



CITY OF FARMINGTON  
800 MUNICIPAL DRIVE  
FARMINGTON, NEW MEXICO 87401

Transformers, Non-VMI, 18 Month Contract  
BID #14-100427  
October 15, 2013  
2:00 P.M.

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Transformers, Non-VMI, 18 Month Contract  
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**ACKNOWLEDGMENT OF RECEIPT FORM**

In acknowledgment of receipt of the distribution packet #14-100427, the undersigned agrees that he/she has received a complete copy, beginning with the title page and ending with Exhibit B, for a total of 46 Pages.

The acknowledgment of the receipt form should be signed and returned to the Buyer no later than **October 9, 2013**. Only potential Bidders who elect to return this form will receive copies of all future communications, relating to, and including amendments to #14-100427, if issued.

FIRM: \_\_\_\_\_

REPRESENTED BY: \_\_\_\_\_

TITLE: \_\_\_\_\_ PHONE NO.: \_\_\_\_\_

EMAIL: \_\_\_\_\_ FAXNO.: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

This name and address will be used for all correspondence related to document #14-100427

Firm **does/does not (circle one)** intend to respond to Transformers, Non-VMI, 18 Month Contract, #14-100427

If firm **does not** intend to reply, please give a brief reason for not responding. \_\_\_\_\_

Return To:

Sharron Dunn  
Buyer I  
City of Farmington  
Central Purchasing  
800 Municipal Drive  
Farmington, NM 87401  
sdunn@fmtn.org

Telephone Number: 505-599-1376

Fax Number: 505-599-1377

Faxed copies of this form will be accepted.  
Faxed Bid responses **will not** be accepted.

**INVITATION TO BID**

\*\*\*\*\*

**BID TITLE: Transformers, Non-VMI, 18**

**Month Contract**

**BID #: 14-100427**

\*\*\*\*\*

Sealed bid opening:  
 CITY OF FARMINGTON  
 CENTRAL PURCHASING DEPARTMENT  
 805 MUNICIPAL DRIVE  
 FARMINGTON, NM 87401  
 DATE: October 15, 2013 2:00 P.M.

The following ARTICLES are made part of this

Bid:

- Article 1 - General Terms & Conditions
- Article 2 - Special Conditions Supplies
- Article 3 - Special Conditions Equipment
- Article 4 - Special Conditions Vehicles
- Article 5 - Specifications
- Article 6 - Definitions

PURCHASING OFFICER:

/s/Edward Smylie  
 Edward Smylie, CPPO

If you have any questions regarding this Invitation to Bid please contact:

BUYER: /s/Sharron Dunn  
 Sharron Dunn, CPPB  
 Telephone Number: (505) 599-1376

PRE-BID CONFERENCE:

DATE: N/A  
 TIME: N/A  
 PLACE: N/A

**IMPORTANT - BIDS MUST BE SUBMITTED IN A SEALED ENVELOPE WITH THE BID NUMBER AND OPENING DATE CLEARLY INDICATED ON THE FRONT OF THE ENVELOPE. EMAILED OR FAXED BIDS WILL NOT BE ACCEPTED.** SUBMITTING A "NO BID" IS NOT REQUIRED TO BE KEPT ON THE CITY'S BIDDERS LIST.

Sealed bids will be received until the above specified date and local time, then publicly opened at the City of Farmington Central Purchasing Department and read aloud. This bid is subject to the Purchase Order Terms and Conditions, Bidding Requirements, and Specifications.

**BIDDER MUST COMPLETE THE FOLLOWING AND THIS PAGE MUST BE SUBMITTED WITH BID**

\_\_\_\_\_  
 COMPANY NAME/MAILING ADDRESS/CITY/STATE/ZIP CODE (please print)

\_\_\_\_\_  
 CONTACT PERSON (please print) TELEPHONE NUMBER

\*\*\* **To be a valid bid, Bidder must Sign Here**\*\*\*

Title Email Address

**In-State Preference will be applied only to those in-state certified bidders who have completed the following:** Bidder has received certification from the State of New Mexico for Resident Bidders Certification. Bidder has been issued Certification # \_\_\_\_\_ and is therefore eligible for the 5% preference. In-state certification approval is required at the time of the bid opening to be eligible for in-state preference.

**Resident Veterans Preference will be applied only to those bidders who have completed the following along with the Resident Veterans Preference Certification form included in this bid:** Bidder has received certification from the State of New Mexico for Resident Veterans Preference. Bidder has been issued Certification # \_\_\_\_\_. Bidder must include their State of New Mexico certificate with their bid. Resident veterans preference certification approval is required at the time of the bid opening to be eligible for resident veterans preference.

Payment Terms: \_\_\_\_\_ % \_\_\_\_\_ Days, Net 30 Days After Receipt of Invoice (Discount will not be considered in computing the low bid.)  
 Federal Tax Identification Number: \_\_\_\_\_  
 F.O.B. Point: Destination Delivery: \_\_\_\_\_ Calendar days  
 (F.O.B. Point Must be Destination, Unless otherwise indicated by the City of Farmington Purchasing Agent and/or enclosed Contract Documents)

Bidder must check the appropriate box below:  
 If applicable, BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING AMENDMENT(S):  
 Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_ Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_  
 Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_ Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

**ARTICLE 1**  
**GENERAL CONDITIONS**

The following bid is made for furnishing materials or services for the City of Farmington, San Juan County, New Mexico.

The bidder declares that the amount and nature of the materials to be furnished is understood and that the nature of this bid is in strict accordance with the conditions set forth and is a part of this bid, and that there will at no time be a misunderstanding as to the intent of the specifications or conditions to be overcome or pleaded after the bids are opened.

The bidder, in submitting this bid, represents that he is an equal opportunity employer, and will not discriminate with regard to race, religion, color, national origin, and sex in the performance of this contract.

The bidder hereby proposes to furnish the items or services bid on, F.O.B. Farmington, New Mexico, at the unit prices quoted herein after notice of bid award.

Bidder must use the Bid Schedule provided and complete all information in the blanks provided. Failure to comply, or use of Bidder provided forms, may result in rejection of the Bid at the City's option.

The City reserves the right to reject any or all bids or to waive technicalities at its option when in the best interests of the City.

If items for which bids have been called for have been identified by a "brand name or equal" description, such identification is intended to be descriptive, but not restrictive, and is to indicate the quality and characteristics of products that will be satisfactory. Bids offering "equal" products will be considered for award if such products are clearly identified in the bids and are determined by the Central Purchasing Office and requesting Department to be equal in all material respects to the brand name products referenced. Unless the bidder clearly indicates in his bid that he is offering an "equal" product, his bid shall be considered as offering a brand name product referenced in the Bid Schedule.

Equal shall be taken in its general sense and shall not mean identical. Specifications are for the sole purpose of establishing minimum requirements of level of quality, standards of performance and design and is in no way intended to prohibit the bidding of any manufacturer(s) item of equal material. The City of Farmington shall be the sole judge of equality in their best interest and decisions of the City of Farmington as to equality shall be final.

Pursuant to Section 13-1-108 NMSA 1978, the total amount bid shall exclude all applicable taxes including applicable state gross receipts tax or applicable local option tax. The City will pay for any taxes due on the contract and will pay any increase in applicable taxes which become effective after the date the contract is entered into in addition to the bid total based upon separate billings which the successful bidder shall submit with each request for payment. Taxes shall be shown as a separate amount on such billing or request for payment and shall separately identify each tax being billed.

To assist the City with budget preparation, the bidder shall complete the paragraph on the bid schedule of this bid and shall identify by name each tax bidder believes to be applicable to this bid and shall estimate the amount of each tax which will be charged on the entire bid.

Bidder's may submit more than one bid that meet or exceed specifications listed. Bidder's submitting more than one base bid should submit each bid in a separately sealed envelope labeled according to the requirements specified on Page 2, Invitation to Bid. Do not submit two base bids in the same envelope. Alternate Bids which offer exceptions to the specifications will be considered and should be submitted in a separately sealed envelope labeled as an alternate.

Any bid received after stated closing time will be returned unopened. If bids are sent by mail to the Purchasing Supervisor, the bidder shall be responsible for actual delivery of the bid to the Central Purchasing Department before the advertised date and hour for opening of bids. If mail is delayed either in the postal service or in the internal mail system of the City of Farmington beyond the date and hour set for the bid opening, bids thus delayed will not be considered and will be returned unopened.

Bids deposited with the City may be withdrawn prior to the time set for opening Bids. Request for non-consideration of Bids must be made in writing to the Central Purchasing Office and received by the City prior to the time set for opening Bids. After other bids are opened and publicly read, the Bid for which non-consideration is properly requested may be returned unopened. The bid may not be withdrawn after the bids have been opened, and the Bidder, in submitting the same, warrants and guarantees that his bid has been carefully reviewed and checked and that it is in all things true and accurate and free of mistakes and that such bid will not and cannot be withdrawn because of any mistake committed by the Bidder.

After Bids are opened and publicly read, the Bids will be tabulated for comparison on the basis of the bid prices and quantities shown in the Bid. Until final award by the City of Farmington, the City reserves the right to reject any or all Bids, to waive technicalities, and to re-advertise, or proceed to do the work otherwise when the best interests of the City will be realized hereby.

Bids will be considered irregular if they show any omissions, alteration of form, additions, conditions not called for, or irregularities of any kind. However, the City reserves the right to waive any irregularities and to make the award in the best interest of the City.

The City reserves the right to reject any or all Bids, and all Bids submitted are subject to this reservation. Bids may be rejected, among other reasons, for any of the following specific reasons:

1. Bids received after the time limit for receiving Bids as stated in the advertisement.
2. Bid containing any irregularities.
3. Unbalanced value of any items.

Bidders may be disqualified and their Bids not considered, among other reasons, for any of the following specific reasons:

1. Reason for believing collusion exists among the Bidders.
2. Reasonable grounds for believing that any Bidder is interested in more than one Bid for the work contemplated.
3. The Bidder being interested in any litigation against the City.
4. The Bidder being in arrears on any existing contract or having defaulted on a previous contract.
5. Lack of competency as revealed by a financial statement, experience and equipment, questionnaires, etc.
6. Uncompleted work which in the judgment of the City will prevent or hinder the prompt completion of additional work if awarded.

The successful bidder may not assign his rights and duties under an award without the written consent of the City's Central Purchasing Office. Such consent shall not relieve the assignor of liability in event of default by his assignee.

Delivery date is an important factor to the City and may be required to be a part of each bid. The City of Farmington considers delivery time to be that period elapsing from the time the individual order is placed until that order or work there under is received by the City at the specified delivery location. The delivery date indicated a guaranteed delivery at Farmington, New Mexico. In evaluating any guaranteed date of delivery, past delivery and service performance on previous

City contracts will be considered. The City reserves the right to reject any bid if the guaranteed delivery date of any bidder is indicated unlikely because of the non-availability of stock in the vicinity of Farmington, New Mexico or failure of the bidder to meet guaranteed delivery dates or service performance on any previous City order

The City reserves the right to demand bond or penalty to guarantee delivery by the date indicated. If order is given and the bidder fails to furnish the materials by the guaranteed date, the City reserves the right to cancel the order without liability on its part. All prices are to be F. O. B. Farmington, New Mexico all freight prepaid.

Whenever the Contractor encounters any difficulty which is delaying or threatens to delay timely performance (including actual or potential labor disputes), the Contractor shall immediately give notice thereof in writing to the Central Purchasing office, stating all relevant information with respect thereto. Such notice shall not in any way constitute a basis for an extension of the delivery or performance schedule or be construed as a waiver by the City of any rights or remedies to which it is entitled by law or pursuant to provisions herein. Failure to give such notice, however, may be grounds for denial of any request for an extension of the delivery or performance schedule because of such delay.

All bids shall specify terms and conditions of payment which will be considered as part of, but not control, the award of bid. City review, inspections, and processing procedures ordinarily require thirty (30) days after receipt of invoice, materials or service. Bids which call for payment before 30 days from receipt of invoice, or cash discounts given on such payment, will be considered only if the opinion of the Central Purchasing Office upon the review, inspections and processing procedures can be completed within the specified time.

It is the intention of the City of Farmington to make payment on completed orders within thirty (30) days of receiving invoicing unless unusual circumstances arise. Invoices shall be fully documented as to labor, materials and equipment provided. Orders will be placed by the Central Purchasing Department and must be given a Purchase Order Number to be valid. All Purchase Orders will be paid upon completion of delivery and acceptance.

Payment will not be made by the City until the vendor has been given a Purchase Order Number, has furnished proper invoice, materials, or services, and otherwise complied with City Purchasing procedures, unless this provision is waived by the City.

In case of default of the successful bidder, the City of Farmington may procure the articles from other sources and hold the bidder responsible for any excess cost occasioned thereby.

Except as to any supplies or components which the specifications provide need not be new, all supplies and components to be provided under this contract shall be new (not used or reconditioned, and not of such age or so deteriorated as to impair their usefulness or safety), of current productions and of the most suitable grade for the purpose intended. If at any time during the performance of this contract the Contractor believes that the furnishing of supplies or components which are not new is necessary or desirable, he shall notify the Purchasing Agent immediately, in writing, including the reasons therefore and proposing any consideration which will flow to the City if authorization to use supplies or components is granted.

Bidders shall have no claim against the City for failure to obtain information made available by the City which the Bidder could have remedied through the exercise of due diligence.

The only approved contact shall be with the buyer listed in this bid. Bidders making contact with any other City official or City employee regarding this Bid may be disqualified.

All bids and related documents are subject to the "Inspection of Public Records Act," Chapter 14, Article 2, NMSA 1978.

By law (Section 13-1-191, NMSA, 1978) the City is required to inform Bidders of the following: (1) it is a third-degree felony under New Mexico law to commit the offense of bribery of a public officer or public employee (Section 30-24-1, NMSA, 1978); (2) it is a third-degree felony to commit the offense of demanding or receiving a bribe by a public officer or public employee (Section 30-24-2, NMSA, 1978); (3) it is a fourth-degree felony to commit the offense of soliciting or receiving illegal kickbacks (Section 30-41-1, NMSA, 1978); (4) it is a fourth-degree felony to commit the offense of offering or paying illegal kickbacks (Section 30-41-2, NMSA, 1978).

Any protest by a Bidder must be timely and in conformance with Section 13-1-172, NMSA, 1978 and applicable procurement regulations. The fifteen (15) day protest period for responsive Bidders shall begin on the day following the City's written notification to all responding Bidders. Protests must be written and must include the name and address of the protestor and the number assigned to this Bid by the City. It also must contain a statement of grounds for protest including appropriate supporting exhibits. The timely protest must be delivered to:

Purchasing Officer  
Central Purchasing Division  
City of Farmington  
800 Municipal Drive (Mailing Address) OR  
805 Municipal Drive (Physical Location)  
Farmington, NM 87401-2663

## **ARTICLE 2**

### **SPECIAL CONDITIONS SUPPLIES**

Periodic deliveries will be made only upon authorization of the Purchasing Department and shall be made if, as, and when required and ordered by the City at such intervals as directed by said Purchasing Department.

Deliveries shall be to the location identified in each order within the City of Farmington.

The quantities shown on the bid are estimated quantities only. The City of Farmington reserves the right to purchase more than or less than the quantities shown. In any event, the unit bid prices shall govern.

The Contract will be awarded at the prices bid for a period of time as set forth in the Bid Schedule.

Bidder warrants that all deliveries made under the Contract will be of the type and quality specified; and the City's Purchasing Agent may reject and/or refuse any delivery which falls below the quality specified in the specifications. The City shall not be held to have accepted any delivery until after an inspection of same has been made and an opportunity to exercise its right of rejection has been afforded.

All manufacturers' warranties shall insure to the benefit of the City, and replacement of defective materials shall be made promptly upon request.

Failure by the Contractor to make reasonable delivery as and when requested shall entitle the Purchasing Agent to acquire quantities from alternate sources wherever available, with the right to seek reimbursement from the Contractor for amounts, if any, paid by the City over and above the bid price.

All materials delivered shall be free of any and all liens and shall upon acceptance thereof become the property of the City, free and clear of any material man's, supplier's, or other liens.

Regardless of the award of a Contract hereunder, the City retains the right to purchase the same or similar materials or items from other sources should it be determined that doing so would be in the City's best interest, based on cost and quality considerations; however, in such event, the Contractor will be given the first option of meeting or rejecting the proposed alternate sources' lower price or higher quality.

Acceptance by the City of any delivery shall not relieve the Contractor of any guarantee or warranty, express or implied, nor shall it be considered an acceptance of material not in accordance with the Specification thereby waiving the City's right to request replacement of defective material.

### **ARTICLE 3**

#### **SPECIAL CONDITIONS EQUIPMENT**

Equipment other than current year models will not be considered as responsive to the Specifications. It is the intention of the City to purchase based on the Specifications, a standard production model. In addition to the equipment set out in the Specifications, the units shall include all equipment set out in the manufacturer's literature as standard equipment. They shall include all exterior moldings, name plates, medallions, series identifications, and chrome of every description that is usual for standard stock models of this series.

Compliance with or variations from the specifications must be noted as to each item on the Specification Sheet. This requirement must be met even though the Purchasing Agent may alter the specifications in the form of an addendum to accommodate variances. A request for a change in the specifications to accommodate a variation must be called to the attention of the Purchasing Agent at least 24 hours before the bid opening date.

All requests for such changes will be considered and the merits weighed. Only those changes in specifications deemed to be in the best interest of the City will be made. In the event of a change in specifications, an addendum will be supplied to bidders.

The unit shall be completely assembled, lubricated, adjusted, with all equipment including standard and extra equipment installed and the unit made ready for operation.

Bidders must fill in all information asked for in the blanks provided under each item. Failure to completely describe the equipment may result in rejection of the Bid. The City reserves the right to evaluate variations from the specifications and its judgment in such matters shall be conclusive.

The Bidder shall attach hereto, as part of this Bid, regularly printed literature published by the factory, which sets forth and describes the equipment he proposes to furnish.

Manufacturer's standard warranty for parts and labor must be included in this Bid.

For bids on more than one unit of equipment, the City reserves the right to make multiple purchases from more than one bidder if it deems such action to be in its best interest.

### **ARTICLE 4**

#### **SPECIAL CONDITIONS VEHICLES**

Vehicles other than current year models will not be considered as responsive to the specifications. It is the intention of the City

to purchase based on the specifications, a standard production model. In addition to the equipment set out in the specifications, the units shall include all equipment set out in the manufacturer's literature as standard equipment. They shall include all exterior molding, name plates, medallions, series identifications, and chrome of every description that is usual for standard stock models of this series.

Compliance with or variations from the specifications must be noted as to each item on the Specification Sheet. This requirement must be met even though Central Purchasing may alter the specifications in the form of an addendum to accommodate variances. A request for change in the specifications to accommodate a variation must be called to the attention of the Central Purchasing Department at least 72 hours before the bid opening date.

All requests for such changes will be considered and the merits weighed. Only those changes in specifications deemed to be in the best interest of the City will be made. In the event of a change in specifications, an addendum will be supplied to bidders.

The units shall be completely assembled, lubricated, adjusted, with all equipment installed and the units made ready for continuous operation with a minimum of five (5) gallons of fuel.

The successful Bidder shall furnish a Manufacturer's Statement of Origin and owner's manual with delivery of each unit.

For bids on more than one unit of equipment, the City reserves the right to make multiple purchases from more than one Bidder if it deems such action to be in its best interest.

All equipment covered by this Bid shall be delivered from point of assembly to the City of Farmington area by railway freight or conveyed by truck. Exceptions to this must be received by the Central Purchasing Department in writing in this Bid form.

### **ARTICLE 5**

#### **SPECIFICATIONS**

These specifications are based upon design and performance criteria which have been developed by the City of Farmington as a result of extensive research and careful analysis of the data. Subsequently, these specifications reflect the only type of equipment, material(s) or supplies that is/are acceptable at this time. Therefore, exceptions may be accepted if they are minor, equal, or superior to that which is specified, and provided that they are listed and fully explained on a separate page entitled, "Exceptions to Specifications". The exceptions shall refer to the specification page and paragraph number. The Purchaser shall determine which (if any) exceptions are acceptable and this determination shall be final.

### **ARTICLE 6**

#### **DEFINITIONS**

**Bid** - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the material/items to be procured or the Work to be performed.

**Bidder** - Any person, firm, or corporation submitting a Bid for the material/items or Work.

**Calendar Day** - A calendar day of twenty-four (24) hours measured from midnight to the next midnight.

**City** - The City of Farmington, New Mexico.

**Contract Price** - The total monies payable to Bidder or the price established for each of the payment items listed in the Bid Schedule as the context indicates.

**Dispute** - Lack of agreement between any parties that have any obligations, duties or responsibilities under the terms of the Bid.

**Proposal** - The offer of a Bidder, on the prescribed form, to provide the material/items or perform the Work at the prices on the Bid Schedule.

**State** - The State of New Mexico.

CITY OF FARMINGTON, NEW MEXICO  
NOTICE TO BIDDERS  
Transformers, Non-VMI, 18 Month Contract, BID #14-100427  
Opening Date: October 15, 2013 @ 2:00 P.M.

Bid documents may be retrieved by accessing the Purchasing page of the City of Farmington website, [www.fmtn.org](http://www.fmtn.org), by calling (505) 599-1373 or visiting the Central Purchasing Office at 805 Municipal Drive, Farmington, New Mexico.

The above document has been issued by the City of Farmington for a competitive solicitation. Interested parties may obtain documents as described above.

Publication Date: September 29, 2013



## **INSTRUCTIONS TO BIDDERS & SPECIFICATIONS**

All items quoted on the bid schedule **must** be pre-approved by the Farmington Electric Utility System's (FEUS) Standards Committee **prior** to this bid. The FEUS Standards Committee meets quarterly, on the second Thursday of the month.

Manufacturers or representative shall submit a written request for approval to the FEUS Standards Committee, Attention: John Armenta, 101 N. Browning Parkway, Farmington, NM 87401. A product sample or presentation may be required by the FEUS Standard's Committee, depending on the complexity of the equipment.

The FEUS Standards Committee has established a list of eight (8) major utilities they contact to ascertain if product has received their approval. The major utilities must have used the item for a minimum of two (2) years, before the FEUS will consider approval. A minimum of three (3) of the major utilities contacted must affirm approval before the FEUS Standards Committee will approve placing the item on their pre-approved list. Any negative response from the major utilities could result in disapproval of the product.

### **Resident Veterans Preference**

In accordance with Sections 13-1-21 and 13-1-22 NMSA 1978 and effective July 1, 2012, a resident veteran's business preference has been implemented. The Taxation and Revenue Department (TRD) will be issuing a three (3) year certificate to each qualified business. Businesses are required to reapply to TRD every three (3) years with the proper documentation to renew their certificate.

Attached is one form to be completed and returned with your bid if your firm will qualify for this preference. The veteran's preference will not be extended without the certificate from TRD **and** the attached Resident Veterans Preference Certification.

This preference is separate from the in-state preference and is not cumulative with that preference.

## Resident Veterans Preference Certification

\_\_\_\_\_ (NAME OF CONTRACTOR) hereby certifies the following in regard to application of the resident veterans' preference to this procurement:

**Please check one box only**

- I declare under penalty of perjury that my business prior year revenue starting January 1 ending December 31 is less than \$1M allowing me the 10% preference discount on this solicitation. I understand that knowingly giving false or misleading information about this fact constitutes a crime.
- I declare under penalty of perjury that my business prior year revenue starting January 1 ending December 31 is more than \$1M but less than \$5M allowing me the 8% preference discount on this bid or proposal. I understand that knowingly giving false or misleading information about this fact constitutes a crime.
- I declare under penalty of perjury that my business prior year revenue starting January 1 ending December 31 is more than \$5M allowing me the 7% preference discount on this bid or proposal. I understand that knowingly giving false or misleading information about this fact constitutes a crime.

"I agree to submit a report, or reports, to the State Purchasing Division of the General Services Department declaring under penalty of perjury that during the last calendar year starting January 1 and ending on December 31, the following to be true and accurate:

"In conjunction with this procurement and the requirements of this business' application for a Resident Veteran Business Preference/Resident Veteran Contractor Preference under Sections 13-1-21 or 13-1-22 NMSA 1978, when awarded a contract which was on the basis of having such veterans preference, I agree to report to the State Purchasing Division of the General Services Department the awarded amount involved. I will indicate in the report the award amount as a purchase from a public body or as a public works contract from a public body as the case may be.

"I understand that knowingly giving false or misleading information on this report constitutes a crime."

I declare under penalty of perjury that this statement is true to the best of my knowledge. I understand that giving false or misleading statements about material fact regarding this matter constitutes a crime.

\_\_\_\_\_  
(Signature of Business Representative)\*      (Date)

\*Must be an authorized signatory for the Business.

The representations made in checking the boxes constitutes a material representation by the business that is subject to protest and may result in denial of an award or unaward of the procurement involved if the statements are proven to be incorrect.

INSTRUCTIONS TO BIDDERS  
18 MONTH CONTRACT FOR TRANSFORMERS  
BID# 14-100427

**1. REQUIREMENTS**

- A. City of Farmington (City) is requesting bids from qualified suppliers for an 18 month contract to provide transformers on an as needed basis to stock the City of Farmington's Electric Warehouse inventory.
- B. All transformers quoted must meet or exceed City's specifications.
- C. Prices quoted on non-approved transformer manufacturers will be considered non-responsive and the bid will be rejected by the City.

**2. TERM OF BID**

- A. The term of the Agreement shall be in effect for one year, subject to earlier termination or extension pursuant to the Bid provisions;
- B. The City reserves the right to extend this bid for an additional 6 month term unless notice is given by either party to the other by U.S. Certified Mail of its intent not to renew at least thirty (30) days prior to the expiration of the initial one-year term.
- C. City does not guarantee a minimum amount of transformers to be purchased during the term of the contract. A purchase order contract will be entered into between the City and the successful Bidder.

**3. TERMINATION**

- A. Termination for Cause - If, through any cause, Bidder fails to fulfill in a timely and proper manner Bidder's obligations under this bid or if Bidder violates any of the covenants, agreements, or stipulations of the Agreement, the City may order Bidder by written notice to stop the services or any portion of them until the cause for such order has been eliminated. If Bidder fails to correct the cause within a time period specified in this notice, which time period shall be reasonable under the circumstances, the City Manager shall have the right to immediately terminate the Agreement. The Bidder shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder.
  - i. Notwithstanding the above, awarded Bidder shall not be relieved of liability to the City for damages sustained by the virtue of any breach of this Agreement by Bidder, and the City may withhold any payments to the Bidder for the purposes of set-off until such time as the exact amount of damages due the City from the Bidder is determined.

- B. Termination for Convenience - The City Manager may terminate the Agreement at any time by giving at least thirty (30) days notice in writing to the Bidder. If this Agreement is terminated due to the fault of Bidder, Section A above, relative to termination shall apply and no further compensation or reimbursement to Bidder shall be due. If terminated for any other reason, City will reimburse Bidder for all documented out-of-pocket expenses incurred in connection with this Contract.

#### 4. QUANTITIES

- A. Attached is a Bid Schedule with a list of transformers that may be purchased during the term of the contract. The City does not guarantee a minimum quantity to be purchased during the term of the contract. Quantities are estimates only, and the City of Farmington reserves the right to:
  - i. Not order some of the items
  - ii. Order more or less than the quantities listed
  - iii. Add as add-ons, or delete transformers

#### 5. PRICE REDETERMINATION

- A. Pricing which is offered pursuant to this solicitation shall be firm-fixed for six (6) months from the date the contract is executed.
- B. The awarded Bidder's selling price is subject to increase or decrease after the initial six month period, for each of the two (2) remaining six month periods of the contract, upon approval of the Bidder's written request to the Purchasing Office no later than 30 days prior to the upcoming six (6) month period.
  - i. The base selling price for each transformer shall be set according to the individual transformer pricing submitted for Bid Schedule #14-100427 as of the October 2013 contract execution date. October 2013 is hereafter called the reference base period.
  - ii. The selling price shall be adjusted in accordance with the percent changes of the PPI index described below.
    - (1) The Producer Price Index for Machinery and equipment, Power and Distribution Transformers, excluding parts., commodity code 117409, not seasonally adjusted (currently Series ID #WPU117409), as it as it appears on the U.S. Department of Labor, Bureau of Labor Statistics internet website, <http://data.bls.gov/cgi-bin/srgate>; this index shall be referred to as the transformer index.
  - iii. The selling price shall be adjusted semi-annually for each subsequent 6 month period, based upon the percent changes (whether up or down) in the transformer index, between the reference base period October 2013 and the applicable latest version (March or September) of the most

recent year. All calculations for the transformer index shall be based upon the latest versions of the Producer Price Index data published as of April 24 and October 23 each year.

- iv. The percent change in the transformer index shall be derived in the following manner:
  - (1) Divide the current value of the transformer index by its value for the reference base period. The result shall be referred to as the percent change.
  - (2) Multiply the percent change by the original base price; this final figure shall be the adjusted selling price for the current adjustment period.
  
- v. If PPI data are not available for any price adjustment period, one of the following options shall be mutually agreed upon;
  - (1) The PPI data for the immediately preceding 3 months, whichever is the most recent month which has published data, shall be used as the basis for adjustment of the transformer index, or
  - (2) The next higher-level series shall be used as the basis for adjustment, or
  - (3) A similar industry type series shall be mutually agreed upon, or
  - (4) An alternate price adjustment method may be negotiated.

C. All price adjustment requests are subject to the following conditions:

- i. Prices after adjustment shall remain firm for the six (6) month period of the price adjustment agreement.
- ii. The City reserves the right to cancel an agreement resulting from this request and solicit a new contract if the adjusted price is above the current open market price for the same items. Cancellation of the contract shall not affect any outstanding orders.
- iii. All revisions shall become effective after they are received, in writing, and accepted by the City. City reserves the right to accept or reject the price adjustment.
- iv. Bidder shall be limited to one (1) price adjustment request per six (6) month period following the initial six (6) months of the contract.
- v. Bidder shall provide written notice to the City of any requested price changes at least thirty (30) days prior to those prices taking effect.

## **6. DELIVERIES**

- a. All orders to be delivered within ninety (90) days after issuance of an order. Any deviation from the delivery schedule shall be approved by the City designated representative.
- b. Shipping documentation shall be sent via fax from the manufacturer to the City's Electric Warehouse at (505) 599-8413 with the actual departure date from the factory and the scheduled delivery date.

## **7. AWARD**

- a. Transformer bids are evaluated based on the total owning cost, "TOC". The TOC is the purchase price plus the value of losses (electricity lost during the voltage reduction) over the 30-year lifespan of the transformer. Reference "Exhibit B".

## **8. PROCUREMENT UNDER EXISTING CONTRACTS**

- a. Under the terms and conditions of this Bid all local area public bodies allowed by law may procure transformers under this Bid as described herein. The terms and conditions of this Bid shall form a part of each order issued herein.
- b. All orders issued herein will bear both a purchase order number and Bid number. It is understood that no guarantee is made or implied, by either the City or the user that any definite quantity of transformers will be issued under this Bid. The supplier is required to accept any orders and furnish the transformers in accordance with the articles contained herein for the quantity of each order issued.

## **9. REQUESTED ORDERS**

- a. The City reserves the right to surpass this Bid and place an order with another vendor if successful Bidder is unable to fill an order as requested.

## **10. PAYMENT**

- a. For payment due for transformers received, the Bidder shall submit invoices after each shipment. Invoice amounts shall be based on the total quantity of transformers delivered.
- b. The Bidder shall provide an invoice which provides detailed billing for transformers provided no later than ninety (90) calendar days after the date transformers have been delivered. Invoices received after this time has elapsed may be considered null and void. The invoice shall reference the purchase order number assigned to this agreement.

- c. The invoice shall be addressed as follows:
  - City of Farmington, Accounts Payable
  - 800 Municipal Drive
  - Farmington, New Mexico 87401
  
- d. Payments shall be paid to Bidder within 30 days contingent upon the following:
  - i. Application of payment discounts, if considered to be in the best interest of the City;
  - ii. From date of receipt by the City of properly documented invoices for payment as determined by the budgetary and fiscal guidelines of the City;
  - iii. On the condition that the Bidder has accomplished the Services to the satisfaction of the City. Any taxes (specifically including the New Mexico Gross Receipts tax), licenses, or other governmental fees and charges, are the responsibility of the Bidder.

**(Category 1)**

ohtrans1

SPECIFICATION \_\_\_\_\_ REVISION NO: 40 \_\_\_\_\_

NAME OF MATERIAL OR DEVICE: Single-Phase Conventional and Completely Self-Protected (CSP)  
Pole Mounted Transformers

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REVISION DATE: September 25, 2013 APPROVED: /s/Luwil Aligarbes  
Engineer

DATE: June 17, 1993 APPROVED BY STANDARDS COMMITTEE

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1. SCOPE:

1.1 This specification describes the electrical and mechanical characteristics of single-phase, conventional and CSP pole-mounted transformers for the City of Farmington.

Please do not submit bids for transformers not meeting specifications as they will not be considered.

2. ORDERING INSTRUCTIONS:

2.1 All orders shall include the following information:

2.1.1 KVA rating

2.1.2 Type: Conventional or CSP

2.1.3 High- and Low-voltage ratings

3. GENERAL:

3.1 This specification is written for single-phase, 60 hertz, 65° C temperature rise, mineral-oil filled, conventional and CSP overhead, pole-mounted, distribution transformers, rated 100 KVA and below.

3.2 All characteristics, tests, definitions, terminology, and voltage designations, except as otherwise specified herein, shall be in accordance with applicable provisions of the latest edition of ANSI C57.12.20 and applicable ANSI C57 Series specifications, including C57.12.00-1980, C57.12.90-1980, and C57.12.80-1978 (or latest editions).

4. ELECTRICAL CHARACTERISTICS:

4.1 KVA High- and Low-Voltage Ratings

Self-cooled 65° C KVA ratings, and voltage ratings and taps shall be in accordance with Table I below:



TABLE I  
RATINGS AND TAPS

CSP

<u>PRIMARY-VOLTAGE</u> <u>RATING</u>	<u>HIGH-VOLTAGE TAPS</u>		<u>KV</u> <u>BIL</u>	<u>SECONDARY-VOLTAGE</u>	
	<u>ABOVE</u>	<u>BELOW</u>		<u>RATING</u>	<u>KVA SIZES</u>
13800 GrdY/7970	None	None	95	120/240	5,10,15,25,37.5,50,75,100
<u>CONVENTIONAL</u>					
7970/13800Y	Two 2-1/2%	Two 2-1/2%	95	120/240	10,15,25,37.5,50,75,100
7970/13800Y	Two 2-1/2%	Two 2-1/2%	95	240/480	10,15,25,37.5,50,75,100
7970/13800Y	Two 2-1/2%	Two 2-1/2%	95	277	10,15,25,37.5,50,75,100

4.2 Short-Circuit Capability:

- 4.2.1 Mechanical short-circuit capability shall be demonstrated by design compliance with ANSI C57.12.90-1980 (or the latest edition).
- 4.2.2 Thermal capability shall be demonstrated by design compliance with ANSI C57.12.00 1980 (or latest edition).

4.3 Windings:

All 25KVA & below transformers shall have interlaced windings.

5. BUSHINGS AND TERMINALS:

5.1 Electrical Characteristics:

Electrical characteristics of high- and low-voltage bushings shall be in accordance with Section 6 of ANSI C57.12.20-1981 (or the latest edition).

5.2 High-Voltage Bushings:

Location and arrangement of the two high-voltage bushings for conventional units; and the single high-voltage bushing for CSP units shall be in accordance with the designated Figure and Table from ANSI C57.12.20-1981 (or the latest edition). A wildlife guard shall be provided for all bushings. A Salisbury #21183 bushing cover kit with Stinger cover bird guard shall be furnished with each transformer.

5.3 Low-Voltage Bushings:

- 5.3.1 Low-voltage bushings shall be sidewall type, singly mounted.
- 5.3.2 Number and location shall conform to the designated Figure and Table from ANSI C57.12.20-1981 (or the latest edition).

5.4 High-Voltage Terminals:

High-voltage terminals shall be universal solderless type connections accommodating No. 8 AWG solid to No. 2 AWG stranded in accordance with ANSI C57.12.20-1981 (or the latest edition).

5.5 Low-Voltage Terminals:

- 5.5.1 Low-voltage terminal sizes shall comply with ANSI C57.12.20-1981 (or the latest edition). Terminals shall be arranged for vertical takeoff.
- 5.5.2 Polarity and connection of terminals shall comply with ANSI C57.12.20-1981 (or the latest edition).

TABLE II  
Terminals and Bushings  
CSP

<u>PRIMARY VOLTAGE RATING</u>	<u>PRIMARY AND SECONDARY BUSHING FIGURE</u>	<u>SECONDARY VOLTAGE RATING</u>	<u>TERMINAL CONNECTIONS FIGURE S19(a)</u>
13800GrdY7970	7	120/240	Upper
<u>CONVENTIONAL</u>			
7970/13800Y	9	120/240	Upper
7970/13800Y	9	240/480	Upper
7970/13800Y	9	277	Lower

Low-Voltage Terminals:

- 5.5.3 On all transformers with a low-voltage rating of 120/240 and 240/480, the X2 terminal shall be bussed to the tank by a removable copper strap. There shall be no internal neutral to tank connection on the low-voltage winding. The copper strap shall be capable of withstanding a fault of the magnitude and duration defined in ANSI C57.12.00-1980 (or the latest edition).

6. PROTECTIVE DEVICES:

CSP transformers shall be supplied with the following protective devices:

- 6.1 CSP Units Only shall be supplied with a low-voltage winding (secondary) gang-operated breaker. This breaker shall be externally operable by hand or standard hotstick and shall have a positive latch when being closed or opened. It shall be furnished without an overload signal light. However, it shall have an emergency overload control device bypassing the automatic scheme.

6.2 Lightning Arrester - CSP Units:

- 6.2.1 Lightning arrester shall be direct connectible with a "ground-lead isolator" that will visibly disconnect a short-circuited arrester from ground potential. Tangent

connectors shall be provided for 600 volt insulated jumper between the high-voltage bushing and the lightning arrester. Incoming line is to be terminated at the arrester. A wildlife guard must be provided for all arresters. The lightning arrester bracket to transformer bracket, single mounting bolt must be of insulating material or coated with insulating material.

- 6.2.2 Lightning arresters shall be heavy duty, metal oxide or silicon carbide distribution class. Approved manufacturers and catalog numbers are shown in Table III.

TABLE III

TRANSFORMER - HIGH-VOLTAGE RATING 10kV 8.4 MOV

<u>MANUFACTURER</u>	<u>13800 GrdY/7970</u>
Joslyn (MacLean)	ZHP010-0N00100
Ohio Brass	213709-7224
Cooper	UHG1005-0D1C-1B1A

- 6.3 Protective Link - CSP Units:

A replaceable expulsion class, weak-link fuse shall be installed in series with the primary winding.

7. ACCESSORY EQUIPMENT:

- 7.1 Tank Grounding:

Each unit shall have a tank grounding provision that will accommodate No. 8 AWG to No. 2 AWG conductor.

- 7.2 Pressure Relief Device:

Each unit shall have an automatic pressure relief valve in accordance with ANSI C57.12.20-1981 (or the latest edition) properly torqued into the tank. The following are approved:

Qualitrol	202 Series
Tomco/Beta	1712K-3

The Qualitrol 202-031-01 is preferred. ABB Power self-venting cover is an acceptable alternative.

- 7.3 Nameplate:

7.3.1 Each unit shall include a fully legible nameplate that is permanently attached to the tank or mounting bracket. The nameplate shall be readable and visible when the transformer is pole mounted and all cables and wires are fully installed. The nameplate shall conform to ANSI C57.12.00-1980 (or the latest edition), Section 5.12, nameplate A.

- 7.3.2 Nameplate shall indicate that the transformer oil contained less than one (1)

ppm PCB at time of manufacture.

7.3.3 Nameplate shall have total weight, gallon, size, all voltage information, polarity and other relevant information normally expected per ANSI Standard C57.12.00.

7.4 Brackets:

Pole mounted brackets shall be:

5, 10, 15, 25, 37.5 50 KVA sizes-ANSI Type A  
75, 100 KVA sizes - ANSI Type B

7.5 No Taps Indication:

Units without taps shall be clearly and permanently marked "NT" in one (1) inch or larger letters on the side of the tank.

8. OIL PRESERVATION:

All transformers furnished under this specification shall be of a sealed-tank construction in which the gas plus oil volume remains constant. The transformer will remain effectively sealed for all temperatures to plus 105° C top oil.

9. TANK AND COVER:

9.1 The tank shall be of sufficient strength to withstand a pressure of 7 psi gauge, without permanent distortion.

9.2 For conventional transformers, tank and cover assemblies shall be capable of safely passing a test where an 8000 amp, one (1) inch arc is cleared by a cutout at rated primary voltage.

9.3 For CSP units, the tank and cover assemblies shall be capable of safely passing a test where a protective link interrupts a fault at the link symmetrical current rating at rated primary voltage.

9.4 All exterior surfaces shall be painted using a system of coordinated and thoroughly tested materials and application techniques that will insure long life in outdoor exposure.

9.5 The finish shall be weather-resistant, "sky gray" ANSI No.70, having an arbitrarily measured minimum thickness of 3.5 mils.

10. PRODUCTION TESTS:

10.1 The manufacturer shall perform all routine tests as defined in ANSI C57.12.00-1980 (or the latest edition).

10.2 The manufacturer shall provide the following certified data by transformer serial number for each transformer shipped. Data shall be supplied for each production run.

10.2.1 Excitation loss, watts

10.2.2 Impedance, % IZ

10.2.3 Total loss, watts

10.3 No individual transformer shall be shipped with losses that exceed quoted losses by more than the tolerances in ANSI C57.12.00-1980 (or the latest edition), Table 16, Line 2, without written approval of the City of Farmington's Electrical Engineering Department.

11. EVALUATION:

11.1 Bid evaluation shall include estimated cost of KWH losses, price, delivery, performance, and adherence to this specification.

12. DATA TO BE SUBMITTED WITH PROPOSAL:

12.1 Two (2) copies of outline drawings, including overall height, overall circumference, and diameter (including support brackets and radiator fins), clearances, and separation dimensions for high- and low-voltage bushings, and all appurtenances.

12.2 Weights of tank, oil, transformer total and shipping weight.

12.3 Test and Performance Data:

12.3.1 Exciting current at 100% rated voltage.

12.3.2 Average excitation loss in accordance with ANSI C57.12.909-1980 (or the latest edition), Section 9, Paragraph 9.3 and Table I6, Line 3.

12.3.3 Average load-loss in secondary breaker for CSP units only.

12.3.4 Average load-loss in accordance with ANSI C57.12.00-1980 (or the latest edition), Paragraph 9.3 and Table I6, Line 3.

12.3.5 Percent impedance volts, of the low-voltage winding with respect to the high-voltage winding at rated self cooled KVA.

12.3.6 CSP protective link interrupting rating.

12.3.7 Accuracy of production test loss measurements ( $\pm\%$ ) in accordance with National Bureau of Standards TN 1204.

12.4 All information and drawings shall be legible and assembled in a coherent format with due attention to 14.1 below.

12.5 Manufacturer shall supply transformers with oil that contains less than 1 ppm PCB.

12.6 Statement from manufacturer that transformers have interlaced windings if 10, 15, and 25 KVA sizes are being bid.

12.7 Amorphous core shall not be used in transformers over 25kVA.

13. SHIPPING:

The manufacturer shall provide adequate and necessary skids, crating, and packing for

transformer to eliminate damage from reasonable handling while in transit to point of delivery. Shipment shall be by open, side-loaded, flatbed truck.

14. EXCEPTIONS AND CHANGES:

- 14.1 The manufacturer must state specifically, in writing with the bid, any exceptions made to the specification.
- 14.2 The supplier may not alter or change the design of the transformer submitted to the Farmington Electric Utility System under this specification.

15. LOSS EVALUATION FORMULA:

15.1 Present Value Formula:

$$pv = \frac{[1 - (\frac{1}{(1+i)^n})]}{i}$$

$i$  = [Expected rate-of-return on investment, inflation, fluctuation of the cost of power, this is relative to inflation. (Multiple of annual cost of losses required to pay for losses for entire time period)] = 2.5%

$n$  = [Number of time periods] = 30 yrs

15.2 No Load Loss Formula: (Core Losses)

$$NLL = PV(EC) \left( \frac{HRS}{YR} \right) \frac{\$}{CORE\ WATT}$$

EC = Energy cost = \$0.0422 \$/KW

$$\frac{HRS}{YR} = (365)(24) = 8760$$

15.3 Load Loss Formula: (Winding Losses)

$$LL = PV(EC)(8760)(LF)^2 \frac{\$}{WINDING\ WATT}$$

LF = Load Factor (Average) = 60%

16. TRANSFORMER LOSS EVALUATION:

- 16.1 All transformers bid for the City of Farmington are subject to evaluation in accordance with this section.
- 16.2 Upon completion of a purchase order or, at the option of the City of Farmington, upon shipment, the manufacturer shall compensate the City of Farmington for the loss variance as follows:

For Conventional and CSP Units:

16.2.1 Cost of Losses Formula: (COL)

$$\text{Cost of Losses} = (QNLL)(NLL) + (QLL)(LL)$$

QNLL = Quoted No Load Loss  
QLL = Quoted Load Loss

16.2.2 TC (Total Cost) = Purchase Price + present value of cost of losses

PUP = Purchase Unit Price

Total Cost = (PUP)+[(QNLL)(NLL)+(QLL)(LL)]

- 16.3 The compensation defined in 16.2 shall be applied to each KVA rating of distribution transformers.
- 16.4 No individual transformer shall be shipped which exceeds the quoted losses by the tolerances in ANSI C57.12.00-1980 (or the latest edition), Table 16 without written consent from the City of Farmington Electrical Engineering Department.
- 16.5 City of Farmington will not compensate the manufacturer in the event of a negative value for LC, above.
- 16.6 All compensation shall be based on the average loss tolerances only in accordance with ANSI C57.12.00-1980, Section 9, Paragraph 9.3 and Table 16, Line 3.
- 16.7 Losses may be measured by the City of Farmington at its facilities for verification of quoted values.

17. APPROVED TRANSFORMER MANUFACTURERS:

- 17.1 All transformers bid must be supplied by manufacturers as approved by the Farmington Electric Utility Standards Committee (FEUSC).

Manufacturers must be approved by three (3) of five (5) major Southwest Utilities and by the FEUSC. Utilities are contacted upon request for input to update our approved Manufacturers' list. Sample transformers (one or two), if requested, must be provided for a tear down as part of the approval process by the Standards Committee. Manufacturers may contact FEUSC Electrical Engineer at (505) 599-8303 for details.

- 17.2 The list of approved manufacturers for pole mounted transformers is as follows:

Power Partners  
Kuhlman Electric Company  
Cooper Industries (Waukesha Plant)  
Central Moloney Transformer Division  
Howard Industries  
ERMCO  
GE

**(Category 2 Items A-B)**

(sngphsdf.spc)\_\_\_\_\_

SPECIFICATION

REVISION 30

NAME OF MATERIAL OR DEVICE: SINGLE-PHASE, DEAD-FRONT, LOOP-FEED PADMOUNTED TRANSFORMER

REVISION DATE: July 10, 2009

APPROVED: /s/ Luvil Aligarbes

Engineer

DATE: July 24, 1990

APPROVED BY STANDARDS COMMITTEE

1. GENERAL:

- 1.1 This specification is written for single-phase, 60 hertz, 65° C temperature rise, mineral-oil filled, self-cooled, padmounted, single-compartment, distribution transformers, rated 167 KVA and below, for use with separable insulated, high-voltage connectors.
- 1.2 All characteristics, definitions, terminology, and voltage designations, except as otherwise specified herein, shall be in accordance with applicable provisions of the latest editions of ANSI C57.12.25 or its successors and applicable ANSI C57 series specifications including C57.12.00-1980, C57.12.90-1980, C57.12.80-1978, C57.12.28-1988 (or the latest editions).

2. RATING:

- 2.1
 

Number of phases	One
Coolant	Oil
Frequency	60 Hertz
Self-Cooled Rating	65° C
High Voltage	13800 Grd. Y/7970
Low Voltage	240/120
- 2.2 BIL levels shall be:
  - 2.2.1 High Voltage 95kV
  - 2.2.2 Low Voltage 30kV
- 2.3 Short-Circuit Capability:
  - 2.3.1 Mechanical short-circuit capability shall be demonstrated by design compliance with ANSI C57.12.90-1980 (or the latest edition).
  - 2.3.2 Thermal capability shall be demonstrated by design compliance with ANSI C57.12-00-1980 (or the latest edition).

3. CONSTRUCTION:

- 3.1 Transformers shall be designed to protect against accidental contact or energized parts, discourage unauthorized access and protect against weather.
- 3.2 All 25 KVA & below transformers shall have interlaced windings.



- 3.3 The padmounted transformers shall consist of the transformer tank, and high- and low-voltage cable terminating compartment. The transformer tank and compartments shall be assembled as a rain-tight, waterproof, and tamper resistant integral unit suitable for mounting on a flat surface.
- 3.4 There shall be no exposed screws, bolts, or other fastening or hinging devices (other than the pentahead specified in 8) which are externally removable. There shall be no opening through which foreign objects such as sticks or wires might be inserted to contact energized parts. Suitable means for padlocking the compartment door shall be provided.
- 3.5 Construction of the unit shall be such that it can be lifted, skidded, and slid into place on the mounting pad without disturbing the entrance cables.

4. BOTTOM PROTECTION:

- 4.1 The transformer tank base shall be raised above the pad to protect the bottom finish during installation and to minimize corrosion due to moisture accumulation. The base shall be cross braced to permit rolling in two directions.
- 4.2 All external surfaces of ferrous material used in the construction of the assembly shall have undercoating over the regular finish, applied to the bottoms of the components and extending up the side to a point one-inch (1") above the bottom of their bases.

5. PROTECTIVE COATING:

- 5.1 All coated surfaces, both exterior and interior, shall be painted using a system which conforms to the requirements of ANSI C57.12.28-1988 (or the latest edition).
- 5.2 The finish shall be weather-resistant, green color Munsell No. 7.0 GY 3.29/1.5.
- 5.3 All external surfaces shall be constructed of steel, 13 USS gauge or thicker.
- 5.4 The transformer and compartment hoods shall be crowned to insure water run-off.

6. HIGH- AND LOW-VOLTAGE COMPARTMENT:

- 6.1 General design shall conform to Figure 1 of ANSI C57.12.25-1981 (or the latest edition). Opening the access hood shall permit access to both the high- and low-voltage terminations.
- 6.2 The edges of the access hood shall be formed to provide a close fitting mating surface, with internal insertion-prevention lip that will be shaped to resist entry or prying by screwdrivers, wrecking bars, tire irons, single-socket lug wrenches, or other readily accessible tools.
- 6.3 Hinges and hinge-pins shall be passivated ANSI Type 304 stainless steel or equivalent corrosion-resistant metal. Hinges shall be so designed as to prevent removal of pin.
- 6.4 The padlocking provision shall be so designed and located as to resist prying or breaking off by screwdrivers, wrecking bars, tire irons, single-socket lug wrenches, or other readily accessible tools and to inhibit removal of the pad-lock with a bolt cutting device or hacksaw.
- 6.5 In addition to the regular locking provisions above, the access hood shall be secured by

a captive, recessed pentahead bolt as depicted in Figure 3, ANSI C57.12.25-1981 (or the latest edition). Bolts and associated hardware must be rust and corrosion resistant and the design shall minimize the possibility of misalignment and cross-threading. The design must be such that wire entry through the bolt hole into the compartment is prohibited when the bolt is removed. The non-rotating cap shall be permanently attached.

- 6.6 The captive pentahead bolt shall be coordinated with the padlock to prevent insertion of the padlock into the hasp until the bolt is completely threaded.
- 6.7 The pentahead assembly shall be designed to withstand, without damage, the access hood dropping from a 90° open position.
- 6.8 The hood shall open in such a way that exposed working space is obtained on the sides and front of the compartment.
- 6.9 The bottom edge of the transformer shall provide for flush mounting on a flat, rigid surface to prevent wire entry into the compartment.

7. CERTIFICATION:

The design must meet the requirements of ANSI C57.12.28-1988 (or the latest edition).

8. BUSHINGS AND TERMINALS:

- 8.1 Number, location, and arrangement of bushings and terminals shall comply with Figure 1 of ANSI C57.12.25-1981 (or the latest edition).
- 8.2 Two (2) high-voltage, bolted-type bushing inserts and wells (flower pots) shall be supplied. Bushings and wells shall conform to ANSI/IEE Std. 386-1977 (or latest edition), Figure I.
- 8.3 The low-voltage portion of the compartment shall contain three (3) stud-mounted transformer connectors, Aluminum Alloy, supplied with radial-tipped set screws. Six (6) ports, slip on, insulated stud-mounted transformer connectors shall be required for all phases and six (6) ports, slip on, non-insulated stud-mounted connector for neutral. Dual-rated connectors for Aluminum or Copper conductors, and fully tested to ANSI C119.4 for class "A" connectors. Connectors to accommodate #6 up to 350MCM wire range.

Approved stud-mounted transformer connectors

- 1) 5/8" Transformer Secondary Bushing, CMC Connectors,  
Catalog No. RLSS350 – 6I (Insulated)  
Catalog No. NSSM350 – 6I (Non-insulated)
- 2) 1" Transformer Secondary Bushing, CMC Connectors,  
Catalog No. RLSS500-6I (Insulated)  
Catalog No. NSSM500-6I (Non-insulated)

- 8.4 The terminal marked "X2" shall be neutral and shall have a removable copper ground strap bussed to the transformer tank. The connection between the strap and the X2 stud-mounted connector shall be done in a manner that there will still remain five unused ports as described in 10.3.
- 8.5 The "HO" transformer lead shall be internally connected to the transformer tank ground pad, and there shall be no internal connection between "HO" and "X2".

8.6 Transformer design shall allow external replacement of the high-voltage bushing wells and low-voltage bushings with common hand tools and oil handling equipment. Wire leads shall have sufficient length and flexibility as to accomplish the replacement. Bushing well or low-voltage insulators that are permanently fastened to the tank with cement, welds, or epoxy preventing their replacement are totally unacceptable.

9. OVERCURRENT PROTECTION:

- 9.1 Transformers shall be furnished with an expulsion fuse assembly.
- 9.2 Expulsion fuse assembly shall be an RTE Loadbreak Bay-O-Net. A drip plate shall be positioned to prevent oil from contacting any high-voltage connector or cable. The fuse and canister assembly shall be located in the upper left quadrant of the high-voltage portion of the compartment.
- 9.3 Expulsion fuse element shall be a Kearney dual-element-weak-link (DEWL) in accordance with Table 1 below.
- 9.4 The fuse shall be located as to minimize the amount of unprotected equipment consistent with good design practice.

TABLE 1

<u>KVA</u>	<u>KEARNEY DEWL CATALOG NO. 7970V</u>
10	124080-5
15	124080-5
25	124080-5
37.5	124080-8
50	124080-12
75	124080-15
100	124080-25
167	124080-30

9.5 The fuse catalog number from Table 1 shall be stenciled in yellow on the hood to be readable when the hood is fully open. Example: "Fuse (Cat. No.)".

10. ACCESSORIES:

10.1 A cable accessory parking stand shall be provided between "HIA" and "HIB" and shall comply with Figure 1 of ANSI C57.12.25-1981 (or the latest edition).

10.2 Pressure relief device. The following are approved:

Qualitrol	202-03I-0I
Qualitrol	202-030-0I
Tomco/Beta	1712K-3

10.3 Upper filter plug and lower drain plug.

10.4 A ground pad shall be located in both the high- and low-voltage portion, near the tank base plane.

10.5 Two-hold down straps for attaching the transformer to a non-concrete pad.

11. LIQUID LEVEL:

A suitable marking inside the tank shall indicate the correct level at 25°C temperature.

12. TERMINAL MARKINGS:

Terminal markings shall comply with Figure 1 of ANSI C57.12.25-1981 (or the latest edition) and shall be stenciled on the tank in yellow.

13. NAMEPLATE:

13.1 An easily readable nameplate that conforms to Paragraph 5.12 of ANSI C57. 12.00-1980 (or the latest edition) shall be furnished with each transformer. It shall be so located that it will be readable with all cables installed and in place. The nameplate shall be mounted on a stationary surface.

13.2 Nameplate shall indicate that the transformer oil contained less than 1 ppm PCB at time of manufacture.

14. TANKS AND PRESERVATION:

14.1 Transformers shall be of a sealed tank construction, so designed that the interior is sealed from the atmosphere, and the gas plus oil volume remains constant. The transformer shall remain effectively sealed for all temperatures to plus 105° top oil.

14.2 The tank shall be of sufficient strength as to withstand a pressure of 7 psi gauge, without permanent distortion.

15. UNDER OIL LIGHTNING ARRESTERS:

15.1 10kV under oil zinc oxide lightning arresters shall be furnished for application on a 13.8/7.97kV, 4-wire, multiground distribution system. The arrester shall be GE Tranquell IA1, or approved equal, with protective characteristics equal to or better than GE Cat. #9L25A-10kV. Rated minimum MCOV 8.4kV; 7000 foot elevation.

15.2 Protective characteristics shall be provided with each order.

15.3 Transformer nameplate shall indicate "10kV under oil arrester" and LA shall be stenciled on the upper left outside of the cabinet door.

15.4 Manufacture and testing of lightning arrester shall comply with the latest revisions of ANSI/IEEE Standards C62.11-1987.

16. DATA TO BE SUBMITTED WITH PROPOSAL:

16.1 Two (2) copies of outline drawings including overall height, overall width, overall depth, base dimensions, clearances required for opening doors, arrangement of bushings and other appurtenances, and compartment dimensions.

16.2 Weights of tank, oil, transformer total, and shipping weight.

16.3 Performance data:

16.4 All information and drawings shall be legible and assembled in a coherent format with

due attention to Paragraph 20.

- 16.5 Exciting current at 100% of rated voltage.
- 16.6 Average excitation loss in accordance with ANSI C57.12.00-1980 (or the latest edition), Section 9, Paragraph 9.3 and Table I6, Line 3.
- 16.7 Average load-loss derived from ANSI C57.12.00-1980 (or the latest edition), Section 9, Paragraph 9.3 and Table I6, Line 3.
- 16.8 Percent impedance volts, of the low-voltage winding with respect to the high-voltage winding at rated self cooled KVA.
- 16.9 Nameplate shall be stamped that transformer oil contained less than 1 ppm PCB at time of manufacture.

17. PRODUCTION TESTS:

- 17.1 The manufacturer shall perform all routine tests as defined in ANSI C57.12.00-1980 (or the latest edition).
- 17.2 The manufacturer shall provide the following certified data by transformer serial number for each transformer shipped. Data shall be supplied for each production run.
  - 19.2.1 Excitation loss, watts
  - 19.2.2 Impedance, % IZ
  - 19.2.3 Total loss, watts

18. SHIPPING:

The manufacturer shall provide adequate and necessary skids, crating, and packing for transformer to eliminate damage from reasonable handling while in transit to the City of Farmington's point of delivery. Units shall at no time be double stacked.

19. EXCEPTIONS AND CHARGES:

Any exceptions a manufacturer may take must be specifically stated in writing with the bid.

20. EVALUATION:

- 22.1 Bid evaluation shall include estimated cost of KWH losses, price, delivery, performance and adherence to this specification.

21. LOSS EVALUATION FORMULA:

21.1 Present Value Formula:

$$pv = \frac{[1 - (\frac{1}{(1+i)^n})]}{i}$$

$i$  = [Expected rate-of-return on investment, inflation, fluctuation of the cost of power, this is relative to inflation. (Multiple of annual cost of losses required to pay for losses for entire time period)] = 2.5%

$n = [\text{Number of time periods}] = 30 \text{ yrs}$

21.2 No Load Loss Formula: (Core Losses)

$$NLL = PV(EC) \left( \frac{HRS}{YR} \right) \frac{\$}{CORE \text{ WATT}}$$

EC = Energy cost = \$4.22 \$/Watt

$$\frac{HRS}{YR} = (365)(24) = 8760$$

21.3 Load Loss Formula: (Winding Losses)

$$LL = PV(EC)(8760)(LF)^2 \frac{\$}{WINDING \text{ WATT}}$$

LF = Load Factor (Average) = 60%

22. TRANSFORMER-LOSS EVALUATION:

22.1 All transformers bid for the City of Farmington are subject to evaluation in accordance with this section.

22.2 Upon completion of a purchase order or - at the option of the City of Farmington - upon shipment, the manufacturer shall compensate the City of Farmington for the loss variance as follows:

24.2.1 Cost of Losses Formula: (COL)

$$\text{Cost of Losses} = (\text{QNLL}) (\text{NLL}) + (\text{QLL}) (\text{LL})$$

QNLL = Quoted No Load Loss

QLL = Quoted Load Loss

22.2.2 TC (Total Cost) = Purchase Price + present value of cost of losses

PUP = Purchase Unit Price

$$\text{Total Cost} = (\text{PUP}) + [(\text{QNLL}) (\text{NLL}) + (\text{QLL}) (\text{LL})]$$

22.3 The compensation defined in 23.2 and 23.3 shall be applied to each KVA rating of distribution transformers.

22.4 All compensation shall be based on the average loss tolerances only in accordance with ANSI C57.12.00-1980, Section 9, Paragraph 9.3 and Table 16, Line 3.

22.5 The City of Farmington will not compensate the manufacturer in the event of a negative value for LC above.

22.6 Compensation shall be based on quoted losses without ANSI C57.12.00-1980 (or the latest edition) tolerance.

22.7 Losses may be measured by the City of Farmington at its facilities for verification of quoted values.

23. APPROVED TRANSFORMER MANUFACTURERS:

- 23.1 All transformers bid must be supplied by manufacturers as approved by the Farmington Electric Utility Standards Committee (FEUSC).

Manufacturers must be approved by three (3) of five (5) major Southwest Utilities contacted and by the FEUSC. Utilities are contacted upon request for input to update our approved Manufacturers' list. Sample transformers (one or two), if requested, must be provided, for a tear down as part of the approval process by the Standards Committee. Manufacturers may contact FEUSC Electrical Engineer at (505)599-8303 for details.

- 23.2 Following is a list of manufacturers approved by the FEUS Committee for supplying single-phase, padmounted transformers:

ABB Power T & D Co., Inc.  
Kuhlman Electric Company  
Cooper Industries (Waukesha Plant)  
Central Moloney Transformer Division  
Howard Industries  
ERMCO

- 23.3 All other manufacturers should contact the City of Farmington's Electrical Engineering Department at (505)599-8321 for requirements that must be met before being included on approval list.

(Category 2 Items C-V)

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SPECIFICATION

Revision No: 34

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NAME OF MATERIAL OR DEVICE: THREE-PHASE, DEAD-FRONT, RADIAL AND LOOP-FEED, PADMOUNTED TRANSFORMERS

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REVISION DATE: May 20, 2009 APPROVED: /s/ Luvil Aligarbes  
Engineer

DATE: May 21, 1990 REVIEWED BY STANDARDS COMMITTEE

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1. SCOPE:

1.1 This specification describes the electrical and mechanical characteristics of three-phase, dead-front, radial- and loop-feed, padmounted transformers for the City of Farmington.

2. ORDERING INSTRUCTIONS:

2.1 All orders shall include the following:

2.1.1 KVA rating

2.1.2 Type: Radial- or Loop-Feed

2.1.3 High- and Low-voltage ratings

3. GENERAL:

3.1 This specification is written for three-phase, 60 hertz, 65°C temperature rise, mineral oil filled, self-cooled, padmounted, compartmentalized, distribution transformers rated 1500 KVA and below, for use with separable insulated high-voltage connectors rated 8.3/14.4kV.

3.2 All characteristics, definitions, terminology, and voltage designations, except as otherwise specified herein, shall be in accordance with applicable provisions of the latest edition of ANSI C57.12.26, or its successors and applicable ANSI C57 series specification including C57.12.00 -1980, C57.12.90-1980, C57.12.80-1978, C57.12.28-1988 (or latest editions).

4. ELECTRICAL CHARACTERISTICS:

4.1 High- and low-voltage ratings and KVA sizes shall be per Table I, Page 2. Minimum BIL rating shall be 95kV.

4.2 Transformers shall be of triplex or five-legged core design and connected wye-wye with primary and secondary neutrals internally connected and brought out to a neutral bushing in the secondary compartment.

4.3 High-Voltage Taps:

Two (2) 2-1/2% above and below high-voltage taps shall be provided. Taps shall be suitable for de-energized operation only. The tap-changer switch shall be ganged and



shall be externally operable. The operating handle shall be located in the primary compartment above the high-voltage bushings. The tap changer shall be set on the 100% tap at the factory and shall be secured to prevent inadvertent change from this position.

TABLE I

<u>TYPE</u>	<u>HIGH-VOLTAGE RATING (Volts)</u>	<u>LOW-VOLTAGE RATING (Volts)</u>	<u>KVA RANGE</u>
Radial	13,800 GrdY/7970	208Y/120	75-750
Radial	13,800 GrdY/7970	480Y/277	150-1500
Loop-Feed	13,800 GrdY/7970	208Y/120	75-750
Loop-Feed	13,800 GrdY/7970	480Y/277	150-1500

4.4 Short Circuit Capability:

4.4.1 Mechanical short circuit capability shall be demonstrated by design compliance with ANSI C57.12.90-1980 (or latest edition).

4.4.2 Thermal capability shall be demonstrated by design compliance with ANSI C57.12.00-1980 (or latest edition).

5. COMPONENTS FOR PRIMARY CABLE SYSTEM:

5.1 Radial-feed transformers shall be provided with three primary bolted type bushing wells and 200 ampere load-break bushing inserts.

5.2 Loop-feed transformers shall be provided with six primary bolted type bushing wells and 200 ampere load-break bushing inserts.

6. OVERCURRENT PROTECTION:

6.1 Loop-feed and radial feed 3Ø transformers shall be protected by a two-fuse protection scheme.

6.2 Supply three Bay-O-Net fuse holders, side-wall mounted, each with a drip guard and a current sensing expulsion fuse link. The fuse links shall be properly sized for the full load of the transformer. Provide three spare links.

6.3 A backup current-limiting fuse, liquid immersed, properly sized, and connected in series with each Bay-O-Net, shall be provided to isolate a faulted transformer winding.

6.4 The catalog number and size of the Bay-O-Net fuse link shall be stenciled in yellow on the inside of the primary compartment door.

7. CONSTRUCTION:

7.1 General:

7.1.1 Transformers shall be designed to protect people against accidental contact of energized parts, discourage unauthorized access and protect against weather.

7.1.2 The padmounted transformer shall consist of the transformer tank high voltage cable terminating compartment and the low-voltage cable terminating

compartment. The transformer tank and compartments shall be assembled as a raintight, weather-proof, and tamper resistant integral unit suitable for mounting on a flat surface.

- 7.1.3 There shall be no exposed screws, bolts, or other fastening or hinging devices (other than the pentahead specified in 7.6) which are externally removable. There shall be no opening through which foreign objects such as sticks or wires might be inserted to contact energized parts. Suitable means for padlocking the compartment door(s) shall be provided. Normal entry shall be possible only with the use of proper access tools.
- 7.1.4 The high- and low-voltage compartments shall be located side by side on one side of the transformer tank. When facing the compartments, the low-voltage compartment shall be on the right.
- 7.1.5 Construction of the unit shall be such that it can be lifted, skidded, and slid into place on the mounting pad without disturbing the entrance cables.

## 7.2 Bottom Protection:

- 7.2.1 The transformer tank base shall be raised above the pad to protect the bottom finish during installation and to minimize corrosion due to moisture accumulation. The base shall be cross braced to permit rolling in two directions.
- 7.2.2 All external surfaces of ferrous material used in the construction of the assembly shall have undercoating over the regular finish, applied to the bottom of the components and extending up the side to a point 1 inch above the bottom of their bases.

## 7.3 Protective Coating:

- 7.3.1 All coated surfaces, both exterior and interior, shall be painted using a system which conforms to the requirements of ANSI C57.12.28-1988 (or latest edition).
- 7.3.2 The finish shall be weather-resistant, green color Munsell No. 7.0 GY 3.29/1.5.

7.4 All external surfaces shall be constructed of steel, 13 USS gauge or thicker.

7.5 The transformer and compartment hoods shall be crowned to insure water run off.

## 7.6 High- and Low-Voltage Compartments:

- 7.6.1 Terminal compartments shall be full height, air filled compartments with separate hinged doors. The compartments shall be completely isolated from each other by a steel barrier without opening or discontinuity of any kind.
- 7.6.2 The edge of the access doors shall be formed to provide a close fitting mating surface, with internal insertion-prevention lip that will be shaped to resist entry or prying by screwdrivers, wrecking bars, tire irons, single-socket lug wrenches, or other readily accessible tools.
- 7.6.3 Hinges and hinge pins shall be passivated AISI Type 304 stainless steel or equivalent corrosion-resistant metal. Hinges shall be so designed as to prevent removal of pin.

- 7.6.4 There shall be a threaded fastening device for the high-voltage door, accessible only through the low-voltage compartment. Screen door latches with wing nuts, gravity hooks, etc. are unacceptable. The compartment doors shall have a minimum of three point latching and the handle shall have provisions for padlocking.
- 7.6.4.1 The padlocking device shall be so designed and located as to resist prying or breaking off by screwdrivers, wrecking bars, tire irons, single-socket lug wrenches or other readily accessible tools and to inhibit removal of the padlock with a bolt cutting device or hacksaw.
- 7.6.5 In addition to the regular locking provisions above, the access doors shall be secured by a captive, recessed pentahead bolt as depicted in Figure II, ANSI C57.12.26-1987 (or latest edition). Bolts and associated hardware must be rust and corrosion resistant and the design shall minimize the possibility of misalignment and cross-threading. The design must be such that wire entry through the bolt hole into the compartment(s) is prohibited when the bolt is removed. The non-rotating cup shall be permanently attached.
- 7.6.5.1 The captive pentahead bolt shall be coordinated with the latch and padlock to prevent unlatching and insertion of the padlock into the hasp when and until the bolt is completely threaded, respectively.
- 7.6.5.2 The captive pentahead shall also function as an interlock device to pin the latch closed.
- 7.6.6 Both compartment doors shall be equipped with stops for holding each door in a 90° open position. The stops shall be captive to prevent loss of the device.
- 7.6.7 Doors on the high- and low-voltage compartments shall be of sufficient size as to provide adequate working space when open.
- 7.6.8 The bottom edge of the transformer shall provide for flush mounting on a flat mounting surface to prevent wire entry into the compartment.

7.7 Certification:

The design must meet the requirements of ANSI C57.12.28-1988 (or latest edition).

8. BUSHINGS AND TERMINALS:

- 8.1 Electrical characteristics of completely assembled low-voltage terminations shall comply with Table 3 of ANSI C57.12.26-1987 (or latest edition).
- 8.2 All low-voltage terminals shall be insulated from the tank with 1.2 kV class bushings. Terminals of low-voltage windings shall be arranged to the specific dimensions shown in Figure 7 and 8 (a) ANSI C57.12.26-1987 (or latest edition). In-line arrangements are unacceptable.
- 8.3 The high-voltage neutral shall be connected to the low-voltage neutral internally with provision for opening this connection for testing.
- 8.4 The low-voltage neutral shall be a fully insulated bushing. A ground pad shall be provided. A removable ground strap shall be provided and connected between the neutral bushing and ground pad. This connection shall not use any holes specified in

Table II below.

- 8.5 A hand hole shall be provided to access the removable connection specified in 8.3.
- 8.6 Low-voltage terminals shall be tinned copper spades with NEMA hole spacing to provide the number of holes given in Table II. Secondary terminals with 8 holes or more shall have an insulated brace on the outside of the low-voltage terminal designed to support the secondary cables. Cabinet must be appropriately sized for larger terminals.

Table II Secondary Terminals  
Transformer KVA Size

Secondary	<u>75</u>	<u>150</u>	<u>300</u>	<u>500</u>	<u>750</u>	<u>1000</u>	<u>1500</u>
<u>Voltage</u>							
208Y/120	6	6	8	8	10		
480Y/277	6	6	6	8	8	8	10

- 8.7 High-voltage terminals.
  - 8.7.1 For radial-feed transformers high-voltage terminals shall be three bolted type bushing wells in accordance with Figure 3 of ANSI/IEEE 386-1985 and ANSI C57.12.26-1987. (or latest edition). Bushing wells shall be arranged in accordance with the specific dimensions of Figures 5A and 7 of ANSI C57.12.26-1987 (or latest edition).
  - 8.7.2 Loop-feed transformers high-voltage bushings shall be supplied as specified in Section 5. Bushing arrangement shall be in accordance with Figure 6A, ANSI C57.12.26-1987.
- 8.8 Transformer design shall allow field replacement of high-voltage bushing wells, bushing inserts, and low-voltage bushings by means of common hand tools and oil handling equipment, without totally un tanking the transformer. Approved bushing inserts 200 Amp load break.
  - 1) Elastimold Int #1601A3R
  - 2) RTE (cooper) Int. #260473613

9. ACCESSORIES:

- 9.1 The following accessories are required on all transformers:
  - 9.1.1 Pressure relief device. The following are approved:
 

Qualitrol	202-031-01
Qualitrol	202-030-01
Tomco/Beta	1712K-3
  - 9.1.2 Upper filter valve or plug.
  - 9.1.3 Combination drain, lower filter valve, and sampling device. Combination drain plug and sampling device may be substituted.

10. LIQUID LEVEL INDICATION:

A suitable marking inside the tank shall indicate the correct level at 25°C temperature.

11. JACKING, ROLLING, LIFTING, AND MOUNTING FACILITIES:

- 11.1 Suitable jack bosses or equivalent jacking facilities shall be provided on the tank. Vertical clearance for jack shall be 1-1/2 inches minimum, 3-1/2 inches maximum.
- 11.2 Transformer base shall be arranged for rolling in two directions; parallel to and at right angles to the centerline of the high-voltage bushings.
- 11.3 These lugs shall be adequate strength and size and arranged on the tank to provide a suitable lift for the completely assembled unit.
- 11.4 A 3/4 inch minimum and a 1-1/2 inch maximum integral flange shall be provided at the base of the high-voltage and low-voltage compartments, to provide means of anchoring the unit to the pad.

12. TERMINAL MARKINGS:

- 12.1 External terminals shall be marked H1A, H2A, H3A, H1B, H2B, H3B, H0X0, X1, X2, X3 by stenciled yellow lettering on the tank.
- 12.2 A winding diagram with high- and low-voltage connections shall be shown on the instruction nameplate.

13. INSTRUCTION NAMEPLATE:

- 13.1 Instruction nameplate shall be located on the inside of the low-voltage compartment door.
- 13.2 Instruction nameplate shall contain the information specified in Paragraph 5.12 of ANSI C57.12.00-1980 (or latest edition), nameplate B.
- 13.3 Nameplate shall indicate that the transformer oil contained less than 1 ppm PCB at time of manufacture.

14. OIL PRESERVATION:

Transformers shall be of sealed tank construction, so designed that the interior is sealed from the atmosphere and the gas plus oil volume remains constant. The transformer shall remain effectively sealed for all temperatures to plus 105° C top oil.

15. TANKS:

The tank shall be of sufficient strength to withstand a pressure of 7 psi gauge, without permanent distortion.

- 15.1 Welded main cover construction shall be provided. Access to internal connection for test purposes shall be provided by means of a handhole, accessible only from the padlocked compartments.
- 15.2 Tank grounding provisions shall be as specified in ANSI C57.12.26-1975 paragraph 6.6.4 (or latest edition).

16. UNDER OIL LIGHTNING ARRESTERS:

- 16.1 10kV under oil zinc oxide lightning arresters shall be furnished for application on a 13.8/7.97kV, 4-wire, multiground distribution system. The arrester shall be GE Tranquell IA1, or approved equal, with protective characteristics equal to or better than GE Cat. #9L25A-10kV. Rated minimum MCOV 8.4kV; 7000 feet elevation.
- 16.2 Protective characteristics shall be provided with each order.
- 16.3 Transformer nameplate shall indicate "10kV under oil arrester" and LA shall be stenciled on the upper left side of the transformer cabinet door.
- 16.4 Manufacture and testing of lightning arrester shall comply with the latest revision of ANSI/IEEE Standard C62.11-1987.

17. DATA TO BE SUBMITTED WITH PROPOSAL:

- 17.1 Two (2) copies of outline drawings including overall height, overall width, overall depth, base dimensions, clearances required for opening doors, arrangement of bushings, and other appurtenances, and compartment dimensions.
- 17.2 Weight of tank, oil, transformer total, and shipping weight.
- 17.3 Test and Performance Data:
  - 17.3.1 Exciting current at 100% of rated voltage.
  - 17.3.2 Average excitation loss in accordance with ANSI C57.12.00-1980 (or latest edition), Section 9, Paragraph 9.3 and Table 16, Line 3.
  - 17.3.3 Average load-loss derived from ANSI C57.12.00-1980 (or latest edition), Section 9, Paragraph 9.3 and Table 16, Line 3.
  - 17.3.4 Percent impedance volts, of the low-voltage winding with respect to the high-voltage winding at rated self cooled KVA.
  - 17.3.5 Accuracy of production test loss measurements ( $\pm$ %) in accordance with National Bureau of Standards TN 1204.
- 17.4 All information and drawings shall be legible and assembled in a coherent format with due attention to Paragraph 19.
- 17.5 Manufacturer shall supply transformers with oil that contains less than 1 ppm PCB.

18. PRODUCTION TESTS:

- 18.1 The manufacturer shall perform all routine tests as defined in ANSI C57.12.00-1980 (or latest edition).
- 18.2 The manufacturer shall provide the following certified data by transformer serial number for each transformer shipped. Data shall be supplied for each production run:
  - 18.2.1 Excitation loss, watts
  - 18.2.2 Impedance, % IZ
  - 18.2.3 Total loss, watts

19. SHIPPING:

The manufacturer shall provide adequate and necessary skids, crating, and packing for transformers to eliminate damage from reasonable handling while in transit to the City of Farmington's point of delivery. Units shall at no time be double stacked.

20. EXCEPTIONS AND CHANGES:

Any exceptions a manufacturer may take must be specifically stated in writing with the bid.

21. EVALUATION:

21.1 Bid evaluation shall include estimated cost of KWH losses, price, delivery, performance, and adherence to this specification.

22. LOSS EVALUATION FORMULA:

22.1 Present Value Formula:

$$pv = \frac{[1 - (\frac{1}{(1+i)^n})]}{i}$$

$i$  = [Expected rate-of-return on investment, inflation, fluctuation of the cost of power, this is relative to inflation. (Multiple of annual cost of losses required to pay for losses for entire time period)] = 2.5%

$n$  = [Number of time periods] = 30 yrs

22.2 No Load Loss Formula: (Core Losses)

$$NLL = PV(EC) \left( \frac{HRS}{YR} \right) \frac{\$}{CORE \ WATT}$$

EC = Energy cost = \$4.22 \$/Watt

$$\frac{HRS}{YR} = (365)(24) = 8760$$

22.3 Load Loss Formula: (Winding Losses)

$$LL = PV(EC)(8760)(LF)^2 \frac{\$}{WINDING \ WATT}$$

LF = Load Factor (Average) = 60%

23. TRANSFORMER LOSS EVALUATION:

23.1 All transformers bid for the City of Farmington are subject to evaluation in accordance with this section.

23.2 Upon completion of a purchase order or at the option of the City of Farmington, upon shipment, the manufacturer shall compensate the City of Farmington for the loss variance as follows:

23.2.1 Cost of Losses Formula: (COL)

$$\text{Cost of Losses} = (\text{QNLL}) (\text{NLL}) + (\text{QLL}) (\text{LL})$$

QNLL = Quoted No Load Loss

QLL = Quoted Load Loss

23.2.2 TC (Total Cost) = Purchase Price + present value of cost of losses

PUP = Purchase Unit Price

$$\text{Total Cost} = (\text{PUP}) + [(\text{QNLL})(\text{NLL}) + (\text{QLL})(\text{LL})]$$

- 23.3 The compensation defined in 22.2 and 22.3 shall be applied to each KVA rating of distribution transformers.
- 23.4 All compensation shall be based on the average loss tolerances only in accordance with ANSI C57.12.00-1980, Section 9, Paragraph 9.3 and Table 16, Line 3.
- 23.5 The City of Farmington will not compensate the manufacturer in the event of a negative value for LC above.
- 23.6 Compensation shall be based on quoted losses without ANSI C57.12.00-1980 (or latest edition) tolerance.
- 23.7 Losses may be measured by the City of Farmington at its facilities for verification of quoted values.

24. APPROVED TRANSFORMER MANUFACTURERS:

- 24.1 All transformers bid must be supplied by manufacturers as approved by the Farmington Electric Utility Standards Committee (FEUSC).
- Manufacturers must be approved by three (3) of five (5) major Southwest Utilities contacted and by the FEUSC. Utilities are contacted upon request for input to update our approved Manufacturers list. Sample transformers (one or two) must be provided, if requested, for a tear down as part of the approval process by the Standards Committee. Manufacturers may contact FEUSC Electrical Engineer at (505) 599-8321 for details.
- 24.2 Following is a list of manufacturers approved by the FEUS Committee for supplying three-phase, pad-mounted transformers:
- General Electric Company-(USA manufactures only)
  - ABB Power T & D Co., Inc.
  - Cooper Industries (Waukesha Plant)
  - Howard Industries
- 24.3 All other manufacturers should contact the Electrical Engineering Department of the City of Farmington at (505)599-8321 for requirements that must be met before being included on approval list.



CITY OF FARMINGTON - BID SCHEDULE

BID: TRANSFORMERS, NON-VMI, 18 MONTH CONTRACT, BID#14-100427 OPENING DATE: October 15, 2013 @ 2:00 PM

ITEM	EST ANNUAL QTY	UOM	STK NUMBER	DESCRIPTION	MANUFACTURER & PART NUMBER	DELIVERY LEAD TIME	UNIT COST	TOTAL COST
<b>CATEGORY 1: TRANSFORMERS, CONVENTIONAL AND COMPLETELY SELF-PROTECTED (CSP)</b>								
A.	2	EA	285 084 075	TRANSFORMERS, CSP, 75 KVA 13800/7970 120/240 PER SPECIFICATIONS				
B.	1	EA	285 084 2005	TRANSFORMERS, CONVENTIONAL, 5 KVA, 7970/13800, 120/240, PER SPECIFICATIONS				
C.	7	EA	285 084 2037	TRANSFORMER, CONVENTIONAL, 37.5 KVA, 7970/13800 120/240, PER SPECIFICATIONS				
D.	4	EA	285 084 2050	TRANSFORMER, CONVENTIONAL, 50 KVA, 7970/13800 120/240, PER SPECIFICATIONS				
E.	9	EA	285 084 2225	TRANSFORMER, CONVENTIONAL, 25KVA, 7970/13800 240/480, PER SPECIFICATIONS				
F.	4	EA	285 084 2237	TRANSFORMER, CONVENTIONAL, 37.5 KVA, 7970/13800 240/480. PER SPECIFICATIONS				
G.	6	EA	285 084 2337	TRANSFORMER, CONVENTIONAL, 37.5 KVA, 7970/13800 277, PER SPECIFICATIONS				
H.	6	EA	285 084 2350	TRANSFORMER, CONVENTIONAL, 50 KVA, 7970/13800 277, PER SPECIFICATIONS				
I.	1	EA	285 084 2375	TRANSFORMER, CONVENTIONAL, 75 KVA, 7970/13800 277, PER SPECIFICATIONS				
<b>CATEGORY 1: TOTAL COST</b>								<b>\$</b>
<b>CATEGORY 2: TRANSFORMERS, PADMOUNT</b>								
A.	2	EA	285 084 7275	TRANSFORMER, PADMOUNT, 75 KVA, SINGLE PHASE, LOOP-FEED, 13800/7970, 240/120, PER SPECIFICATIONS				
B.	1	EA	285 084 7367	TRANSFORMER, PADMOUNT, 167 KVA, SINGLE PHASE, LOOP-FEED, 13800/7970, 240/120, PER SPECIFICATIONS				
C.	1	EA	285 084 7475	TRANSFORMER, PADMOUNT, 75 KVA, 3 PHASE, RADIAL, 13800/7970, 208/120, PER SPECIFICATIONS				
D.	2	EA	285 084 7485	TRANSFORMER, PADMOUNT, 150 KVA, 3 PHASE, RADIAL, 13800/7970, 208/120, PER SPECIFICATIONS				
E.	2	EA	285 084 7490	TRANSFORMER, PADMOUNT, 300 KVA, 3 PHASE, RADIAL, 13800/7970, 208/120, PER SPECIFICATIONS				
F.	1	EA	285 084 7495	TRANSFORMER, PADMOUNT, 500 KVA, 3 PHASE, RADIAL, 13800/7970, 208/120, PER SPECIFICATIONS				
G.	1	EA	285 084 7530	TRANSFORMER, PADMOUNT, 75 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 208/120, PER SPECIFICATIONS				
H.	2	EA	285 084 7550	TRANSFORMER, PADMOUNT, 150 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 208/120, PER SPECIFICATIONS				
I.	1	EA	285 084 7600	TRANSFORMER, PADMOUNT, 300 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 208/120, PER SPECIFICATIONS				
J.	1	EA	285 084 7650	TRANSFORMER, PADMOUNT, 500 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 208/120, PER SPECIFICATIONS				
K.	1	EA	285 084 7685	TRANSFORMER, PADMOUNT, 150 KVA. 3 PHASE, RADIAL, 13800/7970, 480/277, PER SPECIFICATIONS				

CITY OF FARMINGTON - BID SCHEDULE

BID: TRANSFORMERS, NON-VMI, 18 MONTH CONTRACT, BID#14-100427 OPENING DATE: October 15, 2013 @ 2:00 PM

ITEM	EST ANNUAL QTY	UOM	STK NUMBER	DESCRIPTION	MANUFACTURER & PART NUMBER	DELIVERY LEAD TIME	UNIT COST	TOTAL COST
L.	4	EA	285 084 7690	TRANSFORMER, PADMOUNT, 300 KVA, 3 PHASE, RADIAL, 13800/7970, 480/277, PER SPECIFICATIONS				
M.	1	EA	285 084 7695	TRANSFORMER, PADMOUNT, 500 KVA, 3 PHASE, RADIAL, 13800/7970, 480/277, PER SPECIFICATIONS				
N.	1	EA	285 084 7700	TRANSFORMER, PADMOUNT, 750 KVA, 3 PHASE, RADIAL, 13800/7970, 480/277, PER SPECIFICATIONS				
O.	1	EA	286 084 7710	TRANSFORMER, PADMOUNT, 1000 KVA, 3 PHASE, RADIAL, 13800/7970, 480/277, PER SPECIFICATIONS				
P.	1	EA	285 084 7750	TRANSFORMER, PADMOUNT, 1500 KVA, 3 PHASE, RADIAL, 13800/7970, 480/277, PER SPECIFICATIONS				
Q.	1	EA	285 084 7800	TRANSFORMER, PADMOUNT, 150 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 480/277, PER SPECIFICATIONS				
R.	1	EA	285 084 7807	TRANSFORMER, PADMOUNT, 75KVA, 3 PHASE, LOOP-FEED, 13800/7970, 480/277, PER SPECIFICATIONS				
S.	1	EA	285 084 7830	TRANSFORMER, PADMOUNT, 300 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 480/277, PER SPECIFICATIONS				
T.	1	EA	285 084 7850	TRANSFORMER, PADMOUNT, 500 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 480/277, PER SPECIFICATIONS				
U.	1	EA	285 084 7875	TRANSFORMER, PADMOUNT, 750 KVA, 3 PHASE, LOOP-FEED, 13800/7970, 480/277, PER SPECIFICATIONS				
<b>CATEGORY 2: TOTAL COST</b>								<b>\$</b>

**CATEGORY BID - BIDDERS SHALL BID COMPLETE CATEGORIES**

ALTERNATE AWARD EVALUATION: Whichever deems in the best interest of the City, the City reserves the right to award the bid in total, by groups of items on the basis of individual items or any combination of these; or as otherwise specified in the bid terms unless the bidder qualifies his bid by specific limitations. Only the City is in a position to determine its own best interest, therefore the City shall be the sole judge in determining the award analysis. Its decision shall be final.

If qualifying a bid, the Bidder must clearly state so in their bid response on a separate sheet of paper title "Exceptions to Specifications". The restriction(s) or qualifier(s) must be clearly identified. If the Bidder's pricing is subject to change if the City elects to award a category bid based on group of items or line items; or any part of the Bidder's bid is dependent upon receiving a complete category award, then the Bidder's bid response must identify these restrictions. Exemptions must indicate which items or which categories they are bidding on an "all or none" basis, they must indicate if they are qualifying their bid based on a minimum threshold dollar award limit, or any other type exemption. Bid responses with exceptions may result in rejection of the whole bid or partial line items within the bid.

EXCEPTIONS TO SPECIFICATIONS: Pursuant to Article 5 of this bid, any exceptions taken shall be noted on Bidder's business letterhead and submitted with this bid.

DELIVERY: All equipment to be delivered to the City of Farmington Electric Warehouse, 101 N. Browning Parkway, Farmington, NM between the hours of 8:00AM and 3:30PM. The bidder shall give the City at least 24 hours notice (Weekends and Holidays excluded) prior to arriving on site. Contact Bob Schrag, Warehouse Superintendent, 505-599-8400.

DELIVERY ACCESS - HOURS OF WAREHOUSE OPERATION: All Deliveries to the Municipal Operations Center Warehouse Location, 101 N. Browning Parkway, must be made between the hours of 8:00AM and 3:30PM (MST), Monday through Friday, excluding weekends & Holidays. The security gate system is unavailable outside the regular MOC business hours.

CITY OF FARMINGTON - BID SCHEDULE

BID: TRANSFORMERS, NON-VMI, 18 MONTH CONTRACT, BID#14-100427 OPENING DATE: October 15, 2013 @ 2:00 PM

**TAX IDENTIFICATION**

The City of Farmington issues Type 9 Non-Taxable Transaction Certificates (NTTC's) and is tax exempt for purchases of TANGIBLE PERSONAL PROPERTY ONLY. These certificates may not be used to purchase construction materials to be used in construction projects. To receive a NTTC please contact Accounts Payable at 505-599-1222. Determinations for applicable tax classification should be made by the Taxation and Revenue Department or your tax consultant. Please call 505-325-5049 for the Farmington branch or 505-827-0700 for the State office.

I, the official signature on the Bid Submittal Form, hereby swear I am duly authorized to legally bind the prospective bidder to this estimate of taxes certification. Hereby as Bidder, I certify that Bidder has made a diligent effort to ascertain and identify all taxes which will be charged to the City against this Bid and that, in Bidder's opinion, the taxes identified below and the amount shown for all of the taxes which will be charged in addition to the bid total shown on the above Bid Proposal Form. I affirm Bidder will submit payment on the State of New Mexico periodic CRS-1 report for actual taxes due, as estimated below, to the State of New Mexico Taxation and Revenue Department, accurately identifying the appropriate governmental entity to receive credit for taxes paid.

I am fully aware that this certification is made under penalty of perjury under the laws of the State of New Mexico.

Bidder's Initials Below Certify Compliance

New Mexico Gross Receipts Tax	_____ %	\$ _____	
Compensating Tax.....	_____ %	\$ _____	_____
Other.....	_____ %	\$ _____	(Bidder - Initial Here)

**FINANCIAL INTEREST** - All Bidders must notify the City's Purchasing Officer if any employee(s) of the requesting department or the Central Purchasing Division have a financial interest in the bidder: \_\_\_\_\_ No \_\_\_\_\_ Yes

(Bidder Select, Initial & Complete below if applicable)

If Yes, please specify the employee(s) by name:

\_\_\_\_\_

**TENTATIVE COUNCIL APPROVAL SCHEDULE**

Tentative Council Approval Date is scheduled for October 22, 2013, a letter of award and copy of the Abstract will be sent to the participating vendors as soon as possible after Council approval. This information will not be released over the telephone, but may be reviewed in person after authorization has been obtained through the City Clerk's office.

# EXHIBIT A

## LOSS EVALUATION FORMULA, FOR THE FOLLOWING TRANSFORMERS:

Single-Phase Conventional and Completely Self-Protected (CSP) Transformers  
Single-Phase, Dead-Front, Loop-Feed Padmounted Transformers  
Three-Phase, Dead-Front, Radial and Loop-Feed Padmounted Transformers

### LOSS EVALUATION FORMULA:

Present Value Formula:

$$pv = \frac{[1 - (\frac{1}{(1+i)^n})]}{i}$$

$i$  = [Expected rate-of-return on investment, inflation, fluctuation of the cost of power, this is relative to inflation. (Multiple of annual cost of losses required to pay for losses for entire time period)] = 2.5%

$n$  = [Number of time periods] = 30 yrs

No Load Loss Formula: (Core Losses)

$$NLL = PV(EC) \left( \frac{HRS}{YR} \right) \frac{\$}{COREWATT}$$

EC = Energy cost = \$4.22 \$/Watt

$$\frac{HRS}{YR} = (365)(24) = 8760$$

Load Loss Formula: (Winding Losses)

$$LL = PV(EC) (8760) (LF)^2 \frac{\$}{WINDINGWATT}$$

LF = Load Factor (Average) = 60%

## **EXHIBIT B**

### **United States Department of Energy 2010 Distribution Transformer Efficiency Requirements**

On October 12, 2007, the United States Department of Energy placed into effect 10 CFR Part 431, "Energy Conservation Program for Commercial Equipment: Distribution Transformers Energy Conservation Standards; Final Rule." This ruling requires liquid filled distribution transformers, 10 through 2500 kVA, manufactured after January 01, 2010 to meet standard efficiency levels as outlined in the mandate. Below are a few key points on this topic;

- Transformers manufactured after January 01, 2010 are affected by this ruling. Transformers currently in stock or in service will not be subject to the efficiency requirements set forth in above noted ruling
- Rule conformance is strictly the responsibility of the manufacturer
- The efficiency levels outlined in the DOE ruling are standard efficiencies, and are not guaranteed minimum efficiencies for individual units
- Transformers will continue to be tested for losses in accordance with ANSI standard test procedures, and will continue to be subject to ANSI loss tolerances
- DOE efficiency is calculated at 50% load and 55°C (ANSI is 100% load and 85 °C)
- No load and load losses are evaluated at the least efficient voltage rating (dual voltage transformers)
- Requesting guaranteed minimum efficiency in a transformer specification will arbitrarily inflate transformer prices beyond what is required by the DOE, similar to requesting Guaranteed Maximum losses
- Removing load and no-load loss evaluation factors (A and B factors) will allow manufacturers a greater variety of design options, and hence, will allow transformer customers to achieve lower prices
- Rebuilt transformers are not covered by the DOE ruling; for now. The DOE states that they will monitor the volume of rebuilt transformers, and if volume increases significantly, they will re-visit the ruling
- Autotransformers, step-transformers, wind transformers, modulation transformers, and mining transformers are not subject to the efficiency standards set forth in above noted ruling
- **As the cost of transformers increase due to DOE requirements, the incremental percent increase to switch to Envirotemp FR3 fluid decreases. In addition, FR3 fluid extends the life of a transformers insulation paper, and reduces the total lifecycle cost of the transformer**

Efficiency formula if your No Load losses are reported at 20°C

$$100 * \left( \frac{(.5 * kVA * 1000)}{(.5 * kVA * 1000) + NL + (.9061 * LL * (.5^2))} \right)$$

Efficiency formula to use if your No Load losses are reported at 85°C

$$100 * \left( \frac{(.5 * kVA * 1000)}{(.5 * kVA * 1000) + (NL * 1.04225) + (.9061 * LL * (.5^2))} \right)$$

TABLE I.1.—STANDARD LEVELS FOR LIQUID-IMMERSED DISTRIBUTION TRANSFORMERS, TABULAR FORM

Single-phase		Three-phase	
kVA	Efficiency (%)	kVA	Efficiency (%)
10 .....	98.62	15 .....	98.36
15 .....	98.76	30 .....	98.62
25 .....	98.91	45 .....	98.76
37.5 .....	99.01	75 .....	98.91
50 .....	99.08	112.5 .....	99.01
75 .....	99.17	150 .....	99.08
100 .....	99.23	225 .....	99.17
167 .....	99.25	300 .....	99.23
250 .....	99.32	500 .....	99.25
333 .....	99.36	750 .....	99.32
500 .....	99.42	1000 .....	99.36
667 .....	99.46	1500 .....	99.42
833 .....	99.49	2000 .....	99.46
		2500 .....	99.49

Note: All efficiency values are at 50 percent of nameplate-rated load, determined according to the DOE test procedure. 10 CFR Part 431, Subpart K, Appendix A.