND GRID RESISTANCE SHALL NOT EXCEED 5 OHMS.
8. CONTRACTOR SHALL SUBMIT THE GROUND RESISTANCE TEST REPORT AS FOLLOWS:
  1. ONE (1) COPY TO OWNER REPRESENTATIVE
  2. ONE (1) COPY TO ENGINEER
9. FOR ALL GALVANIZED ANTENNA SUPPORTING STRUCTURES, ZINGA SHALL BE USED TO COAT ALL WELDS, CAD WELDS, AND SCRATCHES. NO APPROVED EQUALS AT THIS TIME.

**LEGEND**

- #2 SOLID TINNED COPPER GROUND WIRE
- ⊗ 3/4" x 10' COPPER CLAD GROUND ROD SPACED AT 10' TO 20' O.C.
- GROUND INSPECTION WELL
- CADWELD CONNECTION
- X— PROPOSED FENCE LINE



**TYPICAL KEYED GROUNDING NOTES**

- △1 GATE GROUND LEADS TO GATE POST (IF APPLICABLE)
- △2 ELECTRIC METER GROUNDED ON A SINGLE DRIVEN GROUND ROD THAT IS NOT ATTACHED TO THE GROUND RING
- △3 3/4" THICK x 10' LONG GROUND ROD (TYP.) SPACED ONE-ROD LENGTH MINIMUM BETWEEN RODS
- △4 TOWER GROUND RING, #2 SOLID TINNED COPPER, 30" BELOW GRADE OR 6" BELOW FROST LINE, WHICHEVER IS DEEPER
- △5 TOWER GROUND RING INSPECTION WELL
- △6 MAINTAIN 2'-3" SEPARATION BETWEEN GROUND RING AND FOUNDATION (TYP.)
- △7 GROUND GPS UNIT TO COLLECTOR GROUND BAR (CGB) ON UTILITY H-FRAME
- △8 MASTER GROUND BAR (MGB MOUNTED HORIZONTALLY TO CONCRETE PAD ON INSULATORS; (2) GROUNDS FROM MGB TO EQUIPMENT GROUND RING.
- △9 COLLECTOR GROUND BAR (CGB) MOUNTED TO UNISTRUT RACK ON INSULATORS; (2) GROUNDS FROM MGB TO EQUIPMENT GROUND RING.
- EQUIPMENT CABINET GROUNDING: (1) LEAD FROM MASTER GROUND BAR TO GROUND BAR INSIDE RBS CABINET AND (1) LEAD FROM MASTER GROUND BAR TO RBS PLINTH, #2 INSULATED COPPER (TYP); ROUTE THROUGH NEW PENETRATIONS AND LIQUID-TIGHT CONDUIT FITTINGS THROUGH BACK OF MOUNTING PLINTH
- △10 (1) GROUND LEAD FROM BATTERY CABINET TO MASTER GROUND BAR, #2 INSULATED COPPER; ROUTE IN LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT OUT NEW PENETRATION THOUGH BACK OF EQUIPMENT CABINET PLINTH.
- △11 EQUIPMENT GROUND RING, 30" BELOW GRADE OR 6" BELOW FROST LINE, WHICHEVER IS DEEPER
- △12 EQUIPMENT GROUND RING INSPECTION WELL
- △13 GROUND LEAD FROM EQUIPMENT GROUND RING TO TOWER GROUND RING (TYP. OF 2), #2 SOLID TINNED COPPER
- △14 TOWER GROUND BAR (TGB) WITH (2) GROUNDS FROM TGB TO TOWER GROUND RING AND (1) BOND FROM TGB TO TOWER STEEL
- △15 GROUND LEAD FROM ICE BRIDGE POST TO BURIED GROUND RING (TYP.)
- △16 GROUND LEAD FROM UTILITY H-FRAME TO EQUIPMENT GROUND RING



OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED

**1 GROUNDING SITE PLAN**  
SCALE: 1" = 3'

NOTE:  
FINAL GROUNDING PLAN PENDING  
FINAL TOWER FOUNDATION DESIGN.  
TOWER ERECTION DRAWINGS  
PROVIDED BY TOWER OWNER

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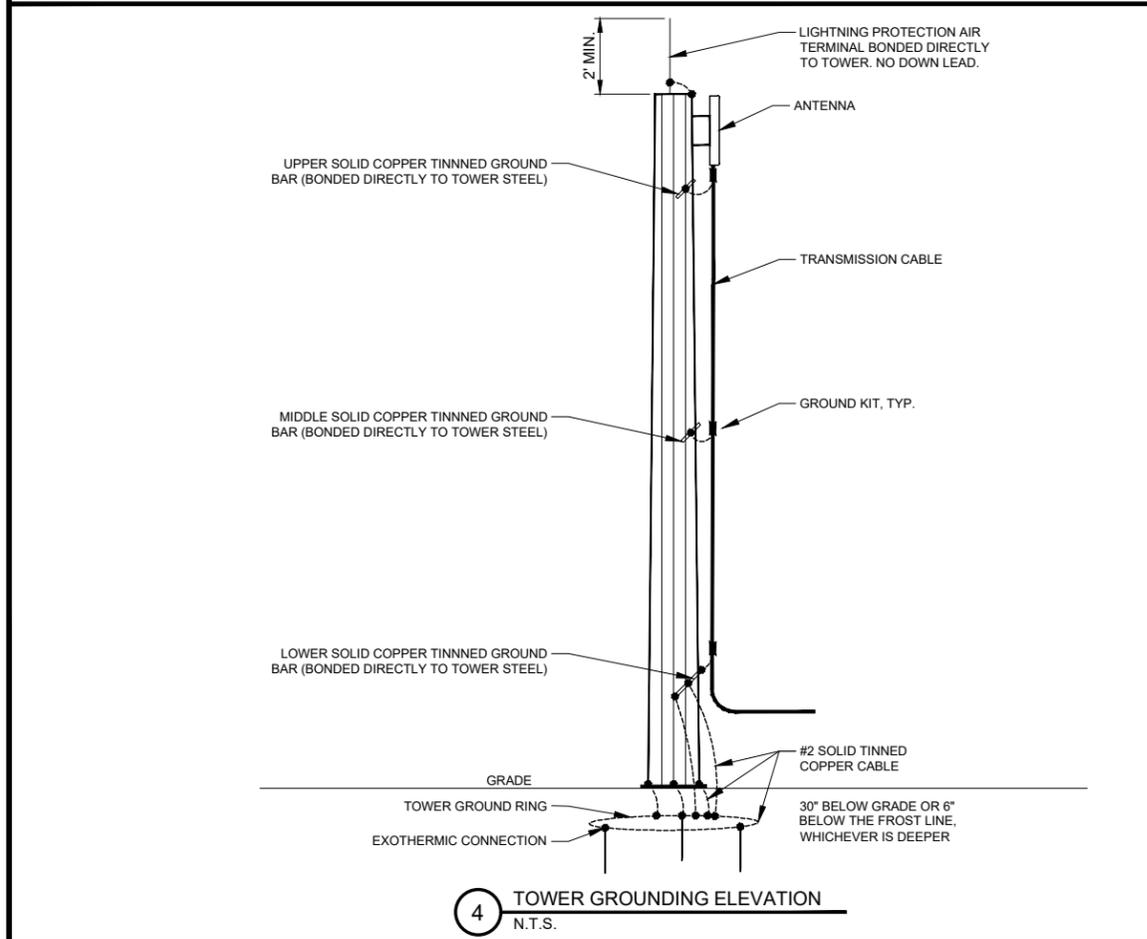
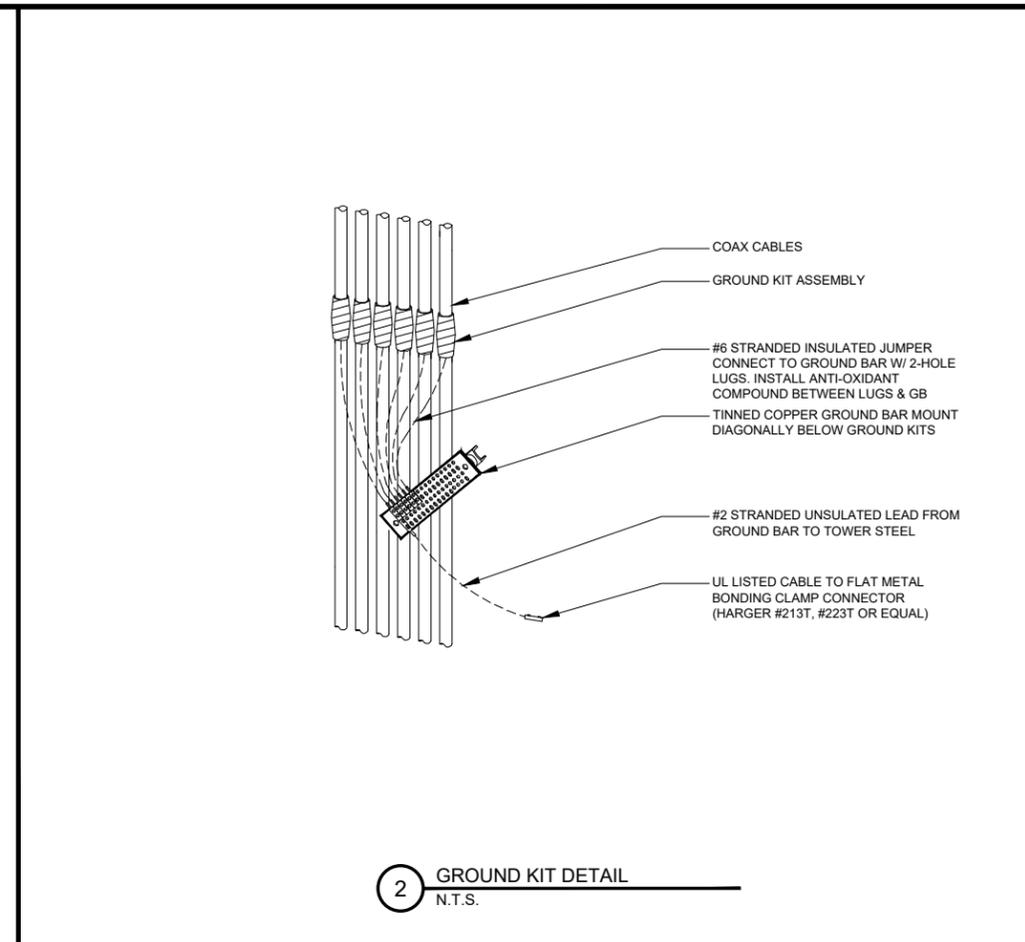
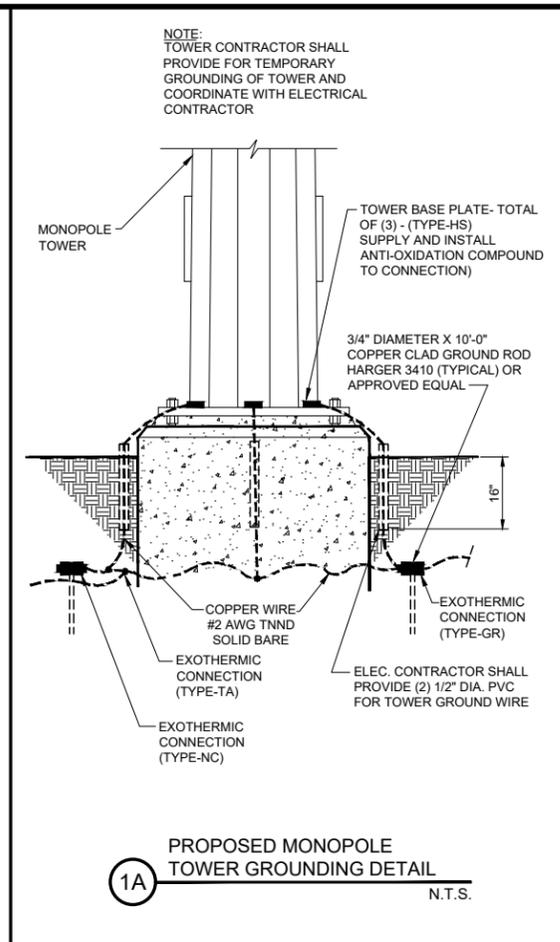
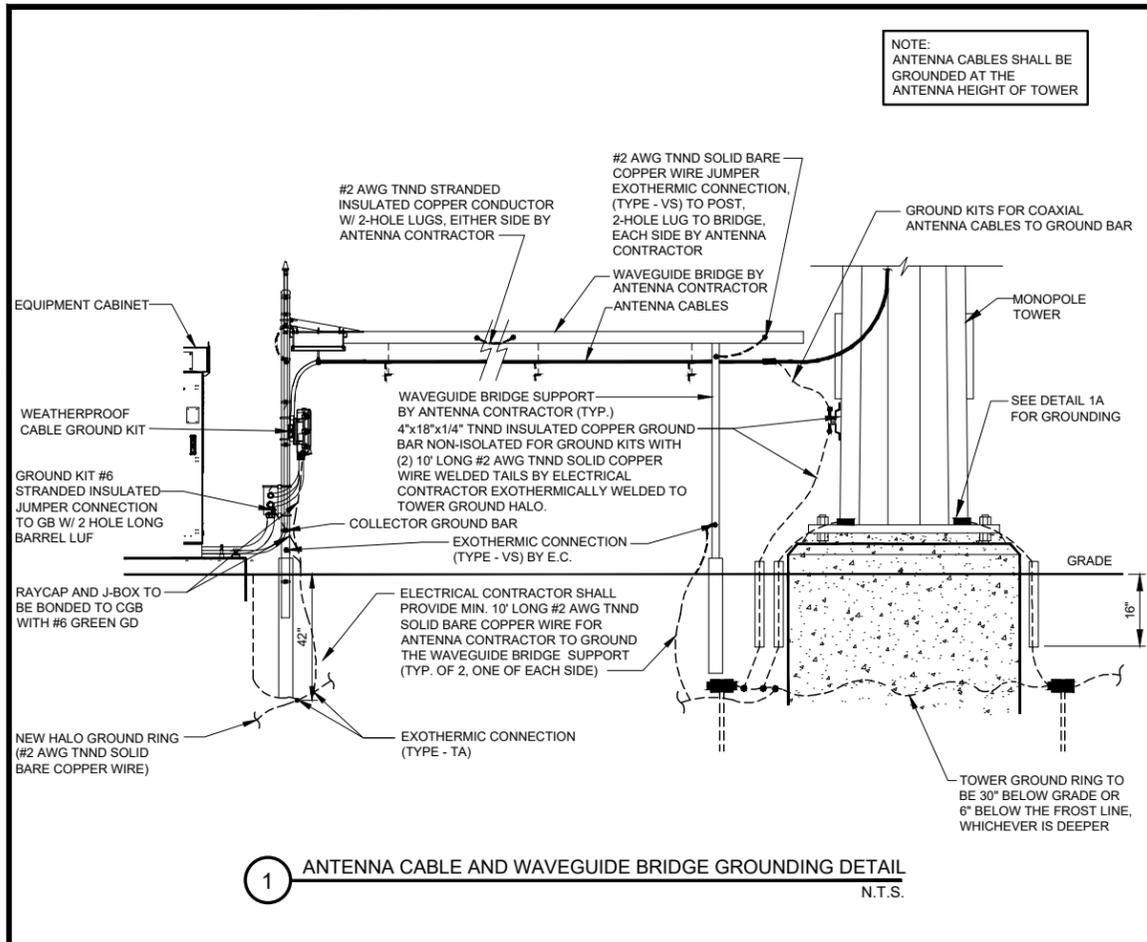
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SHEET TITLE  
**OVERALL GROUNDING  
SITE PLAN**

SHEET NUMBER  
**G-1**

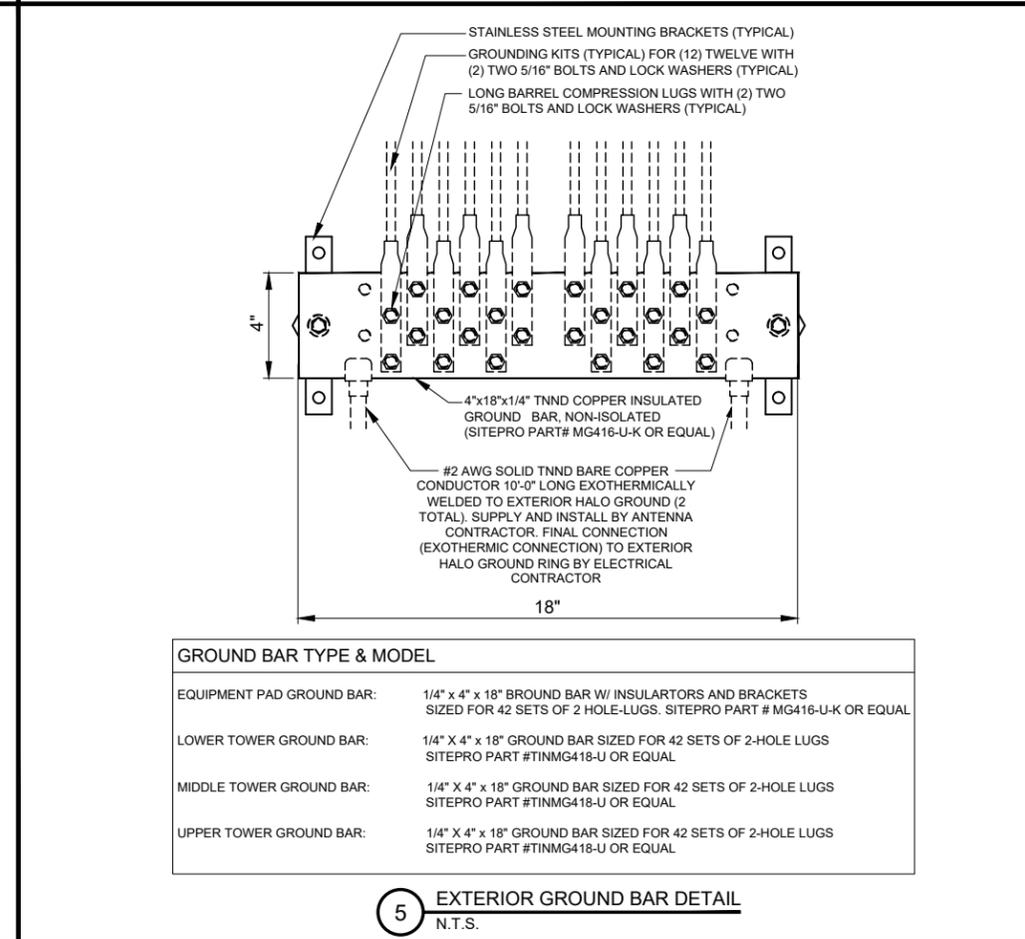


**AIR TERMINAL FOR ALL TOWER TYPES:**

- LIGHTNING AIR TERMINALS SHALL BE AT LEAST 2 FEET ABOVE THE TALLEST POINT OF THE TOWER AND BONDED TO TOWER
- LIGHTNING AIR TERMINALS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO TOWER FRAME
- LIGHTNING RODS SHALL NOT VIOLATE FAA DETERMINATION LETTER
- EXOTHERMIC WELDS ARE TO BE TREATED WITH ZINGA

**TOWER GROUND BAR (TGB)**

- EACH TGB SHALL ACT AS A COLLECTION POINT FOR GROUNDING CONDUCTORS FROM TRANSMISSION CABLE GROUNDING KITS. 3.16.2 EACH TGB SHALL BE BOLTED TO THE TOWER USING STAINLESS STEEL HARDWARE.
- NO INSULATORS ARE TO BE INSTALLED ON THE TGB'S.
- ALL CONNECTION POINTS SHALL USE ANTI-OXIDATION MATERIAL AND STAINLESS HARDWARE.
- THE TOP TGB SHALL BE BOLTED TO THE TOWER BELOW ANTENNAS USING STAINLESS STEEL HARDWARE.
- THE MIDDLE TGB SHALL BE BOLTED TO THE TOWER USING STAINLESS STEEL HARDWARE, BELOW TRANSMISSION CABLE GROUNDING KITS ON CABLE RUNS OVER 300 FEET.
- BOTTOM TGB SHALL BE BOLTED TO THE TOWER USING STAINLESS STEEL HARDWARE, BELOW THE TRANSMISSION CABLE GROUNDING STEEL KITS. IDEALLY, THIS TGB SHALL BE MOUNTED DIAGONALLY JUST ABOVE THE ICE BRIDGE.
- BOTTOM TGB SHALL ADDITIONALLY BE BONDED TO THE TOWER GROUND RING USING 2 # 2 BARE, SOLID TINNED COPPER CABLES. 3.14.9 ALL GROUND BARS SHALL BE SOLID COPPER TINNED PLATED.
- EXOTHERMIC WELDS ARE TO BE TREATED WITH ZINGA.
- ALL CONNECTIONS TO THE GROUND BAR SHALL BE TREATED WITH ANTI-OXIDATION MATERIAL.



GROUND BAR TYPE & MODEL	
EQUIPMENT PAD GROUND BAR:	1/4" x 4" x 18" BROUND BAR W/ INSULATORS AND BRACKETS SIZED FOR 42 SETS OF 2 HOLE-LUGS. SITEPRO PART # MG416-U-K OR EQUAL
LOWER TOWER GROUND BAR:	1/4" X 4" x 18" GROUND BAR SIZED FOR 42 SETS OF 2-HOLE LUGS SITEPRO PART #TINMG418-U OR EQUAL
MIDDLE TOWER GROUND BAR:	1/4" X 4" x 18" GROUND BAR SIZED FOR 42 SETS OF 2-HOLE LUGS SITEPRO PART #TINMG418-U OR EQUAL
UPPER TOWER GROUND BAR:	1/4" X 4" x 18" GROUND BAR SIZED FOR 42 SETS OF 2-HOLE LUGS SITEPRO PART #TINMG418-U OR EQUAL

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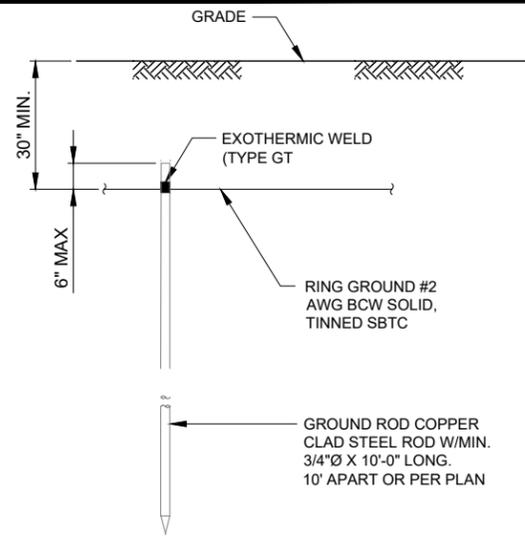
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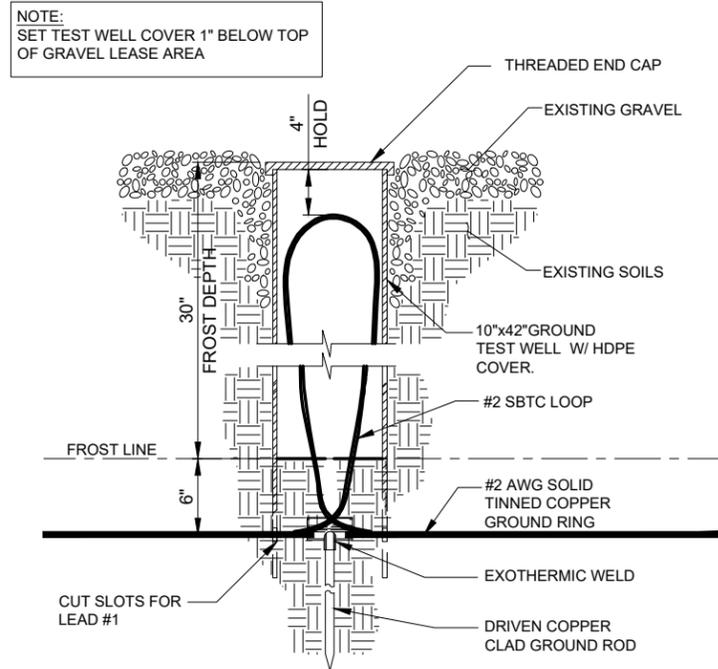
SHEET TITLE  
**GROUNDING DETAILS**

SHEET NUMBER  
**G-2**



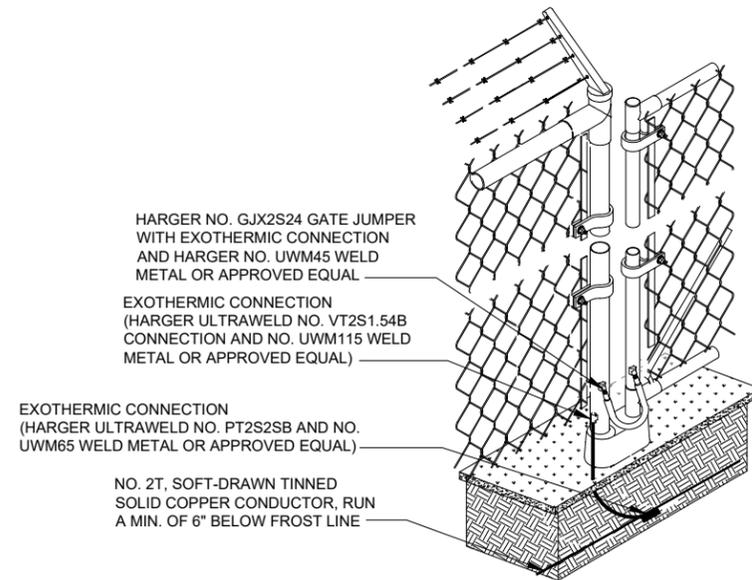
NOTE:  
GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL.

1 GROUND ROD DETAIL  
SCALE: N.T.S.



NOTE:  
SET TEST WELL COVER 1\"/>

2 TEST WELL DETAIL  
SCALE: N.T.S.



3 FENCE GROUNDING DETAIL  
N.T.S.

**uscellular**  
8410 W. BRYN MAWR AVE.  
CHICAGO, IL 60631  
POC: STEVE HATMAKER

**TERRA**  
CONSULTING GROUP, LTD.  
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NO.	DESCRIPTION	DATE	BY
A	ISSUED FOR REVIEW	11/04/22	BJC
B	REVISED PER USCC COMMENTS	12/19/22	JGL
0	ISSUED FOR CONSTRUCTION	12/20/22	EW
1	ADDED LANDSCAPE BUFFER	01/11/23	EW

SITE# 784809  
GERMANTOWN

W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

DRAWN BY: BJC  
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SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
**G-3**

## GENERAL REQUIREMENTS

1. SITE WORK SHALL BE COMPLETED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS (U.S. CELLULAR STANDARD PLANS AND SPECIFICATIONS) AND THE REFERENCED STANDARDS.

A. ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.

B. UNIFORM BUILDING CODE (UBC) BUILDING OFFICIALS & CODE ADMINISTRATORS (BOCA) AS APPLICABLE.

C. AMERICAN CONCRETE INSTITUTE (ACI).

D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

E. ELECTRONICS INDUSTRIES ASSOCIATION STANDARDS (EIA/TIA-222-F) MOST CURRENT VERSION ADOPTED BY SUBJECT STATE.

F. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

2. WHERE A CONFLICT OCCURS BETWEEN REFERENCED STANDARDS AND U.S. CELLULAR STANDARD PLANS AND SPECIFICATIONS, THE MORE STRINGENT STANDARD SHALL APPLY.

3. THE FACILITY IS AN UNOCCUPIED SPECIALIZED MOBILE RADIO FACILITY.

4. PLANS ARE NOT TO BE SCALED AND ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS NOTED OTHERWISE THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

5. PRIOR TO THE SUBMISSIONS OF THE BIDS, THE CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE.

6. THE CONTRACTOR SHALL RECEIVE IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEM NOT CLEARLY IDENTIFIED BY THE CONTRACT DOCUMENTS.

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

8. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING BEST SKILLED PERSONNEL. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT INCLUDING CONTACT AND COORDINATION WITH THE LANDLORDS AUTHORIZED REPRESENTATIVE.

9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS OF THE SITE AND NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BEFORE STARTING ANY WORK.

10. WHEN CONTRACTOR'S ACTIVITIES IMPEDE OR OBSTRUCT TRAFFIC FLOW, CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL DEVICES, SIGNS, AND FLAGMEN IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.

11. THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND U.S. CELLULAR PRIOR TO CONSTRUCTION.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS SUCH AS BUT NOT LIMITED TO, PAVING, CURBS, AGRICULTURAL CROPS, DRAIN TILE, FENCES, LANDSCAPING, GALVANIZED SURFACES, ETC. AND UPON COMPLETION OF WORK REPAIR ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.

13. THE LOCATIONS OF UTILITIES SHOWN ON THE PLAN ARE BASED ON EXISTING RECORDS, FIELD LOCATIONS OR OWNER SUPPLIED INFORMATION AND MAY NOT BE ACCURATE. THE CONTRACTOR SHALL MARK ALL PUBLIC & PRIVATE UTILITIES. THE CONTRACTOR SHALL CALL THE LOCAL "ONE CALL" PROVIDER A MINIMUM OF THREE BUSINESS DAYS PRIOR TO EXCAVATING TO ALLOW MEMBER UTILITIES TO LOCATE THEIR FACILITIES. THE PROPERTY OWNER SHALL BE NOTIFIED IN A SIMILAR FASHION TO ALLOW HIM TO LOCATE HIS PRIVATE UTILITIES.

14. WHEN EXCAVATING AROUND UTILITIES, THE CONTRACTOR SHALL USE REASONABLE CARE IN LOCATING AND PROTECTING UTILITIES. U.S. CELLULAR SHALL BE NOTIFIED IMMEDIATELY OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.

15. DAMAGE TO PUBLIC OR PRIVATE UTILITIES SHALL BE REPORTED TO U.S. CELLULAR AND THE OWNER OF THE UTILITY IMMEDIATELY. ANY DAMAGE RESULTING FROM CONTRACTOR'S NEGLIGENCE OR FAILURE TO ACT WITH DUE REGARD SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

16. UNLESS OTHERWISE NOTED ON THE PLANS, CONTRACTOR SHALL ASSUME ALL SURFACE FEATURES SUCH AS BUILDINGS, PAVEMENTS, LANDSCAPING FEATURES AND PLANTS ARE TO BE SAVED AND PROTECTED FROM DAMAGE.

17. KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

18. THE CONTRACTOR SHALL PROVIDE ON-SITE TRASH RECEPTACLES FOR COLLECTION OF NON-TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.

19. ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON-SITE.

20. THE CONTRACTOR SHALL MAINTAIN AND SUPPLY U.S. CELLULAR WITH AS-BUILT PLANS UPON COMPLETION OF THE PROJECT.

21. MEANS AND METHODS OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, THE DESIGN AND PLACEMENT OF FORMS AND SHORING ARE THE RESPONSIBILITY OF THE CONTRACTOR.

22. THE GENERAL CONTRACTOR SHALL COORDINATE/ASSIST DIFFERENT TRADE CONTRACTORS IN TERMS OF COORDINATION OF SITE ACCESS.

23. ALL ARCHITECTURAL, MECHANICAL & ELECTRICAL SYSTEM AND COMPONENTS IN THIS FACILITY SHALL BE INSTALLED TO RESIST WIND, ICE AND SNOW FORCES AS PER NATIONAL STANDARDS AND BUILDING CODES (LATEST ADOPTED EDITION).

24. U.S. CELLULAR WILL OBTAIN NECESSARY PERMITS AND LICENSES FROM THE FEDERAL COMMUNICATIONS COMMISSION (FCC) AND THE FEDERAL AVIATION ADMINISTRATION (FAA), UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL OTHER PERMITS NECESSARY FOR CONSTRUCTION.

25. U.S. CELLULAR WILL ORDER AND PAY FOR ANY NECESSARY ELECTRIC AND TELEPHONE UTILITY INSTALLATIONS TO THE POINT OF TERMINATION AS SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH UTILITIES.

26. U.S. CELLULAR WILL PROVIDE PRIMARY HORIZONTAL AND VERTICAL CONTROL FOR CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE TO CORRECTLY TRANSFER LINE AND GRADE. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL STAKING OR RE-STAKING.

27. U.S. CELLULAR MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTORS WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING TESTS.

28. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY UTILITIES OR FACILITIES IT DEEMS NECESSARY TO COMPLETE IT'S WORK. THIS INCLUDES, BUT IS NOT LIMITED TO WATER, SEWER, POWER, TELEPHONE, HEAT, LIGHTING OR SECURITY.

29. NOTIFY ENGINEER 2 DAYS IN ADVANCE OF INITIATING SITE CONSTRUCTION ACTIVITIES.

## DEMOLITION

1. PERFORM DEMOLITION AND REMOVAL OF EXISTING MATERIALS OR STRUCTURES AS SHOWN ON THE PLANS AND AS SPECIFIED IN SPECIAL CONDITIONS. PROTECT EXISTING FACILITIES OR STRUCTURES THAT ARE TO REMAIN.

2. COMPLETE DEMOLITION IN A SYSTEMATIC MANNER BEGINNING AT THE HIGHEST LEVEL.

3. NEATLY SAW OR CUT JOINTS AT THE LIMITS OF REMOVAL; WHENEVER POSSIBLE LOCATE CUTS AT EXISTING JOINTS.

4. PATCH AND REPAIR ANY DAMAGED SURFACES OR STRUCTURAL MEMBERS AT THE LIMITS OF REMOVAL.

5. REMOVAL DEMOLITION DEBRIS FROM THE SITE ON A REGULAR BASIS. DISPOSE ALL DEBRIS OFFSITE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. BURNING OF MATERIAL SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS.

## CLEARING AND GRUBBING

1. REMOVE TREES, STUMPS, SHRUBS, GRASS AND OTHER VEGETATION AS SHOWN ON THE PLANS TO ALLOW FOR CONSTRUCTION OF NEW CELLULAR FACILITIES.

2. WHEN POSSIBLE, NEATLY TRIM OR CUT BACK EXISTING TREES OR VEGETATION TO ALLOW FOR CONSTRUCTION OF NEW CELLULAR FACILITIES.

3. WHEN CLEARING TREES, PROTECT ALL SURROUNDING STRUCTURES, PAVEMENTS AND LANDSCAPING BY TOPPING, TRIMMING AND USING GUY LINES.

4. COMPLETELY REMOVE ALL STUMPS AND ROOTS. STUMPS AND ROOTS MAY BE REMOVED BY GRUBBING, CHIPPING OR GRINDING.

5. DISPOSE OF ALL DEBRIS OFFSITE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. BURNING OF MATERIAL SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS.

## EARTHWORK

1. REMOVE TOPSOIL FROM BENEATH ALL PROPOSED ROADS. PARKING AREAS. BUILDINGS AND AREAS TO RECEIVE MORE THAN 6" OF FILL. STOCKPILE TOPSOIL FOR USE DURING RESTORATION.

2. ALL TREES DESIGNATED TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION BY A 5 FOOT HIGH TREE BARRIER UTILIZING WIRE FENCING, OR PROTECTIVE SAFETY NETTING.

3. GRADE AREAS IN ACCORDANCE WITH ELEVATIONS AND GRADES SHOWN ON THE PLANS OR AS NECESSARY IN GRADING TO PROVIDE DRAINAGE.

4. FILL MATERIAL USED IN GRADING OPERATIONS SHALL CONSIST OF EARTH WHICH IS FREE OF DEBRIS, BOULDERS OR ORGANIC MATERIAL. FILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 90% OF MODIFIED PROCTOR **MAXIMUM** DRY DENSITY.

5. ALL FILL SHALL BE TESTED FOR FIELD DENSITY. TESTS SHALL BE TAKEN IN EACH LIFT OF FILL AT LOCATIONS DESIGNATED BY THE OWNER'S REPRESENTATIVE.

6. SELECT GRANULAR FILL SHALL BE USED WHEN FILLING OR BACKFILLING BENEATH AND/OR AROUND ANY STRUCTURES, ROADS OR PARKING AREAS. SELECT FILL SHALL BE PLACED IN 9" LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY. SELECT GRANULAR FILL SHALL CONSIST OF SAND, GRAVEL OR MIXTURE OF SAND AND GRAVEL FREE OF ORGANIC MATERIAL. THE MATERIAL SHALL HAVE A 2" MAXIMUM SIZE, LESS THAN 10% PASSING NO. 200 SIEVE, A PLASTICITY INDEX OF 6 OR LESS, AND A UNIFORMITY COEFFICIENT OF 5 OR GREATER.

7. ALL DISTURBED AREAS SHALL BE RESTORED AS SOON AS POSSIBLE WITH 4" TOPSOIL, SEED, FERTILIZER AND MULCH. GRASS SEED SHALL BE A SUITABLE MIX CONTAINING BOTH ANNUAL AND PERENNIAL VARIETIES OF FESCUE, RYE AND BLUEGRASS. FERTILIZER SHALL CONTAIN A MINIMUM OF 10% EACH OF NITROGEN, PHOSPHORIC ACID AND POTASH. MULCH SHALL BE A STRAW OR HAY MIXTURE FREE OF NOXIOUS WEED SEEDS. APPLY SEED AND FERTILIZER AS RECOMMENDED BY MANUFACTURER. MULCH SHALL BE CRIMPED AFTER APPLICATION.

8. THE CONTRACTOR SHALL VERIFY, UPON COMPLETION OF DEVELOPMENT, THE SITE IS PROPERLY STABILIZED AND ALL INDICATED SWALES AND STORMWATER FACILITIES ARE CONSTRUCTED AS INDICATED ON THE PLANS.

9. TOWER, TOWER FOUNDATIONS, SLABS, MODULAR BUILDINGS, AND ELECTRICAL AND MECHANICAL FEATURES ARE TO BE DESIGNED AND SPECIFIED BY OTHERS.

## EROSION CONTROL

1. CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH THE MOST STRINGENT OF: PROJECT PLANS, SPECIAL PROVISIONS, APPLICABLE STATE DEPARTMENT OF NATURAL RESOURCES OR LOCAL ORDINANCES.

2. ESTABLISH EROSION CONTROL MEASURES PRIOR TO STARTING CONSTRUCTION AND MAINTAIN THROUGHOUT CONSTRUCTION. INSPECT EROSION CONTROL MEASURES FOLLOWING EACH RAINFALL EVENT AND REPAIR AS NECESSARY.

3. SEDIMENTATION CONTROL SHALL BE ACCOMPLISHED DURING CONSTRUCTION THROUGH THE USE OF SILT FENCING PLACED AS SHOWN ON THE ATTACHED PLAN. THE CONTROL DEVICES SHALL BE SET AT THE ONSET OF SITE GRADING TO PREVENT SILTING OF THE EXISTING STORMWATER FACILITIES.

## ROAD AND PARKING AREA CONSTRUCTION

1. PREPARE SUBGRADE FOR ROADS AND PARKING AREAS IN ACCORDANCE WITH "EARTHWORK" SECTION.  
2. PROOF ROLL ROAD TO IDENTIFY UNSUITABLE MATERIALS. EXCAVATE UNSUITABLE MATERIAL AND DISPOSE OFFSITE. BACKFILL UNDERCUT EXCAVATION USING 3" BREAKER RUN MATERIAL. BREAKER RUN MATERIAL SHALL BE CRUSHED STONE MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% WEIGHT PASSING
3"	100
1-1/2"	0-50
3/4"	0-20
#200	0-10

3. PLACE CRUSHED AGGREGATE BASE COURSE IN MAXIMUM OF 6" THICK LIFTS IN ACCORDANCE WITH DETAIL DRAWINGS. MOISTURE CONDITION BASE COURSE AS NECESSARY TO ACHIEVE COMPACTION. BASE COURSE SHALL BE COMPACTED TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY. BASE COURSE MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS:

SIEVE SIZE	% WEIGHT PASSING
3"	100
2-1/2"	25-60
3/4"	0-20
3/8"	0-5

1-1/2" BASE COURSE

SIEVE SIZE	% WEIGHT PASSING
1-1/2"	100
1"	70-100
3/4"	55-95
3/8"	30-65
#4	25-55
#10	15-40
#200	0-10

4. PLACE BASE COURSE WITH CROWN OR UNIFORM SLOPE AS NECESSARY TO PROVIDE DRAINAGE FROM THE SITE.  
5. GEOTEXTILE FABRIC SHALL BE USED IN THE EVENT OF UNSTABLE SOIL CONDITIONS. VERIFICATION OF SUCH CONDITIONS IS THE RESPONSIBILITY OF THE CONTRACTOR.



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		11/04/22	BJC			11/04/22	BJC
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C	ISSUED FOR CONSTRUCTION	01/11/23	EW	D	ADDED LANDSCAPE BUFFER		
E				F			
				G			
				H			

**SITE# 784809  
GERMANTOWN**

W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

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CHECKED BY:	EW
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SHEET NUMBER  
**SP-1**

## CONCRETE AND STEEL REINFORCEMENT

1. CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94. CONCRETE SHALL BE 6 BAG MIX HAVING A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI, MAXIMUM AGGREGATE SIZE OF 1", MAXIMUM WATER CEMENT RATIO OF 0.45, AIR ENTRAINMENT OF 6% +/-1%, AND SLUMP OF 3" +/- 1". DEVIATIONS FROM THE MIX MUST BE APPROVED BY U.S. CELLULAR PRIOR TO USE.

2. CONCRETE CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST STRINGENT OF: PROJECT PLANS, SPECIAL PROVISIONS, OR THE AMERICAN CONCRETE INSTITUTE (ACI) PUBLICATIONS. CONCRETE WORK FOR TOWER FOUNDATIONS SHALL BE COMPLETED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS PROVIDED BY THE TOWER VENDOR.

3. FORM MATERIALS WILL COMPLY WITH ACI 301. PLYWOOD FORMS SHALL BE APA B-B PLYFORM CLASS I SOUND SHEETS. LUMBER SHALL BE SPRUCE-PINE-FIR SPECIES #2 OR BETTER GRADE. TUBULAR COLUMN FORMS MAY BE SPIRALLY WOUND LAMINATED FIBER MATERIAL. FORM TIES SHALL BE REMOVABLE OR SNAP-OFF METAL TYPE.

4. CONCRETE SHALL BE MADE OF CEMENT MEETING THE REQUIREMENTS OF ASTM C150, NORMAL, TYPE I PORTLAND. FINE AND COARSE AGGREGATES FOR CONCRETE SHALL MEET THE REQUIREMENTS OF ASTM C33.

5. PLACE, SUPPORT AND SECURE REINFORCEMENT STEEL AT LOCATIONS SHOWN ON PLANS. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ACI 315. REBAR YIELD STRENGTH = 60,000 PSI.

6. AIR ENTRAINING ADMIXTURES SHALL MEET THE REQUIREMENTS OF ASTM C260; WATER REDUCING ADMIXTURES SHALL MEET THE REQUIREMENTS OF ASTM C494, TYPE A. ALL OTHER ADMIXTURES ARE PROHIBITED WITHOUT PRIOR APPROVAL BY U.S. CELLULAR.

7. VAPOR BARRIER SHALL BE 6 MIL THICK POLYETHYLENE, MEETING THE REQUIREMENTS OF ASTM D2103.

8. CURING COMPOUND SHALL MEET THE REQUIREMENTS OF ASTM C309.

9. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

10. ALL CONSTRUCTION AND EXPANSION JOINTS SHALL BE INSTALLED PER THE DRAWINGS.

11. ALL EXPOSED CORNERS OF CONCRETE WORK SHALL BE CHAMFERED 3/4 " UNLESS NOTED OTHERWISE.

12. PLACE, SUPPORT AND SECURE REINFORCEMENT STEEL AT LOCATIONS SHOWN ON PLANS. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ACI 315.

13. ALL FORM WORK SHALL BE RIGID, TIGHT, LEVEL, PLUMB AND SUFFICIENTLY SHORED TO RESIST CONSTRUCTION LOAD CONDITIONS. COAT FORMS WITH RELEASE AGENT PRIOR TO PLACING REINFORCING STEEL.

14. PREPARE SUBGRADE FOR CONCRETE IN ACCORDANCE WITH PROJECT PLANS AND SPECIAL PROVISION. DO NOT PLACE CONCRETE ON FROZEN SUBGRADE.

15. PROVIDE U.S. CELLULAR A MINIMUM OF 48 HRS. NOTICE PRIOR TO PLACING CONCRETE TO ALLOW FOR INSPECTION AND SCHEDULING OF TESTING.

16. UTILIZE CHUTES, TROUGHS OR CONVEYORS TO PLACE CONCRETE SO THAT HANDLING OF CONCRETE IS MINIMIZED. AVOID SEGREGATION OF THE AGGREGATE AND DISTURBING REINFORCING STEEL.

17. UNIFORMLY CONSOLIDATE CONCRETE USING HAND TOOLS OR MECHANICAL VIBRATORS. THOROUGHLY CONSOLIDATE EACH LAYER PRIOR TO PLACING SUBSEQUENT LAYERS.

18. WHEN PLACING OPERATIONS ARE TEMPORARILY SUSPENDED, THE UNFINISHED FACE OF THE POUR SHALL BE COVERED WITH WET BURLAP UNTIL PLACING OPERATIONS ARE RESUMED. WHEN PLACING OPERATIONS ARE SUSPENDED FOR MORE THAN 30 MINUTES, PROVIDE AN BONDING AGENT TO CONSTRUCTION JOINT.

19. TROWEL FINISH SURFACES UNLESS OTHERWISE DIRECTED ON THE PLANS.

20. AFTER FINAL FINISHING, PROVIDE POLYETHYLENE VAPOR BARRIER OR CURING COMPOUND TO MAINTAIN MOISTURE AND TEMPERATURE OF CONCRETE.

21. IN EXTREME WEATHER PLACE AND CURE CONCRETE IN ACCORDANCE WITH EITHER ACI 306R-89 FOR COLD WEATHER OR ACI 305R-89 FOR HOT WEATHER.

22. WELDING OF REINFORCING STEEL IS PROHIBITED.

23. REMOVE FORMS IN A MANNER THAT DOES NOT DAMAGE THE CONCRETE. FILL AND PATCH POCKETS OR HOLES ON EXPOSED SURFACES USING MORTAR MIXTURE.

24. PROVIDE TEST CYLINDERS AS FOLLOWS:

A. EQUIPMENT ENCLOSURE:

1 CYLINDER AT 7DAYS.

1 CYLINDER AT 14 DAYS.

2 CYLINDERS AT 28 DAYS.

25. NOTIFY ENGINEER 48 HOURS IN ADVANCE OF TOWER FOUNDATION INSTALLATION.

26. REFER TO TOWER MANUFACTURER SPECIFICATIONS REGARDING FOUNDATION REQUIREMENTS.

## CHAINLINK FENCING

1.0 SCOPE:

1.1 THIS SECTION COVERS THE REQUIREMENTS FOR THE MATERIALS AND THE CONSTRUCTION OF SITE FENCING. SEE SITE PLAN AND DRAWINGS FOR DETAILS.

2.0 SPECIAL REQUIREMENTS

2.1 ALL WIRE, FABRIC, FITTINGS, HARDWARE AND STEEL MEMBERS USED FOR SITE AREA FENCING SHALL BE HOT DIPPED GALVANIZED (ASTM A153) OR OTHER APPROVED NON CORROSIVE MATERIAL AND CONFORM TO FEDERAL SPEC RR-F-191G (1-25-74).

2.2 ALL NON-CORROSIVE MATERIAL SHALL BE PRE-APPROVED BY THE PROJECT MANAGER.

2.3 ANY DAMAGE TO GALVANIZING OR NON-CORROSIVE COATING DURING CONSTRUCTION SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S RECOMMENDED METHODS.

3.0 GATE.:

3.1 LOCATION OF GATE SHALL CONFORM TO THE SITE PLAN.

3.2 ALL JOINTS BETWEEN TUBULAR GATE MEMBERS SHALL BE WELDED OR HEAVY FITTINGS PROVIDING RIGID AND WATERTIGHT CONNECTIONS.

3.3 GATE HINGES SHALL PROVIDE FOR 180 DEGREE RADIUS GATE SWING. ALL HINGE NUTS SHALL BE ON THE INSIDE AND DOUBLE-NUT TO DETER UNAUTHORIZED ENTRY.

3.4 BARBED WIRE GUARD SHALL BE INSTALLED ON TOP OF GATES. ADEQUATE CLEARANCE SHALL BE MAINTAINED TO ALLOW GATE OPERATION.

3.5 GATE SHALL BE INSTALLED PLUMB AND SHALL OPEN AND CLOSE FREELY.

3.6 GATE POSTS SHALL NOT BE SHARED AS A CORNER POST

### 4.0 FENCE POSTS

4.1 LOCATION OF CORNER POSTS SHALL BE DETERMINED FROM STAKES AND PROPERTY PINS INSTALLED BY THE REGISTERED LAND SURVEYOR UNDER CONTRACT FOR THE PROJECT. IF THE STAKES ARE NOT PRESENT OR DO NOT CONFORM TO THE SITE PLAN, CONSULT WITH THE PROJECT MANAGER.

4.2 CORNER POSTS SHALL BE SET WITHIN ONE INCH (1") OF DIMENSIONS INDICATED ON THE SITE PLAN.

4.3 FENCE POSTS SHALL BE VERTICALLY PLUMB IN ALL PLANES WITHIN 1/2 INCH (1/2").

4.4 LINE POSTS BETWEEN CORNER AND GATE POSTS SHALL BE EQUALLY SPACED WITH A TEN FOOT (10') MAXIMUM SPACING. GATE POST LOCATIONS SHALL BE IN ACCORDANCE WITH SITE PLAN AND SHALL BE VERIFIED WITH THE PROJECT MANAGER.

4.5 ALL FOUR CORNERS POSTS AND BOTH GATE POSTS SHALL BE CONNECTED TO THE SITE GROUNDING SYSTEM (REFER TO GROUNDING SYSTEM STANDARD). 4.6 FENCE POST OUTSIDE DIAMETER (O.D.) ARE MINIMUM SPECIFICATIONS. LARGER SIZES MAY BE SUBSTITUTED WITH APPROVAL FROM PROJECT MANAGER.

5.0 FABRIC

5.1 FABRIC SHALL BE TENSIONED PER MANUFACTURER'S RECOMMENDATIONS TO PRESENT A NEAT APPEARANCE.

5.2 FABRIC SHALL BE SECURED AT CORNER AND GATE POSTS USING STRETCHER BARS AND TENSION BAND CLIPS.

5.3 FABRIC SHALL BE SECURED TO THE TOP RAIL AND BRACE RODS USING TIE CLIPS.



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## ELECTRICAL NOTES

### 1.0 GENERAL

1.1 CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATING SYSTEM ENERGIZED THROUGHOUT AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.

1.2 CONTRACTOR IS TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF PERMANENT POWER TO THE SITE.

1.3 CONTRACTOR SHALL OBTAIN ALL NECESSARY BUILDING PERMITS, INSPECTIONS AND APPROVALS, AND PAY ALL REQUIRED FEES PURSUANT TO THE WORK.

1.4 ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE AND ANY APPLICABLE NATIONAL, STATE AND LOCAL CODES. ALL COMPONENTS SHALL BE U.L. APPROVED.

1.5 CONTRACTOR SHALL BEFORE SUBMITTING HIS BID, VISIT THE SITE OF THE PROJECT AND BECOME FAMILIAR WITH THE CONDITIONS. NO ALLOWANCE WILL BE MADE FOR EXISTING CONDITIONS OR FAILURE OF THE CONTRACTOR TO OBSERVE THEM.

1.6 EXACT LOCATION OF ALL EQUIPMENT SHALL BE COORDINATED WITH OWNER AND OTHER TRADES.

1.7 CONTRACTOR SHALL PROVIDE ALL VERIFICATION OBSERVATION TESTS AND EXAMINE ALL WORK PRIOR TO ORDERING THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT/ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.

1.8 ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN SAFE CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT (SEE NOTE 1.7 FOR EXCEPTIONS). MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, NBFU AND "UL" LISTED.

1.9 WHERE EQUIPMENT IS SPECIFIED BY MANUFACTURER AND TYPE, SUBSTITUTION SHALL ONLY BE MADE WITH THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL SUBMIT DETAILS OF PROPOSED MATERIALS, REASON FOR CHANGE AND CHANGE IN CONTRACT AMOUNT.

1.10 EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY LABELED WITH ENGRAVED PLASTIC LABELS FOR EACH PANELBOARD, PULL BOX, J-BOX, SWITCH BOX, ETC. IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)

1.11 THESE PLANS ARE DIAGRAMMATIC ONLY AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE.

1.12 THE TEMPERATURE RATING ASSOCIATED WITH THE AMPACITY OF A CONDUCTOR SHALL BE SO SELECTED AND COORDINATED AS TO NOT EXCEED THE LOWEST TEMPERATURE RATING OF ANY CONNECTED TERMINATION, CONDUCTOR, OR DEVICE.

1.13 ALL ENCLOSURES CONTAINING THE SERVICE CONDUCTORS-SERVICE RACEWAY, CABLE ARMOR, BOXES, FITTINGS, CABINETS MUST BE EFFECTIVELY BONDED TOGETHER.

1.14 ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE SPECIFIED, WITH UV PROTECTION (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH SPECIFIED BY NATIONAL STATE AND LOCAL CODES. IT IS REQUIRED AND WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO NOTIFY THE DIGGER HOTLINE OR OTHER SUCH NOTIFYING AGENCY PRIOR TO THE START OF DIGGING, TRENCHING, EXCAVATION, OR OTHER SUCH EARTH REMOVAL; SEE G-001 FOR NOTIFICATION REQUIREMENTS.

1.15 THE UNDERGROUND SERVICE ENTRANCE WORK MUST BE CONSTRUCTED ACCORDING TO THE LOCAL BUILDING CODE, NEC & UTILITY STANDARDS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL UTILITY BEFORE QUOTING AND DURING THE CONSTRUCTION.

## ELECTRICAL NOTES (CONTINUED)

### 2.0 MATERIALS, ELECTRICAL WIRING AND RACEWAYS

2.1 ALL CIRCUIT BREAKERS, FUSES, CONDUCTORS AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT TO WHICH THEY MAY BE SUBJECTED AND A MINIMUM OF 10,000 AIC RATING UNLESS SPECIFIED OTHERWISE.

2.2 PLASTIC PLATES FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS SHALL HAVE ENGRAVED LETTERING WHERE INDICATED ON THE DRAWINGS. WEATHERPROOF RECEPTACLES SHALL HAVE SIERRA "WPD 8" LIFT COVER PLATES.

2.3 METER SOCKET AMPERAGE, VOLTAGE AND NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS AND MANUFACTURED BY SQUARE "D" COMPANY OR AN APPROVED EQUAL.

2.4 INSTALLATION OF RIGID METAL CONDUIT SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF ARTICLES 300 & 346-NEC. SHALL BE UL APPROVED.

2.5 INSTALLATION OF ELECTRICAL METALLIC TUBING (EMT) SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF ARTICLES 300 & 348-NEC. SHALL BE U.L. APPROVED.

2.6 INSTALLATION OF INTERMEDIATE METAL CONDUIT (IMC) SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF ARTICLES 300 & 348-NEC. SHALL BE UL APPROVED.

2.7 PLASTIC CONDUIT SHALL BE SCHEDULE 40, HIGH IMPACT, POLYVINYL CHLORIDE AND SHALL BE USED WITH UNTHREADED SOLVENT CEMENT PLASTIC CONDUIT FITTINGS. COUPLINGS SHALL HAVE A CENTER STOP TO TYPE ENSURE PROPER SEATING. CONDUIT SHALL BE MANUFACTURED BY CARLON OR ACCEPTABLE EQUAL SHALL BE IN COMPLIANCE WITH ART 300 & 347-NEC, UL APPROVED.

2.8 ALL WIRING OF ALL KINDS MUST BE INSTALLED IN CONDUIT, UNLESS OTHERWISE NOTED OR APPROVED BY THE ELECTRICAL ENGINEER.

2.9 ALL WIRING SHALL BE IN ACCORDANCE WITH THE (NEC) NATIONAL ELECTRICAL CODE OR AS INDICATED ON PLANS.

2.10 RACEWAYS SHALL BE STEEL GALVANIZED AND/OR PAINTED, WITH SIZE AS SPECIFIED AND IN ACCORDANCE WITH THE (NEC) NATIONAL ELECTRICAL CODE UNLESS OTHERWISE NOTED ON PLANS. ALL RACEWAYS SHALL BE APPROVED PRIOR TO INSTALLATION.

2.11 JUNCTION BOXES OR PULL BOXES SHALL MEET (NEC) NATIONAL ELECTRICAL CODE STANDARDS AND AS APPROVED FOR INSTALLATION OF RACEWAYS AND WIRING.

2.12 THE RACEWAY AND WIRING INSTALLATION SHALL BE GROUNDED PERMANENTLY AND EFFECTIVELY IN ACCORDANCE WITH ARTICLE 250 OF THE (NEC) NATIONAL ELECTRICAL CODE.

2.13 THE CONTRACTOR SHALL BE AWARE THAT ALL STATE AND LOCAL CODES SHALL APPLY TO THIS INSTALLATION AND MUST BE ADHERED TO.

### 3.0 SCOPE OF WORK

3.1 THE CONTRACTOR SHALL PROVIDE ALL ELECTRICAL WIRING AND EQUIPMENT UNLESS OTHERWISE INDICATED. MAIN COMPONENTS ARE AS FOLLOWS:

- A. PROVIDE ELECTRICAL SERVICE AS INDICATED ON THE DRAWINGS.
- B. PROVIDE FIBER CONDUIT WITH PULL WIRE AS INDICATED HEREIN AND ON DRAWINGS.
- C. COORDINATE ELECTRICAL SERVICE WITH LOCAL POWER COMPANY.
- E. COORDINATE FIBER SERVICE WITH LOCAL FIBER COMPANY.
- F. INSTALL WIRE AND CONDUIT AS INDICATED. PROVIDE CABLE SUPPORTS AS INDICATED.
- G. PROVIDE GROUNDING AS INDICATED.

3.2 ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" OR "AS-BUILT" DRAWINGS AT THE COMPLETION OF THE JOB SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS SHALL BE PROVIDED TO CLIENT. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO CLIENT AT JOB COMPLETION.

3.3 PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF ELECTRICAL WORK.

3.4 UPON COMPLETION OF WORK, CONDUIT CONTINUITY, SHORT CIRCUIT, AND GROUNDING FALL POTENTIAL TEST WILL BE MADE FOR APPROVAL. SUBMIT TEST REPORTS TO CLIENT. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE IN A COMPLETE AND UNDAMAGED CONDITION.

3.5 THE COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF SITE ACCEPTANCE BY CLIENT. ANY WORK MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AND AT THE EXPENSE OF THE CONTRACTOR.

3.6 THE ELECTRICAL CONTRACTOR SHALL VERIFY THE ELECTRICAL EQUIPMENT PROVIDED BY CLIENTS SUPPLIERS.



NO.	DESCRIPTION	DATE	BY	
			BJC	JGL
A	ISSUED FOR REVIEW	11/04/22		
B	REVISED PER USCC COMMENTS	12/19/22		
0	ISSUED FOR CONSTRUCTION	12/20/22		
1	ADDED LANDSCAPE BUFFER	01/11/23		

**SITE# 784809  
GERMANTOWN**

W172N11083  
DIVISION ROAD,  
GERMANTOWN, WI 53022

DRAWN BY:	BJC
CHECKED BY:	EW
DATE:	10/25/22
PROJECT #:	10-079

SHEET TITLE  
**GENERAL  
SPECIFICATIONS**

SHEET NUMBER  
**SP-3**