CITY OF GRAND ISLAND
UTILITIES DEPARTMENT

Working Together for a Better Tomorrow. Today.

PADMOUNT DISTRIBUTION TRANSFORMERS REQUEST FOR QUOTATIONS

BID OPENING DATE/TIME
MAY 31ST @ 4:00 P.M.
CITY OF GRAND ISLAND, CITY HALL
100 E. 1ST STREET, P.O. BOX 1968
GRAND ISLAND, NE 68802

ADVERTISMENT
REQUEST FOR QUOTATIONS

PADMOUNT DISTRIBUTION TRANSFORMERS

Sealed Quotations will be received at the City Clerk's Office, 100 E. First Street, Grand Island, NE 68801 or P.O. Box 1968, Grand Island, NE 68802 until 4:00 PM. (local time) on May 31, 2023, for furnishing a Quotation for Padmount Distribution Transformers listed in the Bid sheets, F.O.B. for the City of Grand Island Utilities Department. Quotations received after the specified time will be returned unopened to sender.

The specifications, and any addenda, may be viewed on-line at www.grand-island.com under Business-Bid Calendar. Documents for use in preparing the Quotation may be downloaded from the Quest CDN website, www.QuestCDN.com for a forty-two-dollar ($42) fee.

Quotations shall be marked "PADMOUNT DISTRIBUTION TRANSFORMERS". All Quotations must be signed and dated in order to be accepted. The original Quotation and two (2) additional complete copies (3 total) shall be submitted for evaluation purposes. If Quotations are being submitted online via QuestCDN, the submitter is NOT required to submit hard copies. Quotations not containing the correct number of copies will not be considered.

Quotations will be evaluated by the Purchaser based on the firm's ability and responsiveness; experience; schedule and efficiency of operation; rates and fees; reputation and ability to perform the project's requirements.

Quotes shall remain firm for a period of forty-five (45) days after Quote due date. The City of Grand Island reserves the right to reject any or all Quotes and to waive technicalities therein and accept whichever Quote that may be in the best interest of the City of Grand Island, at its sole discretion.

The City of Grand Island does not discriminate on the basis of disability in admission of its programs, services, or activities, in access to them, in treatment of individuals with disabilities, or in any aspect of their operations. The City of Grand Island also does not discriminate on the basis of disability in its hiring or employment practices.

This notice is provided as required by Title II of the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973. Questions, complaints, or requests for additional information or accommodation regarding the ADA and Section 504 may be forwarded to the designated ADA and Section 504 compliance coordinator.

RaNae Edwards, City Clerk

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1 GENERAL INFORMATION

1.1 DESCRIPTION

The purpose of this Request for Quotations (RFQ) is to procure distribution pad-mount transformer types/sizes listed in the Quotation sheet as described herein.

1.2 QUOTATION DATE, LOCATION, AND CONTACT INFO

- Sealed Quotations must be received at City Hall by 4:00 P.M. on Wednesday, May 31st, 2023. Quotations may be mailed to the City Clerk's Office (100 E. 1st Street), hand delivered, or submitted online by accessing the Quote specification calendar at https://www.grand-island.com/business/bids-and-request-for-proposals/bid-calendar. Late Quotations will not be considered.

  Note: The Grand Island Utilities Department is NOT tax exempt and is subject to State and City sales tax. See the Nebraska Department of Revenue's web site at www.revenue.state.ne.us for contractor's tax information.

- Direct all related questions to Travis Burdett at Phone: (308) 385-5466, Email: travis.burdett@giud.com.

1.3 DEFINITIONS

- **City or City of Grand Island** – An employee representative of the City of Grand Island.
- **Vendor** – Representative term for company being awarded a Contract for procurement.
- **Contract** – Signed agreement between the City of Grand Island and Vendor.

1.4 PRICING AND PRICE ADJUSTMENTS

- The Vendor shall submit pricing for each transformer size. If firm pricing is not available due to uncertainty in raw materials or other factors, the vendor shall provide an estimated price as well as the methodology of calculating the firm price at the time of shipment. This information shall be considered during quotation evaluation.

1.5 MANUFACTURING SLOTTING AVAILABILITY

- The Grand Island Utilities Department is open to smaller quantities or different delivery estimates of transformers to allow for flexibility of available manufacturing slots. Please indicate this information on the Transformer Quotation Sheet.

1.6 QUOTATION REQUIREMENTS

The following information must be provided/completed and submitted with the Quotation:

- **Verification of 10-year history manufacturing transformers.**
- **Provide Completed Quotation Sheet(s).**
- **Provide Completed Information Sheet(s).**

- **Final Pricing Methodology (if applicable).**
- **Any exceptions taken to this specification.**

1.7 TRANSFORMER QUOTATION SHEET

The enclosed Quotation sheet includes the following criteria:

- **Price** – Vendor price for given transformer class and rating. The price shall cover all materials and labor necessary to manufacture and package the transformer(s) for shipment. Quotation sheet prices shall NOT include sales tax.
- **Total Price** – Total Price will be calculated as:
  Unit Price + ($8.41 x Guaranteed NL Losses) + ($2.69 x Guaranteed FL Losses).
- Use multiple Transformer Quotation Sheets if quoting same sized transformers with different lead times.

Example:

Padmount Transformers	KVA	No-Load Losses (watts)	Full-Load Losses (watts)	No-Load Difference (watts)	Live-Load Difference (watts)
13.2/480/277 DF SS	500	**800**	**4000**		
Purchase 1		850	4050	(50)	(50)
13.2/480/277 DF SS	750	**800**	**4000**		
Purchase 2		760	3940	40	60
			Total	(10)	10
			Cost per watt	$ 8.41	$ 2.69
			Vendor Penalty Fee	$ (84.10)	$ -

**Note: Bold numbers indicate the guaranteed losses in the example above*

1.8 TRANSFORMER INFORMATION SHEET

The enclosed information sheet includes the following criteria:

- **Guaranteed Lead Time -** All orders will be guaranteed to arrive within this period. This window is assessed from the date of purchase.
- **Average Lead Time –** This is a non-binding time frame that provides a normal lead-time for the given transformer class.
- **XFMR Weight –** Typical weight of transformer class
- **Footprint Dimensions –** Typical dimensions of transformer class

1.9 QUOTATION EVALUATIONS

Evaluations will be based on the following criteria:

- Firm and average lead times
- Transformer Pricing (In the case of price estimates, final pricing methodology will be evaluated).
- No-Load Losses (assessed at $8.41 per watt)

- Full-Load Losses (assessed at $2.69 per watt)
- Vendor reputation and impedance guarantees will also be taken into account when evaluating Quotations.

1.10 AWARD PROCESS

Quotations will be analyzed and awarded, independently, for the following categories:

1) Three Phase Pad-Mounted Transformers
2) Single Phase Pad-Mounted Transformers
3) 3750 KVA Pad-Mounted Transformers

- Quotations may include single or multiple categories. Categories may be awarded to three individual vendors or a single vendor strictly based upon the evaluation of the City.

1.11 PENALTIES AND VOIDABLE OFFENSES

- Vendor must reimburse the City for net load losses, exceeding those guaranteed in the Quotation.
- Any transformer not meeting a ± 7.5% impedance tolerance will be rejected by the City and returned at the cost of the Vendor.
- Failure to meet lead-time or impedance guarantees may render the Contract as 'void' at the sole discretion of the City.
- Failure to comply with the specifications detailed in this document may render the Contract as 'void' at the sole discretion of the City.
- Any Quotation from a vendor not in good financial standing with the City of Grand Island (specifically where unpaid debt is owed for past load loss penalties) will not be considered.

1.12 DELIVERY AND NOTIFICATION

- Shall be F.O.B. Grand Island, Nebraska
- The Bill of Lading is to be marked "Notify Storeroom (Call 308-385-5469), Weekdays, 8-12 or 1-3".
- Notice for a Monday delivery must be received by 4:00 P.M. on Friday
- Delivery will be accepted only during normal working hours (8 A.M. to Noon and 1 P.M. to 3 P.M. on Weekdays)
- Transformers shipped in an enclosed truck will be rejected. **Flat-bed trucks only.**

2 THREE PHASE PAD-MOUNTED TRANSFORMERS REQUIREMENTS

2.1 GENERAL SPECIFICATIONS

All equipment specified herein shall be:

- 60 Hz, Liquid-Immersed, Self-Cooled (ONAN), transformers.
- Three Phase, Dead Front, mineral oil filled, pad-mounted style transformers

- New Equipment is preferred. Remanufactured or reconditioned equipment may be considered depending on price and availability. Remanufactured or reconditioned equipment must be clearly noted.
- Any more restrictive requirements listed here-in shall supersede those detailed in the codes and standards listed.
- Category will consist of two styles:
    1) 13,200V Delta Primary → 480V/277 Wye Secondary
    2) 13,200V Delta Primary → 208V/120 Wye Secondary

2.1.1 CODES AND STANDARDS

All transformers must be in accordance with the most recent revision to of the following Standards:

IEEE C57.12.34	(Pad-Mounted Three Phase Transformers)
ANSI C57.12.70	(Terminal Markings and Connections)
ANSI/IEEE C57.12.00	(General Requirements for Liquid-Immersed)
ANSI/IEEE C57.12.90	(Standard Test Code for Liquid-Immersed)
ANSI/IEEE 386	(Separable Insulated Connections)
NEMA TR 1	(Design Test Method for Cabinet Security)
NEMA TR P9; WUG 2.13	(Security for Pad-Mounted Equipment Enclosures)
ANSI C57.12.29	(Pad-Mounted Equipment – Enclosure Integrity for Coastal Env.)

2.1.2 CERTIFIED TEST REPORTS

The following standard tests are to be performed with copies of the results for each transformer identified by serial number:

- Percent impedance
- Exciting current
- Applied potential certification
- No-Load losses
- Load losses
- Total losses
- Ratio certification
- Polarity certification
- Full Wave Impulse (1.2 x 50µS)
- Leak Test
- 100% Resistance Testing for all windings on rated voltage connection
- Certification of full nameplate load without exceeding 65° C
- ANSI Short-Circuit certified test reports per ANSI C57.12.00 and ANSI C57.12.90
- Certification of passing results on EEI paint tests on identical units, per current ASTM Standards (salt spray, humidity, impact, weathering, adhesion, and abrasion).

If these are not standard tests, please take exception, and provide the cost of performing the specified tests. The costs of the additional testing will be taken into account during

Quotation evaluation where the City will have the option of purchasing these tests.

2.1.3 DOCUMENTATION

Each item shall be supplied with one complete copies of transformer documentation including (but not limited to):

- instruction manuals
- drawings
- replacement part manuals
- certified test reports for each transformer

Note: Documentation must be received before payment is approved.

2.1.4 OIL

- Oil shall have a PCB content of 1 PPM or less
- Transformers to be provided with certification of non-PCB status
- Nameplate labeled as non-PCB
- Nameplate showing number of gallons of oil

2.1.5 PRIMARY TAPS

Each transformer must meet the following requirements:

- The location for the control shall be in the primary compartment
- Five primary taps; with two 2½% taps below and two 2½% taps above the 13.2 kV of tap C.
- Labeled as being for de-energized operation only
- Externally operable with a hotstick when primary side door is open
- Shall require at least two operator actions to change taps.
- Shall be of a single shaft / direct connection style – between external operation handle and interior mechanism.

2.1.6 PRIMARY FUSING

Each transformer must meet the following requirements:

- Shall be protected by three RTE Bay-O-Net type fuses located in the primary compartment.
- Fuse holders shall be provided with plastic spill pans/metal drip trays and flapper valves.
- Fuses shall be oil immersed one fuse per phase; dual (load) sensing for 500 KVA and below and current (fault) sensing for 750 KVA and above.
- Fused 1½ times to 2 times full load current.
- An under-oil partial range current limiting fuse will be in a series with the Bay-O-Net fuse to provide interrupting up to 30,000 amperes.

2.1.7 WARRANTY

- Warranty must be for a minimum of one year from date of installation or 36 months from date of purchase.

2.1.8 LOOP FEED PRIMARY SWITCH

Provide three loop-feed, internal, oil-immersed, 3-phase gang operated, load break, manually operated switches that shall meet the following requirements:

- Three - two-position switches
- Must have metal locknuts on the handle side of the switch
- Rated for a minimum of 200 amps at 15 kV.
- Located in the primary compartment
- Hot stick operable
- Labeled - One switch – A - on / off
  One switch – B - on / off
  One switch – Transformer - on / off

2.1.9 NAMEPLATE

Based upon IEEEC57.12.00, 5.12.2 – NAMEPLATE 'A'

- All units of measure (with the exception of temperature) must be depicted in imperial units

2.1.10 CORE

There shall be three primary and three secondary windings wound on a five-legged or equivalent core design. A three-legged core is not acceptable.

2.1.11 TEMPERATURE/INSULATION

Per ANSI C57.12.34 – Under continuous loading at listed KVA rating , Three Phase Transformers must meet the following temperature requirements:

- Not exceed 65 deg C temp rise on windings
- Not exceed 80 deg C hot spot conductor temperature rise
- Not exceed 65 deg C temp rise on insulating oil
- BIL ratings per ANSI C57.12.34

2.1.12 AUDIBLE SOUND LEVELS

Audible sound levels should not exceed those as specified in NEMA TR-1 – Table 1.

2.1.13 IMPEDANCE

Transformers shall have impedance based upon IEEE C57.12.34, 5.1, Table 2 and IEEE C 57.12.00, 9.2.

2.1.14 PRIMARY TERMINATIONS

- All applicable components shall meet – IEEE Std. 386
- The primary connections shall be dead front, 200 amp load break 15kV class with bushings arranged per IEEE C57.12.34 (Figure 16 - 15.2 kV and Figure 12)
- Centerline of lowest high voltage connection of 27" (Drawing No. 3)

Each of the six (6) 200 ampere bushing well interface shall:

- Be capable of being replaced per IEEE C57.12.34 (8.7.2.2)
- Be equipped with 200 ampere load break interface (bushing insert) – IEEE Std. 386 Figure 5
- Have a yellow indicator ring – *Cooper LB1215 or exact equivalent

2.1.15 LOW VOLTAGE BUSHINGS/TERMINALS

The fully insulated neutral bushing spade shall be solidly bonded to the tank wall, externally, with a removable ground strap(s) or appropriately sized blade connected directly to the tank per IEEE 57.12.34. Must fully conform with Drawings No. 1 – 4 in this specification.

For 75, 150, 225 and 300 KVA, the 6-Hole arrangement detailed in Drawing No. 4 applies. For 500, 750, 1000, 1500 and 2500 KVA, the 10-Hole arrangement detailed in Drawing No. 4 applies.

2.1.16 CABINET AND RELATED TANK

Cabinet, tank, sill & hood and related fastening devices shall:

- Meet the IEEE C57.12.29 Standard for Pad-Mounted Equipment - Enclosure Integrity for Coastal Environments.
- Stainless Steel (#304L) is preferred. Mild steel will be considered if it reduces lead time and/or cost.
- Exterior and Inside Termination Area to be painted standard ANSI 61 GRAY.
- All base coat(s), primer and following layer(s) of paint shall be gray.
- Ground provisions Per IEEE C57.12.34 8.11.1, 8.11.2 and 8.11.3

2.1.17 TANK AND RELATED ACCESS TO INSIDE CONNECTIONS

Must be able to access the following items from the top of the tank area by means of bolts or reversible mechanical fasteners and still meet the limited access requirements of C57.12.29-2014:

- Primary bushings as needed to meet replacement needs per IEEE C57.12.34, 8.7.2.2
- Secondary bushings
- Bay-o-net fuse housings
- Current limiting fuse
- Oil thermometer
- Liquid level gauge
- Tap changer
- Primary switches

2.1.18 ACCESSORY EQUIPMENT

- Top oil dial thermometer
- Liquid-level gauge located in termination area
- 1” (National Pipe Thread) - Upper fill plug
- 1” (National Pipe Thread) – Drain valve with sampling valve assembly – (located in the

primary voltage compartment)

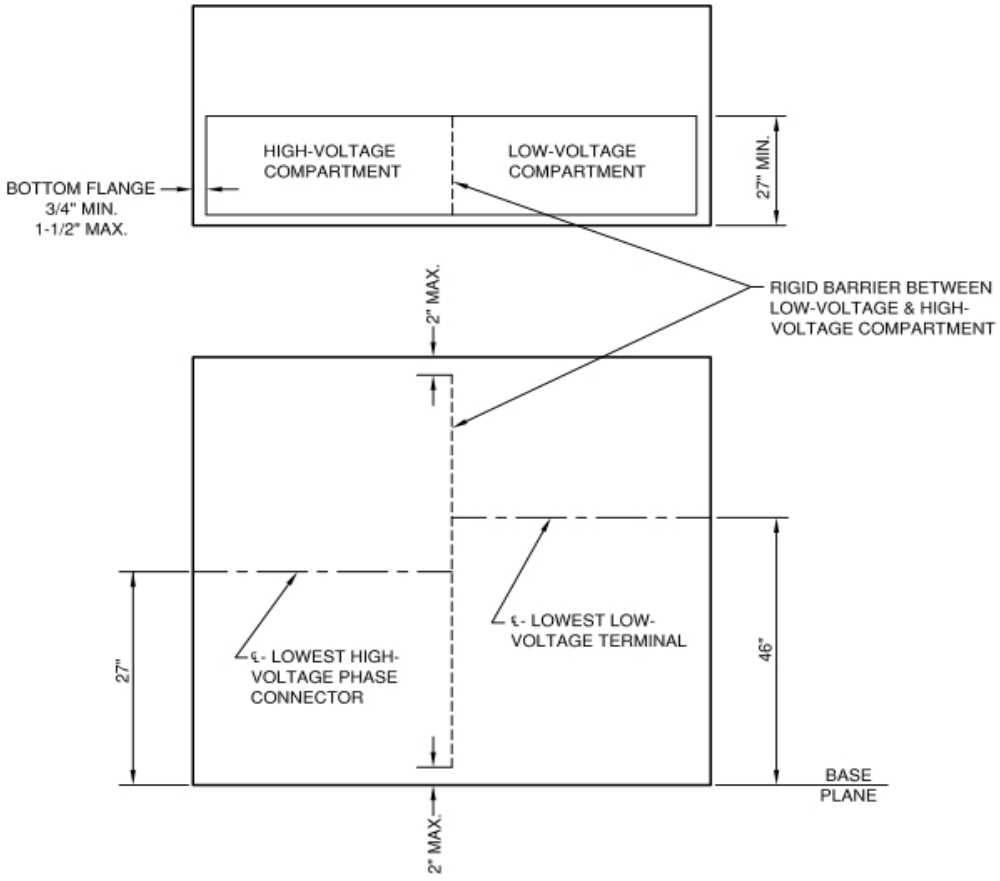
- 1 - Grounding lug - (Burndy - #K2C26 or exact equivalent) shall be installed into the primary side tank ground provision of IEEE C57.12.34 8.11
- The KVA Rating & Secondary voltage shall be permanently affixed or painted on the outside, at the top of the door(s)
- Fuse catalog number, amperage and brand if other than RTE, shall be permanently affixed or painted on inside of primary compartment door.

3 THREE PHASE PADMOUNT DRAWINGS

All transformers must conform to the details shown in the attached drawings (listed below).

THREE PHASE PAD-MOUNTED TRANSFORMERS	
Drawing No.	**Drawing Title**
1	Compartment Specs 500,750,1000,1500, & 2500 KVA 3PH XFMRS
2	Compartment Specs 75,150,225, & 300 KVA 3PH XFMRS
3	Separable Insulated Connector Specs
4 (6-Hole Detail)	Low-Volt. Term. Spec. (75,150,225 & 300 KVA XFMRS)
4 (10-Hole Detail)	Low-Volt. Term. Spec. (500,750,1000,1500 & 2500 KVA XFMRS)

3.1 DRAWING NO. 1

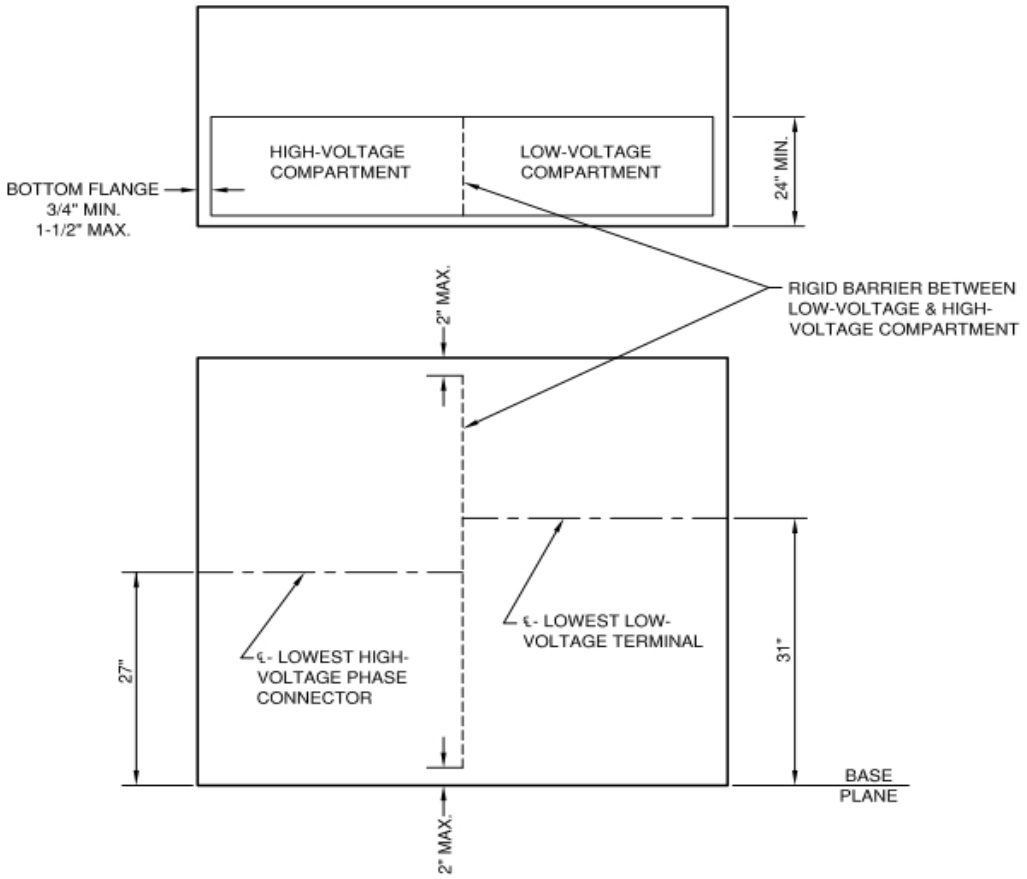


NOTES:

1. ALL DIMENSIONS ARE IN INCHES. TOLERENCE ON HIGH-VOLTAGE PHASE CONNECTOR AND LOW VOLTAGE TERMINAL IS +- 0.5 INCH.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	DATE: 4/28/2016 DRAWN BY: K.J.M. CHECKED BY: T.W.B.	COMPARTMENT SPECS 500, 750, 1000, 1500, & 2500 KVA 3PH XFMRS	PLAN PMT-3-1

3.2 DRAWING NO. 2

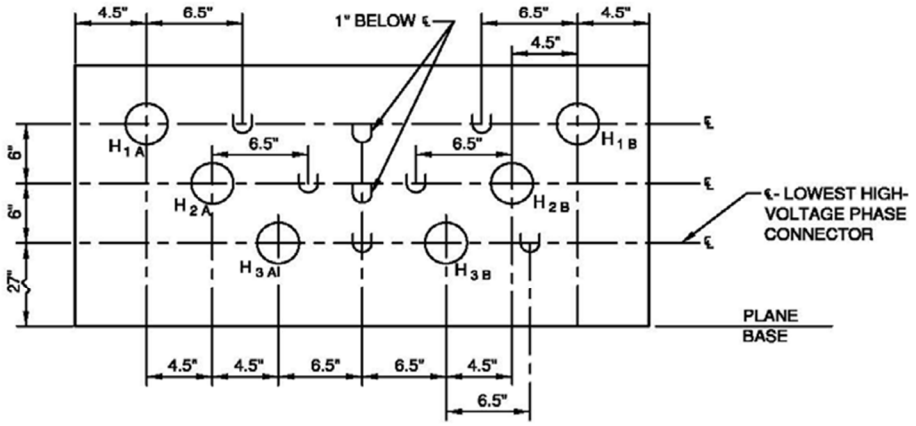


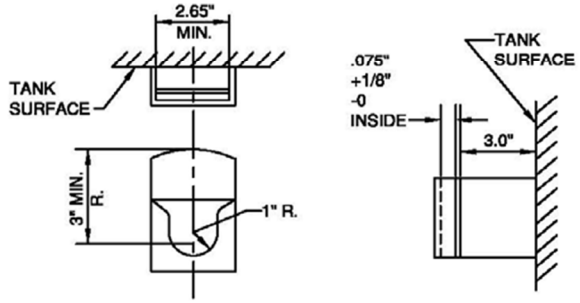
NOTES:

1. ALL DIMENSIONS ARE IN INCHES. TOLERENCE ON HIGH-VOLTAGE PHASE CONNECTOR AND LOW VOLTAGE TERMINAL IS +- 0.5 INCH.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	DATE: 4/28/2016 DRAWN BY: K.J.M. CHECKED BY: T.W.B.	COMPARTMENT SPECS 75, 150, 225, & 300 KVA 3 PH XFMRS	PLAN PMT-3-2

3.3 DRAWING NO. 3





CABLE ACCESSORY PARKING STAND

NOTES:

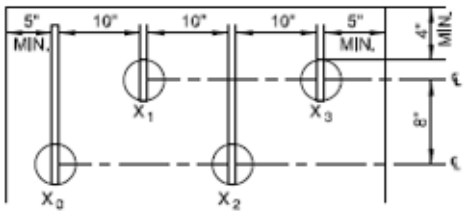
1. HIGHVOLTAGE CONNECTOR ARRANGEMENTS AND DIMENSIONS ARE FOR APPLICATIONS REQUIRING CERTAIN SPECIFIC DIMENSION.

2. ALL DIMENSIONS ARE IN INCHES.

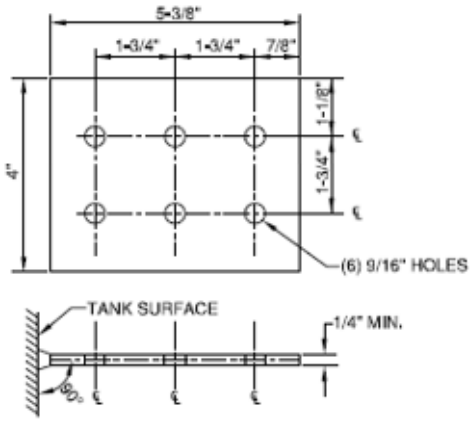
3. H & P ARE MINIMUM DIMENSIONS. DIMENSIONS K, M, AND N, HAVE A TOLOERANCE OF +- .025 INCH.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	DATE: 4/28/2016 DRAWN BY: K.J.M. CHECKED BY: T.W.B.	SEPARABLE INSULATED CONNECTOR SPECS.	PLAN PMT-3-3

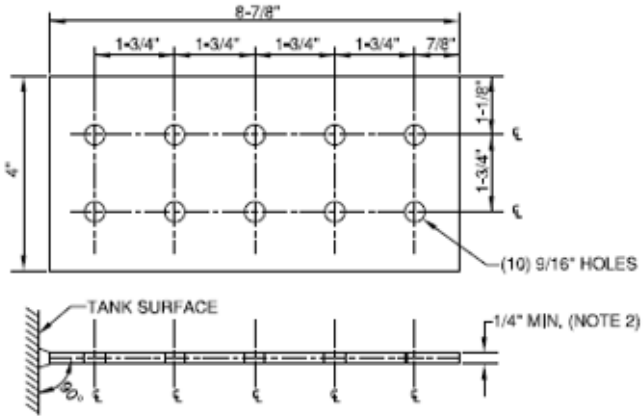
3.4 DRAWING NO. 4



LOW-VOLTAGE
STAGGERED TERMINAL
(TYPICAL)



LOW-VOLTAGE
TERMINAL (6 HOLE)
75, 150, 225, 300 KVA



LOW-VOLTAGE
TERMINAL (10 HOLE)
500, 750, 1000,
1500, 2500 KVA

NOTES:

1. TO BE FURNISHED WITH ADDITIONAL SUPPORT DESIGNED BY MANUFACTURER, A THE END FARTHEST FROM TANK WALL WITHOUT INTERFERRING WITH USE OF ANY OF THE TEN (10) HOLES.

2. GREATER THICKNESS MAY BE REQUIRED TO PROVIDE ADEQUATE AMPACITY.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	DATE: 4/28/2016 DRAWN BY: K.J.M. CHECKED BY: T.W.B.	LOW-VOLTAGE TERMINALS SPECIFICATIONS	PLAN PMT-3-4

(REVISED: 11/27/17)

4 SINGLE PHASE PAD-MOUNTED TRANSFORMERS REQUIREMENTS

4.1 GENERAL SPECIFICATIONS

All equipment specified herein shall be:

- 60 Hz, Liquid-Immersed, Self-Cooled (ONAN), transformers.
- Single Phase, Single Ratio, Dead Front, mineral oil filled, pad-mounted style transformers
- Remanufactured or reconditioned equipment will not be considered. All materials must be new.
- Any more restrictive requirements listed here-in shall supersede those detailed in the codes and standards listed.
- Category will consist of two styles:
    1) 13,200V Grounded Wye Primary → 240V/120 Secondary – Type 1 Bushing
    2) 13,200V Grounded Wye Primary → 240V/120 Secondary – Type 2 Bushing

4.1.1 CODES AND STANDARDS

All transformers must be in accordance with the most recent revision to of the following Standards:

ANSI C57.12.25	(Pad-Mounted Single Phase Transformers)
ANSI C57.12.70	(Terminal Markings and Connections)
ANSI/IEEE C57.12.00	(General Requirements for Liquid-Immersed)
ANSI/IEEE C57.12.90	(Standard Test Code for Liquid-Immersed)
ANSI/IEEE 386	(Separable Insulated Connections)
NEMA TR 1	(Design Test Method for Cabinet Security)
NEMA TR P9; WUG 2.13	(Security for Pad-Mounted Equipment Enclosures)
ANSI C57.12.29	(Pad-Mounted Equipment – Enclosure Integrity for Coastal Env.)

4.1.2 CERTIFIED TEST REPORTS

The following standard tests are to be performed with copies of the results for each transformer identified by serial number:

- Percent impedance
- Exciting current
- Applied potential certification
- No-Load losses
- Load losses
- Total losses
- Ratio certification
- Polarity certification
- Full Wave Impulse (1.2 x 50µS)
- Leak Test
- 100% Resistance Testing for all windings on rated voltage connection
- Certification of full nameplate load without exceeding 65° C
- ANSI Short-Circuit certified test reports per ANSI C57.12.00 and ANSI C57.12.90
- Certification of passing results on EEI paint tests on identical units, per current

ASTM Standards (salt spray, humidity, impact, weathering, adhesion, and abrasion).

If these are not standard tests, please take exception, and provide the cost of performing the specified tests. The costs of the additional testing will be taken into account during Proposal evaluation; the City will have the option of purchasing these tests.

4.1.3 DOCUMENTATION

Each item shall be supplied with one complete copies of transformer documentation including (but not limited to):

- instruction manuals
- drawings
- replacement part manuals
- certified test reports for each transformer
- Note: Documentation must be received before payment is approved.

4.1.4 OIL

- Oil shall have a PCB content of 1 PPM or less
- Transformers to be provided with certification of non-PCB status
- Nameplate labeled as non-PCB
- Nameplate showing number of gallons of oil

4.1.5 TEMPERATURE/INSULATION

Per ANSI C57.12.25 – Under continuous loading at listed KVA rating , Single Phase Transformers must meet the following temperature requirements:

- Not exceed 65 deg C temp rise on windings
- Not exceed 80 deg C hot spot conductor temperature rise
- Not exceed 65 deg C temp rise on insulating oil
- BIL ratings per ANSI C57.12.25

4.1.6 PRIMARY TAPS

Each transformer must meet the following requirements:

- The location for the control shall be in the primary compartment
- Five primary taps; with two 2½% taps below and two 2½% taps above the 7620V of tap C.
- Labeled as being for de-energized operation only
- Externally operable with a hotstick when primary side door is open
- Shall require at least two operator actions to change taps.
- Shall be of a single shaft / direct connection style – between external operation handle and interior mechanism.

4.1.7 PRIMARY FUSING

- Shall be protected by a single RTE Bay-O-Net type fuse (or interchangeable and exact equivalent and noted in the exceptions), located in the primary compartment.
- Fuse holders shall be provided with plastic spill pans/metal drip trays and flapper

valves.

- Fused 1½ times to 2 times full load current.
- An under-oil partial range current limiting fuse will be in a series with the Bay-O-Net fuse to provide interrupting up to 30,000 amperes.

4.1.8 WARRANTY

- Warranty must be for a minimum of one year from date of installation or 36 months from date of purchase.

4.1.9 ACCESSORY EQUIPMENT

- Liquid-level gauge located in termination area
- Palletized
- Lifting provisions w/bolts
- Connector and terminal marking
- Replaceable, self-resealing pressure relief device per ANSI C 57.12.25 - 6.5.2
- Two "Burndy #EQC632C1" grounding lugs shall be installed
- KVA Rating and Secondary Voltage shall be permanently affixed or painted on the outside of the unit.

4.1.10 NAMEPLATE

Based upon IEEEC57.12.00, 5.12.2 – NAMEPLATE 'A'

- All units of measure (with the exception of temperature) must be depicted in imperial units

4.1.11 CABINET FEATURES

- ½" x 1½ inch penta-head bolt for security of compartment door.
- Meet the IEEE C57.12.29 Standard for Pad-Mounted Equipment - Enclosure Integrity for Coastal Environments.
- Stainless Steel (#304L) is preferred. Mild steel will be considered if it reduces lead time and/or cost.
- Exterior and Inside Termination Area to be painted standard ANSI 61 GRAY.
- All base coat(s), primer and following layer(s) of paint shall be gray.
- Fuse catalog number and amperage shall be listed inside lid (viewable when open) and brand (if other than RTE).

4.1.12 AUDIBLE SOUND LEVELS

Audible sound levels should not exceed those as specified in NEMA TR-1 – Table 1.

4.2 SINGLE PHASE (MAXI-PAK) PAD-MOUNTED TRANFORMERS; TYPE 1 BUSHING ARRANGEMENT

4.2.1 PRIMARY TERMINATIONS AND ACCESSORIES

- Type-1 bushing arrangement as shown on Figure 1, Detail "B" of ANSI C57.12.25

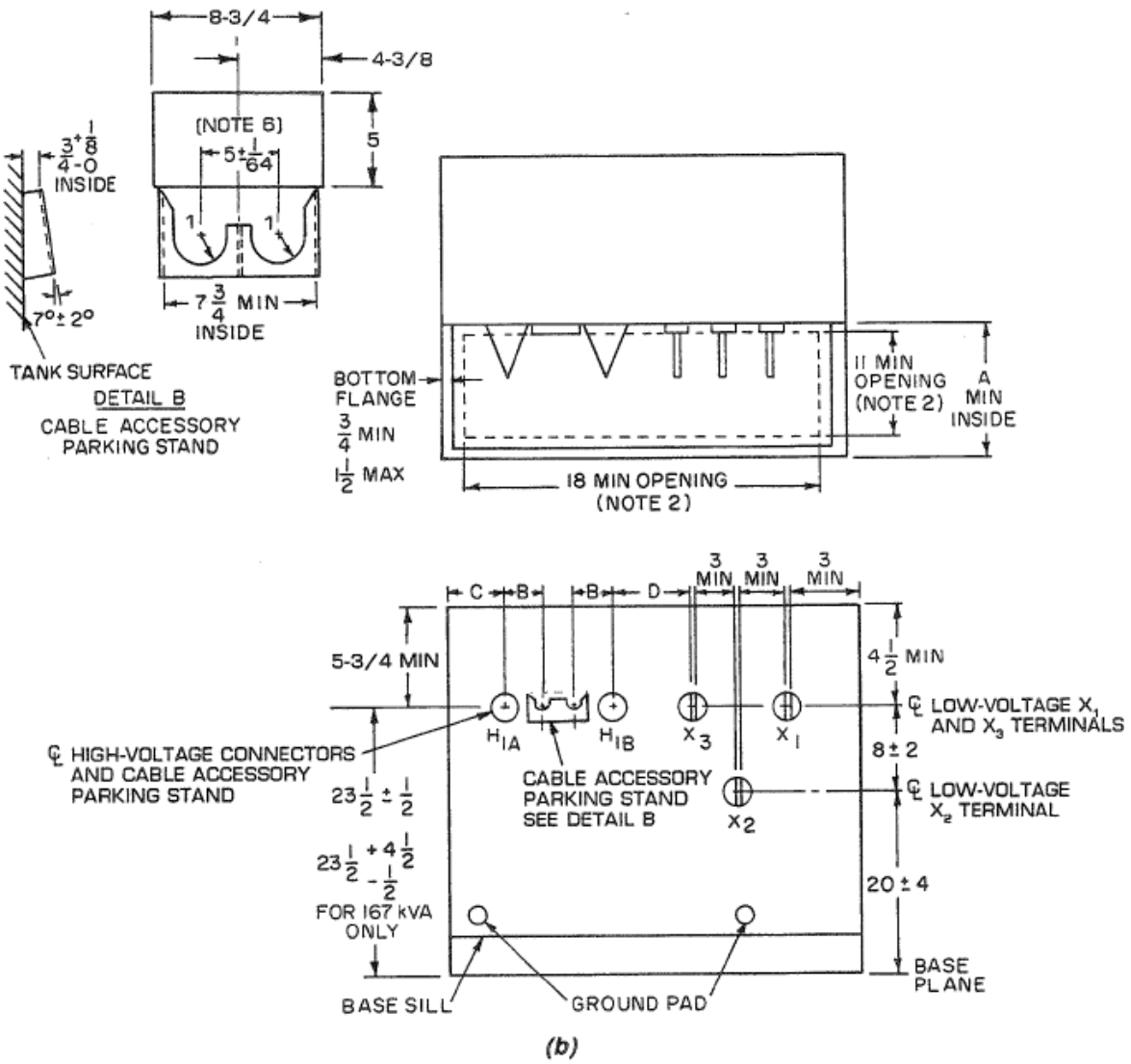
- Loop feed with bushing wells.
- Double parking stand shall be provided per Detail “B’, Figure 1, of ANSI C57.12.25.
- Loop feed with bushing wells.
- Load break inserts; Cooper #LB1215 or Elastimold #16014-1 (with yellow indicator ring to determine if elbow is fully seated).

4.2.2 SECONDARY TERMINATIONS AND ACCESSORIES

- Type-1 bushing arrangement as shown on Figure 1, Detail “B” of ANSI C57.12.25-1990 including:
- Three insulated bushings.
- Stud connector per ANSI C57.12.25 - 6.2.5.Figure 4-(c) and 6.2.6

5 SINGLE PHASE PADMOUNT DRAWINGS

All transformers must conform to the details shown in the attached drawing.



(b)

NOTES

1 All dimensions are in inches unless otherwise specified.

2 This minimum opening in the bottom of the compartment is provided for cable entrance.

3 When a loop feed is not required, omit one high-voltage connector.

4 The low-voltage is shown for additive polarity transformers. The location of X_1 and X_3 is reversed for subtractive polarity.

5 The location of H_{1A} and H_{1B} shall be such that the separable connectors can be operated with the base still in place.

6 Minimum clear space, excluding area required for H_{1A} and H_{1B}, required for installing accessory devices in parking stand.

7 These dimensions are required for certain separable insulated connectors.

Figure 1 (*continued*)

6 3750 KVA PAD-MOUNTED TRANSFORMER REQUIREMENTS

6.1 GENERAL SPECIFICATIONS

All equipment specified herein shall be:

- 60 Hz, Liquid-Immersed, Self-Cooled (ONAN), transformers.
- Three Phase, Dead Front, mineral oil filled, pad-mounted style transformers
- New Equipment is preferred. Remanufactured or reconditioned equipment may be considered depending on price and availability. Remanufactured or reconditioned equipment must be clearly noted.
- Any more restrictive requirements listed here-in shall supersede those detailed in the codes and standards listed.
- Category shall be 13,200V Delta Primary → 480V/277 Wye Secondary

6.1.1 CODES AND STANDARDS

All transformers must be in accordance with the most recent revision to of the following Standards:

IEEE C57.12.34	(Pad-Mounted Three Phase Transformers)
ANSI C57.12.70	(Terminal Markings and Connections)
ANSI/IEEE C57.12.00	(General Requirements for Liquid-Immersed)
ANSI/IEEE C57.12.90	(Standard Test Code for Liquid-Immersed)
ANSI/IEEE 386	(Separable Insulated Connections)
NEMA TR 1	(Design Test Method for Cabinet Security)
NEMA TR P9; WUG 2.13	(Security for Pad-Mounted Equipment Enclosures)
ANSI C57.12.29	(Pad-Mounted Equipment – Enclosure Integrity for Coastal Env.)

6.1.2 CERTIFIED TEST REPORTS

The following standard tests are to be performed with copies of the results for each transformer identified by serial number:

- Percent impedance
- Exciting current
- Applied potential certification
- No-Load losses
- Load losses
- Total losses
- Ratio certification
- Polarity certification
- Full Wave Impulse (1.2 x 50µS)
- Leak Test
- 100% Resistance Testing for all windings on rated voltage connection
- Certification of full nameplate load without exceeding 65° C
- ANSI Short-Circuit certified test reports per ANSI C57.12.00 and ANSI C57.12.90
- Certification of passing results on EEI paint tests on identical units, per current ASTM Standards (salt spray, humidity, impact, weathering, adhesion, and

abrasion).

If these are not standard tests, please take exception, and provide the cost of performing the specified tests. The costs of the additional testing will be taken into account during Quotation evaluation where the City will have the option of purchasing these tests.

6.1.3 DOCUMENTATION

Each item shall be supplied with one complete copies of transformer documentation including (but not limited to):

- instruction manuals
- drawings
- replacement part manuals
- certified test reports for each transformer

Note: Documentation must be received before payment is approved.

6.1.4 OIL

- Oil shall have a PCB content of 1 PPM or less
- Transformers to be provided with certification of non-PCB status
- Nameplate labeled as non-PCB
- Nameplate showing number of gallons of oil

6.1.5 PRIMARY TAPS

Each transformer must meet the following requirements:

- The location for the control shall be in the primary compartment
- Five primary taps; with two 2½% taps below and two 2½% taps above the 13.2 kV of tap C.
- Labeled as being for de-energized operation only
- Externally operable with a hotstick when primary side door is open
- Shall require at least two operator actions to change taps.

6.1.6 PRIMARY FUSING

Each transformer must meet the minimum following requirements:

- Fusing shall be internal weak link cartridge fuses.
- Fusing shall be able to be replaced without accessing the inside of the tank.

6.1.7 WARRANTY

- Warranty must be for a minimum of one year from date of installation or 18 months from date of purchase.

6.1.8 LOOP FEED PRIMARY SWITCH

Provide three loop-feed, internal, oil-immersed, 3-phase gang operated, load break, manually operated switches that shall meet the following requirements:

- Three - two-position switches
- Must have metal locknuts on the handle side of the switch

- Rated for a minimum of 300 amps at 15 kV.
- Located in the primary compartment
- Hot stick operable
- Labeled - One switch – A - on / off
  One switch – B - on / off
  One switch – Transformer - on / off

6.1.9 NAMEPLATE

Based upon IEEEC57.12.00, 5.12.2 – NAMEPLATE 'A'

- All units of measure (with the exception of temperature) must be depicted in imperial units

6.1.10 CORE

There shall be three primary and three secondary windings wound on a five-legged or equivalent core design. A three-legged core is not acceptable.

6.1.11 TEMPERATURE/INSULATION

Per ANSI C57.12.34 – Under continuous loading at listed KVA rating , Three Phase Transformers must meet the following temperature requirements:

- Not exceed 65 deg C temp rise on windings
- Not exceed 80 deg C hot spot conductor temperature rise
- Not exceed 65 deg C temp rise on insulating oil
- BIL ratings per ANSI C57.12.34

6.1.12 AUDIBLE SOUND LEVELS

Audible sound levels should not exceed those as specified in NEMA TR-1 – Table 1.

6.1.13 IMPEDANCE

Transformers shall have impedance based upon IEEE C57.12.34, 5.1, Table 2 and IEEE C 57.12.00, 9.2.

6.1.14 PRIMARY TERMINATIONS

- All applicable components shall meet – IEEE Std. 386
- The primary connections shall be dead front, 200 amp load break 15kV class with bushings arranged per IEEE C57.12.34 (Figure 16 - 15.2 kV and Figure 12)

Each of the six (6) 200 ampere bushing well interface shall:

- Be capable of being replaced per IEEE C57.12.34 (8.7.2.2)
- Be equipped with 200 ampere load break interface (bushing insert) – IEEE Std. 386 Figure 5
- Have a yellow indicator ring – *Cooper LB1215 or exact equivalent

6.1.15 LOW VOLTAGE BUSHINGS/TERMINALS

The fully insulated neutral bushing spade shall be solidly bonded to the tank wall,

externally, with a removable ground strap(s) or appropriately sized blade connected directly to the tank per IEEE 57.12.34.

6.1.16 CABINET AND RELATED TANK

Cabinet, tank, sill & hood and related fastening devices shall:

- Meet the IEEE C57.12.29 Standard for Pad-Mounted Equipment - Enclosure Integrity for Coastal Environments.
- Stainless Steel (#304L) is preferred. Mild steel will be considered if it reduces lead time and/or cost. Radiators may be galvanized mild steel.
- Exterior and Inside Termination Area to be painted standard ANSI 61 GRAY.
- Ground provisions Per IEEE C57.12.34 8.11.1, 8.11.2 and 8.11.3

6.1.17 TANK AND RELATED ACCESS TO INSIDE CONNECTIONS

Must be able to access the following items from the top of the tank area by means of bolts or reversible mechanical fasteners and still meet the limited access requirements of C57.12.29-2014:

- Primary bushings as needed to meet replacement needs per IEEE C57.12.34, 8.7.2.2
- Secondary bushings
- Current limiting fuse
- Oil thermometer
- Liquid level gauge
- Tap changer
- Primary switches

6.1.18 ACCESSORY EQUIPMENT

- Top oil dial thermometer
- Liquid-level gauge located in termination area
- 1” (National Pipe Thread) - Upper fill plug
- 1” (National Pipe Thread) – Drain valve with sampling valve assembly – (located in the primary voltage compartment)
- 1 - Grounding lug - (Burndy - #K2C26 or exact equivalent) shall be installed into the primary side tank ground provision of IEEE C57.12.34 8.11
- The KVA Rating & Secondary voltage shall be permanently affixed or painted on the outside, at the top of the door(s)
- Fuse catalog number, amperage and brand if other than RTE, shall be permanently affixed or painted on inside of primary compartment door.

7 INFORMATION SHEET

3 Phase Padmount Transformer Type	KVA	Guaranteed Lead Time (weeks)	Average Lead Time (weeks)	XFMR Weight (lb)	Dimensions L X W X H (inches)
13.2/208/120	750				
13.2/480/277	750				
13.2/480/277	1000				
13.2/480/277	2500				
13.2/480/277	3750				

Single Phase Padmount Transformer Type	KVA	Guaranteed Lead Time (weeks)	Average Lead Time (weeks)	XFMR Weight (lb)	Dimensions L X W X H (inches)
13.2/7620/240/120 (Maxi-Pak)	50				
13.2/7620/240/120 (Maxi-Pak)	75				
13.2/7620/240/120 (Maxi-Pak)	100				
13.2/7620/240/120 (Maxi-Pak)	167				

8 QUOTATION SHEET

	(A)	(B)	(C)	(D)	(E)	(F)
3 Phase Padmount Transformer Type	**KVA**	**Quantity**	**Price* (each)**	**Guaranteed No-Load Losses (watts)**	**Guaranteed Full-Load Losses (watts)**	**Total Price = B*(C + ($8.41*D) + ($2.69*E))**
13.2/208/120	750	2				
13.2/480/277	750	3				
13.2/480/277	1000	2				
13.2/480/277	2500	2				
13.2/480/277	3750	1				
					Total (Sum Column F)	

* Please indicate if price is firm or estimate. If estimate, attach final pricing methodology.

	(A)	(B)	(C)	(D)	(E)	(F)
Single Phase Padmount Transformer Type	**KVA**	**Quantity**	**Price* (each)**	**Guaranteed No-Load Losses (watts)**	**Guaranteed Full-Load Losses (watts)**	**Total Price = B*(C + ($8.41*D) + ($2.69*E))**
13.2/7620/240/120 (Maxi-Pak)	50	40				
13.2/7620/240/120 (Maxi-Pak)	75	20				
13.2/7620/240/120 (Maxi-Pak)	100	15				
13.2/7620/240/120 (Maxi-Pak)	167	15				
					Total (Sum Column F)	

* Please indicate if price is firm or estimate. If estimate, attach final pricing methodology.

FIRM SUBMITTING QUOTE_____

SIGNATURE_____