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DIVISION OF
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AND FINANCE

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PURCHASING DEPARTMENT
210 Flagg Road, Kingston, RI 02881 USA p: 401.874.2171 f: 401.874.2306 uri.edu/strategic-procurement/purchasing

DATE: January 21st, 2025

Addendum# 1

BID NO.: 101448
OPENING: 2/6/25 at 1:00 PM
COMMODITY: CONSTRUCTION OF NEW 400' RADIO TOWER & TRANSMITTER BLDG.

This addendum is being issued to make the following clarifications:

1. The bid opening is being extended from 1/30/25 at 2:00 PM to 2/6/25 at 1:00 PM.
2. Provide answers to the questions received by the deadline posted in the above referenced bid.
3. Provide a copy of the Non-Mandatory Pre-Bid Sign-In Sheet.

Andrea Boucher Digitally signed by Andrea Boucher
Date: 2025.01.21 13:56:50 -05'00'

Purchasing Department
The University of Rhode Island

Rev. 6-7-24

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BID 101448 – CONSTRUCTION OF NEW 400' RADIO TOWER & TRANSMITTER BLDG.
QUESTIONS AND ANSWERS

1. **I do not see the Geo report called out in the spec document... Snip below:**

   The replacement tower and guy wire foundations shall be designed in accordance with the Geotechnical Investigation Report prepared by Tectonic Engineering Consultants, P.C. dated 8/30/23. B. Entire report and additional information are attached in Appendix E.

   Please let me know how to find it as it is not on the Purchasing portal.

Answer 1: Geotechnical report has been completed and is attached to this addendum.

2. **Geo Tech Report required to complete Bidding. Do you guys have Geo Tech Report?**

Answer 2: Please see Answer 1.

3. **Do you require PE Stamped CD for Tower & Foundation of Tower Only?**

Answer 3: Yes, as this is a delegated design. The Tower and foundation drawings and calculations shall be signed and sealed in the State of Rhode Island.

4. **Design Criteria DATA Required:**
   a. **3 sec wind Guest with Ice**
   b. **3 sec wind Guest No Ice**
   c. **As per CD Ice Thickness 1 inch, Reduction Applied, or No?**
   d. **Is the Building Code TIA 222-H-2017 or TIA-G-2005?**

Answer 4: See sheet T003 for design criteria. The design shall be in accordance with TIA 222-H.

5. **How many Gangs Meter Bank Required:**
   a. **C101 said 2 Gang**
   b. **C200 ask for 4 Gang**
   c. **E100 said 2 Gang**
   d. **E101 ask for Multi Gang**

Answer 5: We are designing the compound for 1 future carrier. A minimum of 2 is required.

6. **Detail of Antenna Quantity / Model and Mount detail as well.**

Answer 6: See chart on C200 for details. Antenna: Shively 6813-4.

A ring-stub, pressurized, FM antenna with a slug matching transformer.
A power gain of 2.14 or 3.3 db when full-spaced.
Right-circular polarization and a 1 5/8 inch input connection.
High density polyethylene four element radomes to protect against ice and snow collection on elements.
the Shively antennas come with their own mounts because the spacing between the bays and the tower leg is crucial to the antenna's performance.

7. Lighting Detail Required (Our Concern is giving below):
   Lighting Requirements

    1. **System Type:**
        a. **Red Obstruction Lighting System** (L-810 for steady-burning lights, L-864 for flashing lights) OR
        b. **Dual Lighting System** (medium-intensity white lights for daytime and twilight, and red lights for nighttime).

Answer 7.1: DUAL MODE tower lighting is desired and encouraged by the FAA and FCC, (white lights day and red at night)

    2. Levels of Lights:
        a. For a tower of **400 ft, 3 levels** of lights are typically required:
            a. Top Level:
                1. At least one red flashing light (L-864) for nighttime visibility.
                2. Alternatively, medium-intensity flashing white light (L-865) for 24-hour operation.
            b. Intermediate Levels:
                1. Two or more lights per level positioned at diagonally opposite locations for redundancy and visibility.
                2. Typically required at approximately **150 ft** and **300 ft** (spaced evenly).
        b. Ground Level/Lower Structures:
            a. Additional steady-burning red lights (L-810) may be installed if the lower sections are obstructed by terrain, vegetation, or buildings.

Answer 7.2: Elevations of lights confirmed as noted above. May change based on final design but use for bidding purposes.

    3. **Horizontal Placement:**
        a. Lights must be installed to ensure 360-degree visibility for aircraft, with no obstructions to the light from any direction.

Answer 7.3: This is correct.

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Number of Locations to Install:

- **Top Level:** 1 location with a red flashing light (or white medium-intensity light).
- **Intermediate Levels:** 2 levels, each with at least 2 lights (diagonally opposite placement).
- **Total Locations:** At least **3 levels**, with lights positioned to provide full horizontal coverage.

Answer: Confirmed for pricing. May change once final tower design has been completed

Additional Notes:

- **Ice Shields:** Required in icing-prone areas to protect light fixtures.

Answer: Ice protection required as shown on drawings.

- **Automatic Monitoring:** Systems should be monitored automatically or visually inspected regularly for functionality.

Answer: Automatic monitoring of the tower lights and other parameters like, inside temperature, transmitter output, and unauthorized entry will be handled by the station's extensive required remote control monitoring which is required by the FCC.

8. Any Accessories needs to Add:

- **Anti-Climb**
- **Safety Climb**
- **TIA Grounding**
- **Step Bolts**
- **Waveguide Ladder**
- **Antenna Mounts**

Answer 8: Yes, to all of the above

9. Does URI possibly have the original tower foundation and guy anchor foundation details?

Answer 9: Yes, original tower by Rohn. Drawings are attached to this addendum.

10. Is there any drawings or foundation details for the existing block building to be removed?

Answer 10: Yes, all existing foundations shall be removed and new foundations to be installed. We do not have original drawings for this building or the foundation.

11. There are large trees along the cleared new guy paths that were discussed with the need to remove etc. Is there an actual drawing showing how many of these large trees are required to be removed? Or does URI have an idea of how many to be removed?

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Answer 11: A survey will need to be completed to confirm which trees will be required to be removed. Any tree within the fall zone shall be removed. An allowance has been included for this line item.

12. Can URI please provide geotechnical report in order to nail down proposed tower design and foundations?

Answer 12: Please see Answer 1.

13. What does the University consider "a substantial portion of the work" that needs to be self-performed?

Answer 13: The awarded vendor is meant to be held to the stated requirements and while subcontracting may be allowed for certain portions of the work (i.e. tree removal). the detailed requirements are not meant to be subcontracted.

14. What would be a "disproportionate amount" of the work for a subcontractor to be assigned?

Answer 14: The awarded vendor is meant to be held to the stated requirements and while subcontracting may be allowed for certain portions of the work (i.e. tree removal). the detailed requirements are not meant to be subcontracted.

15. Is the sign-in sheet from the pre-bid proposal conference available?

Answer 15: Yes, a copy of the Non-Mandatory Pre-Bid Sign-In Sheet is attached to this addendum.

16. What is the schedule for construction? Substantial completion?

Answer 16: Please refer to the bid solicitation. This information is available on the bid form.

17. Officially, what is the website/url for where project information / addendums / etc. are posted?

Answer 17: Bid solicitations including addendums are posted here:
https://purchasing.ri.gov/bidding/externalbidsearch.aspx

Please search by the applicable bid number.

18. Are there any liquidated damages? If so, what's the value?

Answer 18: Please refer to the bid solicitation. This information is available on the bid form.

19. Please provide sign-in sheet/attendee list from the walkthrough.

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Answer 19: Please see Answer 15.

20. Page 7 on the project plans appears to be incomplete, see attached. Is the full page available?

Answer 20: Yes, attached to this addendum are the correct drawings.

21. Is there a geotechnical report available for this project?

Answer 21: Please see Answer 1.

22. Are there any W/MBE requirements for this project? Apprenticeship requirements?

Answer 22: Yes, please refer to the bid solicitation.

23. Will there be any FAA requirements/standards?

Answer 23: Yes, see lighting answer in section 7. We need to keep the NOTAM in effect as long as there we anticipate that will be a replacement tower of the same height at that site. The old tower shows up on pilot sectionals (mape) which every pilot should have and the NOTAM refers back to those sectionals.

24. We are To Purchase Everything Here Correct?
Tower
Generator
All Labor and Materials

Answer 24: Correct.

25. Is this a Prevailing Wage?

Answer 25: Yes, please refer to the bid solicitation regarding prevailing wage requirements.

26. Can you please supply the exact models of antennas that will be required so proper loading can be factored into the design calculations?

Answer 26:
Antenna: Shively 6813-4
A ring-stub, pressurized, FM antenna with a slug matching transformer.
A power gain of 2.14 or 3.3 db when full-spaced.
Right-circular polarization and a 1 5/8 inch input connection.
High density polyethylene four element radomes to protect against ice and snow collection on elements.

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the Shively antennas come with their own mounts because the spacing between the bays and the tower leg is crucial to the antenna's performance.

Tectonic
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University of Rhode Island
Office of Capital Projects
60 Tootell Road, Sherman Bldg.
Kingston, Rhode Island 02881

Attention: Kyle Coleman, P.E., Construction Manager
(Via email: kycoleman@uri.edu)

August 30, 2023

RE: W.O. 12117.01
GEOTECHNICAL INVESTIGATION
PROPOSED 400-FOOT GUYED TOWER
URI RADIO GUYED TOWER
875 PLAINS ROAD
SOUTH KINGSTOWN, WASHINGTON COUNTY, RHODE ISLAND

Dear Mr. Coleman:

Tectonic Engineering Consultants, Inc. (Tectonic) has performed a subsurface investigation and geotechnical engineering analyses for the proposed guyed tower at the above referenced site. This report presents our findings and recommendations for the design and construction of the foundations for the proposed tower.

1.0 DESIGN CONSIDERATIONS

The proposed tower is a guyed tower structure that will be used to mount communication antennas. It is expected that the guyed tower foundation will be subjected to relatively high overturning loads resulting in tension loads on the guy anchors, whereas static compressive loads at the base of the tower will be modest, in comparison. The actual loads from the guyed tower are to be determined by others.

In accordance with the publication entitled "Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures" (TIA-222-H), it shall be permissible to determine seismic design parameters from the ASCE 7 online Hazard Tool based on ASCE 7-16. Additionally, it is our understanding that the monopole tower is categorized as Risk Category II.

2.0 SCOPE OF SERVICES

The following services were performed for The University of Rhode Island - Office of Capital Projects, hereafter referred to as Client.

- Review of geological information publicly available through the United States Geological Survey (USGS) and the National Resources Conservation Service (NRCS).
- Drilling, sampling, and logging of four (4) borings, designated as borings B-1 through B-4, to approximate depths up to 22 feet below existing grade (bgs).

- Field inspection by a Tectonic representative, working under the purview of a Rhode Island State licensed Professional Engineer, to locate the borings; and log and classify all soil samples.

- Performance of in-situ soil resistivity testing by a Tectonic representative at two (2) locations in the general center of the project site.

- Laboratory testing of soil samples selected to verify the field classifications and corrosivity potential of the underlying soil, and to evaluate the engineering characteristics of the soil.

- Geotechnical engineering analyses of the subsurface conditions and laboratory test results as they relate to the design and construction of the foundations of the proposed guyed tower.

- Preparation of this geotechnical report presenting the results of the subsurface investigation, laboratory testing, engineering analyses, and our geotechnical recommendations as they relate to the design and construction of the foundations of the proposed guyed tower.

3.0 SITE AND PROJECT DESCRIPTIONS

The project site (site) is in an undeveloped land parcel, at the general end of Plains Road, South Kingstown, Washington County, Rhode Island. A previously constructed guyed tower, that has since been demolished, is purported to have existed in the general area, with concrete remnants visually observed during the Tectonic subsurface investigation. The site is bordered by heavily wooded areas on all sides, with an existing one-story structure in the general northwest portion of the site. Based on our onsite observations and review of a provided existing conditions topographic survey, prepared by Narragansett Engineering Inc. (NEI), Project # 21.0133, dated August 9, 2023, the site slopes downward to the north-northwest. Ground surface elevations range from approximately +175 to +144 feet. All elevations listed reference the North American Vertical Datum of 1988 (NAVD 88)

Per our discussion with members of the design team, the proposed project consists of the construction of an approximately 400-foot guyed tower, to be constructed in the same general footprint area of the previously referred and demolished guyed tower. Additionally, three (3) deadmen anchors will be constructed for support of the proposed tower. Structural loading was not available as of the preparation of this report. Also, no significant grading, or cutting and filling, is anticipated for construction of the proposed tower and deadmen anchors.

4.0 SUBSURFACE INVESTIGATION

The subsurface investigation consisted of the drilling, sampling, and logging of four (4) test borings, designated as borings B-1 through B-4. Boring B-1 was drilled approximately nine-feet offset of the previously demolished guyed tower base, and borings B-2 through B-4 were advanced approximately 11 to 16 feet offset of the previously demolished guyed tower concrete anchorage. As previously mentioned, it is Tectonic's understanding that the proposed guyed tower and concrete anchorages will be constructed in the same general footprint areas as the previously demolished structures. The approximate locations of the borings are indicated on the attached Location Plan, Figure 1.

The borings were performed by Geologic Earth Exploration, Inc. on July 19 and 20, 2023 using an Acker Recon ATV-mounted drill rig, equipped with an automatic hammer. The borings were advanced through overburden soil using 2-7/8-inch tricone roller bits and mud-rotary drilling techniques. Soils were stabilized with 4-inch nominal diameter driven steel casing. Standard Penetration Testing (SPT) and split-spoon sampling was performed within the borings and was performed in general accordance with the requirements of ASTM Standard D1586 Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils. SPT N-values were recorded for each soil sample taken. Samples of the soil obtained during the investigation were collected, retained, and are currently stored at our material testing laboratory. Upon completion, the boreholes were backfilled with drill cuttings to match the existing conditions.

All drilling, sampling, and logging of the borings, and soil resistivity testing, were performed under the full-time observation of a Tectonic representative working under the supervision of a Professional Engineer licensed in the State of Rhode Island. The Tectonic representative classified and collected soil samples for laboratory testing at the boring locations as they were recovered, and prepared logs of the soil and groundwater conditions encountered. The soils were classified in accordance with the latest edition of the Rhode Island State Building Code (Code), the Burmister Soil Classification System, and the Unified Soil Classification System (USCS) (ASTM D2488). Copies of the boring and soil resistivity test logs are attached.

5.0 RESISTIVITY TESTING

Soil resistivity testing was performed at the site and was completed on July 19, 2023. The testing was performed in general conformance with ASTM Standard G57 and consisted of the performance of two (2) Wenner arrays, designated as Test 1 and Test 2. The tests were performed approximately perpendicular to each other, in the approximate center position of the site. A more detailed location of the testing can be found on Figure 1.

The resistivity testing was performed with an AEMC Industries Model 6472 digital Ground Resistance Tester, using Wenner electrode "a" spacings of 2.5, 5, 10, 20 and 35 feet. Note, specific electrode spacing was not provided by the client, and therefore a generalized standard spacing was used. The data presented below in Table 5.1 includes the calculated earth resistivity, based on the measured resistance at each "a" spacing, which per the assumption of the Wenner array method, represents the average earth resistivity of a hemisphere of soil having a radius equal to the "a" spacing. Resistivity test logs are included in Appendix III.

Table 5.1 - Resistivity Test Results

Measured Resistivity for Varying "A" Spacings (Ohm-Cm)					
Array Number	Electrode Spacing				
	2.5 Ft	5 Ft	10 Ft	20 Ft	35 Ft
Test 1	219,759	305,461	315,994	250,114	252,029
Test 2	208,747	296,843	354,296	275,393	268,786

6.0 LABORATORY TESTING

Laboratory testing consisted of six (6) Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis performed in general accordance with ASTM D6913; and soil chemical (corrosivity) testing. Soil corrosivity testing was performed on two (2) composite soil samples collected from the borings. The

corrosivity testing includes a suite of tests to measure the chloride and sulfate contents, and pH of the soil. The laboratory test results are attached and incorporated into the soil descriptions presented in the following section.

7.0 SUBSURFACE CONDITIONS

The results of the subsurface investigation, and information obtained from the NRCS, indicate that the site is primarily underlain by glacially deposited soils, primarily consisting of coarse sands and silty melt-out till derived from granite and gneiss. The following subsections provide general descriptions of the subsurface conditions encountered. More detailed descriptions are provided on the boring logs, and the laboratory test results, attached.

As previously mentioned, an automatic hammer was used in the performance of the SPT sampling. The energy standardized N_{60}-value, which is typical of a safety hammer and is the standard for geotechnical analyses, is also used in the following descriptions of the soils. An automatic hammer typically imparts about 1.3 times as much energy to the soil as a safety hammer, and therefore, the field N-values reported in the boring logs are corrected by this factor to obtain the energy-corrected SPT N_{60}-values.

7.1 Native Soils

Native soils were encountered from the ground surface to the total depth explored in all borings. The native soils generally consisted of variably colored, coarse-to-fine sand, with varying amounts of coarse-to-fine gravel and silt. Pockets of coarse to fine gravel, as the primary material constituent, were encountered in all borings except boring B-3, and a small pocket of silt was encountered in the upper 2 feet bgs in boring B-1. Field SPT N-values within the native soils ranged from 4 blows per foot (bpf) to split spoon sampler refusal, which is defined as less than 6 inches of sampler penetration for 50 blows of the hammer. When corrected, the SPT N_{60}-values ranged from approximately 5 bpf to sampler refusal, indicating a loose to very dense condition. On average the native soils were encountered in a dense to very dense condition, with the loose layer only occurring in the upper 2 feet bgs in boring B-3. Additionally, note should be taken that numerous obstructions, in the form of cobbles and boulders, were encountered at varying and multiple depth layers in all borings. Auger refusal, on apparent cobble/boulder obstructions, was also encountered at the termination depth of all borings. The native soils have a USCS designation of SM and GM.

7.2 Groundwater

Due to the introduction of drilling fluid during mud rotary drilling, accurate groundwater readings could not be obtained during advancement of the borings. Groundwater, in the form of saturated soil samples, was observed in all borings at approximate depths ranging from 6 to 8 feet bgs. However, it should be noted that long-term measurements of groundwater were not part of the provided scope of services, and if required, Tectonic recommends the installation of a groundwater observation well. Additionally, groundwater levels vary seasonally, and with changing weather conditions. Consequently, groundwater may be encountered at other depths at other times, and in a perched condition above the very dense and fine-grained soils.

7.3 Soil Corrosivity

As noted in Section 5, chemical testing was performed on composite soil samples to evaluate the chloride and sulfate contents, pH, and electrical resistivity of the soils on site. Within the borings, composite samples were collected from the uncontrolled fill and native soils. The chemical testing was performed by Phoenix Environmental Laboratories, Inc. at their testing laboratory located in Manchester, Connecticut. Table 7.3.1 summarizes the results of the laboratory testing and the resulting relative corrosivity and resistivity of the subsurface soil at the site. The laboratory test report is included in Appendix II of this report.

Table 7.3.1 Corrosivity Test Results

Soil Type	Sample No.	Depth (ft)	Chloride Content (mg/kg[2])	pH	Sulfate Content (mg/kg[2,3])	Relative Corrosivity
Tower Base	Composite	2 to 10	< 55	6.60	< 55	Negative
Deadmen	Composite	2 to 8	< 54	6.26	< 54	Negative

Notes:
1. Reference: "Understanding Soil Risks and Hazards Using Soil Survey to Identify Areas with Risks and Hazards to Human Life and Property" USDA
2. The ratio mg/kg is equal to parts per million (ppm).
3. Content values preceded with a less than symbol (<) indicate that the content was below the detectable limit.

8.0 SITE CLASS AND SEISMIC SITE COEFFICIENTS

Based on the results of the subsurface investigation and the criteria outlined in the current edition of the Code and TIA-222-H, the subsurface conditions underlying the site should be considered Class D. The associated seismic design parameters from ASCE 7 are attached.

9.0 GUYED TOWER FOUNDATION RECOMMENDATIONS

Based on our understanding of the project and our conversations with the design team, the proposed construction will consist of the construction of an approximately 400-foot tall guyed tower. The following sub-sections provide our geotechnical recommendations for design and construction of the proposed guyed tower foundations. The recommendations are based on our understanding of the proposed construction, the results of the subsurface investigation, and our experience on other similar projects.

9.1 Tower Base and Guy Anchorages

The proposed guyed tower base can be supported on a conventional shallow spread footing (concrete block) that bears on the very dense native soils encountered at the site around boring B-1. The foundation can be designed for a maximum net allowable soil bearing pressure of 6,000 pounds per square foot (psf). Section 10 of this report provides the subgrade preparation procedures necessary to achieve the recommended bearing capacity. Using the above design criteria, total settlement is estimated to be up to 1 inch. It is recommended that the concrete block has a minimum width of 3.0 feet, and should bear at least 4.5 feet below outside grade, for frost protection.

Each of the guy anchorages will resist the uplift and lateral forces exerted by the guy wires through a combination of dead weight, resistance to soil shear along the anticipated failure planes, and passive earth pressure. The passive earth pressure will occur, because of the lateral loading, along the face of the concrete blocks that are oriented perpendicular to the direction of the guy anchor and are closest to the tower. Frictional resistance will also be developed along the sides and base of the block in the opposite direction of the applied force.

As previously mentioned, groundwater was encountered as shallow as approximately 6 feet bgs. A seasonally high depth to groundwater of 4 feet bgs should be used for design. Based on this depth, and the anticipated bearing depth of the proposed tower base and guy anchorages, construction phase dewatering may be required. Contractors, and others involved, should be prepared for the need to dewater.

The table below provides recommended soil parameters for use in evaluating the soil resistance to the imposed lateral and uplift loads:

Soil Parameter	Native Soils - Approximate Depth Below Existing Grade (ft.)		Imported Structural Fill
	0 to 4	Below 4	
Angle of Internal Friction	32°	36°	34°
Active Earth Pressure Coefficient (Ka)	0.31	0.26	0.28
Passive Earth Pressure Coefficient (Kp) [2]	3.25	3.85	3.54
At-Rest Earth Pressure Coefficient (Ko)	0.47	0.41	0.44
Coefficient of Base Friction [3]	0.35	0.45	0.42
Unit Weight of Soil (pounds per cubic foot)	115	67 [1]	125

1) Assumes a seasonally high depth to groundwater of 4 feet bgs.

2) Reduce the passive pressure above a depth of 4.5 feet below exterior grade by half to account for frost disturbance.

3) Coefficient of base friction applies to mass concrete placed directly against material indicated.

9.2 Foundation Construction Considerations

The foundation subgrades should be prepared by excavating to the bearing depth using hydraulic excavation equipment and using hand equipment to remove all soil and broken cobble and boulder materials loosened by excavation. The subgrade should then be inspected by the geotechnical engineer to verify that the materials are consistent with those described in this report. Any unsuitable materials (broken cobbles or boulders or soil other than those recommended for bearing) should be removed as directed by the geotechnical engineer.

Numerous cobbles and boulders were encountered during the subsurface investigation. Contractors involved in the excavation for the foundation of the proposed guyed tower should be prepared for the need for their removal.

Although not anticipated, any new fill slopes should be constructed on a slope inclination no steeper than 3 to 1 (Horizontal to Vertical) unless a detailed slope stability evaluation is performed. The sides of the excavation should be sloped back for safety unless a sheeting or bracing system is used. The Occupational Safety and Health Administration (OSHA) and other applicable agency requirements pertaining to worker safety should be met during the excavation activities.

10.0 EARTHWORK CONSTRUCTION CRITERIA

The following sections present our recommendations regarding earthwork and construction monitoring.

10.1 General Site Preparation and Excavations

Initially, the site should be stripped of all topsoil-like material and organics, debris, and vegetation. Debris and vegetation from the clearing operations should be removed from the site and disposed of at a legal dump site. All soft or unsuitable native materials, and subsurface obstructions, should be removed from the mat foundation footprint.

If encountered, any existing utilities within the project limits should be excavated and re-routed or removed. The resulting excavations should be backfilled with structural fill in accordance with the procedures outlined in Section 10.3. Trench excavations should be properly benched to allow for adequate compaction.

All excavations should conform to the latest OSHA requirements regarding worker safety. Based upon the soils encountered within the borings, the soils at the site should be considered OSHA Type C soils.

10.2 Foundation and Subgrade Preparation

All subgrades should be inspected by the Tectonic geotechnical engineer prior to the placement of structural fill, steel, or concrete. The foundation subgrade should be prepared by excavating to the bearing depth using hydraulic excavation equipment.

All foundation subgrades should also be proofrolled and be recompacted after excavation using the largest compaction equipment that can be practicably operated in the foundation excavation, such as a heavy plate tamper, or a trench roller, under the full-time observation of the geotechnical engineer. Any unsuitably yielding material should be removed and replaced as described above.

After the soil subgrade has been inspected and approved by the geotechnical engineer, an approximate 4-inch layer of free draining (Item #57 or similar) crushed stone can be placed to protect the subgrade and act as a working platform during construction.

10.3 Fill and Backfill Materials

The existing fill and native soils, due to their high fines content, are not suitable for structural fill, but may be used as general fill, such as in landscape areas. Imported structural fill materials should consist of clean imported on-site sand, gravel, crushed stone, crushed gravel, or a mixture of these, and should contain no organic matter and should meet the gradation as specified in the Rhode Island State Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction, Section M.01.09, Gradation of Aggregates, Reclaimed Processed Material, and as recommended below.

Sieve Size	Percent Finer by Weight
3-inch	100
1-1/2-inch	70 - 100
3/4-inch	50 - 85
No. 4	30 - 55
No. 50	8 - 25
No. 200	2 – 10

All structural fill should be compacted to at least 95 percent of the maximum dry density at near optimum moisture contents as determined by ASTM Standard D1557, *"Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))".* The lift thickness for the fill soils will vary depending on the type of compaction equipment used. Fills should generally be placed in uniform horizontal lifts not exceeding 8 inches in loose thickness. In confined areas, the loose lift thickness should be reduced to 4 inches or less and each lift should be compacted with sufficient passes of hand operated vibratory or impact compaction equipment.

A geotechnical engineer with appropriate field and laboratory support should approve materials for use as fill, and test fill materials for compliance with the recommended compaction. Each lift of fill placed at the site should be tested for compaction.

10.4 Construction Dewatering and Protection of Subgrades

Approved subgrades should be protected from the effects of frost, construction traffic, perched groundwater, surface water, and precipitation. The necessary protection should be provided as soon after acceptance, as is practicable, and should be maintained until coverage with compacted fill or concrete. It is recommended that temporary surface drainage measures be installed to divert runoff away from the proposed construction limits.

Depending on the foundation bearing depths of the tower base and guy anchorages, construction phase dewatering may be warranted, and if required it should be performed in a manner that will prevent loosening or migration of the subgrade soils.

The operation of sumps directly in the foundation excavation should not be allowed. Sump pits should be placed at least 1 foot outside of foundation excavations for every foot below the foundation subgrade elevation that they excavated. As per our field observations, the on-site soils were observed to contain significant amounts of silt, which make them moisture sensitive. They will readily soften and experience a reduction in load-carrying capacity when exposed to moisture. These soils are also frost susceptible and will experience expansion and contraction during freeze-thaw cycles.

11.0 LIMITATIONS

Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers and geologists practicing in this or similar situations. The interpretation of the field data is based on good judgment and experience. However, no matter how qualified the geotechnical engineer or detailed the investigation, subsurface conditions cannot always be predicted beyond the points of actual sampling and testing. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The recommendations contained in this report are for design purposes only. Contractors and others involved in this project are advised to make an independent assessment of the subsurface conditions for the purpose of estimating quantities and scheduling. No warranty, express or implied, is made as to the advice provided in this report.

This report has been prepared for the exclusive use of the Client for the specific application to the proposed construction detailed in this report. If any changes in the design or location of the proposed construction is planned, the conclusions and recommendations contained in this report shall not be considered valid unless reviewed and verified in writing by Tectonic Engineering Consultants, Inc. It is recommended that Tectonic be retained to provide construction monitoring services to ensure proper implementation of the recommendations contained herein, which would otherwise limit our professional liability.

We trust this report will allow you to proceed with design of the existing foundations.

Sincerely,

TECTONIC ENGINEERING CONSULTANTS, INC.

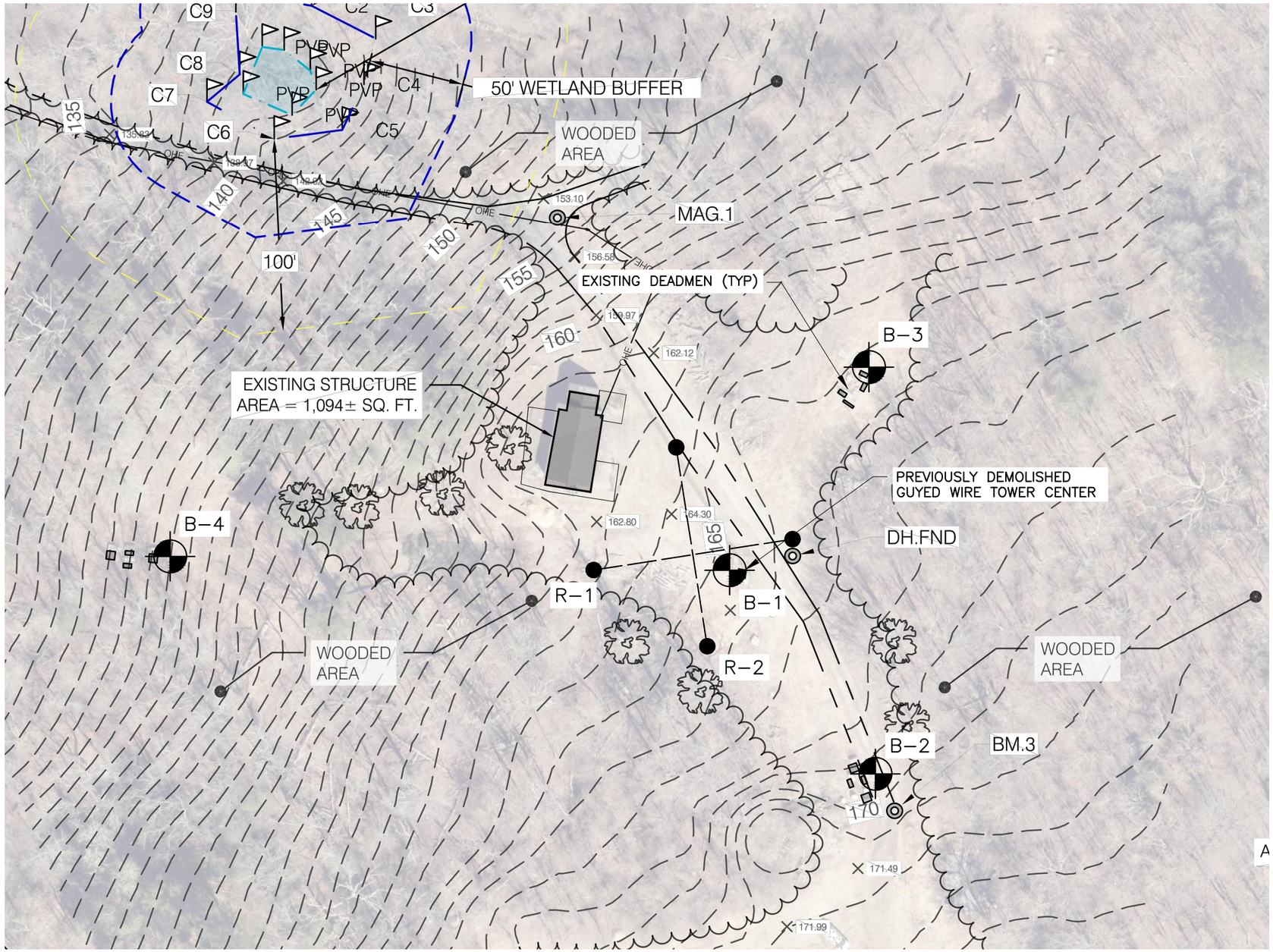
Prepared by:

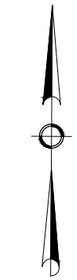
DONALD A. BENVIE
No. 6345
REGISTERED
PROFESSIONAL ENGINEER

Donald A. Benvie, P.E.
President & CEO

CDF/CBB/DB G:\Newburgh\Geotechnical\12100\12117.01 URI Radio Tower System\Report\12117.01.Geo Report.docx

Attachments:
Boring Location Plan, Figure 1
Boring Logs, By Tectonic
Soil Resistivity Results, by Tectonic
Laboratory Results, by Tectonic and Phoenix





LEGEND

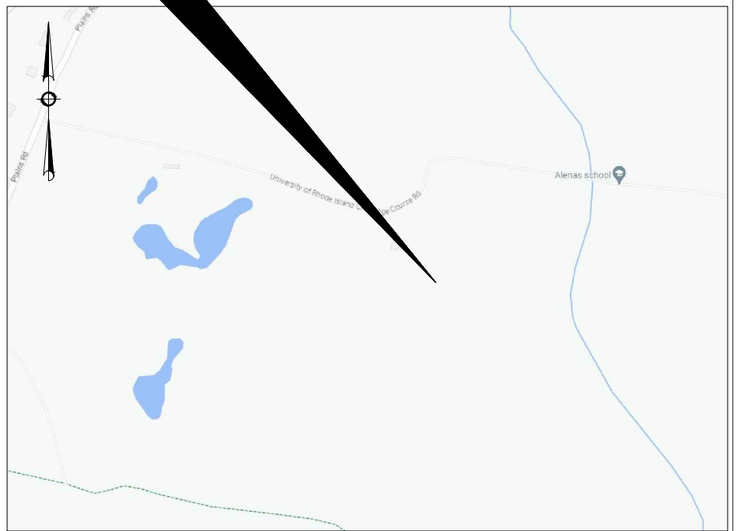
B-4 — APPROXIMATE BORING LOCATION

R-2 — APPROXIMATE SOIL RESISTIVITY TEST LOCATION

NOTES

1. PLAN BASED ON A TOPOGRAPHIC SURVEY PROVIDED BY THE CLIENT, TITLED "EXISTING CONDITIONS SURVEY AND TOPOGRAPHY PLAN", DRAWING NO. SV-101, DATED 08/09/23.
2. BORING AND SOIL RESISTIVITY TEST LOCATIONS WERE FIELD LOCATED BY TECTONIC AND SHOULD BE CONSIDERED APPROXIMATE.

SITE



0 1 2 3

ORIGINAL SIZE IN INCHES

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Tectonic Engineering Consultants, Inc.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com

Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

BORING AND SOIL RESISTIVITY TEST LOCATION PLAN

URI RADIO TOWER SYSTEM
PLAINS ROAD
SOUTH KINGSTOWN, WASHINGTON COUNTY, RHODE ISLAND

Date	Work Order	Drawing No.	Rev
08/30/23	12117.01	FIGURE 1	0
Scale 1" = 60'			

Tectonic

PROJECT No. **12117.01**
PROJECT: **URI Radio Tower System**
LOCATION: **875 Plains Rd, South Kingstown, RI**

BORING No. B-1

SHEET No. 1 of 1

CLIENT: **URI**
CONTRACTOR: **Geo Logic - Earth Exploration, Inc.**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | | TO
ROT. DRILL: | **2 7/8"** | **0** TO **22'**
CASING: | **4"** | **0** TO **22'**
DIAMOND CORE: | | TO
Acker Rebel Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **75° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Connor McCleary**
DRILLER: **Damien Jacobs**
SURFACE ELEVATION: **165.5**
DATUM: **See Remarks**
DATE START: **7/20/23**
DATE FINISH: **7/20/23**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % ✕ ⊗ △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1–2	14	2 2 12 23	S-1	20		M	SM	Bwn-gy Silt, and c-f Sand, little f Gravel		
3–4	62	38 31 31 50/4	S-2	17		M	SM	Bwn-gy c-f SAND, and Gravel, little Silt		62
5–6	50+	48 50/1	S-3	6		M	SM	Bwn-gy c-f SAND, little c-f Gravel, little Silt		160.5
7–8								Drilled through cobble/boulder obstruction to 8'		
9–10	45	20 17 28 30	S-4	17		W	SM	Gy c-f SAND, some c-f Gravel, little Silt		155.5
11–12	79	18 29 50 50/3	S-5	13		W	SM	Bwn c-f SAND, little c-f Gravel, little Silt		79
13–15								Drilled through cobble/boulder obstruction to 15'		150.5
16–17	88+	40 38 50/1	S-6			W	GM	Bwn-gy c-f GRAVEL, and Sand, little Silt		88
20	50+	50/0						Split spoon sampler refusal @ 20' Drilled to 22' Auger refusal at 22'		145.5
								End of Boring at 22'		
25										140.5

REMARKS: Surface elevations estimated based on the NEI Survey, dated August 9, 2023, and reference NAVD 88.

BORING LOG 12117.01.GPJ TECTONIC ENG.GDT 8/25/23

Tectonic

PROJECT No.	**12117.01**
PROJECT:	**URI Radio Tower System**
LOCATION:	**875 Plains Rd, South Kingstown, RI**

BORING No. B-2

SHEET No. 1 of 1

CLIENT: **URI**	GROUND WATER	DATE	TIME	DEPTH	INSPECTOR: **Connor McCleary**
CONTRACTOR: **Geo Logic - Earth Exploration, Inc.**					DRILLER: **Damien Jacobs**
METHOD OF ADVANCING BORING / DIA. / DEPTH					SURFACE ELEVATION: **175.0**
POWER AUGER: / TO	MON. WELL	☐ YES	☒ NO		DATUM: **See Remarks**
ROT. DRILL: **2 7/8"** **0** TO **15'**	SCREEN DEPTH: **---** TO **---**				DATE START: **7/19/23**
CASING: **4"** **0** TO **15'**	WEATHER: **Clear**	TEMP: **80° F**			DATE FINISH: **7/19/23**
DIAMOND CORE: / TO	DEPTH TO ROCK: **Not Encountered'**				
Acker Rebel Track Rig with Automatic Hammer	*CHANGES IN STRATA ARE INFERRED				

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● — 1 2 3 4 5

PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % — 10 20 30 40 50

STANDARD PENETRATION (BLOWS/FT.) ● — 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	50+	9 / 50/3	S-1	8		M	SM	Bwn c-f SAND, little c-f Gravel, little Silt, trace Organics		
2										
3								Drilled through cobble/boulder obstruction to 4'		
4										
5	40	9 / 20 / 20 / 18	S-2	15		M	SM	Gy c-f SAND, some Silt, little f Gravel		170.0
6										
7	50+	15 / 50/1	S-3	4		M	GM	Gy-bwn c-f GRAVEL, and c-f Sand, little Silt		
8										
9	97+	19 / 47 / 50/2	S-4	14		W	SM	Bwn c-f SAND, little c-f Gravel, little Silt		97
10										165.0
11										
12										
13										
14										
15										160.0
16	50+	14 / 50/6	S-5	12		W	SM	Bwn c SAND, trace Gravel, little Silt Drilled to 17'. Auger refusal at 17'.		
17										
18								End of Boring at 17'		
19										
20										155.0
21										
22										
23										
24										
25										150.0
26										
27										

REMARKS: Surface elevations estimated based on the NEI Survey, dated August 9, 2023, and reference NAVD 88.

Tectonic

BORING No. B-3

PROJECT No. **12117.01**
PROJECT: **URI Radio Tower System**
LOCATION: **875 Plains Rd, South Kingstown, RI**

SHEET No. 1 of 1

CLIENT: **URI**
CONTRACTOR: **Geo Logic - Earth Exploration, Inc.**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | | TO
ROT. DRILL: | **2 7/8"** | **0** TO **20'**
CASING: | **4"** | **0** TO **20'**
DIAMOND CORE: | | TO
Acker Rebel Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **80° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Connor McCleary**
DRILLER: **Damien Jacobs**
SURFACE ELEVATION: **166.0**
DATUM: **See Remarks**
DATE START: **7/19/23**
DATE FINISH: **7/19/23**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ●
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	4	2 2 2 3	S-1	14		M	SM	Bwn c-f SAND, little c-f Gravel, little Silt		
5	46	21 24 22 20	S-2	16		M	SM	Bwn c-f SAND, little c-f Gravel, little Silt		161.0
7								Drilled through cobble/boulder obstruction to 8'		
9	50+	48 50/3	S-3	9		W	SM	Gy-blk c-f SAND, some f Gravel, little Silt		
10										156.0
12								Drilled through cobble/boulder obstruction to 15'		
15										151.0
16	50+	45 50/4	S-4	7		W	SM	Gy c-f SAND, little c-f Gravel, little Silt		
18								Drilled through cobble/boulder obstruction to 20'		
20	50+	50/5	S-5	8		W	SM	Same		146.0
21								Drilled to 21' Auger refusal at 21'		
								End of Boring at 21'		
25										141.0

REMARKS: Surface elevations estimated based on the NEI Survey, dated August 9, 2023, and reference NAVD 88.

BORING LOG 12117.01.GPJ TECTONIC ENG.GDT 8/25/23

Tectonic

BORING No. B-4

PROJECT No. **12117.01**
PROJECT: **URI Radio Tower System**
LOCATION: **875 Plains Rd, South Kingstown, RI**

SHEET No. 1 of 1

CLIENT: **URI**
CONTRACTOR: **Geo Logic - Earth Exploration, Inc.**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | | TO
ROT. DRILL: | **2 7/8"** | **0** TO **15'**
CASING: | **4"** | **0** TO **15'**
DIAMOND CORE: | | TO
Acker Rebel Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **80° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Connor McCleary**
DRILLER: **Damien Jacobs**
SURFACE ELEVATION: **147.0**
DATUM: **See Remarks**
DATE START: **7/20/23**
DATE FINISH: **7/20/23**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % ✕ ⊗ △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1–2	10	3 4 6 8	S-1	22		M	SM	Bwn-gy c-f SAND, little f Gravel, little Silt		
3–4	33	12 13 20 18	S-2	18		M	SM	Same		
5–6	70+	17 20 50/5 4	S-3	11		M	SM	Bwn-tn c-f SAND, little c-f Gravel, little Silt		142.0
7–8	50	17 22 28 18	S-4	17		W	SM	Bwn-gy c-f Sand, and c-f Gravel, little Silt		
9–10	32	11 14 18 19	S-5	15		W	GM	Gy-bwn c-f GRAVEL, little c-f Sand, little Silt		137.0
11–14										
15	50+	50/0	S-6	0				No Recovery Drilled to 15' Auger refusal at 15'		132.0
16–26								End of Boring at 15'		127.0 / 122.0
27										

REMARKS: Surface elevations estimated based on the NEI Survey, dated August 9, 2023, and reference NAVD 88.

BORING LOG 12117.01.GPJ TECTONIC ENG.GDT 8/25/23

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LEGEND FOR SOIL DESCRIPTION

COARSE GRAINED SOIL (Coarser then No. 200 Sieve)

DESCRIPTIVE TERM & GRAIN SIZE

TERM	SAND					GRAVEL
coarse - c	No.	4	Sieve to No.	10	Sieve	3" to 3/4"
medium - m	No.	10	Sieve to No.	40	Sieve	3/4" to 3/16"
fine - f	No,	40	Sieve to No.	200	Sieve	

COBBLES 3" to 10"

BOULDERS 10" +

GRADATION DESIGNATIONS	PROPORTIONS OF COMPONENT
fine, f	Less than 10% coarse to medium
medium to fine, m-f	Less than 10% coarse
medium, m	Less than 10% coarse and fine
coarse to medium, c-m	Less than 10% fine
coarse, c	Less than 10% medium and fine
coarse to fine, c-f	All greater than 10%

FINE GRAINED SOIL (Finer than No. 200 Sieve)

DESCRIPTION	PLASTICITY INDEX	PLASTICITY
Silt	0 - 1	none
Clayey Silt	2 - 5	slight
Silt & Clay	6 - 10	low
Clay & Silt	11 - 20	medium
Silty Clay	21 - 40	high
Clay	greater than 40	very high

PROPORTION

DESCRIPTIVE TERM	PERCENT OF SAMPLE WEIGHT
trace	1 - 10
little	10 - 20
some	20 - 35
and	35 - 50

The primary component is fully capitalized if >50% of sample

COLOR

Blue - blue	Gy - gray	Wh - white
Blk - black	Or - orange	Yl - yellow
Bwn - brown	Rd - red	Lgt - light
Gn - green	Tn - tan	Dk - dark

SAMPLE NOTATION

S - Split Spoon Soil Sample
U - Undisturbed Tube Sample
C - Core Sample
B - Bulk Soil Sample
NR - No Recovery of Sample

WOC - Weight of Casing
WOR - Weight of Rods
WOH - Weight of Hammer
PPR - Compressive Strength based on Pocket Penetrometer
TV - Shear Strength (tsf) based on Torvane

ADDITIONAL CLASSIFICATIONS

New York City Building Code soil classifications are given in parentheses at the end of each description of material, if applicable. See sections 1804.2 of the 2008 Building Code for further details.

Tectonic	SOIL RESISTIVITY DATA SHEET	W.O.#: 12117.01	PAGE 1 of 2
		PROJECT:	URI Radio Tower System
		LOCATION:	Rhode Island

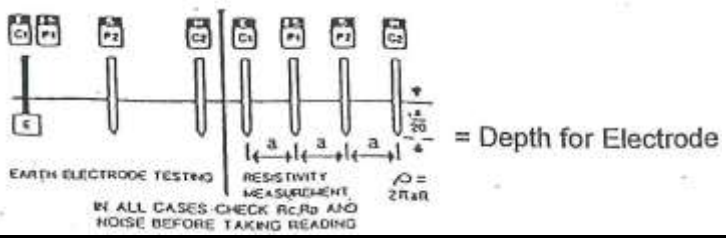
CLIENT:	URI	DATE:	7/19/2023	INSPECTOR:	Connor McCleary
CONTRACTOR:	Tectonic	Weather / Temp. (F):	Clear/ 75	SURFACE ELEVATION:	
LOCATION OF TEST:	R-1			DATUM:	
EQUIPMENT:	AEMC Instruments Model 6472 Digital Ground Resistance Tester				

Electrode Spacing "a" (ft)	Resistance (Ω)	Electrode Depth "a/20" (in)	Resistivity (Ω*cm)
2.5	459.0	6	219759
5	319.0	6	305461
10	165	6	315994
20	65.3	6	250114
35	37.60	6	252029
OTHER			
OTHER			

Orientation of leads:

Topography:

Remarks:



= Depth for Electrode

ADDITIONAL NOTES:

Wenner Four Point method

Tectonic	SOIL RESISTIVITY DATA SHEET	W.O.#: 12117.01	PAGE 2 of 2
		PROJECT:	URI Radio Tower System
		LOCATION:	Rhode Island

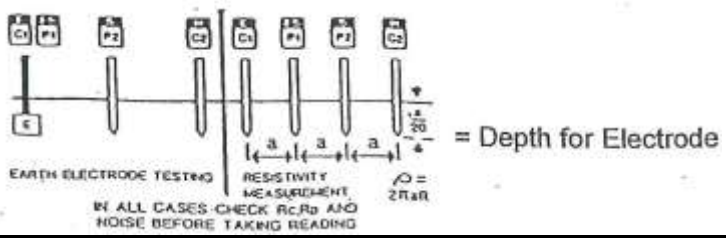
CLIENT:	URI	DATE:	7/19/2023	INSPECTOR:	Connor McCleary
CONTRACTOR:	Tectonic	Weather / Temp. (F):	Clear/ 75	SURFACE ELEVATION:	
LOCATION OF TEST:	R-2			DATUM:	
EQUIPMENT:	AEMC Instruments Model 6472 Digital Ground Resistance Tester				

Electrode Spacing "a" (ft)	Resistance (Ω)	Electrode Depth "a/20" (in)	Resistivity (Ω*cm)
2.5	436.0	6	208747
5	310.0	6	296843
10	185	6	354296
20	71.9	6	275393
35	40.10	6	268786
OTHER			
OTHER			

Orientation of leads:

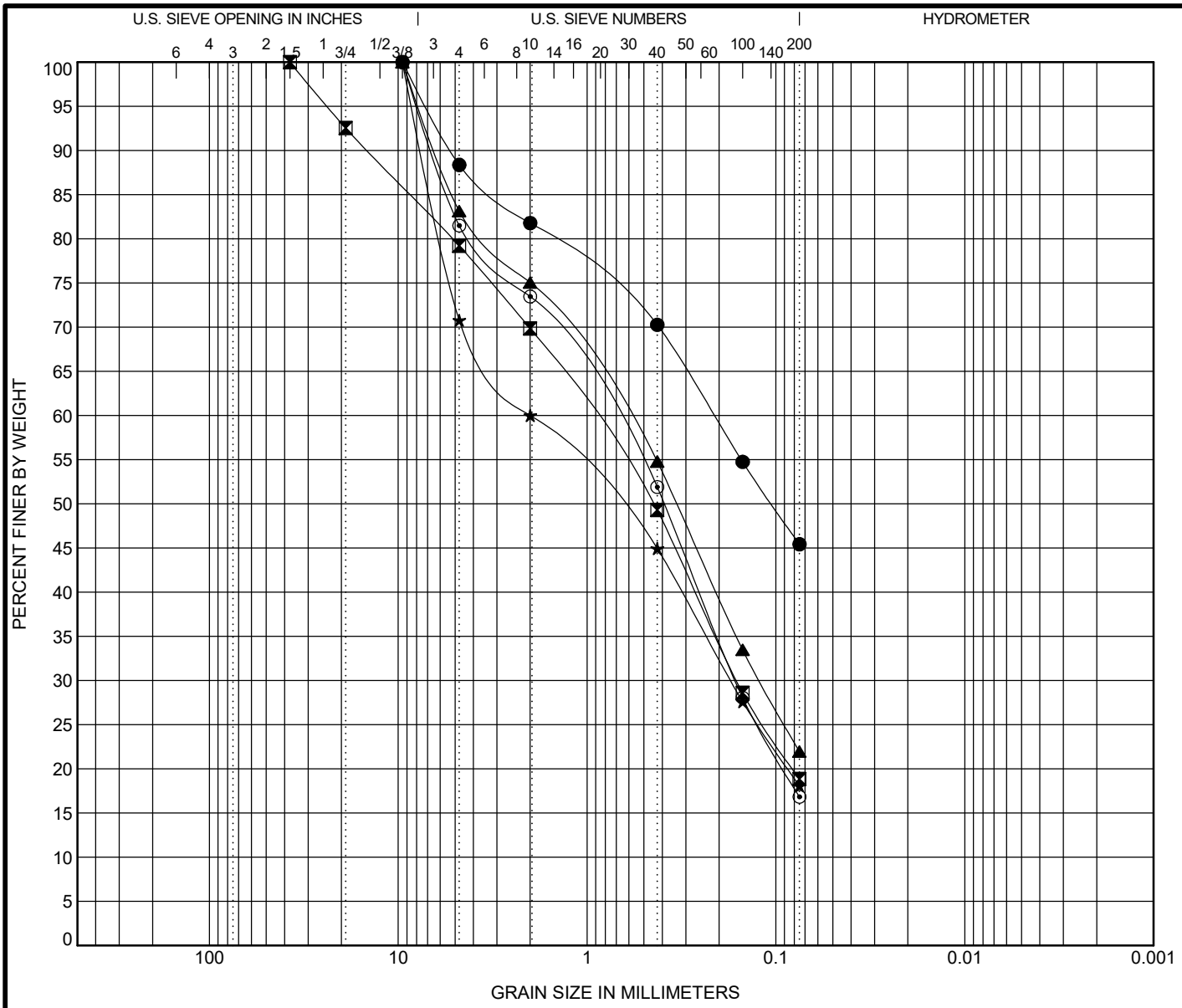
Topography:

Remarks:



ADDITIONAL NOTES:

Wenner Four Point method



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample Identification			Classification	WC%	LL	PL	PI	Cc	Cu
●	B-1	0.0	S-1	Bwn-Gy Silt, and c-f Sand, little f Gravel	19.9					
⊠	B-1	8.0	S-4	Gy c-f SAND, some c-f Gravel, little Silt	8.9					
▲	B-2	4.0	S-2	Gy c-f SAND, some Silt, little f Gravel	9.4					
★	B-3	8.0	S-3	Gy-Blk c-f SAND, some f Gravel, little Silt	10.9					
⊙	B-4	2.0	S-2	Bwn-Gy c-f SAND, little f Gravel, little Silt	6.1					

	Sample Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	Source of Material
●	B-1	0.0	S-1	9.5	0.213			11.6	42.9	45.4		Boring
⊠	B-1	8.0	S-4	37.5	0.953	0.161		20.8	60.4	18.9		Boring
▲	B-2	4.0	S-2	9.5	0.633	0.122		16.9	61.2	22.0		Boring
★	B-3	8.0	S-3	9.5	2	0.173		29.2	52.7	18.1		Boring
⊙	B-4	2.0	S-2	9.5	0.76	0.163		18.5	64.7	16.8		Boring

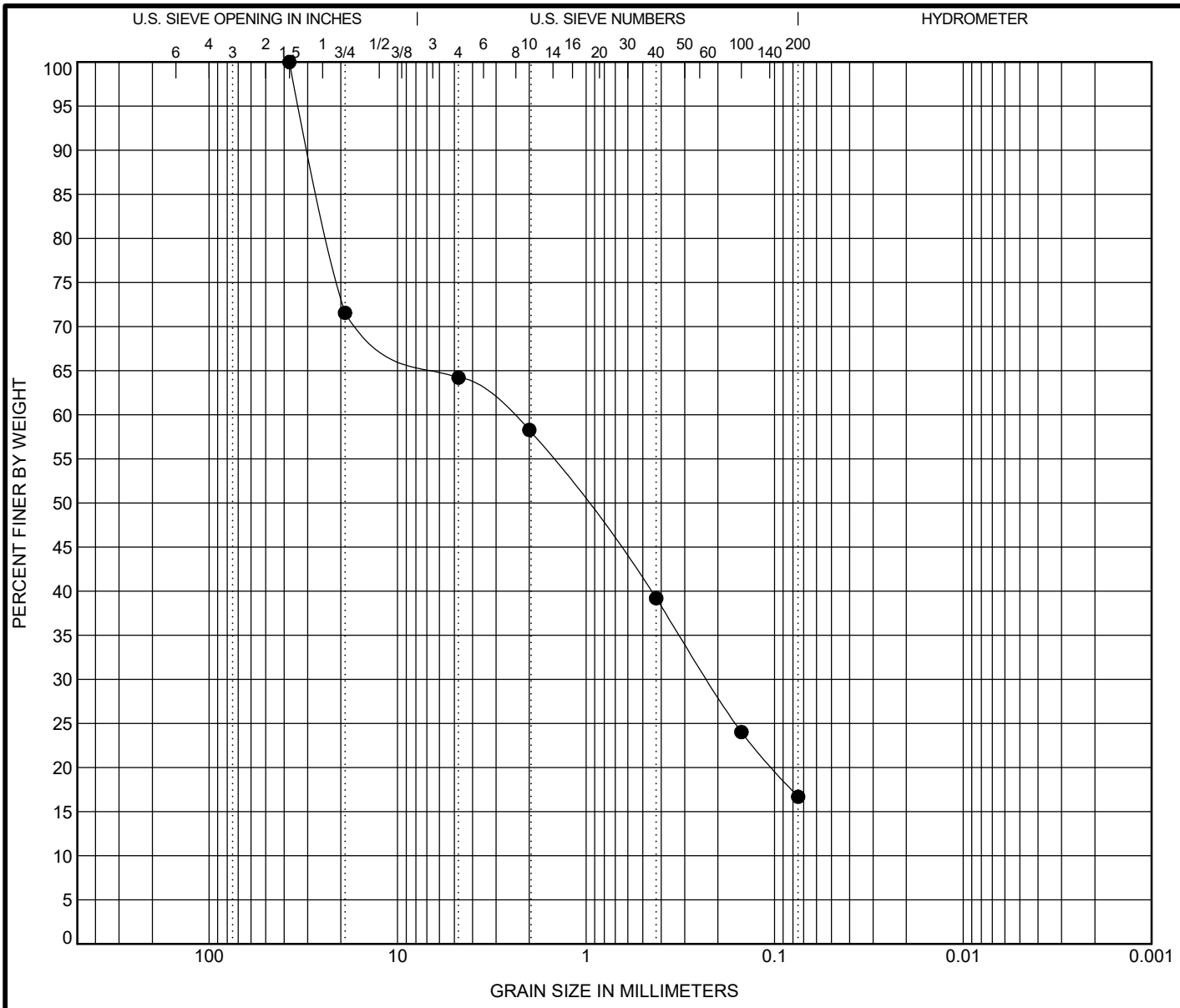
Tectonic
280 Little Britain Road, Bldg. 2
Newburgh, NY 12550
Telephone: (845) 563-9081 Fax: (845) 563-9085

GRAIN SIZE DISTRIBUTION

Project No: **12117.01** Date: **8/9/23**

Project: **URI Radio Tower System**

Location: **Kingston, Rhode Island**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample Identification	Classification	WC%	LL	PL	PI	Cc	Cu
●	**B-4 6.0 S-4**	**Bwn-Gy c-f Sand, and c-f Gravel, little Silt**	**9.5**					

	Sample Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	Source of Material
●	**B-4 6.0 S-4**	**37.5**	**2.57**	**0.226**		**35.8**	**47.5**	**16.7**		**Boring**

Tectonic

280 Little Britain Road, Bldg. 2
Newburgh, NY 12550
Telephone: (845) 563-9081 Fax: (845) 563-9085

GRAIN SIZE DISTRIBUTION

Project No: **12117.01** Date: **8/9/23**

Project: **URI Radio Tower System**

Location: **Kingston, Rhode Island**

PHOENIX
Environmental Laboratories, Inc.

Wednesday, August 09, 2023

Attn: Chris Ferri
Tectonic Engineering
70 Pleasant Hill Road
Mountainville, NY 10953

Project ID: 12117.01 URI RADIO TOWER SYSTEM
SDG ID: GCO67701
Sample ID#s: CO67701 - CO67702

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

August 09, 2023

SDG I.D.: GCO67701

Project ID: 12117.01 URI RADIO TOWER SYSTEM

Client Id	Lab Id	Matrix
COMPOSITE: TOWER BASE	CO67701	SOIL
COMPOSITE: DEADMAN	CO67702	SOIL

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 09, 2023

FOR: Attn: Chris Ferri
Tectonic Engineering
70 Pleasant Hill Road
Mountainville, NY 10953

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/20/23	9:00
Location Code:	TECTONIC	Received by:	SR1	08/07/23	16:06
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	12117.01				

Laboratory Data

SDG ID: GCO67701
Phoenix ID: CO67701

Project ID: 12117.01 URI RADIO TOWER SYSTEM
Client ID: COMPOSITE: TOWER BASE

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	91		%		08/07/23	CV	SW846-%Solid
Chloride	< 55	55	mg/kg	10	08/07/23	BS/GD	SW9056A
Corrosivity	Negative		Pos/Neg	1	08/08/23	MW/ER	SW846-Corr
pH at 25C - Soil	6.60	1.00	pH Units	1	08/08/23 00:04	MW/ER	SW846 9045D
Sulfate	< 55	55	mg/kg	10	08/07/23	BS/GD	SW9056A

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Corrosivity is based solely on the pH analysis performed above.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
August 09, 2023
Reviewed and Released by: Anil Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 09, 2023

FOR: Attn: Chris Ferri
Tectonic Engineering
70 Pleasant Hill Road
Mountainville, NY 10953

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/20/23	9:00
Location Code:	TECTONIC	Received by:	SR1	08/07/23	16:06
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	12117.01				

Laboratory Data

SDG ID: GCO67701
Phoenix ID: CO67702

Project ID: 12117.01 URI RADIO TOWER SYSTEM
Client ID: COMPOSITE: DEADMAN

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	93		%		08/07/23	CV	SW846-%Solid
Chloride	< 54	54	mg/kg	10	08/07/23	BS/GD	SW9056A
Corrosivity	Negative		Pos/Neg	1	08/08/23	MW/ER	SW846-Corr
pH at 25C - Soil	6.26	1.00	pH Units	1	08/08/23 00:04	MW/ER	SW846 9045D
Sulfate	< 54	54	mg/kg	10	08/07/23	BS/GD	SW9056A

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Corrosivity is based solely on the pH analysis performed above.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
August 09, 2023
Reviewed and Released by: Anil Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

August 09, 2023

QA/QC Data

SDG I.D.: GCO67701

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 691117 (PH), QC Sample No: CO67445 (CO67701, CO67702)														
pH			6.71	6.76	0.70	101						85 - 115	20	
QA/QC Batch 691171 (mg/L), QC Sample No: CO67384 (CO67701, CO67702)														
Chloride	BRL	5.0	6.7	6.7	NC	95.0			104			90 - 110	20	
Sulfate	BRL	5.0	<5.0	<5.0	NC	99.7			112			90 - 110	20	m

m = This parameter is outside laboratory MS/MSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
August 09, 2023

Wednesday, August 09, 2023

Criteria: None

State: RI

Sample Criteria Exceedances Report

GCO67701 - TECTONIC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Comments

August 09, 2023 SDG I.D.: GCO67701

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.

Our Story

For the past 30 years, Tectonic has delivered quality professional services in a timely and cost effective manner by pooling its talented staff into project teams that think, act, and perform as one integral unit. By carefully listening and collaborating with its clients, the firm is able to identify the key issues and assure stakeholder objectives are met in the final deliverables. Through innovating and adopting technological advances, the firm is able to generate unique solutions to improve our nation's deteriorating infrastructure and build safe sustainable communities.

As the world evolves, and its challenges grow more complex, Tectonic continues to innovate and provide the practical solutions and exceptional customer service its clients have trusted since its founding.

www.TectonicEngineering.com

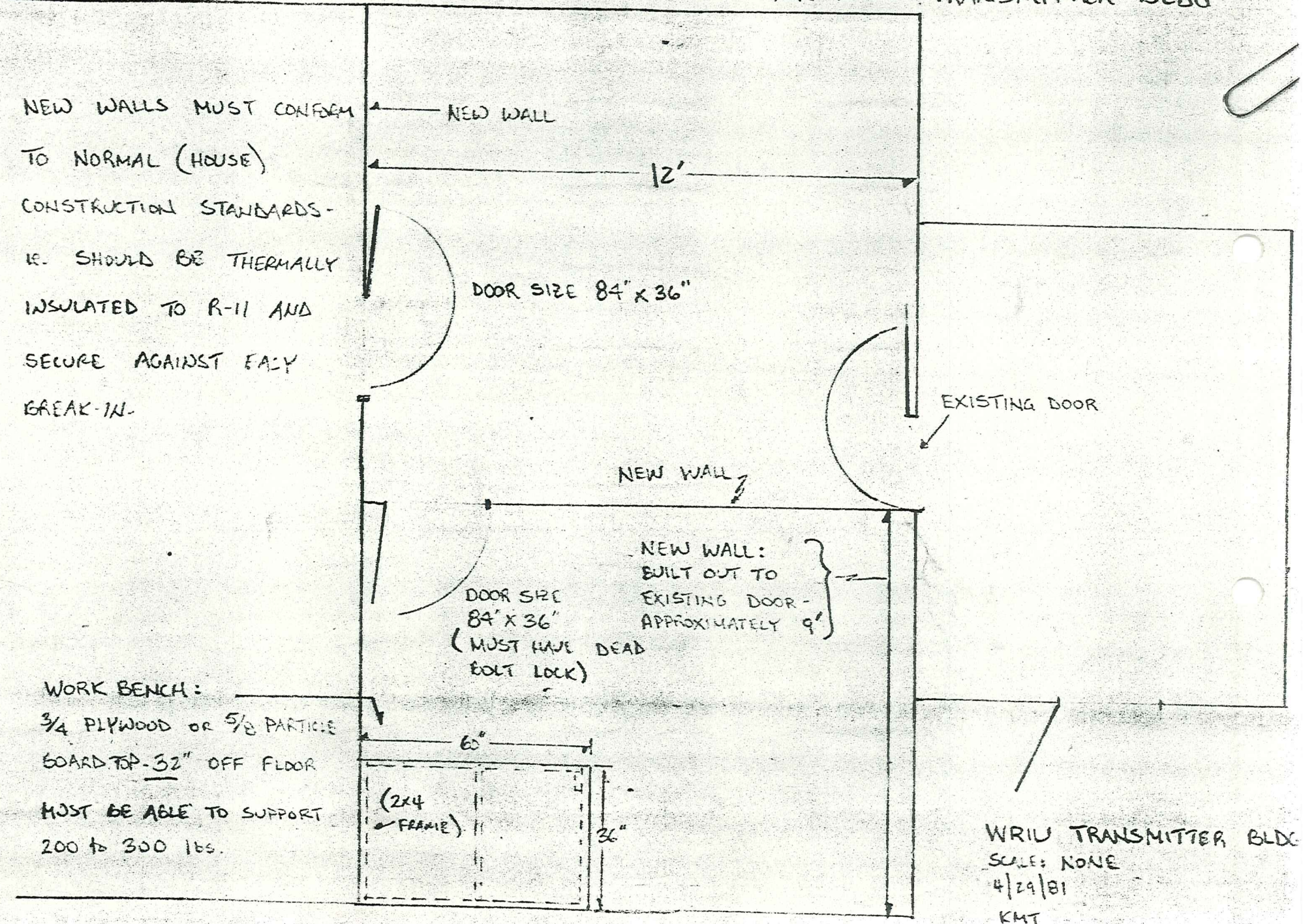
Tectonic

MOUNTAINVILLE, NY (CORPORATE OFFICE)
70 Pleasant Hill Road, PO Box 37
Mountainville, NY, 10953
Phone: 845-534-5959
Fax: 845-534-59993

W. Moretti —

BASIC LAYOUT - WALLS AND DOORS FOR WRIU TRANSMITTER BLDG

NEW WALLS MUST CONFORM TO NORMAL (HOUSE) CONSTRUCTION STANDARDS - IE. SHOULD BE THERMALLY INSULATED TO R-11 AND SECURE AGAINST EASY BREAK-IN.



SHEET D-1412
(Replaces D-1171)

October 1, 1978

BIG-GRIPS (DEAD END) COMPLETE WITH END SLEEVE

PART NUMBER		WT.
	FOR 7-STRAND GALVANIZED GUY WIRE	
BG2142	3/16" Big-Grip, 23" length, complete with GC65303 end sleeve	28/100
BG2144	1/4" Big-Grip, 27" length, complete with GC65136 end sleeve	38/100
BG2146	5/16" Big-Grip, 33" length, complete with GC65128 end sleeve	66/100
*BG2147	3/8" Big-Grip, 37" length, complete with GC65264 end sleeve	95/100
*BG2148	7/16" Big-Grip, 40" length, complete with GC65265 end sleeve	140/100
*BG2115	1/2" Big-Grip, 50" length, complete with GC65266 end sleeve	229/100
*BG2116	9/16" Big-Grip, 55" length, complete with GC65267 end sleeve	342/100
*BG2111	5/8" Big-Grip, 64" length, complete with GC65268 end sleeve	355/100
	FOR 19-STRAND GALVANIZED GUY WIRE	
*BG2112	3/4" Big-Grip, 76" length, complete with GC65269 end sleeve	1080/100

NOTE: 1) End sleeves must be used on all Big-Grips. See Drawing B-700607 for procedure to apply end sleeve on Big-Grips.

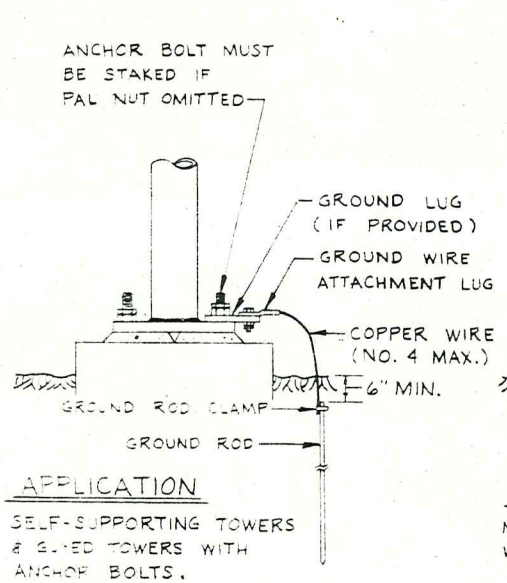
2) Oversized heavy duty thimbles must be used with all Big-Grips.

*Prices available upon request.

Refer to alphabetical/numerical price list for current prices on other items.

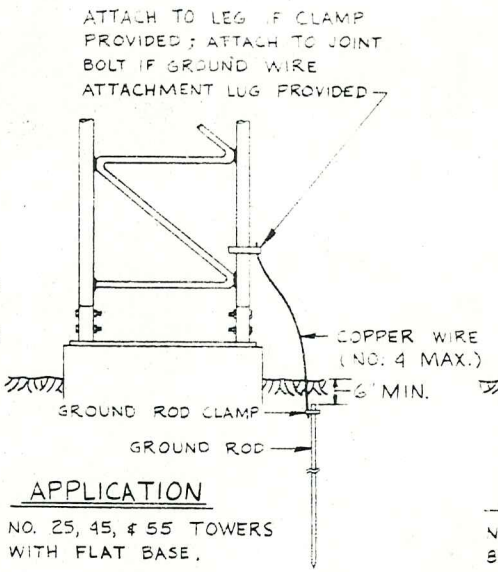
F.O.B. PEORIA, ILLINOIS

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.



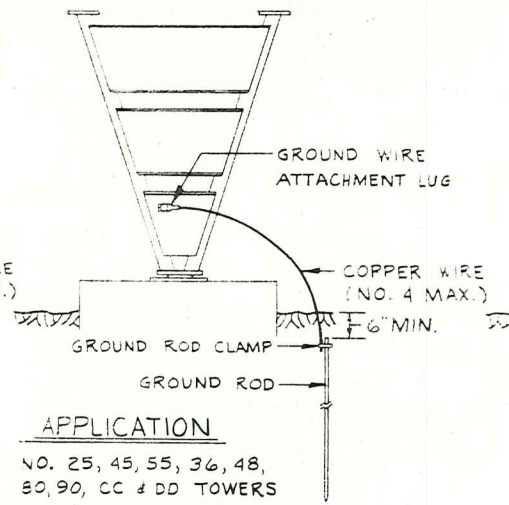
APPLICATION

SELF-SUPPORTING TOWERS & GUYED TOWERS WITH ANCHOR BOLTS.



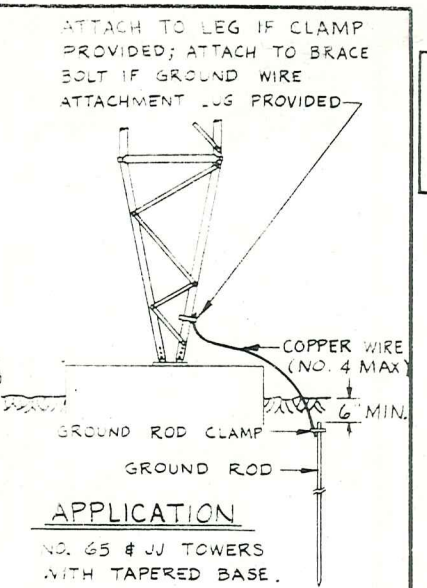
APPLICATION

NO. 25, 45, & 55 TOWERS WITH FLAT BASE.



APPLICATION

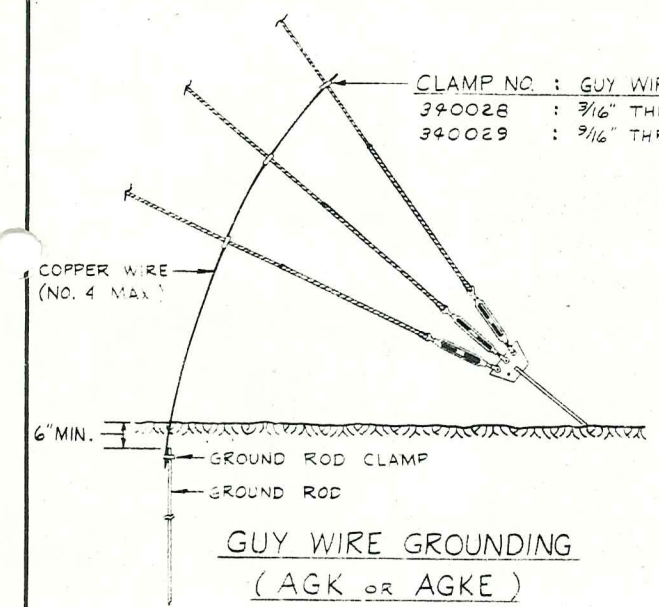
NO. 25, 45, 55, 36, 48, 80, 90, CC & DD TOWERS WITH TAPERED BASE.



APPLICATION

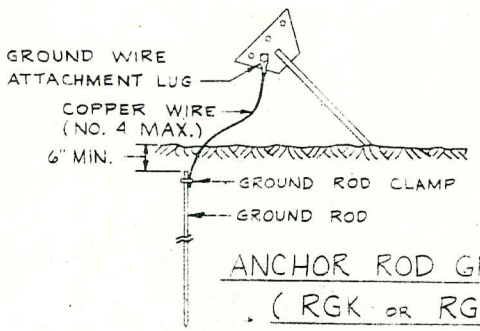
NO. 65 & JJ TOWERS WITH TAPERED BASE.

BASE GROUNDING KITS (BGK OR BGKE)



GUY WIRE GROUNDING

(AGK OR AGKE)



ANCHOR ROD GROUNDING

(RGK OR RGKE)

ANCHOR GROUNDING KITS

NOTE :

REMOVE ALL SHARP BENDS FROM COPPER WIRE

NO.	DESCRIPTION	DATE	BY
R1	ADDED DIMENSIONS ON AGK & AGKE DETAIL	6-9-77	MDJ

REVISIONS

ROHN® MANUFACTURING
DIVISION OF BRACO

TITLE
TOWER GROUNDING METHODS

FILE NO.

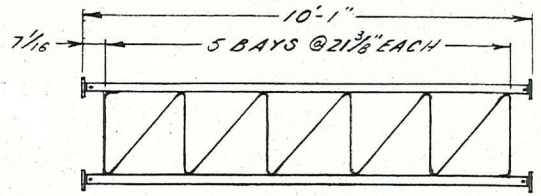
SCALE NONE	MATERIAL	FINISH	WT.
DWN. BY JER	DATE 11-20-73	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES.	
CH'D. BY	DATE 11-27-73		
APP'D. ENG'RG.	DATE 11-27-73	TOLERANCES: DEC. ± FRAC. ± ANGLES ±	DWG. NO. C-731105 R1
APP'D.	DATE 12/1/73		

GAF 880-250 2 72 48194

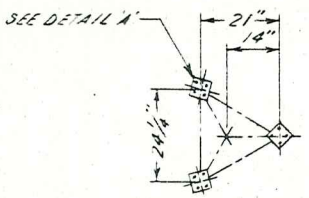
PRINTED IN U.S.A.

TOWER SPECIFICATIONS

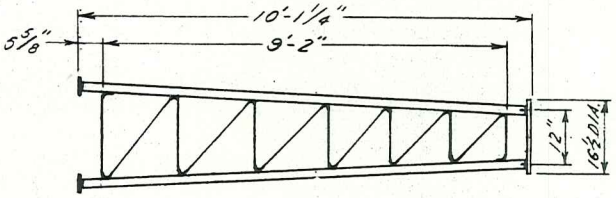
DISTANCE BETWEEN SIDE RAILS (CENTER TO CENTER)		24 1/4"
OVERALL LENGTH OF SECTION		20'-1"
WEIGHT PER SECTION		290 LBS.
SIDE RAIL DIAMETER AND GAUGE *		1.90 D.X.145 WALL
CROSS SECTIONAL AREA - ONE LEG		.799 SQ. IN.
GROSS ALLOWABLE VERTICAL LOAD ON THE BOTTOM TOWER SECTION		63,750 LBS.
MAXIMUM ALLOWABLE AXIAL COMPRESSION OF THE CROSS SECTION OF ONE SIDE RAIL		21,250 LBS.
MEASURED TENSILE STRENGTH OF ONE SIDE RAIL		51,900 LBS.
MEASURED TENSILE STRENGTH OF ONE BOLTED LEG JOINT		51,900 LBS.
MAXIMUM ALLOWABLE TENSION IN EACH BOLTED LEG JOINT		20,800 LBS.
SAFE MOMENT OF RESTRAINT		36,400 LBS.
L - UNBRACED LENGTH OF SIDE RAIL (DISTANCE BETWEEN CROSSPIECES)		21 3/8"
R - RADIUS OF GYRATION OF SIDE RAIL		.623
L/R FOR MAIN LEG MEMBER		34.3
WIND LOAD PER LINEAL FOOT OF TOWER AT THE HORIZONTAL WIND PRESSURES (PER SQUARE FOOT OF FLAT SURFACE) LISTED BELOW:	30 LBS.	13.77
	40 LBS.	18.36
	50 LBS.	22.96

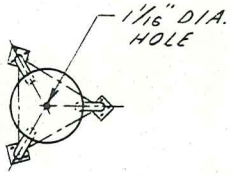


NO. 65G SECTION

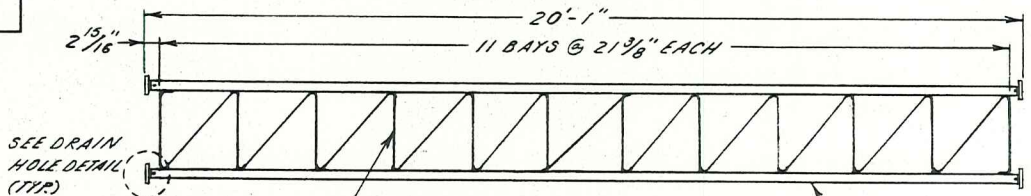


NOTE: THIS VIEW TYPICAL ALL SECTIONS EXCEPT AS SHOWN





NO. 65TG SECTION

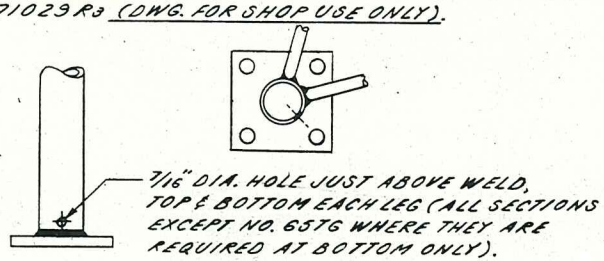


NO. 6520G SECTION

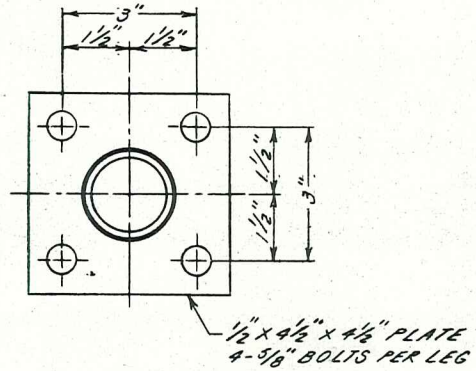
TOWER SECTIONS

GENERAL NOTES

1. ALL SECTIONS ARE HOT DIP GALVANIZED AFTER FABRICATION.
2. ALL SECTIONS CAN BE INSTALLED WITH EITHER END UP, EXCEPT NO. 65TG.
* 3. 2" O.D. X 1/8" WALL TUBING ALTERNATE.
4. 12 - 5/8" X 2" BOLTS REQUIRED PER SECTION, EXCEPT NO. 65TG.
5. FOR FABRICATION DETAIL SECTIONS NO. 65G & 65TG SEE DWG. NO. B770822R4 (DWG. FOR SHOP USE ONLY). FOR FABRICATION DETAIL SECTION NO. 6520G SEE DWG. NO. C771029R3 (DWG. FOR SHOP USE ONLY).



DRAIN HOLE DETAIL



DETAIL A

No.	Revision Description	Date	By
R	RE-DRAW.	12/1/78	GLS

Unarco-Rohn
Division of Unarco Industries, Inc.

Title: MODEL 65G TOWER SECTIONS

Scale: NONE

Drawn by: GLS 11/27/78

Checked by: MDD 4-11-79

Approved by Engineering: TS 4-16-79

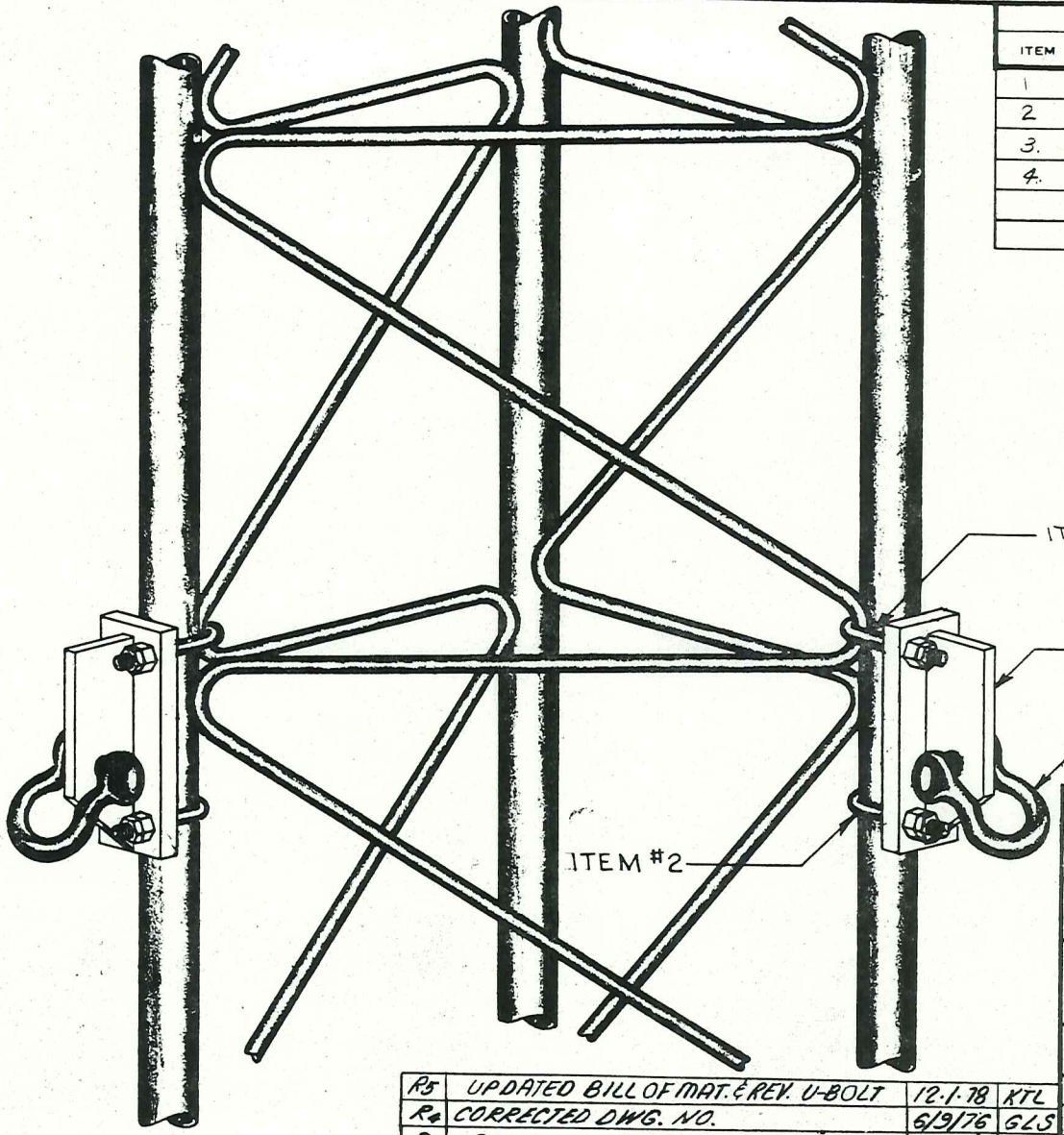
Approved by Production: Date

Approved by Sales: PRL 4-17-79

Unless otherwise specified, dimensions are given in inches. Tolerances: Decimals ±, Fractions ±, Angles ±. Material, Finish, Weight.

File Number

Drawing Number: C630665R3

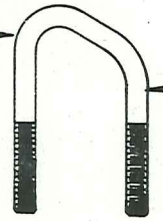


BILL OF MATERIAL

ITEM	QUAN.	PART. NO.	DESCRIPTION	DWG. NO.
1	3	B65G	GUY BRACKET	C670701 R4
2	3	JR810A	1/2" U-BOLT ASS'Y	B651028 R19
3.	3	JR65SA	1/2" U-BOLT ASS'Y	B710909 R3
4.	3	1/2 S	1/2" SHACKLES	—

NOTE: UPPER U-BOLT OF BRACKET MUST INTERCONNECT WITH "ZIG-ZAG" BRACE AS SHOWN.

NOTE: BRACKET DESIGNED FOR USE WITH A MAXIMUM OF 3/8" EHS GUY STRAND.



SPECIAL P.T. NO. JR 65SA U-BOLT ASS'Y

NO.	DESCRIPTION	DATE	BY
R1	ADDED ITEM #5 REDUCED ITEM #2 QUAN.	10-6-71	OH
R5	UPDATED BILL OF MAT. & REV. U-BOLT	12-1-78	KTL
R4	CORRECTED DWG. NO.	6/9/76	GLS
R3	REMOVED LOCKNUTS	12/5/74	OH
R2	ADDED FAB. DWG. NOS. TO BILL OF MAT.	1/18/72	GLS

REVISIONS

ROHN

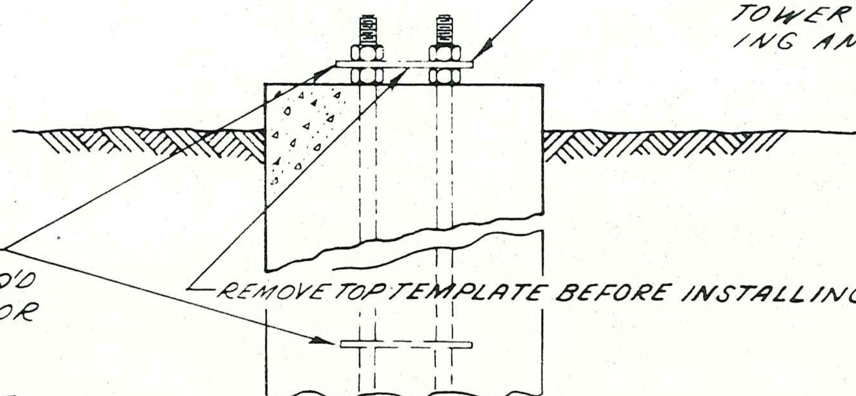
TITLE

INSTALLATION INSTRUCTIONS
GA65G GUYING ASSEMBLY

FILE NO.

SCALE NONE	MATERIAL	FINISH	WT.
DWN BY A. JOHNSON	DATE 1-8-68	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES	
CK'D BY ck	DATE 1-16-68	TOLERANCES DEC ± FRAC ± ANGLES ±	DWG. NO. B 680104 R5
APP'D RAK	DATE 1-16-68		

ANCHOR BOLT SETTING TEMPLATE -(SEE ANCHOR BOLT LAYOUT OF EACH TOWER SITE FOR TEMPLATE PART NO.).
(R1) FOR 6" THRU 12" PIPE LEGS ONLY LOCATE TEMPLATE SUCH THAT SCRIBED LINE PASSING THRU CENTER HOLE & 2 CENTER PUNCH MARKS IS ON LINE TO TOWER AXIS. SEE ANCHOR BOLT LAYOUT OF EACH TOWER SITE FOR FURTHER INFORMATION CONCERNING ANCHOR BOLT ORIENTATION.



CHECK ANCHOR BOLT SIZE, NO., SPACING, & BOLT CIRCLE DIA. ON TEMPLATE AGAINST ANCHOR BOLT LAYOUT DRAWINGS BEFORE INSTALLATION.

ANCHOR BOLT TEMPLATE (2 REQ'D FOR EACH ANCHOR BOLT GROUP)

REMOVE TOP TEMPLATE BEFORE INSTALLING TOWER.

NOTE: IT IS THE RESPONSIBILITY OF THE FOUNDATION CONTRACTOR TO VERIFY THAT THE CORRECT ANCHOR BOLT TEMPLATE AND FOUNDATION DIMENSIONS SHOWN ON RESPECTIVE SITE DRAWINGS ARE BEING USED.

NO	DESCRIPTION	DATE	BY
R2	CORRECTED LEG SIZE	4/20/79	GLS
R1	ADD NOTE.	10/20/78	GLS

REVISIONS

ROHN MANUFACTURING

TITLE: ANCHOR BOLT TEMPLATE INSTALLATION

FILE NO.

SCALE ~

DWN BY O.H. DATE 4-7-73
CKD BY T.S. DATE 4-13-73
APPD ENGR. CW DATE 4-13-73
APPD SALES GR DATE 7-12-73

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES

TOLERANCES — DEC. — FRAC. — ANGLES

DWG NO B 730521 R2

ASSEMBLY BOLT INSTALLATION:

All tower assembly bolts are to be inserted out and/or up (with nuts and pal nuts on the outside of tower face and top of flange connections) - unless prohibited by lack of clearance.

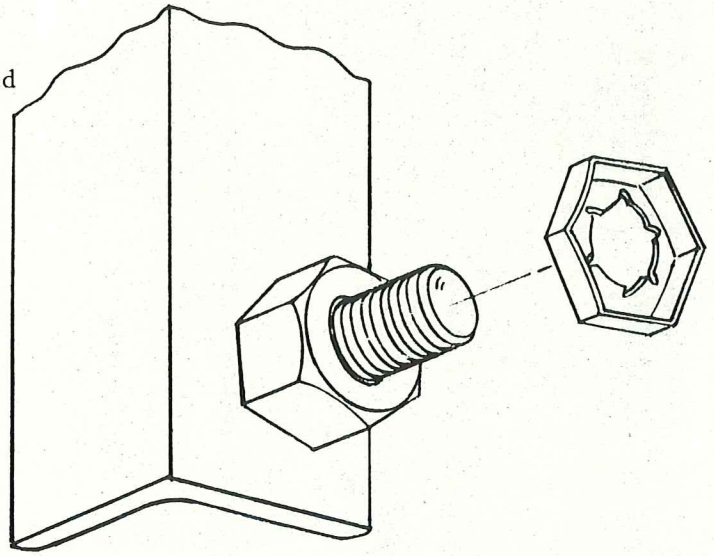
All assembly bolts are to be tightened according to E.I.A. Standard RS-222-B Subpart 1.1.5.2 - (where high strength galvanized bolts are used for nonfriction type connections, the bolts shall be tightened to a "snug tight" condition in accordance with "Specification for Structural Joints using A.S.T.M. A325 or A490 bolts".

Flat washers are to be installed with bolts over slotted holes.

CAUTION: Do not over-torque! Hot dipped galvanizing on bolts, nuts and steel parts tends to act as a lubricant, thus over-tightening can easily occur and can cause bolts to crack or snap off.

PAL NUT INSTALLATION:

Pal nuts are to be installed after nuts are tight and with edge lip out. (see picture below)



No. ▲	Revision Description	▲Date	▲By

Unarco-Rohn

Division of Unarco Industries, Inc.

Title

BOLT ASSEMBLY INSTALLATION

Scale	NONE		
Drawn by	O.H.	Date	7-5-79
Checked by	GKB	Date	7-5-79
Approved by Engineering	TS	Date	7-5-79
Approved by Production		Date	
Approved by Sales	PHL	Date	7-10-79

Unless otherwise specified, dimensions are given in inches.

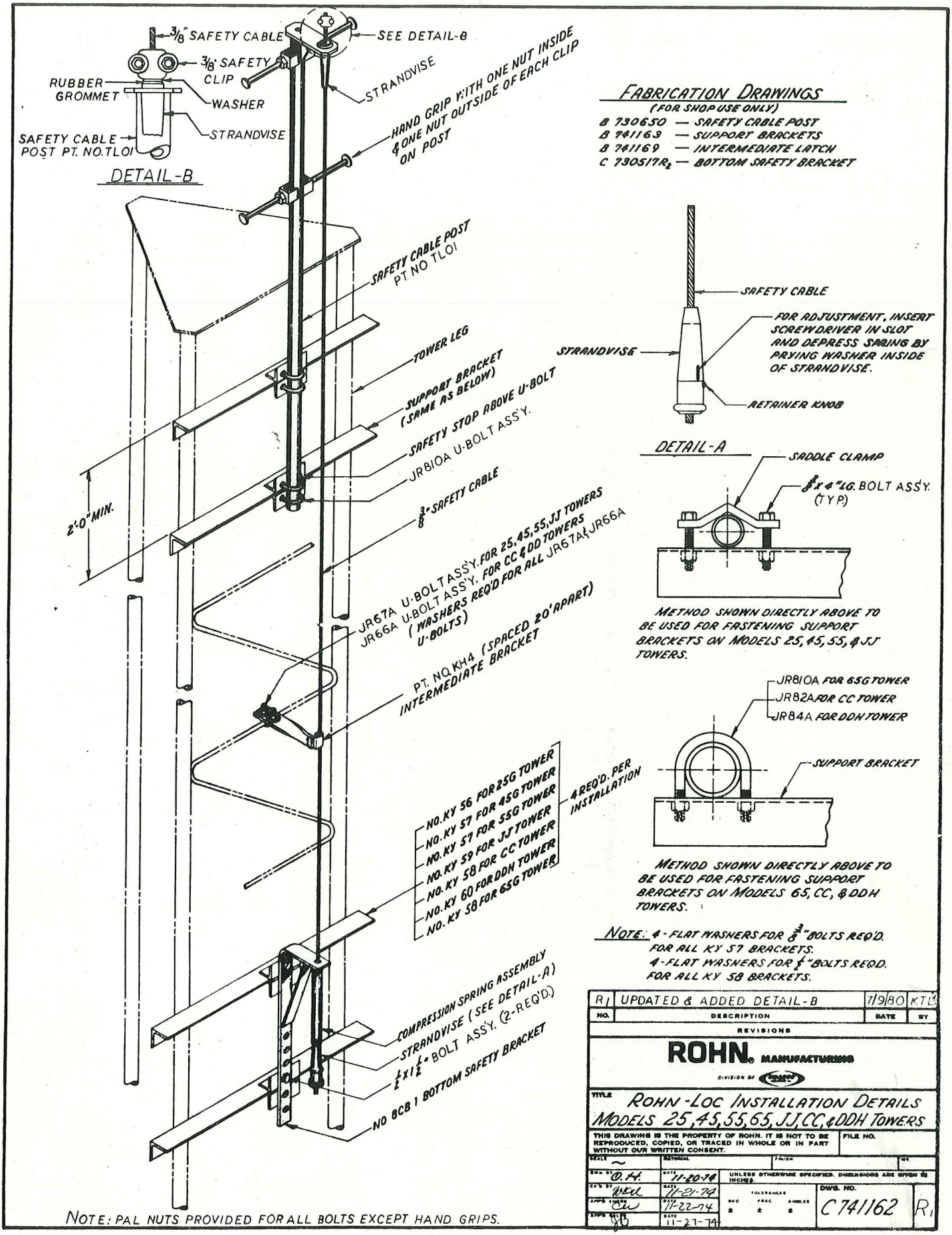
Tolerances

Decimals	Fractions	Angles
±	±	±

Material | Finish | Weight

File Number

Drawing Number A 790135



NO.	DESCRIPTION	DATE	BY
R1	UPDATED & ADDED DETAIL-B	7/9/80	KTL

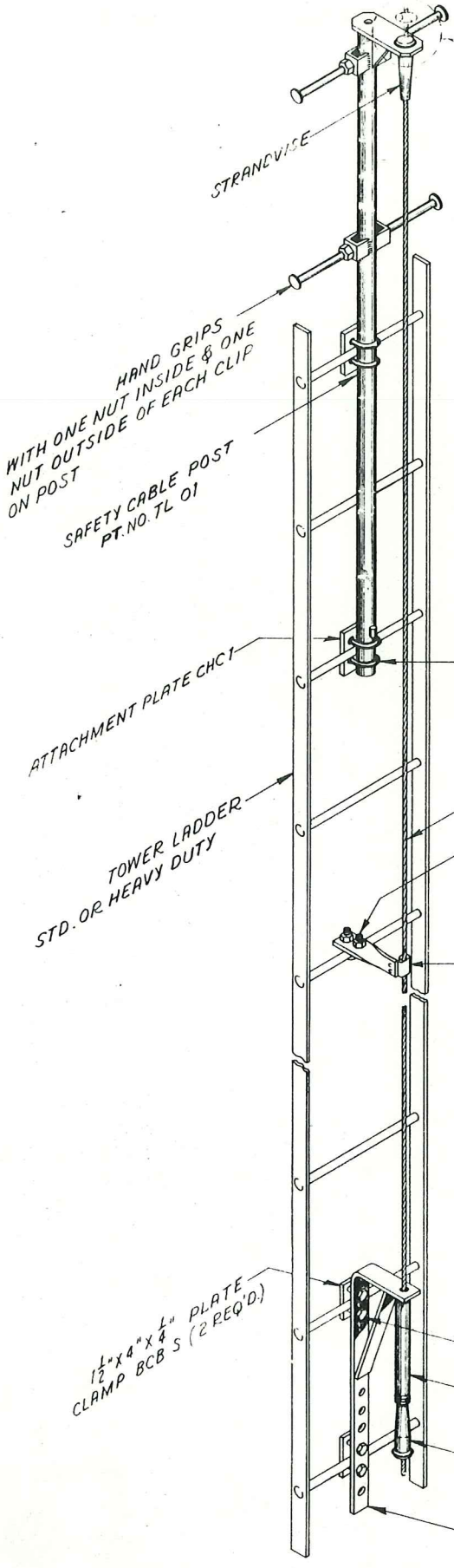
REVISIONS

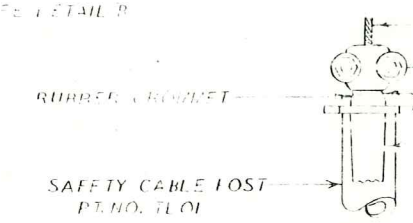
ROHN® MANUFACTURING
DIVISION OF

TITLE: ROHN-LOC INSTALLATION DETAILS MODELS 25, 45, 55, 65, JJ, CC, & DDH TOWERS

FILE NO.

SCALE: ~	MATERIAL	FINISH	WT.
DWN BY: O.H.	DATE: 11-20-74	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES	
CH'D BY: [illegible]	DATE: 11-21-74	TOLERANCES: DEC ± FRAC ± ANGLES ±	DWG. NO. C741162 R1
APPD ENGR: [illegible]	DATE: 11-22-74		
APPD SALES: [illegible]	DATE: 11-27-74		



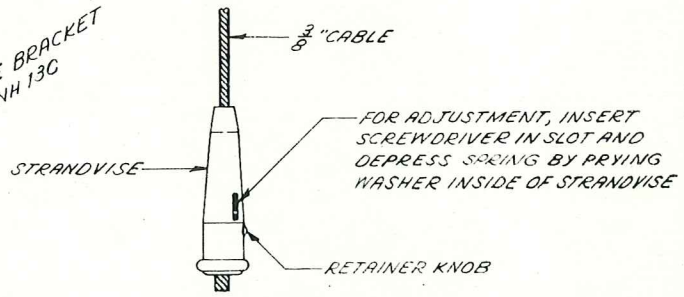


DETAIL B

NOTE: THIS SAFETY DEVICE INSTALLATION TO BE USED FOR ALL ROHN TOWERS USING EITHER A HEAVY OR STANDARD LADDER.

FABRICATION DRAWINGS
(FOR SHOP USE ONLY)

C 730517 R_3 — PARTS NO. BCB 1 & BCB S
B 740610 — PART NO. NH 13C
SK 730903B — PART NO. CHC 1
B 730650 R_6 — PART NO. TL 01



DETAIL-A

NOTE: PAL NUTS PROVIDED FOR ALL BOLTS EXCEPT HAND GRIPS

NO.	DESCRIPTION	DATE	BY
R_1	ADDED DETAIL B	1/9/80	KTE

REVISIONS

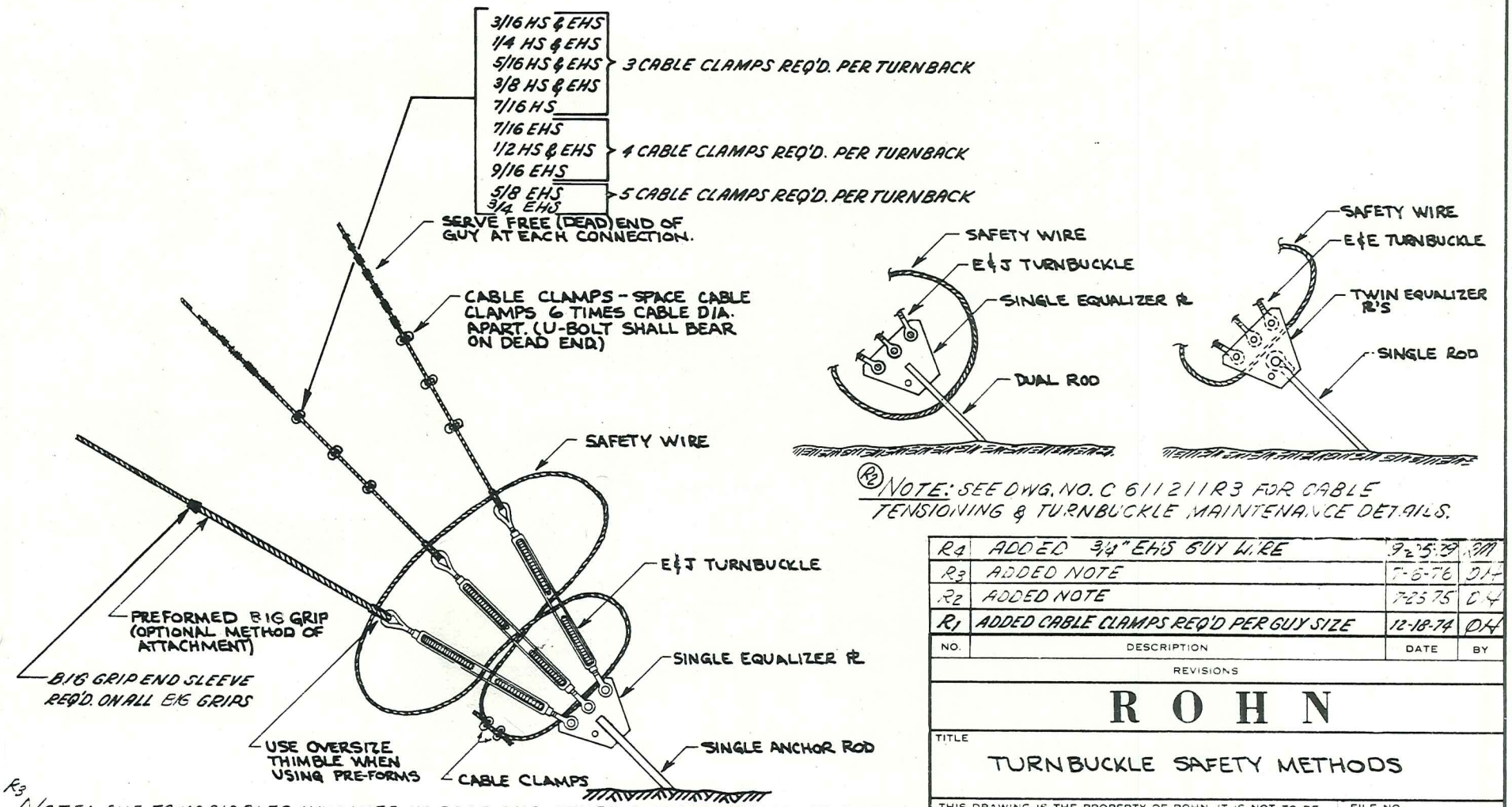
ROHN® MANUFACTURING
DIVISION OF UNARCO

TITLE: ROHN-LOC INSTALLATION DETAILS for ROHN TOWERS W/ LEG OR FACE MTD LADDER

THIS DRAWING IS THE PROPERTY OF ROHN. IT IS NOT TO BE REPRODUCED, COPIED, OR TRACED IN WHOLE OR IN PART WITHOUT OUR WRITTEN CONSENT.

FILE NO.

SCALE ~	MATERIAL	FINISH	MT
DWN BY W.H	DATE 11-22-74	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES.	
CK'D BY [illegible]	DATE 12-3-74	TOLERANCES DEC ± FRAC ± ANGLES ±	DWG. NO. C 741170 R_1
APP'D ENG'G [illegible]	DATE 1-8-75		
APP'D SALES [illegible]	DATE [illegible]		



(R2) NOTE: SEE DWG. NO. C 611211 R3 FOR CABLE TENSIONING & TURNBUCKLE MAINTENANCE DETAILS.

R3 NOTE: DUE TO VARIABLES INVOLVED IN ROOF AND OTHER INSTALLATIONS, IT SHALL BE THE CUSTOMER'S OR INSTALLER'S RESPONSIBILITY TO PROVIDE STRUCTURALLY ADEQUATE SUPPORTS FOR PIER & ANCHOR CONNECTIONS. IT MAY ALSO BE NECESSARY FOR THE CUSTOMER OR INSTALLER TO SECURE THE SERVICE OF A LOCAL ENGINEER TO DETERMINE THAT INSTALLATION COMPLIES WITH LOCAL BUILDING CODES.

NO.	DESCRIPTION	DATE	BY
R4	ADDED 3/4" EHS GUY WIRE	9-25-79	JM
R3	ADDED NOTE	7-6-76	DH
R2	ADDED NOTE	7-25-75	DH
R1	ADDED CABLE CLAMPS REQ'D PER GUY SIZE	12-18-74	DH

REVISIONS

ROHN

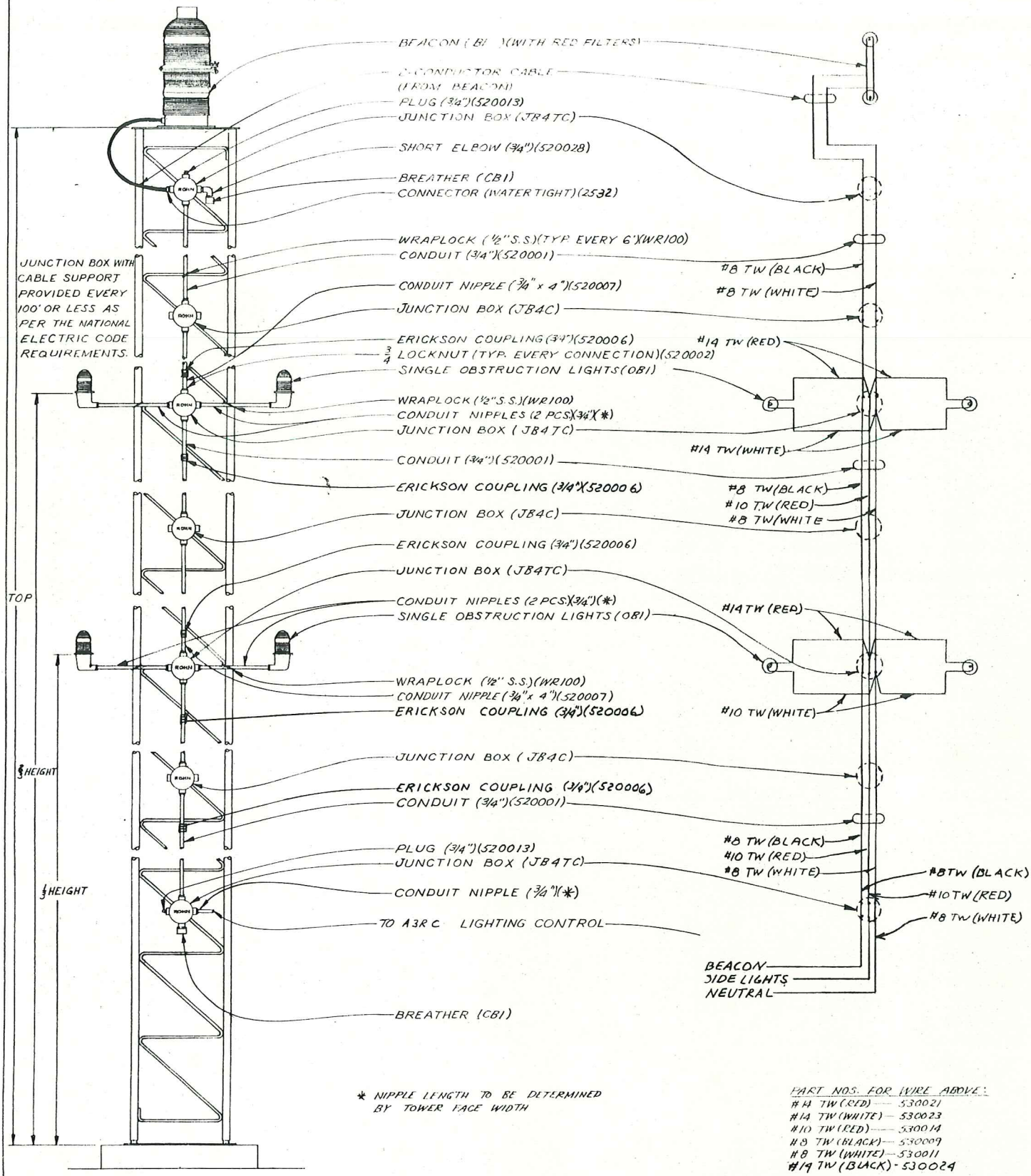
TITLE

TURNBUCKLE SAFETY METHODS

FILE NO.

SCALE	MATERIAL	FINISH	WT.
NONE			

DWN BY	DATE	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES
A. JOHNSON	3-16-68	
CK'D BY DH	DATE 4-4-68	TOLERANCES DEC ± FRAC ± ANGLES ±
APP'D GR	DATE	DWG. NO. B-680324 R4



* NIPPLE LENGTH TO BE DETERMINED BY TOWER FACE WIDTH

PART NOS. FOR WIRE ABOVE:
#14 TW (RED) — 530021
#14 TW (WHITE) — 530023
#10 TW (RED) — 530014
#8 TW (BLACK) — 530009
#8 TW (WHITE) — 530011
#14 TW (BLACK) - 530024

MATERIAL LAYOUT

WIRING DIAGRAM

LIGHTING KIT — CONDUIT — RA 3C

TOWER HEIGHTS 301' - 450'
FAA - #A-3

NOTE:
ALL CONNECTIONS SHOULD BE COMPLETELY TIGHT

R3	ADD ERICKSON COUPLING	6-19-80	JB
R2	ADDED A3RC	9-10-80	JB
R1	ADDED PART NOS., ETC.	8-21-78	AD
R4	ADDED JB-4C NOTE	8-17-76	DH

R3	11-9-70 D.H.
R2	4-11-67 A.J.
R1	11-13-62 L.H.
NO.	REVISION

DRAWN L. HOFFMAN
CHECKED R.S.J.
APPROVED MAL
DATE MAY 19, 1962
SCALE NONE

TITLE: INSTALLATION DETAIL NO. RA3C LIGHTING KIT

CUSTOMER

ROHN® MANUFACTURING DIVISION OF UNARCO

DRAWING NO. C 620501-R3

PARTS LIST P-354
(Replaces P-302)

July 1, 1980

RA3C LIGHTING KIT

301' to 450' w/conduit
120 volt AC

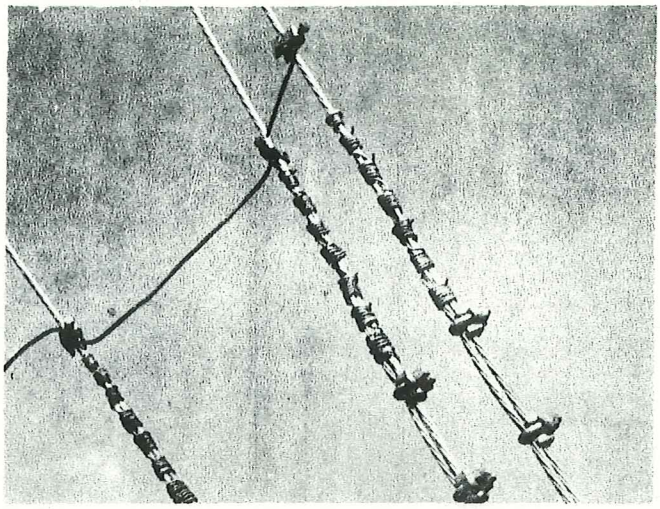
Qty.	Part Number	Description
4	OB1	Single obstruction lights
4	JB4TC	Junction boxes
3	JB4C	Junction boxes
1	2532	Water tight connector
1	520028	Short elbow 3/4"
2	CB1	Conduit breathers
6	520006	Erickson couplings 3/4"
2	520013	Plastic pipe plugs 3/4"
38	520002	Conduit lock nuts 3/4"
1	WR100	Can stainless steel wraplock (1/2" x 100')
1	520023	Can joint compound
20'	530021	#14 TW wire (red)
20'	530023	#14 TW wire (white)
2	520007	Conduit nipples 3/4" x 4"
XXXXXXXX	530021	#14 TW wire (red) (tower height plus 15')
4	*	Conduit nipples 3/4" x *
1	OBLITECAT	Obstruction lighting catalog
-	530014	#10 TW wire (red) (2/3 tower height plus 15')
1	A3RC	Flasher box w/flasher mechanism and remote photocell
2	KH90	Saddle clamps
4	210013G	Galvanized bolts 3/8" x 4"
4	230005	Heavy nuts 3/8"
4	230007	Pal nuts 3/8"
4	250006	Flat stainless steel washers 3/8"
1	520036	Nipple 1/2" x 4"
1	520012	Reducer 3/4" x 1/2"
1	520040	Elbow 1/2"
3	520031	Conduit lock nuts 1/2"
1	520002	Conduit lock nut 3/4"
1	*	Conduit nipple 3/4" x *
1	B1	Beacon w/filters
4	B620W	Beacon bulbs (120 volt)
8	OB116W	Obstruction light bulbs (120 volt)
-	530009	#8 TW wire (black) (tower height plus 15')
-	530011	#8 TW wire (white) (tower height plus 15')
-	520001	Rigid galvanized conduit 3/4" (tower height)

*Determined by face width.

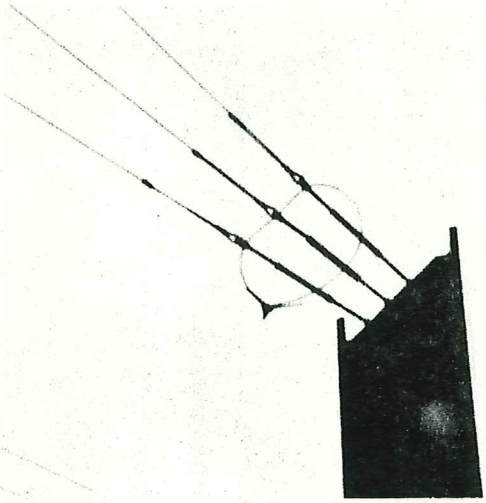
Parts list may vary for self-supporting tower.

See Drawing No. C-620504-R6 for installation data.

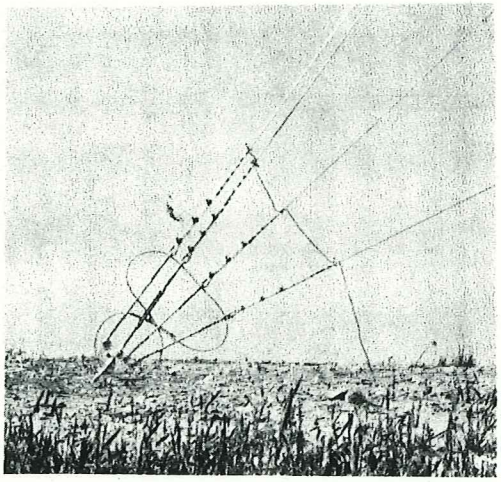
PROPER ANCHOR INSTALLATIONS



SERVING



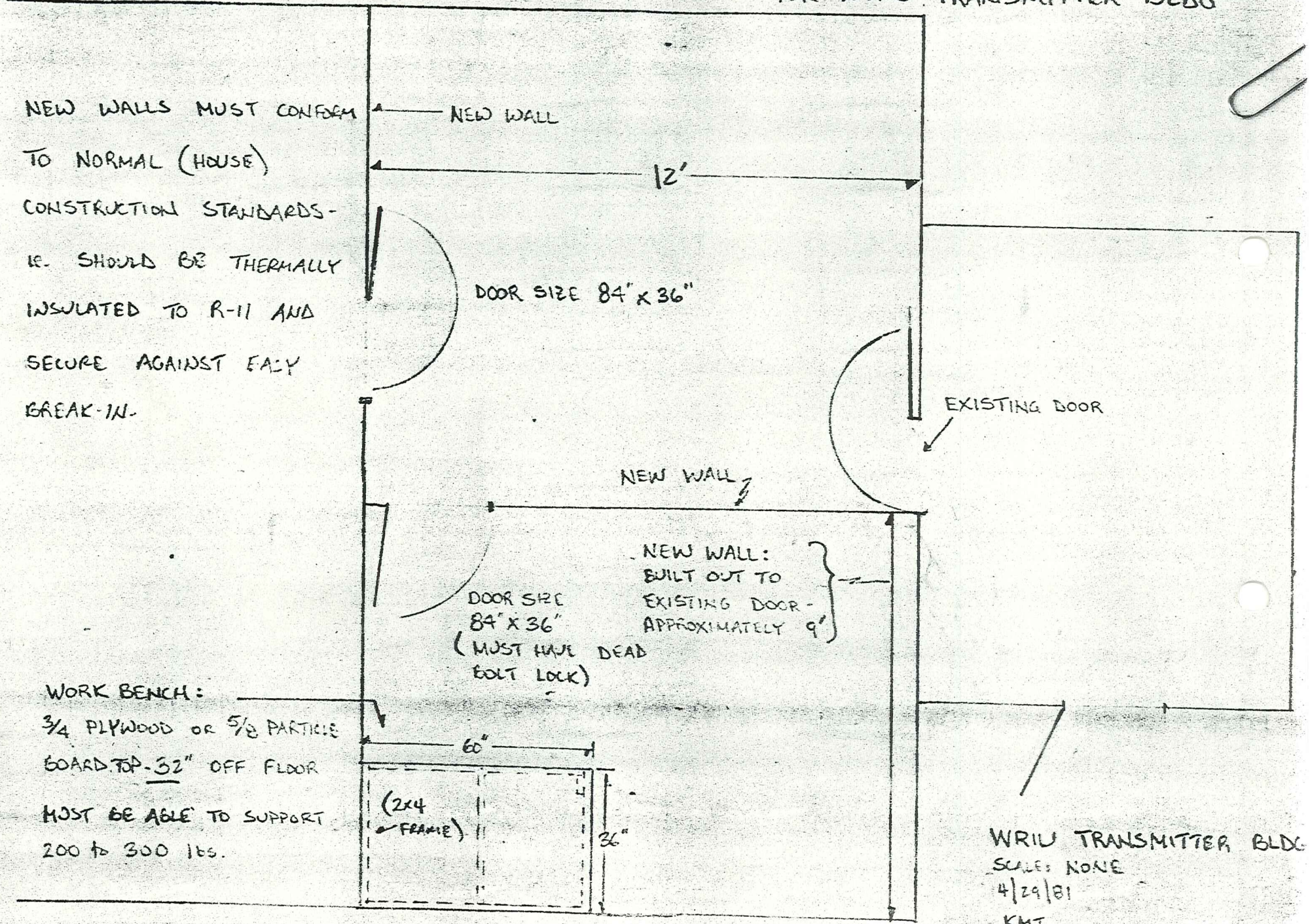
10" "I" BEAM STUB ANCHOR WITH MICROPRESS SLEEVES AND SAFETY WIRE



SAFETY WIRE AND GROUNDING

W. Moretti

BASIC LAYOUT - WALLS AND DOORS FOR WRIU TRANSMITTER BLDG



TO ACHIEVE MAXIMUM COVERAGE WITH THE END SLEEVE, THE APPLICATION SHOULD BE CONDUCTED IN THE FOLLOWING MANNER:

(BE SURE TO SELECT PROPER SIZE END SLEEVE)

1

PLACE THE SLOT SIDE OF THE END SLEEVE OVER THE LONG LEG OF THE DEAD-END.

2

DRIVE THE SLEEVE DOWNWARD UNTIL THE RODS OF SHORT LEG ARE COMPLETELY COVERED.

3

THE RODS OF THE LONG LEG SHOULD BE EVEN WITH, OR MAY EXTEND ABOVE, THE TOP EDGE OF THE SLEEVE.

NO.	DESCRIPTION	DATE	BY
R1	REVISED GUY GRIP TO BIG GRIP	7-6-76	OH

REVISIONS

ROHN

TITLE: APPLICATION PROCEDURE FOR BIG-GRIP END SLEEVE

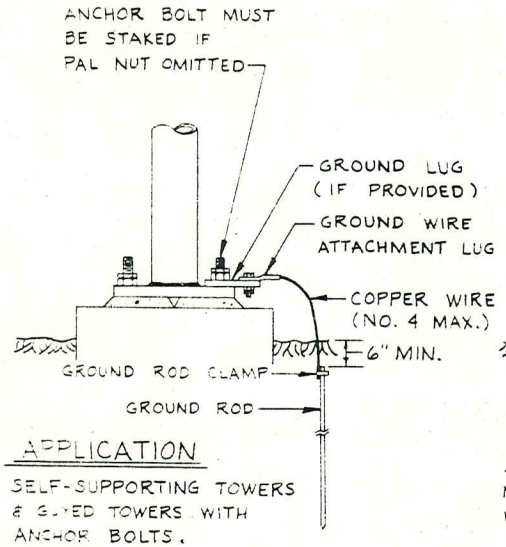
FILE NO.

SCALE	MATERIAL	FINISH	WT.
NONE			

DWN BY	DATE	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES
H. ARCHANG	6-9-70	

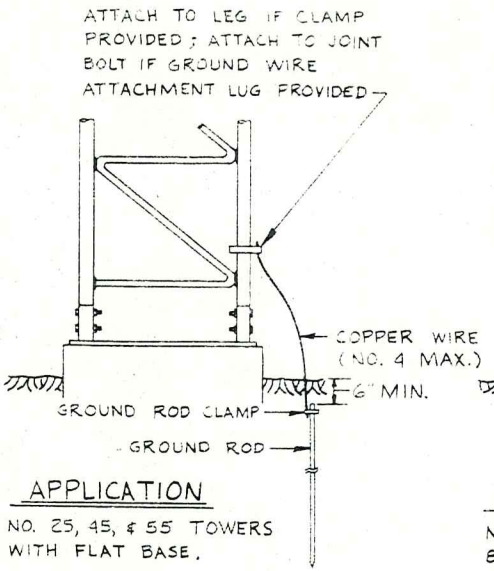
CK'D BY	DATE	TOLERANCES DEC.	FRAC.	ANGLES	DWG. NO.	
B Cm		±	±	±	B-700607	R1
APP'D	DATE 6-9-70					

PRINTED IN U.S.A.



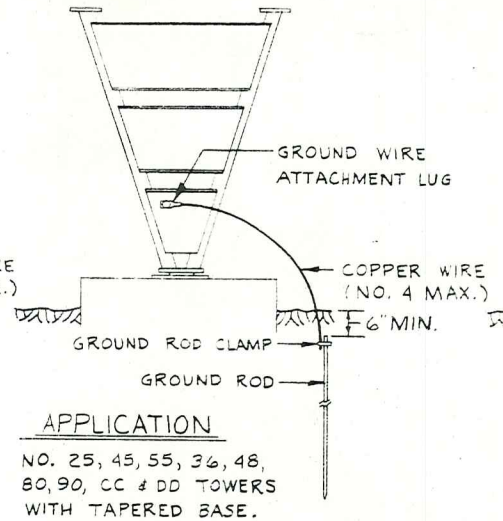
APPLICATION

SELF-SUPPORTING TOWERS & GUYED TOWERS WITH ANCHOR BOLTS.



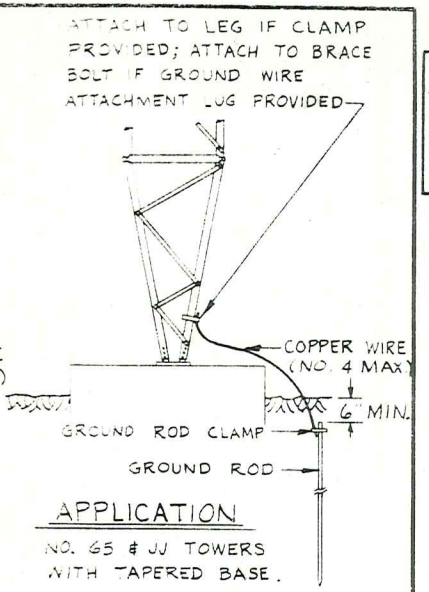
APPLICATION

NO. 25, 45, & 55 TOWERS WITH FLAT BASE.



APPLICATION

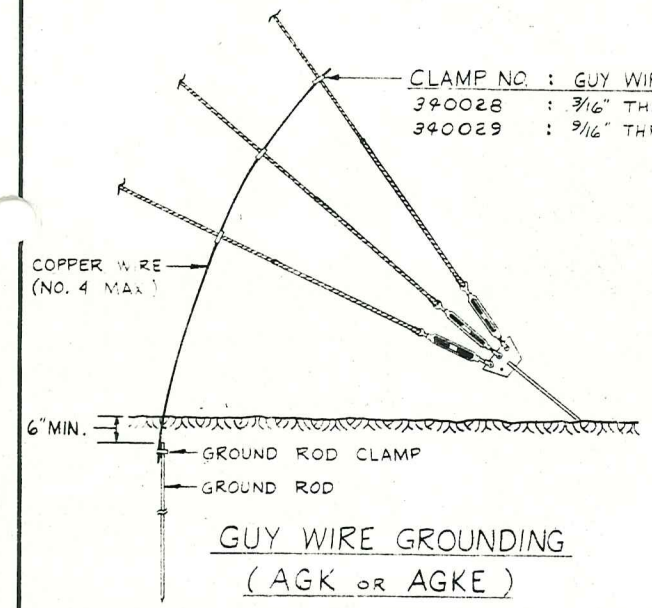
NO. 25, 45, 55, 36, 48, 80, 90, CC & DD TOWERS WITH TAPERED BASE.



APPLICATION

NO. 65 & JJ TOWERS WITH TAPERED BASE.

BASE GROUNDING KITS (BGK OR BGKE)

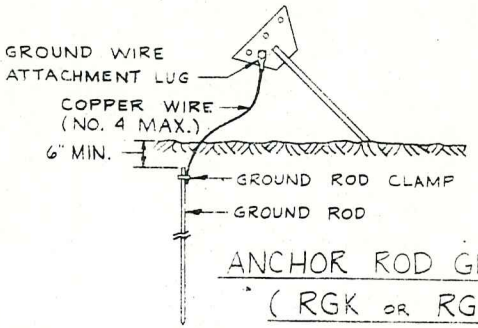


GUY WIRE GROUNDING

(AGK OR AGKE)

NOTE :

REMOVE ALL SHARP BENDS FROM COPPER WIRE



ANCHOR ROD GROUNDING

(RGK OR RGKE)

ANCHOR GROUNDING KITS

NO.	DESCRIPTION	DATE	BY
R1	CHG'D CLAMP NO. ON AGK & AGKE DETAIL	6-9-77	MDI

REVISIONS

ROHN® MANUFACTURING
DIVISION OF BRACO

TITLE
TOWER GROUNDING METHODS

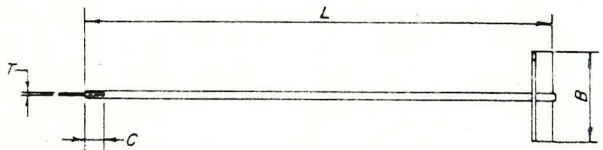
FILE NO.

SCALE NONE	MATERIAL	FINISH	WT.
DWN. BY JER	DATE 11-20-73	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES.	
CHK'D BY	DATE 11-27-73		
APP'D ENGRG.	DATE 11-27-73	TOLERANCES: DEC. ± FRAC. ± ANGLES ±	DWG. NO. C-731105 R1
APP'D	DATE 12/1/73		

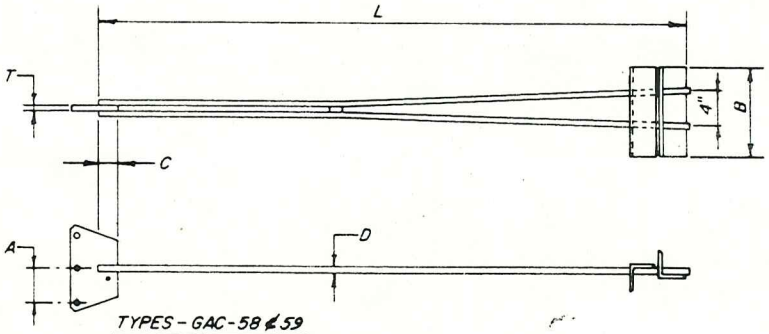
GAF 880-250 2-72 48194

PRINTED IN U.S.A.

TYPES-GAR-25 & GAC-25



TYPES- GAC-75,100,34,56 & 57



TYPES - GAC-58 & 59

ANCHOR ROD DETAILS

ANCHOR ROD DATA

PART NUMBER	EQUALIZER PLATE TYPE	DIMENSIONS IN INCHES						WEIGHT-LBS.	LOAD CAPACITY-LBS.
		L	A	B	C	D	T		
GAR-25	EYE	64	3/4	4	1 1/2	5/8	—	8	5,500
GAC-25-3	EE	64	2	4	1 1/2	5/8	3/16	12	5,500
GAC-25-5	EE	64	2	4	1 1/2	5/8	3/16	13	5,500
GAC-75-1	EJ	120	1 1/16	12	3	3/4	1/2	25	13,250
GAC-75-3	EJ	120	2 1/2	12	3	3/4	1/2	30	13,250
GAC-75-5	EJ	120	2 1/2	12	3	3/4	1/2	35	13,250
GAC-100-1	EJ	120	15/16	12	4	1 1/8	3/4	55	23,550
GAC-100-3	EJ	120	3	12	4	1 1/8	3/4	65	23,550
GAC-100-5	EJ	120	3	12	4	1 1/8	3/4	75	23,550
GAC-34-33	EJ	84	2	12	2 1/2	3/4	3/8	20	13,250
GAC-56-33	EJ	120	2 1/2	12	3	1 1/4	1/2	60	36,800
GAC-57-33	EJ	168	3	12	4	1 7/16	3/4	115	48,600
GAC-58-33	EJ	192	4	12	6	1 1/4	1	200	73,600
GAC-59-33	EJ	240	4	18 (R2)	6	1 7/16	1	300	97,300
GAC-34-55	EJ	84	2	12	2 1/2	3/4	3/8	25	13,250
GAC-56-55	EJ	120	2 1/2	12	3	1 1/4	1/2	65	36,800
GAC-57-55	EJ	168	3	12	4	1 7/16	3/4	125	48,600
GAC-58-55	EJ	192	4	12	6	1 1/4	1	220	73,600
GAC-59-55	EJ	240	4	18 (R2)	6	1 7/16	1	310	97,300

SEE NOTE 6

SEE NOTE 7

8) SEE DRAWING NO. C-730323 FOR ANCHOR ROD FAB. DETAILS.
7) USE EQUALIZER PLATES EP-57- WITH 1 1/16" SLOT- FOR GAC-100 SERIES ANCHORS
6) USE EQUALIZER PLATES EP-56- WITH 15/16" SLOT- FOR GAC-75 SERIES ANCHORS
5) TYPE-EJ EQUALIZER PLATES ARE USED WITH EYE & JAW TURNBUCKLES
4) TYPE-EE EQUALIZER PLATES ARE SUPPLIED IN PAIRS FOR EYE & EYE TURNBUCKLES
3) PART NO. SUFFIXES-1, 3, 5, 33 & 55 DENOTES-1, 3 OR 5 HOLES IN PLATES
2) TYPE GAC-25 RODS ARE SUPPLIED WITH TYPE 2534-EE EQUALIZER PLATES
1) SEE DRAWING NO. C-660416-B_2 FOR EQUALIZER PLATE DETAILS.

NO	DESCRIPTION	DATE	BY
R2	"B" DIMENSION WAS 12"	3/15/73	GLS
R1	REVISED #57 ROD D DIM. & CAPACITY	8-11-77	TS
0	DELETE #60 ROD, REVISE CAP. #25 ROD	1-15-75	WBTL

REVISIONS

ROHN MANUFACTURING

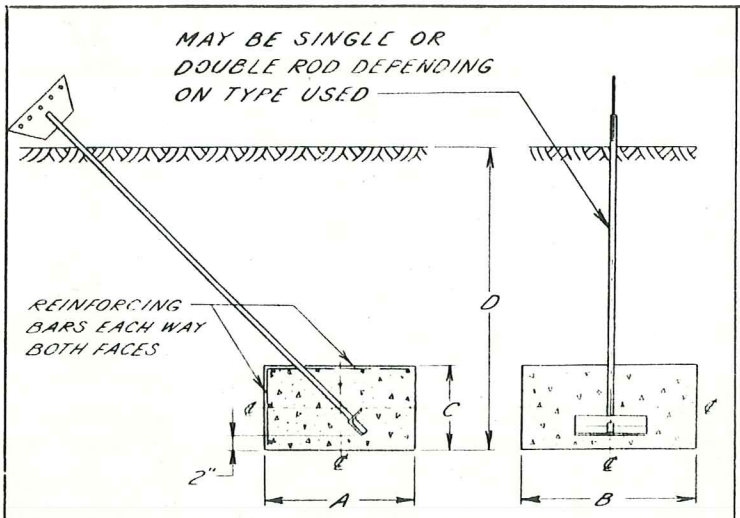
DESIGN BY

TITLE

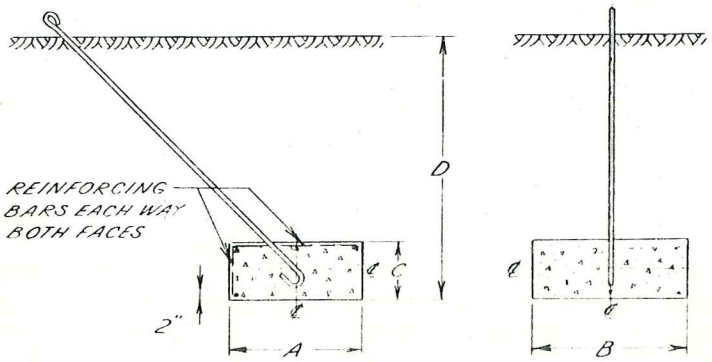
ANCHOR ROD SCHEDULE

FILE NO

SCALE NONE	MATERIAL	FINISH	WT
DWN BY DM	DATE 3-22-73	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES	
CH'D BY	DATE 3-28-73	TOLERANCES	DWG NO C-660415 R2
APP'D BY	DATE 3-28-73	DECIMAL ANGLES	
APP'D BY	DATE 3-28-73		



ANCHOR DETAIL FOR GAC-34, 56, 57, & 58
SHOWN ON DWG. NO. C-660415R2



ANCHOR DETAIL FOR GAC-25

R9 NOTE: DUE TO VARIABLES INVOLVED IN ROOF AND OTHER INSTALLATIONS, IT SHALL BE THE CUSTOMER'S OR INSTALLER'S RESPONSIBILITY TO PROVIDE STRUCTURALLY ADEQUATE SUPPORTS FOR PIER & ANCHOR CONNECTIONS. IT MAY ALSO BE NECESSARY FOR THE CUSTOMER OR INSTALLER TO SECURE THE SERVICE OF A LOCAL ENGINEER TO DETERMINE THAT INSTALLATION COMPLIES WITH LOCAL BUILDING CODES.

General Notes:

* *1. ANCHOR DESIGN ASSUMES E.I.A. NORMAL SOIL.
2. CONCRETE, 3,000 PSI MINIMUM ULTIMATE STRENGTH.
3. ASTM A-615 GRADE 40 DEFORMED REBARS.
4. MINIMUM CONCRETE COVER ON ALL REBARS IS 2".
5. MINIMUM ½" DIAMETER REINFORCING BARS IN ALL ANCHORS WITH MAXIMUM SPACING OF 12" EXCEPT NO. 10 BLOCK MAXIMUM SPACING OF 6".
6. ALL FORMS MUST BE REMOVED FROM CONCRETE BEFORE PLACING COMPACTED BACKFILL.

CONCRETE ANCHOR DATA

DEPTH, D (FT.)	ROD NO.	BLOCK NO.	ANCHOR DIMENSIONS (FT.) A	B	C	WEIGHT CONCRETE (LBS)	CONCRETE (CU. YDS.)	UPLIFT * CAPACITY (LBS)	LATERAL CAPACITY (LBS.)
3	GAC-25	3a	1.5	1.5	1	310	.08	900	1,500
		3b	2	2	1	560	.15	1,320	2,000
		3c	2.5	2.5	1	870	.23	1,810	2,500
		3d	3	3	1	1,260	.33	2,535	3,000
		3e	3	4	1	1,680	.44	3,020	4,000
4	GAC-34	4a	3	3	1.5	1,890	.50	3,490	5,850
		4b	3	4	1.5	2,520	.67	4,360	7,800
		4c	3	5	1.5	3,150	.84	4,985	9,750
		4d	3	6	1.5	3,780	1.00	6,090	11,100
		4e	4	6	1.5	5,050	1.33	7,660	11,100
6	GAC-56	6a	3	4	1.5	2,520	.67	10,035	12,600
		6b	3	5	1.5	3,150	.84	11,600	15,150
		6c	3	6	1.5	3,780	1.00	13,150	18,900
		6d	4	6	1.5	5,050	1.33	15,850	18,900
8	GAC-57	8a	3	5	1.5	3,150	.84	22,150	21,750
		8b	3	6	1.5	3,780	1.00	24,100	26,100
		8c	4	6	1.5	5,050	1.33	28,500	26,100
		8d	6	6	2.0	10,800	2.67	33,380	33,300
10	GAC-58	10a	3	6	2.0	5,040	1.33	37,450	43,200
		10b	4	6	2.0	6,720	1.78	42,700	43,200
		10c	4	7	2.0	7,840	2.07	46,800	50,400
		10d	5	7	2.0	9,800	2.59	52,350	50,400
		10e	5	9	2.0	12,600	3.33	61,700	64,800

* INCLUDES SAFETY FACTOR OF 2

* * NORMAL SOIL IS A COHESIVE TYPE SOIL WITH A HORIZONTAL BEARING CAPACITY OF 400 POUNDS PER SQUARE FOOT PER LINEAL FOOT OF DEPTH. ROCK, NON-COHESIVE SOILS, OR SATURATED OR SUBMERGED SOILS ARE NOT TO BE CONSIDERED AS NORMAL.

	DESCRIPTION	DATE	BY
	REVISIONS		
R11	REVISED ANCHOR DETAIL DWG. NO.	8-15-77	RJH
R10	REMOVED AC-222-B FROM GEN. NOTE 3 D.I.	3/17/77	GLS
R9	ADDED NOTE	7-6-76	GH
R8	REVISE DESIGN NOTE 1.	7-14-75	GLS
R7	REVISE DESIGN NOTE 1 & TITLE BLOCK	11-21-74	JWC
R6	GAC-25 WAS GA-25	12-7-73	JEK
R5	DELETED FOR EIA RS-222-B	9/4/73	GLS

ROHN® MANUFACTURING
DIVISION OF UNARCO

TITLE: STANDARD CONCRETE ANCHORS

FILE NO.

SCALE: NONE | MATERIAL | FINISH | SIZE

DWN. BY: GLS | DATE: 4/3/73

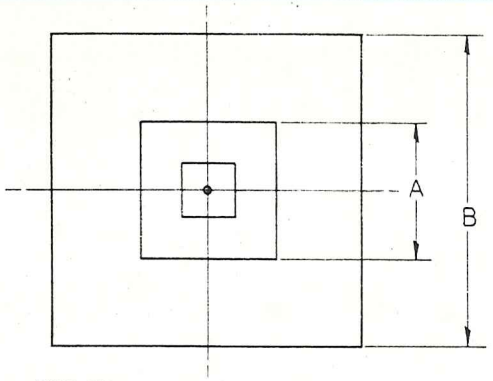
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES

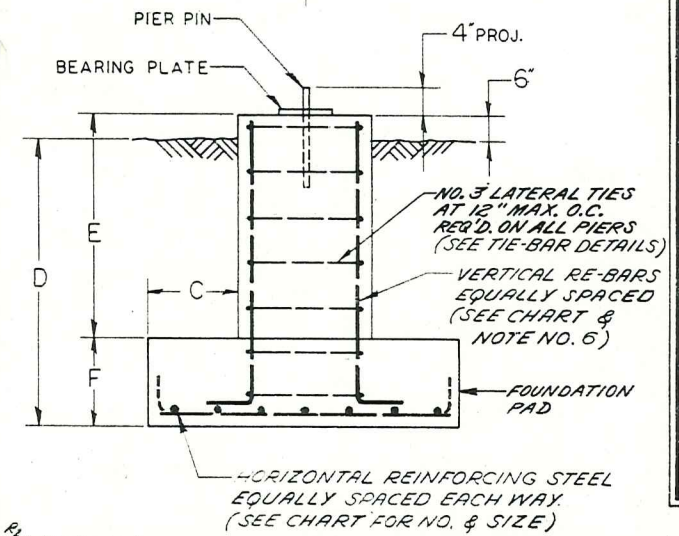
CHK'D | DATE: 4-4-73

APP'D: BR | DATE: 4-6-73

TOLERANCES: DEC ± | FRAC ± | ANGLES ±

DWG. NO. C-620643 R11

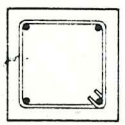




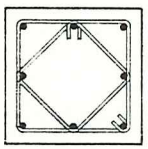
CONCRETE BASE SCHEDULE

CB NO.	TOWER BASE REACTION	DIMENSIONS A	B	C	D	E	F	BEARING PLATE	CONC. (CU. YDS.)	VERTICAL BARS (NO. & SIZE)	HORIZ. BARS (NO. & SIZE)
1	14000	2'-0	2'-0	0	4'-0	0	0	BP 6	.70	4-NO.6	NONE*
2	22000	2'-6	2'-6	0	4'-0	0	0	BP 6	1.00	4-NO.6	NONE*
3	32000	3'-0	3'-0	0	4'-0	0	0	BP 6	1.50	4-NO.6	NONE*
4	44000	3'-6	3'-6	0	4'-0	0	0	BP 6	2.10	4-NO.6	NONE*
5	58000	2'-0	4'-0	1'-0"	4'-0	3'-3	1'-3	BP 6	1.22	4-NO.6	6-NO.4
6	74000	2'-0	4'-6	1'-3"	4'-0	3'-3	1'-3	BP 6	1.42	4-NO.6	6-NO.5
7	90000	2'-0	5'-0	1'-6	4'-6	3'-9	1'-3	BP 10	1.70	8-NO.6	6-NO.5
8	109000	2'-0	5'-6	1'-9	4'-6	3'-9	1'-3	BP 10	2.00	8-NO.6	6-NO.5
9	130000	2'-0	6'-0	2'-0	4'-6	3'-6	1'-6	BP 10	2.50	8-NO.6	7-NO.5
10	150000	2'-0	6'-6	2'-3	4'-6	3'-6	1'-6	BP 10	2.90	8-NO.6	8-NO.5
11	173000	2'-6	7'-0	2'-3	5'-0	3'-9	1'-9	BP 15	4.00	8-NO.7	8-NO.6
12	198000	2'-6	7'-6	2'-6	5'-0	3'-9	1'-9	BP 15	4.50	8-NO.7	8-NO.6
13	224000	2'-6	8'-0	2'-9	5'-0	3'-9	1'-9	BP 15	5.00	8-NO.7	9-NO.6
14	251000	3'-0	8'-6	2'-9	5'-0	3'-6	2'-0	BP 15	6.50	12-NO.7	9-NO.7
15	279000	3'-0	9'-0	3'-0	5'-0	3'-6	2'-0	BP 15	7.20	12-NO.7	10-NO.7

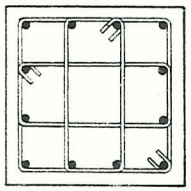
R2 NOTE: DUE TO VARIABLES INVOLVED IN ROOF AND OTHER INSTALLATIONS, IT SHALL BE THE CUSTOMER'S OR INSTALLER'S RESPONSIBILITY TO PROVIDE STRUCTURALLY ADEQUATE SUPPORTS FOR PIER & ANCHOR CONNECTIONS. IT MAY ALSO BE NECESSARY FOR THE CUSTOMER OR INSTALLER TO SECURE THE SERVICE OF A LOCAL ENGINEER TO DETERMINE THAT INSTALLATION COMPLIES WITH LOCAL BUILDING CODES.



CB1 THRU CB6



CB7 THRU CB13



CB14 & CB 15

TIE BAR DETAILS

GENERAL NOTES:

1. BASE PIER DESIGNED FOR AN ALLOWABLE NET SOIL PRESSURE OF 4000 PSF.
2. CONCRETE - 3000 PSI MIN. ULT. STRENGTH AT 28 DAYS.
3. REINFORCING STEEL - ASTM A-615 GRADE 40 DEFORMED BARS.
4. MIN. COVER ON ALL REINFORCING STEEL IS 3".
5. ALL FORMS MUST BE REMOVED FROM CONCRETE BEFORE PLACING COMPACTED BACKFILL.
6. VERTICAL REINFORCING STEEL MAY BE PLACED WITH AN OPTIONAL STANDARD ACI 90° BEND AT BOTTOM.
7. FOUNDATION DESIGN PER E I A STANDARDS.
8. BEARING PLATE PROVIDED ONLY ON TOWERS WITH TAPERED BASE.

*3. HORIZ. BARS IN CHART REFER ONLY TO THE BARS IN THE FOUNDATION PAD.

NO.	DESCRIPTION	DATE	BY
R2	ADDED NOTE	7-6-76	DH
R1	RE-DRAWN - SUPERSEDES C-610621D	2-26-75	DH

REVISIONS

ROHN® MANUFACTURING
DIVISION OF FRANCO

TITLE: CONCRETE BASE SCHEDULE

FILE NO.

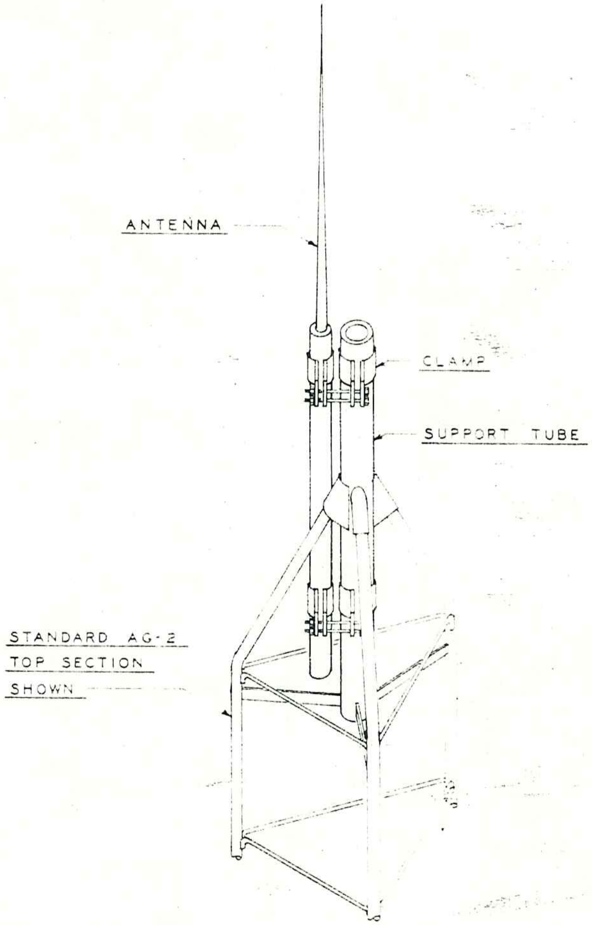
SCALE ~	MATERIAL		FINISH	WT.
DWN. BY O.H	DATE 2-26-75	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES.		
CK'D. BY WDH	DATE 3-7-75	TOLERANCES DEC. ± FRAC. ± ANGLES ±	DWG. NO. C 610621	R5
APP'D. ENGRG. (W)	DATE 3-7-75			
APP'D. BY JR	DATE 3-15-75			

R5	ADDED GENERAL NOTE #8	1-21-80	JHD
R4	REMOVED RS-222-B FROM GEN. NOTE NO. 7	3/7/77	GLS
C6	DELETE SIZE PIER PIN.	7/29/76	GLS

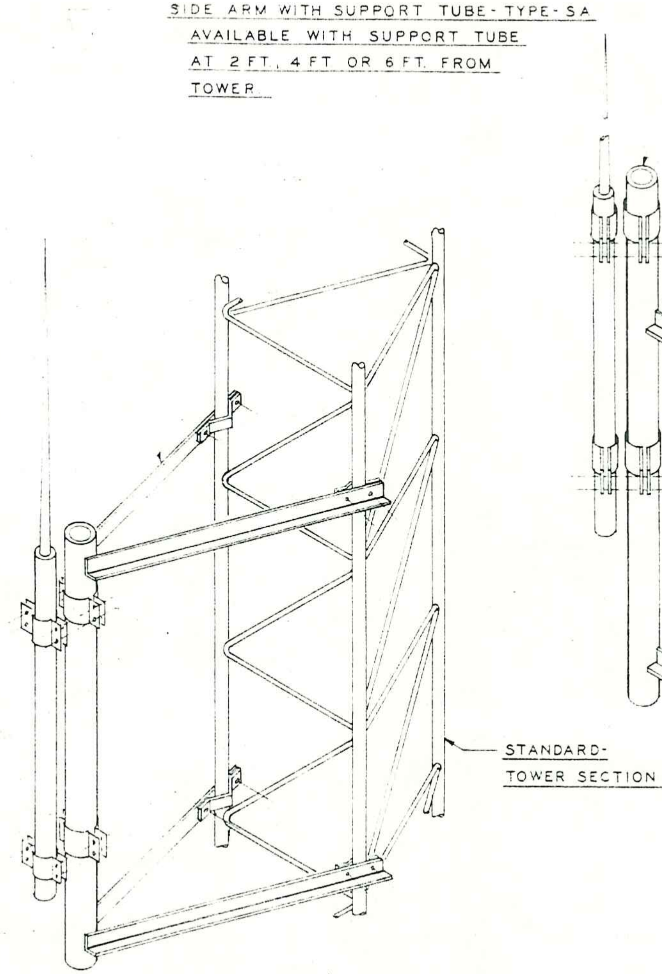
GAF 880-250 2-72 48194

PRINTED IN U.S.A.

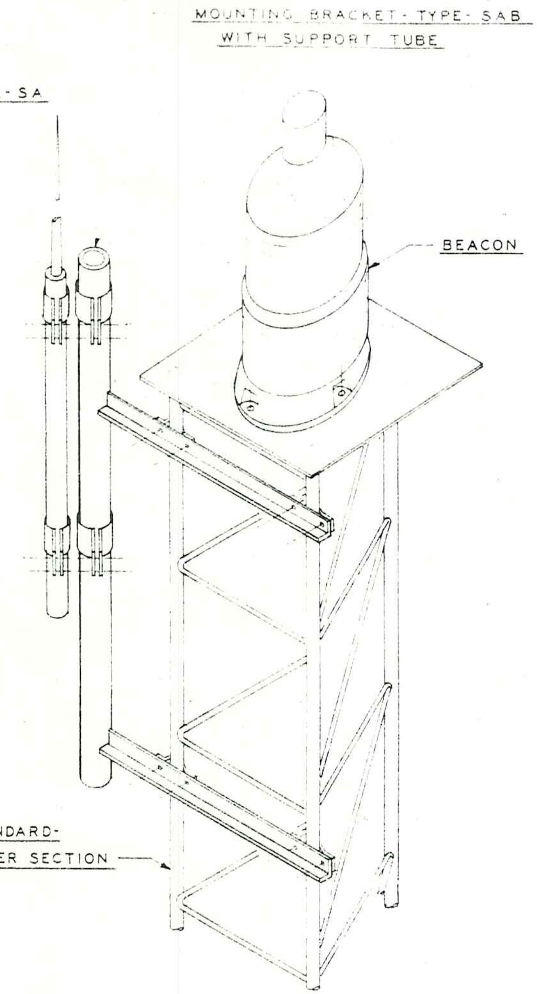
C-661 004



TOP MOUNTING



SIDE MOUNTING-
(AT ANY LEVEL)



TOP MOUNTING-
(WITH BEACON)

NO.	REVISION	BY	DATE
1	REDRAWN	CK	10-12-66

DRAWN CK
CHECKED
APPROVED [illegible]
DATE 10-12-66
SCALE NONE

ANTENNA MOUNTING DETAILS

ROHN MANUFACTURING
PEORIA, ILLINOIS

DRAWING NO. C-661 004

1)- THIS DRAWING SUPERCEDES DRAWINGS [illegible] & [illegible]221-J-R

ILLINOIS B.P. CO.

UNIVERSITY OF RHODE ISLAND
RADIO REPLACEMENT
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

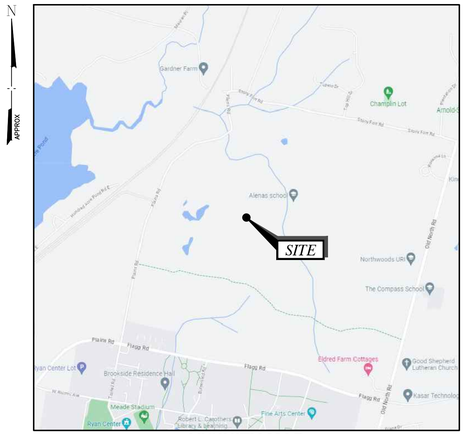
CONSTRUCTION DRAWINGS

PROJECT CONTACTS

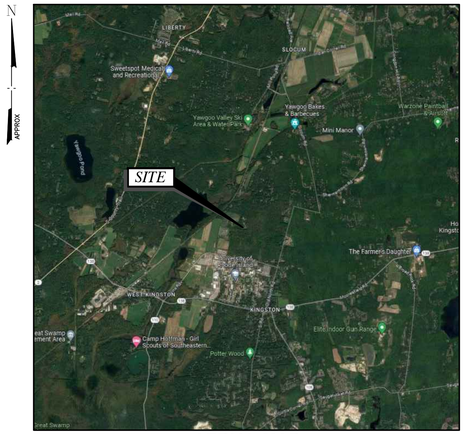
	NAME	COMPANY	NUMBER
APPLICANT	KYLE COLEMAN	UNIVERSITY OF RHODE ISLAND OFFICE OF CAPITAL BUILDINGS 60 TOOTELL ROAD – SHERMAN BUILDING KINGSTON, RI 02881	(401) 500–1064
A/E	EDWARD IAMICELI	TECTONIC ENGINEERING CONSULTANTS INC. 1279 ROUTE 300 NEWBURGH, NY 12550	(845) 567–6656

PROJECT INFORMATION

SCOPE OF WORK:	EXISTING EQUIPMENT SHELTER AND ASSOCIATED EQUIPMENT ALONG WITH THE FOUNDATION SHALL BE DEMOLISHED. A PROPOSED 400' GUYED TOWER, PROPOSED SHELTER & GENERATOR ON A PROPOSED CONCRETE FOUNDATION ARE TO BE INSTALLED WITHIN THE NEW FENCED–IN COMPOUND.
SITE ADDRESS:	875 PLAINS ROAD TOWN OF SOUTH KINGSTON WASHINGTON COUNTY, RI 02892
PROPERTY OWNER:	UNIVERSITY OF RHODE ISLAND
APPLICANT:	UNIVERSITY OF RHODE ISLAND
LATITUDE:	41° 29' 51.64"± N (NAD 83)
LONGITUDE:	71° 31' 41.93"± W (NAD 83)
ELEVATION:	1812'± AMSL (NAVD 88)
JURISDICTION:	TOWN OF SOUTH KINGSTON
PARCEL ID:	MAP 15–2, LOT 1



VICINITY MAP
NOT TO SCALE



AERIAL MAP
NOT TO SCALE

DRAWING INDEX

SHEET NO	DWG NO	DRAWING TITLE	REV	DATE
1 OF 16	T001	TITLE SHEET	3	8/26/2024
2 OF 16	T002	GENERAL/STR NOTES, TESTING & INSPECTIONS	3	8/26/2024
3 OF 16	T003	FOUNDATION NOTES, LEGEND & ABBREVIATIONS	3	8/26/2024
4 OF 16	C100	OVERALL SITE PLAN	3	8/26/2024
5 OF 16	C101	SITE DEMOLITION PLAN & ENLARGED SITE PLAN	3	8/26/2024
6 OF 16	C200	TOWER ELEVATION & OMNI ANTENNA PLANS	3	8/26/2024
7 OF 16	C500	TYPICAL DETAILS	3	8/26/2024
8 OF 16	C501	SIGNAGE ELEVATION & DETAILS	3	8/26/2024
9 OF 16	C502	STRUCTURAL PLANS, SECTIONS, & DETAILS	3	8/26/2024
10 OF 16	E100	ROUTING PLAN	2	6/18/2024
11 OF 16	E101	RISER DIAGRAM & NOTES	2	6/18/2024
12 OF 16	E102	PRELIMINARY WIRING SCHEMATICS	2	6/18/2024
13 OF 16	G100	GROUNDING PLAN & NOTES	2	6/18/2024
14 OF 16	G500	GROUNDING DETAILS & NOTES	2	6/18/2024
15 OF 16	G501	GROUNDING DETAILS	2	6/18/2024
16 OF 16	G502	GROUNDING DETAILS	2	6/18/2024
		SURVEY BY OTHERS	0	12/12/2023
1 OF 2	SV–100	EXISTING SITE OVERVIEW PLAN	0	8/9/2023
2 OF 2	SV–101	EXISTING CONDITIONS AND TOPOGRAPHY PLAN	0	8/9/2023

PLANS ARE NOT TO BE SCALED.

0 1 2 3

ORIGINAL SIZE IN INCHES

THE UNIVERSITY OF RHODE ISLAND

Rev	Date	Revision	Approved
0	3/18/2024	ISSUED FOR BID	
1	6/7/2024	ISSUED FOR PERMIT	
2	6/18/2024	REISSUED FOR PERMIT	
3	8/26/2024	REISSUED FOR PERMIT	

DRAWING CONTROL

Designed by: MB	Drawn by: VM	Checked by: EI
Purpose	Released by	Date
○ For Comment		
○ For Approval		
● For Permit	EI	8/26/2024
○ For Construction		

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering Consultants Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567–6656
(800) 829–6531
www.tectonicengineering.com

EDWARD IAMICELI
No. 0011767
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

TITLE SHEET

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	T001	3
Scale: AS NOTED			

EXISTING CONDITIONS NOTES

1. EXISTING SITE FEATURES AS SHOWN ARE BASED ON A SURVEY DRAWING PREPARED BY NARRAGANSETT ENGINEERING INC. PROJECT NUMBER 19.0133, DATED 8/9/23, AND INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO INSTALLATION OF PROPOSED APPURTENANCES.
2. BEFORE STARTING ANY OPERATION, THE CONTRACTOR SHALL EXAMINE THE CONDITION OF ALL EXISTING WORK AND WORK PERFORMED BY OTHERS IN THE AREA ADJACENT TO THEIR PROPOSED INSTALLATION, AND SHALL REPORT ANY CONDITIONS THAT WILL PREVENT SATISFACTORY ACCOMPLISHMENT OF THEIR WORK TO THE OWNER'S REPRESENTATIVE. PRIOR TO COMMENCING ANY EXCAVATION OR GRADING WORK, THE CONTRACTOR SHALL VERIFY THE ACCURACY OF ALL SURVEY DATA AS INDICATED IN THE DRAWINGS, SPECIFICATIONS, AND IN ANY DOCUMENTS PROVIDED BY OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY INACCURACIES, ERRORS, OR OMISSIONS IN THE SURVEY DATA SO THAT THE NECESSARY ADJUSTMENTS CAN BE MADE. FAILURE TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DEFICIENCIES, ERRORS, OR FAULTS PRIOR TO COMMENCEMENT OF WORK SHALL CONSTITUTE ACCEPTANCE THEREOF AND WAIVER OF ANY CLAIMS OF UNSUITABILITY, ERRORS, OMISSIONS, OR INACCURACIES.
3. THE CONTRACTOR SHALL MAKE NECESSARY THE PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, ETC. DURING CONSTRUCTION ACTIVITY. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR PRESERVING ALL ESTABLISHED SURVEY CONTROL POINTS. IF THE CONTRACTOR OR ANY OF THEIR SUB-CONTRACTORS MOVE OR DESTROY ANY SURVEY CONTROL POINTS, THE COST INCURRED BY THE LAND OWNER OR OWNER'S REPRESENTATIVE TO RE-ESTABLISH THEM WILL BE BORNE BY THE CONTRACTOR.

LEGEND & ABBREVIATIONS

X / X-X	DIRECTION OF ELEVATION VIEW
X / X-X	DIRECTION OF ELEVATION SECTION
L	ANGLE
℄	CENTERLINE
@	AT
℞	PLATE
±	PLUS OR MINUS
#	NUMBER
&	AND
AB	ANCHOR BOLT
ADDL	ADDITIONAL
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWG	AMERICAN WIRE GAUGE
B/	BOTTOM OF
BLDG	BUILDING
BRCG	BRACING
BRG	BEARING
BW	BOTTOM OF WALL
CHKD	CHECKERED
CLR	CLEAR(ANCE)
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPOSITE
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DN	DOWN
DWG(S)	DRAWING(S)
EA	EACH
EF	EACH FACE
EL	ELEVATION
ELEC	ELECTRICAL
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXIST	EXISTING
F/	FACE OF
FD	FLOOR DRAIN
FDN	FOUNDATION
FIN	FINISH(ED)
FL	FLOOR
FS	FAR SIDE
FT	FOOT/FEET
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GRTG	GRATING
GYP	GYPSUM
HEX	HEXAGON(AL)
HGR	HANGER
HORIZ	HORIZONTAL
HP	HIGH POINT
HVAC	HEATING VENTILATING & AIR CONDITIONING
ID	INSIDE DIAMETER
INFO	INFORMATION
INV	INVERT
JT	JOINT
K	KIPS
K-FT	KIP-FEET
LBS	POUNDS
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPER WT	OPERATING WEIGHT
OPNG	OPENING
OPP	OPPOSITE
OW(T)	OPEN WEB (TRUSS)
PLBG	PLUMBING
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PVC	POLY VINYL CHLORIDE
R	RISERS
RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
REF	REFERENCE
REINF	REINFORCE(D), (ING)
REQD	REQUIRED
REV	REVISION(S), REVISED
SCH, SCHED	SCHEDULE
SECT	SECTION
SIM	SIMILAR
SP	SPACES
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SRMSW	SPECIAL REINFORCED MASONRY SHEAR WALL
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STR	STRUCTURAL
T	TREADS
T&B	TOP AND BOTTOM
T/	TOP OF
T/STL	TOP OF STEEL
TBD	TO BE DETERMINED
TBH	THERMAL BREAK/BARRIER HORIZONTAL
TBV	THERMAL BREAK/BARRIER VERTICAL
THD	THREADED
TW	TOP OF WALL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
VIF	VERIFY IN FIELD
W/	WITH
W/O	WITHOUT
WD	WOOD
WP	WORKING POINT
WS	WATERSTOP
WWF	WELDED WIRE FABRIC

GENERAL AND TELECOMMUNICATIONS NOTES

GENERAL

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT BUILDING CODE AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES, LATEST VERSION, AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. DIMENSIONS SHOWN ARE TO FINISH SURFACES, UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE AUTHORIZED REPRESENTATIVE OR THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
5. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
6. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE "NOTICE TO PROCEED," CONTRACTOR WILL CONTACT THE CONSTRUCTION MANAGER OF RECORD A MINIMUM OF 48 HOURS PRIOR TO WORK START.
8. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
9. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
10. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
12. CONTRACTOR SHALL COORDINATE THEIR WORK AND SCHEDULE THEIR ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THEIR WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
14. CONTRACTOR SHALL MAINTAIN LIABILITY INSURANCE TO PROTECT THE OWNER.
15. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
16. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, AND PIPING. REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
17. REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
18. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
19. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
20. PROVIDE 48 HOURS WRITTEN NOTICE TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
21. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS AND OTHER DOCUMENTATION SHALL BE TURNED OVER TO OWNER AT COMPLETION OF CONSTRUCTION.
22. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF 18 MONTHS AFTER DATE OF ACCEPTANCE BY. ANY WORK, MATERIALS OR EQUIPMENT FOUND TO BE DEFECTIVE DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION AT NO ADDITIONAL COST TO THE OWNER.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LANDSCAPE GRADING AND SEEDING OF THE DISTURBED SOIL. THE CONTRACTOR SHALL USE LOCAL GRASS SEED TO STABILIZE SOIL AND SHALL COVER DISTURBED AREAS WITH HAY MULCH TO REDUCE RUNOFF OF SEDIMENT TO DOWNSTREAM AREAS. THE CONTRACTOR SHALL RESTORE THE SITE TO ITS ORIGINAL CONDITION. ALL SLOPES AND DISTURBED AREAS NOT RECEIVING AGGREGATE SURFACING ARE TO BE PREPARED AND BROADCAST SEEDED AND FERTILIZED FOR EROSION PROTECTION. SEEDING FOR AREAS DISTURBED SHALL BE ESTABLISHED SEASONALLY AS REQUIRED BY LOCAL CODES.
24. THE CONTRACTOR SHALL ACKNOWLEDGE THAT ALL OR PORTIONS OF THE WORK MAY INVOLVE POSSIBLE EXPOSURE OF CONTRACTOR, SUB-CONTRACTOR, AND THEIR RESPECTIVE EMPLOYEES, AGENTS, INVITEES, LICENSEES, AND OTHER VISITORS TO THE JOBSITE AND/OR OWNER'S PREMISES TO ELECTRO-MAGNETIC ENERGY ("EME") WHILE PERFORMING WORK UNDER THIS CONTRACT, ESPECIALLY IF WORK IS PERFORMED ON EXISTING TOWERS WHERE ANTENNAS ARE LOCATED. THE CONTRACTOR SHALL ENSURE THAT CONTRACTOR, SUBCONTRACTORS, AND ALL OF THEIR RESPECTIVE EMPLOYEES, AGENTS, INVITEES, LICENSEES, AND OTHER AUTHORIZED REPRESENTATIVES WHO ARE PERFORMING SERVICES UNDER THIS AGREEMENT WILL COMPLY WITH ALL ANSI AND ANY OTHER APPLICABLE EME STANDARDS, RULES OR REGULATIONS, INCLUDING BUT NOT LIMITED TO, THOSE RULES OR REGULATIONS IMPOSED OR SUGGESTED BY THE OWNER, IF ANY. THE CONTRACTOR SHALL ADHERE TO ALL OSHA RULES, REGULATIONS, AND ADOPTED POLICIES. ALL CONTRACTOR PERSONNEL SHALL HAVE UNDERGONE ELECTROMAGNETIC ENERGY (EME) TRAINING FOR PERSONNEL WORKING IN THE VICINITY OF ACTIVE ANTENNAS. AS SUCH, IT IS RECOMMENDED THAT RF MONITORS BE USED BY THE TOWER PERSONNEL TO MONITOR EXPOSURE LEVELS. IF EME LEVELS AT THE SITE EXCEED THE MAXIMUM PERMISSIBLE EXPOSURE LIMITS, THE CONTRACTOR SHALL COORDINATE WITH THE INDIVIDUALS RESPONSIBLE FOR USE OF THE TRANSMITTER TO MAKE SURE THAT THE EQUIPMENT IS DEACTIVATED BEFORE WORK CAN BE RESUMED, WITHOUT CAUSING A SERIOUS DISRUPTION OF THE SERVICE.
25. THE CONTRACTOR AND/OR SUB-CONTRACTORS SHALL DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THAT ALL SYSTEMS AND SUB-SYSTEMS INSTALLED UNDER THIS CONTRACT OPERATE PROPERLY, PRIOR TO THE FINAL INSPECTION ACCEPTANCE. PROVIDE THE OPERATIONS AND MAINTENANCE MANUALS AT THIS TIME.
26. THE MODIFICATIONS TO THE DRAWINGS AFTER START OF CONSTRUCTION SHALL BE APPROVED BY OWNER'S REPRESENTATIVE AND ENGINEER PRIOR TO ANY CHANGES BEING MADE. THE ENGINEER OF RECORD SHALL MAKE THE REQUIRED CHANGE AND WILL SUBMIT CHANGES TO OWNER'S REPRESENTATIVE AND ANY JURISDICTION HAVING AUTHORITY.

    THE CONTRACTOR SHALL KEEP UP-TO-DATE MARKED-UP PRINTS OF THE PROJECT DRAWINGS. UPON COMPLETION OF WORK AT THE SITE, THE CONTRACTOR SHALL REVIEW THE COMPLETED AS-BUILT DRAWINGS, AND ASCERTAIN THAT ALL DATA FURNISHED ON THE DRAWINGS IS ACCURATE AND TRULY REPRESENTS THE WORK AS ACTUALLY INSTALLED. MARKINGS INDICATING CHANGES TO THE DRAWINGS SHALL BE RED OR GREEN AND CLEARLY VISIBLE. TWO (2) SETS OF "AS-BUILT" DRAWINGS SHALL BE FURNISHED TO THE OWNER'S REPRESENTATIVE WITHIN 5 DAYS OF THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL ALSO SHOW THE FOLLOWING AS APPLICABLE:

- MODIFICATIONS TO SITE LAYOUT
- GROUNDING SYSTEM LAYOUT
- UNDERGROUND FUEL LINE RUN
- UNDERGROUND TELCO CABLE RUN
- UNDERGROUND ELECTRICAL RUN

WHEN THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING THE SITE EQUIPMENT ROOM, ISOLATION TRANSFORMER, GENERATOR, ETC. THAT REQUIRES PERIODIC MAINTENANCE, THE CONTRACTOR SHALL INCLUDE ALL OPERATION AND MAINTENANCE MANUALS AND ALL AS-BUILT DRAWINGS WHICH FULLY DESCRIBE THE ACTUAL INSTALLED EQUIPMENT.

27. THE OWNER'S REPRESENTATIVE SHALL PROVIDE A CERTIFICATE OF COMPLETION AND APPROVE FINAL PAYMENT WHEN ALL PUNCH-LIST ITEMS HAVE BEEN CORRECTED, RECORD DRAWINGS SUBMITTED, AND ALL SYSTEMS ARE ACCEPTABLE. THE CONTRACTOR MUST ALSO RECEIVE A CERTIFICATE OF COMPLETION FROM THE MUNICIPALITY. AFTER FINAL PAYMENT, CONTRACTOR SHALL SIGN A RELEASE OF LIEN.

ANTENNA

DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL ALSO CONFORM TO LATEST & APPLICABLE DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO THE LATEST AND APPLICABLE ANSI/TIA-222 STANDARD.

1. ALL ANTENNA MOUNTS AND ASSOCIATED APPURTENANCES SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
3. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUNDING KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
   A. GROUNDING AT THE ANTENNA LEVEL.
   B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
   C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
   D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
   E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
4. ALL PROPOSED GROUNDING BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUNDING BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUNDING BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANTENNA AND THE COAX CONFIGURATION IS THE CORRECT MAKE AND MODELS, PRIOR TO INSTALLATION.
6. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.
7. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
8. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
9. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
10. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
11. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
    A. TEMPERATURE SHALL BE ABOVE 50° F.
    B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
    C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
    D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
12. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5%. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5%.
13. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50-OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.
14. UNISTRUTS SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY ATKORE, HARVEY, IL OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"X1 5/8"X12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
15. MINIMUM BEND RADIUS, OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS.
16. CONTRACTOR TO VERIFY ALL REQUIRED LENGTHS OF MATERIAL PRIOR TO ORDERING MATERIALS.
17. CONTRACTOR TO TAG COAX CABLE AT BOTH ENDS WITH ANTENNA DESIGNATION AS REQUIRED BY CONSTRUCTION MANAGER.

FIBER

1. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INNERDUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE HIGH VOLTAGE CABLES AND THE INNERDUCT IN ORDER TO SEGREGATE CABLE TYPES. FIBER OPTIC TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.
2. THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.
3. WHEN INSTALLING FIBER OPTIC TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

PLANS ARE NOT TO BE SCALED.

0 1 2 3

ORIGINAL SIZE IN INCHES

THE UNIVERSITY OF RHODE ISLAND

Rev	Date	Revision	Approved
0	3/18/2024	ISSUED FOR BID	
1	6/7/2024	ISSUED FOR PERMIT	
2	6/18/2024	REISSUED FOR PERMIT	
3	8/26/2024	REISSUED FOR PERMIT	

DRAWING CONTROL

Designed by: MB	Drawn by: VM	Checked by: EI

Purpose	Released by	Date
○ For Comment		
○ For Approval		
● For Permit	EI	8/26/2024
○ For Construction		

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EDWARD AMICELI No. 0011767 REGISTERED PROFESSIONAL ENGINEER (CIVIL)

GENERAL/STR NOTES, TESTING & INSPECTIONS

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	T002	3
Scale: AS NOTED			

SPECIAL INSPECTIONS REQUIRED

THE FOLLOWING SPECIAL INSPECTIONS SHALL BE PROVIDED IN ACCORDANCE WITH THE CURRENT BUILDING CODE AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES, LATEST VERSION:

1. CONCRETE CONSTRUCTION — IBC §1705.3
   - DESIGN MIX
   - REINFORCING STEEL
   - FORMWORK
   - CONCRETE PLACEMENT
   - TEST CYLINDERS
   - POST-INSTALLED ANCHORS
2. SOILS/SUBGRADE — IBC §1705.6

ALL SPECIAL INSPECTIONS SHALL BE PERFORMED DURING THE COURSE OF CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE SPECIAL INSPECTOR NOT LESS THAN 72 HOURS IN ADVANCE OF PERFORMING WORK REQUIRING SPECIAL INSPECTION.

REQUIRED SUBMITTALS

CONTRACTOR SHALL SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL, AND SHALL INCORPORATE ALL COMMENTS PRIOR TO START OF FABRICATION OR INSTALLATION:

- CONSTRUCTION SCHEDULE

CONCRETE

• CONCRETE MIX DESIGNS	7 DAYS PRIOR TO CONSTRUCTION
• REBAR CUTTING, BENDING & PLACING DWGS	14 DAYS PRIOR TO FABRICATION
• CONCRETE ACCESSORIES DATA SHEETS	WITH REBAR PLACING DRAWINGS

TESTING PROCEDURES REQUIRED

CONTRACTOR SHALL CONTRACT AN INDEPENDENT "THIRD PARTY" TESTING FIRM TO PERFORM AND SUBMIT THE RESULTS OF ALL TESTS REQUIRED BY THE PROJECT SPECIFICATIONS AND DRAWINGS THAT FALL WITHIN THIS SCOPE OF WORK. THESE RESULTS SHALL BE SUBMITTED TO THE DESIGNATED OWNER'S REPRESENTATIVE. AT A MINIMUM, THE INDEPENDENT "THIRD PARTY" TESTING FIRM SHALL PERFORM AND SUBMIT THE RESULTS OF THE FOLLOWING TESTS:

1. FREQUENCY DOMAIN REFLECTOMETER (FDR) WITH PRECISION LOAD/SWEEP TEST FOR ANTENNA AND TRANSMISSION LINE INSTALLATION WORK IN ACCORDANCE WITH GUIDELINES AS OUTLINED BY OWNER
2. GROUNDING RESISTANCE TEST FOR GROUNDING WORK
3. STRUCTURAL (TOWER) STEEL MATERIALS, FINISH, ASSEMBLY, AND PROPER ASSEMBLY/INSTALLATION OF ANTENNAS AND TRANSMISSION LINES WITH "THIRD PARTY CLIMB" AND REPORT INCLUDING PHOTO DOCUMENTATION.

DESIGN CRITERIA

LOCATION:	TOWN OF KINGSTON, RI
BUILDING CODE (AS PER ASCE 7-16 & TIA-REVH):	2019 RHODE ISLAND BUILDING CODE (2018 IBC WITH AMENDMENTS)
WIND	
WIND SPEED:	130 MPH (ULTIMATE WIND SPEED)
WIND SPEED:	50 MPH (WITH ICE)
ICE THICKNESS:	1.00 IN
EXPOSURE CATEGORY:	C
RISK CATEGORY:	II
SEISMIC	
IMPORTANCE FACTOR (I_E):	1
RISK CATEGORY:	II
S_S:	0.161G
S_1:	0.058G
SITE CLASS:	D
ANALYSIS PROCEDURE:	EQUIVALENT LATERAL FORCE PROCEDURE

FOUNDATION DESIGN DATA

ALLOWABLE SOIL BEARING PRESSURE:	6,000 PSF
UNIT WEIGHT OF BACKFILL:	115 PCF

GEOTECHNICAL INVESTIGATION REPORT PREPARED BY TECTONIC ENGINEERING CONSULTANTS INC. DATED 08/30/2023. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

DELEGATED DESIGN

THE TOWER STRUCTURE AND FOUNDATION IS A DELEGATED DESIGN. THE CONTRACTOR SHALL PROVIDE A FULL DESIGN OF THE TOWER AND FOUNDATION AS PER THE DESIGN PARAMETERS PROVIDED AND GEOTECHNICAL REPORT. FINAL DESIGN TO BE SUBMITTED TO THE ENGINEER OF RECORD (EOR) AND SIGNED AND SEALED IN THE STATE OF RHODE ISLAND.

NFPA NOTES

THE SITE SHALL CONFORM TO THE LATEST NFPA 1, 101, AND 72 STANDARDS REQUIRED IN THE STATE AND AMENDED BY THE STATE OF RHODE ISLAND.

FOUNDATION NOTES

EARTHWORK

1. ALL EXCAVATIONS SHALL BE DEWATERED BY SUMPING, PUMPING, ETC. IN A MANNER WHICH WILL NOT LOOSEN FOUNDATION SUBGRADE MATERIAL. SURFACE WATER SHALL BE DIVERTED AWAY FROM EXCAVATIONS BY MEANS OF BERMS, DIVERSION DITCHES, OR OTHER SUITABLE METHODS.
2. CONFINED EXCAVATIONS FOR FOUNDATIONS, UTILITIES, ETC. SHALL BE LIMITED TO 4 FT. IN DEPTH UNLESS SHORING AND BRACING ARE USED. TRENCH EXCAVATION GEOMETRY AND/OR BRACING SHALL CONFORM WITH LATEST OSHA REQUIREMENTS.
3. REMOVE UNSUITABLE MATERIALS AND PROOFROLL OR OTHERWISE COMPACT SUBGRADE PRIOR TO PLACEMENT OF FILL OR CONSTRUCTION OF FOUNDATIONS.
4. ENGINEERED (STRUCTURAL) FILL SHALL BE WELL-GRADED, DURABLE, GRANULAR SOIL, FREE OF DEBRIS AND ORGANIC MATTER, CONFORMING TO THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT FINER BY WEIGHT
3"	100
1/4"	30-70
NO. 40	5-40
NO. 200	0-10

5. ONSITE SOILS MAY BE USED AS ENGINEERED (STRUCTURAL) FILL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER OF RECORD.
6. FILL AND BACKFILL SHALL BE PLACED IN MAXIMUM LOOSE LIFT THICKNESSES OF 8 INCHES IN OPEN AREAS, AND IN MAXIMUM LOOSE LIFT THICKNESS OF 4 INCHES IN CONFINED AREAS. ALL FILL AND BACKFILL SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY PER ASTM D1557 "LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT". HAND OPERATED COMPACTION EQUIPMENT SHALL BE UTILIZED WITHIN 4 FEET OF THE WALLS. EACH LIFT OF FILL SHALL BE TESTED FOR COMPACTION.
7. FREE DRAINING CRUSHED AGGREGATE SHALL CONFORM TO THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT FINER BY WEIGHT
1"	100
1/2"	30-100
1/4"	0-30
NO. 4	0-10
NO. 8	0-5

CONCRETE

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318-14.
2. CONCRETE REQUIREMENTS:

	FOOTINGS & WALLS	PADS/SLABS ON GRADE
COMPRESSIVE STRENGTH	4,000 PSI @ 28 DAYS	4,000 PSI @ 28 DAYS
CEMENT (ASTM C150)	TYPE I/II	TYPE I/II
COARSE AGGREGATE (ASTM C33)	#57 STONE	#67 STONE
FINE AGGREGATE	ASTM C33	ASTM C33
SLUMP (ASTM C143)	3"±1"	4"±1"
WATER CEMENT RATIO	0.52	0.52
ENTRAINED AIR	3.5% TO 6.5%	2%
CURING	PLASTIC SHEET	LIQUID MEMBRANE (ASTM C309, TYPE II, CLASS A)
TEST CYLINDERS REQUIRED	4 PER 50 CY (1 AT 7 DAYS, 3 AT 28 DAYS)	4 PER 50 CY (1 AT 7 DAYS, 3 AT 28 DAYS)

3. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, "DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064, "CARBON-STEEL WIRE AND WELDED WIRE REINFORCEMENT, PLAIN AND DEFORMED, FOR CONCRETE".
5. VAPOR BARRIER SHALL BE MINIMUM 15 MIL POLYETHYLENE SHEET.
6. JOINT FILLER SHALL BE BITUMINOUS EXPANSION JOINT FILLER CONFORMING TO ASTM D1751, "PREFORMED EXPANSION JOINT FILLER FOR CONCRETE PAVING AND STRUCTURAL CONSTRUCTION (NONEXTRUDING AND RESILIENT BITUMINOUS TYPES)".
7. JOINT SEALANT SHALL BE SINGLE COMPONENT, SELF-LEVELING, PREMIUM-GRADE POLYURETHANE SEALANT, TYPE SIKAFLEX-1C SL AS MANUFACTURED BY SIKA CORPORATION, OR ENGINEER APPROVED EQUAL. JOINT SEALANT SHALL BE COMPATIBLE WITH ADJACENT MATERIALS AND SHALL CONFORM TO ASTM C920, "ELASTOMERIC JOINT SEALANTS", TYPE S, GRADE P, CLASS 25, USE T.
8. GROUT SHALL BE NON-METALLIC, NON-SHRINK PREPACKAGED GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS, REQUIRING ONLY THE ADDITION OF WATER. GROUT SHALL BE FIVE STAR GROUT AS MANUFACTURED BY FIVE STAR PRODUCTS, INC., SHELTON, CT, OR APPROVED EQUAL. GROUT SHALL BE MIXED AND PLACED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
9. CONCRETE WORK AND MATERIALS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "SPECIFICATIONS FOR STRUCTURAL CONCRETE", ACI 301.
10. SUBMIT CONCRETE MIX DESIGN TO THE ENGINEER FOR APPROVAL NOT LESS THAN 7 DAYS PRIOR TO CONSTRUCTION. MIX DESIGN SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
11. CHLORIDE-CONTAINING ADMIXTURES SHALL NOT BE USED.
12. CONCRETE COVER FOR REINFORCING SHALL BE 3 INCHES FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH. AT ALL OTHER CONCRETE SURFACES, MINIMUM COVER SHALL BE 2 INCHES FOR #6 AND LARGER BARS, AND 1 1/2 INCHES FOR #5 AND SMALLER BARS, UNLESS OTHERWISE NOTED. CONCRETE COVER FOR REINFORCEMENT NOT EXPOSED TO EARTH OR WEATHER SHALL BE 3/4 INCH FOR SLABS, WALLS, AND JOISTS, UNLESS OTHERWISE NOTED.
13. LAP SPLICES FOR REINFORCING SHALL BE MINIMUM 40 BAR DIAMETERS, UNLESS OTHERWISE NOTED. STANDARD HOOKS SHALL BE 16 BAR DIAMETERS. ALL OTHER REINFORCING DETAILS SHALL BE IN ACCORDANCE WITH ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT".
14. WELDING OF REINFORCING STEEL OR THE APPLICATION OF HEAT TO FACILITATE BENDING IS PROHIBITED, EXCEPT WHERE SPECIFICALLY SHOWN OR NOTED.
15. FORMS SHALL BE BUILT TRUE. THEY SHALL BE STRONG, RIGID, MORTAR-TIGHT, AND ADEQUATELY BRACED OR TIED. FORMS SHALL BE DESIGNED AND CONSTRUCTED TO WITHSTAND ALL LOADS AND PRESSURES, INCLUDING THOSE IMPOSED BY PLASTIC CONCRETE TAKING FULL ACCOUNT OF THE STRESSES DUE TO THE RATE OF POUR, EFFECTIVE VIBRATION AND CONDITIONS BROUGHT ABOUT BY CONSTRUCTION METHODS.
16. ALL REINFORCING, EMBEDDED STEEL, ANCHOR BOLTS, INSERTS AND ALL OTHER EMBEDDED ITEMS SHALL BE IN PLACE BEFORE START OF CONCRETE PLACEMENT. PROVIDE TEMPLATES FOR SETTING OF ANCHOR BOLTS.
17. REMOVE ALL LOOSE MATERIAL AND DEBRIS FROM SUBGRADE SURFACE PRIOR TO PLACING CONCRETE. CONCRETE SHALL NOT BE PLACED ON FROZEN SUBGRADE.
18. CONSTRUCTION AND SAWCUT CONTROL JOINTS SHALL BE INSTALLED AT LOCATIONS INDICATED. CONTRACTOR MAY PROVIDE ADDITIONAL CONSTRUCTION JOINTS AS REQUIRED AT OTHER LOCATIONS AS APPROVED BY THE ENGINEER.
19. WHEN AMBIENT TEMPERATURE IS BELOW 50 DEGREES F. CONCRETE MATERIALS AND PLACEMENT SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 306R "COLD WEATHER CONCRETING".
20. WHEN AMBIENT TEMPERATURE IS ABOVE 90 DEGREES F. CONCRETE MATERIALS AND PLACEMENT SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 305R "HOT WEATHER CONCRETING".
21. CONCRETE SLUMP SHALL NOT EXCEED 5 INCHES UNLESS SPECIFICALLY AUTHORIZED BY THE ENGINEER. SLUMP SHALL BE DETERMINED IN ACCORDANCE WITH ASTM C143 "SLUMP OF HYDRAULIC CEMENT CONCRETE".
22. CONCRETE SHALL BE SUFFICIENTLY CONSOLIDATED BY VIBRATION TO REMOVE AIR VOIDS. VIBRATION SHALL BE IN ACORDANCE WITH ACI 309 "STANDARD PRACTICE FOR CONSOLIDATION OF CONCRETE".
23. THE TOP OF ALL CONCRETE SURFACES SHALL BE TRUE AND LEVEL WITH A SMOOTH FLOAT FINISH, UNLESS OTHERWISE NOTED. PADS AND WALKWAYS SHALL RECEIVE A BROOM FINISH. ALL DIMENSIONS SHALL BE WITHIN A MINIMUM OF ±1/8 INCH. TOLERANCES OF ALL DIMENSIONS OF CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF ACI 318, UNLESS OTHERWISE NOTED.
24. PROVIDE A 3/4" CHAMFER AT ALL EXPOSED EDGES OF CONCRETE, UNLESS OTHERWISE NOTED.
25. DRYING OUT OF CONCRETE, ESPECIALLY DURING THE FIRST 24 HOURS, SHALL BE CAREFULLY GUARDED AGAINST. ALL SURFACES SHALL BE MOIST CURED.
26. DO NOT REMOVE FORMS, SHORES AND BRACING UNTIL CONCRETE HAS GAINED SUFFICIENT STRENGTH TO CARRY ITS OWN WEIGHT, CONSTRUCTION LOADS, AND DESIGN LOADS WHICH ARE LIABLE TO BE IMPOSED UPON IT. VERIFY STRENGTH OF CONCRETE BY COMPRESSIVE TEST RESULTS.
27. THROUGHOUT CONSTRUCTION, THE CONCRETE WORK SHALL BE ADEQUATELY PROTECTED AGAINST DAMAGE DUE TO EXCESSIVE LOADING, CONSTRUCTION EQUIPMENT, MATERIALS OR METHODS, ICE, RAIN, SNOW, EXCESSIVE HEAT AND FREEZING.
28. CONTRACTOR SHALL BRING TO THE IMMEDIATE ATTENTION OF THE OWNER'S FIELD REPRESENTATIVE ANY DEFECTS OR ERRORS IN THE WORK, PRIOR TO MAKING REPAIRS. CONTRACTOR SHALL OBTAIN PERMISSION FROM THE OWNER'S FIELD REPRESENTATIVE TO PATCH OR OTHERWISE REPAIR DEFECTS OTHER THAN MINOR HONEYCOMBING.
29. WHEN DRILLING INTO EXISTING CONCRETE, EXERCISE CAUTION TO AVOID DAMAGE TO EXISTING REINFORCING BARS.
30. PROVIDE 72 HOURS NOTICE TO THE ENGINEER AND SPECIAL INSPECTOR PRIOR TO EACH PLACEMENT OF CONCRETE.
31. CONCRETE TESTING AND SAMPLING SHALL BE PERFORMED UNDER THE DIRECTION OF THE OWNER'S FIELD REPRESENTATIVE.

STRUCTURAL STEEL NOTES

1. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", LATEST EDITION.
2. STRUCTURAL STEEL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992, "STEEL FOR STRUCTURAL SHAPES FOR USE IN BUILDING FRAMING", GRADE 50, UNLESS OTHERWISE INDICATED. IF THE MEMBER SIZES INDICATED ARE NOT AVAILABLE IN THIS GRADE, ASTM A572 "HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STRUCTURAL STEEL", GRADE 50, MAY BE SUBSTITUTED.
3. HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES", GRADE C. SUBSTITUTION WITH ASTM A53 PIPE IS NOT ACCEPTABLE.
4. FIELD WELDING IS NOT PERMITTED, UNLESS SPECIFICALLY INDICATED OTHERWISE ON THESE DRAWINGS.
5. ALL FILLET WELDS SHALL BE MADE USING THE SHIELDED METAL ARC WELDING (SMAW) PROCESS WITH E70XX ELECTRODES UNLESS OTHERWISE NOTED.
6. MISCELLANEOUS STEEL, INCLUDING THREADED RODS, CHANNELS, ANGLES, PLATES, AND BARS SHALL. CONFORM TO ASTM A36 "CARBON STRUCTURAL STEEL", UNLESS OTHERWISE INDICATED.
7. U-BOLTS SHALL CONFORM TO ASTM A36 OR A307 "CARBON STEEL BOLTS, STUDS, AND THREADED ROD 60000 PSI TENSILE STRENGTH". ALL U-BOLTS SHALL BE 1/2" DIAMETER IN 9/16" HOLES, UNLESS OTHERWISE NOTED. INSTALL DOUBLE NUTS ON ALL CONNECTIONS.
8. ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 "ANCHOR BOLTS, STEEL, 36, 55, AND 105-KSI YIELD STRENGTH", GRADE 36.
9. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO ASTM A325 "STRUCTURAL BOLTS, STEEL, HEAT TREATED, 120/105 KSI MINIMUM TENSILE STRENGTH". BOLTS SHALL BE 3/4 INCH DIAMETER, TYPE X, UNLESS OTHERWISE NOTED.
10. MATCHING NUTS SHALL BE HEAVY HEX TYPE, CONFORMING TO ASTM A563 "CARBON AND ALLOY STEEL NUTS". WASHERS, WHERE REQUIRED, SHALL CONFORM TO ASTM F436 "HARDENED STEEL WASHERS".
11. FIELD CONNECTIONS SHALL BE BOLTED UNLESS OTHERWISE INDICATED. ALL BOLTED CONNECTIONS SHALL BE MADE WITH NOT LESS THAN TWO (2) HIGH STRENGTH BOLTS, OR EQUIVALENT WELD.
12. ALL STEEL SUPPORTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
13. STRUCTURAL CONNECTIONS SHALL BE SNUG TIGHT IN ACCORDANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", UNLESS OTHERWISE NOTED.
14. BOLTS IN SLIP-CRITICAL CONNECTIONS SHALL BE FULLY PRETENSIONED BY THE TURN-OF-NUT METHOD IN ACCORDANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
15. ANCHOR BOLTS SHALL BE TENSIONED BY THE TURN-OF-NUT METHOD AFTER GROUTING OF BASE PLATES.
16. ALL HOLES FOR BOLTS SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER WITH AN EDGE DISTANCE OF AT LEAST 1 1/2 TIMES THE BOLT DIAMETER AND A SPACING OF AT LEAST 3 TIMES THE BOLT DIAMETER. ALL BOLTS SHALL BE PROVIDED WITH PALNUTS OR LOCK NUTS
17. CONTRACTOR SHALL COMPLY WITH AWS D1.1 "STRUCTURAL WELDING CODE - STEEL" FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
18. EXPANSION ANCHORS SHALL BE HILTI KWIK BOLT TZ2 OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE 4-3/4" UNLESS OTHERWISE NOTED.
19. ADHESIVE ANCHOR ASSEMBLIES SHALL BE AS MANUFACTURED BY HILTI OR ENGINEER APPROVED EQUAL, AS FOLLOWS:

BASE MATERIAL	ANCHOR SYSTEM
HOLLOW CMU OR BRICK	HIT HY-270
CONCRETE	HIT HY-200

INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

20. HAMMER DRILLS ARE NOT TO BE USED WHEN DRILLING HOLES FOR SLEEVE OR EXPANSION BOLTS INSTALLED IN MASONRY BLOCKS/BRICKS.
21. ALL INTERIOR STRUCTURAL STEEL SHALL BE SHOP PRIME COATED WITH A RUST-INHIBITIVE PRIMER EXCEPT AREAS TO BE FIREPROOFED NEED NOT BE PAINTED. SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE PAINT MANUFACTURER'S RECOMMENDATIONS. AREAS WHICH MAY BE INACCESSIBLE AFTER INSTALLATION SHALL RECEIVE TWO (2) COATS OF PRIMER. FINISH PAINT AS DIRECTED BY OWNER.
22. FIELD CONNECTIONS AND DAMAGED OR ABRADED AREAS OF SHOP PRIME COAT SHALL BE TOUCH-UP PAINTED WITH COMPATIBLE FIELD PRIMER.
23. ALL EXTERIOR STEEL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
24. ALL EXTERIOR BOLTS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
25. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780 "REPAIR OF DAMAGED AND UNCOATED AREAS OF HOT-DIP GALVANIZED COATINGS", USING GALVANIZING COMPOUND AS MANUFACTURED BY ZINGA-USA OR ZINC KOTE, OR ENGINEER APPROVED EQUAL, WITH A MINIMUM METALLIC ZINC CONTENT OF 95% BY WEIGHT IN DRY FILM. DRY FINISHED COATING THICKNESS SHALL BE 3 MILS MINIMUM. DAMAGED AREAS OF STEEL SHALL BE REPAINTED TO MATCH ANY EXISTING FINISH (IF APPLICABLE).
26. STEEL WORK SHALL BE SUBJECT TO SPECIAL INSPECTIONS DURING CONSTRUCTION AS REQUIRED BY THE CODE.
27. CONTRACTOR TO REMOVE MASTIC ON THE EXISTING WALL/PARAPET AT EVERY STEEL SUPPORT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BED OF SILICONE SHALL BE APPLIED ALL AROUND THE STEEL SUPPORT ATTACHMENT TO MAKE IT WEATHERPROOF.
28. ALL HOLES TO BE ADDED IN THE FIELD SHALL BE PUNCHED OR DRILLED. NO HOLE BURNING SHALL BE ALLOWED. REPAIR GALVANIZING IN ACCORDANCE WITH ASTM A780.
29. THE NOTES CONTAINED HEREIN ARE NOT PROJECT SPECIFIC. THE CONTRACTOR SHALL UTILIZE ALL NOTES WHICH SOLELY PERTAIN TO THE WORK DEPICTED ON THESE DRAWINGS.

PLANS ARE NOT TO BE SCALED.

0 1 2 3

ORIGINAL SIZE IN INCHES

THE UNIVERSITY OF RHODE ISLAND

Rev	Date	Revision	Approved
0	3/18/2024	ISSUED FOR BID	
1	6/7/2024	ISSUED FOR PERMIT	
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3	8/26/2024	REISSUED FOR PERMIT	

DRAWING CONTROL

Designed by: MB	Drawn by: VM	Checked by: EI

Purpose	Released by	Date
○ For Comment		
○ For Approval		
● For Permit	EI	8/26/2024
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www.tectonicengineering.com

EDWARD AMICELI
No. 0011767
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

FOUNDATION NOTES, LEGEND & ABBREVIATIONS

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	T003	3

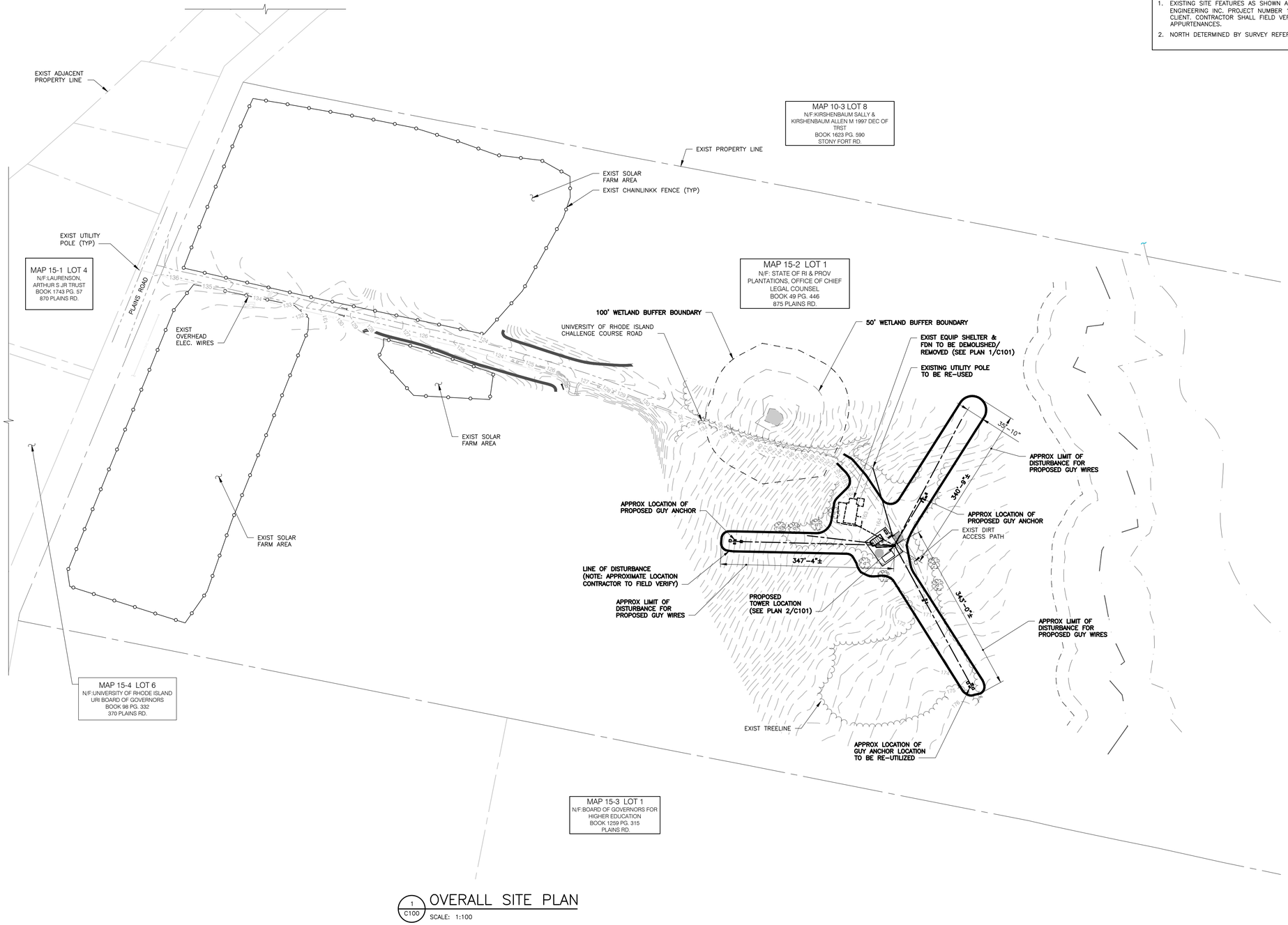
Scale: AS NOTED

N

TRUE

GENERAL NOTES

1. EXISTING SITE FEATURES AS SHOWN ARE BASED ON A SURVEY DRAWING PREPARED BY NARRAGANSETT ENGINEERING INC. PROJECT NUMBER 19.0133, DATED 8/9/23, AND INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO INSTALLATION OF PROPOSED APPURTENANCES.
2. NORTH DETERMINED BY SURVEY REFERENCE IN NOTE #1.



1 / C100 OVERALL SITE PLAN

SCALE: 1:100

PLANS ARE NOT TO BE SCALED.

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EDWARD AMICELI No. 0011767 REGISTERED PROFESSIONAL ENGINEER (CIVIL)

OVERALL SITE PLAN

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

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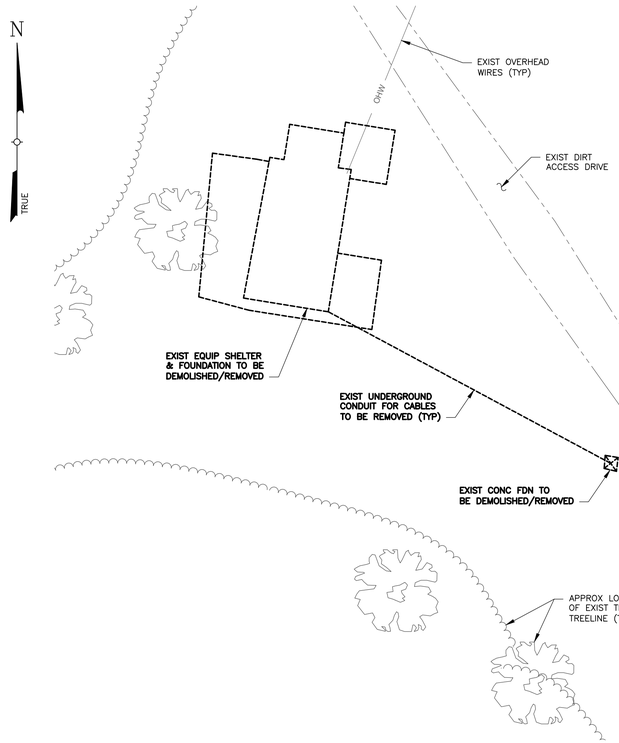
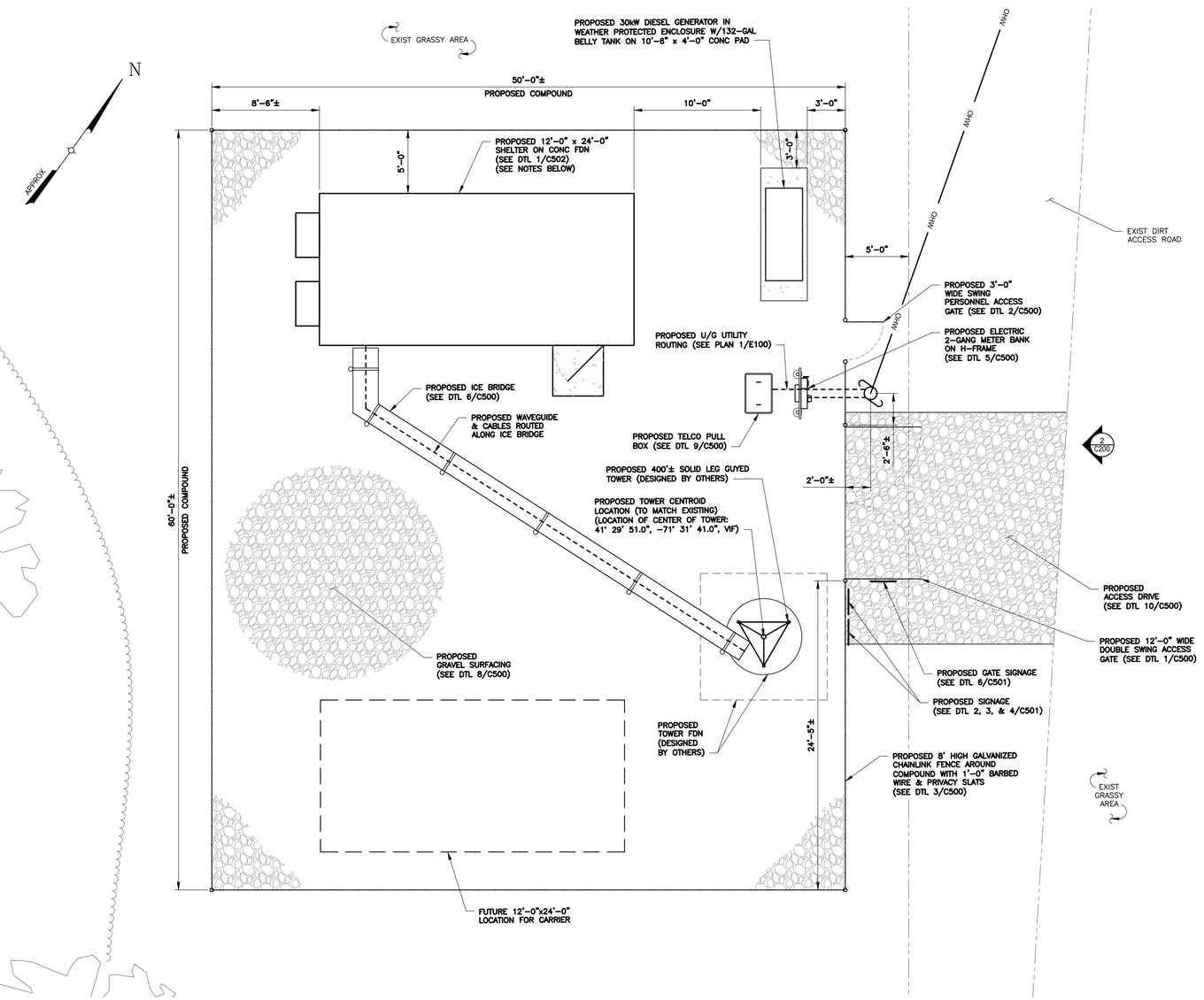


1 C101 SITE/DEMOLITION PLAN
SCALE: 1" = 20'



NOTES:
1. EXISTING EQUIPMENT SHELTER SHALL BE DEMOLISHED AND REMOVED.
2. NEW EQUIPMENT SHELTER SHALL BE PURCHASED AND COMPLY WITH NFPA STANDARDS.
3. TREE CLEARING:
   3.1. CONTRACTOR TO PERFORM TREE SURVEY WITHIN 50' OF ANTENNA/TOWER STRUCTURE INCLUDING GUYS.
   3.2. ANY TREE 50' OR GREATER SHALL BE CUT DOWN.

2 C101 ENLARGED SITE PLAN
SCALE: 1" = 5'

PLANS ARE NOT TO BE SCALED.

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EDWARD AMICELI
No. 0011767
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

SITE DEMOLITION PLAN & ENLARGED SITE PLAN

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

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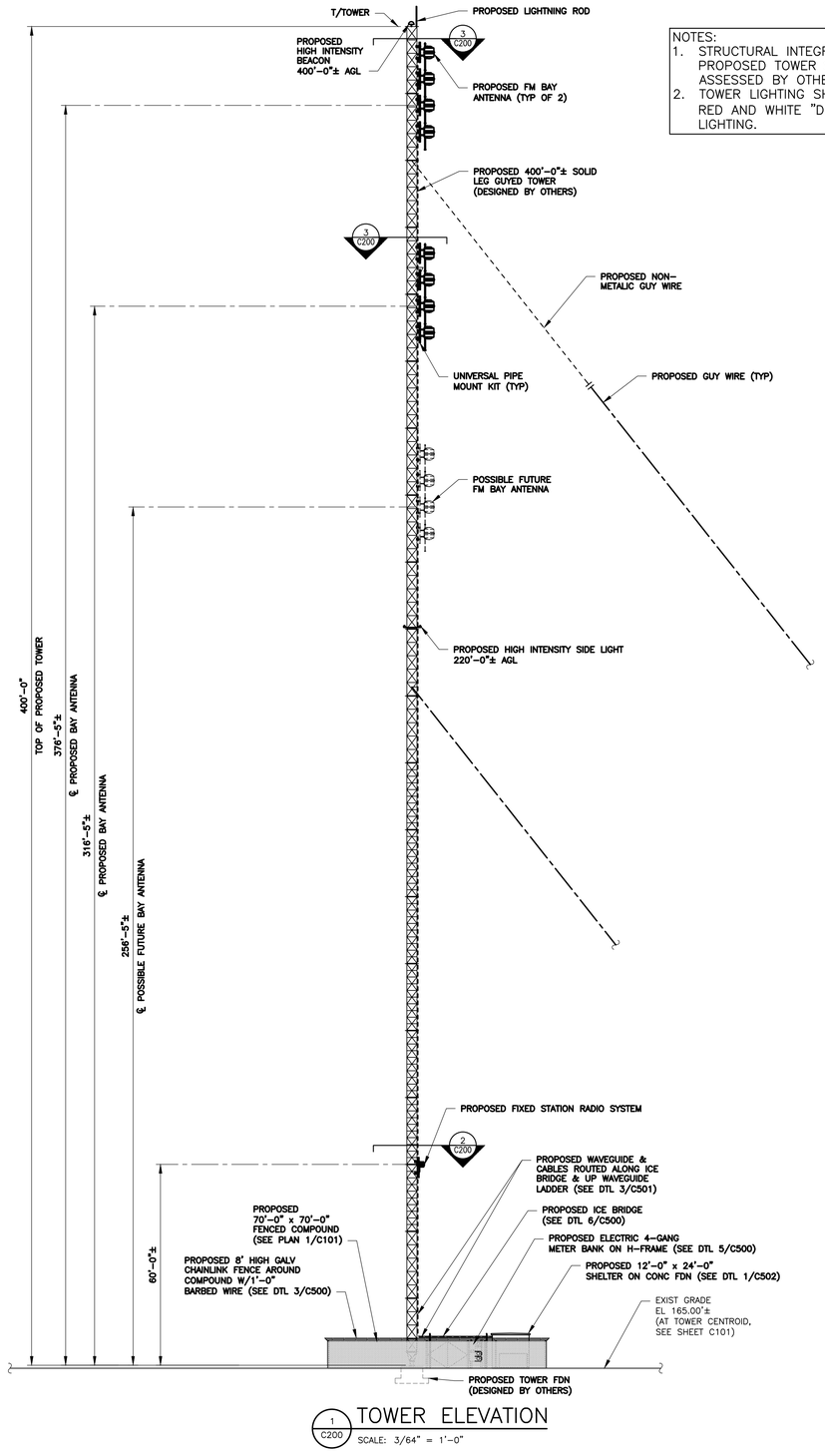


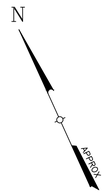
NOTES:
1. STRUCTURAL INTEGRITY OF PROPOSED TOWER SHALL BE ASSESSED BY OTHERS.
2. TOWER LIGHTING SHALL BE RED AND WHITE "DUAL MODE" LIGHTING.

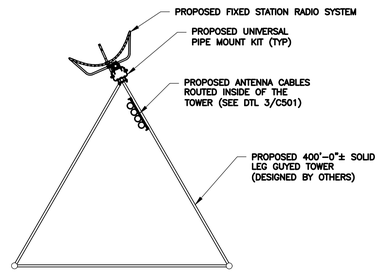
1 C200 TOWER ELEVATION
SCALE: 3/64" = 1'-0"

PROPOSED ANTENNA/CABLE CONFIGURATION SCHEDULE

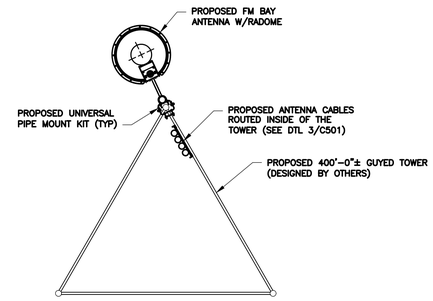
MOUNT LEVEL (FT)	ELEVATION (FT)(℄)	NUMBER OF ANTENNAS	ANTENNA TYPE	ANTENNA TYPE	NUMBER OF FEED LINES	FEED LINE TYPE
376'-5"±	376'-5"±	1	FM ANTENNA W/RADOME	4 BAY - 6810	1	1-5/8" FEEDLINE
316'-5"±	316'-5"±	1	FM ANTENNA W/RADOME	4 BAY - 6810	1	1-5/8" FEEDLINE
256'-5"±	256'-5"±	1	POSSIBLE FUTURE FM ANTENNA W/RADOME	4 BAY - 6810	1	1-5/8" FEEDLINE
57'-0"	60'-0"	1	FIXED STATION RADIO SYSTEM	MF-900B 950	1	1/2" FEEDLINE

NOTES:
1. FINAL ANTENNA AND LINE CONFIGURATION TO BE APPROVED BY URI.
2. SEE SPECIFICATIONS FOR ANTENNA TYPE AND INFORMATION.





2 C200 FIXED STATION RADIO SYSTEM @ 60'-0" LEVEL
SCALE: NTS



● 376'-5", ● 316'-5" & ● 256'-5" LEVEL

3 C200 FM BAY ANTENNA PLAN (TYP)
SCALE: NTS

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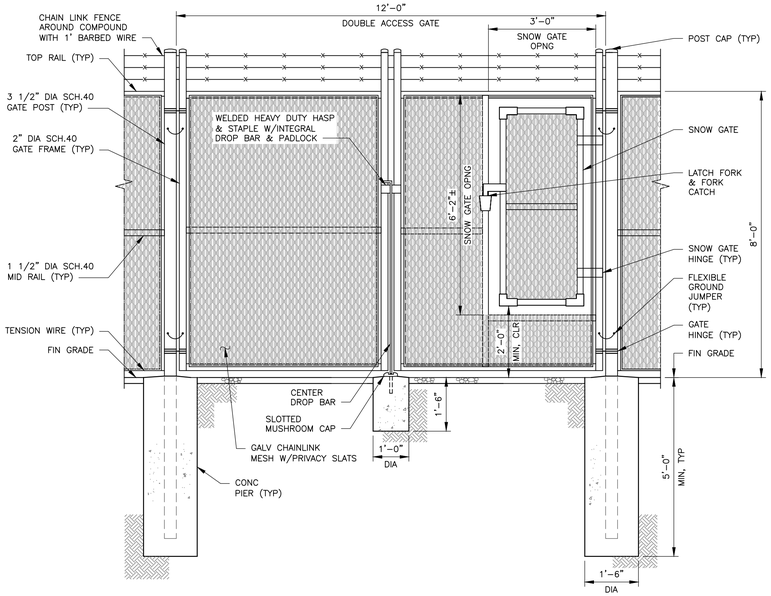
EDWARD AMICELI No. 0011767 REGISTERED PROFESSIONAL ENGINEER (CIVIL)

TOWER ELEVATION & OMNI ANTENNA PLANS

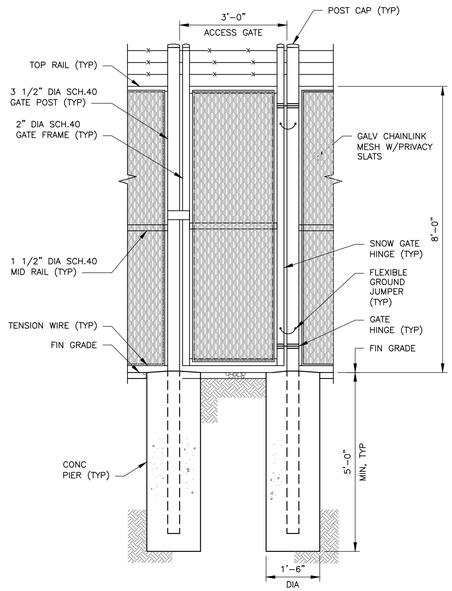
PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	C200	3
Scale: AS NOTED			



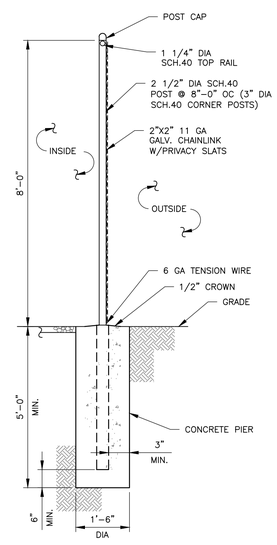
1 C500 DOUBLE ACCESS GATE DETAIL

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



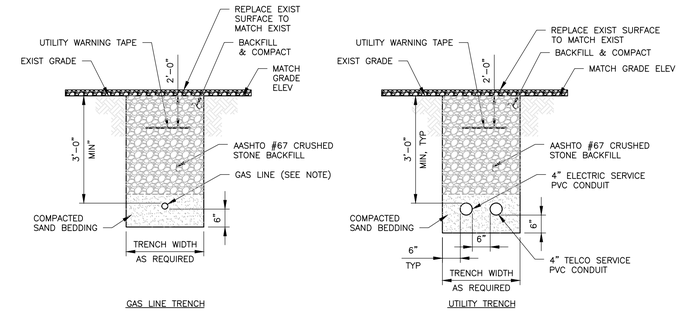
2 C500 PERSONNEL ACCESS GATE DETAIL

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



3 C500 FENCE POST DETAIL

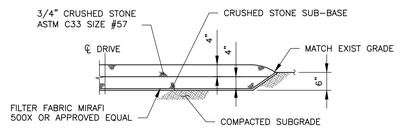
SCALE: 1/2" = 1'-0"



NOTE:
CONTRACTOR SHALL COORDINATE GAS LINE SIZE AND UTILITY CONDUIT SIZES WITH CLIENT, PROPERTY OWNER, AND LOCAL UTILITY COMPANY.

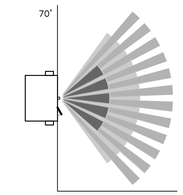
4 C500 TRENCH DETAIL

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

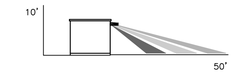


10 C500 ACCESS DRIVE SECTION

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



PLAN VIEW



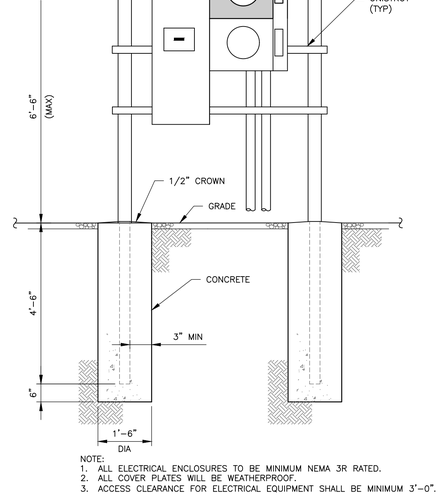
SIDE VIEW

DOUBLE LOOK DOWN LENS

RAB LIGHTING MODEL #GT500R (OR APPROVED EQUAL)

11 C500 LIGHTING PATTERN

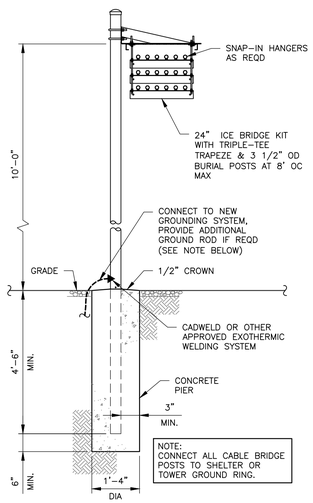
SCALE: NTS



NOTE:
1. ALL ELECTRICAL ENCLOSURES TO BE MINIMUM NEMA 3R RATED.
2. ALL COVER PLATES WILL BE WEATHERPROOF.
3. ACCESS CLEARANCE FOR ELECTRICAL EQUIPMENT SHALL BE MINIMUM 3'-0".

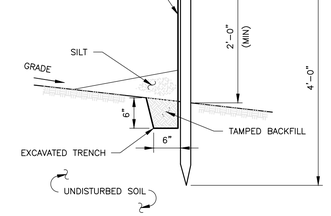
5 C500 METER & DISCONNECT DETAIL

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



6 C500 ICE BRIDGE DETAIL

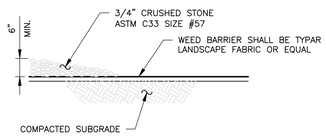
SCALE: 1/2" = 1'-0"



NOTE: SILT FENCE TO BE MAINTAINED IN PLACE DURING CONSTRUCTION PERIOD. REMOVE UPON COMPLETION OF CONSTRUCTION.

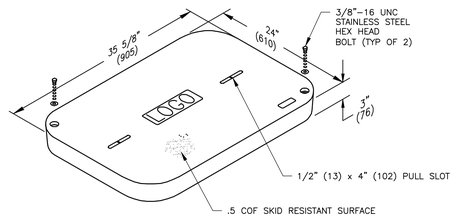
7 C500 SILT FENCE DETAIL

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

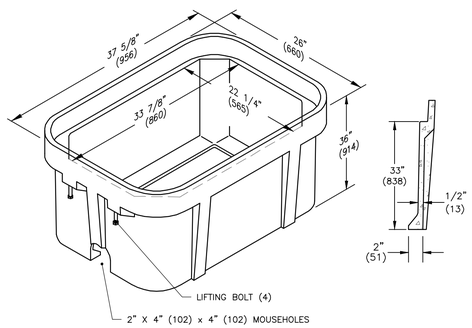


8 C500 GRAVEL SURFACE DETAIL

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



COVER



BOX

9 C500 TELCO PULLBOX DETAIL

SCALE: NTS

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TYPICAL DETAILS

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TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

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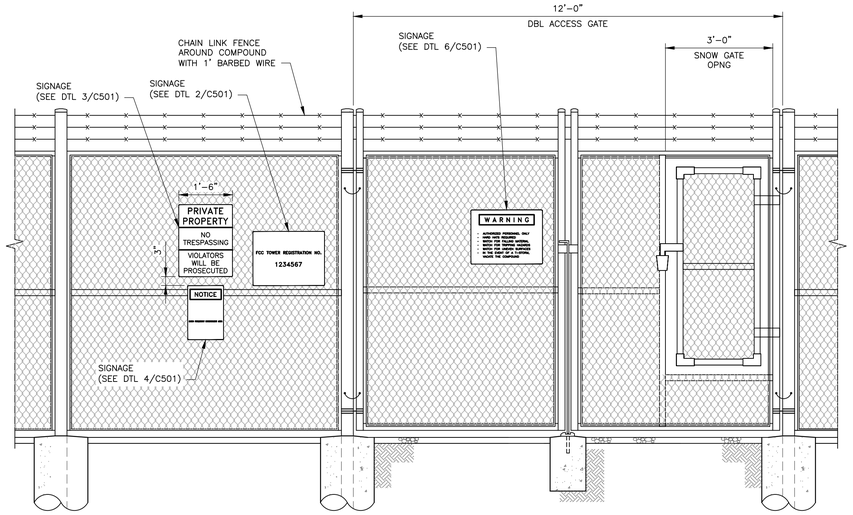
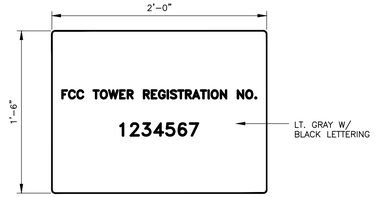
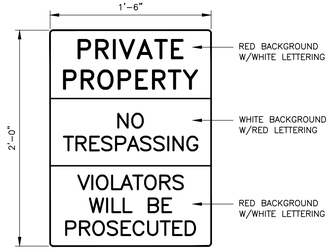
Scale: AS NOTED



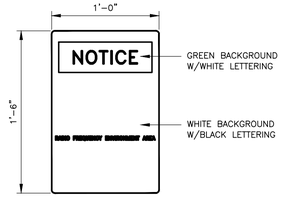
1 C501 SIGNAGE ELEVATION
SCALE: NTS



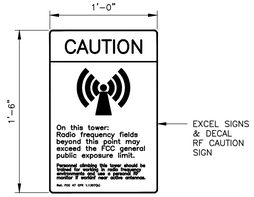
2 C501 FCC REGISTRATION SIGN
SCALE: NTS



3 C501 NO TRESPASSING SIGN
SCALE: NTS

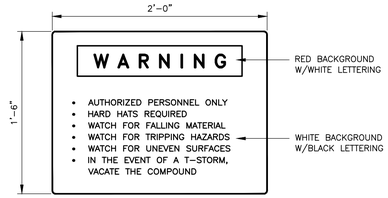


4 C501 NOTICE–RFE SIGN
SCALE: NTS

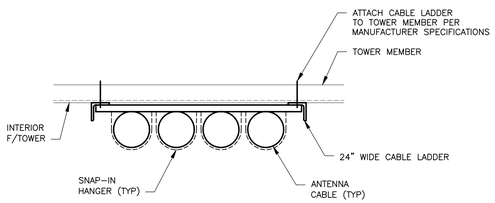


NOTES:
1. INSTALL SIGN AT EACH TOWER CLIMBING LADDER ACCESS.
2. SECURE SIGN TO TOWER USING METAL BANDS, ADHESIVE OR SPECIALLY FABRICATED MOUNTING FRAMES.
3. UNDER NO CIRCUMSTANCES ARE HOLES TO BE DRILLED IN, OR BRACKETS WELDED TO, THE TOWER STRUCTURE UNLESS SPECIFICALLY INSTRUCTED OTHERWISE.

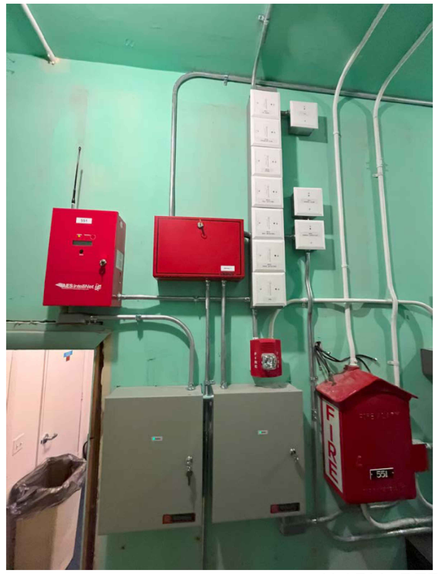
5 C501 RF CAUTION SIGN
SCALE: NTS

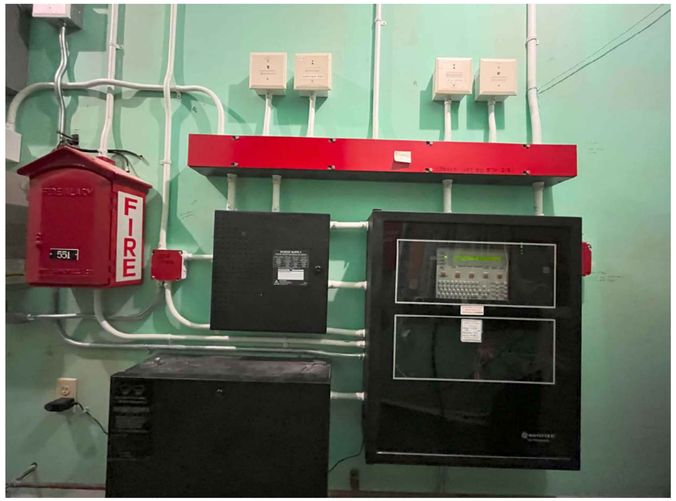


6 C501 CAUTION–HARD HAT CONSTRUCTION AREA AND TRIPPING HAZARDS
SCALE: NTS



7 C501 CABLE LADDER DETAIL
SCALE: NTS





8 C501 ALARM REPORTING SYSTEM SAMPLE ELEVATION
SCALE: NTS

PLANS ARE NOT TO BE SCALED.

0 1 2 3
ORIGINAL SIZE IN INCHES

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OF RHODE ISLAND

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DRAWING CONTROL

Designed by: MB	Drawn by: VM	Checked by: EI
Purpose	Released by	Date
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EDWARD AMICELI
No. 0011767
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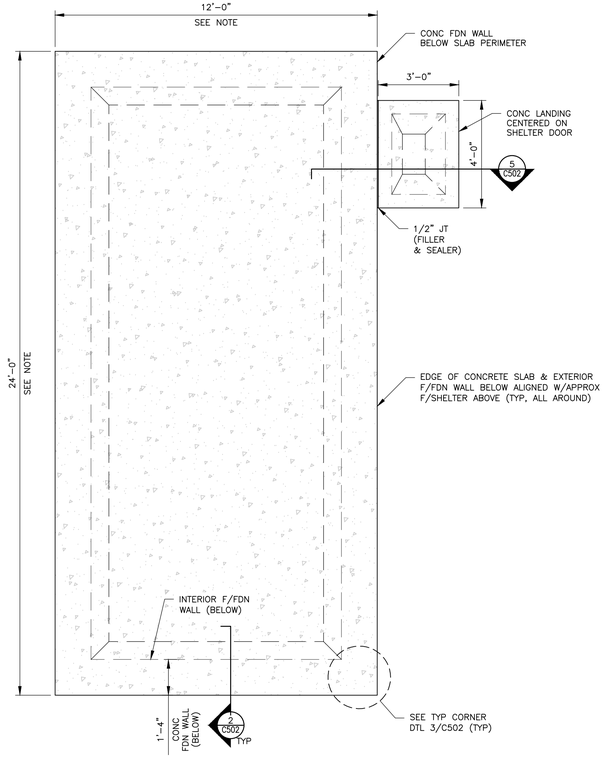
(CIVIL)

SIGNAGE ELEVATION & DETAILS

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

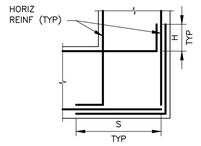
Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	C501	3
Scale: AS NOTED			



NOTES:
1. **PRIOR TO CONSTRUCTION AND FABRICATION OF THE FOUNDATION SYSTEM, CONTRACTOR SHALL COORDINATE FINAL SHELTER DIMENSIONS, ANCHOR LAYOUTS/LOCATIONS, AND FOUNDATION RECOMMENDATIONS WITH THE SHELTER MANUFACTURER.**
2. **SHELTER CONNECTION TO PROPOSED FOUNDATION SYSTEM SHALL BE COORDINATED WITH AND APPROVED BY SHELTER MANUFACTURER. MAINTAIN A MINIMUM OF 6" FROM ANCHORS TO EDGE OF SLAB. MANUFACTURER SHALL CONTACT ENGINEER OF RECORD IF ANCHOR SYSTEM CANNOT COMPLY WITH PROPOSED FOUNDATION SYSTEM. FOUNDATION DIMENSIONS TO BE ADJUSTED TO MATCH SHELTER SPECS.**

1 C502 EQUIPMENT SHELTER FDN PLAN

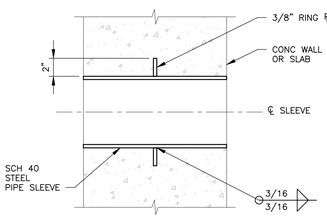
SCALE: 3/8" = 1'-0"



NOTE: SEE TABLE FOR STANDARD REBAR HOOK AND SPLICE DIMENSIONS.

3 C502 TYP FDN WALL CORNER DETAIL

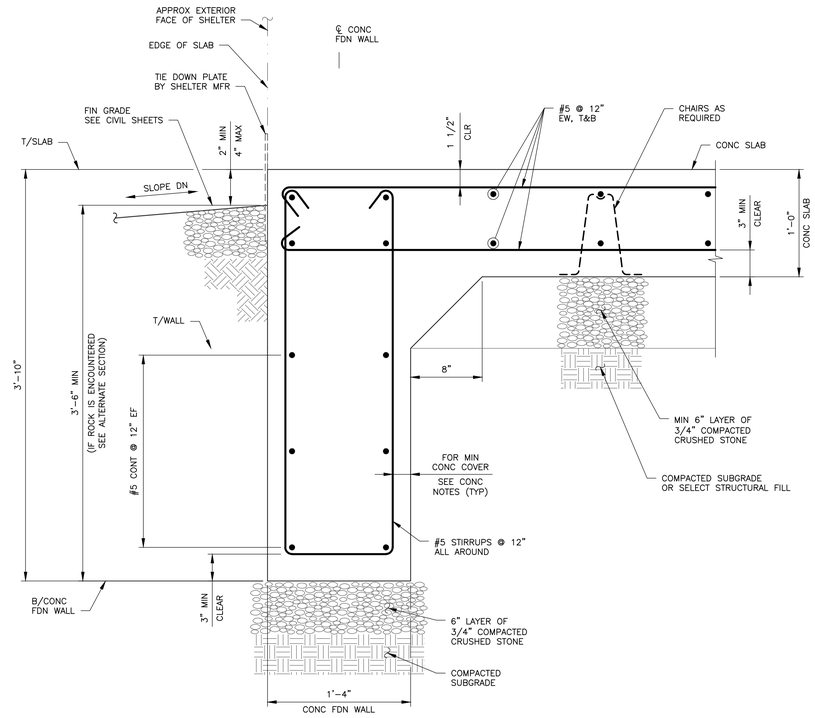
SCALE: 3/4" = 1'-0"



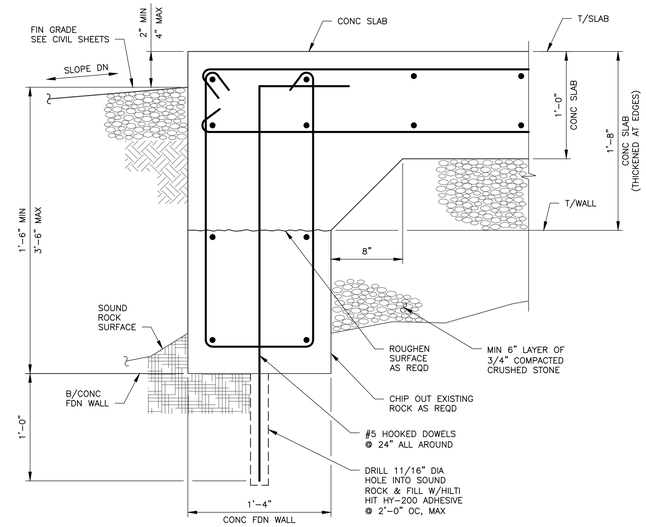
NOTE: PIPE SLEEVE SHALL BE PLACED IN BETWEEN REBAR. DO NOT INTERRUPT, CUT, OR ALTER REBAR IN ANY WAY.

4 C502 TYP CONDUIT SLEEVE DETAIL

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



ON SUBGRADE



NOTE: FOR INFO NOT SHOWN, SEE SECTION FOR FOUNDATION ON SUBGRADE.

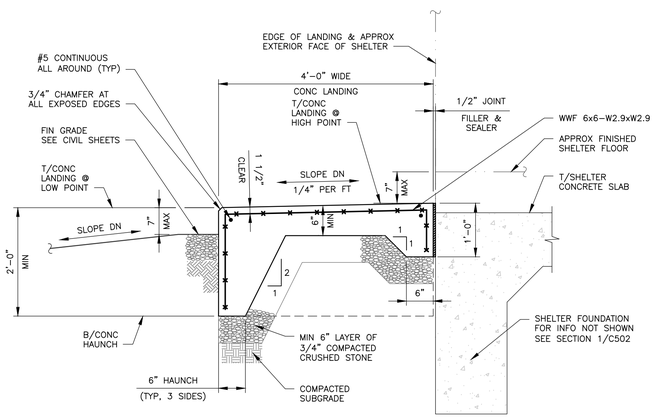
ALTERNATE (INTO ROCK)

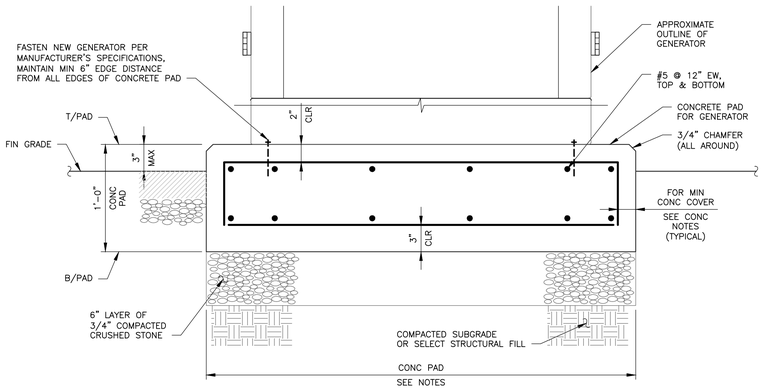
2 C502 TYPICAL SHELTER FOUNDATION SECTIONS

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

5 C502 CONC LANDING SECTION

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



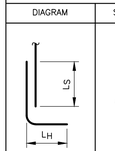


NOTES:
1. **PRIOR TO CONSTRUCTION AND FABRICATION OF THE FOUNDATION SYSTEM, CONTRACTOR SHALL COORDINATE FINAL GENERATOR DIMENSIONS, ANCHOR LAYOUTS/LOCATIONS, AND FOUNDATION RECOMMENDATIONS WITH THE GENERATOR MANUFACTURER.**
2. **GENERATOR CONNECTION TO PROPOSED FOUNDATION SYSTEM SHALL BE COORDINATED WITH AND APPROVED BY GENERATOR MANUFACTURER. MAINTAIN A MINIMUM OF 6" FROM ANCHORS TO EDGE OF SLAB. MANUFACTURER SHALL CONTACT ENGINEER OF RECORD IF ANCHOR SYSTEM CANNOT COMPLY WITH PROPOSED FOUNDATION SYSTEM. FOUNDATION DIMENSIONS TO BE ADJUSTED TO MATCH GENERATOR SPECS.**

6 C502 GENERATOR FDN SECTION

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

STD REBAR HOOK & SPLICE DIMENSIONS

DIAGRAM	SIZE	HOOK L_H	L_S	
			VERT	HORIZ
	#5	10"	31"	40"

NOTE: BASED ON 4,000 PSI CONCRETE.

NOTES

1. SHELTER/GENERATOR SIZE AND ORIENTATION MAY VARY FROM THE LAYOUT SHOWN. CONTRACTOR SHALL VERIFY EXACT SHELTER DIMENSIONS AND ORIENTATION PRIOR TO COMMENCING ANY FOUNDATION WORK.
2. ATTACHMENT OF SHELTER TO CONCRETE SLAB SHALL BE IN ACCORDANCE WITH SHELTER MANUFACTURER'S RECOMMENDATIONS.
3. ALL REQUIRED TIE DOWN PLATES, SHIMS, BOLTS, AND ANCHORS SHALL BE PROVIDED BY THE SHELTER MANUFACTURER AND SHALL BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE SHELTER MANUFACTURER'S RECOMMENDATIONS.
4. PROVIDE REBAR GROUNDING AS DIRECTED BY SHELTER MANUFACTURER AND ELECTRICAL/GROUNDING SHEETS.
5. SLAB AND/OR FOUNDATION INSULATION IN ACCORDANCE WITH ALL APPLICABLE LOCAL ENERGY CODES SHALL BE INSTALLED BY THE CONTRACTOR AS REQUIRED BY THE SHELTER MANUFACTURER.
6. FINISHED GRADE SHALL BE SLOPED AWAY FROM THE SHELTER FOUNDATION.

PLANS ARE NOT TO BE SCALED.

0 1 2 3

ORIGINAL SIZE IN INCHES

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Purpose	Released by	Date
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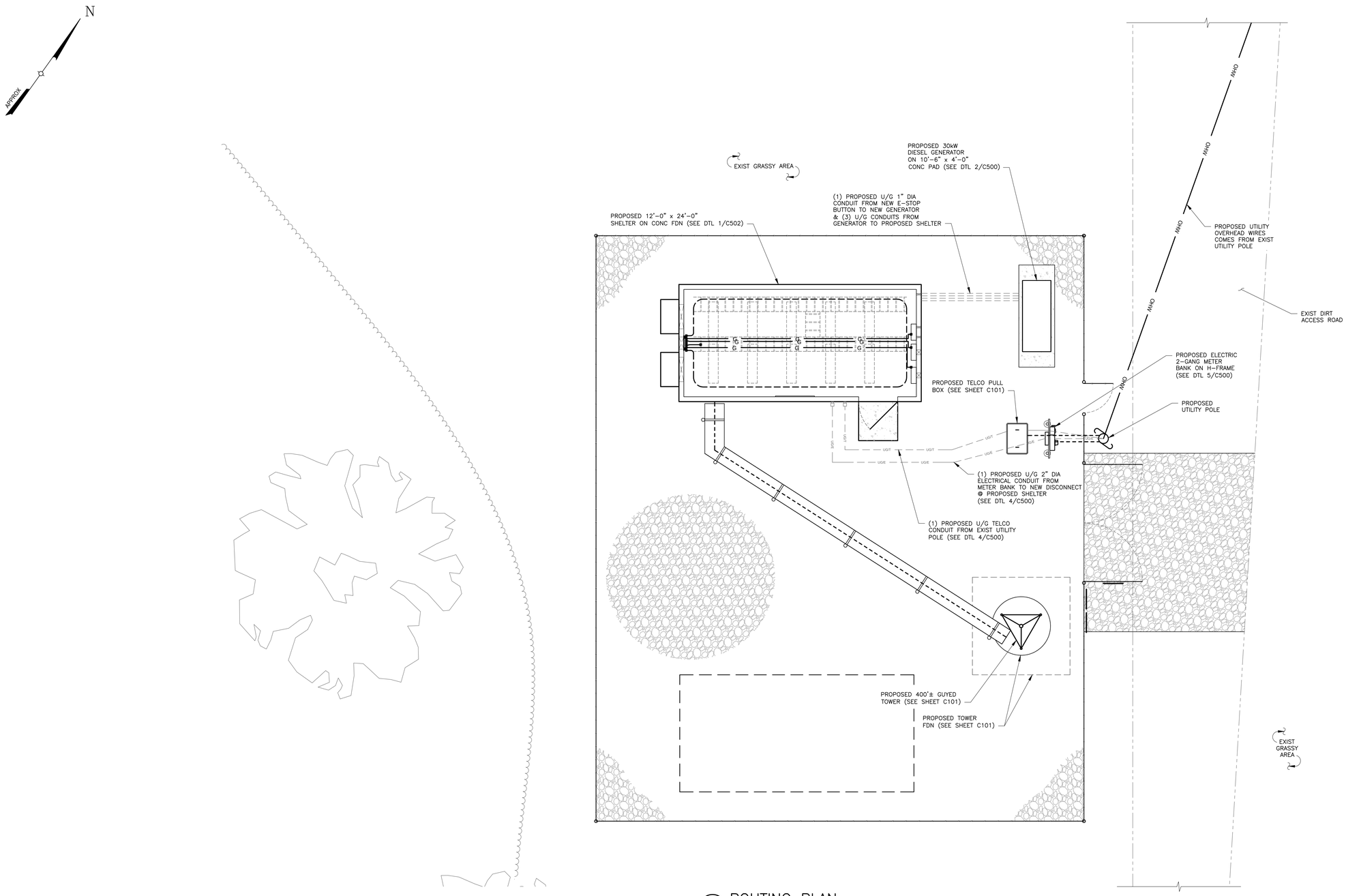
EDWARD AMICELI No. 0011767 REGISTERED PROFESSIONAL ENGINEER (CIVIL)

STRUCTURAL PLANS, SECTIONS, & DETAILS

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	C502	3

Scale: AS NOTED



1 / E100 ROUTING PLAN
SCALE: 1:5

PLANS ARE NOT TO BE SCALED.

0 1 2 3

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TROY GREGORY KENNEN
No. 13229
REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL

ROUTING PLAN

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	E100	2

Scale: AS NOTED

KEY NOTE LEGEND

EXISTING ITEMS

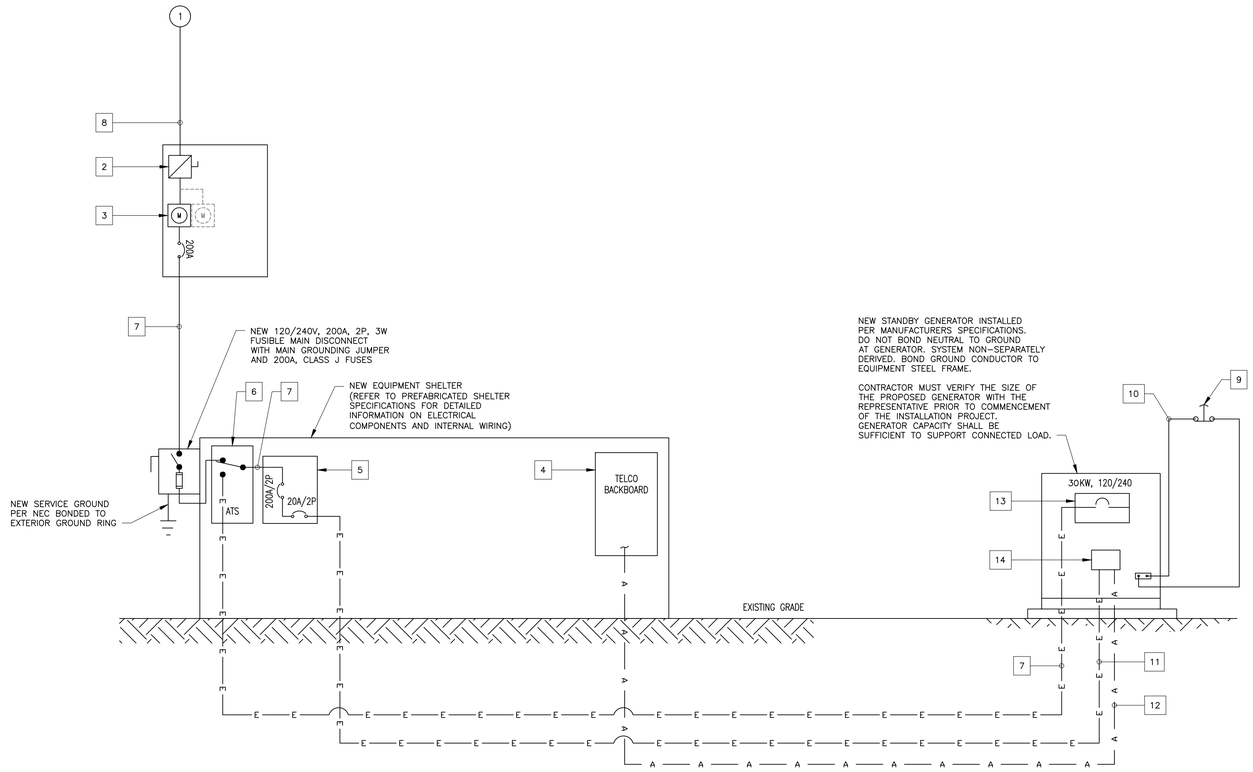
1. EXISTING ELECTRICAL SERVICE

NEW ITEMS

2. NEW MULTI-METER GANG BOX
3. NEW METER WITH 200A CIRCUIT BREAKER
4. NEW TELCO BOARD IN SHELTER
5. AC PANEL 200A MAIN BREAKER, 120/240V, 1P, 3-WIRE, 42P W/INTEGRATED TRANSIENT VOLTAGE SURGE SUPPRESSOR.
6. NEW ATS 120/240V, 200A, 2P, SOLID NEUTRAL, 60 IN SHELTER
7. (2) 3/0 + (1) 3/0 NEU + (1) #4G IN 2" CONDUIT
8. NEW CONDUCTORS TO BE ROUTED BY UTILITY COMPANY (TBD - PENDING ELECTRICAL CONSULT)
9. REMOTE MUSHROOM HEAD EMERGENCY STOP BUTTON ELECTRICALLY OPERATED TO SHUT DOWN GENERATOR
10. 1" CONDUIT AND CONDUCTORS FOR REMOTE EMERGENCY STOP.
11. 3/4" CONDUIT W/CONDUCTORS TO BATTERY CHARGE FOR (3) #12 FROM 20/1 CKT BREAKER.
12. ALARM CIRCUIT AND START/STOP CONTROL TO GENERATOR IN 1" CONDUIT. INSTALL BELDEN CABLE REQUIRED.

INCLUDED WITH GENERATOR

13. 120/240V, 1P GENERATOR OUTPUT CIRCUIT BREAKER 200A, 2P
14. GENERATOR ALARMS, START-STOP CONTROL AND BATTERY CHARGER.



NOTE:
ANTI-OXIDATION COMPOUND SHALL BE APPLIED TO ALL ELECTRICAL CONNECTIONS, PER MANUFACTURER'S INSTRUCTIONS.

1 / E101 RISER DIAGRAM
SCALE: NTS

PLANS ARE NOT TO BE SCALED.
0 1 2 3
ORIGINAL SIZE IN INCHES

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RISER DIAGRAM & NOTES

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

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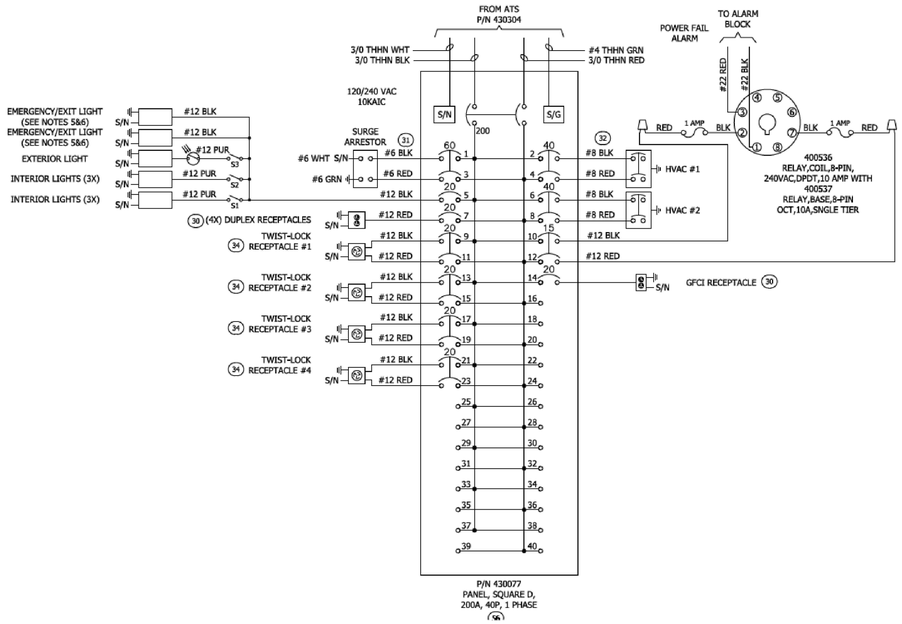

NOTES:
1. DO NOT SHARE NEUTRALS UNLESS OTHERWISE NOTED.
2. WHEN AC AND DC WIRING IS LOCATED IN THE SAME BOX, ENCLOSURE, OR WIREWAY, WIRES MUST BE LABELED WITH VOLTAGE TYPE.
3. LABEL ALL CONDUCTORS WITH CIRCUIT NUMBER AT EVERY SPLICE OR CONNECTION POINT.
4. CAP RED 277V POWER LEAD CONNECTION OPTION.
5. DISCONNECT ALL BATTERIES AFTER TESTING, TO BE FIELD CONNECTED ON JOB SITE AFTER COMMERCIAL POWER IS MADE AVAILABLE.
6. FINAL ELECTRICAL TO BE COORDINATED WITH THE SHELTER MANUFACTURER.

1 / E102 PRELIMINARY PANEL "A" WIRING SCHEMATIC

SCALE: NTS

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PRELIMINARY WIRING SCHEMATICS

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

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Scale: AS NOTED			

N

APPROX

EXIST GRASSY AREA

INTERIOR GROUNDING SYSTEM TO BOND TO EXTERIOR GROUND RING

PROPOSED SHELTER ON CONC FDN (SEE SHEET C101)

PROPOSED GENERTOR (SEE SHEET C101)

EXIST DIRT ACCESS ROAD

PROPOSED 3'-0" WIDE SWING ACCESS GATE (SEE SHEET C101)

PROPOSED TELCO PULL BOX (SEE SHEET C101)

PROPOSED UTILITY H-FRAME (SEE SHEET C101)

PROPOSED EXTERIOR GROUND BAR (EGB) MOUNTED TO TOWER (@ BASE AND MID-SPAN) (SEE DTL 6/G502)

PROPOSED 400'± GUYED TOWER

PROPOSED GROUND ROD (TYP, SEE DTL 1/G500)

PROPOSED GROUND ROD INSPECTION WELL (TYP, SEE DTL 2/G500)

PROPOSED TOWER FDN (DESIGNED BY OTHERS)

PROPOSED 12'-0" WIDE DOUBLE SWING ACCESS GATE (SEE SHEET C101)

PROPOSED 8'-0" HIGH CHAINLINK FENCE (SEE SHEET C101)

EXIST GRASSY AREA

LEGEND

- PROPOSED CHAIN LINK FENCE
- PROPOSED GROUND RING (#2/0 STRANDED)
- PROPOSED INTERIOR HALO GROUND RING (#2/0 STRANDED)
- PROPOSED GROUND CONDUCTOR (#2 SOLID)
- PROPOSED 5/8"x10'-0" COPPER OR STAINLESS STEEL COPPER CLAD GROUND ROD
- PROPOSED GROUND ROD INSPECTION WELL
- CADWELD OR OTHER APPROVED EXOTHERMIC WELDING SYSTEM
- GROUND LUG OR OTHER APPROVED MECHANICAL TYPE CONNECTION

HVAC UNIT (PER SHELTER MANIFACTURER)

CABLE RACK (BY SHELTER MANUFACTURER)

HVAC UNITS SHALL BE GROUNDED

BOND PROPOSED EQUIPMENT

MASTER GROUND BAR PER SHELTER MANUFACTURER

CABLE RACK TO BE GROUNDED TO MGB PER SHELTER MANUFACTURER

DOOR HINGE & METAL DOOR SHALL BE GROUNDED

NOTE: FINAL COORDINATION WITH THE SHELTER MANUFACTURER SHALL BE PERFORMED TO OBTAIN GROUNDING DESIGN.

2 / G100 INTERIOR GROUNDING PLAN (SHELTER)
SCALE: 3" = 1-0"

1 / G100 EXTERIOR GROUNDING PLAN
SCALE: 1" = 5'

PLANS ARE NOT TO BE SCALED.

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GROUNDING PLANS & NOTES

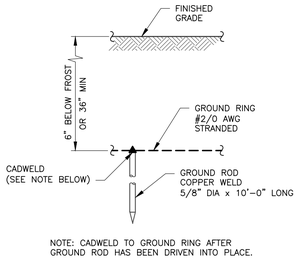
PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	G100	2

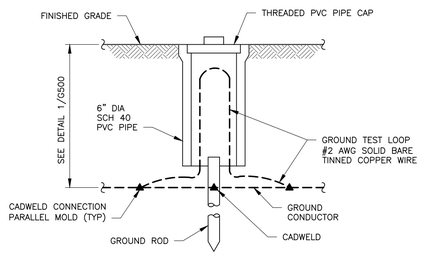
Scale: AS NOTED

GROUNDING NOTES

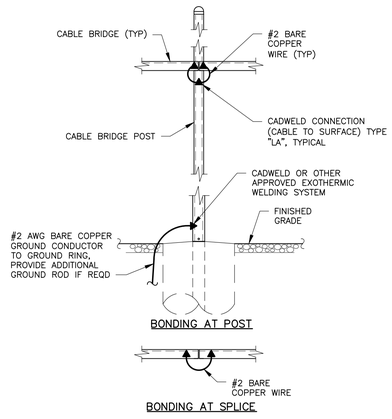
1. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY THE NEC (NFPA 70) AND ALL OTHER APPLICABLE CODES.
2. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2, UNLESS OTHERWISE NOTED. ALL EXPOSED #2 WIRE MUST BE TINN NOT BCW.
3. ALL UNDERGROUND GROUNDING CONDUCTORS SHALL BE #2/0 AWG STRANDED TINNED COPPER WIRES, BURIED BELOW FROSTLINE AND MUST BE EXOTHERMICALLY WELDED.
4. GROUNDING RODS SHALL BE STAINLESS STEEL OR COPPER-CLAD STEEL, 5/8" DIA x 10'-0" LONG MINIMUM, SPACED AT 10' ON CENTER MAXIMUM, WITH TOP OF THE ROD BURIED BELOW FROST LINE. GROUND RODS SHALL BE EXOTHERMICALLY WELDED TO UNDERGROUND GROUNDING LOOP.
5. ALL ABOVE GROUND CONNECTIONS SHALL BE CADWELD, BOLT CLAMP, OR SPLIT BOLT CONNECTORS. CRIMP CONNECTORS SHALL NOT BE USED ON SOLID CONDUCTORS.
6. ALL WIRE CONNECTORS SHALL BE THREE-CRIMP C TAP COMPRESSION, THOMAS & BETTS #54740, ORANGE, OR EQUIVALENT.
7. ALL CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS, THOMAS & BETTS #TBM 8 OR EQUIVALENT.
8. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FILED 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.
9. ALL BENDS SHALL BE AS SHALLOW AS POSSIBLE, WITH NO TURN SHORTER THAN AN 8-INCH NOMINAL RADIUS.
10. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 5 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY OWNER'S REPRESENTATIVE FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE.
11. WHERE ANY GROUNDING CONDUCTOR PASSES THROUGH METAL CONDUIT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
12. UPON COMPLETION OF WORK, CONDUCT CONTINUITY AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO OWNER'S REPRESENTATIVE.
13. GROUNDING CONNECTION TO TRAVEL IN A DOWNWARD DIRECTION.



1 G500 GROUND ROD DETAIL
SCALE: NTS

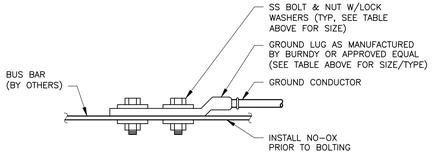


2 G500 GROUND INSPECTION WELL
SCALE: NTS

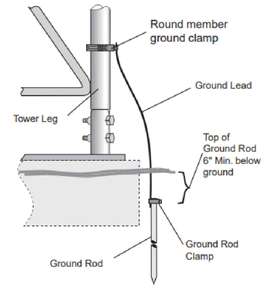


3 G500 CABLE BRIDGE BONDING DETAIL
SCALE: NTS

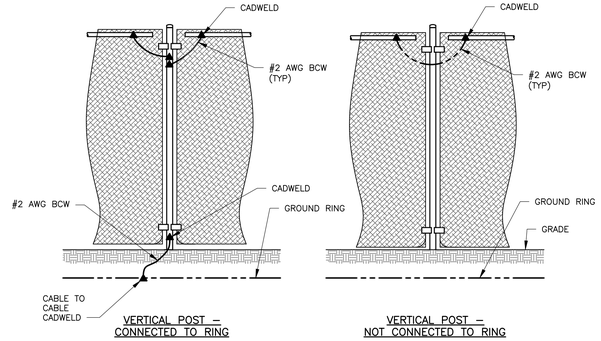
TABLE		
WIRE SIZE	BURNDY LUG #	BOLT DIA
#2	YA2CL-2TC14	1/4"
#2/0	YA25-2LN	1/2"



4 G500 LUG GROUND CONNECTION
SCALE: NTS

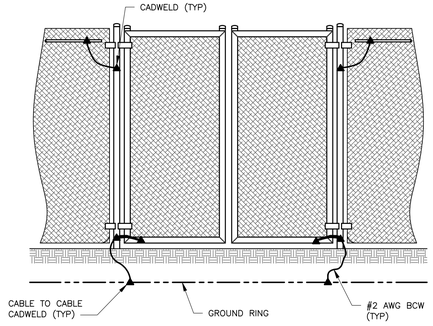


8 G500 TOWER BASE GROUND CONNECTION
SCALE: NTS



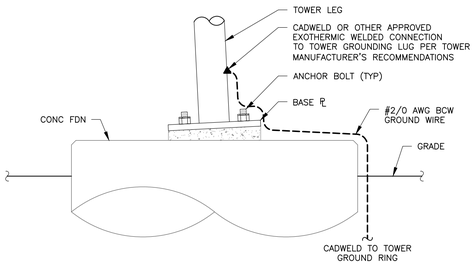
NOTES:
1. VERTICAL POSTS SHALL BE BONDED TO THE RING AT EACH CORNER AND AT EACH GATE POST. AS A MINIMUM, ONE VERTICAL POST SHALL BE BONDED TO THE GROUND RING IN EVERY 40 FOOT STRAIGHT RUN OF FENCE.
2. HORIZONTAL RAILS SHALL BE BONDED TO EACH OTHER.
3. BOND EACH HORIZONTAL RAIL TO EACH OTHER AND TO EACH VERTICAL POST THAT IS BONDED TO THE EXTERIOR GROUND RING.

5 G500 FENCE GROUNDING DETAIL
SCALE: NTS

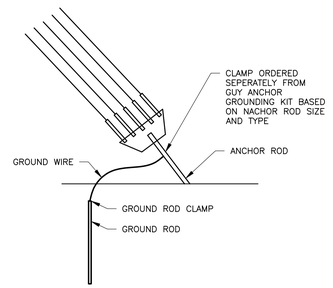


NOTES:
1. THE #2 AWG, BCW, FROM THE RING GROUND SHALL BE CADWELDED TO THE POST ABOVE GRADE.
2. BOND EACH HORIZONTAL RAIL TO EACH OTHER AND TO EACH VERTICAL POLE BONDED TO THE EXTERIOR GROUND RING
3. GATE JUMPER SHALL BE #4/0 AWG WELDING CABLE OR FLEXIBLE COPPER BRAID BURNDY TYPE B WITH SLEEVES ON EACH END DESIGNED FOR EXOTHERMIC WELDING.
4. GATE JUMPER SHALL BE INSTALLED SO THAT IT WILL NOT BE SUBJECTED TO DAMAGING STRAIN WHEN GATE IS FULLY OPENED IN EITHER DIRECTION.

6 G500 GATE GROUNDING DETAIL
SCALE: NTS



7 G500 TOWER LEG GROUNDING DETAIL
SCALE: NTS



9 G500 GUY ANCHOR GROUND CONNECTION
SCALE: NTS

PLANS ARE NOT TO BE SCALED.
0 1 2 3
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1	6/7/2024	ISSUED FOR PERMIT	
2	6/18/2024	REISSUED FOR PERMIT	

DRAWING CONTROL

Designed by: MB	Drawn by: VM	Checked by: EI

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● For Permit	EI	6/18/2024
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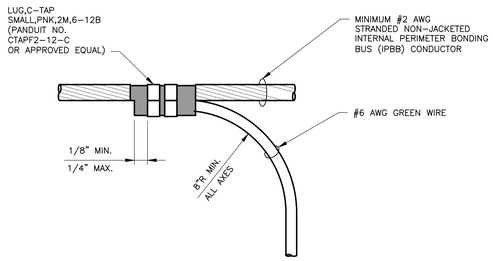
TROY GREGORY KENNEN
No. 13229
REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL

GROUNDING DETAILS & NOTES

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

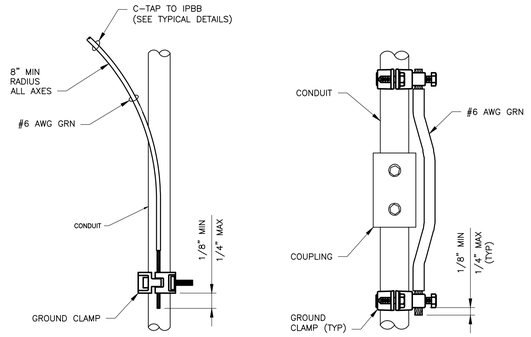
Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	G500	2

Scale: AS NOTED



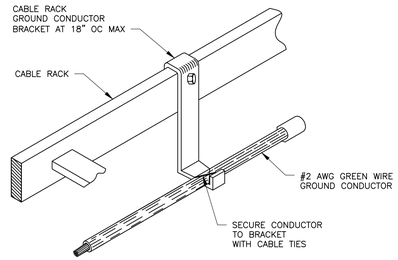
1 G501 IPBB CONDUCTOR RING GROUND TAP

SCALE: NTS



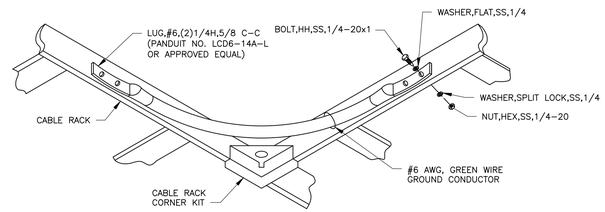
2 G501 CONDUIT BOND DETAILS

SCALE: NTS



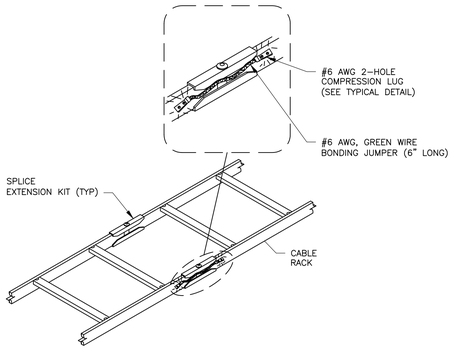
3 G501 CABLE RACK BRACKET FOR GROUND WIRE

SCALE: NTS



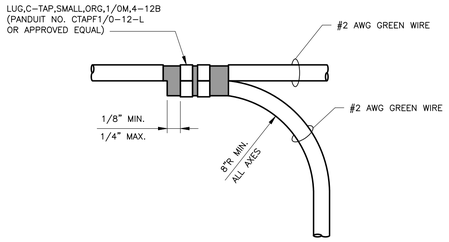
4 G501 CABLE RACK BONDING AT CORNER

SCALE: NTS



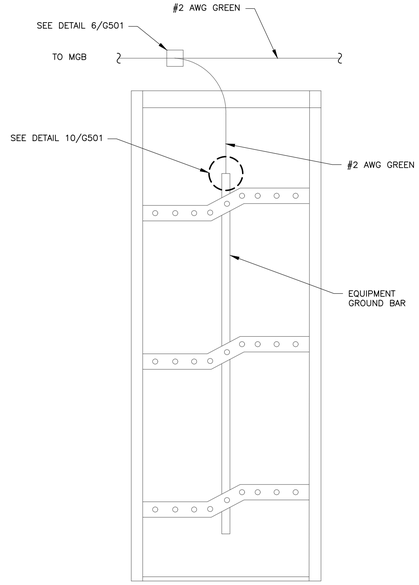
5 G501 CABLE RACK BONDING AT SPLICE

SCALE: NTS



6 G501 EQUIPMENT GROUND TAP

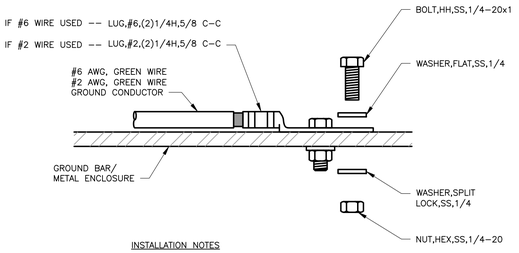
SCALE: NTS



NOTES:
1. REFER TO THIS DETAIL ONLY WHEN PROPOSED EQUIPMENT IS BEING INSTALLED.
2. A #2 GRN SHALL THEN BE TAKEN FROM THE GROUND BUS BAR TO THE EQUIPMENT GROUND GUS CONDUCTOR. ALL EQUIPMENT GROUND SPLICES SHALL BE TAPED WITH GREEN TAPE.

9 G501 EQUIPMENT GROUNDING ELEVATION

SCALE: NTS (VIEWED FROM REAR OF EQUIPMENT)

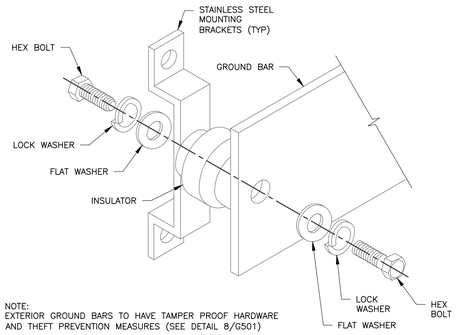


INSTALLATION NOTES

1. SELECT BOLT LENGTH TO PROVIDE A MINIMUM OF TWO EXPOSED THREADS.
2. BURNISH MOUNTING SURFACE TO REMOVE PAINT IN THE AREA OF LUG CONTACT.
3. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE OF LUG AND WIPE CLEAN EXCESS COMPOUND.
4. USE SOLID COPPER WIRE AND MECHANICAL 2-HOLE LUG FOR ALL EXTERIOR GROUNDING.
5. STAINLESS HARDWARE ONLY.
6. ANTI-OX SHALL BE APPLIED TO ALL CONNECTION OF DISSIMILAR METALS.
7. COPPER ENHANCED ANTI-OXIDANT COMPOUND SHOULD BE USED BETWEEN COPPER, BRASS, BRONZE, AND TIN-PLATED BONDING SURFACES.

10 G501 GROUNDING CONNECTION

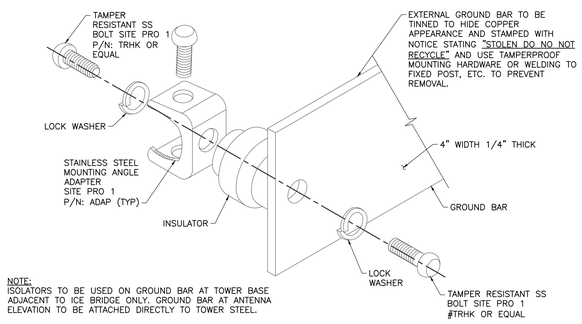
SCALE: NTS



NOTE:
EXTERIOR GROUND BARS TO HAVE TAMPER PROOF HARDWARE AND THEFT PREVENTION MEASURES (SEE DETAIL 8/G501)

7 G501 GROUND BAR WALL INSTALLATION

SCALE: NTS

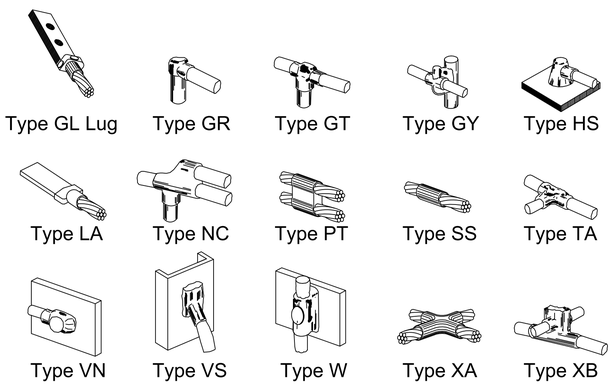


NOTE:
ISOLATORS TO BE USED ON GROUND BAR AT TOWER BASE ADJACENT TO ICE BRIDGE ONLY. GROUND BAR AT ANTENNA ELEVATION TO BE ATTACHED DIRECTLY TO TOWER STEEL.

TOWER GROUND BARS

8 G501 GROUND BAR TOWER INSTALLATION DETAIL

SCALE: NTS



11 G501 EXOTHERMIC (CADWELD) DETAILS

SCALE: NTS

PLANS ARE NOT TO BE SCALED.

0 1 2 3

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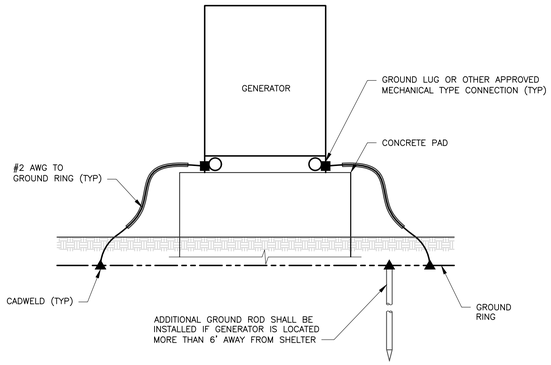
No. 13229
REGISTERED
PROFESSIONAL ENGINEER
ELECTRICAL

GROUNDING DETAILS

PROPOSED GUYED TOWER
875 PLAINS ROAD
TOWN OF SOUTH KINGSTON
WASHINGTON COUNTY, RI 02892

Date	Work Order	Drawing No.	Rev
3/18/2024	12117.01	G501	2

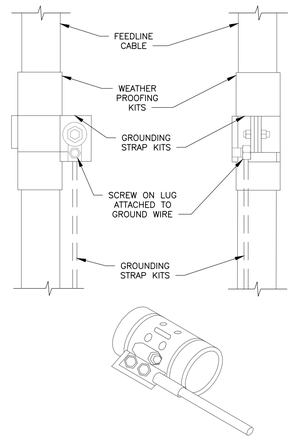
Scale: AS NOTED



1 G502 GENERATOR GROUNDING DETAIL

SCALE: NTS

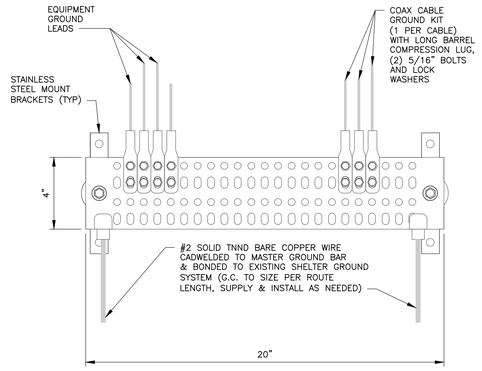
NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. THIS DETAIL IS TYPICAL FOR EACH COAX/HYBRID CABLE WHERE IT IS SPECIFIED TO BE GROUNDED.
3. CABLE TO BE GROUNDED AT ANTENNA LEVEL AND PRIOR TO ENTERING SHELTER ENTRY PANEL.
4. CABLE ALSO TO BE GROUNDED TO GROUND BAR AT TOWER BASE IF APPLICABLE.



NOTE: ADDITIONAL GROUND BAR AND GROUNDING TO BE INSTALLED AT MID HEIGHT OF THE TOWER.

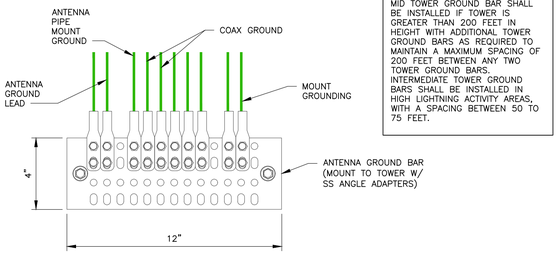
2 G502 COAX CABLE GROUND KIT DETAIL

SCALE: NTS

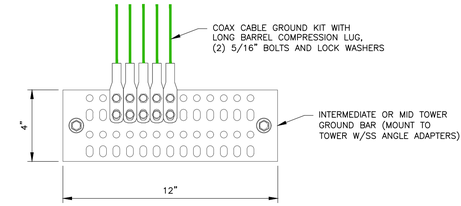


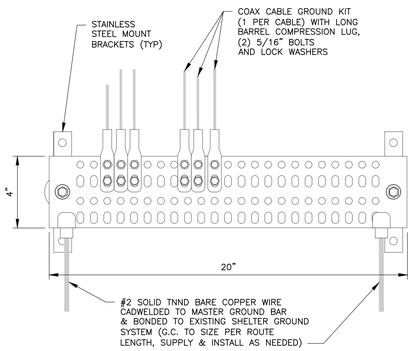
3 G502 INTERIOR GROUND BAR (IGB)

SCALE: NTS



NOTE:
MID TOWER GROUND BAR SHALL BE INSTALLED IF TOWER IS GREATER THAN 200 FEET IN HEIGHT WITH ADDITIONAL TOWER GROUND BARS AS REQUIRED TO MAINTAIN A MAXIMUM SPACING OF 200 FEET BETWEEN ANY TWO TOWER GROUND BARS. INTERMEDIATE TOWER GROUND BARS SHALL BE INSTALLED IN HIGH LIGHTNING ACTIVITY AREAS, WITH A SPACING BETWEEN 50 TO 75 FEET.

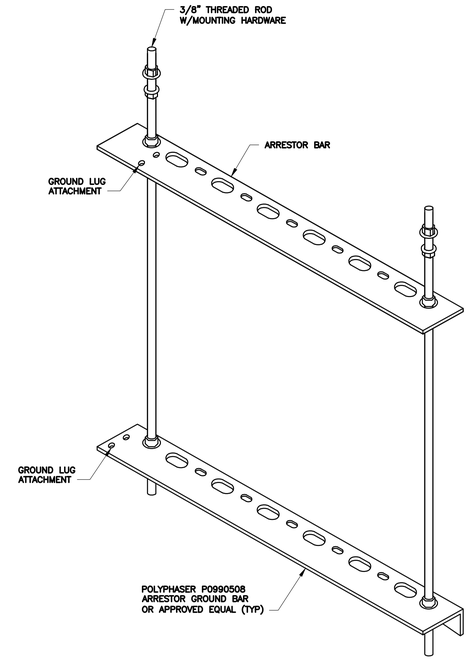




NOTE: ADDITIONAL GROUND BAR AND GROUNDING TO BE INSTALLED AT MID HEIGHT OF THE TOWER.

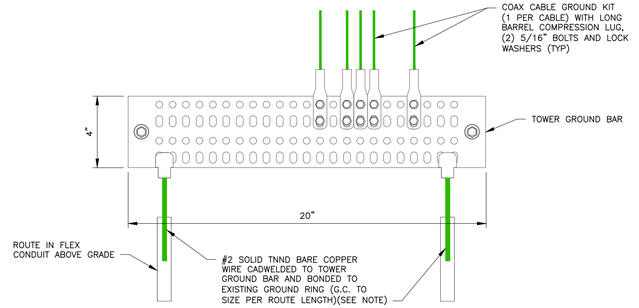
4 G502 EXTERIOR GROUND BAR (EGB)

SCALE: NTS



5 G502 POLYPHASER SURGE ARRESTOR RACK DETAIL

SCALE: NTS



ANTENNA GROUND BAR (AGB)
MID GROUND BAR (MGB)
& TOWER GROUND BAR (TGB)

6 G502

SCALE: NTS

PLANS ARE NOT TO BE SCALED.

0 1 2 3

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Scale: AS NOTED			

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THINK BIG WE DO

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11:18 am

BID NUMBER:	101448	PURCHASING REPRESENTATIVE:	Andrea Boucher
BID TITLE:	Construction of New 400' Radio Tower & Transmitter Building		
LOCATION:	210 Flagg Road, 1st Floor, Large Conference Room, Kingston, RI 02881		
PRE BID DATE AND TIME:	1/10/25 at 11:00 AM		

Company Name:	Representative:	Email Address:	Phone Number
URI - Purchasing	Andrea Boucher	andrea.boucher@uri.edu	401-874-9133
PATRIOT TOWERS INC.	SHAWN SIMMONS	RFP@PATRIOTTOWERS.com	585.889.3391
PNS/Pyramid	Mike D'Monda	MDimonda@PYRamidns.com	518 366-5679
TECTONIC ENG.	GREG LAMEY	glaheye@tectonicengineering.com	914 475-4950
E W Burman	Joshua Moniz	EStimating@EWBurman.com	401-738-5400
URI - OCP	Kyle Coleman	kycoleman@uri.edu	617 855 9530