

ISSUE: Certificate of Appropriateness for alterations (small cell antenna)

APPLICANT: New Cingular Wireless PCS, LLC

LOCATION: Parker-Gray District
Dominion Energy utility pole in right-of-way near 211 Buchanan Street

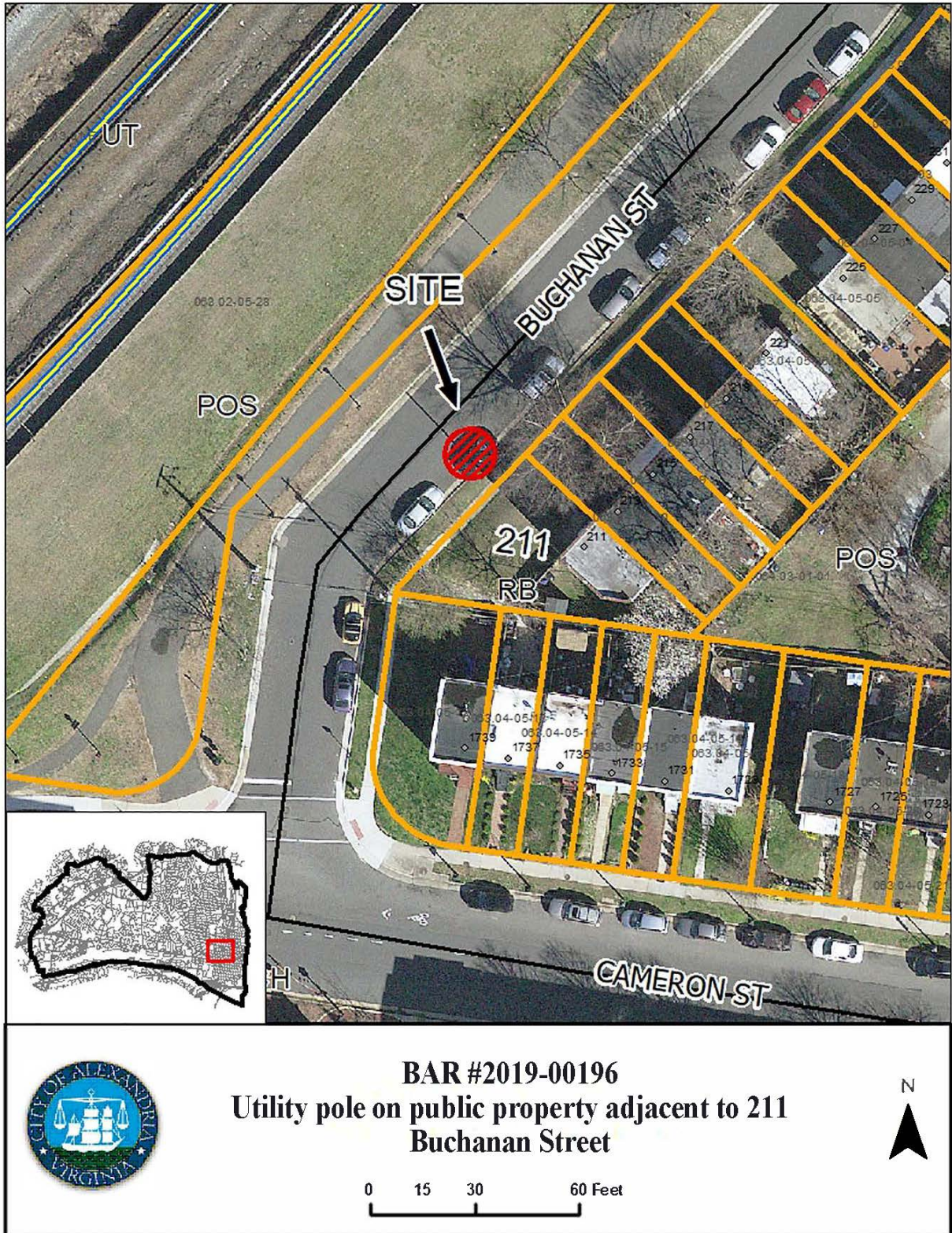
ZONE: RB/Residential Townhouse Zone

STAFF RECOMMENDATION

Staff recommends approval of the Certificate of Appropriateness, as submitted.

GENERAL NOTES TO THE APPLICANT

1. **ISSUANCE OF CERTIFICATES OF APPROPRIATENESS AND PERMITS TO DEMOLISH:** Applicants must obtain a copy of the Certificate of Appropriateness or Permit to Demolish PRIOR to applying for a building permit. Contact BAR Staff, Room 2100, City Hall, 703-746-3833, or preservation@alexandriava.gov for further information.
2. **APPEAL OF DECISION:** In accordance with the Zoning Ordinance, if the Board of Architectural Review denies or approves an application in whole or in part, the applicant or opponent may appeal the Board's decision to City Council on or before 14 days after the decision of the Board.
3. **COMPLIANCE WITH BAR POLICIES:** All materials must comply with the BAR's adopted policies unless otherwise specifically approved.
4. **BUILDING PERMITS:** Most projects approved by the Board of Architectural Review require the issuance of one or more construction permits by Department of Code Administration (including signs). The applicant is responsible for obtaining all necessary construction permits after receiving Board of Architectural Review approval. Contact Code Administration, Room 4200, City Hall, 703-746-4200 for further information.
5. **EXPIRATION OF APPROVALS NOTE:** In accordance with Sections 10-106(B) and 10-206(B) of the Zoning Ordinance, any official Board of Architectural Review approval will expire 12 months from the date of issuance if the work is not commenced and diligently and substantially pursued by the end of that 12-month period.
6. **HISTORIC PROPERTY TAX CREDITS:** Applicants performing extensive, certified rehabilitations of historic properties may separately be eligible for state and/or federal tax credits. Consult with the Virginia Department of Historic Resources (VDHR) prior to initiating any work to determine whether the proposed project may qualify for such credits.



I. APPLICANT'S PROPOSAL

The applicant is requesting a Certificate of Appropriateness to replace the existing wood utility pole in the right-of-way in front of 211 Buchanan Street with a taller wood utility pole in the same location in order to accommodate a small cell antenna on the top and an equipment box installed on the side of the pole. The new pole will be installed adjacent to the existing pole and once the utilities have been relocated the existing pole will be removed.

The pole will measure 10 feet taller than the existing pole and the antenna on top will add 3.25 feet to the overall height. The antenna sheath and the associated utility box located approximately 15 feet above grade and will be painted to match the wood pole.

II. HISTORY

The two-story brick rowhouses along Buchanan Street were constructed sometime **between 1931 and 1941**, according to the Sanborn Fire Insurance maps. The rowhouses are across the street from the Metro Linear Park adjacent to the Metro and CSX rights-of-way. There are existing wood utility poles with overhead wires on both sides of Buchanan Street.

III. ANALYSIS

To address the growing demand for wireless services across the United States, telecommunication providers are increasing the capacity of their networks by deploying small cell antennas within the public right-of-way to reduce the data traffic load on roof-mounted equipment and larger cell towers. Small cell facilities are low-powered antennas that provide wireless service coverage to a limited geographic area (often with ranges of a few hundred feet) and are used to supplement and expand the coverage provided by the traditional, larger-scale network.

In the past two years, Federal and State legislation has been enacted to further streamline the local approval process for cellular facilities, shortening the approval time and limiting jurisdictions' authority. The laws can be contradictory between federal and state in some instances but do recognize that additional guidelines may be necessary in historic districts.

The City has adopted Interim Wireless Facility Aesthetic Guidelines for wireless infrastructure throughout the City which outline specific guidelines related to the replacement of existing utility poles, including:

- pole height may not increase more than 10 feet and may not exceed 50 feet without a special use permit
- replacement poles must be in the same general location as the existing pole
- replacement poles may not cause the removal of an existing tree or cause damaging impacts to trees located in the right-of-way
- wireless facilities must be shrouded, enclosing wires and equipment, and no separate ground mounted equipment is permitted
- wireless facilities must be painted to match the infrastructure

Many of the wireless carriers are working with Dominion Energy to deploy their facilities on replacement utility poles in the City right-of-way. Dominion's safety guidelines require that the existing poles be replaced with taller poles so that there is adequate separation between the utilities

and the new cellular equipment. The wood poles come in 10-foot increments but must be buried deeper in the ground, so the net increase in height will be less.

A Certificate of Appropriateness is required in the Parker-Grady District from the BAR under Section 10-203(A) of the zoning ordinance, which states that “No building or structure shall be erected, reconstructed, altered or restored within the Parker-Gray District unless and until an application for a certificate of appropriateness shall have been approved...” Section 10-103(A) requires the same Certificate for alterations to structures in the OHAD.

BAR staff has no objection to the taller wood poles or the installation of the small cell equipment in this location and finds that painting the equipment the same color as the pole will make them less obvious. The existence of utility poles and overhead wires, street signs, and light poles are part of the urban streetscape, and staff does not believe that the installation of the taller pole with the small cell equipment will adversely impact existing viewsheds. Staff recommends approval of the application, as submitted.

The various wireless carriers have submitted over 60 applications for small cell facilities throughout the City in the past year, although applications are just now being submitted in the historic districts. Staff expects to see an increasing number of applications and in order to facilitate the approval process for small cell facilities on wood utility poles, staff is recommending that the BAR adopt an administrative approval policy, like the recently adopted gas meter policy, for certain types of antennas. The draft policy will be discussed after the applications have been discussed at the same meeting on June 5th. The wireless carriers are committed to working with the BAR in the historic districts to study the future impacts of wireless facilities on other right-of-way features, such as light poles and traffic lights. The goal is to ensure that small cell facilities are integrated into the streetscape of the public right-of-way in such a way as to minimize disruption and preserving the visual character of the City and the safety of the public.

Staff recommends approval of the application, as submitted.

STAFF

Stephanie Sample, Acting Principal Planner, Planning & Zoning
Al Cox, FAIA, Historic Preservation Manager, Planning & Zoning

IV. CITY DEPARTMENT COMMENTS

Legend: C- code requirement R- recommendation S- suggestion F- finding

Zoning

F-1 Height of proposed structure meets zoning ordinance requirements of small cell facilities.
Zoning review will be completed prior to approval of ADM2019-00022.

Code Administration

No Code comments.

Transportation and Environmental Services

No comments received.

Alexandria Archaeology

F-1 No archaeological oversight necessary for this project.

V. ATTACHMENTS

1 – Supplemental Materials

2 – Application for BAR 2019-00196

ADDRESS OF PROJECT: 211 Buchanan StreetDISTRICT: ☐ Old & Historic Alexandria ☒ Parker – Gray ☐ 100 Year Old BuildingTAX MAP AND PARCEL: 063.04-05-11 ZONING: RBAPPLICATION FOR: *(Please check all that apply)*☒ CERTIFICATE OF APPROPRIATENESS☐ PERMIT TO MOVE, REMOVE, ENCAPSULATE OR DEMOLISH
(Required if more than 25 square feet of a structure is to be demolished/impacted)☐ WAIVER OF VISION CLEARANCE REQUIREMENT and/or YARD REQUIREMENTS IN A VISION
CLEARANCE AREA (Section 7-802, Alexandria 1992 Zoning Ordinance)☐ WAIVER OF ROOFTOP HVAC SCREENING REQUIREMENT
*(Section 6-403(B)(3), Alexandria 1992 Zoning Ordinance)*Applicant: ☐ Property Owner ☒ Business *(Please provide business name & contact person)*Name: New Cingular Wireless PCS, LLC c/o Jacobs TechnologyAddress: 7150 Standard DriveCity: Hanover State: MD Zip: 21076Phone: 443-875-3794 E-mail: gn452@att.comAuthorized Agent *(if applicable)*: ☐ Attorney ☐ Architect ☒ VendorName: Alex Dowley Phone: 315-317-5311E-mail: alex.dowley@jacob.com**Legal Property Owner:**Name: Dominion Virginia PowerAddress: 3072 Centreville RoadCity: Herndon State: VA Zip: 20171Phone: 571-203-5259 E-mail: austin.d.gore@dominionenergy.com

- ☐ Yes ☒ No Is there an historic preservation easement on this property?
- ☐ Yes ☐ No If yes, has the easement holder agreed to the proposed alterations?
- ☐ Yes ☒ No Is there a homeowner's association for this property?
- ☐ Yes ☐ No If yes, has the homeowner's association approved the proposed alterations?

If you answered yes to any of the above, please attach a copy of the letter approving the project.

NATURE OF PROPOSED WORK: *Please check all that apply*

- ☐ NEW CONSTRUCTION
☒ EXTERIOR ALTERATION: *Please check all that apply.*
 ☐ awning ☐ fence, gate or garden wall ☐ HVAC equipment ☐ shutters
 ☐ doors ☐ windows ☐ siding ☐ shed
 ☐ lighting ☐ pergola/trellis ☐ painting unpainted masonry
 ☒ other Small Cell Installation on replaced utility pole
☐ ADDITION
☐ DEMOLITION/ENCAPSULATION
☐ SIGNAGE

DESCRIPTION OF PROPOSED WORK: *Please describe the proposed work in detail (Additional pages may be attached).*

Installation of wireless communications and antenna and associated support equipment
on replacement wood utility pole.

SUBMITTAL REQUIREMENTS:

Items listed below comprise the **minimum supporting materials** for BAR applications. Staff may request additional information during application review. Please refer to the relevant section of the *Design Guidelines* for further information on appropriate treatments.

Applicants must use the checklist below to ensure the application is complete. Include all information and material that are necessary to thoroughly describe the project. Incomplete applications will delay the docketing of the application for review. Pre-application meetings are required for all proposed additions. All applicants are encouraged to meet with staff prior to submission of a completed application.

Electronic copies of submission materials should be submitted whenever possible.

Demolition/Encapsulation : *All applicants requesting 25 square feet or more of demolition/encapsulation must complete this section. Check N/A if an item in this section does not apply to your project.*

- N/A
- ☐ ☐ Survey plat showing the extent of the proposed demolition/encapsulation.
☐ ☐ Existing elevation drawings clearly showing all elements proposed for demolition/encapsulation.
☐ ☐ Clear and labeled photographs of all elevations of the building if the entire structure is proposed to be demolished.
☐ ☐ Description of the reason for demolition/encapsulation.
☐ ☐ Description of the alternatives to demolition/encapsulation and why such alternatives are not considered feasible.

Additions & New Construction: *Drawings must be to scale and should not exceed 11" x 17" unless approved by staff. All plans must be folded and collated into 3 complete 8 1/2" x 11" sets. Additional copies may be requested by staff for large-scale development projects or projects fronting Washington Street. Check N/A if an item in this section does not apply to your project.*

- ☐ ^{N/A} ☐ Scaled survey plat showing dimensions of lot and location of existing building and other structures on the lot, location of proposed structure or addition, dimensions of existing structure(s), proposed addition or new construction, and all exterior, ground and roof mounted equipment.
- ☐ ☐ FAR & Open Space calculation form.
- ☐ ☐ Clear and labeled photographs of the site, surrounding properties and existing structures, if applicable.
- ☐ ☐ Existing elevations must be scaled and include dimensions.
- ☐ ☐ Proposed elevations must be scaled and include dimensions. Include the relationship to adjacent structures in plan and elevations.
- ☐ ☐ Materials and colors to be used must be specified and delineated on the drawings. Actual samples may be provided or required.
- ☐ ☐ Manufacturer's specifications for materials to include, but not limited to: roofing, siding, windows, doors, lighting, fencing, HVAC equipment and walls.
- ☐ ☐ For development site plan projects, a model showing mass relationships to adjacent properties and structures.

Signs & Awnings: *One sign per building under one square foot does not require BAR approval unless illuminated. All other signs including window signs require BAR approval. Check N/A if an item in this section does not apply to your project.*

- ☐ ^{N/A} ☐ Linear feet of building: Front: _____ Secondary front (if corner lot): _____.
- ☐ ☐ Square feet of existing signs to remain: _____.
- ☐ ☐ Photograph of building showing existing conditions.
- ☐ ☐ Dimensioned drawings of proposed sign identifying materials, color, lettering style and text.
- ☐ ☐ Location of sign (show exact location on building including the height above sidewalk).
- ☐ ☐ Means of attachment (drawing or manufacturer's cut sheet or bracket if applicable).
- ☐ ☐ Description of lighting (if applicable). Include manufacturer's cut sheet for any new lighting fixtures and information detailing how it will be attached to the building's facade.

Alterations: *Check N/A if an item in this section does not apply to your project.*

- ☐ ^{N/A} ☐ Clear and labeled photographs of the site, especially the area being impacted by the alterations, all sides of the building and any pertinent details.
- ☐ ☐ Manufacturer's specifications for materials to include, but not limited to: roofing, siding, windows, doors, lighting, fencing, HVAC equipment and walls.
- ☐ ☐ Drawings accurately representing the changes to the proposed structure, including materials and overall dimensions. Drawings must be to scale.
- ☐ ☒ An official survey plat showing the proposed locations of HVAC units, fences, and sheds.
- ☐ ☒ Historic elevations or photographs should accompany any request to return a structure to an earlier appearance.

ALL APPLICATIONS: *Please read and check that you have read and understand the following items:*

- ☒ I have submitted a filing fee with this application. (Checks should be made payable to the City of Alexandria. Please contact staff for assistance in determining the appropriate fee.)
 - ☒ I understand the notice requirements and will return a copy of the three respective notice forms to BAR staff at least five days prior to the hearing. If I am unsure to whom I should send notice I will contact Planning and Zoning staff for assistance in identifying adjacent parcels.
 - ☒ I, the applicant, or an authorized representative will be present at the public hearing.
 - ☒ I understand that any revisions to this initial application submission (including applications deferred for restudy) must be accompanied by the BAR Supplemental form and 3 sets of revised materials.
-

The undersigned hereby attests that all of the information herein provided including the site plan, building elevations, prospective drawings of the project, and written descriptive information are true, correct and accurate. The undersigned further understands that, should such information be found incorrect, any action taken by the Board based on such information may be invalidated. The undersigned also hereby grants the City of Alexandria permission to post placard notice as required by Article XI, Division A, Section 11-301(B) of the 1992 Alexandria City Zoning Ordinance, on the property which is the subject of this application. The undersigned also hereby authorizes the City staff and members of the BAR to inspect this site as necessary in the course of research and evaluating the application. The applicant, if other than the property owner, also attests that he/she has obtained permission from the property owner to make this application.

APPLICANT OR AUTHORIZED AGENT:Signature: Alex H. DowleyPrinted Name: Alex DowleyDate: 5/6/19

OWNERSHIP AND DISCLOSURE STATEMENT

Use additional sheets if necessary

1. Applicant. State the name, address and percent of ownership of any person or entity owning an interest in the applicant, unless the entity is a corporation or partnership, in which case identify each owner of more than three percent. The term ownership interest shall include any legal or equitable interest held at the time of the application in the real property which is the subject of the application.

Name	Address	Percent of Ownership
1. AT&T	7150 Standard Drive, Hanover MD 21076	N/A
2.		
3.		

2. Property. State the name, address and percent of ownership of any person or entity owning an interest in the property located at 221 Buchanan Street (address), unless the entity is a corporation or partnership, in which case identify each owner of more than three percent. The term ownership interest shall include any legal or equitable interest held at the time of the application in the real property which is the subject of the application.

Name	Address	Percent of Ownership
1. AT&T	7150 Standard Drive, Hanover MD 21076	N/A
2.		
3.		

3. Business or Financial Relationships. Each person or entity listed above (1 and 2), with an ownership interest in the applicant or in the subject property is required to disclose any business or financial relationship, as defined by Section 11-350 of the Zoning Ordinance, existing at the time of this application, or within the 12-month period prior to the submission of this application with any member of the Alexandria City Council, Planning Commission, Board of Zoning Appeals or either Boards of Architectural Review.

Name of person or entity	Relationship as defined by Section 11-350 of the Zoning Ordinance	Member of the Approving Body (i.e. City Council, Planning Commission, etc.)
1. N/A	N/A	N/A
2.		
3.		

NOTE: Business or financial relationships of the type described in Sec. 11-350 that arise after the filing of this application and before each public hearing must be disclosed prior to the public hearings.

As the applicant or the applicant's authorized agent, I hereby attest to the best of my ability that the information provided above is true and correct.

5/6/19 Alex Dowley Alex H. Dowley
 Date Printed Name Signature



NODE NAME: CRAN_RWSH_NORVA_033
FA: 14510358 USID: 201202
JURISDICTION: CITY OF ALEXANDRIA

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

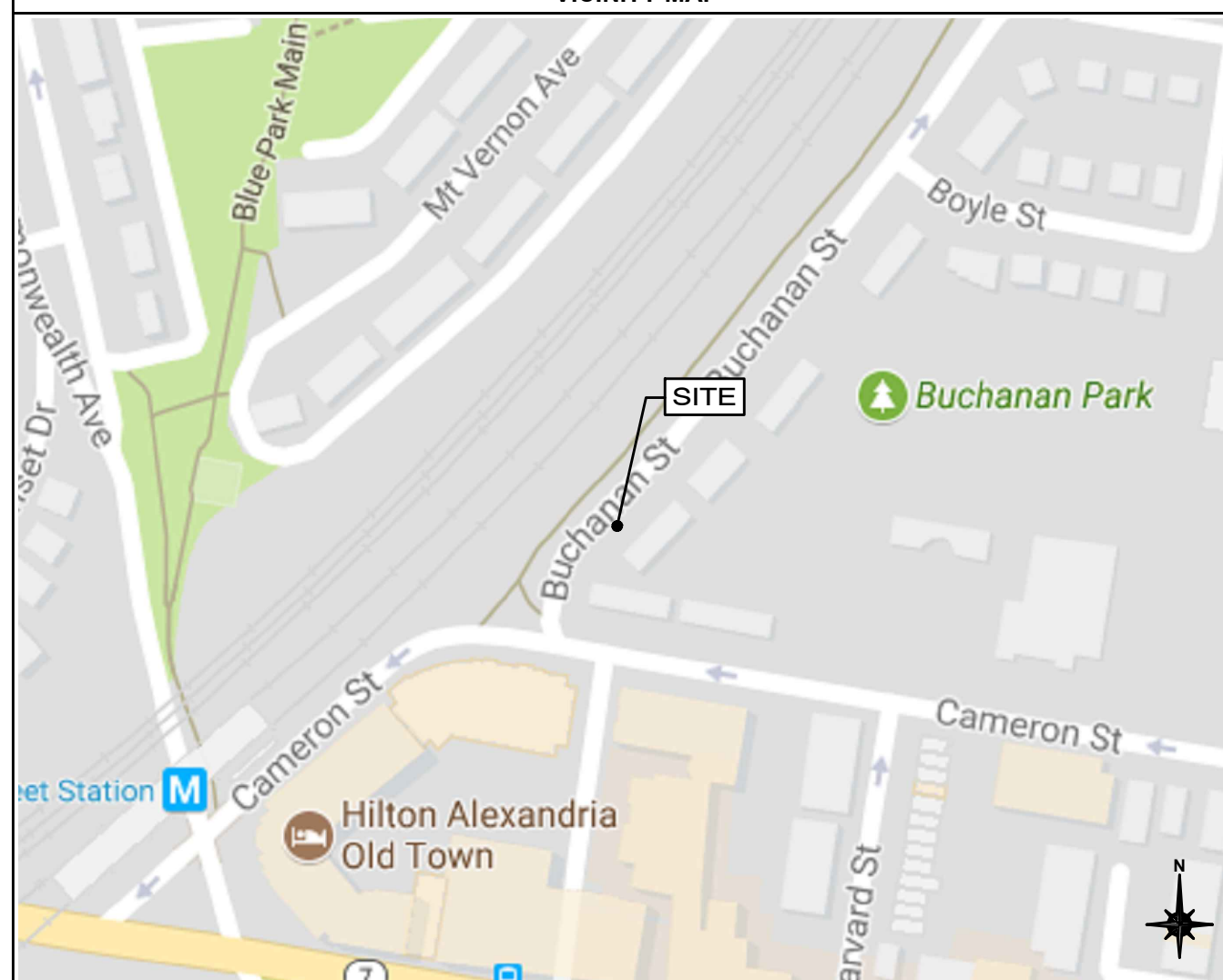
SITE INFORMATION

APPLICANT:	AT&T
APPLICANT ADDRESS:	7150 STANDARD DRIVE HANOVER, MD 21076
AT&T PROJECT MANAGER	MIKE SMITH
SITE ADDRESS:	211 BUCHANAN ST. ALEXANDRIA, VA 22314
ROW OWNER:	CITY OF ALEXANDRIA
PROPERTY OWNER:	DOMINION
STRUCTURE OWNER ADDRESS:	LINCOLN PARK II 3072 CENTREVILLE RD HERNDON, VA 20171
STRUCTURE TYPE:	WOOD UTILITY POLE
JURISDICTION:	CITY OF ALEXANDRIA
LATITUDE:	38° 48' 29.02" N (38.808060)
LONGITUDE:	77° 3' 29.69" W (-77.058246)
LAT/LONG DATUM:	NAD 83
GROUND ELEVATION:	±23' AMSL
POWER	DOMINION VIRGINIA POWER
TELCO	TBD

IMPORTANT NOTICE

THE EXISTING CONDITIONS REPRESENTED HEREIN ARE BASED ON VISUAL OBSERVATIONS AND INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. REPORT AND CONFLICTS OR DISCREPANCIES PRIOR TO CONSTRUCTION.

VICINITY MAP



DRIVING DIRECTIONS

DIRECTION FROM 7150 STANDARD DRIVE HANOVER, MD 21076.
TAKE MD-100 E FROM STANDARD DR, PARK CIR DR AND COCA COLA DR. TAKE BALTIMORE-WASHINGTON PKWY, STATE HWY 295 AND I-295 TO US-1 N/S PATRICK ST IN ALEXANDRIA. TAKE EXIT 177B-177C FROM I-495 S/I-95 S. FOLLOW US-1 N/S PATRICK ST AND CAMERON ST TO BUCHANAN ST TO THE SITE.

DIG ALERT 1-800-552-7001



48 HOURS BEFORE YOU DIG

SCOPE OF WORK

INSTALLATION OF A WIRELESS COMMUNICATIONS ANTENNA AND ASSOCIATED
SUPPORT EQUIPMENT ON AN REPLACEMENT WOOD UTILITY POLE.

CODES

2015 VIRGINIA STATE UNIFORM BUILDING CODE
2015 INTERNATIONAL BUILDING CODE
2014 NATIONAL ELECTRICAL CODE
STRUCTURAL STANDARD FOR STEEL ANTENNA TOWER AND
ANTENNA SUPPORTING STRUCTURES TO TIA-222-G
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE
NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL
AUTHORITY HAVING JURISDICTION FOR THE LOCATION. THE EDITION OF
THE ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF
CONTRACT AWARD SHALL GOVERN THE DESIGN
AT&T STANDARDS: ATT-TP 76300, ATT-TP 76416 & UPDATES AS
REQUIRED
FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND
STANDARDS REGARDING MATERIAL METHODS OF CONSTRUCTION, OR
OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL
GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT
AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL
GOVERN.

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
C-1	SITE PLAN
C-2	POLE ELEVATIONS
C-3	APPURTENANCE DETAILS
C-4	CONNECTION DETAILS
C-5	RF SIGNAGE LABELS SHEET
C-6	PLUMBING DIAGRAM & ANTENNA PORTS
C-7	ELECTRICAL DETAILS SHEET
C-8	RISER DIAGRAM
G-1	GROUNDING DETAILS
GN-1	GENERAL NOTES
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES

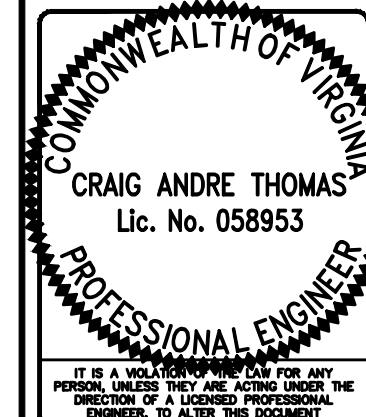
ARCHITECT/ENGINEER

JACOBS ENGINEERING GROUP, INC.
7150 STANDARD DRIVE, SUITE B
HANOVER, MD 21076
CONTACT: LEAH WOOLLY
PROJECT MANAGER
TEL: (443) 230-4400 x113



PROJECT NO:	EP4TURWL
DRAWN BY:	A. ARINGO
CHECKED BY:	D. CORNING

6	04.15.19	UPDATE AS PER REDLINE
5	04.10.19	ANTENNA CHANGE
4	09.17.18	UPDATE AS PER REDLINE
3	06.14.18	UPDATE AS PER REDLINE
2	05.07.18	UPDATE AS PER REDLINE
1	04.03.18	UPDATE AS PER REDLINE
0	03.09.18	UPDATE AS PER REDLINE
B	02.26.18	UPDATE AS PER REDLINE
A	10.06.17	FOR REVIEW

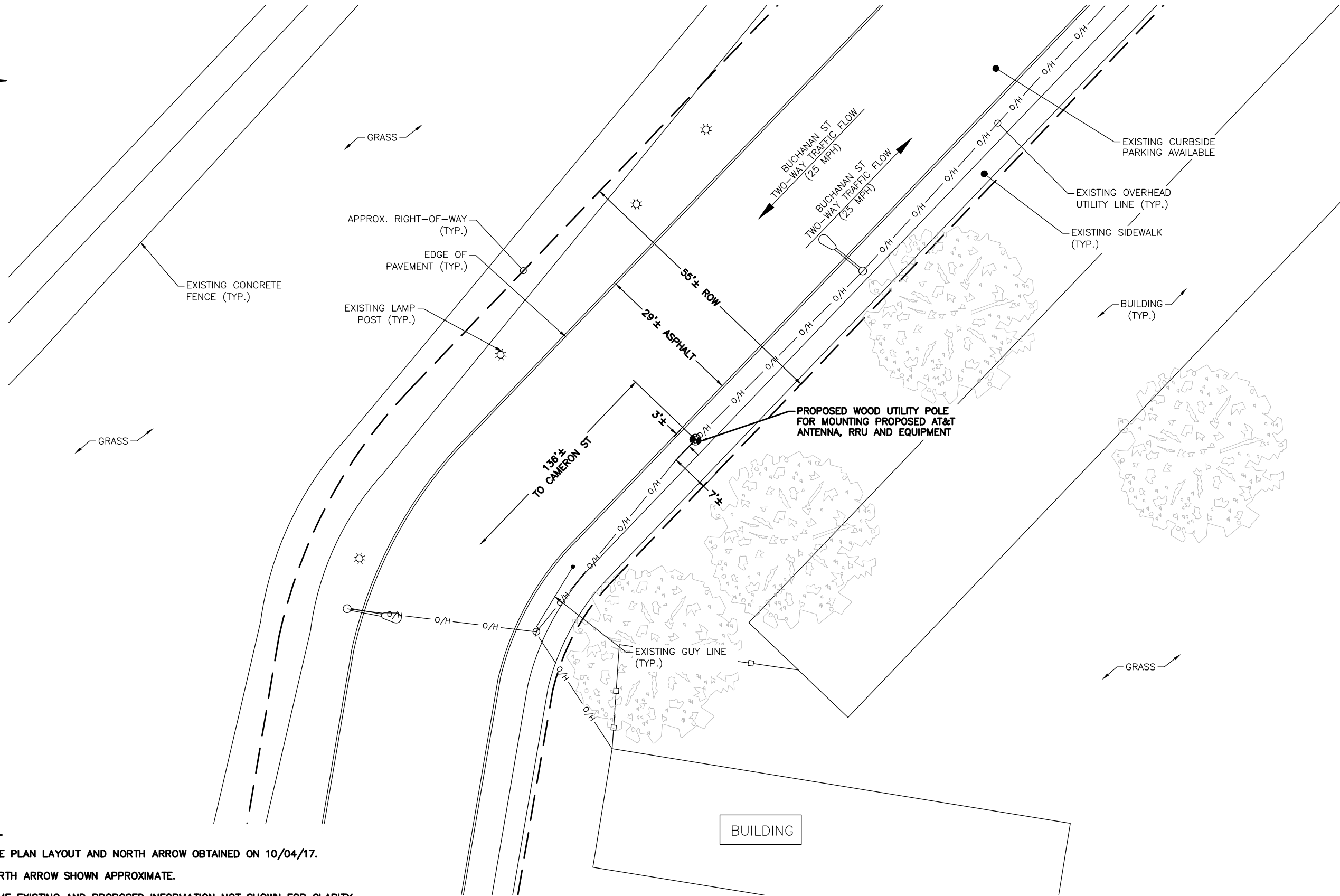


NODE NAME:
CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

SHEET TITLE

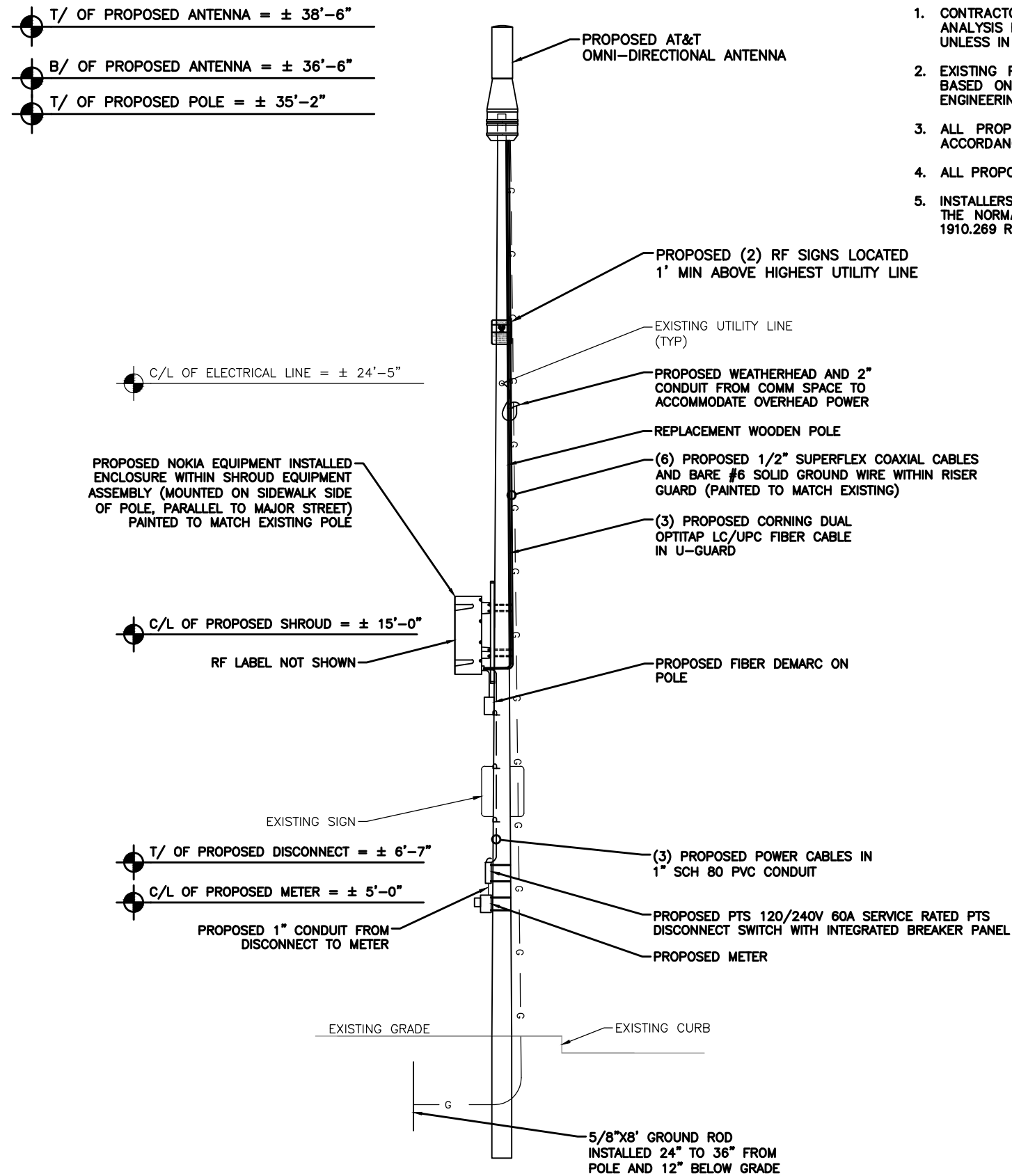
TITLE SHEET

SHEET NUMBER
T-1



1. SITE PLAN LAYOUT AND NORTH ARROW OBTAINED ON 10/04/17.
2. NORTH ARROW SHOWN APPROXIMATE.
3. SOME EXISTING AND PROPOSED INFORMATION NOT SHOWN FOR CLARITY.





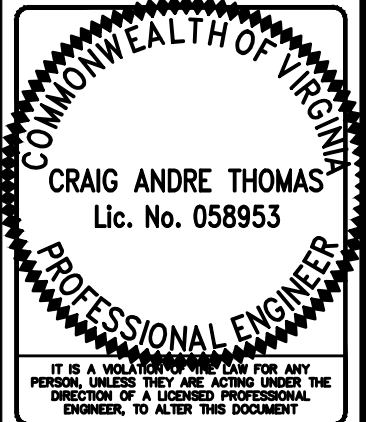
NOTES:

1. CONTRACTOR SHALL REFER TO THE STRUCTURAL ANALYSIS REPORT. NO EQUIPMENT SHALL BE INSTALLED UNLESS IN ACCORDANCE WITH THIS REPORT.
2. EXISTING POLE HEIGHT AND ATTACHMENT ELEVATIONS BASED ON IKE GPS SURVEY PERFORMED BY JACOBS ENGINEERING GROUP, INC.
3. ALL PROPOSED EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH ATT-TP-76416.
4. ALL PROPOSED HARDWARE SHALL BE STAINLESS STEEL.
5. INSTALLERS WORKING IN THE AREA OF THE POLE ABOVE THE NORMAL COMMUNICATION SPACE MUST MEET OSHA 1910.269 REQUIREMENTS.



PROJECT NO:	EP4TURWL
DRAWN BY:	A. ARINGO
CHECKED BY:	D. CORNING

6	04.15.19	UPDATE AS PER REDLINE
5	04.10.19	ANTENNA CHANGE
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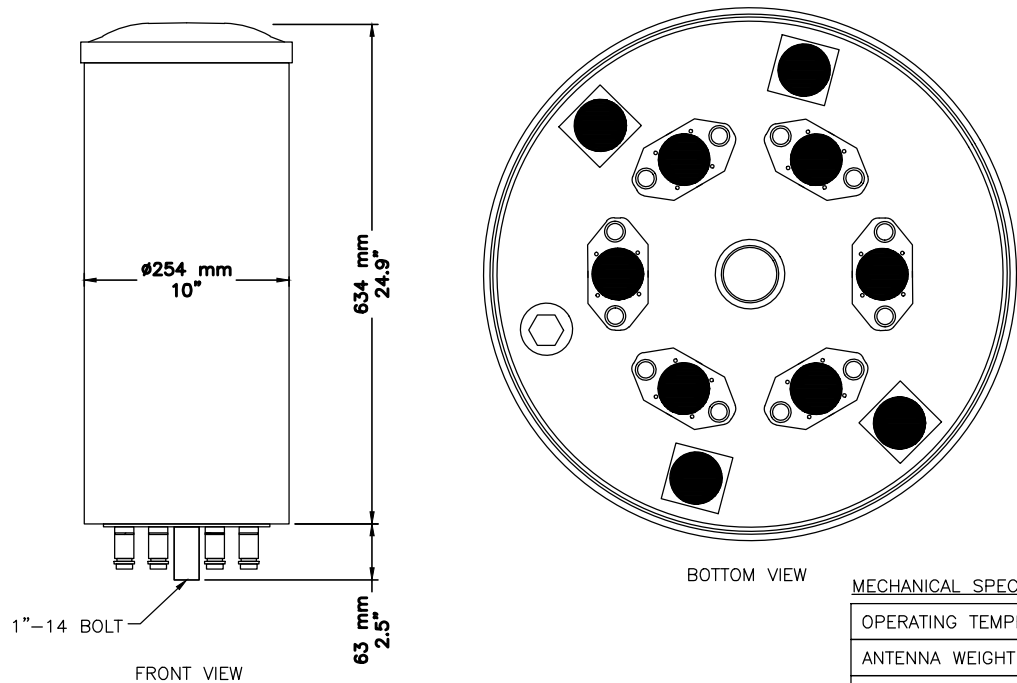


NODE NAME:
CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

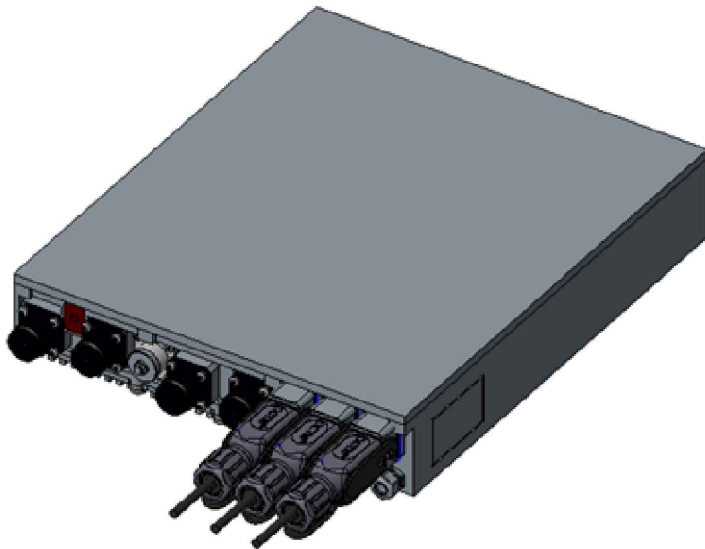
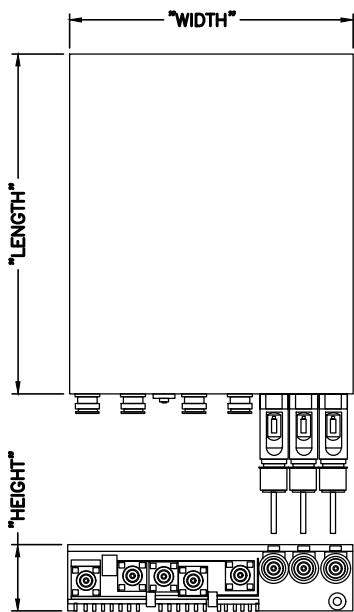
SHEET TITLE
POLE ELEVATIONS

SHEET NUMBER
C-2

PROPOSED POLE ELEVATION



MECHANICAL SPECIFICATIONS	
OPERATING TEMPERATURE	−40° TO 158°F
ANTENNA WEIGHT	17.2 LBS (7.8 KG)
ANTENNA DIAMETER	10" (255 MM)
ANTENNA HEIGHT	24.9" (634 MM)
RADOME MATERIAL	ASA
ROHS	COMPLIANT
RADOME COLOR	GRAY, BROWN, 3M
INGRESS PROTECTION	OUTDOOR (IP65)
WIND SURVIVAL RATING	150mph (241km/h)



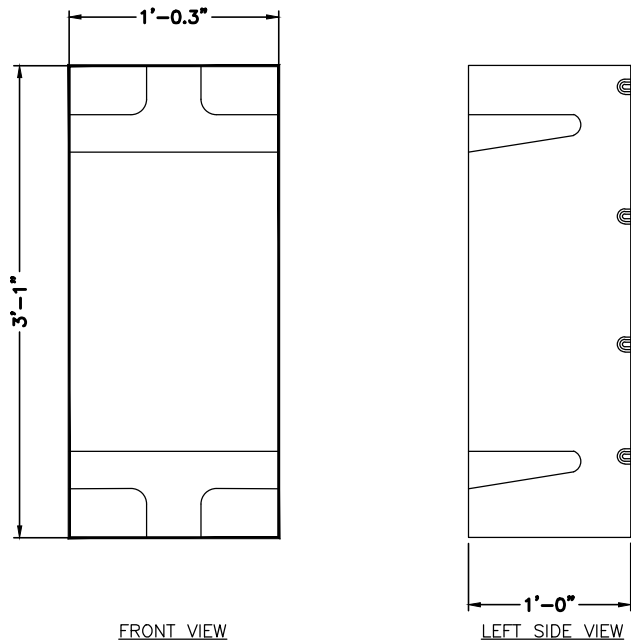
AIR SCALE MICRO SPECIFICATIONS	LENGTH	WIDTH	HEIGHT	VOLUME	RRH	FREQ	EIRP
DC SOLUTION UNIT (B25, B66)	295	245	55	3.98	1	1900	21.6209
AC SOLUTION UNIT (B25, B66)	295	270	55	4.38	2	AWS	24.0699
AC SOLUTION UNIT (B46)	295	150	55	2.43	3	LAA	0.5754

1 GQ2410-06621 ANTENNA DETAIL

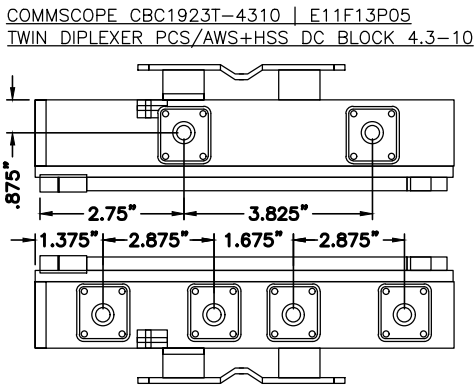
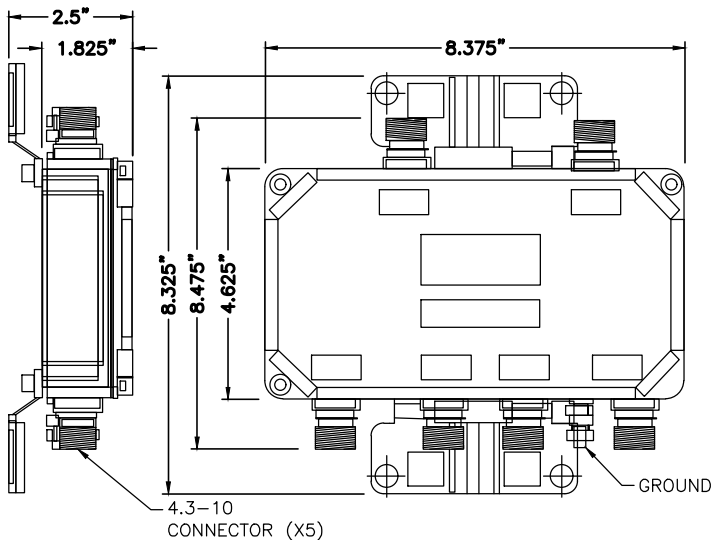
SCALE: NOT TO SCALE

2 NOKIA B25, B66 & B46 RRH DETAIL

SCALE: NOT TO SCALE



NOTE:
SHROUD SHOULD BE LABELED AT&T MOBILITY,
24 HOURS CONTACT: 800-638-2822



DIMENSIONS	
HEIGHT	212.0 MM / 8.3 IN.
WIDTH	116.0 MM / 4.6 IN.
LENGTH	48.0 MM / 1.8 IN.
WEIGHT	2.5 KG / 5.5 LB.

3 NOKIA 1 GIG AIRSCALE RRH SHROUD DETAIL

SCALE: NOT TO SCALE

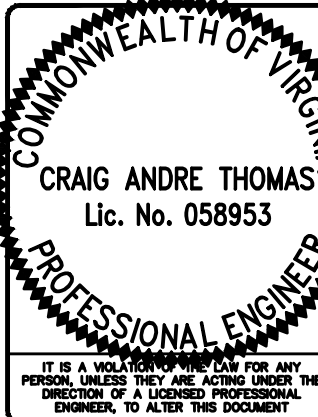
4 TWIN DIPLEXER-CBC1923T-4310_E11F13P06 DETAIL

SCALE: NOT TO SCALE



PROJECT NO:	EP4TURWL
DRAWN BY:	A. ARINGO
CHECKED BY:	D. CORNING

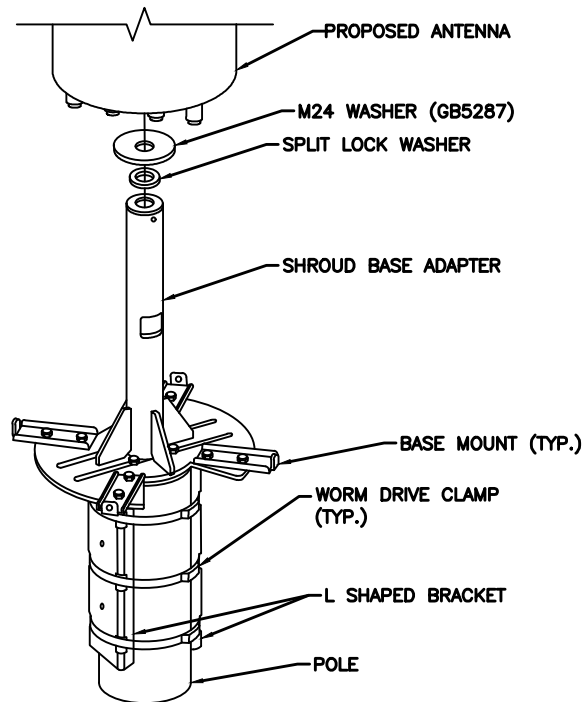
6	04.15.19	UPDATE AS PER REDLINE
5	04.10.19	ANTENNA CHANGE
4	09.17.18	UPDATE AS PER REDLINE
3	06.14.18	UPDATE AS PER REDLINE
2	05.07.18	UPDATE AS PER REDLINE
1	04.03.18	UPDATE AS PER REDLINE
0	03.09.18	UPDATE AS PER REDLINE
B	02.26.18	UPDATE AS PER REDLINE
A	10.06.17	FOR REVIEW



NODE NAME:
CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

SHEET TITLE
APPURTENANCE DETAILS

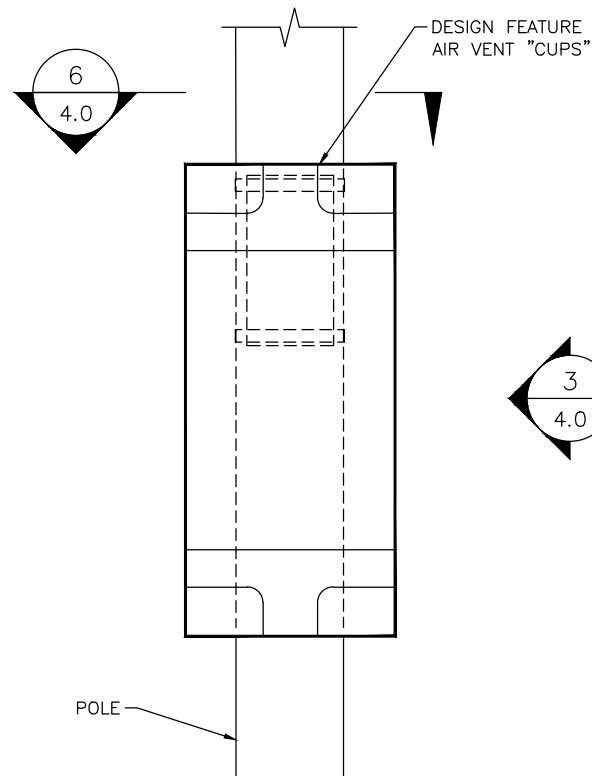
SHEET NUMBER
C-3



1

GALTRONICS GS-06784 MOUNTING BRACKET

SCALE: NOT TO SCALE



4

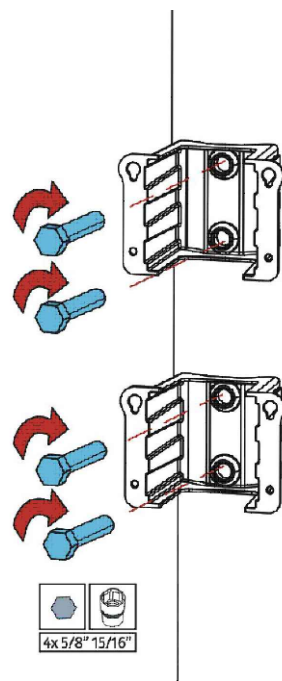
RRH SHROUD FRONT VIEW

SCALE: NOT TO SCALE

2

NOT USED

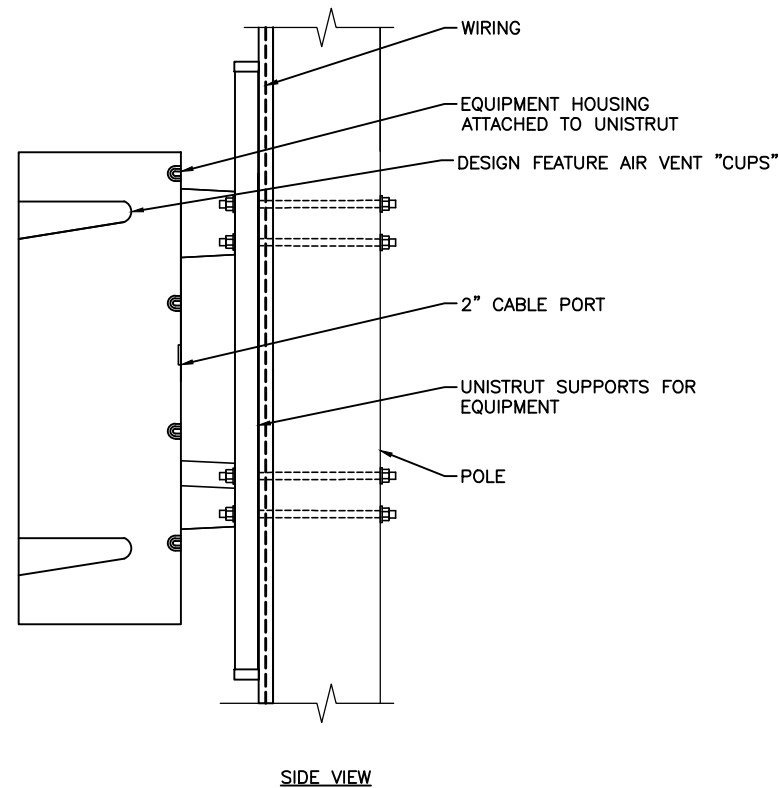
SCALE: NOT TO SCALE



5

RRH SHROUD CONNECTION TO POLE DETAIL

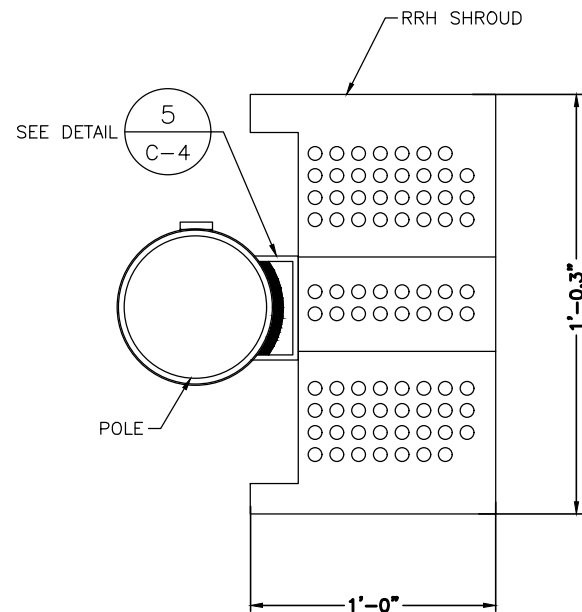
SCALE: NOT TO SCALE



3

RRH SHROUD FRONT SIDE VIEW

SCALE: NOT TO SCALE



6

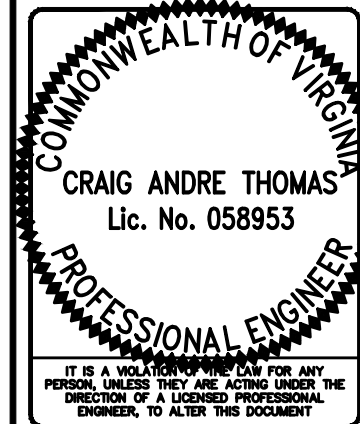
RRH SHROUD CONNECTION TO POLE-TOP VIEW

SCALE: NOT TO SCALE



PROJECT NO:	EP4TURWL
DRAWN BY:	A. ARINGO
CHECKED BY:	D. CORNING

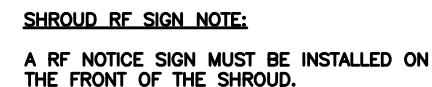
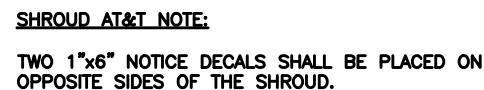
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CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

SHEET TITLE
CONNECTION DETAILS

SHEET NUMBER
C-4



RF LABEL NOTE:

A 9"x11" RF NOTICE SIGN MUST BE INSTALLED ON BOTH SIDES OF THE POLE AT A MINIMUM OF ONE FOOT (1') ABOVE THE UPPER MOST ELECTRIC SUPPLY FACILITIES. THIS SIGN MUST INCLUDE THE STANDARD RF SYMBOL AND STATE "NON RF WORKERS MUST POWER DOWN DEVICE WHEN WORKING ABOVE THIS POINT". THE SIGNS SHALL BE 60 MIL LEXAN WITH U.V. INHIBITORS AND SIGNS SHALL ADHERE TO IEEE C95.2 STANDARDS.

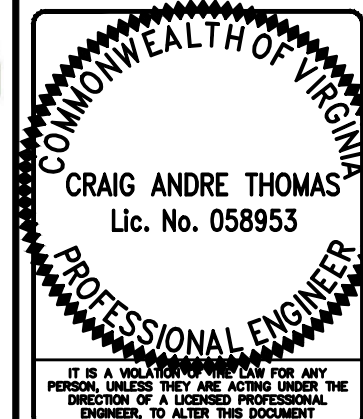
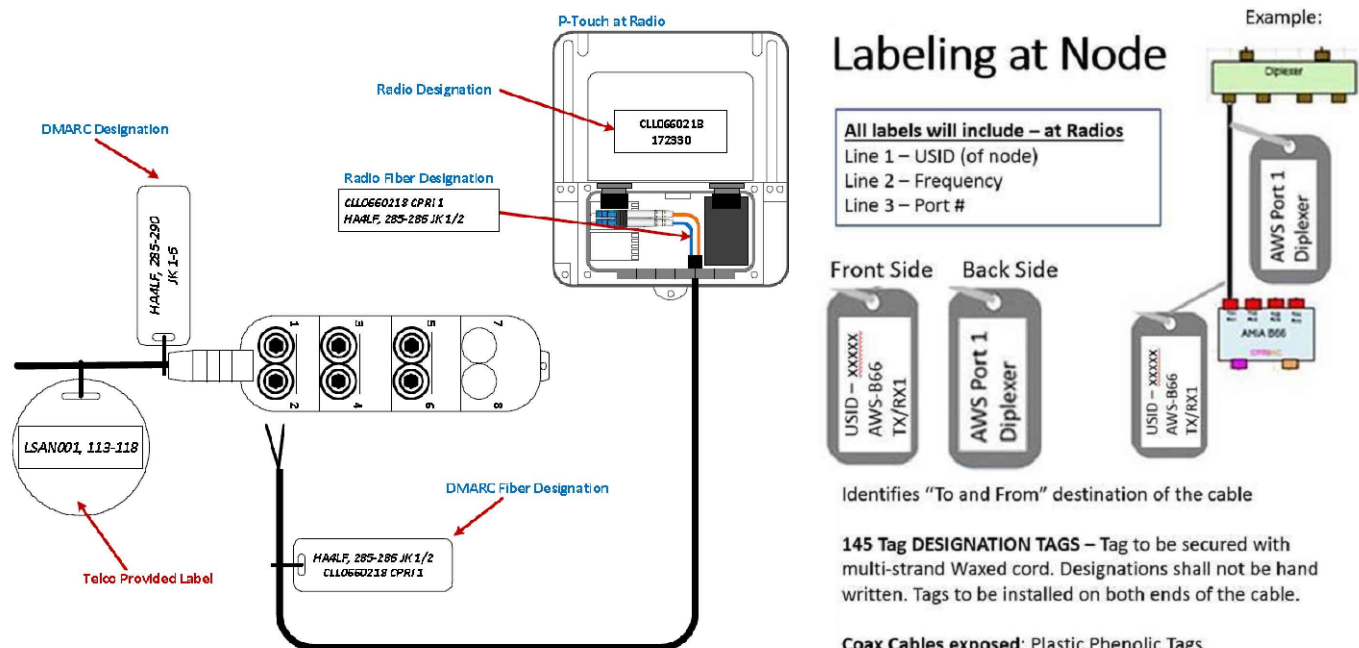


PROJECT NO:	EP4TURWL
DRAWN BY:	A. ARINGO
CHECKED BY:	D. CORNING

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SCALE: NOT TO SCALE

SCALE: NOT TO SCALE



NODE NAME:
CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

SHEET TITLE
RF SIGNAGE
LABELS

SHEET NUMBER
C-5

6	04.15.19	UPDATE AS PER REDLINE
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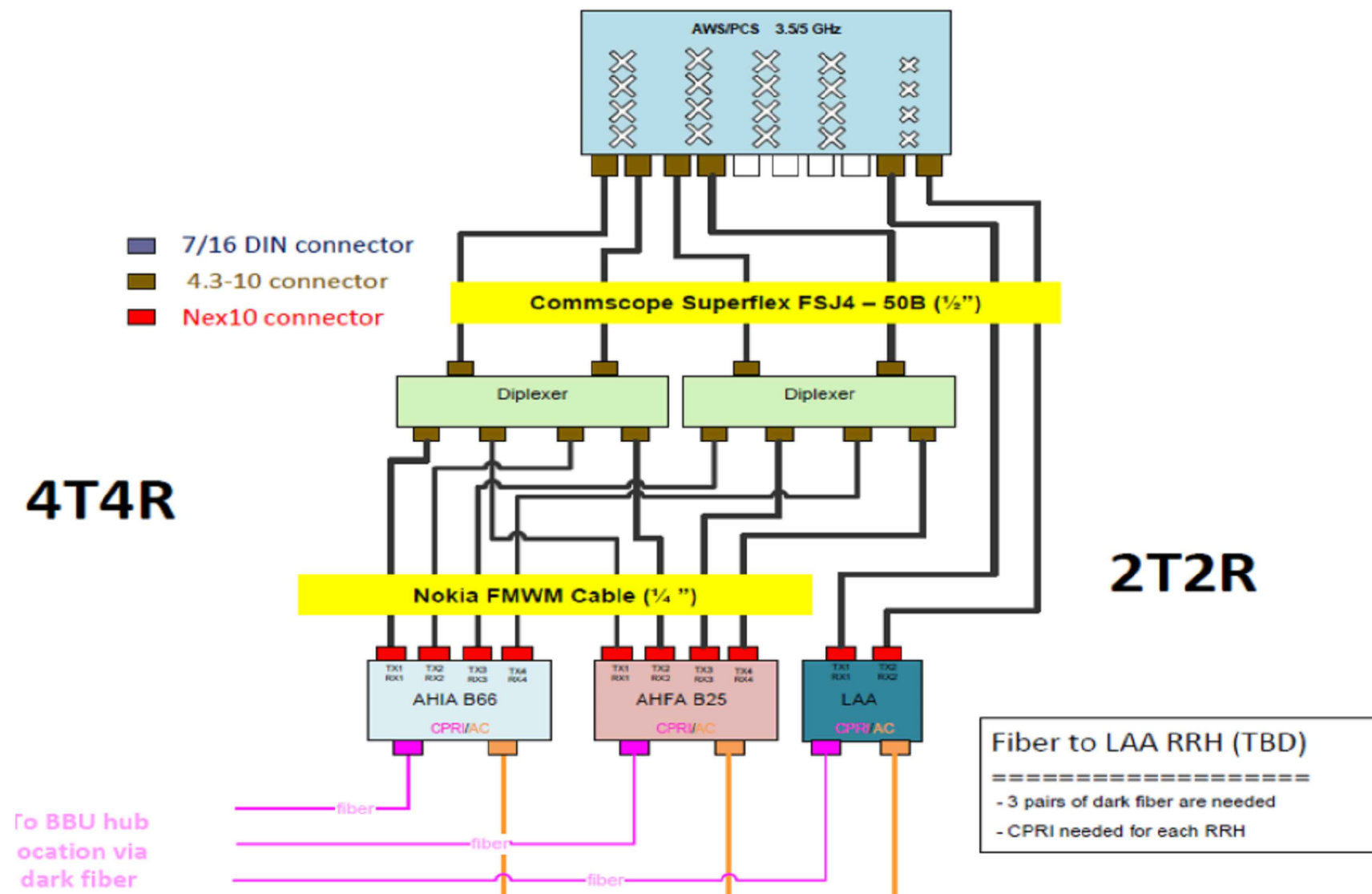
NODE NAME:
CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

SHEET TITLE
PLUMBING DIAGRAM AND
ANTENNA PORTS

SHEET NUMBER
E-3

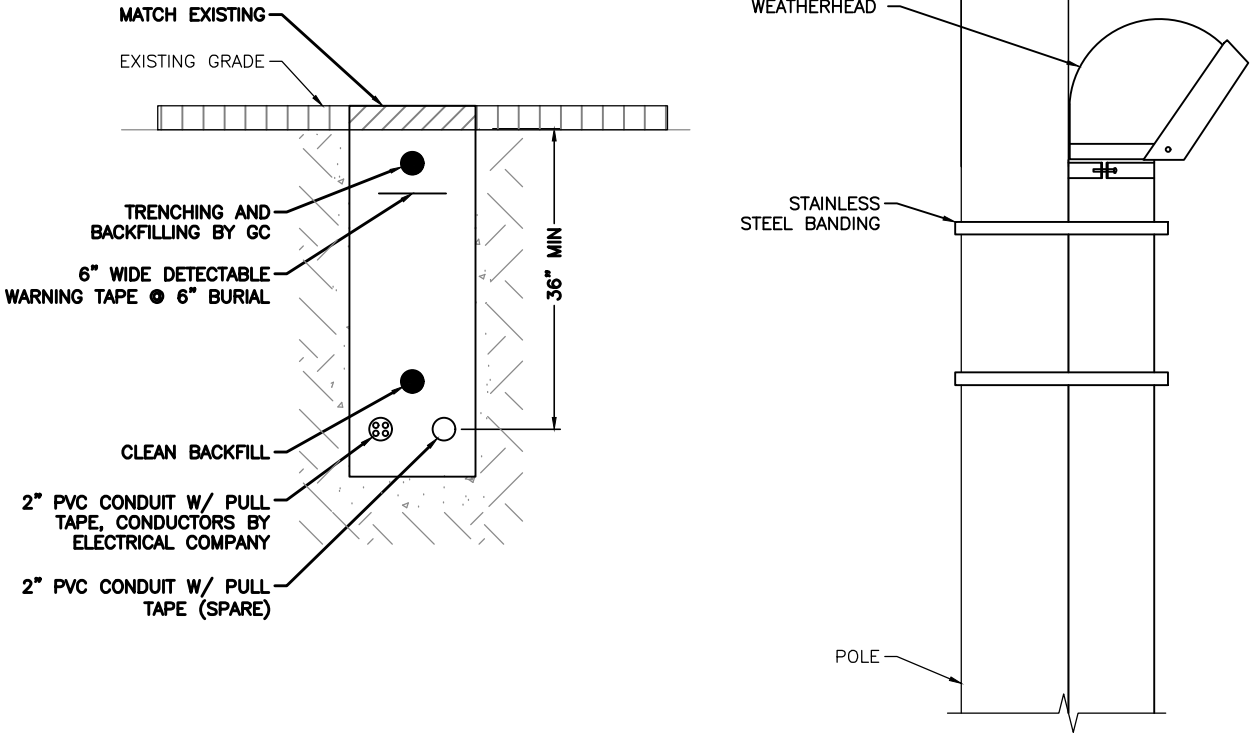
Additional Topics – RF Design

Nokia Pico Perm (4x4 MIMO & LAA, Dedicated Omni) – RAD center < 35'



CABLE SCHEDULE										
TECHNOLOGY	QTY.	SIZE	DESCRIPTION	LENGTH	DIPLEXER	QTY.	SIZE	DESCRIPTION	LENGTH	ANTENNA
PCS	4	1/4"	NOKIA FMWM	2'	CBC1923T-43	02	1/2"	COMMSCOPE (FSJ4) OR SIMILAR	20'	GQ2410-06621
AWS	4	1/4"	NOKIA FMWM	2'	CBC1923T-43	02	1/2"	COMMSCOPE (FSJ4) OR SIMILAR	20'	
LAA	N/A	N/A	N/A	N/A	N/A	2	1/2"	COMMSCOPE (FSJ4) OR SIMILAR	20'	

	Length in ft	Jumper Loss			
		1.7-2.1 GHz	3.5GHz	5GHz	
LS2-HMHM-2-D	2	0.195	0.256	0.311	
LS2-HMHM-4-D	4	0.304	0.400	0.487	
LS2-HMHM-6-D	6	0.412	0.545	0.664	
LS2-HMHM-8-D	8	0.521	0.689	0.840	
LS2-HMHM-10-D	10	0.629	0.833	1.017	
LS2-HMHM-12-D	12	0.738	0.977	1.194	
LS2-HMHM-14-D	14	0.846	1.121	1.370	
LS2-HMHM-16-D	16	0.955	1.265	1.547	
LS2-HMHM-18-D	18	1.063	1.409	1.723	
LS2-HMHM-20-D	20	1.172	1.553	1.900	
LS2-HMHM-22-D	22	1.280	1.698	2.076	
LS2-HMHM-30-D	30	1.714	2.274	2.783	
F1A-XMHM-2-P	2	0.265	0.349	0.424	
F1A-XMHM-4-P	4	0.443	0.585	0.713	
F1A-XMHM-6-P	6	0.621	0.822	1.003	
F1A-XMHM-8-P	8	0.800	1.058	1.292	
F1A-XMHM-10-P	10	0.978	1.295	1.582	
F1A-XMHM-12-P	12	1.156	1.532	1.871	
F1A-XMHM-14-P	14	1.334	1.768	2.161	
F1A-XMHM-16-P	16	1.512	2.005	2.450	
F1A-XMHM-18-P	18	1.690	2.241	2.740	
F1A-XMHM-20-P	20	1.869	2.478	3.030	
F1A-XMHM-22-P	22	2.047	2.714	3.319	



1

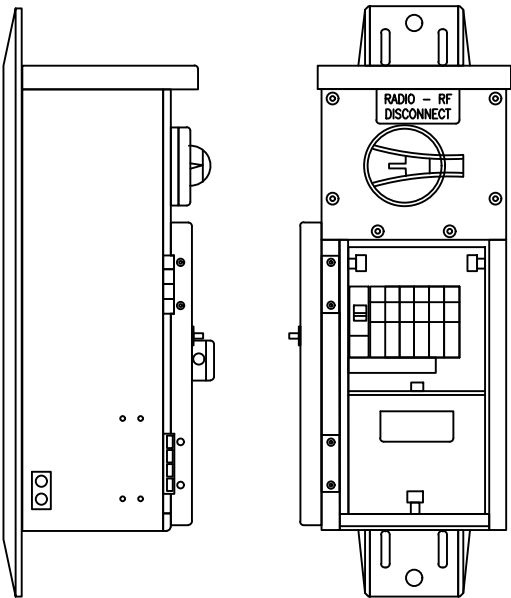
METROCELL JUMPERS LOSS TABLE

SCALE: NOT TO SCALE

2

POWER ROUTING

SCALE: NOT TO SCALE



- HXWXD - 16.15" X 6.68" X 6.285"
- WEIGHT - 11 LBS.
- PICO LOAD BREAKERS - FIVE 10 AMP
- MICRO LOAD BREAKERS - FIVE 20 AMP
- LOAD BREAKER POSITIONS - FIVE
- PICO & MICRO DISCONNECT BREAKER - 60 AMP

3

PTS DISCONNECT

SCALE: NOT TO SCALE

4

NOT USED

SCALE: NOT TO SCALE



PROJECT NO:	EP4TURWL
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CHECKED BY:	D. CORNING

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211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

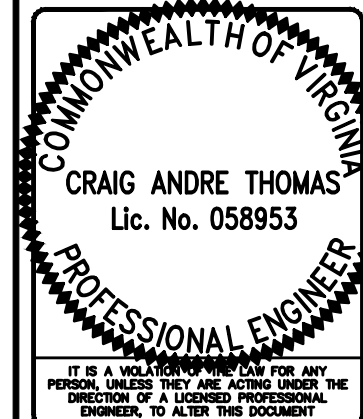
SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-1



PROJECT NO: EP4TURWL
DRAWN BY: A. ARINGO
CHECKED BY: D. CORNING

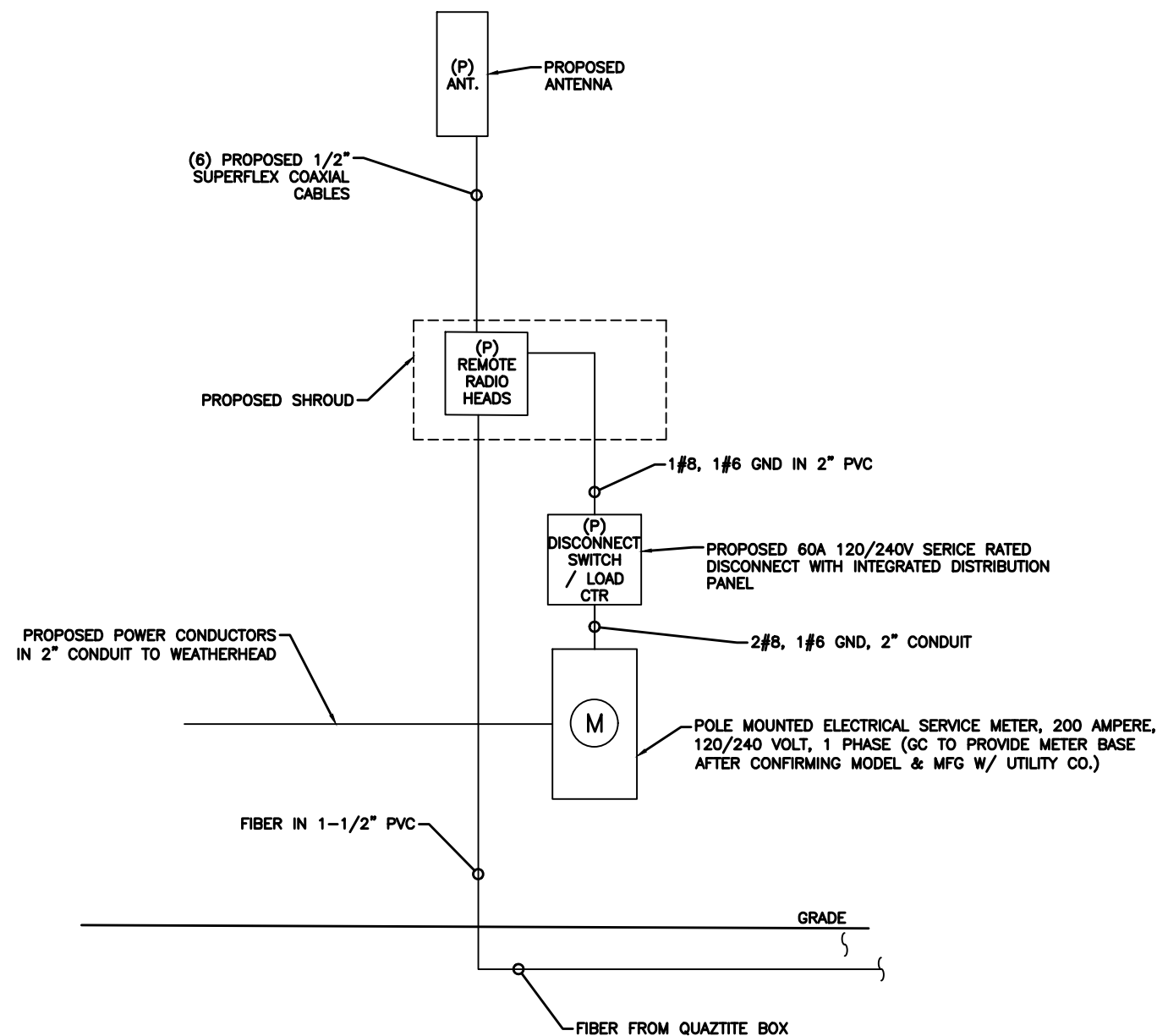
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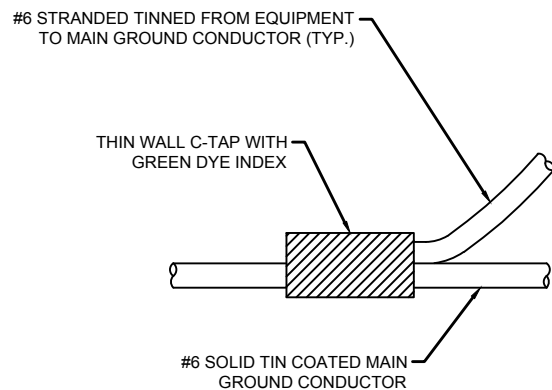
NODE NAME:
CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

SHEET TITLE
RISER DIAGRAM

SHEET NUMBER
C-8



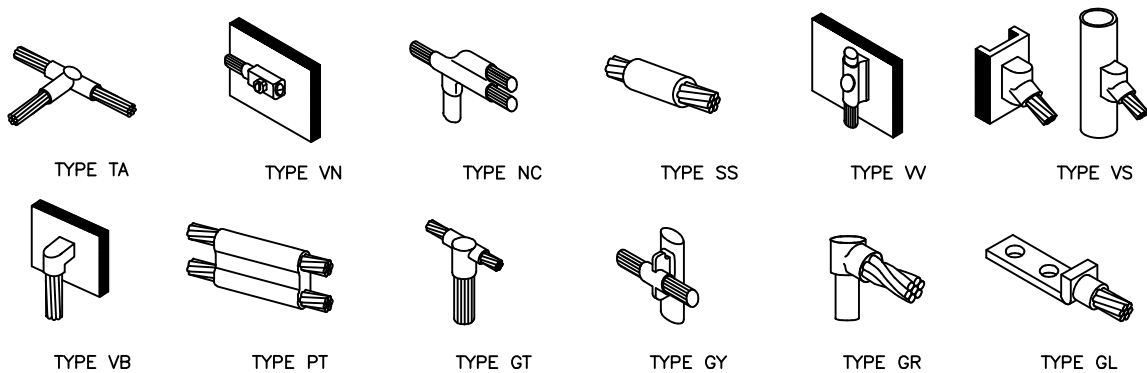
NOTE:
CONTRACTOR TO SURROUND COMPLETED
CONNECTION WITH HEAT-SHRINK TUBING TO
ENSURE WEATHER PROOF CONNECTION.



1

C-TAP DETAIL

SCALE: NOT TO SCALE



NOTE:

ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE
EXAMPLES. CONSULT WITH PROJECT MANAGER FOR
SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.

2

WELD CONNECTION DETAILS

SCALE: NOT TO SCALE

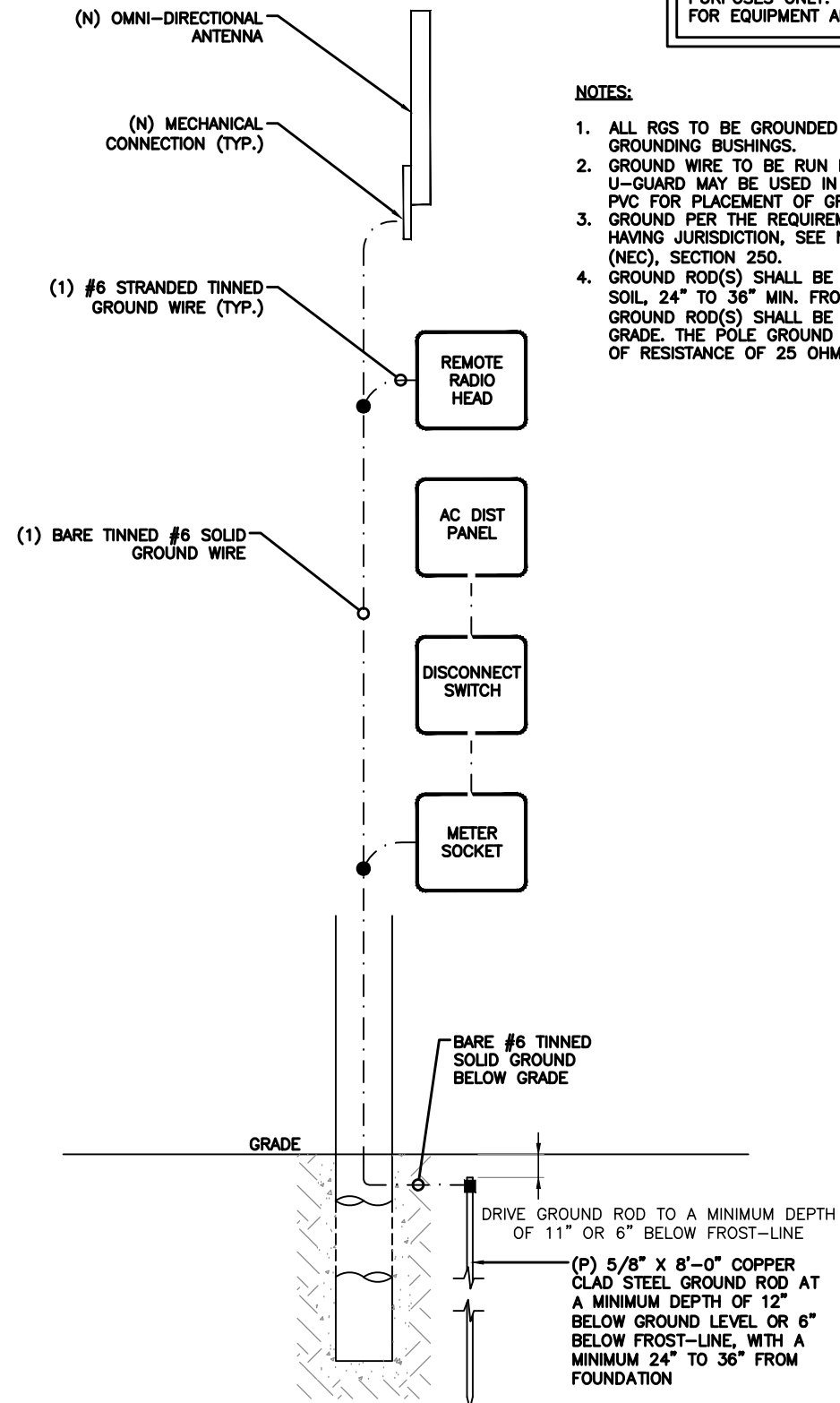
LEGEND

- CADWELD CONNECTION
- MECHANICAL CONNECTION
- COMPRESSION CONNECTION

NOTE:
GROUNDING RISER FOR DIAGRAMMATIC
PURPOSES ONLY. SEE ELEVATION DRAWING
FOR EQUIPMENT AND ANTENNA LOCATIONS.

NOTES:

1. ALL RGS TO BE GROUNDED AT BOTH ENDS USING
GROUNDING BUSHINGS.
2. GROUND WIRE TO BE RUN IN 1/2" SCHEDULE 40 PVC.
U-GUARD MAY BE USED IN PLACE OF SCHEDULE 40
PVC FOR PLACEMENT OF GROUND WIRE.
3. GROUND PER THE REQUIREMENTS OF THE AUTHORITY
HAVING JURISDICTION, SEE NATIONAL ELECTRIC CODE
(NEC), SECTION 250.
4. GROUND ROD(S) SHALL BE INSTALLED IN UNDISTURBED
SOIL, 24" TO 36" MIN. FROM THE POLE. TOP OF
GROUND ROD(S) SHALL BE 12" MIN. BELOW FINISH
GRADE. THE POLE GROUND SHALL HAVE A MAXIMUM
OF RESISTANCE OF 25 OHMS.



3

GROUND RISER DIAGRAM

SCALE: NOT TO SCALE



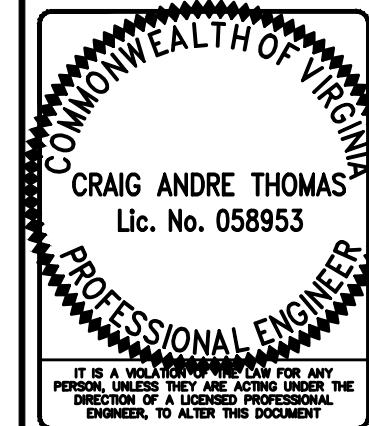
7150 STANDARD DRIVE
HANOVER, MD 21078



Jacobs Engineering Group, Inc.
7150 STANDARD DRIVE, SUITE B
HANOVER, MD 21078

PROJECT NO:	EP4TURWL
DRAWN BY:	A. ARINGO
CHECKED BY:	D. CORNING

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CRAN_RWSH_NORVA_033
211 BUCHANAN ST.
ALEXANDRIA, VA 22314
WOOD UTILITY POLE

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-1

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING CODE, THE LATEST ADOPTED EDITION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL CONSTRUCT SITE IN ACCORDANCE WITH THESE DRAWINGS AND LATEST JACOBS CONSTRUCTION STANDARDS. THE SPECIFICATION IS THE RULING DOCUMENT AND ANY DISCREPANCIES BETWEEN THE SPECIFICATION AND THE CONSTRUCTION DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER OR JACOBS CM PRIOR TO THE COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL 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 ARCHITECT/ENGINEER OR JACOBS CM PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OF FIELD CONDITIONS.
4. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. CONTRACTOR IS REQUIRED TO FURNISH AND INSTALL ANY/ALL ITEMS FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM SUBJECT ONLY TO OWNER-SUPPLIED ITEMS. CONTRACTOR SHALL PROVIDE ANY/ALL REQUIREMENTS FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
5. 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 AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS. OWNER PROVIDED AND CONTRACTOR INSTALLED MATERIALS WILL INCLUDE THE FOLLOWING, UNLESS NOTED OTHERWISE:
- A) TRANSMITTER
B) UHF ANTENNA AND MOUNTING BRACKETS, GPS ANTENNAS AND KU ANTENNAS
C) UHF COAX AND HANGERS
D) INTEGRATED LOAD CENTER
6. 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 REPORTING ANY DISCREPANCIES TO THE ATTENTION OF THE JACOBS CM, IN WRITING, PRIOR TO THE COMMENCEMENT OF WORK.
7. DETAILS PROVIDED ARE FOR THE PURPOSE OF SHOWING DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR SITE CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
8. CONTRACTOR SHALL PAY FOR APPLICABLE PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR IS TO OBTAIN PERMITS AND APPROVED SUBMITTALS PRIOR TO ORDERING MATERIALS AND THE COMMENCEMENT OF WORK.
9. THE TERM "PROVIDE" USED IN CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, INDICATES THAT THE CONTRACTOR SHALL FURNISH AND INSTALL.
10. 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.
11. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING ACCEPTED INDUSTRY-STANDARD SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
12. 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.
13. CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE JACOBS CM AND SCHEDULE THEIR ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS.
14. 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.
15. CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
16. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING ETC. AND IMMEDIATE REPAIR, TO NEW CONDITION, ANY DAMAGE THAT OCCURS DURING CONSTRUCTION AT THE SOLE COST OF THE CONTRACTOR.

17. IN DRILLING HOLES, OR CORING, INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS ETC. MUST BE CLEARLY UNDERSTOOD THAT REINFORCING STEEL SHALL NOT BE DRILLED INTO, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES (UNLESS NOTED OTHERWISE). LOCATIONS OF REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE LOCATED BY THE CONTRACTOR USING APPROPRIATE METHODS AND EQUIPMENT PRIOR TO ANY DRILLING OR CORING OPERATIONS IN EXITING CONCRETE.
18. CONTRACTOR SHALL REPAIR, TO NEW CONDITION, ALL EXISTING WALL SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND IN WITH ADJACENT SURFACES.
19. CONTRACTOR SHALL SEAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES OR MATERIALS WITH U.L. LISTED AND FIRE CODE APPROVED MATERIALS AND SYSTEMS THAT MEET OR EXCEED THE RATING OF THE ASSEMBLY IN WHICH THE NEW PENETRATION IS PLACED.
20. CONTRACTOR SHALL KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, 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.
21. MINIMUM BEND RADIUS OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS.
22. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION SHALL BE IN CONFORMANCE WITH JURISDICTIONAL OR STATE AND LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL AND COORDINATED WITH LOCAL REGULATORY AUTHORITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ANY EROSION CONTROL MEASURES, RECORD-KEEPING, MONITORING, AND REPORTING TO THE OWNER AND REGULATORY AUTHORITIES.
23. ALL CONSTRUCTION WORK IS TO ADHERE TO APPLICANT'S INTEGRATED CONSTRUCTION STANDARDS UNLESS STATE OR LOCAL CODE IS MORE STRINGENT.
24. THE INTENT OF THE PLANS AND SPECIFICATIONS IS TO PERFORM THE CONSTRUCTION IN ACCORDANCE PER STATE BUILDING STANDARDS CODE AND STATE CODE OF REGULATIONS, SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE APPROVED PLANS AND SPECIFICATIONS WHEREIN THE FINISHED WORK WILL NOT COMPLY PER STATE CODE OF REGULATIONS, A SCOPE OF WORK DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE JURISDICTION BEFORE PROCEEDING WITH THE WORK. A CHANGE ORDER FOR THAT SCOPE SHALL BE SUBMITTED TO THE JACOBS CM PRIOR TO PROCEEDING WITH THE WORK.
25. ADEQUATE AND REQUIRED LIABILITY INSURANCE SHALL BE PROVIDED BY THE CONTRACTOR FOR PROTECTION AGAINST PUBLIC LOSS AND ANY/ALL PROPERTY DAMAGE FOR THE DURATION OF WORK.
26. CONTRACTOR SHALL GUARANTEE ANY/ALL MATERIALS AND WORK FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE. ANY CORRECTIVE WORK SHALL BE COMPLETED AT THE SOLE COST OF THE CONTRACTOR.

ELECTRICAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ANY/ALL ELECTRICAL WORK INDICATED. ANY/ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH DRAWINGS AND ANY/ALL APPLICABLE SPECIFICATIONS. IF ANY PROBLEMS ARE ENCOUNTERED BY COMPLYING WITH THESE REQUIREMENTS, CONTRACTOR SHALL NOTIFY JACOBS CM AS SOON AS POSSIBLE, AFTER THE DISCOVERY OF THE PROBLEMS, AND SHALL NOT PROCEED WITH THAT PORTION OF WORK, UNTIL THE JACOBS CM HAS DIRECTED THE CORRECTIVE ACTIONS TO BE TAKEN.
2. ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE THEMSELVES WITH ANY/ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATION INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. ALL EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, ETC. THAT ARE PART OF THE FINAL SYSTEM, SHALL BE VERIFIED BY THE CONTRACTOR, PRIOR TO THE SUBMITTING OF THEIR BID. FAILURE TO COMPLY WITH THIS PARAGRAPH WILL IN NO WAY RELIEVE CONTRACTOR OF PERFORMING ALL WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM.

3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC, ALL CODES AND ORDINANCES OF THE LOCAL JURISDICTION, AND POWER AND TELEPHONE COMPANIES HAVING JURISDICTION AND SHALL INCLUDE BUT ARE NOT LIMITED TO:
- A) UL – UNDERWRITERS LABORATORIES
B) NEC – NATIONAL ELECTRICAL CODE
C) NEMA – NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
D) OSHA – OCCUPATIONAL SAFETY AND HEALTH ACT
E) SBC – STANDARD BUILDING CODE
F) NFPA – NATIONAL FIRE PROTECTION AGENCY
G) ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE
H) IEEE – INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
I) ASTM – AMERICAN SOCIETY FOR TESTING MATERIALS
4. REFER TO SITE PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, AND CONFIRM WITH JACOBS CM ANY SIZES AND LOCATIONS WHEN NEEDED.
5. EXISTING SERVICES: CONTRACTOR SHALL NOT INTERRUPT EXISTING SERVICES WITHOUT WRITTEN PERMISSION OF THE OWNER.
6. CONTRACTOR SHALL CONFIRM WITH LOCAL UTILITY COMPANY ANY/ALL REQUIREMENTS SUCH AS THE : LUG SIZE RESTRICTIONS, CONDUIT ENTRY, SIZE OF TRANSFORMERS, SCHEDULED DOWNTIME FOR THE OWNERS' CONFIRMATION, ETC... ANY/ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE JACOBS CM, PRIOR TO BEGINNING ANY WORK.
7. MINIMUM WIRE SIZE SHALL BE #12 AWG, NOT INCLUDING CONTROL WIRING, UNLESS NOTED OTHERWISE. ALL CONDUCTORS SHALL BE COPPER WITH THWN INSULATION, UNLESS OTHERWISE NOTED.
8. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET/DAMP LOCATIONS AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
9. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF THE CONSTRUCTION. CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
10. ELECTRICAL SYSTEM SHALL BE AS COMPLETELY AND EFFECTIVELY GROUNDED, AS REQUIRED BY SPECIFICATIONS, SET FORTH BY APPLICANT.
11. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS, WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY FUNCTIONAL AND SHALL BE APPROVED BY THE JACOBS CM AND LOCAL JURISDICTION. ANY DEFICIENCIES SHALL BE CORRECTED BY AN ELECTRICAL CONTRACTOR AT THE SOLE COST OF THE CONTRACTOR.
12. ALL WORK SHALL BE COORDINATED WITH OWNER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
13. THE CORRECTION OF ANY DEFECTS SHALL BE COMPLETED BY THE CONTRACTOR WITHOUT ANY ADDITIONAL CHARGE AND SHALL INCLUDE THE REPLACEMENT OR THE REPAIR OF ANY OTHER PHASE OF THE INSTALLATION, WHICH MAY HAVE BEEN DAMAGED THEREIN.
14. CONTRACTOR SHALL PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES AND DEVICES FOR ALL OUTLETS AS INDICATED.
15. DITCHING AND BACK FILL: CONTRACTOR SHALL PROVIDE FOR ALL UNDERGROUND INSTALLED CONDUIT AND/OR CABLES INCLUDING EXCAVATION AND BACKFILLING AND COMPACTION. REFER TO NOTES AND REQUIREMENTS "EXCAVATION, AND BACKFILLING".
16. MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SHALL APPEAR ON THE LIST OF U.L. APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NEC, NEMA AND IECE.
17. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR MANUFACTURER'S CATALOG INFORMATION OF ANY/ALL EQUIPMENT AND ALL OTHER ELECTRICAL ITEMS FOR APPROVAL BY THE JACOBS CM PRIOR TO INSTALLATION.
18. ANY CUTTING OR PATCHING DEEMED NECESSARY FOR ELECTRICAL WORK IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY AND SHALL BE INCLUDED IN THE COST FOR WORK AND PERFORMED TO THE SATISFACTION OF THE JACOBS CM UPON FINAL ACCEPTANCE.
19. THE ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS WITH ONLY TYPEWRITTEN DIRECTORIES. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
20. DISCONNECT SWITCHES SHALL BE UL-RATED, H.P. RATED HEAVY-DUTY, QUICK-MAKE AND QUICK-BREAK ENCLOSURES, AS REQUIRED BY EXPOSURE TYPE.
21. ALL CONNECTIONS SHALL BE MADE WITH A PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND KNOWN AS "NO-OXIDE A" BY DEARBORNE CHEMICAL COMPANY. COAT ALL WIRE SURFACES BEFORE CONNECTING. EXPOSED COPPER SURFACES, INCLUDING GROUND BARS, SHALL BE TREATED – NO SUBSTITUTIONS.



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DRAWN BY:	A. ARINGO
CHECKED BY:	D. CORNING

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WOOD UTILITY POLE

SHEET TITLE
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GN-1

ELECTRICAL NOTES CONT'D:

22. RACEWAYS: CONDUIT SHALL BE SCHEDULE 80 PVC MEETING OR EXCEEDING NEMA TC2 - 1990. CONTRACTOR SHALL PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS - 200 LBS TEST POLYETHYLENE CORD. ALL CONDUIT BENDS SHALL BE A MINIMUM OF 2 FT. RADIUS. RGS CONDUITS WHEN SPECIFIED, SHALL MEET UL-6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADED RIDGED CONDUIT. COAT ALL THREADS WITH "BRITE ZINC" OR "COLD GALV."
23. SUPPORT OF ALL ELECTRICAL WORK SHALL BE AS REQUIRED BY NEC.
24. CONDUCTORS: CONTRACTOR SHALL USE 98% CONDUCTIVITY COPPER WITH TYPE THWN INSULATION, UNLESS OTHERWISE NOTED, 600 VOLT, COLOR CODED. USE SOLID CONDUCTORS FOR WIRE UP TO AND INCLUDING NO. 8 AWG. USE STRANDED CONDUCTORS FOR WIRE ABOVE NO. 8 AWG.
25. CONNECTORS FOR POWER CONDUCTORS: CONTRACTOR SHALL USE PRESSURE TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER. USE SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER.
26. SERVICE: AS SPECIFIED ON THE DRAWINGS, OWNER OR OWNER'S AGENT WILL APPLY FOR POWER. ALL PROVISIONS FOR TEMPORARY POWER WILL BE OBTAINED BY THE CONTRACTOR.
27. TELEPHONE OR FIBER SERVICE: CONTRACTOR SHALL PROVIDE EMPTY CONDUITS WITH PULL STRINGS AS INDICATED ON DRAWINGS.
28. ELECTRICAL AND TELCO/FIBER RACEWAYS TO BE BURIED A MINIMUM DEPTH OF 30", UNLESS OTHERWISE NOTED.
29. CONTRACTOR SHALL PLACE 6" WIDE DETECTABLE WARNING TAPE AT A DEPTH OF 6" BELOW GROUND AND DIRECTLY ABOVE ELECTRICAL AND TELCO SERVICE CONDUITS. CAUTIONS TAPE TO READ "CAUTION BURIED ELECTRIC" OR BURIED TELECOMM".
30. ALL BOLTS SHALL BE 3-16 STAINLESS STEEL.

GROUNDING NOTES:

1. ALL HARDWARE SHALL BE 3-16 STAINLESS STEEL, INCLUDING LOCK WASHERS. COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND, AS SPECIFIED, BEFORE MATING. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. ALL STEEL CONDUIT SHALL BE BONDED AT BOTH ENDS WITH GROUNDING BUSHING.
4. ALL ELECTRICAL AND GROUNDING AT THE POLE SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER.
5. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
6. GROUND ALL ANTENNA BASES, FRAMES, CABLE RUNS, AND OTHER METALLIC COMPONENTS USING #6 GROUND WIRES. FOLLOW ANTENNA AND BTS MANUFACTURER'S PRACTICES FOR GROUNDING REQUIREMENTS.
7. ALL GROUND CONNECTIONS SHALL BE #6 AWG, UNLESS OTHERWISE NOTED. ALL WIRES SHALL BE COPPER WITH THHN, UNLESS OTHERWISE NOTED. ALL GROUND WIRE SHALL BE SOLID TIM COATED OR STRANDED GREEN INSULATED WIRE.
8. CONTRACTOR TO VERIFY AND TEST GROUND TO SOURCE, 10 OHMS MAXIMUM. PROVIDE SUPPLEMENT GROUNDING RODS AS REQUIRED TO ACHIEVE SPECIFIED OHMS READING. GROUNDING AND OTHER OPTIONAL TESTING WILL BE WITNESSED BY THE JACOBS CM.
9. NOTIFY ARCHITECT/ENGINEER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.
10. ALL HORIZONTALLY RUN GROUNDING CONDUCTORS SHALL BE INSTALLED A MINIMUM OF 30" BELOW GRADE/ 6" BELOW FROST-LINE IN TRENCH, UNLESS OTHERWISE NOTED. BACK FILL SHALL BE COMPACTED AS REQUIRED BY ARCHITECT/ENGINEER.
11. ALL GROUND CONDUCTORS SHALL BE RUN AS STRAIGHT AND SHORT AS POSSIBLE, WITH A MINIMUM OF 12" BENDING RADIUS NOT LESS THAN 90 DEGREES.
12. ACCEPTABLE CONNECTIONS FOR GROUNDING SYSTEM SHALL BE:
- A) BURNDY, HY-GRADE U.L. LISTED CONNECTORS FOR OUTDOOR USE OR AS APPROVED BY APPLICANT PROJECT MANAGER.
- B) CADWELD, EXOTHERMIC WELDS (WELDED CONNECTIONS).
- C) ONE (1) HOLE TINNED COPPER COMPRESSION (LONG BARREL) FITTINGS.
13. ALL CRIMPED CONNECTIONS SHALL HAVE EMBOSSED MANUFACTURER'S DIEMARK VISIBLE AT THE CRIMP (RESULTING FROM USE OF PROPER CRIMPING DEVICES) AND WEATHER-PROOFED WITH HEAT SHRINK.

14. ALL CONNECTION HARDWARE SHALL BE TYPE 3-16 STAINLESS STEEL (NOT ATTRACTED TO MAGNETS).
15. 15. ELECTRICAL SERVICE EQUIPMENT GROUNDING SHALL COMPLY WITH NEC, ARTICLE 250-82 AND SHALL BOND ALL EXISTING AND NEW GROUNDING ELECTRODES. NEW GROUNDING ELECTRODE SHALL INCLUDE BUT NOT LIMITED TO GROUND RODS.

TESTING AND EQUIPMENT TURN UP REQUIREMENTS:

1. RF CABLE, DATA CABLE, RADIO EQUIPMENT AND BACK HAUL EQUIPMENT TESTING WILL COMPLY WITH CURRENT INDUSTRY STANDARDS AND/OR THOSE STANDARDS OF THE EQUIPMENT MANUFACTURER OR PROVIDED TO THE CONTRACTOR PRIOR TO TESTING.
2. CONTRACTOR WILL USE THE APPROPRIATE CALIBRATED TESTING EQUIPMENT IN THE TESTING OF RF CABLE, DATA CABLE, RADIO EQUIPMENT AND BACK HAUL EQUIPMENT THAT MEET INDUSTRY STANDARDS OF THE MANUFACTURER OR THOSE STANDARDS PROVIDED TO THE CONTRACTOR PRIOR TO TESTING.
3. CONTRACTOR TO VERIFY AND RECORD ALL TEST RESULTS AND PROVIDE THESE RESULTS WITHIN THE FINAL CLOSE OUT PACKAGE.
4. ALL PERSONNEL INVOLVED IN THE TESTING OF RF CABLE, DATA CABLE, RADIO EQUIPMENT AND BACK HAUL EQUIPMENT WILL BE REQUIRED TO HAVE BEEN TRAINED AND/OR CERTIFIED IN THE PROPER TESTING OF RF CABLE, DATA CABLE, RADIO EQUIPMENT AND BACK HAUL EQUIPMENT.
5. ALL TEST RESULTS SHALL BE TIME STAMPED, RECORDED AND PRESENTED PRIOR TO ENERGIZING AND TURN UP OF ANY EQUIPMENT.
6. GPS EQUIPMENT IS NOT TO BE TESTED OR ATTACHED TO ANY CABLING DURING TESTING, DOING SO WILL DAMAGE THE GPS UNIT.
7. PRIOR TO TESTING IF THE CONTRACTOR HAS ANY QUESTIONS ABOUT THE TESTING PROCEDURES THEY ARE TO CALL AND OBTAIN ASSISTANCE FROM A QUALIFIED DESIGNATED TESTING REPRESENTATIVE.
8. EQUIPMENT IS NOT TO BE ENERGIZED UNTIL ALL TESTING HAS BEEN COMPLETED, APPROVED AND THE APPROPRIATE AUTHORITY HAS BEEN NOTIFIED AND GIVES APPROVAL TO ENERGIZE THE EQUIPMENT.

SITE WORK NOTES:

1. DO NOT EXCAVATE OR DISTURB BEYOND THE PROPERTY LINES OR LEASE LINES, UNLESS OTHERWISE NOTED.
2. SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-BUILD DRAWINGS BY GENERAL CONTRACTOR AND ISSUED TO ARCHITECT/ENGINEER AT COMPLETION OF PROJECT.
3. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING UTILITIES.
4. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER OR JACOBS CM FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT THEIR OWN RISK AND EXPENSE. CONTRACTOR SHALL CALL LOCAL UTILITY LOCATE HOT LINE, SUCH AS 811, FOR UTILITY LOCATIONS A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.
5. ALL NEW AND EXISTING STRUCTURES ON SITE AND IN AREAS TO BE DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISH ELEVATIONS PRIOR TO FINAL INSPECTION OF WORK. ANY COST RELATED TO ADJUSTING EXISTING STRUCTURES SHALL BE BORNE SOLELY BY THE CONTRACTOR.
6. GRADING OF THE SITE WORK AREA IS TO BE SMOOTH AND CONTINUOUS IN SLOPE AND IS TO FEATHER INTO EXISTING GRADES AT THE GRADING LIMITS.
7. ALL TEMPORARY EXCAVATIONS FOR THE INSTALLATION OF FOUNDATIONS, UTILITIES, ETC., SHALL BE PROPERLY LAID BACK OR BRACED IN ACCORDANCE WITH CORRECT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.
8. STRUCTURAL FILLS SUPPORTING PAVEMENTS SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY, UNLESS OTHERWISE NOTED.
9. NEW GRADES NOT IN BUILDING AND DRIVEWAY IMPROVEMENT AREA TO BE ACHIEVED BY FILLING WITH APPROVED CLEAN FILL AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.

10. ALL FILL SHALL BE PLACED IN UNIFORM LIFTS. THE LIFTS THICKNESS SHOULD NOT EXCEED THAT WHICH CAN BE PROPERLY COMPACTED THROUGHOUT ITS ENTIRE DEPTH WITH THE EQUIPMENT AVAILABLE.
11. ANY FILLS PLACED ON EXISTING SLOPES THAT ARE STEEPER THAN 10 HORIZONTAL TO 1 VERTICAL SHALL BE PROPERLY BENCHED INTO THE EXISTING SLOPE AS DIRECTED BY GEOTECHNICAL ENGINEER.
12. CONTRACTOR SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SUCH THAT NO DEBRIS, PAPER, TRASH, WEEDS, BRUSH, EXCESS FILL, OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE GENERAL CONTRACTOR.
13. ALL TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH THE IMPROVEMENTS SHALL BE PROTECTED BY THE GENERAL CONTRACTOR.
14. ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY GENERAL CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.

ENVIRONMENTAL NOTES:

1. ALL WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH ISSUED PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF FINES AND PROPER CLEAN UP FOR AREAS IN VIOLATION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS AND WATERWAYS. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MAINTAINED IN PLACE THROUGH FINAL JURISDICTIONAL INSPECTION AND RELEASE OF SITE.
3. CONTRACTOR SHALL INSTALL/CONSTRUCT ALL NECESSARY SEDIMENT/SILT CONTROL FENCING AND PROTECTIVE MEASURES AS REQUIRED BY THE LOCAL JURISDICTION WITHIN THE LIMITS OF SITE DISTURBANCE PRIOR TO CONSTRUCTION.
4. NO SEDIMENT SHALL BE ALLOWED TO EXIT THE PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ADEQUATE MEASURES FOR CONTROLLING EROSION. ADDITIONAL SEDIMENT CONTROL FENCING MAY BE REQUIRED IN ANY AREAS SUBJECT TO EROSION.
5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE ON THE SITE AT ALL TIMES WITH SILT AND EROSION CONTROL MEASURES MAINTAINED ON THE DOWNSTREAM SIDE OF SITE DRAINAGE. ANY DAMAGE TO ADJACENT PROPERTY AS A RESULT OF EROSION WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTIONS AND ANY REPAIRS OF ALL SEDIMENT CONTROL MEASURES INCLUDING SEDIMENT REMOVAL AS NECESSARY.
7. CLEARING OF VEGETATION AND TREE REMOVAL SHALL BE ONLY AS PERMITTED AND BE HELD TO A MINIMUM. ONLY TREES NECESSARY FOR CONSTRUCTION OF THE FACILITIES SHALL BE REMOVED.
8. SEEDING AND MULCHING AND/OR SODDING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE PROJECT FACILITIES AFFECTING LAND DISTURBANCE.
9. CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENTS FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE, BUT IS NOT LIMITED TO SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS, AND CHECK DAMS.
10. RIP RAP OF SIZES INDICATED SHALL CONSIST OF CLEAN, HARD, SOUND, DURABLE, UNIFORM IN QUALITY STONE FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI, OR OTHER DELETERIOUS SUBSTANCES.
11. GENERAL CONTRACTOR TO PLACE MATERIAL AT ALL CATCH BASINS ADJACENT TO CONSTRUCTION SITE TO PREVENT SOLID WASTE CONTAMINATION FROM ENTERING SEWER SYSTEM.



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FOUNDATION, EXCAVATION AND BACKFILL NOTES:

1. ALL FINAL GRADED SLOPES SHALL BE A MAXIMUM OF 3 HORIZONTAL TO 1 VERTICAL, UNLESS OTHERWISE NOTED.
2. BACKFILL OF POLE SHALL BE PERFORMED IN ONE (1) OF THREE (3) OPTIONS:

A) PREFERRED: RAINBOW INDUSTRIES POLE SETTING FOAM SHALL BE INSTALLED PER MANUFACTURER SPECS. FOAM SHALL ALWAYS BE USED FRO POOR SOILS.

B) SECONDARY: CONCRETE (REQUIRES JACOBS CM WRITTEN APPROVAL) ALLOWABLE SOIL PRESSURE = 2000 PSF (ASSUMED). NON-NATIVE SOILS SHALL BE REMOVED FROM BORE AREA AND SHALL NOT BE REUSED FOR BACKFILL.
3. ALL EXCAVATIONS PREPARED FOR PLACEMENT OF CONCRETE SHALL BE OF UNDISTURBED SOILS, SUBSTANTIALLY HORIZONTAL AND FREE FROM ANY LOOSE, UNSUITABLE MATERIAL OR FROZEN SOILS, AND WITHOUT THE PRESENCE OF POUNDING WATER. DEWATERING FOR EXCESS GROUND WATER SHALL BE PROVIDED WHEN REQUIRED. COMPACTION OF SOILS UNDER CONCRETE PAD FOUNDATIONS SHALL NOT BE LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR THE SOIL IN ACCORDANCE WITH ASTM D1557.
4. CONCRETE FOUNDATIONS SHALL NOT BE PLACED ON ORGANIC OR UNSUITABLE MATERIAL. IF ADEQUATE BEARING CAPACITY IS NOT ACHIEVED AT THE DESIGNED EXCAVATION DEPTH, THE UNSATISFACTORY SOIL SHALL BE EXCAVATED TO ITS FULL DEPTH AND EITHER BE REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL OR THE EXCAVATION SHALL BE FILLED WITH CONCRETE OF THE SAME TYPE SPECIFIED FOR THE FOUNDATION. CRUSHED STONE MAY BE USED TO STABILIZE THE BOTTOM OF THE EXCAVATION. ANY STONE SUB BASE MATERIAL, IF USED, SHALL NOT SUBSTITUTE FOR REQUIRED THICKNESS OF CONCRETE.
5. ALL EXCAVATIONS SHALL BE CLEAN OF UNSUITABLE MATERIAL SUCH AS VEGETATION, TRASH, DEBRIS, AND SO FORTH PRIOR TO BACK FILLING. BACK FILL SHALL CONSIST OF APPROVED MATERIALS SUCH AS EARTH, LOAM, SANDY CLAY, SAND AND GRAVEL, OR SOFT SHALE, FREE FROM CLODS OR LARGE STONES OVER 2 1/2" MAX DIMENSIONS. ALL BACK FILL SHALL BE PLACED IN COMPACTED LAYERS.
6. ALL FILL MATERIALS AND FOUNDATION BACK FILL SHALL BE PLACED IN MAXIMUM 6" THICK LIFTS BEFORE COMPACTION. EACH LIFT SHALL BE WETTED IF REQUIRED AND COMPACTED TO NOT LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR SOIL IN ACCORDANCE WITH ASTM D1557.
7. NEWLY PLACED CONCRETE FOUNDATIONS SHALL CURE A MINIMUM OF 72 HOURS PRIOR TO BACK FILLING.
8. FINISHED GRADING SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE AND PREVENT STANDING WATER. THE FINAL (FINISH) ELEVATION OF SLAB FOUNDATIONS SHALL SLOPE AWAY IN ALL DIRECTIONS FROM THE CENTER. FINISH GRADE OF CONCRETE PADS SHALL BE A MAXIMUM OF 4 INCHES ABOVE FINAL FINISH GRADE ELEVATIONS WHERE REQUIRED.
9. NEWLY GRADED GRAVEL SURFACE AREAS TO RECEIVE GRAVEL SHALL BE COVERED WITH GEOTEXTILE FABRIC TYPE: TYPAR-3401 AS MANUFACTURED BY TYPAR GEOSYNTHETICS OR AN APPROVED EQUIVALENT, SHOWN ON PLANS. THE GEOTEXTILE FABRIC SHALL BE BLACK IN COLOR TO CONTROL THE RECURRENCE OF VEGETATIVE GROWTH AND EXTEND TO WITHIN 1 FOOT OUTSIDE THE SITE FENCING OR ELECTRICAL GROUNDING SYSTEM PERIMETER WHICH EVER IS GREATER. ALL FABRIC SHALL BE COVERED WITH A MINIMUM OF 4" DEEP COMPACTED STONE OR GRAVEL AS SPECIFIED. I.E. DOT TYPE NO. 57 FOR FENCED COMPOUND: DOT TYPE NO. 67 FOR ACCESS DRIVE AREA, UNLESS OTHERWISE NOTED.
10. IN ALL AREAS TO RECEIVE FILL: REMOVE ALL VEGETATION, TOPSOIL, DEBRIS, WET AND UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS, AND DELETERIOUS MATERIALS FROM GROUND SURFACE. PLOW STRIP OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SUCH THAT FILL MATERIAL WILL BIND WITH EXISTING/PREPARED SOIL SURFACE.
11. WHEN SUB GRADE OR PREPARED GROUND SURFACE HAS A DENSITY LESS THAN THAT REQUIRED FOR THE FILL MATERIAL, SCARIFY THE GROUND SURFACE TO DEPTH REQUIRED. PULVERIZE, MOISTURE-CONDITION AND/OR AERATE THE SOILS AND RECOMPACT TO THE REQUIRED DENSITY PRIOR TO PLACEMENT OF FILLS.
12. IN AREAS WHICH EXISTING GRAVEL SURFACING IS REMOVED OR DISTURBED DURING CONSTRUCTION OPERATIONS, REPLACE GRAVEL SURFACING TO MATCH ADJACENT GRAVEL SURFACING AND RESTORED TO THE SAME THICKNESS AND COMPACTION AS SPECIFIED. ALL RESTORED GRAVEL SURFACING SHALL BE FREE FROM CORRUGATIONS AND WAVES.

13. EXISTING GRAVEL SURFACING MAY NOT BE REUSED.
14. GRAVEL SUB SURFACE SHALL BE PREPARED TO REQUIRED COMPACTION AND SUB GRADE ELEVATIONS BEFORE GRAVEL SURFACING IS PLACED AND/OR RESTORED. ANY LOOSE OR DISTURBED MATERIALS SHALL BE THOROUGHLY COMPACTED AND ANY DEPRESSIONS IN THE SUB GRADE SHALL BE FILLED AND COMPACTED WITH APPROVED SELECTED MATERIAL. GRAVEL SURFACING MATERIAL SHALL NOT BE USED FOR FILLING DEPRESSIONS IN THE SUB GRADE.
15. PROTECT EXISTING GRAVEL SURFACING AND SUB GRADE IN AREAS WHERE EQUIPMENT LOADS WILL OPERATE. USE PLANKING "MATTS" OR OTHER SUITABLE PROTECTION DESIGNED TO SPREAD EQUIPMENT LOADS AS MAY BE NECESSARY. REPAIR ANY DAMAGE TO EXISTING GRAVEL SURFACING OR SUB GRADE WHERE SUCH DAMAGE IS DUE TO THE CONTRACTORS OPERATIONS.
16. DAMAGE TO EXISTING STRUCTURES AND/OR UTILITIES RESULTING FROM CONTRACTORS NEGLIGENCE SHALL BE REPAIRED AND/OR REPLACED TO THE OWNERS SATISFACTION AT NO ADDITIONAL COST TO THE CONTRACT.
17. ALL SUITABLE BURROW MATERIAL FOR BACK FILL OF THE SITE SHALL BE INCLUDED IN THE BID. EXCESS TOPSOIL AND UNSUITABLE MATERIAL SHALL BE DISPOSED OF OFF-SITE AT LOCATIONS APPROVED BY GOVERNING AGENCIES AT NO ADDITIONAL COST TO THE CONTRACT.

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COMMONWEALTH OF VIRGINIA

CRAIG ANDRE THOMAS

Lic. No. 058953

PROFESSIONAL ENGINEER

IT IS A VIOLATION OF VIRG LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT

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