SPECIFICATIONS & CONTRACT DOCUMENTS

FOR

THREE PHASE PAD MOUNTED TRANSFORMERS

City of Fremont
400 East Military Ave
Fremont, Nebraska

NOTICE TO BIDDERS **PUBLISH THREE (3) TIMES:**
THREE PHASE PAD MOUNTED TRANSFORMERS September 10, 2022
FREMONT, NEBRASKA September 17,2022
September 24,2022

Sealed Bids will be received at the office of the City Clerk in the City Building, 400 East Military Avenue, Fremont, Nebraska, until 2:00 p.m., September 27, 2022 and be publicly opened and read in the Council Chambers at that time for Three Phase Pad Mounted Transformers for the City of Fremont.

Each bid shall be accompanied by a certified check, cashier's check, or a bank draft on a solvent Nebraska bank insured by FDIC or a bid bond in the amount not less the five percent (5%) of the bid price. That bid security shall be sealed and addressed to the City Clerk, Fremont, Nebraska and labeled on the outside " Three Phase Pad Mounted Transformers". Any bids received from contractors not so qualified will be returned unopened.

The bid security shall guarantee the bidder's good faith to enter into the contract within fifteen (15) days at the bid price if accepted by the City Council. Any proposal received which is not accompanied by a bid security will not be considered. The bid security of the successful bidder will be retained until the material has been delivered and accepted by the City. The bid security of the unsuccessful bidders will be returned when their bids are rejected. The City of Fremont hereby reserves the right to accept that bid which, in its judgment, will produce the best job of workmanship and material, whether or not it is the lowest bid; and reserves the right to reject any or all bids and to waive any or all informalities of any proposal.

ATTEST: **CITY OF FREMONT, NEBRASKA**

TYLER FICKEN
CITY CLERK JOEY SPELLERBERG, MAYOR

PROPOSAL FOR THREE PHASE PAD MOUNTED TRANSFORMERS

FOR THE CITY OF FREMONT, NEBRASKA
ACCORDING TO SPECIFICATIONS

Date of Proposal _____

Name & Address of Bidder _____

_____

_____

_____
Telephone Number

Authorized Signature _____

Name & Title/Individual Signing _____

_____

Return Bid Security to _____

****

DELIVERY OF

TWO (2) TRANSFORMERS, 500 Kva, 3 PH, PAD MOUNTED, 13800 Grd Y/7970 480Y-277V

$_____

Anticipated Delivery Date…….. _____

Bidder must acknowledge receipt of Addendums.

Number	Date
_____	_____
_____	_____
_____	_____

PROPOSAL FOR THREE PHASE PAD MOUNTED TRANSFORMERS

FOR THE CITY OF FREMONT, NEBRASKA
ACCORDING TO SPECIFICATIONS

Date of Proposal _____

Name & Address of Bidder _____

_____

_____

_____
Telephone Number

Authorized Signature _____

Name & Title/Individual Signing _____

_____

Return Bid Security to _____

****

DELIVERY OF

TWO (2) TRANSFORMERS, 750 Kva, 3 PH, PAD MOUNTED, 13800 Grd Y/7970 480Y-277V

$_____

Anticipated Delivery Date…….. _____

Bidder must acknowledge receipt of Addendums.

Number	Date
_____	_____
_____	_____
_____	_____

DETAILED SPECIFICATIONS

THREE PHASE PAD MOUNTED TRANSFORMERS

1.0 SCOPE

1.1 This specification covers the electrical characteristics and mechanical features of pad mounted, compartmental type, self-cooled, three phase, and 60 Hertz, mineral-oil-immersed, distribution transformers rated 75 through 2,500 KVA.

1.2 Except as modified by these specifications, all transformers shall meet the applicable provisions specified in ANSI/IEEE C57.12.00, ANSI C57.12.22, IEEE C57.12.26, ANSI C57.12.28, ANSI C57.12.70, ANSI/IEEE C57.12.80, ANSI/IEEE C57.12.90 and ANSI C119.2. Specific ANSI/IEEE references are periodically made to specific requirements. Manufacturing and design should be in accordance to the latest revision of the standard stated.

2.0 RATINGS

2.1 This specification covers transformers with ratings as shown in the following table. The average winding temperature shall not exceed 65 degree centigrade rise above ambient temperature for continuous operation at nameplate KVA ratings.

Three Phase High Voltage Rating (V)	Low Voltage Rating (V)	Taps	BIL (KV)	Insulation Class (KV)
13,800GrdY/7970	208Y/120	5	95	15
13,800GrdY/7970	480Y/277	5	95	15

High voltage tap ratings shall be two taps above and two taps below rated voltage with an external operating handle. The tap ratings shall be manufactured as follows:

Above -	14,400 V
-	14,100 V
RATED-	13,800 V
Below -	13,500 V
-	13,200 V

2.2 The following is a list of KVA sizes that may be purchased for the high and low voltage ratings specified:

75 through 2,500 KVA.

2.3 HIGH/LOW VOLTAGE NEUTRAL

The high voltage neutral shall be securely grounded to the tank internally. This connection shall be independent of all other connections. The low voltage neutral shall be insulated and isolated except for a removable ground strap connected to the ground pad.

3.0 INSULATING FLUID

3.1 Mineral oil filled fluid to be classified as **NO-PCB** by indicating on the nameplate that the transformers are manufactured with **LESS THAN 1** part per million (ppm) of Polychlorinated Biphenyls (PCBs).

3.2 Insulating oil to meet ASTM D3487-82(a) requirements, with a minimum breakdown value of 28 KV per ASTM D1816-84(a) requirements using a 0.4" gap.

4.0 CONSTRUCTION

4.1 ANSI C57.12.22, IEEE C57.12.26 and ANSI C57.12.28 design. Loop feed, dead front, high voltage connection specified in IEEE C57.12.26, Figures 6(a), 7 and 8(a).

4.2 Six dead front, externally clamped, replaceable and removable, universal type high voltage bushing wells capable of accepting 15 KV class, 200 amp switching, 10,000 amp symmetrical fault closing, bushing well inserts. Bushing wells shall have a replaceable external contact stud. Inserts **ARE NOT** to be provided. Bushing wells are to meet the requirements as set forth in IEEE Standard 386, including the reference to the interface defined in Figure 3.

4.3 Low voltage bushings externally clamped and removable with NEMA standard multi-hole tin plated copper spade terminals suitable for copper or aluminum connectors specified in IEEE C57.12.26, Figure 9 and in the following table:

KVA RATING	Spade Terminal Mounting Holes
75 - 300	8 mounting holes
500 - 2,500	10 mounting holes

The low voltage terminal arrangement shall be configured as specified in IEEE C57.12.26, Figure 8(a).

4.4 The depth of the high and low voltage compartments shall be increased to allow sufficient space for the longer above specified low voltage spade terminals.

4.5 All transformers shall be supplied with insulated low voltage bushing support brackets capable of supporting the weight associated with the number of cables and connectors required for the particular size of the transformers. The mounting of the support brackets to the spade terminals shall not interfere with the attachment of the cable connectors to the spade terminals, by allowing for the use of all spade terminal cable connector mounting holes. The insulated low voltage bushing support brackets shall be removable to allow for the replacement of spade terminals and for the installation of current transformer metering equipment.

4.6 Bidder shall supply drawings showing the configuration, location and dimensions of the insulated secondary bushing supports with the bid.

4.7 Bidder shall supply drawings showing high voltage and low voltage configurations and dimensions with the bid.

4.8 Bidder shall supply drawings and dimensions showing the pad size requirement and cabinet dimensions with the bid. The transformers shall be constructed to a size that covers the concrete pad high and low voltage compartment opening and fit onto the overall outside dimensions as follows:

75 to 300 KVA	Pad OD - 76” wide by 70” deep
	Compartment - 38” wide by 14” deep
500 to 1000 KVA	Pad OD - 95” wide by 102” deep
	Compartment - 52” wide by 18” deep
1500 to 2500 KVA	Pad OD - 95” wide by 108” deep
	Compartment - 57” wide by 18” deep

4.9 The paint finish shall be Munsell Green 7GY3.29/1.5 specified in ANSI C57.12.28, Paragraph 5.2.3 with an undercoated base.

4.10 A replaceable pressure relief valve specified in IEEE C57.12.26 Paragraph 7.5.2.

4.11 Externally mounted tank grounding provisions as specified in ANSI C57.12.22 Paragraph 7.6.3 with a low voltage neutral bushing grounding strap.

4.12 One inch fill plug and a one inch drain plug with a one half inch oil sampler device mounted on the front of the tank located in the low voltage compartment.

4.13 Mounting provisions for a liquid level oil gauge mounted on the front of the tank located in the low voltage compartment. The liquid level gauge **IS NOT** to be provided.

4.14 Nameplate and connection diagram specified in ANSI C57.12.22, Paragraph 7.4.1 and 7.4.2 mounted on the front of the tank to include the PCB ppm level at the time of manufacture. The nameplate shall include the month and year of manufacture without the use of special codes and be located in the low voltage compartment.

4.15 The construction of the transformers shall provide flexibility, convenience and reliability, shall conform as specified in ANSI C57.12.22, IEEE C57.12.26 and ANSI C57.12.28 and shall have a removable front sill plate. The transformers shall be complete when received and ready for service.

4.16 Construction of the transformers shall be so designed and constructed as to be tamper- resistant as specified in IEEE C57.12.26 and ANSI C5712.28. Except for the captive compartment door fastening device, there shall be no screws, bolts or other fastening devices which are externally removable.

4.17 The high and low voltage compartments shall be arranged for cable from below and have a captive external fastening device and be suitable for a single padlock. The padlocking facility shall have a captive penta-head recessed bolt specified in ANSI C57.12.28, Figure 1.

4.18 The low voltage compartment shall have a removable hinged door, have three-point latching and have an external handle. The compartment door shall open to a minimum of 120 degrees and have a holding bar.

4.19 The high voltage compartment door shall have a removable hinged door with a fastening device which is accessible **ONLY** after the door to the low voltage compartment has been opened. The compartment door shall open to a minimum of 120 degrees and have holding bars.

4.20 The high voltage Bay-O-Net fuse holders shall be arranged to allow removal without removing the compartment lid and shall have a drip shield located under the Bay-O-Net fuse holders.

4.21 The sound level of the transformers shall conform to the requirements specified in NEMA Standard TR-1, paragraph 0.05.

4.22 All transformers shall be shipped on a removable wooden pallet or structure that will support the weight of the transformers while being stored, loaded, unloaded or moved by a forklift type vehicle.

4.23 Grounding provisions shall consist of three grounding pads. They shall be welded to the tank in a continuous seam near the base (7" high & 5" from side). Two in the primary compartment and one in the secondary compartment. (See Grounding Pad detail TRANS.DWG)

Ground pads shall be unpainted copper faced or stainless steel pads, 2 x 3 ½ inches each, with two ½ inch-13 UNC tapped holes, 7/16 inches deep, on 1 ¾ inch centers.

Minimum copper facing thickness shall be 0.015 inches.

4.24 Manufacturer shall provide copies of the following documents:

4.24.1 Product Data on specified product;

4.24.2 Shop Drawings on specified product;

4.24.3 Standard Test Data, as required by ANSI/IEEE C57.12.90, by Transformer Serial Number to follow shipment.

4.24.4 Manufacturer shall provide copies of installation, operation and maintenance procedures to owner.

4.24.5 Submit operation and maintenance data based on factory and field testing, operation and maintenance of specified product.

5.0 FUSING

5.1 The high voltage fusing shall consist of externally removable under oil expulsion fuses in series with internal oil immersed partial range current limiting fuses. ` The partial range current limiting fuses shall be connected to the high voltage feed through bus between bushings such that there are a minimum of unprotected leads and connections within the transformer. The partial range

current limiting fuses must be on the source side of the expulsion fuses. The six fuses shall be selected and sized such that the expulsion fuses will blow and the partial range current limiting fuses will not be damaged (and will not require any testing or checking) for any possible low voltage fault external to the transformer tank.

Where the table below includes the acceptable expulsion fuse, the internal partial range current limiting fuse shall be selected to coordinate with the listed expulsion fuses. The internal partial range current limiting fuse must be selected to clear any fault above the interrupting rating of the expulsion fuse in a time that will prevent excessive arcing or pressure buildup within the transformer tank.

5.2 The dual sensing Bay-O-Net expulsion fuse holders shall be the Cooper Power Systems flapper, sidewall mount design, Bay-O-Net fuse assembly, catalogue number 4000361C99FV.

5.3 The high ampere Bay-O-Net overload fuse holders shall be the Cooper Power Systems flapper, sidewall mount design, Bay-O-Net fuse assembly, with silver plated contacts, catalogue number 4038804B03M.

5.4 An expulsion fuse shall be installed in the Bay-O-Net holder in conformance with the following table:

Transformer Size, KVA	Dual Sensing Bay-O-Net Expulsion Fuse Link
Three Phase	Cooper
75	4000358C05
150	4000358C08
225	4000358C10
300	4000358C10
500	4000358C12
750	4000358C14
	High Ampere Overload Fuse Link
1000	4038361C03CB
1500	4038361C04CB
2000	4038361C05CB
2500	4038361C05CB

6.0 LOSSES

6.1 Each bidder shall include with the bid the transformer losses corrected to 85 degrees centigrade. The following formula will be used to determine the Equivalent First Costs:

CT = CU + (NLL)(CNL) + (LL)(CLL)
Where CT = total cost to be evaluated
CU = quoted unit price
NLL = core loss in watts (no load)
LL = winding loss in watts (full load)
CNL = evaluated value of core losses in dollars per watt ($3.21)
CLL = evaluated value of winding losses in dollars per watt ($1.03)

TLL = total load losses are the core (no load) + the winding (full load) losses

The formula used to calculate the evaluated value of the losses does include an expected service life of 30 years before change out.

7.0 TESTS

7.1 The transformers shall comply with the testing requirements specified in IEEE C57.12.00.

7.2 The successful bidder shall supply Certified Loss Tests by serial number for each transformer supplied, showing the above required losses and impedances sent at least one week prior to submitting the invoice.

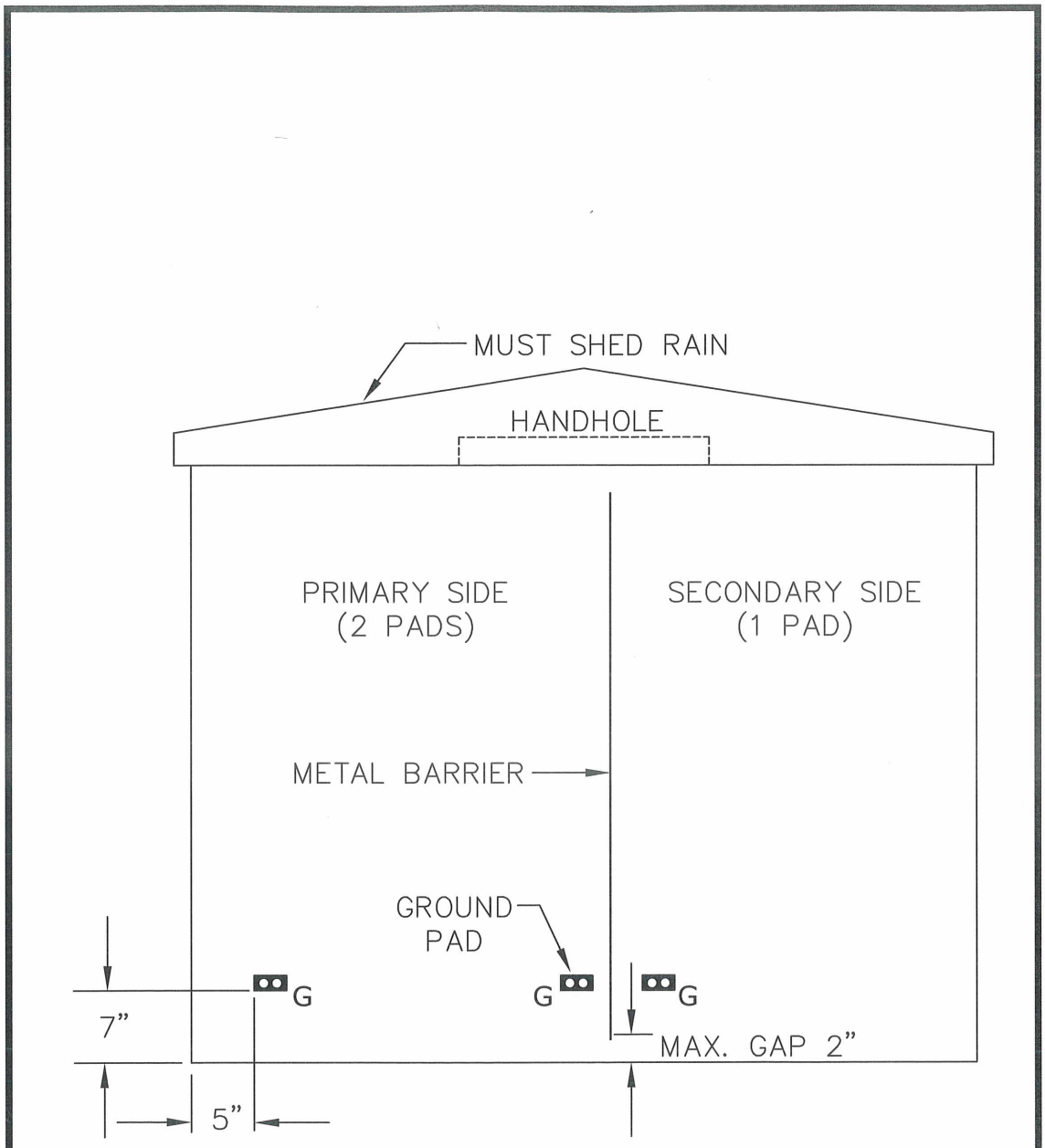
7.3 If the tested losses exceed the tolerances specified by IEEE C57.12.00, Paragraph 9.3 and Table 19, then the purchase price may be reduced by an amount equal to the excess no load and/or load losses multiplied by the appropriate values of CNL and CLL.

7.4 Testing not limited to but should include the following:

A. No load loss
B. Excitation current at rated voltage
C. Polarity check
D. Ratio check
E. Low frequency dielectric tests at high and low voltage
F. Mechanical leak test
G. Load loss
H. Impedance
I. Production line impulse test

8.0 IMPEDANCES

8.1 The percent impedance voltage shall be within a tolerance specified in IEEE C57.12.00, Paragraph 9.2.



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REVISED: 4/30/19 KAVAN	GROUNDING PAD DETAIL FREMONT DEPARTMENT OF UTILITIES CONSTRUCTION STANDARD	

INSTRUCTIONS TO BIDDERS

GENERAL. Sealed Bids will be received at the office of the City Clerk in the City Building, 400 East Military Avenue, Fremont, Nebraska, until 2:00 pm on Tuesday, September 27, 2022, and be publicly opened and read in the Council Chambers at that time for:

TRANSFORMERS

BID ENVELOPE & EXCEPTIONS. The bid security, the bid, detailed list of exceptions, addenda, and any other pertinent material, shall be sealed in an envelope marked: **"BID FOR TRANSFORMERS"**. Bidders must list any exceptions with a detailed explanation on a separate sheet, if necessary, and enclose it in the same sealed envelope.

In order to be valid, bidders shall submit proposals to the office of the City Clerk, on the form furnished with the specifications as furnished by the City. If a corporation submits a bid, a legally authorized corporation agent or officer shall sign it. The City Council may reject any proposals, which are incomplete, irregular, or fail to meet all the requirements. Bid received after the above-specified time for opening will be returned unopened to the sender.

Bidders shall sign copies of any addenda and attach them to the specifications. Bidders shall mail or deliver the sealed bid package, to the office of the City Clerk, 400 East Military Avenue, Fremont, Nebraska 68025 in a sealed envelope with their return address noted on the envelope, labeled "**TRANSFORMERS**".

EVALUATION. Staff will evaluate the bids based on quality, warranty, experience of the manufacturer, price, delivery and adherence to specifications. The City reserves the right to select the bid which best suits its needs, whether or not it is the lowest bid, and also reserves the right to reject any or all bids and to waive informalities.

INSTRUCTIONS. The purpose of these specifications is to give detailed data on the scope of the contract, quality of equipment required, standards used in determining its acceptability, and similar data. Each bidder shall carefully check all requirements and shall offer equipment which fully complies with these requirements or shall plainly set forth all points, features, conditions, specifications, etc., wherein the equipment offered does not meet these specifications. The bidder shall indicate any deviation from the specifications in the appropriate blanks in the Specifications.

The bidder shall base his bid on materials and equipment complying fully with the specifications. If the materials and equipment do not conform, the bidder will be responsible for furnishing materials and equipment which fully conform at no change in the bid price.

The bidder shall include a set of the manufacturer's specifications for all products to be used, in with their bid.

BID SECURITY. The bidder shall submit with each proposal a certified check, cashier's check, or a bank draft on a solvent Nebraska bank insured by FDIC or a bid bond in the amount not less than five percent (5%) of the bid price. That bid security shall be payable to the City Treasurer of the City of Fremont, Nebraska.

It guarantees the bidder's good faith to enter into the contract within fifteen (15) days at the bid price if accepted by the City Council. If the bid is accepted and the bidder fails to execute the

contract documents, the City has the option to retain the bid security. All bid securities will be held until the successful bidder has executed the contract documents. The bid security of the successful bidder will be retained until the material has been delivered and accepted by the City.

All bids shall remain in force for a sixty (60) day period. The City Clerk will return bid securities to unsuccessful bidders within sixty (60) days from the date the bids are opened.

ADDENDA AND INTERPRETATIONS. No interpretation of the meaning of the bidding documents will be made to any bidder orally. Every request for such interpretation should be made to **Nate Royuk (**402-727-2636), Senior Engineering Associate, **nate.royuk@fremontne.gov**, or mailed to the Department of Utilities at the address given in the Notice to Bidders, and to be given consideration must be received at least two (2) days prior to the date fixed for the opening of bids.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda. All addenda so issued shall become part of the contract documents. Bidders will be responsible for verifying that they have received all addenda issued by listing the addendum number on the Bid Proposal where it is indicated "Acknowledgment of Receipt of Addendums".

TAXES. Before quoting the net bid, the bidder shall not include sales, use or similar taxes applicable to the sale to, or use by, the Utility, of the items, which taxes are to be paid by the contractor. If the bidder is required to collect taxes, taxes shall be separated individually from the item price for the contract evaluation and for invoicing purposes.

TAX EXEMPTION. All applicable taxes shall be listed separately before quoting the final bid price on the proposal. The contractor shall pay all taxes lawfully applicable to the equipment, materials, and services covered by this contract.

PAYMENT. Payment to the contractor shall be made within 60 days of receiving the material.