EXHIBIT A

FLORIDA DEPARTMENT OF TRANSPORTATION

SCOPE OF SERVICES

FOR

FTE CLERMONT TURNPIKE TOWER REPLACEMENT

March 13, 2014
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APPENDIX A - FDOT FTE CLERMONT TURNPIKE (8-5269) TOWER REPLACEMENT
CONTRACT PLANS
1. PROJECT SCOPE

1.1 General

This document provides technical specifications and delineates the requirements for replacing the Florida Department of Transportation’s (FDOT’s) Florida’s Turnpike Enterprise (FTE) Clermont Turnpike 270-foot guyed telecommunications tower and radio antenna systems. This project will supply and install a 270-foot solid rod member self-supporting tower and radio antenna systems. The self-supporting tower and foundation shall be erected then new radio antennas and grounding systems shall be furnished and installed in accordance with these specifications and plans. The existing microwave and land mobile radio systems shall be cut-over from the existing guyed tower to the newly erected self-supporting tower and antenna systems. Finally, the guyed tower shall be dismantled and new fenced compound facilities shall be furnished and installed.

The main elements of this project include, but are not limited to:

- Submit proposed transportation Maintenance of Traffic (MOT) plans for review and approval of the FDOT.
- Submit proposed tower and foundation structural analysis and structure assembly design plans for review and approval of the FDOT.
- Submit proposed antennas, transmission line, tower lighting, and grounding systems installation design plans for review and approval of the FDOT.
- Furnish and install the concrete drilled pier tower foundations.
- Furnish and erect the 270-foot self-supporting tower.
- Furnish and install all antennas, waveguides, coaxial cables, tower lighting system, required appurtenances and exterior grounding systems.
- Inspect all installation work.
- Perform waveguide air pressure leak tests. FDOT to witness.
- Perform antennas, waveguides, and coaxial cables time and frequency sweep measurements. FDOT to witness.
- Cut-over operational microwave and land mobile radio systems to the new antenna systems, including microwave antenna path alignments. FDOT to witness.
- Perform and verify microwave receive signal level performance measurements. FDOT to witness.
- Dismantle 270-foot guyed tower and remove all associated foundations below grade.
• Dispose of all material and debris.
• Backfill holes, grade, and apply grass sod to compound.
• Furnish and install new communications compound and materials lot fence segments.
• Final acceptance inspection.
• Entire job shall be in accordance with Appendix A: FDOT FTE Clermont Turnpike (8-5269) Tower Replacement Contract Plans package.

1.2 Conduct of Work

The Successful Proposer (hereafter “Vendor”) shall arrange with the FDOT for access to the sites and work areas. The Vendor shall provide security for his/her equipment as required by the FDOT, and shall conduct his/her operations so as to avoid interference with the FDOT's normal operations.

Work to be performed outside the scope of these specifications shall be referred to as "By others", or if by the State of Florida's designated representative then "By FDOT". The Vendor shall be responsible for coordinating his work with that of "others" or FDOT wherever an interface is required.

1.3 Drawings and Project Plans

The drawings and project plans are typically diagrammatic. They are as accurate as scale permits and the Vendor shall follow them as closely as possible. Any field conditions that change the required installation shall be reported to the FDOT. The Vendor shall verify all conditions and measurements relating to the work in the field prior to proceeding with installation. The Vendor shall verify all walls, rack profiles, cable trays, and conduit lengths at the existing facilities and include all conditions required to install equipment and systems as described herein and as shown on the drawings. All offsets required for installation of cabling and wiring systems shall be included in this project at no additional cost to the FDOT. The Vendor shall coordinate any modifications required by existing conditions to avoid conflicts of building systems and other building components.

The drawings, project plans, and specifications are complementary, and any work required by one and not the other shall be considered to be required by both. The FDOT Project Manager shall be the sole interpreter of the drawings and specifications.

The Vendor shall note that all drawings and details are diagrammatic in general and indicate the character of the work included. Work intended, but having minor details
obviously omitted or not shown, shall be furnished and installed complete to perform the functions desired.

1.4 Definitions

Department: The Purchaser (or Owner)
State of Florida
Florida Department of Transportation (FDOT)
Contact Person is the FDOT Project Manager (see below) in Tallahassee, Florida

Vendor: The individual, firm, partnership, corporation, company, association, or other legal entity to whom the contract is awarded by the FDOT and who is subject to the terms thereof.

Vendor Project Manager: The Vendor’s project contact person who has the project responsibility.

FDOT Project Manager: Randy Pierce
FDOT Traffic Engineering and Operations – ITS Section
605 Suwannee Street, MS 90
Tallahassee, Florida 32399-0450
V: (850) 410-5608, F: (850) 410-5501
randy.pierce@dot.state.fl.us

Project Consultant: Russell Allen, P.E.
RCC Consultants, Inc.
2927 Habersham Dr
Tallahassee, Florida 32309
V: (850) 410-5626, F: (850) 410-5501
Russell.Allen@dot.state.fl.us

1.5 Vendor’s Responsibility

It is understood, and the Vendor hereby agrees, that the Vendor is solely responsible for all equipment, materials, and services proposed. Notwithstanding the details presented in these specifications, the Vendor is responsible for verifying the completeness of the materials required and suitability of devices to meet these specifications. The Vendor shall provide and install, without claim, any additional equipment required for operation in accordance with these specifications.
1.6 Changes in Work

FDOT may at any time, by written amendment to the contract, make changes within the general scope of the work, including, but not limited to, revisions, deletions or additions to portions of the work; or changes in the method of shipment or packaging and place of delivery, upon appropriate approvals as allowed by FDOT’s procurement code.

If any change order initiated by the FDOT causes an increase or decrease in the cost or time required for the performance of any part of the work under the contract, an equitable adjustment shall be made by the FDOT in the contract price or delivery schedule, or both, and the contract shall be modified in writing accordingly. Adjustments to contract price for labor shall be based on the actual direct labor and burden reasonably incurred in the additional or unforeseen work, plus a mark-up not to exceed 10 percent. Adjustments to contract price for actual equipment and supplies shall be based on the actual cost of equipment and supplies incorporated into the work, including Vendor paid transportation charges, reasonably incurred in the additional or unforeseen work, plus a mark-up not to exceed 10 percent.

1.7 No Waiver of Contract

Changes made by the FDOT shall not be considered to waive any of the provisions of the contract, nor may the Vendor make any claim for loss of anticipated profits because of the changes, or by reason of any variation between the approximate quantities and the quantities of work actually performed. All work shall be performed as directed by the FDOT and in accordance with the contract documents.

1.8 Site Access and Security Requirements

The FDOT system addressed in this contract supports public safety applications such as Intelligent Transportation Systems, Highway Maintenance, and the Statewide Law Enforcement Radio System. To ensure security for the system, FDOT requires that Vendor or Sub-Vendor employees submit to security background checks performed by the Florida Department of Law Enforcement after award of contract. This is only required if the Vendor or Sub-Vendor employees require site access without being escorted by an FDOT representative. A minimum of one Vendor or Sub-Vendor employee that possesses this clearance must be on site at all times, unless accompanied by an FDOT representative.
1.9 Right to Remove Personnel from Project

The FDOT has the right to remove any Vendor or Sub-Vendor personnel from the project for any reason. The FDOT shall send a written notification to the Vendor, via fax, that a particular person shall be removed from the project. The Vendor shall remove the particular person from the project within 24 hours of transmission of the written notice.

1.10 Warranty

All equipment and services furnished by the Vendor as part of this project shall be warranted to be free from defects in material and workmanship, and shall conform to this specification. In the event any such defects in equipment or services become evident within the warranty period, the Vendor shall correct the defect by, at its option, (1) repairing any defective component of the equipment; (2) furnishing and installing necessary replacement parts; or (3) redoing the faulty services. The Vendor is responsible for all charges incurred in returning defective parts to the Vendor's, Sub-Vendor's, or suppliers' plants, and in shipping repaired or replacement parts to FDOT. The Vendor shall provide labor to perform warranty services at no charge to FDOT during the warranty period.

The Vendor further warrants that during the warranty period equipment furnished under this contract shall operate under normal use and services as a complete system, which shall perform in accordance with this specification.

The warranty period shall be a period of at least 12 months from the date of final systems acceptance as defined herein. Claims under any of the warranties herein are valid if made within 30 days after termination of the warranty period. In addition, the following specific requirements apply to the Vendor's warranty:

- All equipment furnished by the Vendor hereunder shall be new and of current manufacture.

- FDOT shall notify the Vendor within a reasonable time after the discovery of any failure or defect occurring within the warranty period.

Should the Vendor fail to remedy any failure or defect within 30 consecutive days after receipt of notice thereof, or within time specified in the notice, FDOT shall have the right to replace, repair, or otherwise remedy such failure or defect at the Vendor’s expense.

The Vendor shall obtain any warranties which Sub-Vendors or suppliers to the Vendor give in the regular course of commercial practice, and shall apply the same to the benefit of the FDOT.
The warranty shall be comprehensive. No deductibles shall be allowed for travel time, service hours, repair parts cost, etc.

1.11 Material and Workmanship

All equipment and component parts furnished shall be new, meet or exceed the minimum requirements stated herein, and perform to manufacturer’s specifications.

All parts shall be of high quality workmanship and utilize the most current technology available. No part or attachment shall be substituted or applied contrary to the manufacturer’s recommendations and standard practices. At the time of delivery and installation, the most current revision model of each type of equipment meeting or exceeding the requirements of this contract shall be provided, regardless of the model offered in the proposal.

1.12 Software Updates and Vendor Documentation

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1.13 Patents and Royalties

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1.14 Kick-Off Conference

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1.15 Progress Reporting

The Vendor shall provide weekly progress reports on work schedules. The Vendor shall also provide progress reports against the approved weekly work schedule.

1.16 Submittals

1.16.1 General

This section specifies administrative and procedural requirements for submittals required for performance of the Work, including but not limited to:

- Vendor’s installation schedule.
- Product data.
- Special reports.
1.16.2 Coordination

The Vendor shall coordinate the preparation and processing of submittals with performance of installation activities. The Vendor shall transmit each submittal sufficiently in advance of performance of related installation activities to avoid delay.

The Vendor shall coordinate each submittal with purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

The Vendor shall coordinate transmittal of different types of submittals for related elements of the Work so processing shall not be delayed by the need to review submittals concurrently for coordination.

FDOT reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

1.16.3 Processing

The Vendor shall allow sufficient review time so that installation shall not be delayed as a result of the time required to process submittals, including time for resubmittals.

The Vendor shall allow 10 business days for initial review. The Vendor shall allow additional time if processing shall be delayed to permit coordination with subsequent submittals. FDOT shall promptly advise the Vendor when a submittal being processed shall be delayed for coordination.

If an intermediate submittal is necessary, the Vendor shall process the submittal the same as the initial submittal.

The Vendor shall allow 10 business days for reprocessing each submittal.

No extension of contract time shall be authorized because of failure to transmit submittals to FDOT sufficiently in advance of the work to permit processing.

1.16.4 Submittal Preparation

The Vendor shall place a permanent label or title block on each submittal for identification. The Vendor shall indicate the name of the entity that prepared each submittal on the label or title block.
The Vendor shall provide a space approximately 4” x 5” on the label or beside the title block on drawings to record the Vendor’s review and approval markings and the action taken.

Include the following information on the label for processing and recording action taken:

- Project name.
- Date.
- Name and address of Vendor.
- Name and address of Sub-Vendor.
- Name and address of supplier.
- Name of manufacturer.
- Number and title of appropriate specification section.
- Drawing number and detail references, as appropriate.

1.16.5 Submittal Transmittal

The Vendor shall package each submittal appropriately for transmittal and handling. The Vendor shall transmit each submittal to FDOT using a transmittal form. Submittals received from sources other than the Vendor shall be returned without action.

The Vendor shall record relevant information and requests for data on the transmittal. The Vendor shall record deviations from contract document requirements, including all variations and limitations on the transmittal or on a separate sheet. The Vendor shall include the Vendor’s certification that information complies with contract document requirements.

1.16.6 Vendor’s Installation Schedule

1.16.6.1 General

The Vendor shall prepare a fully developed installation schedule. The Vendor shall submit its initial schedule within 10 days of receipt of Notice to Proceed.

The Vendor shall secure time commitments for performing critical elements of the work from all parties involved. The Vendor shall coordinate each element on the schedule with other installation activities; include minor elements involved in the sequence of the work. The Vendor shall show each activity in proper sequence.

The Vendor shall coordinate the installation schedule with Sub-Vendors, submittal schedule, payment requests and other schedules.
1.16.6.2 Distribution

The Vendor shall print and distribute copies to FDOT, Sub-Vendors, and other parties required to comply with scheduled dates.

When revisions are made, the Vendor shall distribute the updated schedule to the same parties. The Vendor shall remove parties from distribution when they have completed their assigned portion of the work and are no longer involved in installation activities.

1.16.6.3 Schedule Updating

The Vendor shall revise the schedule after each meeting or activity, where revisions have been recognized or made. The Vendor shall issue the updated schedule concurrently with report of each meeting. The Vendor shall submit Notification of Work forms weekly, and as needed.

1.16.7 Drawings

The Vendor shall submit newly prepared information and, when required, drawn to accurate scale. The Vendor shall highlight, encircle, or otherwise indicate deviations from the contract documents.

When submitting drawings that do not meet all specified requirements, the Vendor shall clearly indicate on the drawings and the transmittal letter the proposed exceptions. Any drawings without clearly identifying specification exceptions shall be subject to the same provisions of a "rejected" submittal.

Drawings include, but are not limited to, tower shop/fabrication drawings, tower assembly drawings, site plans, fence details and notes, grounding plan, 66-type punchblock details, indoor and outdoor equipment wall mount details, obstruction lighting wiring diagrams, installation drawings, and similar drawings.

Submittals of tower Shop/Fabrication Drawings, including gusset/tab designs, member connection designs, welding specifications, and gavanization details are required.

THE VENDOR SHALL SUBMIT FOUR SETS OF DRAWINGS FOR FDOT REVIEW. ONE SET SHALL BE RETURNED.

The Vendor shall not use drawings without a written approval from the FDOT Project Manager indicating action to be taken in connection with installation.
1.16.8 Product Data

The Vendor shall collect product data into a single submittal for each element of installation or the system. The product data shall include printed information such as manufacturer's installation instructions and performance specifications.

The Vendor shall mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which are not required, the Vendor shall mark copies to indicate the applicable information. The Vendor shall include the Vendor's certification that the product complies with contract document requirements.

The Vendor shall submit four copies of each required submittal. One copy shall be returned to the Vendor marked with action taken and corrections or modifications required.

The Vendor shall furnish copies of the final submittal to installers, Sub-Vendors, suppliers, manufacturers, and others required for performance of installation activities. The Vendor shall show the distribution on transmittal forms.

1.16.9 Submittal Actions

Except for submittals for record, information or similar purposes, where action and return is not required or requested, FDOT shall review each submittal and return comments to the Vendor.

The Vendor shall comply with FDOT’s review comments.

1.16.10 Special Reports

Except when otherwise indicated, the Vendor shall submit special reports directly to FDOT within one day of occurrence requiring special report, with copies to others affected by the occurrence.

The Vendor shall prepare and submit reports of significant accidents at the site and anywhere else work is in progress to FDOT. The Vendor shall record and document data and actions, and shall comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.
1.17 Project Closeout

1.17.1 Substantial Completion

Substantial Completion is defined as the point at which the equipment is fully installed, operational, has successfully passed field acceptance testing of all elements, and inspections are completed.

Before requesting inspection for certification of Substantial Completion, the Vendor shall complete the following:

- In the application for payment that coincides with, or first follows, the date Substantial Completion is claimed, include supporting documentation for completion as indicated in these contract documents and a statement showing an accounting of changes in the contract sum.

- If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete installation, and reasons the work is not complete.

- Advise FDOT of pending insurance change-over requirements.

- Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

- Obtain and submit releases enabling FDOT unrestricted use of the work and access to services and utilities; include operating certificates and similar releases.

On receipt of a request for inspection for substantial completion, FDOT shall either proceed with inspection or advise the Vendor of unfulfilled requirements. FDOT shall prepare the Certificate of Substantial Completion following the inspection, or advise the Vendor of work that shall be completed or corrected before the certificate shall be issued.

FDOT shall repeat inspection when requested and assured that the work has been substantially completed.

1.17.2 Final Acceptance

Final Acceptance is defined as the point at which all work is completed, all closeout forms are completed and submitted, and equipment spares, manuals, and training have been provided.
A. Before requesting inspection for Certification of Final Acceptance, the Vendor shall complete the following: Submit as-built documentation, maintenance manuals, final project photographs, ITS Facility Management System Attribute Forms, and similar final record information.

B. Deliver spare parts and similar items.

C. Complete final clean up requirements.

D. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

E. Submit an updated final statement, accounting for final additional changes to the contract sum.

F. Submit a copy of FDOT's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance. List any and all exceptions on this list.

G. Submit all required inspection certificates, bonds, and written guarantees.

H. Return all FDOT provided keys for access to the site. Include affidavit that duplications of keys have not occurred.

FDOT shall re-inspect the work upon receipt of notice that all the work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to FDOT. Upon completion of re-inspection, FDOT shall prepare a Certificate of Final Acceptance, or advise the Vendor of work that is incomplete or of obligations that have not been fulfilled but are required for Final Acceptance. If necessary, re-inspection shall be repeated.

1.17.3 Closeout Checklist

All items listed below, with the exception of the first item listed, shall be bound in individual heavy-duty 3-ring vinyl covered binders. The Vendor shall mark appropriate identification on front and spine of each binder.

All items shall be submitted in triplicate within fifteen days of Substantial Completion for the project:
• Application and Certification for Payment (Final). Four copies with original signatures and seals.

• Power of Attorney from Surety to make Final Payment.

• Warrantees as required by the specifications, in the name of FDOT.

• Verification that FDOT’s personnel have been trained in the use of their new equipment. Submit a sign-in sheet signed by personnel receiving the training.

• As-built documentation of maintenance and operation manuals.

• Equipment Inventory List including manufacturer and serial numbers.

• Completed ITS Facility Management System Attribute Forms

• Notarized affidavit of all Sub-Vendor payrolls, bills for materials/equipment and other indebtedness paid and satisfied.

2. SITE OF WORK

The Vendor shall visit and inspect the FTE Clermont Turnpike communications facilities prior to submitting a quote. The Vendor shall submit a quote for equipment and facilities work required as delineated in this specification and Appendix A.

ALL PRE-BID SITE VISITS MUST BE COORDINATED AND SCHEDULED WITH THE FDOT PROJECT MANAGER. AN FDOT REPRESENTATIVE WILL BE AVAILABLE TO ACCOMMODATE ACCESS TO THE FACILITIES IF REQUESTED.

The FTE Clermont Turnpike communications facilities are located at Mile Post 285 on Florida’s Turnpike at US-27/US-19. The physical address is: 20736 O’Brien Road, Groveland, FL 34736.

Latitude: 28° 38’ 45.2” N   Longitude: 81° 48’ 29.8” W   (NAD 83)

3. INSTALLATION

Installation of all tower and facilities equipment shall meet or exceed the design requirements of this Scope of Services and standards of good engineering practice. Any damage to the existing facilities shall be repaired by the Vendor at no additional cost to FDOT. The relative arrangement of operating equipment shall be consistent with the existing site installation and with good engineering practices.
The Vendor shall refer to Contract Plans in Appendix A for installation details.

3.1 Elliptical Waveguide and Coaxial Cable Special Concerns

The Vendor shall be responsible for all elliptical waveguides, coaxial cables, tower lights cables, conduits, and respective hardware; as any bends, kinks, or deformation will render the elliptical waveguides and coaxial cables unusable. Splicing of the waveguide is not permitted. Any elliptical waveguides and coaxial cables damaged by the Vendor shall be replaced with new full-length waveguides and coaxial cables at the Vendor's cost, without claim.

The Vendor shall refer to Contract Plans in Appendix A for installation details.

3.2 270-Foot Solid Rod Member Self-Supporting Tower

The Vendor shall supply and deliver a 270-foot solid rod member self-supporting tower assembly to the FTE Clermont Turnpike communications site. The Vendor shall furnish and install the concrete drilled pier leg foundations. The Vendor shall erect and install the self-supporting tower assembly in accordance with these specifications.

The Vendor shall refer to Contract Plans in Appendix A for specifications and installation details.

3.3 Site Grounding

Lightning damage to equipment and structures and its prevention is a major consideration in the design of communications sites in Florida. The Vendor shall perform all facilities work in accordance with the installation requirements delineated herein to ensure that adequate grounding is installed at the FTE Clermont Turnpike communications facilities site.

Work performed at the FDOT site must meet the requirements herein to ensure compliance with FDOT installation practices.

ANY VARIANCE FROM THE FDOT'S PRACTICES SHALL BE SUBMITTED IN WRITING AND MUST BE PRE-APPROVED IN WRITING BY THE FDOT PROJECT MANAGER OR IT WILL NOT BE ACCEPTED.

The Vendor shall refer to Contract Plans in Appendix A for installation details.
3.4 **Antenna Systems Cut-Over**

The radio antenna systems' Return Loss shall be commensurate with the system component return loss specifications of the manufacturer. The radio antennas, waveguides, and coaxial transmission lines shall be swept in both frequency domain and time domain with appropriate laboratory-grade Vector Network Analyzer test equipment, and printed documentation of the test results shall be submitted to the FDOT for approval prior to cut-over.

All of the FDOT radio systems are in service and carrying critical communications traffic. Should the cut-over cause downtime to the existing system, the downtime must be coordinated with the FDOT prior to the downtime occurrence. All work classified as causing minor downtime requires a minimum of two days prior notice. All work classified as causing significant downtime requires a minimum of ten days prior notice and must be coordinated with the FDOT prior to occurrence.

Microwave link performance Receive Signal Levels (RSLs) measurements shall be performed by the Vendor and witnessed by the FDOT to verify proper antenna alignment. RSL measurements shall be recorded onto the FDOT approved Coordinate Sites RSL Measurements form contained in Appendix A.

The Vendor shall refer to Contract Plans in Appendix A for cut-over details.

4. **INSPECTION AND VERIFICATION**

The FDOT’s Project Manager or designated representative shall be present to oversee and inspect all installation activities. The Vendor shall notify the individuals listed below of the start of work a minimum of seven (7) working days in advance. The FDOT Project Manager or designated personnel has the authority to stop work at the site if the work is not being performed in a manner consistent with these specifications or if the work is being performed in an unsafe manner.

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<tr>
<th>Name</th>
<th>Organization</th>
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</tr>
<tr>
<td>Russell Allen, P.E.</td>
<td>FDOT, Traffic Operations - ITS, TGC</td>
<td>(850) 410-5626</td>
</tr>
</tbody>
</table>

5. **PERFORMANCE TESTING AND ACCEPTANCE**

The Vendor shall notify the FDOT Project Manager and the FDOT’s local personnel at least 10 days prior to completion of the installation activities. The Vendor, in conjunction
with the FDOT's Project Manager or designated representative(s), shall verify that all equipment is correctly installed and functioning properly.

ALL TESTS SHALL BE WITNESSED BY THE FDOT PROJECT MANAGER OR DESIGNATED PERSONNEL. ALL TESTS RESULTS SHALL HAVE A WITNESS SIGNATURE OF THE DESIGNATED FDOT PERSONNEL OR THE TEST RESULTS WILL NOT BE ACCEPTED.

5.1 Performance Testing

Following the completion of all inspections and testing, the installed self-supporting tower, elliptical waveguide and coaxial cable transmission lines shall be subjected to a minimum 20 day performance period. A performance period of 20 consecutive calendar days of successful operation shall constitute a successful performance period.

For the purpose of the successful performance period, failure of operation is defined as the failure of a major component of the tower, elliptical waveguide or coaxial cable transmission lines. Degradation of microwave link performance is considered a failure.

The performance verification shall be accomplished and witnessed by the FDOT Project Manager or designated personnel. Upon acceptance of the criteria of the test by the FDOT Project Manager, the 20 day performance period shall begin. This requirement shall be accomplished during a period of time not to exceed 45 consecutive calendar days after equipment installation, inspection, and testing.

If a successful performance period cannot be accomplished within 45 consecutive calendar days after the equipment inspection and testing, the FDOT reserves the right to deem the Vendor in default and enforce the provisions set forth in the contract.

5.2 Acceptance

The Vendor shall provide an acceptance report at the conclusion of the testing for FDOT review and approval. Upon completion of the successful performance period the FDOT shall issue acceptance.

6. AS-BUILT DOCUMENTATION

The Vendor shall provide photographic documentation of all work performed at the site clearly showing the removal and installation of new facilities, equipment, grounding, and installation hardware, including mounting and grounding connections of antenna transmission line systems and other ancillary hardware to the tower.
The Vendor shall provide a set of hard copy, as well as soft copy, as-built documentation as part of this project. The as-built documentation shall fully detail all work activities associated with this project.

The awarded Vendor may request a copy of the design drawings in Visio format as a reference for developing as-built documentation.

THE VISIO DRAWINGS ARE FOR DIAGRAMMATICAL PURPOSES ONLY AND ARE NOT CONSIDERED AS-BUILT DOCUMENTS. THE VENDOR IS RESPONSIBLE FOR DEVELOPING ALL AS-BUILT DRAWINGS.

The Vendor shall complete the ITS Facility Management System Attribute Forms in accordance with this specification. The forms included in this section are for diagrammatical purposes only. The Vendor shall download the actual forms from the following ITS Facility Management System web site address:

http://www.dot.state.fl.us/trafficoperations/ITS/Projects_Telecom/ITSFM/ITSFM.shtm

It is important that the Vendor download and use the most current file versions prior to starting installation, survey, inventory, or feature import tasks because of the frequency of updates.
6.1 ITS Facility Management Attribute Forms

<table>
<thead>
<tr>
<th>Date:</th>
<th>Inspector:</th>
<th>Financial Project ID:</th>
<th>As-Built Drawing No:</th>
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</thead>
<tbody>
<tr>
<td>Tower Support Structure (SIN):</td>
<td>Latitude / Longitude (N/W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Name:</td>
<td>N =</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner:</td>
<td>W=</td>
<td></td>
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## Tower Support Structure

**Tower Information**

- Year Installed:
- Tower Type: [ ] Self-Support [ ] Guyed [ ] Mono Pole [ ] Crank Up
- Tower Manufacture:
- Tower Model:
- Tower Finish: [ ] Galvanized [ ] Painted
- Tower Height (ft):

## Tower Inspection Date:

**Antenna Components**

- Year Installed:
- Antenna Manufacture:
- Antenna Model:
- Antenna Type: [ ] Dish [ ] Panel [ ] Yagi [ ] Omni [ ] Folded Dipole [ ] Unknown
- Antenna Polarization: [ ] Horizontal [ ] Vertical [ ] Circular [ ] Dual
- Antenna Direction (Azimuth in Degrees):
- Antenna Mount: [ ] Direct [ ] Pipe [ ] Side Arm [ ] Well [ ] Bridge
- Antenna Jumper Size (Pigtail): [ ] 1/2’’ [ ] 7/8’’ [ ] 1 3/8’’ [ ] EW63 [ ] EW60 [ ] WE65 [ ] Other:
- Antenna Jumper Length:

## Communication Cables

- Communication Cable Type: [ ] Coax – Corrugated [ ] Coax – Braided [ ] Waveguide
- Communication Cable Size: [ ] 1/2’’ [ ] 7/8’’ [ ] 1 3/8’’ [ ] EW63 [ ] EW60 [ ] WE65 [ ] Other:
- Communication Cable Length (ft):
- Communication Cable Connector Type: [ ] 7/16 DIN [ ] BNC [ ] N-Type [ ] UHF [ ] WG63 [ ] Other:

## Warning Lights

- Beacon Type:
- Beacon Manufacturer:
- Beacon Model:
- Light Controller Manufacturer:
- Light Controller Model:
- Side Markers Installed: [ ] Yes [ ] No
- Side Markers Type:
- Side Markers Manufacturer:
- Side Markers Model:
- Side Markers Point-of-Attachment (ft):
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<tr>
<th>Wireless Radio Components</th>
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<tr>
<td>Microwave</td>
<td>Antenna Mount Type: □ Direct □ Pipe □ Side Arm</td>
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<tr>
<td>Land Mobile Radio</td>
<td>Bridge □ Cantilever STR □ Overhead STR</td>
</tr>
<tr>
<td>Motorist Aid System</td>
<td>Wall □ Other:</td>
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<tr>
<td>Highway Advisory Radio</td>
<td>Antenna Type: □ Yagi □ Panel □ Omni □ Dish</td>
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<td>Broadcast</td>
<td>Grid Dish □ Folded Dipole □ Other:</td>
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<td>Leased Cellular</td>
<td>Polarization: □ Vertical □ Horizontal</td>
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<tr>
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<td>Microwave</td>
<td>Antenna Mount Type: □ Direct □ Pipe □ Side Arm</td>
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<tr>
<td>Serial Number:</td>
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APPENDIX A

FDOT FTE CLERMONT TURNPIKE (8-5269)
TOWER REPLACEMENT CONTRACT PLANS
1. The vendor shall be responsible for verifying the conditions and measurements relating to the work in the field prior to proceeding with installation, removal, and disposal activities. The vendor shall coordinate any modifications required with FDOT.

2. The vendor is responsible for all equipment, materials, and services required to complete this project. The vendor is responsible for verifying the completeness of materials required and suitability of devices to meet these plans. The vendor shall provide and install, without claim, any additional equipment and services required for operation of these plans.

3. The vendor shall be responsible for determining local facilities for delivering, storing, and legally disposing of post-installation materials.

4. The vendor shall verify all hazardous materials onto the project site. The vendor shall provide for performing the work, the vendor shall request, in writing, permission from FDOT. The vendor shall provide the Turnpike contamination impact coordinator (CIC) with a copy of the material safety data sheet (MSDS) for each hazardous material proposed for use. Foot shall coordinate with the Turnpike CIC prior to issuing written approval to the vendor. Because state laws prohibit the treatment of products that are properly containerized and intended for use as hazardous material, such products do not need MSDS Submittal. Turnpike contamination impact coordinator: Mark Mulligan, P.G.

5. The vendor shall be responsible for determining if there are any coating materials or protection on the tower that would be considered hazardous waste upon disposal of the structure or any structural components. Copies of any test reports are not to exceed 10 days of the disposal of the materials. Any known or suspected hazardous waste found on the project site by the vendor shall be immediately reported to FDOT, who shall direct the vendor to protect the area of known or suspected contamination from further access. The vendor shall notify the Turnpike CIC of the discovery. The Turnpike CIC will arrange for investigation. The vendor shall not return to the area of contamination until approval is provided by FDOT. The Turnpike CIC will advise FDOT.

6. The vendor shall be responsible for coordinating all necessary notifications of work and construction with the Federal Aviation Administration (FAA) and Federal Communications Commission (FCC) with the FDOT project manager. All FAA and FCC permits will be handled by FDOT based on this coordination.

7. The vendor shall be responsible for obtaining any permits (DEP, South Florida Water Management District, etc.) and meeting building official requirements, including associated fees. The vendor is responsible for contacting applicable building officials for permit applications and submitting to the foot for signature of the permit. The vendor shall coordinate with the FDOT project manager for obtaining permits for the project site.

8. The vendor shall submit all detailed design plans for foot review and approval. All submitted plans shall be in writing. The vendor shall begin installation work until all design submittals are approved in writing by the foot project manager.

9. The vendor shall submit an installation schedule to FDOT for review and approval.

10. The vendor must coordinate all site work with FDOT. The contact person is Randy Pierce, 850-410-5668.

11. All tower and antenna installation work shall be done by tower climbers certified by OSHA or approved equivalent.

12. The vendor shall coordinate each element on the schedule with other installation activities and show each activity in proper sequence.

13. The vendor shall notify all utility owners through sunshine state one call of Florida (811) two business days in advance of beginning installation work on the job site. Note that not all utility companies are members of the sunshine state one call, and therefore, the vendor shall contact them individually.

14. The vendor shall be responsible for coordinating all utility owners through sunshine state one call of Florida. The vendor shall be responsible for coordinating with Turnpike intelligence transportation department (ITD) department for location of Turnpike’s fiber in the area. If relocation of fiber is necessary, the vendor shall coordinate this effort with Turnpike’s department as well. The contractors for Turnpike’s department are: John Easterling, P.E., PTOE, John.Easterling@dot.state.fl.us, and ERIK GORDIN, P.E., ERC.GORDIN@DOT.STATE.FL.US.

15. The vendor shall be responsible for verifying all excavation work, including but not limited to clearing and grading activities. The vendor shall coordinate any modifications required with FDOT.

16. The vendor shall be responsible for all backfill and compaction of excavated area. The vendor shall coordinate any modifications with FDOT.

17. The vendor shall be responsible for coordinating all necessary notifications of work and construction with the Federal Aviation Administration (FAA) and Federal Communications Commission (FCC) with the FDOT project manager. All FAA and FCC permits will be handled by FDOT based on this coordination.

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20. The vendor shall be responsible for coordinating all necessary notifications of work and construction with the Federal Aviation Administration (FAA) and Federal Communications Commission (FCC) with the FDOT project manager. All FAA and FCC permits will be handled by FDOT based on this coordination.
3. SECOND GUST BASIC WIND SPEED: 120 MPH
   RADIAL ICE: 0 INCHES
   STRUCTURAL CLASSIFICATIONS: III
   IMPORTANCE FACTOR: 1.15
   EXPOSURE CATEGORY: C
   TOPOGRAPHIC CATEGORY: F

   THE ABOVE DESIGN CRITERIA EXCEED THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2010 FOR THE FOLLOWING CRITERIA:

   3. SECOND GUST ULTIMATE WIND SPEED (FBC 2010): 145 MPH
   RISK CATEGORY: V
   EXPOSURE CATEGORY: C

   THE TOWER DESIGN SHALL ALSO MEET THE DEFLECTION CRITERIA OUTLINED IN ANSI/TIA-222-G-2 SECTIONS 2.8.2 AND 2.8.3 FOR MICROWAVE DISHES: TOTAL BEAM DEFLECTION (TWIST AND SWAY) FOR PROPOSED MICROWAVE DISHES SHALL NOT EXCEED 0.6 DEGREES (3 DB) AT 60 MPH.

   THE TOWER SHALL ALSO MEET THE ADDITIONAL REQUIREMENTS AS DELINATED ON SHEET IT-10 OF THESE SPECIFICATIONS.

   ELEVATION | DESCRIPTION | DESIGN ANTENNAS | MINIMUM (EPA) | LINES
   --- | --- | --- | --- | ---
   270' | LIGHTNING ROD | COMTELCO BS855U | 1 FT² | 1/2" Ø COPPER |
   270' | BEACON / STROBE | COMTELCO BS855U | 2 FT² | 1.9" Ø COND |
   267' | COMTELCO BS855U | ASP105K | 6 FT² | 1-1/4" |
   267' | ASP105K | 6 FT² | 1-1/4" |
   267' | (3) 4' SIDE ARMS | EWP63 | 14 FT² |
   260' | HP8-59W-P3A (8' HP DISH) AZ=313E | NOTE 7 | HP8-59W-P3A (8' HP DISH) AZ=313E | EWP3 | EWP3 |
   260' | DISH MOUNT | NOTE 7 | HP8-59W-P3A (8' HP DISH) AZ=313E | EWP3 | EWP3 |
   247' | COMTELCO BS855U | ASP105K | 3 FT² | 1-1/4" |
   247' | ASP105K | 3 FT² | 1-1/4" |
   240' | HP8-59W-P3A (8' HP DISH) AZ=313E | NOTE 7 | HP8-59W-P3A (8' HP DISH) AZ=313E | EWP3 | EWP3 |
   240' | DISH MOUNT | NOTE 7 | HP8-59W-P3A (8' HP DISH) AZ=313E | EWP3 | EWP3 |
   240' | 4' SIDE ARM | CSS-105K-200S-085K-200S-0 | 6 FT² |
   220' | (3) DBXLH-6565C-R2M | CSS-105K-200S-085K-200S-0 | 23.7 FT² | (6) 1-1/8" |
   220' | (6) DBXLH-6565C-R2M | CSS-105K-200S-085K-200S-0 | 42.5 FT² | (12) 1-5/8" |
   220' | (3) SECTOR MOUNTS | CSS-105K-200S-085K-200S-0 | 45 FT² |
   210' | HP8-59W-P3A (8' HP DISH) AZ=313E | NOTE 7 | HP8-59W-P3A (8' HP DISH) AZ=313E | EWP3 | EWP3 |
   210' | DISH MOUNT | NOTE 7 | HP8-59W-P3A (8' HP DISH) AZ=313E | EWP3 | EWP3 |
   204' | HP8-59W-P3A (8' HP DISH) AZ=313E | NOTE 7 | HP8-59W-P3A (8' HP DISH) AZ=313E | EWP3 | EWP3 |
   138' | (3) OBSTRUCTION LIGHTS | CSS-105K-200S-085K-200S-0 | 9 FT² | SAME CONDUIT |
   134' | CCTV CAMERA WITH LOWERING DEVICE | CSS-105K-200S-085K-200S-0 | 5 FT² | (2) 1-5/8" |
   134' | CCTV CAMERA WITH LOWERING DEVICE | CSS-105K-200S-085K-200S-0 | 5 FT² | (2) 1-5/8" |
   130' | CCTV LOWERING DEVICE SECURITY BOX | CSS-105K-200S-085K-200S-0 | 6 FT² |
   3' | CCTV LOWERING DEVICE SECURITY BOX | CSS-105K-200S-085K-200S-0 | 6 FT² |

6. THE WIND FORCE ON ANY ANTENNA SHALL BE COMPUTED USING THE MOST CRITICAL WIND DIRECTION AND ANTENNA AREA. IF A SPECIFIC MINIMUM "WIND AREA -- (EPA)" IS SHOWN, THAT VALUE (OR A HIGHER VALUE) SHALL BE USED FOR THE TOWER DESIGN.

7. THE WIND LOADING FOR THE MICROWAVE DISHES SHALL BE CALCULATED FOR EACH WIND DIRECTION USING THE VALUES FROM ANSI/TIA-222-G-2, ANNEX C (C.2 AND TABLE C3) USING A DISH DIAMETER OF 8.4 FT. THE DISH AZIMUTHS RELATIVE TO THE TOWER ORIENTATION SHALL BE IN ACCORDANCE WITH SHEET IT-10, AND INCORPORATED IN THE FINAL TOWER DESIGN.

8. TWO (2) WAVEGUIDE LADDERS MUST BE INCLUDED IN THE WIND LOADING (ONE FOR THE FUTURE CELL CARRIER, THE OTHER FOR ALL OTHER LINES). NO STACKING OF TRANSMISSION LINES SHALL BE CONSIDERED IN THE ORIGINAL DESIGN. ALL LINEAR APPURTENANCES ON ALL FACES ARE TO BE INCLUDED IN THE DESIGN LOADING. NO SHIELDING OF LINEAR APPURTENANCES MAY BE CONSIDERED EXCEPT THAT, AS IN ACCORDANCE WITH ANSI/TIA-222-G-2, SECTION 2.6.8.3, MAY BE INCLUDED FOR LINEAR APPURTENANCES ENTIRELY WITHIN THE FACE ZONE.

9. OTHER ANCILLARY ITEMS SUCH AS CLIMBING HARDWARE, SAFETY CLIMB CABLE AND ATTACHMENTS, WAVEGUIDE LADDERS, LIGHTNING PROTECTION, ETC. SHALL BE INCLUDED IN THE WIND LOADING OF THE TOWER.


11. IF USED, ALL FACE, PLAIN AND HP REDUNDANT BRACING MEMBERS ON THE NEW TOWER MUST BE TRIANGULATED IN ACCORDANCE WITH THE REQUIREMENTS OF ANSI/TIA-222-G-2, TABLE 4-7. ANY TOWER DESIGN INCLUDING NON-TRIANGULATED BRACING MEMBERS WILL BE CONSIDERED IN NON-COMPLIANCE WITH THESE SPECIFICATIONS.

12. FOR TOWER DESIGNS USING DOUBLE ANGLE MEMBERS, OR OTHER BUILT UP MEMBERS, THESE MEMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ANSI/TIA-222-G-2, SECTION 4.5.3 (E. THE SLENDERNESS OF THE MEMBERS MUST BE ADJUSTED IN ACCORDANCE WITH THE APPLICABLE STICK BOLT MODIFICATION FORMULA).


14. ALL GUSSSET PLATES, CONNECTION PLATES, BRACING MEMBERS, ETC. SHALL HAVE CONNECTIONS THAT ARE PROPERLY DESIGNED AND DETAILLED FOR BOLT HOLE ALIGNMENT, BOLT SHEAR, AND Rupture PER THE REQUIREMENTS OF ANSI/TIA-222-G-2 SECTION 4.6 AS WELL AS ALL OTHER FORCES APPLIED TO THEM. ALL GUSSSET PLATES, CONNECTION PLATES, ETC. SHALL BE DETAILED SO THAT THE WORK LINES HAVE A CONTINUOUS LOAD PATH THROUGH THE GUSSSET STEEL OR CONNECTION PLATE STEEL TO THE MEMBERS BEING CONNECTED. DETAILING THAT INDUCES BENDING FORCES INTO THE GUSSSETS OR CONNECTION PLATES. OR THAT DO NOT PROVIDE A CONTINUOUS LOAD PATH ALONG THE WORK LINES SHALL BE CONSIDERED IN NONCOMPLIANCE WITH THESE SPECIFICATIONS.

15. THE DRILLED SHAFT PIERS SHALL EXTEND A MINIMUM 12 INCHES ABOVE FINISHED GRADE. CORNERS SHALL HAVE A MINIMUM ONE (1) INCH CHAMFER. THE TOP OF THE PIERS SHALL BE SLOPED TO DRAIN WATER FROM THE CENTER.

16. THE FOUNDATIONS SHALL BE DESIGNED FOR TOWER REACTIONS 10 PERCENT HIGHER THAN CALCULATED FOR TOWER DESIGN.

THE FOUNDATION MATERIALS SHALL MEET OR EXCEED THE FOLLOWING CRITERIA: CONCRETE f_c = 3000 PSI AT 28 DAYS, REINFORCED STEEL ASTM A-160 GRADE 60, CEMENT ASTM C 150 TYPE 1 LOW-ALKALAI CONTENT WITH A NaO Content LESS THAN 0.5 PERCENT.

CONCRETE DESIGN MIX SHALL BE SUBMITTED TO THE FOOT PROJECT MANAGER FOR REVIEW AND APPROVAL.

PROPER GUSSSET/TAB DESIGN

IMPROPER GUSSSET/TAB DESIGN

RCC CONSULTANTS, INC.
2207 HARBOR DRIVE
PALM HARBOR, FL 34683
PH (813) 224-4833
FAX (813) 224-5029

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CLERMONT TOWER DESIGN CRITERIA NOTES (CONT'D.)

IT-3

2. INSTALLATION AND COMPONENT PARTS SUPPLIED SHALL BE NEW, MEET OR EXCEED THE MINIMUM REQUIREMENTS STATED HEREIN, AND PERFORM TO MANUFACTURER’S SPECIFICATIONS. NO PART OR ATTACHMENT SHALL BE SUBSTITUTED OR APPLIED CONTRARY TO THE MANUFACTURER’S SPECIFICATIONS.

3. THE VENDOR IS RESPONSIBLE FOR CLEARING OF BRUSH, TREES, OR ANY OTHER OBSTRUCTIONS, INCLUDING THE REMOVAL OF FENCING, ASPHALT OR CONCRETE, ANY TREE STUMPS RESULTING FROM CLEARING SHALL BE GRUBBED. ALL ENVIRONMENTAL PROTECTION REQUIREMENTS MUST BE MET.

4. THE VENDOR SHALL PROVIDE AND INSTALL THE TRASH GENERATED FROM THE INSTALLATION, INCLUDING LUNCH BAGS AND DRINKS, IN A NEAT MANNER UNTIL DISPOSED OF PROPERLY. THE VENDOR SHALL BE RESPONSIBLE FOR REMOVING AND LEGALLY DISPOSING OF TRASH IN A TIMELY MANNER. THE VENDOR SHALL NOT ALLOW TRASH TO BLOW AWAY OR AWAY FROM ANY CONSTRUCTION SITE.

5. THE VENDOR SHALL PROVIDE AND INSTALL A NEW 270 FT. SOLID ROD MEMBER SELF-SUPPORTING TOWER AND CONCRETE DRILLED SHAFT FOUNDATIONS PER THESE PLANS.

6. THE VENDOR SHALL PROVIDE AND INSTALL A NEW HORIZONTAL TRANSMISSION LINE BRIDGE AND ALL ASSOCIATED SUPPORT AND INSTALLATION HARDWARE. THE TRANSMISSION LINE BRIDGE SHALL INCLUDE TWO LEVELS OF TRAPEZE KITS, INSTALLED WITH MAXIMUM SEPARATION OF 36 IN. ON CENTER. THE TRANSMISSION LINE BRIDGE SHALL BE INSTALLED IN SUCH A MANNER AS TO NOT COMPROMISE THE MINIMUM BEND RADIUS OF EACH WAVEGUIDE AND TRANSMISSION LINE DURING INSTALLATION AND MOUNTING.

7. THE VENDOR SHALL PROVIDE AND INSTALL THE TOWER LIGHTING PROTECTION AND GROUNDING SYSTEM IN PER THESE PLANS. THE VENDOR SHALL PROVIDE AND INSTALL A NEW -48 VDC LED DUAL DAYTIME/NIGHTTIME TOWER LIGHTING SYSTEM PER THESE PLANS. EACH WAVEGUIDE AND COAXIAL TRANSMISSION LINE SHALL BE SECURED TO THE TOWER USING STAINLESS STEEL HARDWARE.

8. THE VENDOR SHALL INSTALL A #6 AWG RED INSULATED CONDUCTOR FROM THE NEGATIVE DC POWER TERMINAL OF THE TOWER LIGHTING SYSTEM TO THE 48 VDC POWER SYSTEM BATTERY PANEL. THE VENDOR SHALL INSTALL A #6 AWG BLACK INSULATED CONDUCTOR FROM THE POSITIVE DC POWER TERMINAL OF THE TOWER LIGHTING SYSTEM TO THE 48 VDC POWER SYSTEM RETURN BUS BAR. THE VENDOR SHALL INSTALL A 5 AMP BREAKER IN THE 48 VDC POWER DISTRIBUTION BATTERY PANEL.

9. THE VENDOR SHALL PROVIDE INSTALL SURGE PROTECTION DEVICES FOR THE TOWER OBTURATION PROTECTION SYSTEM PER THESE PLANS. THE SURGE PROTECTION DEVICES SHALL BE INSTALLED IN THE COMMUNICATIONS BUILDING AS close as possible TO THE LIGHT CONTROLLER AND POWER SUPPLY TO MINIMIZE LEAD LENGTHS.

10. THE VENDOR SHALL FURNISH ONE (1) FIPLEX MODEL FDOT DHV0544V2, 8 CAVITY, 2 ANTENNA PORT, LOW BAND COMPACT BASE STATION DUPLEXER, TX: 47.54 MHZ, RX: 45.22 MHZ INSIDE THE COMMUNICATIONS BUILDING FOR FUTURE INSTALLATION BY OTHERS.

TRAFFIC CONTROL – MAINTENANCE OF TRAFFIC NOTES:


12. THE VENDOR SHALL PROVIDE AND INSTALL NEW TYPE 8 (CHAIN LINK) SITE COMPOUND FENCING WITH TOP RAIL PER SECTION 550 OF THE FDOT 2014 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND PER INDEX 802 OF THE FDOT 2014 DESIGN STANDARDS. THE CEMENT FABRIC SHALL BE FASTENED TO THE TOP RAIL.

13. THE VENDOR SHALL FURNISH ONE (1) FIPLEX MODEL FDOT DHV0544V2, 8 CAVITY, 2 ANTENNA PORT, LOW BAND COMPACT BASE STATION DUPLEXER, TX: 47.54 MHZ, RX: 45.22 MHZ INSIDE THE COMMUNICATIONS BUILDING FOR FUTURE INSTALLATION BY OTHERS.

14. THE VENDOR SHALL PROVIDE AND INSTALL SURGE PROTECTION DEVICES FOR THE CAMERA SYSTEMS AT BOTH ENDS OF THE POWER/DATA CABLE. THE SURGE PROTECTION DEVICES SHALL BE INSTALLED INSIDE THE TOWER TOP CONNECTION BOX AND MOUNTED IN THE COMMUNICATIONS BUILDING AS close as possible TO THE LIGHT CONTROLLER AND POWER SUPPLY TO MINIMIZE LEAD LENGTHS.

15. THE VENDOR SHALL PROVIDE AND INSTALL ALL ANTENNAS, CCTV CAMERAS WITH LOWERING DEVICES, ELLIPTICAL AND FLEXIBLE RECTANGULAR WAVEGUIDES, COAXIAL TRANSMISSION LINES, CCTV POWER/DATA CABLES, ASSOCIATED MOUNTING AND INSTALLATION HARDWARE, AND ALL OTHER TOWER APPURTENANCES.

16. THE VENDOR SHALL PROVIDE AND INSTALL ADVANCE WARNING SIGNS AND TRAFFIC CONTROL DEVICES UTILIZING FDOT STANDARD INDEX NO. 600 SERIES.

17. THE VENDOR SHALL PROVIDE AND INSTALL INSTALL INSTRUMENTS AND SURGE PROTECTION DEVICES TO THE FDOT PROJECT MANAGER FOR REVIEW AND APPROVAL.

18. THE VENDOR SHALL CUT-OVER THE FDOT’S EXISTING RADIO SYSTEM FROM THE OLD TOWER’S ANTENNAS TO THE NEW IN A MANNER THAT DOES NOT VIOLATE THE MANUFACTURER’S MAXIMUM TWIST, MINIMUM BEND RADIUS, AND MINIMUM HABEND RADIUS SPECIFICATIONS. THE COAXIAL TRANSMISSION LINES SHALL BE INSTALLED IN SUCH A MANNER AS NOT TO VIOLATE THE MANUFACTURER’S MINIMUM BEND RADIUS.

19. THE VENDOR IS RESPONSIBLE FOR VERIFYING CORRECT SIZE, GENDER, AND SUITABILITY OF ALL WAVEGUIDE AND COAXIAL TRANSMISSION LINES TO THE TOWER FOUNDATIONS PER THESE PLANS. THE SURGE PROTECTION DEVICES SHALL BE INSTALLED IN THE COMMUNICATIONS BUILDING AS close as possible TO THE LIGHT CONTROLLER AND POWER SUPPLY TO MINIMIZE LEAD LENGTHS.


22. THE VENDOR SHALL PROVIDE INSTALL SURGE PROTECTION DEVICES FOR THE CAMERA SYSTEMS AT BOTH ENDS OF THE POWER/DATA CABLE. THE SURGE PROTECTION DEVICES SHALL BE INSTALLED INSIDE THE TOWER TOP CONNECTION BOX AND MOUNTED IN THE COMMUNICATIONS BUILDING AS close as possible TO THE LIGHT CONTROLLER AND POWER SUPPLY TO MINIMIZE LEAD LENGTHS.

23. THE VENDOR SHALL PROVIDE INSTALL SURGE PROTECTION DEVICES FOR THE CAMERA SYSTEMS AT BOTH ENDS OF THE POWER/DATA CABLE. THE SURGE PROTECTION DEVICES SHALL BE INSTALLED INSIDE THE TOWER TOP CONNECTION BOX AND MOUNTED IN THE COMMUNICATIONS BUILDING AS close as possible TO THE LIGHT CONTROLLER AND POWER SUPPLY TO MINIMIZE LEAD LENGTHS.
1. GENERAL

1.1 THE VENDOR SHALL PROVIDE AND INSTALL ANTENNAS, ELLIPTICAL WAVEGUIDES, FLEXIBLE RECTANGULAR WAVEGUIDES (BETWEEN DISK NETWORK AND LABORATORY-CLASS & GRADE) AND INSTALLATION HARDWARE FOR ALL RADIO SYSTEMS. THE VENDOR SHALL BE RESPONSIBLE FOR FURNISHING ALL OF THE NECESSARY EQUIPMENT, HARDWARE, LABOR, AND INSTALLATION SERVICES TO EFFECT PROPER INSTALLATION OF THE RADIO ANTENNA SYSTEMS.

1.2 ALL OF THE CUT-OVER RADIO SYSTEMS ARE IN SERVICE AND CARRYING CRITICAL COMMUNICATIONS TRAFFIC. SHOULD THE CUT-OVER CAUSE DOWNTIME TO THE EXISTING SYSTEM, THE DOWNTIME MUST BE COORDINATED WITH THE FOOT PRIOR TO THE DOWNTIME OCCURRENCE. ALL WORK CLASSIFIED AS CAUSING LESS THAN FIVE MINUTES OF DOWNTIME REQUIRE A MINIMUM OF TWO DAYS PRIOR NOTICE AND MUST BE COORDINATED WITH THE FOOT PRIOR TO OCCURRENCE.

2. PRE CUT-OVER

2.1 INSTALL TOWER, ANTENNAS, ELLIPTICAL AND FLEXIBLE RECTANGULAR WAVEGUIDES, COAXIAL TRANSMISSION LINES.

2.2 INSTALL NEW AIR PRESSURIZATION MANIFOLD EQUIPMENT.

2.3 INSTALL WAVEGUIDES FROM ANTENNA POSITION TO MICROWAVE RACK POSITION AND IMMEDIATELY PRESSURIZE (DO NOT CONNECT TO ANTENNA). ANY WAVEGUIDES NOT PRESSURIZED WITHIN 12 HOURS (EXCLUDING FLEXIBLE RECTANGULAR WAVEGUIDE SECTIONS) SHALL BE PURGED WITH DRY NITROGEN IN ACCORDANCE WITH TRANSMISSION LINE AND WAVEGUIDE MANUFACTURER'S SPECIFIED PROCEDURES.

2.4 EACH NEW PRESSURIZED ANTENNA SYSTEM SHALL BE VERIFIED TO BE FREE OF LEAKS. THE VENDOR SHALL PERFORM A PRESSURE TEST THAT SHALL START AT NOON AND RUN FOR A PERIOD OF 48 HOURS. AT THE START OF THE TEST, THE VENDOR SHALL CLOSE THE VALVE FOR THE PRESSURIZED WAVEGUIDE AND RECORD THE PRESSURE. AT THE END OF THE TEST, THE VENDOR SHALL RECORD THE PRESSURE FOR THE WAVEGUIDE AND COMPARE IT TO THE ORIGINAL PRESSURE. IF THE DIFFERENCE IN PRESSURE IS LESS THAN OR EQUAL TO 1 PSI (.69 kPa), THEN THE LINE WILL BE CONSIDERED TO BE FREE OF LEAKS. IF THE DIFFERENCE IN PRESSURE OF THE WAVEGUIDE IS GREATER THAN 1 PSI, THEN THE VENDOR SHALL REPAIR THE LINE AND REPEAT THE TEST, WITHOUT CLAIM.

2.5 INSTALL NEW COAXIAL TRANSMISSION LINES TO THE SHELTER BULKHEAD MOUNTED SURGE PROTECTION DEVICES (DO NOT CONNECT TO ANTENNA).

2.6 THE RADIO ANTENNA SYSTEMS' RETURN LOSS SHALL BE COMMENSURATE WITH THE SYSTEM COMPONENT RETURN LOSS SPECIFICATIONS OF THE MANUFACTURER. THE RADIO ANTENNAS, WAVEGUIDES, AND COAXIAL TRANSMISSION LINES SHALL BE SWEEPT IN BOTH FREQUENCY DOMAIN AND TIME DOMAIN WITH APPROPRIATE LABORATORY-GRADE VECTOR NETWORK ANALYZER TEST EQUIPMENT, AND PRINTED DOCUMENTATION OF THE TEST RESULTS SHALL BE SUBMITTED TO THE FOOT FOR APPROVAL. THE VENDOR SHALL SUBMIT A LIST OF TEST EQUIPMENT, WITH CALIBRATION DATES, TO THE FOOT PROJECT MANAGER FOR REVIEW AND APPROVAL PRIOR TO TESTING.

3. CUT-OVER

3.1 PERFORM CLERMONT COORDINATE SITE RECEIVE SIGNAL LEVEL (RSL) MEASUREMENTS. RECORD EXISTING ANTENNA SYSTEMS RSL MEASUREMENTS ONTO THE FOOT APPROVED FORM. SEE T-11, CLERMONT TOWER RSL MEASUREMENTS FORM.

3.2 CUT-OVER THE NEW WILDWOOD TURNPIKE DIVERSITY ANTENNA TO THE CLERMONT TURNPIKE MICROWAVE RADIO. THE VENDOR SHALL UTILIZE THE EXISTING FLEXIBLE RECTANGULAR WAVEGUIDE AT THE RADIO END FOR CUTOVER. THE OLD WAVEGUIDE SHALL REMAIN PRESSURIZED UNTIL SUCCESSFUL CUTOVER.

3.3 ALIGN THE NEW WILDWOOD TURNPIKE DIVERSITY ANTENNA FOR PEAK MAIN LOBE RSL. UTILIZATION OF THE LABORATORY-GRADE VECTOR NETWORK ANALYZER FOR ANTENNA ALIGNMENT IS RECOMMENDED.

3.4 CUT-OVER THE NEW WILDWOOD TURNPIKE DIVERSITY ANTENNA RSL onto THE RSL FORM AND VERIFY PROPER RSL PERFORMANCE FOR THE NEW ANTENNA.

3.5 ALIGN THE NEW WILDWOOD TURNPIKE MAIN ANTENNA FOR PEAK MAIN LOBE RSL. UTILIZATION OF THE LABORATORY-GRADE VECTOR NETWORK ANALYZER FOR ANTENNA ALIGNMENT IS RECOMMENDED.

3.6 CUT-OVER THE NEW WILDWOOD TURNPIKE MAIN ANTENNA RSL onto THE RSL FORM AND VERIFY PROPER RSL PERFORMANCE FOR THE NEW ANTENNA.

3.7 CUT-OVER THE NEW ORLANDO WEST INTERCHANGE DIVERSITY ANTENNA TO THE CLERMONT TURNPIKE MICROWAVE RADIO. THE VENDOR SHALL UTILIZE THE EXISTING FLEXIBLE RECTANGULAR WAVEGUIDE AT THE RADIO END FOR CUTOVER. THE OLD WAVEGUIDE SHALL REMAIN PRESSURIZED UNTIL SUCCESSFUL CUTOVER.

3.8 ALIGN THE NEW ORLANDO WEST INTERCHANGE DIVERSITY ANTENNA FOR PEAK MAIN LOBE RSL. UTILIZATION OF THE LABORATORY-GRADE VECTOR NETWORK ANALYZER FOR ANTENNA ALIGNMENT IS RECOMMENDED.

3.9 CUT-OVER THE NEW ORLANDO WEST INTERCHANGE DIVERSITY ANTENNA RSL onto THE RSL FORM AND VERIFY PROPER RSL PERFORMANCE FOR THE NEW ANTENNA.

3.10 RECORD THE CUT-OVER ORLANDO WEST INTERCHANGE DIVERSITY ANTENNA RSL onto THE RSL FORM AND VERIFY PROPER RSL PERFORMANCE FOR THE NEW ANTENNA.

3.11 CUT-OVER THE NEW ORLANDO WEST INTERCHANGE MAIN ANTENNA TO THE CLERMONT TURNPIKE MICROWAVE RADIO. THE VENDOR SHALL UTILIZE THE EXISTING FLEXIBLE RECTANGULAR WAVEGUIDE at THE RADIO END for CUTOVER. THE OLD WAVEGUIDE SHALL REMAIN PRESSURIZED UNTIL SUCCESSFUL CUTOVER.

3.12 ALIGN THE NEW ORLANDO WEST INTERCHANGE MAIN ANTENNA FOR PEAK MAIN LOBE RSL. UTILIZATION OF THE LABORATORY-GRADE VECTOR NETWORK ANALYZER FOR ANTENNA ALIGNMENT IS RECOMMENDED.

3.13 RECORD THE CUT-OVER ORLANDO WEST INTERCHANGE MAIN ANTENNA RSL onto THE RSL FORM AND VERIFY PROPER RSL PERFORMANCE FOR THE NEW ANTENNA.

3.14 CUT-OVER ALL NEW COAXIAL CABLES TO THE CLERMONT TURNPIKE LAND MOBILE RADIO EQUIPMENT, WHILE MINIMIZING RADIO SYSTEM DOWNTIME.
1. THE VENDOR SHALL SUBMIT TOWER, ANTENNA SYSTEMS, AND SITE LAYOUT DESIGN PLANS TO THE FDOT PROJECT MANAGER FOR REVIEW AND APPROVAL.

2. VENDOR SHALL FURNISH AND INSTALL TOWER FOUNDATIONS PER THESE PLANS.

3. VENDOR SHALL FURNISH AND INSTALL A NEW 270 FT. GALVANIZED SOLID ROD MEMBER SELF-SUPPORTING TOWER PER THESE PLANS. THE TOWER SHALL BE DESIGNED TO SUPPORT THE ANTENNAS, LINES, AND APPURTENANCES, AND PER THE DESIGN CRITERIA DELINEATED ON SHEET IT-3.

4. THE VENDOR SHALL SECURE THE TOWER SITE COMPOUND AT ALL TIMES. ADDITIONAL OR TEMPORARY TYPE B FENCING MAY BE REQUIRED. THE VENDOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL FENCING, AT NO ADDITIONAL COST TO FDOT.

5. THE VENDOR SHALL FURNISH AND INSTALL A TOWER SAFETY CLIMBING ASSEMBLY ON THE NEW 270 FT. SELF-SUPPORTING TOWER. THE CLIMBING ASSEMBLY SHALL BE MANUFACTURED SPECIFICALLY FOR THE TOWER THAT IS INSTALLED. THE CLIMBING ASSEMBLY MAY INCLUDE STEP BOLTS OR A CLIMBING LADDER.


THE VENDOR SHALL SUBMIT A DETAILED ANTENNA SYSTEM MOUNTING DESIGN TO THE FDOT PROJECT MANAGER FOR REVIEW AND APPROVAL.

IN ADDITION, THE VENDOR SHALL SUBMIT A DETAILED INTERIOR AND EXTERIOR CABLE MANAGEMENT DESIGN PLAN TO THE FDOT PROJECT MANAGER FOR REVIEW AND APPROVAL.

7. THE VENDOR SHALL INSTALL GROUNDING SYSTEM PER IT-8.

8. THE FDOT OR APPROVED REPRESENTATIVE SHALL INSPECT TOWER, ANTENNAS, AND GROUNDING SYSTEM INSTALLATIONS.

9. THE VENDOR SHALL TEST ANTENNA SYSTEMS, CUT-OVER RADIO SYSTEMS AND ALIGN ANTENNAS.


11. THE FDOT OR APPROVED REPRESENTATIVE SHALL PERFORM A FINAL INSPECTION OF COMPLETE JOB.
12. Proposed 270 ft. tower leg locations are presently marked with stakes. Proposed tower leg locations are based on soil borings and good engineering practice. It is the responsibility of the vendor to determine the actual tower face dimension.

13. The vendor shall remove specified existing fence section per Sheet IT-9.

14. The vendor shall furnish and install a new horizontal transmission line bridge per these plans. It is the responsibility of the vendor to determine the best practical location of the new transmission line bridge. The proposed location shall be included in the site layout design.

15. The FDOT or approved representative shall perform final inspection of complete job.
GROUNDING NOTES:

1. EXISTING TOWER AND PARTIAL FENCING REMOVED FOR VISUAL CLARITY.
2. ALL GROUND RODS SHALL BE 10 FEET LONG, COPPER-CLAD STEEL WITH A MINIMUM DIAMETER OF 5/8 IN.
3. THE INSTALLATION OF GROUND RODS SHALL BE PER THESE SPECIFICATIONS. SPACING BETWEEN GROUND RODS SHALL BE 20 FT. MAXIMUM.
4. #2 AWG TINNED SOLID COPPER WIRE IS REQUIRED FOR ALL ABOVE GROUND AND BELOW GROUND INSTALLATIONS OF GROUND WIRE. ALL FENCE GATE GROUND CONDUCTORS SHALL BE #20 AWG STRANDED WELDING CABLE WITH BLACK INSULATION.
5. GROUND CONDUCTORS (WIRE & STRAPS) SHALL BE DOWNWARD COURSING AND VERTICAL, AS MUCH AS POSSIBLE, AND BE AS SHORT AND STRAIGHT AS PRACTICAL. SHARP BENDS AND MULTIPLE BENDS IN CONDUCTORS SHALL BE AVOIDED IN ALL CASES. THE MINIMUM BEND RADIUS SHALL BE EIGHT (8) INCHES PER NFPA 70B.
6. ALL BELOW GROUND GROUNDING CONNECTIONS SHALL BE EXOTHERMIC BOND CONNECTIONS. ALL BELOW GROUND GROUNDING CONDUCTORS SHALL BE INSTALLED AT A MINIMUM OF 36 IN. BELOW GRADE.
7. ALL ABOVE GROUND GROUNDING CONNECTIONS SHALL BE EXOTHERMIC BOND, MECHANICAL CLAMP, OR IRREVERSIBLE CRIMP CONNECTIONS.
8. THE VENDOR SHALL CLEAN AND PREPARE ALL GROUND CONDUCTORS AND SURFACES PRIOR TO PERFORMING EXOTHERMIC BONDS. ALL NON-CONDUCTING SURFACE COATINGS SHALL BE REMOVED BEFORE EACH CONNECTION IS MADE.
9. THE VENDOR SHALL CONNECT THE NEW TOWER GROUND RING TO THE EXISTING 4-1/2 IN. FLAT COPPER STRAP RADIALS ASSOCIATED WITH THE 270 FT. GUADED TOWER PER THESE SPECIFICATIONS.
11. THE VENDOR SHALL EXOTHERMICALLY BOND ALL HORIZONTAL TRANSMISSION LINE BRIDGE SUPPORT POLES TO THE NEW TOWER GROUND RING WITH #2 AWG TINNED SOLID COPPER WIRE.
12. WELDING OR OTHER FORMS OF EXOTHERMIC BONDS SHALL NOT BE USED UNLESS PRE-APPROVED IN WRITING BY THE FDOT PROJECT MANAGER.
13. THE VENDOR SHALL NOT BACKFILL OPENINGS WHERE UNDERGROUND EXOTHERMIC BONDS ARE MADE UNTIL FDOT HAS INSPECTED AND APPROVED THE GROUNDING SYSTEM.
14. ALL RADIO FREQUENCY (RF) WAVEGUIDES AND COAXIAL TRANSMISSION LINES SHALL BE GROUNDED TO THE TOWER AND BULKHEAD AT A MINIMUM OF FOUR (4) LOCATIONS PER THESE SPECIFICATIONS: 1) TOP OF TRANSMISSION LINE SYSTEM, 2) MIDDLE OF THE TRANSMISSION LINE SPAN, 3) BASE OF THE TOWER WHERE TRANSITION IS MADE TO THE HORIZONTAL TRANSMISSION LINE BRIDGE (TOWER BASE GROUND BUS BAR), AND 4) AT THE TRANSMISSION LINE BULKHEAD PRIOR TO ENTERING THE COMMUNICATIONS BUILDING.
15. ALL RF COAXIAL TRANSMISSION LINES SHALL BE EQUIPPED WITH SURGE PROTECTION DEVICES (SPD) PER THESE SPECIFICATIONS. ALL SPDs SHALL BE CONNECTED DIRECTLY TO THE BULKHEAD UPON ENTERING THE COMMUNICATIONS BUILDING.
16. NEW FENCING SHALL BE PER FOOT DESIGN STANDARDS FOR FENCE TYPE B, INDEX NO 802.

LEGEND:

- NEW FENCING
- EXISTING GROUNDING
- NEW GROUNDING
- 20' EXISTING GROUND ROD
- 10' GROUND ROD
- EXOTHERMIC BOND
FACILITIES REMOVAL PLAN:

1. THE VENDOR SHALL SUBMIT A DETAIL removal/demolition plan for approval by FDOT. THE PLAN SHALL INCLUDE A DETAILED SCHEDULE OF EVENTS DETAILING EACH PHASE OF REMOVAL/DEMOLITION; A SAFETY PLAN DETAILING THE ACTIVITIES AND THE ACTIONS TO BE TAKEN TO MITIGATE HAZARDS; AND AN EMERGENCY PLAN.

2. THE VENDOR SHALL REMOVE A PORTION OF THE EXISTING FENCE SYSTEM PER THESE SPECIFICATIONS.

3. THE VENDOR SHALL REMOVE THE OLD OBSTRUCTION LIGHTING SYSTEM, INCLUDING BUT NOT LIMITED TO, POWER SUPPLIES, CONTROLLERS, SPDs, BALLASTS, CONDUITS, AND ALL ASSOCIATED ELECTRICAL AND GROUNDING CONDUCTORS IN BOTH THE COMMUNICATIONS ROOM AND THE GENERATOR ROOM. THE VENDOR SHALL LEAVE THE CIRCUIT BREAKER IN PLACE AND SWITCH IT TO THE "OFF" POSITION. SEE SHEET IT-12.

4. THE VENDOR SHALL DISMANTLE AND REMOVE 270 FT. GUYED TOWER.

5. THE VENDOR SHALL REMOVE TOWER BASE FOUNDATION AND ALL GUY ANCHOR FOUNDATIONS NO LESS THAN 3 FT. BELOW EXISTING GRADE.

6. THE VENDOR SHALL INSTALL NEW PERIMETER FENCING PER THESE PLANS AND PER FOOT 2014 DESIGN STANDARDS FOR FENCE TYPE B, INDEX NO 902.

7. THE VENDOR SHALL MATCH THE EXISTING FENCE AND GATE HEIGHTS TO THEIR RESPECTIVE COMPOUNDS. THE VENDOR HAS FLEXIBILITY AS TO THE ACTUAL LAYOUT OF THE NEW PERIMETER FENCING.

8. THE VENDOR SHALL LEGALLY DISPOSE OF ALL TOWER STEEL, FOUNDATION MATERIAL, FENCING, EXTRACTION MATERIAL, DEBRIS, AND TRASH.

EXISTING Guyed TOWER PAINT HAS TESTED POSITIVE FOR LEAD BASED PAINT. REFERENCE LIMITED LEAD-BASED PAINT SCREENING #01000-02257 INCLUDED IN THESE PLANS.
NOTES:

1. REMOVE ALL ANTENNAS, TRANSMISSION LINES, TOWER LIGHTS, CONDUIT, AND ASSOCIATED MOUNTING HARDWARE PER THESE PLANS.
2. REMOVE CCTV CAMERA AND DELIVER TO THE FDOT PROJECT MANAGER.
3. REMOVE ALL TOWER STEEL, GUY WIRES, AND FOUNDATIONS PER THESE PLANS.
4. RESTORE SITE COMPOUND PER THESE PLANS.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
CLERMONT TURNPIKE TOWER LOADING DIAGRAMS

RCC CONSULTANTS, INC.
2527 Hardbodin Drive
Tallahassee, FL 32309
PH.(850)-224-4451
FAX.(850)-224-3059

DATE REV. DESCRIPTION DATE REV. DESCRIPTION

ID MODEL PARTS
NOTE
DESCRIPTION

1. INSTALL TOWER FOUNDATIONS AND STEEL PER THESE PLANS.
2. INSTALL -48 VDC LED DUAL DAYTIME/NIGHTTIME TOWER LIGHTING SYSTEM PER THESE PLANS.
3. INSTALL ALL ANTENNAS, CCTV CAMERAS AND LOWERING DEVICES WITH MESSENGER WIRES, TRANSMISSION LINES, CCTV POWER/ DATA CABLES, CONDUITS, SURGE PROTECTION, AND ASSOCIATED MOUNTING AND GROUNDING HARDWARE PER THESE PLANS.
4. INSTALL CCTV LOWERING DEVICE SECURITY BOXES, AND ASSOCIATED MOUNTING HARDWARE, AT THE BASE OF THE TOWER. THE CCTV CAMERAS SHALL BE AXIS Q6045-E DOME CAMERAS WITH CLS CTMT-16HDM-XXX-PMT LOWERING DEVICES. THE CAMERAS SHALL BE POWERED AND CONTROLLED BY AXIS T8124 DC MIDSPAN POE INJECTORS. THE SURGE PROTECTION DEVICES SHALL BE CITEL MJ8-POE-A.
5. ITEM "I" IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. THIS IS A FUTURE LOAD CELLULAR ANTENNA SYSTEM TO BE CONSIDERED FOR TOWER CAPACITY DESIGN, NOT TO BE FURNISHED OR INSTALLED AS A PART OF THIS PROJECT.
ORIENTATION NOTES:

1. THE VENDOR SHALL SECURE EACH MICROWAVE DISH TO THE TOWER USING THE APPROPRIATE HARDWARE AS SHOWN IN THE TYPICAL DISH MOUNT DETAILS ON THIS SHEET.

   THE VENDOR SHALL SUBMIT A COMPLETE LIST OF PROPOSED MICROWAVE DISH MOUNTING HARDWARE TO THE FDOT PROJECT MANAGER FOR REVIEW AND APPROVAL.

2. THE VENDOR SHALL INSTALL, AT A MINIMUM, (1) INBOARD SIDE STRUT WITH AZIMUTH ADJUSTMENT KIT AND (2) OUTBOARD SIDE STRUTS FOR EACH MICROWAVE DISH. IT IS THE VENDOR'S RESPONSIBILITY TO VERIFY PROPER PARTS AND QUANTITIES FOR MOUNTING AND SECURING EACH MICROWAVE DISH TO THE TOWER.

3. THE VENDOR SHALL ORIENT EACH MICROWAVE DISH PER THESE PLANS. SEE SHEET IT-10.

4. THE VENDOR SHALL ORIENT THE POLARIZATION OF EACH MICROWAVE DISH PER THESE PLANS. SEE SHEET IT-12.
NOTES:
1. THE VENDOR SHALL REMOVE THE EXISTING 2 PORT INSTALLATION MANIFOLD BEFORE INSTALLING THE NEW 4 PORT MANIFOLD KIT.
2. THE VENDOR SHALL REMOVE THE OLD WAVEGUIDES AND ASSOCIATED PRESSURIZATION TUBING AFTER SUCCESSFUL CUTOVER OF THE MICROWAVE ANTENNA SYSTEMS. THE VENDOR SHALL CAP AND CLOSE OFF ALL UNUSED GAUGES TO PREVENT AIR LEAKS.
3. THE VENDOR SHALL INSTALL NEW BOOT COVERS ON ALL USED AND UNUSED BULKHEAD PORTS.
4. THE VENDOR SHALL REMOVE THE OLD OBSTRUCTION LIGHTING SYSTEM, INCLUDING BUT NOT LIMITED TO, POWER SUPPLIES, CONTROLLERS, SPDs, BALLASTS, CONDUITS, AND ALL ASSOCIATED ELECTRICAL AND GROUNDING CONDUCTORS IN BOTH THE COMMUNICATIONS ROOM AND THE GENERATOR ROOM. THE VENDOR SHALL LEAVE THE CIRCUIT BREAKER IN PLACE AND SWITCH IT TO THE "OFF" POSITION. SEE SHEET IT-12.
THE VENDOR SHALL PATCH ALL WALL PENETRATIONS WITH AN APPROPRIATE MORTAR MIX AND SHALL APPROPRIATELY PLUG ALL OPENINGS TO ELECTRICAL BOXES THAT ARE A RESULT OF CONDUIT REMOVAL WITH METALLIC PLUGS.

BULKHEAD DETAIL – EXISTING EXTERIOR VIEW
NOTES:
1. THE VENDOR SHALL INSTALL THE NEW -48 VDC TOWER OBSTRUCTION LIGHTING SYSTEM AND ASSOCIATED SURGE PROTECTION. SURGE PROTECTION SHALL BE ADVANCED PROTECTION TECHNOLOGIES TWL SERIES SPECIFIC TO THE UNMAR DL54-008 OBSTRUCTION LIGHTING SYSTEM.

THE APPROXIMATE LOCATION OF THIS EQUIPMENT ABOVE IS FOR DIAGRAMMATICAL PURPOSES ONLY. THE VENDOR IS RESPONSIBLE FOR DETERMINING THE BEST LOCATIONS FOR EQUIPMENT AND ALL ASSOCIATED CONDUITS AND MOUNTING AND GROUNDING HARDWARE.

2. THE VENDOR SHALL ROUTE THE NEW WAVEGUIDES ALONG THE EXISTING CEILING-MOUNT TRAPEZE ASSEMBLIES, AND EXISTING CEILING-MOUNT THREADED RODS, TO THE MICROWAVE RADIO RACKS. THE VENDOR SHALL SECURE THE WAVEGUIDES TO THE TRAPEZE ASSEMBLIES USING STAINLESS STEEL BOLT-ON WAVEGUIDE HANGER KITS.

3. THE VENDOR SHALL INSTALL A NEW GAS DISTRIBUTION MANIFOLD KIT AND ASSOCIATED GAUGES AND PLASTIC TUBING FOR THE NEW WAVEGUIDES. THE VENDOR SHALL INTEGRATE THIS EQUIPMENT WITH THE EXISTING PRESSURIZATION EQUIPMENT.

4. THE VENDOR SHALL INSTALL THE NEW SURGE PROTECTION DEVICES DIRECTLY ON THE TRANSMISSION LINE BULKHEAD.

5. THE VENDOR SHALL ROUTE THE NEW COAXIAL TRANSMISSION LINES ALONG THE OVERHEAD CABLE TRAYS, PARALLEL TO THE EXISTING UHF RADIO TRANSMISSION LINES TO THE APPROPRIATE UHF RADIO RACKS. THE VENDOR SHALL SECURE THE TRANSMISSION LINES TO THE OVERHEAD CABLE TRAYS WITH ZIP TIES, AT 36 IN. INTERVALS, MAXIMUM.

6. THE VENDOR SHALL INSTALL THE NEW CCTV POWER/DATA CABLES IN THE TRANSMISSION LINE BULKHEAD, AND NEATLY COIL ALL EXCESS CABLE FOR FUTURE TERMINATION. EXCESS CABLE LENGTHS SHALL BE MINIMUM 15 FT. THE VENDOR SHALL ALSO PROVIDE THE MIDSPAN POE INJECTORS INSIDE THE COMMUNICATIONS BUILDING FOR FUTURE INSTALLATION BY OTHERS.

7. THE VENDOR SHALL REMOVE THE OLD WAVEGUIDES AND ASSOCIATED PRESSURIZATION TUBING AFTER SUCCESSFUL CUTOVER OF THE MICROWAVE ANTENNA SYSTEMS. THE VENDOR SHALL CAP AND CLOSE OFF ALL UNUSED GAUGES TO PREVENT AIR LEAKS.

8. THE VENDOR SHALL INSTALL NEW BOOT COVERS ON ALL USED AND UNUSED BULKHEAD PORTS.

9. THE VENDOR SHALL PROVIDE THE FLIPJUX DUPLEXER INSIDE THE COMMUNICATIONS BUILDING FOR FUTURE INSTALLATION BY OTHERS.