

BID NOTICE/ QUOTE NOTICE

Sealed bids / quotes will be received by the Director of Public Service of the City of Wadsworth at his office in the City Hall, 120 Maple Street, Wadsworth, Ohio 44281, until 1:00 P.M. E.S.T. on the 4th day of March, 2011, at which time and place said bids and quotes will be opened, with the exception of the Electric Division, for furnishing to said City the following material and labor as required by the Department of Public Service during the year 2011-2012.

ELECTRIC DIVISION: Opening at 365 Broad Street, at 1:30 PM

Tree Trimming and Tree Removal for Electric Line Clearance, Vacuum Circuit Breakers, Fire Retardant Clothing

WATER/SEWER DIVISION:

Sludge Disposal, Chemicals, other materials

STREET DIVISION:

Limestone, Top Soil, Gravel, Asphalt, Concrete, Storm Sewer Pipe, Stainless Steel Bands, Concrete, Class C Concrete, Controlled Density Backfill, Masonry Cement, Ice Melt, Calcium Chloride, Pavement Crack Filling Material, services.

GENERAL SERVICES:

Equipment Rental

Specifications and Bidding Forms for said materials are on file in the office of the Director of Public Service. Quantities shown therein are approximate only; actual quantities of material ordered will depend on the requirements of the Department of Public Service of said City. All proposals shall be sealed and endorsed **"MATERIAL AND EQUIPMENT BID"**.

Bidders are to use bid forms furnished by the City of Wadsworth. Each bid must contain the full name of every person or company interested in the same. *No bid bonds/checks are required with bid submission; but, performance guarantees, in the form of bond or certified check, may be required from any vendor awarded a contract of \$25,000 or more in value.* Such bond or check will be returned to the bidder upon satisfactory execution of the contract. Awards in excess of \$4999 require action by the City of Wadsworth Board of Control.

The City reserves the right to reject any or all bids; to waive any informalities or irregularities in the bids received; to purchase from multiple bidders on any award of less than \$25,000 (subject to quality of materials, needs, and availability); and to award to the lowest and/or best bidder.

John C. Easton, Director of Public Service

Dated: February 16, 2011

Published: Medina County Gazette – February 16, and February 23, 2011

**AFFIDAVIT OF CONTRACTOR OF NON-DELINQUENCY OF
PERSONAL PROPERTY TAXES**

O.R.C. 5719.042

STATE OF OHIO

COUNTY OF MEDINA SS:

TO: FISCAL OFFICER
CITY OF WADSWORTH
MEDINA COUNTY, OHIO

The undersigned, being first duly sworn, having been awarded a contract by the
City of Wadsworth for _____

hereby states that _____ was not charged at the
time the bid was submitted with any delinquent personal property taxes on the
general tax list of personal property of Medina County, Ohio.

vendor name

by _____
signature

printed name and title

Sworn to before me and subscribed in my presence this _____ day of
_____, 2010.

Notary

Notary Name (printed) my commission expires

***** FOR INSTRUCTIONAL USE ONLY *****

READ BEFORE COMPLETING YOUR DMA FORM

Forms not conforming to the specifications listed below or not submitted to the appropriate agency or office will not be processed.

- To complete this form, you will need a copy of the Terrorist Exclusion List for reference. The Terrorist Exclusion List can be found on the Ohio Homeland Security Web site at the following address:

<http://www.homelandsecurity.ohio.gov/dma.asp>

- Be sure you have the correct DMA form. If you are applying for a state issued license, permit, certification or registration, the "State Issued License" DMA form must be completed (HLS 0036). If you are applying for employment with a government entity, the "Public Employment" DMA form must be completed (HLS 0037). If you are obtaining a contract to conduct business with or receive funding from a government entity, the "Government Business and Funding Contracts" DMA form must be completed (HLS 0038). The Pre-certification form (HLS 0035) should only be completed if you are specifically instructed to do so by the agency or office requesting the form.
- Your DMA form is to be submitted to the issuing agency or entity. "Issuing agency or entity" means the government agency or office that has requested the form from you or the government agency or office to which you are applying for a license, employment or a business contract. For example, if you are seeking a business contract with the Ohio Department of Commerce's Division of Financial Institutions, then the form needs to be submitted to the Department of Commerce's Division of Financial Institutions. Do NOT send the form to the Ohio Department of Public Safety UNLESS you are seeking a license from or employment or business contract with one of its eight divisions listed below.
- Department of Public Safety Divisions:

Administration	Ohio Homeland Security*
Ohio Bureau of Motor Vehicles	Ohio Investigative Unit
Ohio Emergency Management Agency	Ohio Criminal Justice Services
Ohio Emergency Medical Services	Ohio State Highway Patrol
- * DO NOT SEND THE FORM TO OHIO HOMELAND SECURITY UNLESS OTHERWISE DIRECTED. FORMS SENT TO THE WRONG AGENCY OR ENTITY WILL NOT BE PROCESSED.

***** FOR INSTRUCTIONAL USE ONLY *****

GOVERNMENT BUSINESS AND FUNDING CONTRACTS

In accordance with section 2909.33 of the Ohio Revised Code

DECLARATION REGARDING MATERIAL ASSISTANCE/NO ASSISTANCE TO A TERRORIST ORGANIZATION

This form serves as a declaration of the provision of material assistance to a terrorist organization or organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List (see the Ohio Homeland Security Division Web site for reference copy of the Terrorist Exclusion List).

Any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided. Failure to disclose the provision of material assistance to such an organization or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree.

For the purposes of this declaration, "material support or resources" means currency, payment instruments, other financial securities, funds, transfer of funds, and financial services that are in excess of one hundred dollars, as well as communications, lodging, training, safe houses, false documentation or identification, communications equipment, facilities, weapons, lethal substances, explosives, personnel, transportation, and other physical assets, except medicine or religious materials.

COMPLETE THIS SECTION ONLY IF YOU ARE AN INDEPENDENT CONTRACTOR

LAST NAME		FIRST NAME		MI
HOME ADDRESS				
CITY	STATE	ZIP	COUNTY	
HOME PHONE		WORK PHONE		

COMPLETE THIS SECTION ONLY IF YOU ARE A COMPANY, BUSINESS OR ORGANIZATION

LAST NAME		FIRST NAME		MI
BUSINESS/ORGANIZATION NAME			PHONE	
BUSINESS ADDRESS				
CITY	STATE	ZIP	COUNTY	

DECLARATION

In accordance with section 2909.32 (A)(2)(b) of the Ohio Revised Code

For each question, indicate either "yes," or "no" in the space provided. Responses must be truthful to the best of your knowledge.

- Are you a member of an organization on the U.S. Department of State Terrorist Exclusion List? ☐ Yes ☐ No
- Have you used any position of prominence you have with any country to persuade others to support an organization on the U.S. Department of State Terrorist Exclusion List? ☐ Yes ☐ No
- Have you knowingly solicited funds or other things of value for an organization on the U.S. Department of State Terrorist Exclusion List? ☐ Yes ☐ No
- Have you solicited any individual for membership in an organization on the U.S. Department of State Terrorist Exclusion List? ☐ Yes ☐ No
- Have you committed an act that you know, or reasonably should have known, affords "material support or resources" to an organization on the U.S. Department of State Terrorist Exclusion List? ☐ Yes ☐ No
- Have you hired or compensated a person you knew to be a member of an organization on the U.S. Department of State Terrorist Exclusion List, or a person you knew to be engaged in planning, assisting, or carrying out an act of terrorism? ☐ Yes ☐ No

In the event of a denial of a government contract or government funding due to a positive indication that material assistance has been provided to a terrorist organization, or an organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List, a review of the denial may be requested. The request must be sent to the Ohio Department of Public Safety's Division of Homeland Security. The request forms and instructions for filing can be found on the Ohio Homeland Security Division Web site.

CERTIFICATION

I hereby certify that the answers I have made to all of the questions on this declaration are true to the best of my knowledge. I understand that if this declaration is not completed in its entirety, it will not be processed and I will be automatically disqualified. I understand that I am responsible for the correctness of this declaration. I understand that failure to disclose the provision of material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List, or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree. I understand that any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided by myself or my organization. If I am signing this on behalf of a company, business or organization, I hereby acknowledge that I have the authority to make this certification on behalf of the company, business or organization referenced on page 1 of this declaration.

X

APPLICANT SIGNATURE

DATE

CITY OF WADSWORTH
WADSWORTH ELECTRIC AND COMMUNICATIONS
STANDARD SPECIFICATIONS

E-1 TRANSMISSION AND DISTRIBUTION LINE CLEARANCE & TREE REMOVAL

Clearance to be bid by section as per enclosed maps. Work to begin as soon as possible after acceptance of bid. Bidders to furnish, upon request, a list pertaining to age and condition of equipment and to supply a resume of line clearance experience on energized lines. Proof of insurance and state compliance of laws ruling compensation, etc. in the State of Ohio.

TRANSMISSION AND DISTRIBUTION TREE TRIMMING BID INSTRUCTIONS (Sections 2 & T2)

1. Bidding to be on Sections 2 (Distribution) & T2 (Transmission) with a total.
2. Section 2 (Distribution) boundaries are South of the center line of Greenwich Road, East and West of S.R. #94 (See enclosed map).
3. Section T2 (Transmission) boundaries are South of the center line of Greenwich Road, East and West of S.R. #94 (See enclosed map).
4. Transmission facilities will be de-energized at the time of trimming. All attempts will be made to de-energize Transmission facilities at the same time Distribution facilities are being trimmed. Coordination of de-energizing transmission facilities will be done by Manager, Superintendent or Assistant Superintendent of the Electric Division.
5. Any time the Transmission or Distribution required clearance is not achieved, approval must be given by Manager, Superintendent or Assistant Superintendent of the Electric Division.
6. Trees to be removed where possible with customer permission. Special concessions will be made for tree removal.
7. Contractor is responsible for contacting owners before trimming trees located on private property. In the country, where permission is granted by owner, trees are to be removed that are directly under Transmission and Distribution lines.
8. Priority of all sections will be determined by the Manager, Superintendent and Assistant Superintendent of the Electric Division.
9. Wood chips will be disposed of at the discretion of the City of Wadsworth.
10. Questions on tree trimming are to be directed to Gene Post (330) 335-2835 or Bill Lyren (330) 335-2858 or Dale Tittle (330) 335-2836.

DISTRIBUTION GUIDE LINES FOR EFFECTIVE TREE CLEARANCE

	<u>Side</u>	<u>Under</u>	<u>Overhead</u>
600 TO 15,000V	4' TO 8'	6' TO 12'	All if possible
120 TO 600V	2' TO 4'	3' TO 6'	3' TO 5'

TRANSMISSION GUIDE LINES FOR EFFECTIVE TREE CLEARANCE

	<u>Side</u>	<u>Under</u>	<u>Overhead</u>
69, 000V	15' TO 20'	15' TO 20'	All if possible

E-1 TRANSMISSION AND DISTRIBUTION LINE CLEARANCE & TREE REMOVAL

	<u>Bid Price</u>
SECTION 2 (DISTRIBUTION)	_____
SECTION T2 (TRANSMISSION)	_____
TOTAL	_____

Wadsworth Electric and Communications
City of Wadsworth, Ohio 44281
Flame Resistant Clothing

Pick up / Deliveries to: 365 Broad Street Wadsworth, Ohio 44281

Bill to: 120 Maple Street Wadsworth, Ohio 44281

Vendor to supply uniform storage lockers and hangers for dirty and clean clothes

Pick up / Delivery time: Thursday morning every week, two locations within the Electric and Communications Building-365 Broad Street Wadsworth, Ohio 44281

All garments will be cleaned and maintained by Vendor.

Vendor is to explain how credit for clothes that employees wash on their own is structured and flagged out on weekly invoices.

Any garments that require replacement due to normal wear will be replaced by Garment provider at no Charge to Wadsworth Electric and Communications.

No Buy Back of garments addendums to Service Agreement

Vendor to explain process and charges involved for City Owned FR Clothing returning to the weekly cleaning schedule

The Flame resistant clothing shall have a minimum Class 2 Arc Rating APTV 8.0

Customer agrees to have employees measured by a Vendor representative using garment size samples if needed

Company Emblem: Wadsworth Electric and Communications / Embroidered with first name of employee will need to put on 55 employees shirts in the Communication division as these employees are doing installs inside of customer premise

This contract will be effective as of the date of the award for 60 months from the date of installation.

Wadsworth Electric and Communications currently has 35 of its employees wearing FR Clothing in their Electric and Communication departments.

Estimate of Employee's In each Category	<u>Rental Uniform Pricing</u>		Weekly Charges
	Inventory	Changes	

1. 35 Indura Ultra Soft Shirt Or Indura Ultra Soft Henley Style Shirt Long Sleeve	11	5	_____
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Employees will have option choosing between the Indura Ultra Soft Long Sleeve Shirt and the Indura Soft Henley long sleeve shirt
Vendor Response should include vendor item number, APTV and description of garment

2. 35 Indura Ultra Soft Pant Relaxed Fit Blue Jean	11	5	_____
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Vendor Response should include vendor item number, APTV and description of garment

3. 35 Carhart Jacket Bomber Style Or Carhart Coat	2	1	_____
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Employees will have option choosing between the Carhart Jacket Bomber Style and Carhart Coat Style
Vendor Response should include vendor item number, APTV and description of garment

4. 35 Indura Ultra Soft Jacket Or Indura Hooded Pullover	2	1	_____
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Employees will have option choosing between the Indura Ultra Soft Jacket and the Indura Soft Pullover
Vendor Response should include vendor item number, APTV and description of garment

5. 35 Carhart Duck Bibs 2 1 _____
 Overall lined
 Or unlined

Employees will have option choosing between the Duck Bib Overall, Lined or Unlined
 Vendor Response should include vendor item number, APTV and description of garment

Year 1 Subtotal	Add lines 1 thru 5	Sub Total	_____
Year 2 Subtotal	Add lines 1 thru 5	Sub Total	_____
Year 3 Subtotal	Add lines 1 thru 5	Sub Total	_____
Year 4 Subtotal	Add lines 1 thru 5	Sub Total	_____
Year 5 Subtotal	Add lines 1 thru 5	Sub Total	_____

5 year Total of items bid _____

Vendor Instructions:

Please provide additional information as needed for Wadsworth Electric and Communications review of this bid

Exceptions / Changes should be indentified in bidder's response

Wadsworth Electric and Communications may ask vendor to provide samples of garments after the bid opening for review

Questions can be directed to Gene Post, Manager of Electric and Communications
 Wadsworth - 330-335-2835

Specification for Medium Voltage Replacement Circuit Breakers For Metal-Clad Switchgear

City of Wadsworth Electric & Communications Department

Date: 1/14/2011
By: Mark Feller PE

I. SCOPE OF SUPPLY

- A. This specification covers requirements for the replacement of existing air magnetic circuit breakers with new vacuum circuit breakers. A quantity of three (3) breakers are included in this request for bid for the 2011 budget year. The City reserves the right to increase or decrease the number of vacuum circuit breakers to be purchased under the contract.
- B. It is the intent of this specification that each new circuit breaker operates identically to the original installed breakers to include, but not limited, operation of MOC and TOC auxiliary switches, test position operation, and safety related functions so the new breakers will be interchangeable with existing breakers. The breakers will be applied in utility substations in line reclosing service.
- C. In all instances throughout this specification, the term "Bidder" shall refer to any company submitting a proposal to fulfill the requirements of this Specification. The term "Contractor" shall refer to the successful Bidder who is awarded a purchase order and who has accepted the overall responsibility for filling the requirements of this specification.
- D. Whenever equipment proposed by the Bidder cannot satisfactorily meet the intent of this specification in any respect, SUCH EXCEPTIONS SHALL BE CLEARLY STATED BY THE BIDDER. The City reserves the right to accept or reject any stated exceptions to the requirements of this specification during evaluation of the received bids. The City shall enforce the requirements of this specification for any resulting contract. If the Contractor supplies or attempts to supply non-conforming equipment the City shall have the right to terminate the Contract with no cancellation penalty payable to the Contractor.
- E. The City will determine the lowest and/or best bid based on the stated pricing and its evaluation of other pertinent factors including but not limited to projected lifetime costs and maintenance costs. Such determination by the City will be final.
- F. The Contractor shall have full responsibility for compliance with the requirements of this specification. Review and/or approval of drawings or data does not constitute acceptance of any designs, materials, or equipment that will not fulfill the functional or performance requirements established herein.
- G. Each bid shall include the unit cost of each replacement circuit breaker including shipping costs **FOB DESTINATION** and a proposed delivery schedule. Due to recent experience with inferior packaging for shipment of equipment by a number of suppliers failure to bid **FOB DESTINATION** shall be sufficient cause for rejection of any bid.
- H. Each circuit breaker shall be fully crated for shipment to protect the entire unit from shipping damage. Shipment of breakers unprotected on open pallets is not acceptable.

II. EXISTING BREAKER DATA

- A. Existing air magnetic circuit breakers to be replaced are as follows:

1. Manufacturer:	Allis-Chalmers
2. Type:	FC-500B
3. Voltage:	15kV
4. Continuous Current Rating:	1200 Amperes
5. Interrupting Class:	500 MVA
6. Trip Coil Voltage	48 VDC
7. Close Coil Voltage	48 VDC
8. Spring Charge Motor Voltage	240 VAC

III. DETAILED SPECIFICATIONS

- A. The Contractor shall furnish labor, material, and equipment necessary to provide complete operable replacement circuit breakers as described. All new materials used shall be new and shall be of first quality and the best of each class and shall meet or exceed applicable NEMA and ANSI standards.
- B. Stored energy shall be automatically discharged upon moving the breaker into the disconnect position.
- C. Breaker shall be provided with open and close semaphores which shall be red for close and green for open.
- D. Manual trip and close provisions shall be supplied identified as "trip" (green) and "close" (red).
- E. The vacuum breaker secondary control terminals and auxiliary terminals shall be wired to the secondary disconnect contacts to match existing breaker control circuits functionally identical to the original control circuits. No modification of the fixed cubicle wiring is permitted except for mechanism charging power which may be reconfigured from 240VAC to 48VDC depending on the design of the mechanism. All auxiliary contact ratings shall be equal to or greater than the ratings of the auxiliary contacts on the existing breakers.
- F. All mechanical and electrical interlocks shall be functionally the same as the existing circuit breaker. The replacement breaker shall not alter the operating characteristics of the existing mechanical and electrical interlocks.
- G. Bus connections between the vacuum breaker assembly shall be insulated phase-to-phase and phase-to-ground to maintain the original BIL or greater.
- H. An operation counter shall be provided to register one count for each trip or close operation. It shall be visible from the front of the breaker.
- I. The circuit breaker under-carriage shall be provided with steel wheels rated to withstand normal and impact loads during physical relocation of the breaker to and from the substation and to and from the circuit breaker compartment.
- J. The completed replacement breaker shall be identical in electrical and physical functions to the existing breakers except where enhanced safety interlocking is indicated.
- K. All equipment and parts shall meet the requirements of the latest applicable published standards of IEEE, NEMA, and ANSI including ANSI C37.09.

IV. RECOMMENDED SPARE PARTS

- A. Each bidder shall provide with his bid spare parts pricing for coils, motor (if used), vacuum bottles, control relays or contactors, electronic parts, and any other renewal or repair parts normally recommended by the manufacturer of the circuit breakers bid.

V. TESTING

- A. Testing shall be in accordance with the latest ANSI Standards and the most recent draft of the ANSI Standard C37.09 in regards to the tests described in this section.
- B. The City reserves the right to witness factory tests and shall be notified at least 10 days prior to testing.
- C. Vacuum Breakers shall be design tested and certified to meet the latest applicable ANSI, NEMA, and IEEE standards. Each breaker element shall be of current manufacture and be fully production tested in accordance with ANSI C37.09, Section 5.

D. Completed Replacement Vacuum Circuit Breakers shall have the following tests:

1. A complete set of IEEE design tests shall be performed on a completed prototype unit. If these tests have already been performed on an identical unit certified copies of these test reports shall be available upon request by the City. This includes but is not limited to:
 - i. Rated Full Wave Impulse Withstand Voltage Test as per ANSI C37.09, Para. 4.5.4.
 - ii. Low Frequency Withstand per ANSI C37.09, Paragraph 4.5.3.1
 - iii. Mechanical Endurance Test as per ANSI C37.20.2. The Contractor shall not perform this test except at the direction of the Purchaser.
 - iv. Rated Continuous Current Test as per ANSI C37.09, Paragraph 4.4
 - v. Close and Latch per ANSI C37.09, Paragraph 4.6.2.4 and ANSI C37.06 - Table 1
2. The following production tests shall be performed on all replacement breaker units:
 - i. AC High Potential (HI POT) test to test the breaker's dielectric strength. High voltage insulation shall be tested phase-to-phase, phase-to-ground, and line-to-load.
 - ii. Mechanical Operating Test as described in C37.09, Paragraph 5.11, to include the verification of all mechanical and electrical interlocks.
 - iii. Measure and submit the primary circuit path resistance of each breaker pole.

V. DOCUMENTATION

- A. Four (4) copies of an outline drawing and wiring diagram shall be submitted for approval by the City prior to manufacturing.
- B. Four (4) copies of the complete inspection report with all test results and data sheets shall be provided for the breakers with shipment.
- C. Four (4) complete sets of breaker schematic and wiring drawings shall be provided with the shipment showing the secondary control block, the close and trip coils, the various breaker switches and contacts, and other electrical components of the breaker.
- D. Four (4) complete sets of instruction manuals with a renewal parts list shall be provided with each breaker.

VI. WARRANTY

- A. The Contractor shall warrant that the equipment and all parts shall be free from defects in design, manufacturing, and material. The warranty shall extend for a minimum of one (1) year after commercial operation or eighteen (18) months from delivery. If during the warranty period modifications or repairs of the subject equipment are necessary the warranty period shall be extended for a minimum of one (1) year from the date of the completion of repair or modification.

**Specification for Medium Voltage Pole Mounted
Switched Capacitor Banks**

City of Wadsworth Electric & Communications Dept.

Date: 02/11/11

Contact: Mark Feller PE

SCOPE OF SUPPLY

This specification covers requirements for approximately 10 - 600 kVAr and 10 - 1200 kVAr factory assembled pole mounted switched capacitor banks to be supplied in 2011. The capacitor banks shall be quoted as cost per each with shipping costs included. The City of Wadsworth (City) reserves the right to adjust actual quantities to accommodate project requirements. Bidders may offer a quantity price discount schedule if desired.

In all instances throughout this specification, the term "Bidder" shall refer to any company submitting a proposal to fulfill the requirements of this specification. The term "Contractor" shall refer to the successful Bidder who is awarded a purchase order and who has accepted the overall responsibility for filling the requirements of this specification.

Whenever equipment proposed by the Bidder cannot satisfactorily meet the intent of this specification in any respect, SUCH EXCEPTIONS SHALL BE CLEARLY STATED BY THE BIDDER. The City reserves the right to accept or reject any exceptions to the requirements of this specification during evaluation of the received bids. The City will enforce the requirements of this specification for any resulting contract unless modified by exceptions accepted by the City during the bid evaluation process. If the Contractor supplies or attempts to supply non-conforming equipment the City shall have the right to terminate the Contract with no cancellation penalty payable to the Contractor.

The City will determine the lowest and/or best bid based on the stated pricing and evaluation of pertinent factors including but not limited to projected lifetime costs and maintenance costs. Such determination by the City will be final.

The Contractor shall have full responsibility for compliance with the requirements of this specification. Review and/or approval of submittal drawings and data does not constitute acceptance of any designs, materials, or equipment that will not fulfill the functional or performance requirements established herein.

Each bid shall include the unit cost of each capacitor bank assembly including shipping costs FOB DESTINATION and a proposed delivery schedule. Failure to bid FOB DESTINATION shall be sufficient cause for rejection of any bid.

DETAILED SPECIFICATIONS

The Contractor shall furnish labor, material, and equipment necessary to provide complete operable pole mounted switched capacitor as described herein. All new materials used shall be new and shall be of first quality and the best of each class and shall meet applicable NEMA and ANSI standards.

The pole mounted capacitor banks will be applied on utility distribution feeders with the following characteristics:

System voltage rating (kV line to line):

12.47

System connection (4 wire wye, delta, etc.):

4 wire multi-grounded wye

Available fault current (amperes):

6000

External fused cutouts (by the City) will be utilized for bank protection.

Capacitors

Capacitors shall be rated 7200 Volts and will be Grounded Wye connected.

Capacitors shall be capable of operation from -40 to +46°C ambient temperature and shall have overvoltage capabilities in accordance with applicable NEMA and ANSI standards.

Capacitors shall be designed to withstand up to 10 kA fault current without rupture when coordinated with expulsion fuse links. Capacitors must be able to withstand $2e^6 A^2$ seconds of fault current without rupturing.

Capacitor tanks shall be made using grade 409 stainless steel and primed with an epoxy primer having a nominal thickness of one mil and painted with Munsell Color Code 5BG7.0/0.4 light gray urethane finish paint having a nominal thickness of one mil. The coating system shall meet the requirements of ANSI C57.12.31 - Pole Mounted Equipment Standard and ANSI C57.12.29 - Coastal Pole Mounted Equipment Standard.

The capacitor tanks shall be provided with stainless steel mounting brackets with industry standard 15.62 inch mounting centers. The underside of each bracket shall not be painted to assure positive grounding.

Each capacitor shall have a stainless steel nameplate containing data required by applicable standards.

Each capacitor shall be supplied with a blue non-PCB decal on the capacitor tank to provide quick and easy identification.

Capacitor unit bushings shall be light gray wet process porcelain, shall be glazed for high strength and durability, and shall be hermetically solder sealed to the capacitor tank. Capacitors shall be supplied with two bushings. Each terminal shall be supplied with parallel-groove terminals that accommodate copper or aluminum conductors from No. 8 solid to No. 1 stranded. Bushings shall be rated 95 kV BIL with a minimum creep distance of 10.38 inches and a minimum strike distance of 6.25 inches.

Internal pack construction shall be extended foil, mechanically crimped utilizing polypropylene film and laser cut foil for maximum DIV performance. Paper film type dielectric capacitors will not be considered. The DIV ratio to operating stress will not be less than 180% at room temperature.

Capacitors shall utilize non-PCB dielectric fluid.

Each capacitor shall have an internal discharge resistor to reduce the residual charge to 50 volts or less within 5 minutes.

Capacitors shall be compliant to ANSI/IEEE std, 18 latest revision, and NEMA CP-1 latest revision.

Capacitors shall be as manufactured by Cooper Power Systems or approved equal.

Capacitor Rack Frames

A capacitor rack frame shall be provided to mount the capacitor units and vacuum switches. The rack frame shall be constructed of aluminum (ASTM 6061-T6). The capacitor rack frame shall include a pole mounting plate with 18 inch mounting hole spacing for direct pole mounting. The frame shall be supplied with a grounding connector and lifting lugs.

No. 4 solid copper wire shall be used for capacitor and vacuum switch HV connections.

Bird guards for capacitor units and switches shall be supplied including protection tubing on wiring between capacitor units and vacuum switches.

Stainless steel hardware shall be supplied for mounting capacitor units and required accessories.

The capacitor rack wiring shall have proper electrical clearances for 12.47kV Line-to-Line, 7.2kV Line-to-Ground and 95 kV BIL ratings.

Each pole mounted capacitor rack assembly shall be shipped on an appropriate wooden pallet.

The capacitor rack frame shall be an "in-line" design and shall be sized to accommodate three capacitor units. The rack frame shall be capable of mounting ANSI and NEMA standard capacitor units of other manufacturers without requiring multiple rack sizes for different size kvar units.

Vacuum Switches

Capacitor banks shall be supplied with 3 vacuum switches. The switches shall be manufactured and tested in accordance with the latest revision of ANSI C37.66. Switches shall be rated as follows:

Distribution system voltage class (kV)	15
Rated Impulse Withstand Voltage (kV BIL):	95
Continuous current rating (amps):	200
Symmetrical current rating (amps):	6000
Asymmetrical current rating (amps):	9000
High frequency transient (amps):	12000
Transient Inrush Frequency (Hz):	6000
Control voltage:	120 VAC, 60 Hz.

Bistable magnetic solenoid mechanism is preferred.

Two vacuum switches shall be mounted on the front angle away from the pole rear angle and one vacuum switch shall be end mounted on the rack.

Each vacuum switch shall include a 5 pin weatherproof receptacle for connection to the control enclosure. Pins shall be arranged as follows:

Pin A

Pin B Common

Pin C Close

Pin D Open

Pin E

Switches shall be Cooper Power Systems type KVCS1S11 or approved equal.

Cabling and Junction Box for Customer Connections

Control cables from individual capacitor switches shall be routed to a small cable junction box mounted on the capacitor rack. Weatherproof cable bushing connectors shall be utilized for cable entry.

Control cables from the junction box to the switches shall be heavy duty weatherproof and sunlight resistant construction. Each cable shall each be terminated with a 5 pin weatherproof screw on plug for the vacuum switch connection with the following pin designations:

Pin A

Pin B Common

Pin C Close

Pin D Open

Pin E

The cable junction box shall be furnished with one (1) six (6) point single piece heavy duty 600V rated stud type terminal block, Marathon catalog 1506ST or equal for customer connections.

BASE BID

Each bidder shall provide pricing for the rack mounted capacitor banks with complete with vacuum switches as described above with vacuum switches wired to a junction box for customer connections to external control.

The City will furnish the capacitor controls under the base bid.

ALTERNATE "A"

Bidders are requested to provide a pricing addition per capacitor bank for synchronous closing type vacuum switches if available in lieu of standard vacuum switches. Manufacturer's standard cabling and pinout design shall be applied for this alternate.

ALTERNATE "B"

Bidders are requested to provide pricing for capacitor bank control equipment as described below under this alternate.

Control for 1200kVAr Banks

Each 1200 kVAr switched pole mounted capacitor bank shall be supplied with a 14"H x 12" W x 6" deep aluminum NEMA 4 weather-resistant control enclosure with sub-panel to terminate vacuum switch control cables and house control components. The control enclosure shall be mounted on the side of the rack near the rack pole mounting bracket similar to the cable junction box specified above.

Each control enclosure for 1200 kVAr capacitor banks shall be provided with:

Two (2) interposing relays, each with a 24VDC coil, 30 Ampere 250VAC contact, 2 kV - 1 min. withstand rating for open contact, 4 kV - 1 min. withstand rating coil to contact, -55C to 70C operating temperature range, for interfacing remote control signals to the 120VAC vacuum switch solenoids, Picker Components PC739-1X-24D-S with .25" quick connect terminals or equal.

One (1) twelve (12) point single piece heavy duty 600V rated stud type terminal block, Marathon 1512ST or equal. The following terminals shall be provided left to right viewing the top of the terminal boards:

- 1 - Line input for 120VAC power
- 2 - Neutral input for 120VAC power supply
- 3 - Ground
- 4 - 24VDC Control Input Common
- 5 - 24VDC Close Input
- 6 - 24VDC Open Input
- 7 - 120VAC Common to vacuum switches
- 8 - 120VAC Close Output to vacuum switches
- 9 - 120VAC Open Output to vacuum switches
- 10 - 120VAC Fused Auxiliary Output
- 11 - N/C
- 12 - N/C

Weatherproof cable bushing connectors shall be utilized for cable entry.

The 1200 kVAr capacitor banks will be remote controlled via a control cable from the associated substation control building. Remote indication of capacitor bank operation is not required for the 1200kVAr banks since they will be located in close proximity to the substations. The City will provide a wiring diagram of existing control boxes for use by the Contractor.

Control for 600 kVAr Banks

Each 600 kVAr switched pole mounted capacitor bank shall be arranged for control from a remote control enclosure as described below.

A thirty foot (30') multi-conductor heavy duty weatherproof and sunlight resistant control cable shall be provided to connect the rack mounted junction box to the control enclosure.

Each 600 kVAr switched pole mounted capacitor bank shall be supplied with a 26"H x 17" W x 15" deep (minimum dimensions) aluminum NEMA 4X weather-resistant control enclosure with sub-panel to terminate vacuum switch control cables and house control components. Enclosure shall be as manufactured by APX Enclosures, Inc. TCSM261715 or equal with pole mounting accessories. The control enclosure will be pole side mounted by the City below the capacitor bank.

Each control enclosure for 600 kVAr capacitor banks shall be provided with:

One (1) - SEL 2411 Automation Controller, surface mount, 120VAC power supply and logic input voltages, 8 Digital Input + 8 Digital Outputs minimum, IRIG port, and Ethernet port with IEC 61850 protocol including GOOSE messaging and defined logical node data points.

One (1) - SEL 2401 Satellite Synchronized Clock with antenna, power supply and necessary cabling

Six (6) interposing relays, each with a 120VAC coil, 30 Ampere 250VAC contact, 2 kV - 1 min. withstand rating for open contact, 4 kV - 1 min. withstand rating coil to contact, -55C to 70C operating temperature range, for interfacing Controller outputs to the 120 VAC vacuum switch solenoids, Picker Components PC739-1X-120A-S with .25" quick connect terminals or equal.

One (1) two pole fuse holder with (1) - 15 Ampere slow fuse and (1) - 5 Ampere slow fuse

One (1) twelve (12) point single piece heavy duty 600V rated stud type terminal block, Marathon 1512ST or equal. The following terminals shall be provided left to right viewing top of terminal board:

- 1 - Line input for 120VAC power
- 2 - Neutral input for 120VAC power supply
- 3 - Ground
- 4 - 120VAC Common to vacuum switches
- 5 - 120VAC Close Output to vacuum switch 1
- 6 - 120VAC Open Output to vacuum switch 1
- 7 - 120VAC Close Output to vacuum switch 2
- 8 - 120VAC Open Output to vacuum switch 2
- 9 - 120VAC Close Output to vacuum switch 3
- 10 - 120VAC Open Output to vacuum switch 3

11 - 120VAC Fused Auxiliary Output

12 - N/C

All cables shall exit the enclosure bottom. Weatherproof cable bushing connectors shall be utilized for cable exits. The GPS antenna shall be mounted through a suitable gasketed hole in the top of the enclosure.

The 600 kVAr capacitor banks will be remote controlled with communications via the City's fiber optic network. The control enclosure shall be designed with sufficient space to accommodate a fiber optic media converter/power supply to be supplied by the City. A 1" diameter hole shall be provided in the bottom of the enclosure to accommodate a Fiberdyne Labs 6 fiber non-armored entrance cable, (4)SC/UPC, 2mm fiber breakout.

The City will provide engineering assistance as needed for design of the controller.

FACTORY TESTS

Production tests shall be performed in accordance with the latest versions of NEMA CP1 or ANSI/IEEE Std. 18. All capacitor units shall be tested at 4.3 times rated voltage DC or 2.0 times rated voltage AC.

Type test and conformance test reports previously performed shall be made available upon request.

DOCUMENTATION

Two (2) copies of the manufacturers design data curve demonstrating the average losses vs. ambient temperature from -40 to +46°C shall be submitted with the bid. Bidders shall also submit the tank-rupture time-current curve (TCC) and fusing recommendations for the capacitors being offered.

Four (4) copies of bills of material, outline drawings and wiring diagrams shall be submitted for approval by the City prior to manufacturing.

One (1) copy of the manufacturer's test and inspection report with test results illustrating successful completion of operating tests shall be provided for the switched capacitor banks with shipment.

One (1) complete instruction manual with a renewal parts list shall be provided with each capacitor bank.

WARRANTY

The Contractor shall warrant that the equipment and all parts shall be free from defects in design, manufacturing, and material. The warranty shall extend for a minimum of one (1) year after commercial operation or eighteen (18) months from delivery. If during the warranty period modifications or repairs of the subject equipment are necessary the warranty period shall be extended for a minimum of one (1) year from the date of the completion of repair or modification.