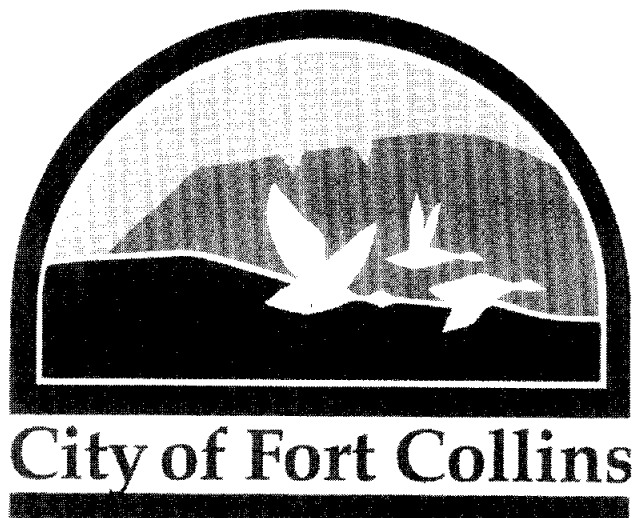


City of Fort Collins

Bid Proposal

BID 6021

LP Transformer, 50kVA, Modified Overhead



BID DATE: 2:00 P.M. (Our Clock) December 29, 2006

**CITY OF FORT COLLINS
INVITATION TO BID
BID 6021
LP Transformer, 50kVA, Modified Overhead**

Sealed bids will be received and publicly opened at the office of the Director Of Purchasing and Risk Management, PO Box 580, 215 North Mason St., 2nd floor, Fort Collins, Colorado 80524, at the time and date noted on the bid proposal and/or contract documents. If delivered, they are to be delivered to 215 North Mason Street, 2nd Floor, Fort Collins, Colorado 80524. If mailed, the address is P.O. Box 580, Fort Collins, 80522-0580.

Bids must be received at the Purchasing Office prior to 2:00 p.m. (our clock), December 29, 2006.

Special Instructions

All bids must be properly signed by an authorized representative of the company with the legal capacity to bind the company to the agreement. Bids may be withdrawn up to the date and hour set for closing. Once bids have been accepted by the City and closing has occurred, failure to enter into contract or honor the purchase order will be cause for removal of supplier's name from the City of Fort Collins' bidders list for a period of twelve months from the date of the opening. The City may also pursue any remedies available at law or in equity. Bid prices must be held firm for a period of forty-five (45) days after bid openings.

Submission of a bid is deemed as acceptance of all terms, conditions and specifications contained in the City's specifications initially provided to the bidder. Any proposed modification must be accepted in writing by the City prior to award of the bid.

Only bids properly received by the Purchasing Office will be accepted. All bids should be clearly identified by the bid number and bid name contained in the bid proposal.

No proposal will be accepted from, or any purchase order awarded, to any person, firm or corporation in default on any obligation to the City.

Bids must be furnished exclusive of any federal excise tax, wherever applicable.

Bidders must be properly licensed and secure necessary permits wherever applicable.

Bidders not responding to this bid will be removed from our automated vendor listing for the subject commodities.

The City may elect where applicable, to award bids on an individual item/group basis or on a total bid basis, whichever is most beneficial to the City. The City reserves the right to accept or reject any and all bids, and to waive any irregularities or informalities.

Sales prohibited/conflict of interest: no officer, employee, or member of City Council, shall have a financial interest in the sale to the City of any real or personal property, equipment, material, supplies or services where such officer or employee exercises directly or indirectly any decision-making authority concerning such sale or any supervisory authority over the services to be rendered. This rule also applies to subcontracts with the City. Soliciting or accepting any gift,

9/1/2006rev

gratuity, favor, entertainment, kickback or any items of monetary value from any person who has or is seeking to do business with the City of Fort Collins is prohibited.

Freight terms: unless otherwise noted, all freight is F.O.B. Destination, Freight Prepaid. All freight charges must be included in prices submitted on proposal.

Discounts: any discounts allowed for prompt payment, etc., must be reflected in bid figures and not entered as separate pricing on the proposal form.

Purchasing restrictions: your authorized signature of this bid assures your firm's compliance with the City's purchasing restrictions. A copy of the resolutions are available for review in the Purchasing Office or the City Clerk's Office. Request Resolution 91-121 for cement restrictions.

Collusive or sham bids: any bid deemed to be collusive or a sham bid will be rejected and reported to authorities as such. Your authorized signature of this bid assures that such bid is genuine and is not a collusive or sham bid.

Bid results: for information regarding results for individual bids send a self-addressed, self-stamped envelope and a bid tally will be mailed to you. Bid results will be posted in our office 7 days after the bid opening.

James B. O'Neill II, CPPO, FNIGP
Director of Purchasing and Risk Management

9/1/2006rev

FIRM NAME: _____

**CITY OF FORT COLLINS
BID PROPOSAL
BID NO. 6021
LP Transformer, 50kVA, Modified Overhead
BID DATE: 2:00 p.m. (Our clock) December 29, 2006**

WE HEREBY ENTER OUR BID FOR THE CITY OF FORT COLLINS' REQUIREMENTS FOR LP Transformer, 50kVA, Modified Overhead PER THE BID INVITATION AND ANY REFERENCED SPECIFICATIONS.

QUANTITY: DESCRIPTION:

50 Ea. Transformer, 50kVA, Modified Overhead, single Phase Distribution with one High Voltage Bushing Well, High Voltage Rating: 13200 GRDY/7620. Low Voltage Rating: 120/240. Serial Number 151 to be in Accordance with Specification #368-105-151, Rev. KK

PLEASE COMPLETE THE ATTACHED EXCEL SPREAD SHEET FOR BID SUBMITTAL.

IF YOU ELECT TO PASSWORD PROTECT YOUR BID, PLEASE NOTE THAT PASSWORD BELOW.

DELIVERY MAY BE A CONSIDERATION OF BID AWARD

*Any surcharges or additional costs shall be noted & included in bid submittal.

The transformers being bid meet or exceed the specifications. _____ Yes _____ No. If not, please list exceptions, (specifying paragraph reference number) on a separate sheet of paper and attach to your bid.

Guaranteed No Load Loss	_____
Guaranteed Full Load Loss	_____
Guaranteed Total Load Loss	_____
Impedance (%)	_____

Escalation is _____, is not _____ applicable for the transformers bid. If escalation applies, the bidder shall indicate in his bid the specific items or materials subject to escalation, and shall give the method and indices to be used in computing the amount thereof. Escalation occurring after the quoted delivery date will not be paid unless delays are the result of actions by the city. Escalation occurring after acceptance if purchaser exercises the option to delay shipment after manufacturing is completed, will not be paid.

For purposes of warranty and service ONLY approved manufacturers or distributors authorized by an approved manufacturer to serve the Fort Collins area may bid.

The City of Fort Collins reserves the right to split the bid in whatever percentages are most advantageous to the City.

Future orders of LP Transformer, 50kVA, Modified Overhead may be authorized, at the option of the City, from this bid for a period of five years after date of award. Satisfactory pricing and delivery is required for future orders based on this bid.

SUPPLEMENTAL INSTRUCTIONS

Prices quoted must remain firm for a 30 day period after the opening date.

Freight terms: F.O.B. destination freight prepaid. All freight charges must be included in pricing submitted on proposal and not entered as separate pricing.

Any discount allowed by Vendor for prompt payment, etc. must be reflected in quoted figure, and not entered as separate pricing.

The City reserves the right to accept or reject any and all quotes.

Bidder not responding to the services requested in this bid shall be removed from our automated listing for: Not Applicable

Any questions or inquiries regarding this bid should be directed to:

Opal F. Dick, CPPO, Senior Buyer
(970) 221-6778

SIGNATURE AND TITLE: TYPED OR PRINTED NAME AND TITLE

COMPANY NAME: (AREA CODE) TELEPHONE NUMBER/FAX NUMBER

ADDRESS: STREET, CITY, STATE, ZIP DATE

EMAIL:

Purchase Order Terms and Conditions

1. COMMERCIAL DETAILS.

Invoice Address. To ensure prompt Payment mail invoices in duplicate to:
City of Fort Collins Accounting Division
P.O. Box 580
Fort Collins, CO 80522

Tax exemptions. By statute the City of Fort Collins is exempt from state and local taxes. Our Exemption Number is 98-04502. Federal Excise Tax Exemption Certificate of Registry 84-6000587 is registered with the Collector of Internal Revenue, Denver, Colorado (Ref. Colorado Revised Statutes 1973, Chapter 39-26, 114 (a)).

Goods Rejected. GOODS REJECTED due to failure to meet specifications, either when shipped or due to defects of damage in transit, may be returned to you for credit and are not to be replaced except upon receipt of written instructions from the City of Fort Collins.

Inspection. GOODS are subject to the City of Fort Collins inspection on arrival.

Final Acceptance. Receipt of the merchandise, services or equipment in response to this order can result in accepted payment on the part of the City of Fort Collins. However, it is to be understood that FINAL ACCEPTANCE is dependent upon completion of all applicable required inspection procedures.

Freight Terms. Shipments must be F.O.B., City of Fort Collins, 700 Wood St., Fort Collins, CO 80522, unless otherwise specified on this order. If permission is given to prepay freight and charge separately, the original freight bill must accompany invoice. Additional charges for packing will not be accepted.

Shipment Distance. Where manufacturers have distributing points in various parts of the country, shipment is expected from the nearest distribution point to destination, and excess freight will be deducted from Invoice when shipments are made from greater distance.

Permits. Seller shall procure at sellers sole cost all necessary permits, certificates and licenses required by all applicable laws, regulations, ordinances and rules of the state, municipality, territory or political subdivision where the work is performed, or required by any other duly constituted public authority having jurisdiction over the work of vendor. Seller further agrees to hold the City of Fort Collins harmless from and against all liability and loss incurred by them by reason of an asserted or established violation of any such laws, regulations, ordinances, rules and requirements.

Authorization. All parties to this contract agree that the representatives are, in fact, bona fide and possess full and complete authority to bind said parties.

LIMITATION OF TERMS. This Purchase Order expressly limits acceptance to the terms and conditions stated herein set forth and any supplementary or additional terms and conditions annexed hereto or incorporated herein by reference. Any additional or different terms and conditions proposed by seller are objected to and hereby rejected.

2. DELIVERY.

PLEASE ADVISE PURCHASING AGENT immediately if you cannot make complete shipment to arrive on your promised delivery date as noted. Time is of the essence. Delivery and performance must be effected within the time stated on the purchase order and the documents attached hereto. No acts of the Purchasers including, without limitation, acceptance of partial late deliveries, shall operate as a waiver of this provision. In the event of any delay, the Purchaser shall have, in addition to other legal and equitable remedies, the option of placing this order elsewhere and holding the Seller liable for damages. However, the Seller shall not be liable for damages as a result of delays due to causes not reasonably foreseeable which are beyond its reasonable control and without its fault of negligence, such acts of God, acts of civil or military authorities, governmental priorities, fires, strikes, flood, epidemics, wars or riots provided that notice of the conditions causing such delay is given to the Purchaser within five (5) days of the time when the Seller first received knowledge thereof. In the event of any such delay, the date of delivery shall be extended for the period equal to the time actually lost by reason of the delay.

3. WARRANTY.

The Seller warrants that all goods, articles, materials and work covered by this order will conform with applicable drawings, specifications, samples and/or other descriptions given, will be fit for the purposes intended, and performed with the highest degree of care and competence in accordance with accepted standards for work of a similar nature. The Seller agrees to hold the purchaser harmless from any loss, damage or expense which the Purchaser may suffer or incur on account of the Sellers breach of warranty. The Seller shall replace, repair or make good, without cost to the purchaser, any defects or faults arising within one (1) year or within such longer period of time as may be prescribed by law or by the terms of any applicable warranty provided by the Seller after the date of acceptance of the goods furnished hereunder (acceptance not to be unreasonably delayed), resulting from imperfect or defective work done or materials furnished by the Seller. Acceptance or use of goods by the Purchaser shall not constitute a waiver of any claim under this warranty. Except as otherwise provided in this purchase order, the Sellers liability hereunder shall extend to all damages proximately caused by the breach of any of the foregoing warranties or guarantees, but such liability shall in no event include loss of profits or loss of use. NO IMPLIED WARRANTY OR MERCHANTABILITY OR OF FITNESS FOR PURPOSE SHALL APPLY.

4. CHANGES IN LEGAL TERMS.

The Purchaser may make changes to legal terms by written change order.

5. CHANGES IN COMMERCIAL TERMS.

The Purchaser may make any changes to the terms, other than legal terms, including additions to or deletions from the quantities originally ordered in the specifications or drawings, by verbal or written change order. If any such change affects the amount due or the time of performance hereunder, an equitable adjustment shall be made.

6. TERMINATIONS.

The Purchaser may at any time by written change order, terminate this agreement as to any or all portions of the goods then not shipped, subject to any equitable adjustment between the parties as to any work or materials then in progress provided that the Purchaser shall not be liable for any claims for anticipated profits on the uncompleted portion of the goods and/or work, for incidental or consequential damages, and that no such adjustment be made in favor of the Seller with respect to any goods which are the Sellers standard stock. No such termination shall relieve the Purchaser or the Seller of any of their obligations as to any goods delivered hereunder.

7. CLAIMS FOR ADJUSTMENT.

Any claim for adjustment must be asserted within thirty (30) days from the date the change or termination is ordered.

8. COMPLIANCE WITH LAW.

The Seller warrants that all goods sold hereunder shall have been produced, sold, delivered and furnished in strict compliance with all applicable laws and regulations to which the goods are subject. The Seller shall execute and deliver such documents as may be required to effect or evidence compliance. All laws and regulations required to be incorporated in agreements of this character are hereby incorporated herein by this reference. The Seller agrees to indemnify and hold the Purchaser harmless from all costs and damages suffered by the Purchaser as a result of the Sellers failure to comply with such law.

9. ASSIGNMENT.

Neither party shall assign, transfer, or convey this order, or any monies due or to become due hereunder without the prior written consent of the other party.

10. TITLE.

The Seller warrants full, clear and unrestricted title to the Purchaser for all equipment, materials, and items furnished in performance of this agreement, free and clear of any and all liens, restrictions, reservations, security interest encumbrances and claims of others.

11. NONWAIVER.

Failure of the Purchaser to insist upon strict performance of the terms and conditions hereof, failure or delay to exercise any rights or remedies provided herein or by law, failure to promptly notify the Seller in the event of a breach, the acceptance of or payment for goods hereunder or approval of the design, shall not release the Seller of any of the warranties or obligations of this purchase order and shall not be deemed a waiver of any right of the purchaser to insist upon strict performance hereof or any of its rights or remedies as to any such goods, regardless of when shipped, received or accepted, as to any prior or subsequent default hereunder, nor shall any purported oral modification or rescission of this purchase order by the Purchaser operate as a waiver of any of the terms hereof.

12. ASSIGNMENT OF ANTITRUST CLAIMS.

Seller and the Purchaser recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact borne by the Purchaser. Therefore, for good cause and as consideration for executing this purchase order, the Seller hereby assigns to the Purchaser any and all claims it may now have or hereafter acquired under federal or state antitrust laws for such overcharges relating to the particular goods or services purchased or acquired by the Purchaser pursuant to this purchase order.

13. PURCHASERS PERFORMANCE OF SELLERS OBLIGATIONS.

If the Purchaser directs the Seller to correct nonconforming or defective goods by a date to be agreed upon by the Purchaser and the Seller, and the Seller thereafter indicates its inability or unwillingness to comply, the Purchaser may cause the work to be performed by the most expeditious means available to it, and the Seller shall pay all costs associated with such work.

The Seller shall release the Purchaser and its contractors of any tier from all liability and claims of any nature resulting from the performance of such work.

This release shall apply even in the event of fault of negligence of the party released and shall extend to the directors, officers and employees of such party.

The Seller's contractual obligations, including warranty, shall not be deemed to be reduced, in any way, because such work is performed or caused to be performed by the Purchaser.

14. PATENTS.

Whenever the Seller is required to use any design, device, material or process covered by letter, patent, trademark or copyright, the Seller shall indemnify and save harmless the Purchaser from any and all claims for infringement by reason of the use of such patented design, device, material or process in connection with the contract, and shall indemnify the Purchaser for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution or after the completion of the work. In case said equipment, or any part thereof or the intended use of the goods, is in such suit held to constitute infringement and the use of said equipment or part is enjoined, the Seller shall, at its own expense and at its option, either procure for the Purchaser the right to continue using said equipment or parts, replace the same with substantially equal but non-infringing equipment, or modify it so it becomes non-infringing.

15. INSOLVENCY.

If the Seller shall become insolvent or bankrupt, make an assignment for the benefit of creditors, appoint a receiver or trustee for any of the Sellers property or business, this order may forthwith be canceled by the Purchaser without liability.

16. GOVERNING LAW.

The definitions of terms used or the interpretation of the agreement and the rights of all parties hereunder shall be construed under and governed by the laws of the State of Colorado, USA.

The following Additional Conditions apply only in cases where the Seller is to perform work hereunder, including the services of Sellers Representative(s), on the premises of others.

17. SELLERS RESPONSIBILITY.

The Seller shall carry on said work at Seller's own risk until the same is fully completed and accepted, and shall, in case of any accident, destruction or injury to the work and/or materials before Seller's final completion and acceptance, complete the work at Seller's own expense and to the satisfaction of the Purchaser. When materials and equipment are furnished by others for installation or erection by the Seller, the Seller shall receive, unload, store and handle same at the site and become responsible therefor as though such materials and/or equipment were being furnished by the Seller under the order.

18. INSURANCE.

The Seller shall, at his own expense, provide for the payment of workers compensation, including occupational disease benefits, to its employees employed on or in connection with the work covered by this purchase order, and/or to their dependents in accordance with the laws of the state in which the work is to be done. The Seller shall also carry comprehensive general liability including, but not limited to, contractual and automobile public liability insurance with bodily injury and death limits of at least \$300,000 for any one person, \$500,000 for any one accident and property damage limit per accident of \$400,000. The Seller shall likewise require his contractors, if any, to provide for such compensation and insurance. Before any of the Sellers or his contractors employees shall do any work upon the premises of others, the Seller shall furnish the Purchaser with a certificate that such compensation and insurance have been provided. Such certificates shall specify the date when such compensation and insurance expires. The Seller agrees that such compensation and insurance shall be maintained until after the entire work is completed and accepted.

19. PROTECTION AGAINST ACCIDENTS AND DAMAGES.

The Seller hereby assumes the entire responsibility and liability for any and all damage, loss or injury of any kind or nature whatsoever to persons or property caused by or resulting from the execution of the work provided for in this purchase order or in connection herewith. The Seller will indemnify and hold harmless the Purchaser and any or all of the Purchasers officers, agents and employees from and against any and all claims, losses, damages, charges or expenses, whether direct or indirect, and whether to persons or property to which the Purchaser may be put or subject by reason of any act, action, neglect, omission or default on the part of the Seller, any of his contractors, or any of the Sellers or contractors officers, agents or employees. In case any suit or other proceedings shall be brought against the Purchaser, or its officers, agents or employees at any time on account or by reason of any act, action, neglect, omission or default of the Seller of any of his contractors or any of its or their officers, agents or employees as aforesaid, the Seller hereby agrees to assume the defense thereof and to defend the same at the Sellers own expense, to pay any and all costs, charges, attorneys fees and other expenses, any and all judgments that may be incurred by or obtained against the Purchaser or any of its or their officers, agents or employees in such suits or other proceedings, and in case judgment or other lien be placed upon or obtained against the property of the Purchaser, or said parties in or as a result of such suits or other proceedings, the Seller will at once cause the same to be dissolved and discharged by giving bond or otherwise. The Seller and his contractors shall take all safety precautions, furnish and install all guards necessary for the prevention of accidents, comply with all laws and regulations with regard to safety including, but without limitation, the Occupational Safety and Health Act of 1970 and all rules and regulations issued pursuant thereto.

Revised 11/91

Fort Collins Utilities Transformer Bid Loss Data Sheet

# Units	50	Bid #	6021	Preparer Name :				Name						
Size		Date:		Preparer Contact Num:				Number						
NL Loss Cost														
FL Loss Cost														
														Base Bid Extended Cost (Total \$)
Supplier	Mfr / Mfr#	Base Bid \$ / Each	Del/Wks	Guar No Load Loss	Guar Full Load Loss	Impedanc e	Meet Specs? (Yes / No)	Escalation (is / is not) a factor	Guar Total Load Loss	NL Loss * NL Loss Cost	FL Loss * FL Loss Cost	Evaluated Bid		
Supplier 1	Mfr 1	\$ -	-	0	0	0.00	-	-	0	\$ -	\$ -	\$ -	\$ -	
Supplier 2	Mfr 2	\$ -	-	0	0	0.00			0	\$ -	\$ -	\$ -	\$ -	
Supplier 3	Mfr 3	\$ -	-	0	0	0.00			0	\$ -	\$ -	\$ -	\$ -	

Directions for Bidders:

- 1) Fill out the information in the cells with blue text.
- 2) Save the file using your company name and the bid number and e-mail it to: purchasing@fcgov.com
(Example: TransformerSales_Bid 6021.xls)

If you are concerned about security, you may password-protect this file after you have entered your data. To protect this file, take the following steps:

- 1) Select Tools, Options
- 2) Select Security Tab
- 3) Type your password in the "Password to Open" field.
- 4) Re-enter your password to confirm it.

Important! Please remember to include this password in the bid information that will be sealed in the envelope that will be unsealed at Bid Opening. This will secure your data until the time of the bid opening.

- 5) Save the file and e-mail it to: purchasing@fcgov.com

THE CITY OF FORT COLLINS

**Light and Power Department
P.O. Box 580
Fort Collins, CO 80522**

SPECIFICATION NO: 368-105

**TITLE: OVERHEAD-TYPE, SINGLE PHASE
DISTRIBUTION TRANSFORMERS
WITH SEPARABLE
INSULATED LOAD BREAK HIGH-VOLTAGE CONNECTORS**

PREPARED BY:


Tim M. Sagen, Standards Engineering Manager

ORIGINATED: March 3, 1973

REVISED: February, 2003

REVISION DESCRIPTIONS

REVISION DESCRIPTION (Previous revisions on file)	APPROVED
Rev. II <ul style="list-style-type: none"> • Updated Table of Contents • Paragraph 3.2.2.1.1; 3.2.4.2. - Editorial • Paragraph 3.2.3.1. - updated ANSI reference • Paragraph 3.2.3.2. - changed lead type terminals to stud type, updated ANSI reference to 1985. • Paragraph 3.2.5.2 - Deleted reference to Table II • Paragraph 3.2.5.6. - Updated ANSI reference; changed "non-PCB" reference to "contains < 1 ppm PCB" • Paragraph 3.2.6.1. - Change Table III to Figure 2 • Paragraph 3.2.7. - Delete ratio requirement, update ANSI reference to 1987. • Paragraph 4.2.2. - Change impedance tolerance to within range specified. • Table 1: Change lead type LV terminals to stud type. Add impedance ranges on 131, 151, and 156. • Add Figure 1 • Changes Table III to Figure 2 • Appendix C – delete tank coating from table. 	Sagen/Coram 7/27/94
Rev. JJ <ul style="list-style-type: none"> • Paragraph 5.0 – Added pallet requirements 	Sagen 9/4/97
Rev. KK <ul style="list-style-type: none"> • Update date specific references to ANSI standards. • Add reference to Central Moloney secondary bushings. • Add Central Moloney to Approved Manufacturers list in Appendix C. 	Sagen 2/20/2003

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SPECIFICATION FOR OVERHEAD-TYPE, SINGLE PHASE DISTRIBUTION TRANSFORMERS WITH SEPARABLE INSULATED LOAD BREAK HIGH-VOLTAGE CONNECTORS

1 SCOPE

This Specification establishes the minimum requirements for single phase, 60 hertz, mineral-oil-filled self cooled (O.I.S.C.) overhead-type distribution transformers with separable insulated load break high voltage connectors; rated 250 kilovolt-amperes (KVA) and smaller; high-voltage: 7620/13200Y and dual voltage 7620/13200Y x 2400/4160Y; low voltage 120/240, 240/480, 277 volts, and 4160Y/2400.

2 APPLICABLE DOCUMENTS

The following American National Standards (ANSI) for Distribution, Power, and Regulating Transformers and Shunt Reactors form a part of this Specification:

- | | |
|-------------------------------------------|---------------|
| • General Requirements | C57.12.00 |
| • Overhead-Type Distribution Transformers | C57.12.20 |
| • Terminal Marking and Connections | C57.12.70 |
| • Terminology | C57.12.80 |
| • Test Code | C57.12.90 |
| • Appendix to ANSI C57.12.20 | C57.91 |
| • Separable Insulated Connectors | ANSI/IEEE 386 |

3 REQUIREMENTS

3.1 GENERAL REQUIREMENTS FOR DESIGN

Unless otherwise stated in this Specification, all transformers shall be new and shall conform to the American National Standard Requirements for Overhead-Type Distribution Transformers, ANSI C57.12.20 - latest revision. In case of conflict, the requirements of the following documents shall apply in the priority shown:

1. This Specification.
2. Referenced ANSI Standards.

Approved manufacturers are listed in Appendix C. For purposes of warranty and service, any distributor bidding must be an authorized distributor appointed by an approved manufacturer to serve the Fort Collins area.

3.2 SPECIFIC REQUIREMENTS FOR DESIGN

3.2.1 FUNCTIONAL DESCRIPTION

Transformers of this design are for installation on an underground power system utilizing separable insulated connectors and may be installed in underground vaults subject to submersion. They may also be padmounted under an enclosure, or pole mounted. The transformer tank, cover, and all external appurtenances shall be of corrosion-resistant material, unless they are otherwise rendered corrosion resistant.

3.2.2 RATINGS

3.2.2.1 KILOVOLT-AMPERE-RATINGS

3.2.2.1.1 NAMEPLATE RATING

Kilovolt-ampere ratings are continuous and based on not exceeding either a 65°C average winding temperature rise or an 80°C hot spot temperature rise. The temperature rise of the insulating oil shall not exceed 65° when measured near the top of the tank. The KVA rating shall be regarded as a test rating which defines an output which can be taken from the apparatus under the prescribed conditions of test within the limitations of all applicable standards. KVA ratings shall be in accordance with Table-1.

3.2.2.1.2 ADDITIONAL SUPPLEMENTAL LOADING

Additional supplemental loading may be carried as recommended by ANSI C57.91.

3.2.2.2 VOLTAGE RATINGS

Secondary and primary voltage ratings shall be in accordance with Table 1.

3.2.2.3 IMPEDANCE

Nominal impedance voltage shall be in accordance with Table 1 of this specification. Completed units may vary from the specified nominal up to the tolerance specified in ANSI C57.12.00.

3.2.2.4 BASIC IMPULSE INSULATION LEVELS

The high voltage BIL shall be 95 kV. The low voltage BIL shall be 30 kV.

3.2.3 BUSHINGS AND TERMINALS

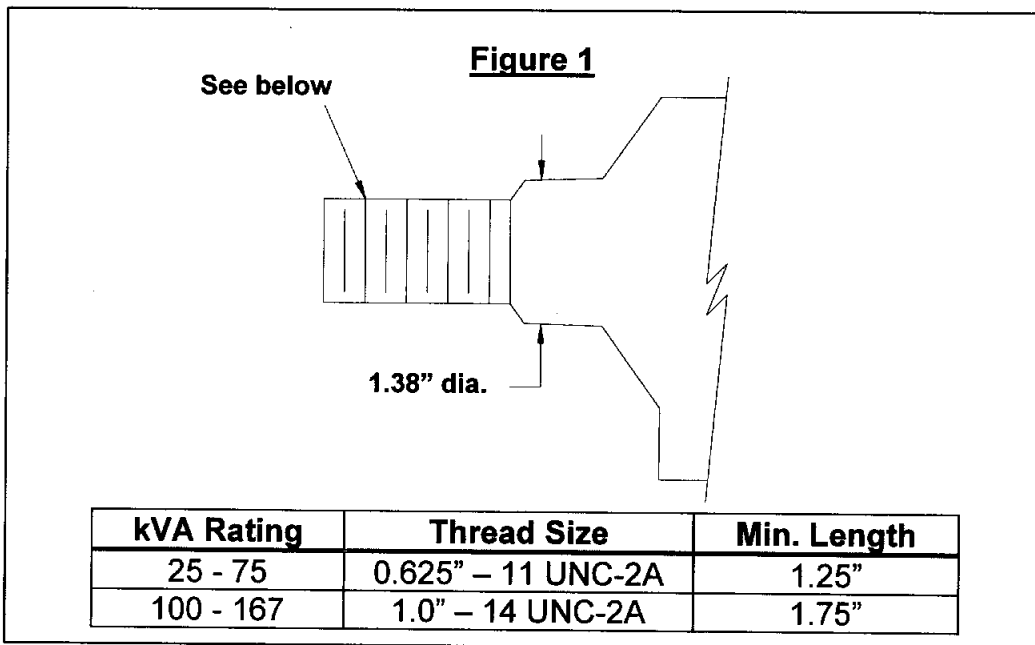
All internal leads and connections, on both high and low voltage, shall be sized to carry full ampere rating, including overload rating of transformer.

3.2.3.1 HIGH VOLTAGE TERMINALS

The number of high voltage terminals required is specified in Table 1. High-voltage bushing wells shall be cover mounted 200A load-break interface 8.3/14.4 kV bushings in accordance with ANSI/IEEE Std. 386.

3.2.3.2 LOW VOLTAGE TERMINALS

Terminal type and number shall be in accordance with Table 1 of this specification. Eyebolt and spade terminals shall be singly mounted sidewall type. Stud type terminals shall be singly mounted on the sidewall at 5.5 to 7.5 inch center to center spacing. Stud type terminals shall be equivalent to Central Moloney type 7013 having dimensions in accordance with Figure 1 of this specification or Central Moloney type 70105850, shall have a copper stud, and shall be internally or externally clamped. All non-metallic components of the terminals shall be of a material resistant to ultra-violet degradation. Mounting hardware shall be corrosion resistant. Secondary terminals for transformers with secondary voltages above 480V shall be cover mounted 200A load-break interface 8.3/14.4 kV bushings in accordance with ANSI/IEEE Std 386.



3.2.4 NEUTRAL TERMINATION

3.2.4.1 On transformers having one high voltage bushing, the H₂ end of the winding shall be securely grounded internally.

3.2.4.2 On units having three external eyebolt or spade type low-voltage terminals, the X₂ connection of the winding shall be isolated and an adequate external copper ground strap shall be provided from the neutral bushing to a standard tank ground pad.

On units having lead type low-voltage terminals, the X₂ connections of the winding shall be connected to the tank internally and such connection shall be indicated on a label next to the X₂ lead as well as on the nameplate.

Ground connections shall be suitably sized for the short-circuit rating of the transformer as defined in ANSI C57.12.00.

3.2.4.3 An adequate stainless steel connection shall provide electrical continuity between the tank and the cover.

3.2.5 ACCESSORY EQUIPMENT

In addition to the requirements of ANSI, accessory equipment shall be provided in accordance with **Table 1** and the following details.

3.2.5.1 Current-protecting (CP) when specified in Table 1 shall include internal weaklink primary fuse, secondary breaker, signal light, and emergency control handle. Internal fusing (internal) when specified in Table 1 shall include an internal partial range current limiting fuse in conjunction with an internal eutectic (temperature sensitive) weak link fuse.

3.2.5.2 When required by Table 1, an RTE Bay-o-net fuse and internally mounted ELSP partial range current limiting fuse(s) shall be furnished. Bay-o-net fuses shall be top mounted or sidewall mounted as required in Table 1.

3.2.5.3 When the transformer is specified as a dual voltage unit, an externally operated dual voltage switch shall be provided.

3.2.5.4 Taps, when required, shall be full capacity above and below normal and shall be provided with an externally operated tap changer switch. On dual voltage transformers, taps shall be furnished on the top voltage only.

3.2.5.5 Cover mounted, pocket type, cable accessory, parking stand for a loadbreak stand off device shall be provided.

3.2.5.6 Cover mounted instruction nameplate conforming to 5.12 of ANSI C57.12.00-1987, Nameplate A, shall be provided. Also, on the nameplate or label affixed near it, the manufacturer shall indicate that the dielectric fluid contains less than 1 ppm PCB.

TABLE 1

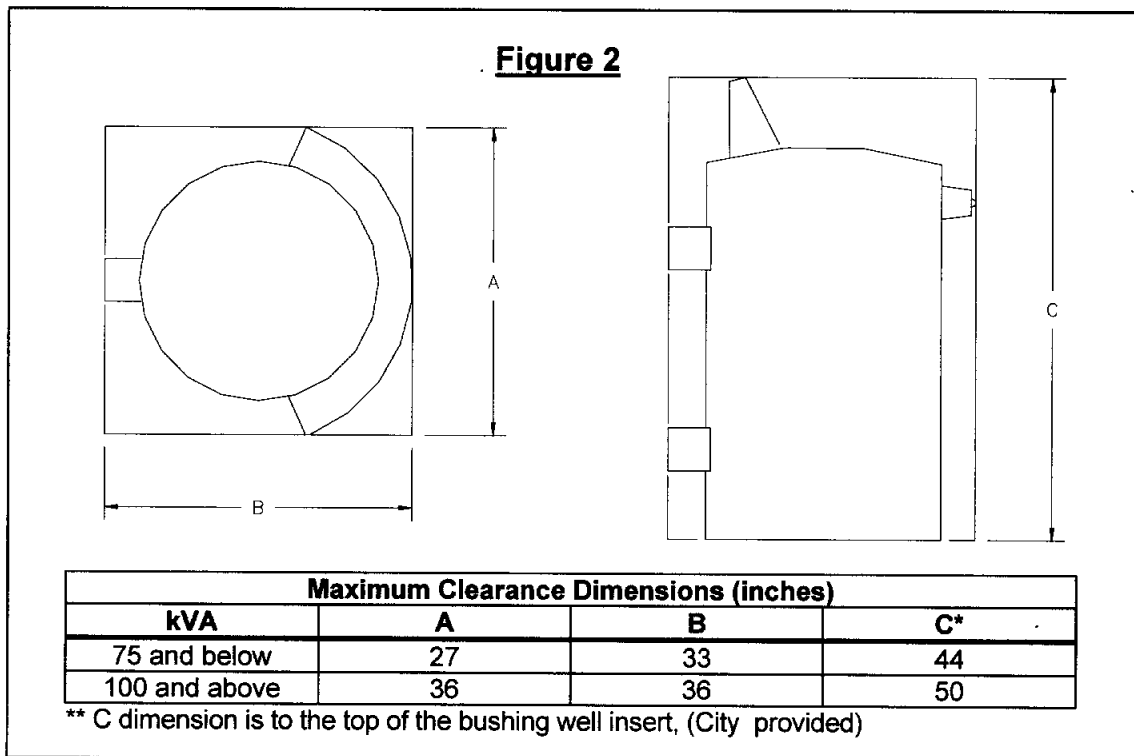
STOCK NO. 368-105-SERIAL	KVA	% Z	HIGH VOLTAGE				LOW VOLTAGE		PROTECTION TYPE ⁽¹⁾
			RATING	TERMINAL(S)	TAPS		RATING	TYPE AND NUMBER OF TERMINALS	
					ABOVE	BELOW			
-111	10	TBD	13200 GRDY/7620	One bushing well	-	-	120/240*	Three Eyebolt	CP
-131	25	1.77 to 2.16	13200 GRDY/7620	One bushing well	-	-	120/240*	Three CU stud	CP
-151	50	1.77 to 2.16	13200 GRDY/7620	One bushing well	-	-	120/240*	Three CU stud	CP
-155	50	TBD	7620/13200Y	Two bushing wells	2-2½%	2-2½%	120/240*	Three 4 hole "H"	S
-156	50	TBD	13200 GRDY/7620	One bushing well	-	-	240/480	Three Eyebolt	CP
-161	75	1.86 to 2.27	13200 GRDY/7620	One bushing well	-	-	120/240*	Three CU stud	Internal
-171	100	TBD	13200 GRDY/7620	One bushing well	-	-	120/240*	Three Eyebolt	Internal
-174	100	TBD	13200 GRDY/7620	One bushing well	2-2½%	2-2½%	120/240	Four 6 hole "J"	Internal
-175	100	TBD	7620/13200Y	Two bushing wells	2-2½%	2-2½%	120-240	Four 6 hole "J"	S
-176	100	TBD	13200 GRDY/7620	One bushing well	2-2½%	2-2½%	277	Two 4 hole "H"	Internal
-177	100	TBD	7620/13200Y	Two cover mounted bushing wells	2-2½%	2-2½%	2400/4160Y	Two cover mounted bushing wells	S
-184	167	TBD	13200 GRDY/7620	One bushing well	2-2½%	2-2½%	120/240	Four 6 hole "J"	Internal
-185	167	TBD	7620/13200Y	Two bushing wells	2-2½%	2-2½%	120/240	Four 6 hole "J"	S
-186	167	TBD	13200 GRDY/7620	One bushing well	2-2½%	2-2½%	277	Two 4 hole "H"	Internal
-189	167	TBD	13200 GRDY/7620	One cover mounted bushing wells	-	-	4160GRDY/ 2400	One cover mounted bushing well	S
-195	250	TBD	7620/13200Y	Two bushing wells	2-2½%	2-2½%	120/240	Four 6 hole "J"	S
-196	250	TBD	13200 GRDY/7620	One bushing well	2-2½%	2-2½%	277	Two 6 hole "J"	Internal
-231	25	TBD	13200 GRDY/7620x 4160 GRDY/2400	One bushing well	-	-	120/240*	Three Eyebolt	CP
-238	25	TBD	13200 GRDY/7620x 4160 GRDY/2400	One bushing well	2-2½%	2-2½%	240/480	Three Eyebolt	CP
-251	50	TBD	13200 GRDY/7620X 4160 GRDY/2400	One bushing well	-	-	120/240*	Three Eyebolt	CP
-258	50	TBD	13200 GRDY/7620X 4160 GRDY/2400	One bushing well	2-2½%	2-2½%	240/480	Three Eyebolt	CP

*Reconnectable in field for 120/208 volt service

(1) **CP** = current-protecting (see para. 3.2.5.1); **S** = conventional; **Internal** - current limiting protection (see para. 3.2.5.1)
TBD = To be Determined

3.2.6 TANK

3.2.6.1 An adequate tank coating for underground vault application shall be provided. Appendix B is provided as a reference for comparing coating requirements. The Light and Power Department, Engineering Division, is the only authority regarding the adequacy of proposed coatings. Figure 2 shows outside dimensions.



3.2.6.2 PRESSURE

The tank shall be equipped with a Qualitrol #202-014-01 or 202-030-01 pressure relief device or a pressure relief cover. If a pressure relief cover is used, the cover assembly shall remain effectively sealed for overloads and external secondary short circuits of the magnitude and duration allowed by industry standards and loading guides, but shall relieve pressure at a minimum of 8 psi gauge if designed to reseal; or at a minimum of 20 psig if designed for pressure relief without resealing. If a pressure relief cover is used, a manual means of venting the tank before removal of the cover shall be provided. Regardless of which means of pressure relief is provided, the tank and other components of the tank shall be of sufficient strength to withstand, without damage or permanent distortion, the pressures occurring prior to pressure relief, as well as pressures occurring due to normal overloads and external secondary short circuits.

3.2.6.3 GROUNDING PROVISIONS

A minimum of two tank mounted ground nuts fitted with a solderless type connector for AWG conductor size No. 8 solid to No. 2 stranded shall be provided. One ground connector shall be on the tank sidewall, near the top of the tank, below the primary bushing and the other shall be near the base, below the primary bushing.

3.2.7 LOSSES

The total losses of a transformer shall be the sum of the excitation losses and the load losses (I^2R losses). Load loss tests shall be performed and reported on all units regardless of whether or not a record of such tests is available on duplicate units. Loss evaluations and loss costs will be based on the values shown in the "Special Conditions and Supplemental Instructions to Bidders." Transformers will be evaluated on excitation losses and I^2R losses at the specified rates. If tested losses exceed quoted losses but are within the tolerances of paragraph 9.3, ANSI C57.12.00-2000, the additional cost incurred from the differential of losses will be calculated using the following equation and the above specified rates and will be deducted from the original Purchase Order or back charged to the manufacturer. In the following equation "Units" shall mean "Transformers of the same size and design on one order."

Excess loss \$ = [No. of units] [(No Load Loss Evaluation \$) (Avg. No Load Losses - Quoted No Load Losses) + (Load Loss Evaluation \$) (Avg. Load Losses - Quoted Load Losses)]. If this equation results in a negative number, no credit will be given the Supplier.

If any unit or units exceed the tolerances of paragraph 9.3, ANSI C57.12.00-2000, that unit or units shall not be shipped without express permission from the City. If accepted, the deduction for excess losses will be based on the following equation: Excess loss \$ = (No Load Loss Evaluation \$) (No Load Losses - Quoted No Load Losses) But Not Less Than Zero + (Load Loss Evaluation \$) (Load Losses - Quoted Losses) But Not Less Than Zero.

4 QUALITY ASSURANCE

4.1 GENERAL

4.1.1 RESPONSIBILITY FOR INSPECTION

Unless otherwise specified, the vendor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the vendor may utilize his own facilities or any commercial laboratory acceptable to the City of Fort Collins. The City reserves the right to perform or witness any of the inspections set forth in this Specification where such inspections are deemed necessary.

4.1.2 TEST REPORT

The manufacturer shall furnish to the purchaser certified copies of the results of loss tests prior to payment. Copies of loss tests shall be sent to Standards and shall be attached to the invoice. Unsigned copies are not acceptable even if accompanied by a signed cover letter.

4.2 TEST CONDITIONS

Unless otherwise specified, testing required by Section 4.4 shall be conducted under the following conditions.

4.2.1 REFERENCE TEMPERATURE

The reference temperature to which losses, impedance, regulation, and efficiency are corrected shall be 85°C.

4.2.2 TOLERANCE ON IMPEDANCE VOLTAGE

Impedance on completed units shall fall within the ranges specified herein.

4.2.3 TOLERANCE ON IMPEDANCE VOLTAGE ON A TAP

The percent departure of tested impedance voltage on any tap from tested impedance voltage at rated voltage shall not be greater than the total tap voltage range expressed as a percentage of the rated voltage.

4.3 NOT USED

4.4 TESTS

The tests to be performed and the test procedures required are specified in ANSI C57.12.20, ANSI C57.12.00, and C57.12.90. Exception: impedance and load-loss tests shall be made on each unit and may not be omitted even if a record of such tests made on a duplicate unit is available.

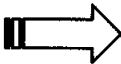
5 PREPARATION FOR DELIVERY

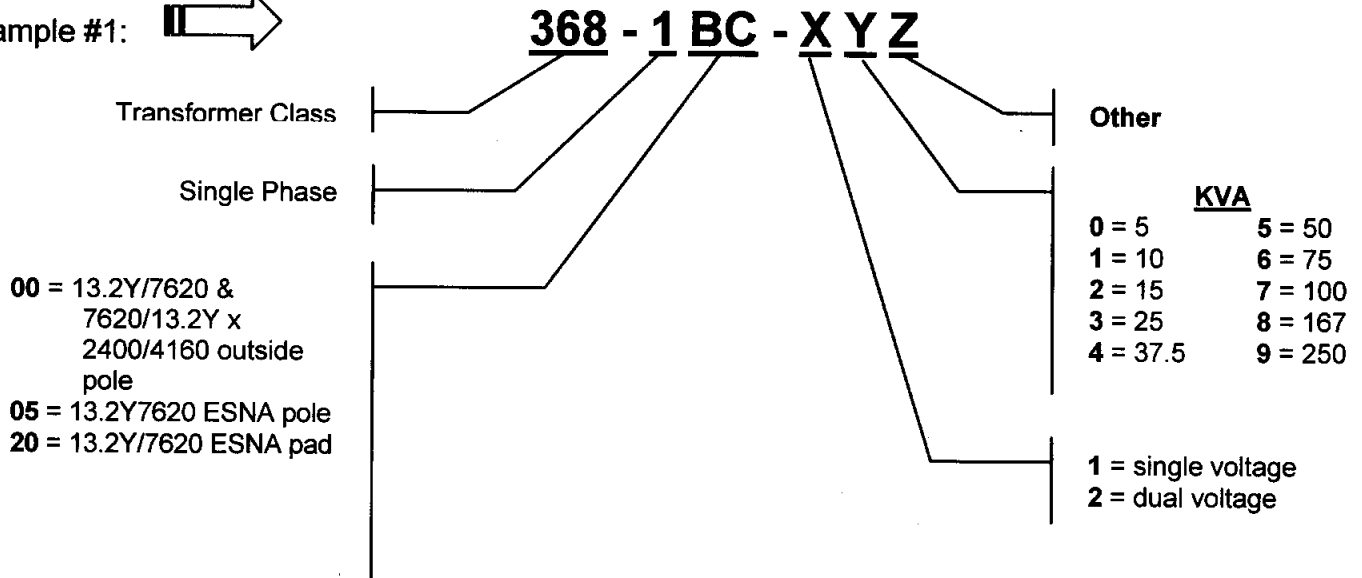
Transformers shall be prefilled with the appropriate amount of transformer oil and shall be shipped by open-bed truck. Units shall be packaged in such a way as to provide for ease of handling and to protect units from shipping damage. Units shall be packaged on four-way universal pallets with 34 inch minimum opening and loaded on the truck for side removal. The Supplier shall provide 24 hour notice prior to delivery for any shipments where an individual transformer weighs over 5,000 pounds. In addition to these requirements, the Supplier shall comply with any additional requirements or modifications shown on the purchase order and/or supplemental instructions.

APPENDIX A – Transformer Stock Number Coding

Below are examples that demonstrate the coding method used by City of Fort Collins to establish transformer stock numbers.

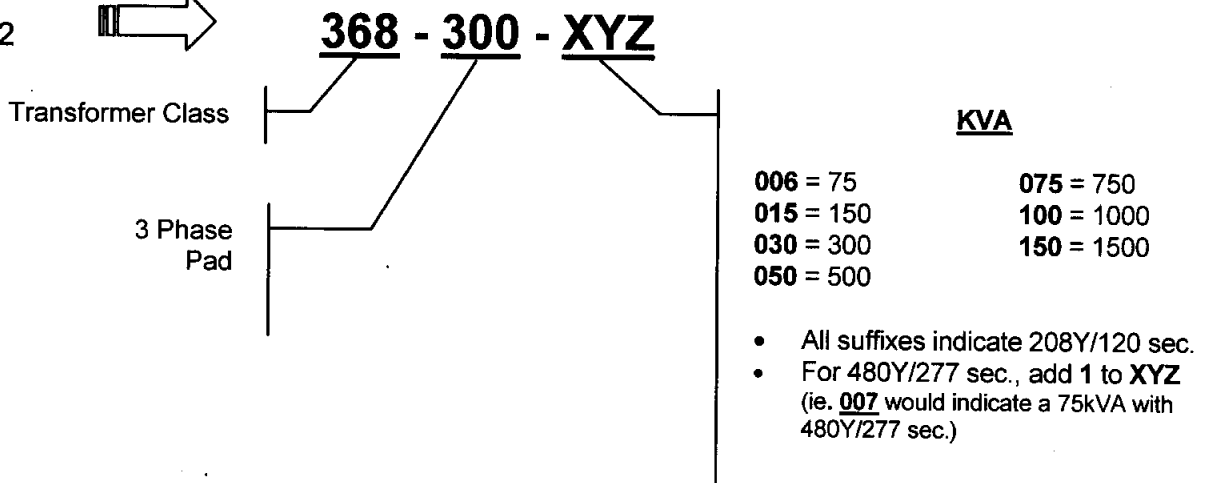
I. SINGLE PHASE

Example #1: 



II. THREE PHASE

Example #2: 



APPENDIX B – Tank Coating Comparison

This Appendix is not intended to dictate requirements for items purchased under Specification 368-105, but is included as an aid in comparing coatings for those manufacturers attempting to meet the requirements of this design.

Tank coatings listed here are for reference only and shall not be considered as complete. Also, the City of Fort Collins shall not be held responsible for patent infringements incurred through the use of this information.

- B.1 ARMORTEC, a fusion bonded vinyl resin having a minimum coating thickness of 15 mils.
- B.2 Coal-tar Epoxy having a minimum thickness of 15 mils applied in two coats over a zinc rich primer and overcoated with flow coat applied black enamel paint.
- B.3 Electrostatically applied thermosetting polyester applied as follows:
1. Five Stage Wash - alkaline detergent, water rinse, phosphate treatment, water rinse, and sealing rinse.
 2. Delay Line - dry and cool.
 3. Coat - Electrostatically coat with a thermosetting polyester.
 4. Bake - Heat as recommended by polyester manufacturer to set polyester.
 5. Cool.
 6. Repeat Process - Repeat applicable steps of above process to obtain a minimum dry build of 6 mils.
- B.4 Ceilcote Flakeline 252 (minimum thickness 35 mils).

APPENDIX C – Approved Manufacturers

Transformers purchased under this Specification shall be of the make shown below. Manufacturers not listed below may submit written proposals demonstrating compliance with these Specifications for consideration of addition to the accepted manufacturer list prior to the next request for bids. In addition to inclusion on the list below, manufacturer's equipment must also satisfy all requirements of this Specification to be acceptable.

<u>MANUFACTURER</u>	<u>SERIAL NO.</u>
Cooper Power Systems	All except 196 & 195
Howard Industries	All
ABB	All
Central Moloney	All

The manufacturers in the following list have been conditionally approved and may bid as an alternate. The definition and intent of "Conditional Approval" of a manufacturer is to allow the City to gain some experience with the manufacturer's product. Should a conditionally approved manufacturer be the evaluated low bidder, the City reserves the right to award all, part, or none of the order to them, dependant upon the current needs of the City for that item or items.

Transformer Loss Evaluation Form- AVERAGE LOSSES

City Order No. _____ S/N

Manufacturer _____ Invoice No.

KVA/Unit

<u>LINE</u>	DESCRIPTION	AMOUNT
(1)	No. of units	
(2)	Average core losses	
(3)	Quoted core losses	
(4)	Excess average core losses: line (2) less line (3)	
(5)	Penalty for excess average core losses: line (1) x line (4) x \$	
(6)	Average copper losses	
(7)	Quoted copper losses	
(8)	Excess average copper losses: line (6) less line (7)	
(9)	Penalty for excess average copper losses: line (1) x line (8) x \$	
(10)	Penalty to be assessed manufacturer: line (5) plus line (9) but not less than zero	

Date _____ Prepared By: _____
Design Engineering

NOTE: If any unit(s) exceeds the loss tolerances of ANSI C57.12.00, Light & Power will either reject it, include it on these averages, or calculate losses using the Individual Transformer Losses Evaluation Form, whichever is most favorable to Light and Power.

Individual Transformer Loss Evaluation Form

City Order No. _____ S/N
 Manufacturer _____ Invoice No.
 KVA/Unit _____

<u>LINE</u>	<u>DESCRIPTION</u>	<u>AMOUNT</u>
(1)	Tested core losses	
(2)	Quoted core losses	
(3)	Excess core losses line (1) less line (2) but not less than zero	
(4)	Percent difference line (3) , line (2) x 100	
(5)	Tested total losses	
(6)	Quoted total losses	
(7)	Excess total losses line (5) less line (6) but not less than zero	
(8)	Percent difference line (7) , line (6) x 100	
(9)	Tested copper losses	
(10)	Quoted copper losses	-
(11)	Excess copper losses line (9) less line (10) but not less than zero	
(12)	Penalty for excess core losses line (3) x \$	
(13)	Penalty for excess copper losses line (11) x \$	
(14)	Penalty to be assessed manufacturer line (12) plus line (13)	

Date _____ Prepared By: _____ (Design Engineering)

Special Conditions and Supplemental Instructions to Bidders
Applicable to Specification 368-105

A. Data to be Supplied with Bidder's Proposal

The following data shall be supplied with the bidder's proposal in addition to that information required by the "Invitation to Bid" and the "Purchase Requisition".

1. Impedance volts in % at full load, high voltage to low voltage at 85°C.
2. No load and total losses at 85°C.
3. Protective tank coating specification.
4. A statement indicating compliance with our Specification without exception.
5. Escalation is ____, is not ____ applicable for the transformers bid. If escalation applies, the Bidder shall indicate in his bid the specific items or materials subject to escalation, and shall give the method and indices to be used in computing the amount thereof. Escalation occurring after the quoted delivery date will not be paid unless delays are the result of actions by the City. Escalation occurring after acceptance, if Purchaser exercises the option to delay shipment after manufacturing is completed, will not be paid.

Failure to supply the above data shall constitute a basis for rejection of the bid.

B. Loss Evaluations

Loss penalties and loss evaluations will be based on the following values:

1. No load or excitation losses at \$3.25/watt.
2. Load losses at \$1.10/watt.

C. Shipping Terms

Ship F.O.B. point of destination, freight prepaid.

D. Terms of Payment

1. If escalation applies, the City of Fort Collins shall not be billed for escalation occurring after the promised delivery date. Escalation charges shall be itemized on the invoice.
2. Test reports shall accompany the invoice. If test reports do not accompany the invoice, late payment penalty charges incurred due to delays in obtaining the test reports will not be paid. Certified copies of test reports shall be sent to the Design Section, Fort Collins Light and Power Utility.
3. Loss penalty credits and escalation charges shall be itemized on the invoice.