



COUNTY FACILITIES PLANNING WORK INITIATION REQUEST FORM

Please complete a form for each new proposal review request.

Work Proposal Name:

Verizon Cell Lease at County Grounds East Water Tower

Date of Request:

9/11/19

Requesting Department:

DAS-Economic Development

Department Contact Name:

Adam Stehly

High Org:

115

Low Org:

1191

Approval Signature of Department Head:

AaronHertzberg

Digitally signed by AaronHertzberg
Date: 2019.09.10 10:58:40 -0500

DESCRIPTION

Please provide a detailed description of the request:

Verizon has requested to lease space on the County Grounds east water tower. This location was previously occupied by Sprint. Initial term would be five years with four additional five-year options. Rent remains an open topic of negotiations. Verizon has submitted draft plans for review. Other open items include whether the County wants to make maintenance of the water tower an affirmative obligation and any scheduling for painting. Partners at MRMC are aware of the interest. Based on current negotiations with MRMC, the County will receive the rent revenue through the initial five-year term after which MRMC will collect.

How will this proposal improve your operations, enhance customer service or otherwise benefit your department and the County?

This would generate additional revenue and provide additional cell coverage in the County.

Desired Timeline:

Begin Date:

9/12/19

End Date:

12/31/24

Duration:

Anticipated Funding Source (select all that apply):

Requestor's Operating Budget

Capital Budget

Other (i.e. grants, donations, etc.; please describe):

Request Involves:

Parks Property

BHD Property



COUNTY FACILITIES PLANNING WORK INITIATION REQUEST DETERMINATION

CFPSC ACTION FOR CFPSC USE ONLY

CFPSC Project Tracking #:

2019-021

TYPE OF REQUEST (Refer to paragraph 4.3 of the CFPSC charter for more details)

1. Property Management 2. Move Management 3. Property Improvements
 4. New Footprint 5. Contractural Obligations 6. Centralized Facilities Management Process Improvement

CFPSC Review Comments:

FOR EASEMENTS ONLY

Reviewed & Recommended for Approval:

DAS — FM, AE&ES (Legal Description)

Director, DAS

Corporation Counsel

Note:

- Easements affecting lands zoned "Parks" require County Board approval.*
- Forward a copy of the recorded easement to AE&ES.*

CFPSC RECOMMENDATION

The County Facilities Planning Steering Committee reviewed this proposal on [redacted]. As evidenced by the authorized signature below, the County Facilities Planning Steering Committee recommends [redacted] approval of this proposal.

Chair or Vice-Chair:

County Facilities Planning Steering Committee

Date:

WATER TOWER LEASE AGREEMENT

This Water Tower Lease Agreement ("**Agreement**"), made this ____ day of _____ 2019, between **Milwaukee County**, a municipal corporation, with its principal offices located at 633 W. Wisconsin Avenue, Suite 903, Milwaukee, Wisconsin 53203, hereinafter designated "**LESSOR**" and **Celco Partnership d/b/a Verizon Wireless**, with its principal offices at One Verizon Way, Mail Stop 4AW100, Basking Ridge, New Jersey 07920 (telephone number 866-862-4404), hereinafter designated "**LESSEE**". The LESSOR and LESSEE are at times collectively referred to hereinafter as the "**Parties**" or individually as the "**Party**".

WITNESSETH

In consideration of the mutual covenants contained herein and intending to be legally bound hereby, the Parties hereto agree as follows:

1. **PREMISES.** LESSOR hereby leases to the LESSEE a portion of that certain space ("the **Tower Space**") on the LESSOR's water tower, hereinafter referred to as the "**Tower**", located at 8948 Watertown Plank Road, Wauwatosa, Milwaukee County, Wisconsin, as shown on the Tax Map of the City of Wauwatosa, and being further described by Tax Identification Numbers 381-9999-20 and 372-9999-17 (the entirety of LESSOR's property is referred to hereinafter as the "**Property**", and legally described in **Exhibit "A"** attached hereto and made a part hereof), together with an approximately 450 square feet parcel of land (the "**Land Space**") sufficient for the installation of LESSEE's communications equipment; together with the non-exclusive right ("the **Right of Way**") for ingress and egress, seven (7) days a week, twenty-four (24) hours a day, on foot or motor vehicle, including trucks, and for the installation and maintenance of utility wires, poles, cables, fiber conduits over, under, or along a [_____] foot wide right-of-way extending from the nearest public right-of-way, W. Watertown Plank Road, to the Land Space; and together with any further rights of way (the "**Further Rights of Way**") over and through the Property between the Land Space and the Tower Space for the installation and maintenance of utility wires, poles, cables, conduits, and pipes. The Tower Space, Land Space, Right of Way and Further Rights of Way, if any, are substantially described in Exhibit "A", attached hereto and made a part hereof demised premises and are collectively referred to hereinafter as the "**Premises**". Notwithstanding the foregoing, LESSEE agrees to provide LESSOR with at least twenty-four (24) hours advance notice by telephone to LESSOR at [Insert LESSOR Contact] or by electronic message to LESSOR at [Insert LESSOR Contact] of LESSEE's intent to access the Tower Space and the Tower for the purpose of installation, operation and maintenance of its communications equipment.

In the event any public utility is unable to use the Right of Way or Further Rights of Way, the LESSOR hereby agrees to grant an additional right-of-way(s) either to the LESSEE or to the public utility at no cost to the LESSEE.

LESSOR shall deliver the Premises to LESSEE in a condition ready for LESSEE's use and clean and free of debris. LESSEE is solely responsible for determining whether the Premises are suitable for its intended use. LESSOR makes no representations or warranties as to the condition of the Premises, which is available for lease to LESSEE in its "as-is, where-is" condition.

LESSOR hereby grants permission to LESSEE to install, maintain and operate the radio communications equipment, antennas and appurtenances described in **Exhibit "B"** attached hereto.

LESSEE reserves the right to replace the aforementioned equipment with similar and comparable equipment provided said replacement does not increase tower loading of said Tower.

LESSEE's equipment shall remain the personal property of LESSEE and LESSEE agrees that LESSOR shall not have any responsibility for the operation, care or protection thereof or act as a guarantor of the equipment or the services to any parties by LESSEE's operations or use of the equipment. LESSEE shall mark all of its equipment (including but being limited to antennas, cables and equipment cabinets) with signage identifying LESSEE as the owner and/or operator in compliance with applicable laws, and shall keep, operate and maintain said equipment in a safe and neat condition, and in good repair.

2. SURVEY. LESSOR also hereby grants to LESSEE the right to survey the Property and Premises and said survey shall then become **Exhibit "C"** which shall be attached hereto and made a part hereof and shall control in the event of boundary and access discrepancies between it and Exhibit "A". Cost for such work shall be borne by the LESSEE.

3. TERM; RENTAL; ELECTRICAL.

a. This Agreement shall be effective as of the date of execution by both Parties ("**Effective Date**"), provided, however, the initial term shall be for five (5) years beginning on the first day of the month following the Commencement Date (as hereinafter defined). The "**Commencement Date**" shall be the first day of the month after LESSEE begins installation of LESSEE's communications equipment. Rental payments shall begin on the Commencement Date and be due at a total annual rental of \$39,500.00, to be paid in equal monthly installments on the first day of the month, in advance, to LESSOR, or to such other person, firm or place as LESSOR may, from time to time, designate in writing at least thirty (30) days in advance of any rental payment date by notice given in accordance with Paragraph 25 below. LESSOR and LESSEE acknowledge and agree that the initial rental payment shall not be delivered by LESSEE until 60 days after the Commencement Date. Upon agreement of the Parties, LESSEE may pay rent by electronic funds transfer and, in such event, LESSOR agrees to provide to LESSEE bank routing information for such purpose upon request of Lessee.

b. For any party to whom rental payments are to be made, LESSOR or any successor in interest of LESSOR hereby agrees to provide to LESSEE (i) a completed, current version of Internal Revenue Service Form W-9, or equivalent; (ii) complete and fully executed state and local withholding forms if required; and (iii) other documentation to verify LESSOR's or such other party's right to receive rental as is reasonably requested by LESSEE. Rental shall accrue in accordance with this Agreement, but LESSEE shall have no obligation to deliver rental payments until the requested documentation has been received by LESSEE. Upon receipt of the requested documentation, LESSEE shall deliver the accrued rental payments as directed by LESSOR.

c. LESSOR shall, at all times during the Term, provide electrical service and telephone service access within the Premises. LESSEE shall furnish and install an electrical meter at the Premises for the measurement of electrical power used by LESSEE's installation and LESSEE shall pay the utility directly for its power consumption. LESSEE shall provide LESSOR with proof that an electrical meter has been installed at the Property within forty-five (45) days of installation. LESSEE shall be permitted at any time during the Term, to install, maintain and/or provide access to and use of, as necessary (during any power interruption at the Premises), a temporary power source, and all related equipment and appurtenances within the Premises, or elsewhere on the Property in such locations as reasonably

approved by LESSOR. LESSEE shall have the right to install conduits connecting the temporary power source and related appurtenances to the Premises.

4. EXTENSIONS. This Agreement shall automatically be extended for 4 additional 5-year terms unless Lessee terminates it at the end of the then current term by giving LESSOR written notice of the intent to terminate at least 3 months prior to the end of the then current term. The initial term and all extensions shall be collectively referred to herein as the “Term”.

5. EXTENSION RENTALS. The annual rental shall increase on each anniversary of the Commencement Date by an amount equal to four percent (4%) of rent for the previous lease year.

6. INTENTIONALLY OMITTED.

7. TAXES. LESSEE shall have the responsibility to pay any personal property, real estate taxes, assessments, or charges owed on the Property which is the result of LESSEE’s use of the Premises and/or the installation, maintenance, and operation of the LESSEE’s improvements, and any sales tax imposed on the rent (except to the extent that LESSEE is or may become exempt from the payment of sales tax in the jurisdiction in which the Property is located), including any increase in real estate taxes at the Property which arises from the LESSEE’s improvements and/or LESSEE’s use of the Premises. LESSEE shall be responsible for the payment of any taxes, levies, assessments and other charges imposed including franchise and similar taxes imposed upon the business conducted by LESSEE at the Property. Notwithstanding the foregoing, LESSEE shall not have the obligation to pay any tax, assessment, or charge that LESSEE is disputing in good faith in appropriate proceedings prior to a final determination that such tax is properly assessed provided that no lien attaches to the Property. Nothing in this Paragraph shall be construed as making LESSEE liable for any portion of LESSOR’s income taxes in connection with any Property or otherwise.

LESSEE shall have the right, at its sole option and at its sole cost and expense, to appeal, challenge or seek modification of any tax assessment or billing for which LESSEE is wholly or partly responsible for payment. LESSOR shall reasonably cooperate with LESSEE at LESSEE’s expense in filing, prosecuting and perfecting any appeal or challenge to taxes as set forth in the preceding sentence, including but not limited to, executing any consent, appeal or other similar document. In the event that as a result of any appeal or challenge by LESSEE, there is a reduction, credit or repayment received by the LESSOR for any taxes previously paid by LESSEE, LESSOR agrees to promptly reimburse to LESSEE the amount of said reduction, credit or repayment. In the event that LESSEE does not have the standing rights to pursue a good faith and reasonable dispute of any taxes under this paragraph, LESSOR will pursue such dispute at LESSEE’s sole cost and expense upon written request of LESSEE.

8. USE; GOVERNMENTAL APPROVALS. LESSEE shall use the Premises for the purpose of constructing, maintaining, repairing and operating a communications facility and uses incidental thereto. All improvements, equipment, antennas and conduits shall be at LESSEE's expense and their installation shall be at the discretion and option of LESSEE. The Parties agree that LESSEE shall install its equipment within the Premises in accordance with the Equipment List attached as Exhibit “B”. LESSEE shall have the right to replace, repair, add or otherwise modify its ground equipment located within the Land Space. In the event LESSEE wishes to add equipment on the Tower or replace antennas on the Tower, LESSEE shall obtain LESSOR’s prior written approval, which shall not be unreasonably withheld, conditioned or delayed. It is understood and agreed that LESSEE's ability to use the Premises is contingent upon its obtaining after the execution date of this Agreement all of the certificates, permits and other approvals (collectively the

"Governmental Approvals") that may be required by any Federal, State or Local authorities as well as satisfactory soil boring tests and structural analysis which will permit LESSEE use of the Premises as set forth above. LESSOR shall reasonably cooperate with LESSEE in its effort to obtain such approvals and shall take no action which would adversely affect the status of the Property with respect to the proposed use thereof by LESSEE. In the event that (i) any of such applications for such Governmental Approvals should be finally rejected; (ii) any Governmental Approval issued to LESSEE is canceled, expires, lapses, or is otherwise withdrawn or terminated by governmental authority; (iii) LESSEE determines that such Governmental Approvals may not be obtained in a timely manner; (iv) LESSEE determines that any soil boring tests or structural analysis is unsatisfactory; (v) LESSEE determines that the Premises is no longer technically or structurally compatible for its use, or (vi) LESSEE, in its sole discretion, determines that the use the Premises is obsolete or unnecessary, LESSEE shall have the right to terminate this Agreement. Notice of LESSEE's exercise of its right to terminate shall be given to LESSOR in writing by certified mail, return receipt requested, and shall be effective upon the receipt of such notice by LESSOR, or upon such later date as designated by LESSEE. All rentals paid to said termination date shall be retained by LESSOR. Upon such termination, this Agreement shall be of no further force or effect except to the extent of the representations, warranties and indemnities made by each Party to the other hereunder. Otherwise, the LESSEE shall have no further obligations for the payment of rent to LESSOR.

9. INDEMNIFICATION. Subject to Paragraph 10 below, each Party shall indemnify and hold the other harmless against any claim of liability or loss from personal injury or property damage resulting from or arising out of the negligence or willful misconduct of the indemnifying Party, its employees, contractors or agents, except to the extent such claims or damages may be due to or caused by the negligence or willful misconduct of the other Party, or its employees, contractors or agents.

10. INSURANCE.

Every contractor shall and shall require all parties furnishing services or product to LESSOR or any of its subsidiary companies to obtain and maintain substantially the same insurance as required of Contractor, must provide LESSOR with evidence of the following minimum insurance requirements. In no way do these requirements limit the liability assumed elsewhere in the contract. All parties shall, at their sole expense, maintain the following insurance:

A. Commercial General Liability Insurance including contractual coverage: The limits of this insurance for bodily injury and property damage Combined shall be:

Each Occurrence Limit	\$5,000,000
General Aggregate Limit	\$5,000,000
Products – Completed Operations Limit	\$5,000,000
Personal and Advertising injury Limit	\$5,000,000

B. Automobile Liability Insurance:

Should the performance of this Agreement involve the use of automobiles, Contractor shall provide commercial automobile insurance covering the ownership, operation and maintenance of all owned, non-owned and hired motor vehicles with limits of \$2,000,000 combined single limit each accident for bodily injury and property damage.

C. Workers' Compensation Insurance:

Such insurance shall provide coverage in compliance with the statutory requirements in the state where the work is performed, even if such coverages are elective in that state and Employers Liability Insurance with limits of \$500,000 each accident/disease/policy limit.

D. Excess/Umbrella Liability Insurance

Such insurance shall provide additional limits of \$2,000,000 per occurrence in excess of the limits in (A.), (B.), and (C) above.

Additional Requirements:

E. Contractor shall require substantially the same insurance requirements, as listed above, of all its contractors, and subcontractors, and these contractors, and subcontractors shall also comply with the additional requirements listed below.

F. The insurance specified in (A.), (B.), and (E.) above shall: (a) include LESSOR including its directors, officers and employees as additional insureds as their interest may appear under this Agreement by endorsement to the policies except workers compensation and employer's liability, and, (b) provide that such insurance is primary coverage with respect to all insureds and additional insureds.

G. The above insurance coverages may be obtained through any combination of primary and excess or umbrella liability insurance. LESSOR may require higher limits or other types of insurance coverage(s) as necessary and appropriate under the applicable purchase order.

H. Except where prohibited by law, all insurance policies shall contain provisions that the insurance companies waive the rights of recovery or subrogation, by endorsement to the insurance policies, against LESSOR, its subsidiaries, its employees, co-lessees, co-ventures' and affiliated companies

I. Contractor shall provide certificates evidencing the coverages, limits and provisions specified above on the execution of the Agreement and thereafter upon the renewal of any of the policies. Upon receipt of notice from its insurers Contractor shall use commercially reasonable efforts to provide LESSOR with a thirty (30) day advanced written notice of any cancellation of the policies maintained in accordance with this Agreement. Coverage must be placed with carriers with an A. M. Best rating of A- or better.

11. LIMITATION OF LIABILITY. Except for indemnification pursuant to paragraphs 9 and 31, neither Party shall be liable to the other, or any of their respective agents, representatives, employees for any lost revenue, lost profits, loss of technology, rights or services, incidental, punitive, indirect, special or consequential damages, loss of data, or interruption or loss of use of service, even if advised of the possibility of such damages, whether under theory of contract, tort (including negligence), strict liability or otherwise.

12. ANNUAL TERMINATION. Notwithstanding anything to the contrary contained herein, provided LESSEE is not in default hereunder beyond applicable notice and cure periods, LESSEE shall have the right to terminate this Agreement upon the annual anniversary of the Commencement Date provided that three (3) months prior notice is given to LESSOR.

13. ACCESS TO TOWER. LESSOR agrees the LESSEE shall have reasonable access to the Tower upon notice provided for in Paragraph, for the purpose of installing and maintaining the said equipment. LESSOR shall furnish LESSEE with necessary means of access for the purpose of ingress and egress to this site and Tower location. It is agreed, however, that only authorized engineers, employees or properly authorized contractors of LESSEE or persons under their direct supervision will be permitted to enter said premises.

14. TOWER COMPLIANCE. LESSOR covenants that it will keep the Tower in good repair as required by all Laws (as defined in Paragraph 35 below). The LESSOR shall also comply with all rules and regulations enforced by the Federal Communications Commission (“FCC”) with regard to the lighting, marking and painting of towers.

LESSEE’s equipment shall at all times during the Term be installed, operated and maintained in accordance with all applicable laws, codes, rules, regulations, orders and requirements of all local, county, state and Federal governmental and regulatory bodies and agencies, including, but not limited to, the rules, regulations and orders of the FCC and the Occupational Safety & Health Administration (“OSHA”). Upon the written request of LESSOR, LESSEE shall provide LESSOR with proof of its license issued by the FCC for the operation of its equipment upon the Premises. In addition, LESSEE shall post its license information in accordance with all governing FCC regulations at the Premises.

LESSEE shall make no structural changes to the tower without written consent of the LESSOR. Structural changes shall require an engineering review. LESSOR shall be required to repair at its cost and expense any damage to the towers coating system.

All antenna(s) on the Tower must be identified by a marking fastened securely to its bracket on the Tower and all transmission lines are to be tagged at the conduit opening where it enters any user’s equipment space.

Upon request of the LESSOR, LESSEE agrees to relocate its equipment on a temporary basis to another location on the Property, hereinafter referred to as the “**Temporary Relocation**,” for the purpose of LESSOR performing maintenance, repair or similar work at the Property or on the Tower provided:

- a. The Temporary Relocation is similar to LESSEE’s existing location in size and is fully compatible for LESSEE’s use, in LESSEE’s reasonable determination;
- b. LESSOR pays all costs incurred by LESSEE for relocating LESSEE’s equipment to the Temporary Relocation and improving the Temporary Relocation so that it is fully compatible for the LESSEE’s use, in LESSEE’s reasonable determination;
- c. LESSOR gives LESSEE at least ninety (90) days written notice prior to requiring LESSEE to relocate;
- d. LESSEE’s use at the Premises is not interrupted or diminished during the relocation and LESSEE is allowed, if necessary, in LESSEE’s reasonable determination, to place a temporary installation on the Property during any such relocation; and
- e. Upon the completion of any maintenance, repair or similar work by LESSOR, LESSEE is permitted to return to its original location from the temporary location with all costs for the

same being paid by LESSOR.

15. INTERFERENCE.

a. LESSEE agrees that LESSEE will not cause interference that is measurable in accordance with industry standards to LESSOR's equipment. LESSOR agrees that LESSOR and other occupants of the Property will not cause interference that is measurable in accordance with industry standards to the then existing equipment of LESSEE.

b. Without limiting any other rights or remedies, if interference occurs and continues for a period in excess of 48 hours following notice to the interfering party via telephone to LESSEE'S Network Operations Center (at (800) 852-2671/(800) 621-2622) or to LESSOR (at _____), the interfering party shall or shall require any other user to reduce power or cease operations of the interfering equipment until the interference is cured. In no event will LESSOR be entitled to terminate this Agreement or relocate the equipment as long as LESSEE is making a good faith effort to remedy the interference issue.

c. The Parties acknowledge that there will not be an adequate remedy at law for noncompliance with the provisions of this Paragraph and therefore, either Party shall have the right to equitable remedies, such as, without limitation, injunctive relief and specific performance.

16. REMOVAL AT END OF TERM. Upon expiration or within sixty (60) days of earlier termination, LESSEE shall remove LESSEE's communications equipment, including antennas, conduits, fixtures and all personal property (except footings) and restore the Premises to its original condition, reasonable wear and tear and casualty damage excepted. LESSOR agrees and acknowledges that the communications equipment shall remain the personal property of LESSEE and LESSEE shall have the right to remove the same at any time during the Term, whether or not said items are considered fixtures and attachments to real property under applicable laws. If such time for removal causes LESSEE to remain on the Premises after termination of the Agreement, LESSEE shall pay rent at the then existing monthly rate or on the existing monthly pro-rata basis if based upon a longer payment term, until the removal of the communications equipment is completed. The Parties agree that the time for removal of LESSEE's equipment shall not exceed 60 days. Any LESSEE equipment remaining on the Premises after expiration of the 60-day removal period shall be deemed to have been abandoned by LESSEE and may be disposed of by LESSOR, in LESSOR's reasonable discretion. LESSEE shall reimburse LESSOR for all expenses incurred by LESSOR in removing and disposing of any LESSEE equipment within 45 days of receipt of notice from LESSOR. In the event LESSEE fails to restore the Premises to its original condition as noted herein, LESSOR may at its option make such repair and/or restoration performed to the Premises, and LESSEE shall reimburse LESSOR for all such reasonable expenses incurred by LESSOR, within 45 days of receipt of notice from LESSOR.

17. HOLDOVER. LESSEE has no right to retain possession of the Premises or any part thereof beyond the expiration of that removal period set forth in Paragraph 16 herein, unless the Parties are negotiating a new lease or lease extension in good faith. In the event that the Parties are not in the process of negotiating a new lease or lease extension in good faith, LESSEE holds over in violation of Paragraph 16 and this Paragraph 17, then the rent then in effect payable from and after the time of the expiration or earlier removal period set forth in Paragraph 16 shall be equal to 150% of the rent applicable during the month immediately preceding such expiration or earlier termination.

18. INTENTIONALLY OMITTED.

19. RIGHTS UPON SALE. Should LESSOR, at any time during the Term decide (i) to sell or transfer all or any part of the Property or the Tower thereon to a purchaser other than LESSEE, or (ii) to grant to a third party by easement or other legal instrument an interest in and to that portion of the Tower and or Property occupied by LESSEE, or a larger portion thereof, for the purpose of operating and maintaining communications facilities or the management thereof, such sale or grant of an easement or interest therein shall be under and subject to this Agreement and any such purchaser or transferee shall recognize LESSEE's rights hereunder under the terms of this Agreement. To the extent that LESSOR grants to a third party by easement or other legal instrument an interest in and to that portion of the Tower and/or Property occupied by LESSEE for the purpose of operating and maintaining communications facilities or the management thereof and in conjunction therewith, assigns this Agreement to said third party, LESSOR shall not be released from its obligations to LESSEE under this Agreement, and LESSEE shall have the right to look to LESSOR and the third party for the full performance of this Agreement.

20. QUIET ENJOYMENT. LESSOR covenants that LESSEE, on paying the rent and performing the covenants herein, shall peaceably and quietly have, hold and enjoy the Premises.

21. TITLE. LESSOR represents and warrants to LESSEE as of the execution date of this Agreement, and covenants during the Term that LESSOR is seized of good and sufficient title and interest to the Property and has full authority to enter into and execute this Agreement. LESSOR further covenants during the Term that there are no liens, judgments or impediments of title on the Property, or affecting LESSOR's title to the same and that there are no covenants, easements or restrictions which prevent or adversely affect the use or occupancy of the Premises by LESSEE as set forth above, except to the extent any such covenants, easements, liens, judgments, impediments or restrictions may be of public record.

22. INTEGRATION. It is agreed and understood that this Agreement contains all agreements, promises and understandings between LESSOR and LESSEE and that no verbal or oral agreements, promises or understandings shall be binding upon either LESSOR or LESSEE in any dispute, controversy or proceeding at law, and any addition, variation or modification to this Agreement shall be void and ineffective unless made in writing signed by the Parties. In the event any provision of the Agreement is found to be invalid or unenforceable, such finding shall not affect the validity and enforceability of the remaining provisions of this Agreement. The failure of either Party to insist upon strict performance of any of the terms or conditions of this Agreement or to exercise any of its rights under the Agreement shall not waive such rights and such Party shall have the right to enforce such rights at any time and take such action as may be lawful and authorized under this Agreement, in law or in equity.

23. GOVERNING LAW. This Agreement and the performance thereof shall be governed, interpreted, construed and regulated by the Laws of the State in which the Property is located.

24. ASSIGNMENT. This Agreement may be sold, assigned or transferred by the LESSEE without any approval or consent of the LESSOR to the LESSEE's principal, affiliates, subsidiaries of its principal or to any entity which acquires all or substantially all of LESSEE's assets in the market defined by the Federal Communications Commission in which the Property is located by reason of a merger, acquisition or other business reorganization. As to other parties, this Agreement may not be sold, assigned or transferred without the written consent of the LESSOR, which such consent will not be unreasonably withheld, delayed or conditioned. No change of stock ownership, partnership interest or control of LESSEE or transfer upon partnership or corporate dissolution of LESSEE shall constitute an assignment hereunder.

25. NOTICES. All notices hereunder must be in writing and shall be deemed validly given if sent by certified mail, return receipt requested or by commercial courier, provided the courier's regular business is delivery service and provided further that it guarantees delivery to the addressee by the end of the next business day following the courier's receipt from the sender, addressed as follows (or any other address that the Party to be notified may have designated to the sender by like notice):

LESSOR: Milwaukee County
Department of Administrative Services Economic Development Division
633 W. Wisconsin Avenue, Suite 903
Milwaukee, Wisconsin 53203
Attention: Lease Manager

LESSEE: Cellco Partnership
d/b/a Verizon Wireless
180 Washington Valley Road
Bedminster, New Jersey 07921
Attention: Network Real Estate

Notice shall be effective upon actual receipt or refusal as shown on the receipt obtained pursuant to the foregoing.

26. SUCCESSORS. This Agreement shall extend to and bind the heirs, personal representatives, successors and assigns of the Parties hereto.

27. INTENTIONALLY OMITTED.

28. RECORDING. LESSOR agrees to execute a Memorandum of this Agreement, in a form prepared by LESSEE, at LESSEE's sole cost and expense and reasonably satisfactory to LESSOR, which LESSEE may record, at its sole expense, with the appropriate recording officer. The date set forth in the Memorandum of Lease is for recording purposes only and bears no reference to commencement of either the Term or rent payments.

29. DEFAULT.

a. In the event there is a breach by LESSEE with respect to any of the provisions of this Agreement or its obligations under it, including the payment of rent, LESSOR shall give LESSEE written notice of such breach. After receipt of such written notice, (i) LESSEE shall have fifteen (15) days in which to cure any monetary breach or be subject to a late fee of \$50.00 per day for each day after the 15-day cure period; and (ii) LESSEE shall have thirty (30) days in which to cure any non-monetary breach, provided LESSEE shall have such extended period as may be required beyond the thirty (30) days if the nature of the cure is such that it reasonably requires more than thirty (30) days and LESSEE commences the cure within the thirty (30) day period and thereafter continuously and diligently pursues the cure to completion. LESSOR may not maintain any action or effect any remedies for default against LESSEE unless and until LESSEE has failed to cure the breach within the time periods provided in this Paragraph. LESSEE agrees to pay any late fee imposed due to a monetary breach which exceeds fifteen (15) days within 45-days of receipt of notice from LESSOR.

b. In the event there is a breach by LESSOR with respect to any of the provisions of this Agreement or its obligations under it, LESSEE shall give LESSOR written notice of such breach. After

receipt of such written notice, LESSOR shall have thirty (30) days in which to cure any such breach, provided LESSOR shall have such extended period as may be required beyond the thirty (30) days if the nature of the cure is such that it reasonably requires more than thirty (30) days and LESSOR commences the cure within the thirty (30) day period and thereafter continuously and diligently pursues the cure to completion. LESSEE may not maintain any action or effect any remedies for default against LESSOR unless and until LESSOR has failed to cure the breach within the time periods provided in this Paragraph. Notwithstanding the foregoing to the contrary, it shall be a default under this Agreement if LESSOR fails, within five (5) days after receipt of written notice of such breach, to perform an obligation required to be performed by LESSOR if the failure to perform such an obligation interferes with LESSEE's ability to conduct its business on the Property; provided, however, that if the nature of LESSOR's obligation is such that more than five (5) days after such notice is reasonably required for its performance, then it shall not be a default under this Agreement if performance is commenced within such five (5) day period and thereafter diligently pursued to completion.

30. REMEDIES. Upon a default, the non-defaulting Party may at its option (but without obligation to do so), perform the defaulting Party's duty or obligation on the defaulting Party's behalf, including but not limited to the obtaining of reasonably required insurance policies. The costs and expenses of any such performance by the non-defaulting Party shall be due and payable by the defaulting Party upon invoice therefor. In the event of a default by either Party with respect to a material provision of this Agreement, without limiting the non-defaulting Party in the exercise of any right or remedy which the non-defaulting Party may have by reason of such default, the non-defaulting Party may terminate the Agreement and/or pursue any remedy now or hereafter available to the non-defaulting Party under the Laws or judicial decisions of the state in which the Premises are located; provided, however, LESSOR shall use reasonable efforts to mitigate its damages in connection with a default by LESSEE. If LESSEE so performs any of LESSOR's obligations hereunder, the full amount of the reasonable and actual cost and expense incurred by LESSEE shall immediately be owing by LESSOR to LESSEE, and LESSOR shall pay to LESSEE upon demand the full undisputed amount thereof with interest thereon from the date of payment at the greater of (i) ten percent (10%) per annum, or (ii) the highest rate permitted by applicable Laws. Notwithstanding the foregoing, if LESSOR does not pay LESSEE the full undisputed amount within thirty (30) days of its receipt of an invoice setting forth the amount due from LESSOR, LESSEE may offset the full undisputed amount, including all accrued interest, due against all fees due and owing to LESSOR until the full undisputed amount, including all accrued interest, is fully reimbursed to LESSEE.

31. ENVIRONMENTAL.

a. LESSEE shall conduct its business in compliance with all applicable laws governing the protection of the environment or employee health and safety ("**EH&S Laws**"). LESSEE shall indemnify and hold harmless LESSOR from claims to the extent resulting from LESSEE's violation of any applicable EH&S Laws or to the extent that LESSEE causes a release of any regulated substance to the environment.

b. LESSOR shall indemnify and hold harmless LESSEE from all claims to the extent resulting from LESSOR's violation of any applicable EH&S Laws or a release of any regulated substance to the environment except to the extent resulting from the activities of LESSEE. LESSOR's liability shall be limited by Wis. Stat. § 893.80(3) for general liability, to the extent that statute is applicable to the claim at issue. The Parties recognize that LESSEE is only leasing a small portion of LESSOR's property and that LESSEE shall not be responsible for any environmental condition or issue except to the extent resulting from LESSEE's specific activities and responsibilities. In the event that LESSEE encounters any Hazardous Materials (as defined herein) that do not result from its activities, LESSEE may relocate its facilities to avoid

such Hazardous Materials to a mutually agreeable location or, if LESSEE desires to remove at its own cost all or some the Hazardous Materials (such as soil) containing those Hazardous Materials. LESSOR agrees to sign any necessary waste manifest associated with the removal, transportation and/or disposal of such substances.

c. LESSEE shall not bring, use, generate, store, treat or dispose of any Hazardous Materials on, in, under or near the Premises.

d. As used herein, "**Hazardous Materials**" shall mean any material, waste or substance defined as hazardous, toxic or dangerous in any applicable local, county, state or Federal law or regulation.

e. LESSEE shall be responsible for ensuring that its equipment is in compliance with the FCC radiofrequency ("**RF**") exposure guidelines and its equipment is operating within the safe limits pursuant to FCC RF standards. Prior to installation of its equipment on the Premises, LESSEE shall submit to LESSOR written documentation confirming that the RF levels of its equipment is in compliance with FCC standards and do not exceed FCC standards for permissible exposure levels.

f. In the event of LESSOR's maintenance or repair of the Tower, requiring LESSOR access to the Tower Space, LESSEE shall take commercially reasonable steps necessary to reduce RF exposure to LESSOR employees, including, at LESSEE's option powering down such equipment during periods of maintenance within the Tower Space. LESSOR shall provide LESSEE with at least 48 hours' notice to LESSEE'S Network Operations Center (at (800) 852-2671/(800) 621-2622) prior to any such maintenance within the Tower Space.

reasonably cooperate with LESSOR in reducing RF exposure to LESSOR employees or personnel by

32. **CASUALTY.** In the event of damage by fire or other casualty to the Tower or Premises that cannot reasonably be expected to be repaired within forty-five (45) days following same or, if the Property is damaged by fire or other casualty so that such damage may reasonably be expected to disrupt LESSEE's operations at the Premises for more than forty-five (45) days, then LESSEE may, at any time following such fire or other casualty, provided LESSOR has not completed the restoration required to permit LESSEE to resume its operation at the Premises, terminate this Agreement upon fifteen (15) days prior written notice to LESSOR. Any such notice of termination shall cause this Agreement to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Agreement and the Parties shall make an appropriate adjustment, as of such termination date, with respect to payments due to the other under this Agreement. Notwithstanding the foregoing, the rent shall abate during the period of repair following such fire or other casualty in proportion to the degree to which LESSEE's use of the Premises is impaired.

33. **CONDEMNATION.** In the event of any condemnation of all or any portion of the Property, this Agreement shall terminate as to the part so taken as of the date the condemning authority takes title or possession, whichever occurs first. If as a result of a partial condemnation of the Premises or Tower, LESSEE, in LESSEE's sole discretion, is unable to use the Premises for the purposes intended hereunder, or if such condemnation may reasonably be expected to disrupt LESSEE's operations at the Premises for more than forty-five (45) days, LESSEE may, at LESSEE's option, to be exercised in writing within fifteen (15) days after LESSOR shall have given LESSEE written notice of such taking (or in the absence of such notice, within fifteen (15) days after the condemning authority shall have taken possession) terminate this Agreement as of the date the condemning authority takes such possession. LESSEE may on its own behalf

make a claim in any condemnation proceeding involving the Premises for losses related to the equipment, conduits, fixtures, its relocation costs and its damages and losses (but not for the loss of its leasehold interest). Any such notice of termination shall cause this Agreement to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Agreement and the Parties shall make an appropriate adjustment as of such termination date with respect to payments due to the other under this Agreement. If LESSEE does not terminate this Agreement in accordance with the foregoing, this Agreement shall remain in full force and effect as to the portion of the Premises remaining, except that the rent shall be reduced in the same proportion as the rentable area of the Premises taken bears to the total rentable area of the Premises. In the event that this Agreement is not terminated by reason of such condemnation, LESSOR shall promptly repair any damage to the Premises caused by such condemning authority.

34. SUBMISSION OF AGREEMENT/PARTIAL INVALIDITY/AUTHORITY. The submission of this Agreement for examination does not constitute an offer to lease the Premises and this Agreement becomes effective only upon the full execution of this Agreement by the Parties. If any provision herein is invalid, it shall be considered deleted from this Agreement and shall not invalidate the remaining provisions of this Agreement. Each of the Parties hereto warrants to the other that the person or persons executing this Agreement on behalf of such Party has the full right, power and authority to enter into and execute this Agreement on such Party's behalf and that no consent from any other person or entity is necessary as a condition precedent to the legal effect of this Agreement.

35. APPLICABLE LAWS. During the Term, LESSOR shall maintain the Property and all structural elements of the Premises in compliance with all applicable laws, rules, regulations, ordinances, directives, covenants, easements, zoning and land use regulations, and restrictions of record, permits, building codes, and the requirements of any applicable fire insurance underwriter or rating bureau, now in effect or which may hereafter come into effect (including, without limitation, the Americans with Disabilities Act and laws regulating hazardous substances) (collectively "**Laws**"). During the Term, LESSEE shall, in respect to the condition of the Premises and at LESSEE's sole cost and expense, comply with (a) all Laws relating solely to LESSEE's specific and unique nature of use of the Premises (other than general office use); and (b) all building codes requiring modifications to the Premises due to the improvements being made by LESSEE in the Premises.

36. SURVIVAL. The provisions of the Agreement relating to indemnification from one Party to the other Party shall survive any termination or expiration of this Agreement. Additionally, any provisions of this Agreement which require performance subsequent to the termination or expiration of this Agreement shall also survive such termination or expiration.

37. CAPTIONS. The captions contained in this Agreement are inserted for convenience only and are not intended to be part of the Agreement. They shall not affect or be utilized in the construction or interpretation of the Agreement.

38. INTENTIONALLY OMITTED.

39. INTENTIONALLY OMITTED.

[Signature page follows. The remainder of this page is intentionally blank.]

IN WITNESS WHEREOF, the Parties hereto have set their hands and affixed their respective seals the day and year first above written.

LESSOR:

Milwaukee County

By: _____

Print Name: _____

Its: _____

Date: _____

WITNESS

LESSEE:

Cellco Partnership d/b/a Verizon Wireless

By: _____

Print Name: _____

Its: _____

Date: _____

WITNESS

EXHIBIT "A"

LEGAL DESCRIPTION OF PROPERTY AND PREMISES

Legal Description of Property:

Lands in the Northwest 1/4 of Section 28, Town 7 North, Range 21 East, in the City of Wauwatosa, County of Milwaukee, State of Wisconsin, described as those lands lying North of the South line of Watertown Plank Road except Street and further excepting those lands described in Quit Claim Deed recorded as Document No. 7298266, as corrected by Quit Claim Deed recorded as Document No. 7390971, further excepting Certified Survey Map Nos. 6548 and 8503.

Note: Property address: vacant land on Watertown Plank Road

Note: Tax ID# 381-9999-20

AND

All that part of the South 1/2 of the Southwest 1/4 of Section 21, Township 7 North, Range 21 East, lying Southwest of the railroad, in the City of Wauwatosa, County of Milwaukee, State of Wisconsin, EXCEPTING THEREFROM Sanderson's Subdivision, as platted.

FURTHER EXCEPTING THEREFROM that part described as follows:

Beginning at the Northwest corner of Sanderson's Subdivision; thence North 20 feet; thence Northeast 136.85 feet; thence South 16.81 feet; thence Northeast 15.08 feet; thence Southwest 152.57 feet to the point of beginning.

FURTHER EXCEPTING THEREFROM those lands described in Quit Claim Deed, Option and Right of First Refusal from Milwaukee County to Wisconsin Electric Power Company dated December 2, 1996 and recorded December 3, 1996 as Document No. 7298266 and corrected by Correction Deed dated June 1, 1997 and recorded July 9, 1997 as Document No. 7390971.

FURTHER EXCEPTING THEREFROM Certified Survey Map No. 6548 recorded August 11, 1998 as Document No. 7580648 and also excepting that part described as follows:

Commencing on the West line of Certified Survey Map No. 6548, 124.60 feet North of the intersection of the South line of said 1/4 Section and the West line of Certified Survey Map No. 6548; thence Southwest 70 feet; thence Northwest 206.64 feet; thence Northeast 70 feet; thence Southeast 206.64 feet to the point of beginning.

FURTHER EXCEPTING THEREFROM those lands described in the following documents:

Certified Survey Map No. 7687 recorded December 20, 2005 as Document No. 9150942 and corrected by Affidavit of Correction recorded March 30, 2012 as Document No. 10099466;

Certified Survey Map No. 8330 recorded February 16, 2011 as Document No. 9971339;

Certified Survey Map No. 8398 recorded October 28, 2011 as Document No. 10047530;

Certified Survey Map No. 8503 recorded December 19, 2012 as Document No. 10196089;

Award of Damages recorded July 30, 2013 as Document No. 10276264.

ALSO

All that part of the North 1/2 of the Southwest 1/4 of Section 21, Township 7 North, Range 21 East, lying Southwest of the railroad, in the City of Wauwatosa, County of Milwaukee, State of Wisconsin, EXCEPTING THEREFROM Certified Survey Map No. 7687, Certified Survey Map No. 8330 and Award of Damages recorded as Document No. 10276264.

Note: Tax ID# 372-9999-17

Legal Description of Premises:

[TBD]

EXHIBIT "B"

EQUIPMENT LIST

Note: Any Equipment of Lessee not listed on Exhibit B may not be installed by Lessee, unless the agreement provides otherwise.

Antennas (s): 9 Total

Quantity: 6
Type: Panel
Manufacturer: Quintel
Model: QS8656-5
Dimensions: 96"L x 12"W x 9.6"D
Weight: 84 lbs
Mounting Height: 96' AGL

Quantity: 3
Type: Antenna/RRU Integrated Unit
Manufacturer: Ericsson
Model: KRE 101 2251 2 (antenna)
2208 (RRU)
Dimensions: 7.87"L x 7.87"W x 4.84"D
Weight: 11.02 lbs
Mounting Height: 96' AGL

Cable(s):

Number of Lines: 1
Type: Hybrid
Size: 2"

Surge Suppressor(s)

Quantity: 1
Manufacturer: Raycap
Model: 6600
Dimensions: 12.6"H x 16.5"W x 29.5"D
Weight: 31.5 lbs
Mount Location: 96' AGL

Frequencies:

Transmit: 746-757MHz, 1950-1965MHz, 2120-2130 MHz, 2145-2155 MHz, 2170-2180 MHz
Receive: 776-787 MHz, 1720-1730 MHz, 1745-1755 MHz, 1770-1780 MHz, 1870-1885 MHz

RRUs: 9 Total

Quantity: 3
Manufacturer: Ericsson
Model: 2208
Dimensions: Included with KRE Antenna
Weight: Included with KRE Antenna
Mounting Height: Included with KRE Antenna

Quantity: 3
Manufacturer: Ericsson
Model: 4449
Dimensions: 14.96"L x 13.19"W x 9.25"D
Weight: 70 lbs
Mount Location: 96' AGL

Quantity: 3
Manufacturer: Ericsson
Model: 8843
Dimensions: 14.96"L x 13.19"W x 9.25"D
Weight: 70 lbs
Mount Location: 96' AGL

Ground Space

Square Feet: 450 (18' x 25')
Tenant Equipment Cabinet Platform
Dimensions: 8' x 9'4"
Tenant Backup Generator
Dimensions: 4.5' x 10'

EXHIBIT "C"
SURVEY

CONSULTANT TEAM

PROJECT CONSULTANT: TERRA CONSULTING GROUP, LTD.
600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
(847) 698-6400

SURVEYOR: MERIDIAN SURVEYING, LLC
N8774 FIRELANE 1
MENASHA, WI 54952
(920) 993-0881
(920) 273-6037

STRUCTURAL: (TOWER ANALYSIS) KRECH OJARD & ASSOCIATES, PA
101 PUTNAM STREET
EAU CLAIRE, WI 54703
(715) 552-7374
(715) 552-7336 (FAX)

STRUCTURAL ANALYSIS DATE: 09/23/19

VICINITY MAP

N.T.S.



REGIONAL MAP

N.T.S.



PROJECT TYPE

PROPOSED LESSEE ANTENNAS TO BE MOUNTED ON EXISTING WATER TANK WITH PROPOSED 8'-0" x 10'-0" EQUIPMENT PLATFORM AT BASE.

PROJECT INFORMATION

SITE COORDINATES: LATITUDE: 43° 02' 45.67" N (1A CERTIFICATION)
LONGITUDE: 88° 01' 32.30" W (1A CERTIFICATION)

ELEVATION: ±745.6' (1A)

P.I.N. #: 372999917, 372999920

ADDRESS: 8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

UTILITIES: POWER: T.B.D. FIBER: T.B.D.

JURISDICTION: CITY OF WAUWATOSA

OCCUPANCY: UNINHABITED

ZONING: SP-MED, SPECIAL PURPOSE DISTRICT - MEDICAL CENTER

CONSTRUCTION TYPE: CO LO

PROPERTY OWNER: MILWAUKEE COUNTY INSTITUTIONS
2711 W. ELLIS ST
MILWAUKEE, WI 53208

TOWER OWNER: MILWAUKEE COUNTY
633 W. WISCONSIN AVE
MILWAUKEE, WI 53203

CONTACT PERSON: ADAM STEHLY (414) 278-4876

APPLICANT: VERIZON WIRELESS
1515 WOODFIELD ROAD
SCHAUMBURG, IL 60173

CONSTRUCTION MANAGER: JON BARTELL (920) 841-1263

REAL ESTATE MANAGER: ALLEN WAITES (630) 291-7845

GENERATOR TYPE: DIESEL

MAKE: GENERAC

MODEL #: 7134-WI/ILTANK 30KW DIESEL 120/240 1-PH OUTDOOR 190 GALLON
WI/IL STYLE TANK W/ CWK SSM

SHEET DRAWING INDEX REVISION

SHEET NO.	DRAWING INDEX	REVISION
T-1	TITLE SHEET	1.
LP	LOCATION PLAN	1.
C-1	ENLARGED SITE PLAN	1.
C-2	SITE GRADING PLAN (SHEET 1 OF 1)	1.
C-3	SITE DETAILS	-
C-4	EQUIPMENT PAD & FOUNDATION PLAN	-
C-5	GENERATOR FOUNDATION DETAILS	-
ANT-1	SITE ELEVATION & ANTENNA LAYOUT	-
ANT-2	ANTENNA INFORMATION	-
ANT-2A	ANTENNA INFORMATION	-
ANT-3	SITE DETAILS	-
ANT-4	SITE DETAILS	-
S-1	STRUCTURAL NOTES, ELEVATION & PLAN	-
S-2	STRUCTURAL DETAILS	-
B-1	EQUIPMENT PAD PLAN & NOTES	-
B-2	EQUIPMENT PAD ELEVATIONS	-
E-1	UTILITY ROUTING PLAN	1.
E-1A	UTILITY RISER DIAGRAMS	-
E-1B	GENERATOR UTILITY ROUTING PLAN	-
E-1C	GENERATOR SINGLE LINE DIAGRAM & ALARM WIRING	-
E-2	SITE GROUNDING PLAN	-
E-2A	ANTENNA GROUNDING PLAN	-
E-3	GROUNDING DETAILS	-
E-4	GROUNDING DETAILS	-
E-5	ELECTRICAL DETAILS	-
SP-1	SPECIFICATIONS	-
SP-2	SPECIFICATIONS	-
SP-3	PAINTING AND WELDING NOTES	-
P-1	EXISTING SITE PHOTOS	-
EX-1	GENERATOR CUT-SHEET	-

ATTACHMENTS

1 OF 5	SITE SURVEY	-
2 OF 5	SITE SURVEY	-
3 OF 5	SITE SURVEY	-
4 OF 5	SITE SURVEY	-
5 OF 5	SITE SURVEY RFDS (BY OTHERS)	-



1515 WOODFIELD ROAD, SUITE 1400
SCHAUMBURG, ILLINOIS 60173
PHONE: (847) 619-5397 FAX: (847) 706-7415

LOCATION NUMBER: 236678

SITE NAME: CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD

WAUWATOSA, WI 53226

FIBER COORDINATION IS NOT COMPLETE (PENDING FIBER CONTACT). PRIOR TO CONSTRUCTION, CONTACT DESIGNER FOR UPDATE.



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

verizon
1515 WOODFIELD ROAD,
SUITE 1400
SCHAUMBURG, ILLINOIS 60173
PHONE: (847) 619-5397
FAX: (847) 706-7415

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

REVISIONS

NO.	DESCRIPTION	DATE	BY	BE	TJS
1.	ISSUED FOR REVIEW	09/20/19			
	UPDATE WITH NEW LINEWORK	12/20/19			

LOC. # 236678

CHILDREN'S HOSPITAL

8948 WATERTOWN
PLANK ROAD
WAUWATOSA, WI 53226

DRAWN BY: BE

CHECKED BY: DS

DATE: 09/26/19

PROJECT #: 33-3203

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

LEGEND

- = 1" IRON PIPE FOUND
- = COUNTY MONUMENT FOUND
- = ELECTRIC TRANSFORMER
- = ELECTRIC METER
- = TELEPHONE PEDESTAL
- = FIBER OPTIC PEDESTAL
- = GAS METER
- = GAS VALVE
- = LIGHT POLE
- = GROUNDING PORT
- = METAL POST
- = CONDUIT
- = SIGN
- = EXISTING PINE TREE
- = EXISTING TREE

- = CHAINLINK FENCE LINE
- = BURIED ELECTRIC
- = BURIED TELEPHONE
- = BURIED ELEC. & TELE.
- = BURIED FIBER OPTIC LINE
- = BURIED GAS LINE
- = PROPERTY LINE

SURVEY PERFORMED BY:

MERIDIAN SURVEYING, LLC

N8774 Firelane 1 Office: 920-993-0881
Menasha, WI 54952 Fax: 920-273-6037

BM#1) ELEVATION: 745.82'
TOP OF TAG BOLT ON HYDRANT, LOCATED WEST OF WATER TOWER

GENERAL SITE NOTES

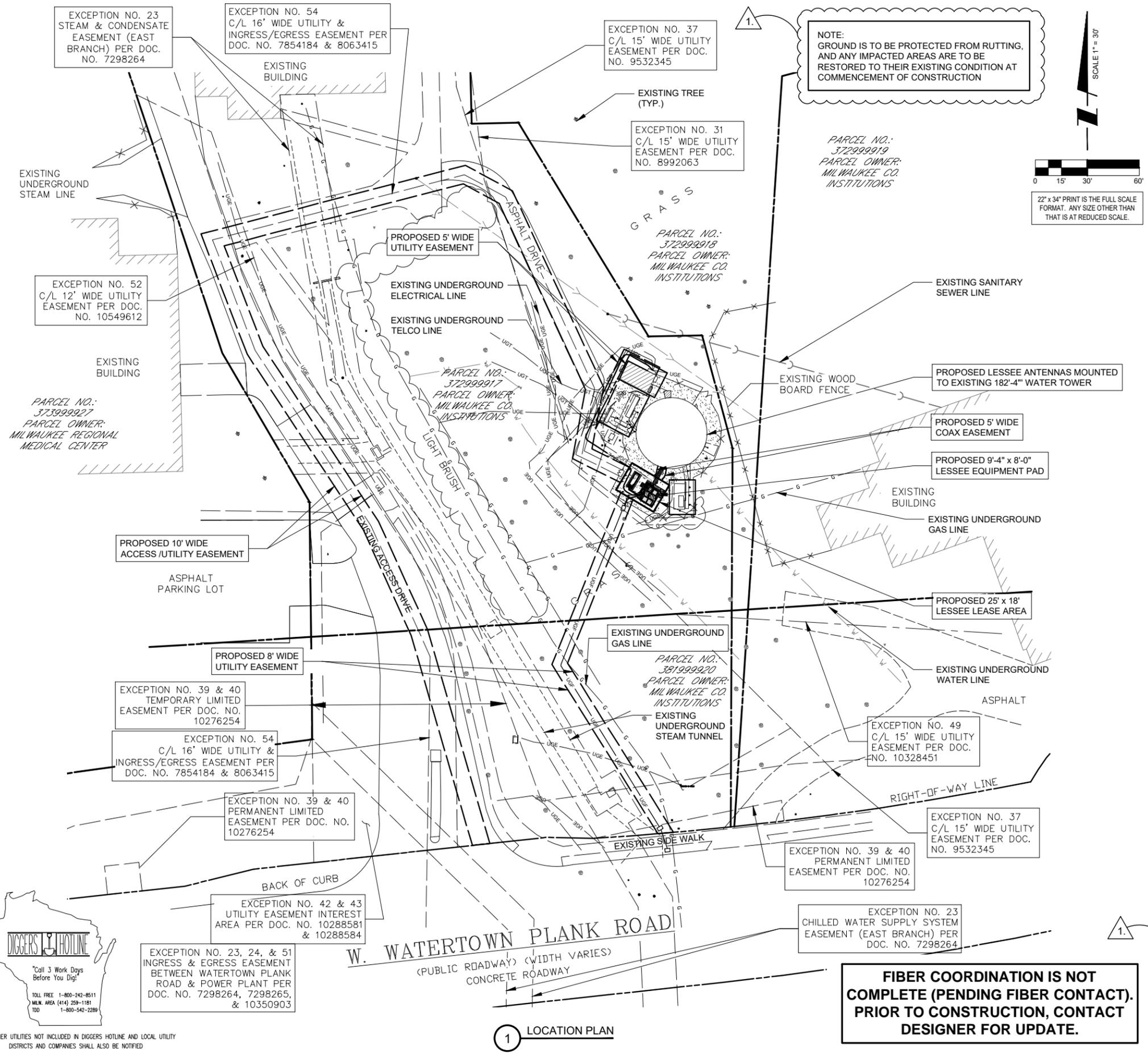
- CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING PAVEMENT. CONTRACTOR SHALL PHOTOGRAPH AND VIDEOTAPE EXISTING PAVEMENT PRIOR TO CONSTRUCTION. ANY DAMAGE CAUSED DURING CONSTRUCTION SHALL BE REPLACED TO EXISTING OR BETTER CONDITION AT NO ADDITIONAL COST.
- THE CONTRACTOR WILL, UPON BECOMING AWARE 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.
- 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 CATCH BASINS SUSCEPTIBLE TO EROSION. EROSION CONTROL MEASURES SHALL BE PERIODICALLY INSPECTED TO ENSURE PROPER FUNCTION. EROSION CONTROL SHALL BE REMOVED UPON COMPLETION OF WORK.

DIGGERS HOTLINE

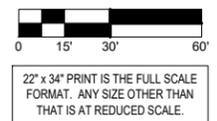
"Call 3 Work Days Before You Dig!"

TOLL FREE 1-800-242-8511
MILW. AREA (414) 259-1181
TDD 1-800-542-2289

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



NOTE: GROUND IS TO BE PROTECTED FROM RUTTING, AND ANY IMPACTED AREAS ARE TO BE RESTORED TO THEIR EXISTING CONDITION AT COMMENCEMENT OF CONSTRUCTION



PARCEL NO.: 372999919
PARCEL OWNER: MILWAUKEE CO. INSTITUTIONS

PARCEL NO.: 372999918
PARCEL OWNER: MILWAUKEE CO. INSTITUTIONS

PARCEL NO.: 372999917
PARCEL OWNER: MILWAUKEE CO. INSTITUTIONS

PARCEL NO.: 381999920
PARCEL OWNER: MILWAUKEE CO. INSTITUTIONS

EXCEPTION NO. 49
C/L 15' WIDE UTILITY EASEMENT PER DOC. NO. 10328451

EXCEPTION NO. 37
C/L 15' WIDE UTILITY EASEMENT PER DOC. NO. 9532345

EXCEPTION NO. 39 & 40
PERMANENT LIMITED EASEMENT PER DOC. NO. 10276254

EXCEPTION NO. 23
CHILLED WATER SUPPLY SYSTEM EASEMENT (EAST BRANCH) PER DOC. NO. 7298264

EXCEPTION NO. 23, 24, & 51
INGRESS & EGRESS EASEMENT BETWEEN WATERTOWN PLANK ROAD & POWER PLANT PER DOC. NO. 7298264, 7298265, & 10350903

EXCEPTION NO. 39 & 40
TEMPORARY LIMITED EASEMENT PER DOC. NO. 10276254

EXCEPTION NO. 54
C/L 16' WIDE UTILITY & INGRESS/EGRESS EASEMENT PER DOC. NO. 7854184 & 8063415

EXCEPTION NO. 52
C/L 12' WIDE UTILITY EASEMENT PER DOC. NO. 10549612

EXCEPTION NO. 37
C/L 15' WIDE UTILITY EASEMENT PER DOC. NO. 9532345

EXCEPTION NO. 31
C/L 15' WIDE UTILITY EASEMENT PER DOC. NO. 8992063

EXCEPTION NO. 23
STEAM & CONDENSATE EASEMENT (EAST BRANCH) PER DOC. NO. 7298264

EXCEPTION NO. 54
C/L 16' WIDE UTILITY & INGRESS/EGRESS EASEMENT PER DOC. NO. 7854184 & 8063415

FIBER COORDINATION IS NOT COMPLETE (PENDING FIBER CONTACT). PRIOR TO CONSTRUCTION, CONTACT DESIGNER FOR UPDATE.

1 LOCATION PLAN

verizon

1515 WOODFIELD ROAD,
SUITE 1400
SCHAUMBURG, ILLINOIS 60173
PHONE: (847) 619-5397
FAX: (847) 706-7415

TERRA

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

NO.	DESCRIPTION	DATE	BY
1.	ISSUED FOR REVIEW	09/20/19	BE
	UPDATE WITH NEW LINEWORK	12/20/19	TJS

LOC. # 236678

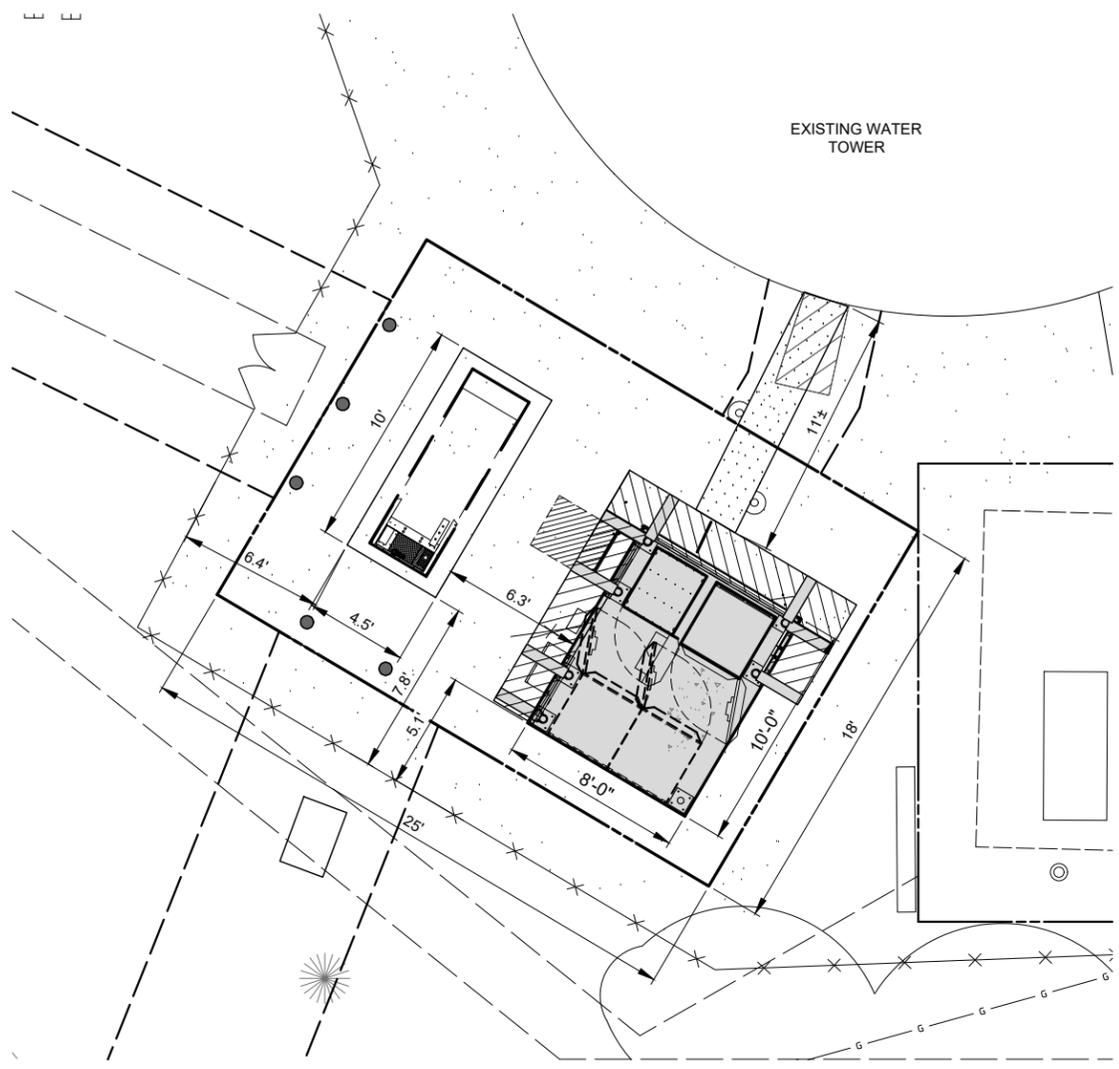
CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

DRAWN BY:	BE
CHECKED BY:	DS
DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
LOCATION PLAN

SHEET NUMBER
LP



2 SITE DIMENSION PLAN
SCALE: 1" = 4'

NOTE TO G.C.
G.C. TO HAND DIG ELECTRICAL LINES FROM EXISTING METER TO PROPOSED LESSEE EQUIPMENT LOCATION, AVOID EXISTING BURIED CONDUITS WITHIN PROPOSED EASEMENT AREA

SURVEY PERFORMED BY:

MERIDIAN SURVEYING, LLC

N8774 Firelane 1 Office: 920-993-0881
Menasha, WI 54952 Fax: 920-273-6037

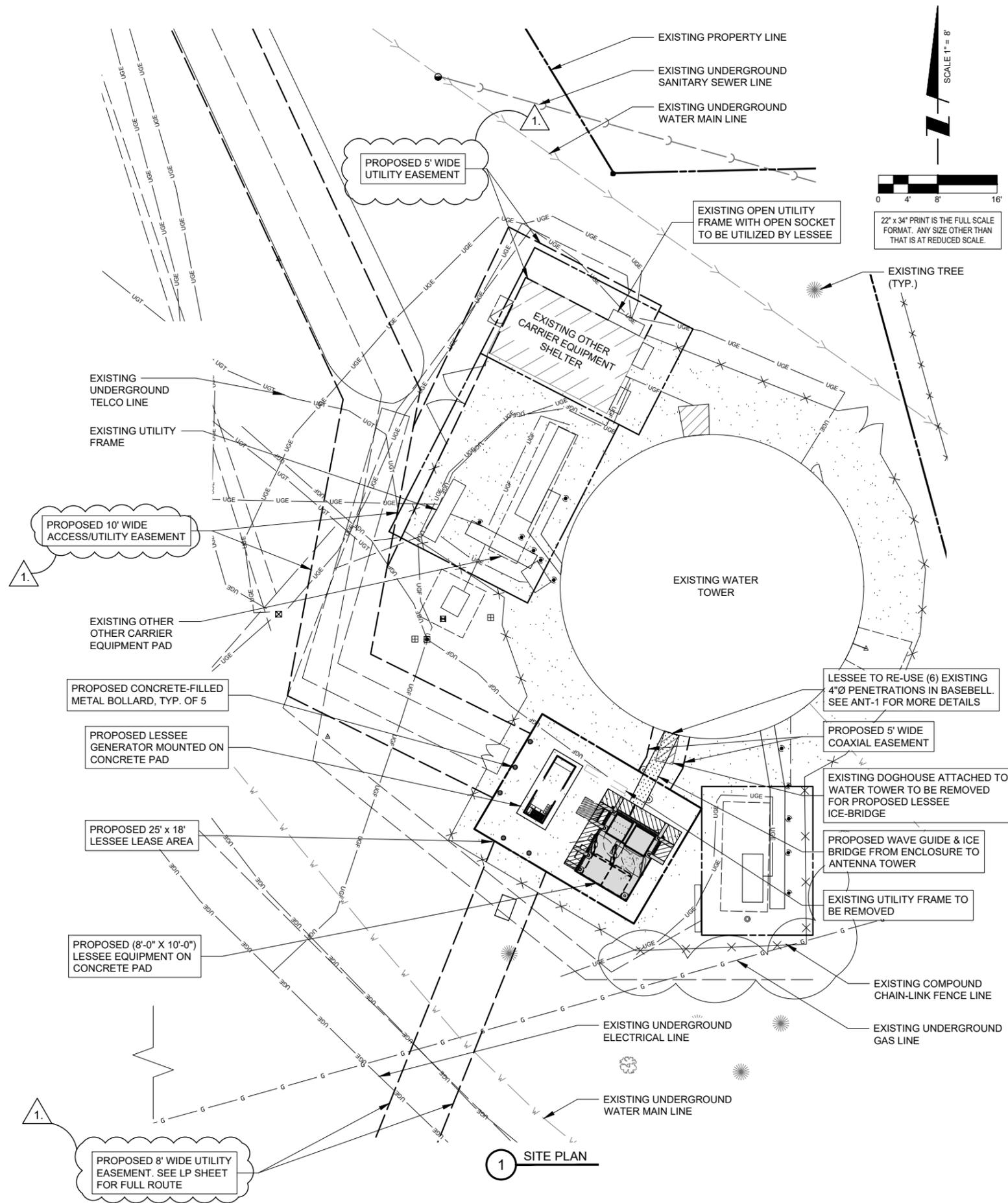
BM#1) ELEVATION: 745.82'
TOP OF TAG BOLT ON HYDRANT, LOCATED WEST OF WATER TOWER

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"Call 3 Work Days Before You Dig!"

TOLL FREE 1-800-242-8511
MILW. AREA (414) 259-1181
TDD 1-800-542-2289

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



SCALE 1" = 8'

0 4' 8' 16'

22" x 34" PRINT IS THE FULL SCALE FORMAT. ANY SIZE OTHER THAN THAT IS AT REDUCED SCALE.

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1515 WOODFIELD ROAD,
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PHONE: (847) 619-5397
FAX: (847) 706-7415

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NO.	DESCRIPTION	DATE	BY
1.	ISSUED FOR REVIEW	09/20/19	BE
	UPDATE WITH NEW LINEWORK	12/20/19	TJS

LOC. # 236678

CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

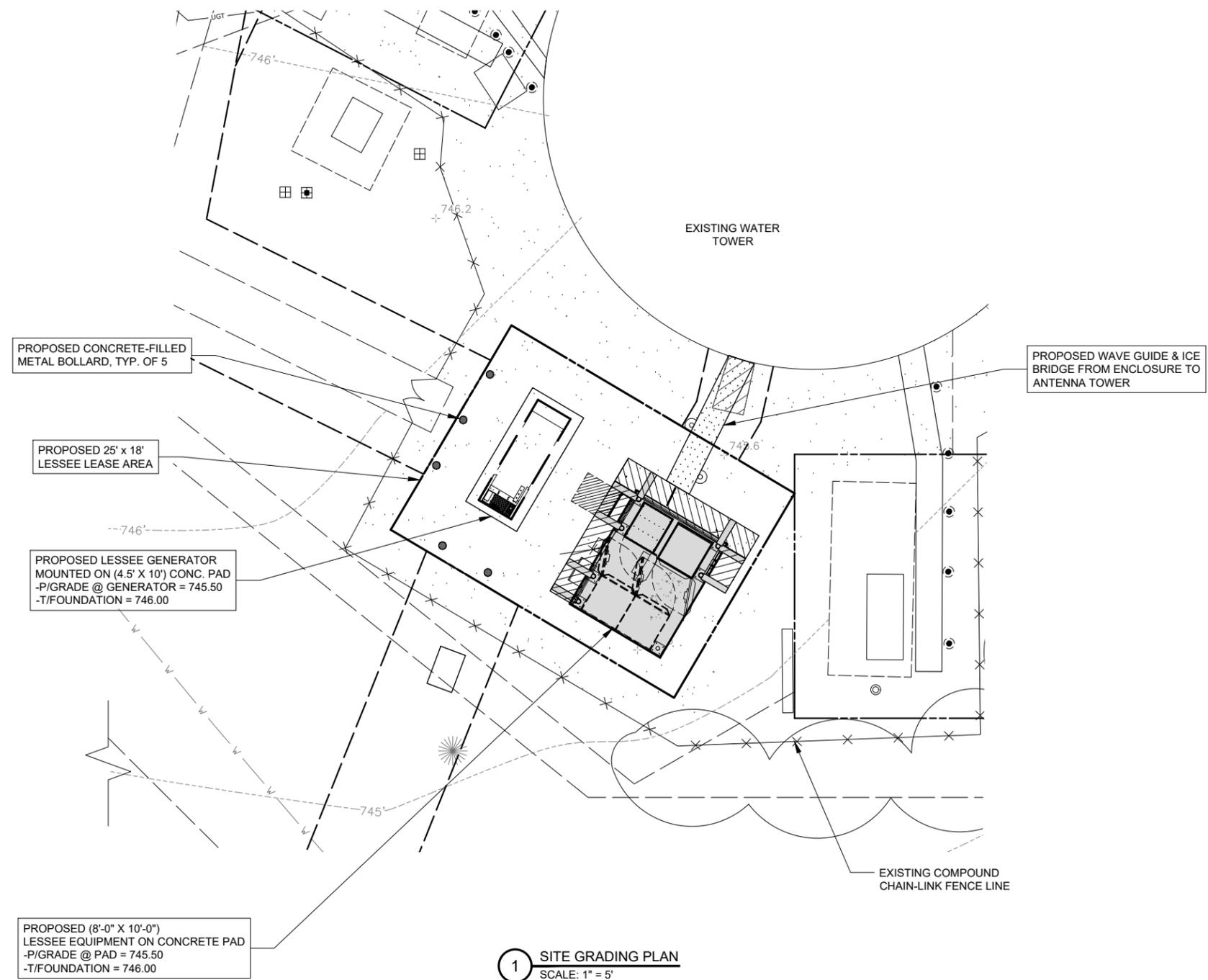
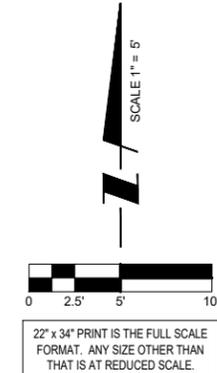
DRAWN BY:	BE
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PROJECT #:	33-3203

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
C-1

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LEGEND	
PROPOSED GROUND DRAINAGE FLOW DIRECTION ARROWS	
	DRAINAGE DIRECTION ARROW
	GROUND SLOPE% WITH DIRECTION
	SUMMIT DRAINAGE DIRECTIONS
	EXISTING GROUND DRAINAGE FLOW DIRECTION
PROPOSED SPOT GRADES	
	PROPOSED ELEVATION
PROPOSED LINES	
	PROPOSED GROUND RIDGE LINE
	PROPOSED CONTOUR
	EXISTING CONTOUR
	PROPOSED CULVERT & END SECTIONS

1 SITE GRADING PLAN
 SCALE: 1" = 5'



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LOC. # 236678
CHILDREN'S HOSPITAL
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SHEET TITLE
SITE GRADING PLAN (SHEET 1 OF 1)

SHEET NUMBER
C-2

NO.	DESCRIPTION	DATE	BY
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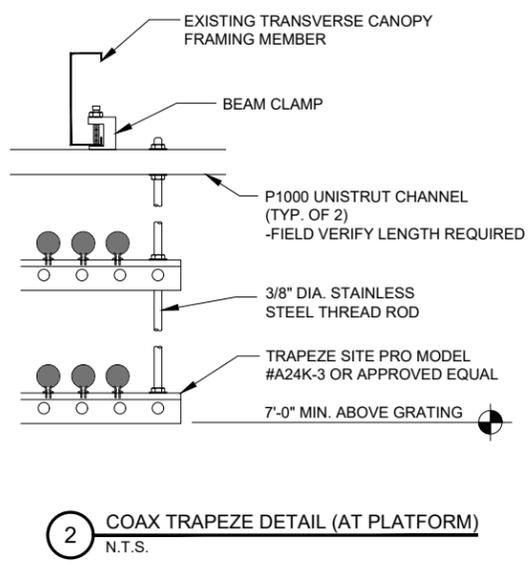
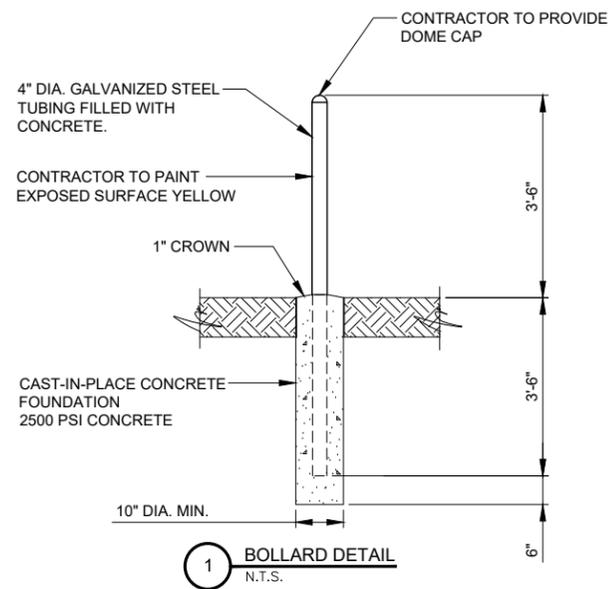
CHILDREN'S HOSPITAL

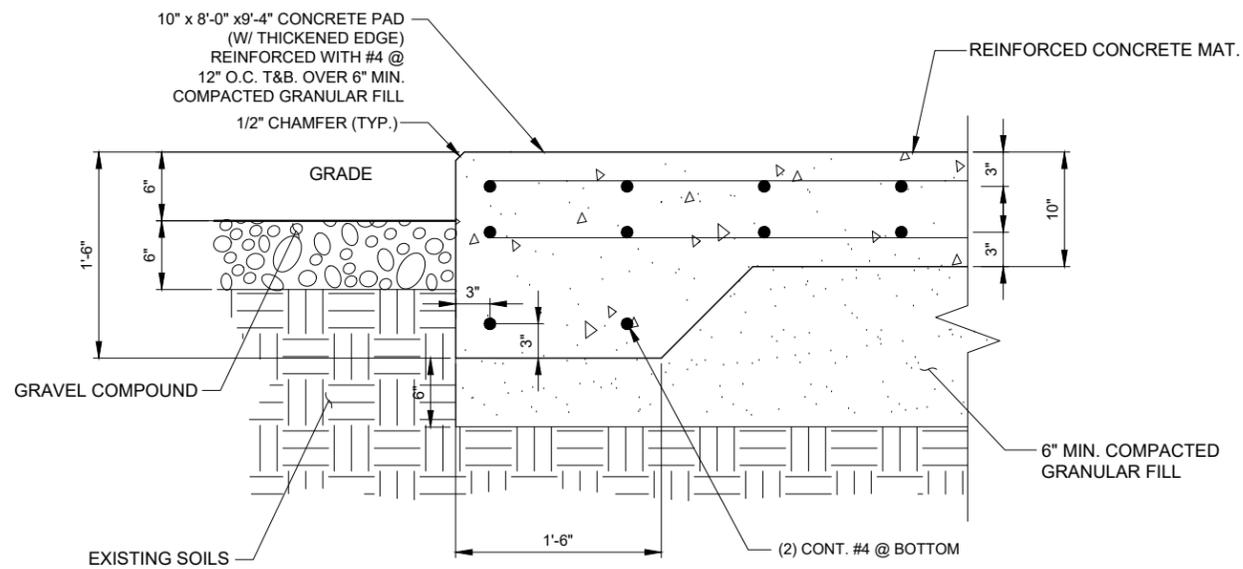
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SHEET TITLE
 SITE DETAILS

SHEET NUMBER
C-3





1 CONCRETE PAD SECTION VIEW
SCALE: 1 1/2" = 1'-0"

CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 AND ACI 301, LATEST EDITION. THESE DOCUMENTS SHALL BE AVAILABLE IN THE FIELD OFFICE.
2. EXCEPT WHERE OTHERWISE INDICATED, CONCRETE SHALL BE NORMAL WEIGHT AND WITH MINIMUM 28-DAY COMPRESSIVE STRENGTHS OF $F'_{c}=4000$ PSI. ALL EXTERIOR EXPOSED CONCRETE SHALL BE AIR ENTRAINED WITH 6% AIR CONTENT.
3. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
5. CONCRETE MIX DESIGN SHALL BE SUBMITTED TO ARCHITECT / ENGINEER FOR REVIEW.

NOTE:
LOCALIZED AREAS OF SOFT OR LOOSE MATERIALS MAY BE ENCOUNTERED AT THE PROPOSED BEARING ELEVATION. THE SOILS MAY REQUIRE COMPACTION USING A PLATE COMPACTOR IN THE FOOTING TRENCH IF FIELD CONDITIONS INDICATE LOOSE GRANULAR SOILS. THE SOILS MAY REQUIRE REMOVAL AND REPLACEMENT WITH AN APPROVED ENGINEERED FILL. FOUNDATION DEPTH AND OVER DIG REQUIREMENTS SHALL BE VERIFIED WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT AND INCLUDED IN THE BID BEFORE CONSTRUCTION. THE EVALUATION OF THE SUB GRADE AND SELECTION OF FILL MATERIALS SHALL BE MONITORED AND TESTED BY A QUALIFIED REPRESENTATIVE OF THE SOILS ENGINEER.

2 CONCRETE NOTES

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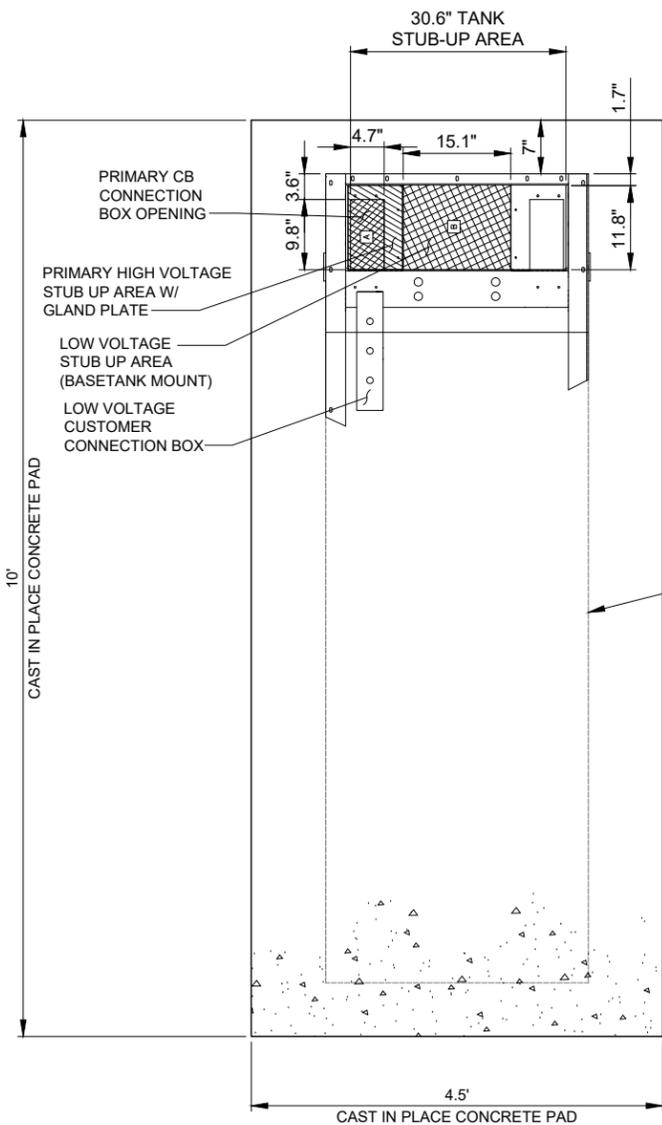
SHEET TITLE
EQUIPMENT PAD FOUNDATION PLAN

SHEET NUMBER
C-4



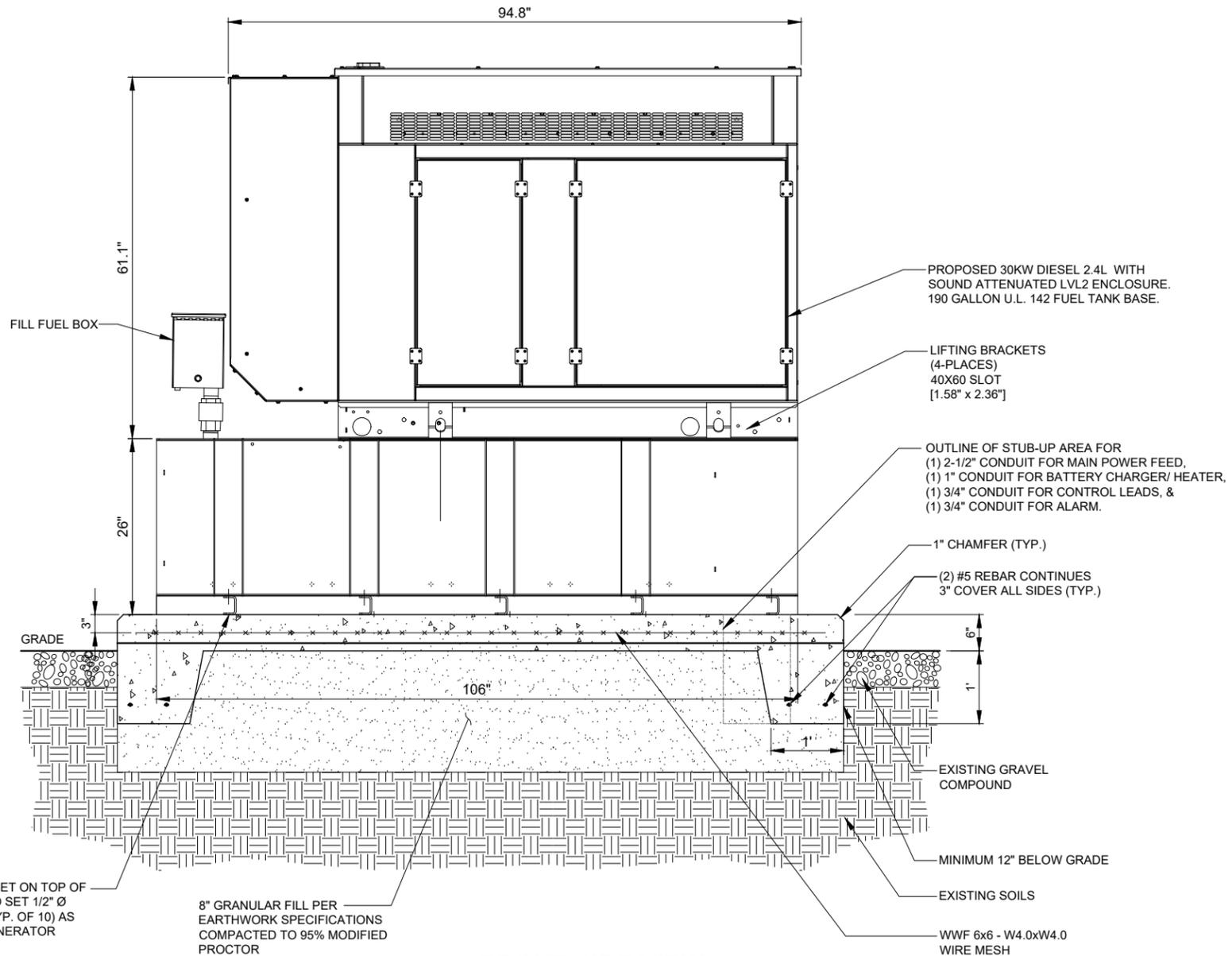
OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED

RECOMMENDED ELECTRICAL STUB-UPS (SEE DETAILED VIEW & TOP VIEW)	
(LOW VOLTAGE STUB UP) 1. TRANSFER SWITCH/COMMUNICATIONS CONDUITS, COMMUNICATIONS AND 2-WIRE START MUST NOT BE RUN IN CONDUIT W/ AC WIRING.	
(HIGH VOLTAGE STUB UP) 1. AC LOAD LEAD CONDUIT AREA. 2. 120/240 VAC FROM UTILITY FOR OPTIONAL LOADS SUCH AS GFCI OUTLET, BLOCK HEATER, BATTERY CHARGER, AND OTHER 120/240 VAC OPTIONS. (GLAND PLATE INCLUDED)	



PLAN VIEW

1 TYPICAL GENERAC FOUNDATION DETAIL
SCALE: 1" = 1'

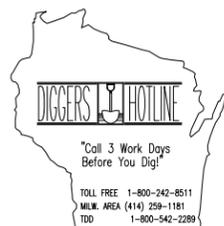


FRONT SIDE VIEW

2 TYPICAL GENERAC FOUNDATION DETAIL
SCALE: 1" = 1'

NOTES:

- SEE GENERATOR MANUFACTURE'S DRAWINGS FOR PHYSICAL LOCATION OF FUEL LINES, CONTROL AND POWER INTERCONNECTIONS AND OTHER INTERFACES THAT ARE TO CAST INTO THE CONCRETE. THE PREFERRED METHOD IS TO BRING THE CONDUIT THROUGH THE PAD TO THE UNDERSIDE OF THE GENERATOR (MINIMIZES RODENT DAMAGE). FINISH CONNECTIONS WITH FLEXIBLE CONDUIT PER GENERATOR MANUFACTURES SPECS. RIGID CONDUITS SHALL BE SECURED TO THE EXISTING SLAB, THEN BURIED BETWEEN SLAB AND SHELTER.
- THE GENERATOR SHALL BE LOCATED A MIN 5' AWAY FROM A COMBUSTIBLE WALL.
-THE GENERATOR SHALL BE LOCATED A MIN OF 3' AWAY FROM A NON-COMBUSTIBLE WALL.



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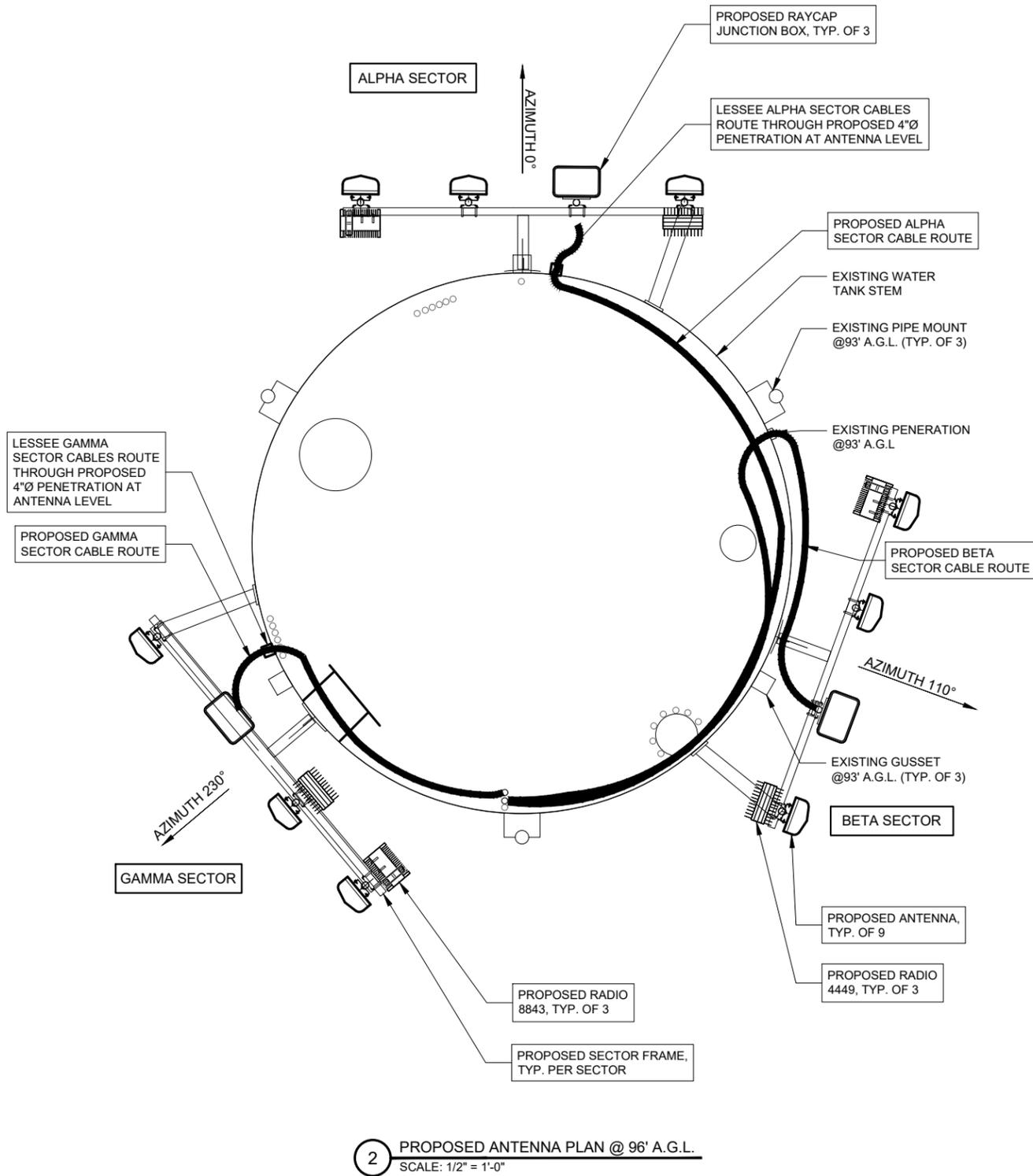
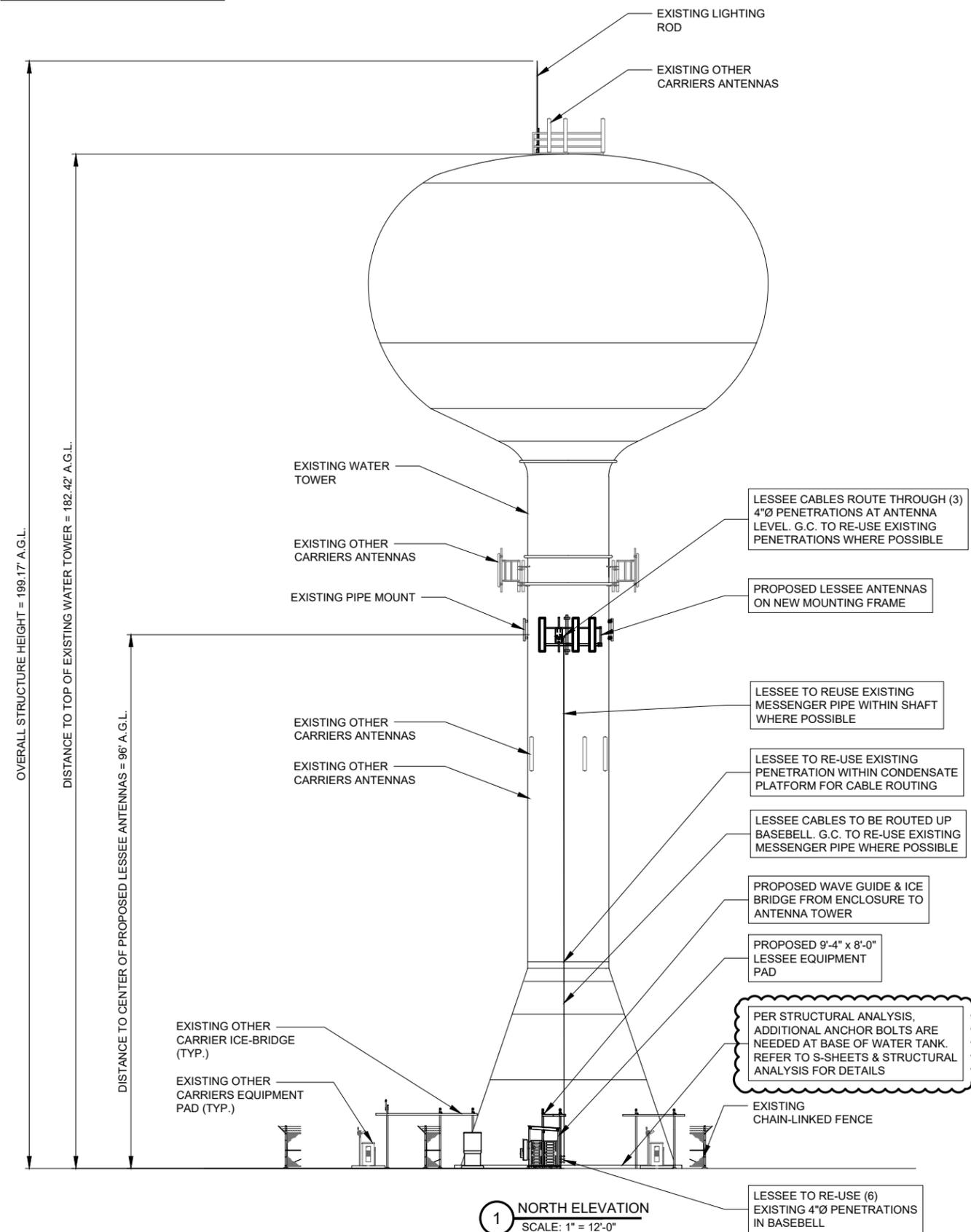
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DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
GENERATOR FOUNDATION DETAILS

SHEET NUMBER
C-5

NOTE:
THIS DRAWING IS FOR EXHIBIT AND
LAYOUT PURPOSES ONLY.
REFER TO STRUCTURAL ANALYSIS
KRECH OJARD ENGINEERING.

VERIZON WIRELESS SHALL MARK ALL OF ITS
EQUIPMENT (INCLUDING BUT NOT LIMITED TO
ANTENNAS, CABLES, & EQUIPMENT
CABINETS) WITH WEATHERPROOF TAGS OR
PLATES IDENTIFYING IT AS THE OWNER



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PROJECT #: 33-3203

SHEET TITLE
SITE ELEVATION & ANTENNA LAYOUT

SHEET NUMBER
ANT-1

Childrens Hospital - F - Jennings, Christian - christian.jennings@verizonwireless.com - 07/29/2019 11:53:04

Antenna Summary

Added Antennas														
700 LTE	850 CDM A	850 LTE	1900 CDM A	1900 LTE	2100 LTE	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	QTY
						ERICSSON	KRE_101_2251_2	96	96,3	230(03),110(02),0(01)	false	false	PHYSICAL	3
YES				YES	YES	QUINTEL USA INC	QS8656-5	96	100	230(03),110(02),0(01)	true	true	PHYSICAL	6
Removed Antennas														
700 LTE	850 CDM A	850 LTE	1900 CDM A	1900 LTE	2100 LTE	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	QTY
Retained Antennas														
700 LTE	850 CDM A	850 LTE	1900 CDM A	1900 LTE	2100 LTE	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	QTY

Added: 9 Removed: 0 Retained: 0

1 ANTENNA SUMMARY
N.T.S.



NO.	DESCRIPTION	DATE	BY	BE	TJS	
						ISSUED FOR REVIEW
1.		09/30/19				
		12/20/19				

Childrens Hospital - F - Jennings, Christian - christian.jennings@verizonwireless.com - 07/29/2019 11:53:04

Equipment Summary

Added Non Antennas													
Equipment Type	700 LTE	850 CDMA	850 LTE	1900 CDMA	1900 LTE	2100 LTE	Location	Make	Model	Cable Length	Cable Size	Inst. Type	Quantity
OVP Box	YES				YES	YES	Tower	Raycap	6600			PHYSICAL	1
Hybrid Cable	YES				YES	YES	Tower	Hybrid	High Capacity			PHYSICAL	1
OVP Box	YES				YES	YES	Shelter	Raycap	6600			PHYSICAL	1
RRU							Tower	Ericsson	2208			PHYSICAL	3
RRU	YES						Tower	Ericsson	4449			PHYSICAL	3
RRU					YES	YES	Tower	Ericsson	8843			PHYSICAL	3
Removed Non Antennas													
Equipment Type	700 LTE	850 CDMA	850 LTE	1900 CDMA	1900 LTE	2100 LTE	Location	Make	Model	Cable Length	Cable Size	Inst. Type	Quantity
Retained Non Antennas													
Equipment Type	700 LTE	850 CDMA	850 LTE	1900 CDMA	1900 LTE	2100 LTE	Location	Make	Model	Cable Length	Cable Size	Inst. Type	Quantity

2 EQUIPMENT SUMMARY
N.T.S.

LOC. # 236678

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SHEET TITLE
ANTENNA INFORMATION

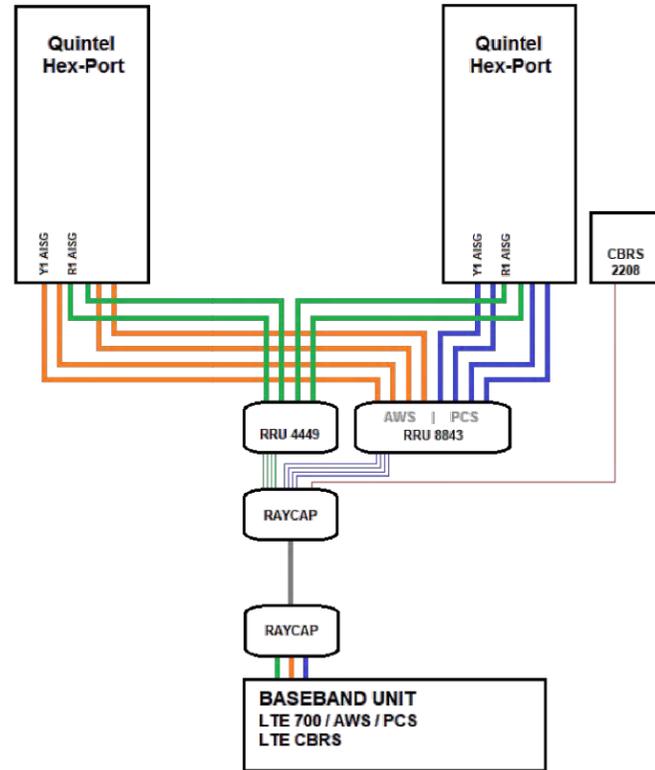
SHEET NUMBER
ANT-2

RF EMISSIONS REPORT REQUIRED

YES NO

DATE OF REPORT: _____

Childrens Hospital - F - Jennings, Christian - christian.jennings@verizonwireless.com - 07/29/2019 11:53:04



1 CABLE DIAGRAM
N.T.S.

HYBRID LENGTH ESTIMATE

SECTOR	AT GROUND		AT STRUCTURE		TOTAL (±)
	HOR (±)	VER (±)	HOR (±)	RAYCAP CL (±)	
ALPHA	13'	9'	36'	96'	154'
BETA	13'	9'	36'	96'	154'
GAMMA	13'	9'	25'	96'	143'

NOTE TO RF, G.C. & IMPLEMENTATION:
RAYCAP CHART IS CURRENTLY BEING UPDATED BY VERIZON WIRELESS. PRIOR TO FINAL AND CONSTRUCTION, CHART TO BE INSERTED. GC TO NOTIFY VERIZON WIRELESS IF THIS NOTE IS STILL ON THE DRAWINGS PRIOR TO CONSTRUCTION.

Raycap Layout - Raycap Per Sector					
POWER					
3	700 RRU	6	700 RRU2/A2		
2	PCSLT RRU	5	PCSLT RRU2/A2		
1	AWS RRU	4	AWS RRU2/A2		
FIBER					
1	2	3	4	5	6
AWS RRU	AWS RRU2/A2	PCSLTE RRU	PCSLTE RRU/A2	700 RRU	700 RRU/A2
7	8	9	10	11	12

2 RAYCAP TABLE
N.T.S.



NO.	DESCRIPTION	DATE	BY
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LOC. # 236678

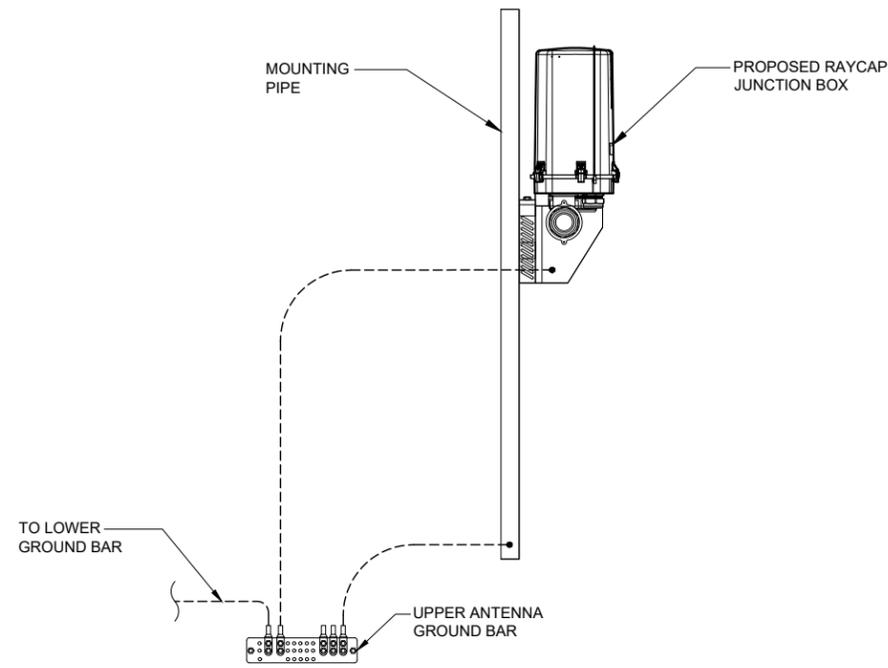
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SHEET TITLE
ANTENNA INFORMATION

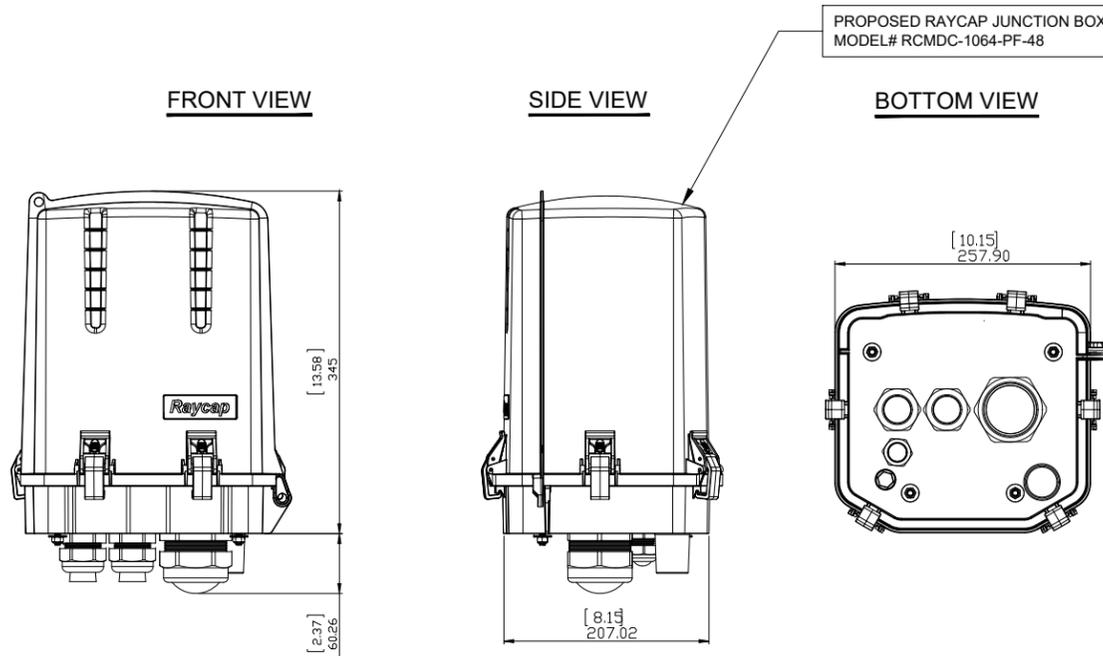
SHEET NUMBER
ANT-2A



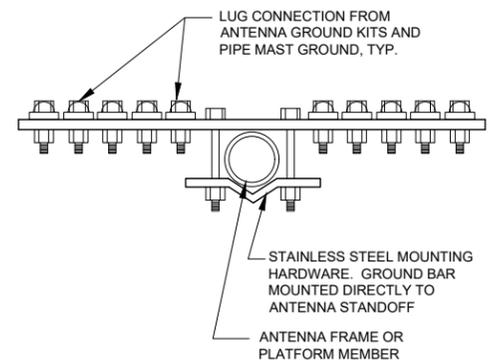
1 RAYCAP JUNCTION BOX MOUNT DETAIL
N.T.S.

SPECIFICATIONS DC SURGE PROTECTION FOR RRU/INTEGRATED ANTENNA RADIO HEAD
 APPLICATION: SECTOR MODEL
 WEIGHT: 14LBS (06.35 KG)

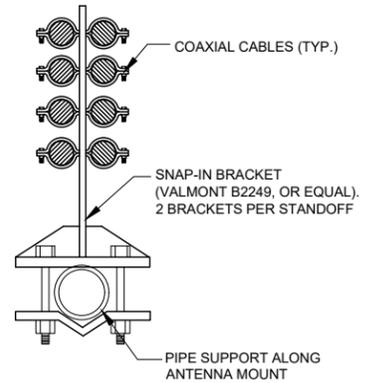
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[INCHES]



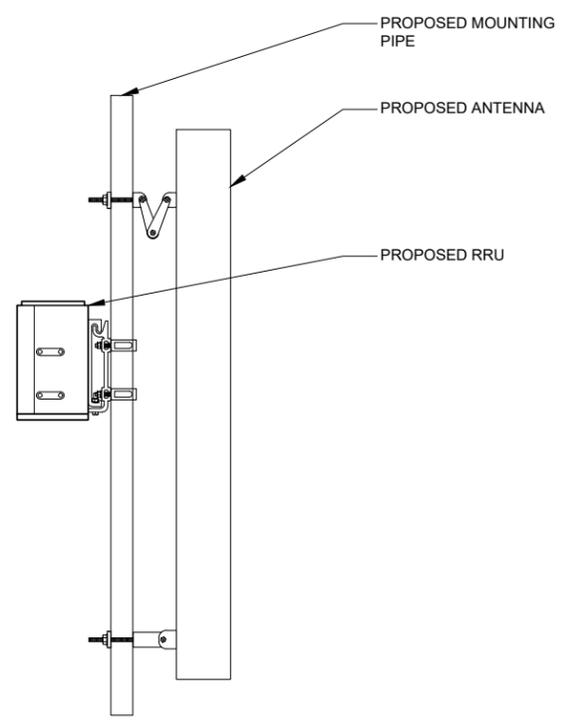
4 MAIN RAYCAP JUNCTION BOX DETAIL



2 GROUND BAR AT SECTOR
N.T.S.



3 SNAP-IN BRACKET AT ANTENNA MOUNT
N.T.S.



5 RRU MOUNT DETAIL
N.T.S.

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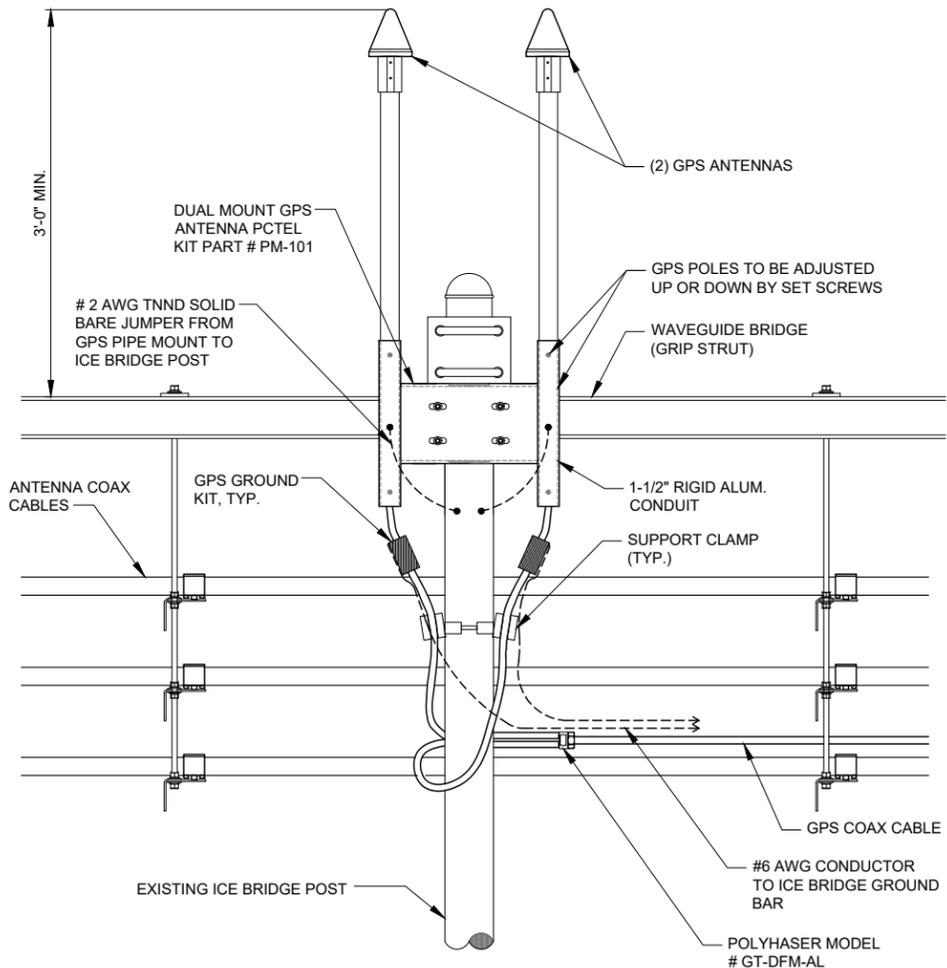
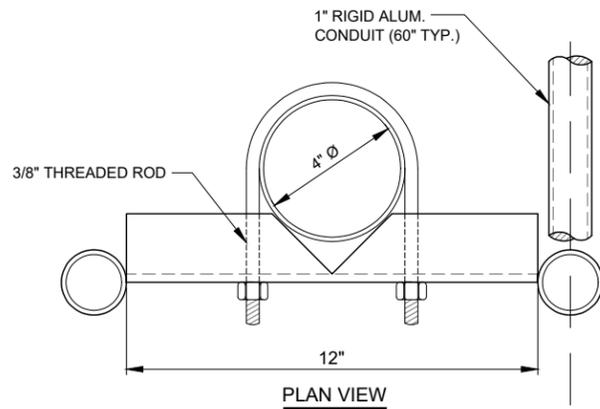
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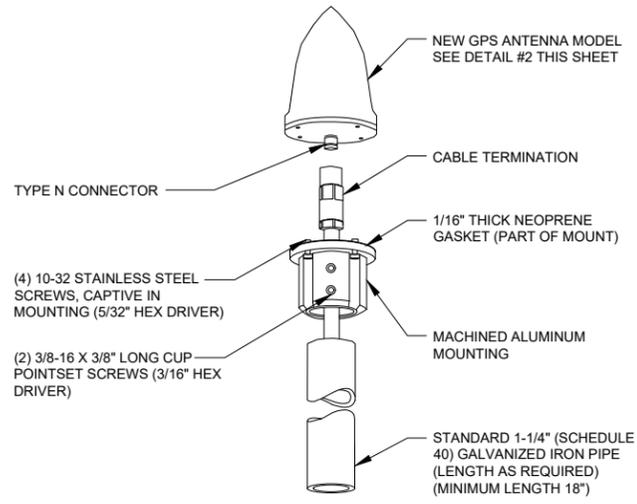
SHEET TITLE
SITE DETAILS

SHEET NUMBER
ANT-3



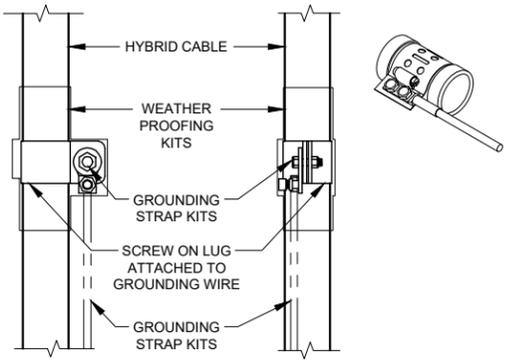
1 GPS MOUNTING DETAIL
N.T.S.

NOTE:
INSTALL EACH GPS ON THE
CLOSEST ICE BRIDGE POSTS TO
SHELTER (TYP. AT 2 LOCATIONS).

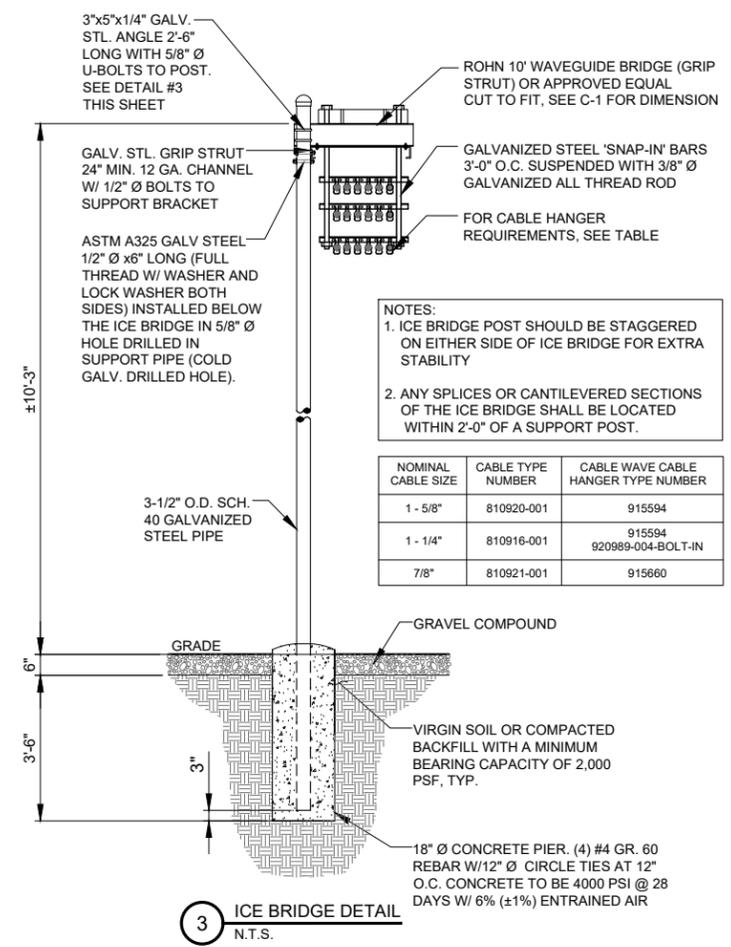


2 TYPICAL GPS DETAIL
N.T.S.

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 CABLE WHERE IT IS SPECIFIED TO BE GROUNDED
3. CABLE TO BE GROUNDED AT ANTENNA LEVEL AND PRIOR TO ENTERING SHELTER ENTRY PANEL.
4. CABLE ALSO TO BE GROUNDED TO GROUND BAR AT TOWER BASE IF APPLICABLE.
5. USE ONLY TIN PLATED GROUNDING KITS.



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



NOTES:
1. ICE BRIDGE POST SHOULD BE STAGGERED ON EITHER SIDE OF ICE BRIDGE FOR EXTRA STABILITY
2. 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 ICE BRIDGE DETAIL
N.T.S.

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CHILDREN'S HOSPITAL

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SHEET TITLE
SITE DETAILS

SHEET NUMBER

ANT-4

GENERAL STRUCTURAL NOTES

- DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:
 - 2015 INTERNATIONAL BUILDING CODE
 - AWWA-D100-11
 - TIA-222-H
- WATER TANK DESIGN LOADS (PER AWWA-D100-11):
 - WIND LOAD:
 - ULTIMATE WIND SPEED (3 SEC. GUST) = 120 MPH (PER 2015 IBC WIND SPEED MAPS)
 - NOMINAL WIND SPEED CONVERSION = 93 MPH
 - RISK CATEGORY: III
 - WIND IMPORTANCE FACTOR: $I_w = 1.15$
 - WIND EXPOSURE: D
 - SEISMIC LOAD (ASCE 7-10/2015 IBC)
 - RISK CATEGORY: III
 - SEISMIC IMPORTANCE FACTOR: 1.25
 - SITE CLASS = D
 - SDS = 0.092
 - SD1 = 0.074
 - SEISMIC DESIGN CATEGORY: B
- ANTENNA SUPPORTING STRUCTURES & ANTENNA DESIGN LOADS (PER TIA-222-H)
 - WIND LOAD:
 - ULTIMATE WIND SPEED (3 SEC. GUST) = 107 MPH
 - RISK CATEGORY II
 - WIND IMPORTANCE FACTOR: $I_w = 1.0$
 - WIND EXPOSURE: C
 - ICE LOAD:
 - UNIFORM ICE THICKNESS: $T = 1.5$ INCHES
 - ICE IMPORTANCE FACTOR: $I_i = 1.0$
 - DESIGN ICE THICKNESS: $T_D = 1.88$ INCHES
 - CONCURRENT WIND SPEED (3 SEC. GUST) = 40 MPH
- EQUIPMENT SUMMARY (INDIVIDUAL SELF WEIGHT + 1 1/2" RADIAL ICE LOAD PER TIA CODE)
 - (6) QUINTEL USA QS8656-5 ANTENNAS
 - (3) ERICSSON KRE_101_2251_2/2208 ANTENNA/RRU
 - (3) RAYCAP 6600
 - (3) RRU 8843
 - (3) RRU 4449
 - (1) HYBRID CABLE
- CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF EXISTING BUILDING UTILITIES, STREETS, EQUIPMENT ETC. DURING CONSTRUCTION. PROVIDE TEMPORARY PROTECTION AS REQUIRED.
- FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION.
- ANY HOLES CUT IN THE EXISTING OR NEW STRUCTURE WHICH ARE NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE REVIEWED PRIOR TO CONSTRUCTION WITH THE ENGINEER.
- CONTRACTOR TO VERIFY ALL EQUIPMENT DIMENSIONS AND FASTENING REQUIREMENTS WITH MANUFACTURER.
- STRUCTURAL DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS, COORDINATE WITH THE ENGINEER IF DIMENSIONS ARE NOT CLEAR.
- ANY CLAMPING-STYLE FRICTION CONNECTIONS, INCLUDING U-BOLTS, SHOULD INCLUDE A RUBBER STRIP BETWEEN THE CLAMP / U-BOLT AND THE BASE MATERIAL TO PREVENT METAL ON METAL CONTACT.
- RESTORE THE SITE TO PRE-PROJECT CONDITIONS AT THE END OF THE PROJECTS

STRUCTURAL STEEL AND MISCELLANEOUS METALS

- ALL WIDE FLANGE MEMBERS TO BE ASTM A992.
- HSS STRUCTURAL TUBING TO BE A500, GRADE B.
- PIPE TO BE A53, GRADE B.
- ALL OTHER STRUCTURAL STEEL SHAPES TO BE ASTM A36
- FABRICATION AND ERECTION OF STRUCTURAL STEEL MEMBERS IS TO BE IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE.
- ALL STRUCTURAL STEEL AND MISCELLANEOUS METALS EXPOSED TO EXTERIOR CONDITIONS SHALL BE GALVANIZED. TOUCH UP ALL DISTURBED AREAS.
- BOLTED CONNECTION TO USE A325 HIGH STRENGTH BOLTS WITH THE THREADS INCLUDED IN THE SHEAR PLANE WITH A563 NUTS AND F436 WASHERS UNLESS NOTED OTHERWISE ON PLANS.

WELDING

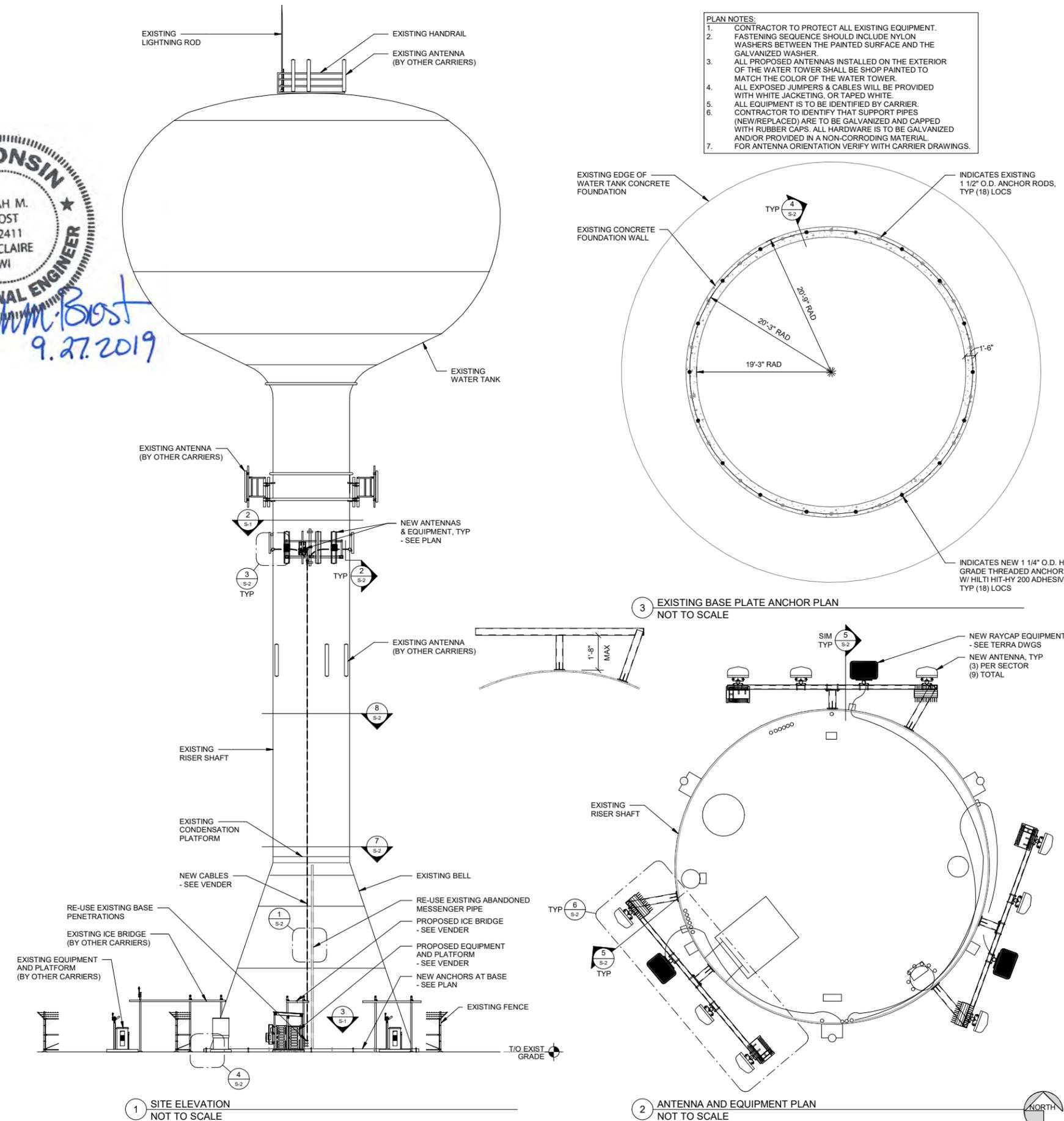
- ALL WELDING SHALL BE BY A CERTIFIED WELDER.
- ALL WELDING SHALL COMPLY WITH THE AWS STRUCTURAL WELDING CODES, INCLUDING ANSI/AWWA D100-96 "AWWA STANDARD FOR WELDED STEEL TANKS FOR WATER STORAGE" AS MODIFIED TO DATE.
- MAKE ALL WELDS TO THE TANK WALL WITH E7018 LOW HYDROGEN ROD. WELD SMOOTH AND AVOID UNDERCUTS AND BURRS. GRIND SMOOTH ALL WELDS SO THAT NO SHARP PROTRUSIONS REMAIN. SMOOTH IS DEFINED AS NO CUTS OR ABRASIONS OCCUR WHEN RUBBING YOUR HAND OVER THE WELD.
- DO NOT WELD WHEN THE AMBIENT TEMPERATURE IS BELOW 32°F UNLESS THE REQUIREMENTS OF THE AWWA D100, SEC. 10.2.1 ARE FOLLOWED.
- BEFORE WELDING, REMOVE ALL COATINGS WITHIN 6" OF THE AREA TO BE WELDED. PREPARE EXISTING STRUCTURAL COMPONENT SURFACES WHERE WELDING IS TO BE PERFORMED IN ACCORDANCE WITH SSPC-SP-10 WHITE METAL BLAST CLEANING CODE.
- DO NOT WELD GALVANIZED COMPONENTS DIRECTLY TO THE TANK SURFACE. GRIND GALVANIZED SURFACES FREE OF GALVANIZING PRIOR TO WELDING. PREPARE EXISTING STRUCTURAL COMPONENT SURFACES WHERE WELDING IS TO BE PERFORMED IN ACCORDANCE WITH AWS CODE.
- COMPLY WITH APPLICABLE AWWA D-100, AWS D1.1, ANSI, ASTM STANDARDS, ACI, AISC AND FEDERAL, STATE, AND LOCAL CODES DURING CONSTRUCTION DESIGN AND FABRICATION.
- ALL WELDS FOR THIS PROJECT NEED TO BE SEAL WELDS. STITCH WELDING IS NOT PERMITTED.
- ALL WELDING ELECTRODES SHALL BE E70XX.

GENERAL PAINT NOTES:

- PAINTING SPECIFICATIONS ARE PROVIDED BY OTHERS.



Sarah M. Brost
9.27.2019



PLAN NOTES:

- CONTRACTOR TO PROTECT ALL EXISTING EQUIPMENT.
- FASTENING SEQUENCE SHOULD INCLUDE NYLON WASHERS BETWEEN THE PAINTED SURFACE AND THE GALVANIZED WASHER.
- ALL PROPOSED ANTENNAS INSTALLED ON THE EXTERIOR OF THE WATER TOWER SHALL BE SHOP PAINTED TO MATCH THE COLOR OF THE WATER TOWER.
- ALL EXPOSED JUMPERS & CABLES WILL BE PROVIDED WITH WHITE JACKETING, OR TAPED WHITE.
- ALL EQUIPMENT IS TO BE IDENTIFIED BY CARRIER.
- CONTRACTOR TO IDENTIFY THAT SUPPORT PIPES (NEW/REPLACED) ARE TO BE GALVANIZED AND CAPPED WITH RUBBER CAPS. ALL HARDWARE IS TO BE GALVANIZED AND/OR PROVIDED IN A NON-CORRODING MATERIAL.
- FOR ANTENNA ORIENTATION VERIFY WITH CARRIER DRAWINGS.



NO.	DESCRIPTION	DATE	BY
1	ISSUED FOR CONSTRUCTION	09/27/19	JTF

LOC. # 236678

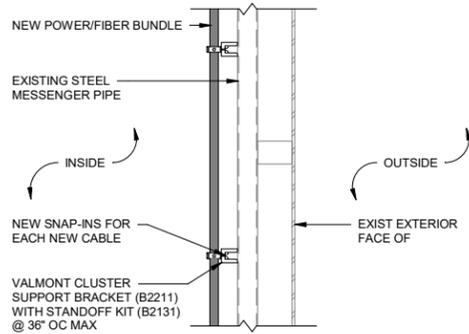
CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

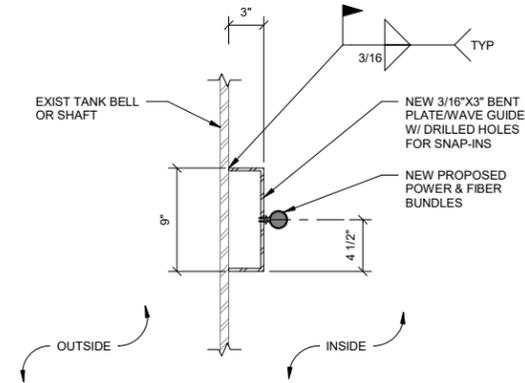
DRAWN BY:	JTF
CHECKED BY:	SMB
DATE:	09/27/19
PROJECT #:	192001.17

SHEET TITLE
STRUCTURAL NOTES,
ELEVATION, & PLAN

SHEET NUMBER
S-1

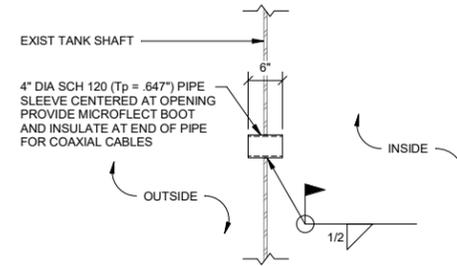


1 VERTICAL COAX CABLE DETAIL
3/4" = 1'-0"

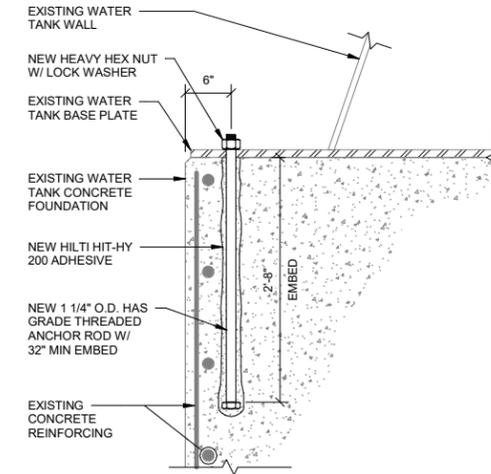


NOTES:
1. CABLES TO BE SUPPORTED EVERY 4'-0" OC (MAX).
2. CABLES CAN NOT BE ROUTED BEHIND LADDER.

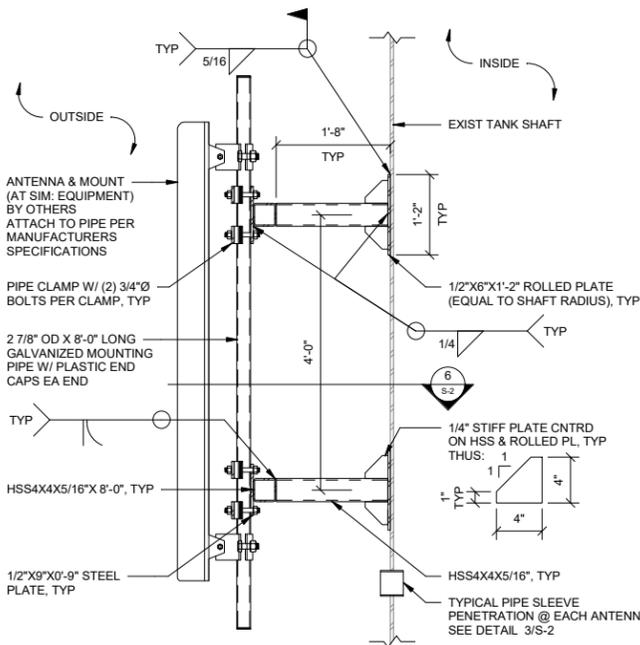
2 HORIZONTAL COAX CABLE DETAIL
1 1/2" = 1'-0"



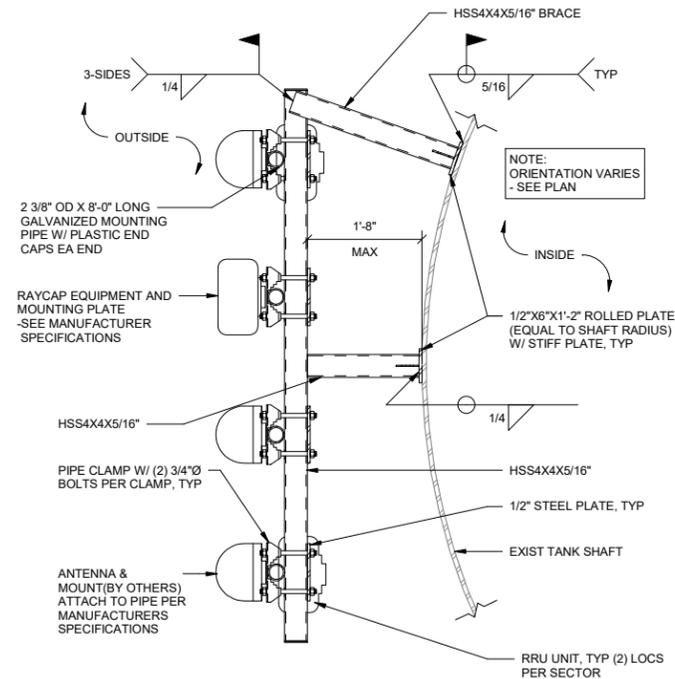
3 PIPE SLEEVE PENETRATION DETAIL (6 THUS)
3/4" = 1'-0"



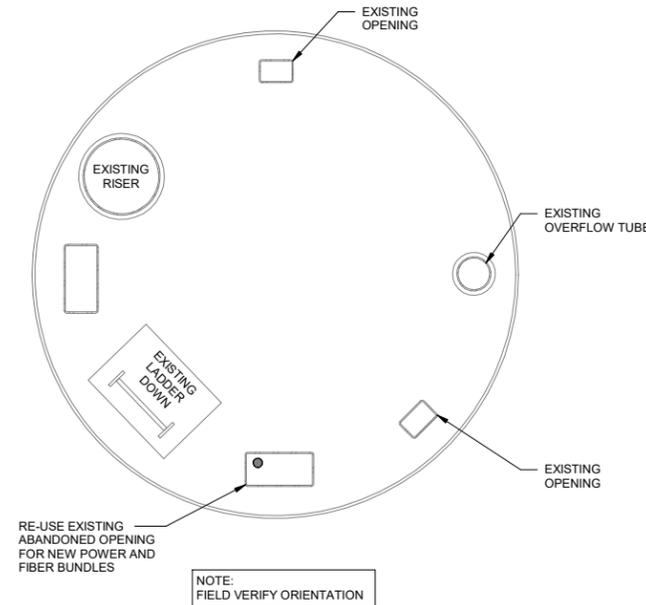
4 THREADED ANCHOR ROD DETAIL (18 THUS)
1" = 1'-0"



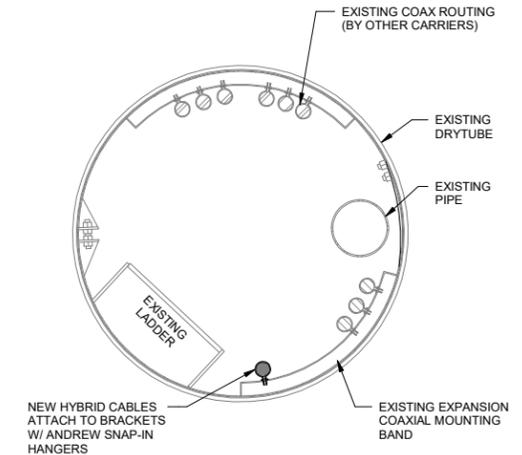
5 ANTENNA MOUNT DETAIL (3 THUS)
3/4" = 1'-0"



6 EXTERIOR MOUNT - PLAN (3 THUS)
3/4" = 1'-0"



7 PLATFORM PENETRATION DETAIL - PLAN
NOT TO SCALE



8 VERTICAL CABLE DRYTUBE ACCESS DETAIL - PLAN
NOT TO SCALE



Sarah M. Brost

9.27.2019

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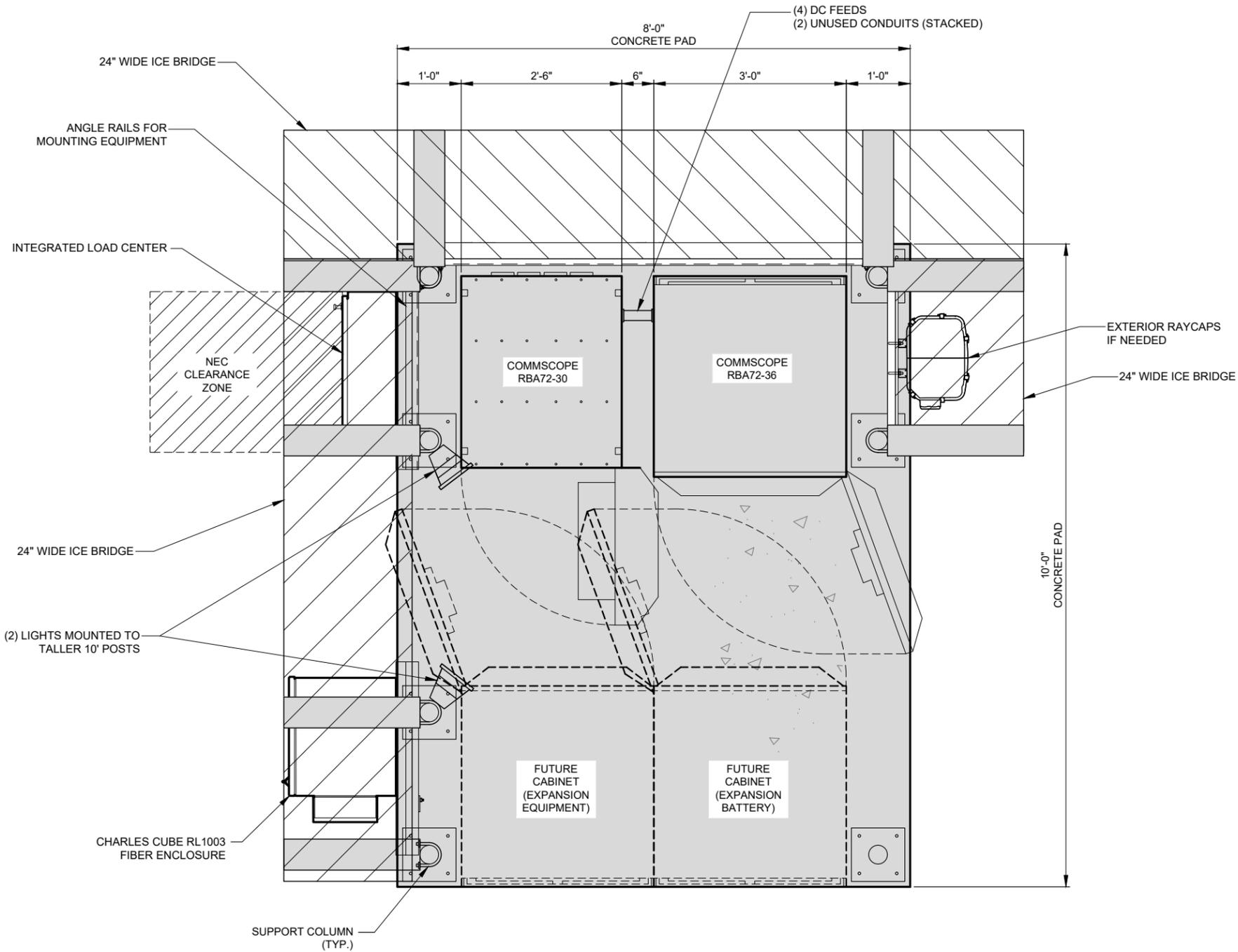
CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

DRAWN BY:	JTF
CHECKED BY:	LBL
DATE:	09/27/19
PROJECT #:	192001.17

SHEET TITLE
STRUCTURAL DETAILS

SHEET NUMBER
S-2



1 EQUIPMENT PAD - LAYOUT PLAN
SCALE: 3/4" = 1'-0"

LEGEND	
	= CANOPY/CONCRETE PAD
	= ICE BRIDGE

NOTES:

- EQUIPMENT CONCRETE PAD IS PRE MANUFACTURED BY OTHERS.
- THIS IS UNMANNED STORAGE AND EQUIPMENT SKID ONLY.
- SKID SHALL BE PLACED ACCORDING TO STATE AND LOCAL CODE FROM ANY PROPERTY LINE, INTERIOR LOT LINE OR ANY OTHER BUILDING.
- ALL ITEMS NOTED AS "FIELDWORK" SHALL BE INSTALLED AND TESTED AT THE FACTORY THEN REMOVED FOR TRANSPORT AND REINSTALLED AT THE FINAL SITE.
- SKID NOT DESIGNED FOR INSTALLATION IN A FLOOD PRONE AREA.
- FIRE EXTINGUISHER INSTALLED BY OTHERS WHEN NOT SUPPLIED BY SABRE.
- THIS SKID DOES NOT CONTAIN PLUMBING FACILITIES.
- THIS ENCLOSURE IS CLASSIFIED AS USE S-2 (IBC, FBC), U (OBC)
2006-2015 INTERNATIONAL BUILDING CODE
2009-2012 UNIFORM MECHANICAL CODE
2006-2015 INTERNATIONAL MECHANICAL CODE
2004 CHICAGO BUILDING CODE
- DESIGN PARAMETERS**
 USE GROUP: S-2 (IBC, FBC)
 U (OBC)
 CONSTRUCTION TYPE: V-B (IBC, FBC)
 OCCUPANCY CATEGORY: II
 ROOF LIVE LOAD: 81 PSF
 FLOOR LIVE LOAD: 986 PSF
 GROUND SNOW LOAD: 96 PSF (N/A FOR FBC 2014)
 WIND SPEED: 150 MPH/EXPOSURE C
 SEISMIC ZONE FOR SBC & UBC: 4
 SEISMIC DESIGN CATEGORY FOR IBC: E (IBC)
 USE GROUP-III (OBC)
 SITE CLASS-D (OBC)
- BULLET RESISTANCE LEVEL 4 FOR 4" CONCRETE PER IBC
 CONCRETE f_c : 5000 PSI AT 28 DAYS
 CONCRETE UNIT WEIGHT: 115 PCF
- CONCRETE PAD AND ASSOCIATED EQUIPMENT IS PROVIDED BY OWNER UNDER SEPARATE CONTRACT. EQUIPMENT ENCLOSURE INFORMATION INDICATED HEREIN IS PROVIDED FOR REFERENCE ONLY AND IS TAKEN FROM MANUFACTURER'S AVAILABLE DATA. REFER TO CIVIL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR WORK TO BE PERFORMED UNDER THIS CONTRACT.

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NO.	DESCRIPTION	DATE	BY
			BE
1.	ISSUED FOR REVIEW	09/30/19	TJS
	UPDATE WITH NEW LINEWORK	12/20/19	

LOC. # 236678

CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD
 WAUWATOSA, WI 53226

DRAWN BY:	BE
CHECKED BY:	DS
DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
EQUIPMENT PAD PLAN & NOTES

SHEET NUMBER

B-1

NO.	DESCRIPTION	DATE	BY	BE	TJS
1.	ISSUED FOR REVIEW	09/30/19	BE		
	UPDATE WITH NEW LINEWORK	12/20/19	TJS		

LOC. # 236678

CHILDREN'S HOSPITAL

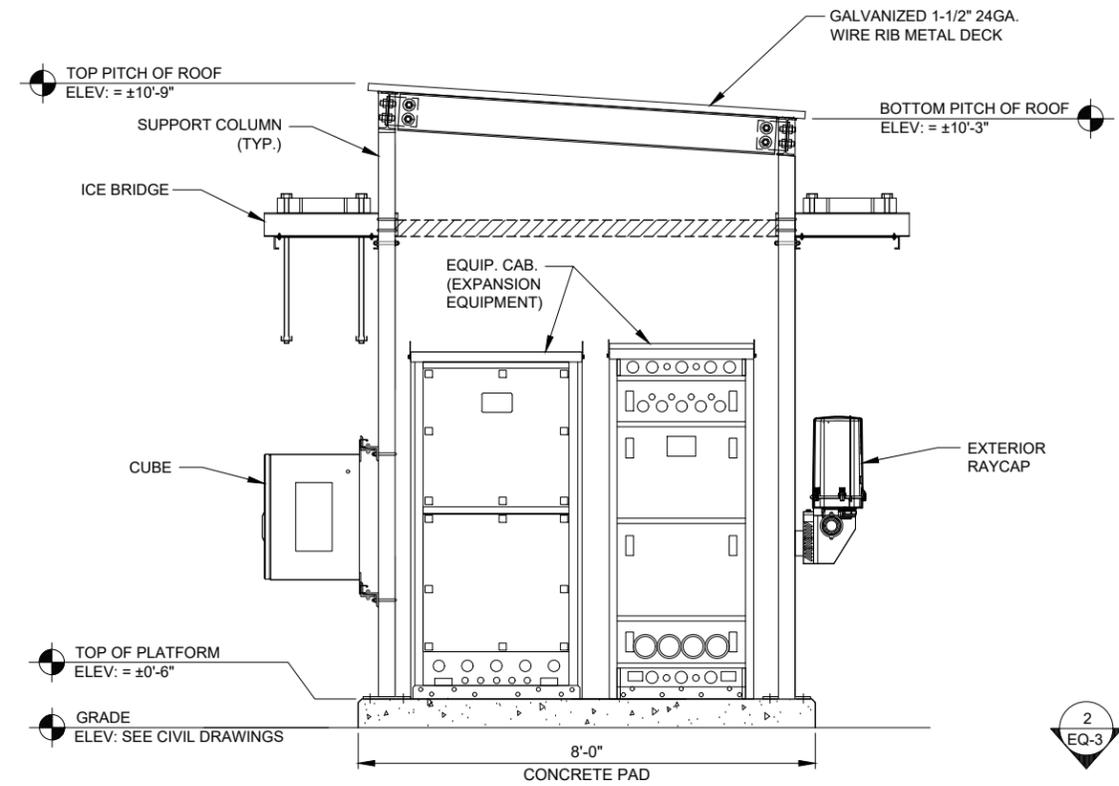
8948 WATERTOWN PLANK ROAD
 WAUWATOSA, WI 53226

DRAWN BY:	BE
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PROJECT #:	33-3203

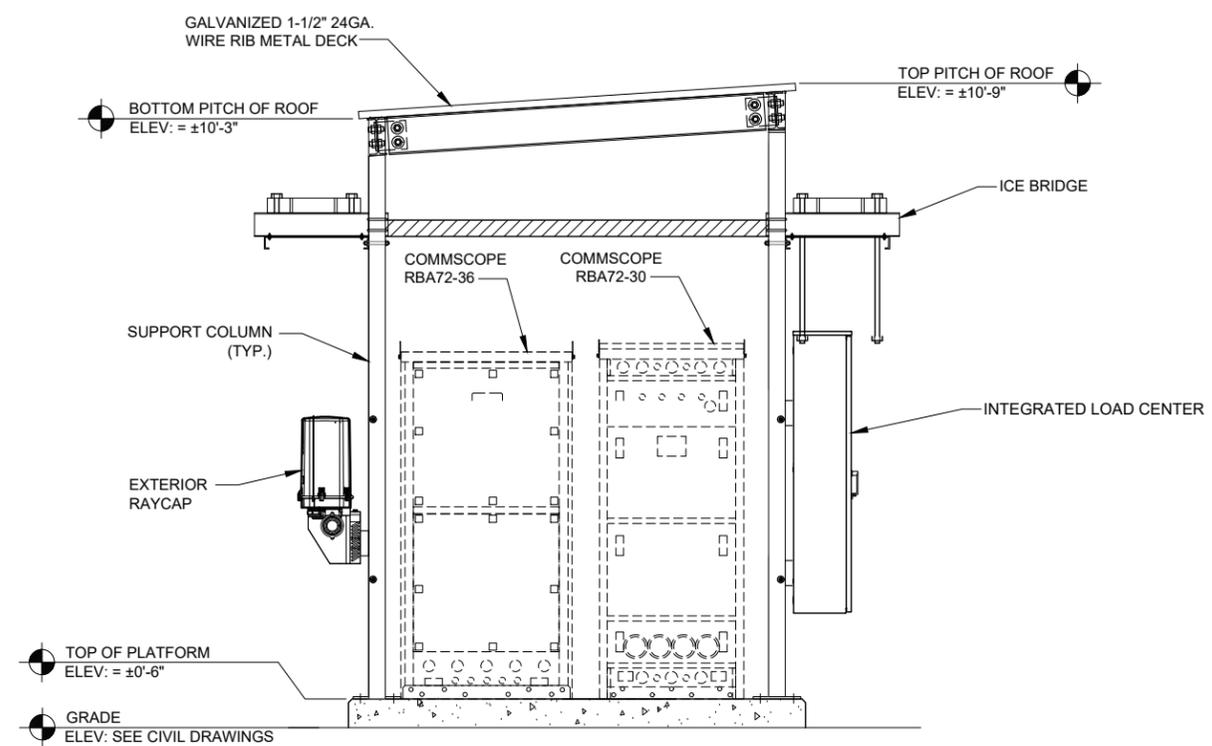
SHEET TITLE
 EQUIPMENT PAD ELEVATIONS

SHEET NUMBER

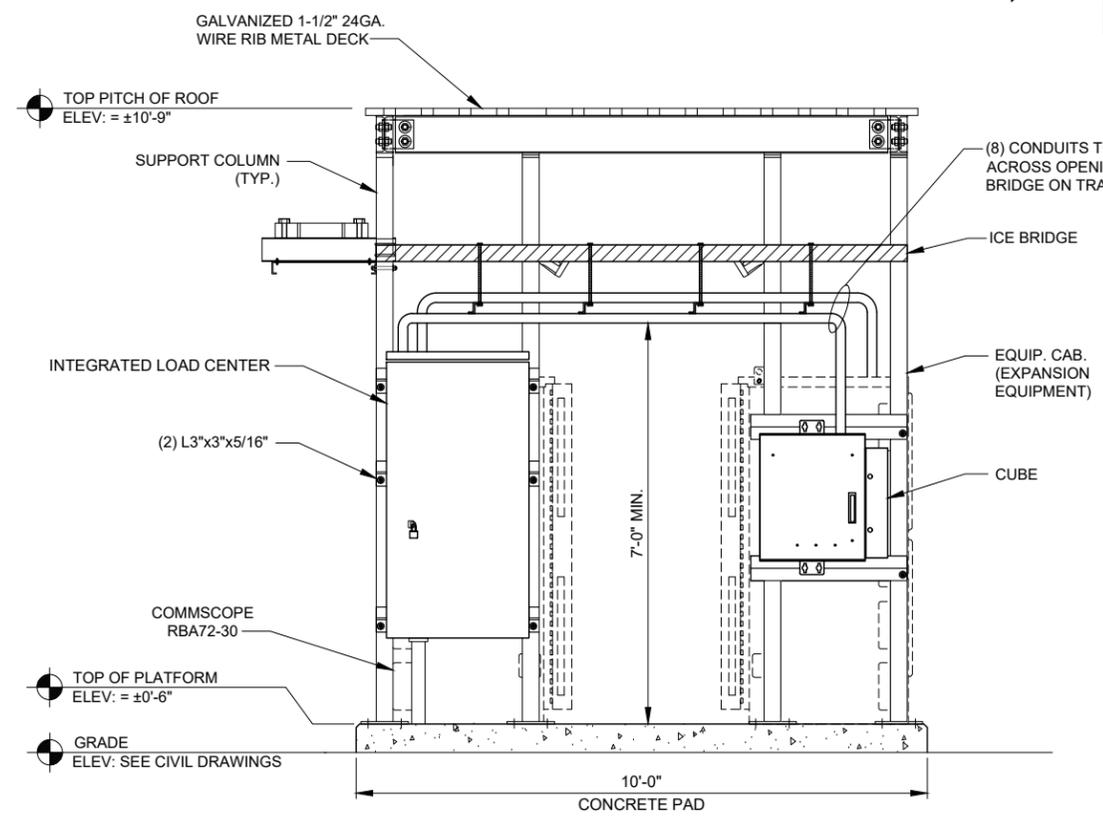
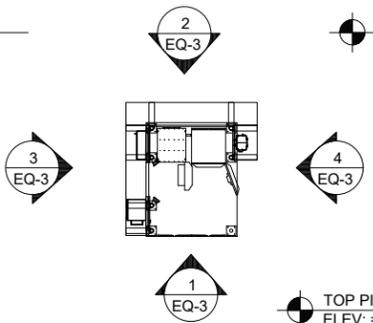
B-2



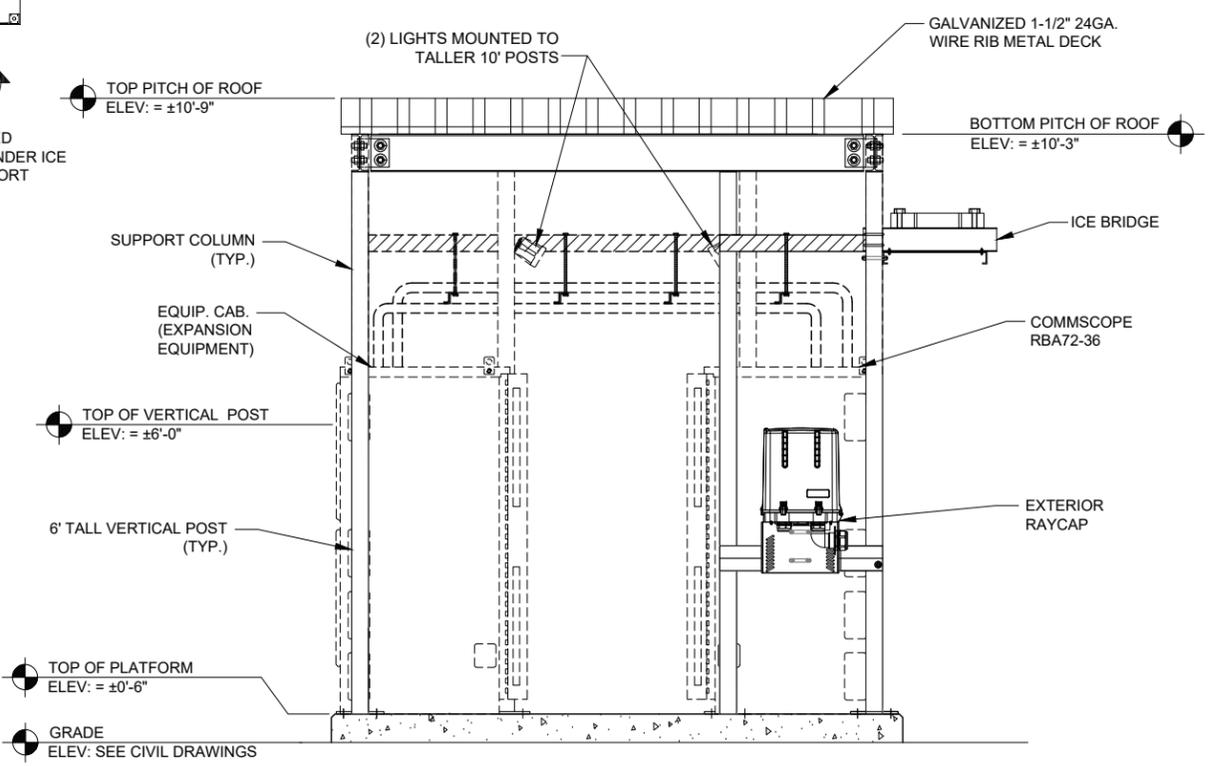
1 EQUIPMENT PLATFORM ELEVATION
 SCALE: N.T.S.



2 EQUIPMENT PLATFORM ELEVATION
 SCALE: N.T.S.



3 EQUIPMENT PLATFORM ELEVATION
 SCALE: N.T.S.



4 EQUIPMENT PLATFORM ELEVATION
 SCALE: N.T.S.

NOTE: FOR REFERENCE ONLY

UTILITY NOTES:

WORK INCLUDES:

THESE NOTES AND ACCOMPANYING DRAWINGS COMPLEMENT THE PROVISIONS AND INSTALLATIONS BY THE ELECTRICAL CONTRACTOR, OF ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO INSTALL THE ELECTRICAL WORK COMPLETE IN CONNECTION WITH THIS VERIZON WIRELESS SITE AND SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:

1. THE PROVISIONS, INSTALLATION, AND CONNECTION OF A GROUNDING ELECTRODE SYSTEM COMPLETE WITH A BUILDING AND SECONDARY GROUNDING, CELLULAR TELEPHONE COMMUNICATIONS TOWER AND CONNECTIONS TO THE INCOMING ELECTRICAL DISTRIBUTION EQUIPMENT.
2. THE PROVISION AND INSTALLATION OF AN OVERHEAD ELECTRICAL SERVICE OR UNDERGROUND ELECTRICAL SERVICE AND ALL ASSOCIATED WIRE AND CONDUIT AS REQUIRED AND/OR INDICATED ON PLANS.
3. THE PROVISION, INSTALLATION OF CONDUIT AND CONNECTIONS FOR LOCAL TELEPHONE SERVICE.
4. THE FURNISHING AND INSTALLATION OF THE ELECTRICAL SERVICE ENTRANCE CONDUCTORS, CONDUITS, METER SOCKET, AND CONNECTIONS TO THE SERVICE EQUIPMENT WITHIN THE ENCLOSURE.
5. TWO INCH (2") AND THREE INCH (3") DIAMETER PVC CONDUITS SCHEDULE 40.
6. ALL PVC CONDUITS SHOULD BE LEFT WITH NYLON PULL CORD FOR FUTURE USE.
7. EXCAVATION, TRENCHING, AND BACKFILLING FOR CONDUIT(S), CABLE(S), AND EXTERNAL GROUNDING SYSTEM.

CODES, PERMITS, AND FEES:

1. ALL REQUIRED PERMITS, LICENSES, INSPECTIONS AND APPROVALS SHALL BE SECURED AND ALL FEES FOR SAME PAID BY CONTRACTOR.
2. THE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES: STATE, LOCAL AND NATIONAL, AND THE DESIGN, PERFORMANCE CHARACTERISTICS AND METHODS OF CONSTRUCTION OF ALL ITEMS AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE VARIOUS APPLICABLE STANDARD SPECIFICATIONS OF THE FOLLOWING AUTHORITIES:

N.E.C.	NATIONAL ELECTRIC CODE
A.N.S.I.	AMERICAN NATIONAL STANDARDS INSTITUTE
I.E.E.E.	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
A.S.T.M.	AMERICAN SOCIETY FOR TESTING MATERIALS
N.E.M.A.	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
U.L.	UNDERWRITERS LABORATORIES, INC.
N.F.P.A.	NATIONAL FIRE PROTECTION ASSOCIATION

RACEWAYS AND WIRING:

1. WIRING OF EVERY KIND MUST BE INSTALLED IN CONDUIT, UNLESS NOTED OTHERWISE, OR AS APPROVED BY THE ENGINEER.
2. UNLESS OTHERWISE SPECIFIED, ALL WIRING SHALL BE COPPER (CU) TYPE THWN, SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
3. RACEWAYS SHALL BE GALVANIZED STEEL, SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, UNLESS OTHERWISE NOTED. ALL RACEWAYS SHALL BE APPROVED FOR THE INSTALLATION.
4. PULL OR JUNCTION BOXES SHALL BE PROVIDED AS REQUIRED TO FACILITATE INSTALLATION OF RACEWAYS AND WIRING. PROVIDE JUNCTION AND PULLBOXES FOR CONDUIT RUNS WITH MORE THAN (360) DEGREES OF BENDS.
5. PROVIDE A COMPLETE RACEWAY AND WIRING INSTALLATION, PERMANENTLY AND EFFECTIVELY GROUNDED IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE AND LOCAL CODES.
6. ELECTRICAL PANELBOARD TO BE FURNISHED BY VERIZON WIRELESS AND INSTALLED BY THE GENERAL CONTRACTOR/ELECTRICAL CONTRACTOR.
7. ALL STEEL CONDUIT SHALL BE BONDED AT BOTH ENDS WITH GROUNDING BUSHING.

GENERAL NOTES:

SEE DETAILS AND SCHEDULES ON DRAWINGS AND SPECIFICATIONS FOR MEANING OF ABBREVIATIONS AND ADDITIONAL REQUIREMENTS AND INFORMATION. CHECK ARCHITECTURAL, STRUCTURAL AND OTHER MECHANICAL AND ELECTRICAL DRAWINGS FOR SCALE, SPACE LIMITATIONS, COORDINATION, AND ADDITIONAL INFORMATION, ETC. REPORT ANY DISCREPANCIES, CONFLICTS, ETC. TO ENGINEER BEFORE SUBMITTING BID. ALL EQUIPMENT FURNISHED BY OTHERS (FBO) SHALL BE PROVIDED WITH PROPER MOTOR STARTERS, DISCONNECTS, CONTROLS, ETC. BY THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE. THE ELECTRICAL CONTRACTOR SHALL INSTALL AND COMPLETELY WIRE ALL ASSOCIATED EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S WIRE DIAGRAMS AND AS REQUIRED FOR A COMPLETE OPERATING INSTALLATION. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF (FBO) EQUIPMENT PRIOR TO ROUGH-IN OF CONDUIT AND WIRING TO AVOID CONFLICTS.

COORDINATION WITH UTILITY COMPANY:

THE ELECTRICAL CONTRACTOR SHALL COORDINATE COMPLETE ELECTRICAL SERVICE WITH LOCAL UTILITY COMPANY FOR A COMPLETE OPERATIONS SYSTEM, INCLUDING TRANSFORMER CONNECTIONS, CONCRETE TRANSFORMER PADS, IF REQUIRED, METER SOCKETS, PRIMARY CABLE RACEWAY REQUIREMENTS, SECONDARY SERVICE, ETC. PRIOR TO SUBMITTING BID TO INCLUDE ALL LABOR AND MATERIALS. THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN THE BID ANY OPTIONAL OR EXCESS FACILITY CHARGES ASSOCIATED WITH PROVIDING ELECTRICAL SERVICE FROM LOCAL UTILITY COMPANY. VERIFY BEFORE BIDDING TO INCLUDE ALL COSTS. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE AVAILABLE FAULT CURRENT WITH THE LOCAL UTILITY COMPANY PRIOR TO SUBMITTING BID. ADJUST A.I.C. RATINGS OF ALL OVER CURRENT PROTECTION DEVICES IN DISTRIBUTION EQUIPMENT AS REQUIRED TO COORDINATE WITH AVAILABLE FAULT CURRENT FROM LOCAL UTILITY COMPANY. ALL GROUNDING RODS PROVIDED BY THE POWER OR TELEPHONE UTILITY COMPANIES MUST BE TIED INTO THE MAIN EXTERNAL GROUND RING.

UTILITY CONTACTS:

POWER: T.B.D.

FIBER: T.B.D.

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 FIBER SERVICE. COORDINATE WITH ELECTRIC AND FIBER COMPANY.

NOTE:
SEE SHEET LP FOR
ENTIRE UTILITY ROUTE.

PROPOSED 10' WIDE
ACCESS /UTILITY EASEMENT

PROPOSED 3"
CONDUIT W/ (3) #4/0,
BY T.B.D. (130'± L.F.)

PROPOSED 5' WIDE
UTILITY EASEMENT

PROPOSED (2) 4" Ø CONDUITS W/
(2) 1-1/4" INNERDUCTS W/ PULL
ROPE BY G.C. (205'± L.F.)

PROPOSED LESSEE FIBER
HANDHOLE AT COMPOUND
BY G.C.

PROPOSED 8' WIDE
UTILITY EASEMENT

PROPOSED (2) 4" Ø CONDUITS W/
(2) 1-1/4" INNERDUCTS W/ PULL
ROPE BY G.C. (24'± L.F.)

EXISTING
UNDERGROUND
GAS LINE

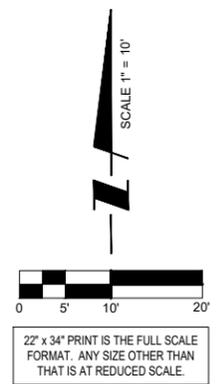
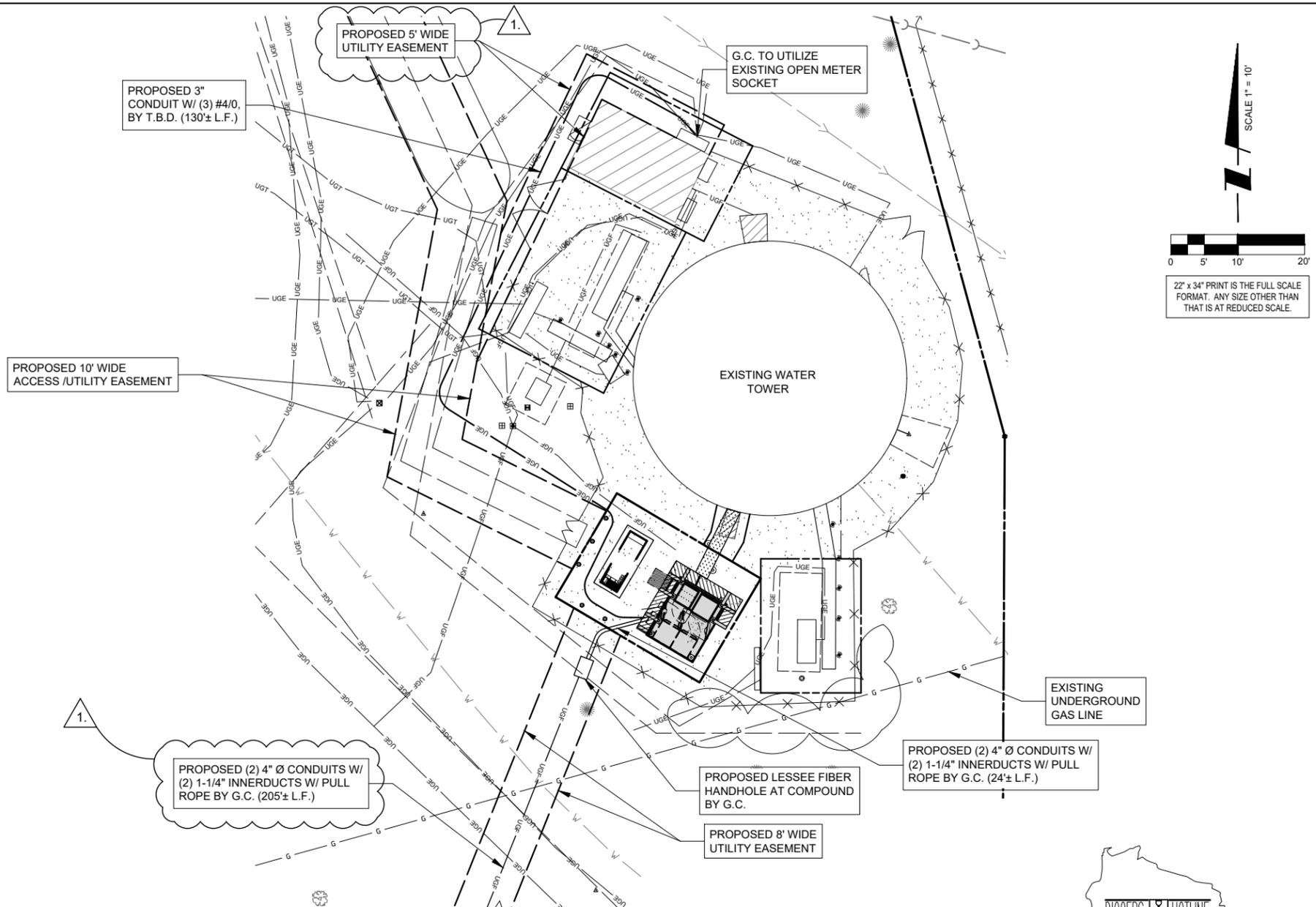
PROPOSED 8' WIDE
UTILITY EASEMENT

EXISTING
UNDERGROUND
GAS LINE

PROPOSED LESSEE FIBER
HANDHOLE "MEET POINT" BY
G.C.

PROPOSED FIBER CONDUIT
BY FIBER PROVIDER

PROPOSED FIBER HANDHOLE
BY FIBER PROVIDER



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

NOTES:
GENERAL CONTRACTOR & ELECTRICAL CONTRACTOR TO USE EXPANSION COUPLINGS FOR ALL UTILITY CONNECTIONS ASSOCIATED WITH THE EQUIPMENT PAD. UTILIZE A CARLON EXPANSION COUPLING (WWW.CARLON.COM, OR EQUAL) W/ A MINIMUM OF 4" TRAVEL LENGTH. GROUND CONDUCTORS FROM PAD TO BELOW GRADE TO BE INSTALLED WITH A SLACK LOOP TO ACCOUNT FOR ANY POSSIBLE FROST HEAVE.

NOTE:
CONTRACTOR TO VERIFY ROUTES WITH LOCAL UTILITY COMPANY PRIOR TO INSTALLATION.

FIBER COORDINATION IS NOT COMPLETE (PENDING FIBER CONTACT). PRIOR TO CONSTRUCTION, CONTACT DESIGNER FOR UPDATE.

1 SITE UTILITY ROUTING PLAN

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NO.	DESCRIPTION	09/30/19			
1.	ISSUED FOR REVIEW	12/20/19			
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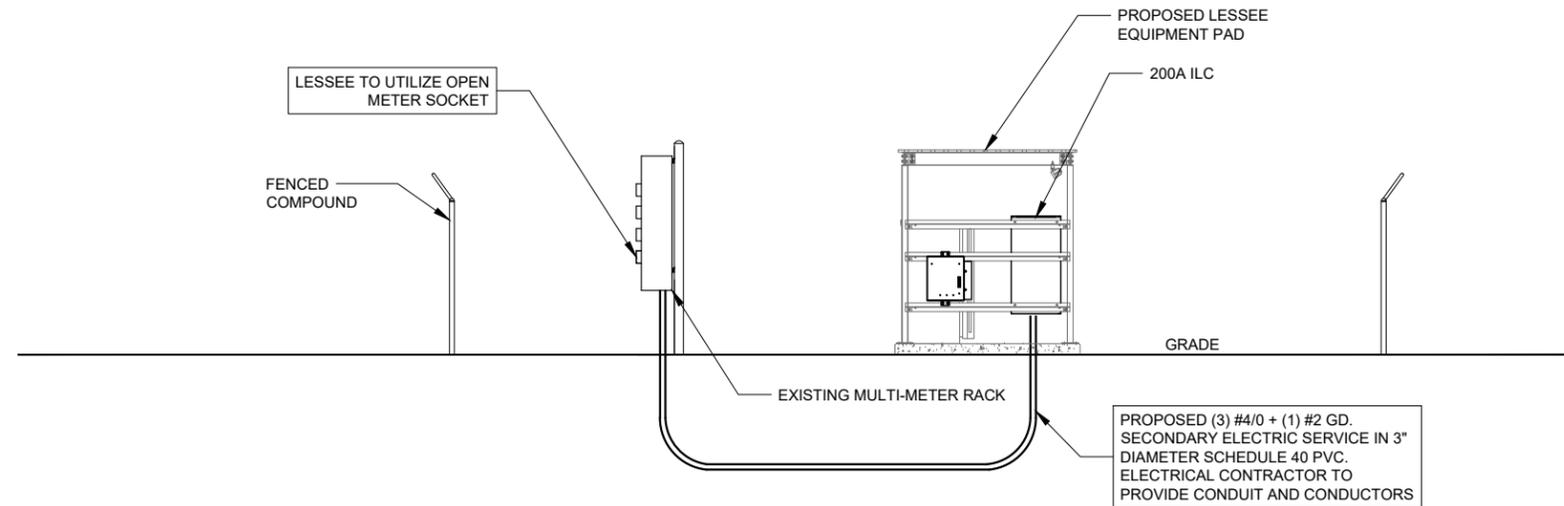
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WAUWATOSA, WI 53226

DRAWN BY:	BE
CHECKED BY:	DS
DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
UTILITY ROUTING PLAN

SHEET NUMBER
E-1

• DESIGN PENDING POWER COORDINATION

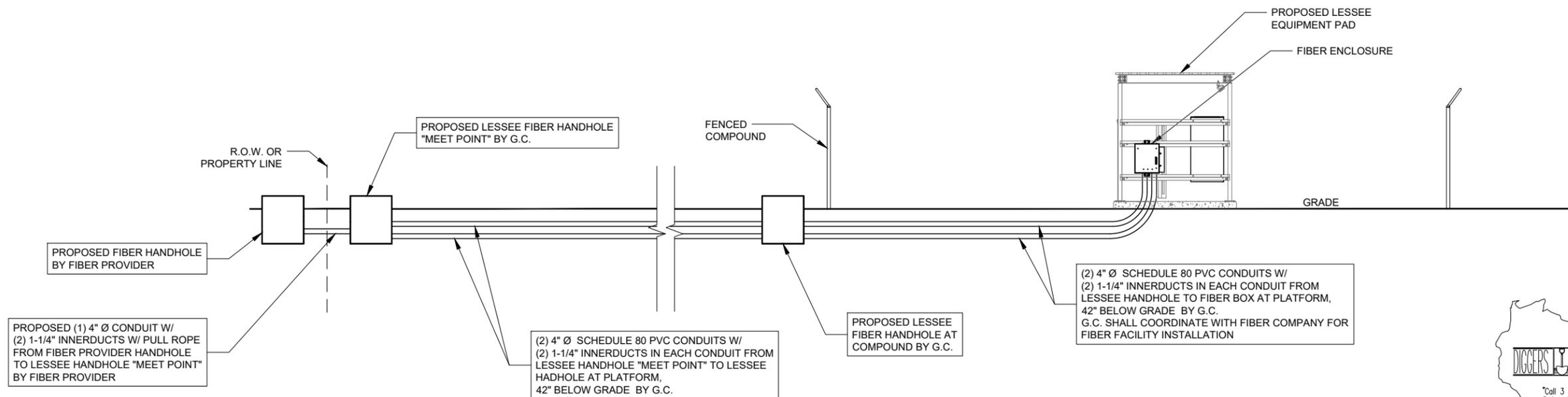


ELECTRICAL SERVICE: 200 AMP 120/240V SINGLE PHASE 3 WIRE

1 POWER RISER DIAGRAM
SCALE: N.T.S.

CONTRACTOR SHALL BUILD INTO THE PRICE OF THE BID THE COST OF TWO (2) MOBILIZATIONS:
1) POWER/FIBER PERMIT PULLED PRIOR TO BUILDING PERMIT AND PRELIMINARY WORK (SMART JACK ON A STICK, ETC) COMPLETED PRIOR TO GENERAL CONSTRUCTION
2) RETURN TO COMPLETE GENERAL ELECTRICAL CONSTRUCTION

• DESIGN PENDING FIBER COORDINATION



NOTE: VERIFY FIBER ROUTING REQUIREMENTS WITH FIBER COMPANY

2 FIBER RISER DIAGRAM
SCALE: N.T.S.



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

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WAUWATOSA, WI 53226

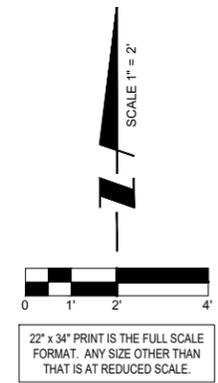
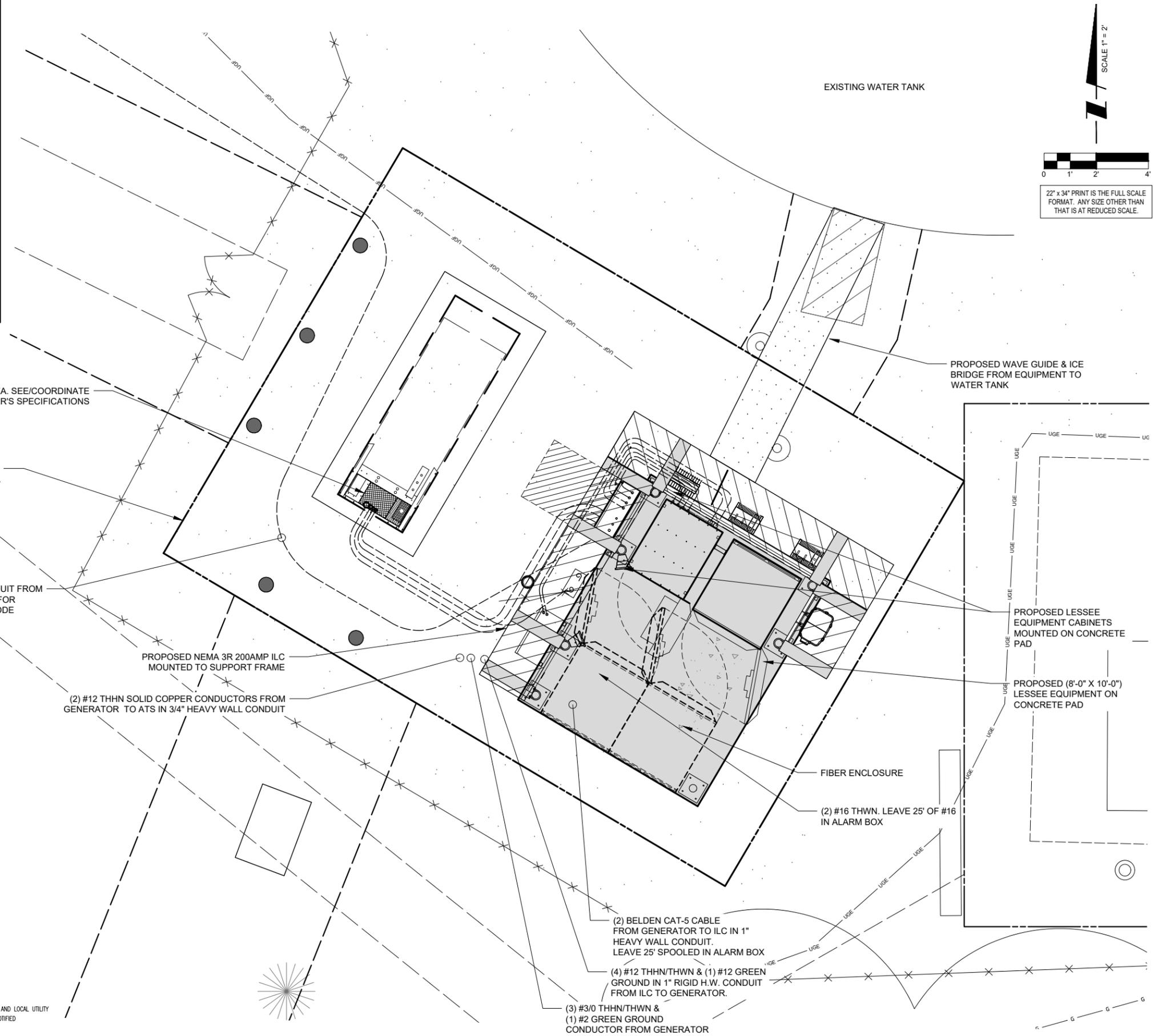
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DATE: 09/26/19
PROJECT #: 33-3203

SHEET TITLE
UTILITY RISER DIAGRAMS

SHEET NUMBER
E-1A

NOTES:

- 1) SEE DETAILS ON EXISTING GROUND GRID AND GENERATOR GROUND GRID FOR REQUIRED GROUNDING SYSTEM.
- 2) NEW AUTOMATIC TRANSFER SWITCH, INSTALLED AND WIRED BY E.C. CONNECT EXTERNAL GROUND LUG AND GROUNDING CONDUCTOR THAT WAS REMOVED FROM MANUAL TRANSFER SWITCH.
- 3) E.C. MUST LOCATE GROUND GRID INSTALLED FOR NEW EQUIPMENT PAD & PROVIDE THE ATTACHMENT OF THE GENERATOR GROUND TO THE EQUIPMENT GRID FOR SINGLE POINT GROUNDING.
- 4) E.C. TO EXTEND #2 TINNED SOLID COPPER GROUND CONDUCTORS FROM (2) LOCATIONS ON GENERATOR FRAME (SEE MANUFACTURERS RECOMMENDATIONS) PROVIDE GROUND LUGS ON GENERATOR AS REQUIRED. EXTEND #1/0 STRANDED GROUND CONDUCTOR AND CONNECT TO COPPER CLAD GROUND RODS VIA HEAVY DUTY EXOTHERMIC TERMINATIONS AND THEN EXTENDED AND ATTACH TO BUILDING GROUND GRID VIA EXOTHERMIC TERMINATIONS.
- 5) NEW GENERATOR FURNISHED BY LESSEE. INSTALLED AND WIRED BY E.C. DELIVERED AND SET BY CONTRACTOR.
- 6) E.C. MUST MONITOR DC POWER WHEN ON BATTERY BACK-UP DURING PORTIONS OF CONSTRUCTION. IF LEVEL FALLS BELOW RECOMMENDED LEVEL 2256 DC, E.C. MUST TURN ON THE MAIN POWER. THE CELL SITE CANNOT GO OFF LINE AT ANYTIME.



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LOC. # 236678
CHILDREN'S HOSPITAL
 8948 WATERTOWN PLANK ROAD
 WAUWATOSA, WI 53226

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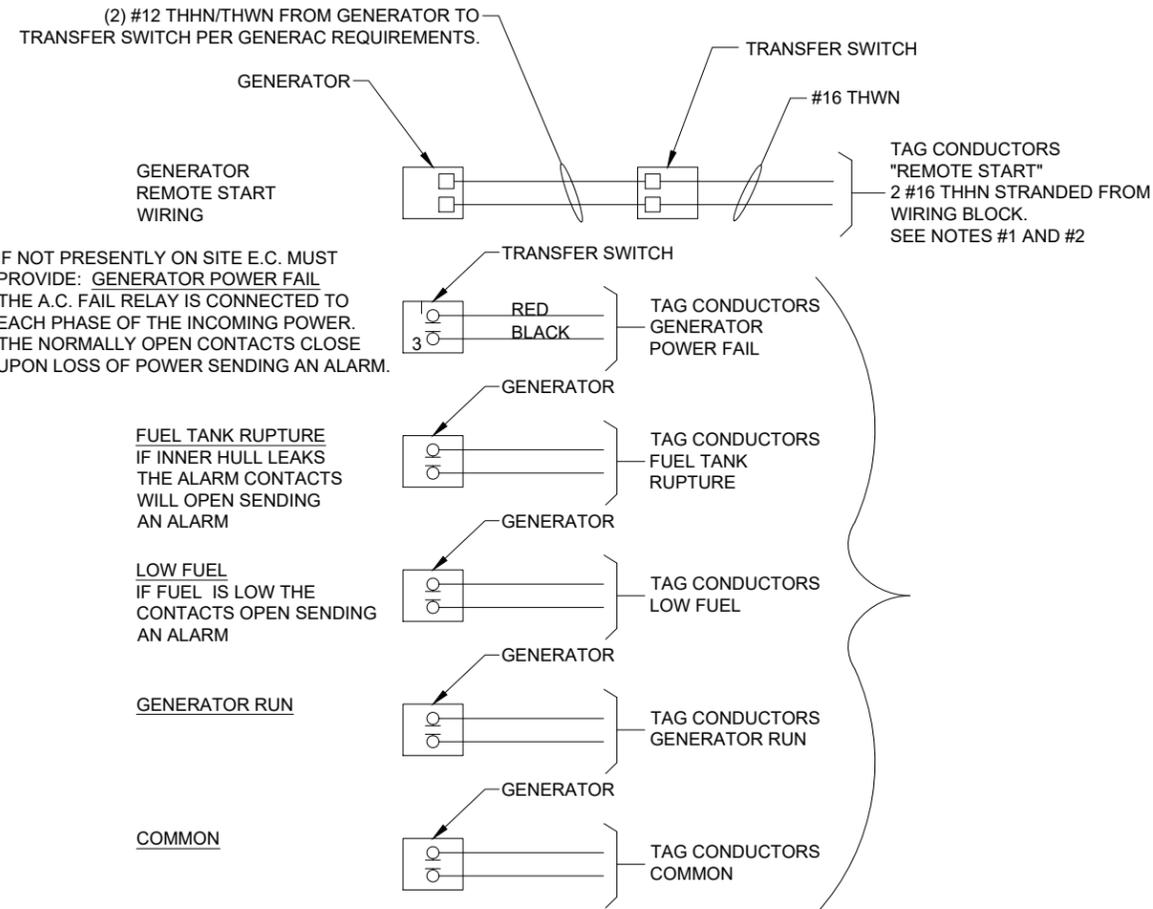
SHEET TITLE
GENERATOR UTILITY ROUTING PLAN

SHEET NUMBER
E-1B



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

NOTE:
 CONTRACTOR TO VERIFY ROUTES WITH LOCAL UTILITY COMPANY PRIOR TO INSTALLATION.



IF NOT PRESENTLY ON SITE E.C. MUST PROVIDE: GENERATOR POWER FAIL THE A.C. FAIL RELAY IS CONNECTED TO EACH PHASE OF THE INCOMING POWER. THE NORMALLY OPEN CONTACTS CLOSE UPON LOSS OF POWER SENDING AN ALARM.

FUEL TANK RUPTURE IF INNER HULL LEAKS THE ALARM CONTACTS WILL OPEN SENDING AN ALARM

LOW FUEL IF FUEL IS LOW THE CONTACTS OPEN SENDING AN ALARM

GENERATOR RUN

COMMON

NOTES:

1) E.C. TO PULL A #16 AWG SOLID RED AND A #16 AWG SOLID BLACK FROM THE TRANSFER SWITCH TO ALARM WIRING BLOCK FOR REMOTE START.

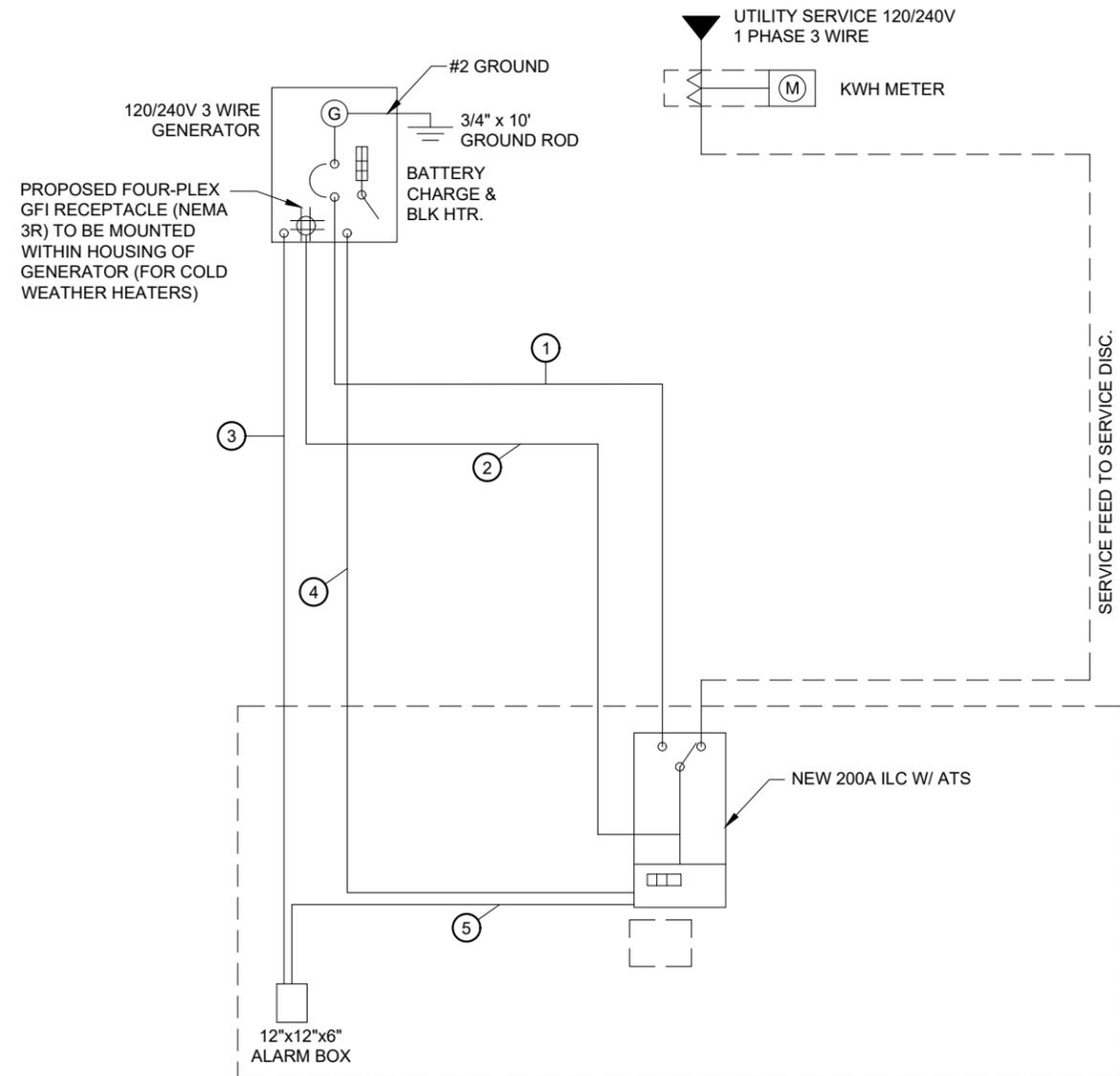
2) E.C. TO PULL ALL ALARM LEADS TO EXISTING ALARM WIRING BLOCK. LEAVE A MINIMUM OF 24" PIGTAILS AT ALARM WIRING BLOCK AND TAG CONDUCTORS AS INDICATED, TERMINATIONS ON ALARM POINT WIRING BLOCK BY OTHERS. CONDUCTORS CAN BE RUN EXPOSED. THEY SHALL BE NEATLY BUNDLED USING NYLON TIES AND SUPPORTED AT 2'-0" INTERVALS FOR A NEAT INSTALLATION.

1 ALARM WIRING
N.T.S.

KEY

- ① (3) #3/0 & (1) #2 GND IN 2-1/2" C
- ② (4) #12 & (1) #12 GND IN 1" C (SEE NOTE)
- ③ (2) CAT-5 BELDEN IN 1" C FROM GENERATOR TO ALARM BOX. LEAVE 25' SPOOLED IN ALARM BOX
- ④ (2) #12 THWN IN 3/4" C
- ⑤ (2) #16 THWN. LEAVE 25' OF #16 IN ALARM BOX

NOTE:
E.C. TO PROVIDE (2) 20A 1-POLE CIRCUIT BREAKERS FOR BATTERY CHARGER AND JACKET HEATER



2 NEW SINGLE LINE DIAGRAM
N.T.S.

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LOC. # 236678

CHILDREN'S HOSPITAL

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SHEET TITLE
GENERATOR SINGLE LINE DIAGRAM & ALARM WIRING

SHEET NUMBER
E-1C

GROUNDING ELECTRODE SYSTEM NOTES:

1. ALL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE, SPLICES, ETC. ALL CABLE TO GROUND RODS, GROUND RODS SPLICES AND LIGHTNING PROTECTION SYSTEM AS INDICATED. GROUND FOUNDATION ONLY AS INDICATED BY PM. ALL MATERIALS USED (MOLDS, WELDING, METAL, TOOLS, ETC.) SHALL BE 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 PLATFORM AND 25 FEET OF TOWER AS INDICATED ON DRAWINGS. GROUND EACH GATE POST AND CORNER POST. GROUND 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
 3. ONE (1) COPY TO KEEP INSIDE EQUIPMENT ENCLOSURE

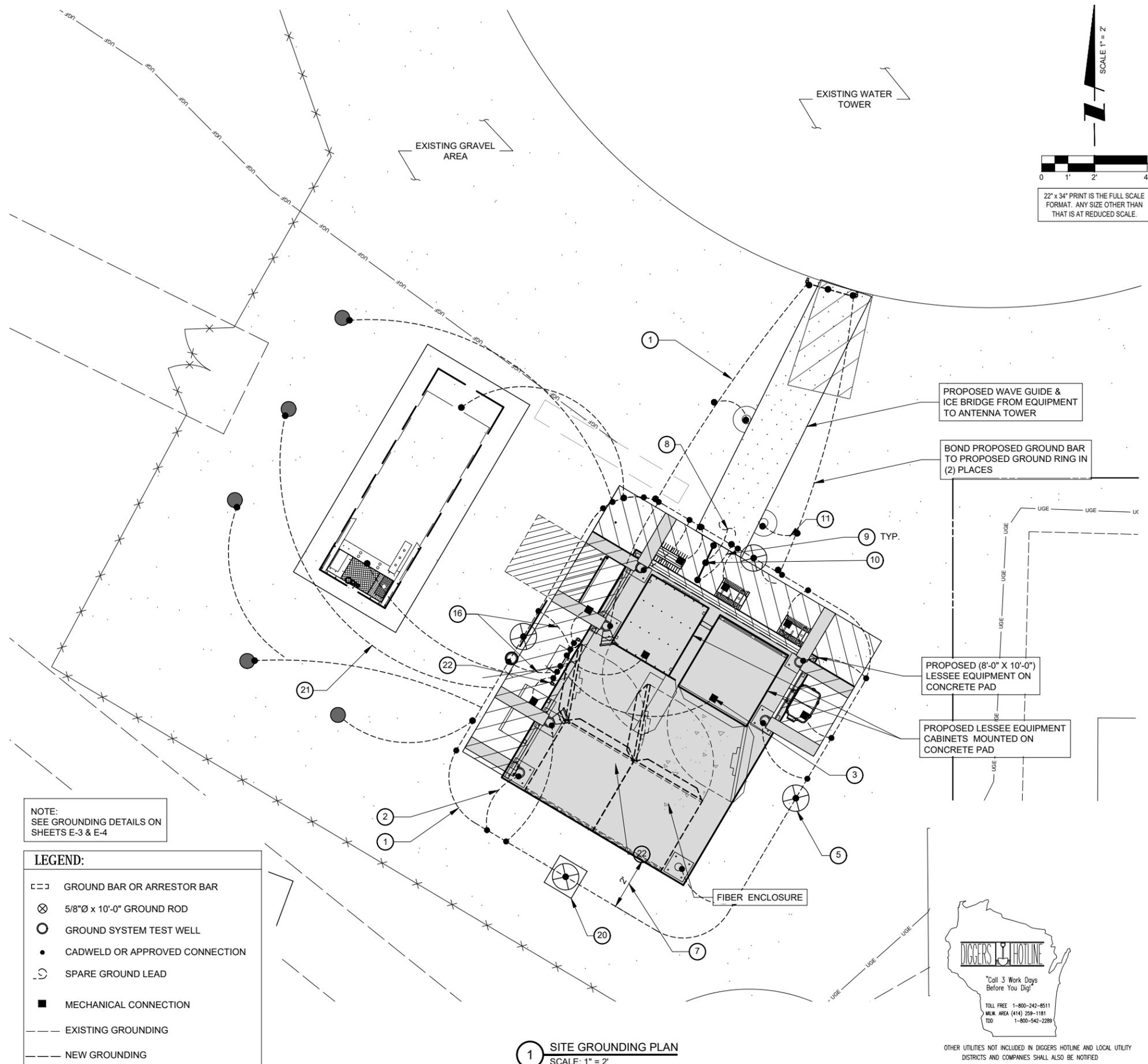
TYPICAL KEYED GROUNDING NOTES 

- 1 #2 AWG T1NND SOLID BARE COPPER CONDUCTOR 42" BELOW GRADE (TYPICAL) MINIMUM 24" BENDING RADIUS
- 2 PLATFORM CORNER POST, STEEL COLUMN, STEEL BEAM & CANOPY GROUND
- 3 CABINET GROUND BOLTED TO UNIT HOUSING
- 4 DISCONNECT AND ELECTRIC SERVICE GROUND TO GROUND ROD
- 5 5/8" x 10' COPPER CLAD GROUND ROD
- 6 GROUND CHAIN LINK FENCE (TYPICAL) EXOTHERMIC CONNECTION (TYPE VS) GROUND FENCE POSTS WITHIN 6 FEET OF PLATFORM AND 25 FEET OF TOWER. (SEE DETAIL, SHEET E-5.)
- 7 MAINTAIN TWO FOOT DISTANCE OFF OF STRUCTURES.
- 8 GROUND COAXIAL ANTENNA CABLES TO GROUND BAR BY ANTENNA CONTRACTOR TERMINATE CABLES 1'-0" FROM PLATFORM AND INSTALL LIGHTNING SURGE ARRESTORS ON EACH CABLE GROUND.
- 9 EXOTHERMICALLY WELD COPPER GROUND BAR TAIL TO HALO GROUND RING (EXOTHERMIC CONNECTION TYPE TA) BY ANTENNA CONTRACTOR. FINAL CONNECTION BY ELECTRICAL CONTRACTOR.
- 10 4"x20"x1/4" T1NND INSULATED COPPER GROUND BAR, NON ISOLATED WITH 10.0' LONG #2 AWG T1NND SOLID COPPER WIRE WELDED TAILS (HARGER GBIT 14420VW)
- 11 GROUND CABLE WAVEGUIDE BRIDGE (TYP.) BY ELECTRICAL CONTRACTOR.
- 12 PROPOSED PERIPHERAL GROUND RING SHOULD BE INSTALLED 1' TO 2' INSIDE THE FENCE LINE, THE TOWER GROUND RING SHOULD BE INSTALLED A MINIMUM 2' OFF OF ANY STRUCTURES.
- 13 EXISTING TOWER OR COMPOUND GROUND RING (V.I.F.)
- 14 GATE JUMPERS (SEE DETAIL, SHEET E-4)
- 15 BOND EXISTING/ PROPOSED TOWER GROUND RING TO PROPOSED PLATFORM GROUND RING WITH #2 AWG T1NND SOLID COPPER CONDUCTOR IN 2 LOCATIONS.
- 16 TWO #2 LEADS FROM THE EGR TO THE GROUND BAR AT UTILITY FRAME LOCATED ON PLATFORM STEEL. CADWELD AT EGR AND DOUBLE HOLE LUGS ON PLATFORM.
- 17 BOND RAYCAP TO MGB.
- 18 EACH TOWER FOUNDATION TO HAVE AT LEAST ONE ANCHOR BOLT BONDED TO TOWER GROUND RING WITH #2 T1NND SOLID COPPER CONDUCTOR
- 19 EACH TOWER FOUNDATION TO HAVE AT LEAST ONE ANCHOR BOLT BONDED TO TOWER GROUND RING WITH #2 T1NND SOLID COPPER CONDUCTOR
- 20 COPPER CLAD GROUND ROD WITH INSPECTION WELL TOP OF GROUND ROD MAX 24" BURY.
- 21 EXTEND GROUND CONDUCTORS IN 1/2" RIGID H.W. CONDUIT ADJACENT TO PAD, OFFSET AND ATTACH TO EXTERIOR OF GENERATOR HOUSING AND EXTEND TO GROUND LUGS AS REQUIRED, VERIFY LOCATION WITH GENERAC.
- 22 MGB MOUNTED UNDER PERIMETER BEAM

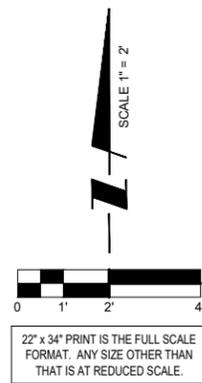
NOTE:
SEE GROUNDING DETAILS ON
SHEETS E-3 & E-4

LEGEND:

	GROUND BAR OR ARRESTOR BAR
	5/8"Ø x 10'-0" GROUND ROD
	GROUND SYSTEM TEST WELL
	CADWELD OR APPROVED CONNECTION
	SPARE GROUND LEAD
	MECHANICAL CONNECTION
	EXISTING GROUNDING
	NEW GROUNDING



1 SITE GROUNDING PLAN
SCALE: 1" = 2'



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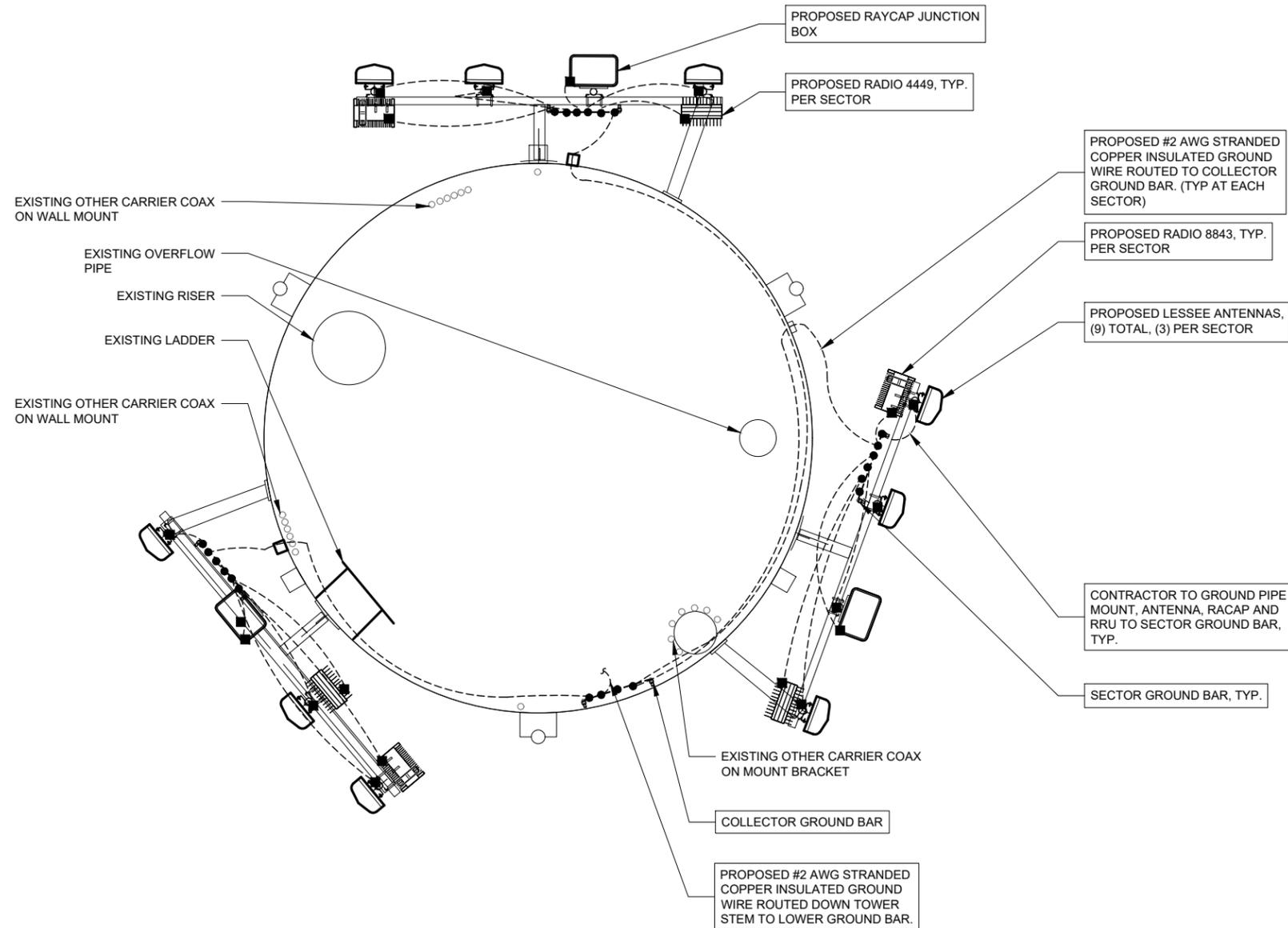
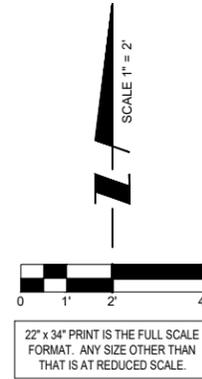
SHEET TITLE
SITE GROUNDING PLAN

SHEET NUMBER
E-2



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

NOTE:
THIS DETAIL IS CONCEPTUAL TO DEMONSTRATE GROUNDING
AT THE ANTENNAS. VERIFY NUMBER OF ANTENNAS, MOUNTING
FRAME, ANTENNA TYPE AND AZIMUTH WITH ANT-1 SHEET.



LEGEND:

□	GROUND BAR OR ARRESTOR BAR
⊗	5/8"Ø x 10'-0" GROUND ROD
○	GROUND SYSTEM TEST WELL
•	CADWELD OR APPROVED CONNECTION
⊖	SPARE GROUND LEAD
■	MECHANICAL CONNECTION
---	EXISTING GROUNDING
---	NEW GROUNDING

1 PROPOSED ANTENNA GROUNDING PLAN
SCALE: 1" = 2'

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SHEET TITLE
ANTENNA GROUNDING PLAN

SHEET NUMBER
E-2A

NOTE:
ANTENNA CABLES SHALL BE
GROUNDED AT THE
ANTENNA HEIGHT OF TOWER

NOTE:
ALL CABINET GROUND
CONNECTION BY OTHERS.

APPROVED UL LISTED GROUND CLAMPS	
APPLICATION	UL LISTED HARGER PART #
METAL FLANGE	213, 213T, 213TTP
PIPE MEMBER	CPC SERIES (SIZED TO FIT DIAMETER OF PIPE)
LARGER PIPE MEMBER	UPC SERIES (UNIVERSAL PIPE CLAMP) SIZED TO FIT DIAMETER OF PIPE

#2 AWG TNN D SOLID BARE COPPER WIRE JUMPER EXOTHERMIC CONNECTION, (TYPE - VS) TO POST, 2-HOLE LUG TO BRIDGE, EACH SIDE BY ANTENNA CONTRACTOR

GROUND ALL ANTENNA GROUND KITS TO GRND BAR BY ANTENNA CONTRACTOR.

METAL ROOF CANOPY
SEE DETAIL 3/C-5 FOR TRAPEZE DETAIL

DUAL GPS ANTENNA
GROUND GPS ANTENNA TO GRND BAR W/ #6 AWG STRANDED, TINNED BARE CU GROUND LEAD

#2 AWG TNN D STRANDED INSULATED COPPER CONDUCTOR W/ 2-HOLE LUGS, EITHER SIDE BY ANTENNA CONTRACTOR

NEW ICE BRIDGE

WATER TOWER

G.C. TO CONNECT & TERMINATE HYBRID CABLE AT RAYCAP INSIDE CABINET. (CONNECTION BETWEEN RAYCAP & CABINETS BY OTHERS)

SUPPORT COLUMN (TYP.)

ILC

TELCO BOX

STANDBY GENERATOR

#2 GROUND WIRE FOR GEN. SEE DETAIL #2 THIS SHEET

GRADE

16" TYP.

1/2" DIA. PVC CONDUIT FOR GROUND WIRE, FASTENED TO ENCLOSURE W/ (1) NON-METALLIC "C" CLAMP, FEED THRU AND EXTEND PVC PIPE 16" BELOW GRADE (TYP)

NEW HALO GROUND RING (#2 AWG TNN D SOLID BARE COPPER WIRE)

CONCRETE PAD

NEW 5/8" x 10'-0" LONG COPPER CLAD GROUND ROD (TYP.)

EXOTHERMIC CONNECTION (TYPE - TA)

1 TYPICAL SITE GROUNDING DETAIL
SCALE: N.T.S.

4"x20"x1/4" TNN D INSULATED COPPER ICE BRIDGE GROUND BAR, NON- ISOLATED, FOR GROUND KITS, BY ELECTRICAL CONTRACTOR.

GALV. PIPE BY ANTENNA CONTRACTOR (TYP.)

ELECTRICAL CONTRACTOR SHALL PROVIDE MIN. 10' LONG #2 AWG TNN D SOLID BARE COPPER WIRE FOR ANTENNA CONTRACTOR TO GROUND THE WAVEGUIDE BRIDGE SUPPORT (TYP. OF 2, ONE OF EACH SIDE)

#2 BARE SOLID TINNED COPPER GROUND DOWN TO NEW HALO GROUNDING SYSTEM PVC ENCASED. CLIP TO STRUCTURE OR PIPE MAX 3'-0" O.C. (TYP.)

PROVIDE DRIP LOOP

CLEAN & GREASE GROUND BARS (BY CONTRACTOR)

EXISTING TOWER GROUNDING (V.I.F.)

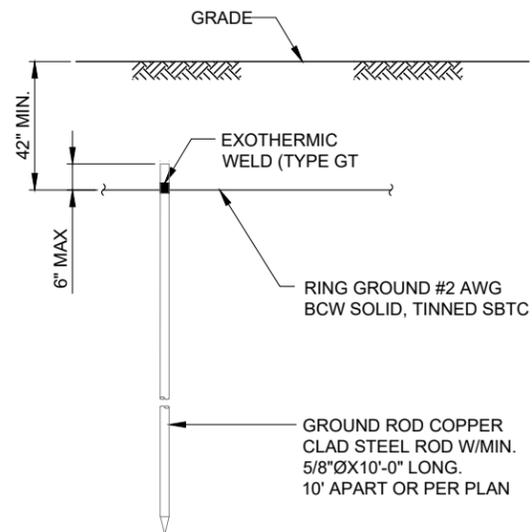
CONNECT EXISTING TOWER GROUND RING TO PROPOSED EQUIPMENT GROUND RING (2 PLACES TYP.)

EXISTING WATER TOWER GROUND RING (V.I.F.)

ANTENNA GROUND KIT (ON VERTICAL) 6" ABOVE POINT OF BEND BY ANTENNA CONTRACTOR

#6 GROUND STRAPS CONNECT TO GROUND BAR W/ DOUBLE LUGS W/STARLOCK WASHERS CONNECTIONS

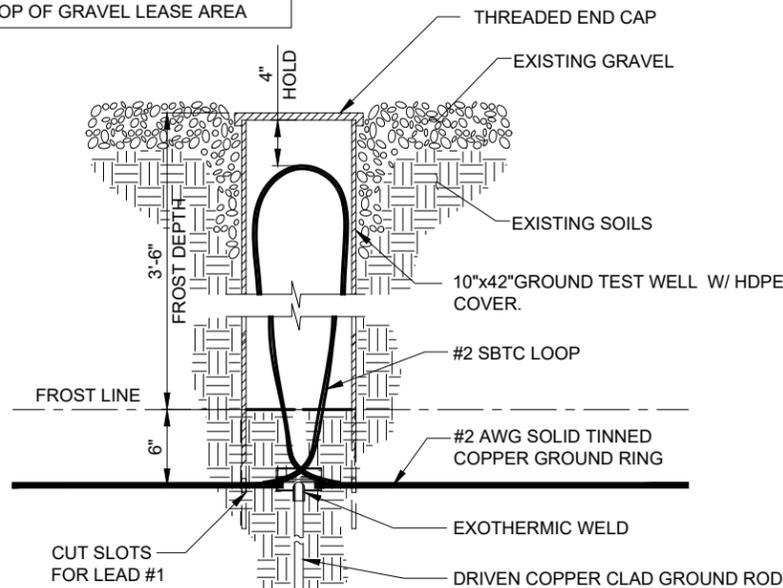
4" x 20" x 1/4" TINNED COPPER GROUND BAR WITH (2) 10' LONG #2 AWG TNN D SOLID COPPER WIRE WELDED TAILS BY ELECTRICAL CONTRACTOR EXOTHERMICALLY WELDED TO TOWER GROUND HALO. GROUND BAR TO BE ISOLATED FROM TOWER



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

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

NOTE:
SET TEST WELL COVER 1" BELOW TOP OF GRAVEL LEASE AREA

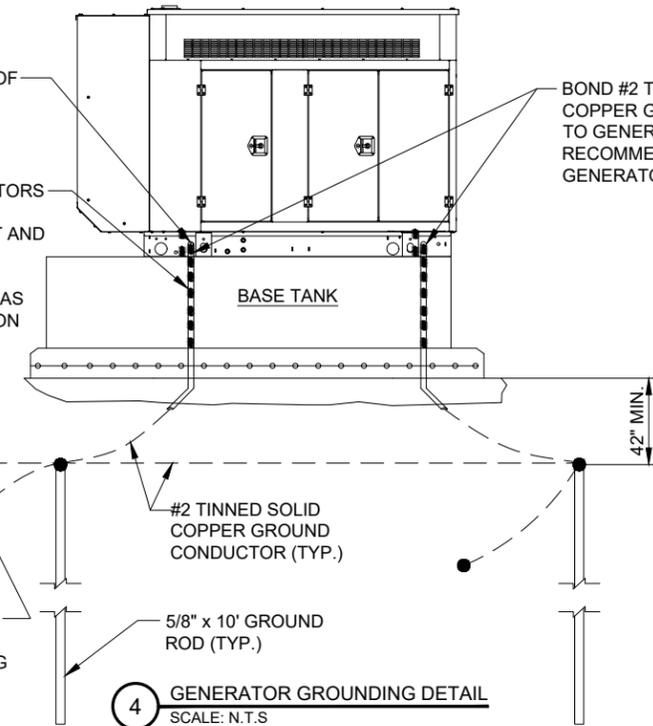


3 TEST WELL DETAIL
SCALE: N.T.S.

PROVIDE LB'S INTO SIDE OF GENERATOR HOUSING.

EXTEND GROUND CONDUCTORS IN 1/2" RIGID H.W. CONDUIT ADJACENT TO PAD, OFFSET AND ATTACH TO EXTERIOR OF GENERATOR HOUSING AND EXTEND TO GROUND LUGS AS REQUIRED, VERIFY LOCATION WITH GENERAC.

BOND #2 TINNED SOLID COPPER GROUND CONDUCTOR TO GENERATOR FRAME AS RECOMMENDED BY GENERATOR SUPPLIER. (TYP.)



EXTEND #2 TINNED SOLID COPPER GROUND CONDUCTOR TO EXISTING BUILDING GRID, TYP.

4 GENERATOR GROUNDING DETAIL
SCALE: N.T.S.

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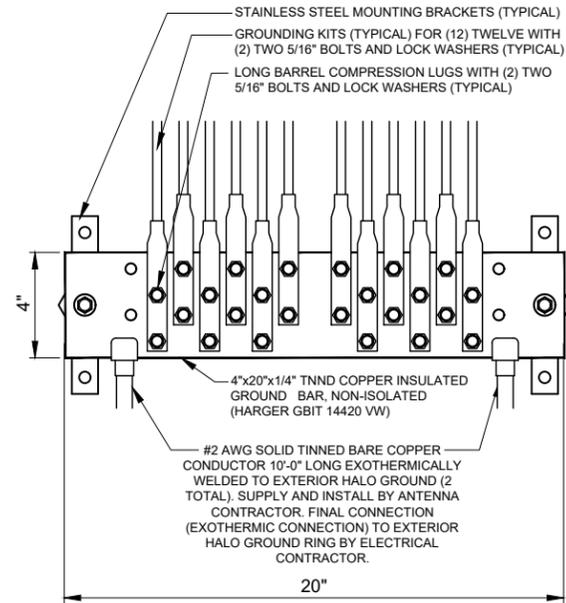
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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-3

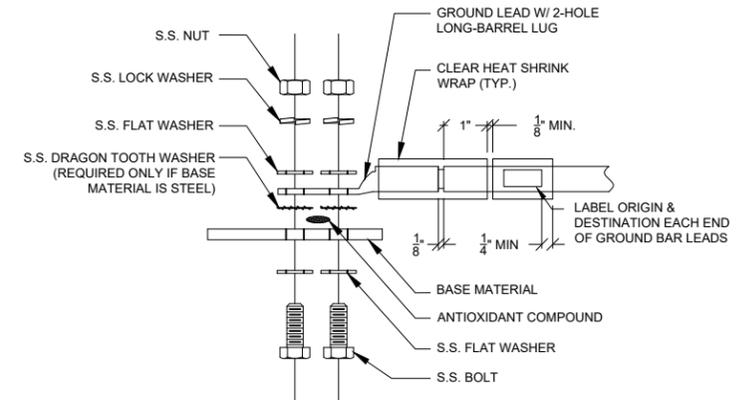
GROUNDING ELECTRODE SYSTEM NOTES:

1. ALL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS. CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE, SPLICES, ETC. ALL CABLE TO GROUND RODS, GROUND RODS SPLICES AND LIGHTNING PROTECTION SYSTEM AS INDICATED. GROUND FOUNDATION ONLY AS INDICATED BY PM. ALL MATERIALS USED (MOLDS, WELDING, METAL, TOOLS, ETC.) SHALL BE 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 ENCLOSURE AND 25 FEET OF TOWER AS INDICATED ON DRAWINGS. GROUND EACH GATE POST AND CORNER POST. GROUND 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.
5. AFTER INSTALLATION OF THE CANOPY AT THE DOOR, GC/EC IS TO BOND THE CANOPY TO THE DOOR FRAME WITH A #2 CONDUCTOR. USE DOUBLE-LUG CONNECTION. PREP AND PAINT SURFACE TO MATCH AFTER INSTALLATION.
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:
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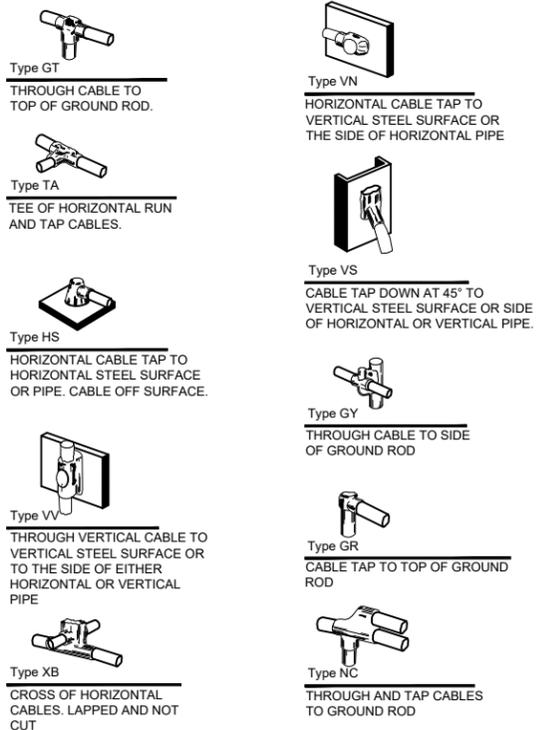


1 EXTERIOR GROUND BAR DETAIL
N.T.S.

- NOTES:
1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING BELLEVILLES. COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
 2. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
 3. GROUND BARS, INSTALL BOLT HEAD TOWARD WALL
 4. ENCLOSURES, INSTALL BOLT HEAD ON OUTSIDE OF ENCLOSURE



2 GROUND LUG INSTALLATION DETAIL
N.T.S.



3 EXOTHERMIC WELD DETAILS
EXOTHERMIC AND HARGER ULTRAWELD OR APPROVED EQUAL

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DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
GROUNDING DETAILS

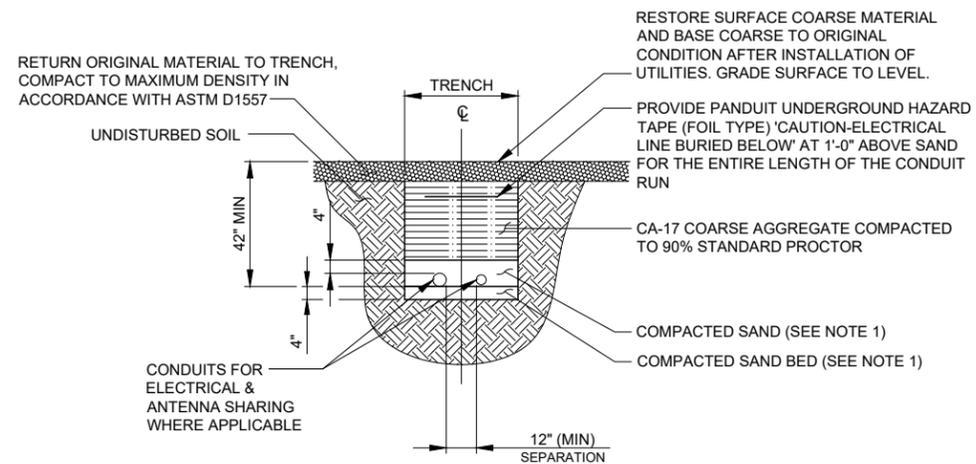
SHEET NUMBER
E-4



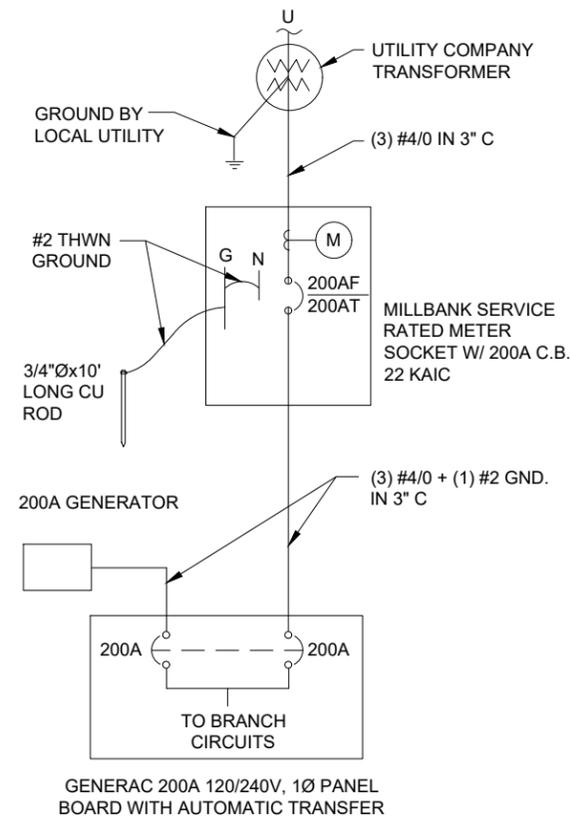
OTHER UTILITIES NOT INCLUDED IN DIGGERS HOTLINE AND LOCAL UTILITY DISTRICTS AND COMPANIES SHALL ALSO BE NOTIFIED

NOTES:

- LEAN CONCRETE, RED-COLORED TOP, MAY BE USED IN PLACE OF COMPACTED SAND.
- BURY CONDUITS 42" BELOW GRADE OR 6" BELOW FROST LINE, WHICHEVER IS GREATER
- CONDUIT SIZE, TYPE, QUANTITY AND SEPARATION DIMENSION TO BE VERIFIED WITH LOCAL UTILITY COMPANY REQUIREMENTS



1 UTILITY TRENCH DETAIL
SCALE: N.T.S.



2 SINGLE LINE DIAGRAM
N.T.S.

verizon
1515 WOODFIELD ROAD,
SUITE 1400
SCHAUMBURG, ILLINOIS 60173
PHONE: (847) 619-5387
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TERRA
CONSULTING GROUP, LTD.
600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH: 847-698-6400
FAX: 847-698-6401

NO.	DESCRIPTION	DATE	BY
1.	ISSUED FOR REVIEW	09/20/19	BE
	UPDATE WITH NEW LINEWORK	12/20/19	TJS

LOC. # 236678

CHILDREN'S HOSPITAL

9848 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

DRAWN BY:	BE
CHECKED BY:	DS
DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-5

GENERAL

THE CONSTRUCTION DOCUMENT DRAWINGS ARE INTERRELATED. WHEN PERFORMING THE WORK, EACH CONTRACTOR MUST REFER TO ALL DRAWINGS. COORDINATION IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

DIVISION 1: GENERAL REQUIREMENTS
SECTION 01700 - PROJECT CLOSEOUT

PART 1 - GENERAL

- A. OBTAIN AND SUBMIT RELEASES ENABLING THE OWNER UNRESTRICTED USE OF THE WORK AND ACCESS TO SERVICES AND UTILITIES; INCLUDE OCCUPANCY PERMITS, OPERATING CERTIFICATES AND SIMILAR RELEASES.
B. SUBMIT RECORD DRAWINGS, DAMAGE OR SETTLEMENT SURVEY, PROPERTY SURVEY, AND SIMILAR FINAL RECORD INFORMATION.
C. COMPLETE FINAL CLEAN UP REQUIREMENTS. TOUCH UP AND OTHERWISE REPAIR AND RESTORE MARRED EXPOSED FINISHES.

PART 2 - FINAL CLEANING

- 1. COMPLETE THE FOLLOWING CLEANING OPERATIONS BEFORE REQUESTING INSPECTION FOR CERTIFICATION OF COMPLETION.
a. CLEAN THE PROJECT SITE, YARD AND GROUNDS, IN AREAS DISTURBED BY CONSTRUCTION ACTIVITIES, INCLUDING LANDSCAPE DEVELOPMENT AREAS, OF RUBBISH, WASTE MATERIALS, LITTER AND FOREIGN SUBSTANCES. SWEEP PAVED AREAS BROOM CLEAN. REMOVE PETRO-CHEMICAL SPILLS, STAINS AND OTHER FOREIGN DEPOSITS, RAKE GROUNDS THAT ARE NEITHER PLANTED NOR PAVED, TO A SMOOTH EVEN-TEXTURED SURFACE.
b. REMOVE TOOLS, CONSTRUCTION EQUIPMENT, MACHINERY AND SURPLUS MATERIAL FROM THE SITE
c. REMOVE SNOW AND ICE TO PROVIDE SAFE ACCESS TO THE SITE AND EQUIPMENT ENCLOSURE.
d. CLEAN EXPOSED EXTERIOR AND INTERIOR HARD-SURFACED FINISHES TO A DIRT-FREE CONDITION, FREE OF STAINS, FILMS AND SIMILAR FOREIGN SUBSTANCES. AVOID DISTURBING NATURAL WEATHERING OF EXTERIOR SURFACES.
e. REMOVE DEBRIS FROM LIMITED ACCESS SPACES, INCLUDING ROOFS, EQUIPMENT ENCLOSURE, MANHOLES, AND SIMILAR SPACES.
f. TOUCH-UP AND OTHERWISE REPAIR AND RESTORE MARRED EXPOSED FINISHES AND SURFACES. REPLACE FINISHES AND SURFACES THAT CAN NOT BE SATISFACTORILY REPAIRED OR RESTORED, OR THAT SHOW EVIDENCE OF REPAIR OR RESTORATION. DO NOT PAINT OVER "UL" AND SIMILAR LABELS, INCLUDING ELECTRICAL NAME PLATES.
g. LEAVE THE PROJECT CLEAN AND READY FOR OCCUPANCY
2. REMOVAL OF PROTECTION: REMOVE TEMPORARY PROTECTION AND FACILITIES INSTALLED DURING CONSTRUCTION TO PROTECT PREVIOUSLY COMPLETED INSTALLATIONS DURING THE REMAINDER OF THE CONSTRUCTION PERIOD.

DIVISION 2: SITE WORK
SECTION 02200 - EARTHWORK AND DRAINAGE

PART 1 - GENERAL

- 1. WORK INCLUDED: SEE SITE PLAN.
2. SEQUENCING
a. CONSTRUCT TEMPORARY CONSTRUCTION AREA ALONG EAST FENCE LINE.
b. GRADE, SEED, FERTILIZE, AND MULCH ALL AREAS DISTURBED BY CONSTRUCTION (INCLUDING UNDERGROUND UTILITY EASEMENTS) IMMEDIATELY AFTER BRINGING LEASE AREA AND ACCESS DRIVE W/ TURNAROUND TO BASE COURSE ELEVATION, WATER TO ENSURE GROWTH

PART 2 - EXECUTION

- 1. INSPECTIONS: LOCAL BUILDING INSPECTORS SHALL BE NOTIFIED NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, UNLESS OTHERWISE SPECIFIED BY JURISDICTION.
2. PREPARATION
a. CLEAR TREES, BRUSH AND DEBRIS FROM SITE AS REQUIRED.
b. PRIOR TO OTHER EXCAVATION AND CONSTRUCTION, GRUB ORGANIC MATERIAL TO A MINIMUM OF SIX INCHES (6") BELOW GRADE.
c. UNLESS OTHERWISE INSTRUCTED BY OWNER, TRANSPORT ALL REMOVED TREES, BRUSH AND DEBRIS FROM THE PROPERTY TO AN AUTHORIZED LANDFILL.
d. PRIOR TO PLACEMENT OF FILL OR BASE MATERIALS, ROLL THE SOIL.
e. WHERE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, LINE THE AREAS WITH STABILIZER MAT PRIOR TO PLACEMENT OF FILL OR BASE MATERIAL.
3. INSTALLATION
a. GRADE OR FILL THE SITE AS REQUIRED IN ORDER THAT UPON DISTRIBUTION OF SOILS, RESULTING FROM EXCAVATIONS, THE RESULTING GRADE WILL CORRESPOND WITH SAID SUB-BASE COURSE. ELEVATIONS ARE TO BE CALCULATED FROM BENCHMARK, FINISHED GRADES, OR INDICATED SLOPES.
b. CLEAR EXCESS SPOILS, IF ANY, FROM JOB SITE AND DO NOT SPREAD BEYOND THE LIMITS OF PROJECT AREA UNLESS AUTHORIZED BY PROJECT MANAGER AND AGREED TO BY LANDOWNER.
c. AVOID CREATING DEPRESSIONS WHERE WATER MAY POND.
d. THE CONTRACT SHALL INCLUDE GRADING, BANKING, AND DITCHING, UNLESS OTHERWISE INDICATED.
e. PLACE FILL OR STONE IN SIX INCH (6") MAXIMUM LIFTS, AND COMPACT BEFORE PLACING NEXT LIFT.
f. THE TOP SURFACE COURSE, SHALL EXTEND A MINIMUM OF ONE FOOT (1') BEYOND THE SITE FENCE (UNLESS OTHERWISE NOTED) AND SHALL COVER THE AREA AS INDICATED.
g. APPLY SEED, FERTILIZER, AND STRAW COVER TO ALL OTHER DISTURBED AREAS, DITCHES, AND DRAINAGE SWALES, NOT OTHERWISE RIPRAP.

- h. UNDER NO CIRCUMSTANCES WILL DITCHES, SWALES, OR CULVERTS BE PLACED SO THAT THEY DIRECT WATER TOWARDS, OR PERMIT STANDING WATER IMMEDIATELY ADJACENT TO SHELTER OR EQUIPMENT. IF DESIGNS OR ELEVATIONS ARE IN CONFLICT WITH THIS, ADVISE CONSTRUCTION MANAGER IMMEDIATELY.
i. APPLY SEED, FERTILIZER, AND STRAW COVER TO ALL OTHER DISTURBED AREAS, DITCHES, AND DRAINAGE SWALES, NOT OTHERWISE RIPRAP.
j. UNDER NO CIRCUMSTANCES WILL DITCHES, SWALES, OR CULVERTS BE PLACED SO THAT THEY DIRECT WATER TOWARDS, OR PERMIT STANDING WATER IMMEDIATELY ADJACENT TO SHELTER OR EQUIPMENT. IF DESIGNS OR ELEVATIONS ARE IN CONFLICT WITH THIS, ADVISE CONSTRUCTION MANAGER IMMEDIATELY.
k. IN DITCHES WITH SLOPES GREATER THAN 10% MOUND DIVERSIONARY HEADWALLS IN THE DITCH AT CULVERT ENTRANCES. POSITION THE HEADWALL AT AN ANGLE NO GREATER THAN THAT 60° OFF THE DITCH LINE. RIPRAP THE UPSTREAM SIDE OF THE HEADWALL AS WELL AS THE DITCH FOR SIX FEET (6') ABOVE THE CULVERT ENTRANCE.
l. APPLY SEED AND FERTILIZER TO SURFACE CONDITIONS WHICH WILL ENCOURAGE ROOTING. RAKE AREAS TO BE SEEDED TO EVEN THE SURFACE AND LOOSEN THE SOIL.
m. SOW SEED IN TWO DIRECTIONS IN TWICE THE QUANTITY RECOMMENDED BY THE SEED PRODUCER.
n. ENSURE GROWTH OF SEEDED AND LANDSCAPED AREAS, BY WATERING, UP TO THE POINT OF RELEASE FROM THE CONTRACT. CONTINUE TO REWORK THE BARE AREAS UNTIL COMPLETE COVERAGE IS OBTAINED.
4. FIELD QUALITY CONTROL: COMPACT SOILS TO MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D-1557. AREAS OF SETTLEMENT WILL BE EXCAVATED AND REFILLED AT CONTRACTOR'S EXPENSE. INDICATE PERCENTAGE OF COMPACTION ACHIEVED ON AS-BUILT DRAWINGS.
5. PROTECTION
a. PROTECT SEEDED AREAS FROM EROSION BY SPREADING STRAW TO A UNIFORM LOOSE DEPTH OF 1-2 INCHES, STAKE AND TIE DOWN AS REQUIRED. USE OF EROSION CONTROL MESH OR MULCH NET WILL BE AN ACCEPTABLE ALTERNATIVE.
b. PROTECT ALL EXPOSED AREAS AGAINST WASHOUTS AND SOIL EROSION. PLACE STRAW BALES AT THE INLET APPROACH TO ALL NEW OR EXISTING CULVERTS. WHERE THE SITE OR ROAD AREAS HAVE BEEN ELEVATED IMMEDIATELY ADJACENT TO THE RAIL LINE, STAKE EROSION CONTROL FABRIC FULL LENGTH IN THE SWALE TO PREVENT CONTAMINATION OF THE RAIL BALLAST. ALL EROSION CONTROL METHODS SHALL CONFORM TO APPLICABLE BUILDING CODE REQUIREMENTS.

SECTION 02830 - FENCING AND GATE(S)
PART 1 - GENERAL

- 1. WORK INCLUDED - SEE PLAN FOR SITE AND LOCATION OF FENCE
2. QUALITY ASSURANCE
a. ALL STEEL MATERIALS UTILIZED IN CONIUNCTION WITH THIS SPECIFICATION WILL BE GALVANIZED OR STAINLESS STEEL. WEIGHT OF ZINC COATING ON THE FABRIC SHALL NOT BE LESS THAN 12 OUNCES PER SQUARE FOOT OF MATERIAL COVERED. POSTS SHALL BE HOT-DIPPED IN GRADE "E" ZINC, 18 OUNCES PER SQUARE FOOT.
3. SEQUENCING
a. IF THE SITE AREA HAS BEEN BROUGHT UP TO SURFACE COURSE ELEVATION (PRIOR TO THE FENCE CONSTRUCTION), FENCE POST EXCAVATION SPOILS MUST BE CONTROLLED TO PRECLUDE CONTAMINATION OF SAID SURFACE COURSE.
4. SUBMITTALS
a. MANUFACTURER'S DESCRIPTIVE LITERATURE.
b. CERTIFICATE OR STATEMENT OF COMPLIANCE WITH THE SPECIFICATIONS.

PART 2 - PRODUCTS

- 1. FENCE MATERIAL
a. ALL FABRIC WIRE, RAILS, HARDWARE, AND OTHER STEEL MATERIALS SHALL BE HOT-DIPPED GALVANIZED.
b. FABRIC SHALL BE SEVEN-FOOT (7") HIGH OR TO MATCH EXISTING FENCE TWO-INCH CHAIN LINK MESH OF NO. 9 GAUGE (0.148") WIRE. THE FABRIC SHALL HAVE A KNUCKLED FINISH FOR THE TOP SELVAGES. FABRIC SHALL CONFORM TO THE SPECIFICATIONS OF ASTM A-392 CLASS 1.
c. ALL POSTS SHALL BE SCHEDULE - 40 MECHANICAL SERVICE PIPE AND SHALL BE TYPE 1 ASTM A-128 AND OF THE FOLLOWING DIAMETER
i. LINE 2" SCHEDULE 40 (2 3/8" O.D.)
ii. CORNER 3" SCHEDULE 40 (3 1/2" O.D.)
iii. GATE 3" SCHEDULE 40 (3 1/2" O.D.)
d. ALL TOP AND BRACE RAILS SHALL BE 1 DIAMETER SCHEDULE - 40 MECHANICAL - SERVICE PIPE.
e. GATE FRAMES AND BRACES SHALL BE 1.90 INCH DIAMETER SCHEDULE 40 MECHANICAL - SERVICE PIPE. FRAMES SHALL HAVE WELDED CORNERS.
f. GATE FRAMES SHALL HAVE A FULL-HEIGHT VERTICAL BRACE, AND A FULL-WIDTH HORIZONTAL BRACE, SECURED IN PLACE BY USE OF GATE BRACE CLAMPS.
g. GATE HINGES SHALL BE MERCHANTS METAL MODEL 64386 HINGE ADAPTER WITH MODEL 6409, 188-DEGREE ATTACHMENT.
h. A NO. 7 GAUGE ZINC COATED TENSION WIRE SHALL BE USED AT THE BOTTOM OF THE FABRIC, TERMINATED WITH BAND CLIPS AT CORNER AND GATE POSTS.
i. A SIX-INCH BY 1/2-INCH DIAMETER EYEBOLT TO HOLD TENSION WIRE SHALL BE PLACED AT LINE POSTS.
j. STRETCHER BARS SHALL BE 3/16-INCH BY 3/4-INCH OR HAVE EQUIVALENT CROSS-SECTIONAL AREA.

- k. ALL CORNER GATE AND PANELS SHALL HAVE A 3/8-INCH TRUSS ROD WITH TURNBUCKLES.
l. ALL POST EXCEPT GATE POSTS SHALL HAVE A COMBINATION CAP AND BARBED WIRE SUPPORTING ARM. GATE POSTS SHALL HAVE A DOME CAP.
m. OTHER HARDWARE INCLUDES BUT MAY NOT BE LIMITED TO TIE CLIPS, BAND CLIPS, AND TENSION BAND CLIPS.
n. ALL CAPS SHALL BE MALLEABLE IRON, DOME OR ACORN SHAPED AS REQUIRED BY PIPE SIZE.

PART 3 - EXECUTION

- 1. INSPECTION: TO CONFIRM PROPER DEPTH AND DIAMETER OF POST HOLE EXCAVATIONS. ALL POST HOLES WILL BE EXCAVATED AS PER CONSTRUCTION DOCUMENTS,
2. INSTALLATION
a. FOUNDATIONS SHALL HAVE A MINIMUM SIX INCH (6") CONCRETE COVER UNDER POST.
b. ALL FENCE POSTS SHALL BE VERTICALLY PLUMB; ON QUARTER INCH (1/4")
c. AT CORNER POSTS, GATE POSTS, AND SIDES OF GATE FRAME, FABRIC SHALL BE ATTACHED WITH STRETCHER AND TENSION BAND-CLIPS AT FIFTEEN (15) INCH INTERVALS.
d. AT LINE POSTS, FABRIC SHALL BE ATTACHED WITH BAND-CLIPS AT FIFTEEN (15) INCH INTERVALS.
e. FABRIC SHALL BE ATTACHED TO BRACE RAILS, TENSION WIRE AND TRUSS RODS WITH TIE-CLIPS AT TWO FOOT (2') INTERVALS.
f. A MAXIMUM GAP OF ONE INCH WILL BE PERMITTED BETWEEN TIE CHAIN LINE FABRIC AND THE FINAL GRADE.
g. GATE SHALL BE INSTALLED SO LOCKS ARE ACCESSIBLE FROM BOTH SIDES.
h. GATE HINGE BOLTS SHALL HAVE THEIR THREADS PEENED OR WELDED TO PREVENT UNAUTHORIZED REMOVAL.
i. CONCRETE TO BE A MINIMUM OF 4,000 PSI AT 7 DAYS. CEMENT SHALL EXCEED ASTM C150, TYPE IIIA.

- 3. PROTECTION: UPON COMPLETION OF ERECTION, INSPECT FENCE MATERIAL AND PAINT FIELD CUTS OR GALVANIZING BREAKS WITH ZINC-BASED PAINT, COLOR TO MATCH THE GALVANIZED METAL. APPLICABLE STANDARDS:

Table with 3 columns: Standard (ASTM-A120, ASTM-A123, ASTM-A153, ASTM-A392, ASTM-A491, ASTM-A525, ASTM-A570), Description (SPECIFICATION FOR PIPE, STEEL, BLACK AND HOT-DIPPED ZINC COATED (GALVANIZED) WELDED AND SEAMLESS, FOR ORDINARY USES, ZINC (HOT-DIP GALVANIZED) COATING ON IRON AND STEEL PRODUCTS, STANDARD SPECIFICATION FOR ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE, SPECIFICATION FOR ZINC-COATED STEEL CHAIN LINK FENCE FABRIC, SPECIFICATION FOR ALUMINUM-COATED STEEL CHAIN LINK FENCE FABRIC, STANDARD SPECIFICATION FOR STEEL SHEET ZINC COATED (GALVANIZED) BY THE HOT-DIPPED PROCESS, SPECIFICATION FOR HOT-ROLLED CARBON STEEL SHEET AND STRIP. STRUCTURAL QUALITY.)

- A. FEDERAL SPECIFICATION RR-F-191-FENCING, WIRE AND POST METAL (AND GATES, CHAIN LINK FENCE FABRIC, AND ACCESSORIES)

DIVISION 3: CONCRETE
SECTION 03000 - BASIC CONCRETE MATERIALS AND METHODS

PART 1 - GENERAL

- 1. WORK INCLUDED: FORMWORK, REINFORCEMENT, ACCESSORIES, CAST-IN-PLACE CONCRETE, FINISHING, AND CURING.
2. INSPECTIONS
a. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING BUILDING DEPARTMENT INSPECTIONS REQUIRED FOR HIS SCOPE OF WORK.
b. ALL REINFORCING STEEL SHALL BE INSPECTED AND APPROVED BY THE LESSEE'S CONSTRUCTION MANAGER PRIOR TO PLACEMENT OF CONCRETE.
c. THE LESSEE'S CONSTRUCTION MANAGER SHALL BE NOTIFIED NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS.
3. QUALITY ASSURANCE
a. CONSTRUCT AND ERECT CONCRETE FORMWORK IN ACCORDANCE WITH ACI 301 AND ASTM 318.
b. PERFORM CONCRETE REINFORCING WORK IN ACCORDANCE WITH ACI 301, ACI 318, AND ASTM A184.
c. PERFORM CAST-IN-PLACE CONCRETE WORK IN ACCORDANCE WITH ACI 301, ACI 318, AND ACI 117-90.
d. OPEN FOUNDATION TRENCHES SHALL BE INSPECTED BY MES PRIOR TO CONCRETE INSTALLATION.
4. SUBMITTALS: SUBMIT CONCRETE MIX AND REINFORCING STEEL SHOP DRAWINGS FOR APPROVAL BY LESSEE CONSTRUCTION MANAGER/ENGINEER. THE SHOP DRAWING SHALL BE SUBMITTED IN THE FORM OF TWO (2) CONCRETE MIX DESIGN INFORMATION SHEETS AND TWO (2) BLUELINE DRAWINGS FOR REINFORCING STEEL.

PART 2 - PRODUCTS

- 1. REINFORCEMENT MATERIALS
a. REINFORCEMENT STEEL, ASTM A615, 60 ksi YIELD GRADE, DEFORMED BILLET STEEL BARS, PLAIN FINISH.
b. WELDED STEEL WIRE FABRIC ASTM A185 PLAIN TYPE IN FLAT SHEETS, PLAIN FINISH.
c. CHAIRS, BOLSTERS, BAR SUPPORTS, SPACERS. SIZED AND SHAPED FOR SUPPORTS OR REINFORCING.

- d. FABRICATE CONCRETE REINFORCING IN ACCORDANCE WITH ACI 315, ACI 318, ASTM A184.
2. CONCRETE MATERIALS
a. CEMENT: ASTM C150, PORTLAND TYPE
b. FINE AND COURSE AGGREGATES: ASTM C33 - MAXIMUM SIZE OF CONCRETE AGGREGATE SHALL NOT EXCEED: ONE INCH (1") SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR ONE-THIRD (1/3) CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING.
c. WATER: CLEAN AND NOT DETRIMENTAL TO CONCRETE
d. AIR ENTRAINING ADMIXTURE: ASTM C260
e. BONDING AGENT: LATEX EMULSION FOR BONDING NEW TO OLD CONCRETE AS MANUFACTURED BY DAYTON SUPERIOR.
f. NON-SHRINK GROUT: PREMIXED COMPOUND CONSISTING OF NONMETALLIC AGGREGATE. CEMENT, WATER REDUCING AND PLASTICISING AGENTS.
3. CONCRETE MIX

- a. CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE A.C.I. REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
b. MIX AND DELIVER CONCRETE IN ACCORDANCE WITH ASTM C94, ALT. 3.
c. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. PROVIDE CONCRETE AS FOLLOWS:
i. COMPRESSIVE STRENGTH: 4000 psi AT 7 DAYS. SEE SHEET 2-1 FOR CAISSON CONCRETE COMPRESSIVE STRENGTH.
ii. SLUMP: 3 INCHES

PART 3 - EXECUTION

- 1. INSERTS, EMBEDDED COMPONENTS AND OPENINGS
a. THE CONSTRCTOR SHALL COORDINATE AND CROSS-CHECK ARCHITECTURAL, BUILDING & ELECTRICAL DRAWINGS FOR OPENINGS, SLEEVES, ANCHORS, HANGERS, AND OTHER ITEMS RELATED TO CONCRETE WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THE PROPER LOCATION BEFORE PLACING CONCRETE.
b. PROVIDE FORMED OPENINGS WHERE REQUIRED FOR WORK TO BE EMBEDDED IN AND PASSING THROUGH CONCRETE MEMBERS.
c. COORDINATE WORK OF OTHER SECTIONS IN FORMING AND SETTING OPENING, SLOTS, RECESSES, CHASES, SLEEVES, BOLTS, ANCHORS, AND OTHER INSERTS.
d. INSTALL CONCRETE ACCESSORIES STRAIGHT, LEVEL AND PLUMB.
2. REINFORCEMENT PLACEMENT
a. PLACEMENT REINFORCEMENT, SUPPORTED AND SECURED AGAINST DISPLACEMENT.
b. ENSURE REINFORCING IS CLEAN, FREE OF LOOSE SCALE, DIRT, OR OTHER FOREIGN COATINGS.
c. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
d. MINIMUM CONCRETE COVER FOR REINFORCING SHALL BE THREE INCHES (3") UNLESS OTHERWISE NOTED.
e. CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED THREE INCHES (3") NOR BE LESS THAN TWO INCHES (2").
3. PLACING CONCRETE
a. VIBRATE ALL CONCRETE.
b. ALL CONCRETE WORK SHALL ADHERE TO THE LATEST A.C.I. STANDARDS FOR WINTER POURING AND CURING PROCEDURE IF SEASONAL CONDITIONS APPLY.
4. CURING
a. AFTER PLACEMENT, PROTECT CONCRETE FROM PREMATURE DRYING.
b. MAINTAIN CONCRETE WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR A PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
5. PROVIDE HAND RUBBED SMOOTH FINISH TO ALL EXPOSED VERTICAL FORMED CONCRETE SURFACES.
6. FIELD QUALITY CONTROL
a. SUBMIT THREE (3) CONCRETE TEST CYLINDERS - TAKEN FOR EVERY 15 CUBIC YARD OR LESS. SUBMIT CONCRETE TESTS TO THE PROJECT MANAGER IN ACCORDANCE WITH ASTM, C-31 AND C-39.
b. SUBMIT ONE (1) ADDITIONAL TEST CYLINDER - TAKEN DURING COLD WEATHER POURS, AND CURED ON JOB SITE UNDER SAME CONDITIONS AS CONCRETE IT REPRESENTS.
c. SUBMIT ONE (1) SLUMP TEST - TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN.
7. DEFECTIVE CONCRETE: MODIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LINES, DETAILS OR ELEVATIONS AT COST OF GC, AS DIRECTED BY ARCHITECT/ENGINEER.



Table with 7 columns: NO., DESCRIPTION, DATE, BY, BE, TJS, and a blank column. Row 1: 1, UPDATE WITH NEW LINENWORK, 12/20/19, TJS

LOC. # 236678

CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD WAUWATOSA, WI 53226

Table with 2 columns: Field Name and Value. DRAWN BY: BE, CHECKED BY: DS, DATE: 09/26/19, PROJECT #: 33-3203

SHEET TITLE
SPECIFICATIONS

SHEET NUMBER
SP-1

DIVISION 5: METALS

SECTION 16400 – SERVICE AND DISTRIBUTION

SECTION 05000 – METALS

PART 1 – GENERAL

- SECTION INCLUDES: STRUCTURAL STEEL FRAMING MEMBERS, BASE PLATES, PLATES, BARS AND GROUTING UNDER BASE PLATES.
- SUBMITTALS: SHOP DRAWINGS: INDICATE SIZES, SPACING, AND LOCATIONS OF STRUCTURAL MEMBERS, OPENINGS, CONNECTIONS, CAMBERS, LOADS, AND WELDED SECTIONS.
- QUALITY ASSURANCE
 - FABRICATE STRUCTURAL STEEL MEMBERS IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
 - PERFORM DESIGN UNDER DIRECT SUPERVISION OF A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE.

PART 2 – PRODUCTS

- MATERIALS:
 - STRUCTURAL STEEL MEMBERS: ASTM A572, GRADE 50
 - STRUCTURAL TUBING: ASTM A500, GRADE B
 - PIPE: ASTM A53, TYPE E OR S, GRADE B
 - BOLTS, NUTS, AND WASHERS: ASTM A325
 - ANCHOR BOLTS: ASTM A307
 - WELDING MATERIALS: AWS D1.1, TYPE REQUIRED FOR MATERIALS BEING WELDED
 - GROUT: NON-SHRINK TYPE, PREMIXED COMPOUND CONSISTING OF NONMETALLIC AGGREGATE, CEMENT, WATER REDUCING AND PLASTICIZING ADDITIVES, CAPABLE OF DEVELOPING A MINIMUM COMPRESSIVE STRENGTH OF 7000 psi AT 28 DAYS.
 - SHOP AND TOUCH-UP PRIMER: SSPC 15, TYPE 1, RED OXIDE
 - TOUCH-UP PRIMER FOR GALV. SURFACES: ZINC RICH TYPE
- FABRICATION: CONTINUOUSLY SEAL JOINTED MEMBERS BY CONTINUOUS WELDS. GRIND EXPOSED WELDS SMOOTH.
- FINISH:
 - PREPARE STRUCTURAL COMPONENT SURFACES IN ACCORDANCE WITH SSPC SP-1 TO SP-10 PROCEDURES.
 - STRUCTURAL STEEL MEMBERS SHALL BE HOT DIPPED GALVANIZED.

PART 3 – EXECUTION

- EXAMINATION AND PREPARATION: VERIFY THAT THE FIELD CONDITIONS ARE ACCEPTABLE.
- ERECTION:
 - ALLOW FOR ERECTION LOADS. PROVIDE TEMPORARY BRACING TO MAINTAIN FRAMING IN ALIGNMENT UNTIL COMPLETION OF ERECTION AND INSTALLATION OF PERMANENT BRIDGING AND BRACING.
 - FIELD WELD COMPONENTS INDICATED ON SHOP DRAWINGS.
 - DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER.
 - AFTER ERECTION, TOUCH-UP WELDS, ABRASIONS, AND SURFACES NOT SHOP PRIMED OR GALVANIZED WITH TOUCH-UP PRIMERS AS SPECIFIED UNDER SECTION 05000, METALS, PART 2 – PRODUCTS, H & I. SURFACES TO BE IN CONTACT WITH CONCRETE NOT INCLUDED.
- FIELD QUALITY CONTROL: FIELD INSPECTION OF MEMBERS, CONNECTIONS, WELDS AND TORQUING.

DIVISION 16: ELECTRICAL

SECTION 16050 – BASIC ELECTRICAL MATERIALS AND METHODS

- CONTRACTOR SHALL REVIEW THE CONTRACT DOCUMENTS PRIOR TO ORDERING THE ELECTRICAL EQUIPMENT AND STARTING THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT LISTING ANY DISCREPANCIES OR CONFLICTING INFORMATION.
- ELECTRICAL PLANS, DETAILS AND DIAGRAMS ARE DIAGRAMMATIC ONLY. VERIFY EXACT LOCATIONS AND MOUNTING HEIGHTS OF ELECTRICAL EQUIPMENT WITH OWNER PRIOR TO INSTALLATION.
- EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANELBOARD, PULLBOX, JUNCTION BOX, SWITCH BOX, ETC. THE TYPE OF TAGGING METHODS SHALL BE IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (O.S.H.A.).
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN GOOD WORKING CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED "U" WHERE APPLICABLE. MATERIALS SHALL MEET WITH APPROVAL OF ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, NBFU AND "UL" LISTED.
- ALL CONDUIT SHALL HAVE A PULL CORD.
- PROVIDE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
- ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY UBC, NEC AND ALL APPLICABLE CODES.
- PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
- 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 COVERPLATES.

- WIRE AND CABLE CONDUCTORS SHALL BE COPPER, 600V, TYPE THHN OR THWN, WITH A MIN. SIZE OF #12 AWG, COLOR CODED. ALL RECTIFIER DROPS SHALL BE STRANDED TO ACCEPT CRIMP CONNECTORS.
 - ALL CHEMICAL GROUND RODS SHALL BE "UL" APPROVED.
 - METER SOCKET AMPERES, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS. MANUFACTURED BY MILBANK OR APPROVED EQUAL, AND SHALL BE UTILITY COMPANY APPROVED.
 - CONDUIT:
 - RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH GALVANIZED ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAPPED WRAPPED WITH HUNTS WRAP PROCESS NO. 3.
 - ELECTRICAL METALLIC TUBING SHALL HAVE U.L. LABEL, FITTING SHALL BE GLAND RING COMPRESSION TYPE.
 - FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE. ALL FLEXIBLE CONDUITS SHALL HAVE FULL LENGTH GROUND WIRE.
 - ALL UNDERGROUND CONDUIT SHALL BE AS NOTED ON THE DRAWINGS AT A MINIMUM DEPTH OF 42" BELOW GRADE. IT IS REQUIRED AND WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO NOTIFY DIGGERS HOTLINE AT 1-800-242-8511 OR OTHER SUCH NOTIFYING AGENCY THIRTY-SIX (36) HOURS PRIOR TO DIGGING.
 - CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS ARE TO BE PAID BY THE CONTRACTOR.
 - ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS WITH WHITE ON BLUE BACKGROUND LETTERING (MINIMUM LETTER HEIGHT SHALL BE ONE FORTH INCH (1/4"). NAMEPLATES SHALL BE FASTENED WITH STAINLESS STEEL SCREWS, NOT ADHESIVE.
 - UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL POTENTIAL GROUNDING TESTS BY AN INDEPENDENT TESTING SERVICE ENGAGED BY THE CONTRACTOR SHALL BE SUBMITTED FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
 - GROUNDING ELECTRODE SYSTEM
 - PREPARATION
 - SURFACE PREPARATION: ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FIELD INSPECTED AND MODIFIED TO ENSURE PROPER CONTACT. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE A NON-OXIDIZING AGENT APPLIED PRIOR TO INSTALLATION.
 - GROUND BAR PREPARATION: ALL COPPER GROUND BARS SHALL BE CLEANED, POLISHED AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
 - SLEEVES: ALL GROUNDING CONDUCTORS SHALL RUN THROUGH PVC SLEEVES WHEREVER CONDUCTORS RUN THROUGH WALLS, FLOORS OR CEILINGS. IF CONDUCTORS MUST RUN THROUGH EMT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
 - GROUND BARS
 - ALL GROUND BARS SHALL BE ONE FORTH INCH (1/4") THICK TINNED COPPER PLATE AND OF SIZE INDICATED ON DRAWINGS.
 - ALL CONNECTIONS TO THE GROUND BAR SHALL OBSERVE THE FOLLOWING SEQUENCE:
 - BOLT-HEAD
 - 2-HOLE LUG
 - TINNED COPPER BUSS BAR
 - STAR WASHER
 - NUT
 - EXTERNAL CONNECTIONS
 - ALL BURIED GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS. CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE, SPLICES, TEE'S, CROSSES, ETC. ALL CABLE TO GROUND RODS, GROUND ROD SPLICES AND LIGHTNING PROTECTION SYSTEMS ARE TO BE AS INDICATED. ALL MATERIALS USED (MOLDS, WELDING METAL, TOOLS, ETC.) SHALL BE BY "CADWELD" AND INSTALLED PER MANUFACTURER'S RECOMMENDED PROCEDURES.
 - ALL ABOVE GRADE GROUNDING AND BONDING CONDUCTORS SHALL BE CONNECTED BY TWO HOLE CRIMP TYPE (COMPRESSION) CONNECTIONS (EXCEPT FOR THE ACEG AND GROUND ROD) MECHANICAL CONNECTIONS, FITTINGS OR CONNECTIONS THAT DEPEND SOLELY ON SOLDER SHALL NOT BE USED. ALL CABLE TO CABLE CONNECTIONS SHALL BE HIGH PRESSURE DOUBLE CRIMP TYPE CONNECTIONS. CONNECTIONS TO STRUCTURAL STEEL SHALL BE EXOTHERMIC WELDS.
 - GROUND RODS
 - ALL GROUND RODS SHALL BE 5/8-INCH DIAMETER X 10'-0" LONG "COPPERWELD" OR APPROVED EQUAL, OF THE NUMBER AND LOCATIONS INDICATED. GROUND RODS SHALL BE DRIVEN FULL LENGTH VERTICAL IN UNDISTURBED EARTH.
 - GROUND CONDUCTORS
 - ALL GROUND CONDUCTORS SHALL BE STANDARD TINNED SOLID BARE COPPER ANNEALED, AND OF SIZE INDICATED ON DRAWINGS UNLESS NOTED OTHERWISE.
 - LUGS
 - LUGS SHALL BE 2-HOLE, LONG BARREL, STRAND COPPER UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS. LUGS SHALL BE THOMAS AND BETTS SERIES #548__BE OR EQUIVALENT

A.	535 MCM DLO	54880BE
B.	262 MCM DLO	54872BE
C.	#1/0 DLO	54862BE
D.	#4/0 THWN AND BARE	54866BE
E.	#2/0 THWN	54862BE
F.	#2 THHN	54207BE
G.	#6 DLO	54205BE
- WHEN THE DIRECTION OF THE CONDUCTOR MUST CHANGE, IT SHALL BE DONE GRADUALLY. THE CURVATURE OF THE TURN SHALL BE DONE IN ACCORDANCE WITH THE FOLLOWING CHART:

<u>GROUNDING CONDUCTOR SIZE</u>	<u>MINIMUM BENDING RADIUS TO INSIDE EDGE</u>
NO. 6 AWG TO NO. 4 AWG	6 INCHES
NO. 2 AWG TO NO. 1/0 AWG	8 INCHES
NO. 2/0 AWG TO 4/0 MCM	12 INCHES
250 MCM TO 750 MCM	24 INCHES
- GROUND RING
 - THE EXTERNAL GROUND RING ENCIrcLING THE TOWER (IF APPLICABLE) AND BETWEEN THE EQUIPMENT SHELTER PLATFORM ANCHORS SHALL BE MINIMUM NO. 2 A.W.G. SOLID TINNED BARE COPPER CONDUCTOR IN DIRECT CONTACT WITH THE EARTH AT THE DEPTH INDICATED ON THE DRAWINGS. CONDUCTOR BENDS SHALL HAVE A MINIMUM BENDING RADIUS OF EIGHT INCHES (8").
 - ALL EXTERNAL GROUND RINGS ARE TO BE JOINED TOGETHER AND ALL CONNECTIONS MUST BE CADWELDED. NO LUGS OR CLAMPS WILL BE ACCEPTED.
- FENCE/GATE

GROUND EACH GATE POST, CORNER POST AND GATE AS INDICATED ON DRAWING GROUND CONNECTIONS TO FENCE POSTS AND ALL OTHER CONNECTIONS FOR THE GROUND GRID SYSTEM SHALL BE MADE BY EXOTHERMIC WELD PROCESS, AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES, AND SPRAYED WITH COLD-GALVANIZED PAINT.
- I.E.E.E. FALL POTENTIAL TESTS
 - FOR RAW LAND SITE
 - GROUND TESTS SHALL BE PERFORMED AS INDICATED ON DRAWINGS. A BIDDLE GROUND OHMER OR THE METHOD OF USING TWO AUXILIARY GROUND RODS (AS DESCRIBED IN I.E.E.E. STANDARDS NO. 81-1983, PART 1) MAY BE USED. THE I.E.E.E. METHOD REQUIRES THE USE OF AN A.C. TEST CURRENT. THE AUXILIARY TEST RODS MUST BE SUFFICIENTLY FAR AWAY FROM THE ROD UNDER TEST SO THAT THE REGIONS IN WHICH THEIR RESISTANCE IS LOCALIZED DO NOT OVERLAP. THE TEST POINT WILL BE THE GROUND ROD AND WILL CONSIST OF THE THREE POINT FALL OF POTENTIAL MEGGER TEST METHOD, USING THE BIDDLE NULL-BALANCE EARTH TESTER (MEGGER #250220-2 OR EQUIVALENT)
 - CONTRACTOR TO CONDUCT GROUND RESISTANCE TEST IN THE FORMAT AS FOLLOWS:
 - FIRST TEST – SHALL BE WITH FOUR GROUND RODS INSTALLED, ONE AT EACH CORNER OF THE PAD BUT NOT CONNECTED TO THE MAIN GROUNDING BUS. FURNISH WIRE TO CONNECT (TEMPORARY CLAMP) ALL FOUR GROUND RODS TOGETHER TO MAKE A SYSTEM TEST AFTER EACH ROD IS INDIVIDUALLY TESTED. IF ANY INDIVIDUAL ROD TESTS 25 OHMS OR MORE, THE ELECTRICAL CONTRACTOR AND OWNER'S REPRESENTATIVE SHOULD BE NOTIFIED SO THAT THE ROD CAN BE DRIVEN DEEPER UNTIL ALL FOUR RODS HAVE A RESISTANCE OF 10 OHMS OR LESS ON A DRY DAY.
 - SECOND TEST – SHALL BE WITH THE GROUND RODS CONNECTED, WITH DRY SOIL AND WHEN NO STANDING WATER HAS BEEN PRESENT FOR THE PAST TEN (10) DAYS. THE MAXIMUM ALLOWABLE READING IS 5 OHMS TO GROUND. IF THE RESISTANCE OF THE ENTIRE SYSTEM EXCEEDS 5 OHMS, NOTIFY THE CONTRACTOR AND OWNER'S REPRESENTATIVE SO THAT ADDITIONAL AND/OR DEEPER RODS CAN BE INSTALLED.
 - TOWER
 - FIRST TEST – SHALL BE WITH THREE GROUND RODS INSTALLED (MINIMUM), EQUALLY SPACED AROUND THE TOWER FOUNDATION, BUT NOT CONNECTED TO THE SHELTER PAD EXTERNAL GROUND RING. FURNISH WIRE TO CONNECT (TEMPORARY CLAMP) ALL THREE GROUND RODS TOGETHER TO MAKE A SYSTEM TEST AFTER EACH ROD IS INDIVIDUALLY TESTED. IF ANY INDIVIDUAL ROD TESTS 25 OHMS OR MORE, NOTIFY THE CONTRACTOR AND OWNER'S REPRESENTATIVE SO THAT THE ROD CAN BE DRIVEN DEEPER UNTIL ALL THREE (3) RODS HAVE A RESISTANCE OF 10 OHMS OR LESS ON A DRY DAY.
 - SECOND TEST – SHALL BE WITH THE GROUND RODS CONNECTED, WITH DRY SOIL AND WHEN NO STANDING WATER HAS BEEN PRESENT FOR THE PAST TEN (10) DAYS, THE MAXIMUM ALLOWABLE READING IS 5 OHMS TO GROUND. IF THE RESISTANCE OF THE ENTIRE SYSTEM EXCEEDS 5 OHMS THE ELECTRICAL CONTRACTOR AND OWNER'S REPRESENTATIVE SHOULD BE NOTIFIED SO THAT EITHER ADDITIONAL AND/OR DEEPER RODS CAN BE INSTALLED.
 - EQUIPMENT PAD AND TOWER
 - AFTER THE EQUIPMENT PAD AND TOWER GROUND RESISTANCE TEST IS COMPLETED, CONTRACTOR SHALL TIE EQUIPMENT PAD EXTERNAL GROUND RING AND TOWER EXTERNAL GROUND RING TOGETHER. AFTER FIRST AND SECOND TEST ALL CONNECTIONS MUST BE MADE USING EXOTHERMIC WELD. NO LUGS OR CLAMPS WILL BE ACCEPTED.
 - AFTER ALL THE EXTERNAL GROUND RINGS ARE TIED TOGETHER, COMPLETE A MEGGER CHECK OF THE GROUND SYSTEM SHOULD BE DONE. THE MAXIMUM ALLOWABLE LEADING IS 5 OHMS TO GROUND.
- GROUNDING RESISTANCE TEST REPORT

UPON COMPLETION OF THE TESTING FOR EACH SITE, A TEST REPORT SHOWING RESISTANCE IN OHMS WITH AUXILIARY POTENTIAL ELECTRODES AT 5 FEET AND 10 FEET INTERVALS UNTIL THE AVERAGE RESISTANCE STARTS INCREASING AND ALSO NOTE THAT 10-15 PHOTOS MUST BE TAKEN TO PROOF ENTIRE EXTERNAL GROUND RING SYSTEM BEFORE BACKFILL. TWO (2) SETS OF TEST DOCUMENTS ARE OF THE INDEPENDENT TESTING SERVICE TO BE BOUND AND SUBMITTED WITHIN ONE (1) WEEK OF WORK COMPLETION.

SECTION 16503 – POLES, POSTS, AND STANDARDS
(SINGLE MAST AND SELF SUPPORTING TOWERS)

GENERAL

- LIGHTNING ROD AND EXTENSION PIPE INCLUDING ALL APPURTENANCES, TO BE FURNISHED BY OWNER, IF REQUIRED.
- PROVIDE TEMPORARY LIGHTING FOR TOWER AS PER FAA REGULATIONS DURING CONSTRUCTION, IF REQUIRED.
- GROUNDING:

GROUND TOWER WITH A MINIMUM OF #2 AWG TINNED SOLID BARE COPPER CONDUCTOR CADWELDED TO TOWER BASE PLATE. TWO (2) GROUNDING LEADS PER TOWER BASE PLATE.

NO EXOTHERMIC WELDS SHALL BE ATTACHED DIRECTLY TO THE MONOPOLE TOWER SHAFT.

SECTION 16745 – TELECOMMUNICATIONS WIRING COMPONENTS
(COAXIAL ANTENNA CABLE)

GENERAL

- ALL MATERIALS, PRODUCTS OR PROCEDURES INCORPORATED INTO WORK SHALL BE NEW AND OF STANDARD COMMERCIAL QUALITY.
- CERTAIN MATERIALS AND PRODUCTS WILL BE SUPPLIED BY THE OWNER (REFER TO GENERAL CONDITIONS FOR THE LIST OF OWNER FURNISHED EQUIPMENT, MATERIALS AND SUPPLIES FOR THESE ITEMS). THE CONTRACTOR IS RESPONSIBLE FOR PICKUP AND DELIVERY OF ALL SUCH MATERIALS
- ALL OTHER MATERIALS AND PRODUCTS SPECIFIED IN THE CONTRACT DOCUMENTS SHALL BE SUPPLIED BY THE CONTRACTOR.

MATERIALS:

- COAXIAL CABLE:
 - INSTALL COAXIAL CABLE AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS WITH COAXIAL CABLES SUPPORTED AT NO MORE THAN 3'-0" O.C. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURERS' REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE FEET (3') IN EXCESS OF EQUIPMENT LOCATION UNLESS OTHERWISE STATED.
 - ALL COAX RUN LENGTHS GREATER THAN 175 FEET SHALL BE 1-5/8", ALL COAX. RUN LENGTH BETWEEN 101 FEET AND 174 FEET SHALL BE 1-1/4", AND IN LENGTH LESS THAN OR EQUAL TO 100 FEET SHALL BE 7/8".
- ANTENNA AND COAXIAL CABLE GROUNDING
 - ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS)
- COAXIAL CABLE IDENTIFICATION
 - TO PROVIDE EASY IDENTIFICATION AND UNIFORM MARKING OF ANTENNA CABLING, PLASTIC TAGS SHALL BE USED AT THE FOLLOWING LOCATIONS:
 - FIRST LOCATION IS AT THE END OF THE COAX NEAREST THE ANTENNA (WHERE THE COAXIAL CABLE AND JUMPER ARE CONNECTED).
 - SECOND LOCATION IS INSIDE THE EQUIPMENT SHELTER NEAR THE WAVEGUIDE ENTRY PORT.
 - USE ANDREW CABLE TIES (PT.# 27290) TO SECURE IDENTIFICATION TAGS.
- TESTING

LESSEE SHALL PROVIDE AN INDEPENDENT TESTING AGENCY TO PERFORM THE COAXIAL SWEEP TEST & REPORT. THE CONTRACTOR IS TO PROVIDE ONE CLIMBER / QUALIFIED PERSONNEL TO ASSIST IN ANY REPAIRS AND WEATHERPROOFING ONCE THE TEST IS COMPLETE. THE CONTRACTOR IS TO PROVIDE LESSEE WITH A MINIMUM OF 48 HOURS NOTICE PRIOR TO THE TIME OF THE SWEEP TEST.



NO.	DESCRIPTION	DATE	BY	BE	TJS					REVISIONS
										ISSUED FOR REVIEW
1.	UPDATE WITH NEW LINENWORK	09/30/19								
		12/20/19								

LOC. # 236678

CHILDREN'S HOSPITAL

8948 WATERTOWN PLANK ROAD WAUWATOSA, WI 53226

DRAWN BY:	BE
CHECKED BY:	DS
DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
SPECIFICATIONS

SHEET NUMBER
SP-2

GENERAL WELDING:

1. ALL WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER.
2. COMPLY WITH THE AWS D1.1 STRUCTURAL WELDING CODE, ANSI/AWWA D100-96 (LATEST EDITION THEREOF), "AWWA STANDARD FOR WELDED STEEL TANKS FOR WATER STORAGE" AND FEDERAL, STATE, AND LOCAL CODES DURING CONSTRUCTION DESIGN AND FABRICATION.
3. MAKE ALL WELDS TO THE TANK WALL WITH E7018 LOW HYDROGEN ROD. WELD SMOOTH AND AVOID UNDERCUTS AND BURRS. GRIND SMOOTH ALL WELDS SO THAT NO SHARP PROTRUSIONS REMAIN. SMOOTH IS DEFINED AS: "NO CUTS OR ABRASIONS OCCUR WHEN RUBBING YOUR HAND OVER THE WELD."
4. BEFORE WELDING, REMOVE ALL COATINGS WITHIN THE 6" OF THE AREA TO BE WELDED.
5. USE ASTM A-36 CARBON STEEL FOR ALL STRUCTURAL STEEL; USE A-307 BOLTS UNLESS OTHERWISE SPECIFIED.
6. FIELD FIT UP PROBLEMS OR CHANGES TO THE PLAN SHEETS ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

GENERAL PAINTING INSTRUCTIONS:

1. SHOP PAINTING:
ABRASIVE BLAST CLEAN ALL NEW STEEL TO COMMERCIAL GRADE (SSPC-S6) CONDITION AND APPLY A THREE COAT EPOXY/URETHANE SYSTEM AS FOLLOWS:

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	27	2.0	3.0
INTERMEDIATE	27	2.0	3.0
TOP COAT*	1074	2.0	3.0

2. EDGES TO BE WELDED IN THE FIELD SHALL NOT BE COATED (LEAVE A MINIMUM OF TWO INCHES BARE METAL.)

3. FIELD PAINTING:
EXTERIOR - SOLVENT CLEAN, SPOT POWER TOOL CLEAN ALL ABRADED AND WELDED AREAS TO A SSPC-SP11 GRAY METAL CONDITION AND SPOT COAT IN ACCORDANCE WITH COATINGS AS SPECIFIED ABOVE.
DRY INTERIOR - SPOT POWER TOOL CLEAN ALL AREAS OF BURNED COATING TO A SSPC-SP11 GRAY METAL CONDITION AND APPLY A TWO COAT EPOXY POLYAMIDE SYSTEM AS FOLLOWS:

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	FC20	3.0	5.0
TOP COAT*	FC20	3.0	5.0

WET INTERIOR - SPOT POWER TOOL CLEAN ALL AREAS OF BURNED COATING TO A SSPC-SP11 GRAY METAL CONDITION AND COAT IN ACCORDANCE WITH COATINGS AS SPECIFIED BELOW:

COAT	RAVEN SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	AQUATAPOXY	3.0	5.0
TOP COAT	AQUATAPOXY	3.0	5.0
TOTAL		6.0	10.0

4. PREPARATION OF GALVANIZED MATERIAL:
APPLY ONE COAT OF CLEAN 'N' ETCH AS PER MANUFACTURER'S RECOMMENDATIONS AND COAT IN ACCORDANCE WITH COATINGS AS SPECIFIED BELOW:

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	66 HI-BUILD EPOXOLINE	2.0	3.0
TOP COAT*	1074 ENDURA-SHIELD	2.0	3.0
TOTAL		4.0	6.0

5. PREPARATION OF ALL MISCELLANEOUS ANTENNA EQUIPMENT:
(ANTENNAS, COAX, MOUNTING BRACKETS)

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	135 CHEMBUILD EPOXY	3.0	4.0
TOP COAT*	1074 ENDURA-SHIELD	2.0	3.0
TOTAL		5.0	7.0

6. APPLY ALL COATINGS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

*TOP COAT COLOR TO MATCH EXISTING COLOR. (SEE TANK OWNER FOR RECORDS)

1 GENERAL NOTES



NO.	DESCRIPTION	DATE	BY		
			BE	TJS	
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8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

DRAWN BY:	BE
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SHEET TITLE
PAINTING AND WELDING NOTES

SHEET NUMBER
SP-3



1 EXISTING OVERALL STRUCTURE
SCALE: N.T.S.



2 EXISTING METER CENTER
SCALE: N.T.S.



3 EXISTING ACCESS DRIVE & GATE
SCALE: N.T.S.



4 EXISTING DOGHOUSE & H-FRAME TO BE REMOVED
SCALE: N.T.S.



5 EXISTING CABLE PENETRATION AT ANTENNA LEVEL
SCALE: N.T.S.



6 PROPOSED EQUIPMENT LOCATION
SCALE: N.T.S.

verizon
1515 WOODFIELD ROAD,
SUITE 1400
SCHAMBURG, ILLINOIS 60173
PHONE: (847) 619-5387
FAX: (847) 706-7415

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

NO.	DESCRIPTION	DATE	BY
1.	ISSUED FOR REVIEW UPDATE WITH NEW LINEWORK	09/30/19 12/20/19	BE TJS

LOC. # 236678

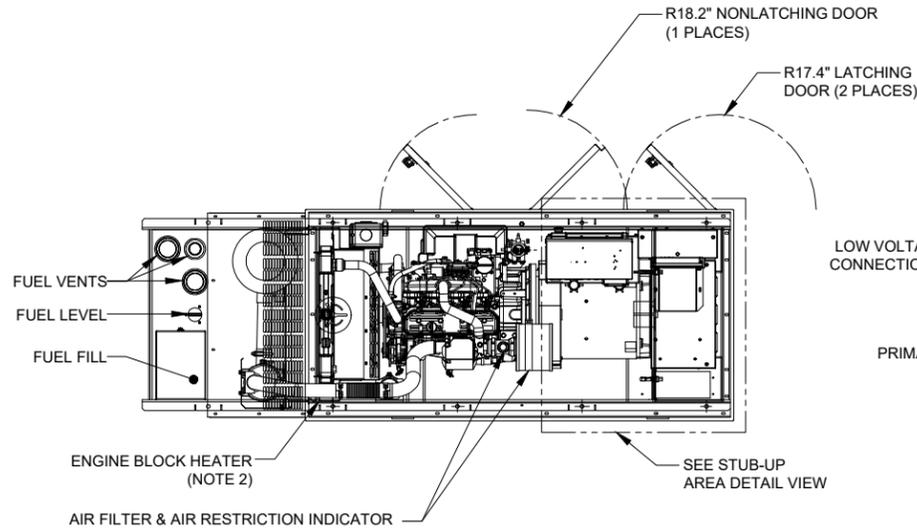
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8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

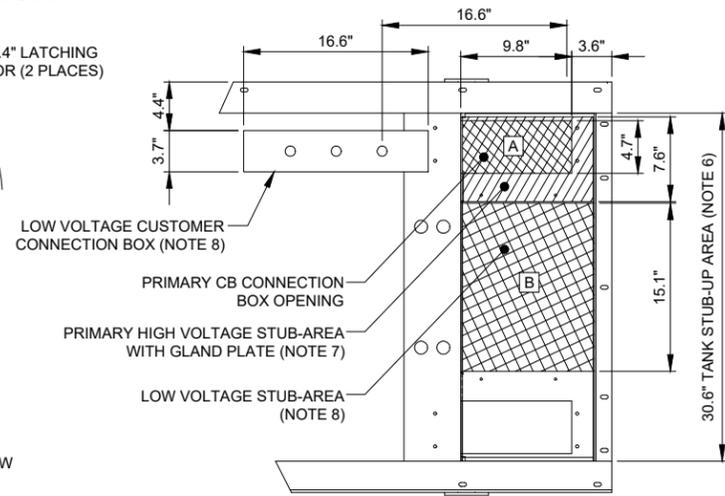
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SHEET TITLE
EXISTING SITE PHOTOS

SHEET NUMBER
P-1



TOP OR PLAN VIEW



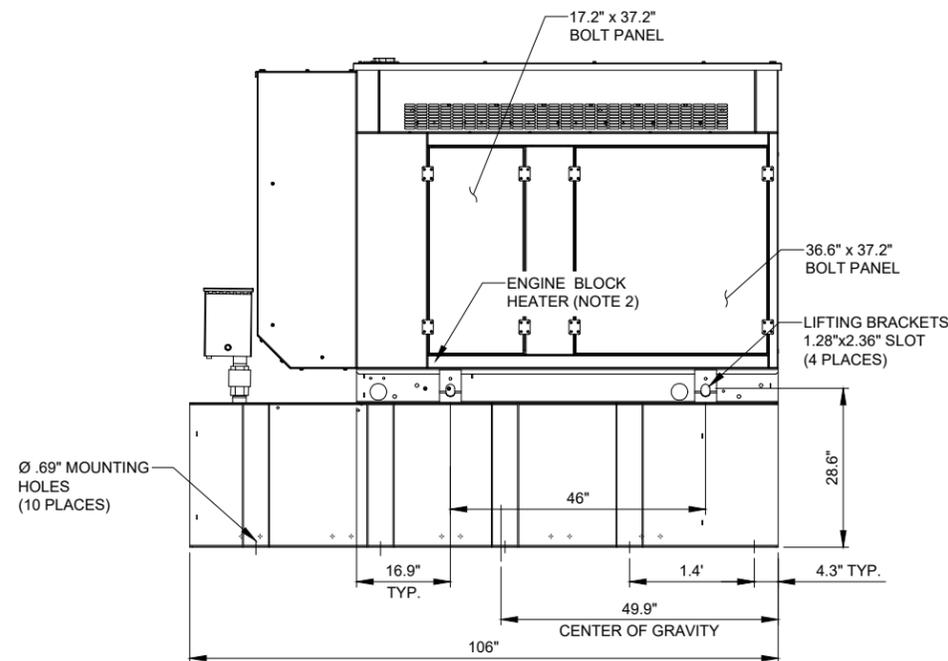
STUB-UP AREA DETAILED VIEW

RECOMMENDED ELECTRICAL STUB-UPS
(SEE DETAILED VIEW & TOP VIEW)

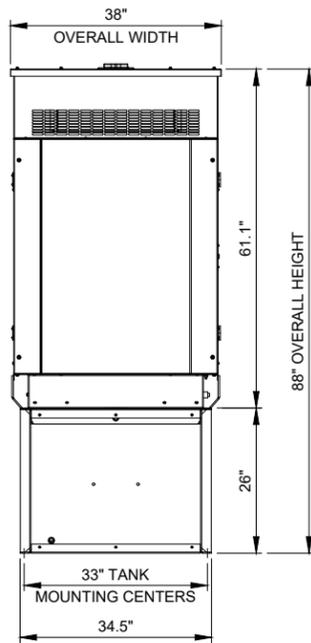
DESCRIPTION	INSIDE BASE
(HIGH VOLTAGE STUB UP) 1. AC LOAD LEAD CONDUIT AREA. 2. 120/240 VAC FROM UTILITY FOR OPTIONAL LOADS. (GLAND PLATE INCLUDED)	A
LOW VOLTAGE STUB UP 1. TRANSFER SWITCH/ COMMUNICATIONS CONDUITS. COMMUNICATIONS AND 2-WIRE START MUST NOT BE RUN IN CONDUIT W/ AC WIRING. (SEE NOTE 8)	B

NOTES

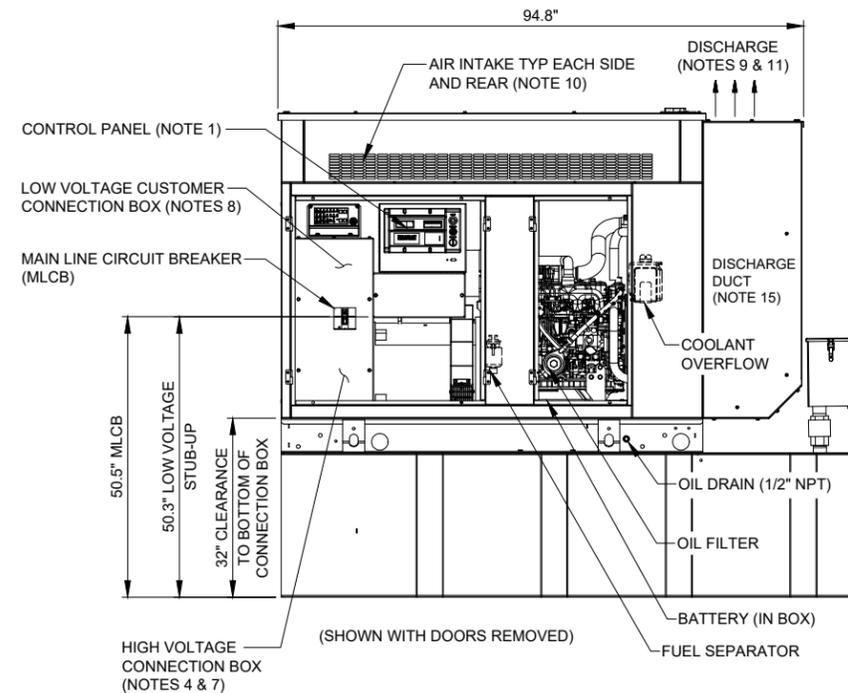
- CONTROL PANEL INCLUDES BATTERY CHARGER WITH THREE PRONG CORD.
- 1500W 120VAC ENGINE BLOCK HEATER WITH THREE PRONG CORD.
- 12 VOLT NEGATIVE GROUND SYSTEM.
- GENERATOR MUST BE GROUNDED.
- CENTER OF GRAVITY & WEIGHT MAY BE SHIFTED SLIGHTLY DUE TO UNIT OPTION.
- STUB-UPS: BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB UP AREA.
- HIGH VOLTAGE STUB-UP AREA INCLUDES THE AC LOAD LEAD CONNECTION TO THE MAIN LINE CIRCUIT BREAKER, THE NEUTRAL CONNECTION, AND AUXILIARY 120/240V CONNECTION.
- CONNECTION POINTS FOR CONTROL WIRES. BOTTOM OF LOW VOLTAGE CUSTOMER CONNECTION BOX HAS KNOCKOUTS FOR 1/2" AND 3/4" CONDUIT FITTINGS.
- MUST ALLOW FREE FLOW OF DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
- MUST ALLOW FREE FLOW OF INTAKE AIR. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
- GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM THE RADIATOR IS NOT RECIRCULATED.
- IT IS THE RESPONSIBILITY OF THE INSTALLATION TECHNICIAN TO ENSURE THAT THE GENERATOR INSTALLATION COMPLIES WITH ALL APPLICABLE CODES, STANDARDS, AND REGULATIONS.
- 132 GALLON USEABLE CAPACITY BASKET TANK IS INCLUDED WITH GENERATOR.
- UNIT IS SHIPPED WITH FUEL SUPPLY AND RETURN LINES DISCONNECTED AND PLUGGED BETWEEN ENGINE AND FUEL TANK. THIS HAS BEEN DONE TO FACILITATE PRESSURE TESTING OF THE TANK IN THE FIELD. FOR INFORMATION REGARDING CONNECTING THE FIELD TANK FIELD TESTING PROCEDURE (0E5082) SUPPLIED IN THE TANK LOOSE VENTS KIT, WHICH IS SHIPPED WITH THIS GENERATOR.
- SEE DRAWING 0C3850 FOR DISCHARGE DUCT REMOVAL. REMOVAL OF DUCT WILL PROVIDE ACCESS TO MUFFLER FOR SERVICING.



LEFT SIDE VIEW



REAR VIEW



RIGHT SIDE VIEW

NO.	DESCRIPTION	BY	DATE
1.	ISSUED FOR REVIEW	BE	09/20/19
	UPDATE WITH NEW LINEWORK	TJS	12/20/19

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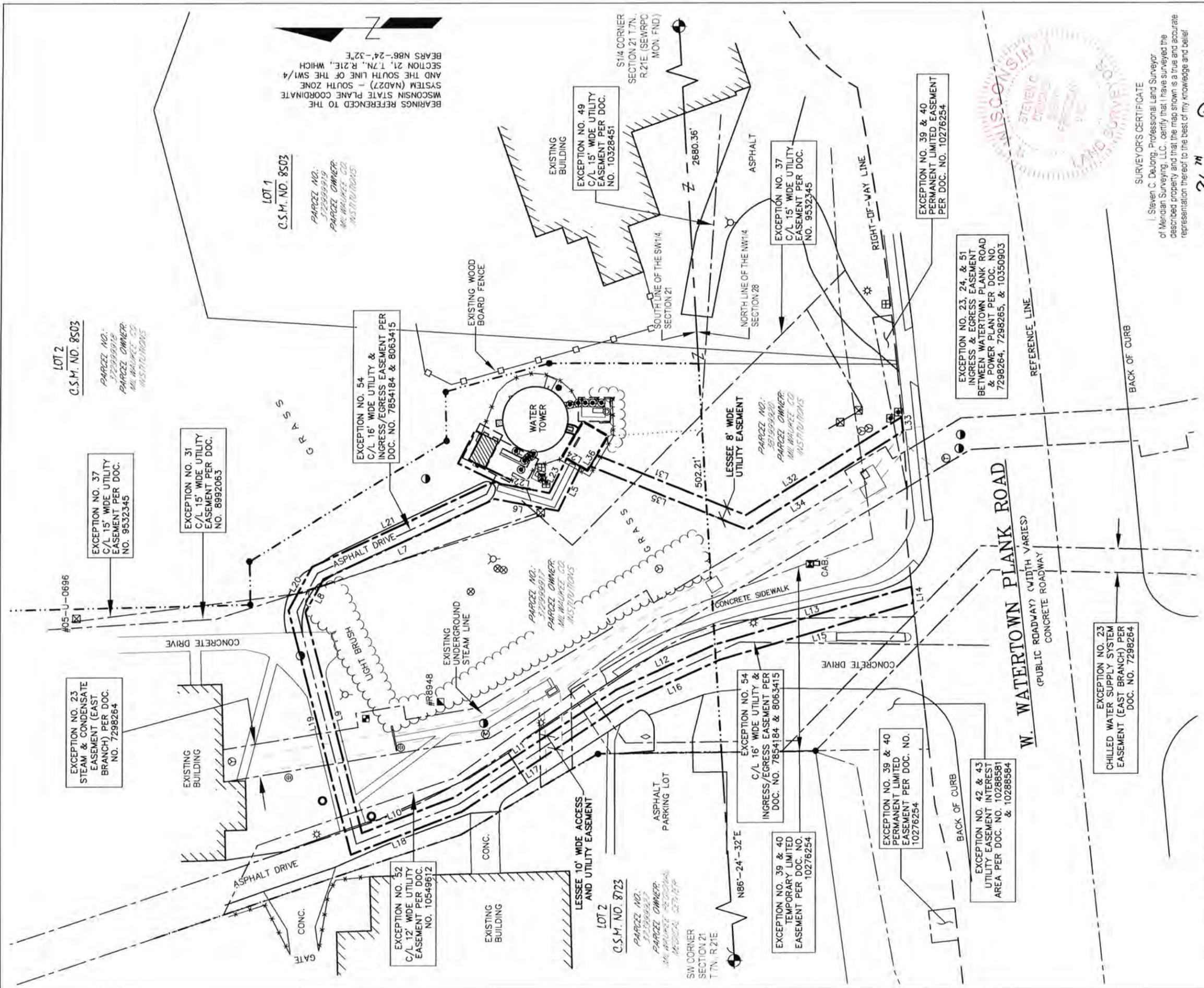
8948 WATERTOWN PLANK ROAD
WAUWATOSA, WI 53226

DRAWN BY:	BE
CHECKED BY:	DS
DATE:	09/26/19
PROJECT #:	33-3203

SHEET TITLE
GENERATOR CUT-SHEET

SHEET NUMBER

EX-1



BEARINGS REFERENCED TO THE WISCONSIN STATE PLANE COORDINATE SYSTEM (NAD27) - SOUTH ZONE AND THE SOUTH LINE OF THE SW1/4 SECTION 21, T.7N., R.21E., WHICH BEARS N86°-24'-32"E

WISCONSIN PROFESSIONAL LAND SURVEYOR
 STEVEN C. DELONG
 SURVEYOR'S CERTIFICATE
 I, Steven C. DeLong, Professional Land Surveyor of Meridian Surveying, LLC, certify that I have surveyed the described property and that the map shown is a true and accurate representation thereof to the best of my knowledge and belief.
 Dated this 26th day of DECEMBER, 2019.

SURVEYED FOR:

600 Busse Highway
 Park Ridge, IL 60068
 OFFICE: (847) 698-6400
 FAX: (678) 444-4472

SURVEYED FOR:

1515 WOODFIELD ROAD
 SUITE 1400
 SCHAUMBURG, IL 60173

MERIDIAN
 SURVEYING, LLC

N9637 Friendship Drive Office: 920-993-0881
 Kaukauna, WI 54130 Fax: 920-273-6037

SITE NAME:
 MILWAUKEE COUNTY WT

SITE NUMBER:
 236678

SITE ADDRESS:
 8948 WATERTOWN PLANK RD.
 WAUWATOSA, WI 53226

PROPERTY OWNER: TOWER OWNER:
 MILWAUKEE COUNTY MILWAUKEE COUNTY
 INSTITUTIONS 633 W. WISCONSIN AVE.
 2711 W. ELLIS ST. MILWAUKEE, WI 53203
 MILWAUKEE, WI 53208

PARCEL NO.: 372999917 (LEASE)
 372999920 (EASE.)

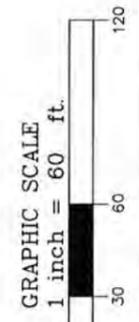
ZONED: SPECIAL PURPOSE DISTRICT

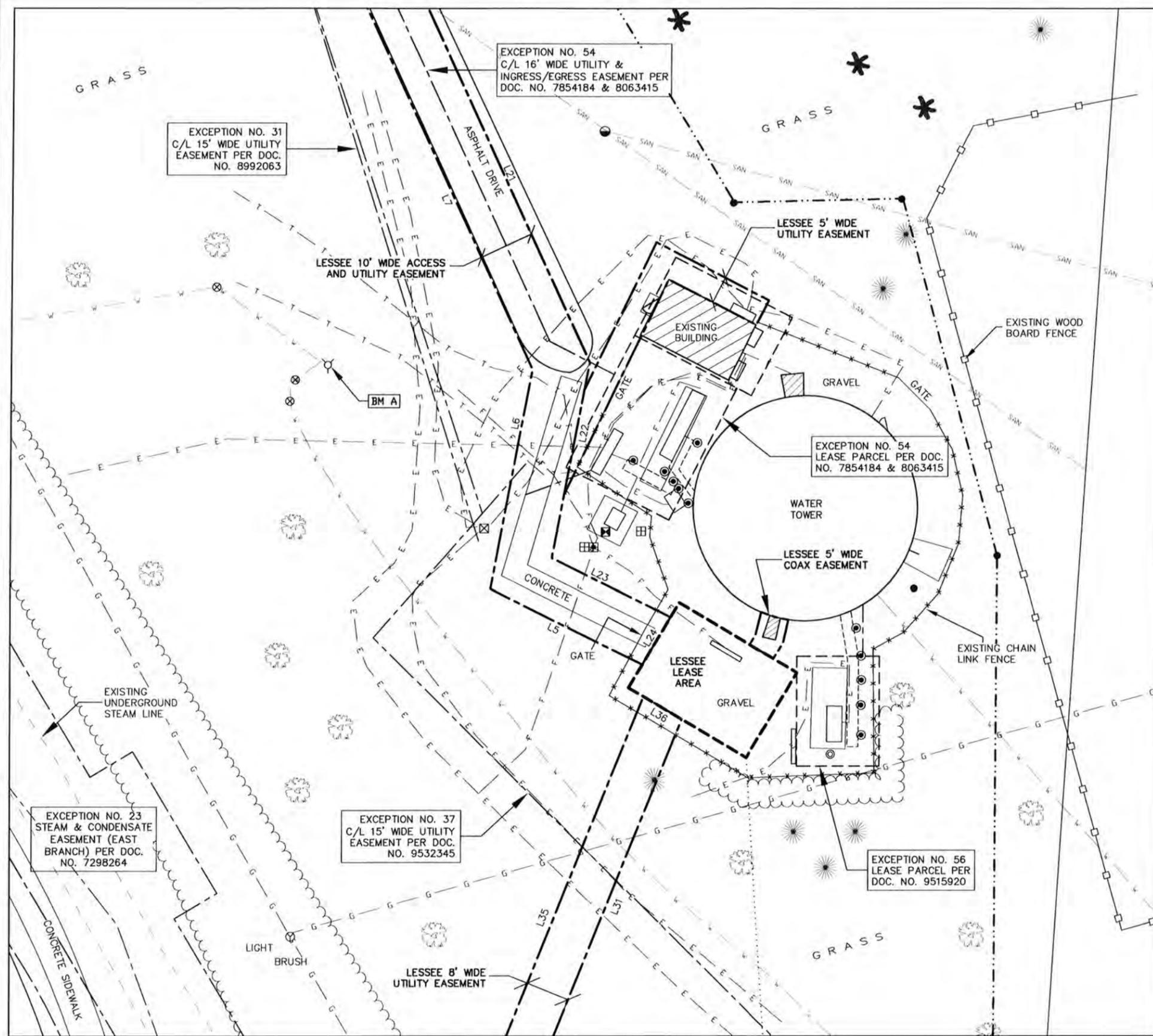
DEED REFERENCE: X

LEASE EXHIBIT
 FOR
 VERIZON WIRELESS PERSONAL
 COMMUNICATIONS LP d/b/a VERIZON WIRELESS
 BEING A PART OF THE SW1/4 OF THE
 SW1/4, SECTION 21, T.7N., R.21E., CITY
 OF WAUWATOSA, MILWAUKEE COUNTY,
 WISCONSIN

NO.	DATE	DESCRIPTION	BY
4	12/26/19	Added Lease and Easement	JD
3	12/16/19	Added Additional Locates	JB
2	6/25/19	Added Title Report	JB
1	5/29/19	Preliminary Survey	JB

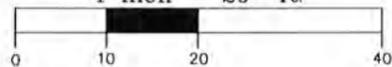
DRAWN BY:	J.B.	FIELD WORK DATE:	5-23-19
CHECKED BY:	S.C.D.	FIELD BOOK:	M-5, PG.2-3
JOB NO.:	11142	SHEET	1 OF 5





BENCHMARK INFORMATION
 SITE BENCHMARK: (BM A)
 TOP OF TAG BOLT ON HYDRANT,
 LOCATED WEST OF WATER TOWER
 ELEVATION: 745.82'

GRAPHIC SCALE
 1 inch = 20 ft.



-LEGEND-

- = 1" X 18" IRON PIPE SET
- = 1" IRON PIPE FOUND
- ⊙ = COUNTY MONUMENT FOUND
- ⊠ = ELECTRIC METER
- ⊞ = ELECTRIC TRANSFORMER
- ⊞ = FIBER OPTIC VAULT
- ⊞ = FIBER OPTIC PEDESTAL
- ⊞ = TELEPHONE PEDESTAL
- ⊞ = CABLE BOX
- ⊞ = LIGHT POLE
- ⊞ = WATER VALVE
- ⊞ = FIRE HYDRANT
- ⊞ = TELEPHONE MANHOLE
- ⊞ = STORM INLET
- ⊞ = MANHOLE
- ⊞ = GAS VALVE
- ⊞ = GROUNDING PORT
- ⊞ = METAL POST
- ⊞ = WOOD POST
- T — = BURIED TELEPHONE
- E — = BURIED ELECTRIC
- F — = BURIED FIBER OPTIC LINE
- G — = BURIED GAS LINE
- W — = WATER MAIN
- SAN — = SANITARY SEWER MAIN
- — — = PROPERTY LINE
- * = EXISTING PINE TREE
- ⊙ = EXISTING SPRUCE TREE
- ⊙ = EXISTING TREE



BEARINGS REFERENCED TO THE WISCONSIN STATE PLANE COORDINATE SYSTEM (NAD27) - SOUTH ZONE AND THE SOUTH LINE OF THE SW1/4 SECTION 21, T.7N., R.21E., WHICH BEARS N86°-24'-32"E



SURVEYOR'S CERTIFICATE
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Dated this 26TH day of DECEMBER, 2019.

Steven C. DeJong
 WISCONSIN PROFESSIONAL LAND SURVEYOR
 Steven C. DeJong, S-2791

SURVEYED FOR:

600 Busse Highway
 Park Ridge, IL 60068
 OFFICE: (847) 698-6400
 FAX: (678) 444-4472

SURVEYED FOR:

1515 WOODFIELD ROAD
 SUITE 1400
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MERIDIAN
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SITE NAME:
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 WAUWATOSA, WI 53226

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 MILWAUKEE COUNTY MILWAUKEE COUNTY
 INSTITUTIONS 633 W. WISCONSIN AVE.
 2711 W. ELLIS ST. MILWAUKEE, WI 53203
 MILWAUKEE, WI 53208

PARCEL NO.: 372999917 (LEASE)
 372999920 (EASE.)

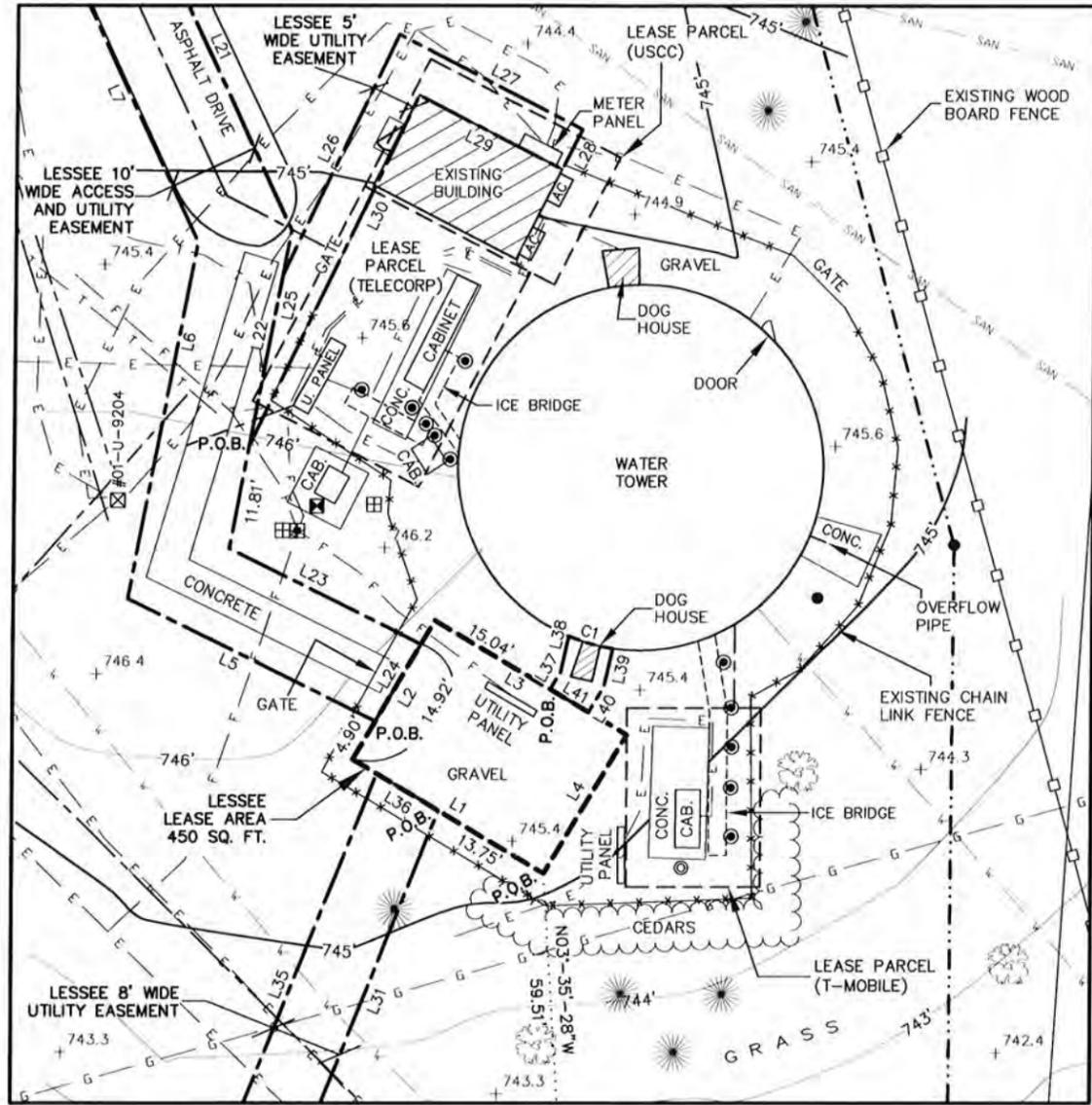
ZONED: SPECIAL PURPOSE DISTRICT

DEED REFERENCE: X

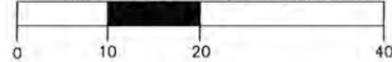
LEASE EXHIBIT
 FOR
 VERIZON WIRELESS PERSONAL
 COMMUNICATIONS LP d/b/a VERIZON WIRELESS
 BEING A PART OF THE SW1/4 OF THE
 SW1/4, SECTION 21, T.7N., R.21E., CITY
 OF WAUWATOSA, MILWAUKEE COUNTY,
 WISCONSIN

NO.	DATE	DESCRIPTION	BY
4	12/26/19	Added Lease and Easement	JD
3	12/16/19	Added Additional Locates	JB
2	6/25/19	Added Title Report	JB
1	5/29/19	Preliminary Survey	JB

DRAWN BY: J.B.	FIELD WORK DATE: 5-23-19
CHECKED BY: S.C.D.	FIELD BOOK: M-5, PG.2-3
JOB NO.: 11142	SHEET 2 OF 5



GRAPHIC SCALE
1 inch = 20 ft.



BEARINGS REFERENCED TO THE WISCONSIN STATE PLANE COORDINATE SYSTEM (NAD27) - SOUTH ZONE AND THE SOUTH LINE OF THE SW1/4 SECTION 21, T.7N., R.21E., WHICH BEARS N86°-24'-32"E

SURVEYOR'S CERTIFICATE

I, Steven C. DeJong, Professional Land Surveyor of Meridian Surveying, LLC., certify that I have surveyed the described property and that the map shown is a true and accurate representation thereof to the best of my knowledge and belief.

Dated this 26th day of DECEMBER, 2019.

Steven C. DeJong
WISCONSIN PROFESSIONAL LAND SURVEYOR
Steven C. DeJong, S-2791



CALL DIGGERS HOTLINE TOLL FREE 1(800)242-8511 OPERATES 24 HOURS A DAY 365 DAYS A YEAR



-LEGEND-

- = 1" X 18" IRON PIPE SET
- = 1" IRON PIPE FOUND
- ⊕ = COUNTY MONUMENT FOUND
- ⊖ = ELECTRIC METER
- ⊞ = ELECTRIC TRANSFORMER
- ⊠ = FIBER OPTIC VAULT
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- SAN — = SANITARY SEWER MAIN
- — — = PROPERTY LINE
- * = EXISTING PINE TREE
- ⊙ = EXISTING SPRUCE TREE
- ⊙ = EXISTING TREE

SURVEY NOTES:

-THE LOCATION OF THE EXISTING UTILITIES, AS SHOWN ON THIS PLAN, ARE APPROXIMATE ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL LOCATION AND DEPTH OF ALL EXISTING UTILITIES. THE OWNER AND THE SURVEYOR SHALL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATION FROM THE LOCATION SHOWN.

-DIGGERS HOTLINE TICKET NO. 20192011414.

-PRIVATE UTILITIES MARKED ON 5-23-2019.

-THIS IS NOT A BOUNDARY SURVEY OF THE PARENT PARCEL. THIS SURVEY REPRESENTS THE LEASE AREA AND EASEMENTS ONLY.

-ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD MAPS, THE EXISTING TELECOMMUNICATIONS SITE IS LOCATED IN ZONE "X", FIRM PANEL NO. 55133C0250G, DATED NOVEMBER 5 2014, AND IS NOT IN A SPECIAL FLOOD HAZARD AREA. ZONE "X" IS DESIGNATED AS: "AREA OF MINIMAL FLOOD HAZARD".

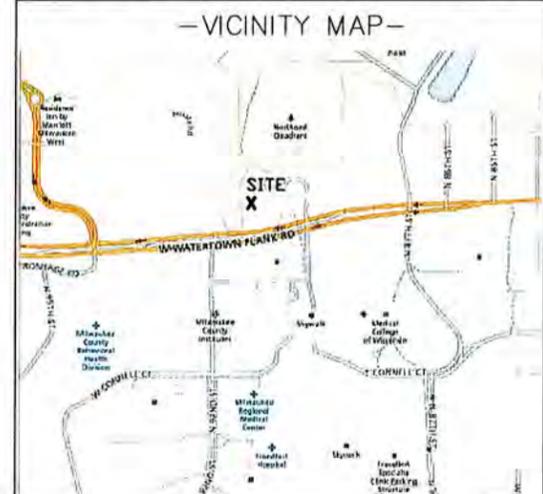
WETLAND NOTE:
-THE PRESENCE AND LOCATION OF WETLANDS HAS NOT BEEN DETERMINED ON THIS PROPERTY. WETLANDS SHOULD ONLY BE DETERMINED BY ACTUAL FIELD DELINEATION PERFORMED BY A QUALIFIED WETLAND SPECIALIST.

LINE TABLE				
Line #	Direction	Length	L21	S24°56'20"E 124.73'
L1	N59°23'24"W	25.00'	L22	S10°39'28"W 36.22'
L2	N30°36'36"E	18.00'	L23	S63°38'42"E 24.09'
L3	S59°23'24"E	25.00'	L24	S30°36'36"W 10.03'
L4	S30°36'36"W	18.00'	L25	N10°39'28"E 19.40'
L5	N63°38'42"W	30.93'	L26	N25°34'40"E 29.76'
L6	N10°39'28"E	40.58'	L27	S62°45'49"E 23.16'
L7	N24°56'20"W	118.21'	L28	S26°47'13"W 5.00'
L8	N61°32'33"W	23.53'	L29	N62°45'49"W 18.06'
L9	S75°31'14"W	142.61'	L30	S25°34'40"W 43.36'
L10	S21°03'58"E	62.01'	L31	S21°51'37"W 101.40'
L11	S33°31'32"E	121.03'	L32	S32°06'28"E 115.16'
L12	S24°24'20"E	68.47'	L33	S85°08'57"W 9.00'
L13	S16°16'34"E	128.37'	L34	N32°06'28"W 115.11'
L14	S83°49'00"W	10.16'	L35	N21°51'37"E 106.71'
L15	N16°16'34"W	125.88'	L36	S59°23'24"E 8.09'
L16	N24°24'20"W	66.96'	L37	N30°34'55"E 2.21'
L17	N33°31'32"W	121.33'	L38	N12°39'06"E 4.11'
L18	N21°03'58"W	74.33'	L39	S12°39'06"W 4.32'
L19	N75°31'14"E	157.77'	L40	S30°34'55"W 3.34'
L20	S61°32'33"E	30.77'	L41	N59°23'24"W 5.00'

CURVE TABLE				
Curve #	Radius	Length	Delta	Chord
C1	20.47'	5.12	014°20'12"	S74°22'54"E 5.11'

EXISTING WATER TOWER BASE

LATITUDE: 43°-02'-45.67"
LONGITUDE: 88°-01'-32.30"
(Per North American Datum of 83/2011)
Top of Lightning Rod Elevation: 944.8'
(Highest Point)
Top of Water Tower Elevation: 927.1'
Ground Elevation: 745.6'
(Per North American Vertical Datum of 1988)



SURVEYED FOR:

600 Busse Highway
Park Ridge, IL 60068
OFFICE: (847) 698-6400
FAX: (678) 444-4472

SURVEYED FOR:

1515 WOODFIELD ROAD
SUITE 1400
SCHAUMBURG, IL 60173

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SITE NAME:
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MILWAUKEE COUNTY MILWAUKEE COUNTY
INSTITUTIONS 633 W. WISCONSIN AVE.
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MILWAUKEE, WI 53208

PARCEL NO.: 372999917 (LEASE)
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ZONED: SPECIAL PURPOSE DISTRICT

DEED REFERENCE: X

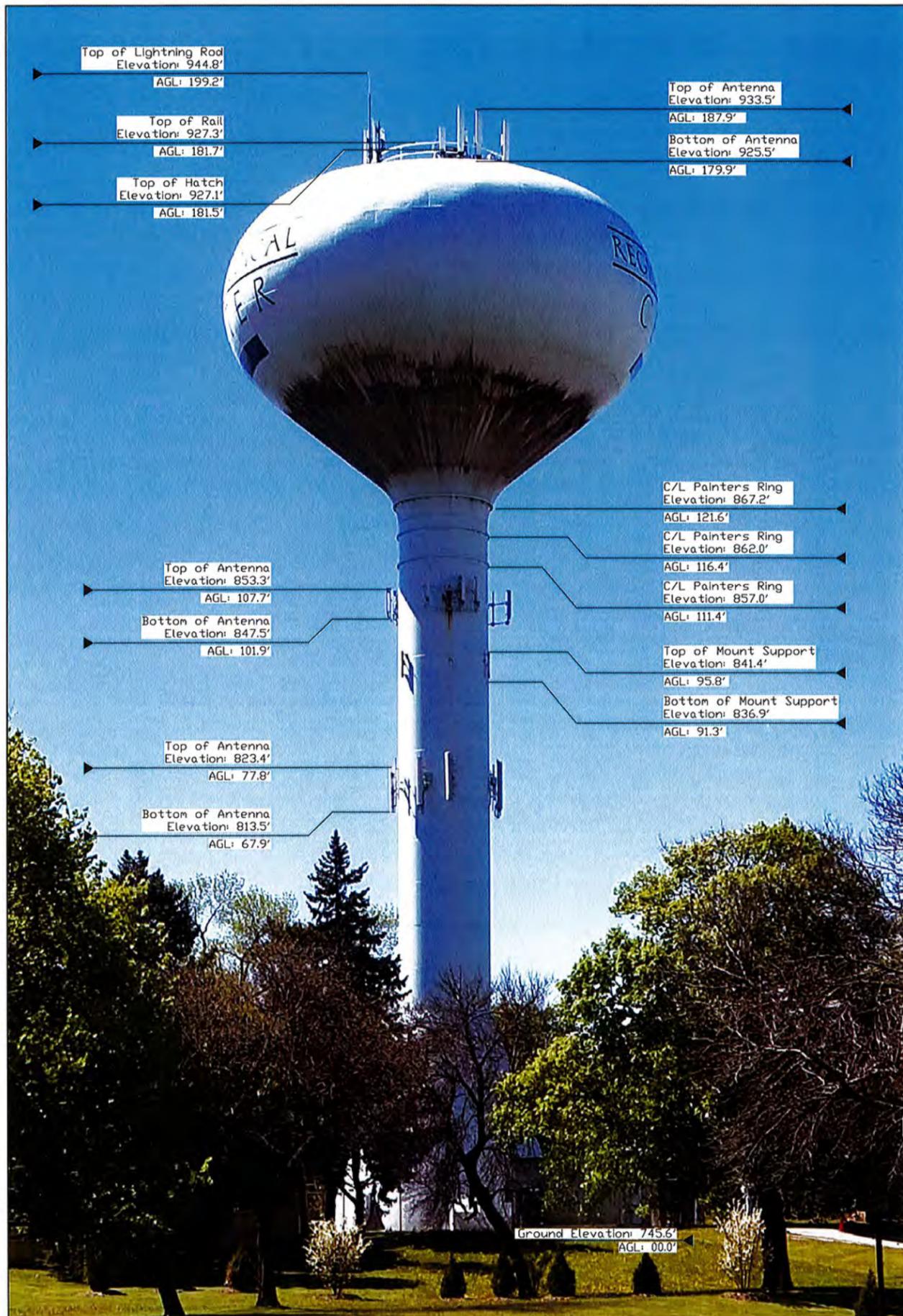
LEASE EXHIBIT
FOR
VERIZON WIRELESS PERSONAL
COMMUNICATIONS LP d/b/a VERIZON WIRELESS
BEING A PART OF THE SW1/4 OF THE
SW1/4, SECTION 21, T.7N., R.21E., CITY
OF WAUWATOSA, MILWAUKEE COUNTY,
WISCONSIN

NO.	DATE	DESCRIPTION	BY
4	12/26/19	Added Lease and Easement	JD
3	12/16/19	Added Additional Locates	JB
2	6/25/19	Added Title Report	JB
1	5/29/19	Preliminary Survey	JB

DRAWN BY: J.B. FIELD WORK DATE: 5-23-19

CHECKED BY: S.C.D. FIELD BOOK: M-5, PG.2-3

JOB NO.: 11142 SHEET 3 OF 5



LESSEE LEASE AREA

A part of the Southwest Quarter (SW1/4) of the Southwest Quarter (SW1/4) of Section Twenty-One (21), Township Seven (7) North, Range Twenty-One (21) East, City of Milwaukee, Milwaukee County, Wisconsin containing 450 square feet (0.010 acres) of land and being described by:

Commencing at the Southwest Corner of said Section 21; thence N86°-24'-32"E 502.21 feet along the south line of the SW1/4 of said Section 21; thence N03°-35'-28"W 59.51 feet to the point of beginning; thence N59°-23'-24"W 25.00 feet; thence N30°-36'-36"E 18.00 feet; thence S59°-23'-24"E 25.00 feet; thence S30°-36'-36"W 18.00 feet to the point of beginning. Being subject to any and all easements and restrictions of record

LESSEE 10' WIDE ACCESS & UTILITY EASEMENT

A part of the Southwest Quarter (SW1/4) of the Southwest Quarter (SW1/4) of Section Twenty-One (21) and also a part of the Northwest Quarter (NW1/4) of the Northwest Quarter (NW1/4) of Section Twenty-Eight (28) all in Township Seven (7) North, Range Twenty-One (21) East, City of Milwaukee, Milwaukee County, Wisconsin containing 7,489 square feet (0.172 acres) of land and being described by:

Commencing at the Southwest Corner of said Section 21; thence N86°-24'-32"E 502.21 feet along the south line of the SW1/4 of said Section 21; thence N03°-35'-28"W 59.51 feet thence N59°-23'-24"W 25.00 feet; thence N30°-36'-36"E 4.90 feet to the point of beginning; thence N63°-38'-42"W 30.93 feet; thence N10°-39'-28"E 40.58 feet; thence N24°-56'-20"W 118.21 feet; thence N61°-32'-33"W 23.53 feet; thence S75°-31'-14"W 142.61 feet; thence S21°-03'-58"E 62.01 feet; thence S33°-31'-32"E 121.03 feet; thence S24°-24'-20"E 68.47 feet; thence S16°-16'-34"E 128.37 feet to a point on the north line of W. Watertown Plank Road; thence S83°-49'-00"W 10.16 feet along said north line of W. Watertown Plank Road; thence N16°-16'-34"W 125.88 feet; thence N24°-24'-20"W 66.96 feet; thence N33°-31'-32"W 121.33 feet; thence N21°-03'-58"W 74.33 feet; thence N75°-31'-14"E 157.77 feet; thence S61°-32'-33"E 30.77 feet; thence S24°-56'-20"E 124.73 feet; thence S10°-39'-28"W 36.22 feet; thence S63°-38'-42"E 24.09 feet; thence S30°-36'-36"W 10.03 feet to the point of beginning. Being subject to any and all easements and restrictions of record.

LESSEE 5' WIDE UTILITY EASEMENT

A part of the Southwest Quarter (SW1/4) of the Southwest Quarter (SW1/4) of Section Twenty-One (21), Township Seven (7) North, Range Twenty-One (21) East, City of Milwaukee, Milwaukee County, Wisconsin containing 286 square feet (0.007 acres) of land and being described by:

Commencing at the Southwest Corner of said Section 21; thence N86°-24'-32"E 502.21 feet along the south line of the SW1/4 of said Section 21; thence N03°-35'-28"W 59.51 feet thence N59°-23'-24"W 25.00 feet; thence N30°-36'-36"E 14.92 feet; thence N63°-38'-42"W 24.09 feet; thence N10°-39'-28"E 11.81 feet to the point of beginning; thence continue N10°-39'-28"E 19.40 feet; thence N25°-34'-40"E 29.76 feet; thence S62°-45'-49"E 23.16 feet; thence S26°-47'-13"W 5.00 feet; thence N62°-45'-49"W 18.06 feet; thence S25°-34'-40"W 43.36 feet to the point of beginning. Being subject to any and all easements and restrictions of record.

LESSEE 8' WIDE UTILITY EASEMENT

A part of the Southwest Quarter (SW1/4) of the Southwest Quarter (SW1/4) of Section Twenty-One (21), Township Seven (7) North, Range Twenty-One (21) East, City of Milwaukee, Milwaukee County, Wisconsin containing 1,753 square feet (0.040 acres) of land and being described by:

Commencing at the Southwest Corner of said Section 21; thence N86°-24'-32"E 502.21 feet along the south line of the SW1/4 of said Section 21; thence N03°-35'-28"W 59.51 feet; thence N59°-23'-24"W 13.75 feet to the point of beginning; thence S21°-51'-37"W 101.40 feet; thence S32°-06'-28"E 115.16 feet to a point on the north line of W. Watertown Plank Road; thence S85°-08'-57"W 9.00 feet along said north line of W. Watertown Plank Road; thence N32°-06'-28"W 115.11 feet; thence N21°-51'-37"E 106.71 feet; thence S59°-23'-24"E 8.09 feet to the point of beginning. Being subject to any and all easements and restrictions of record.

LESSEE 5' WIDE COAX EASEMENT

A part of the Southwest Quarter (SW1/4) of the Southwest Quarter (SW1/4) of Section Twenty-One (21), Township Seven (7) North, Range Twenty-One (21) East, City of Milwaukee, Milwaukee County, Wisconsin containing 35 square feet of land and being described by:

Commencing at the Southwest Corner of said Section 21; thence N86°-24'-32"E 502.21 feet along the south line of the SW1/4 of said Section 21; thence N03°-35'-28"W 59.51 feet; thence N59°-23'-24"W 25.00 feet; thence N30°-36'-36"E 18.00 feet; thence S59°-23'-24"E 15.04 feet to the point of beginning; thence N30°-34'-55"E 2.21 feet; thence N12°-39'-06"E 4.11 feet; thence 5.12 feet southeasterly along the arc of a curve to the left, having a radius of 20.47 feet and a chord of which bears S74°-22'-54"E 5.11 feet; thence S12°-39'-06"W 4.32 feet; thence S30°-34'-55"W 3.34 feet; thence N59°-23'-24"W 5.00 feet to the point of beginning. Being subject to any and all easements and restrictions of record.

WISCONSIN
STEVEN C. DEJONG
S 2731
FEBRUARY 2019
December 22, 2019

SURVEYED FOR:



600 Busse Highway
Park Ridge, IL 60068
OFFICE: (847) 698-6400
FAX: (678) 444-4472

SURVEYED FOR:



1515 WOODFIELD ROAD
SUITE 1400
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SITE NAME:
MILWAUKEE COUNTY WT

SITE NUMBER:
236678

SITE ADDRESS:
8948 WATERTOWN PLANK RD.
WAUWATOSA, WI 53226

PROPERTY OWNER: MILWAUKEE COUNTY INSTITUTIONS
TOWER OWNER: MILWAUKEE COUNTY 633 W. WISCONSIN AVE. MILWAUKEE, WI 53203

PARCEL NO.: 372999917 (LEASE)
372999920 (EASE.)

ZONED: SPECIAL PURPOSE DISTRICT

DEED REFERENCE: X

LEASE EXHIBIT

FOR
VERIZON WIRELESS PERSONAL COMMUNICATIONS LP d/b/a VERIZON WIRELESS
BEING A PART OF THE SW1/4 OF THE SW1/4, SECTION 21, T.7N., R.21E., CITY OF WAUWATOSA, MILWAUKEE COUNTY, WISCONSIN

NO.	DATE	DESCRIPTION	BY
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3	12/16/19	Added Additional Locates	JB
2	6/25/19	Added Title Report	JB
1	5/29/19	Preliminary Survey	JB

DRAWN BY: J.B.	FIELD WORK DATE: 5-23-19
CHECKED BY: S.C.D.	FIELD BOOK: M-5, PG.2-3
JOB NO.: 11142	SHEET 4 OF 5

PARENT PARCEL

Lands in the Northwest 1/4 of Section 28, Town 7 North, Range 21 East, in the City of Wauwatosa, County of Milwaukee, State of Wisconsin, described as those lands lying North of the South line of Watertown Plank Road except Street and further excepting those lands described in Quit Claim Deed recorded as Document No. 7298266, as corrected by Quit Claim Deed recorded as Document No. 7390971, further excepting Certified Survey Map Nos. 6548 and 8503.

Note: Property address: vacant land on Watertown Plank Road

Note: Tax ID# 381-9999-20

AND

All that part of the South 1/2 of the Southwest 1/4 of Section 21, Township 7 North, Range 21 East, lying Southwest of the railroad, in the City of Wauwatosa, County of Milwaukee, State of Wisconsin, EXCEPTING THEREFROM Sanderson's Subdivision, as platted.

FURTHER EXCEPTING THEREFROM that part described as follows:

Beginning at the Northwest corner of Sanderson's Subdivision; thence North 20 feet; thence Northeast 136.85 feet; thence South 16.81 feet; thence Northeast 15.08 feet; thence Southwest 152.57 feet to the point of beginning.

FURTHER EXCEPTING THEREFROM those lands described in Quit Claim Deed, Option and Right of First Refusal from Milwaukee County to Wisconsin Electric Power Company dated December 2, 1996 and recorded December 3, 1996 as Document No. 7298266 and corrected by Correction Deed dated June 1, 1997 and recorded July 9, 1997 as Document No. 7390971.

FURTHER EXCEPTING THEREFROM Certified Survey Map No. 6548 recorded August 11, 1998 as Document No. 7580648 and also excepting that part described as follows:

Commencing on the West line of Certified Survey Map No. 6548, 124.60 feet North of the intersection of the South line of said 1/4 Section and the West line of Certified Survey Map No. 6548; thence Southwest 70 feet; thence Northwest 206.64 feet; thence Northeast 70 feet; thence Southeast 206.64 feet to the point of beginning.

FURTHER EXCEPTING THEREFROM those lands described in the following documents:

Certified Survey Map No. 7687 recorded December 20, 2005 as Document No. 9150942 and corrected by Affidavit of Correction recorded March 30, 2012 as Document No. 10099466; Certified Survey Map No. 8330 recorded February 16, 2011 as Document No. 9971339; Certified Survey Map No. 8398 recorded October 28, 2011 as Document No. 10047530; Certified Survey Map No. 8503 recorded December 19, 2012 as Document No. 10196089; Award of Damages recorded July 30, 2013 as Document No. 10276264.

ALSO

All that part of the North 1/2 of the Southwest 1/4 of Section 21, Township 7 North, Range 21 East, lying Southwest of the railroad, in the City of Wauwatosa, County of Milwaukee, State of Wisconsin, EXCEPTING THEREFROM Certified Survey Map No. 7687, Certified Survey Map No. 8330 and Award of Damages recorded as Document No. 10276264.

Note: Tax ID# 372-9999-17

TITLE REPORT REVIEW

TITLE REPORT: NEAR NORTH NATIONAL TITLE LLC

COMMITMENT NO.: W11905383

EFFECTIVE DATE: May 31, 2019

FEE SIMPLE TITLE VESTED IN: Milwaukee County, a municipal corporation

NOTE: THE STATEMENT OF APPLICABILITY REFERS TO THE LEASE SITE AND ANY EASEMENTS PERTINENT THEREUNTO WHERE SPECIFIC ENCUMBRANCES AFFECT THE LEASE SITE AND/OR A PERTINENT EASEMENT, THEY ARE IDENTIFIED AS SUCH.

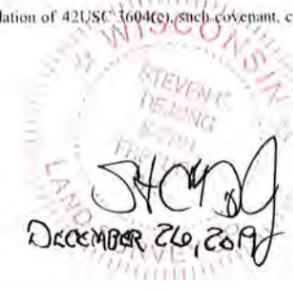
SCHEDULE B-II

(1-10) THESE ARE GENERAL STATEMENTS AND NOT SPECIFIC ENCUMBRANCES

- (11) Ordinance establishing widths for highways in Milwaukee County on the state trunk highway system, the county trunk highway system, and the county system of prospective state highways and other matters contained in the instrument recorded November 12, 1926 as Document No.1410. **This particular document has been superseded by more recent right of way plats and does not apply. All current roadway right of ways are plotted and shown.**
- (12) Utility Easement and other matters contained in the instrument recorded May 3, 1937 as Document No. 3575475. **This easement is blanket in nature and cannot be specifically defined. Applies to parent parcel, but cannot be accurately mapped.**
- (13) Utility Easement and other matters contained in the instrument recorded April 28, 1961 as Document No. 3875399. **Does not apply.**
- (14) Utility Easement and other matters contained in the instrument recorded April 28, 1961 as Document No. 3875400. **Does not apply.**
- (15) Sewer Main Easement and other matters contained in the instrument recorded July 18, 1974 as Document No. 4857078. **Does not apply.**
- (16) Certificate of Compensation and other matters contained in the instrument recorded December 17, 1987 as Document No. 6132597. **Does not apply.**
- (17) Easement Agreement and other matters contained in the instrument recorded December 17, 1987 as Document No. 6132598; together with Revised Easement recorded August 31, 1990 as Document No. 6412938 and re-recorded September 10, 1990 as Document No. 6415258; also together with Supplemental Easement Agreement recorded March 29, 1993 as Document No. 6745405. **Does not apply.**
- (18) Water Main Easement and other matters contained in the instrument recorded March 29, 1989 as Document No. 6263343. **Does not apply.**
- (19) Utility Easement and other matters contained in the instrument recorded July 7, 1989 as Document No. 6291257. **Does not apply.**
- (20) Utility Easement and other matters contained in the instrument recorded June 21, 1990 as Document No. 6390928. **Does not apply.**
- (21) Utility Easement and other matters contained in the instrument recorded April 24, 1991 as Document No. 6475651. **Does not apply.**
- (22) Utility Easement and other matters contained in the instrument recorded May 23, 1991 as Document No. 6484269. **Does not apply.**
- (23) Easement Agreement and other matters contained in the instrument recorded December 3, 1996 as Document No. 7298264; together with Steam Easement recorded February 28, 2005 as Document No. 8966618 and re-recorded November 8, 2005 as Document No. 9127248; also together with Conveyance of Rights in Land recorded August 29, 2013 as Document No. 10288581; also together with Quit Claim Deed by Utility recorded August 29, 2013 as Document No. 10288584. **Applies to parent parcel and is plotted and shown.**

- (24) Subordination Agreement and other matters contained in the instrument recorded December 3, 1996 as Document No. 7298265. **Applies to parent parcel and is plotted and shown.**
- (25) Wisconsin Electric Distribution Easement Overhead and Underground and other matters contained in the instrument recorded April 2, 1999 as Document No. 7721424. **Does not apply.**
- (26) Notice of Location of Catalogued Burial Site and other matters contained in the instrument recorded July 30, 2001 as Document No. 8107693. **Does not apply.**
- (27) Notice of Location of Catalogued Burial Site and other matters contained in the instrument recorded July 30, 2001 as Document No. 8107694. **Does not apply.**
- (28) Wisconsin Electric Distribution Easement Overhead and Underground and other matters contained in the instrument recorded August 30, 2002 as Document No. 8339388; together with Conveyance of Rights in Land recorded August 29, 2013 as Document No. 10288581. **Does not apply.**
- (29) Wisconsin Electric Distribution Easement Overhead and Underground and other matters contained in the instrument recorded August 1, 2003 as Document No. 8586952; together with Conveyance of Rights in Land recorded August 29, 2013 as Document No. 10288581. **Does not apply.**
- (30) Permanent Easement, Temporary Construction Easement, Permanent Access Easement, Temporary Access Easement and Tunnel Easement and other matters contained in the instrument recorded October 31, 2003 as Document No. 8666892. **Does not apply.**
- (31) Wisconsin Electric Distribution Easement Underground and other matters contained in the instrument recorded April 13, 2005 as Document No. 8992063. **Applies to parent parcel and is plotted and shown.**
- (32) Utility Easement and other matters contained in the instrument recorded November 15, 2005 as Document No. 9131827.
A Correction Instrument was recorded July 12, 2012 as Document No. 10137834, which corrected an instrument recorded November 15, 2005 as Document No. 9131827 as follows: The easement area was described incorrectly. **Does not apply.**
- (33) Affidavit and other matters contained in the instrument recorded December 5, 2005 as Document No. 9142885. **Does not apply.**
- (34) Wisconsin Electric Distribution Easement Underground and other matters contained in the instrument recorded November 2, 2006 as Document No. 9332980. **Does not apply.**
- (35) Permanent Access Easements and Temporary Construction Easement and other matters contained in the instrument recorded January 30, 2007 as Document No. 9378043. **Does not apply.**
- (36) Utility Easement and other matters contained in the instrument recorded July 16, 2007 as Document No. 9463733. **Does not apply.**
- (37) Utility Easement and other matters contained in the instrument recorded December 6, 2007 as Document No. 9532345. **Applies to parent parcel and is plotted and shown.**
- (38) Permanent Easement and other matters contained in the instrument recorded October 15, 2008 as Document No. 9660640. **Does not apply.**
- (39) Notice of Lis Pendens and other matters contained in the instrument recorded July 17, 2013 as Document No. 10270831; together with Award of Damages recorded July 30, 2013 as Document No. 10276264. **This document created the right of way of W. Watertown Plank Road along with several easements included within the document. The current right of way is plotted and shown. Easements that affect parent parcel are plotted and shown.**
- (40) Award of Damages and other matters contained in the instrument recorded July 30, 2013 as Document No. 10276264. **This document created the right of way of W. Watertown Plank Road along with several easements included within the document. The current right of way is plotted and shown. Easements that affect parent parcel are plotted and shown.**
- (41) Conveyance of Rights in Land and other matters contained in the instrument recorded August 26, 2013 as Document No. 10286705. **Does not apply.**
- (42) Conveyance of Rights in Land and other matters contained in the instrument recorded August 29, 2013 as Document No. 10288581. **Applies to parent parcel and is plotted and shown.**
- (43) Easement, restrictions and other matters contained in the Quit Claim Deed by Utility recorded August 29, 2013 as Document No. 10288584. **Applies to parent parcel and is plotted and shown.**
- (44) Conveyance of Rights in Land and other matters contained in the instrument recorded September 10, 2013 as Document No. 10291953. **This easement is blanket in nature and cannot be specifically defined. Applies to parent parcel, but cannot be accurately mapped.**
- (45) Quit Claim Deed to City of Wauwatosa and other matters contained in the instrument recorded September 16, 2013 as Document No. 10293791. **Does not apply.**
- (46) Steam Easement and other matters contained in the instrument recorded December 9, 2013 as Document No. 10319290. **Does not apply.**
- (47) Utility Easement and other matters contained in the instrument recorded January 16, 2014 as Document No. 10328447. **Does not apply.**
- (48) Distribution Easement Underground Electric and other matters contained in the instrument recorded January 16, 2014 as Document No. 10328450. **Does not apply.**
- (49) Utility Easement and other matters contained in the instrument recorded January 16, 2014 as Document No. 10328451. **Applies to parent parcel and is plotted and shown.**
- (50) Utility Easement and other matters contained in the instrument recorded January 16, 2014 as Document No. 10328456. **Does not apply.**
- (51) Access Easement and other matters contained in the instrument recorded April 15, 2014 as Document No. 10350903. **Applies to parent parcel and is plotted and shown.**
- (52) Utility Easement and other matters contained in the instrument recorded March 24, 2016 as Document No. 10549612. **Applies to parent parcel and is plotted and shown.**
- (53) Permanent Easement for Berm and other matters contained in the instrument recorded October 12, 2016 as Document No. 10612231. **Does not apply.**
- (54) Terms, conditions, provisions and other matters contained in that certain unrecorded Option and Lease Agreement entered into by and between Milwaukee County and INDUS, Inc. dated November 11, 1998 as evidenced by Memorandum of Lease recorded January 3, 2000 as Document No. 7854184; together with Notice of Lease Assignment recorded May 10, 2001 as Document No. 8063415. **Applies to parent parcel and is plotted and shown.**
- (55) Terms, conditions, provisions and other matters contained in that certain unrecorded Lease Agreement by and between Milwaukee County, a Wisconsin body corporate and Fitness Development Associates, LLC, a Wisconsin limited liability company dated July 29, 1998; together with Amendment One to Fitness Development Associates, LLC Lease for 8700 Watertown Plank Rd. recorded February 20, 2002 as Document No. 8228336. **Does not apply.**
- (56) Terms, conditions, provisions and other matters contained in that certain unrecorded License Agreement by and between County of Milwaukee and T-Mobile Central LLC, a Delaware limited liability company as evidenced by Memorandum of License recorded October 29, 2007 as Document No. 9515920. **Applies to parent parcel and is plotted and shown.**
- (57) Rights of tenants under existing unrecorded leases and of all parties claiming by, through or under them.

If any document referenced herein contains a covenant, condition or restriction which is in violation of 42 USC 1604(c), such covenant, condition or restriction, to the extent of such violation, is hereby deleted.



SURVEYED FOR:



600 Busse Highway
Park Ridge, IL 60068
OFFICE: (847) 698-6400
FAX: (678) 444-4472

SURVEYED FOR:



1515 WOODFIELD ROAD
SUITE 1400
SCHAUMBURG, IL 60173



N9637 Friendship Drive Office: 920-993-0881
Kaukauna, WI 54130 Fax: 920-273-6037

SITE NAME:
MILWAUKEE COUNTY WT

SITE NUMBER:
236678

SITE ADDRESS:
8948 WATERTOWN PLANK RD.
WAUWATOSA, WI 53226

PROPERTY OWNER: TOWER OWNER:
MILWAUKEE COUNTY MILWAUKEE COUNTY
INSTITUTIONS 633 W. WISCONSIN AVE.
2711 W. ELLIS ST. MILWAUKEE, WI 53203
MILWAUKEE, WI 53208

PARCEL NO.: 372999917 (LEASE)
372999920 (EASE.)

ZONED: SPECIAL PURPOSE DISTRICT

DEED REFERENCE: X

LEASE EXHIBIT

FOR
VERIZON WIRELESS PERSONAL
COMMUNICATIONS LP d/b/a VERIZON WIRELESS
BEING A PART OF THE SW1/4 OF THE
SW1/4, SECTION 21, T.7N., R.21E., CITY
OF WAUWATOSA, MILWAUKEE COUNTY,
WISCONSIN

NO.	DATE	DESCRIPTION	BY
4	12/26/19	Added Lease and Easement	JD
3	12/16/19	Added Additional Locates	JB
2	6/25/19	Added Title Report	JB
1	5/29/19	Preliminary Survey	JB

DRAWN BY: J.B.	FIELD WORK DATE: 5-23-19
CHECKED BY: S.C.D.	FIELD BOOK: M-5, PG.2-3
JOB NO.: 11142	SHEET 5 OF 5

WEST > Upper Midwest > Illinois/Wisconsin > Wisconsin > Childrens Hospital - F
 - Jennings, Christian - christian.jennings@verizonwireless.com - 07/29/2019 11:53:04

Project Detail		Location Information	
Site Type		Siterra Site ID#	
Carrier Aggregation	true	Site Name	Childrens Hospital - F
MPT Id	173691	Siterra SR#	
eCIP-0	false	E-NodeB ID#	209894
Project Name	MANUAL Initial Build ENTRY -	PSLC#	236678
RFDS Project ID	1531157	Switch Name	
Project ID	15831421	Tower Owner	
Site Traker Project ID		Tower Type	Tank
RFDS Project Scope		Street Address	8948 Watertown Plank Road
		City	Wauwatosa
		State	WI
		Zip Code	53226
		County	Milwaukee
		Latitude	43.046 / 43° 2' 45.6" N
		Longitude	-88.025639 / 88° 1' 32.3004" W

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Antenna Summary

Added Antennas														
700 LTE	850 CDM A	850 LTE	1900 CDM A	1900 LTE	2100 LTE	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	QTY
						ERICSSON	KRE_101_2251_2	96	96.3	230(03),110(02),0(01)	false	false	PHYSICAL	3
YES				YES	YES	QUINTEL USA INC	QS8656-5	96	100	230(03),110(02),0(01)	true	true	PHYSICAL	6
Removed Antennas														
700 LTE	850 CDM A	850 LTE	1900 CDM A	1900 LTE	2100 LTE	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	QTY
Retained Antennas														
700 LTE	850 CDM A	850 LTE	1900 CDM A	1900 LTE	2100 LTE	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	QTY

Added: 9 Removed: 0 Retained: 0

Equipment Summary

Added Non Antennas													
Equipment Type	700 LTE	850 CDMA	850 LTE	1900 CDMA	1900 LTE	2100 LTE	Location	Make	Model	Cable Length	Cable Size	Inst. Type	Quantity
OVP Box	YES				YES	YES	Tower	Raycap	6600			PHYSICAL	1
Hybrid Cable	YES				YES	YES	Tower	Hybrid	High Capacity			PHYSICAL	1
OVP Box	YES				YES	YES	Shelter	Raycap	6600			PHYSICAL	1
RRU							Tower	Ericsson	2208			PHYSICAL	3
RRU	YES						Tower	Ericsson	4449			PHYSICAL	3
RRU					YES	YES	Tower	Ericsson	8843			PHYSICAL	3
Removed Non Antennas													
Equipment Type	700 LTE	850 CDMA	850 LTE	1900 CDMA	1900 LTE	2100 LTE	Location	Make	Model	Cable Length	Cable Size	Inst. Type	Quantity
Retained Non Antennas													
Equipment Type	700 LTE	850 CDMA	850 LTE	1900 CDMA	1900 LTE	2100 LTE	Location	Make	Model	Cable Length	Cable Size	Inst. Type	Quantity

Services

700 MHZ LTE				
Current Version:		Proposed Version:		
		0002		
		01	02	03
		0	110	230
		209894	209894	209894
		QS8656-5_V3-0F_740MHZ_05DT_PORT1 (1528569)	QS8656-5_V3-0F_740MHZ_05DT_PORT1 (1528569)	QS8656-5_V3-0F_740MHZ_05DT_PORT1 (169250)
		QUINTEL USA INC	QUINTEL USA INC	QUINTEL USA INC
		96	96	96
		0	0	0
		5	5	5
		100	100	100
		Ericsson	Ericsson	Ericsson
		4449	4449	4449
		4,4	4,4	4,4

2100 MHZ LTE				
	Current Version:	Proposed Version:		
		0002		
		01	02	03
Sector				
Azimuth		0	110	230
Cell/ENode B ID		209894	209894	209894
Antenna Model		QS8656-5_V3-OF_2140MHZ_02DT_PORT3 (1528527)	QS8656-5_V3-OF_2140MHZ_02DT_PORT3 (1528527)	QS8656-5_V3-OF_2140MHZ_02DT_PORT3 (1528527)
Antenna Make		QUINTEL USA INC	QUINTEL USA INC	QUINTEL USA INC
Centerline(Ft)		96	96	96
Mechanical DT(Deg.)		0	0	0
Electrical DT		2	2	2
Tip Height		100	100	100
TMA make				
TMA model				
RRU make		Ericsson	Ericsson	Ericsson
RRU model		8843	8843	8843
# of Tx, Rx Lines		4,4	4,4	4,4
Position				

3.5 GHz				
	Current Version:	Proposed Version:		
		0002		
		01	02	03
Sector				
Azimuth		0	110	230
Cell/ENode B ID		209894	209894	209894
Antenna Model		KRE_101_2251_2_L45_360_0_HV_COPOLARIZED (1560837)	KRE_101_2251_2_L45_360_0_HV_COPOLARIZED (1560837)	KRE_101_2251_2_L45_360_0_HV_COPOLARIZED (1560837)
Antenna Make		ERICSSON	ERICSSON	ERICSSON
Centerline(Ft)		96	96	96
Mechanical DT(Deg.)		0	0	0
Electrical DT		0	0	0
Tip Height		96.3	96.3	96.3
TMA make				
TMA model				
RRU make		Ericsson	Ericsson	Ericsson
RRU model		2208	2208	2208
# of Tx, Rx Lines		2,2	2,2	2,2
Position				

1900 MHZ LTE				
	Current Version:	Proposed Version:		
		0002		
		01	02	03
Sector				
Azimuth		0	110	230
Cell/ENode B ID		209894	209894	209894
Antenna Model		QS8656-5_V3-OF_1950MHZ_02DT_PORT3 (1528491)	QS8656-5_V3-OF_1950MHZ_02DT_PORT3 (1528491)	QS8656-5_V3-OF_1950MHZ_02DT_PORT3 (1528491)
Antenna Make		QUINTEL USA INC	QUINTEL USA INC	QUINTEL USA INC
Centerline(Ft)		96	96	96
Mechanical DT(Deg.)		0	0	0
Electrical DT		2	2	2
Tip Height		100	100	100
TMA make				
TMA model				
RRU make		Ericsson	Ericsson	Ericsson
RRU model		8843	8843	8843
# of Tx, Rx Lines		4,4	4,4	4,4
Position				

AWS3				
	Current Version:	Proposed Version:		
		0002		
		01	02	03
Sector				
Azimuth		0	110	230
Cell/ENode B ID		209894	209894	209894
Antenna Model		QS8656-5_V3-OF_2140MHZ_02DT_PORT3 (1528527)	QS8656-5_V3-OF_2140MHZ_02DT_PORT3 (1528527)	QS8656-5_V3-OF_2140MHZ_02DT_PORT3 (1528527)
Antenna Make		QUINTEL USA INC	QUINTEL USA INC	QUINTEL USA INC
Centerline(Ft)		96	96	96
Mechanical DT(Deg.)		0	0	0
Electrical DT		2	2	2
Tip Height		100	100	100
TMA make				
TMA model				
RRU make		Ericsson	Ericsson	Ericsson
RRU model		8843	8843	8843
# of Tx, Rx Lines		4,4	4,4	4,4
Position				

Service Comments

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Callsigns Per Antenna - Proposed

Sector	Make	Model	Centerline	Tip Height	Azimuth(TN)	Elec. Tilt	Mech. Tilt	Gain	Horiz BW	Regulatory Power	700 Callsigns	850 Callsigns	1900 Callsigns	2100 Callsigns	28 GHz Callsigns	31 GHz Callsigns	39 GHz Callsigns
01	ERICSSON	KRE_101_2251_2_L45_3600_HV_COPOLARIZED (1560837)	96ft/29.26m	96.3ft/29.35m	0	0	0	9.088	67.5	14.78							
02	ERICSSON	KRE_101_2251_2_L45_3600_HV_COPOLARIZED (1560837)	96ft/29.26m	96.3ft/29.35m	110	0	0	9.088	67.5	14.78							
03	ERICSSON	KRE_101_2251_2_L45_3600_HV_COPOLARIZED (1560837)	96ft/29.26m	96.3ft/29.35m	230	0	0	9.088	67.5	14.78							
01	QUINTEL USA INC	QS8656-5_V3-0F_1950MHZ_02DT_PORT3 (1528491)	96ft/29.26m	100ft/30.48m	0	2	0	15.04	65.5	196.8			KNLF240				
02	QUINTEL USA INC	QS8656-5_V3-0F_1950MHZ_02DT_PORT3 (1528491)	96ft/29.26m	100ft/30.48m	110	2	0	15.04	65.5	196.8			KNLF240				
03	QUINTEL USA INC	QS8656-5_V3-0F_1950MHZ_02DT_PORT3 (1528491)	96ft/29.26m	100ft/30.48m	230	2	0	15.04	65.5	196.8			KNLF240				
01	QUINTEL USA INC	QS8656-5_V3-0F_2140MHZ_02DT_PORT3 (1528527)	96ft/29.26m	100ft/30.48m	0	2	0	15.439	61	142.5					WQGA717,WQPZ950		
01	QUINTEL USA INC	QS8656-5_V3-0F_2140MHZ_02DT_PORT3 (1528527)	96ft/29.26m	100ft/30.48m	0	2	0	15.439	61	213.75					WQVN958		

02	QUINTE L USA INC	QS8656-5_V3- 0F_2140MHZ_ 02DT_PORT3 (1528527)	96ft/29.26 m	100ft/30.4 8m	110	2	0	15.4 39	61	142.5				WQGA71 7,WQPZ9 50					
02	QUINTE L USA INC	QS8656-5_V3- 0F_2140MHZ_ 02DT_PORT3 (1528527)	96ft/29.26 m	100ft/30.4 8m	110	2	0	15.4 39	61	213.75				WQVN95 8					
03	QUINTE L USA INC	QS8656-5_V3- 0F_2140MHZ_ 02DT_PORT3 (1528527)	96ft/29.26 m	100ft/30.4 8m	230	2	0	15.4 39	61	142.5				WQGA71 7,WQPZ9 50					
03	QUINTE L USA INC	QS8656-5_V3- 0F_2140MHZ_ 02DT_PORT3 (1528527)	96ft/29.26 m	100ft/30.4 8m	230	2	0	15.4 39	61	213.75				WQVN95 8					
01	QUINTE L USA INC	QS8656-5_V3- 0F_740MHZ_0 5DT_PORT1 (1528569)	96ft/29.26 m	100ft/30.4 8m	0	5	0	12.3 99	61.5	69.36	WQJQ691								
02	QUINTE L USA INC	QS8656-5_V3- 0F_740MHZ_0 5DT_PORT1 (1528569)	96ft/29.26 m	100ft/30.4 8m	110	5	0	12.3 99	61.5	69.36	WQJQ691								
03	QUINTE L USA INC	QS8656-5_V3- 0F_740MHZ_0 5DT_PORT1 (169250)	96ft/29.26 m	100ft/30.4 8m	230	5	0	12.3 99	61.5	69.36	WQJQ691								

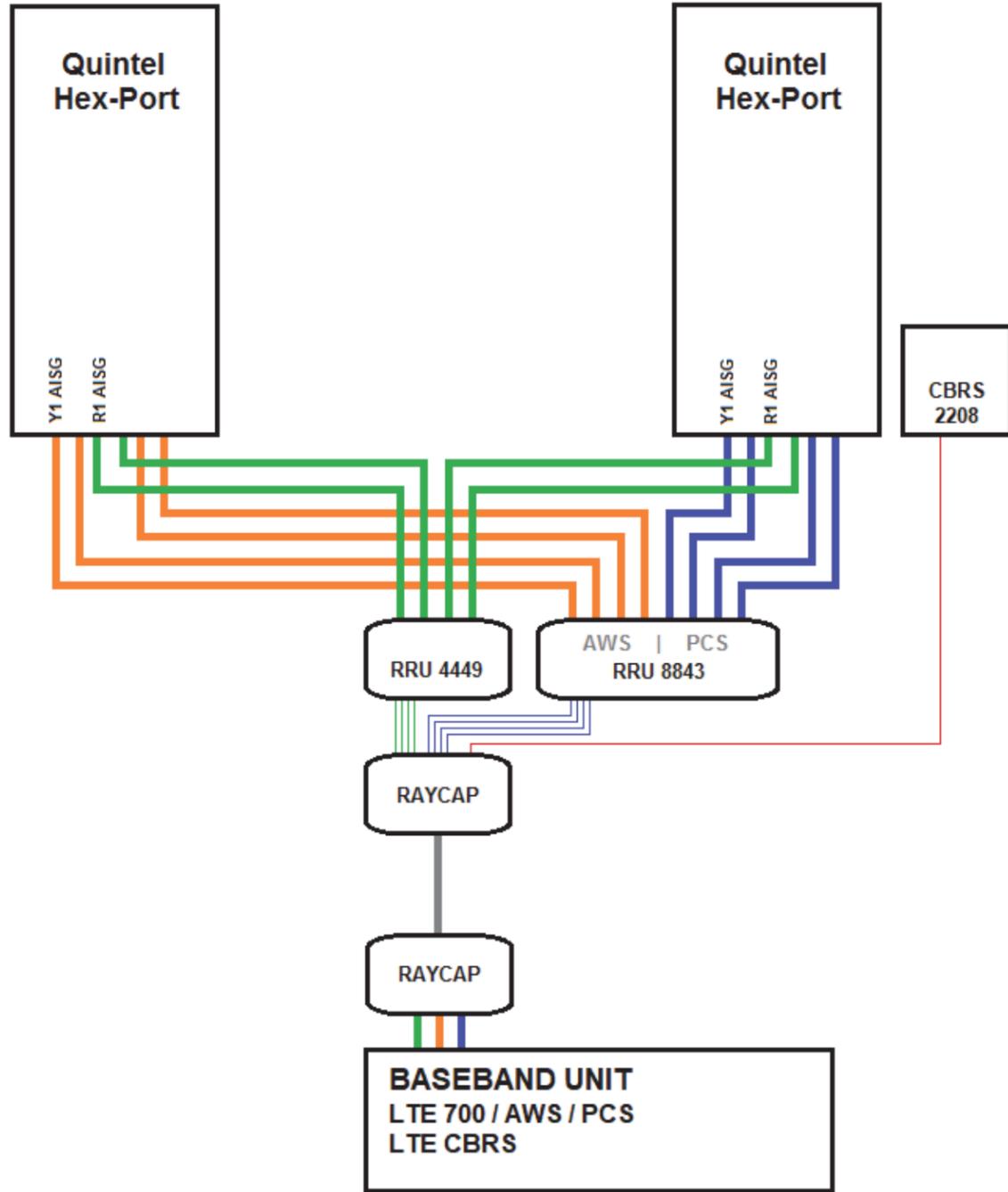
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Callsigns

Callsigns	Market	Radio Code	Market Number	Block	State	County	Licensee Name	Wholly Owned	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq Mi	Status	Project Action
CBRS_CALLS IGN	UNLICENSED	3.5 GHz	UNLICENSED	UNLICENSED	WI	Milwaukee	UNLICENSED	UNLICENSED	UNLICENSED	UNLICENSED-UNLICENSED	UNLICENSED-UNLICENSED	UNLICENSED-UNLICENSED	UNLICENSED-UNLICENSED	14.78		3926.0	Active	Added
KNLF240	Milwaukee	CW	MTA020	B	WI	Milwaukee	Celco Partnership	Yes	30.000	1870.00-1885.00	1950.00-1965.00	.000-.000	.000-.000	196.8	1640	3926.0	Active	Added
WPLM426	Milwaukee, WI	LD	BTA297	B	WI	Milwaukee	Celco Partnership	Yes	150.000	31000.000-31075.000	31225.000-31300.000	.000-.000	.000-.000			3926.0	Active	
WPOH970	Milwaukee, WI	LD	BTA297	A	WI	Milwaukee	Celco Partnership	Yes	300.000	29100.000-29250.000	31075.000-31225.000	.000-.000	.000-.000			3926.0	Active	
WQGA717	Great Lakes	AW	REA003	F	WI	Milwaukee	Celco Partnership	Yes	20.000	1745.00-1755.00	2145.00-2155.00	.000-.000	.000-.000	142.5	1640	3926.0	Active	Added
WQJQ691	Great Lakes	WU	REA003	C	WI	Milwaukee	Celco Partnership	Yes	22.000	746.00-757.00	776.00-787.00	.000-.000	.000-.000	69.36	1000	3926.0	Active	Added
WQPZ950	Great Lakes	AW	REA003	E	WI	Milwaukee	Celco Partnership	Yes	10.000	1740.00-1745.00	2140.00-2145.00	.000-.000	.000-.000	142.5	1640	3926.0	Active	Added
WQVN958	Milwaukee-Racine, WI	AT	BEA063	J	WI	Milwaukee	Celco Partnership	Yes	10.000	.000-.000	2170.00-2180.00	.000-.000	.000-.000	213.75	1640	3926.0	Active	Added

WRBB504	Milwaukee, WI	UU	BTA297	L1	WI	Milwaukee	Cellco Partnership	Yes	425.000	27500.000-27925.000	.000-.000	.000-.000	.000-.000			3926.0	Active	
WRBB505	Milwaukee, WI	UU	BTA297	L2	WI	Milwaukee	Cellco Partnership	Yes	425.000	27925.000-28350.000	.000-.000	.000-.000	.000-.000			3926.0	Active	
WRBD810	Milwaukee, WI	UU	PEA038	3-A	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	38700.000-38750.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBD811	Milwaukee, WI	UU	PEA038	3-B	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	39400.000-39450.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBE272	Milwaukee, WI	UU	PEA038	4-A	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	38750.000-38800.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBE273	Milwaukee, WI	UU	PEA038	4-B	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	39450.000-39500.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBE500	Milwaukee, WI	UU	PEA038	5-A	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	38800.000-38850.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBE501	Milwaukee, WI	UU	PEA038	5-B	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	39500.000-39550.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBE746	Milwaukee, WI	UU	PEA038	6-A	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	38850.000-38900.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBE747	Milwaukee, WI	UU	PEA038	6-B	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	39550.000-39600.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBE942	Milwaukee, WI	UU	PEA038	7-A	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	38900.000-38950.000	.000-.000	.000-.000	.000-.000			.0	Active	

WRBE943	Milwaukee, WI	UU	PEA038	7-B	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	39600.000-39650.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBF582	Milwaukee, WI	UU	PEA038	9-A	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	39000.000-39050.000	.000-.000	.000-.000	.000-.000			.0	Active	
WRBF583	Milwaukee, WI	UU	PEA038	9-B	WI	Milwaukee	Straight Path Spectrum, LLC	Yes	50.000	39700.000-39750.000	.000-.000	.000-.000	.000-.000			.0	Active	





December 20, 2019

Mr. Greg High

**RE: Milwaukee County – East Water Tower, Verizon request for installing wireless facility
VZW Location# 236678
TCG Project# 33-3203
Date of Review: 11/19/2019**

Dear Mr. High,

We have received your plan review comments for the above captioned site and have addressed the comments and incorporated the recommendations given in your letter. Revisions to the drawings have been clouded for clarity and ease of reference. Below is a summary of how each of the items have been addressed:

Location Plan (LP) shows route of proposed 8'-0" wide utility easement assumed to be FIBER, but the plan is labeled as "incomplete" and doesn't show existing steam tunnel and other utilities in the proposed route that the new fiber would take from the water tower to the northeast corner of the intersection of Watertown Plank Road and 92nd Street. Submit complete easement document exhibit and plan for utility easement.

Response: *Diggers didn't mark the steam tunnel prior to the initial survey, but that information was added. The proposed fiber easement was revised to avoid the buried steam tunnel. It should be noted that this is our ASSUMED / most likely fiber path – Verizon's fiber provider has not yet determined a final "meet point," which is why the drawings still have "pending fiber coordination" notes. That information will be confirmed prior to final drawings being submitted.*

On the five page lease exhibit, the parent parcel is described but lease exhibit should provide a legal description of the LEASE PARCEL and provide plan view showing lease boundary and dimensions with bearings as well as notes regarding access route to the leased parcel.

Response: *The survey sheets have been updated with Verizon's proposed lease area and easements. A proposed access easement was added from Verizon's lease area to the ROW.*

Since there is welding to the structure required, a detail should first be submitted to Milwaukee County for review, including paint stripping, priming, and re-coating procedures on both exterior and interior surfaces.

Response: *Weld details and notes are located on sheets S-1 and S-2. Coating procedures were added to sheet SP-3. If the County or tank owner provide preferred specifications, those will be added instead.*



December 20, 2019

RE: Milwaukee County – East Water Tower, Verizon request for installing wireless facility
VZW Location# 236678
TCG Project# 33-3203
Date of Review: 11/19/2019

Submit projected noise level of equipment.

Response: *The requested noise levels are included in this submittal.*

Submit lighting plan if applicable.

Response: *The platform lighting is intended to be used only in the event of an emergency, if a cell tech needs to perform work at night. The lights will be rarely, if ever used.*

The balance of the comments were advisory in nature and did not require revisions to the drawings.

We trust that this letter addresses your concerns and comments. Should there be any additional questions or comments, please do not hesitate to contact us.

Respectfully Yours,

A handwritten signature in blue ink, appearing to read "Dan Szlaga". The signature is fluid and cursive, with a large initial "D" and a stylized "Szlaga".

Dan Szlaga
Terra Consulting Group, Ltd.
847-698-6400

Octave Band Sound Data SD030 2.4 Liter Diesel

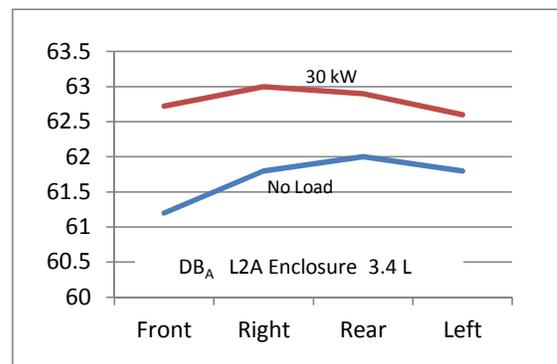
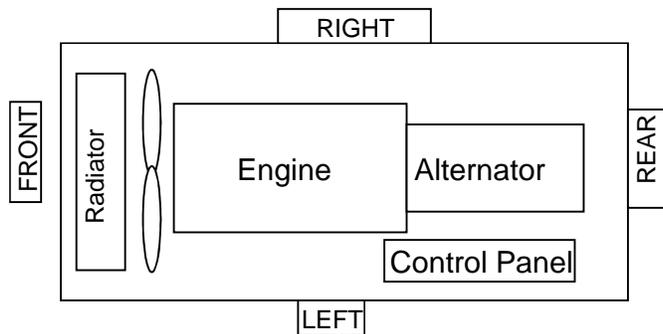
Test Date	3/14/2013	Engine Firing Frequency	60
Test Request #	A-2-3738A- T12	Alt Fan Frequency	480
Generator Model	SD030 2.4 Liter	Cooling Fan Frequency	416
Enclosure	Level 2 A Verizon	Test Conditions	Sunny
Unit Dimensions		Temp ° F	58
Engine	2.4 Liter Generac Diesel	Barometric Pres	30.65
Alternator	30 kW 390 mm 240V 1 Ø	Wind Speed mph	2-4
Engine Speed	1800	Muffler	Standard
Test Location	Waukesha	Fuel	#2 Diesel
Instrument	TES1358		

Test Load: 0 kW 240 Volt Distance 7 Meters

MICROPHONE LOCATION	OCTAVE BAND CENTER FREQUENCY									
	31.5	63	125	250	500	1000	2000	4000	8000	dB _A
FRONT	24.9	50.0	55.5	49.6	55.1	47.5	45.7	41.5	33.9	61.2
RIGHT	25.0	52.0	55.5	50.5	56.5	48.2	50.4	42.3	38.4	61.8
REAR	26.8	47.4	52.5	52.1	56.5	51.5	48.3	44.8	35.8	62
LEFT	24.0	43.4	54.6	48.0	57.2	46.6	46.7	43.6	36.9	61.8
Average	25.2	48.2	54.5	50.0	56.3	48.4	47.8	43.0	36.3	61.7

Test Load: 30 kW 240 Volt Distance 7 Meters

MICROPHONE LOCATION	OCTAVE BAND CENTER FREQUENCY									
	31.5	63	125	250	500	1000	2000	4000	8000	dB _A
FRONT	21.7	59.7	54.3	49.1	56.1	47.5	46.5	42.1	34.5	62.7
RIGHT	21.3	58.5	56.4	52.5	55.4	50.7	53.0	44.2	38.8	63.0
REAR	24.1	55.9	51.9	53.1	56.7	52.0	48.8	45.0	34.8	62.9
LEFT	26.6	47.7	53.5	48.8	57.5	47.2	48.1	43.4	37.4	62.6
Average	23.4	55.5	54.0	50.9	56.4	49.4	49.1	43.7	36.4	62.8



1. All positions at 23 feet (7 meters) from side faces of generator set.
2. Test conducted on a 100 foot diameter asphalt surface.
3. Data subject to change without notice