

**EXPEDITED**  
**MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION**  
**STAFF REPORT**

<b>Address:</b>	23630 Woodfield Road, Gaithersburg	<b>Meeting Date:</b>	6/22/2022
<b>Resource:</b>	Outstanding/First Period (1880-1910) Resource <b>Woodfield Historic District</b>	<b>Report Date:</b>	6/15/2022
<b>Applicant:</b>	Smartlink, LLC (Bijan Olexo, Agent)	<b>Public Notice:</b>	6/8/2022
<b>Review:</b>	HAWP	<b>Tax Credit:</b>	No
<b>Permit Number:</b>	993932	<b>Staff:</b>	Michael Kyne
<b>PROPOSAL:</b> Telecommunications equipment alteration			

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**STAFF RECOMMENDATION:**

- ☒ Approve  
☐ Approve with conditions

**ARCHITECTURAL DESCRIPTION:**

**SIGNIFICANCE:** Outstanding/First Period (1880-1910) Resource within the Woodfield Historic District  
**STYLE:** Colonial Revival  
**DATE:** 1908



**Fig. 1: Subject property, south side of Woodfield Road.**

**PROPOSAL:**

There is an existing 80' high mono-pine (a monopole telecommunications tower disguised as a tree) within a fenced compound at the southeast side of the subject property, approximately 300' from Woodfield Road. There is existing associated ground equipment within the fenced compound.

The applicant proposes to modify the existing mono-pine, extending its height by 10' (going from 80' high to 90' high). The proposal also includes the installation of associated equipment (i.e., antennas, a generator, and a 12' x 16' concrete pad) on the mono-pine and/or within the fenced compound area:



*Fig. 2: Subject property house, circled in yellow, and telecommunications location, circled in red.*



*Fig. 3: Current view of the monopine (circled in red), as viewed from the public right-of-way of Kimblehunt Drive to the southeast of the subject property.*

**APPLICABLE GUIDELINES:**

IV. The Expedited Staff Report format may be used on the following type of cases:

2. Modifications to a property, which do not significantly alter its visual character.

**Montgomery County Code; Chapter 24A-8**

- (b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to ensure conformity with the purposes and requirements of this chapter, if it finds that:
  - (1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or
  - (2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter; or
  - (3) The proposal would enhance or aid in the protection, preservation and public or private utilization of the historic site or historic resource located within an historic district in a manner compatible with the historical, archeological, architectural or cultural value of the historic site or historic district in which an historic resource is located; or
  - (4) The proposal is necessary in order that unsafe conditions or health hazards be remedied; or
  - (5) The proposal is necessary in order that the owner of the subject property not be deprived of reasonable use of the property or suffer undue hardship; or
  - (6) In balancing the interests of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public welfare is better served by granting the permit.
- (c) It is not the intent of this chapter to limit new construction, alteration or repairs to any 1 period or architectural style.
- (d) In the case of an application for work on an historic resource located within an historic district, the commission shall be lenient in its judgment of plans for structures of little historical or design significance or for plans involving new construction, unless such plans would seriously impair the historic or architectural value of surrounding historic resources or would impair the character of the historic district. (Ord. No. 9-4, § 1; Ord. No. 11-59.)

***Secretary of Interior's Standards for Rehabilitation***

The Secretary of the Interior defines rehabilitation as “the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values.” The *Standards* are as follows:

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

**STAFF RECOMMENDATION:**

Staff recommends that the Commission **approve** the HAWP application under the Criteria for Issuance in Chapter 24A-8(b), (1), (2) & (d), having found that the proposal is consistent with the *Damascus-Goshen Amendment to the Master Plan for Historic Preservation In Montgomery County*, and therefore will not substantially alter the exterior features of the historic resource and is compatible in character with the district and the purposes of Chapter 24A;

and with the *Secretary of the Interior's Standards for Rehabilitation* #2 and #9;

and with the general condition that the applicant shall present an electronic set of drawings, if applicable, to Historic Preservation Commission (HPC) staff for review and stamping prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits;

and with the general condition that final project design details, not specifically delineated by the Commission, shall be approved by HPC staff or brought back to the Commission as a revised HAWP application at staff's discretion;

and with the general condition that the applicant shall notify the Historic Preservation Staff if they propose to make any alterations to the approved plans. Once the work is completed the applicant will contact the staff person assigned to this application at 301-563-3400 or [michael.kyne@montgomeryplanning.org](mailto:michael.kyne@montgomeryplanning.org) to schedule a follow-up site visit.





FOR STAFF ONLY:  
HAWP# 993932  
DATE ASSIGNED \_\_\_\_\_

**APPLICATION FOR  
HISTORIC AREA WORK PERMIT**  
HISTORIC PRESERVATION COMMISSION  
301.563.3400

**APPLICANT:**

Name: Smartlink, LLC  
Address: 1362 Mellon Road, Suite 140  
Daytime Phone: 301-655-6411

E-mail: bijan.olexo@smartlinkgroup.com  
City: Hanover, MD Zip: 21076  
Tax Account No.: \_\_\_\_\_

**AGENT/CONTACT (if applicable):**

Name: Bijan Olexo  
Address: 1362 Mellon Road, Suite 140  
Daytime Phone: 301-655-6411

E-mail: bijan.olexo@smartlinkgroup.com  
City: Hanover, MD Zip: 21076  
Contractor Registration No.: \_\_\_\_\_

**LOCATION OF BUILDING/PREMISE:** MIHP # of Historic Property 14/016-000A

Is the Property Located within an Historic District? Yes/District Name Woodfield Historic District  
No/Individual Site Name \_\_\_\_\_

Is there an Historic Preservation/Land Trust/Environmental Easement on the Property? If YES, include a map of the easement, and documentation from the Easement Holder supporting this application.

Are other Planning and/or Hearing Examiner Approvals /Reviews Required as part of this Application? (Conditional Use, Variance, Record Plat, etc.?) If YES, include information on these reviews as supplemental information.

Building Number: 23630 Street: Woodfield Road  
Town/City: Gaithersburg Nearest Cross Street: White Peach Court  
Lot: \_\_\_\_\_ Block: \_\_\_\_\_ Subdivision: \_\_\_\_\_ Parcel: \_\_\_\_\_

**TYPE OF WORK PROPOSED: See the checklist on Page 4 to verify that all supporting items for proposed work are submitted with this application. Incomplete Applications will not be accepted for review. Check all that apply:**

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> New Construction | <input type="checkbox"/> Deck/Porch          | <input type="checkbox"/> Shed/Garage/Accessory Structure |
| <input type="checkbox"/> Addition                    | <input type="checkbox"/> Fence               | <input type="checkbox"/> Solar                           |
| <input type="checkbox"/> Demolition                  | <input type="checkbox"/> Hardscape/Landscape | <input type="checkbox"/> Tree removal/planting           |
| <input type="checkbox"/> Grading/Excavation          | <input type="checkbox"/> Roof                | <input type="checkbox"/> Window/Door                     |
|  |  | <input type="checkbox"/> Other: _____                    |

I hereby certify that I have the authority to make the foregoing application, that the application is correct and accurate and that the construction will comply with plans reviewed and approved by all necessary agencies and hereby acknowledge and accept this to be a condition for the issuance of this permit.

Bijan Olexo

5/19/2022

Signature of owner or authorized agent

Date

5

**HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFYING**  
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

<b>Owner's mailing address</b> 10 Presidential Way, Woburn, MA 01801	<b>Owner's Agent's mailing address</b> 1362 Mellon Road, Suite 140, Hanover, MD 21076
<b>Adjacent and confronting Property Owners mailing addresses</b>	
23614 Woodfield Road, Gaithersburg, MD 20882	23640 Woodfield Road, Gaithersburg, MD 20882
9003 Magruder Knolls Court, Gaithersburg, MD 20882  9015 Magruder Knolls Court Gaithersburg, MD 20882	9007 Kimblehunt Drive, Gaithersburg, MD 20882
9006 Kimblehunt Drive, Gaithersburg, MD 20882	23612 Woodfield Road, Gaithersburg, MD 20882

**Description of Property:** Please describe the building and surrounding environment. Include information on significant structures, landscape features, or other significant features of the property:

There is currently a monopine (monopole telecome tower disguised as a tree) on the property to the east of the baseball field. There is an existing fenced in compound surrounding the tower for current and future ground equipment. There is a Church north of the tower/compound closest to Woodfield Road, while the tower itself is about 100 yards back from the main road disguised as a tree. The tower is owned by American Tower Corporation.

**Description of Work Proposed:** Please give an overview of the work to be undertaken:

AT&T is proposing a 10ft extension of the 80' monopine to make the overall height 90'. AT&T is proposing to install 12 antennas, 12 RRH's and 3 DC9's onto the existing tower, along with a WIC (Walk-In-Cabinet) and a 30kw Diesel Generator that will sit on a 12' x 16' concrete pad on the ground all within the existing compound and within our lease area.

Work Item 1: Antenna Colocation

Description of Current Condition:

There is an 80' monopine tower with Verizon antennas on the tower and ground equipment within the compound.

Proposed Work:

AT&T is proposing to extend the tower 10' and install their antennas on the tower, and related ground equipment in the compound.

Work Item 2: \_\_\_\_\_

Description of Current Condition:

Proposed Work:

Work Item 3: \_\_\_\_\_

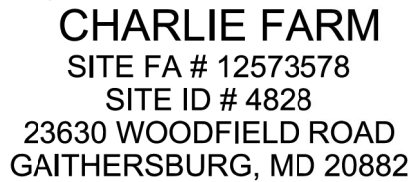
Description of Current Condition:

Proposed Work:



# HISTORIC AREA WORK PERMIT CHECKLIST OF APPLICATION REQUIREMENTS

	Required Attachments						
Proposed Work	I. Written Description	2. Site Plan	3. Plans/ Elevations	4. Material Specifications	5. Photographs	6. Tree Survey	7. Property Owner Addresses
New Construction	*	*	*	*	*	*	*
Additions/ Alterations	*	*	*	*	*	*	*
Demolition	*	*	*		*		*
Deck/Porch	*	*	*	*	*	*	*
Fence/Wall	*	*	*	*	*	*	*
Driveway/ Parking Area	*	*		*	*	*	*
Grading/Excavation/ Landscaping	*	*		*	*	*	*
Tree Removal	*	*		*	*	*	*
Siding/ Roof Changes	*	*	*	*	*		*
Window/ Door Changes	*	*	*	*	*		*
Masonry Repair/ Repoint	*	*	*	*	*		*
Signs	*	*	*	*	*		*



SCOPE OF WORK:

1. INSTALL STEEL WIC
2. INSTALL 30KW DIESEL GENERATOR
3. INSTALL ANTENNA PLATFORM
4. INSTALL 12'x16' CONCRETE PAD
5. INSTALL 10' TOWER EXTENSION
6. INSTALL 12 ANTENNAS
7. INSTALL 12 RRH's
8. INSTALL COMPONENTS SUPPORTING ANTENNAS' OPERATION AS DESCRIBED PER DRAWINGS

SITE NAME:	CHARLIE FARM
SITE FA #:	12573578
SITE ID #:	4828
SITE ADDRESS:	23630 WOODFIELD ROAD GAITHERSBURG, MD 20882
JURISDICTION:	MONTGOMERY COUNTY
ZONING:	RE-2 (RESIDUE/DISTRICT)
TOWER OWNER:	AMERICAN TOWER CORPORATION
PROPERTY OWNER:	WESLEY GROVE UNITED METHODIST CHURCH 23640 WOODFIELD ROAD GAITHERSBURG, MD 20882
LATITUDE:	(39.243506) N 39° 14' 36.62" (NAVD--88)
LONGITUDE:	(-77.187456) W 77° 11' 14.84" (NAVD--88)
ELEVATION:	595.0' (NAVD 88) ±AMSL
USE GROUP:	U
CONST. TYPE:	IIB

THE CONTRACTOR MUST VERIFY ALL FIELD MEASUREMENTS AND CONDITIONS PRIOR TO BID AND TO COMMENCEMENT OF CONSTRUCTION.

[illegible]

APPLICANT: AT&T MOBILITY  
7150 STANDARD DR.  
HANOVER, MD 21076

ARCHITECT/ENGINEER: KCI TECHNOLOGIES INC.  
11830 WEST MARKET PLACE, SUITE F  
FULTON, MD 20759  
NICHOLAS BARRICK (410) 792-8086

PROJECT MANAGEMENT: SMARTLINK LLC  
1362 MELLON ROAD, SUITE 140  
HANOVER, MD 21076  
PHONE: (410) 582-8043

\* ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

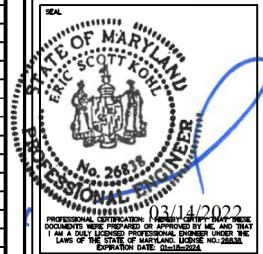
- 2018 INTERNATIONAL BUILDING CODE ER 31-19
- CHAPTER 8 COUNTY BUILDING CODE
- 2018 INTERNATIONAL BUILDING CODE
- 2015 NFPA FIRE CODE
- 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
- MONTGOMERY COUNTY CODE CHAPTER 17 (ELECTRICAL)
- NFPA 70 (NATIONAL ELECTRIC CODE)

		APPROVED	APPROVED AS NOTED	REVISIONS
OWNER REPRESENTATIVE	DATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SITE ACQUISITION	DATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONSTRUCTION MANAGER	DATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ZONING	DATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF ENGINEER	DATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DRAWN BY:		JW
CHECKED BY:		JM
APPROVED BY:		GT

NO.	DATE	DESCRIPTION
A	12/17/21	PRELIMINARY DRAWINGS
B	1/7/22	REVISED ADDRESS
C	2/14/22	REVISED PER COMMENTS
D	3/1/22	REVISED PER COMMENTS
O	3/9/22	ISSUED FOR PERMITTING



ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26838



**1362 MELLON RD. SUITE 140  
HANOVER, MD 21076**

**CHARLIE FARM**

**FA#: 12573578**  
**SITE ID#: 4828**  
**23630 WOODFIELD ROAD**  
**GAITHERSBURG, MD 20882**

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KCI JOB NUMBER:	011802184.ATT31
SHEET TITLE	

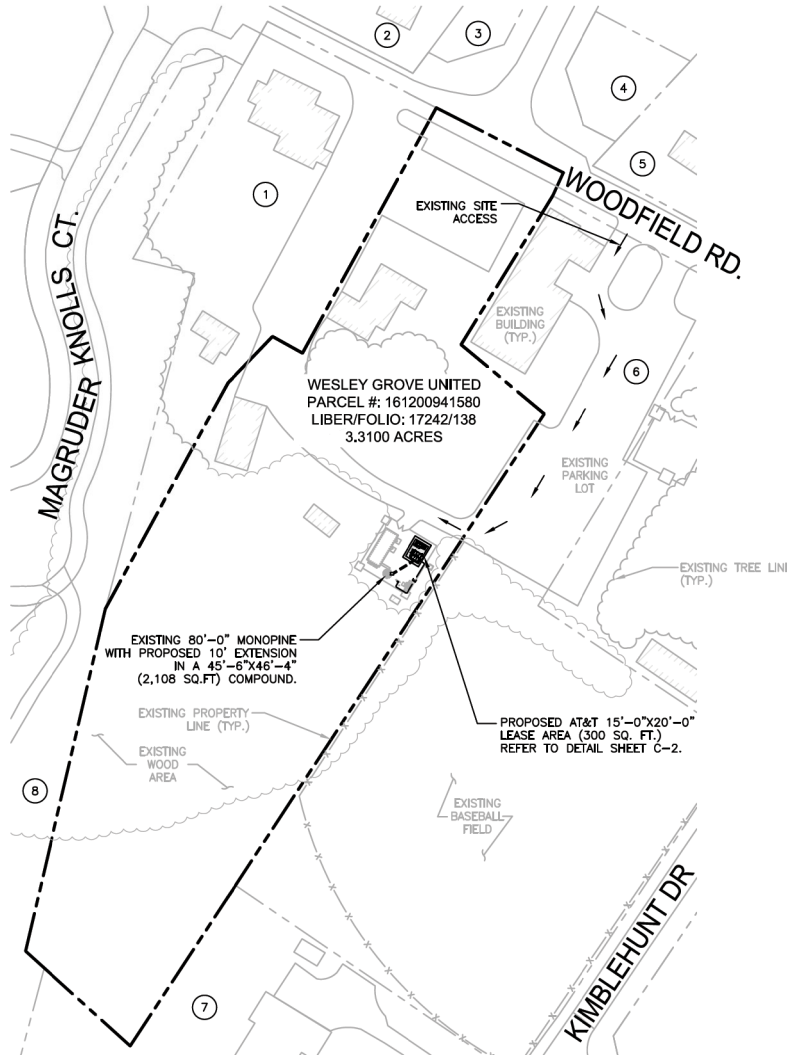
# TITLE SHEET

**SHEET**

T-1



- 1 WESLEY GROVE UNITED  
METHODIST CHURCH  
23640 WOODFIELD ROAD  
GAITHERSBURG, MD 20882  
PARCEL ACCOUNT #: 161200943794  
1.18 AC
- 2 DEWEESE SHENAE DIANE  
23633 WOODFIELD ROAD  
GAITHERSBURG, MD 20882  
PARCEL ACCOUNT #: 161200928708  
1.04 AC
- 3 BIRKSHIRE HOMEOWNERS ASSN INC.  
3407 OLANDWOOD COURT STE. 101  
OLNEY, MD 20832  
PARCEL ACCOUNT #: 161203307455  
0.13 AC
- 4 BIRKSHIRE HOMEOWNERS ASSN INC.  
3407 OLANDWOOD COURT STE. 101  
OLNEY, MD 20832  
PARCEL ACCOUNT #: 161203307444  
0.13 AC
- 5 SOLIS STEPHEN &  
JEANNE FORDHAM  
23623 WOODFIELD ROAD  
GAITHERSBURG, MD 20882  
PARCEL ACCOUNT #: 161200935987  
0.40 AC
- 6 WESLEY GROVE UNITED  
METHODIST CHURCH  
23640 WOODFIELD ROAD  
GAITHERSBURG, MD 20882  
PARCEL ACCOUNT #: 161203059080  
2.81 AC
- 7 SHIFLETT C CURTIS & KELLY  
9007 KIMBLEHUNT DRIVE  
GAITHERSBURG, MD 20882  
PARCEL ACCOUNT #: 161203028897  
2.0 AC
- 8 GRIMES RICHARD  
DAWSON HELEN  
9015 MAGRUDER KNOLLS COURT  
GAITHERSBURG, MD 20882  
PARCEL ACCOUNT #: 161203412528  
4.36 AC



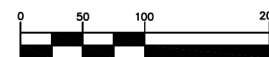
### SITE NOTES

1. APPLICANT/OWNER: AT&T MOBILITY  
CONTACT: JESSE BIRD  
7150 STANDARD DRIVE  
HANOVER, MD 21076
2. SITE DATA:  
PARCEL #: 161200941580  
WATER DESIGNATION: N/A  
SEWER DESIGNATION: N/A  
ELECTION DISTRICT: 08  
SITE AREA: 3.31 AC.  
SITE ADDRESS: 23630 WOODFIELD ROAD  
GAITHERSBURG, MD 20882
3. EXISTING USE: CHURCH/TELECOMMUNICATION FACILITY  
PROPOSED USE: CHURCH/TELECOMMUNICATION FACILITY
4. ZONING OF SITE IS RE-2 (RESIDENTIAL DISTRICT)
5. LIMIT OF DISTURBANCE = 200 sq.ft.
6. EXISTING IMPERVIOUS AREA = 19,017 sq.ft
7. PROPOSED IMPERVIOUS AREA = 0 sq.ft
8. NO COMMERCIAL SIGNAGE IS PROPOSED.
9. NOTIFY "MISS UTILITY" AT 1-800-257-7777 48 HOURS PRIOR TO DOING ANY EXCAVATION IN THIS AREA. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATED AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

### LEGEND

---	PROPERTY LINE
- - -	EX. EDGE OF ROAD
	EX. BUILDING
~~~~~	EX. FEATURES
~~~~~	EX. TREE LINE
---	PROP. EQUIPMENT
---	PROP. ELECTRIC LINE
---	LIMIT OF DISTURBANCE

GRAPHIC SCALE



( IN FEET )

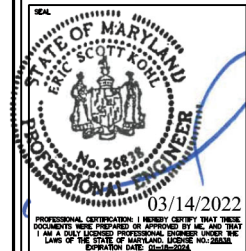
### PROPERTY PLAN

SCALE: 1"=100' (1"=50') ON 22"x34" SHEET

DRAWN BY:		JW
CHECKED BY:		JM
APPROVED BY:		GT
NO.	DATE	DESCRIPTION
A	12/17/21	PRELIMINARY DRAWINGS
B	1/7/22	REVISED ADDRESS
C	2/14/22	REVISED PER COMMENTS
D	3/1/22	REVISED PER COMMENTS
O	3/9/22	ISSUED FOR PERMITTING



KCI TECHNOLOGIES, INC.  
11830 West Market Place, Suite F  
Fulton, MD 20759  
Phone: 410.792.8086



ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26887



1362 MELLON RD, SUITE 140  
HANOVER, MD 21076

### CHARLIE FARM

FAR: 12573578  
SITE ID#: 4628  
23630 WOODFIELD ROAD  
GAITHERSBURG, MD 20882

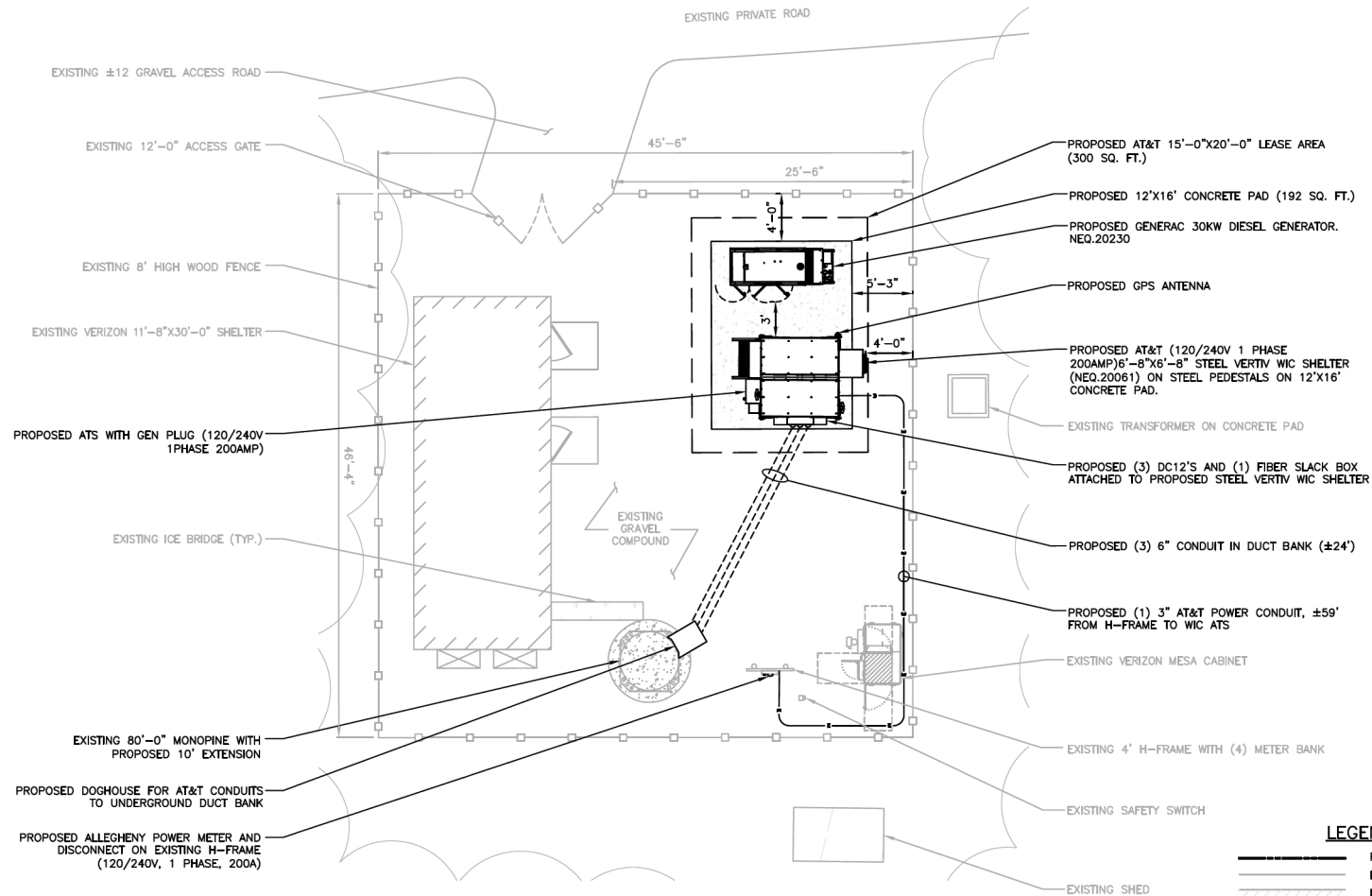
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KCI JOB NUMBER: 011802184.ATTS1  
SHEET TITLE:

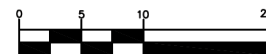
### PROPERTY PLAN

SHEET

C-1



GRAPHIC SCALE



( IN FEET )

#### LEGEND

-----	PROPERTY LINE
-----	EX. EDGE OF ROAD
-----	EX. BUILDING
-----	EX. FEATURES
-----	EX. TREE LINE
-----	PROP. EQUIPMENT
-----	PROP. ELECTRIC LINE
-----	LIMIT OF DISTURBANCE

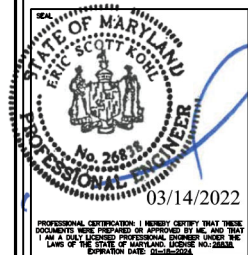
#### COMPOUND PLAN

SCALE: 1"=10' (1"=5') ON 22"x34" SHEET

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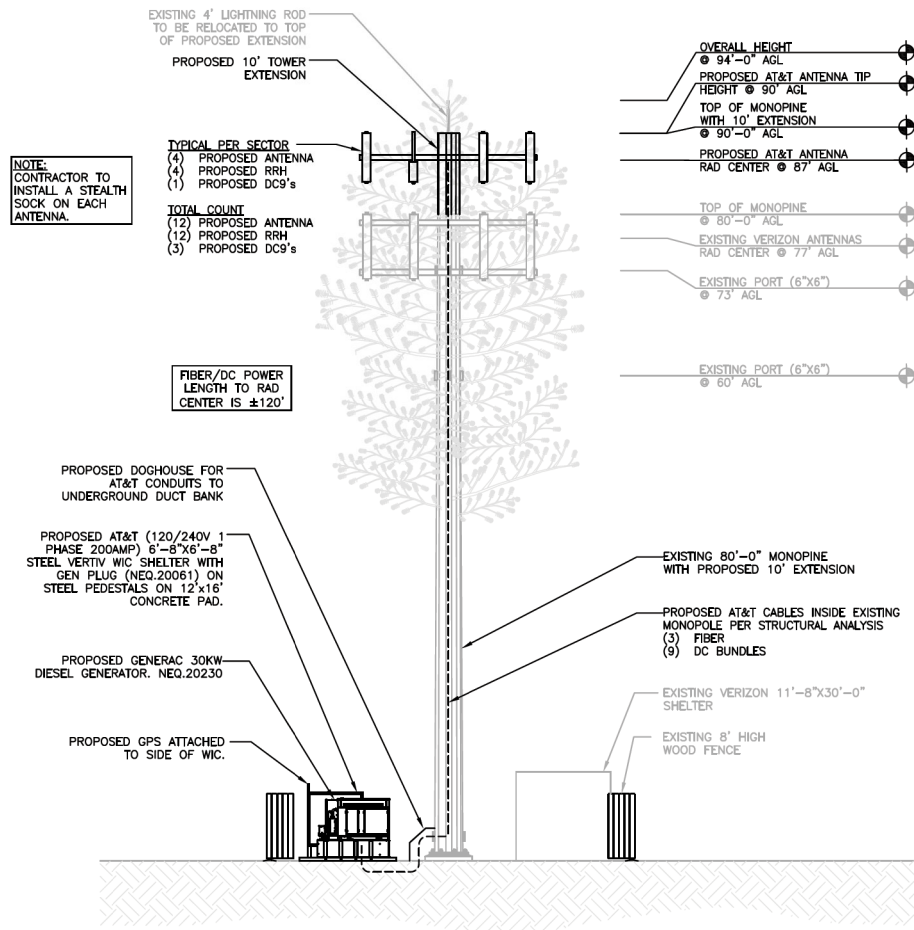
SCALE:	AS NOTED
DATE:	3/9/22
KCI JOB NUMBER:	011802184.ATTS1
SHEET TITLE:	

#### COMPOUND PLAN

SHEET

C-2





# TOWER ELEVATION

SCALE: N.T.S

1

DRAWN BY:		JW
CHECKED BY:		JM
APPROVED BY:		GT
NO.	DATE	DESCRIPTION
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KCI TECHNOLOGIES, INC.  
11830 West Market Place, Suite F  
Fulton, MD 20759  
Phone: 410.792.8086



PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A QUALIFIED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 26838 EXPIRATION DATE: 03/14/2024

ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26838



7150 STANDARD DRIVE  
HANOVER, MD 21076



1362 MELLON RD. SUITE 140  
HANOVER, MD 21076

## CHARLIE FARM

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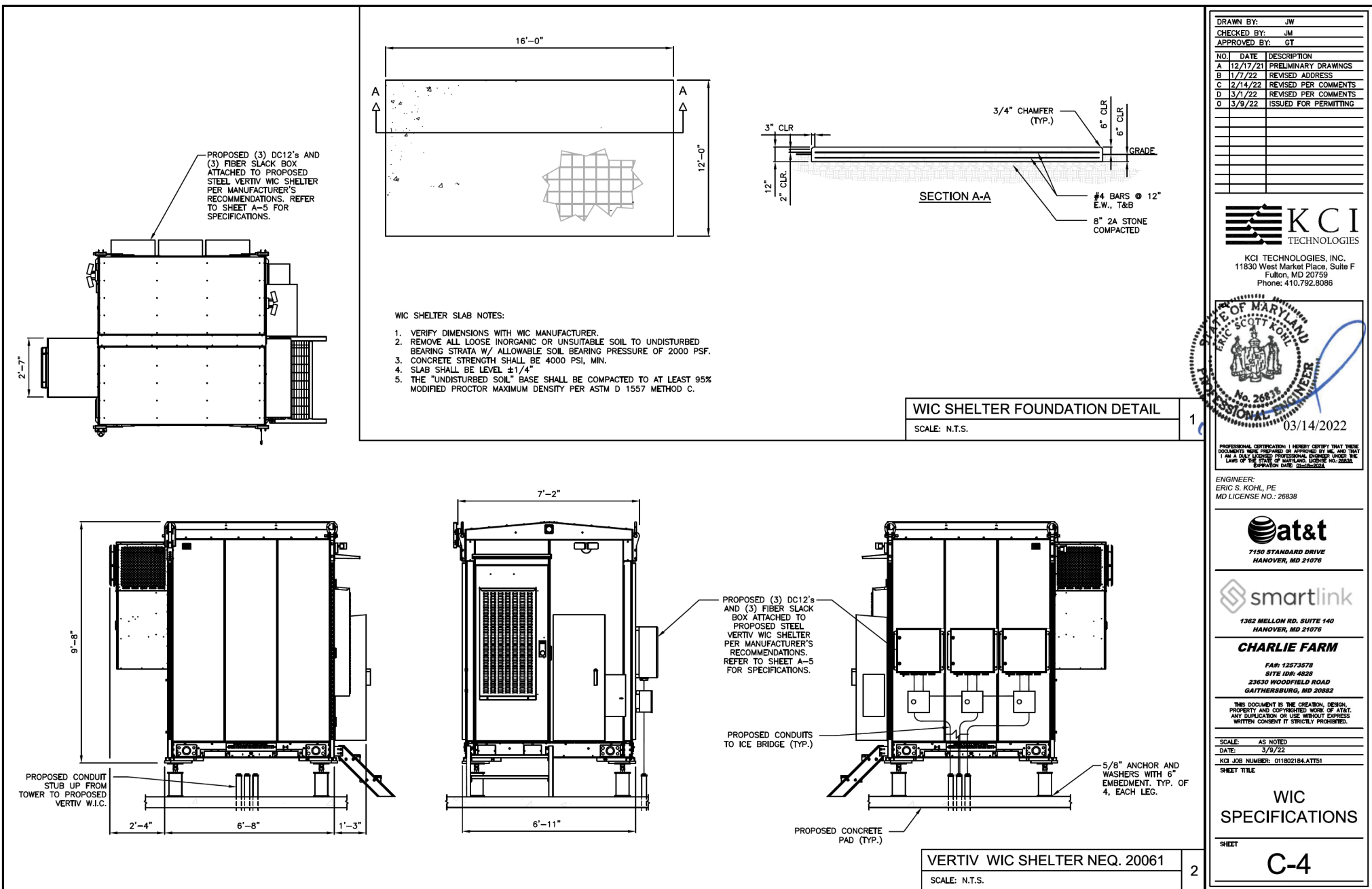
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SHEET TITLE:

## TOWER ELEVATION

SHEET

C-3



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 CHECKED BY: JM  
 APPROVED BY: GT

NO.	DATE	DESCRIPTION
A	12/17/21	PRELIMINARY DRAWINGS
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ENGINEER:  
 ERIC S. KOHL, PE  
 MD LICENSE NO.: 26838



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**CHARLIE FARM**

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 23630 WOODFIELD ROAD  
 GAITHERSBURG, MD 20882

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 DATE: 3/9/22  
 KCI JOB NUMBER: 011802184.ATTS1  
 SHEET TITLE:

**WIC SPECIFICATIONS**

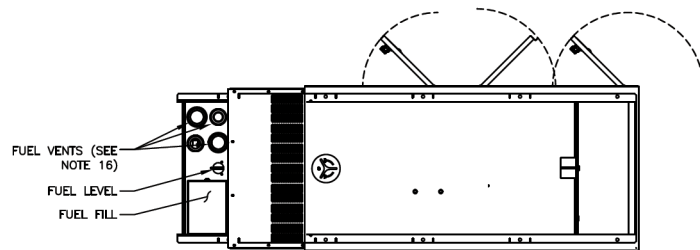
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**C-4**

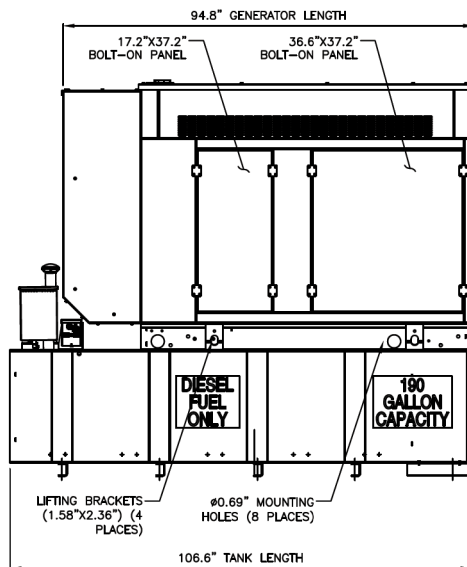
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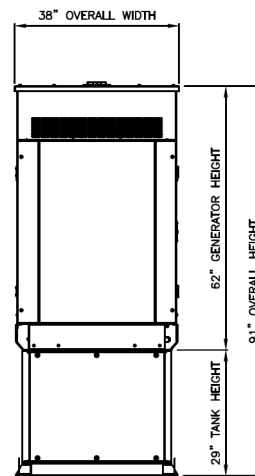
2



TOP VIEW



LEFT SIDE VIEW



REAR VIEW

NOTES:

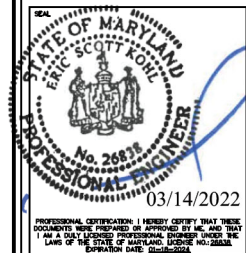
- CONTROL PANEL INCLUDES BATTERY CHARGER WITH THREE PRONG CORD.
- 1500W 120VAC ENGINE BLOCK HEATER WITH THREE PRONG CORD.
- 12 VOLT NEGATIVE GROUND SYSTEM.
- GENERATOR MUST BE GROUNDED.
- CENTER OF GRAVITY & WEIGHT MAY SHIFT SLIGHTLY DUE TO UNIT OPTIONS.
- STUB-UPS: BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB-UP AREA.
- HIGH VOLTAGE STUB-UP AREA INCLUDES THE AC LOAD LEAD CONNECTION TO THE MAIN LINE CIRCUIT BREAKER, THE NEUTRAL CONNECTION, AND AUXILIARY 120/240V CONNECTION.
- CONNECTION POINTS FOR CONTROL WIRES. BOTTOM OF LOW VOLTAGE CUSTOMER CONNECTION BOX HAS KNOCKOUTS FOR 1/2" AND 3/4" CONDUIT FITTINGS.
- MUST ALLOW FREE FLOW OF DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
- MUST ALLOW FREE FLOW OF INTAKE AIR. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
- GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM THE RADIATOR IS NOT RECIRCULATED.
- IT IS THE RESPONSIBILITY OF THE INSTALLATION TECHNICIAN TO ENSURE THAT THE GENERATOR INSTALLATION COMPLIES WITH ALL APPLICABLE CODES, STANDARDS, AND REGULATIONS.
- 190 GALLON USEABLE CAPACITY BASETANK IS INCLUDED WITH GENERATOR.
- UNIT IS SHIPPED WITH FUEL SUPPLY AND RETURN LINES DISCONNECTED AND PLUGGED BETWEEN ENGINE AND FUEL TANK. THIS HAS BEEN DONE TO FACILITATE PRESSURE TESTING OF THE TANK IN THE FIELD. FOR INFORMATION REGARDING CONNECTING THE FUEL SUPPLY AND RETURN LINES PRIOR TO START UP, SEE THE TANK LOOSE FIELD TESTING PROCEDURE (0E5082) SUPPLIED IN THE TANK LOOSE VENTS KIT, WHICH IS SHIPPED WITH THIS GENERATOR.
- SEE DRAWING 003850 FOR DISCHARGE DUCT REMOVAL. REMOVAL OF DUCT WILL PROVIDE ACCESS TO MUFFLER FOR SERVICING.
- ADDITIONAL 2" FEMALE NPT PORTS - PLUGGED OR EQUIPPED WITH TOP-MOUNT SWITCHES DEPENDING ON UNIT OPTIONS.

WEIGHT DATA: (INCLUDES EMPTY FUEL TANK)  
 GENERATOR: 1358 KG (2995 LBS)  
 GENERATOR WITH WOODEN SHIPPING SKID: 1424 KG (3139 LBS)

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 11830 West Market Place, Suite F  
 Fulton, MD 20759  
 Phone: 410.792.8086



ENGINEER:  
 ERIC S. KOHL, PE  
 MD LICENSE NO.: 26838



7150 STANDARD DRIVE  
 HANOVER, MD 21076



1382 MELLON RD, SUITE 140  
 HANOVER, MD 21076

CHARLIE FARM

FAR: 12573578  
 SITE ID#: 4828  
 23630 WOODFIELD ROAD  
 GAITHERSBURG, MD 20882

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 SHEET TITLE:

GENERATOR  
 DETAIL

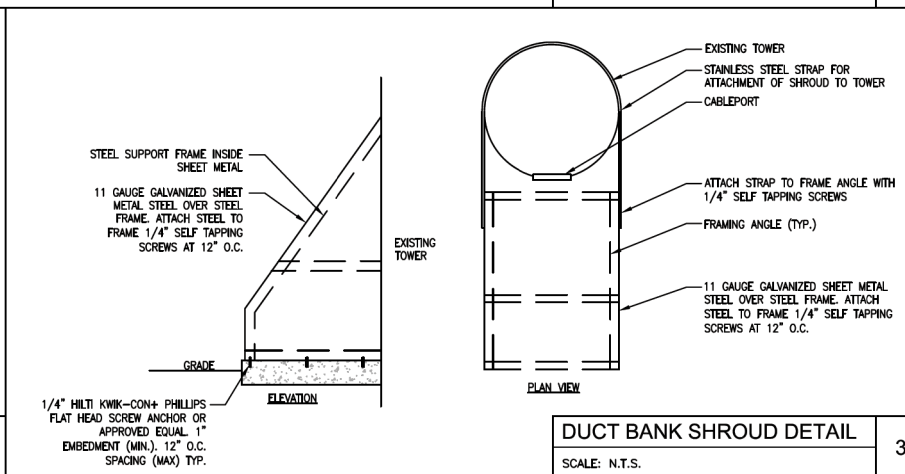
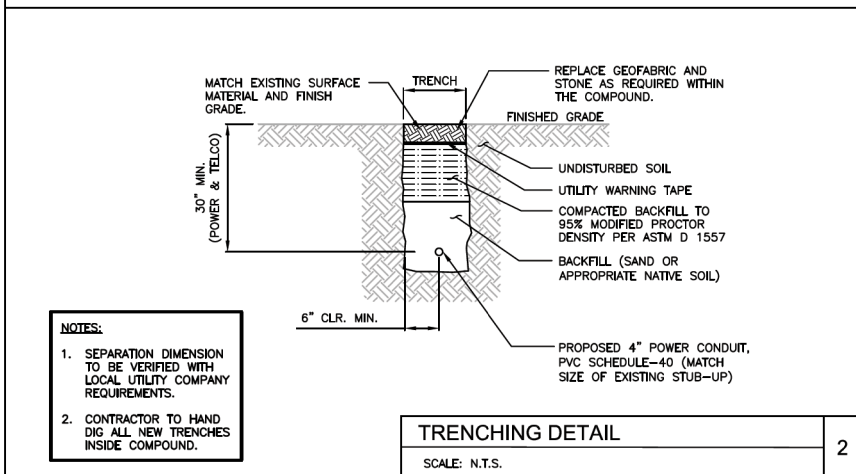
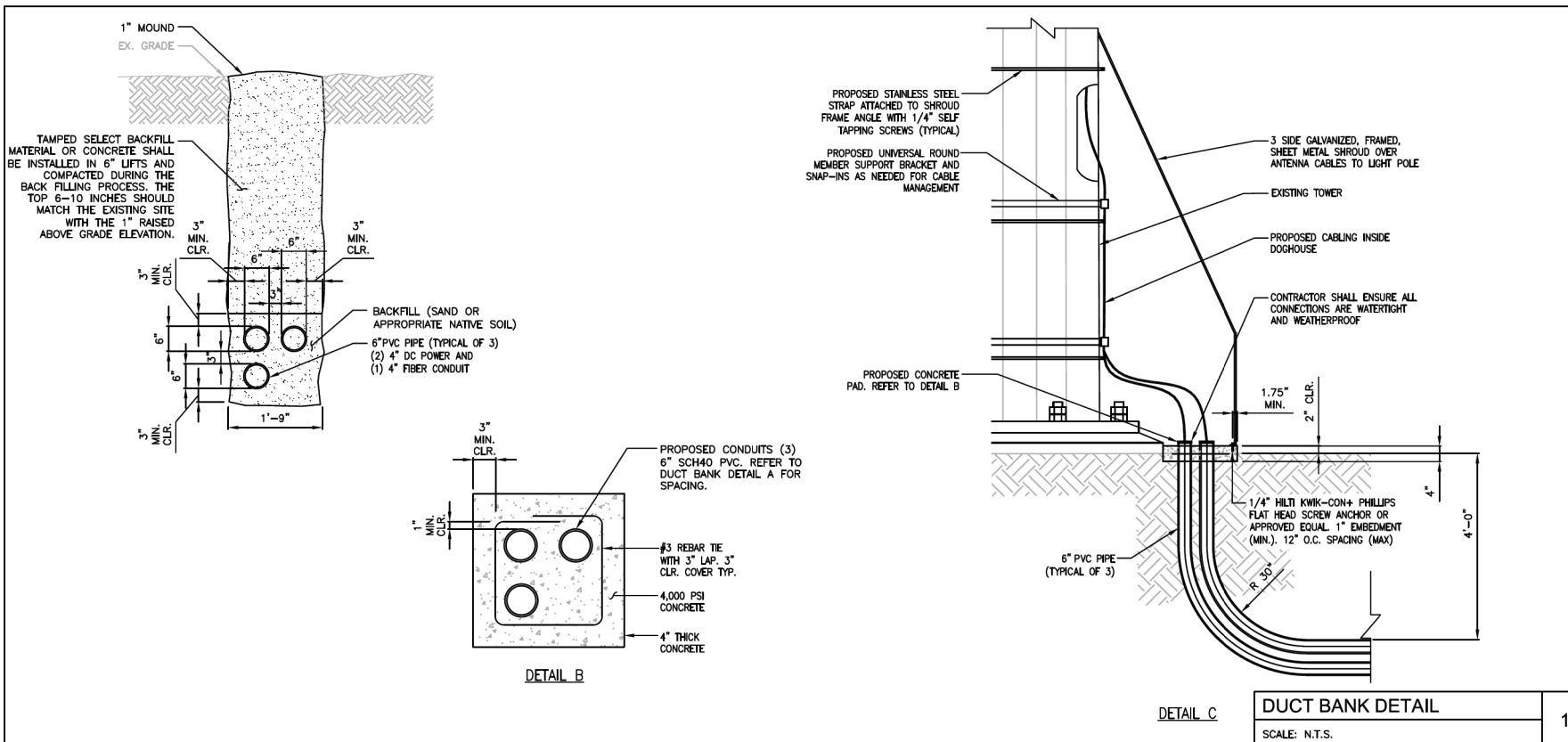
SHEET

C-5

GENERAC - DIESEL 30kW - NEQ: 20230

NOT TO SCALE

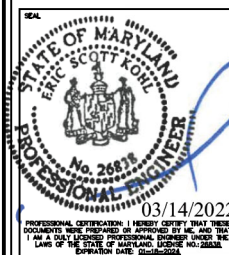
1



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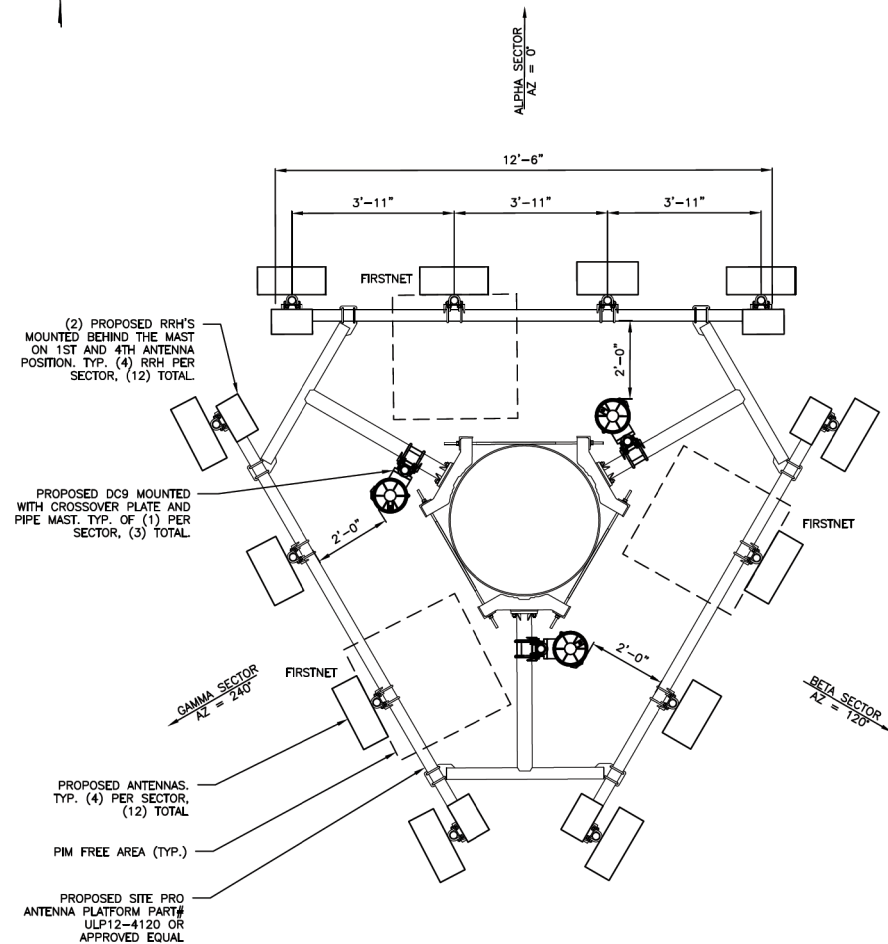
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KCI JOB NUMBER: 011802184.ATTS1  
SHEET TITLE:

#### TRENCHING DETAILS

SHEET

C-6

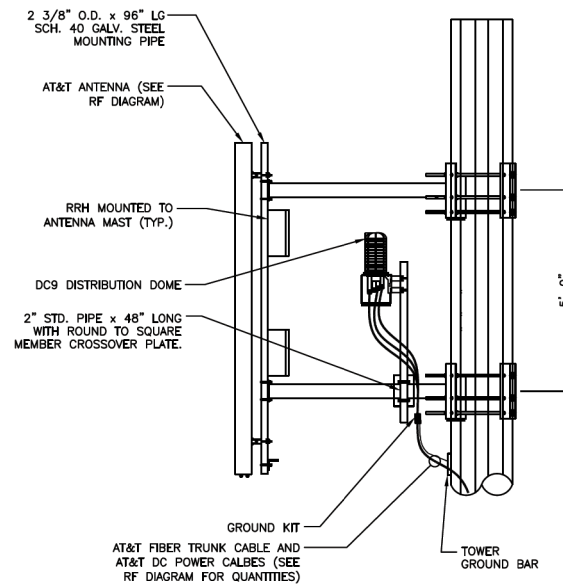




PROPOSED ANTENNA CONFIGURATION

SCALE: 1"=3' (1"=1.5') ON 22"x34" SHEET

1



NOTES:

1. ANTENNA ORIENTATION IS BASED ON TRUE NORTH BEARING. CONTRACTOR SHALL VERIFY TRUE NORTH PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO REFER TO FINAL RF CONFIGURATIONS SHEET FOR ANTENNA AZIMUTHS PRIOR TO CONSTRUCTION.
3. RRH'S TO BE ATTACHED TO ANTENNA MAST WITH BRACKETS INCLUDED FROM MANUFACTURER.
4. SUBCONTRACTOR SHALL COORDINATE COLOR CODING IN THE FIELD WITH AT&T REPRESENTATIVE.
5. INSTALL SURGE ARRESTORS ON MAIN COAXIAL CABLES, GROUND TO NEAREST GROUND BAR.
6. SUBCONTRACTOR SHALL INSTALL A BRASS IDENTIFICATION TAG (1 1/2" IN DIAMETER) WITH 1/4" STAMPED LETTERS AND NUMBERS. ONE AT THE ANTENNA PORT CONNECTION NEAR THE END OF THE JUMPER AND ONE ON EACH END OF THE JUMPER SERVING THE RADIO EQUIPMENT. EACH TAG WILL BE STAMPED WITH AT&T AND THE ANTENNA PORT IDENTIFICATION NUMBER. I.E. TAGS SHALL BE ATTACHED WITH CORROSION PROOF UV RESISTANT WIRE OR CABLE-TY.

ANTENNA AND RRH MOUNT DETAIL

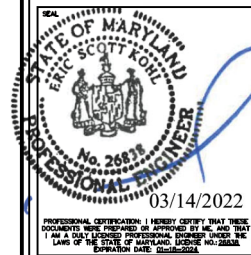
SCALE: 1"=3' (1"=1.5') ON 22"x34" SHEET

2

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11830 West Market Place, Suite F  
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SHEET TITLE:

ANTENNA LAYOUT AND MOUNTING DETAIL

SHEET

A-1

ANTENNA SCHEDULE											
SECTOR POSITION	STATUS	ANTENNA MANUFACTURE	ANTENNA MODEL	ANTENNA DIMENSIONS	RAD CENTER	AZIMUTH	TMA/RRU QUANTITY & MODEL	ANTENNA E-TILT	ANTENNA M-TILT	FIBER/POWER FEEDERS	TRUNK LENGTH
A-1	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	0°	(1) AIRSCALE DUAL RRH4T4R B25/66 320W (AHFIB)	2.5°	0°	(1) 24 PAIR FIBER-OPTIC TRUNK CABLE (PER SECTOR) (3) 9-C DC TRUNK CABLES (PER SECTOR)	±120'
A-2	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	0°	(1) B12/14/29 TRIBAND RRH 370W (AHLBBA)	2°	0°		
A-3	PROPOSED	NOKIA	AEQK	29.7"x17.7"x9.5"	87' AGL	0°	(1) INTEGRATED MMA 64T64R 192AE (AEQK)	0°	0°		
A-4	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	0°	(1) AIRSCALE RRH 4T4R B5 160W (ACHA) (1) AIRSCALE RRH 4T4R B30 100W (AHNA)	2°	0°		
B-1	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	120°	(1) AIRSCALE DUAL RRH4T4R B25/66 320W (AHFIB)	2.5°	0°	(1) 24 PAIR FIBER-OPTIC TRUNK CABLE (PER SECTOR) (3) 9-C DC TRUNK CABLES (PER SECTOR)	±120'
B-2	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	120°	(1) B12/14/29 TRIBAND RRH 370W (AHLBBA)	2°	0°		
B-3	PROPOSED	NOKIA	AEQK	29.7"x17.7"x9.5"	87' AGL	120°	(1) INTEGRATED MMA 64T64R 192AE (AEQK)	0°	0°		
B-4	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	120°	(1) AIRSCALE RRH 4T4R B5 160W (ACHA) (1) AIRSCALE RRH 4T4R B30 100W (AHNA)	2°	0°		
G-1	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	240°	(1) AIRSCALE DUAL RRH4T4R B25/66 320W (AHFIB)	2.5°	0°	(1) 24 PAIR FIBER-OPTIC TRUNK CABLE (PER SECTOR) (3) 9-C DC TRUNK CABLES (PER SECTOR)	±120'
G-2	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	240°	(1) B12/14/29 TRIBAND RRH 370W (AHLBBA)	2°	0°		
G-3	PROPOSED	NOKIA	AEQK	29.7"x17.7"x9.5"	87' AGL	240°	(1) INTEGRATED MMA 64T64R 192AE (AEQK)	0°	0°		
G-4	PROPOSED	COMMSCOPE	NNHH-65B-R4	72"x19.6"x7.8"	87' AGL	240°	(1) AIRSCALE RRH 4T4R B5 160W (ACHA) (1) AIRSCALE RRH 4T4R B30 100W (AHNA)	2°	0°		
GPS -- (MOUNTED ON WIC SHELTER)			-	-	-	-	(1) 1/2" COAX	-	-		±25'

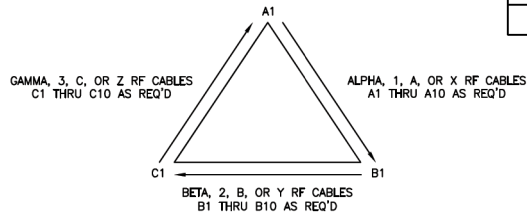
#### CABLE SYSTEM & RF SYSTEM DESIGN PLAN NOTES:

- SECTOR ORIENTATION/AZIMUTH WILL VARY FROM REGION TO REGION AND IS SITE SPECIFIC. REFER TO SEPARATE RF REPORT FOR EACH SITE TO DETERMINE THE ANTENNA LOCATION AND FUNCTION OF EACH TOWER SECTOR FACE.
- THE STANDARD IS BASED ON EIGHT COLORED TAPES -- RED, BLUE, GREEN, YELLOW, BROWN, ORANGE, WHITE, AND SLATE (GREY). THESE TAPES SHOULD BE READILY AVAILABLE TO THE ELECTRICIAN OR CONTRACTOR ON SITE.
- USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE MARKING COLOR CONVENTION TABLE".
- COLOR CODE TAPE SHALL BE 3" WIDE AT TOP AND MIDDLE OF TOWER AND 2" WIDE AT THE BOTTOM. ALL JUMPERS SHALL BE INCLUDED.
- ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID UNRAVELING.
- ALL COLOR BANDS INSTALLED AT OR NEAR THE GROUND SHALL BE A MINIMUM OF 3/4" WIDE.
- ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.

#### CABLE IDENTIFICATION NOTES:

- SUBCONTRACTOR SHALL COORDINATE COLOR CODING WITH THE MASTER COLOR CODE DOCUMENT.
- SUB CONTRACTOR SHALL INSTALL A BRASS IDENTIFICATION TAG (1-1/2" IN DIAMETER WITH 1/4" STAMPED LETTERS AND NUMBERS) ONE AT THE ANTENNA PORT CONNECTION NEAR THE END OF THE JUMPER AND ONE ON EACH END OF THE JUMPER SERVING THE RADIO EQUIPMENT. EACH TAG WILL BE STAMPED WITH "ATT" AND THE ANTENNA PORT IDENTIFICATION NUMBER EXAMPLE BELOW. TAGS SHALL BE ATTACHED WITH CORROSION PROOF UV RESISTANT WIRE OR CABLE-TY.

RF DESIGN NOTE:  
THIS ANTENNA AND COAX CABLE SCHEDULE HAS BEEN CREATED USING THE FOLLOWING RFDS DATED 12/03/21, V2021\_1.2  
ALL ANTENNA DESIGN, ZONING, STRUCTURAL ANALYSIS PERMITS AND COMPLIANCE SUBMISSIONS ARE COORDINATED WITH THE AFOREMENTIONED DOCUMENT.



PROPOSED ANTENNAS	TOTAL	PROPOSED RRH (PER SECTOR)	TOTAL
(4) PER SECTOR	(12)	(1) B12/14/29 NOKIA TRIBAND RRH (AHLBBA)	(3)
		(1) AIRSCALE DUAL RRH 4T4R B25/66 320W (AHFIB)	(3)
		(1) AIRSCALE RRH 4T4R B5 160W (ACHA)	(3)
		(1) AIRSCALE RRH 4T4R B30 100W (AHNA)	(3)

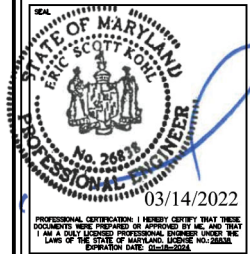
#### RF SCHEDULE AND NOTES

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Fulton, MD 20759  
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ERIC S. KOHL, PE  
MD LICENSE NO.: 2683



7150 STANDARD DRIVE  
HANOVER, MD 21076



1362 MELLON RD, SUITE 140  
HANOVER, MD 21076

#### CHARLIE FARM

FAR: 12573578  
SITE ID#: 4628  
23630 WOODFIELD ROAD  
GAITHERSBURG, MD 20882

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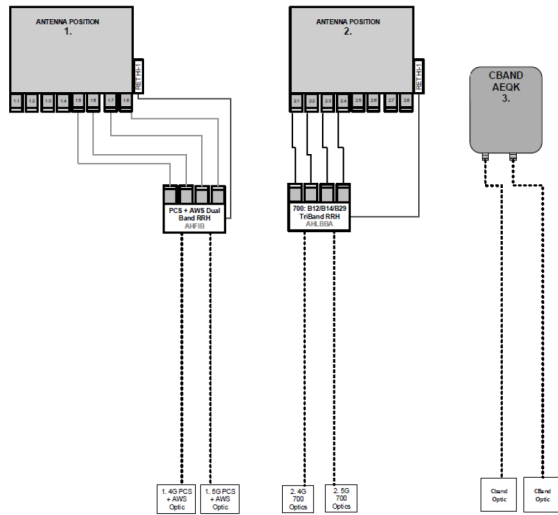
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DATE: 3/9/22  
KCI JOB NUMBER: 011802184.ATTS1  
SHEET TITLE:

#### RF SCHEDULE AND NOTES

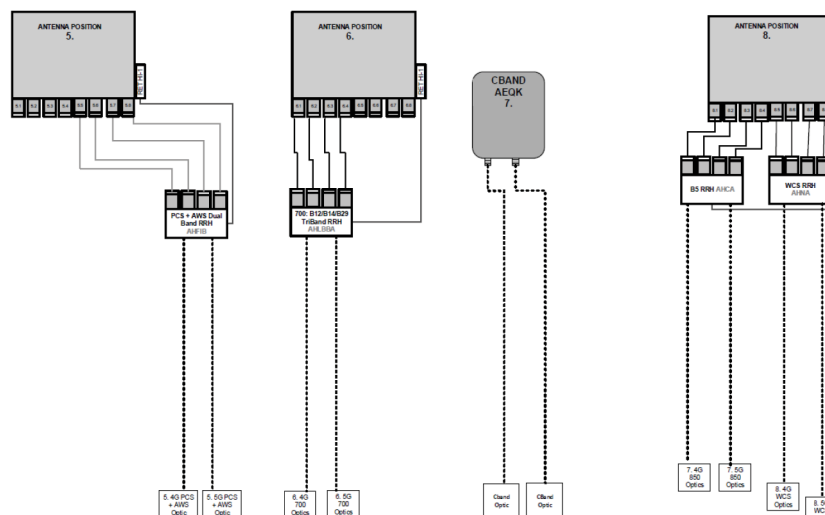
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A-2

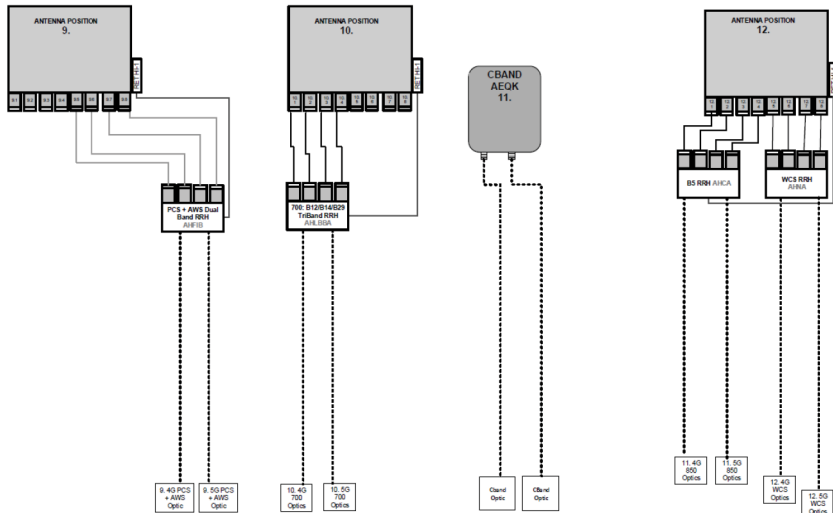
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7CC\_P10PA1A3\_P2OLF7E\_P3AASCB\_P4OCW\_F0\_NoDOD\_C



RF DESIGN NOTE:  
THIS ANTENNA AND COAX CABLE SCHEDULE HAS BEEN  
CREATED USING THE FOLLOWING RFDS DATED 12/03/21,  
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ALL ANTENNA DESIGN, ZONING, STRUCTURAL ANALYSIS  
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LAWS OF THE STATE OF MARYLAND. LICENSE NO. 26838  
EXPIRATION DATE: 03/14/2024

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MD LICENSE NO.: 26838



7150 STANDARD DRIVE  
HANOVER, MD 21076



1362 MELLON RD, SUITE 140  
HANOVER, MD 21076

**CHARLIE FARM**

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SITE ID#: 4628  
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SHEET TITLE:

**PLUMBING  
DIAGRAMS**

SHEET

**A-3**

**PLUMBING DIAGRAMS**

SCALE: N.T.S.

1



700 RRH

SPECIFICATIONS	
LxWxD (IN.)	24"x14.09"x7.83"
WEIGHT (LBS.)	101.4

NOKIA AIRSCALE RRH 4T4R B12/14/29 TRIBAND AHLBBA

SCALE: N.T.S.

1



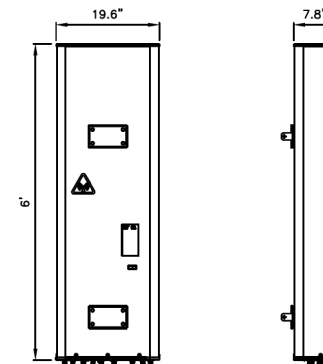
850 RRH

SPECIFICATIONS	
LxWxD (IN.)	13.3"x11.6"x6.5"
WEIGHT (LBS.)	16.7

NOKIA AIRSCALE RRH 4T4R B5 160W AHCA

SCALE: N.T.S.

2



SPECIFICATIONS	
LxWxD (IN.)	72.0"x19.6"x7.8"
WEIGHT (LBS.)	78.3

PROPOSED COMMSCOPE NNHH-65B-R4

SCALE: N.T.S.

3



1900 RRH

SPECIFICATIONS	
LxWxD (IN.)	11.8"x15.7"x4.7"
WEIGHT (LBS.)	40

NOKIA AIRSCALE RRH 4T4R B25/66 320W AHFIB

SCALE: N.T.S.

4



SPECIFICATIONS	
HxWxD (IN.)	13.3"x12.1"x5.5"
WEIGHT (LBS.)	34.17

NOKIA AIRSCALE RRH 4T4R B30 100W AHNA

SCALE: N.T.S.

5



SPECIFICATIONS	
LxWxD (IN.)	29.5"x17.7"x9.5"
WEIGHT (LBS.)	99.2

PROPOSED NOKIA AEQK AIRSCALE MAA 64T64R

SCALE: N.T.S.

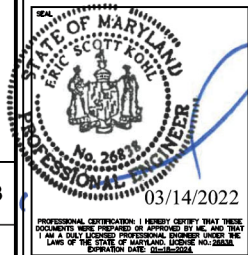
6

NOTE:  
RRH INTEGRATED INTO  
PROPOSED ANTENNAS.

RF DESIGN NOTE:  
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TECHNOLOGIES  
KCI TECHNOLOGIES, INC.  
11830 West Market Place, Suite F  
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ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26838

**at&t**  
7150 STANDARD DRIVE  
HANOVER, MD 21076

**smartlink**  
1362 MELLON RD, SUITE 140  
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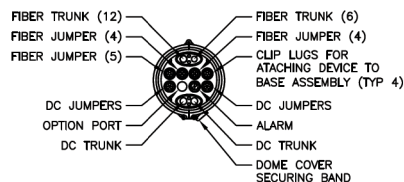
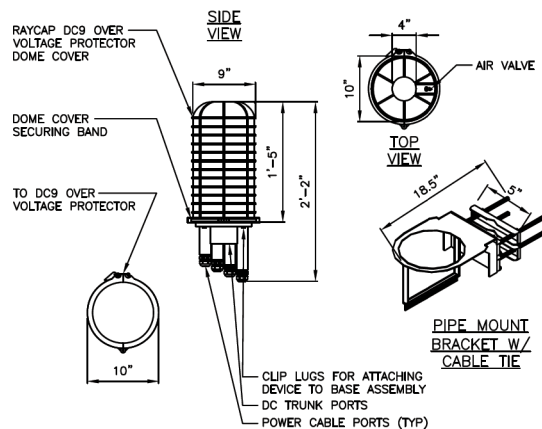
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DATE: 3/9/22  
KCI JOB NUMBER: 011802184.ATT51  
SHEET TITLE:

**EQUIPMENT  
SPECIFICATIONS**

SHEET

**A-4**





- NOTES:**
1. AT&T SUPPLIES DC9 SURGE DOME AND PIPE MOUNTING BRACKETS. CONTRACTOR SHALL SUPPLY MOUNTING PIPE OR UNISTRUT.
  2. DC9 AND BRACKET: 32.8 LBS
  3. DC9 WILL BE MOUNTED TO PLATFORM WITH SITEPRO MOUNT# FMA1: 14 LBS.
  4. TOTAL WEIGHT: 46.8 LBS

#### RAYCAP DC9 FIBER/DC DOME DETAIL

SCALE: N.T.S.

1

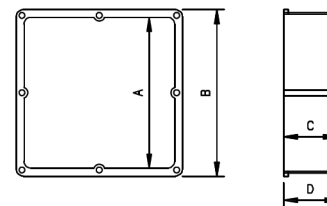


SPECIFICATIONS	
LxWxD (IN.)	26"x24"x8.8"
WEIGHT (LBS.)	56.3

#### DC12-48-60-0-25E DETAIL

SCALE: N.T.S.

2



FRONT

SIDE

PRODUCT CODE	PART NUMBER	A	B	C	D	GASKET CODE	SCREW CODE	VOLUME
078250	JB12124	12"	12.687"	4"	4.25"			577.4 CID
078251	JB12126	12"	12.687"	6"	6.25"	072749	072513 (8) 072549 (4)	846.0 CID
078252	JB12128	12"	12.687"	8"	8.25"			1,102.0 CID

#### FIBER/DC SLACK BOX DETAIL

SCALE: N.T.S.

3

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CHECKED BY:	JM	
APPROVED BY:	GT	
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11830 West Market Place, Suite F  
Fulton, MD 20759  
Phone: 410.792.8086



ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26838



7150 STANDARD DRIVE  
HANOVER, MD 21076



1362 MELLON RD, SUITE 140  
HANOVER, MD 21076

#### CHARLIE FARM

FAR: 12573578  
SITE ID#: 4628  
23630 WOODFIELD ROAD  
GAITHERSBURG, MD 20882

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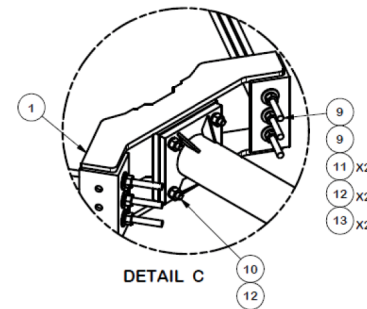
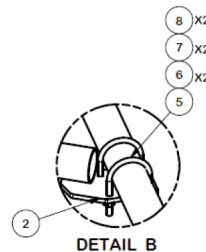
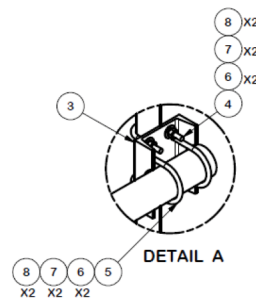
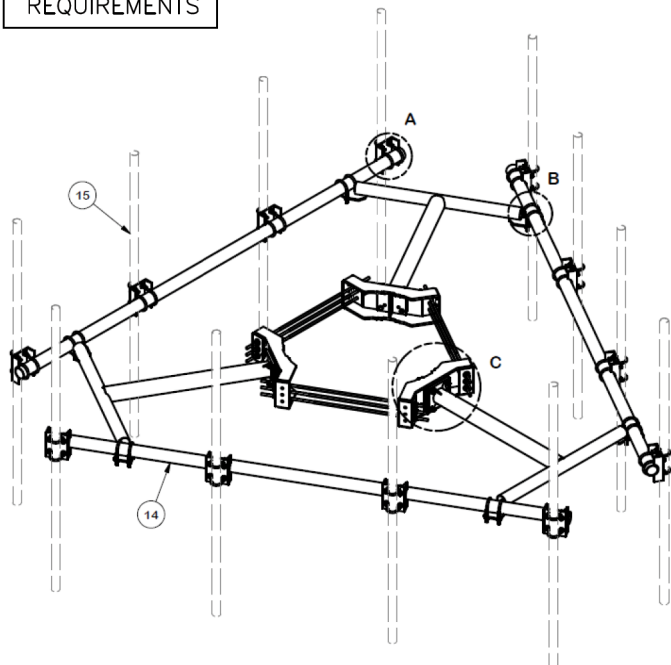
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KCI JOB NUMBER: 011802184.ATTS1  
SHEET TITLE:

#### EQUIPMENT SPECIFICATIONS

SHEET

A-5

TYPICAL OF (2)  
PER AT&T  
REQUIREMENTS



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	3	X-ULP	SUPPORT ARM WELDMENT		103.07	309.20
3	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	103.33
4	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	6.17
5	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	9.25
6	120	G12FW	1/2" HDG USS FLATWASHER	0.095	0.03	4.09
7	120	G12LW	1/2" HDG LOCKWASHER	.125	0.01	1.67
8	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
9	9	G58R-24	5/8" X 24" GALV THREADED ROD		2.20	19.76
9	9	G58R-48	5/8" X 48" GALV THREADED ROD		4.39	39.52
10	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
11	18	G58FW	5/8" HDG USS FLATWASHER	.122	0.07	1.27
12	30	G58LW	5/8" HDG LOCKWASHER	.156	0.03	0.78
13	30	G58NUT	5/8" HDG HEAVY 2H HEX NUT	5/8	0.13	3.90
14	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
15	12	A	B	C	D	

ANTENNA PIPES					
"ASSEMBLY NO."	PART NO. "A"	PART DESCRIPTION "B"	LENGTH "C"	UNIT WT. "D"	TOTAL WT.
ULP12-472	P272	2-3/8" O.D. SCH. 40 PIPE	72"	23.07	1,311.05
ULP12-484	P284	2-3/8" O.D. SCH. 40 PIPE	84"	26.91	1,357.13
ULP12-496	P296	2-3/8" O.D. SCH. 40 PIPE	96"	30.76	1,403.33
ULP12-4126	P2126	2-3/8" O.D. SCH. 40 PIPE	126"	40.76	1523.33

#### TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:  
SAWED, SHEARED AND GAS CUT EDGES ( $\pm 0.030"$ )  
DRILLED AND GAS CUT HOLES ( $\pm 0.030"$ ) - NO CONING OF HOLES  
LASER CUT EDGES AND HOLES ( $\pm 0.010"$ ) - NO CONING OF HOLES  
BENDS ARE  $\pm 1/2$  DEGREE  
ALL OTHER MACHINING ( $\pm 0.030"$ )  
ALL OTHER ASSEMBLY ( $\pm 0.000"$ )

PROPRIETARY NOTE:  
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#### DESCRIPTION

ULTRA LOW PROFILE RIDGED T-ARM  
FOR 12 ANTENNAS

CPD NO.	DRAWN BY	ENG. APPROVAL
5416	LMD 12/20/2012	
CLASS	SUB	DRAWING USAGE
81	01	CUSTOMER

CHECKED BY	DWG. NO.
BMC 12/27/2012	ULP12-4XX



Locations:  
New York, NY  
Atlanta, GA  
Los Angeles, CA  
Plymouth, IN  
Salem, OR  
Dallas, TX

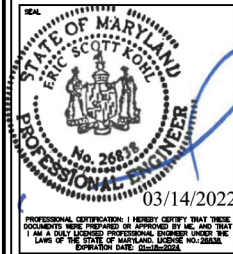
SEE "ASSEMBLY NO."

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10" 6" ANTENNA MOUNTING PIPES	5416	CEK	7/2/2015

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HANOVER, MD 21076



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#### CHARLIE FARM

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GAITHERSBURG, MD 20882

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KCI JOB NUMBER: 011802184.ATTS1  
SHEET TITLE:

MOUNT DETAIL

SHEET

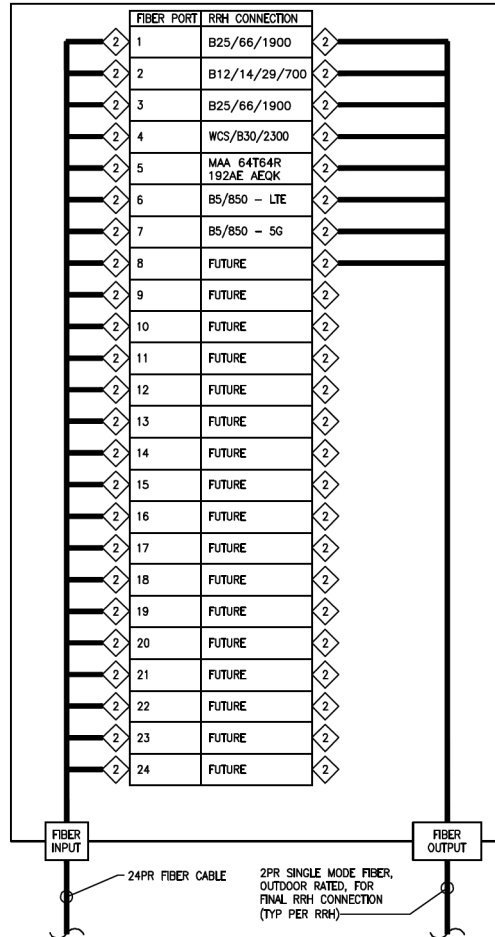
A-6

MOUNT DETAIL

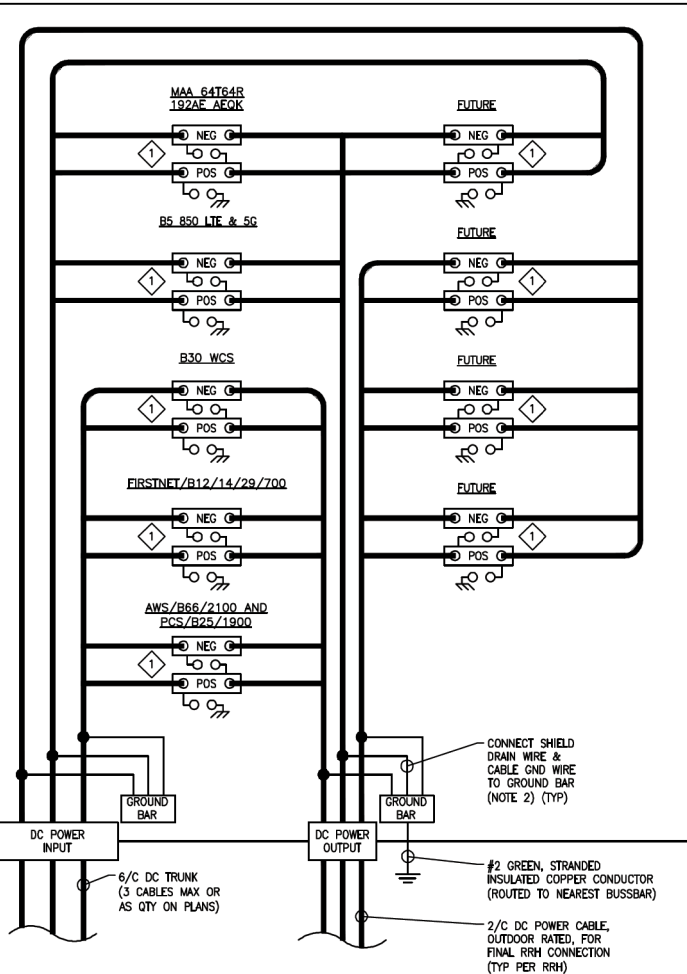
SCALE: N.T.S.

1

# DC9 FIBER CONNECTIONS



# DC9 DC POWER CONNECTIONS



## NOTES:

- TRUNK GLAND KITS:  
TRUNK GLAND KIT A: OVAL GASKET FOR #4 AND #6AWG TRUNK (CEQ. 21428)  
TRUNK GLAND KIT B: OVAL GASKET FOR (2) #4 AWG TRUNKS (CEQ. 21429)  
TRUNK GLAND KIT C: OVAL GASKET FOR (2) #6 AWG TRUNKS (CEQ. 21434)
- WHEN SHIELDED CABLE IS USED CONNECT CABLE SHIELD DRAIN WIRE AND GROUND WIRE TO GROUND BAR.
- FIRST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH ON ALPHA SECTOR. IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS.
- 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH ON BETA SECTOR.
- 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH ON GAMMA SECTOR.
- AN RRH WILL NEVER HAVE MORE THAN ONE SQUID ALARMED ON IT.
- SQUID ALARMS ARE NOT TO BE DAISY CHAINED.

2 = LC CONNECTOR

1 = STRIKESORB PROTECTION MODULE BY RAYCAP

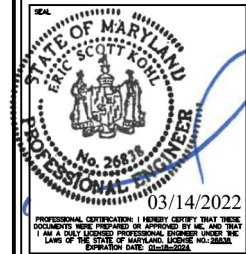
DC9 WIRING DIAGRAM

SCALE: N.T.S.

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SHEET TITLE

## DC9 WIRING DIAGRAM

SHEET

A-7

120/240V, 1Ø, 3W  
200A MAIN C.B.

# PANEL SCHEDULE PTLC

CKT. NO.	CKT. BKR AMPS	DESCRIPTION	DESCRIPTION	CKT. BKR AMPS	CKT. NO.
1	30	RECTIFIER SHELVES 1&2	RECTIFIER SHELVES 7&8	30	2
3					4
5	30	RECTIFIER SHELVES 3&4	RECTIFIER SHELVES 9&10	30	6
7					8
9	30	RECTIFIER SHELVES 5&6	RECTIFIER SHELVES 11&12	30	10
11					12
13	—	SPACE	SPACE	—	14
15	—	SPACE	SPACE	—	16
17	—	SPACE	SPACE	—	18
19	—	SPACE	SPACE	—	20
21	—	SPACE	SPACE	—	22
23	—	SPACE	SPACE	—	24
25	25	TO HVAC	EX. LIGHTS	15	26
27			OUTLETS	20	28
29	—	SPACE	SPACE	—	30
31	—	SPACE	SPACE	—	32
33	—	SPACE	SPACE	—	34
35	—	SPACE	SPACE	—	36
37	—	SPACE	SPACE	—	38
39	—	SPACE	BATTERY CHARGER	20	40
41	—	SPACE	BLOCK HEATER	20	42

## NOTES:

1. LOAD CENTER IS WITHIN POWER ENCLOSURE, FACTORY INSTALLED BY VERTIV.

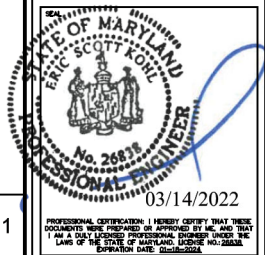
## ELECTRICAL PANEL

SCALE: N.T.S.

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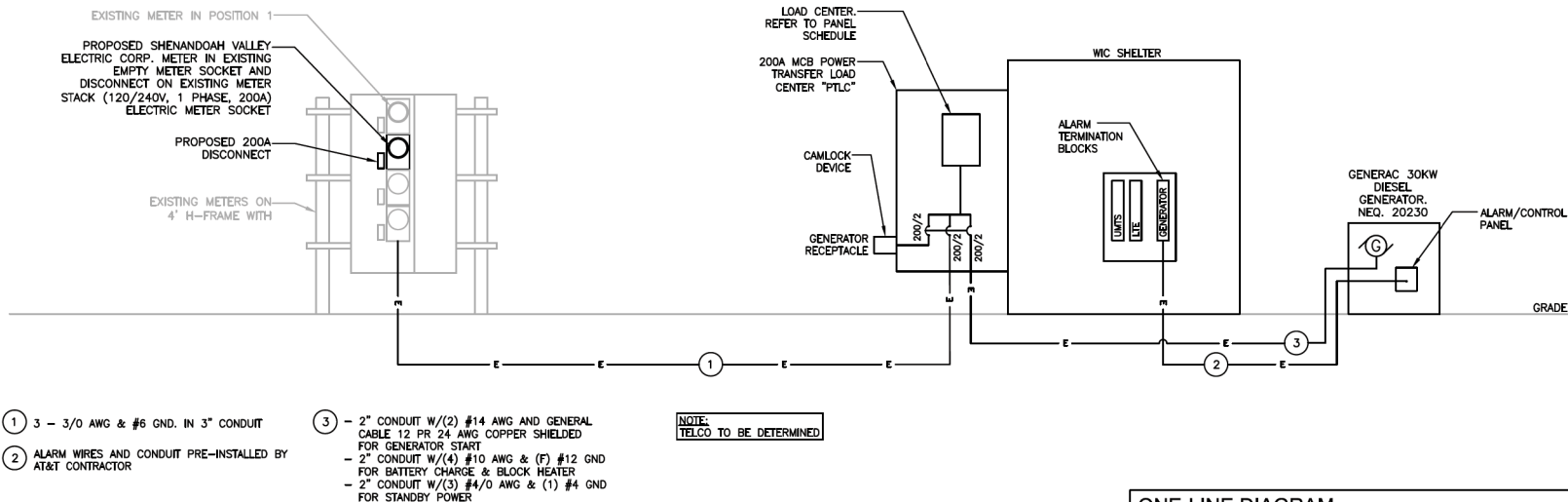
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SHEET TITLE:

## ELECTRICAL SPECIFICATIONS

SHEET

E-1



## ONE-LINE DIAGRAM

SCALE: N.T.S.

SHEET

E-1





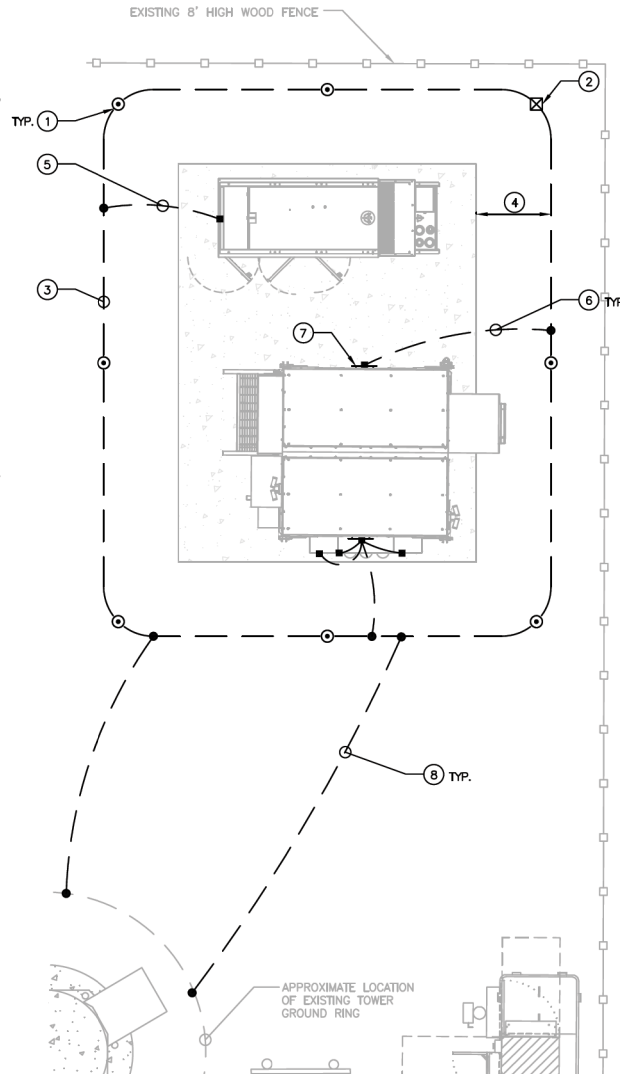
# **DRAWING NOTES:**

- 1 PROPOSED 8'-0" (MINIMUM) x 5/8" COPPER CLAD STEEL GROUND ROD. TOP OF GROUND ROD SHALL BE AT THE SAME DEPTH AS THE GROUND RING. GROUND RODS MUST BE PLACED A MIN. OF 6' APART AND A MAXIMUM OF 11' APART.
- 2 PROPOSED 8'-0" (MINIMUM) x 5/8" COPPER CLAD STEEL GROUND ROD WITH INSPECTION WELL. TOP OF GROUND ROD SHALL BE AT THE SAME DEPTH AS THE GROUND RING.
- 3 BURIED GROUND RING SHALL BE #2 AWG, BARE, TINNED, SOLID COPPER BURIED AT LEAST 30" BELOW GRADE.
- 4 BURIED GROUND RING SHALL BE WITHIN 24" TO 36" OF THE STRUCTURE (WHERE POSSIBLE). THE GROUND RING SHALL BE AT A DEPTH OF AT LEAST 30" BELOW FINISHED GRADE.
- 5 EXTEND 2#2 AWG, BARE, TINNED SOLID, COPPER GROUND CONDUCTOR FROM EXTERIOR GROUND BAR ON BOTH SIDES OF PROPOSED WIC SHELTER AND BOND TO NEW BURIED GROUND RING. TYP. OF 2 PLACES
- 6 EXTEND 2#2 AWG, BARE, TINNED SOLID, COPPER GROUND CONDUCTOR FROM EXTERIOR GROUND BAR ON BOTH SIDES OF PROPOSED WIC SHELTER AND BOND TO NEW BURIED GROUND RING. TYP. OF 2 PLACES
- 7 EXISTING, MANUFACTURER INSTALLED 4"x24" EXTERIOR GROUND BAR. TYP. OF 2.
- 8 EXTEND #2 AWG, BARE, TINNED SOLID, COPPER GROUND CONDUCTOR FROM EXISTING TOWER GROUND RING AND BOND TO NEW BURIED GROUND RING. TYP. OF 2 PLACES

## **CONNECTION LEGEND:**

- MECHANICAL CONNECTION
- ⊠ GROUND ROD WITH INSPECTION WELL
- EXOTHERMIC WELD
- ⊙ GROUND ROD

NOTE:  
THE INTERNAL WIC FRAME AND ALL ATTACHED EQUIPMENT ARE FACTORY GROUNDED TO THE WIC MASTER GROUND BAR.



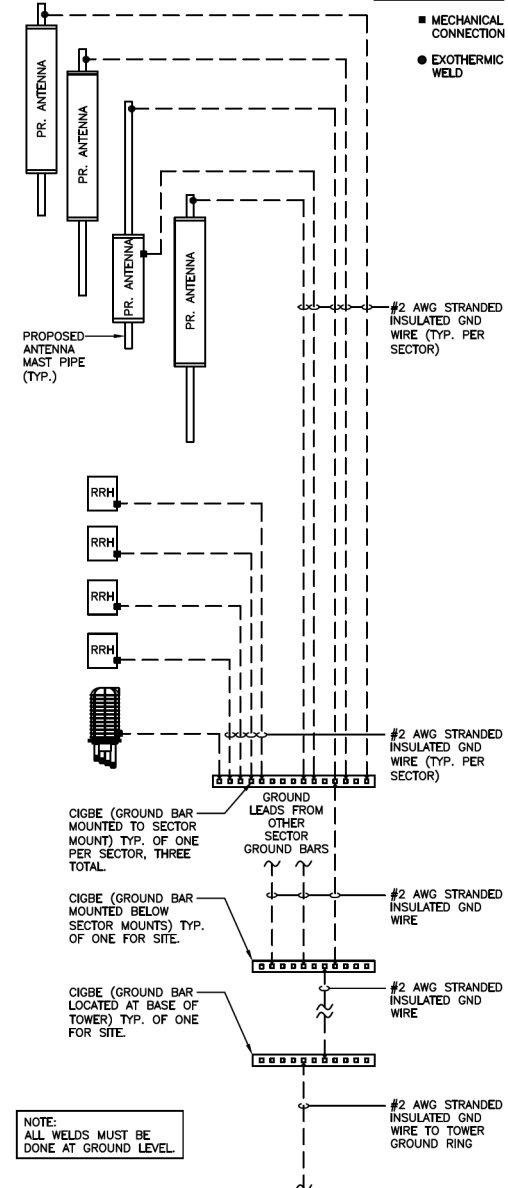
**COMPOUND GROUNDING PLAN**

SCALE: 1"=5' (1"=2.5') ON 22"x34" SHEET

1

## **CONNECTION LEGEND:**

- MECHANICAL CONNECTION
- EXOTHERMIC WELD



NOTE:  
ALL WELDS MUST BE DONE AT GROUND LEVEL.

**ANTENNA GROUNDING PLAN**

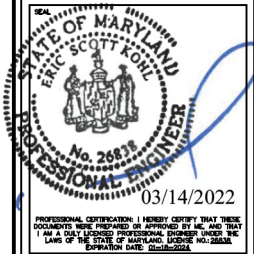
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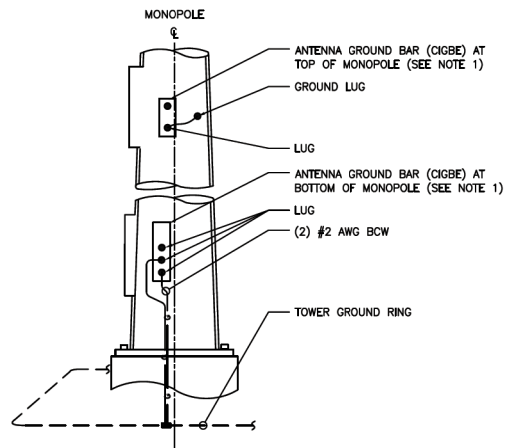
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SHEET TITLE:

## **GROUNDING PLAN & DETAILS**

SHEET

**GR-1**



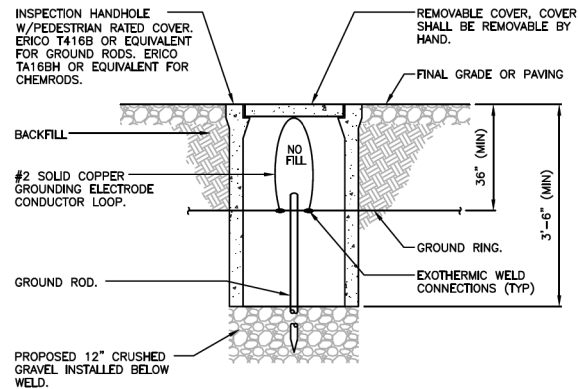
**NOTES:**

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

**GROUND BAR PLATE CONNECTION**

SCALE: N.T.S.

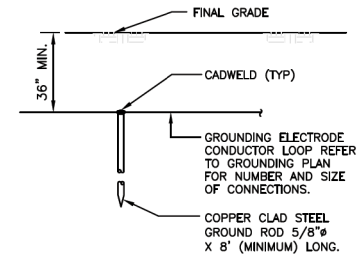
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**GROUND ROD WITH INSPECTION WELL DETAIL**

SCALE: N.T.S.

2



**GROUND ROD DETAIL**

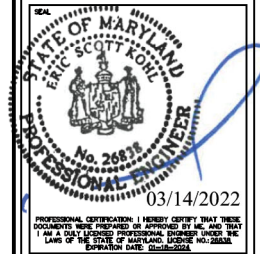
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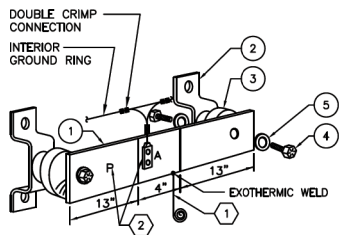
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SHEET TITLE:

**GROUNDING  
DETAILS**

SHEET

**GR-2**



EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

#### SECTION "P" - SURGE PROTECTORS

- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR (#2)
- COMMERCIAL POWER COMMON
- NETRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- COAX SUPPRESSION

#### SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

#### SECTION "I" - ISOLATED GROUND ZONE

ALL COMMUNICATIONS EQUIPMENT FRAMES, ISOLATED GROUND BAR - IGB (#2)

#### NOTES:

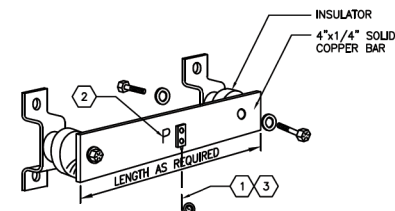
- EXOTHERMICALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
- USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "I") WITH 1" HIGH LETTERS.
- APPLY NO-OX OR EQUIVALENT TO MATING SURFACE OF LUG AND WIPE CLEAN EXCESS COMPOUND.

NEWTON INSTRUMENT COMPANY, INC. BUTNER, N.C.			
NO.	REQ.	PART NO.	DESCRIPTION
①	1	1/4"x4"x30"	PREDRILLED GND. BAR
②	2	A-6056	WALL MTG. BRKT.
③	2	3061-4	INSULATORS
④	4	3012-1	5/8"-11 x 1" H.H.C.S.
⑤	4	3015-8	5/8 LOCKWASHER

#### EXTERIOR GROUND BAR DETAIL

SCALE: N.T.S.

1



EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

#### CONNECTION FOR:

COAXIAL CABLE SHIELD  
CABLE ENTRY PORTS (HATCH PLATES)  
24V & 48V DC POWER RETURN BAR  
TELCO BAR

CONNECTION FOR (CONTINUED):  
COAXIAL CABLE SURGE SUPPRESSORS  
RECTIFIER FRAMES  
GENERATOR FRAME WORK  
MASTER GROUND BAR

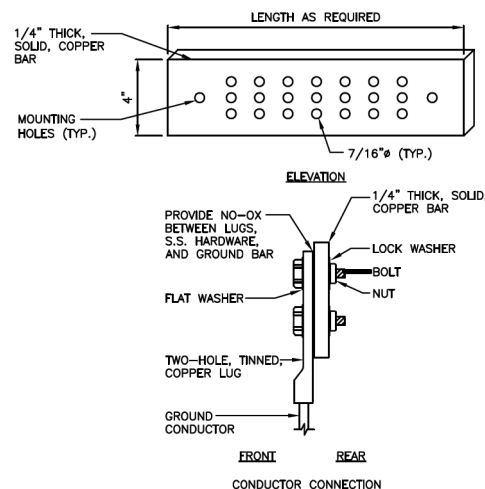
#### DETAIL NOTES:

- TWO-HOLE, LONG BARREL COMPRESSION LUG WITH 2AWG STRANDED COPPER CONDUCTOR AND GREEN THW INSULATION TO GROUND BAR. ROUTE CONDUCTOR AS APPLICABLE TO BURIED GROUND CONDUCTOR OR MASTER GROUND BAR AND CONNECT WITH TWO-HOLE LUG TO "P" SECTION.
- USE PERMANENT MARKER TO LABEL THE WHOLE BAR AS "P" WITH 1" HIGH LETTERS.
- FOR GROUND BAR LOCATED OUTDOORS, ON-GRADE ONLY, EXOTHERMICALLY WELD A 2 AWG BARE TINNED COPPER CONDUCTOR TO GROUND BAR AND EXOTHERMICALLY WELD TO BURIED GROUND CONDUCTOR.
- APPLY NO-OX OR EQUIVALENT TO MATING SURFACE OF LUG AND WIPE CLEAN EXCESS COMPOUND.

#### INSTALLATION OF GROUND WIRE TO CABLE GROUND BAR DETAIL

SCALE: N.T.S.

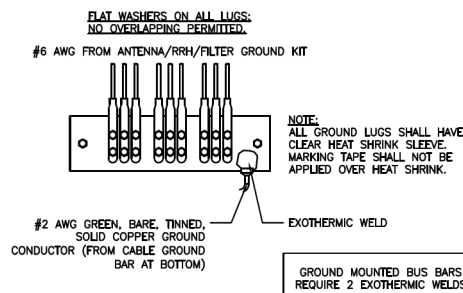
2



#### EXTERIOR GROUND BAR DETAIL

SCALE: N.T.S.

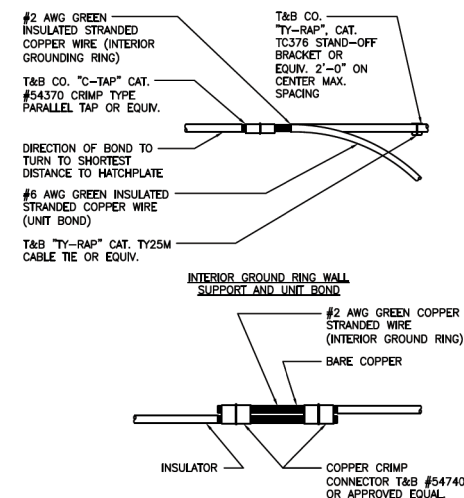
3



#### SECTOR GROUND BAR DETAIL

SCALE: N.T.S.

4



#### INTERIOR GROUND RING SPLICE DETAIL

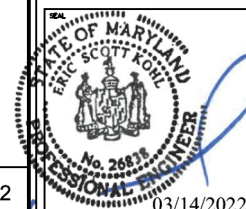
SCALE: N.T.S.

5

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KCI TECHNOLOGIES, INC.  
11830 West Market Place, Suite F  
Fulton, MD 20759  
Phone: 410.792.8086



ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26838



smartlink  
1382 MELLON RD, SUITE 140  
HANOVER, MD 21076

#### CHARLIE FARM

FAR: 12573578  
SITE ID#: 4828  
23630 WOODFIELD ROAD  
GAITHERSBURG, MD 20882

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KCI JOB NUMBER: 011802184.ATTS1  
SHEET TITLE

#### GROUNDING DETAILS

SHEET

GR-3

#### SITE WORK NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO THE COMMENCEMENT OF WORK.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION. ALL CONTRACTORS AND SUBCONTRACTORS SHALL BE PROVIDED SAFETY AND ENVIRONMENTAL AWARENESS TRAINING.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE LOCAL AUTHORITY HAVING JURISDICTION.
6. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION AND NOT EXCEEDING THE LIMITS OF DISTURBANCE AS IDENTIFIED ON THE CONSTRUCTION DRAWING AND ASSURING THAT SEDIMENT AND EROSION CONTROL IS PROPERLY MAINTAINED.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT, TOWER AREAS AND INTO NATURAL DRAINAGE WAYS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

#### GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
ENGINEER - SUPPORT ENGINEERING  
CONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
OWNER - AT&T  
OEM - ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

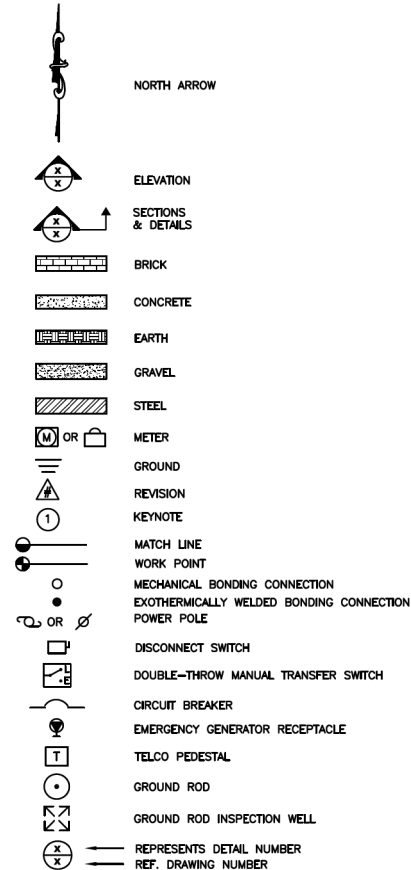
#### GENERAL NOTES (CONT.):

5. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL OBTAIN FIELD APPROVAL BY THE LOCAL AUTHORITY HAVING JURISDICTION FOR ANY DEVIATION FOR SHOWN ROUTES FOR ANY UTILITY.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER. SUBSTITUTIONS OF ANY EQUIPMENT AND MATERIALS REQUIRE THE APPROVAL OF THE LOCAL AUTHORITY HAVING JURISDICTION.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN A CLEAR CONDITION ON A DAILY BASIS.
13. CONSTRUCTION SHALL COMPLY WITH THE LATEST EDITION OF SPECIFICATIONS UNDER "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
14. WHERE THE CONSTRUCTION DRAWINGS OR SPECIFICATIONS ARE IN CONFLICT WITH ANY REQUIREMENTS OF THE PERMIT ISSUED BY THE LOCAL AUTHORITY HAVING JURISDICTION, THE PERMIT SHALL HAVE PRIMARY AUTHORITY.

#### CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:  

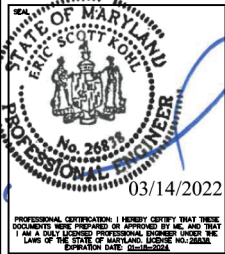
CONCRETE CAST AGAINST EARTH.....	3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 AND LARGER .....	2 IN.
#5 AND SMALLER & WWF.....	1 1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:	
SLAB AND WALL .....	3/4 IN.
BEAMS AND COLUMNS.....	1 1/2 IN.
5. A CHAMFER OF 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.



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KCI TECHNOLOGIES, INC.  
11830 West Market Place, Suite F  
Fulton, MD 20759  
Phone: 410.792.8086



ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26818



1382 MELLON RD, SUITE 140  
HANOVER, MD 21076

#### CHARLIE FARM

FAR: 12573578  
SITE ID#: 4828  
23630 WOODFIELD ROAD  
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SHEET TITLE:

#### GENERAL NOTES

SHEET

SP-1



## GENERAL ELECTRICAL AND GROUNDING NOTES:

### PART 1 -- GENERAL

#### 1.1 GENERAL CONDITIONS:

- A. CONTRACTOR SHALL INSPECT THE EXISTING SITE CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
  - B. THE CONTRACTOR SHALL OBTAIN PERMITS, LICENSES, MAKE ALL DEPOSITS, AND PAY ALL FEES REQUIRED FOR THE CONSTRUCTION PERFORMANCE FOR THE WORK UNDER THIS SECTION.
  - C. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DRAWING SHALL NOT BE SCALED TO DETERMINE DIMENSIONS.
- 1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES.
- A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES. CONDUIT BENDS SHALL BE THE RADIUS BEND FOR THE TRADE SIZE OF CONDUIT IN COMPLIANCE WITH THE LATEST EDITIONS OF NEC.

#### 1.3 REFERENCES:

- A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION UNLESS OTHERWISE NOTED. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.
  1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
  2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
  3. ICE (INSULATED CABLE ENGINEERS ASSOCIATION)
  4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
  5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
  6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
  7. UL (UNDERWRITERS LABORATORIES, INC.)
  8. AT&T GROUNDING AND BONDING STANDARDS

#### 1.4 SCOPE OF WORK:

- A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND BE OPERATIONAL.
- B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING, TRENCHES, BACKFILLING, AND REMOVAL OF EXCESS DIRT.
- D. THE CONTRACTOR SHALL FURNISH TO THE OWNER WITH CERTIFICATES OF A FINAL INSPECTION AND APPROVAL FROM THE INSPECTION AUTHORITIES HAVING JURISDICTION.
- E. THE CONTRACTOR SHALL PREPARE A COMPLETE SET OF AS-BUILT DRAWINGS, DOCUMENT ALL WIRING EQUIPMENT CONDITIONS, AND CHANGES WHILE COMPLETING THIS CONTRACT. THE AS-BUILT DRAWINGS SHALL BE SUBMITTED AT COMPLETION OF THE PROJECT.

### PART 2 -- PRODUCTS

#### 2.1 GENERAL:

- A. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED, NEW, AND FREE FROM DEFECTS.
- B. ALL ITEMS OF MATERIALS AND EQUIPMENT SHALL BE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AS SUITABLE FOR THE USE INTENDED.
- C. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 10,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.

#### 2.2 MATERIALS AND EQUIPMENT:

##### A. CONDUIT:

1. RIGID METAL CONDUIT (RMC) SHALL BE HOT-DIPPED GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.
2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED.
3. CONDUIT CLAMPS, STRAPS AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION AND CONCRETE TIGHT TYPE. GROUNDING BUSHINGS WITH INSULATED THROATS SHALL BE INSTALLED ON ALL CONDUIT TERMINATIONS.
4. NONMETALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40 PVC OR SCHEDULE 80 PVC WHERE SPECIFIED. INSTALL USING SOLVENT-CEMENT-TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.

##### B. CONDUCTORS AND CABLE:

1. CONDUCTORS AND CABLE SHALL BE FLAME-RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC. SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN-2, 600 VOLT, SIZE AS INDICATED, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR USED.
2. #10 AWG AND SMALLER CONDUCTOR SHALL BE SOLID OR STRANDED AND #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.
3. SOLDERLESS, COMPRESSION-TYPE CONNECTORS SHALL BE USED FOR TERMINATION OF ALL STRANDED CONDUCTORS.
4. STRAIN-RELIEF SUPPORTS GRIPS SHALL BE HUBBELL KELLEMS OR APPROVED EQUAL. CABLES SHALL BE SUPPORTED IN ACCORDANCE WITH THE NEC AND CABLE MANUFACTURER'S RECOMMENDATIONS.
5. ALL CONDUCTORS SHALL BE TAGGED AT BOTH ENDS OF THE CONDUCTOR, AT ALL PULL BOXES, J-BOXES, EQUIPMENT AND CABINETS AND SHALL BE IDENTIFIED WITH APPROVED PLASTIC TAGS (ACTION CRAFT, BRADY, OR APPROVED EQUAL).

##### C. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD-FRONT, QUICK-MAKE, QUICK-BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE AND INTERLOCK WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED FURNISHED IN NEMA 3R ENCLOSURE, SQUARE-D OR ENGINEERED APPROVED EQUAL.

##### D. CHEMICAL ELECTROLYTIC GROUNDING SYSTEM:

1. INSTALL CHEMICAL GROUNDING AS REQUIRED. THE SYSTEM SHALL BE ELECTROLYTIC MAINTENANCE FREE ELECTRODE CONSISTING OF RODS WITH A MINIMUM #2 AWG CU EXOTHERMALLY WELDED PIGTAIL, PROTECTIVE BOXES, AND BACKFILL MATERIAL. MANUFACTURER SHALL BE LYNCOLE XIT GROUNDING ROD TYPES K2-(\*)CS OR K2L-(\*)CS (\*) LENGTH AS REQUIRED.
2. GROUND ACCESS BOX SHALL BE A POLYPLASTIC BOX FOR NON-TRAFFIC APPLICATIONS, INCLUDING BOLT DOWN FLUSH COVER WITH "BREATHING" HOLES, XIT MODEL #XB-22. ALL DISCONNECT SWITCHES AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS ID NUMBERING, AND THE ELECTRICAL POWER SOURCE.
3. BACKFILL MATERIAL SHALL BE LYNCONITE AND LYNCOLE GROUNDING GRAVEL.

##### E. SYSTEM GROUNDING:

1. ALL GROUNDING COMPONENTS SHALL BE TINNED AND GROUNDING CONDUCTOR SHALL BE #2 AWG BARE, SOLID, TINNED, COPPER, ABOVE GRADE GROUNDING CONDUCTORS SHALL BE INSULATED WHERE NOTED.
2. GROUNDING BUSES SHALL BE BARE, TINNED, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION. STANDARD BUS BARS MGB, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
3. CONNECTORS SHALL BE HIGH-CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO-HOLE COMPRESSION LUGS WITH HEAT SHRINK FOR MECHANICAL CONNECTIONS. INTERIOR CONNECTIONS USE TWO-HOLE COMPRESSION LUGS WITH INSPECTION WINDOW AND CLEAR HEAT SHRINK.
4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.
5. GROUND RODS SHALL BE ERICO #615800, COPPER-CLAD STEEL WITH HIGH-STRENGTH STEEL CORE AND ELECTROLYTIC-GRADE COPPER OUTER SHEATH, MOLDED WELDED TO CORE, 5/8"x10'-0". ALL GROUNDING RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES.
6. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS IN COMPLIANCE WITH THE AT&T SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.

##### F. OTHER MATERIALS:

1. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.
2. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

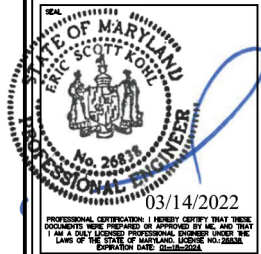
##### G. PANELS AND LOAD CENTERS:

1. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

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Fulton, MD 20759  
Phone: 410.792.8086



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7150 STANDARD DRIVE  
HANOVER, MD 21076



1362 MELLON RD, SUITE 140  
HANOVER, MD 21076

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FAR: 12573578  
SITE ID#: 4628  
23630 WOODFIELD ROAD  
GAITHERSBURG, MD 20822

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SHEET TITLE:

## GENERAL NOTES

SHEET

SP-2



## GENERAL ELECTRICAL AND GROUNDING NOTES CONTINUED:

### PART 3 - EXECUTION

#### 3.1 GENERAL:

- ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT OR WATER, AND AGAINST CHEMICAL OR MECHANICAL INJURY DURING INSTALLATION AND CONSTRUCTION PERIODS.

#### 3.2 LABOR AND WORKMANSHIP:

- ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE INSTALLED BY EXPERIENCED WIREMEN, IN A NEAT AND WORKMAN-LIKE MANNER.
- ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED, ALIGNED AND TESTED BY THE CONTRACTOR AS REQUIRED TO PRODUCE THE INTENDED PERFORMANCE.
- UPON COMPLETION OF WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL LABELS AND ANY DEBRIS, CRATING OR CARTONS AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

#### 3.3 COORDINATION:

- THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER-FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

#### 3.4 INSTALLATION:

##### A. CONDUIT:

- ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN 3/4 INCH TRADE SIZE.
- PROVIDE RIGID GALVANIZED STEEL CONDUITS FOR ALL RISERS UNLESS OTHERWISE NOTED. EMT MAY BE INSTALLED FOR EXTERIOR CONDUITS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
- INSTALL SCH. 80 PVC CONDUIT WITH A MINIMUM COVER OF 24" UNDER ROADWAYS, PARKING LOTS, STREETS, AND ALLEYS. CONDUIT SHALL HAVE A MINIMUM COVER OF 18" IN ALL OTHER NON-TRAFFIC APPLICATIONS (REFER TO 2008 NEC, TABLE 300.5).
- USE GALVANIZED FLEXIBLE STEEL CONDUIT WHERE DIRECT CONNECTION TO EQUIPMENT WITH MOVEMENT, VIBRATION, OR FOR EASE OF MAINTENANCE. USE LIQUID TIGHT, FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS. INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORT TO ALLOW FOR EXPANSION AND CONTRACTION.
- A RUN OF CONDUIT BETWEEN BOXES OR EQUIPMENT SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE QUARTER-BENDS. CONDUIT BEND SHALL BE MADE WITH THE UL LISTED BENDER OR FACTORY 90 DEGREE ELBOWS MAY BE USED.
- FIELD FABRICATED CONDUITS SHALL BE CUT SQUARE WITH A CONDUIT CUTTING TOOL AND REAMED TO PROVIDE A SMOOTH INSIDE SURFACE.
- PROVIDE INSULATED GROUNDING BUSHING FOR ALL CONDUITS.
- CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
- ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF CONDUCTORS OR CABLES. CONDUIT SHALL BE FREE OF DIRT AND DEBRIS.
- INSTALL PULL STRINGS IN ALL CLEAN EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END.
- INSTALL 2" HIGHLY VISIBLE AND DETECTABLE TAPE 12" ABOVE ALL UNDERGROUND CONDUITS AND CONDUCTORS.
- CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.
- PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS TO ALLOW FOR RACEWAYS AND CABLES TO BE ROUTED THROUGH THE BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE EFFECTIVELY SEALED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FIRE STOPS AT FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE, AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.

##### B. CONDUCTORS AND CABLE:

- SPLICES SHALL BE MADE ONLY AT OUTLETS, SLACK BOXES, OR ACCESSIBLE RACEWAY CONDULETS APPROVED FOR THIS PURPOSE.
- PULLING LUBRICANTS SHALL BE UL APPROVED. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CONDUCTOR OR CABLES INTO THE CONDUIT.
- CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES & EQUIPMENT TO PERMIT MAKING A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS OR TERMINALS. CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY AND MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS IS PROHIBITED. DAMAGED CABLES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- ALL POWER WIRING SHALL BE COLOR CODED AS FOLLOWS:

DESCRIPTION	208/240/120 VOLT SYSTEMS
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUNDING	GREEN

##### C. DISCONNECT SWITCHES:

- INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB. CONNECT TO WIRING SYSTEM AND GROUNDING SYSTEM AS INDICATED.

##### D. GROUNDING:

- ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING MANUFACTURER, AT&T GROUNDING AND BONDING STANDARDS, AND THE NATIONAL ELECTRICAL CODE.
- PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM INDICATED WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
- ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
- BUILDINGS AND/OR NEW TOWERS GREATER THAN 75 FEET IN HEIGHT AND WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUND RING, TO THE EXISTING GROUNDING SYSTEM. THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 AWG COPPER. ROOFTOP GROUND RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).
- TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
- CONTRACTOR SHALL VERIFY THE LOCATIONS OF GROUNDING TIE-IN-POINTS TO THE EXISTING GROUNDING SYSTEM. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION BEFORE BEING PERMANENTLY CONCEALED.
- APPLY CORROSION-RESISTANCE FINISH TO FIELD CONNECTIONS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED. USE KOPR-SHIELD ANTI-OXIDATION COMPOUND ON ALL COMPRESSION GROUNDING CONNECTIONS.
- A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS.
- BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE 6 AWG GROUNDING CONDUCTOR TO A GROUND BUS.
- DIRECT BURIED GROUNDING CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 36" MINIMUM BELOW GRADE, OR 6" BELOW THE FROST LINE, USE THE GREATER OF THE TWO DISTANCES.
- ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT.
- THE INSTALLATION OF CHEMICAL ELECTROLYTIC GROUNDING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL PROTECTIVE BOX FLUSH WITH GRADE.
- DRIVE GROUND RODS UNTIL TOPS ARE A MINIMUM DISTANCE OF 36" DEPTH OR 6" BELOW FROST LINE, USING THE GREATER OF THE TWO DISTANCES.
- IF COAX ON THE ICE BRIDGE IS MORE THAN 6 FT. FROM THE GROUND BAR AT THE BASE OF THE TOWER, A SECOND GROUND BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE, TO GROUND THE COAX CABLE GROUNDING KITS AND IN-LINE ARRESTORS.
- CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

##### 3.5 ACCEPTANCE TESTING:

- CERTIFIED PERSONNEL USING CERTIFIED EQUIPMENT SHALL PERFORM REQUIRED TESTS AND SUBMIT WRITTEN TEST REPORTS UPON COMPLETION.
- WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND NOT TO COMPLY WITH THE SPECIFIED REQUIREMENTS, THE NON-COMPLYING ITEMS SHALL BE REMOVED FROM THE PROJECT SITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS PROMPTLY AFTER RECEIPT OF NOTICE FOR NON-COMPLIANCE.

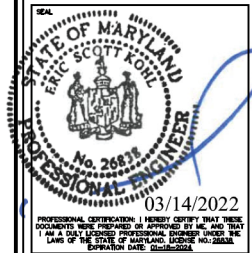
##### C. TEST PROCEDURES:

- ALL FEEDERS SHALL HAVE INSULATION TESTED AFTER INSTALLATION, BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1000V DC. PROVIDE WRITTEN DOCUMENTATION FOR ALL TEST RESULTS.
- PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
- MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE CONDUCTORS AND NEUTRALS. SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
- PERFORM GROUNDING TEST TO MEASURE GROUNDING RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3-POINT "FALL-OF-POTENTIAL" METHOD. PROVIDE PLOTTED TEST VALUES AND LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.

DRAWN BY:		JW
CHECKED BY:		JM
APPROVED BY:		GT
NO.	DATE	DESCRIPTION
A	12/17/21	PRELIMINARY DRAWINGS
B	1/7/22	REVISED ADDRESS
C	2/14/22	REVISED PER COMMENTS
D	3/1/22	REVISED PER COMMENTS
O	3/9/22	ISSUED FOR PERMITTING



KCI TECHNOLOGIES, INC.  
11830 West Market Place, Suite F  
Fulton, MD 20759  
Phone: 410.792.8086



ENGINEER:  
ERIC S. KOHL, PE  
MD LICENSE NO.: 26838



1382 MELLON RD. SUITE 140  
HANOVER, MD 21076

### CHARLIE FARM

FAR: 12573578  
SITE ID#: 4828  
23630 WOODFIELD ROAD  
GAITHERSBURG, MD 20882

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SHEET TITLE:

## GENERAL NOTES

SHEET

SP-3