BID # 25-21-01

TITLE: **2025-2026 Transformer Inventory**

QUESTIONS: **Tyson Brown, Procurement Specialist**
cp@bentonpud.org

BID Issued	**February 4, 2025**
Questions Submitted	**February 21, 2025, at 3:00 PM PST**
BID Due	**March 20, 2025, at 3:00 PM PST**
Anticipated Award Date	**April 22, 2025**

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25-21-01

CALL FOR BIDS #25-21-01
Distribution Transformers

NOTICE IS HEREBY GIVEN by Benton PUD, Kennewick, Washington that sealed bids will be received until 3:00 PM PST, Thursday, March 20, 2025, at which time, they will be opened and publicly read for the purchase of Distribution Transformers.

Specifications, and related documents may be obtained at Procurement Department of Benton PUD, PO Box 6270, 2721 w. 10th Avenue, Kennewick, Washington, 99336; cp@bentonpud.org or www.bentonpud.org.

Each bid shall be accompanied by a certified check or cashier's check payable to the order of Benton PUD or Bid Bond with a Corporate Surety licensed to do business in the State of Washington, for a sum not less than five present (5%) of the amount of the bid. (RCW 54.04.080)

The successful bidder will be required to furnish a Surety or Performance Bond for 100% of the award contract price.

25-21-01

GENERAL INSTRUCTIONS TO BIDDER

1. SEALED bids must be received at the District's Procurement Department, 2721 W. 10th Avenue, Kennewick, Washington by the time and date specified in the Call for Bids. The District assumes no responsibility for bids not received by the Procurement Department at bid time.

   Mail to: Benton PUD
   Attn: Procurement Department Bid # 25-21-01.
   P.O. Box 6270
   Kennewick, WA 99336

   Deliver to: Benton PUD
   Attn: Procurement Department Bid # 25-21-01.
   2721 W. 10th Avenue
   Kennewick, WA 99336

2. All bids shall conform to the technical specifications and contract terms specified within the bid package. A sample contract has been provided in the bid package containing the contract terms. When submitting the bid, the contractor must clearly specify any modifications to the specifications or contract terms, including all exceptions, deletions, additions, or other changes on the Bid Schedule. Material modifications as deemed by Benton PUD may be considered as non-responsive and the bid rejected.

3. Each bid shall be accompanied by a certified or cashier's check payable to the order of the District for a sum not less than 5% of the amount of the bid, or accompanied by a Bid Bond in an amount not less than 5% of the bid, with a corporate Surety licensed to do business in the State of Washington, conditioned that the successful bidder will pay the District as liquidated damages the amount specified in the bond unless he enters into a contract in accordance with his bid within ten (10) days from the date on which he is notified that he is the successful bidder.

4. The successful bidder will be required to furnish a performance bond in the form attached hereto with a surety authorized to do business in the State of Washington, in a penal sum not less than 100% of the contract.

5. In the event the successful bidder fails to furnish an approved Performance Bond and to sign the contract within ten (10) days after notification by the District, an amount equal to five percent (5%) of the amount of the bid shall be forfeited to the District as liquidated damages. Said liquidated damages shall be paid from the Bid Bond.

6. All items must be accepted by the District prior to payment. Acceptance criteria and time periods are specified within the bid technical specifications.

7. Bids shall cover delivery F.O.B. destination and acceptance by the District. Acceptance shall be after

delivery to the destination within Benton County, Washington. Acceptance notification by the District to the contractor shall be in writing. Testing, if applicable, will be performed prior to acceptance.

8. Warranty may be a consideration in contract award. Bidder shall state all conditions of warranty on the Bid Schedule.

9. Bids shall reflect the exemption of the Federal Excise Tax. The contract is subject to Washington State Sales Tax, but the bid price shall NOT include this amount.

10. Special consideration will be given to firm bids.

11. The experience and proven performance of the bidder will be considered in awarding the contract. Consideration will also be given to adequacy of the maintenance and service facilities provided by the Bidder.

12. Any changes, additions or deletions to the specifications shall be made by written addendum only.

13. The District reserves the right to waive minor irregularities or minor errors in any proposal; if it appears to the District that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the proposal in which they occur prior to the acceptance thereof by the District.

14. The District reserves the right to reject any or all bids and to waive any informalities in the bidding process.

15. The venue and jurisdiction of any action or claim for or against the Bidder or the District shall be in Benton County, Washington and in the District or Superior Courts thereof according to the jurisdictional amount.

16. Delivery shall be a consideration in awarding this bid. Line items can be split between vendors/manufacturers if partial quantities are available with shorter lead times. Example: If the line-item quantity is 10 each, and one vendor/manufacturer offers 5 units in 40 weeks and the balance in 80 weeks, but another vendor/manufacturer offers all 10 units with a 80 week lead time, the District could split that line item between the two vendors/manufacturers to get 5 units delivered faster.

17. The District may cancel any lines from the bid before award if purchase is not viable at the time of award.

25-21-01

SPECIAL INSTRUCTIONS TO BIDDER

1. Transformer bids will be evaluated for losses.

2. Total Bid will be sum of: Bid price + cost of core losses + cost of copper losses.

3. Cost of core losses is $1,782.32 per kW.

   Cost of copper losses is $574.15 per kW.

   Assumptions made in arriving at cost of losses are:

   a. System losses from point of delivery to the primary side of distribution transformer are 5%.

   b. Distribution transformers are loaded to an average load of 90% of rated capacity at peak.

   c. Annual load factor of distribution transformers is 25%.

   d. Transformers have an estimated life expectancy of 25 years.

   e. Percent increase in cost of power is 582% in a 25-year period.

   f. Cost of losses is taken as present worth of the cost of losses over the life of the transformer.

4. Transformer bid prices, delivery after receipt of order and loss data shall be furnished on the forms provided as part of this bid package. If an item is not bid, leave that space blank.

5. Certified test data of core and total losses required on each unit shipped.

6. If the actual evaluated cost, minus the bid evaluated cost, is greater than zero (0) on any one unit, this amount will be summed for all units in which this difference is greater than zero (0) and this sum may be deducted from the invoice.

7. Section 12 of specification 65-04, section 11.2.8 of specification 67-06, and section 13.2.b of specification 69-19 are removed and replaced with the following:

a. Each transformer shall be equipped with a mechanical “pull ring” style over pressure protection device. Device shall operate during over pressure conditions, automatically reseal once pressure has fallen, and shall be designed to prevent the entry of contaminants. Device shall be brass with stainless steel spring and pull ring and shall screw into transformer tank. The pressure relief device shall activate at 10 psi and the flow rate shall meet C57 minimums.

8. The spare paint requirements of section 11.1 of specification 65-04, section 13.11.1 of specification 67-06, and section 16.1 of specification 69-19 are removed.

9. Bidder shall clearly indicate the manufacturing location of major transformer components (tank, core, coils) where such components are manufactured at a location other than the manufacturing plant used as the shipping origination point to the District.

10. If transformers are assembled overseas or if major components are shipped from overseas, the Bidder shall clearly indicate how the transformers or the subcomponents are to be protected from salt corrosion/damage during transport.

11. The District does not require approval drawings for Overhead transformers in specification 65-04. If the successful Bidder wishes to submit these (between receipt of order and prior to the commencement of manufacturing) they may do so for the District to perform an informal review for general conformance. Should such drawings be submitted for Overhead units they shall contain the following information at a minimum:

    a. Outline dimensions
    b. Bushing description
    c. Overall unit weight, core/coil weight, mineral oil weight and gallons.
    d. Positions of accessories.

25-21-01

BID SCHEDULE

Item	Item #	QTY	Description	Bid Price (per unit)	Lead Time (ARO)	No Load Loss* (Watts)	Load Loss (Watts)	Total Loss*
1	9072120010	10	Transformer, 10 kVA, single phase overhead, 7200/12470Y-120/240 volt, OA, no taps, two porcelain bushings, Spec. 65-04					
2	9072120015	20	Transformer, 15 kVA, single phase overhead, 7200/12470Y-120/240 volt OA, no taps, two porcelain bushings, Spec. 65-04					
3	9072120025	20	Transformer, 25 kVA single phase overhead, 7200/12470Y-120/240 volt, OA, no taps, two porcelain bushings, Spec. 65-04					
4	9072120037	10	Transformer, 37.5 kVA, single phase overhead, 7200/12470Y-120/240 volt, OA, no taps, two porcelain bushings, Spec. 65-04					
5	9072120050	10	Transformer, 50 kVA, single phase overhead, 7200/12470Y-120/240 volt, OA, no taps, two porcelain bushings, Spec. 65-04					
6	9072120167	5	Transformer, 167 kVA, single phase overhead, 7200/12470Y-120/240 volt, OA, no taps, two porcelain bushings, Spec. 65-04					
7	9072270010	10	Transformer, 10 kVA, single phase overhead, 7200/12470Y-277/480Y volt, two porcelain bushings, Spec. 65-04					
8	9072270015	5	Transformer, 15 kVA, single phase overhead, 7200/12470Y-277/480Y volt, two porcelain bushings, Spec. 65-04					
9	9112210167	10	Transformer, 167 kVA single phase pad, 12470GRDY/7200-240/120 volt, no taps, loop feed, dead front, Spec. 69-19					
10	9112420025	10	Transformer, 25 kVA single phase pad, 12470GRDY/7200-480/240 volt, no taps, loop feed, dead front, Spec. 69-19					

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11	9312200150	5	Transformer, 150 kVA 3-phase pad, 12470Grdy/7200-208Y/120 volt radial feed, dead front, four 2.5% taps below,Spec. 67-06					
12	9312200300	5	Transformer, 300 kVA 3-phase pad, 12470Grdy/7200-208Y/120 volt radial feed, dead front, four 2.5% taps below,Spec. 67-06					
13	9312200500	5	Transformer, 500 kVA 3-phase pad, 12470Grdy/7200-208Y/120 volt radial feed, dead front, four 2.5% taps below,spec. 67-06					
14	9341480750	2	Transformer, 750 kVA 3-phase pad, 4160GRDY/2400-480Y/277 volt radial feed live front, Spec. 67-06					
15	9312480045	5	Transformer, 45kVA 3-phase pad 12470Grdy/7200-480Y/277 volt, 2.5% taps above & below, radial feed dead front,Spec. 67-06					
16	9312480300	5	Transformer, 300 kVA 3-phase pad 12470Grdy/7200-480Y/277V 2.5% taps above & below, radial feed, dead front,Spec. 67-06					
17	9312481500	2	Transformer, 1500 kVA 3-phase pad, 12470Grdy/7200-480Y/277V, 2.5% taps above & below, radial feed dead front,Spec. 67-06					
18	9312482000	2	Transformer, 2000 kVA 3-phase pad, 12470Grdy/7200-480Y/277V, 2.5% taps above & below, radial feed dead front,Spec. 67-06					
19	9312482500	2	Transformer, 2500 kVA 3-phase pad, 12470Grdy/7200-480Y/277V, 2.5% taps above & below, radial feed dead front,Spec. 67-06					
20	9412480150	4	Transformer, 150kVA Triplex 3ph pad, 12470Grdy/7200-480Y/277, 2.5% taps above& below, radial feed dead front. Spec 67-06					
21	9412480300	3	Transformer, 300kVA Triplex 3ph pad, 12470Grdy/7200-480Y/277V,2.5% taps above& below, radial feed dead front. Spec 67-06					

Drawings will be required to finalize purchase of transformers and needed to finalize pad design for the transformers. Options for the transformer configuration can be noted. Base price of the transformers must be as per the above descriptions. BID may be awarded per line or as a whole.

THE DISTRICT WILL NOT ACCEPT ANY CHANGES OR MODIFICATION AFTER THE RECEIPT OF THIS BID.

Prices are Firm through Delivery Date	**YES**	**NO**	**(If Bidder is proposing Pricing other than firm it is a requirement to provide process in which the price is calculated and against what index)**
Any Exceptions To The Specifications	**YES**	**NO**	
Any Exceptions To Exhibit A	**YES**	**NO**	
Acknowledge Receipt of Addend. Nos.			

State Warranty	
Manufacturer	
Supplier Name	
Address	
Supplier Email	
Supplier Phone #	

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1. **Firm Price through Bid Lead-Time and shipment, no metals adjustments**
2. **Delivery shall be a consideration in awarding bid. Bidder shall provide delivery schedule for all reels related to the bid; partial shipments will be allowed as part of this bid, but reel lengths must meet specifications.**
3. **Anticipated Approval of Contract & Award Date will be April 8, 2025.**

The District is a public entity subject to the disclosure requirements of the Washington Public Records Act of RCW 42.56. The bidder expressly acknowledges and agrees that its proposal and any information bidder submits with its proposal or which bidder submits to the District in its performance of any contract with the District is subject to public disclosure pursuant to the Public Records Act or other applicable law and the District may disclose bidder's proposal and/or accompanying information at its sole discretion in accordance with its obligations under applicable law.

The District must comply with the Preservation and Destruction of Public Records RCW 40.14. The bidder expressly acknowledges and agrees that it will maintain all records and documentation related to the contract in accordance with its obligations under applicable law.

In the event that the District receives a request pursuant to the Washington Public Records Act, or other legal process requesting or mandating disclosure of any information or documents submitted to the District by bidder, the District's sole obligation shall be to notify the bidder promptly, so that the bidder at bidder's expense and cost, may seek court protection of any of the requested information bidder deems confidential.

Person authorized to bind supplier to the Terms and Conditions of this Bid:

COMPANY NAME: _____

BY: _____

PRINT: _____

TITLE: _____

DATE: _____

WA ST CONTRACTOR'S REGISTRATION NO: _____

TAX IDENTIFICATION NO: _____

25-21-01

EXHIBIT A - SPECIFICATIONS

65-04 (XFR
Distribution-Pole Ty

69-19 (Single Phase
Padmounted Transf

67-06 (Three Phase
Padmounted Transf

Public Utility District No. 1 of Benton County

Specification 65-04

Pole Type Distribution Transformers

REV.	DESCRIPTION	BY	APPROVED BY	DATE
15	Added 17.2.3	DAB		9/7/2018
14	Revised 14.0, 17.0, 18.3 , Added 1.3, 11.1, 17.1, section 17.2, Receiving document reference image.	DAB	RD	10/06/2017
13	Revised 1.2, Section 14.	DAB	RD	2/8/17
12	Updated figure 1, moved proposal requirement to section 2	TLF	BJS	6/11/15
11	Added grounding lug spec, section 12.0	MDC	RD	11/1/12
10	Modified 11.0.	MDC	RD	1/4/11
9	Revised 1.1, 2.1, 7.0, 10.0	MDC	RD	2/22/10
8	Revised 13.2	BJS	JCG	04/05/06
7	Revised 13.0, added 12.0 and 13.2.	BJS	SBH	06/15/04
6	Section 3.2, 7.0, 11.0; Re-Ordering of sections, inclusion of Figure 1	BJS	Director	04/05/01
5	Section 2, Corrected typo 22% to 2 ½%	JCR	Director	10/12/99
4	Section 15, Last Paragraph	JCR	Director	06/18/99
3	Add Section 3.4 – Spade Terminals	MDH	Director	11/20/98
2	Changed shipping in Section 15	JCR	Director	4/25/96
1	Add Section 15 - Shipping/Receiving	JCR	Director	8/30/95
0	Drafted			

Public Utility District No. 1 of Benton County

Specification #65-04

SPECIFICATIONS FOR POLE TYPE DISTRIBUTION TRANSFORMERS

1. General
2. Information to be submitted with proposal
3. Ratings
4. Bushings
5. Impedances
6. Fault Current
7. Dielectric Tests
8. Overall Height
9. Core and Coil Designs
10. Insulating Oil
11. Paint
12. Pressure Relief
13. Grounding
14. Nameplate
15. Labels
16. Packing Slip
17. Acceptance
18. Shipping/Receiving

1.0 GENERAL

1.1 This specification covers pole type distribution transformers for use on the Benton County Public Utility District distribution system.

1.2 The transformers shall conform to the latest requirements of the NEMA Standards No. TR1 and the ANSI Standards No. C57 for oil immersed, self-cooled, pole type distribution transformer. Units shall conform to the latest Department of Energy (DOE) transformer efficiency standard.

1.3 All proposal documents, drawings, and test reports shall be submitted electronically to the District at cp@bentonpud.org.

2.0 INFORMATION TO BE SUBMITTED WITH PROPOSAL

The supplier shall submit the following information with this proposal:

Maximum Guaranteed Total Losses, at rated conditions and 85°C.
Maximum Guaranteed No Load Losses, at rated conditions and 85°C.
Efficiency, at rated load.
Regulation, at 1.00 and 0.8 power factors.
Weights, of complete transformer including insulating liquids.
Outline Dimensions
Bushings, describing by type and manufacturer of outlet bushings and showing by sketch their relative locations through the tank wall and cover for each of the voltage windings specified.
Percent Impedance Volts, of the low voltage winding with respect to the high voltage winding at the kVA specified.
Volume, (gallons) of insulating liquid.

3.0 RATINGS

3.1 The transformers supplied under this specification shall be 65°C average winding rise, single phase, 60 cycle, oil immersed, self-cooled, pole type in the following kVA ratings: 5, 10, 15, 25, 37.5, 50, 75, 100, 167, 250, and 333.

3.2 Voltage ratings, high voltage bushing requirements, and high voltage tap requirements shall be as specified by the following groups:

Group I
7200/12470Y primary volts, 120/240 secondary volts, two high voltage bushings, no taps.

Group II
7200/12470Y primary volts, 120/240 secondary volts, two high voltage bushings, 4 2½% taps below normal.

Group III
7200/12470Y primary volts, 240/480 secondary volts, two high voltage bushings, 2 – 2½ % taps above and below normal.

Group IV
7200/12470Y primary volts, 277/480Y secondary volts, two high voltage bushings, 2 – 2½ % taps above and below normal.

Group V
14400/24940Y primary volts, 240/480 secondary volts, two high voltage bushings, taps at 13800, 13200, 12870, 12540.

Group VI
14400/24940Y primary volts, 120/240 secondary volts, two high voltage bushings, taps at 13800, 13200, 12870, 12540.

4.0 BUSHINGS

4.1 Bushings shall conform to applicable NEMA and ANSI Standards.

4.2 High voltage bushings shall be cover mounted. The opening in the cover shall be a minimum of 2 ¼ inches in diameter.

4.3 Low voltage bushings shall be tank wall mounted.

4.4 Low voltage bushings for units 100 kVA and larger shall have a Type H Spade. per ANSI C57.12.20.

5.0 IMPEDANCES

Impedance shall conform to manufacturer's standard at 85°C subject to tolerances in ANSI Standard No. C57.

6.0 FAULT CURRENT

Available fault current phase to phase at secondary bushings, 120/240 volt, shall be less than 10,000 amps for 50 kVA or less. For 75 kVA transformers the available fault current at the secondary bushings shall be less than 22,000 amps.

7.0 DIELECTRIC TESTS

7.1 Applied and induced potential tests shall be made on the complete transformer units in accordance with ANSI Standard C57.

7.2 The supplier shall submit evidence satisfactory to the purchaser that transformers of

design, capacity, and voltage similar to units specified herein have been successfully subjected to impulse tests and that the specified units will successfully withstand them without failure. The tests shall be a prescribed by ANSI Standards C57.

8.0 OVERALL HEIGHT

The following overall maximum heights (including bushings) are desired and suppliers meeting this requirement may be given an evaluation advantage over those not meeting this requirement.

5-15 kVA	36 inches
25 kVA	40 inches
37.5-50 kVA	44 inches
75-100 kVA	52 inches

9.0 CORE AND COIL DESIGNS

9.1 The core and coil shall be independently clamped together without using the transformer tank.

9.2 Double sided adhesive paper shall be used in the winding of the coil.

10.0 INSULATING OIL

The proper amount of insulating oil shall be provided. The nameplate shall state that the transformer is filled with mineral oil and that the mineral oil has a PCB concentration less than 1ppm.

11.0 PAINT

The paint finish shall meet or exceed ANSI/IEEE C57.12.31, latest revision.

11.1 One can of the paint used for the final coat shall be shipped per every 25 transformers. For orders less than 25 units, one can of paint shall be supplied. A spray can is preferred.

12.0 INTERNAL FAULT DETECTOR

Each transformer shall be equipped with a non-resettable device which detects and provides external indication of internal transformer faults, and also incorporates pressure relief functionality. The pressure relief activation level shall be 10 psi. The approved device is manufactured by IFD Corporation or approved equal.

13.0 GROUNDING

Tank grounding lug shall be Hubbell (Fargo) # GC 207.

14.0 NAMEPLATE

The nameplate shall have a permanent bar code label per the requirements of IEEE Std. C57.12.35. The maximum fault current shall be indicated on the transformer nameplate and shall be titled “Max Fault”.

15.0 LABELS

15.1 The manufacturer shall install the kVA and secondary voltage numbers as per normal manufacturing procedure. (See Figure 1)

15.2 The manufacturer shall install a temporary bar code label per the requirements of IEEE Std. C57.12.35. The label shall contain the manufacturer code and transformer serial number.

16.0 PACKING SLIP

Packing slip shall contain the following information:
Purchase order number
Type (padmount, pole, etc.)
Secondary Voltage
kVA

17.0 ACCEPTANCE

17.1 Transformers without above information will not be accepted by the District. Transformers may be returned at manufacturer's expense. (Stock transformers, purchased in an emergency, are an exception.)

17.2 The manufacturer shall fill out the following information in the District’s transformer receiving document:

Serial Number
Impedance
Max Fault Current
Oil Weight
Total Unit Weight
PCB Level is less than 1 ppm

17.2.1 A draft copy of the receiving document is included in the specification. The successful bidder will receive the document in electronic format (Excel) at the time a PO is awarded.

17.2.2 The manufacturer shall return the document via email to the District’s Contracts and Purchases department at the time the units are shipped.

17.2.2.1 Units that arrive prior to the District receiving the receiving

document from the manufacturer will not be accepted and may be returned at manufacturer's expense.

17.2.3 For Impedance and Max Fault Current values, the manufacturer shall indicate the value (design or tested) that matches what they would normally print on the unit nameplate.

18.0 SHIPPING/RECEIVING

18.1 The manufacturer shall prepare all transformers for shipping in a manner to prevent: 1) damage from transportation and 2) contamination from weather conditions. The use of tarps to cover the units or covered vans are the required methods. Shipments made by rail will not be accepted.

18.2 Benton PUD shall utilize proper equipment and personnel to handle the transformers in a manner as to prevent damage to the units. Inspection will be done promptly after delivery to assure that: 1) the units meet District specifications, 2) quantities are correct, and 3) no damage has occurred in shipping.

18.3 At the time the transformers are shipped, the manufacturer will inform the District's Purchasing Department via email as to the type of unit, quantity, and day of shipment.

END

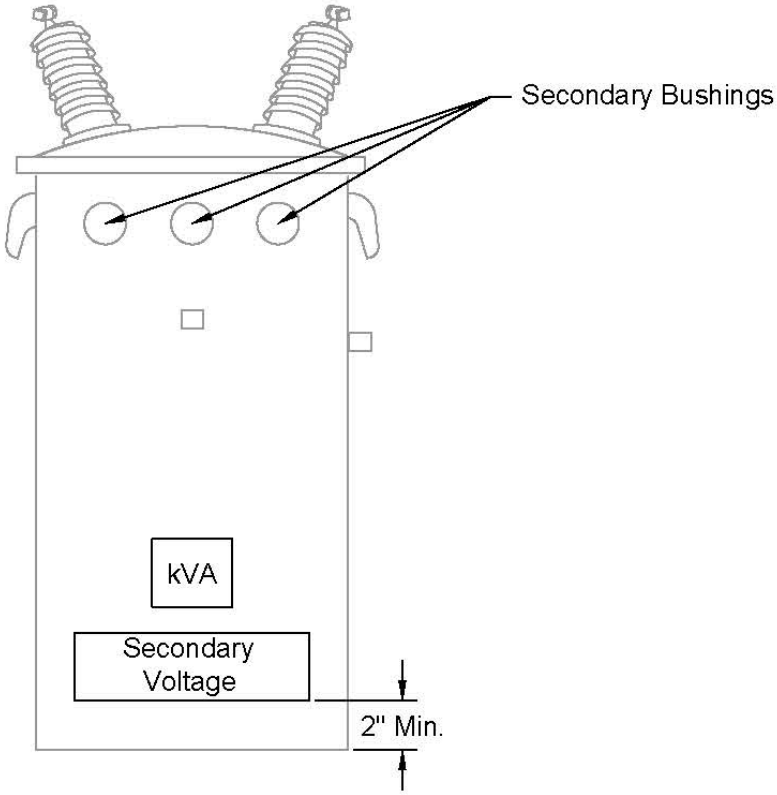

Figure 1 - Secondary voltage and kVA ratings locations on pole mounted transformers

(center on secondary bushing side)

Purchase Order # xxxxx
Date Ordered: xx-xx-xx

LINE ITEM # 1		DESCRIPTION	MANUFACTURER
		Transformer, 37.5 kVA single phase pad, 12470GRDY/7200-240/120 volt, no taps, loop feed, dead front, Spec. 69-19	Example

	Contracts/Purchasing		Manufacturer						Warehouse Admin.		Transformer Shop			Xfmr Shop Admin.	
	Inventory #	District #	Serial #	Impedance	Max Fault Current	Oil Weight	Total Weight	PCB Level Must Be LT1 (Y/N)	Date Received	Received By	Warning Lbl Installed	Fuse	Initial/Date	Receiving Entered	Ready - Line Entered
1	xxxxxxxxxx	xxxxx													
2	xxxxxxxxxx	xxxxx													
3	xxxxxxxxxx	xxxxx													
4	xxxxxxxxxx	xxxxx													
5	xxxxxxxxxx	xxxxx													
6	xxxxxxxxxx	xxxxx													
7	xxxxxxxxxx	xxxxx													
8	xxxxxxxxxx	xxxxx													
9	xxxxxxxxxx	xxxxx													
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12	xxxxxxxxxx	xxxxx													
13	xxxxxxxxxx	xxxxx													
14	xxxxxxxxxx	xxxxx													
15	xxxxxxxxxx	xxxxx													
16	xxxxxxxxxx	xxxxx													
17	xxxxxxxxxx	xxxxx													
18	xxxxxxxxxx	xxxxx													
19	xxxxxxxxxx	xxxxx													

Public Utility District No. 1 of Benton County

Specifications #69-19

Pad Mount, Compartmentalized, Single Phase Transformers 15 through 167 KVA

43	Revised Attachment 2-clarifying decal placement	EAP		11/9/20
42	Revised 18.1, Attachment 1, and Attachment 2	EAP	RD	9/17/19
41	Added 20.2.c	DAB		9/7/2018
40	Revised 15.4, 18.1, 20.0 21.0, Attachment 2 Added 1.5, 16.1, 18.1.a, 20.1, 20.2, Attachment 1, Attachment 3	DAB	RD	10/06/17
39	Revised 1.3, Modified section 8 to remove voltage distinction for fault current limits. Added 15.4	DAB	RD	2/8/2017
38	Modified Figure 1	DAB	BJS	8/19/2015
37	Modified section 1.4, 4.2b, 8, 21, and reformatted tables	TLF	BJS	6/11/15
36	Modified section 3.1 and 13.2b	TLF	RD	6/13/13
35	Modified 13.2d	MDC	RD	9/26/12
34	Modified 10.0	MDC	RD	5/14/12
33	Modified 13.2b	MDC	RD	1/4/11
32	Section 13.2h added	MDC	RD	8/27/10
31	Revised 4.4, 6.0, 9.0, 11.1, 11.3, 11.4, 11.6, 13.2b, 13.2f, 14,7, 16.0, Figure 1.	MDC	RD	2/22/10
30	Revised 18.2	BJS	JCG	04/05/06
29	Added 15.3 and 18.2	BJS	SBH	06/15/04
28	Sections 11.1, 14.3c, 18.0	BJS	SBH	05/09/02
27	Section 11.3 Cat # Revision	BJS	SBH	02/28/01
26	Section 11.1, removal of "High voltage bushing shall be a 4-hole square clamp."	JCR	REG	10/12/99
25	Section 21, last paragraph	JCR	Director	06/18/99
24	Section 9 Primary Fuses, 11.3 High Voltage Bushings	MDH	REG	03/31/99
23	Change Section 11.5 – Terminals Not Supplied	MDH	Director	11/20/98
2	Added/changed	____	Director	2/01/78
1	Added/changed	____	Director	9/29/76
0	Drafted by	____		2/03/69
REV.	**DESCRIPTION**	**BY**	**APPROVED BY**	**DATE**

Public Utility District No. 1 of Benton County

Specifications #69-19

Pad Mount, Compartmentalized, Single Phase Transformers 15 through 167 KVA

1	General
2	Information to be Submitted with Proposal
3	Drawings and Test Data
4	Rating
5	Tests
6	Voltage Taps
7	Impedances
8	Fault Current
9	Primary Fuses
10	Loop Feed
11	Bushings and Terminals
12	Core and Coil Designs
13	Accessories
14	Tank & Cabinet Construction
15	Nameplate
16	Paint
17	Insulating Oil
18	Labels
19	Packing Slip
20	Acceptance
21	Shipping/Receiving

BID ITEM DESCRIPTION INSTRUCTIONS FOR PUD PERSONNEL:

1. Specify kVA rating, Section 4.
2. Refer to Section 6 for Voltage Taps.

1.0 GENERAL

1.1 This specification covers the furnishing and delivery, F.O.B. Kennewick, Washington; of pad mount compartmentalized single phase transformers, 15 kVA to 167 kVA, 15 kV, and below.

It is the intent of this specification to provide padmounted transformers with "dead front" design, and having maximum overall height, width, and depth dimensions as listed on Figure 1 to follow.

1.2 Only those manufacturers who have demonstrated their capabilities of manufacturing pad mount, single phase transformers, 15 kVA to 167 kVA, 15 kV and below, will be considered.

1.3 Governing Standards

The transformers shall conform to all applicable requirements of the latest NEMA Standards for transformers, and the ANSI Standards on transformers, and the latest Department of Energy (DOE) transformer efficiency standard.

1.4 Shipping Conditions

The transformers shall be oil immersed and shipped filled with oil. Transformers 75kVA and below shall be shipped double stacked, if possible. See shipping section for additional detail.

1.5 All proposal documents, drawings, and test reports shall be submitted electronically to the District at cp@bentonpud.org.

2.0 INFORMATION TO BE SUBMITTED WITH PROPOSAL

2.1 The Bidder shall submit the following information with their proposal.

2.1.a Maximum Guaranteed No Load Losses
Maximum guaranteed no load losses by wattmeter, at rated conditions and 85°C.

2.1.b Maximum Guaranteed Total Losses
Maximum guaranteed total losses by wattmeter, at rated conditions and 85°C.

2.1.c Efficiency
Efficiency at rated load.

2.1.d Regulation
Regulation at 1.00 and 0.8 power factors.

2.1.e Percent Impedance Volts

Percent impedance volts of the low voltage winding with respect to the high voltage winding at the kVA specified.

2.1.f Exciting Current

Exciting current at rated voltage.

2.1.g Weight

Approximate net weight of complete transformer including insulating oil.

2.1.h Outline Dimensions

Outline dimensions including overall height, projected floor space, and clearances required for opening any doors affecting width and length of dimensions. **Drawings showing the dimensions shall accompany the proposal.**

2.1.i Bushing Descriptions

Bushing descriptions by type and manufacturer and showing by sketch their relative locations through the tank wall for each of the voltage windings specified.

2.1.j Test Reports

Certified Test Report shall be submitted showing that the finish used meets or exceeds ANSI/IEEE C57.12.28, latest revision.

3.0 DRAWINGS AND TEST DATA

3.1 Information to be Submitted PRIOR to manufacturing

Upon receipt of order and PRIOR to commencement of manufacturing, the successful Bidder shall prepare and submit in duplicate, to the Engineer, drawings covering information as follows for approval:

3.1.a Outline Dimensions

Outline dimensions of transformer tank and cabinet including relative locations within the cabinet of high and low voltage bushings, primary fuses, and accessories.

3.1.b Bushing, Fuse and Accessory Description

The manufacturer's name, type, and catalog number for all bushings, bushing wells, fuses, switches and other accessories shall be included on the drawing.

3.1.c Position of Accessories

Position of all accessories located within the cabinet.

3.1.d Base

Detail of base for pad design.

4.0 RATING

4.1 Kilovolt-ampere ratings

Kilovolt-ampere ratings shall be 15, 25, 37.5, 50, 75, 100, and 167.

4.2 Voltage Ratings

High voltage and low voltage ratings shall be as noted herein.

4.2.a High Voltage Ratings

High Voltage (H)	High Voltage Insulation	Leads Through Tank
12470 Grd. Y/7200	95 kV BIL	2(H and H) 1A 1B

4.2.b Low Voltage Ratings

Low Voltage (X)	Low Voltage Insulation	Leads Through Tank
240/120	30 kV BIL	3
480/240	30 kV BIL	3

4.3 Phase and Cycles

Transformers shall be single (1) phase, 60 hertz units.

4.4 Limits of Temperature Rise for Continuous Ratings

4.4.a The average winding temperature rise above the ambient temperature when tested in accordance with their ratings, shall not exceed 65°C (winding temperature rise by resistance).

4.4.b The hottest spot winding temperature rise above the ambient temperature, when tested in accordance with their ratings, shall not exceed 80°C*****.

4.4.c Cooling shall be accomplished by oil and air.

5.0 TESTS

5.1 General

Tests shall be made as specified in ANSI C57.12.00 and C57.12.90.

5.2 Dielectric Tests

The complete transformer(s), including bushings, shall be subjected to applied potential tests and induced potential tests.

5.3 Certified Test Data - Design Units

The District realizes that ANSI C57 does not require resistance, impedance, and load-loss tests for distribution transformers 500 kVA and smaller, provided a record of such tests made on a duplicate or essentially duplicate unit in accordance with ANSI C57 is available. The Bidder shall provide the District with certified test data on the duplicate or essentially duplicate unit which has been tested in accordance with ANSI C57. The Bidder shall further state in writing that the units being supplied to the District are duplicates or essentially duplicates of the unit for which certified test data has been submitted.

5.4 Certified Test Data – Actual

Certified test data of tests performed in accordance with ANSI C57 shall be provided for all transformers 501 kVA or larger or for which data as required in Section 5.3 is not available.

6.0 VOLTAGE TAPS

Transformers shall be furnished without taps, except when specified on the bid schedule. When required, the taps shall be four 2.5% below normal voltage.

7.0 IMPEDANCES

Impedances shall conform to manufacturer's standard at 85°C, subject to tolerances specified in ANSI Standard No. C57.12.00.

8.0 FAULT CURRENT

Available fault current phase to phase at secondary bushings shall be less than 10,000 amps for 50 kVA or less. For transformers 75 kVA and greater, the available fault current phase to phase at the secondary bushings shall be less than 22,000 amps.

9.0 PRIMARY FUSES

The primary fuse protection shall be provided and shall be the Cooper current sensing Bay-O-Net fuse in series with Cooper isolation links sized as follows:

Transformer kVA	Cooper Current Sensing Bay-O-Net		Cooper Isolation Link
	Catalog No.	Continuous Current Rating	Catalog No.
15	4000353C04	6	3001861A01M
25	4000353C06	10	3001861A02M
37.5	4000353C06	10	3001861A02M
50	4000353C08	15	3001861A02M
75	4000353C10	25	3001861A03M
100	4000353C10	25	3001861A03M
167	4000353C12	40	3001861A03M

10.0 LOOP FEED AND VFI REQUIREMENT

The transformer shall be energized from a loop feed (through) circuit. The transformer shall be provided with loop feed primary bushings of a type specified in Section 11. If a VFI type transformer is specified in the item description, only a Cooper VFI transformer with type “EF” protection curves shall be accepted.

11.0 BUSHINGS AND TERMINALS

11.1 Arrangement

Bushings and terminals shall be Type 2 arrangement per ANSI C57.12.25. All bushings shall be externally clamped. All high voltage and low voltage leads will be of sufficient length and size to allow replacement of bushings through existing opening in tank wall. High voltage bushings shall be clamped with a three or four hole clamp and fastened with 3/8" diameter studs or larger and appropriate other fasteners.

11.2 Bushings and Terminal Tests

Bushings shall conform with and be tested in accordance with applicable ANSI and NEMA Standards. Electrical characteristics of transformer bushings and terminals shall be as listed below:

Insulation Class kV	Basic Impulse Insulation Level, Dry Withstand kV	60 Hz Dry One-Minute Withstand kV
1.2	30	10
15.0	95	34

11.3 High Voltage Bushings

High voltage universal bushing well and insert conforming to ANSI/IEEE Standard 386 latest revision shall be provided. The loadbreak bushing insert shall be Cooper Cat. #LBI215. The insert shall be properly installed in the well and ready for service. A ground wire (bleed wire) shall be attached from the bushing insert to the transformer tank. The high voltage bushing well clamp shall be equipped with bail tabs.

11.4 Low Voltage Bushings

The low voltage bushings shall be externally threaded stud bushings having copper studs either 5/8 inch or 1 inch in diameter per ANSI C57.12.25, Figure 4C.

11.5 Low Voltage Terminals

Low voltage terminals shall not be supplied with the transformer.

11.6 Terminal Marking

External terminals shall be marked by stenciled lettering, stamped plates or decals on the tank per ANSI C57.12.00.

12.0 CORE AND COIL DESIGNS

12.1 The core and coil shall be independently clamped together without using the transformer tank.

12.2 Double sided adhesive paper shall be used in winding of coil.

13.0 ACCESSORIES

13.1 Life

Service life of accessories shall be comparable with the transformer.

13.2 Standard and Special Accessories

Transformers shall be equipped with the manufacturer's standard accessories and the following accessories, which shall be in addition to any which may be specified elsewhere in these specifications:

13.2.a Oil drain provision.

13.2.b Each transformer shall be equipped with a non-resettable device which detects and provides external indication of internal transformer faults, and also incorporates pressure relief functionality. The internal fault detector shall be located on the inside of the secondary compartment. The approved device is manufactured by IFD Corporation or approved equal.

13.2.c Lifting devices.

13.2.d Tank grounding lug shall be Hubbell (Fargo) #GC 207.

13.2.e Hold down cleats.

13.2.f Accessory parking stand between the high voltage bushings. The parking stand shall be designed to fit the accessories of various manufacturers.

13.2.g Drip shield on Bay-O-Net fuse adequate to protect high voltage terminations from oil when fuse is pulled.

13.2.h Provisions shall be made for electrically bonding the transformer tank and compartments together. Bonding jumpers shall be included on all doors and lids.

14.0 TANK AND CABINET CONSTRUCTION

14.1 Tanks

14.1.a The tank shall be of welded construction of sufficient strength to withstand the design pressures without permanent distortion.

14.1.b Transformers shall be of sealed tank construction which seals the interior of the tank from the atmosphere, and in which the gas plus the oil volume remains constant. The transformer will remain effectively sealed for a top oil temperature range of minus 5°C to plus 105°C.

14.2 Cabinets Compartments

The cabinet shall contain the primary and secondary compartments and shall be located on a common side of the transformer. No separating barrier between the primary and secondary areas shall be provided.

14.3 Cabinet Cover

14.3.a The cabinet cover shall comprise the cabinet top, sides and front. It shall be hinged at the top connection to the transformer cover. It shall swing up for access to the

primary and secondary areas.

14.3.b A captive, recessed pentahead bolt shall be provided to secure the cover in the closed position.

14.3.c The depth of the cabinet cover shall be a minimum of 16 inches, as measured between the tank wall and the front of the cover when in a closed position.

14.4 Padlock Provision

A provision shall be furnished for padlocking the cabinet cover closed.

14.5 Roof Design

The roof of the cabinet and transformer shall be designed to prevent collection of water.

14.6 Temporary Service Access

A two-inch diameter opening shall be furnished for conduit entry at the bottom of the side of the low voltage compartment. A cover plate, removable from the inside, shall be provided.

14.7 Unit Assembly and Tamper Resistance

Transformer shall be factory-assembled and shipped as a unit, tamper resistant, weather resistant, and designed and constructed to prevent insertion of foreign objects. No additional housing, fences, or other provisions shall be necessary to make the unit safe. The assembly, when in operating position, shall not have any nuts, bolts, screws, or any detachable equipment exposed, except the pentahead bolt per 14.3 above. Cabinet security shall meet the requirements of ANSI/IEEE C57.12.28.

15.0 NAMEPLATE

15.1 Nameplate Location

The transformer nameplate shall be mounted in the low voltage compartment.

15.2 Material

The nameplate shall be of corrosion-resistant material.

15.3 Bar Code

The nameplate shall have a permanent bar code label per the requirements of IEEE Std. C57.12.35.

15.4 Fault Current

The maximum fault current shall be indicated on the transformer nameplate and shall be titled “Max Fault”.

16.0 PAINT

The paint finish shall meet or exceed ANSI C57.12.28, latest revision. Certified Test Reports shall be submitted with proposal verifying this. The color of the final coat shall be manufacturer's standard dark green weather resistant transformer paint, or as specified under Bid Item.

16.1 One can of the paint used for the final coat shall be shipped per every 25 transformers. For orders less than 25 units, one can of paint shall be supplied. A spray can is preferred.

17.0 INSULATING OIL

17.1 The proper amount of insulating oil shall be provided. The nameplate shall state that the transformer is filled with mineral oil and that the mineral oil has a PCB concentration less than 1 ppm.

18.0 LABELS

18.1 The manufacturer shall install the following labels: danger, combination notice-warning, kVA, and secondary voltage. The labels shall be Designer Decal stickers OR approved alternate with the part numbers listed in Attachment 1.

18.1.a Proposal documentation shall include images and technical information of any proposed alternate labels.

18.2 The manufacturer shall install a temporary bar code label per the requirements of IEEE Std. C57.12.35. The label shall contain the manufacturer code and transformer serial number.

18.3 All other labels will be supplied and installed by the District.

19.0 PACKING SLIP

Packing slip shall contain the following information:

Purchase Order Number
Secondary Voltage
Type (pad mount, pole, etc.)
kVA

20.0 ACCEPTANCE

20.1 Transformers without above information will not be accepted by the District. Transformers may be returned at manufacturer's expense.

20.2 The manufacturer shall fill out the following information in the District's transformer receiving document:

Serial Number
Impedance
Max Fault Current
Oil Weight
PCB Level is less than 1 ppm

20.2.a A draft copy of the receiving document is included in the specification. The successful bidder will receive the document in electronic format (Excel) at the time a PO is awarded.

20.2.b The manufacturer shall return the document via email to the District's Contracts and Purchases department at the time the units are shipped.

20.2.b.i Units that arrive prior to the District receiving the receiving document from the manufacturer will not accepted and may be returned at manufacturer's expense.

20.2.c For Impedance and Max Fault Current values, the manufacturer shall indicate the value (design or tested) that matches what they would normally print on the unit nameplate.

21.0 SHIPPING/RECEIVING

The manufacturer shall prepare all transformers for shipping in a manner to prevent: 1) damage from transportation, and 2) contamination from weather conditions. The use of tarps to cover the units or covered vans are the preferred methods.

Transformers 75kVA and below shall be shipped double stacked, if possible. They shall be shipped in a manner so as to prevent damage to either the top or bottom unit, i.e. the top transformer shall not be set directly on the bottom transformer. There shall be mounting hardware (per manufacturer's design) that will keep the units completely separated and secured during shipment.

Benton PUD shall utilize proper equipment and personnel to handle the transformers in a manner as to prevent damage to the units. Inspection will be done promptly after delivery to assure that: 1) the units meet District specifications, 2) quantities are correct, and 3) no damage

has occurred in shipping.

At the time the transformers are shipped, the manufacturer will inform the District's Purchasing Department via email as to the type of unit, quantity, and day of shipment.

END

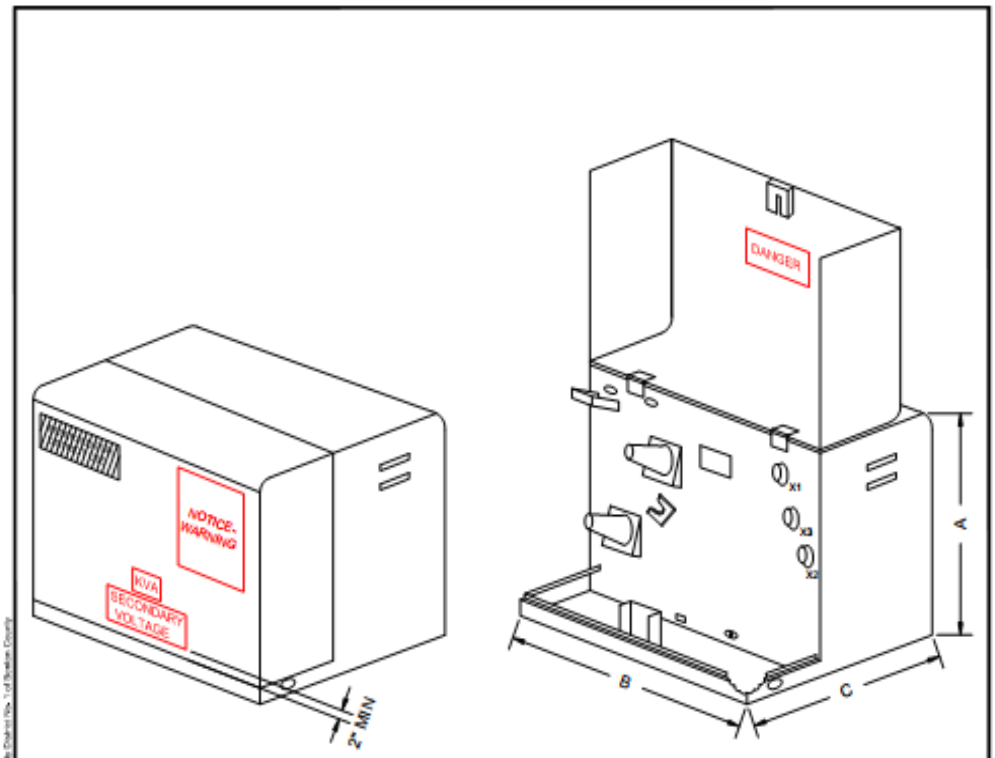
Attachment 1 – Single Transformer Dimensions and Label Locations

Label Description	Designer Decal Part Number
Multi-purpose Notice-Warning	DD-WARNOT912-BI-BPUD
Danger	DANBI-410-BPUD

Secondary Voltage Label	Designer Decal Part Number
Single Phase Pad, 240/120	DD-1P240/120
Single Phase Pad, 480/240	DD-1P480/240

kVA Label	Designer Decal Part Number
10 kVA	DD-KVAYB-10
15 kVA	DD-KVAYB-15
25 kVA	DD-KVAYB-25
50 kVA	DD-KVAYB-50
75 kVA	DD-KVAYB-75
100 kVA	DD-KVAYB-100
167 kVA	DD-KVAYB-167

Attachment 2 – Transformer Dimensions and Label Locations



External Dimensions-(Excluding Cooling Radiators) Not To Exceed The Following In Inches						
kVA	25	37.5	50	75	100	167
A	27	27	27	27	32	32
B	36	36	36	36	36	41.5
C	36.25	36.25	36.25	36.25	39.25	39.25

BENTON PUD

DRAWN BY: SWT

DRAW DATE: 11/14/09

TITLE:

Single Phase Padmount
Not to Exceed Dimensions
per Spec 69-19

REV BY:

REV DATE:

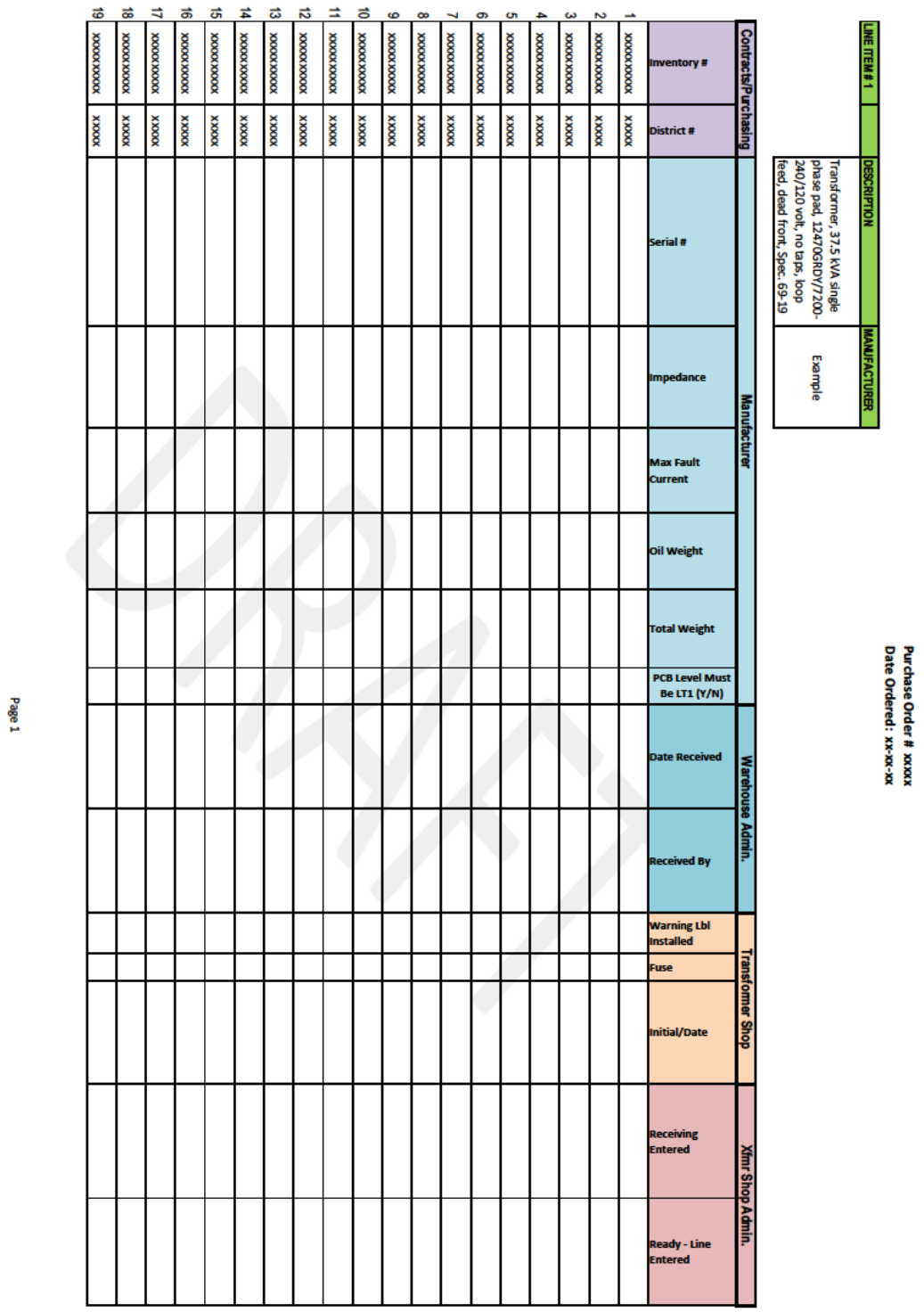
SHT. 1 of 1

DIR. ENG.

DWG. NO.

Figure 1

Attachment 3 – Example Receiving Document



Purchase Order # xxxxx
Date Ordered: xx-xx-xx

LINE ITEM # 1	DESCRIPTION	MANUFACTURER
	Transformer, 37.5 kVA single phase pad, 12470GRDY/7200-240/120 volt, no taps, loop feed, dead front, Spec. 69-19	Example

	Contracts/Purchasing		Manufacturer						Warehouse Admin.		Transformer Shop			Xfmr Shop Admin.	
	Inventory #	District #	Serial #	Impedance	Max Fault Current	Oil Weight	Total Weight	PCB Level Must Be LT1 (Y/N)	Date Received	Received By	Warning Lbl Installed	Fuse	Initial/Date	Receiving Entered	Ready - Line Entered
1	xxxxxxxxxx	xxxxx													
2	xxxxxxxxxx	xxxxx													
3	xxxxxxxxxx	xxxxx													
4	xxxxxxxxxx	xxxxx													
5	xxxxxxxxxx	xxxxx													
6	xxxxxxxxxx	xxxxx													
7	xxxxxxxxxx	xxxxx													
8	xxxxxxxxxx	xxxxx													
9	xxxxxxxxxx	xxxxx													
10	xxxxxxxxxx	xxxxx													
11	xxxxxxxxxx	xxxxx													
12	xxxxxxxxxx	xxxxx													
13	xxxxxxxxxx	xxxxx													
14	xxxxxxxxxx	xxxxx													
15	xxxxxxxxxx	xxxxx													
16	xxxxxxxxxx	xxxxx													
17	xxxxxxxxxx	xxxxx													
18	xxxxxxxxxx	xxxxx													
19	xxxxxxxxxx	xxxxx													

Page 1

Benton PUD

Specification #67-06

Pad Mount, Compartmentalized, Three Phase Transformers 45 through 2500 kVA

47	Revised 10.6.3	SMV	SH	11/21/2022
46	Revised 10.6.3, Added 18.1-18.4	EAP	SH	7/12/21
45	Revised 10.6.2, 15.1, Attachment 1 and Figure 1, added 13.12.4	EAP	RD	9/16/19
44	Revised 10.6.3, 17.2.3, and Attachment 1	DAB	RD	9/7/2018
43	Revised 6.1, 8.0, 13.11.1, 15.1, 17.0, 18.0 Attachment 1, Figure 1, Added 1.5, 15.1.1, 17.1, Section 17.2, Receiving document reference image.	DAB	RD	10/06/2017
42	Revised 1.3, section 8.	DAB	RD	2/8/17
41	Updated section 6.2, reformatted tables, and attachment 1.	TLF	BJS	6/11/15
40	Added 8.0, Attachment 1, and Figure 1. Updated 6.2, 9.0, 13.7, 15.1, and construction standards. Updated reference to IEEE C57.12.34 throughout document.	TLF	RD	10/20/14
39	Modified sections 3.1, 10.2h, 12.4, and added	TLF	RD	6/26/13
38	Modified 10.2b	MDC	RD	9/26/12
37	Added 10.2h	MDC	RD	1/4/11
36	Revised Section 6.2, 8.0.	MDC	RD	5/4/10
35	Revised 2,1m, 4.4, 8.0, 9.1, 9.3-9.8, 12.1d, 12.2, 12.3, 12,9, 12.11, Figure 1 removed.	MDC	RD	2/22/10
34	Revised 9.7a and 14.2.	BJS	JCG	04/05/06
33	Added 12.12c and 14.2, revised standard numbers in 12.6.	BJS	SBH	06/15/04
32	Section 14.0	BJS	SBH	05/09/02
31	Section 9.3, Cat.# Revision	BJS	Director	02/28/01
2	Changed	-	Director	2/10/78
1	Changed	-	Director	11/02/77
0	Drafted by	-		2/06/67
REV.	**DESCRIPTION**	**BY**	**APPROVED BY**	**DATE**

Benton PUD

Specification #67-06

PAD MOUNT, COMPARTMENTALIZED, THREE PHASE TRANSFORMERS 45 THROUGH 2500 kVA

BID ITEM DESCRIPTION INSTRUCTIONS FOR PUD PERSONNEL:

1. Specify kVA and voltage ratings, Section 4.
2. Specify primary taps, Section 6.2.
3. Paint color if other than standard dark green, Section 13.11.

1.0 GENERAL

1.1 This specification covers the furnishing and delivery F.O.B. Kennewick, Washington, of pad mount compartmentalized three phase transformers, 45 kVA to 2500 kVA, 15 kV, and below. Transformer shall be radial feed unless otherwise specified.

1.2 Only those manufacturers who have demonstrated their capabilities of manufacturing padmount, three phase transformers, 45 kVA to 2500 kVA, 15 kV and below, will be considered.

1.3 Governing Standards

The transformers shall conform to meet all applicable requirements of the latest NEMA Standards for transformers, the ANSI Standards on transformers, and the latest Department of Energy (DOE) transformer efficiency standard.

1.4 Shipping Conditions

The transformers shall be oil immersed and shipped filled with oil.

1.5 All proposal documents, drawings, and test reports shall be submitted electronically to the District at cp@bentonpud.org.

2.0 INFORMATION TO BE SUBMITTED WITH PROPOSAL

2.1 The bidder shall submit the following information with his proposal.

2.1.1 Maximum Guaranteed No Load Losses
Maximum guaranteed no load losses by wattmeter, at rated conditions and 85°C.

2.1.2 Maximum Guaranteed Total Losses
Maximum guaranteed total losses by wattmeter, at rated conditions and 85°C.

2.1.3 Efficiency
Efficiency at rated load.

2.1.4 Regulation
Regulation at 1.00 and 0.8 power factors.

2.1.5 Percent Impedance Volts
Percent impedance volts of the low voltage winding with respect to the high voltage winding at the kVA specified.

2.1.6 Exciting Current
Exciting current at rated voltage.

2.1.7 Weight
Approximate net weight of complete transformer including insulating oil.

2.1.8 Volume
Volume (gallons) of insulating oil.

2.1.9 Insulation System
Description of insulation system. Description shall include manufacturer's data supporting justification for rating on the basis of 65°C rise.

2.1.10 Outline Dimensions
Outline dimensions including overall height, projected floor space, and clear opening space required to lower the unit(s) into a transformer vault. **Drawings showing the dimensions shall accompany the proposal.**

2.1.11 Bushing or Bushing Well Descriptions
Bushing descriptions by type and manufacturer and showing by sketch their relative locations through the tank wall for each of the voltage windings specified. A sketch shall be included which shows method for supporting low voltage terminals when supports are required.

2.1.12 Primary Fuse
Primary fuses shall be as specified in Section 9. The relative location of the fuses shall be shown in the primary compartment on a drawing submittal.

2.1.13 Test Reports
Certified Test Reports shall be submitted showing the coating used meets or exceeds ANSI C57.12.28.

3.0 DRAWINGS AND TEST DATA

3.1 Information to be Submitted PRIOR to manufacturing

Upon receipt of order and PRIOR to commencement of manufacturing, the successful bidder shall prepare and submit to the engineer, in duplicate, drawings covering information as follows for approval:

3.1.1 Outline Dimensions
Outline dimensions of transformer tank and cabinet including relative locations within the cabinet of high and low voltage bushings and primary fuses.

3.1.2 Bushing, Fuse and Accessory Description
The manufacturer's name, type, and catalog number for all bushings, bushing wells, fuses, switches and other accessories shall be included on the drawing.

3.1.3 Position of Accessories
Position of all accessories located within the cabinet including pipe inlets and

outlets, and their diameters and thread designation.

3.1.4 Terminal Board Connections
Connection diagram of internal terminal board, where one is used.

3.1.5 Base
Detail of base for pad design.

4.0 RATING

4.1 Kilovolt-ampere ratings

Kilovolt-ampere ratings shall be 45, 75, 112, 150, 225, 300, 500, 750, 1000, 1500, 2000, and 2500.

4.2 Voltage Ratings

High voltage and low voltage ratings shall be as noted herein.

4.2.1 High Voltage Ratings

High Voltage (H)	High Voltage Insulation	Leads Through Tank
12470GrdY/7200	95 kV BIL	3

The high voltage neutral shall be internally connected to the X0 bushing. There shall be a disconnect link accessible from the manhole which when removed isolates the high voltage neutral from the low voltage neutral.

4.2.2 Low Voltage Ratings

Low Voltage (X)	Low Voltage Insulation	Leads Through Tank
208Y/120	30 kV BIL	4
480Y/277	30 kV BIL	4
2400Y	60 kV BIL	3
4160Y/2400	60 kV BIL	4

4.3 Phase and Cycles

Transformers shall be three (3) phase, 60 hertz units.

4.4 Limits of Temperature Rise for Continuous Ratings

4.4.1 The average winding temperature rise above the ambient temperature when tested in accordance with their ratings, shall not exceed 65°C (winding temperature rise by resistance).

4.4.2 The hottest spot winding temperature rise above the ambient temperature, when tested in accordance with their ratings, shall not exceed 80°C.

4.4.3 Cooling shall be accomplished by oil and air.

5.0 TESTS

5.1 General

All tests shall be performed as specified in IEEE C57.12.34, latest revision.

5.2 Certified Test Data - Design Units

The District realizes that ANSI/IEEE C57 does not require resistance, impedance, and load-loss tests for distribution transformers 500 kVA and smaller, provided a record of such tests made on a duplicate or essentially duplicate unit in accordance with ANSI/IEEE C57 is available. The Bidder shall provide the District with certified test data on the duplicate or essentially duplicate unit which has been tested in accordance with ANSI/IEEE C57. The Bidder shall further state in writing that the units being supplied to the District are duplicates or essentially duplicates of the unit for which certified test data has been submitted.

5.3 Certified Test Data - Actual

Certified test data of tests performed in accordance with ANSI/IEEE C57 shall be provided for all transformers 501 kVA or larger or for which data as required in Section 5.3 is not available.

6.0 WINDINGS

6.1 Connections - Three-Phase Units

Three-phase transformers shall be furnished with a wye-wye connection. Either a five-legged core or a triplex coil-core design shall be provided unless otherwise specified on the bid schedule. The District may specify Triplex only coil-core designs for certain units.

6.2 Taps

Transformers shall be furnished with taps unless specifically stated otherwise on the bid schedule. For units furnished with taps, the taps shall be as shown in the table below. The tap changer shall be designed for operation with the transformer de-energized.

For units with secondary voltage of:	Primary voltage taps shall be:
208Y/120	**Four total:** 2 ½ % taps below normal voltage
480Y/277	**Four total:** two 2 ½ % taps, above and below normal voltage
2400Y	**Four total:** two 2 ½ % taps, above and below normal voltage
4160Y/2400	**Four total:** two 2 ½ % taps, above and below normal voltage

7.0 IMPEDANCES

Impedances shall conform to manufacturer's standard at 85°C, subject to tolerances specified in ANSI/IEEE Standard No. C57. The District has also included fault current limitations on three phase transformers as discussed in Section 8.

8.0 FAULT CURRENT

For transformers with a rating of 300 kVA or less, the available three phase fault current at secondary bushings shall be less than 22 kA. For transformers with a rating of 500 kVA and above, the available three phase fault current at the secondary bushings shall be less than 65 kA.

The maximum fault current shall be indicated on the transformer nameplate and shall be titled “Max Fault”.

9.0 PRIMARY FUSES

Primary fuses shall be furnished as follows:

45 - 500 kVA Units

The primary fuse protection shall be internal Cooper current sensing Bay-O-Net fuses and Cooper isolation link sized as follows:

Transformer kVA	Cooper Current Sensing Bay-O-Net		Cooper Isolation Link
	Catalog No.	Continuous Current Rating	Catalog No.
45	4000353C04	6	3001861A01M
75	4000353C06	10	3001861A02M
112	4000353C06	10	3001861A02M
150	4000353C08	15	3001861A02M
225	4000353C10	25	3001861A03M
300	4000353C10	25	3001861A03M
500	4000353C12	40	3001861A03M

750 - 1500 kVA Units

The primary fuse protection shall be internal Cooper current sensing Bay-O-Net fuses in series with ELSP current limiting fuses. The sizes shall be as follows:

Transformer kVA	Cooper Current Sensing Bay-O-Net		ELSP Current Limiting Fuse	
	Catalog No.	Continuous Current Rating	Catalog No.	Continuous Current Rating
750	4000353C14	65	CBUC15150D100	150
1000	4000353C16	100	CBUC15165D100	165
1500	4000353C17	140	CBUC15150D100	300*

* Denotes parallel fuse application

2000 – 2500 kVA Deadfront Units

No Primary fuse protection shall be provided for deadfront units rated 2000-2500 kVA.

2000 – 2500 kVA Livefront Units

The primary fuse protection for livefront units shall be located in the primary cabinet and shall be S&C Type SML-20 fuse holders. The fuse elements shall be S&C SMU-20 with TCC numbers 119-2 and 119-2-2, and shall be sized as follows:

Transformer kVA	Fuse Element Size
2000	100E
2500	125E

Adequate spacing shall be available to train cables in primary compartments and attach to the top of the fuse holder. Approval drawings will be required.

10.0 BUSHINGS AND TERMINALS

10.1 Location

Bushings and terminals shall be located in accordance with IEEE C57.12.34, latest revision to allow for external replacement.

10.2 Bushing and Terminal Tests

Bushings shall conform with and be tested in accordance with IEEE C57.12.34, latest revision.

10.3 High Voltage Bushings

High voltage universal bushing well and insert conforming to ANSI/IEEE Standard 386 latest revision shall be provided. The loadbreak bushing insert shall be Cooper Cat. # LBI215. The insert shall be properly installed in the well and ready for service. A ground wire (bleed wire) shall be attached from the bushing insert to the transformer tank.

10.4 Live-Front Requirements

10.4.1 High Voltage Bushings
Livefront units with external primary fuses located in the primary cabinet shall have porcelain type high voltage bushings.

10.4.2 Energized Conductors
High voltage clearances of bare energized conductors when attached to transformer bushings, or fuse terminals shall have clearances from other energized parts of grounded surfaces per IEEE C57.12.34, latest revision.

10.4.3 Barrier
Barriers required in the high voltage compartment to maintain the insulation level as specified in Section 10.4.2 shall be of polyester glass material.

10.4.4 High Voltage Terminals
High voltage terminals shall be equipped with solderless connectors having a terminal opening to accommodate No. 2 AWG to No. 250 KCM stranded conductor. This does not apply to plug-in type terminators.

10.5 Low Voltage Bushings

The low voltage bushings for 300 kVA transformers and below shall be externally threaded stud bushings having copper studs either 5/8-inch or 1 inch in diameter per ANSI/IEEE C57.12.34

10.6 Low Voltage Terminals

10.6.1 Terminal Type
Low voltage terminals shall be NEMA standard spade type terminals for transformers less than 150 kVA. Transformers rated 150kVA and larger shall have NEMA standard 10 hole blades supported from the top of the compartment, unless otherwise specified in the bid schedule. The supports shall not interfere with more than two holes on one side of the terminal.

10.6.2 Clearance Between Terminals
External clearance between low-voltage bushing terminals shall be in accordance with IEEE C57.12.34, latest revision except where modified by this specification.

10.6.3 Terminal Arrangement
Terminals of low-voltage winding shall be arranged either in the horizontal or the staggered arrangement per IEEE C57.12.34, latest revision. Regardless of whether Figure 4(A) (staggered terminal) or Figure 4(B) (in-line terminal) arrangement is used, the horizontal (“A” distance) clearance shall be a minimum of 7” to accommodate the District’s slipover metering CT’s.

10.7 Terminal Marking

External terminals shall be marked by stenciled lettering, stamped plates on the tank, or decals.

11.0 ACCESSORIES

11.1 General

11.1.1 Life
Service life of accessories shall be comparable with the transformer.

11.1.2 Location
The accessories shall be located within the secondary and/or primary compartment.

11.2 Standard and Special Accessories

Transformers shall be equipped with standard accessories and the following accessories, which shall be in addition to any which may be specified elsewhere in these specifications:

11.2.1 Oil Drain, Filter Press, and Sampling Valve
Oil drain, filter press, and sampling valve shall be furnished for units rated 225 kVA and larger.

11.2.2 Tank Grounding Provisions
Tank grounding lug shall be Hubbell (Fargo) # GC 207.

11.2.3 Bonding
Provision shall be made for electrically bonding the transformer tank and compartments together.

11.2.4 Tap Changer
Externally-operated tap changer shall be provided when taps are required by Section 6.2 herein.

11.2.5 Upper Filter Press
Upper filter press connection shall be furnished for units rated 225 kVA and larger.

11.2.6 Liquid Level Indication
A magnetic liquid level gauge shall be furnished for units rated at 750 kVA and larger.

11.2.7 Thermometer
Dial type thermometer shall be furnished for units rated at 750 kVA and larger.

11.2.8 Internal Fault Detector

Each transformer shall be equipped with a non-resettable device which detects and provides external indication of internal transformer faults, and also incorporates pressure relief functionality. The internal fault detector shall be located on the inside of the secondary compartment. The approved device is manufactured by IFD Corporation or approved equal.

11.3 Lifting Lugs

Each transformer shall be equipped with lifting lugs of adequate strength and size and so arranged on the tank to provide a suitable lift.

11.4 Jacking Provision

Suitable jack bosses or equivalent jacking facilities shall be provided on the tank for units rated at 225 kVA and larger.

12.0 RADIATORS

Radiators or cooling tubes shall be so designed that there will be no recesses or surfaces on which water can accumulate, and so arranged that all surfaces will be readily accessible for cleaning and repainting without removing the radiators from the tank.

13.0 TANK AND CABINET CONSTRUCTION

13.1 Tanks

13.1.1 Strength

The tank shall be of welded construction of sufficient strength in accordance with IEEE C57.12.34, latest revision.

13.1.2 Pressure Relief

Pressure relief shall be provided in accordance with IEEE C57.12.34, latest revision.

13.1.3 Sealed Tank

Transformers shall be of sealed tank construction which seals the interior of the tank from the atmosphere, and in which the gas plus the oil volume remains constant. The transformer will remain effectively sealed for a top oil temperature range of minus 5°C to plus 105°C.

13.1.4 Cover

The main tank cover may be either welded or gasketed on transformers of 1000 kVA and smaller. On transformers 1500 kVA and larger, the main tank cover shall be welded in place and provision made for removing and re-welding cover. Transformers with a welded main tank cover shall provide a separate handhole for access to the H0/X0 connection.

13.2 HV-LV Compartment Separating Barrier

Units having plug-in type high-voltage terminators shall have common primary- secondary compartments with or without a separating barrier. A separating barrier between the primary and secondary compartments is required for livefront units.

13.3 Barrier Provision for Live Front Units Only

There shall be a removable inner insulating barrier installed behind the primary compartment door and in front of the primary bushings. The removable barrier shall be stenciled with the words "Danger" in letters 3" high and "High Voltage" in letters 1" high. The insulating barrier shall be made of glass base polyester or equivalent. Handles on the barrier shall be of material similar to that used for the barrier. The barrier mounting method shall be designed for installation and/or removal entirely from the front. The barrier must be readily installed or removed by one man. The barrier mounting devices within the high voltage chamber shall be securely attached to the cabinet so that no tools or human hands need to be used on the high voltage side of the barrier.

13.4 Unit Assembly and Tamper Resistance

The cabinet, transformer, and cover shall be factory assembled and shipped as a unit, tamper resistant, weather resistant, and designed and constructed to prevent insertion of foreign objects. No additional housing, fences, or other provisions, shall be necessary to make the unit safe. The assembly, when in operating position shall not have any nuts, bolts, screws, or any detachable equipment exposed, except appropriate tamperproof pentahead bolt fasteners adequate to tightly seal the enclosure. Cabinet security shall meet requirements of ANSI/IEEE C57.12.28.

Access to exposed live parts in excess of 600V shall require two separate conscious acts. The first shall be the opening of a door or barrier that is locked or otherwise secured against unauthorized entry. The second act shall be either the opening of a door or the removal of a barrier. An appropriate safety sign shall be visible when the door is first opened.

13.5 Door

13.5.1 Description of Doors

Separate hinged type doors shall be provided for primary and secondary compartments. A method shall be provided to hold the doors in an open position.

13.5.2 Latching

The doors shall be provided with positive latching. The secondary compartment door shall be caught at three points. Provision shall be made for padlocking the secondary compartment door. The primary compartment door shall be accessible only after the secondary compartment door has been opened. Each latched door shall be latched at a minimum of three points. In addition to the three point latching, one pentahead bolt shall be coordinated with the latch and padlock to

prevent unlatching and insertion of the padlock into the hasp when and until the bolt head is essentially completely seated, respectively.

13.5.3 Size of Doors

Doors on the high-voltage and low-voltage compartments shall be of sufficient size to provide free working space when open.

13.5.4 The Edges of the Access Doors Shall Be Formed to Provide:

1. A close-fitting mating surface, with internal insertion-prevention lip that will be shaped to prohibit entry or prying by screwdrivers, wrecking bars, tire irons, single-socket lug wrenches, or other readily accessible tools.

2. A rigid panel which, in conjunction with a handle-linkage-latching mechanism with three (or more) point latching, will resist bending in the event that sufficient force is applied to distort the compartment or compartment door(s) and permit prying access to the door edges.

13.5.5 Padlock Provision

A provision shall be furnished for padlocking the doors or cover closed.

13.5.6 Pentahead Bolt Security Lock

In addition to the regular locking provisions, all access doors shall be secured by a recessed, captive pentahead bolt which threads into a nut with a blind hole. A pentahead bolt shall be considered "captive" when the retention scheme will prevent it from being readily removed during normal operation of the door(s) or hood(s). The recess is to be nonrotating. The dimensions of the pentahead bolt and nonrotating recess shall comply with Figure 1 of IEEE C57.12.28 latest revision. If all doors may be secured with a single bolt, one bolt will be sufficient.

13.6 Material Gauge

The external surfaces of the primary and secondary compartments and the tank, excluding radiators, shall be constructed of material equivalent in strength to at least 13 USS gauge steel. Stainless steel hinges and stainless steel pins (type 304) shall be provided.

13.7 Placing on Pad

Construction of the unit shall be such that it can be placed on the mounting pad of dimensions shown in UG6-C and UG6-C2 (attached), without disturbing entrance cables and associated equipment. The unit shall fit on the pad without extending past the pad dimensions.

13.8 Mounting Facilities

A means shall be provided for anchoring the unit to the pad.

13.9 Rolling Provisions

Transformer base for units rated at 225 kVA and larger shall be arranged for rolling in two directions: Parallel to and at right angles to the centerline of the high-voltage bushing.

13.10 Roof Design

The roof of the cabinet and transformer shall be designed to prevent collection of water.

13.11 Paint Finish

The paint finish shall meet or exceed ANSI/IEEE C57.12.28, latest revision. Certified Test Reports shall be submitted with proposal verifying this. The color of the final coat shall be manufacturer's standard dark green weather resistant transformer paint, or as specified under Bid Items.

13.11.1 Touchup

One can of the paint used for the final coat shall be shipped per every 25 transformers. For orders less than 25 units, one can of paint shall be supplied. A spray can is preferred.

13.12 Nameplate

13.12.1 Nameplate Location
The transformer nameplate shall be mounted in the low voltage compartment.

13.12.2 Material
The nameplate shall be of corrosion-resistant material.

13.12.3 Bar Code
The nameplate shall have a permanent bar code label per the requirements of IEEE Std. C57.12.35.

13.12.4 Triplex-Core Transformer Identification
The nameplate shall have “Triplex Core” imprinted on it for triplex-core transformer units as additional identification.

13.13 Bottom Protection

All external surfaces of ferrous material used in the construction of the tank shall have an asphaltic base "Undercoating" over the regular finish applied to the bottoms and extending up the sides to a point one inch (1") above the bottom of the base or District approved alternate.

14.0 INSULATING OIL

The proper amount of insulating oil shall be provided. The nameplate shall state that the transformer is filled with mineral oil and that the mineral oil has a PCB concentration less than 1 ppm.

15.0 LABELS

15.1 The manufacturer shall install the following labels: danger, combination notice-warning, kVA, and secondary voltage. The labels shall be Designer Decal stickers OR approved alternate with the part numbers listed in Attachment 1.

15.1.1 Proposal documentation shall include images and technical information of any proposed alternate labels.

15.2 The manufacturer shall install a temporary bar code label per the requirements of IEEE Std. C57.12.35. The label shall contain the manufacturer code and transformer serial number.

15.3 All other labels will be supplied and installed by the District.

16.0 PACKING SLIP

Packing slip shall contain the following information:

Purchase Order Number
Type (pad mount, pole, etc)
Secondary Voltage
kVA

17.0 ACCEPTANCE

17.1 Transformers without above information will not be accepted by the District. Transformers may be returned at manufacturer's expense.

17.2 The manufacturer shall fill out the following information in the District's transformer receiving document:

Serial Number
Impedance
Max Fault Current
Oil Weight
Total Unit Weight
PCB Level is less than 1 ppm

17.2.1 A draft copy of the receiving document is included in the specification. The successful bidder will receive the document in electronic format (Excel) at the time a PO is awarded.

17.2.2 The manufacturer shall return the document via email to the District's Contracts and Purchasing department at the time the units are shipped.

17.2.2.1 Units that arrive prior to the District receiving the receiving document from the manufacturer will not be accepted and may be returned at manufacturer's expense.

17.2.3 For Impedance and Max Fault Current values, the manufacturer shall indicate the value (design or tested) that matches what they would normally print on the unit nameplate.

18.0 SHIPPING/RECEIVING

18.1 The manufacturer shall prepare all transformers for shipping in a manner to prevent: (1) damage from transportation, and (2) contamination from weather conditions.

18.2 Any transformers that weigh less than 2800 lbs. shall be shipped via tarp-covered units on a flat bed trailer or covered van.

18.3 Any transformers that weigh in excess of 2800 lbs. shall be shipped via a Conestoga trailer or tarp-covered units on a flat bed trailer.

18.4 Shipments made by rail will not be accepted.

Benton PUD shall utilize proper equipment and personnel to handle the transformers in a manner as to prevent damage to the units. Inspection will be done promptly after delivery to assure that: 1) the units meet District specifications, 2) quantities are correct, and 3) no damage has occurred in shipping.

At the time the transformers are shipped, the manufacturer will inform the District's Purchasing Department via email as to the type of unit, quantity, and day of shipment.

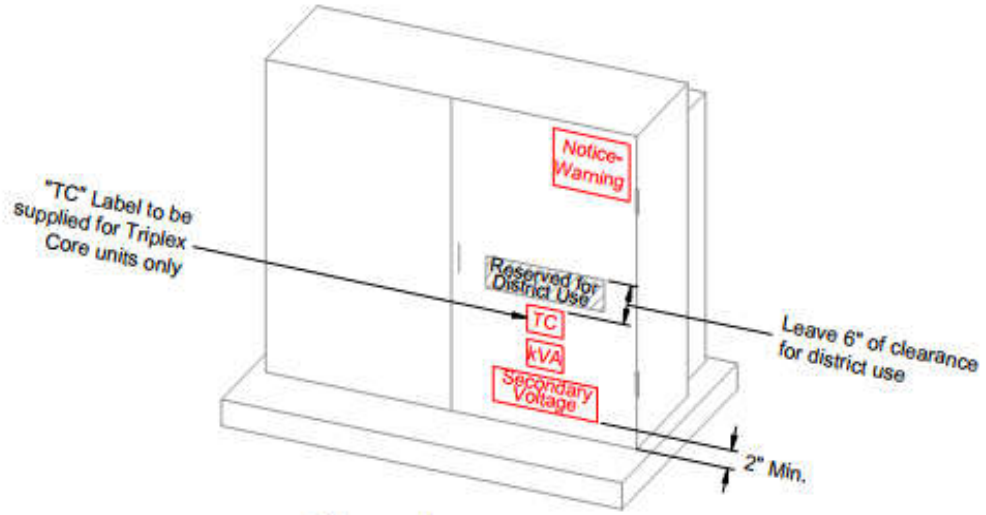
END

Attachment 1 - Three Phase Padmount Sticker Details

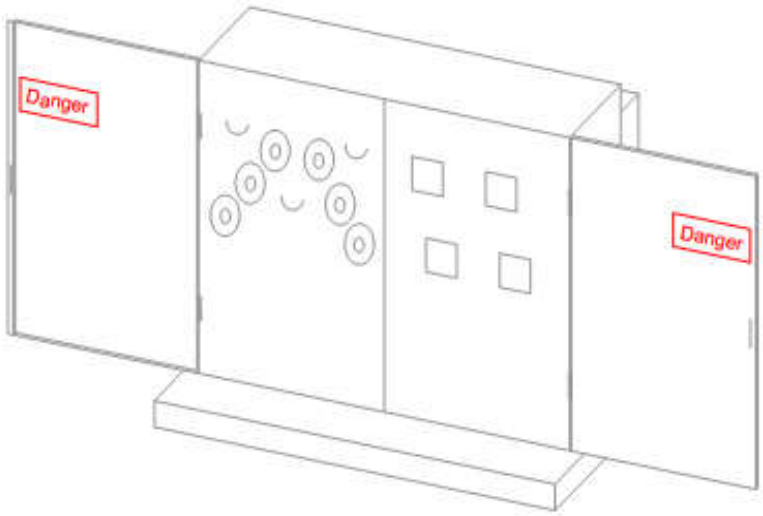
Label Description	Designer Decal Part Number
Multi-purpose Notice-Warning	DD-WARNOT912-BI-BPUD
Danger	DANBI-410-BPUD
Triplex Coil-Core	DD-KVAYB-TC

Secondary Voltage Label	Designer Decal Part Number
Three Phase Pad, 208Y/120	DD-3P208Y/120
Three Phase Pad, 480Y/277	DD-3P480Y/277
Three Phase Pad, 4160Y/2400	DD-3P4160Y/2400
Three Phase Pad, 2400Y	DD-3P2400Y

kVA Label	Designer Decal Part Number
45 kVA	DD-KVAYB-45
75 kVA	DD-KVAYB-75
112 kVA	DD-KVAYB-112
150 kVA	DD-KVAYB-150
225 kVA	DD-KVAYB-225
300 kVA	DD-KVAYB-300
500 kVA	DD-KVAYB-500
750 kVA	DD-KVAYB-750
1000 kVA	DD-KVAYB-1000
1500 kVA	DD-KVAYB-1500
2000 kVA	DD-KVAYB-2000
2500 kVA	DD-KVAYB-2500
2500/3125 kVA	DD-KVAB-2500/3125



Closed



Open

BENTON PUD

DRAWN BY: CA

DRAW DATE: 10/02/2014

TITLE:

Three Phase Padmount
Sticker Placement

REV BY: DAB

REV DATE: 10/06/17

REV NO: 1

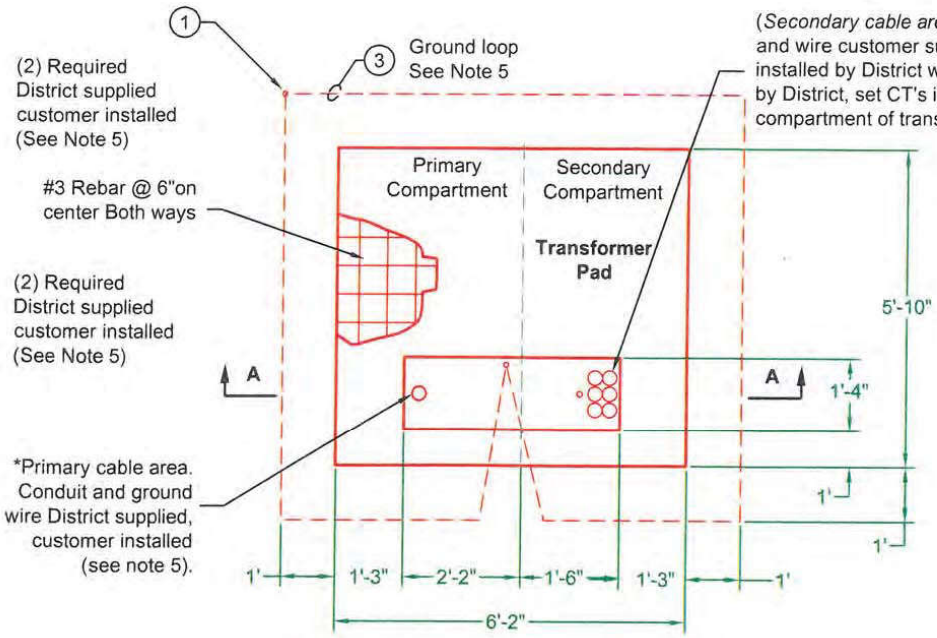
DIR. ENG.

DATE:

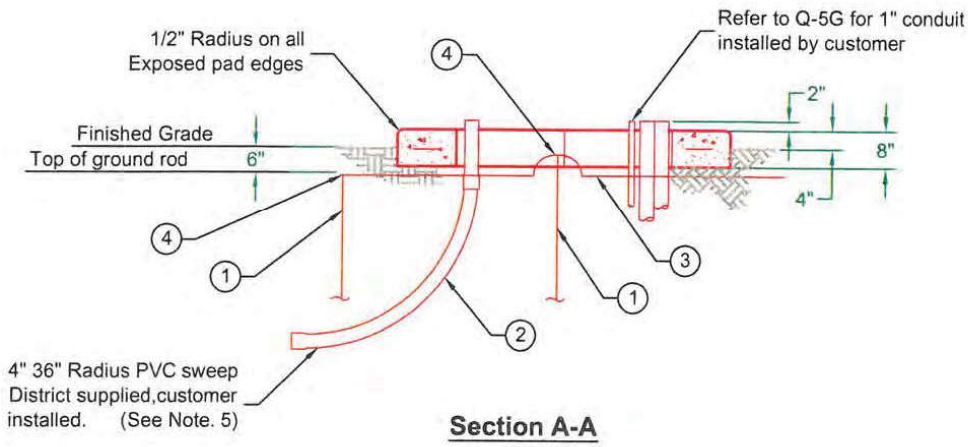
SHT. 1 of 1

DWG. NO.

Figure 1



Plan View
Concrete Transformer
Pad by Customer



Section A-A

F:\Apps\Eng\Construction Standards Specifications & Property\Construction Standards

BENTON PUD

DRAWN BY: JAD
DRAW DATE: 11/01/01

TITLE:

Transformer Pad Details
500 kVA & Below
Three Phase Pad

REV BY: JWV
REV DATE: 10/01/2013
REV NO: 1
DIR. ENG:
DATE: 1/14
SHT. 1 of 2
DWG. NO. **UG6-C**

UG6-C			
Item	Qty.	Description	Item Code
1	2	5/8" x8" Ground Rod	337381
2	1	4 " Diameter PVC Sch. 40 36" Radius Sweep	633651
3	50'	Wire #4 MHDB 7 Str.	400300
4	2	5/8" Ground Rod Clamp	327100

Notes:

1. Ground under pad must be 95% minimum compaction.
2. Concrete shall be Portland Cement concrete, 5 sack mix, attaining 3000 P.S.I. at 28 days.
3. Top of pad shall be level and finished smooth. Surface shall not contain honeycomb or segregation.
4. Barricade traffic bollards provided and installed by customer - contact District engineering to determine location of posts. When required, bollards must not interfere with swing of transformer doors.
5. Customer to pick up 4" primary conduit sweep, 2 ground rods, and #4 Str. bare CU. ground wire from the District warehouse located at 1500 S. Ely street, Kennewick.
6. Maximum number of wire-6 sets of 750 kcm copper or aluminum. Contact the District if in need of additional sets.
7. For pad location,reference District standard Q-6C for clearance to existing structures.

F:\Apps\Eng\Construction Standards Specifications & Property\Construction Standards

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 11/01/01

TITLE:

Transformer Pad Details
500 kVA & Below
Three Phase Pad

REV BY: JWV

REV DATE: 10/01/2013

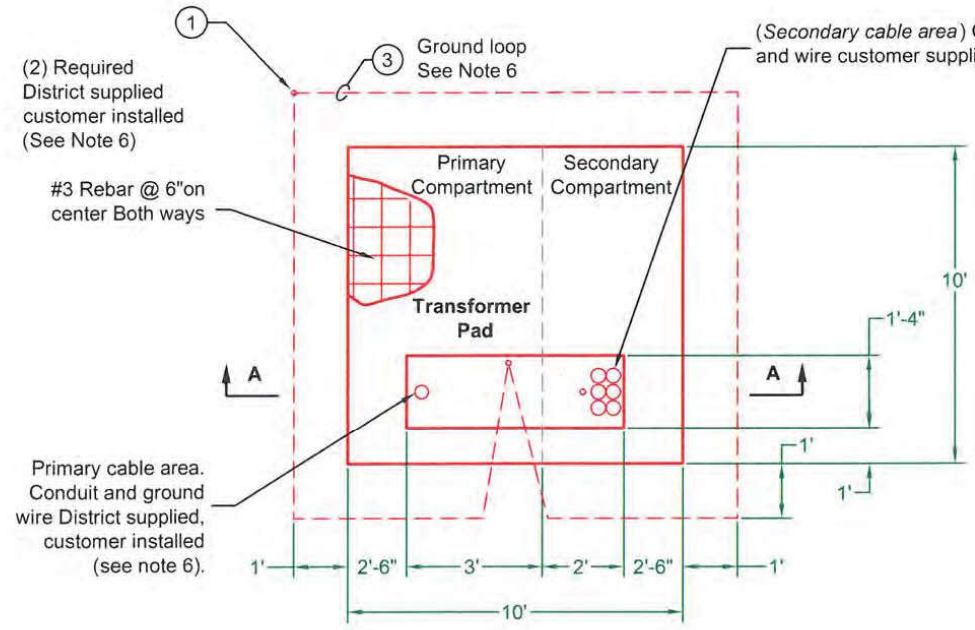
REV NO: 1

DIR. ENG. RD DATE: 1/14

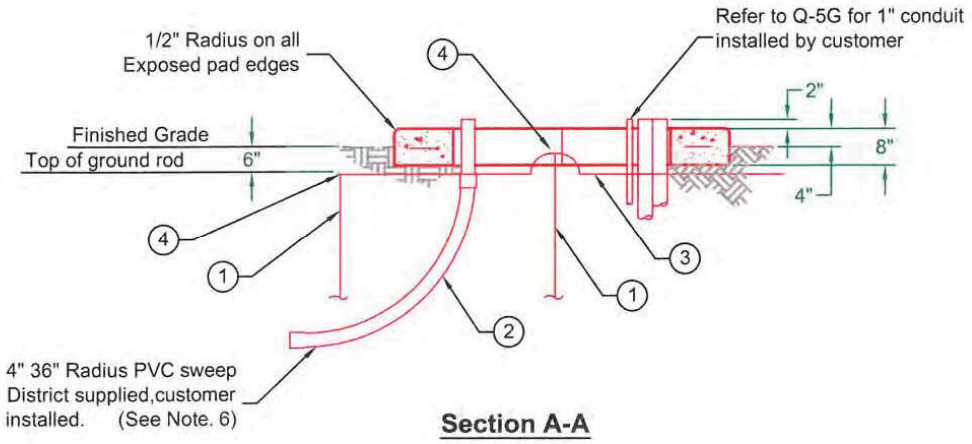
SHT. 2 of 2

DWG. NO.

UG6-C



Plan View
Concrete Transformer
Pad by Customer



Section A-A

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BENTON PUD

DRAWN BY: JAD
DRAW DATE: 11/01/01

TITLE:

Transformer Pad Details
750 kVA & Above
Three Phase Pad

REV BY: JWV
REV DATE: 10/01/2013
REV NO: 1
DIR. ENG.
DATE: 2/14
SHT. 1 of 2
DWG. NO.

UG6-C2

UG6-C2			
Item	Qty.	Description	Item Code
1	2	5/8" x8" Ground Rod	337381
2	1	4 " Diameter PVC Sch. 40 36" Radius Sweep	633651
3	50'	Wire #4 MHDB 7 Str.	400300
4	2	5/8" Ground Rod Clamp	327100

Notes:

1. Ground under pad must be 95% minimum compaction.
2. Concrete shall be Portland cement concrete, 5 sack mix, attaining 3000 P.S.I. at 28 days.
3. Top of pad shall be level and finished smooth. Surface shall not contain honeycomb or segregation.
4. Barricade traffic bollards provided and installed by customer - contact District engineering to determine location of posts.
5. When required, bollards must not interfere with swing of transformer doors.
6. Customer to pick up 4" primary conduit sweep, 2 ground rods, and #4 Str. bare CU. ground wire from the District warehouse located at 1500 S. Ely street, Kennewick.
7. Maximum number of wire-6 sets of 750 kcm copper or aluminum. Contact the District if in need of additional sets.
8. For pad location, reference District standard Q-6C for clearance to existing structures.

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BENTON PUD

DRAWN BY: JAD

DRAW DATE: 11/01/01

TITLE:

Transformer Pad Details
750 kVA & Below
Three Phase Pad

REV BY: JWV

REV DATE: 10/01/2013

SHT. 2 of 2

REV NO: 1

DIR. ENG.

DATE: 2/14

DWG. NO.

UG6-C2

Purchase Order # xxxxx
Date Ordered: xx-xx-xx

LINE ITEM # 1		DESCRIPTION	MANUFACTURER
		Transformer, 37.5 kVA single phase pad, 12470GRDY/7200-240/120 volt, no taps, loop feed, dead front, Spec. 69-19	Example

	Contracts/Purchasing		Manufacturer						Warehouse Admin.		Transformer Shop			Xfmr Shop Admin.	
	Inventory #	District #	Serial #	Impedance	Max Fault Current	Oil Weight	Total Weight	PCB Level Must Be LT1 (Y/N)	Date Received	Received By	Warning Lbl Installed	Fuse	Initial/Date	Receiving Entered	Ready - Line Entered
1	xxxxxxxxxx	xxxxx													
2	xxxxxxxxxx	xxxxx													
3	xxxxxxxxxx	xxxxx													
4	xxxxxxxxxx	xxxxx													
5	xxxxxxxxxx	xxxxx													
6	xxxxxxxxxx	xxxxx													
7	xxxxxxxxxx	xxxxx													
8	xxxxxxxxxx	xxxxx													
9	xxxxxxxxxx	xxxxx													
10	xxxxxxxxxx	xxxxx													
11	xxxxxxxxxx	xxxxx													
12	xxxxxxxxxx	xxxxx													
13	xxxxxxxxxx	xxxxx													
14	xxxxxxxxxx	xxxxx													
15	xxxxxxxxxx	xxxxx													
16	xxxxxxxxxx	xxxxx													
17	xxxxxxxxxx	xxxxx													
18	xxxxxxxxxx	xxxxx													
19	xxxxxxxxxx	xxxxx													

25-21-01

EXHIBIT B – Sample Contract and Performance Bond

CONTRACT

Contract #_____

This agreement is made and entered into on the _____ day of _____, 202_, by and between:

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY, hereinafter referred to as "the District",

AND

_____, hereinafter referred to as "the Contractor"

WITNESSETH:

That the Contractor, for the consideration hereinafter fully set out, and the District, for the consideration of material furnished, agrees that:

1. SCOPE OF WORK: Furnish _____ per specifications in Bid Pkg. #__-__.

2. DELIVERY & ACCEPTANCE:

The Contractor shall deliver the _____ F.O.B. destination to Benton PUD by _____; failure to do so may result in damage to the District.

Testing and Acceptance of conforming items by Benton PUD shall occur within the number of days after delivery as specified in the bid specification (if applicable). Items that fail to meet acceptance criteria as specified in the bid specifications shall be rejected. Acceptance or rejection by the District to the Contractor shall be in writing.

3. PAYMENT:

Payment will be made within thirty days of Acceptance by the District or receipt of a valid invoice from the Contractor, whichever occurs later.

The District agrees to pay the Contractor for the material/equipment the sum of _____ Dollars ($XXXXXX.00), plus applicable Washington State Sales Tax.

4. GUARANTEE:

The Contractor guarantees the _____ against all defects in workmanship, materials, and in design as stated on the warranty provided by _____.

25-21-01

5. PERFORMANCE BOND:

The Contractor shall furnish, in favor of the District, a Performance Bond as required by the Contract Documents, and this Contract shall not obligate the District until such Performance Bond has been tendered.

The District is a public entity subject to the disclosure requirements of the Washington Public Records Act of RCW 42.56. The vendor expressly acknowledges and agrees that its proposal and any information vendor submits with its proposal or which vendor submits to the District in its performance of any contract with the District is subject to public disclosure pursuant to the Public Records Act or other applicable law and the District may disclose vendor's proposal and/or accompanying information at its sole discretion in accordance with its obligations under applicable law.

The District must comply with the Preservation and Destruction of Public Records RCW 40.14. The vendor expressly acknowledges and agrees that it will maintain all records and documentation related to the contract in accordance with its obligations under applicable law.

In the event that the District receives a request pursuant to the Washington Public Records Act, or other legal process requesting or mandating disclosure of any information or documents submitted to the District by vendor, the District's sole obligation shall be to notify the vendor promptly, so that the vendor at vendor's expense and cost, may seek court protection of any of the requested information vendor deems confidential.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement.

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY	**NAME**
BY:_____	BY:_____
PRINT:_____	PRINT:_____
TITLE:_____	TITLE:_____
DATE:_____	DATE:_____

UBI NO. _____

25-21-01

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That whereas, **Public Utility District No. 1 of Benton County**, Washington, a municipal corporation, hereinafter designated as the "District", has entered into an agreement dated _____, 202_, With, hereinafter designated as the "Contractor", providing for ___ _____, which agreement is on file at the District's office and by this reference is made a part hereof.

NOW, THEREFORE, We, the undersigned Contractor, as principal, and, a corporation organized and existing under and by virtue of the laws of the State of _____ and duly authorized to do a surety business in the State of Washington, as surety, are held and firmly bound into the State of Washington and the District in the sum of

($0.00)

for the payment of which we do jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that if the said principal, his heirs, representatives or successors, shall well and truly keep and observe all of the covenants, conditions, and agreements in said contract and shall faithfully perform all of the provisions of the contract, pay all taxes of the Contractor arising therefrom, and pay all laborers, mechanics, subcontractors, and material men and all persons who shall supply such person or subcontractors with provisions and supplies for carrying on such work, and shall indemnify and save harmless the District, their officers, and agents, from any and all claims, actions or damage of every kind and description including attorneys' fees and legal expense and from any pecuniary loss resulting from the breach of any of said terms, covenants, or conditions to be performed by the Contractor:

AND FURTHER, that the Contractor will correct or replace any defective work or materials discovered by the said District within a period of one year from the date of acceptance of such work or material by said District, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

25-21-01

No change, extension of time, alteration or addition to the work to be performed under the agreement shall in any way affect Contractor's or surety's obligation on this bond, and surety does hereby waive notice of any change, extension of time, alterations or additions thereunder.

This bond is furnished in pursuance of the requirements of Sections 54.04.080 et seq. of Revised Code of Washington, and, in addition to other Contractor and surety to the District for the use and benefit of said District together with all laborers, mechanics, subcontractors, material men, and all persons who supply such person or subcontractors with provisions and supplies for the carrying on of the work covered by the agreement to the extent required by said Revised Code of Washington.

IN WITNESS WHEREOF, the said Contractor and the said surety have caused this bond to be signed and sealed by their duly authorized officers this ____ day of _____, 202__.

_____
Surety

_____
Title

_____
Contractor

_____
Title