

JEA Transmission Crew Tools and Equipment			
Not intended to be all inclusive for JEA's System		Or approved equal	
Description	Quantity	Manufacturer	Part Number
Honda gas powered generator, model EU2000i, must be able to connect in parallel	2	Honda	EU2000i
Harrington or Buckingham, 3 ton lever type hoist, w/ 10' of logging chain	4	Harrington	LB030
Harrington or Buckingham, 6 ton lever type hoist, w/ 10' of logging chain	4	Harrington	LB060
Harrington or Buckingham, 9 ton lever type hoist, w/ 10' of logging chain	4	Harrington	LB090
15 ton lever type hoist, w/ 15' of chain, bike chain style coffering hoist	3	Coffington	WG-15
Kellems conductor pulling grip for 556 acsr, .914" diameter	3	Hubbell	cat # ZCS1712 , range .75" -- 1.00", 14.1 K lbs
	3	Hubbell	cat # ZCS1711 , range .50" -- .75", 10.5 K lbs
Kellems conductor pulling grip for 954 acsr, 1.196" diameter	3	Hubbell	cat # ZCS1713, range 1.00" -- 1.25", 25 K lbs
Kellems conductor pulling grip for 954 AAC, 1.126 " diameter	3	Hubbell	cat # ZCS1714, range 1.25" -- 1.50", 31 K lbs
Kellems conductor pullinggrip for 954 acss, 1.196" diameter	3	Hubbell	
Kellems conductor pulling grip for 1590 acsr, 1.545" diameter	3	Hubbell	cat # ZCS1715 , range 1.50" -- 1.75", 31 K lbs
Kellems conductor pulling grip for 3#6 AW, .349" diameter	3	Hubbell	cat # ZCS1710, range .25" -- .50", 7 K lbs
Kellems conductor DUA pulling tube for 556 acsr, .914" diameter	3	Hubbell	cat # 91061045, range .75" -- 1.10"
Kellems conductor DUA pulling tube for 954 acsr, 1.196" diameter	3	Hubbell	cat # 91061046, range 1.00" -- 1.50"
Kellems conductor DUA pulling tube for 954 AAC, 1.126 " diameter	3	Hubbell	cat # 91061046, range 1.00" -- 1.50"
Kellems conductor DUA pulling tube for 954 acss, 1.196" diameter	3	Hubbell	cat # 91061046, range 1.00" -- 1.50"
Kellems conductor DUA pulling tube for 1590 acsr, 1.545" diameter	3	Hubbell	cat # 91061047, range 1.25" -- 1.70"
Kellems conductor DUA pulling tube for 3#6 AW, .349" diameter	3	Hubbell	cat # 91061043, range .25"-- .65"
One (1) each 60 ton dies for JEA compression type material, mfg by Burndy and Alcoa, SH14, SH10, AH30, AH24	1	Burndy and Alcoa	
GreenLee, 15 ton crimping tool, 18 V battery powered, model 1550FTLU	1	GreenLee	1550FTLU
Dynameters, 5" dial face, 20 k lb range, 20000 x 200, with shackles	2	Dillon Dynameter	30006-0100
Dynameters, 5" dial face, 5K lb , 5000 x 50, with shackles	1	Dillon Dynameter	30006-0050
Dynameters, 5 dial face, 2K lb, 2000 x 20, with shackles	1	Dillon Dynameter	30006-0035
Conductor temperature gauge, sagometer	1	Tallman	CT40-160
Dynameter hooking clips	as needed	included with the shackles	supply with dynameters above
Pocket book bolted style conductor grip for 954 acsr, code name Cardinal, 1.196 diameter, 6 bolt, 12000 lb, for ACSR conductor	6	Tallman Equipment Company	MOLH62-6-1.196
Conductor bushing, for 954 acsr, code name Cardinal, 1.196 diameter	6	Tallman Equipment Company	TE5806
Conductor grip for 954 aac, code name Goldenrod, 1.126 diameter	6	Tallman Equipment Company	???
Conductor grip for 954 ACSS, code name Cardinal, 1.196 diameter, 6 bolt, 9000 lb, ACSS	6	Tallman Equipment Company	MOLH62-6-1.196
Pulling swivel, 7/8", to use w/for kellems grips	2	Hubbell	20308001A
Pulling swivel, 1-1/4", to use w/for kellems grips	2	Hubbell	20308002A
Pulling swivel, 1-1/2", to use w/for kellems grips	2	Hubbell	20308003A
Pulling swivel, 1-5/8", to use w/for kellems grips	2	Hubbell	20308004A
Pulling swivel, 2-3/8", to use w/for kellems grips	2	Hubbell	20308005A
5/8" punch locke banding tool for Kellems grips	2	Hubbell	20320048
5/8" band locking tool	2	Hubbell	20320047
5/8" bands for kellems grips	100	Hubbell	20320050, 20320051, 20320052
3/4" punch locke banding tool for Kellems grips	2	Hubbell	?
3/4" band locking tool	2	Hubbell	?
3/4" bands for kellems grips	100	Hubbell	?
1-1/4" punch locke banding tool for Kellems grips	2	Hubbell	?
1-1/4" band locking tool	2	Hubbell	?
1-1/4" bands for kellems grips	100	Hubbell	?
3000 lb capstan hoist, gas powered	1	Hubbell	?
Cap stan bracket	1	Hubbell	C3081443
Hydrallic foot control for portable hydrallic pump	1	Hubbell	C3080685
Cap stan rope lock	1	Hubbell	C3080859
34", conductor block (dolie), with grounding	6	Wagner and Smith	MDL-52-34 UL/GRD
Portable hydrallic pole pulling equipment, tiiger model 4001D	1	Tiiger	4001D
Grounding mats, 10' x 10', 4' x 4' spacing, 3/16" tinned copper cable, with ball stud(s) and grounding cables	3	Hubbell	C6002991
Battery powered magnetic steel pole drill	1	Milwaukee	?????
Air hammer and/or rod driver for installing ground rods, plus accessories	1	Crowder Hydrallic Tools	LPD-LD
Megger device, ground resistance tester	1	Erico	EST4630
Conductor clipping hooks (lip)	1	Tallman Equipment Company	TES22-771
Reel lift hub tool, 4500 lbs	2	J Harlen	Reel Thing, 4500 lbs, RT40
Greenlee "Gator" conductor cutter, 18V, model ESG45L, 7.7 ton	1	Greenlee	model ESG45KL
Battery operated "Timberbond" mixing tool, with 4 spare batteries and chargers	4	Power Push	model #7075-11, 2K dispenser
Various Compression dies required for JEA Conductor Sizes	varies, 2 each minimum	See JEA conductor list	See separate compression die JEA connector list

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1. SCOPE

The intent of these Contract Documents is to provide supplementation for JEA's construction crews. JEA construction crews may be composed of JEA's own work forces or other contract crews. The Contractor shall provide all labor, supervision, equipment, and materials (except as otherwise noted) necessary to complete the Work within the time stipulated, complying with the plans furnished and with the requirements of these Contract Documents. The Work specified within these Contract Documents includes:

- The construction and maintenance of overhead electrical distribution and/or transmission projects
- The inspection, maintenance and emergency call out on the transmission system
- Providing secondary and street light service crews
- The removal, disposition, replacement of fill and assignment of liabilities for unused JEA transmission and distribution poles.
- Outsourcing the contractor's transmission maintenance equipment and crew to cell tower carriers, including their contractors, for maintenance, repair and upgrade of cellular facilities located in JEA Transmission towers and/or structures.

2. GENERAL INTENT

All Work shall be done in a safe and professional manner, so as to render a neat and uniform appearance. All material shall be handled in such a way as to preserve its finish and protective coatings. General arrangement shall be in accordance with JEA Overhead Distribution Construction Standards Manual and satisfactory to the Contract Administrator. Transmission work shall be in accordance with the JEA Transmission Construction Standards and satisfactory to the O & M Transmission Maintenance Engineer.

The Contractor should be advised that any of the units may be separated from the Contract Documents and used for a similar project at various locations throughout the system.

The JEA Overhead Distribution Construction Standards Manual and other drawings included as part of these Contract Documents do not completely describe all Contractor responsibilities for every Bid Item. This APPENDIX A shall clarify requirements to allow for proper completion of the Bid Form.

3. CONSTRUCTION DRAWINGS AND AS-BUILTS

The Construction Drawings consist of plan views of the entire project, and depict the expected size and placement of new poles, primary and secondary conductors, transformers, service drops and other associated material in relation to the design configuration.

As-Built drawings shall be required to be submitted to the inspector for review within ten (10) business days of completion of the work. This shall include plating changes and material data information forms.

Work order(s) shall be issued to the Unit Price Contractor for transmission maintenance work.

4. JEA OVERHEAD DISTRIBUTION AND TRANSMISSION CONSTRUCTION STANDARDS

These publications provide standard engineering, design and construction practices for JEA. They contain Standard Construction Plates which illustrate the various Standards as well as providing written specifications, construction notes and a list of required materials.

Where applicable, all work shall be performed as specified by the JEA Overhead Distribution Construction Standards Manual and the JEA Transmission Construction Standards, which shall be considered as part of these Contract Documents.

Revisions to these Standards shall also be considered as part of these Contract Documents. If such revisions substantially change the cost of installation of a unit, the unit bid price for such unit shall be changed by the procedures in accordance with Solicitation Paragraph - Special Construction or New Units.

These Standards are located at jea.com. Questions related to these Standards can be sent to the following contact:

Joshua Gordon, Manager Energy Contract Management
21 West Church Street, T9
Jacksonville, Florida 32202
Email: gordje@jea.com

5. STRUCTURE AND MATERIAL LIST

The Structure List is an itemized listing of each station in the project with a tabulation of the expected configuration at that station. This List is to be used in conjunction with the JEA Overhead Distribution Construction Standards Manual for identification of "Plate" configurations and JEA equipment Item ID's. Also included is a Material List with estimated quantities of material needed for a particular job. This list is to be used as an aid to the Contractor.

6. ADDITIONAL CODES AND STANDARDS

The latest rules and regulations of the following organizations shall be considered a part of these Contract Documents, and all Work shall be done in strict accordance with applicable provisions thereof:

- Institute of Electronic and Electrical Engineers (IEEE)
- Edison Electric Institute (EEI)
- National Electrical Manufacturer's Assoc. (NEMA)
- American Concrete Institute (ACI)
- American National Standards Institute (ANSI)

7. CONSTRUCTION PRACTICE CONFORMITY - OPERATION FACTORS

7.1. Outages:

All customer outages shall be held to a minimum. It is realized that certain outages shall have to be taken on the electric distribution system. The time of the outages shall be at the discretion of

System Operations Control Center (SOCC) personnel and must follow the guidelines set forth in the JEA Safety Manual.

It is anticipated that all Work to be done under these Contract Documents can be accomplished during regular working hours. However, should any unforeseen circumstances occur where JEA or its customers cannot be without service during regular working hours, the Work shall have to be scheduled to their convenience. Where inclement weather may "catch" the Contractor, he shall be expected to continue work as previously scheduled and return customers to service.

The transmission maintenance work performed under this contract shall be on de-energized and grounded transmission circuits.

7.2. Notifications:

In no case shall connections or taps be made to hot lines, any lines cut in or out of service, or any outage attempted without due notice being given to SOCC station 2 and station 5 personnel. This must be done so as to minimize interference with the proper operation of the system.

7.3. JEA Project Design:

The JEA Project Design group, through its representatives, shall be responsible for project staking (pole locations, guy anchor locations, etc.) requirements.

7.4. Protection Of Other Utilities And Property:

Where telephone, and/or cable TV, and/or traffic signal facilities exist in the same area as the electric line, the Contractor shall protect such telephone, and/or cable TV, and/or traffic signal facilities from any possible damage. The Contractor shall also coordinate with the Telephone Company and/or Cable TV Company and/or City Traffic Engineer in the removal of old poles, which carry telephone, and/or cable TV, and/or traffic signal facilities. Other utilities, such as gas, sewer, and water shall be protected by the Contractor, and the Contractor shall save JEA harmless from the consequences of any action of the Contractor or Subcontractor that may damage such other utilities. JEA shall attempt to provide necessary information relative to such other utilities, but shall not be responsible for error or omission as to size, depth, location, etc., of such facilities.

When in the course of Work under these Contract Documents, the Contractor causes physical damage to the property of any property owner; i.e. private, commercial, City, State, or Federal, the Contractor shall be responsible for a speedy repair of all such damage at no cost to JEA.

8. TREE TRIMMING

Necessary tree trimming shall be provided under a separate specification and shall not be the responsibility of the Contractor under these Contract Documents.

The Contractor shall provide JEA a minimum of ten (10) business days' notice of any tree trimming or ground line clearing work required.

9. ADMINISTRATION

9.1. Drawings:

The Construction Drawings shall consist of a cover sheet and necessary detail sheets for the job. If any conflicts are found between existing facilities and those shown on the Construction Drawings or on any structure configuration sketches which may be included, the Project Inspector is to be notified before any extra Work is done at that particular location.

9.2. Additions and Deletions:

It shall be understood that any existing pole structures under these Contract Documents, which are found to be defective, may be replaced at JEA's option.

9.3. Acceptance Test:

Upon completion, the entire Work shall be inspected and, if required, tests made in the presence of the Contract Administrator and all required adjustments shall be made to his satisfaction.

9.4. Schedule Of Values Project Price:

The Contract Project Price constitutes the total amount payable to the Contractor for performing the Work associated with each assigned individual project in accordance with these Contract Documents.

The JEA Representative shall calculate the preliminary Contract Project Price by summing the unit prices assigned to each bid item within the Project Documents.

The Contractor shall be responsible for visiting each project site with the Project Documents prior to construction in order to become familiar with the existing JEA distribution facilities and the landscape/topography of the site. Any construction issues and/or inconsistencies with the Project Documents determined from the visit that would affect the Contract Project Price shall be brought to the attention of the JEA Representative.

The JEA Representative shall then calculate the final Contract Project Price which shall usually compute to less than \$750,000.00. In the event that the schedule or JEA's system operations dictate a larger project value, then JEA may at their discretion issue some projects with a Contract Project Price in excess of \$750,000.00 as and when conditions apply.

9.5. PRICING

9.5.1. FIXED UNIT PRICE

The Fixed Unit Price for a defined scope of work is the value determined and entered by the Bidder on the Appendix B Bid Workbook. The amount entered on the line for the corresponding scope determines the Unit Price the contractor shall be paid for each particular bid item and will be multiplied by the actual quantity of fixed price scope performed as defined by the Unit of Measure and is the total price paid to the contractor for actual work performed in accordance with the invoicing and payment processing. Respondents will enter the fixed scope Unit Price which is

multiplied by a forecast quantity to come up with an extended value to see the price impact of different values.

9.5.2. LABOR, EQUIPMENT, MATERIAL PRICE

The Labor, Equipment unit price is the value determined and entered by the Bidder on the Appendix B Bid Form. The Unit Price multiplied by the actual quantity of the work performed at the specified Unit of Measure and is the total price paid to the contractor for actual work performed in accordance with the invoicing and payment processing. Contractors will enter unit prices in the attached Bid Workbook. Respondents will enter the Unit Prices are multiplied by the JEA estimated forecast and will calculate to an extended price for each line.

Material Reimbursement shall be at cost + 10%. JEA will NOT pay for consumables, safety equipment, gear or other items which do not become a permanent part of JEA's infrastructure.

9.6. Daily Work Records And Invoicing For Unit Price Work:

The process for Unit Price Work documentation shall be as follows:

- Contractor Foreman and JEA Inspector shall verify work units daily in the field.
- Contractor shall enter Daily Work Units into a database.
- Contractor shall prepare Daily Work Unit Sheets from the data provided for the Contract Administrator.
- JEA advises Contractor of any corrections.
- Information is saved for monthly billing.

The monthly billing is prepared by totaling all units per the JEA account number structure for the desired time frame. The desired time frame shall conform to calendar months. The totals from the Contractor's computer must match the JEA total. When this is achieved the totals are submitted for payment.

The Contractor shall submit the calendar month unit totals on the Application for Payment form, see Section VI, Standard Forms, to JEA no later than twenty (20) days into the month following the month in which the units were completed.

The Application for Payment shall be submitted each month. Applications for Payment submitted other than described herein may be rejected by JEA. The monthly billing time limits are of the essence.

A "mock" sample billing package shall be provided to the Contractor at least one (1) month prior to the initial invoice.

9.7. Project Related Permits:

Generally JEA shall provide project related permits.

10. TRANSMISSION SPECIFIC REQUIREMENTS

10.1. Emergency Response Time

The Contractor general foreman, foreman and transmission crew members shall respond to JEA emergency request for assistance.

The general foreman and crew foreman shall carry mobile phones at all times and respond to phone calls from JEA.

The Contractor's transmission employees shall arrive on site within four (4) hours of a request for emergency assistance.

If called out to assist with a JEA emergency, the Contractor employees' time starts when they leave their house.

10.2. Transmission Crew Staffing Requirements

The Contractor's General Foreman shall be experienced in Transmission and Distribution construction work activities.

The Contractor's Transmission crew shall consist of an experienced transmission foreman and two (2) experienced transmission linemen and two mid-step (2) apprentices..

10.3. Transmission Maintenance Work Hours and Work Days

During the transmission outage windows, it is anticipated that the contractor shall work 50 hours per week Monday thru Friday. This is contingent upon actual circuit outage availability, work load requirements and available funding.

JEA has two (2) outage windows per year. They are; October 1 thru mid-December and March 1 thru mid-May.

The Contractor shall work a minimum of forty (40) hours per week during the non-outage windows of each year, Monday thru Thursday.

Generally speaking the transmission crew shall work forty hours per week and not be sent home for rain delays. They may be needed for transmission circuit outage inspections and subsequent repairs.

10.4. Minimum Transmission Equipment Required at Mobilization

The Contractor's transmission class bucket trucks and digger derrick shall be all wheel drive, equipped with the "Air Boss" tire inflate/deflate system or equivalent and have material handling capabilities.

The Contractor shall supply one (1) 125' bucket truck and one (1) 105' bucket truck. Both bucket trucks shall have storage bins for required tools and equipment.

The Contractor shall have ten (10) Durabase 14' x 7' mats readily available for immediate use as needed. This includes all tools, key ways, etc. required to lift and assemble the mats at a jobsite.

The Contractor shall have the following minor tools and equipment on site at all times for immediate use, upon initial mobilization (see Attachment). This list is not intended to list all needed minor tool and equipment requirements but to ensure that the Contractor is prepared to begin a variety of work tasks immediately upon mobilization.

The Contractor shall be required to prove at the beginning of the contract period they have access to a minimum 18 foot boat in length and motor that can navigate in water one foot in depth and access to a "Marsh Master" type swamp vehicle, both within 24 hours of notification from the JEA of the need to supply either or both.

10.5. Transmission Crew Experience Requirements

The general foreman and transmission crew foreman shall be thoroughly experienced in transmission work and energized distribution work and have a minimum of five (5) years' experience. The Contractor shall provide resumes for each of these positions listing experience, with contact information, for verification and approval to work in our system.

The linemen shall be graduates of a certified line school or program, have a minimum of two (2) years' experience working energized distribution work and three (3) years performing transmission work. The Contractor shall provide resumes demonstrating their experience for JEA review and approval to work in our system.

11. SWITCHING AND HOLD TAG PROCEDURES

All personnel requesting hold tags, clearance and (or) switching on JEA electrical facilities shall do so in accordance with the JEA Safety Manual.

The Transmission General Foreman and transmission crew foreman shall perform transmission circuit switching and obtain Contractor crew hold tags for work to be performed by their transmission crew(s).

The Contractors transmission crew employees are required to attend a JEA substation entry training class in order to enter JEA substations. JEA will pay the contractors employees cost to attend this mandatory training class.

The Contractors General foreman, distribution crew foreman and transmission crew foreman are required to attend JEA Radio and Hold Tag training class in order to request and obtain "Hold Tags" in JEA's electric system. JEA will pay the contractors employees cost to attend this mandatory training class.

JEA has a number of high security substations which require JEA and Contractors employees to pass federal background searches before access is granted. JEA will reimburse the Contractor for expenses related to obtaining the required background searches.

JEA shall schedule and arrange transmission circuit outages for the transmission contractor with our System Operating Control Center (SOCC).

Transportation Worker Identification Credential (TWIC) and Jacksonville Port Authority (JPA) Entry Badges ---- The contractors General Foreman (GF) and Transmission Crew Foreman (TCF) and shall obtain federal TWIC and local JPA entry and escort badges to enter the JPA property on Blount Island. JEA will pay the Contractor's GF and TCF to obtain TWIC and JPA entry badges one (1) time during the life of the contract. The Contractor shall be responsible for the cost to obtain, replace lost or renew additional employee entry badges thereafter.

12. POLE REMOVAL

12.1. General:

All distribution and transmission circuit poles, wood, steel and concrete shall be removed by the contractor on a labor, equipment and material (L.E.M.) basis.

Poles to be removed may exist near or within energized overhead power lines at voltages up to 240,000 volts. The poles shall be cleaned of any crossarms and hardware by JEA and any other attachments prior to removal. The contractor shall be required to furnish, install and remove any protective devices necessary for the safe removal of a pole from within or around energized conductors.

The Contractor shall be responsible for completed removal of the pole, including the butt. Rotten butts shall be removed. Butts cut at the ground line shall be removed.

The Contractor shall furnish all material and equipment required to fill holes and complete surface restoration. Additional surface restoration required by controlling agency shall be handled on a case-by-case basis.

12.2. Soft Surfaces (sod, etc.):

At the time the pole is removed, the Contractor shall fill the hole with a sand fill, tamped to prevent settling.

In the case of planted areas, the Contractor shall maintain the restoration Work until positive growth is evidenced.

In unplanted areas, the Contractor shall restore such areas to a sound condition using construction techniques and materials which are the same as the existing surrounding area.

12.3. Hard Surfaces (asphalt/concrete):

Included in this work is the pulling of the pole, seam to seam removal and replacement of concrete (where applicable) and removal and replacement of the lime rock base and asphalt (where applicable). All edges shall be cut flush before replacing concrete or asphalt.

All concrete and asphalt removal and repairs shall be performed in accordance with any local rules and regulations which may apply.

If permanent replacement of asphalt/concrete cannot be completed immediately, temporary repairs shall be provided by using hand mixed concrete or asphalt cold patch to fill the area of restoration at the time the pole is pulled.

Contractor should contact the D.O.T., City Streets and Highway Department or other City agency for specific details.

12.4. Disposition of the Removed Poles:

The Contractor shall be responsible for the disposition of removed poles.

The Contractor shall be liable for all damages incurred while executing this Contract, including removing, transporting and disposing of poles.

The Contractor shall also be liable for accidents caused by improper filling, tamping and restoration of surface conditions left by removal of the pole.

The Contractor is liable for damages to all public and private utilities and to all public or private property, including JEA property.

Pulled poles shall not be left on the job site.

12.5. Protection of Other Utilities and Property:

Where telephone, CATV and/or other communication facilities exist in the same area as the electric line, the Contractor shall protect the facilities from any possible damage.

Other utilities, such as gas, sewer and water shall be protected by the Contractor, and the Contractor shall save the JEA harmless from the consequences of any action by the Contractor or Subcontractor that damage such other utilities.

The JEA shall attempt to provide necessary information relative to such other utilities, but shall not be responsible for error or omission as to size, depth, location, etc., of such facilities.

When, in the course of Work under this Contract, the Contractor causes physical damage to the property of any property owner: i.e., private, commercial, City, State, or Federal, The Contractor shall be responsible for a speedy repair of all such damage at no cost to the JEA. The Contractor shall also fully indemnify the JEA against all monetary claims arising from such damage.

12.6. Attached Facilities:

When other facilities are attached to a JEA pole, the Contractor shall not remove the attachment in order to pull a pole.

If a pole that is assigned is in this condition, the Contractor shall notify the JEA Construction Inspector.

12.7. Ground Rods and guy anchors:

The pole removal work shall include removing ground rods and cutting guy anchors off one (1) foot below grade. Generally, all ground rods and guy anchors are removed by JEA or JEA's joint use pole users before the pole is disestablished. However, an unknown quantity of these poles shall have ground rods and guy anchors which are required to be removed by the Contractor.

13. ADDITIONAL DEFINITIONS AND EXPLANATIONS

13.1. After examining the JEA Overhead Distribution Construction Standards Manual, the Technical Specifications and other provisions within the Contract Documents, it is found that these Contract Documents contains two basic types of items:

CONSTRUCTION "STANDARD": For example, Item 2001, DA1; Item 2401, DGA; etc.

"NON-STANDARD" CONSTRUCTION: Those items which do not have construction standards for guidelines, but are described verbally. For example, Item 1505 - Set Pole Deeper (per foot); Item 1512 - Drill hole in concrete pole; etc.

The final product desired from those Bid Items in Paragraph 13.1, above is easily determined by the JEA Overhead Distribution Construction Standards Manual, the Technical Specifications and other provisions within the Contract Documents. The labor operations of install, remove, etc., are defined below and are to be used with the JEA Overhead Distribution Construction Standards Manual and verbally described Bid Items where applicable.

Definitions: Install and Remove are for Work done on new or existing lines energized at a voltage up to 240,000 volts. The Contractor is required to furnish and install necessary safety equipment, line hose, temporary jumpers, etc. to perform any Bid Item in accordance with acceptable safety practices. JEA shall not pay additional "adders" for energized conductors.

Install (Build New): Includes receiving of material and equipment at JEA Service Centers, or other locations designated by JEA; and distribution, excavation, backfilling, and any other operations that may be required to erect or "Install" same in accordance with the JEA Overhead Distribution Construction Standards Manual or any additional engineering data furnished by JEA. All material included in the Standard Construction Plates are inclusive. Extra moneys shall not be paid for connecting of attachment devices or jumpers used in construction.

Remove: Includes removal of materials and/or equipment from their present location in the JEA Distribution or Transmission lines including, if required, the disposal of or returning same to the JEA Service Centers or other location designated by the Project Inspector. Extras shall not be paid for connecting or attachment devices or jumpers for removal. Each group has a removal section.

Guys and anchors: Are separated into two sections. All hardware and grips are included with the guys portion of this group.

Grounding: Includes all connections to brackets, equipment, rods, and wires where required in standard construction plates.

Conductors: All are covered under the same criteria. Hardware associated with conductor is not part of this group.

Removal of any items in Group VI, regulators/capacitors/reclosers: includes associated connections and jumpers as indicated in the standard construction plate.

SPLICE (PRIMARY CONDUCTORS): To join or unite two "pieces" by a Construction Standard or some means acceptable to the Project Inspector.

RELOCATE: Relocation of conductor includes unclip, relocation from one structure or position to another and clipping to another location or structure without a conductor splice. Conductor (Group V) and Street Lights (Group II) of the proposal section is the only construction included in the relocate category. When relocation of a construction Plate other than conductor or street light is called for it is understood that the Contractor shall be paid for a build new and a remove unit for that item. The only exception to this rule, are the bid units for relocating primary and secondary cable risers (Bid Items 2707-2710) from one pole to another.

13.2. SEVERE CONDITION ADDER:

The conditions and terrain shall be evaluated between subsequent Work locations for application of this adder. It is entirely possible that, once the Contractor gets to a work site, the conditions and/or terrain may vary so that the application of this adder differs with all subsequent units.

Terrain, marsh, or swamp not accessible to all-wheel drive vehicle or an area which would require that equipment be "matted" into the job-site and that such equipment is necessary to perform the construction unit.

Construction is usually performed on LEM where pole lines are in easements not accessible to trucks and are along rear lot lines and are inaccessible because of buildings, lawns, shrubs fences, etc., existing between the street and the pole line.

An area where it is nearly impossible due to caving water and large obstacles to perform the construction unit without extensive de-watering equipment, sheet piling, road building, and progress is slow due to no fault of the Contractor.

A terrain severe condition shall apply each time an independent operation such as setting a pole, framing a pole, or hanging equipment (transformers, switches, etc.) requires a trip to the structure; however, a particular Group severe adder can only be approved once per station. Several different Group adders may be approved per station, if necessary. Since the condition could change between phases, the Project Inspector must approve this adder at each phase of construction. Use

of the condition shall not be approved if due to inefficient planning by the Contractor, therefore every effort should be made to minimize the number of trips to each structure.

Any line work, whose nominal operating voltage (not insulation value) is 69 kV and above or whose height is seventy feet (70') or more above grade, shall be considered transmission class and shall be paid for on a Labor, Equipment and Material (L.E.M.) basis.

14. GROUP I - POLES

14.1. POLES – INSTALL (Items 1001 - 1106 & 1201):

Framing of poles prior to setting: It is not the intent of these contract documents to indicate the methods by which work is performed. If the contractor decides to frame poles prior to setting:

Install items shall be used for framing activities.

The cost for setting the pole shall be the same as that for the pole if it was unframed.

If the pole is framed prior to setting no terrain adder shall apply for the framing.

Pole setting: Poles shall be set to the depths specified in the JEA Overhead Distribution Construction Standards Manual by any means necessary. Hand digging shall be included as part of the unit.

Install item: Install item includes receiving of poles at JEA service centers, delivering to job site, digging hole by any means, setting, aligning and tamping.

One-fourth install item: One-fourth of the install item value is appropriate for hauling a pole to a job site and returning same to the pole bins due to a job change, provided, that the particular pole cannot be used at another location on the same job.

14.2. POLES – MISCELLANEOUS (Items 1701-1719):

Severe condition poles (Item 1701): This unit is appropriate for a pole crew under the guidelines stated in APPENDIX A, Paragraph 13.2.

Relocate pole crew/L.E.M. (Item 1702): This unit is appropriate when JEA requests that the contractor move the pole crew from one location to another before completion of work.

Down time pole crew/L.E.M. (Item 1703): This unit is appropriate when the Contractor's Pole Crews must stop work due to delays caused by JEA.

Set pole deeper (Item 1705): This unit is appropriate where poles are being installed at more than the JEA standard setting depth by any means necessary. Footage for payment is determined by the required depth minus the JEA standard depth. There is no limit to the extra depth.

Jetting - existing poles only (Item 1706): This unit is appropriate for increasing the setting depth of existing poles. Unit includes all equipment and men necessary to perform the work unit. The project inspector must approve this unit prior to its use at each station.

Lean/straighten/rake pole (Item 1708): This unit is appropriate where an existing pole is dislodged or displaced from its existing position. It is also appropriate where an existing pole is leaned away from the line for removal by others or for any other reason. All associated Work on the pole to permit straightening or leaning or raking is additional.

Drill hole in crossarms (Item 1710): The contractor shall supply the means of drilling whether on the ground or in the air. Holes shall be drilled as indicated by the project engineer in construction notes or by standards.

Drill hole in wood pole (Item 1711): The contractor shall supply the means of drilling whether on the ground or in the air. Holes shall be drilled as indicated by the project engineer in construction notes or by standards.

Drill hole in concrete pole (Item 1712): Holes shall be drilled in the center and every effort should be made to avoid cutting the reinforcing strands inside the concrete. If drilling from both sides, the holes shall be aligned to allow clearance for a bolt without binding.

Cut pole/cut crossarm (Item 1713): This item is only appropriate where it is called for on the job or authorized by the project inspector. Convenience topping is occasionally done to facilitate other job operations and such is not an appropriate labor item.

Cut concrete/asphalt (Item 1715): This is appropriate when a pole, anchor or splice box is installed and cutting through paving is required and is in addition to the "install" or "remove" unit for the item. The patching of damage after installation or removal is not included. This item includes cutting pavement or concrete and removal of debris from the job sight.

Patch concrete/asphalt (Item 1716): This unit is appropriate to mend, fill up, or cover a hole or weak spot in an item by restoring or replacing with the proper material and workmanship as before the damage was done. The contractor shall be required to furnish all concrete, asphalt, lime rock, wire, mesh, reinforcing steel and forms for the required work. Unit price includes cost of repairs acceptable to the project inspector. This unit is used when patching or repairing with asphalt or concrete; driveways, sidewalks, or pavement as a result of other units installed or removed under these contract documents.

Rake, seed & mulch (Items 1717 - 1719): This item is appropriate where due to construction, property damage has occurred whether private, commercial, city, state, or federal. The contractor shall be responsible for supplying the material and restoring the landscape to its original condition per square foot acceptable to the project inspector. The appropriate unit price for payment shall be based on total square footage for each project.

15. GROUP II - FRAMING

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Vertical Primary – Install (Items 2001 – 2074 & 2091-92): This item is appropriate for installation of all the various types of vertical primary framing listed in the proposal. Item includes all insulators, brackets, bolts, washers, nuts, jumpers, etc. for a complete unit.

Contaminated Environment – Install (Items 2075 - 2090): This item is appropriate for installation of all the various types of contaminated environment framing listed in the proposal. Item includes all insulators, brackets, bolts, washers, nuts, jumpers, etc. for a complete unit.

Substructures – Install (Items 2101 - 2129): This item is appropriate for installation of all the various types of substructures listed in the proposal. Item includes all insulators, brackets, bolts, washers, nuts, jumpers, etc. for a complete unit.

Horizontal Primary – Install (Items 2201 - 2227): This item is appropriate for installation of all the various types of crossarm primary framing listed in the proposal. Item includes all crossarms, braces, insulators, brackets, bolts, washers, nuts, jumpers, etc. for a complete unit.

Crossarm, Temporary (Item 2227): Wooden crossarm bolted to existing facility to provide working clearance. Insulators are not included with this unit but crossarms braces are if necessary.

Aerial Cable – Install (Items 2301 - 2324): This item is appropriate for installation of all the various types of aerial cable framing listed in the proposal. Item includes all insulators, brackets, spacers, clamps, connectors, bolts, washers, nuts, jumpers, etc. for a complete unit.

Single-Phase Primary – Install (Items 2350 - 2353): This item is appropriate for installation of all the various types of single-phase framing listed in the proposal. Item includes all insulators, brackets, spacers, clamps, connectors, bolts, washers, nuts, jumpers, etc. for a complete unit.

Transformers – Install (Items 2401 - 2405): This item is appropriate for installation of all the various types of transformer applications listed in the proposal. Item includes all transformers, surge arresters, brackets, cutouts, insulators, clamps, connectors, bolts, washers, nuts, jumpers, etc. for a complete unit.

Transformer, individual – Install (Item 2404): This unit is appropriate for all of the various overhead distribution transformers. The material listed shall be called for on an itemized basis for this unit. It is not used in conjunction with a construction Plate.

The units are per each transformer and include the following:

- Hangers and various types of mounting Plates.
- Secondary risers and/or connections to the secondary bus.
- Cluster mounting bracket, only when more than one (1) transformer unit is performed.
- Primary jumpers from bushings and necessary connections.
- Case Bonds.

The units DO NOT INCLUDE the following:

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- Associated arresters and cutouts.
- Cluster mounting brackets on a single transformer.
- Pin, insulator and attachment where a riser or jumper is supported on an insulator.
- Associated crossarm or braces.

Transformer, Ground Cutout - Install and Remove (Item 2405): This item is appropriate for the installation and removal of a cutout used to temporarily ground the primary wye of ungrounded wye-delta transformer banks when energizing or de-energizing. Item includes cutout, clamps, conductor, etc. for a complete unit.

Switches – Install (Items 2501 - 2510): This item is appropriate for installation of all the various types of switch applications listed in the proposal. Item includes all switches, operating mechanisms, conversion kits, brackets, clamps, arresters, connectors, insulators, crossarms, bolts, washers, nuts, jumpers, etc. for a complete unit.

Primary Metering (Items 2509-2510): These items are appropriate for the installation of primary metering equipment (cluster bracket), bypass switches, arresters, insulators, h.v. jumpers, etc. It does not include the mounting of pt's or ct's to the cluster bracket, or the wiring between the said units.

System Protection – Install (Items 2601 - 2618): This item is appropriate for installation of all the various types of system protection applications listed in the proposal. Item includes all cutouts, fuse links, brackets, connectors, jumpers, bolts, washers, nuts, jumpers, etc. for a complete unit.

Fuse Link Exchange/Replace (Item 2613): The fuse link can be itemized for equipment or lateral protection and includes removing the existing fuse, whether blown or not and installing the new fuse. It is not an adder to a standards plate.

Arrester (Items 2614 - 2615): This item is appropriate for installation of all the various types of arrester units with voltage ratings for distribution. The jumpers and connections to render the units operable are included with the arrester unit. If the jumper is to be supported on an insulator, then the pin insulator and attachment units are also appropriate but they are separately priced under substructures.

Cutout (Item 2618): This item is appropriate for the installation of a cutout only, regardless of the cutout bil or the voltage of the system it being installed on.

Riser Poles – Install (Items 2701 - 2706): This item is appropriate for installation of all the various types of riser pole applications listed in the proposal. The item includes surge arresters, brackets, insulators, clamps, connectors, switches, cutouts, bolts, washers, nuts, etc. for a complete unit.

Riser Poles – Relocation (Items 2707 - 2710): These items are appropriate for the relocation of cable risers, Primary or Secondary, from one structure to another. These items are all inclusive, and include all work necessary to relocate the riser, such as splice boxes, conductor splicing, excavation, etc. It is understood that the bid items are for the relocation of cables in developed

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areas that are 15 feet or less from one structure to the other, and are not deeper than 5 feet in depth. Relocation of cable in excess of these values shall be paid for under L.E.M.

Riser Poles – Remove – All (Item 2711): This unit includes all necessary work to remove primary and secondary risers of any type and size. It shall include cutting and plugging conduits if necessary and cutting cables off at least one foot below grade.

Identification – Install (Item 2801): This unit is appropriate for installing all JEA equipment, circuit, etc., identification tags on poles. This unit shall be paid for on a per station basis.

Lighting – Install (Items 2901 - 2909): This unit is appropriate for installation of all the various types of lighting clamps, fixtures, lamps, photo electric controls, bolts, washers, nuts, etc. for a complete unit.

Street-Lighting Repair Parts (Items 2903 - 2906): the items listed below are for maintenance or are called for on an item basis. Replacement for maintenance shall require prior approval from JEA. Trouble-shooting is not covered under these contract documents. If immediate operation is not attained; submit notification to the project inspector for action. Lamp (2903), Refractor (2904), Photo Cell (2906). Any wattage is included in this unit.

Secondary – Install (Items 3001 - 3022): This unit is appropriate for the installation of all the various types of secondary applications listed in the proposal. The item includes brackets, insulators, screws, bolts, washers, nuts, etc. for a complete unit.

Brackets – Remove (Items 3101 - 3115): All brackets shall include nuts, bolts, and washers as part of the remove item.

Miscellaneous Hardware - Remove (Items 3116 - 3127): These units are appropriate for the removal of all miscellaneous hardware items.

Number, All (Item 3123): This unit is for the removal of all JEA equipment, circuit, etc., identification tags installed on poles. This unit shall be paid for on a per station basis.

Cut Bolts (Item 3127): This unit is appropriate for cutting off the ends of bolts that extend more than 2" past the nut. Unit also includes cold galvanizing of cut bolt.

Insulators – Remove (Items 3201 - 3202): All insulators shall include nuts, bolts, and washers as part of the remove item.

Crossarms – Remove (Items 3303 - 3306): All crossarms shall include nuts, bolts, washers and braces as part of the remove item.

Shield – Remove (Item 3307): All bayonets shall include nuts, bolts, and washers as part of the remove item.

Switches, Cutouts, Arresters – Remove (Items 3401 - 3407): All switches, cutouts, arresters shall include nuts, bolts, and washers as part of the remove item.

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Transformers – Remove (Items 3501 - 3506): All transformers shall include nuts, bolts, and washers as part of the remove item.

Street Lighting Fixtures – Remove (Items 3601 - 3603): All street lighting shall include nuts, bolts, and washers as part of the remove item.

Miscellaneous Units (Items 3700 - 3708):

Severe Condition – Framing (Item 3700): This unit is appropriate for a framing crew under the guidelines stated in APPENDIX A, Paragraph 13.2.

Relocate Framing Crew/L.E.M. (Item 3701): This unit is appropriate when JEA requests that the contractor move the framing crew from one project to another before completion of work.

Down Time Framing Crew/L.E.M. (Item 3702): This unit is appropriate when the Contractor's Framing Crews must stop work due to delays caused by JEA.

Line Rubber - Install/Remove (Items 3703 - 3704): Install or remove incidental line rubber is appropriate for the installation or removal of the different types of conductor covers or line rubber.

Line rubber installed for the purpose of protecting JEA system reliability shall be furnished by JEA. The Project Inspector must approve installation of line rubber prior to installation.

Any line rubber installed for the protection or convenience of the Contractor shall be provided by the Contractor.

Splice/sleeve (all primary conductor only) – Install (Item 3705): This item is appropriate for the installation or replacement of all types and sizes of splices. The item is appropriate each time one is installed or replaced that is not included with new conductor to permit continuous runs and those used to repair existing lines at mid span.

Hot line clamp only - Install/remove (Items 3706 - 3707): This item includes the installation or removal of hot line clamps only.

Mechanical jumper - install/remove (Item 3708): This item is appropriate for the installation or removal of a mechanical jumper to temporarily jumper from one conductor to another.

Street Light – Relocate (Items 3800 - 3804): These items include the removal of all the material given with each of the Plates listed and reinstalling the same material on another nearby structure and energizing.

Jumpers, Switch: Where conductor is dead-ended on switch poles, enough conductor length shall be left beyond the dead-end clamp to connect directly to the switch lug if possible. If jumpers are required, they shall be of the same material and size as the primary conductor on which they are being installed.

Construction Practice Conformity - Secondary, Street Lighting and Transformers:

Secondary Installations: Open wire secondary shall be carried on standard four inch (4") secondary forks with twelve inch (12") spacing. In dead-ending weatherproof copper secondary conductors of #2 and smaller sizes, vise type or compression connectors may be used. Weatherproof conductors of sizes larger than #2, and all bare conductors shall be dead-ended with applicable copper compression fittings. ACSR and all aluminum conductors shall be dead-ended with two U-bolt type clamps using armor tape for sizes of #2 and smaller, and a straight-line clamp for sizes 1/0 and larger all in accordance with the JEA Overhead Distribution Construction Standards Manual.

Triplex: In the case of triplex cut-ins which are too short due to relocation of poles, splicing shall be done using like triplex and acceptable compression connectors as listed in the JEA Master Material Catalog.

Neutral Installation: Where neutral is carried alone or with secondary other than triplex, it shall be on a white insulator and located above secondary conductors, or below the primary, all in accordance with the JEA Overhead Distribution Construction Standards Manual.

Street Lighting Installations: The Contractor shall relocate all streetlights on the job as detailed in the structure list. Streetlights to remain in place shall be reconnected to new secondary bus. Where duplex cable is specified, standard secondary procedures are to be used all in accordance with the JEA Overhead Distribution Construction Standards Manual.

Transformer Installation:

Each transformer shall be protected with a surge arrester and a fused cutout, and shall be arranged on the pole in accordance with the JEA Overhead Distribution Construction Standards Manual.

Copper shall be used for all primary leads to surge arresters, cut-outs, transformers, etc., and for all secondary leads from transformer side to conductor material.

Transformer riser sizes shall be as indicated in the JEA Overhead Distribution Construction Standards Manual.

Existing Hardware: The Contractor shall tighten any loose hardware he may encounter while reworking an existing structure.

16. GROUP III - GUYS AND ANCHORS

Down Guys – Install (Items 4003 - 4016): This unit is appropriate for the installation of all the various down guy installations listed in the proposal. The unit includes guy wire, anchor, clamps, connectors, guy grips, guards, screws, bolts, washers, nuts, etc. for a complete unit.

Sidewalk Guys – Install (Item 4102): This unit is appropriate for the installation of all the various sidewalk guy installations listed in the proposal. The unit includes guy wire, anchor, clamps, connectors, guy grips, guards, pipe, screws, bolts, washers, nuts, etc. for a complete unit.

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Overhead Guys – Install (Items 4201 - 4206): This unit is appropriate for the installation of all the various overhead guy installations listed in the proposal. The unit includes guy wire, guy grips, clamps, connectors, bolts, washers, nuts, etc. for a complete unit.

Special Conditions – Install (Items 4301 - 4353): These units are appropriate for the installation of bog shoes, pole keys, butt guys, stub guys, and anchor extensions as listed in the proposal. The units shall include all material for a complete unit.

Anchors – Remove (Items 4401 - 4406): This item is appropriate for the removal of all anchors including associated hardware.

CUTANC (Item 4407): Cut and remove guy anchor a minimum of twelve inches (12”) below existing grade and backfill the hole.

Guys – Remove (Items 4501 - 4506): This item is appropriate for the removal of all guys and guy guards including associated hardware.

Miscellaneous (Items 4601 - 4603):

Severe Condition Guys & Anchors (Item 4601): This unit is appropriate for Guy & Anchor Crews under the guidelines stated in APPENDIX A, Paragraph 13.2.

Relocate Guy & Anchor Crew/L.E.M. (Item 4602): This unit is appropriate when JEA requests that the Contractor move the Guy & Anchor Crew from one project to another before completion of Work.

Down Time Guy & Anchor Crew/L.E.M. (Item 4603): This unit is appropriate when the Contractor's Guy & Anchor Crews must stop work due to delays caused by JEA.

Guying Locations: Guys shall be installed at all locations shown on the Construction Drawings, in the JEA Overhead Distribution Construction Standards Manual, or at any other points where needed to hold the arms in proper alignment or to provide additional strength where the structure alone cannot safely bear the load. Guy anchors, where possible, shall be placed out from the pole a distance equal to the vertical height from the ground to the point of guy attachment on the pole.

Anchors: Where a new anchor is called for, the Contractor is expected to set the new anchor and either remove the old anchor or cut it off two feet (2') below the ground.

17. GROUP IV - GROUNDING

Pole Bond – Install (Items 5001 - 5010): This unit is appropriate for the installation of all the various pole bond applications as listed in the proposal. The item includes conductor, clamps, connectors, ground rods, couplings, guards, staples, etc. for a complete unit.

Additional Rod (Item 5009): This unit is appropriate where the Contractor installs additional ground rods to achieve 25 ohms but does not require the use of a well-driller.

Guy Bond – Install (Items 5101 - 5104): This unit is appropriate for the installation of the various guy bond applications listed in the proposal. The unit includes conductor, connectors, etc. for a complete unit.

Bonding, All – Remove (Items 5201 - 5204): This is appropriate for the removal of all bonding units.

Grounding Miscellaneous (Items 5301 - 5303):

Severe Condition Grounding (Item 5301): This unit is appropriate for Grounding Crews under the guidelines stated in APPENDIX A, Paragraph 13.2.

Relocate Grounding Crew/L.E.M. (Item 5302): This unit is appropriate when JEA requests that the Contractor move the Grounding Crew from one location to another before completion of Work.

Down Time Grounding Crew/L.E.M. (Item 5303): This unit is appropriate when the Contractor's Grounding Crews must stop work due to delays caused by JEA.

CONSTRUCTION PRACTICE CONFORMITY - GROUNDING.

Grounds, General:

All poles shall have a grounding installation consisting of a pole top ground and either a full or a minimal pole bottom ground, as specified below.

The following shall be solidly bonded to the ground riser at the pole upon which they exist: common neutral and secondary neutral; shield wire; span guys and down guys; surge arresters; the cases of all transformers, reclosers, sectionalizers, capacitor units, circuit breakers, or any other metal clad equipment; the control column of group operated switches.

All grounds shall be in accordance with the JEA Overhead Distribution and/or Transmission Construction Standards Manual.

The Contractor shall install ground rods, as necessary, on transmission structures as required to obtain a resistance of 10 ohms or less.

Grounds, Distribution Full (Items 5001 & 5002): A full ground shall consist of three (3) driven 8' x 5/8" copper-weld sectional rods, joined end to end, along with associated riser and hardware. A full ground shall be installed at all equipment poles, such as transformers, reclosers, sectionalizer, capacitor bank, lighting arrester stations and other locations shown in the structure list. A full ground shall be installed between such installations, if necessary, in order that a full ground shall not be more than 1,000 feet apart where continuous neutral or shield wire is carried. Ohm readings shall be taken at all full ground installations, and in the event that the reading exceeds 25 OHMS,

additional ground rods (up to a maximum of five (5) additional rods) shall be driven in order to attain this reading. No additional payment shall be made for megging grounds.

Grounds, Transmission Full (Item 5010): A full transmission ground shall consist of eight (8), driven 8' x 5/8" copper-weld sectional rods, joined end to end, along with associated riser and hardware. A full ground shall be installed at requested transmission structures. Ohm readings shall be taken at all full ground installations, and in the event that the reading exceeds 10 OHMS, record the ground reading and provide the information to JEA for further evaluation. No additional payment shall be made for megging grounds.

Grounds, Minimal: Minimal grounds for poles shall consist of one (1) driven 8' x 5/8" copperweld rod along with associated riser and hardware all in accordance with the JEA Overhead Distribution Construction Standards Manual. A minimal ground is required at all wood poles where a full ground has not been specified. This requirement includes wood secondary clearance and guy stub poles, as well as main line poles.

Minimal grounds for streetlight poles shall not be necessary.

Grounds, Pole Top:

Pole top grounds for wood poles shall consist of a continuation of the ground riser from the neutral level to the top of the pole along with associated hardware and guy and shield wire connections, as required.

Pole top grounds for concrete poles shall consist of making guy and shield wire connections to the integral ground loop, as required.

Grounds, Existing:

In the case where no pole relocation is involved, the Contractor shall be responsible for altering existing grounding configurations to conform with the previous paragraphs in this Section and with the current JEA Overhead Distribution Construction Standards Manual Plates applicable to that particular structure.

When pole relocation is involved, existing ground rods may be utilized if they are five feet (5') or less from the new pole location. If such is not the case, existing rods may not be utilized and must be salvaged or cut off two feet (2') below ground level at the option of the Contractor.

Installation of additional ground rods and resistance readings:

The Contractor may be required to install ground rods in addition to the number of rods as specified for each of the various types of structures. Any additional rod required shall be coupled to the driven rods and then driven to full depth.

The Contractor shall be required to submit ohm readings at all full ground installations. These shall be included on the "As-Built" drawings.

Guy, Bonding:

The upper end of all down guys shall be bonded to the pole top ground with a copper to aluminum compression connector. All existing guy breakers shall be removed and a copper jumper shall be installed to complete the path to ground (applicable only to older guys which, by present standards, would not be insulated). In any installation where a guy breaker (strain insulator) is specified or necessary on a down guy, the lower portion shall be bonded to ground, either by underground jumper to an adjacent continuous guy, or by "plowing in" a #4 copper lead from the tail of the guy near the anchor rod over to the pole ground. "Aerial" bonding is acceptable.

Span guys shall be bonded at each point of connection as if they were the upper end of the down guy.

18. GROUP V - CONDUCTOR

Distribution/Transmission Class – Install (Items 6001 - 6017): Install items as applicable to conductor includes unreeling, stringing, sagging, and clipping (tying) overhead conductors, as called for with hand ties or armor rods or line guards. Dead-ends; i.e. placing conductor in dead-end shoe is considered the same as clipping and is an operation associated with installing or sagging conductors. Connectors, stirrups, and taps, etc., are included within the Construction Standard Plates.

It DOES NOT include splices as may be required.

Distribution/Transmission Class – Remove (Items 6101 - 6111): Remove Item is applicable to conductor, and is reverse of and may include all work associated with conductor install. Removal DOES NOT include splices as may be required.

Distribution/Transmission Class – Relocate (Items 6401 - 6417): The relocation of primary and secondary conductor requires unclipping the primary or secondary conductor, transferring the conductor to a new location or position, and re-clipping the conductor at the new location. Clip/Unclips is not a separate item from relocate.

Conductor – Miscellaneous (Items 6501 - 6504):

Severe Condition Conductor Crew (Item 6501): This unit is appropriate for a Conductor Crew under the guidelines stated in APPENDIX A, Paragraph 13.2.

Relocate Conductor Crew (Item 6502): This unit is appropriate when JEA requests that the Contractor move the Conductor Crew from one project to another before completion of Work.

Down Time Conductor Crew (Item 6503): This unit is appropriate when the Contractor's Conductor Crews must stop work due to delays caused by JEA.

Guy Breaker (Primary Section) (Item 6504): This unit is appropriate where a guy breaker is used to temporarily isolate primary conductor of same phase.

Conductor (General):

Install and remove units for conductor shall be called for on a per foot basis. Prefabricated cable with more than one conductor such as triplex, duplex, PAP, etc. shall be treated as a single conductor.

Relocate units shall be called for on a per station basis.

REUSE OF CONDUCTORS: The reuse of conductor salvaged on the job shall be permitted wherever the type and size are the same as called for, where excessive splices are not present, and where the Project Inspector or Project Engineer is satisfied that the conductor is in suitable condition for reinstallation.

Construction Practice Conformity - Conductor:

General:

The Contractor shall be expected to conform to all JEA Standard Construction Practices as outlined in this Section, as interpreted by the Contract Administrator and as depicted in the JEA Overhead Distribution Construction Standards Manual.

The technical recommendations of the various conductor manufacturers, particularly those applicable items from the Kaiser Technical Manual, relative to care, handling, installation methods, etc. are hereby made a part of these Contract Documents.

Regardless of construction or configuration, conductor shall be paid according to the kV class its use is intended. (Example: conductor pulled and clipped in for 26.4kV on 69kV insulation shall be paid based on 26.4kV cost factors)

Conductor Stringing:

The conductor shall be strung by the tension stringing method. The conductor shall be maintained in the air during the entire stringing operation and provisions shall be made to keep the pulling line and conductor taut. There shall be a swivel in all kellem grips. Proper equipment, similar to the "bull wheel puller" and the "bull wheel tensioner", as manufactured by the Peterson Engineering Company, shall be used for conductor stringing.

When stringing conductor, it is necessary that proper tools be used to insure the gripping of all strands. A basket-type grip or basket of woven wire is usually used. This type of grip can be pulled through stringing sheaves or over arm sheaves when pulling the conductor. In any case, all stringing blocks shall have a sheave diameter of at least ten (10) times the conductor diameter.

The ends of the conductor used for dead ending that have been twisted and snubbed by the pulling eye attachment or come-a-longs shall not be used as part of the permanent construction, but shall be clipped and wasted. Should any section of the conductor receive noticeable abrasion, kinking or other damage during the stringing and pulling operations, it shall be cut out and replaced with a perfect section spliced in an approved manner before the conductor span is cut for

permanent dead ending. Grips used in dead ending size 954 MCM and larger conductor shall be the bolted "Pocketbook" type. In no case shall there be two splices in the same span or splices in adjacent spans, unless allowed by special permission of the Project Engineer. Aluminum conductor that drops into fresh water or sand shall be rinsed and inspected; that which drops into salt water must be replaced. The final decision on any exceptions shall rest with the Contract Administrator.

Conductor Connections:

General: Whenever copper and aluminum are joined together in a connector, the copper conductor should always be below the aluminum conductor. The Contractor is reminded that line integrity is based on properly sized and installed connections and this phase of the job shall be closely scrutinized.

Connections, Aluminum: All connections or splices that are not of the automatic, power installed or bolt-on type shall be installed with a compression tool using the proper die. An oxide inhibiting paste recommended by the connector manufacturer shall be used on all aluminum connections.

Connections, Copper: All connections or splices that are not of the automatic, power installed, or bolt-on type shall be installed with a compression tool using the proper die.

Taps: Compression, power installed, or bolt-on stirrups and hot line clamps consistent with subject type of construction shall be used on all lateral and transformer taps off 26.4kV lines.

Ties, Aluminum: Aluminum tie wires shall be EC grade annealed aluminum for all voltage levels and shall be of the hot line type for use on 26.4 kV primary. For insulated primary cable "Aerial Cable", insulated #4 aluminum tie wire shall only be used. For bare primary, #4 bare aluminum tie wire shall be used for all conductor up through size 3/0, and #2 bare aluminum (hot line type) shall be used for all 336.4 MCM and larger primary conductor. "Wrap-lock" ties shall be used when furnished by JEA.

Ties, Copper: Copper tie wires shall be soft drawn copper of same size as line conductor, up to #4 AWG. For line conductor larger than #4 AWG, #4 copper tie wire shall be used. Ties shall be made in an approved manner. Hot line ties shall be used on all 26.4 kV and 13.2kV distribution.

Armoring:

Line guards shall be used where any conductor is installed in a clamp top post insulator. Unless an "armor-grip" support is specified, standard pre-formed armor rods shall be used on installations using double crossarms with tie-top insulators.

Aerial cable need not be reinforced, but shall be tied directly to the top or side of the insulators. Aerial cable shall only be installed on "Hendrix" polymer insulators.

Conductor Position: Unless otherwise noted on the Construction Standards Plates, Construction Drawings, or approved by the Project Engineer, all conductor positions shall be in accordance with the JEA Overhead Distribution Construction Standards Manual.

Sags and Tensions: All sagging shall be in accordance with the JEA Overhead Distribution Construction Standards Manual unless approved manufacturers data is supplied, or sag data is provided by the Project Engineer. No sagging shall be performed when the ambient temperature is below 45 Degrees F. without permission of the Project Engineer. Sagging shall be done using a calibrated dynamometer or a sag watch. Calibration certification must be updated quarterly.

19. GROUP VI - REGULATORS/CAPACITORS/RECLOSERS

Regulators/Capacitors/Reclosers – Install (Items 7001 – 7019): This unit is appropriate for the installation of the various applications of regulators, capacitors, reclosers as listed in this proposal. This unit includes regulators, capacitors, reclosers, arresters, insulators, brackets, cutouts, bolts, washers, nuts, etc. for the installation of a complete unit.

Capacitor Can (Item 7014): The capacitor can unit is appropriate to cover the replacement of an existing primary capacitor. It includes mounting with necessary jumpers and connections to render the unit operable; units are each.

Capacitor Switch (Item 7015): This unit is appropriate for a single phase oil switch used to control a primary capacitor bank phase or other similar use. The unit includes mounting, control connections, code wire and conduit installation necessary to render the unit operable.

Antenna (Item 7019): This unit is appropriate for an antenna installed for remote operation of an automated piece of equipment. The unit includes mounting, connections, coaxial cable and conduit installation necessary to render the unit operable. If the antenna and the associated hardware is part of another construction standard, it shall not be paid for as a separate item.

Regulators/Capacitors/Reclosers – Remove (Items 7101 – 7105): This unit is appropriate for the removal of regulators (Bank), capacitors (Bank), and reclosers. Removal includes all associated material and hardware. This includes the platform and bypass switch mounting brackets for regulators. Bypass switches shall be removed as a separate item(s).

20. GROUP VII – LABOR, EQUIPMENT, AND MATERIAL (L.E.M.)

Labor/L.E.M. (Items 8001 - 8042): These units are appropriate for determining the direct labor charges to be applied for Labor, Equipment and Material (L.E.M.).

Equipment/L.E.M. (Items 9001 - 9077): These units are appropriate for determining the equipment charges to be applied for Labor, Equipment and Material (L.E.M.).

Underground Distribution Facilities & Manhole Ductbank Unit Price Construction & Maintenance

1. SCOPE

It is the intent of these Contract Documents to provide for supplementation of JEA's construction crews. JEA construction crews may be composed of JEA's own work forces or other contract crews. The Contractor shall provide all labor, supervision, equipment, and materials (except as otherwise noted) which are necessary to complete the Work within the time stipulated, and to comply with the plans furnished and with the requirements of these specifications.

The Work specified within these Contract Documents include the construction and maintenance of pre-cast or cast-in-place reinforced manholes, cast-in-place reinforced concrete duct banks, direct buried conduit, primary & secondary cable, all associated equipment, street lights, and street light circuits associated with an underground electrical substation and distribution system.

2. GENERAL INTENT

2.1. All Work shall be done in a safe and professional manner, so as to render a neat and uniform appearance. All material shall be handled in such a way as to preserve its finish and protective coatings. General arrangement shall be in accordance with JEA Underground Distribution Construction Standards and Street Light Standards and satisfactory to the Contract Administrator. The JEA Underground Distribution Standards and Streetlight Standards are located at https://www.jea.com/Engineering_and_Construction/Electric_Reference_Materials/.

2.2. The Contractor should be advised that any of the units can be separated from the Contract and used for a project of installation/removal of same at various locations throughout the system.

2.3. The JEA Underground Distribution Construction Standards and other drawings included as part of these Contract Documents do not completely describe all Contractor responsibilities for every Bid Item. This Appendix A will clarify requirements to allow for proper completion of the Bid Form.

3. CONSTRUCTION DRAWINGS

3.1 The Construction Drawings consist of plan views of the entire project showing manhole and conduit systems, the expected size and placement of primary and secondary cables, transformers, service laterals, and etc., in relation to existing site references.

4. JEA UNDERGROUND DISTRIBUTION CONSTRUCTION STANDARDS

4.1. This publication provides standard engineering, design and construction practices for JEA. It contains Standard Construction Plates which illustrate the various Standards as well as providing written specifications, construction notes and a list of required materials. The JEA Underground Distribution Standards and Street Light Standards are located at https://www.jea.com/Engineering_and_Construction/Electric_Reference_Materials/.

4.2. Where applicable, all work will be performed as specified by the JEA Underground Electric Distribution Construction Standards and Street Light Standards which shall be considered as part of the specifications.

4.3. Revisions to these Standards shall also be considered as part of these specifications. If such revisions substantially change the cost of installation of a unit, the unit bid price for such unit shall be handled in accordance with the terms and conditions of the contract.

4.4. Upon request, one set of the Underground Electric Distribution Construction Standards will be furnished free to all Bidders. Additional copies are available at prevailing prices. Copies may be requested from:

Joshua Gordon, Manager Energy Contract Management
21 West Church Street, T9
Jacksonville, Florida 32202
Email: gordje@jea.com

5. CABLE SPLICING REQUIREMENTS

5.1. All terminations and splices shall be made by personnel who hold a current Certification. Certification must be obtained within thirty-one (31) days after date of final execution of Contract. A Certified Splicer must be available to work for the Contractor at any time a requirement arises.

5.2. Splicers may be Union-Certified or certified by the Construction and Maintenance activity of JEA. Arrangements for JEA Certification will be made with the Contract Administrator. Additional personnel may be certified as required. Splicers will be certified at the discretion of the Contract Administrator.

6. CONTRACTOR LOCATING EQUIPMENT

6.1 The Contractor shall provide at their expense a Ground Penetrating Radar (GPR) for the express purpose of locating all existing underground utilities prior to any directional boring, or excavation/trenching operation. The utilities such as, but not limited to water, sewer, gas, etc., and the equipment shall be equivalent or better in performance and/or specification to "Noggin 500" (300-500MHz, with radar detection up to 25 feet deep).

6.2 The Contractor shall submit the GPR equipment performance/specification at the time of award.

7. EXCAVATIONS

7.1. All excavations shall be made in compliance with Occupational Safety and Health Administration (OSHA) Regulations.

7.2. De-watering, sheeting and shoring shall be at the discretion of the Contractor and the allowance for the cost of same shall be included in the Bid Items under excavations.

7.3. All excavations are to be backfilled and compacted to the original degree of compaction, unless otherwise indicated. In addition, those excavations on City, County or State right-of-ways are to be compacted by the procedures and to the densities required by the governing authority. Refer to JEA Underground Electric Distribution Construction Standards at Section III Earthwork.

7.4. Storage of excavated material shall be the responsibility of the Contractor. Material unsuitable for backfill or excess backfill material shall be disposed of by the Contractor in accordance with Section V, Part D - Site General Conditions, Subsection 3.0, Construction and Demolition Debris.

8. AS-BUILT DRAWINGS

8.1 The Contractor shall provide to the JEA Representative one complete color coded set of "As-built" Drawings, and one Xerox black & white copy set of the color coded set to the JEA Representative after completion of the Work and within ten business days. The "As-Built" Drawings shall be dimensioned and

abbreviated in accordance with the JEA "Detailed Underground Electric As-Built Standards". The dimension markings and color codes shall be as follows:

Red – primary distribution conduit (2")
Purple – primary distribution conduit (4")
Orange – primary feeder conduit (6")
Green – secondary street light conduit (1")
Navy – other secondary conduit (3")

8.2 The Contractor shall be responsible for keeping all project construction as-built records and prints for a period of 24 months (2 years) from completion of the project in the event JEA requires additional prints provided by the Contractor, and shall include this in the Bid Price.

9. SITE RESTORATION

9.1. It is the policy of the JEA to restore all property, both public and private, to as good or better condition than when the construction began. Area shall be restored to the satisfaction of the JEA Representative, adjacent property owners and, if in the right-of-way, meet the requirements of the agency having jurisdiction.

9.2. Streets, sidewalks and other paved areas are to be replaced in accordance with JEA Underground Distribution Construction Standards, Section VIII - Surface Work, and/or the "City Standard Specifications for the City of Jacksonville" and/or the Florida DOT "Standard Specifications for Road and Bridge Construction/Plans & Preparation Manual (PPM)/Florida DOT Roadway & Traffic Design Standards", where applicable. It should be noted that saw cutting of pavement to clean straight lines is required as well as replacement of sidewalks to construction joints.

10. AREAS OF CONSTRUCTION

The Work Units will be Downtown or Outside of Downtown, unless otherwise agreed upon. The Downtown is comprised of a network service area and the underground service area. This boundary map is located in the JEA Electric Rules and Regulations, Figures 5.01A & 5.01B.

Examples of Outside of Downtown area:

- 1) Substations.
- 2) Commercial and Industrial sites.
- 3) Road projects.
- 4) Underground developments.

11. CLASSES OF CONSTRUCTION

11.1. The Unit Prices contain items with Class I, Class II, Class U, and Class D designations. Listed below are definitions for class designations:

11.1.1. CLASS I OR "*"C" OPTION

11.1.1.1. Where no existing JEA facilities are present, where abandoned de-energized lines are present, or in the case of energized cables, when digging, trenching, setting poles or bases etc., farther than three (3) feet from where lines or cables have been located with either a cable locator or as-built drawings; and when any overhead energized line is over four (4) feet from work being performed on a riser pole.

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11.1.1.2. Duct bank and manhole work next to a concrete encased duct bank or manhole containing energized cables shall be considered Class I or "C" option.

11.1.2. CLASS II OR "H" OPTION

11.1.2.1. Where energized JEA, 600 volt or higher, cable exists, when digging, trenching, setting poles or bases etc., within three (3) feet of located lines or cables or when the location of existing cables cannot be determined by a cable locator or as-builts, and when any overhead energized line is closer than four (4) feet from work being performed on a riser pole.

11.1.2.2. Hand digging may be required to expose existing cables.

11.1.2.3. Duct bank and manhole work involving the direct exposure of energized cables or cables in duct not encased in concrete or where cables shall require additional protection shall be considered Class II or "H" option

11.1.3 CLASS U OR "U" OPTION - Construction, Undeveloped Areas.

11.1.3.1. This option is prescribed in areas which are undeveloped or undergoing development, where, for the most part there are few, if any, impediments to excavation, and adjacent storage for excavated material is available. This option includes vacant properties within existing developments

11.1.3.2. Backfill and compaction shall be as indicated for the various Bid Items.

11.1.3.3. Any surface restoration which is required will be plated separately.

11.1.4 CLASS D OR "D" OPTION - Construction, Developed Areas.

11.1.4.1. This option is prescribed for work in areas having lawns and pavement. Sprinkler systems, private underground electric lines and other underground utilities may be encountered.

11.1.4.2. Many impediments to excavation may be expected and storage area for excavated material may be limited or non-existent.

11.1.4.3. Excavations through existing lawns shall be restored to the original condition either by replacing the original sod or by sodding with the original type of grass. Cost of sod or sod replacement is included in the Unit Price.

11.1.4.4. Backfill and compaction shall be such as to attain the original degree of consolidation.

11.1.4.5. Restoration of paved areas will be plated separately.

12. EXPLANATION OF BID ITEMS

GROUP I – DIRECTIONAL BORE

BID ITEM(S)	BID DESCRIPTION
22602 - 22626	Directional Bore 1" Conduit, LF Directional Bore 2" Conduit, LF Directional Bore 3" Conduit, LF

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Directional Bore 4" Conduit, LF
Directional Bore 2- 4" Conduit, LF
Directional Bore 6" Conduit, LF
Directional Bore 2- 6" Conduit, LF

a. Contractor will install conduits using directional boring equipment under existing street, roadway or any other surface without disturbing said surface. Conduits shall be installed at the minimum depth, within the limits specified in the Contract Documents and in accordance with JEA Underground Distribution Construction Standards; and these conduits shall include pull rope/flat strap as a means to pull back cables. This item shall include the digging and restoration of all pits necessary to complete the installation. De-watering, sheeting and shoring, if required, shall be included in the Bid Item. Backfill and compaction shall be such as to attain the original degree of consolidation. All conduits will be tied in within three (3) working days of installation. Area shall be restored to the satisfaction of the JEA Representative, adjacent property owners and, if in the right-of-way, meet the requirements of the agency having jurisdiction.

b. The JEA may elect to supply the conduit on a reel and the associated fittings. Should the JEA elect to have the Contractor supply the conduit and fittings, the costs shall be reimbursed on an L.E.M. basis. The conduit and fittings shall meet the JEA specifications as referenced on page 33-34 of this Appendix A.

GROUP II - BACKFILL

BID ITEM(S)	BID DESCRIPTION
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20101	Base Course
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a. This item includes the cost of furnishing, placing and leveling base course material, all in accordance with JEA Underground Distribution Construction Standards (See Section III - EARTHWORK) and Project Documents.

b. The quantity of material for payment shall be the volume of base course installed.

20102	Backfill Compacted
-------	--------------------

a. This item includes the cost of replacing and compacting the original excavation spoil to fill the void area after construction, all in accordance with JEA Underground Distribution Construction Standards (See Section III - EARTHWORK) and Project Documents.

b. The quantity of backfill for payment under this item shall be 130% of the volume of the remaining excavation after construction in cubic yards.

20103	Select Backfill Compacted
-------	---------------------------

a. This item includes the cost of furnishing, placing and compacting select backfill required to fill the void resulting from the abandonment of a structure or other construction, all in accordance with JEA Underground Distribution Construction Standards (See Section III - EARTHWORK) and Project Documents.

b. The quantity of select backfill for payment under this item shall be 130% of the total volume of the structure before removal or the volume of the remaining excavation after construction.

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20105 Grout

a. This item includes the cost of furnishing, placing 1:10 (cement: sand) grout, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

20110 Flowable Fill

a. This item includes the material and labor to install flowable fill, all in accordance with JEA Underground Distribution Construction Standards (See Section III -EARTHWORK) and Project Documents.

GROUP III - TRENCH

BID ITEM(S) BID DESCRIPTION

20201 - 20912 Trench

a. This item includes the cost of excavating trench of every description of whatever substance encountered, all in accordance with JEA Underground Distribution Construction Standards (See Section III - EARTHWORK) and Project Documents.

b. The Contractor shall provide such dewatering, well-pointing, sheeting and shoring, as may be required to support the sides of any excavation. Labor, equipment and material to provide such support, and to hold any pole to prevent its falling due to excavation, as well as the cost of required compaction tests shall be paid by the Contractor and included in the Unit Price.

c. The limits of surface restoration (payline) for these items shall be twelve (12) inches each side of the designated excavation width. All work within these limits shall be included in the bid price. All work outside these limits shall be at the Contractor's expense.

d. Upon the determination of the Contract Administrator, the Contractor shall be additionally compensated by the use of applicable Bid Items or L.E.M. as follows:

1) For removing single objects or obstructions, which require additional labor and/or equipment to reduce their volume such that it can be removed with the backhoe on site, which are encountered within the limits (payline) of the excavation, in manhole and duct bank construction.

2) For steel or treated timber sheeting and shoring that is required to be left in place.

e. The cost of removing or rearranging any subsurface or overhead structures of other utilities to provide clearance for conduit or structures shall be paid for by the JEA.

f. In the event the Contractor excavates below the grade required, the Contractor shall at its own expense backfill and compact material as specified by the Project Engineer.

g. In the event that unsuitable base material is encountered and is designated to be replaced or unsuitable backfill is designated to be replaced, measurement and payment will be made on the basis of the appropriate item as set forth in the contract.

GROUP IV - EXCAVATION

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BID ITEM(S)	BID DESCRIPTION
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21001 - 21304	Excavation For Cast-In-Place Structures
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- a. The purpose of these items is to provide for excavation for construction of cast-in-place structures. Unit Prices should reflect the period of time the excavation must be left open for construction as well as dimensions and depth of cast-in-place structure.
- b. The Contractor shall do all the excavating of every description of whatever substance encountered. The Contractor shall provide such dewatering, well-pointing, sheeting and shoring as may be required to support the sides of the excavation. Labor, equipment and material to provide such support, and hold any pole to prevent its falling due to excavation, as well as the cost of required compaction tests shall be paid by the Contractor and included in the Unit Price.
- c. The JEA description column indicates the nominal dimensions of excavations. The JEA will normally design cast-in-place structures with outside dimensions such that eighteen inches (18) between each outside wall of the cast-in-place structure and the excavation required is all the clearance the Contractor can expect. If the Contractor desires more clearance, Contractor will obtain such at its own expense.
 - 1) The limits of excavation and surface restoration (payline) for these items shall be thirty (30) inches each side of the outside structure width and length at the top of the excavation, and eighteen (18) inches each side of the outside structure width and length at the bottom of the excavation. All work within these limits shall be included in the bid price. All work outside these limits shall be at the Contractor's expense.
- d. In the instance of a structure design requiring a larger excavation than a standard size, then the Unit Price for the next larger excavation shall apply. The JEA reserves the right to adjust the length and width of the excavation, as long as the perimeter length of the excavation item is not exceeded.
- e. Cast-in-place structures are normally designed with two (2) feet of cover. If additional depths are necessary to allow for the installation of base course, payment will be made on the basis of the appropriate item.
- f. Upon the determination of the Contract Administrator, the Contractor shall be additionally compensated by the use of applicable Bid Items or L.E.M. as follows:
 - 1) For removing single objects or obstructions, which require additional labor and/or equipment to reduce their volume such that it can be removed with the backhoe on site, which are encountered within the limits (payline) of the excavation, in manhole and duct bank construction.
 - 2) For the cost of any excavation that is abandoned due to circumstances and conditions beyond the Contractor's control such as subsurface obstructions, changes in plan, etc.
 - 3) For steel or treated timber sheeting and shoring that is required to be left in place.
- g. The cost of removing or rearranging any subsurface or overhead structures of other utilities to provide clearance for conduit or structures shall be paid for by the JEA.
- h. In the event the Contractor excavates below the grade required, the Contractor shall at its own expense backfill and compact material as specified by the Project Engineer.

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- i. In the event that unsuitable base material is encountered and is designated to be replaced or unsuitable backfill is designated to be replaced, measurement and payment will be made on the basis of the appropriate item as set forth in the Contract.

GROUP V - MANHOLES

BID ITEM(S)	BID DESCRIPTION
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21711 - 21942 22011 - 22152	Set Precast Manholes
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- a. The item shall consist of a complete "package" which shall include excavation, installation and backfilling, all in accordance with JEA Underground Distribution Construction Standards, (See Section IV, CONCRETE).
- b. Dimensions of structure sizes indicated in the JEA description column are nominal inside dimensions. The dimensions of the excavation required to set the various sized structures shall be based on the limits of excavation (payline) for these items. Where there are existing cables, excavations must be large enough to allow the bottom portion of the structure to be swung under the cables.
- c. The limits of excavation and surface restoration (payline) shall be thirty (30) inches each side of the outside structure width and length at the top of the excavation, and eighteen (18) inches each side of the outside structure width and length at the bottom of the excavation. All work within these limits shall be included in the Bid. All work outside these limits shall be at the Contractor's expense.
- d. The Contractor shall do all the excavating of every description of whatever substance encountered, backfill, and compact the excavation to the required densities. The Contractor shall provide such dewatering, well-pointing, sheeting and shoring as may be required to support the sides of the excavation. Labor, equipment and material to provide such support, and hold any pole to prevent its falling due to excavation, as well as the cost of required compaction tests shall be paid by the Contractor and included in the Unit Price.
- e. Upon the determination of the Contract Administrator, the Contractor shall be additionally compensated by the use of applicable Bid Items or L.E.M. as follows:
- 1) For removing single objects or obstructions, which require additional labor and/or equipment to reduce their volume such that it can be removed with the backhoe on site, which are encountered within the limits (payline) of the excavation, in manhole and duct bank construction.
 - 2) For the cost of any excavation that is abandoned due to circumstances and conditions beyond the Contractor's control such as subsurface obstructions, changes in plan, etc.
 - 3) For steel or treated timber sheeting and shoring that is required to be left in place.
- f. The cost of removing or rearranging any subsurface or overhead structures of other utilities to provide clearance for conduit or structures shall be paid for by the JEA.
- g. In the event the Contractor excavates below the grade required, the Contractor shall at its own expense backfill and compact material as specified by the Project Engineer.

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h. In the event that unsuitable base material is encountered and is designated to be replaced or unsuitable backfill is designated to be replaced, measurement and payment will be made on the basis of the appropriate item as set forth in the contract.

i. Pre-cast concrete structures will be furnished by the JEA and will be delivered. The Contractor shall give the manufacturer 48 hours' notice as to the desired delivery, time and date. The Contractor will be required to unload, stage, and set the pre-cast structure. Such operations shall be at the Contractor's expense.

23911 - 23916 PVC Manholes, Install/Remove

a. Install items include the cost of excavation, installation of manhole to proper grade, cutting holes in floor or wall for up to six (6) elbow or conduit entrance, base course, backfill, and compaction. Removal items include the cost to excavate, removal of the manhole, backfill and compaction. All in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

GROUP VI - CAST-IN-PLACE MANHOLES

BID ITEM(S)	BID DESCRIPTION
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21401 - 21403	Concrete
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a. This item includes the cost of furnishing, placing, consolidation and curing of concrete in cast-in-place structures, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

21501	Reinforcing Steel (Rebar S)
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a. This item includes the cost of furnishing, fabrication, handling, and placement of reinforcing steel, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

b. The weight of steel placed in the structure shall be determined by either of the following:

1) If the steel is shop fabricated, the total weight as determined by the fabricator shall be the quantity of steel.

2) If the steel is fabricated in the field, the total weight shall be determined by summarizing the weight of bars called for in the Project Documents.

21502	Reinforcing Steel (Rebar L)
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a. This item includes the cost of furnishing, fabrication, handling, and placement of reinforcing steel, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

b. Longitudinal reinforcing steel shall be 60,000 PSI Yield deformed bars, and may be size #6 through #10. Payment by pound should adequately compensate the Contractor for handling heavier steel.

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c. Project Documents will indicate where the steel is to be placed in the spacers. Length of lap splices required will be indicated in the "Rebar Schedule" which will be found in the details to the Project Documents. If the actual weight of steel placed is not known, the weight shall be computed as follows:

1) For each rebar size:

a) Longitudinal rebar weight equals:(number of rebar) X (weight of rebar "pounds per foot") X (length of duct bank span "feet" + lap splices "feet").

21503 Reinforcing Steel (Rebar T)

a. This item includes the cost of furnishing, fabrication, handling, and placement of reinforcing steel, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

b. Transverse reinforcing steel (Dowels) shall be 60,000 PSI yield, deformed bars, size #6 or #7, placed on centers ranging from 6" to 18". See "Rebar Schedule" and details in Project Documents for placement.

c. If the actual weight of steel placed is not known, the weight shall be computed as follows:

1) For each rebar size:

a) Transverse rebar weight equals:(length of duct bank span "feet") X (length of one rebar "inches") X (weight of rebar "pounds per foot") divided by (distance between centers "inches").

21602 Pulling Irons

a. This item includes the cost of furnishing and installing, in cast-in-place manholes, pulling irons, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

22301 - 22306 Formwork

a. This item includes the cost of form material and accessories, form supports and necessary shores, erection and removal of the forms, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents. Cost of installation of sleeves for sump drains, forming for "knock-outs", boxing out openings for duct termination, etc. in the top, bottom or walls are included in this item.

b. The items of payment for all formwork shall be by square foot of contact area (SFCA).

22307 Forming Transformer Vault Access Curb

a. This item includes the cost of the imbedding of the grate frames and the placement of the grates and covers, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

23103 - 23105 Plug Abandoned Duct/Pipe

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- a. This item includes the cost of the material and sealing of abandoned duct/pipe ends by filling the entire area of the duct/pipe for a distance of at least eighteen (18) inches from the end of the duct/pipe with a 1:10 grout mixture, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

GROUP VII - MANHOLE NECKS

BID ITEM(S)	BID DESCRIPTION
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22401	Manhole Neck
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- a. This item includes the cost of installation of grade extension ring, two (2) courses of brick and mortar, manhole cover ring and manhole cover to grade, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.
- b. The Contractor shall supply all brick and mortar required.
- c. Compensation for trench paid according to appropriate item, 4 feet per ring.

22405 - 22407	Adjusting Existing Manhole Rings To Proper Grade
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- a. This item includes chipping out and adjustment of the manhole ring, and the labor required to install up to one (1) course of brick, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.
- b. The Contractor shall supply all brick, mortar, and concrete required.
- c. Compensation for additional courses of brick are to be paid according to the appropriate item.

22408, 22409	Adjusting Existing Manhole Rings and Cover For Pavement Milling
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- a. These items include cost of steel plates and the cost of removal of manhole rings, cover, and necks prior to pavement milling and the replacing the manhole rings and covers and building a new neck after pavement milling, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.
- b. The Contractor shall supply all brick, mortar, and concrete required.
- c. Compensation for trench paid according to appropriate item, 4 feet per ring.

22410	Replace Existing "Butterfly" Manhole Roof with Steel Plate Roof
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- a. This item includes the cost of the removal of manhole cover and butterfly manhole roof. Replacement with a JEA supplied steel plate roof, building of a new neck and replacement ring and cover, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.
- b. The Contractor shall supply all brick, mortar, and concrete required.

GROUP VIII - DIRECT BURIED DUCT

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BID ITEM(S)	BID DESCRIPTION
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22510	INSTALL CONDUIT, PVC, UP TO 3" DIAMETER, LF
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22511	INSTALL CONDUIT, PVC, 4" TO 6" DIAMETER, LF
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a. Contractor will install conduits, couplings, plugs, markers, pull cord and marking tape, all in accordance with the JEA Underground Distribution Construction Standards. The ducts, so installed, shall furnish a continuous path for the installation of cable between manholes, riser poles, transformers, equipment cabinets or any combination thereof.

b. All ducts shall be proven with a mandrel which has been approved by the JEA Standards Committee and which is no more than 1/2" smaller than the duct diameter before it is accepted. A pull string shall be installed in any conduit which is so designated. Duct failing to pass the proper mandrel shall be replaced/repaired at the expense of the Contractor.

c. Applicable Underground Distribution Construction Standards:
UC*__

22512	INSTALL CONDUIT ELL, PVC, UP TO 3" DIAMETER, EA
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22513	INSTALL CONDUIT ELL, PVC, 4" TO 6" DIAMETER, EA
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a. Contractor will install conduits ells, couplings, plugs, markers, pull cord and marking tape, all in accordance with the JEA Underground Distribution Construction Standards. The ducts, so installed, shall furnish a continuous path for the installation of cable between manholes, riser poles, transformers, equipment cabinets or any combination thereof.

b. All ducts shall be proven with a mandrel which has been approved by the JEA Standards Committee and which is no more than 1/2" smaller than the duct diameter before it is accepted. A pull string shall be installed in any conduit which is so designated. Duct failing to pass the proper mandrel shall be replaced/repaired at the expense of the Contractor.

c. Applicable Underground Distribution Construction Standards:
UCL4*__; UCL9*__

22701 - 22705, 22711 – 22715 Direct Buried Duct Bank

a. This item includes the cost of construction of the duct bank and spacers, backfilling and compacting with select backfill to a point 6" above duct bank and finish backfill as indicated. Also included is the termination of conduits into manholes or other structures. It does not include the excavation, or special backfill, grout or base course. These items are covered under other units.

b. All ducts will be proved with an approved mandrel 1/2" smaller than the duct diameter before surface restoration. Leave pull string in all acceptable ducts. Notify the Project Inspector of any duct failures. Proofing is to be included in the Unit Price for construction of direct buried duct. Duct failing to pass the proper mandrel shall be replaced/repaired at the expense of the Contractor.

c. Duct bank may be constructed of Schedule 40 PVC, or FRE (Fiberglass) conduit.

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d. Bottom of trench shall be undisturbed to provide a firm base for the conduit bank. If trench bottom is disturbed, it shall be compacted to achieve the desired base consolidation for the conduit bank.

GROUP IX - CONCRETE REMOVAL (OTHER THAN SIDEWALK/PAVEMENT)

The cost of removal of the items under this heading shall be paid for only within the limits of the type of excavation involved. In addition, only single objects or obstructions which require additional labor and/or equipment to reduce their volume such that it can be removed with the backhoe on site will be considered for payment.

BID ITEM(S)	BID DESCRIPTION
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22911 - 22922	Concrete
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a. This item includes the cost of removal of concrete. Such concrete may be in the form of structures, manholes, vaults, foundations, etc. and shall include the disposal of the debris, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

b. Manholes and vaults may or may not contain energized facilities. If energized facilities are present, it shall be the responsibility of the Contractor to temporarily protect said facilities from damage until they are removed or until permanent protection is installed. Bid Items are separated into reinforced and non-reinforced concrete removal.

c. The unit of measure for removal shall be the cubic foot. Volume measurements shall be the actual volume of the material removed. The volume to be removed shall be that which is indicated by the Project Engineer.

22923	Modular Brick
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a. This item includes the cost of removal of modular brick structures by the cubic foot and the disposal of the debris, all in accordance with the JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

23011 - 23064	Duct Bank
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a. This item includes the cost of removal of concrete encased duct bank and disposal of debris, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

b. No specific dimensions of existing duct banks are implied. Item to include removal of any concrete, including overpour, and conduits of all types.

c. Bid Items are separated into reinforced and non-reinforced concrete duct bank removal.

23071	Abandon Manhole
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a. This Bid Item provides for the abandonment of manholes, vaults or other underground structures which have no further use to the JEA and are to be removed to a depth of thirty six (36) inches below the proposed grade or as indicated on the Project Documents so as to not interfere with future construction.

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b. The Bid Item unit shall be one (1) cubic foot. Measurement shall be the volume of the interior of the manhole, prior to demolition, expressed in cubic feet, rounded off to the next whole cubic foot. All materials are to be furnished by the Contractor.

GROUP X - DUCT BANK

BID ITEM(S)	BID DESCRIPTION
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23201 - 23308	Concrete Encased Duct Bank
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a. This item includes the cost of construction of the duct bank and does not include excavation, backfilling, compaction, base course, nor the placement of reinforcing steel, all of which are covered in other items.

b. The Contractor shall furnish and place all forms, concrete, concrete block spacer supports, labor and equipment for the installation of duct, duct fittings, and duct spacers supplied by the JEA, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

c. In the event that other than a standard duct bank configuration is specified, such duct bank shall be constructed on an L.E.M. basis, limited to the duct bank construction.

d. Included in the cost of the duct bank item will be the termination into manholes or vaults. In most cases, this will require breaking out the splay openings or the structure wall, grouting in the bell-ends, and finishing off of duct not terminated in a bell end.

e. All duct will be proved with a mandrel 1/2" smaller than the duct diameter before surface restoration. Leave pull string in all acceptable ducts. Notify the Project Engineer of any duct failures. Proofing is to be included in the item price for construction of a duct bank. Duct failing to pass the proper mandrel shall be replaced/repared at the expense of the Contractor.

GROUP XI - PADS & PITS

BID ITEM(S)	BID DESCRIPTION
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24900	Install Pad, All, Each
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a. Contractor shall set precast concrete pads in accordance with JEA Underground Distribution Construction Standards. Pad shall be level and set so that no part of the pad is lower than "finish" grade. Prior to setting of pad, ells are to be installed as per the Conduit Plate, and soil shall be compacted to original degree of consolidation. Additional backfill material, if required, shall be included in the Bid Item.

21847	Remove Pad, All, Each
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a. Contractor shall remove and dispose of pre-cast or poured-in-place concrete pad. Work may entail demolition of concrete if existing conduit ells are to be preserved. In the event that site is to be abandoned, ells shall be removed and site shall be backfilled, compacted, and leveled.

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21849 Adjust Pad, All, Each

a. The purpose of this Bid Item is to raise, lower, or level an equipment pad. It may also be prescribed for the installation of additional conduit ells to the pad. The ells are to be installed as per the Conduit Plates. Contractor shall remove pad, supply material and perform work necessary to re-set pad to grade as specified. Prior to re-setting of pad, soil shall be compacted to original degree of consolidation, even though no additional ells have been installed.

23601 Install Pit, All, Each

a. Contractor shall set precast concrete pits in accordance with JEA Underground Distribution Construction Standards. Prior to setting of pit, ells are to be installed as per Conduit Plate and soil shall be compacted in 12 inch lifts to achieve 95% compaction. Storage and/or disposal of excavated material shall be included in the Bid Item. Contractor shall furnish and install granular fill material in the splay opening around the conduit ells in the bottom of the pit.

24907 Remove Pit, All, Each

a. Contractor shall remove and dispose of pre-cast or poured-in-place concrete pit. In the event that site is to be abandoned, ells shall be removed and site shall be backfilled, compacted, and leveled.

21855 Adjust Pit, All, Each

a. The purpose of this Bid Item is raise, lower, or level an equipment pit. It may also be prescribed for the installation of additional conduit ells to the pit. Contractor shall remove pit, supply material and perform work necessary to re-set pit to grade as specified. Prior to re-setting of pit, soil shall be compacted to original degree of consolidation even though no additional ells have been installed. Contractor shall furnish and install granular fill material in the splay opening around the conduit ells in the bottom of the pit.

GROUP XII - PADMOUNT EQUIPMENT

BID ITEM(S)	BID DESCRIPTION
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23604	Install Single Phase Padmounted Equipment, All, Each
23609	Install Three Phase Padmounted Equipment up to 750 kVA , All, Each
23610	Install Three Phase Padmounted Equipment 1000 to 2500 kVA , All, Each

a. Contractor shall install transformers, switches, fuses, lightning arresters, junction cabinets and their associated enclosures, all in accordance with JEA Underground Distribution Construction Standards and Project Documents.

b. Installation includes receiving, transporting, unloading, placing, leveling, anchoring and labeling as prescribed.

c. Equipment loading or unloading shall be accomplished by utilizing the lifting eyes or other lifting devices supplied on the equipment. Equipment shall not be slid or pushed into place while handling.

d. Unit Price to include connection of all secondary cables and grounds.

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e. Contractor will apply up to seven (7) digit adhesive backed equipment address numbers and Warning Signs on the cabinet. Surface will be thoroughly cleaned before applying adhesive backed numbers. Installation includes marking the conduit destination address on the inside of the equipment enclosure with an indelible black marker (verify, and mark conduit destinations, if not marked on old equipment).

f. Unit Price includes removal of lifting bolts on padmounted equipment.

23605	Remove Single Phase Padmounted Equipment, All, Each
23611	Remove Three Phase Padmounted Equipment up to 750 kVA, All, Each
23612	Remove Three Phase Padmounted Equipment 1000 to 2500 kVA, All, Each

a. Remove existing padmount equipment including salvageable attachments and dispose of in accordance with this Contract (Section V, Part F - Material Requirements, Subsection 5.0, Salvage Materials). Work to include disconnection of all cables, removal of ground rods if feasible, removal of ells, backfilling, compaction and leveling. If ground rods cannot be removed, they shall be cut off a minimum of 12" below grade.

23606,	Relocate Single Phase Padmounted Equipment, All, Each
23607	Relocate Three Phase Padmounted Equipment up to 750 kVA, All, Each
23608	Relocate Three Phase Padmounted Equipment 1000 to 2500 kVA, All, Each

a. Remove existing equipment and replace at same location after pad has been reset. Work to include disconnection and connection of all primary and secondary cables, grounds and ancillary devices. Application and/or correction of labeling shall be included.

GROUP XIII - PULL AND SERVICE BOXES

BID ITEM(S)	BID DESCRIPTION
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23811	INSTALL PULL AND SERVICE BOXES, ALL, EACH
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a. Contractor will install pull and service boxes complete with ells all in accordance with JEA Underground Distribution Construction Standards (See Section VII - Secondary Systems) and Project Documents.

b. Applicable Underground Distribution Construction Standards:
PULL-BOX*__; SERV-BOX-C*__; SERV-BOX-P*__; SERV-BOX-D*__,
SERV-BOX-M*__

23812	REMOVE PULL AND SERVICE BOXES, ALL, EACH
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a. Removal items to include the cost of removal of the box, backfill and compaction.

23813	INSTALL PEDESTALS, ALL, EACH
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a. Contractor will install Secondary Pedestals complete with concrete base and up to six (6) elbows all in accordance with JEA Underground Distribution Construction Standards (See Section VII - Secondary Systems) and Project Documents.

b. Work to include connection of electrical grounds.

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c. Installation includes marking conduit/elbow destination address on inside of pedestal with indelible marker and labeling the pedestal address on the outside.

d. Applicable Underground Distribution Construction Standards:
USP-__

23814 REMOVE PEDESTALS, ALL, EACH

a. Removal items to include the cost of removal of the pedestal, terminations, splices, electrical grounding and fuses, and for backfill and compaction.

b. Applicable Underground Distribution Construction Standards:
USP-__

GROUP XIV - GROUNDING

BID ITEM(S)	BID DESCRIPTION
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24001, 24002	Ground Rod Assembly Install
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a. This item includes the cost to install a minimum of three ground rods and up to a maximum of eight (8) ground rods in an effort to achieve a reading of 25 ohms or less. If the 25 ohm reading is not reached with eight (8) rods, Contractor will record the ground resistance achieved. Reading will be recorded on the inside of the transformer/cabinet with an indelible marker.

b. Ground rods, couplings, wire and connections will be installed in accordance with JEA Underground Distribution Construction Standards (See Section VII - Secondary Systems) and Project Documents.

GROUP XV - SIDEWALK AND PAVEMENT

BID ITEM(S)	BID DESCRIPTION
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24600 - 24700	Asphalt Installation/Removal
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a. This item includes the cost of furnishing and installing or removing asphalt pavement, sidewalk and/or curb within the limits of excavation (payline), all in accordance with JEA Underground Distribution Construction Standards (See Section VIII - SURFACE WORK) and Project Documents. Included in the item is a lime rock sub-base, not included in the item is the removal of a concrete sub-base.

b. The item of installation is the square foot. The item of removal is the cubic foot.

c. In the event that asphalt overlay is specified, such overlay shall be applied in accordance with Florida D.O.T. Standard Specifications for Road and Bridge Construction and City Public Works Department "Standard Paving Repair Detail P-46" or its most recent revision.

24801, 24802	Concrete Sidewalk Removal
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a. This item includes the cost to remove concrete as required, all in accordance with JEA Underground Distribution Construction Standards (See Section VIII - SURFACE WORK) and Project Documents.

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- b. Concrete six inches (6") thick or less will be removed by the square foot. Concrete over six inches (6") thick will be removed by the cubic foot.

24803, 23804 Modular Pavement, Install/ Remove

a. This item includes the cost to furnish and install or remove modular pavement, all in accordance with JEA Underground Distribution Construction Standards (See Section VIII - SURFACE WORK) and Project Documents. Paving bricks, octagonal concrete (flagstone), granite blocks, etc., will be considered modular pavement.

- b. The item of installation/removal is the square foot.

24901 - 24903 Construction of Concrete Sidewalk and Pavement

a. This item includes the cost of all required form work and the furnishing, pouring and finishing of concrete, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

- b. Concrete is to be poured in units of four, five, or six inches thick per square foot.

25001, 25002 Building and Removal of Curbs

a. This item includes the cost to furnish concrete and build and remove curbs within the limits of the excavation, all in accordance with JEA Underground Distribution Construction Standards (See Section VIII - SURFACE WORK) and Project Documents.

- b. Building and removing curbs will be per linear foot.

25003 Granite Curb Removal

a. This item to include the cost of removal of granite curb within the limits of the excavation and to return the removed curbing to the designated service center or other salvage location.

- b. The item for removal of granite curb will be linear foot.

25201, 25202 Sawing Concrete and Asphalt

a. This item includes the cost to saw concrete and/or saw asphalt as required within the limits of the excavation, all in accordance with JEA Underground Distribution Construction Standards (See Section VIII - SURFACE WORK) and Project Documents.

- b. All cuts are to be straight and parallel to existing curbs, roads, sidewalks, etc.

- c. The cuts shall be limited in depth so damage will not occur to asphalt or concrete to be left in place.

GROUP XVI - SOD AND SEED

BID ITEM(S)	BID DESCRIPTION
25301	INSTALL SEED1, 1000 SQUARE FT. AND LESS, SQ. FT.
25302	INSTALL SEED2, 1001 SQUARE FT. TO 5000, SQ. FT.

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25303 INSTALL SEED3, 5001 SQUARE FT. AND ABOVE, SQ. FT.

- a. These Units include the grading and raking of the surface, the seeding and mulching, and the cost of all seed, mulch, etc. Seed to be the same as original turf or as directed, all in accordance with JEA Underground Distribution Construction Standards (See Section III - Earthwork) and Project Documents
- b. Applicable Underground Distribution Construction Standard:
SEED1; SEED2; SEED3

25304 INSTALL SOD1, 1000 SQUARE FT. AND LESS, SQ. FT.

25305 INSTALL SOD2, 1001 SQUARE FT. AND ABOVE, SQ. FT.

- a. These units include the grading and raking of the surface, the placement and rolling of sod, and the cost of sod. Sod to be the same type as original or as directed , all in accordance with JEA Underground Distribution Construction Standards (See Section III - Earthwork) and Project Documents.
- b. Applicable Underground Distribution Construction Standard:
SOD1; SOD2

25306 REMOVE AND REPLACE SOD, SQ FT.

- a. This item includes the cutting and removal of existing sod and replacement after excavation has been backfilled, graded and raked.
- b. Applicable Underground Distribution Construction Standard:
SODX

GROUP XVII - STREET LIGHTS

BID ITEM(S) BID DESCRIPTION

24471 - 24475, 24400 – 24450 Street Light

- a. Removal.
 - 1.) Includes the cost to remove entire street light assembly and street light pole.
 - 2.) Includes material and labor to backfill and compact all holes and ditches, and the removal of all debris.
- b. Installation.
 - 1.) Includes installing entire street light assembly, street light pole, and the connection to the existing street light cable and conduit, all in accordance with JEA Underground Distribution Standards (See Section VII – SECONDARY SYSTEMS and Project Documents.

24460, 24474, 24461 Street Lights (DOUBLE FIXTURE POLE)

- a. Removal.
 - 1.) Includes the cost to remove an entire double fixture street light assembly and street light pole.

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2.) Includes material and labor to backfill and compact all holes and ditches, and the removal of all debris.

b. Installation.

3.) Includes installing an entire double fixture street light assembly, street light pole, and the connection to the existing street light cable and conduit, all in accordance with JEA Underground Distribution Standards (See Section VII - SECONDARY SYSTEMS) and Project Documents.

24462 Anchor base- No extra compensation for trench will be paid.

GROUP XVIII - PRIMARY CABLE, PULLING, SPLICING AND TERMINATING

BID ITEM(S)	BID DESCRIPTION
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24701-24705	Pull/Remove Single Phase Primary Cable, LF Pull/Remove Three Phase Primary Cable, LF
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a. These items include the installation or removal of cable(s) and their associated neutrals up to and including 1000 MCM in existing conduit, all in accordance with JEA Underground Distribution Construction Standards (See Section V - Primary) and Project Documents.

b. The Contractor will be required to lubricate the cable during pull-in with a JEA approved cable pulling lubricant.

c. All cable ends shall be capped before, during and after cable pulling to prevent contamination of cable.

d. All cable removed shall be returned to salvage and placed in the appropriate bin.

e. Primary splices and elbows removed are to be included in the unit for removal of primary cable.

f. All conduit ends with cable shall have foam-duct applied to the ends.

g. Establishing normal open (N.O.) points will be considered as part of the cable pulling and termination activity. No additional payments will be made.

24706 - 24707	Single Phase Splice Up To And Including 1/0 AWG, Each Single Phase Splice 350 MCM And Larger, Each
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24708 - 24709	Single Phase Termination Up To And Including 1/0 AWG, Each Single Phase Termination 350 MCM And Larger, Each
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a. The Contractor will be required to install primary voltage splices and terminations, including fault indicators, in accordance with JEA Underground Distribution Construction Standards, (Section V - Primary) and manufacturer's instructions, including the use of the exact tools and dies. Splices and terminations must be installed by personnel certified by the JEA. A certified splicer/terminator must be available to work at any time, as any situation arises. Additional personnel may be certified as required. The removal of splices is to be included in the unit price for installation.

24710 - 24714	Single Phase Riser Pole, Each
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Two Phase Riser Pole, Each
Three Phase 1/0 AWG Riser Pole, Each
Three Phase 350 MCM Riser Pole, Each
Three Phase 1000 MCM Riser Pole, Each

- a. The Contractor will install the underground portion of riser poles as indicated in the JEA Underground Distribution Construction Standards (See Section V - Primary) and Project Documents.

GROUP XIX - CABLE PULLING & REMOVAL

BID ITEM(S)	BID DESCRIPTION
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24717 - 24718	Pull Three Phase Primary Cable, LF
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- a. These items include the installation of cable(s) and their associated neutrals up to and including 750 MCM in conduit, all in accordance with JEA Underground Distribution Construction Standards (See Section V - Primary) and Project Documents.
- b. The Contractor will be required to lubricate the cable during pull-in with a JEA approved cable pulling lubricant.
- c. All cable ends shall be capped before, during and after cable pulling to prevent contamination of cable.

25601 - 25604 Cable Removal And Salvage

- a. This item includes the cost of removing cable to be scrapped for salvage from conduit or duct which is being removed or abandoned, cutting to lengths for easy handling but not to exceed six (6) feet. Transport to and placement in the appropriate salvage bin at the designated Service Center. Bid Item includes up to three (3) single conductors per conduit.

GROUP XX - SECONDARY CABLE, PULLING, SPLICING & TERMINATING

BID ITEM(S)	BID DESCRIPTION
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25605 - 25615	INSTALL SECONDARY CABLE, ALL, LF REMOVE SECONDARY CABLE, ALL, LF
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- a. These items include the installation or removal of secondary cables and fiber optic cables in existing conduit, all in accordance with JEA Underground Distribution Construction Standards, Section VII - Secondary Systems and Project Documents.
- b. Applicable Underground Distribution Construction Standards: USC*_, FO-PULL__

25616 - 25617	INSTALL SECONDARY SPLICE/TERMINATE, ALL, EACH REMOVE SECONDARY SPLICE/TERMINATION, ALL, EACH
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- a. Install or remove all secondary splices, terminations and fuse kits in accordance with JEA Underground Distribution Construction Standards, Section VII - Secondary Systems. These Bid Items include Installation of address tags for street light destination
- b. Applicable Underground Distribution Construction Standards: USS*_; USTSL; UCN

25618 INSTALL/REMOVE SECONDARY & FIBER OPTIC RISER, ALL, EA

- a. These items include the installation or removal of fiber optic cable risers and secondary cable risers up to and including 750 MCM, all in accordance with JEA Underground Distribution Construction Standards, Section VII - Secondary Systems and Project Documents.
- b. Applicable Underground Distribution Construction Standards:
USRC*_, USRW*_, USRXC*_, USRXW*_, USR1XC*_, USR1 XW*_, FO-RIS1C, FO-RIS1W

GROUP XXI - EQUIPMENT PAINTING

BID ITEM(S)	BID DESCRIPTION
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15501 15502 15508 15509	PAINT SINGLE PHASE TRANSFORMER/ENCLOSURE, EACH PAINT THREE PHASE TRANSFORMER/ENCLOSURE, EACH PAINT ALUMINUM / STEEL STREET LIGHT POLE, EACH PAINT L4 STREET LIGHT POLE, EACH
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- a. Approved paint shall be applied to the exterior of padmounted transformers, enclosures and poles by roller or brush at the equipment's service location. Item shall include the replacement of all marking and numbers thereon. Equipment shall be painted with the units energized or de-energized.
- b. The Contractor shall furnish all materials and labor. Contractor supplies approved paint for low profile (L4) street light. All other final finish paint supplied by JEA. All loose paint, scale dirt, concrete and other debris shall be removed prior to painting. All bare metal shall be primed with a JEA approved commercial grade primer. The entire surface to be painted shall be sanded (wire brushed) and just prior to painting, the sanded surface shall be thoroughly cleaned with a commercial finish cleaner/reducer.
- c. The Contractor shall be responsible for all damages resulting from sanding dust, paint spillage, and overspray. Contractor shall take all necessary precautions as to not paint the pad.

GROUP XXII - MISCELLANEOUS

BID ITEM(S)	BID DESCRIPTION
21602	EXCAVATE 2' X 4' X 60" DEEP, EACH
21603	EXCAVATE 4' X 6' X 60" DEEP, EACH
21604	EXCAVATE 6' X 6' X 60" DEEP, EACH

This item includes the excavation of the indicated size for miscellaneous purposes. All surface restoration included accept in paved areas.

Applicable Underground Distribution Construction Standards: EXC1; EXC2; EXC3

21605	INSTALL SELECT BACKFILL, CU YD.
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- a. This item includes the material and labor to install select backfill.

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b. Applicable Underground Distribution Construction Standard: BKFL

21606 ISOLATION, HOUR

- a. This item includes the foreman, lineman, groundman, etc. and splicer van, pickup, etc. for excessive isolation time beyond 30 min.

21607 LOCATES, HOUR

- a. This item is for the abnormal situations that require exploratory digging to locate conduits, ends of conduits, manholes, etc.
b. Applicable Underground Distribution Construction Standard: LOC-EX-FAC

21608 EQUIPMENT BUMPER, EACH

- c. Contractor will install 8 foot x 6 inch galvanized steel conduit, fill with 3000 psi concrete, and paint DOT yellow all in accordance with JEA Underground Distribution Construction Standards Section IV - Concrete Pads and Project Documents.
d. Applicable Underground Distribution Construction Standard: UPDB

21609 INSTALL CABLE RACKS

- e. This item includes the cost of installing one (1) manhole cable rack with three (3) arms.
f. Applicable Underground Distribution Construction Standard:
g. CBL-RACK

21610 Foam Duct

- a. This item includes the cost of furnishing and placing material required to seal ducts, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

22700 Measuring Pull Tape

- a. This item includes the cost of installing a measuring pull tape into a duct, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.
b. Measuring pull tape is to be supplied by the Contractor.

23101, 23102 Grout And Seal Duct

- a. This item includes the cost of cutting duct smooth and flush to wall of manhole, Grouting around duct to ensure water tight seal and install duct plug, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.
b. Finished work shall not have any sharp protrusions.
c. Option "C" is cold or new construction and Option "H" is hot around existing cables.

23401 – 23404 Coupling Of Duct

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- a. This item includes the cost of all necessary preparation to couple an existing duct to a new duct, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

23501, 23502 Install Split Duct

- a. This item includes the cost of installing prefabricated Schedule 40 PVC split conduit, installation around existing energized cable, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

23510 – 23513 Rod Duct (Clean Conduit)

- a. These items include cleaning out duct for cable pulling, by washing, augering, brushing and other necessary operations to clean out existing duct until the proper mandrel can be pulled through, proving the duct satisfactory for use. Leave pull string in all acceptable duct. Contractor to supply all necessary equipment, material and tools to rod duct.

24200 Pump Out Manhole

- a. This item includes the cost of removing water from a manhole or vault.

24300 Clean Out Manhole

- a. This item includes the cost of cleaning out any mud or debris from a manhole or vault.

25400 Stub Out

- a. This item includes cost of drilling a hole in the manhole to be used for a conduit termination, grouting and sealing the duct, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.

25500 Slug-Duct (Prove Conduit)

- a. This item includes cost of pulling proper sized duct slug through duct proving duct suitable for use, all in accordance with JEA Underground Distribution Construction Standards (See Section IV - CONCRETE) and Project Documents.
b. Leave pull string in all acceptable duct.
c. Notify Project Engineer as to results immediately.

GROUP XXIII - LABOR, EQUIPMENT AND MATERIAL (LABOR ITEMS)

BID ITEM(S)	BID DESCRIPTION
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28001 – 28029	Labor Item Bids (L.E.M.)
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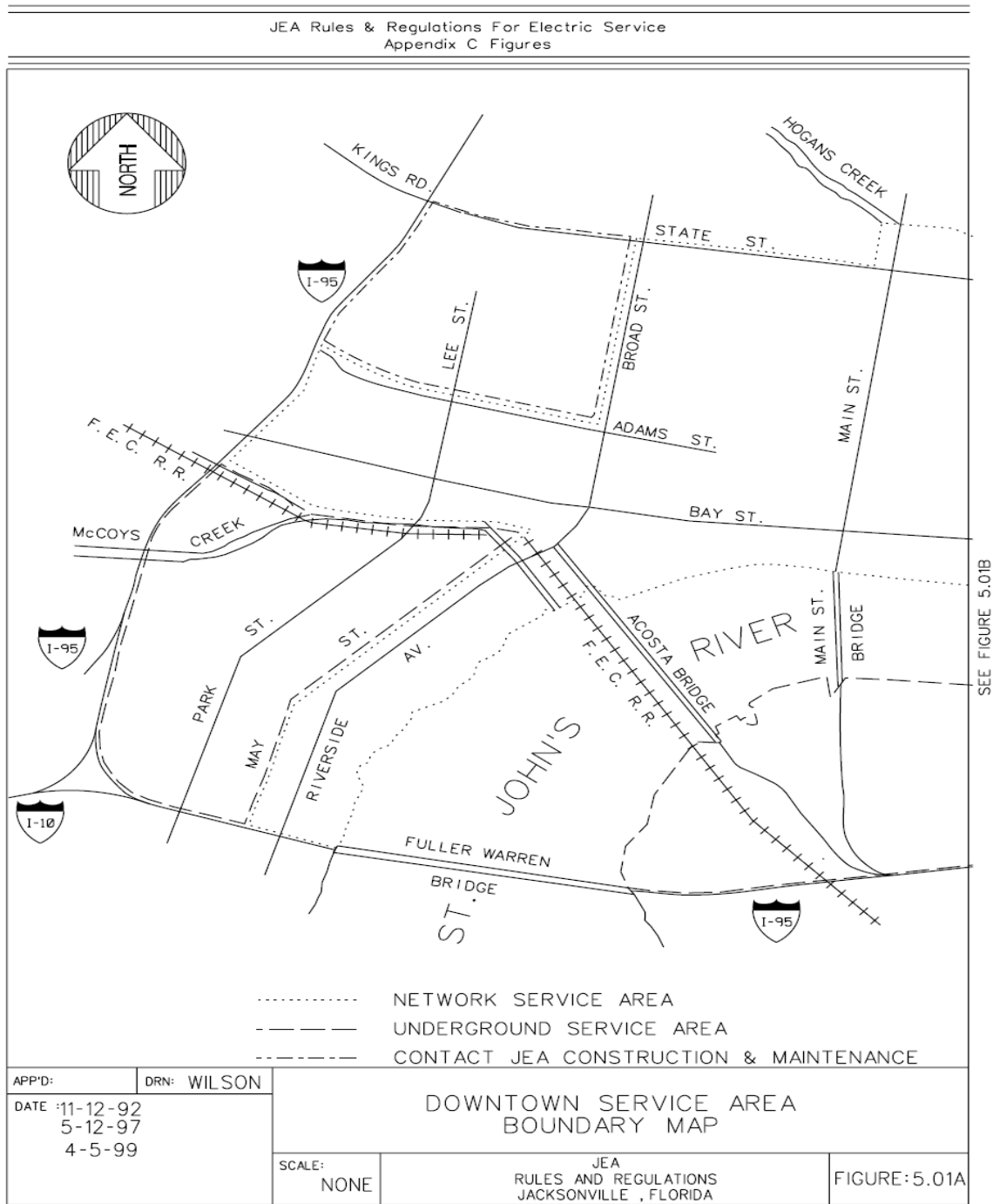
- a. These items are appropriate for determining the labor charges to be applied for Labor, Equipment and Material (L.E.M.) work performed under Section V, Part B - Progress and Completion, Subsection 10.

GROUP XXIV - LABOR, EQUIPMENT AND MATERIAL (EQUIPMENT ITEMS)

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BID ITEM(S)	BID DESCRIPTION
29001 – 29056	Equipment Item Bids (L.E.M.)
a.	These items are appropriate for determining the equipment charges to be applied for Labor, Equipment and Material (L.E.M.) work performed under Section V, Part B - Progress and Completion, Subsection 10.
b.	Well point systems requiring more than eight (8) continuous hours of operation will be paid on a rental/cost plus basis. Operation of eight hours or less will be paid based on the unit price.

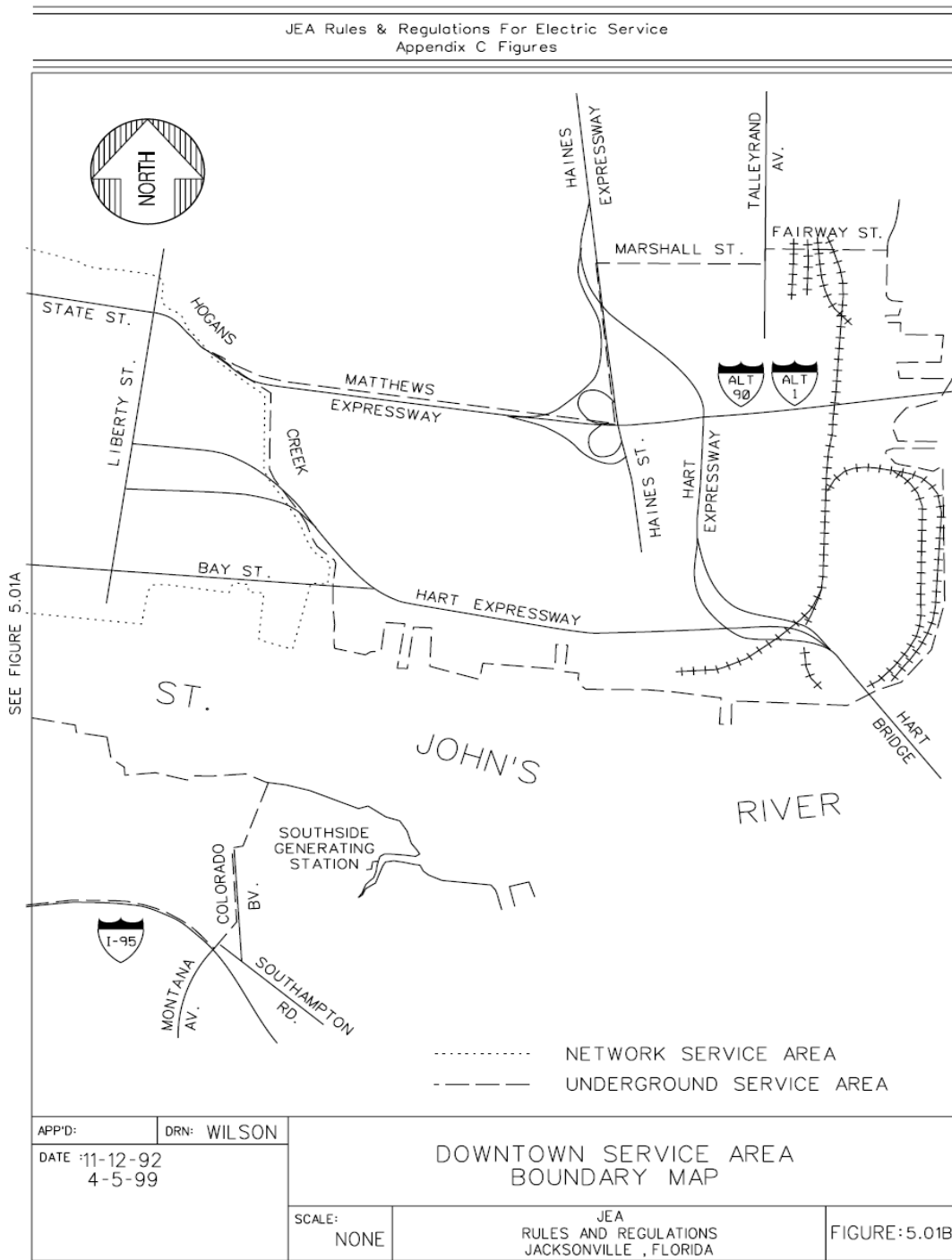
Appendix A - Technical Specifications
069-19 JEA Overhead and Underground Electrical Maintenance, Construction and Repair Services
(UNDERGROUND)



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Effective: September 1, 2007

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**SPECIFICATION FOR
HIGH DENSITY POLYETHYLENE, SMOOTH WALL,
COILABLE CONDUIT**

1. GENERAL

(REGRIND MATERIAL IS NOT ACCEPTABLE) SMOOTH WALL DUCT MADE FROM VIRGIN HIGH-DENSITY POLYETHYLENE RESIN IS REQUIRED. THE POLYETHYLENE SHALL BE TYPE III, CATEGORY 3, CLASS C, GRADE P34 MEETING THE LATEST REQUIREMENTS OF ASTM D1248. CONSISTENT WITH THE CELL CLASSIFICATION 334420C, AS DESCRIBED IN ASTM D3350. THE FINISHED PRODUCT SHALL BE IN COMPLIANCE WITH THE DIMENSIONAL, MATERIAL, AND TESTING REQUIREMENTS OF NEMA TC-7 (SDR 13.5), ASTM F714, ASTM D3035, AND ASTM D2447.

2. MINIMUM DRUM SIZE AND BENDING RADIUS, MAXIMUM REEL SIZE

DUCT SIZE	MINIMUM DRUM DIAMETER	UNSUPPORTED BEND RADIUS
1"	24"	14"
1 1/4"	24"	14"
2"	42"	26"
3"	64"	48"
4"	84"	60"
6"	N/A	N/A

RETURNABLE STEEL REELS WITH STANDARD DUCT LENGTHS.

3. PARALLELED ITEMS

PARALLELED CONDUIT SHALL BE PACKAGED IN **2,000** CIRCUIT FOOT REEL LENGTHS OF THE FOLLOWING COLOR PATTERNS (AS STATED ON THE JEA BID PROPOSAL FORM):

- A. YELLOW, PURPLE AND ORANGE
- B. GREEN, BROWN AND GRAY

4. COLOR/UV PROTECTION

CONDUIT COLOR SHALL BE UNIFORM SOLID COLOR AS STATED ON THE JEA BID PROPOSAL FORM. ULTRAVIOLET PROTECTION SHALL BE IN ACCORDANCE WITH ASTM D3895.

5. ENVIRONMENTAL STRESS CRACK RESISTANCE

CONDUIT SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM D1693-80 (VALUE - F20>96 HRS).

6. OVALITY

THE MAXIMUM OVALITY (OUT OF ROUNDNESS) ALLOWED AFTER REMOVAL FROM REEL SHALL BE 10% OF THE DIMENSIONAL LIMITS SET FORTH IN NEMA TC-7.

7. CONNECTION FITTINGS

COUPLINGS SHALL BE CORROSION RESISTANT ALUMINUM, THREADED TYPE WHICH HAVE A HIGH PULL OUT STRENGTH. COUPLINGS SHALL BE COVERED AFTER INSTALLATION WITH HEAT SHRINK, COLD SHRINK OR WATER RESISTANT SILICONE TAPE.

8. FINAL DUCT ASSEMBLY

CONDUIT SHALL BE PRE-LUBRICATED AND HAVE A 500# MIN. STRENGTH PULL STRING INSTALLED. (JEA USE) LUBRICANT SHALL BE COMPATIBLE WITH ALL CABLE INSULATION AND JACKET MATERIAL.

NOTE: IF THERE ARE ANY CONTRADICTIONS OR CONFLICTS BETWEEN SPECIFICATIONS, THE MOST STRINGENT SHALL APPLY.