

4. MONOPOLE TOWER REQUIREMENTS

The specifications contained herein encompass the labor, equipment, and materials for the fabrication of one 90-foot monopole tower and foundation.

The Bidder shall be responsible for furnishing and installing the new monopole tower at the Western District Police Station.

The monopole tower shall be designed to be suitable for all existing conditions at the site. The monopole shall be self-supporting, tubular, and be a welded or bolted steel structure.

4.1 FAA/FCC Requirements

The County has filed with the Federal Aviation Administration (FAA) application Form 7460-1 (Notice of Proposed Construction or Alteration) for the monopole and was issued FAA Aeronautical Study Number (ASN): 2012-AEA-3864-OE. Upon FAA completion of the Aeronautical Study and granting of the FAA Determination, the Bidder shall file with the Federal Communication Commission (FCC) to obtain an Antenna Structure Registration (ASR) number.

Upon completion of the monopole tower installation, the Bidder shall file the required notifications with the FAA and FCC notifying them that the construction of the tower is complete. The Bidder shall submit with the FAA Form 7460-2 a certified survey letter verifying the coordinates and tower base elevation in NAD 83 Datum. The certified survey letter verifying the coordinates and tower base elevation must meet FAA “2C Accuracy” requirements.

The Bidder shall furnish and display the ASR number in a conspicuous place so that it is readily visible near the base of the antenna structure. Materials used to display the ASR number must be weather-resistant and of sufficient size to be easily seen at the base of the tower.

4.2 Tower Design Requirements

The tower shall meet or exceed the following requirements:

4.2.1 Loading Requirements

Antenna Description	Quantity	Elevation
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Antenna Description	Quantity	Elevation
4-foot High Performance solid dish antenna (Andrew Model HP4-107), associated transmission line and installation hardware	1	85 ft (C.L.)
800 MHz Control Station Yagi Antennas	TBD	

4.2.2 Design/Construction Standards

The basic tower design and construction shall meet or exceed the requirements of TIA/EIA-222, latest edition. The Bidder shall determine which standard applies and be responsible for constructing to that standard.

4.2.3 Wind Loading

The Bidder is responsible for verification of TIA/EIA-222 or local building code, most recent issue, requirements for wind loading at the tower sites. The highest of the wind loading speed shall be used in all cases. If the highest wind speed prescribed by the aforementioned standards is less than 90 mph basic wind speed and 30 mph basic wind speed with 0.50-inch of ice, a minimum of 90 mph basic wind speed or 30 mph basic wind speed with 0.50-inch of ice shall be used for the wind speed.

4.2.4 Twist and Sway

The tower shall be designed to ensure that the tower twist and sway limits at the antenna mounting points do not exceed the maximum twist and sway for each antenna as specified in Section 4.2.1. All maximum twist and sway requirements are referenced to Wind Loading requirements per Section 4.2.3, minimum basic wind loading speed of 90 mph. As a default, the twist and sway deformations at microwave antenna mounting points shall not exceed the allowable 10 dB degradation in radio frequency signal level.

For the purposes of twist and sway analysis, the analysis shall be performed using the method prescribed by EIA/TIA. For a 4-foot, 11GHz microwave antenna, the tower's twist and sway shall not exceed +/- 1.2 degrees for an allowable 10 dB degradation in radio frequency signal level.

4.2.5 Corrosion Protection

All tower steel shall be hot-dip galvanized after fabrication per ASTM A123 with a minimum application of two ounces per square foot of zinc of surface area. All hardware and other attachments shall be galvanized per ASTM A153. All exposed portions of anchor bolts shall be galvanized per ASTM A153.

4.2.6 Climbing Facility

The towers shall be provided with step-bolts or a climbing ladder with rungs spaced not more than 16 inches o.c.

Where a ladder is used, the member or rung shall support a concentrated load of level 300-pounds referenced at equatorial mean sea at midspan without excessive deflection. Minimum rung size shall be 5/8-inch diameter. The concentrated load need not be considered in combination with other loads.

A safety climbing device such as a Rohn RAM, or approved equivalent, shall be provided. The safety climb shall be complete with cable, tower attachment brackets, safety belt, lanyard, etc. The safety climb shall be installed in accordance with the manufacturer's instructions.

4.2.7 Painting

All coatings shall be manufactured and labeled to meet Federal Environmental Protection Act Volatile Organic Compound(s) guidelines, including the National Volatile Organic Compound Emission Standards for architectural coatings.

In order to create a successful duplex system (paint over galvanization), the paint shall be compatible with the surfaces to be painted, including any previous coatings, and suitable for the environmental conditions. Surface preparation and paint application shall be in accordance with manufacturer's recommendations and ASTM D6386.

The Bidder shall take any and all precautions necessary to prevent paint splatter on surfaces that do not require to be painted. Any painted surfaces which have been damaged shall be touched up with specified paint and color to match the adjacent undamaged surfaces

4.2.7.1 Paint Selection

As some types of paint will not adhere adequately to galvanized steel, or will only do so under restricted conditions, the Bidder shall utilize a suitable paint system with a first coat that is fully compatible with a zinc surface. The first coat shall serve as a "tie coat" or interface between the galvanized steel and the top coat. The Bidder shall contact paint manufacturers for specific information regarding the suitability of paint system for use on galvanized steel.

Mixing, thinning and application methods shall be done in strict compliance per manufacturer's recommendations.

4.2.8 Lighting System

Due to the proximity to Manassas Regional Airport (HEF), tower lighting is required.

The Bidder shall furnish and install a red obstruction lighting system with the tower. Two or more steady-burning red obstruction lights (L-810) should be installed in a manner to ensure an unobstructed view of one or more lights by a pilot. The lighting system shall conform to all FAA, NEC, local, and FCC Regulations, and shall further conform to FAA publication AC 70/7460-1K.

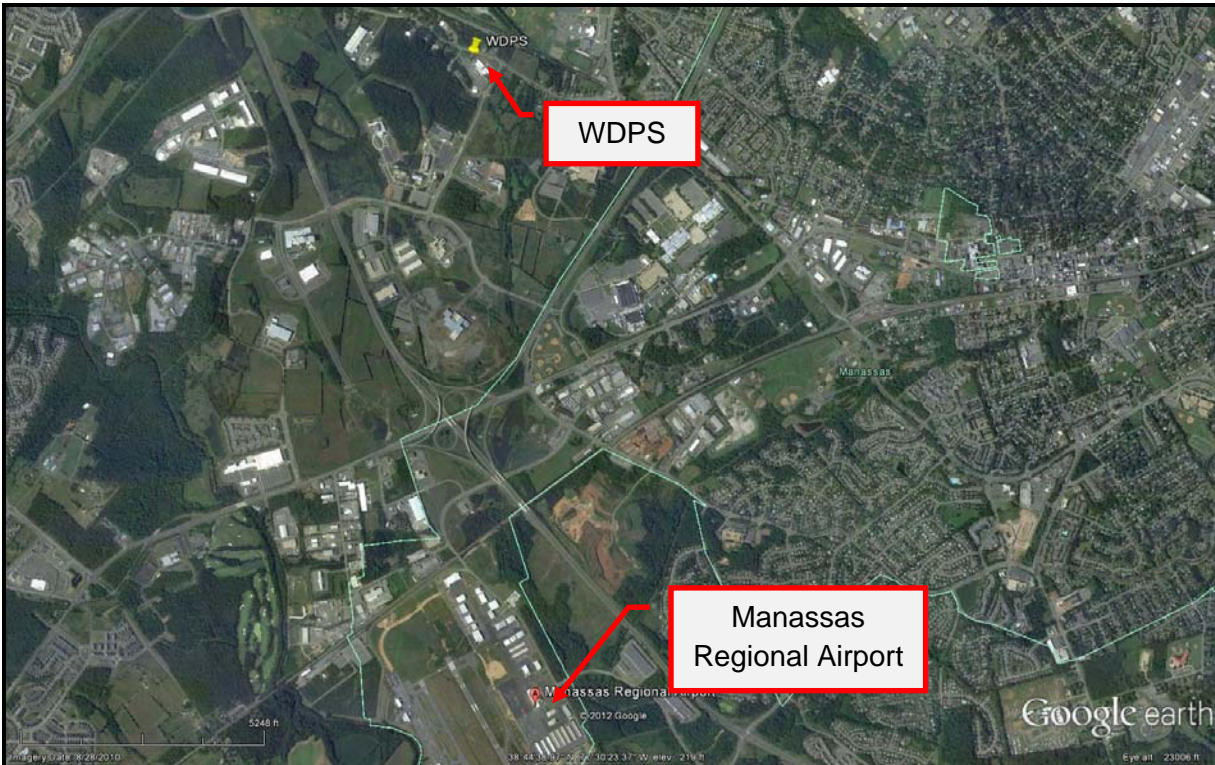


Figure 6 – Manassas Regional Airport

The red obstruction lights should be operated by a satisfactory control device (e.g., photo cell, timer, etc.) adjusted so the lights will be turned on when the northern sky luminance reaching a vertical surface falls below a level of 60 foot-candles (645.8 lux) but before reaching a level of 35 foot-candles (367.7 lux). The control device should turn the lights off when the northern sky luminance rises to a level of not more than 60 foot-candles (645.8 lux). The lights may also remain on continuously. The sensing device should, if practical, face the northern sky in the Northern Hemisphere.

The system control circuitry and alarm points shall be housed in a panel inside the new equipment shelter. The Bidder shall be responsible for housing, maintaining and

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operating the lighting system. Interconnecting cables between the lights and the control circuitry shall comply with the NEC as well as all local electrical codes in effect at the site of installation. Interconnecting cables shall be securely attached to the tower structure. Plastic or nylon-type cable ties shall not be used.

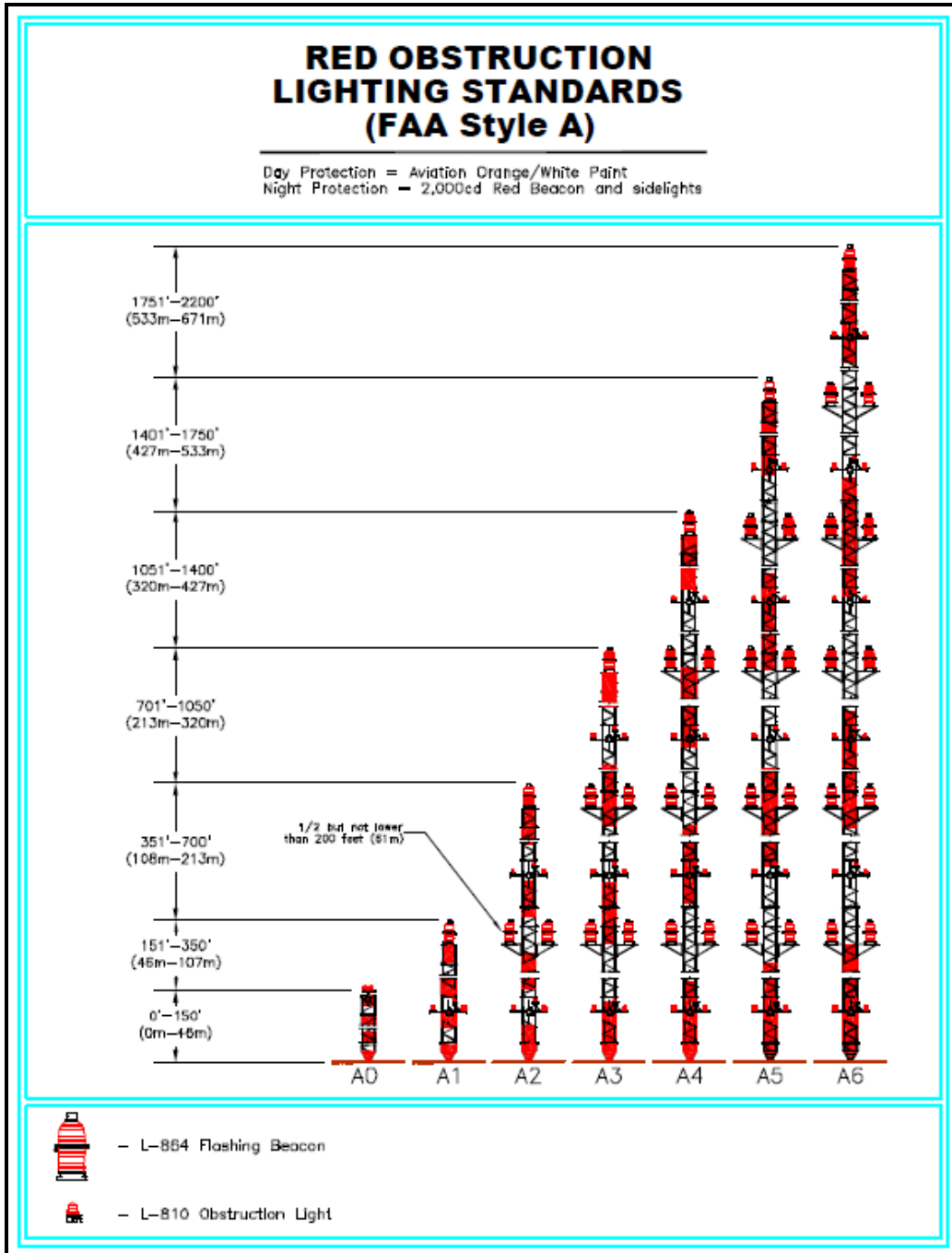


Figure 7 – Red Obstruction Lighting Standards

4.2.9 Marking

Tower lighting systems are the preferred method of marking towers. Painting of the tower and associated equipment and hardware is not allowed unless specifically required by the FAA.

4.3 Tower Foundation Requirements

The tower foundation shall be designed to be suitable for all existing conditions at the tower site, support the tower loading requirements specified in the previous sections, and meet or exceed the following requirements delineated herein.

4.3.1 Design Standards

The tower foundation shall be designed to meet or exceed the requirements of TIA/EIA-222, latest revision, as required by site location and any other exceeding wind loading requirements of the local jurisdiction.

4.3.2 Soil Information

The tower foundation shall be designed with respect to the actual soil conditions at the tower site. The Bidder shall propose the foundations based upon TIA/EIA-222 "standard" soil. However, the final design shall be based upon actual soil conditions. For these cases, the bid shall be based on "standard" soil and an add-and-deduct per cubic yard of concrete shall be provided for the difference between the proposed design and the final design. The final foundation design and installation is solely the responsibility of the Bidder.

5. GROUNDING AND BONDING SYSTEM

The Bidder shall furnish and install a grounding system at the communications site. The ultimate goal of the grounding system is to achieve resistance to earth of five ohms or less. The grounding system shall be in compliance with the standards and requirements delineated in these specifications. This will include, but not be limited to, connecting equipment building interior grounds, exterior grounds, fuel tank, and perimeter fencing. Interconnection of these items by copper conductors as specified in this document forms the site grounding system.

The shelter shall be provided with a protective grounding system meeting the requirements of Motorola's R56 Standards and Guidelines for Communications Sites, unless stated otherwise.

A perimeter ground system shall be provided for the interior of the shelter. An interior halo ground shall consist of a non-continuous run of #2 AWG (minimum) bare solid copper wire mounted on the walls, with insulated stand-offs eight feet AFF. A single break in the halo ground shall be located approximately opposite the PolyPhaser bulkhead panel. The break shall be a minimum of four inches wide, and any attached equipment on each side of the break shall be separated by a minimum of four inches. The bulkhead panel shall be the primary terminating point for all equipment and cable tray grounds in the shelter.

All metallic conduits shall be grounded to the interior perimeter ground. If multiple conduits are grounded using a single conductor, the conductor shall be clamped to each conduit run such that removal of one clamp does not interrupt the path to ground of the other conduits (see Figure 8).

Cable runs of #2 AWG (minimum) stranded copper wire with green insulating jacket shall be placed on the outside of the cable trays running lengthwise and horizontally in the building and shall be bonded to the bulkhead panel. All points where cable tray sections meet must be made electrically continuous by the use of grounding straps. The Bidder shall remove the paint between mating attachments of cable tray sections.

The exterior perimeter grounds shall consist of a continuous run of #2 AWG (minimum) solid tinned copper wire (stranded conductors are not acceptable) buried at a minimum depth of 30 inches below ground level and at a minimum distance of 36 inches from the tower foundation.

On the exterior of the shelter, the PolyPhaser bulkhead panel shall serve as the grounding point for transmission line grounding kits. The grounding kits shall attach

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directly to the exterior of the bulkhead panel. The bulkhead panel shall be permanently bonded to the external perimeter ground and bulkhead sandwich bar via the multiple six-inch wide copper straps. The bulkhead panel sandwich bar and straps shall be welded to a 6-inch by 1/8-inch copper strap (PolyPhaser) at the base of the shelter. The strap shall run along the tank floor inside a 12-inch by 3-inch galvanized steel cable tray section with 12-inch wide screw down cover for protection. The cable tray section shall be bonded to the 6- inch strap. The interior ground shall be exothermically bonded to the external perimeter ground.

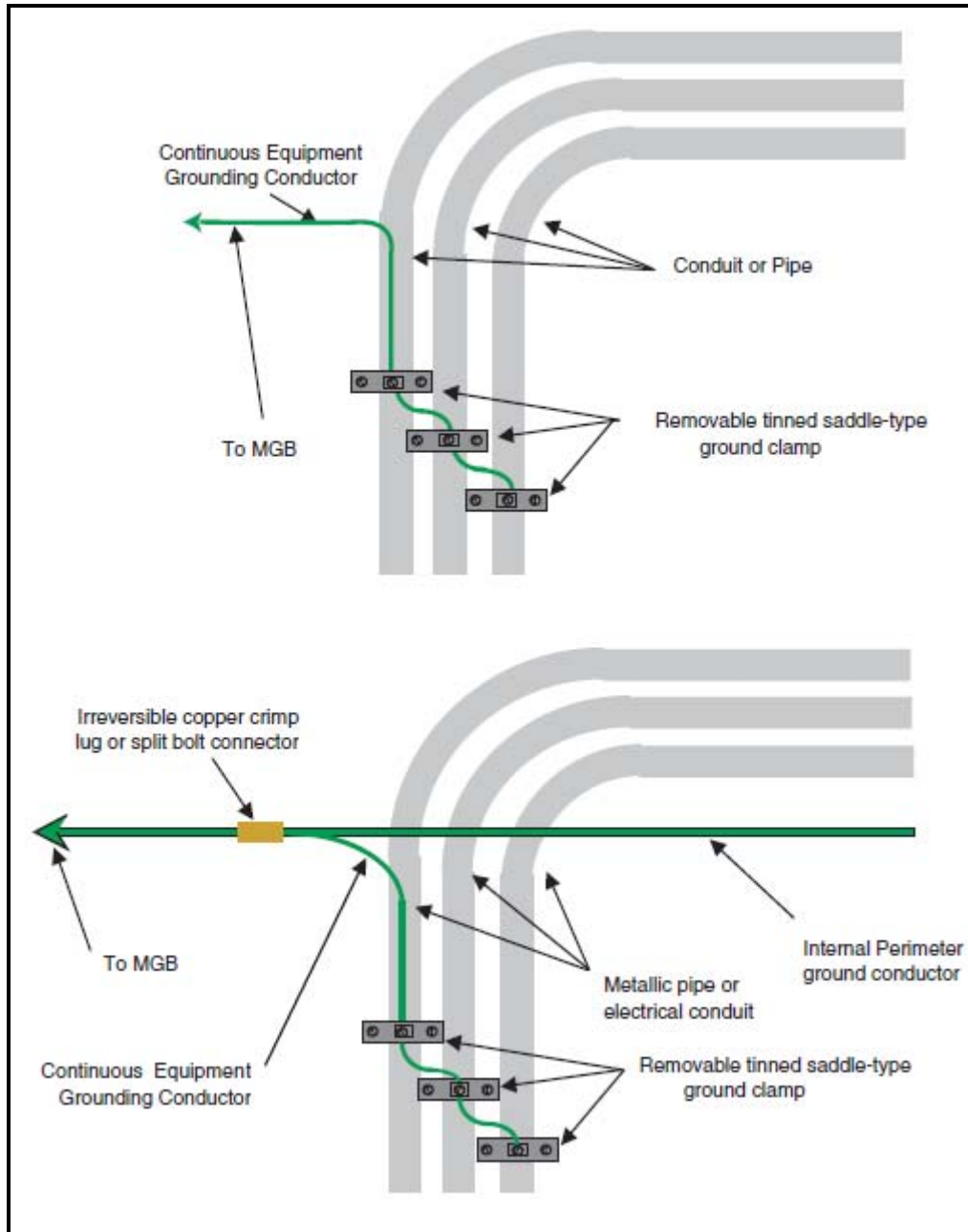


Figure 8 – Typical Grounding of Metallic Conduits

The interior halo ground shall be connected to the exterior perimeter ground via the PolyPhaser bulkhead panel flat copper straps. The exterior ground shall be connected to the AC utility ground rod.

All connections to ground rods and subterranean ground wire cable runs shall be a minimum of 30 inches below grade and made by exothermic weld (CADWELD™ or

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equivalent). The Bidder shall obtain County acceptance of exterior grounding system and exothermic connections prior to burial.

A tower ground bar (TGB) of minimum dimensions 1/4-inch thick by three inches by 36 inches shall be installed four inches below the tower/ice bridge interface on the tower cable ladder. The TGB shall be installed on the inside of the cable ladder with stainless steel hardware and be both physically and electrically connected to the tower. The TGB shall be connected to the tower perimeter ground system via two #2 AWG tinned solid copper conductors, one on each end of the bar. The connection to the tower ground system shall be achieved without bends, if possible.

All exterior grounding system conductor connections shall be exothermically welded (CADWELD™ or equivalent) to their respective terminals, interconnections, and ground rods. Conductor connections forming interior halo, equipment ground drops, and connections to conductors passing through the building may be made by mechanical compression or crimped connections.

The Bidder will be required to verify that the overall grounding system meets the grounding specifications. If it is determined that the resistance to earth is greater than five ohms, the Bidder will be required to install additional rods as necessary to comply with the grounding objective as stated.

The Bidder shall also ground the generator fuel tank and the security fence to the exterior perimeter ground using #2 AWG tinned solid copper wire. Ground attachments to the fence shall be at every corner and gate posts, at a minimum. Additional attachment points may be necessary to ensure that the entire fence is grounded to the common site ground formed by the tower perimeter ground and the building exterior perimeter ground (see Figure 9).

The Bidder is required to provide the driven ground rods (minimum eight feet and 5/8-inch diameter), conductors, connectors, and all exothermic welds for the entire site grounding system. Driven ground rods shall be placed at locations where the equipment building interior halo ground is connected to the external perimeter ground. The ground rods shall be located no closer than six feet and no more than 16 feet apart.

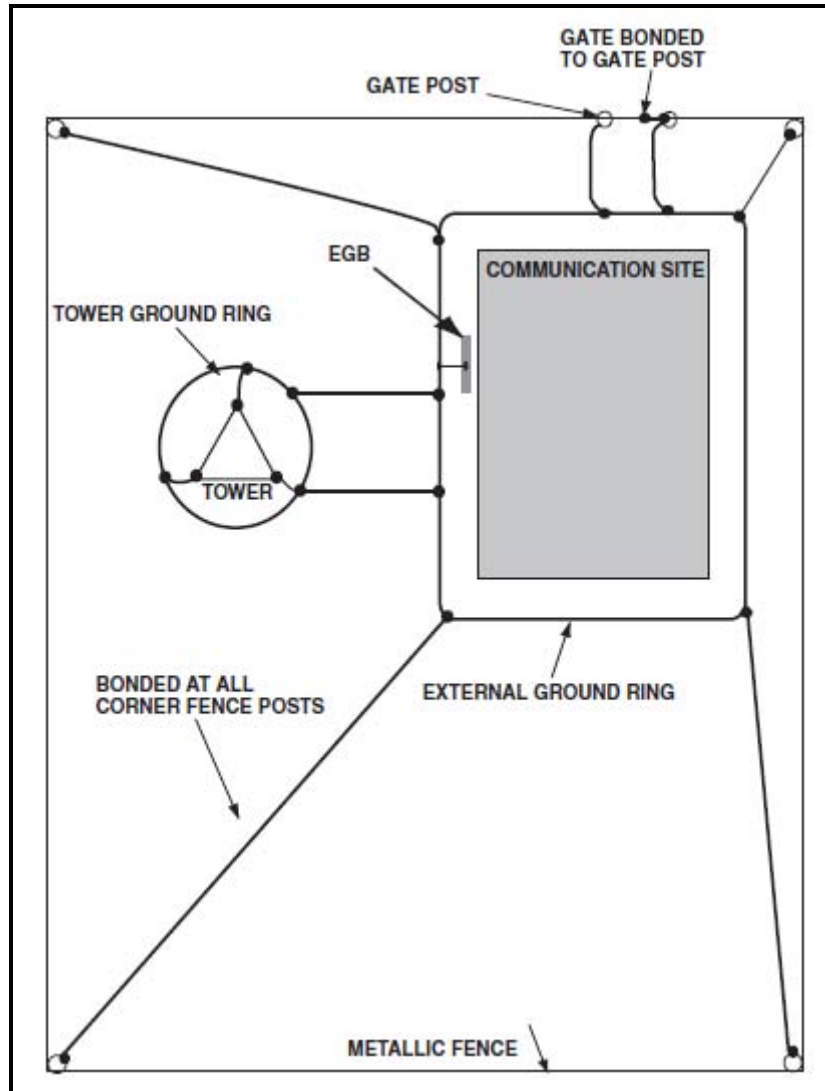


Figure 9 – Typical Fence Grounding

When bonding two dissimilar metals, proper bimetallic transition connectors shall be utilized. The connections between dissimilar metals shall be protected with a non-oxide grease compound.

All grounding runs for the interior or exterior perimeter grounds shall be installed in a manner to minimize impedance, and shall be consistent with good engineering procedures; no sharp bends or right angles will be allowed.

6. INSTALLATION

6.1 General

The equipment installations required by this ITB include all of the previously described equipment, associated hardware, wiring of commercial power, and other facilities normally associated with communications systems. All installations shall be accomplished in accordance with good engineering practices, and all local codes and ordinances.

The Bidders shall inform themselves fully as to all facilities for delivering, storing, placing, handling, and disposition of materials. All aspects of the installation shall be planned and executed in a professional manner.

The installation for each particular equipment item or facility shall include hardware, brackets, wiring, fasteners, ancillary devices, procedures, and services required to install and/or interface components to create operating systems which fulfill the requirements of this ITB. The Bidder is required to adhere to all applicable electrical code and building regulations, all local codes and ordinances, and in general, utilize good engineering practices.

The installations shall be approved by the County prior to commencement of work. The Bidder shall provide drawings depicting the proposed installations at the site within thirty (30) days following the execution of the contract.

The County has had excellent protection and resistance to lightning and electrical surge damage. In order to maintain the County's high level of lightning protection and equipment reliability, all equipment shall be installed, be electrically grounded and bonded, and include surge suppression devices in accordance with the guidelines of the latest versions of NFPA 70, IEEE Std 1100, National Electric Code, Motorola's Fixed Network Equipment Installation Standards Manual R56, all local building codes, and the Bidder/Bidder's FNE installation standards.

6.2 Clearing of Land

Clearing of brush, trees, or any other obstructions, including the removal of asphalt or concrete, is the responsibility of the Bidder. The Bidder shall coordinate with the County's Project Manager as to the extent and schedule for such work to ensure that there is no interference to concurrent operations at the sites. Any tree stumps resulting from clearing shall be grubbed. The Bidder shall comply with all environmental protection requirements.

6.3 Site Cleanup

At the completion of the installations specified herein, the Bidder shall remove all debris that are a result of such installations, backfill and compact all excavations (after inspection and approval is performed by the County), and return the grounds to their original condition.

6.4 Power Service

The installation or modification of AC power service at the communications site shall be the responsibility of the Bidder. The Bidder is required to coordinate with the local utility company as to specific requirements at the site to ensure that power service is available for operation of all electrical equipment.

The Bidder is responsible for all costs associated with electrical service connection of the communications facilities to commercial power.

6.5 Site Preparation

Site preparation shall be provided by the Bidder. This shall include all grading and clearing work. The building and tower base shall be graded so as to prevent the pooling and standing of run-off water. The final grade shall slope away in all directions from the tower base and building. These areas (extending to three feet outside the fence) shall be treated to prevent the recurrence of vegetative growth. The Bidder shall check local codes before applying a chemical defoliant. The Bidder shall treat the newly fenced area with a County approved herbicide prior to installing the weed prevention material. The weed prevention material shall be 6-mil plastic sheet.

Where required, the Bidder shall furnish and install gravel or crushed rock to cover the newly fenced area. The gravel or crushed rock shall be obtained locally and shall not exceed two inches in diameter, so that foot traffic is not difficult. The depth of gravel or rock shall be greater than four inches.

Foundation work and grounding shall also be the Bidder's responsibility. The County's inspectors shall be contacted prior to beginning any work at the site. The responsibility for appropriate permits and inspections, as necessary, rests with the Bidder.

6.6 Emergency Power Generator

The generator shall be secured to a concrete pad with hardware that will minimize vibration and preclude movement. The generator shall be connected to the electrical system and to the fuel source with a flexible fuel line.

6.7 Transfer Switches

Two transfer switches shall be mounted inside of the equipment building. The automatic transfer switch (ATS) shall be connected to the generator via metallic conduit pursuant to manufacturer and electrical code requirements. The commercial power source and the electrical components within the equipment building shall be wired to the transfer switch via conduit with conductors of sufficient size to handle the load requirements of the communications equipment and be code compliant. The manual transfer switch (MTS) shall be installed at the output of the ATS and the secondary input shall be made via an externally mounted weatherproof Huble connector (or engineer-approved equivalent) to allow an alternate generator connection.

The Bidder shall coordinate with the County regarding the schedule for generator installation.

6.8 Fuel Storage Equipment

All LPG storage equipment must meet all local, state, and federal environmental requirements. The LPG fuel storage equipment shall be connected to the standby generator with code approved piping.

All fuel storage equipment shall be above ground on code-approved foundations. The County may choose to have the LPG fuel storage equipment at WDPS installed underground.

LPG fuel storage equipment shall be protected from vehicles with physical barriers.

7. PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

7.1 General

Following completion of the preceding installation requirements, the Bidder, in conjunction with the County's personnel (to be designated), shall verify that all equipment is correctly installed and functional. The Bidder shall provide all necessary technical personnel, transportation, and test equipment to conduct functional tests. The Bidder shall coordinate with the County as to scheduling of the tests. All deviations, anomalies, tests, or specifications failures shall be remedied by the Bidder in a timely manner, as specified by the County and at the Bidder's sole expense.

7.2 Mechanical Inspection

The entire installation effort shall be inspected for conformity to these specifications and to the standards of good engineering practice. Particular attention shall be paid to:

- Site free of debris and excavations backfilled, compacted, and restored
- Ground system properly installed and bonded
- All alarms, circuits, and outlets properly labeled

7.3 Electrical Inspection

The grounding system at each site shall be measured by a three point fall of potential ground resistance test and shall measure five ohms or less. The test shall be performed prior to connection with the utility ground. The external grounding system shall be inspected by the County prior to burial. If the resistance to earth is greater than this amount, the Bidder shall supply and install the additional ground rods required to achieve five ohms or less at no additional cost to the County. The use of soil treating chemicals to lower the resistance is specifically not allowed except by prior County approval.

A written record of the results shall be provided. Two hard copies shall be delivered to the County and one hard copy shall be delivered to the County's Technical Representative. The report shall include details of the instrumentation (model, serial and date of last calibration) and local conditions (wet, dry, temp. etc.).

7.4 Overall Inspection

In addition to the foregoing detailed inspection, the following tests shall be performed on the appropriate equipment or structure. Any equipment not meeting the requirements of these specifications shall be immediately repaired or replaced by the Bidder without additional cost to the County.

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These tests shall be:

- Ground testing using triangulation method and approved test equipment
- Generator testing under full load using the Bidder provided load
- A concrete materials test (a report shall be submitted containing slump test results and compressive strength test results)
- Transfer switch operation to demonstrate loss of commercial power, operation of generator unit, and restoration to commercial power
- Proper alarm operation for specific status information
- Power distribution panel and outlet testing to confirm proper breaker operation and appropriate measurement of voltage and grounding
- Proper installation and operation of surge protection
- Proper installation and operation of all lighting (building and tower) and associated switches and controls
- Proper installation and operation of all timers, thermostats, and air conditioners to include cycling of units
- Proper installation of fire detectors and fire suppression system
- Loading of fire suppression system

7.5 Installation Drawings and Maintenance Manuals

The Bidder shall furnish three sets of "as built" drawings and maintenance manuals for the site where work is performed within thirty (30) days after completion of installation; one to be left at the communications site in the equipment building file cabinet, one complete set to the County, and one complete set of materials to the County's technical consultant. Each piece of electrical equipment installed in the building, including the fire suppression system, shall be provided with a maintenance manual that depicts circuit diagrams, as well as proper unit assembly and installation. All drawings and maintenance manuals shall include all modifications and revisions made to the original drawings, and completely reflect the final layout and configuration of all towers, foundations, power systems, equipment, and alarm points on the Bidder -provided type 66 punch block.

7.6 Emergency Power Generator Tests

The complete installation shall be initially started and checked out for operational compliance by factory-trained representative(s) of the engine-generator set manufacturer. The engine lubrication oil, as recommended by the manufacturer for operation under environmental conditions specified, shall be provided by the Bidder. The Bidder shall provide LPG fuel to fill the fuel storage tank to the maximum allowable capacity.

Upon completion of initial start-up and system check-out, the Bidder shall perform a field test, with the County notified in advance, to demonstrate load carrying capability and voltage and frequency stability.

7.7 AC Power Surge Protection

The primary and emergency power surge protector installations shall be inspected by the manufacturer or its authorized representative. Written certification shall be provided attesting to proper installation and grounding.

7.8 Fire Suppression System

Each fire suppression system shall be inspected by a local company that will certify correct operation. Written certification shall be provided attesting to proper installation and operation, as well as any reporting requirement of local fire officials having jurisdiction at the site.

8. WARRANTY AND MAINTENANCE

8.1 System Warranty

The County requires a "System Warranty" that encompasses all equipment and services provided by the Bidder. The Bidder shall warrant that all equipment and services provided shall be free from all defects in material, software, workmanship, and title, and conform to the proposed specifications and/or all warranties as stated in the Uniform Commercial Code.

The Bidder shall warrant that all equipment and installation conform to the manufacturer's published specifications, that it shall be free from defects in materials, functionality, and workmanship for a period of at least one (1) year from the date of Final System Acceptance.

Any OEM/subcontractor costs for first-year warranty of any system hardware or software component covered under the above warranty requirements shall be included within the basic system cost. The County, prior to acceptance of the system, shall pay no warranty or maintenance costs to the Bidder or any OEM/subcontractor.

During the warranty period, should any single component or software code suffer multiple repeated failures, the Bidder shall replace the same hardware or software component or code throughout the entire system with a redesigned, improved upon, and/or upgraded component or code at no cost to the County.

Bidders shall provide a copy of provisions and terms of the proposed warranty in compliance with applicable state and local codes. A description of available warranty options shall be included in the bid. The Bidder shall be the single point of contact for all warranty claims.

Warranty repairs on all furnished equipment and systems shall be made at no cost to the County for parts, labor, or shipping (to/from repair facility) during the warranty period. The County reserves the right to closely monitor and observe warranty repair service.

During the warranty period, the Bidder shall maintain adequate staff and spare parts inventory, both located within the Prince William County area to assure prompt warranty service. Response times during the warranty period shall be the same as that listed for "Maintenance".

Warranty service shall be provided on the same basis as stated in Section 8.2 below. The Bidder shall certify that its proposed service facilities shall, within the time required herein, be able to diagnose any system failure, that repair will be completed at the earliest possible opportunity upon receipt of necessary parts, and any system critical

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part or sub-system that is not locally stocked as a spare part will be available on an express basis within no more than twenty-four hours.

8.2 System Maintenance, Repair, and Service Facilities

The Bidder shall be responsible for preventative and remedial maintenance of the network system for a period of one (1) year following Final System Acceptance by the County. Maintenance shall include parts, labor, and travel to communications sites or the County facilities to repair fixed equipment.

The Bidder shall detail in its bid the name, location, and the technical capabilities of the service facility which will provide any or all of the installation, service and maintenance, both initially and on a continuing basis. The Bidder shall include a thorough description of the proposed service facilities, the size and location of the facilities, the size and qualifications of its staff including factory training, the number of years in business, and a list of customers (with names and telephone numbers) who operate systems of similar size and complexity for whom installation and maintenance services are performed. The Bidder shall specifically identify the unique experience that the facility and its staff have in the support of the technology proposed to the County. This information is required to demonstrate to the County that the proposed local service facilities are capable of installing, optimizing, and maintaining the proposed network system.

Technicians that are dispatched or assigned to service County equipment and facilities shall be factory certified and trained on the provided equipment and familiar with the County system and configuration.

Any technicians dispatched to service County equipment and facilities shall be approved by the County and has successfully completed a background investigation conducted by the Prince William County Police Department at the expense of the Bidder.

The Bidder shall detail the response times of factory support, should it be required by the local service facility. The factory support referenced here shall be provided directly to the local service facility for assistance in fulfilling the terms of the installation and maintenance agreements; costs for factory support shall be included in your cost bid.

If a maintenance contract is executed following the initial warranty period, the payments for the maintenance contract shall be made by the County on a monthly basis.

The Bidder shall provide a discount level (off list price) and the terms at which the County can purchase service and maintenance equipment.

8.3 Service Response

For the purpose of this ITB, major system failure is defined as the failure of operation of a major component of the site (tower lights, HVAC system, emergency generator,

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automatic transfer switch, etc.). Degradation of performance is not a failure if function and proper operation is maintained.

Response to major system failures shall be as follows:

- ◆ Telephone response within 30 minutes of notification by the County
- ◆ Technician on-site within 2 hours of notification by the County
- ◆ Fault restoration within 4 hours of notification by the County

Response to minor system failures shall be as follows:

- ◆ Telephone response within 30 minutes of notification by the County
- ◆ Technician on-site within 4 hours of notification by the County
- ◆ Fault restoration within 8 hours of notification by the County

9. DOCUMENTATION

Thorough “as built” documentation shall be provided by the Bidder and delivered to the County’s Project Manager within 30 calendar days of Final System Acceptance. Three (3) copies of the documentation shall be provided in 3-ring binders and three (3) copies on CD media in the original software format, including Visio, Excel, and Word for drawings, spreadsheets, and text. One (1) additional paper copy of a complete set of as-built documents and one (1) electronic copy shall be provided for placement at each site.

The Bidder shall supply complete sets of system maintenance manuals in both paper and electronic format.

10. BID PRICE

The Bidder shall submit all pricing for its bid based on the following pricing worksheets. The forms provided in these worksheets serve as the basis for the proposed pricing of all equipment and all services including, but not limited to, equipment delivery, freight, installation, programming, optimization, project management, engineering, performance verification, warranty, etc. Submission of a bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered in performing the work.

The Bidder should expand on the specifics of these forms and duplicate the forms as required to adequately portray the proposed architecture. The Bidder must be as descriptive as possible and include equipment model names, supplier names and model numbers for 3rd-party equipment, etc.

Bids should clearly and effectively communicate system concept, infrastructure configuration and user equipment options. Pricing should reflect both system and component level costs.

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Site: Western District Police Station		
Description	Quantity	Unit Cost
12' x 36' Concrete Shelter	1	
Emergency Power System	1	
90' Monopole Tower	1	
Tower Foundation		
Services		
Engineering		
Civil Work		
Project Management		
Total		
Optional		
1000 Gallon Underground LP Fuel Storage Equipment	1	
Civil Work		
Optional Total		

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Site: Vint Hill		
Description	Quantity	Unit Cost
12' x 36' Concrete Shelter	1	
Emergency Power System	1	
Services		
Engineering		
Civil Work		
Project Management		
Total		

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Site: Cherry Hill (<i>OPTIONAL</i>)		
Description	Quantity	Unit Cost
12' x 36' Concrete Shelter	1	
Emergency Power System	1	
Services		
Engineering		
Civil Work		
Project Management		
Total		

Appendix A

WDPS Site Specifics

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Figure 10 – WDPS Front Elevation View

Figure 11 – WDPS Top Elevation View #1

Figure 12 – WDPS Top Elevation View #2

Figure 13 – WDPS Top Elevation View - Dimensions

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Figure 14 – WDPS Floor Plan Layout

Figure 15 – WDPS Electrical Block Diagram

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Panel Name: MDP			Panel Amperage: 400			
Voltage & Phase: 120/240 1Ø			Panel A.I.C. Rating: 10kAIC			
Mounting: Surface			Other: 400 MB			
Description	Brk	Phase			Brk	Description
UPS A	125/2	1	A	2	125/2	UPS B
UPS A	-	3	B	4	-	UPS B
AC -1	60/2	5	A	6	60/2	AC - 2
AC -1	-	7	B	8	-	AC - 2
Interior Lights	20/1	9	A	10	20/1	Exterior Lights
Dehydrator	20/1	11	B	12	20/1	Tower Light Controller
General Receptacles	20/1	13	A	14	20/1	General Receptacles
General Receptacles	20/1	15	B	16	20/1	General Receptacles
DC Rectifier	30/2	17	A	18	20/1	SPARE
DC Rectifier	30/2	19	B	20	20/1	SPARE
SPARE	20/1	21	A	22	20/1	SPARE
SPACE		23	B	24		SPACE
SPACE		25	A	26		SPACE
SPACE		27	B	28		SPACE
SPACE		29	A	30		SPACE
SPACE		31	B	32		SPACE
SPACE		33	A	34		SPACE
SPACE		35	B	36		SPACE
SPACE		37	A	38		SPACE
SPACE		39	B	40		SPACE
Connected Load A (VA)		44759	373	A		
Connected Load B (VA)		45975	383	A		

Table 4 – WDPS MDP Electrical Schedule

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Panel Name: UPS - A			Panel Amperage: 225			
Voltage & Phase: 120/240 1Ø			Panel A.I.C. Rating: 10kAIC			
Mounting: Surface			Other:			
Description	Brk	Phase			Brk	Description
GAS1 Netra T5220 Servers PS1	20/1	1	A	2	20/1	GAS02 Netra T5220 Servers PS1
GAS01 Netra T5220 Servers PS2	20/1	3	B	4	20/1	GAS03 Netra T5220 Server PS2
DCD(HP ProLiant DL360 G5 single pwr-supp (T7121C))	20/1	5	A	6	20/1	MAS LAN Switch 1 HP3500 (TT2208)
SNAP 410 Storage Server (DLN1412A)	20/1	7	B	8	20/1	MDM (OBM) Server
GENWATCH 3	20/1	9	A	10	20/1	PNS (HP ProLiant DL360 G6 dual pwr-supp) PS2
MAS LAN Switch 2 HP3500 (TT2208)	20/1	11	B	12	20/1	Backhaul Switch 01 (HP2610-24)
KMF 001(HP ProLiant DL360 G6 dual pwr-supp) PS1 (DLN6733)	20/1	13	A	14	20/1	VMS 001(HP ProLiant DL360 G6 dual pwr-supp) PS2 (DLN6733)
PDG (HP ProLiant DL360 G6 dual pwr-supp) PS2	20/1	15	B	16	20/1	VMS 002(HP ProLiant DL360 G6 dual pwr-supp) PS1
CS/LAN Switch 01 (HP2610-24)	20/1	17	A	18	20/1	DMZ HP2610-24 (CLN1836)
Juniper SSG-140 Firewall (TT1931)	20/1	19	B	20	20/1	CEN Switch 01 HP2610-24 (CLN1836)
TRAK 9100	20/1	21	A	22	20/1	DATA SW
Prime Site Switch 1 & 3 External Pwr Supply (TT2250)	20/1	23	B	24	20/1	BH Switch (HP2610-48) 01
Prime Site Switch 2 & 4 External Pwr Supply (TT2250)	20/1	25	A	26	20/1	CONV LAN Switch 02 (HP2610-24)
DATA SW	20/1	27	B	28	20/1	MLC 8000 05
MLC 8000 03	20/1	29	A	30	20/1	NM/DISP LAN Switch 02 (HP2610-48)
MLC 8000 02	20/1	31	B	32	20/1	NM/DISP LAN Switch 01 (HP2610-48)
NICE IP Logger	20/1	33	A	34	20/1	SPARE
ASTRON 12DC PWR SUPPLY	20/1	35	B	36	20/1	SPARE
SPARE	20/1	37	A	38	20/1	SPARE
SPARE	20/1	39	B	40	20/1	SPARE
Connected Load A (VA)		6903	58	A		
Connected Load B (VA)		7051	59	A		

Table 5 – WDPS UPS - A Electrical Schedule

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Panel Name: UPS - B		Panel Amperage: 225				
Voltage & Phase: 120/240 1Ø		Panel A.I.C. Rating: 10kAIC				
Mounting: Surface		Other:				
Description	Brk	Phase		Brk	Description	
GAS01 Netra T5220 Servers (Dual 650Watts Power Supply) PS1	20/1	1	A	2	20/1	GAS03 Netra T5220 Servers (Dual 650Watts Power Supply) PS1
GAS1 Netra T5220 Servers (Dual 650Watts Power Supply) PS2	20/1	3	B	4	20/1	GAS02 Netra T5220 Servers (Dual 650Watts Power Supply) PS2
Paradyne Modem	20/1	5	A	6	20/1	Backhaul Switch 02 (HP2610-24)
OPSWARE (HP ProLiant DL360 G5 single pwr-supp (T7121C)	20/1	7	B	8	20/1	LAN Switches External Pwr Spply (TT2250)
TMS	20/1	9	A	10	20/1	KMF 001(HP ProLiant DL360 G6 dual pwr-supp) PS2
PNS (HP ProLiant DL360 G6 dual pwr-supp) PS1	20/1	11	B	12	20/1	PDG (HP ProLiant DL360 G6 dual pwr-supp) PS1
VMS 002(HP ProLiant DL360 G6 dual pwr-supp) PS2	20/1	13	A	14	20/1	KVM 01
VMS 001(HP ProLiant DL360 G6 dual pwr-supp) PS1 (DLN6733)	20/1	15	B	16	20/1	KVM Pullout LCD BlacBox KVT202A (DQKVT202)
ASTRON 12DC PWR SUPPLY	20/1	17	A	18	20/1	Prime Site Switch 2 HP3500 (TT2208)
Prime Site LAN Switch 1 HP3500 (TT2208)	20/1	19	B	20	20/1	BH Switch (HP2610-48) 02
LAN Switches External Pwr Spply 02 (DSHPJ8168A)	20/1	21	A	22	20/1	MLC 8000 02
Prime Site Switch 4 HP3500 (TT2208)	20/1	23	B	24	20/1	CONV LAN Switch 01 (HP2610-24)
LAN Switches External Pwr Spply 01 (DSHPJ8168A)	20/1	25	A	26	20/1	NICE IP Logger
MLC 8000 02	20/1	27	B	28	20/1	Prime Site LAN Switch 3 HP3500 (TT2208)
SPARE	20/1	29	A	30	20/1	SPARE
SPARE	20/1	31	B	32	20/1	SPARE
SPARE	20/1	33	A	34	20/1	SPARE
SPARE	20/1	35	B	36	20/1	SPARE
SPARE	20/1	37	A	38	20/1	SPARE
SPARE	20/1	39	B	40	20/1	SPARE
Connected Load A (VA)		7051	59	A		
Connected Load B (VA)		7244	60	A		

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Table 6 – WDPS UPS - B Electrical Schedule

Appendix B

Vint Hill and Cherry Hill Site Specifics

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Figure 16 – Vint Hill Top Elevation View

Figure 17 – Vint Hill and Cherry Hill Floor Plan Layout

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Panel Name: MDP		Panel Amperage: 400				
Voltage & Phase: 120/240 1Ø		Panel A.I.C. Rating: 10kAIC				
Mounting: Surface		Other: 400 MB				
Description	Brk	Phase			Brk	Description
AC - 1	60-2	1	A	2	60/2	AC - 2
AC - 1	-	3	B	4	-	AC - 2
DC - Power Plant 1A	30/2	5	A	6	30/2	DC - Power Plant 2A
DC - Power Plant 1A	-	7	B	8	-	DC - Power Plant 2A
DC - Power Plant 3A	30/2	9	A	10	30/2	DC - Power Plant 4A
DC - Power Plant 3A	-	11	B	12	-	DC - Power Plant 4A
DC - Power Plant 5A	30/2	13	A	14	30-2	DC - Power Plant 6A
DC - Power Plant 5A	-	15	B	16	-	DC - Power Plant 6A
DC - Power Plant 1B	20/1	17	A	18	20/1	DC - Power Plant 2B
DC - Power Plant 1B	20/1	19	B	20	20/1	DC - Power Plant 2B
Interior Lights	20/1	21	A	22	20/1	Exterior Lights
Dehydrator	20/1	23	B	24	20/1	Tower Light Controller
General Receptacles	20/1	25	A	26	20/1	General Receptacles
General Receptacles	20/1	27	B	28	20/1	General Receptacles
SPARE	20/1	29	A	30	20/1	SPARE
SPARE	20/1	31	B	32	20/1	SPARE
SPARE	20/1	33	A	34	20/1	SPARE
SPARE	20/1	35	B	36	20/1	SPARE
SPARE	20/1	37	A	38	20/1	SPARE
SPARE	20/1	39	B	40	20/1	SPARE
Connected Load A (VA)		36680	306	A		
Connected Load B (VA)		36380	303	A		

Table 8 – Vint Hill and Cherry Hill MDP Electrical Schedule

Appendix C

Typical Drawings

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Figure 18 – Typical Site Electrical with Isolation Transformer

Prince William County, VA
Communications Equipment Buildings, Standby Generators and Monopole ITB

Figure 19 – Typical Site Electrical without Isolation Transformer

Figure 20 – Typical Utility Detail – Shelter Exterior

Figure 21 – Typical Chain-Link Fence Grounding Detail

Figure 22 – Typical Shelter Floor Plan/Cable Tray Layout