

TECHNICAL SPECIFICATIONS

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TECHNICAL SPECIFICATIONS

1. GENERAL

1.1 General Description: The purpose of this specification is to provide the technical requirements and scope of work to support procurement of:

- 1.1.1 Drone-based flying transmission system damage assessments in case of a tropical storm, hurricane or other high wind event in JEA's service territory on an as-requested basis.
- 1.1.2 Drone-based flying comprehensive circuit inspections of JEA's transmission circuits energized at 230, 138 and 69 kV on an as-scheduled basis.
- 1.1.3 The annual work referenced above is subject to change. There is no guaranteed annual work or minimum work amount to be performed under this contract.
- 1.1.4 The listed scope of work shall be paid based upon labor, equipment, material, mobilization/demobilization, reimbursable and standby charge rates as bid by the Company.
- 1.1.5 JEA shall pay the Contractors hourly labor and equipment expenses for JEA requested standby and/or weather delays once mobilized.
- 1.1.6 The Company shall provide drone(s) equipped to perform the assigned task, FAA licensed drone pilot, observer/camera or video equipment operator and ancillary equipment as specified in these documents. The company shall request permission to fly in controlled airspace.

1.2 Scope of Work:

The scope of the aerial drone-based storm damage assessments and as-scheduled comprehensive circuit inspection work shall include but not be limited to:

1.2.1 Storm Damage Assessment

- 1.2.1.1 Perform Storm Damage Assessments on an as-requested basis.
- 1.2.1.2 Prior to a known wind event, JEA may reserve your drone crew(s) and equipment by placing them on paid "Standby" status until the storm passes. The rate of pay for "Reserve Standby Status" is per day.
- 1.2.1.3 Immediately prior to the wind event occurring in Jacksonville, JEA may request that you mobilize to or near Jacksonville and be within a 2 hours response time. At this point, you are placed on paid "Work" status and paid the daily bid rate.
- 1.2.1.4 You are paid either the "standby" rate or "work" rate per day not both.
- 1.2.1.5 The initial area of focus will be performing damage assessment of known transmission circuit outages which will not re-energize (reclose).
- 1.2.1.6 After the storm passes and the "ALL CLEAR" is declared by JEA, you'll start performing assigned transmission circuit damage assessments.
- 1.2.1.7 The damage assessments shall include flying suspected areas with damage. Identifying damages, taking photographs and video of the damaged areas, surrounding site conditions.
- 1.2.1.8 The Contractor shall take pictures of any/all observed damage. The pictures shall be geo-referenced with the GPS coordinates of each picture location.
- 1.2.1.9 The Contractor shall immediately communicate those observations verbally to the assigned JEA employee and immediately provide JEA with the SD memory card(s) containing the pictures and video.
- 1.2.1.10 Travel to the next assigned damage assessment location and continue until all out of service transmission lines have been assessed for damage.
- 1.2.1.11 Once the damage assessment work is complete, start flying the edges of all JEA 230 and 138 kV transmission line corridors identifying falling or leaning trees.

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- 1.2.1.12 Fly all 230 and 138kKV circuit corridors, directly above the edges of JEA's transmission corridors, looking for and identifying locations of fallen and/or leaning trees. The desire is to remove these trees before they cause additional transmission circuit outages. It is critical that both right of way edges be flown separately
- 1.2.1.13 Take geo-referenced photographs of all leaning and/or falling trees. Record, document observations as instructed by JEA.
- 1.2.1.14 Once complete, download, process and provide JEA with copies of all photographs, video and other assorted documentation on a hard drive.
- 1.2.1.15 De-mobilize from the site.

1.2.2 Comprehensive Circuit Inspections

- 1.2.2.1 Perform Comprehensive Circuit Inspections on an as-scheduled basis.
- 1.2.2.2 Prior to starting work, attend a JEA instructed 4 to 6 hour transmission circuit inspection class discussing JEA inspection practices and expectations.
- 1.2.2.3 The Drone shall be operated slightly above and if possible within 15' of distance to the side of the transmission power line, watch out of adjacent transmission circuits, so that the assessors/observers can visually inspect the power line, structures, insulators and conductors, unless equipped with a capable zoom camera.
- 1.2.2.4 Perform detailed inspection of the structure at the ground line. This includes but is not limited to concrete foundations, direct buried concrete, steel structures, vibratory installed caissons with anchor bolts and wood poles.
- 1.2.2.5 Perform detailed bottom of pole to top of pole drone-based inspections.
- 1.2.2.6 Taking pictures of all areas of concern.
- 1.2.2.7 Document areas of concern as needed to provide detailed information to JEA.
- 1.2.2.8 Fly each structure and inspect it from a minimum of three overlapping flying/viewing positions around each structure.
- 1.2.2.9 Galvanized steel lattice structures shall be flown and inspected in greater detail. Fly as many paths and views as required to determine the condition of the erection assembly bolts, steel platform grating, grating clips and tower climbing step bolts and climbing cages, identify rusting and/or rusted-through steel tower members.
- 1.2.2.10 Verify tower warning lights are flashing properly, if installed.
- 1.2.2.11 JEA shall pay the Contractors hourly labor and equipment expenses for JEA requested standby and/or weather delays once mobilized.

1.3 Documentation

1.3.1.1 Storm Damage Assessment

- 1.3.1.1.1 Provide JEA with verbal assessments after each circuit outage is flown. Supply JEA SD memory cards containing pictures of observed damage areas, leaning and falling trees.

1.3.1.2 Comprehensive Circuit Inspections

- 1.3.1.2.1 Provide JEA with a detailed circuit inspection report, by circuit, with pictures as needed to document areas of concern.
- 1.3.1.2.2 Supply documentation in a notebook with an electronic copies of all relevant reports, pictures, and video's and associated information to document areas of concern.

2. DRONE, CREW AND EQUIPMENT SPECIFICATIONS

2.1 Drones

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- 2.1.1 The Drone(s) shall be capable of flying and performing the specified tasks.
- 2.1.2 The Drone(s) shall have a zoom camera with a 30 times optical zoom lens and be capable of capturing 4K high definition video.
- 2.1.3 The Drone camera/video equipment shall have pan, tilt and zoom capabilities as required to perform the specified tasks.
- 2.1.4 The Gimbal/camera/video equipment shall be capable of documenting the condition of the area between porcelain insulator bells. Top-mounted Gimbals may be required to view and capture photographs of areas between insulator bells.

2.2 Drone Crew

- 2.2.1 The crew shall be a minimum of two (2) people with **both** members capable of performing pilot and observer/camera-video operator job responsibilities. The Pilot in Charge shall be the “**lead**” person for the crew and communicate with JEA’s Project Engineer or assigned project representative.
- 2.2.2 Each crew member shall have a minimum of one (1) year experience performing power line damage assessment and comprehensive transmission circuit inspections.
- 2.2.3 Drone crew members shall be experienced with electric utility transmission and distribution overhead line systems and be capable of specifically identifying damaged components of an electric distribution and transmission system.
- 2.2.4 JEA will review, evaluate and approve the experience of the Contractor employees, who can demonstrate proven experience in identifying damaged components of a transmission and distribution lines.

2.3 Additional Equipment Requirements

- 2.3.1 The crew shall arrive fully equipped to perform the specified task and be prepared to start work immediately upon arrival in Jacksonville, Florida.
- 2.3.2 The crew equipment requirements shall include a 4 wheel drive, 4 door truck similar to a Ford F150 or F250, haul trailer, 4 wheel drive Polaris or similar approved trail operated vehicle, generator, fuel, and all associated tools and equipment required to perform the specified task.

- 2.4 Location of Project(s): The assessment work sites are located throughout the JEA transmission and distribution system primarily located in Duval County. We have limited transmission and distribution circuits in Nassau, St Johns and Clay Counties. The transmission rights of way generally contain a patrol road to travel along the right of way path. A Polaris or similar type trail vehicle is required to travel off most patrol roads.

2.5 JEA Project Engineer:

Joey Pazzalia, PE, PMP
Transmission Maintenance
2325 Emerson Street
Jacksonville, Florida 32207
Mobile: 904-507-9017
Email: pazzjl2@jea.com

- 2.6 Pre-Construction Conference: A mandatory pre-flight meeting shall be conducted immediately before damage assessments operations begin for the benefit of communication and coordination between the parties. Such meeting shall be scheduled by the JEA Project Engineer.
- 2.7 Sequence of Work and Project Schedule: The specified work shall be performed on an as needed basis for three years or until the expenditure limit of the contract is reached.
- 2.8 Drawings, Route Maps and Details: Prior to the start of each storm season, JEA shall provide paper based and/or electronic drawings depicting the locations and identification of JEA's transmission circuits within the transmission system.

Paper based Transmission Route Maps can be provided if they provide the Contractor value.

JEA will provide the Contractor with an electronic KMZ file, titled "Transmission Corridor Map", which contains each 230 and 138 kV transmission circuit and its corresponding transmission structure by location for use while performing transmission system damage assessment work.

JEA shall provide the Contractor with a printed reduced copy and an electronic PDF copy of JEA's Transmission System Map for use. It identifies each transmission circuit and its corresponding starting and ending substation name.

- 2.9 The Company shall thoroughly review the bid documents before preparing the bid.

2.10 Safety

- 2.10.1 In conjunction with the applicable sections of the Occupational Safety and Health Act (OSHA), the Company shall take precautions, at their own expense and include it in the bid, as necessary to:
- 2.10.1.1 Protect all workmen engaged in the performance of the work specified.
 - 2.10.1.2 Protect the Public from hazardous conditions.
 - 2.10.1.3 Place and maintain necessary guards and barriers, lights, signs, etc.
 - 2.10.1.4 Prevent injuries and accidents.
 - 2.10.1.5 Conform to applicable requirements of (OSHA) 29 CFR 1910-1200 pertaining to the communication of information regarding hazards involved in his work.
 - 2.10.1.6 Provide safe passage to and from the adjacent areas that may be affected by the work.
 - 2.10.1.7 Fly the Drone in accordance with FAA rules and regulations.

3. PROJECT EXECUTION

- 3.1 The work as specified shall be performed as assigned.
- 3.2 Mobilize and complete the assigned work within mutually agreed time frames.
- 3.3 Have on hand all tools, materials, equipment, and labor required for the work provided.
- 3.4 Once mobilized and work begins, the Company shall work continuously until completing all specified work.
- 3.5 The Company shall employ "Best Management Practices" while performing the specified activities.
- 3.6 The Company shall supply a Lead Person who is in "Responsible Charge" for all project activities. The "Responsible Charge" person must know, obey and enforce all environmental, work and safety practices and procedures. The Company's employee in "Responsible Charge" for each crew shall have a cell phone. The lead person in responsible charge shall be the project "foreman" for the purposes of this project.

4. CODES AND STANDARDS

The Company shall perform the project work in accordance with applicable requirements of the latest versions of the codes and standards referenced herein and in the Solicitation.

- 4.1 Latest Version. Unless a particular version is designated, all references to codes and standards shall, in each instance, be understood to be the current version of the code or standard in effect (including all amendments) on the date of the Request for Bid.
- 4.2 Conflicts. For materials or workmanship specified by association, trade, Federal, State, local codes and standards, comply with the requirements of the referenced code or standard. Where the requirements of referenced codes and standards conflict with each other, generally, the most stringent requirements apply. Where the requirements of referenced codes and standards conflict with the technical requirements stipulated herein, request clarification from Engineer before proceeding.
- 4.3 Codes. The project work performed shall comply with relevant portions of the following codes:
- National Electrical Safety Code (ANSI C2).
 - Federal and State Occupational Safety and Health Act (OSHA)
 - Code of Federal Regulations
 - EPA
 - FAA
- 4.4 Standards. The project work performed shall comply with relevant portions of industry accepted standards published by the following institutes, associations and societies:
- American Institute of Steel Construction (AISC)
 - American Iron and Steel Institute (AISI)
 - American National Standard Institute (ANSI)
 - American Society of Civil Engineers (ASCE)
 - American Society of Mechanical Engineers (ASME)
 - American Society for Testing and Materials (ASTM)
 - Institute of Electrical and Electronics Engineers, Inc. (IEEE)
 - National Electrical Manufacturer's Association (NEMA)
 - Underwriters' Laboratories, Inc. (UL)
 - Edison Electric Institute

5. MATERIAL AND EQUIPMENT

5.1 General

- 5.1.1 All material to be installed under this project is generally JEA supplied.

6. PROTECTION OF THE ENVIRONMENT

The Company shall maintain work areas free from environmental pollution that would be in violation of any federal, state, or local ordinances or regulations.

6.1 Environmental Requirements

Environmental Requirements shall be defined as all laws, ordinances, statutes, codes, rules, regulations, agreements, judgments, orders, permits including their conditions, and decrees, now or hereafter enacted, promulgated, or amended, of the United States, the states, the counties, the

cities, or any other political subdivisions in which the Work Location is located, and any other political subdivision, agency or instrumentality exercising jurisdiction over JEA, the Work Location, or the use of the Work Location, relating to pollution, the protection or regulation of human health, natural resources, or the environment, or the emission, discharge, release or threatened release of pollutants, contaminants, chemicals, or industrial, toxic or hazardous substances or waste or Hazardous Materials (as defined in this Contract) into the environment (including, without limitation, ambient air, surface water, ground water or land or soil).

6.2 Environmental Compliance

The Company shall be familiar, and otherwise comply with Environmental Requirements as they apply to the erection work under this Contract unless relieved from compliance with specified Environmental Requirements identified in this Contract. Company shall furthermore notify the Owner of the need to obtain additional regulatory authorizations, including permits, prior to applying for such authorizations.

6.3 Waterways

The Company shall observe the rules and regulations of the state, local, and federal agencies prohibiting the pollution of stream or river waters by dumping any refuse, rubbish, or debris therein.

6.4 Air Quality

The Company shall minimize air pollution due to construction operations by using properly operating combustion emission control devices on construction vehicles and equipment, and shutting down motorized equipment not actually in use.

6.5 Since all project work is to be performed between the hours of 8 AM and 5 PM, the Company shall obtain the necessary permits from the appropriate agencies and make all necessary arrangements prior to commencing the project work.

7. COMPANY EQUIPMENT AND SAFETY

7.1 The Company and any subcontractors must apply and submit an application to JEA Safety and obtain JEA Safety Certification before the Bid Opening date in order for their bid to be opened.

The Company and his employees shall demonstrate adequate knowledge of safety and environmental regulations.

7.2 Company's Equipment shall be in good condition and capable of performing this work. Company will be required to demonstrate to JEA's satisfaction that equipment being used has been completely refurbished and in good working order.

7.3 Company shall employ adequate safety measures to ensure the safety of the job site and his employees.

7.4 The Company shall immediately notify the Project Engineer of any on the job injury, after seeking medical treatment or safety incident.

7.5 JEA's definition of "All Clear" occurs when the storm has passed JEA's service territory and the continuous wind speeds are less than 30 miles per hour. **The Contractor shall notify JEA if they use a different definition of 'All Clear'.**

8. CONDITIONS FOR PERFORMING THE WORK

- 8.1 Material provided by Company shall be new quality and meet all standards and codes governing the material for the type of use of the material
- 8.2 Access to perform all work is the responsibility of the Company.
- 8.3 Company shall be responsible at all times for providing security to the work site, equipment and materials. In addition, Company shall provide site security for Company worker safety.

9. ATTACHMENTS

Required documents shall be provided to the Contractor prior to the start of storm season each year.

10. JEA SUPPLIED PROJECT LANDING/SHOW UP/MATERIAL LAY DOWN AREAS

JEA may allow the Company to use existing transmission rights of ways in the vicinity of the project as landing zones. The Company shall be responsible for keeping the areas clean of trash and debris and restore each area to “as-found” condition.

JEA may request that the Company obtain permission from third parties to use their property/facilities as a drone landing zone and/or work area. JEA shall reimburse the Company based upon a cost plus 10% basis.

11. TYPICAL WORK DESCRIPTIONS

Drone and Potential Crew Staffing Recommendations (to be mutually agreed to be based upon the scope of each assigned project). Item numbers listed below correlate to items numbers on Appendix B - Bid Workbook Unit Prices.

Drone-Based Work Scope:

Requirement:

- | | |
|--|---|
| 1. Drone | DJI, Matrice M100, approved equivalent or greater, including all required equipment |
| 2. Drone Pilot | FAA Certified Drone Pilot |
| 3. Camera/Video Operator | and FAA Certified Drone pilot |
| 4. Ford F150, 4 door, 4 wheel Drive | Or approved equivalent |
| 5. Generator, fuel, tools and equipment, etc. | Any/all tools required to maintain the Drone, charge the Drone batteries and operate in an “Off Road” power line easement environment |
| 6. Polaris, 4 wheel drive trail vehicle, and transport trailer | Or similar trail type vehicle |
| 7. Mobilization/Demobilization Per Person | Per event is defined as the time required to travel to Jacksonville to perform the specified work and to travel back to your assigned base of operation |
| 8. Reserve the Crew Standby Rate Prior to a Storm | A daily paid rate to reserve the crew, off site, until mobilized to Jacksonville or released from “Reserve” Standby status |

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9. Mobilized Hourly Standby Rate	Once mobilized and on site, paid on an hourly basis until flight operations begin/or resume after a JEA caused or weather delay to standby until it is safe to perform requested work activities
10. Per Diem Expenses	Hotel room (unless JEA supplies the room), food and miscellaneous minor expenses

12. PERMITS

The Company shall prepare, apply, pay fees and obtain any/all permits required to perform the work listed in this specification.

13. SPECIALTY EQUIPMENT

During the life of this project, the Company may be requested to provide specialty equipment or services for use during an assigned project. The specialty equipment or service shall be paid for based upon cost plus up to a maximum 10% markup for handling/coordinating the specialty equipment or service. Examples of the specialty equipment may include a boat, Marsh Master or air boat.