



# CITY OF RICHMOND

DEPARTMENT OF EMERGENCY COMMUNICATIONS

STEPHEN M. WILLOUGHBY  
DIRECTOR

November 10, 2016

City of Richmond Urban Design Committee  
900 E Broad Street  
Richmond, VA 23219

Re: Application for URBAN DESIGN COMMITTEE Review – City of Richmond Public Safety

Dear Committee:

Motorola is the system integrator for the new Richmond Capital Region Land Mobile Radio (LMR) System. The new public safety regional radio system participants are the City of Richmond, Chesterfield County, the City of Colonial Heights, Hanover County, Henrico County, and the Capital Region Airport Commission. The new system is a wide area APCO P-25 system with three modernized 800 MHz simulcast subsystems. One of the simulcast subsystems is in the City of Richmond. The system is designed to meet the long term public safety needs of the City of Richmond as well as the needs of the Region. The system is designed to provide enhanced interoperability and redundancy, with improved coverage performance and increased channel capacity.

As part of its contract with the City of Richmond, Motorola and its subcontractor partners including Pyramid Network Services, Nokia and others are tasked with developing the radio transmission sites for the new system. Motorola was tasked with designing a system, which will meet the specific needs and coverage requirements of the City's public safety first responders. The site selection and design process is critical in meeting the coverage requirements of the City and essential to ensuring the safety of both emergency responders and the public in general.

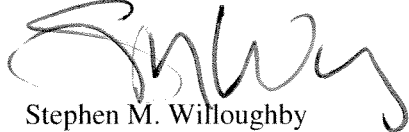
As part of the system design process, Motorola selected sites in such a manner that the minimum amount of transmission sites are utilized in the new system while still meeting the City's radio coverage requirements. In performing this analysis, Motorola considered existing City owned sites, other existing sites and new locations. Although the structural capacity of these existing sites was a consideration, the primary objective of Motorola's analysis was to locate sites needed to meet the City's coverage requirement while minimizing the number of new sites required for the system. There was also an effort to locate new sites on public land owned by the City, where possible.

The new system design from Motorola consists of reusing two of the City's current sites, relocating to a new tower at the third existing site, co-locating at one site and constructing three new sites for a total of seven. The existing sites being utilized in the new system are: Hopkins Road (DEC), and City Hall, the new approved tower site is at Fire Station 25. We also plan to co-locate equipment at WTVR Television Station. The new sites proposed for this system, and detailed in this application, include (by name): East End Site, Port of Richmond and Fire Station 23. Motorola selected these sites based on the results of a scientific analysis using industry-accepted coverage design tools. Motorola has determined that the three

new sites, along with the two existing sites and co-location at two additional, are required to meet the coverage requirements of the City.

Prior to considering these new sites in the system, existing sites in the surrounding area were thoroughly evaluated as alternatives, but Motorola determined these sites would provide levels of coverage that were well below the City's requirements. The distance between each site, both new and existing, must also be closely evaluated and tightly controlled in order for the simulcast technology to work properly. To significantly change or move any individual site would potentially impact the best location and required tower heights for all other surrounding sites. Using locations and site designs other than those reflected here would result in either a lower level of coverage being delivered, which would not meet the needs of the City's first responders or it would have required additional sites beyond what Motorola is currently contracted to provide in meeting the coverage requirements.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Willoughby", written over a horizontal line.

Stephen M. Willoughby  
Director of Emergency Communications

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# APPLICATION



## Application for URBAN DESIGN COMMITTEE Review

Department of Planning and Development Review  
Planning & Preservation Division  
900 E. Broad Street, Room 510  
Richmond, Virginia 23219  
(804) 646-6335

<http://www.richmondgov.com/CommitteeUrbanDesign>

### Application Type

Addition/Alteration to Existing Structure  
 New Construction  
 Streetscape  
 Site Amenity

Encroachment  
 Master Plan  
 Sign  
 Other

### Review Type

Conceptual  
 Final

Project Name: Port of Richmond - Public Safety Communications Tower

Project Address: 4430 Deepwater Terminal Road, Richmond, VA 23234

Brief Project Description (this is not a replacement for the required detailed narrative) :  
Installation of a 331' high self support tower, 100' x 100' compound and related equipment.

### Applicant Information

(on all applications other than encroachments, a City agency representative must be the applicant)

Name: Stephen M. Willoughby, Director Email: stephen.willoughby@richmondgov.com

City Agency: Department of Emergency Communications Phone: (804) 646 - 5142

Address: 3516 N. Hopkins Rd., Richmond, VA 23224

Main Contact (if different from Applicant): Tim Glynn

Company: Pyramid Network Services Phone: 315-399-8259

Email: tglynn@pyramidns.com

### Submittal Deadlines

All applications and support materials must be filed no later than 21 days prior to the scheduled meeting of the Urban Design Committee (UDC). Please see the schedule on page 3 as actual deadlines are adjusted due to City holidays. **Late or incomplete submissions will be deferred to the next meeting.**

### Filing

Applications can be mailed or delivered to the attention of "Urban Design Committee" at the address listed at the top of this page. **It is important that the applicant discuss the proposal with appropriate City agencies, Zoning Administration staff, and area civic associations and residents prior to filing the application with the UDC.**

### UDC Background

The UDC is a ten member committee created by City Council in 1968 whose purpose is to advise the City Planning Commission on the design of projects on City property or right-of-way. The UDC provides advice of an aesthetic nature in connection with the performance of the duties of the Commission under Sections 17.05, 17.06 and 17.07 of the City Charter. The UDC also advises the Department of Public Works in regards to private encroachments in the public right-of-way.



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### Submission Requirements

- 10 copies of the application cover sheet and all support materials (see below), unless the application is for an encroachment, in which case only 6 copies are required. Plan sheets should be 11" x 17", folded to 8 1/2" x 11". If it is not possible to scale plans to these dimensions, please provide one set of larger, scaled plans.
- An electronic copy (PDF preferred) of all application materials, which can be burned to disc, emailed, or delivered by FTP.

All applications must include the attached cover sheet and the following support materials, as applicable to the project:

#### For Conceptual Review

- A detailed project narrative which includes the following: purpose of the project, project background, project budget and funding sources, description of construction program and estimated construction start date (description should also provide information on the surrounding area to provide context).
- A site plan for the project indicating site characteristics which include: building footprints, parking areas, pedestrian routes, recreation areas, open areas and areas of future expansion.
- A set of floor plans and elevations, as detailed as possible.
- A landscaping plan which shows the general location and character of plant materials and notes any existing tree to be removed.

#### For Final Review

- A detailed project narrative which includes the following: purpose of the project, project background, project budget and funding sources, description of construction program and estimated construction start date (description should also provide information on the surrounding area to provide context).
- A site plan for the project indicating site characteristics which include: building footprints, parking areas, pedestrian routes, recreation areas, open areas and areas of future expansion.
- A set of floor plans and elevations, as detailed as possible.
- A landscaping plan that includes a complete plant schedule, the precise location of all plant materials, and a landscape maintenance analysis. The plant schedule must show number, size and type of each planting proposed. If existing trees are to be removed, their size, type and location must be noted on the landscape plan.
- The location of all lighting units should be noted on a site plan, including wall-mounted, site and parking lot lighting. Other site details, such as benches, trash containers and special paving materials, should also be located. Include specification sheets for each item.
- Samples of all proposed exterior building materials, including but not limited to brick, mortar, shingles, siding, glass, paint and stain colors. When an actual sample cannot be provided, a product information sheet that shows the item or a photo of an existing item may be substituted.

### Review and Processing

Once an application is received, it is reviewed by staff, who compiles a report that is sent to the UDC. A copy of the report and the meeting agenda will be sent to the applicant prior to the meeting. The applicant or a representative should be present at the UDC meeting or the application may be deferred to the next regularly scheduled meeting. It is also strongly suggested that a representative of the City Agency which will have final responsibility for the item be present at the meeting (if the applicant and the representative are not the same). Once the UDC recommends action on the application, it is automatically placed on the agenda for the next City Planning Commission (CPC) meeting. An exception to this is encroachment applications, recommendations for which are forwarded to the Department of Public Works. The applicant or a representative must be present at the CPC meeting or the application may be deferred to the next regularly scheduled meeting.



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### MEETING SCHEDULE 2015-2016

| UDC Meetings      | UDC Submission Deadlines | Anticipated Date of Planning Commission Following the UDC Meeting |
|-------------------|--------------------------|---|
| December 10, 2015 | November 12, 2015*       | January 4, 2016   |
| January 7, 2016   | December 10, 2015**      | January 19, 2016 <sup>1</sup>                                     |
| February 4, 2016  | January 14, 2016         | February 16, 2016 <sup>2</sup>                                    |
| March 10, 2016    | February 18, 2016        | March 21, 2016  |
| April 7, 2016     | March 17, 2016           | April 18, 2016  |
| May 5, 2016       | April 14, 2016           | May 16, 2016  |
| June 9, 2016      | May 19, 2016             | June 20, 2016   |
| July 7, 2016      | June 16, 2016            | July 18, 2016   |
| August 4, 2016    | July 14, 2016            | September 6, 2016 <sup>3</sup>                                    |
| September 8, 2016 | August 18, 2016          | September 19, 2016  |
| October 6, 2016   | September 15, 2016       | October 17, 2016  |
| November 10, 2016 | October 20, 2016         | November 21, 2016   |
| December 8, 2016  | November 10, 2016*       | January 3, 2017 <sup>4</sup>                                      |

<sup>1</sup> Monday, January 18<sup>th</sup> is a City of Richmond Holiday

<sup>2</sup> Monday, February 15<sup>th</sup> is a City of Richmond Holiday

<sup>3</sup> Monday, September 5<sup>th</sup> is a City of Richmond Holiday

<sup>4</sup> Monday, January 2<sup>nd</sup>, 2017 is a City of Richmond Holiday

\* Moved forward to account for Thanksgiving Holiday Schedule

\*\* Moved forward to account for Winter Holiday Schedule

For further information or assistance, please contact the Planning and Preservation Division by phone at (804) 646-6335 or by email at [DCDCCompPlan@RichmondGov.com](mailto:DCDCCompPlan@RichmondGov.com).

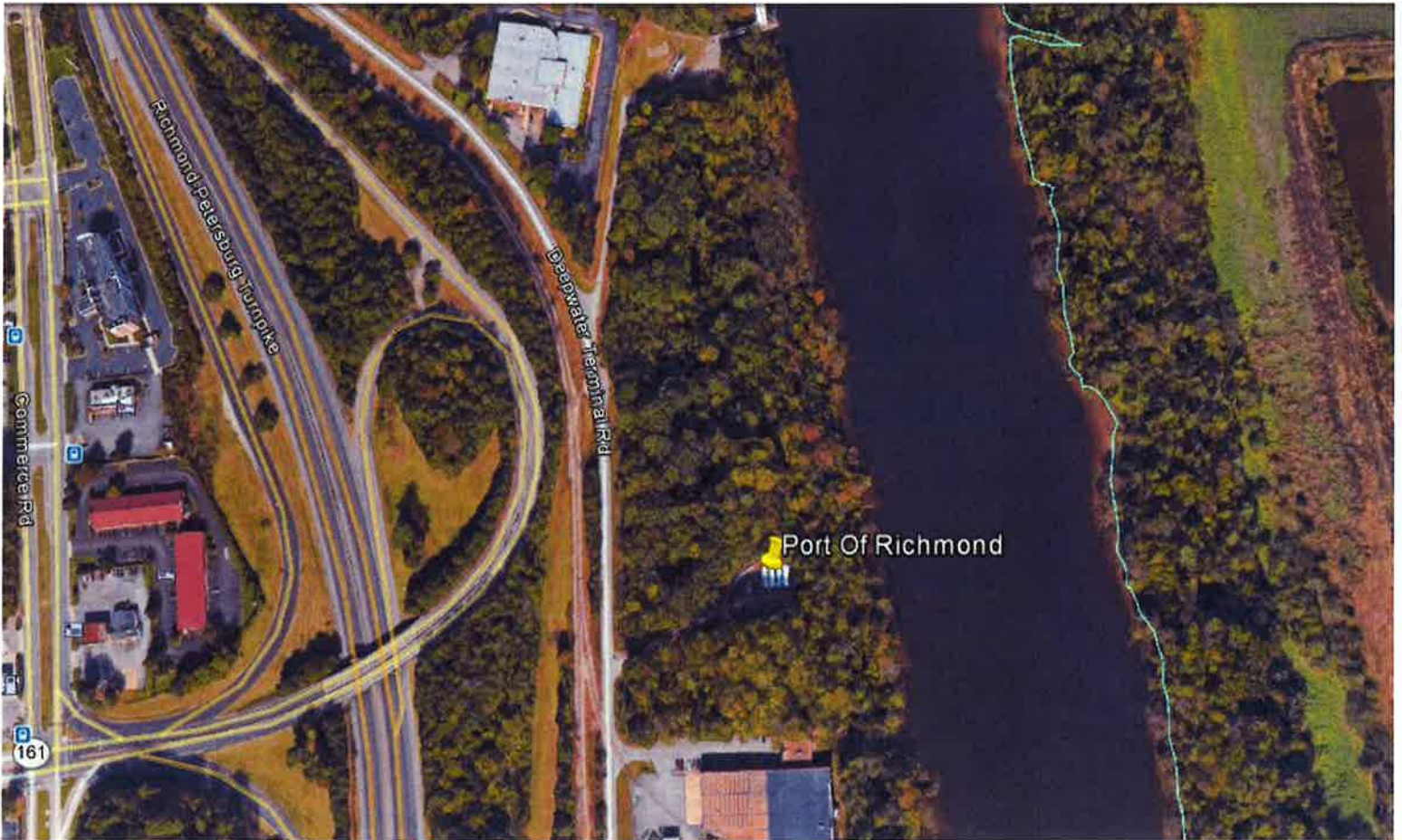
Information about the UDC along with the application and meeting schedule is available at the City of Richmond website, <http://www.richmondgov.com/CommitteeUrbanDesign>

# VICINITY MAP



# Port Of Richmond- Vicinity Map

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# NARRATIVE

# Project Narrative

## *Port of Richmond Public Safety Communications Tower*

### **Purpose of Project:**

To construct a radio communications site that is part of a system that supports the needs of Richmond's first responders and will improve public safety within the immediate vicinity and across the Capital Region.

### **Project Background:**

This project is being implemented through a contract with Motorola Solutions to modernize and improve the current public safety communications system for the City. The current system is quickly becoming obsolete and its replacement is complex. This work is being executed in coordination with similar efforts by other jurisdictions across the region to ensure continued interoperability. The Richmond portion of the system interconnects sites and provides a high level of communications on the street and within heavily constructed buildings. The new system consists of seven sites, of which three are existing and four are being newly developed. One of the four new sites will be located on an existing structure. Three of the sites need to be situated such that they require new towers. This site is one of those new ones that will be required. The site will consist of a self-supporting tower, an equipment shelter and emergency power generator, all enclosed within a fenced compound of approximately 10,000 square feet.

### **Project Budget/Funding Sources:**

This site development is funded through an existing City Capital Improvements Project (Award# 500250). The estimated cost of construction for this site is \$2M.

### **Description of construction program:**

Motorola is the prime contractor for the system in Richmond as well as the other participants in the Capital Region. Motorola is responsible for completion of the system, and is contracting with Pyramid Network Services to complete permitting and construction of the site compound as described here and approved.

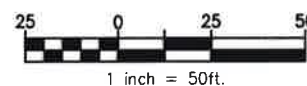
### **Estimated Construction Start Date:**

Construction of this site needs to commence by June 2017 in order to avoid delays to the Richmond project and meet the entire Region's schedule. We need the ability to transition off of an antiquated system on to a new one which can be supported and provide reliable service to public safety agencies. In order to finalize construction drawings, system designs, and federal regulatory notifications and approvals that depend on location, approval of this package is anticipated to be needed in February, 2017.

# DRAWINGS



Site Location Plan



ANY DISCREPANCIES BETWEEN THIS DRAWING PACKAGE AND EXISTING FIELD CONDITIONS MUST BE REPORTED TO THE ENGINEER OF RECORD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

PRELIMINARY  
NOT FOR  
CONSTRUCTION

|     |          |                   |     |     |       |
|-----|----------|-------------------|-----|-----|-------|
| E   | 10-14-16 | ISSUED FOR REVIEW | CAH | MJA |       |
| D   | 10-04-16 | ISSUED FOR REVIEW | MLM | MJA |       |
| C   | 10-03-16 | ISSUED FOR REVIEW | MLM | MJA |       |
| B   | 09-12-16 | ISSUED FOR REVIEW | MLM | MJA |       |
| A   | 09-10-16 | ISSUED FOR REVIEW | MLM | MJA |       |
| NO. | DATE     | REVISIONS         | BY  | CHK | APP'D |



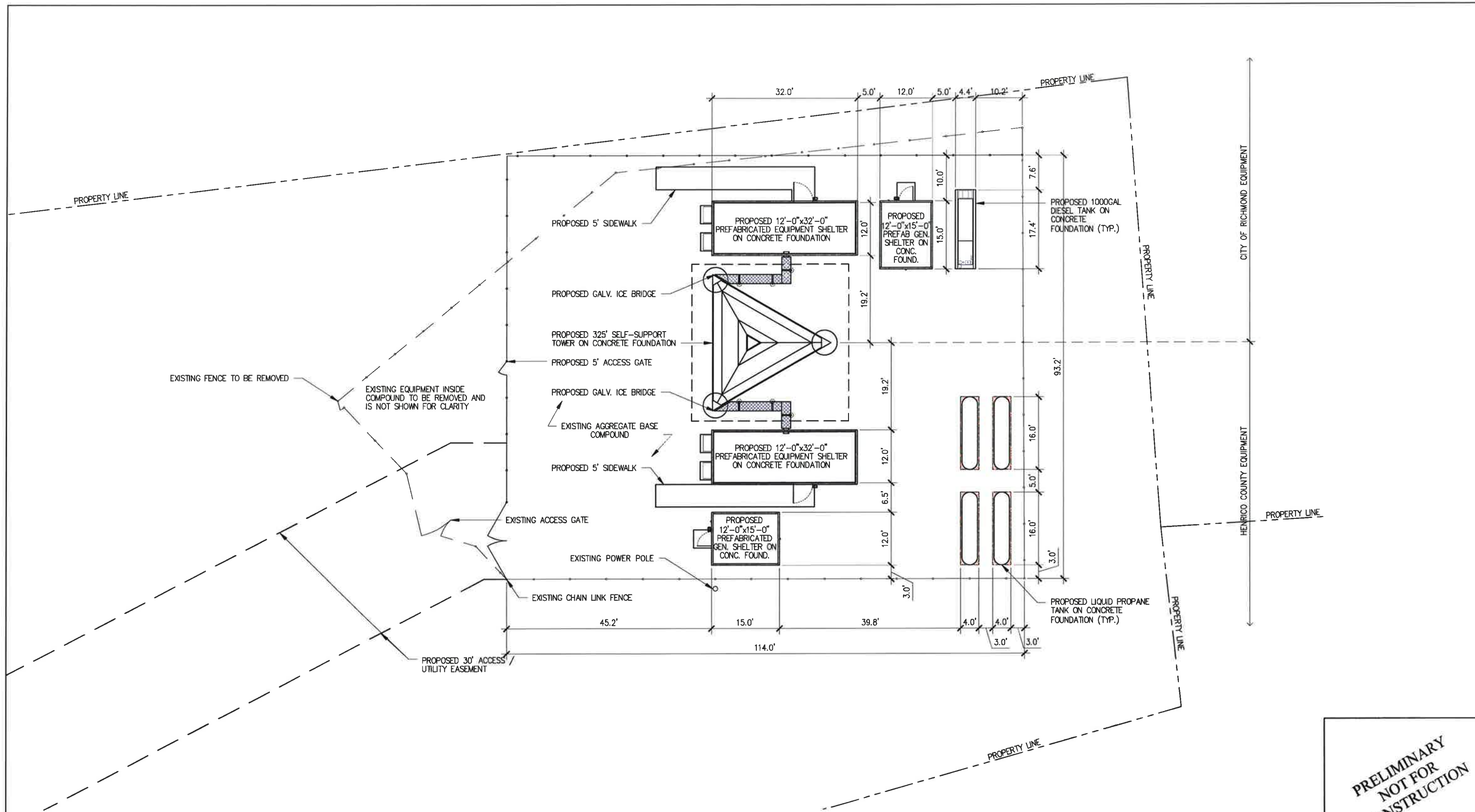
SITE LOCATION PLAN

PORT OF RICHMOND  
4430 DEEPWATER TERMINAL RD  
RICHMOND, VA 23234

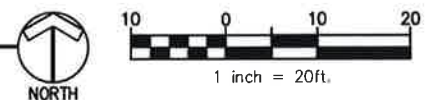
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### Enlarged Site Plan



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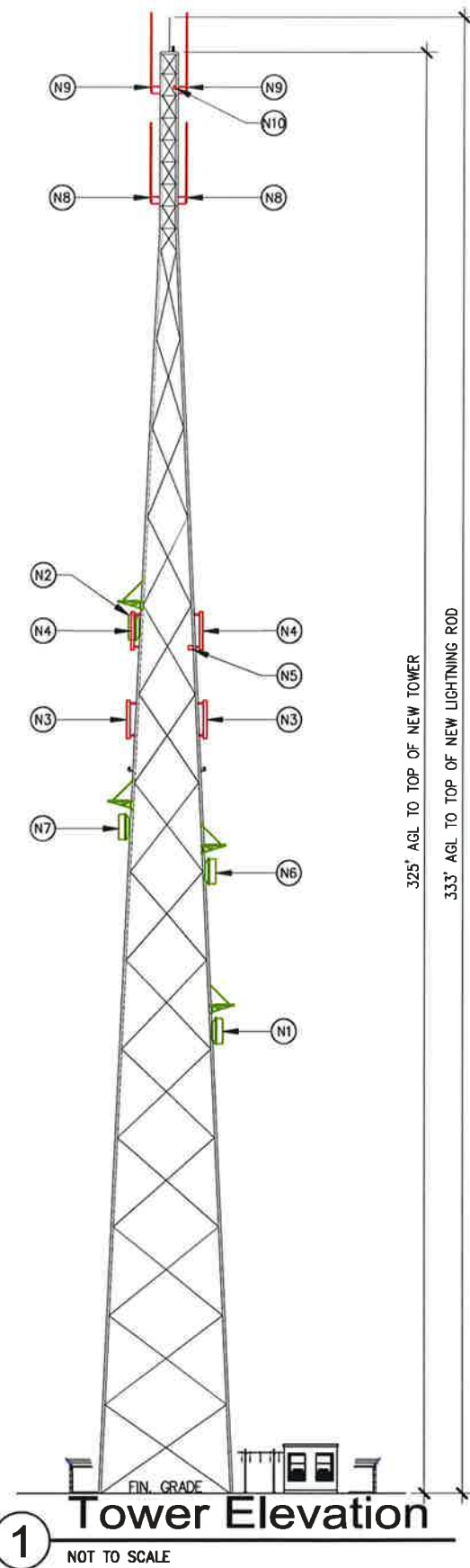
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| NO. | DATE     | REVISIONS         | BY  | APP'D |



**ENLARGED SITE PLAN**  
PORT OF RICHMOND  
4430 DEEPWATER TERMINAL RD  
RICHMOND, VA 23234

**C-2**

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**Port of Richmond 325' TOWER**  
 LAT: 37° 27' 53.5"  
 LON: -77° 25' 21.4"

### Antenna/Appertunance Location Chart

E = EXISTING  
 N = NEW  
 F = FUTURE

| ANTENNA INFORMATION  |              |                |      |        |             |            |           |         |      | FEEDLINE INFORMATION |              |         |        |      |
|--|--------------|----------------|------|--------|-------------|------------|-----------|---------|------|----------------------|--------------|---------|--------|------|
| ANTENNA ID   | MANUFACTURER | MODEL          | TYPE | LENGTH | BOTTOM ELEV | RAD CENTER | TOP ELEV. | AZIMUTH | QTY. | TYPE                 | MANUFACTURER | MODEL   | SIZE   | QTY. |
| N1   | RFS          | PAD6-65B       | MW   | 6.0'   | 101.0'      | 104.0'     | 107.0'    |         | 1    | COAX                 | FLEXWELL     | E60     | 2"     | 1    |
| N2   | RFS          | PAD6-65B       | MW   | 6.0'   | 192.0'      | 195.0'     | 198.0'    |         | 1    | COAX                 | FLEXWELL     | E60     | 2"     | 1    |
| N3   | SINCLAIR     | SE419-SWBPALDF | TX   | 8.6'   | 170.0'      | 174.3'     | 178.6'    | N/A     | 3    | COAX                 | COMMSCOPE    | AVA7-50 | 1-5/8" | 3    |
| N4   | SINCLAIR     | SE419-SWBPALDF | RX   | 8.6'   | 190.0'      | 194.3'     | 198.6'    | N/A     | 2    | COAX                 | COMMSCOPE    | AVA6-50 | 1-1/4" | 2    |
| N5   | -            | -              | TTA  | N/A    | -           | 190.0'     | -         | N/A     | 2    | COAX                 | COMMSCOPE    | LDF4-50 | 1/2"   | 2    |
| N6   | RFS          | PAD6-65B       | MW   | 6.0'   | 137.0'      | 140.0'     | 143.0'    |         | 1    | COAX                 | FLEXWELL     | E60     | 2"     | 1    |
| N7   | RFS          | PAD6-65B       | MW   | 6.0'   | 147.0'      | 150.0'     | 153.0'    |         | 1    | COAX                 | FLEXWELL     | E60     | 2"     | 1    |
| N8   | SINCLAIR     | SE4192         | TX   | 18.0'  | 291.0'      | 300.0'     | 309.0'    | N/A     | 3    | COAX                 | COMMSCOPE    | AVA7-50 | 1-5/8" | 3    |
| N9   | SINCLAIR     | SE4192         | RX   | 18.0'  | 316.0'      | 325.0'     | 334.0'    | N/A     | 2    | COAX                 | COMMSCOPE    | AVA6-50 | 1-1/4" | 2    |
| N10  | -            | -              | TTA  | N/A    | -           | 316.0'     | -         | N/A     | 2    | COAX                 | COMMSCOPE    | LDF4-50 | 1/2"   | 2    |
| REFER TO TOWER MANUFACTURER DRAWINGS FOR BEACON AND OBSTRUCTION LIGHTING HEIGHTS |              |                |      |        |             |            |           |         |      |                      |              |         |        |      |

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**TOWER ELEVATION AND  
 ANTENNA INFORMATION**  
 PORT OF RICHMOND  
 4430 DEEPWATER TERMINAL  
 RD  
 RICHMOND, VA 23234

C-4

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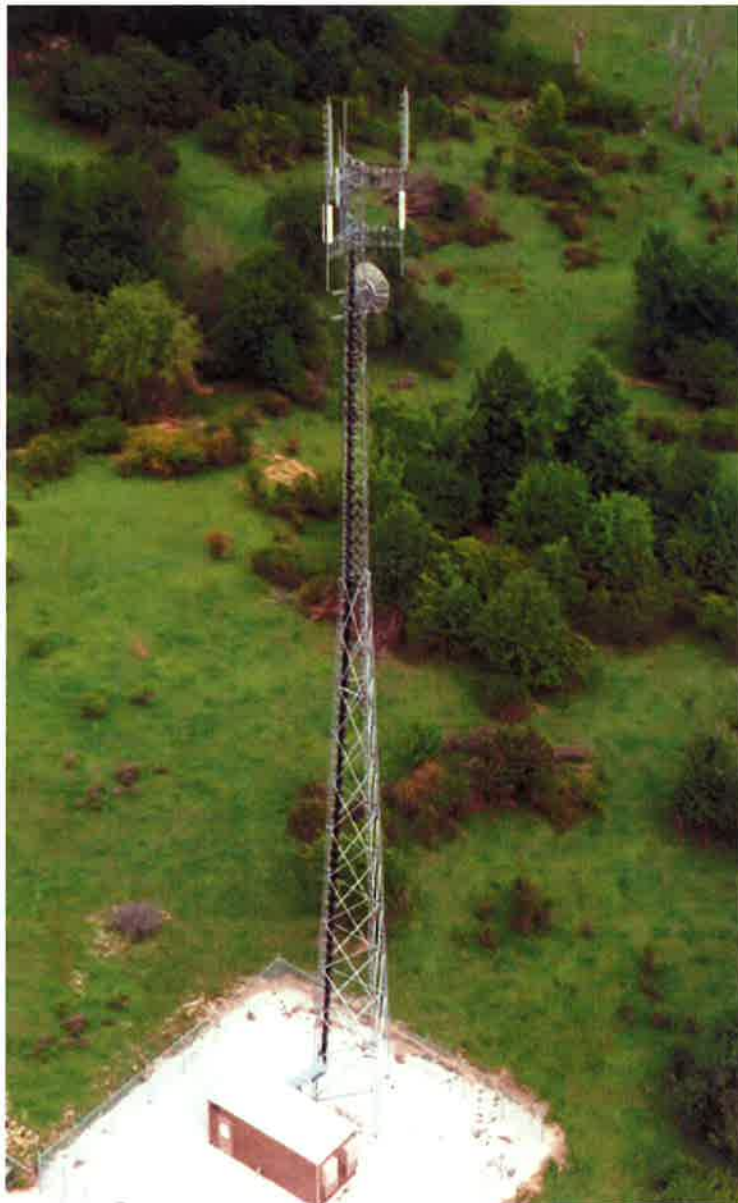
**MATERIALS  
EXHIBIT**



# Tower Exhibit

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Engineered for excellent value and design flexibility, Self-supporting towers employ a variety of components to configure reliable structures which meet the needs of these wireless tower installations. Engineers select single-member legs or a combination of single-member and truss-style legs, depending on the tower mission and customer specifications. Depending on load and environmental requirements, tubular-steel, solid-steel or a combination of tubular- and solid-steel components are integrated into the structure's design. Towers are comprised of durable materials in a flexible design for long tower life, as the single member sections reduce ice accumulations and minimize wind loads.



# Concrete Shelter Exhibit

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Concrete shelters are pre-assembled reinforced solid concrete construction. The completed shelter is inherently bullet, vandal and fire resistant. Our standard four Inch (10 cm) wall construction provides a 2-hour fire endurance rating which is recognized and valid in the following model codes: UBC, SBC, BOCA.

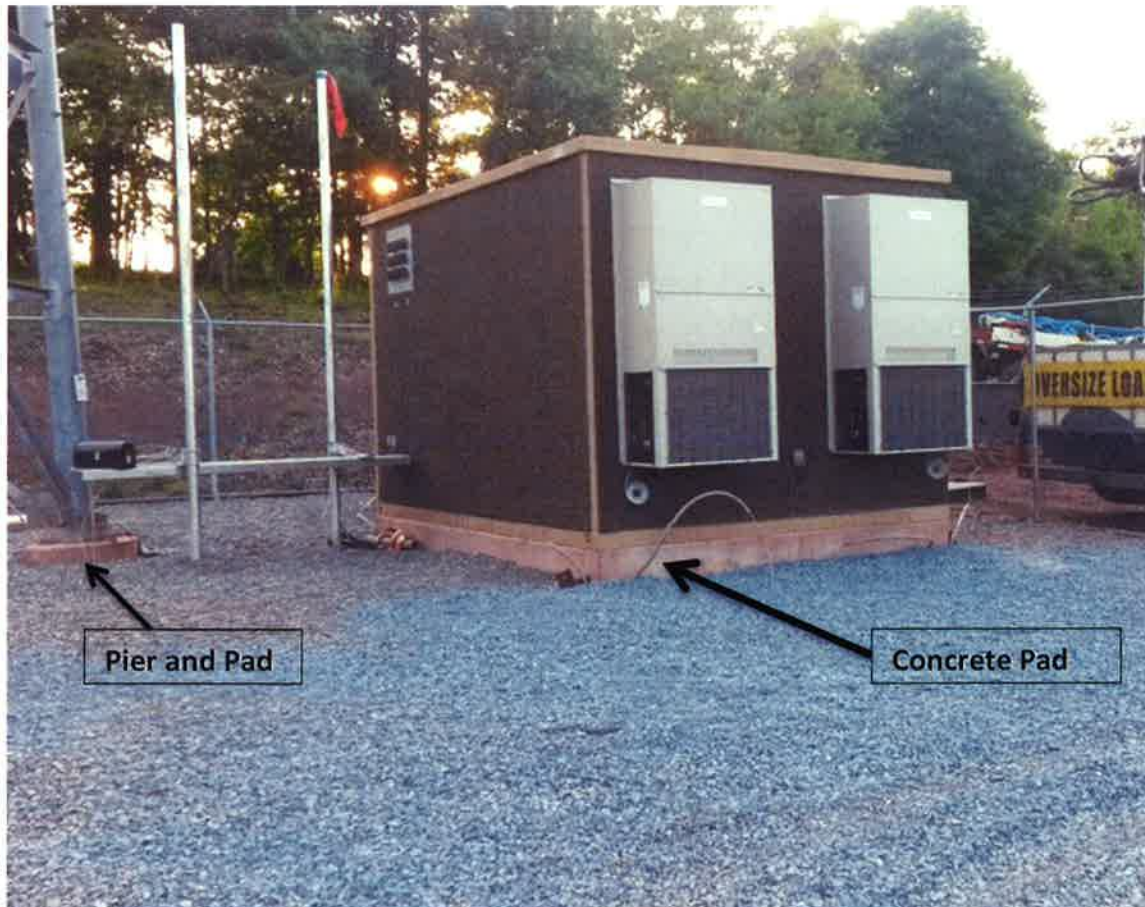
The walls, roof and floor panels are welded together into a single unit for maximum structural strength. Each panel to panel joint includes a double seal for superior weather protection.



# Concrete Pad Exhibit

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The concrete formulation is made with no less than 4000-PSI compressive strength at 28 days and a density less than 100 pcf. Concrete strength shall conform to ACI 318-05. Supplier shall provide the jurisdiction with certificates originating by the batch mixing plant certifying ready mixed concrete as manufactured and delivered to be in conformance with ASTM C 94. Concrete samples shall be collected for strength testing per ASTM C172. Four test cylinders for truck delivery. The reinforcing materials shall not have rusting and fouling with dirt, grease, and other bond-breaking coatings. The metal reinforcement accurately and securely brace against displacement through the use of reinforcing accessories in accordance with ACI 318.



# Fencing Exhibit

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The fencing shall be hot-dipped galvanized, 8-foot high chain link security fencing or a hot-dipped galvanized, 12-foot high chain link security fencing. The fence enclosure shall include a reinforced 16-foot vehicular gate and 4-foot pedestrian gate. Gates shall be designed to swing out to a fully open position.



Fence with Swing Gate