

## **SPECIFICATION 635 – ADJUSTMENT OF FACILITIES OF THE PUERTO RICO ELECTRIC POWER AUTHORITY**

### **635-1            DESCRIPTION**

#### **635-1.01        Scope**

a.        This work shall consist of the adjustment by the Contractor of facilities of the Puerto Rico Electric Power Authority (PREPA) occupying the project right-of-way or adjacent thereto which interfere with or are affected by the project construction. The work shall be performed in accordance with these specifications, the applicable standards and specifications of PREPA, and in conformity with the lines, dimensions and details shown on the plans or established by the Engineer.

b.        The work by the Contractor consists of the furnishing of all necessary materials and the installation of complete electrical distribution lines (primary and/or secondary) and/or transmission lines including, but not limited to, poles, distribution and transmission standards, conduits, conductors, transformers, fixtures, fittings and all other appurtenances and hardware required to complete the adjustments. The work also includes the removal of existing distribution and/or transmission lines indicated on the plans, and the relocation, removal, replacement, rearrangement or reconstruction of any other PREPA facilities shown on the plans or described in the contract documents.

#### **635-1.02        Definitions**

a.        Distribution lines include overhead or underground lines of 2.40, 4.16, 4.8, 7.62, 8.32 and 13.20 KV. It also includes secondary lines of 120/240V, 120/208V, 120/277V and 240/480V.

b.        Transmission lines include overhead or underground lines of 38, 115 and 230KV.

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- c. Transmission and distribution line standards refer to construction standards and details included in PREPA's Construction Standards Handbooks.

**635-1.03** It shall be understood that PREPA technical specifications and standards referred to or included in the contract documents to cover contract pay items apply to the materials and construction requirements of the work but that measurement and payment for such items will be governed by the provisions of this specification. The latest PREPA standards and regulations shall prevail during the construction no matter the Standards Drawings and Specifications shown in plans.

**635-1.04** When PREPA adjustment work is included for performance as part of the highway contract, the Contractor shall save PREPA harmless from any claims for injuries and otherwise, sustained by the Contractor or his employees as a result of his adjustment operations.

**635-1.05** The provisions of Article 105.06 of the General Provisions concerning the Contractor's responsibility for and cooperation with utilities are applicable, as appropriate, for all PREPA adjustment work, whether performed by the Contractor or by PREPA.

### **635-2 MATERIALS**

**635-2.01** All materials required for the PREPA adjustment work to be performed under the contract shall be furnished by the Contractor unless otherwise specified. These materials shall be new and shall meet the requirements of the plans and these specifications. However, sound salvaged materials obtained from the removal of existing facilities may be used in the adjustment work if acceptable to PREPA.

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**635-2.02** All electrical equipment and materials shall conform to the latest appropriate standards and specifications of PREPA, the Underwriters Laboratories (UL), the National Electrical Code (NEC), and other building codes and regulations applicable to the work.

**635-2.03** Promptly following the execution of the contract but not later than 60 calendar days after receipt of notice of the contract award, the Contractor shall submit to PREPA and the Engineer for review and approval a complete list of all equipment and materials which he proposes to install in the adjustment work. The list shall include all the materials required by the plans and other contract documents indicating for each item the manufacturers' name, size and other descriptive data which is necessary and customarily used in the trade to identify such materials.

### **635-3 CONSTRUCTION REQUIREMENTS**

#### **635-3.01 General**

a. The Contractor shall give PREPA at least two (2) weeks advance notice before beginning work on the utility adjustments, to permit PREPA to make arrangements to have a representative present at the site of the work. The Contractor shall not perform adjustment work without the presence of PREPA representative to supervise the work except when the right to have a representative present at the work is waived in writing by PREPA.

b. The PREPA representative shall have free access at all times to all parts of the work and to all material intended for use in the work concerning the PREPA facilities. The Contractor shall coordinate with the PREPA and the Authority representatives his proposed construction schedule and procedures.

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- c. The Contractor shall be responsible for protecting the existing PREPA installations from damage by his construction operations to insure the continuity of the utility service.
- d. Any work involving disconnecting existing live lines, connection to live lines, and crossing of or working in close proximity to existing live lines shall be performed by PREPA personnel. The Contractor shall pay PREPA for the cost of such work. Upon receipt of a certified invoice or other acceptable evidence of payment by the Contractor, the Authority will reimburse the Contractor by an extra work order. The reimbursement will include the amount paid to PREPA, any additional municipal excise taxes, and insurance payments related to these work. No payment will be made for mark-up, administrative and incidental expenses, profit surcharges and any similar charge.
- e. The Contractor shall be responsible for obtaining, at his expense, all permits and inspections required by PREPA and by applicable laws and regulations.
- f. All adjusted facilities shall be completely installed, inspected, tested and left in operating condition to the satisfaction of PREPA and the Authority.
- g. Construction shall be performed in accordance with the latest standard practices of PREPA and shall conform as to quality of materials used, tests and workmanship with the requirements of PREPA and all the applicable standards of the National Electrical Manufacturers' Association (NEMA), the Electronics Industries Association (EIA), the Institute of Electronic and Electrical Engineers (IEEE), the National Electrical Code (NEC) and the American National Standards Institute (ANSI). Any changes in the plans and specifications that may be considered necessary to meet the applicable requirements of any of these standards and codes shall be

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submitted to PREPA and the Authority for written approval prior to being made.

h. Wherever reference is made in these specifications to any national or local code or standard it shall be construed to mean the code or standard which is in effect on the date the project is advertised for bids.

i. The locations of the adjusted facilities shown on the plans are approximate only and the exact location will be established by PREPA and the Engineer in the field. It shall be understood that any changes made by the Engineer in the vertical or horizontal locations shown in the plans, which do not materially affect the character and scope of the adjustment work, will be made by Contractor at no extra cost to the Authority.

j. Any changes proposed by the PREPA District Engineer and/or the Contractor that materially affect the character and scope of the adjustment work require the prior written approval of the PREPA central office and the Design Area of the Highway Authority.

k. Existing salvageable items identified on the plans, which are not to be used in the utility adjustment work, shall be removed by the Contractor from the project site and delivered to PREPA at the locations indicated in the contract documents, at the Contractor's expense.

l. Existing underground facilities which are not to be incorporated in the adjusted utility may be abandoned in place, if authorized by the Engineer, unless they interfere with the project construction or otherwise shown on the plans. However, such abandonment in place shall be subject to providing, at the Contractor's expense, any necessary protective measures such as plugging or filling of conduits, manholes and boxes as may be specified in the contract documents or required by the Engineer.

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**635-3.02** PREPA Standards - For construction details not shown on the plans, reference shall be made to the PREPA Construction Standards Handbooks. These cover such items as typical pole construction, conductor separations and clearances, neutral conductor position, transformers details and installation, interconnections and grounding, and other applicable installation details.

### **635-3.03 Excavation and Backfill**

- a. Before beginning excavations for any underground work, the Contractor shall notify the utilities concerned, the Engineer and the Demolitions and Excavations Center, a minimum of two weeks in advance of the proposed excavation work, so that the location of all underground installations in the project area may be determined. It will be the responsibility of the Contractor to make the necessary contacts with utilities and others who have underground installations in the project area. Any damage to existing facilities, shown on the plans or identified by the utilities prior to excavations caused by negligence by the Contractor shall be repaired of the Contractor at no expense to the Authority.
- b. Unless otherwise indicated in the contract documents, the Contractor shall do all excavation, backfilling and resurfacing work, including removal and replacement of curbs, sidewalks, paved surfaces and other materials necessary to complete the work in accordance with the plans and specifications.
- c. Excavation and backfilling shall conform to the applicable requirements of Specification 205 - Trench Excavation and Specification 206 - Excavation for Structures, supplemented as follows:

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1. Excavations for locating existing underground conduits shall be done by hand tools, unless otherwise authorized by the Engineer, and exercising the utmost care to avoid damage to the existing facility and the interruption of service. Power tools and picks shall be used only on the hard top surface with the excavation in the underlying soil material performed with hand shovels.
2. The location of conduit trenches are shown approximately on the plans and will be located in the field by the Engineer. All conduit trenches shall be dug to the depth required by the PREPA construction standards.
3. In making excavations in paved surfaces, cuts shall be made with an abrasive type power saw along the neat boundaries of the area to be removed as specified in paragraph 3.04b below.
4. Foundation and backfill material for conduits shall comply with applicable PREPA requirements. Backfill shall be placed in layers not exceeding 20 centimeters in thickness and compacted by mechanical tamping tools. Backfill shall be placed as soon as practicable but not later than 3 days after the underground utility work has been completed and accepted.
5. All excavations for pole or pedestal concrete foundations shall be made to the neat lines of the foundations. No backfilling will be permitted as the concrete must be placed directly against the sides of the excavation. On completion of the work, the top surfaces shall be replaced and finished to correspond with the existing surrounding surfaces.

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6. Unless otherwise authorized by the Engineer, all surplus excavated material shall be removed and disposed of outside the right-of-way or at locations within the project approved by the Engineer. The excavation site shall be cleaned up and left in a neat condition satisfactory to the Engineer.

### **635-3.04 Removing and Replacing Improvements**

a. Existing improvements such as sidewalks, curbs, gutters, P.C. concrete and asphaltic concrete pavements, underlying materials, lawn and plants, and any other improvements removed, broken or damaged by the Contractor's operations, shall be replaced or reconstructed with the same kind of materials as found in the work or with materials of equal quality acceptable to the Engineer. Replacement and repair of such improvements shall be undertaken as soon as practicable but not later than 3 days after backfilling of the excavations has been completed and accepted.

b. The outline of all areas to be removed in pavements sidewalks, curbs, gutters and driveways shall be cut to a minimum depth of five (5) centimeters with an abrasive type saw, prior to removing the existing material. Cuts shall be neat and true along score lines, with no shatter outside the removal area.

**635-3.05 As-Built Plans** - Upon completion of the PREPA adjustment work, the Contractor shall submit to the Engineer "As-Built" plans of the adjustment work incorporating all the changes made, if any, in the original plans.

**635-3.06 Partial Certifications and Final Acceptance** - For the adjustment works of PREPA facilities, the Contractor shall obtain partial certifications every three months for the work executed. These certifications shall be performed and duly signed by a Puerto Rico licensed Electrical Engineer according to PREPA requirements



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and submitted to PREPA for acceptance. When all adjustment works are completed, a final certification shall be submitted to PREPA for final acceptance and the Contractor shall furnish to the Authority PREPA's certification accepting the works.

### **635-4 METHOD OF MEASUREMENT**

**635-4.01** When a lump sum method of payment is specified in the contract, the complete PREPA adjustment work shown on the plans will be considered a single unit and no separate measurement will be made of any of its individual components.

**635-4.02** When components of the PREPA adjustment work are included as separate pay items in the contract these will be measured as follows:

- a. Poles of each material, class and size specified in the contract documents, installed complete and accepted, will be measured by the unit.
- b. Transmission and distribution standards of each type specified in the contract documents, installed complete with all hardware and appurtenances and accepted, in conformity with PREPA requirements, will be measured by the unit.
- c. Electrical conduit will be measured by the linear meter of each type and size specified, installed according to the plans or as ordered by the Engineer and accepted, and including all fittings, hangers, spacers, expansion devices, concrete encasement, warning ribbon and any other items required to provide a complete installation. Where a cluster of parallel conduits is installed in a conduit run, the length of each size of conduit will be determined by the product of the length of the cluster by the times the conduit occurs in the cluster.

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d. Junction boxes, pull boxes and manholes will be measured by the number of each type and size installed in accordance with the plans or as ordered by the Engineer, and accepted. Each unit shall be complete and include frames, covers and all necessary hardware.

e. Conductors for transmission and distribution lines will be measured by the linear meter of each class and size specified in the contract documents, including spacers and messenger cables, installed complete and accepted according to the plans or as ordered by the Engineer.

f. Substations of each specified type and size furnished, installed and accepted will be measured as a unit. Each substation unit shall consist of the complete installation conforming to PREPA standards, ready for operation, including foundation, concrete pad (when required), specified pole and cross arms (when required), transformer, fuses, breakers, risers, connectors, fuse cutouts, lightning arresters, insulators, grounds, enclosures and cabinets (as required), and all necessary hardware and appurtenances.

g. The removal of existing electrical lines, including poles, conductors and all hardware and appurtenances, and including also the storing and delivery to PREPA of any salvageable materials specified in the contract documents which are not used in the adjustment work, will be measured as a lump sum item. When no pay item is included in the contract, such removal and salvaging work shall be a subsidiary obligation of the Contractor under the PREPA adjustment work.

**635-4.03** The removal and replacement of existing improvements required for the adjustment of PREPA facilities, covered under Article 635-3.04, will not be measured for direct payment but shall be a subsidiary obligation of the contractor under the PREPA adjustment pay items.

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**635-4.04** Excavation, bedding and backfill required for foundations, poles, pull and junction boxes, and conduit installations will not be measured directly for payment. These items shall be a subsidiary obligation of the Contractor with their cost included under the respective utility adjustment pay items, except when a PREPA Standard pay item covering such work is included in the contract.

**635-4.05** Concrete and reinforcing steel for foundations, conduit encasement, manholes, pole and junction boxes and other system units, will not be measured directly for payment but shall be a subsidiary obligation of the Contractor with their cost included under the respective utility adjustment pay items, except when a PREPA Standard pay item covering such work is included in the contract.

**635-4.06** Any piles required for foundations will be measured and paid for under Specification 615 - Piling.

**635-4.07** When the PREPA adjustment work is paid for by separate component pay units rather than as a lump sum item, it shall be understood that the combination of all component pay units shall provide for the complete adjustment ready for operation and that any miscellaneous fees, work, equipment, and materials necessary to complete the adjustment work shall be furnished and installed by the Contractor at no extra cost to the Authority. The cost of any of these miscellaneous items shall be considered as included under the contract pay items.

**635-4.08** The costs for obtaining PREPA's certifications and acceptance of the performed works according to article 635-3.05 shall be considered a subsidiary obligation of the Contractor under the pay items of this specification included in the proposal schedule.

### **635-5 BASIS OF PAYMENT**

**635-5.01** The accepted quantities, determined as provided above for the pay items listed in Article 5.04 below which are included in the contract, will be paid for at the contract unit price per unit of measurement. Such price and payment shall constitute full

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compensation for furnishing and installing all required equipment and materials, and for all labor, equipment, tools and incidentals necessary to complete each item as required by the plans and specifications, and to the satisfaction of PREPA.

**635-5.02** When PREPA adjustment pay items not listed in Article 5.04 below are included in the contract, the basis of payment will be as specified in the contract documents.

**635-5.03** When the Contractor installs materials furnished by PREPA at no cost to the Contractor in exchange for similar materials salvaged from the existing PREPA facility, and for which payment is being made by the Highway Authority to the Contractor under a contract pay item, the value of such material will be deducted by the Authority from the payments due the Contractor.

**635-5.04** Payment for works under this specification will be made according to the following schedule:

- a. Eighty percent (80%) of the contract unit price for each pay item will be paid after the initial installation is completed and accepted by the Engineer.
- b. The remaining twenty percent (20%) due to the Contractor will be paid to the Contractor after the submittal to the Authority of the certification of final acceptance of the works by PREPA.

**635-5.05** Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Adjustment of PREPA Facilities.....	Lump Sum
Wood Poles _____ (Class, Size)	Each

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<u>Pay Item</u>	<u>Pay Unit</u>
Concrete Poles _____ (Class, Size)	Each
PREPA Transmission Standard _____....	Each (Type)
PREPA Distribution Standards _____.....	Each (Type)
Conductor _____ (Type, Size)	Linear Meter
Conduit _____ (Type, Size)	Linear Meter
PREPA Pull Box Standard _____ (Type, Size)	Each
PREPA Junction Box Standard _____ (Type, Size)	Each
PREPA Manhole Standard _____ (Type, Size)	Each
Substation _____ (Type, Size)	Each
Removal of Existing PREPA Facilities.....	Lump Sum