



The Bhagirathi Co-operative Milk Producers' Union Limited

(A Govt. of West Bengal Project)

BU/MDO/RIDFXXIX/1013

Date: 24.09.2025

Reverse Auction for Procurement, Installation and Commissioning of:

1. 1 no(s) 15 KL vertically insulated milk silo with foundation and accessories.
2. 1 no(s) 10 KL Bulk Milk Cooler

The Bhagirathi Cooperative Milk Producers' Union Limited Invites Tender/ Reverse Auction for Procurement, Installation and Commissioning of 15KL vertically insulated milk silo with foundation and accessories as per specification terms and conditions mentioned hereunder in two bid system:

Scope of Work	Supply, Installation and Commissioning of: 1. 1 no(s) 15 KL vertically insulated milk silo with foundation and accessories. 2. 1 no(s) 10 KL Bulk Milk Cooler.
Bid Inviting Authority	The Managing Director of The Bhagirathi Cooperative Milk Producers' Union Limited
Estimated Cost of Work	18,00,000/- for 15 KL Milk Silo 15,00,000/- for 10 KL BMC
EMD	36,000/- for 15 KL Milk Silo 30,000/- for 10 KL BMC
Technical Bid Documents to be furnished by bidder	<ol style="list-style-type: none">1. Declaration in the letterhead of that the firm/agency/company shall supply IDMC make BMC and Silo only.2. Company Documents like MOA, AOA/Partnership/Proprietorship deed, Trade License/Certificate of Enlistment.3. Company declaration of a minimum of 3 years of work experience in supply, commissioning and delivery of Milk Silos, Storage tanks, BMCs etc. (Work Orders or Completion Certificates in support of same must be provided)4. Minimum Turnover of Rs 1 crore. Audited Balance Sheet of previous three consecutive financial years (21-22, 22-23 and 23-24). Companies with decreasing turnover shall not be considered.5. Income Tax Return of previous three consecutive financial years (21-22, 22-23 and 23-24).6. PAN CARD and GSTIN (GST Registration Certificate)7. AFFIDAVIT as per ANNEXURE-I8. The Company which are blacklisted by our organization, any organization or by NDDB are not eligible to bid otherwise, bid will not be accepted and EMD may be forfeited. Even an order issued to such a bidder may get cancelled.9. The technical team of BCMPUL may inspect the required infrastructure available with the bidder before finalization of the tender.



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Terms and Condition:

1. Bidders are required to go through the Tender Documents understand the requirement the location of the installation and commissioning and then quote their rate. Rate once quoted by the bidder shall be deemed to be quoted by the bidder after understanding the requirements of the Milk Union. Rates once quoted are final and no alteration in rate shall be allowed.
2. During evaluation the Milk Union may summon any bidder and seek clarification/information regarding bids within the stipulated time frame. In case the bidders fail to clarify any query during the stipulated time frame the bid shall be liable for rejection.
3. **Pre-Bid Meeting/Site inspection:** Bidder are requested to visit the site before submitting the bid. Site visit can be arranged upon request.
4. **Bid Validity:** The Rate once is quoted in this tender should be valid for a period of 365 days from the date of Financial Bid Evaluation. Bidders are therefore required to assess their rates before quoting them.
5. **Rejection of bid:** Milk Union may reject the bid from any party with unsatisfactory performance with the Milk Union or any other Milk Union in the past.
6. **Price:** Price consists of the cost of the equipment, dispatch, transit insurance, (necessary cost of civil construction for the 15 KL vertical insulated storage tank) along with installation and commissioning of the unit along with trial run and satisfactory operational training of the entire unit with two years of comprehensive warranty along with all taxes and levies. All components and consumables required in testing and commissioning must be taken into account by the bidder before quoting the rates.
7. **Training:** The supplier shall provide operational and safety training to at least 2 personnel of the milk union at the time of commissioning of the unit without any extra cost.
8. **Payment:** Payment shall be released in 3 phases in NEFT/RTGS to the Bank Account of the supplier after submission of 3 copies of invoice along with documents mentioned in Documentation clause which are as follows:
 - a) **First Phase:** 80% payment shall be released after receipt of the material in good condition. Transit Insurance shall be the responsibility of the supplier. Goods unless received by the Milk Union shall be the responsibility of the supplier and no claim in this regard shall be entertained. EMD shall also be released after delivery of materials and after receipt of an intimation in writing from the supplier.
 - b) **Second Phase:** 10% payment shall be released after 1 month of successful installation and commissioning of the entire Unit certified by the Concerned Official and approved by the Competent Authority.
 - c) **Third Phase:** 10% payment shall be released after 1 month of submission of equivalent amount bank guarantee valid for a period of 2 years. This shall serve as Performance Guarantee. In case the supplier fails to provide maintenance and support as per the requirement of the Milk Union or is found to act in a way which jeopardizes the operations of the Milk Union, the Performance Bank Guarantee shall be forfeited after giving a Notice to the supplier in writing and the supplier shall be debarred from participating into any tender in future.
9. **Warranty:** Warranty period shall be twenty-four months from the date of Commissioning of the installed unit from the principal company. Requisite document / warranty papers should be



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furnished by the Supplier after installation and commissioning of the machines. Machines not accompanied by warranty papers after commissioning will be rejected.

10. If the silo is not operational as a result of manufacturing defect or as a result of poor workmanship the machine has to be replaced by the supplier.
11. **Delivery:** Supply, installation & commissioning of the ordered item with all accessories must be completed within 30 to 45 days from the date of order. Trial run of the whole unit will be done in presence of Milk Union's authorized personnel. Trial run report shall be submitted duly signed by the authorized personnel. Training of Operation & Maintenance to the operator will have to be imparted free of cost at the time of Commissioning & Trial run. It is obligatory for the bidder to note that failure to maintain delivery & i/c schedule of ordered item will hold the supplier responsible & action will be taken strictly as per tender rules laid down herein without any prejudice or any short of plea will not be considered except any incident occurred "by act of god" or non-readiness of site by any means may be considered only.
12. **Place of Delivery, Installation and Commissioning:** The office of The Bhagirathi Cooperative Milk Producers' Union Ltd. Feeder Dairy, Panchantala, Berhampore, Murshidabad, Pin-742101, West Bengal or any Chilling Plant of Bhagirathi in Murshidabad district.
13. **Penal Measure:** Time being the essence of the contract failure to supply the materials within due time or delay in installation and commissioning of the materials shall invite penalty.
 - a. Liquidated damages of 0.5% per week subject to a maximum of 10% of the total cost of materials shall be charged if goods are not delivered in time or there is a delay in service during the Warranty period, and the amount will be deducted from the Security Deposit or Performance Guarantee or bill of the supplier.
 - b. For violation of any terms and conditions of the contract the Bhagirathi Milk Union reserves the right to cancel the contract without assigning any reason thereof. On termination of Contract the Security Deposit will be forfeited and the resultant loss shall be recovered from the company. The subsequent company will be blacklisted for 3 years.
14. **Rate Quoted:** The rate quoted by the bidder shall be inclusive of all taxes GST and other charges/taxes if any for the delivery of the goods in the office of The Bhagirathi Cooperative Milk Producers' Union Ltd.
15. Mode of transportation for the supply of the goods to our site will be arranged by the bidder.
16. Materials dispatched from the bidder until or unless reaches the Place of Delivery is the sole responsibility of the bidder. The Milk Union will not be responsible for any damage in transit, loading or unloading and no claim in this regard will be entertained.
17. **Loading and Unloading:** Unloading material at site shall be arranged by the Milk Union. The supplier is required to inform well in advance before dispatch of material.
18. **Civil works:** Civil work for foundation shall be in the scope of the supplier.
19. **Standards:** The Goods supplied under this Agreement shall conform to the standards mentioned in the Technical Specifications and when no applicable standard is mentioned, to the authoritative standards appropriate to the Goods to the latest Indian Standards.
20. **Registration of Goods:** If required under the Applicable Law, goods supplied under the Agreement shall be registered for use in India.



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21. **Packing:** The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their destination, as indicated in the Purchase Order.
22. **Termination for Default:** The Purchaser, without prejudice to any other remedy for breach of the Agreement, by written notice of default sent to the Supplier, may terminate this Agreement in whole or in part: a) If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the Purchase Order, or within any extension thereof granted by the Purchaser; or b) If the Goods do not meet the Technical Specifications or registration requirement (if any) stated in the Agreement; or c) If the Supplier, in the judgment of the Purchaser has engaged in fraud and corruption, in competing for or in executing the Agreement; or d) If the Supplier fails to perform any other obligation(s) under the Agreement.
23. **Termination for Insolvency:** The Purchaser may at any time terminate the Agreement by giving written notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent.
24. **Termination for Convenience:** The Purchaser, by written notice sent to the Supplier, may terminate the Agreement or the Purchase Order, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Agreement or Purchase Order is terminated, and the date upon which such termination becomes effective. The Goods that are already supplied before the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the terms and prices described in the Agreement and the Purchaser order.
25. **Dispute Resolution:** Any dispute arising out of the Agreement, which cannot be amicably settled between the parties, shall be referred to adjudication/arbitration in accordance with the Arbitration and Conciliation Act of 1996 of India. The venue of adjudication/arbitration shall be Kolkata. The language of arbitration shall be English.
26. **Applicable Law:** The Agreement shall be interpreted in accordance with the laws of Union of India.
27. **Force Majeure:** If, at any time during the subsistence of this contract, the performance in whole or in part by either party of any obligation under this contract is prevented or delayed by reasons of any war or hostility, act of public enemy, civil commotion, sabotage, fire, floods, explosion, epidemics, quarantine restriction, strikers lockout or act of God (hereinafter referred to as events) neither party shall have any claim for damages against other in respect of such non-performance or delay in performance.
28. The undersigned reserves the right to accept or reject any tenders and to cancel the entire tender process at any point of time without assigning any reason whatsoever.

Sd/-
Managing Director
The Bhagirathi Cooperative
Milk Producers' Union Limited



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Technical Specification of 15 KL Vertically Insulated Milk Storage Silo with accessories

Functional Requirements:

The milk silo would be used to store chilled thick milk at 3 to 4°C temperature.

Design Requirements and Capacity:

15000 Liters. The volume of the silo should be such that after filling it unto this rated capacity the level would be at least 100 mm below the line where cylindrical shell joins the conical top (i.e.) The gross capacity should be at least 10% higher than the rated capacity as above to avoid agitational or accidental spillage of milk.

Constructional Features:

Double walled, insulated and welded construction of sanitary design.

Slope: The bottom of the silo should have 1:15 slope towards inlet cum outlet for free and complete drainage of liquid.

Metal contact:

The only metal to metal contact between the inner and the outer shells should be at the places where fittings for the tank are provided. At the places where mild steel stiffeners are provided insulated padding should be fixed between the inner stainless-steel shell and stiffeners.

Finish: All welding joints should be polished smoothly. All stainless-steel surfaces are to be polished to 150 grits.

Joint Curvature:

The radii of all welded and permanent attachment joints should be at least 6 mm. Where the conical top and flat bottom join the cylindrical shell, the radii should not be less than 25 mm.

Installation:

It should be suitable for outside installation. The accessories mounted on top should be weather-proof.

Scope of Supply:

Inner cylindrical body. The inner shell, conical top and flat bottom should be fabricated from 3.0 mm, 3 mm and 3 mm thick SS plates respectively confirming to AISI SS 304 – 1 No.

Outer Cylindrical Body:

The outer shell, conical top and flat bottom should be fabricated from 2 mm, 2 mm and 4 mm thick stainless-steel plates respectively conforming to AISI – SS 304 – 1 No. Stiffeners between inner and outer shells and supporting structure for bottom of mild steel to be provided.

Insulation:

The entire inner shell (including the alcove portion) conical top and flat bottom should be insulated with rigid Polyurethane Foam case-in-situ. The insulation will be homogenous on the entire surface of the inner shell, and the average insulation thickness shall be 80mm. The insulation material shall be applied in cast-in-situ method, and the material will have average density 32-36Kg/cu.cm and coefficient of thermal conductivity of 0.017w/mK. The stiffener rings also shall be insulated with suitable thermal plugs so that no metal-to-metal contact exists between the inner and outer shell. The insulation should with stand high temperature of 98°C during in place of cleaning. It should not permit more than 1°C rise in temperature in 24 hours when temperature gradient is 35° C. and milk temperature is 4°C.

Accessories:

63.5 mm dia. cup type inlet cum outlet with two-way stainless steel; (AISI -SS304) flanged butterfly valve ending with compete stainless steel union - 1 No.



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Air Vent:

Stainless steel (AISI -SS304) 450 mm dia. air vent to prevent formation of partial vacuum during CIP and pressure during filling - 1 No. Stainless Steel (AISI -SS304) cleats should be provided near the air vent for fixing and hanging rope ladder - 1 No.

Man Way:

Oval shaped stainless steel (AISI -SS304) man way of dimensions approximately 550 x 405mm and provided with leak proof hinged insulated stainless steel (AISI -SS304) door with tightening and locking device. The manway door should open inward but at the same time, it can be taken out when necessary. The gasket should be of silicon rubber of food grade quality -1 No.

Sight Glass:

Stainless Steel (AISI -SS304) sight glass assembly should be provided with toughened glass. It should be provided in such a way that one can easily read from the lowest level upto the highest-level marks- 1 No.

Sand Blasted Level Marks:

It should be calibrated at 500 L Intervals and provided on the inner shell at opposite side of the sight glass.

Light Glass:

Stainless Steel (AISI -SS304) light glass assembly should be provided with toughened glass and stainless-steel lamp shade for mounting 24V and 100Watt bulb. The lamp holder should be made of brass - 1 No.

Agitator with Motor Starter:

It should be paddle type in Stainless steel (AISI -SS304) construction complete with geared motor of adequate capacity and should be able to uniformly mix milk in the tank within 10 minutes. The agitator shaft should consist of metal rod with high resistance to shearing and tangential force, gear coupling should be made of industrial grade / standard material. GEAR MOTOR should be provided with SS cover - 1 No.

Level Indicator/Transmitter:

Digital level indicator and transmitter flange type in stainless steel (AISI -SS304) food grade having accuracy of 0.25% should be installed. The preferred make is Yokogawa, Endre- Hausser, Siemens. 1 No.

Spray Ball:

Removable stainless steel (AISI -SS304) cleaning device located at the apex of the conical top to provide flooding of liquid over the complete interior surface during CIP. It should have stainless steel union at the outer end connection - 1 No.

Sampling Cock:

It should be provided on the inlet cum outlet and should be stainless steel (AISI -SS304) construction of sanitary design - 1 No.

Thermowell:

300 mm long stainless steel (AISI -SS304) inclined pocket suitable for mounting stem type dial thermometer should be suitably located in the alcove. It should have 21 mm BSP male threads (Digital thermometer is within the scope of supply).

Drain Hole:



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The outer shell should be provided with one or more drain holes at the lowest point. Any aperture in the shell should be designed so as to prevent ingress of moisture. Lifting Lugs: Stainless steel (AISI -SS304) lifting lugs 16 mm should be provided at top. - 6 Nos.

Anchor Points:

Anchor points, pipes and sockets should be provided on the top of the tank so that safety railings and platform could be welded to them after installation - 1 set.

Ladder:

Suitable stainless-steel ladder fabricated in AISI SS 304 with necessary supports should be provided along with the body of the tanks.

Railing:

Circular railing made out of 38 mm dia. SS 304 pipe with 150 mm wide x 2mm thick SS kick plate to be provided all along the periphery of the tank. The railing shall be complete with suitable numbers of vertical posts of 900mm height. The railing pipes shall be supplied loose and assembled at site.

Painting:

All the mild steel stiffeners used in the construction of the silo should be painted with two coats of epoxy primer after thorough de-rusting.

Level probe socket:

Provision for high level and low-level probe sockets should be provided. A Stainless-steel panel to accommodate the Digital temperature indicator and digital level indicator with wiring should be fitted in front of the tank at visible height.

Erection and commissioning

- Unpacking, unloading and positioning of the silo in the specified place.
- Erection and commissioning of 15,000 Lts. Milk Silo on the concrete base.
- Mounting the agitator on the top of the silo.
- Supply and providing of safety ring guard on the top of the silo fabricated with 20 mm S.S pipes for a height of 1 meter and clad with the S. S pipes on the top peripheral.
- Supply and providing of foot guard with 6mm S.S sheet for a height of 150mm on the top peripheral along with the safety ring guard.
- Supply and providing 24 V lighting arrangements to the silo for the sight glass including materials and wiring like cable, 230 V/ 24 V transformer, Isolator, earthing and bulb.

Civil Foundation (Design & Execution)

- **Design:** RCC circular/annular foundation suitable for 15 KL vertical silo, considering soil SBC (bidder to verify at site; if not available, assume ≥ 150 kN/m² and confirm).
- **Foundation to include:** Isolated/pad footing or ring beam as per load, **M30 RCC**, Fe500 steel, anti-corrosion anchor bolt sleeves, and **cast-in M.S. base ring/plates** as required.
- **Anchor Bolts:** High-strength galvanized anchor bolts, template setting, grouting with non-shrink grout, torque proof.
- **Top Level & Plinth:** Finished top level to ensure proper **1:15 internal bottom slope** drainage to outlet; peripheral concrete apron with slope away from silo; PCC below RCC as required.
- **Earthing & Lightning:** Supply & installation of chemical earthing (2 Nos.) and lightning protection per IS:2309; bonding to silo shell where required.

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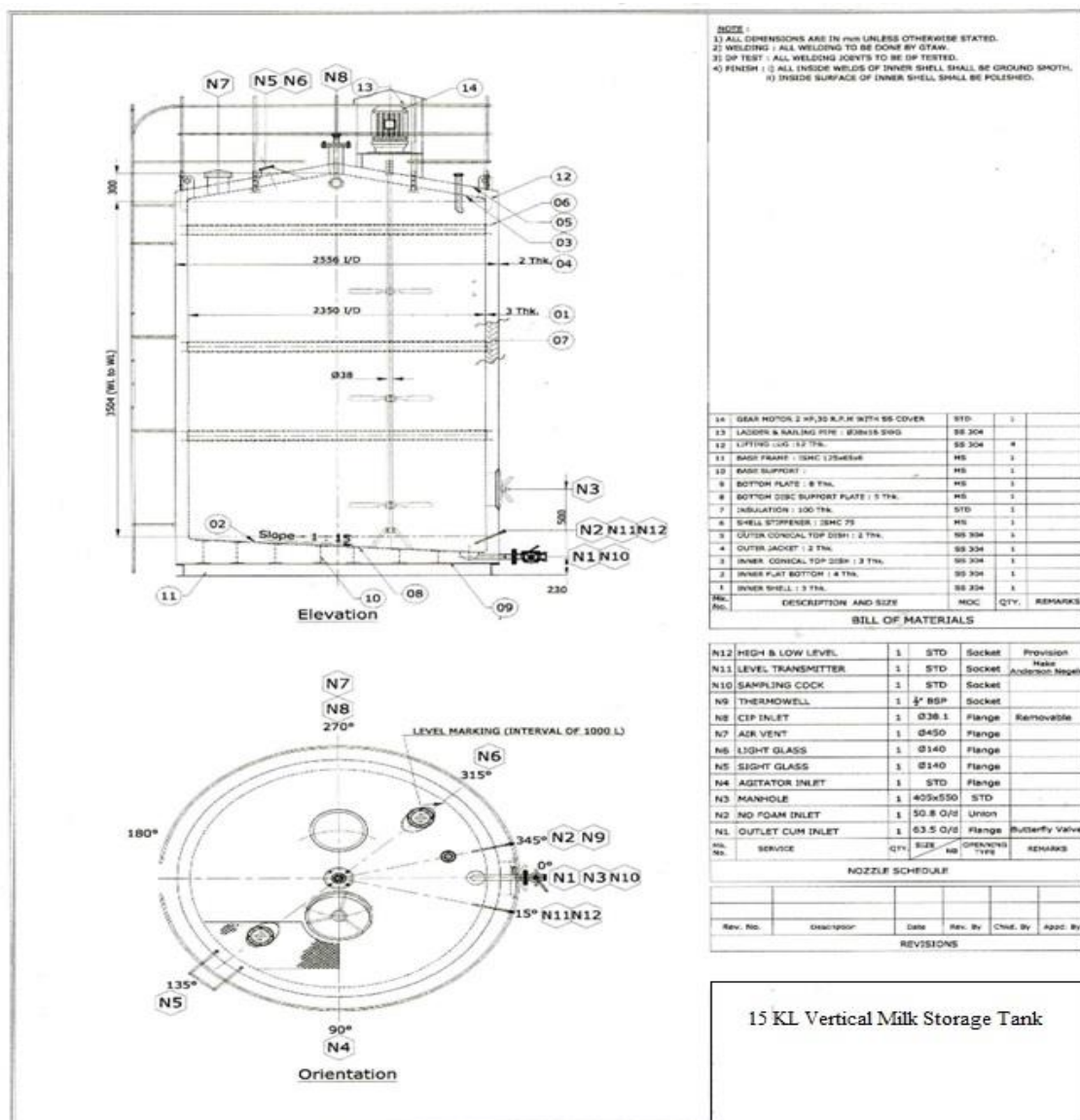
- **Foundation Drawing & Calculations:** To be submitted for approval before execution; as-built to be handed over.

TESTS:

The following tests should be conducted by the manufacturer at its works:

1. Dye penetration test for welding joints.
2. Water fill-up test of inner vessel for water TIGHTNESS.
3. When man way is closed and cover tightened without gasket then the gap at any place between the man way neck and cover should not exceed 0.5 mm.

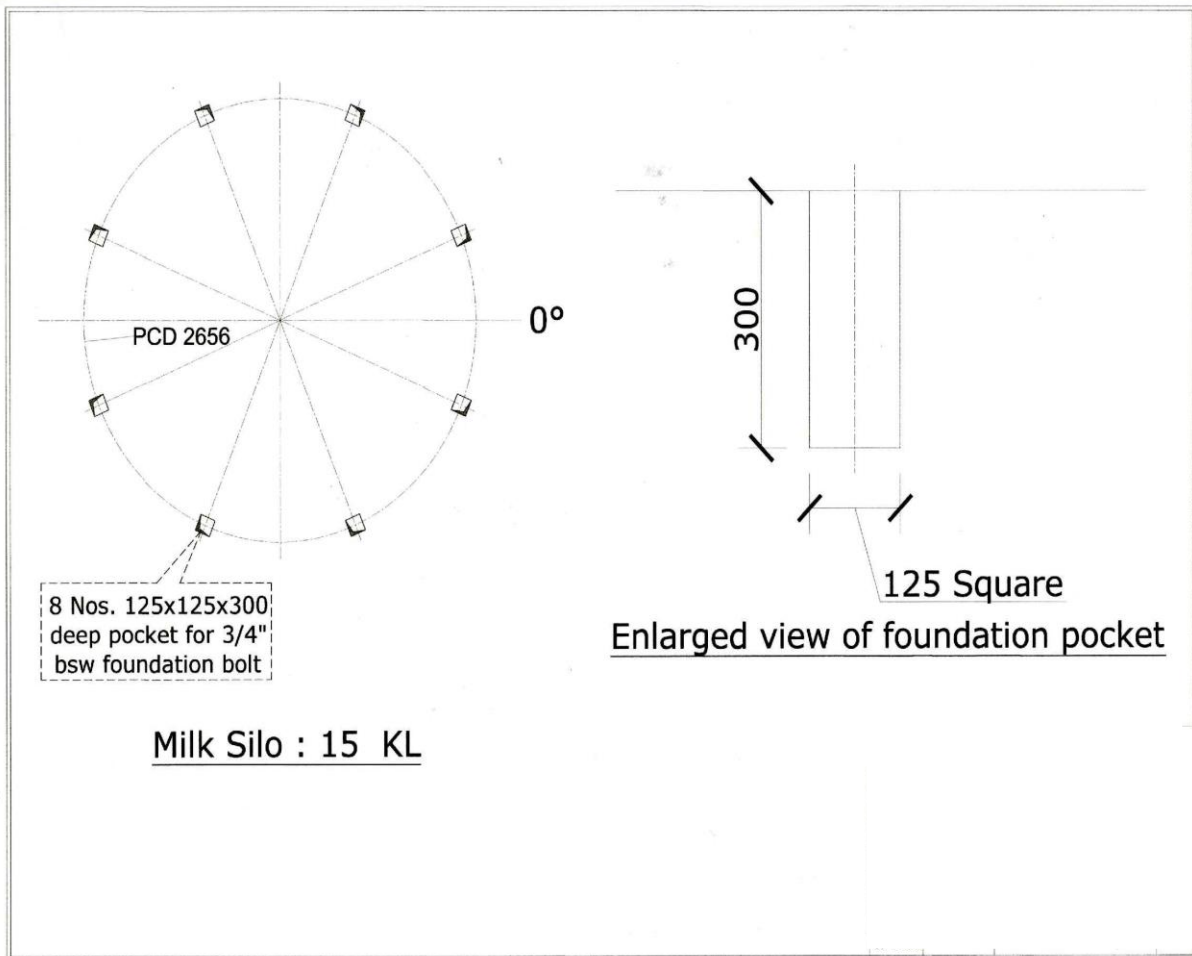
DIAGRAM OF SILO





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DIAGRAM OF FOUNDATION



Sd/-
Managing Director
Bhagirathi Cooperative Milk
Producers Union Limited



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DETAILED TECHNICAL SPECIFICATION AND SCOPE OF WORK FOR SUPPLY INSTALLATION AND COMMISSIONING 10 KL BULK MILK COOLER

1. GENERAL DESCRIPTION

Design, supply, installation & Commissioning of direct expansion type of bulk milk cooling system including all accessories & items given in the detailed scope of work.

2. FUNCTIONAL REQUIREMENT

This system would be installed in village dairy cooperative society (DCS)/village milk collection center which collects the milk every day in the morning & evening from milk producers, The milk collected shall be stored in the bulk milk cooler cooled from ambient temperature to 40C. The stored milk shall be dispatched to dairy plant through insulated road milk tanker once in a day.

3. SUPPLY

The bulk milk cooler shall be a complete unit with the refrigeration system, Agitator, lockable inlet & outlet valve with line strainer (Disc Type) to dump tank outlet. Also includes supply of AISI-304 balance tank with SS filter for pumped system SS piping & milk hose unions & milk transfer pump of 12KLPH SS 304 pipes & fittings, food grade quality flexible hose of adequate length, 8'*4' rubber mat of 4mm thickness for can lid resting. Erection materials, pipe supports, floor plates, pipe clamps, cable conduits, can tipping bar shall also be supplied. Earth pit CI covers & earthing as required by local electrical regulation. The indicative distances between SS collection tray to balance tank – 2m, between balance tank to bulk milk cooler – 5 m, BMC to Mains power point – 20m may be considered for calculating cable & SS piping requirement, The exact distances for SS piping, electrical cabling to panels shall be as per site conditions and complete piping & cabling necessary for installation shall be supplied. Power cables should be copper armoured with standard cross-sectional area * required core as per power load requirement.

4. DESIGN REQUIREMENT

The net capacity of the bulk milk cooler should be as mentioned below; however, the gross capacity in all sizes shall be around 10% higher than the rated capacity to avoid agitation or accidental spillage of milk. Tank capacity 10000 lit.

5. CONSTRUCTIONAL FEATURES

- I. Material used for construction: Rated capacity 10000 lit. Gross 11000 lit. BMC tank inner, outer, bottom and top open able cover shall be fabricated from stainless steel AISI304 Material. The Skid made from heavy M.S. box section and shall be hot dip galvanized on which refrigeration unit is mounted. All piping, fitting, lockable cover, agitator shaft & blade adjustable ball feet made from AISI304 dipstick, outlet & inlet valves, blank flanges, ladder & manhole of about 45 centimetres diameter for closed type milk cooling tank etc. made from AISI304.
- II. Shape & orientation: 10000 lit. Horizontal Cylindrical closed type tank.



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6. TANK FITTINGS & ACCESSORIES

The tank shall be provided with stainless steel inlet with special “no-foam” design, outlet 38mm. butterfly valve & blank union with locking arrangement, a sampling cock lockable type at outlet before butterfly valve, Inspection window/manhole with locking arrangement. The digital type of temperature indicator shall be provided in the control panel. Temperature sensor shall be permanently fixed at the bottom. It shall sense the temperature of the surface at the outlet & transmit the signal to the digital Indicator. The tank shall be provided with S.S. calibrated dipstick to measure the volume of milk inside the tank. The dipstick shall be graduated from 10% or less to not less than 100% of the rated volume. The tank shall be equipped with agitator capable of producing a uniform distribution of fat in the milk.

All S.S. Fittings shall be of SMS STANDARD

BMC shall be provided with AISI-304 filter with SS fine wire mesh. The filter shall be designed and installed in such way that it can frequently and easily be cleaned.

7. INSULATION

The insulation of the tank shall be done by injection in-situ of high density 40kg/m³ CFC free polyurethane foam and the thickness should be at least 50mm minimum the efficient of the insulation should be such that at max. 38°C ambient temperature the rate of rise of the mean temperature of the milk shall not exceed by 1°C in 4 hrs when the rated milk volume initially at about 40°C is allowed to stand undisturbed when refrigeration unit is not working.

8. CLEANING IN PLACE (CIP)

For closed type tank configuration facilities for cleaning-In-Place shall be provided which shall include CIP spray balls and piping from milk reception / balance tank through milk transfer pump to bulk milk cooler. Using Balance Tank, Rotating dish and nozzle spray system in the tank to cover all the internal surface of the tank. Minimum 3 nozzle spray must be provided.

9. TANKER LOADING ARRANGMENT

1000-liter capacity Stainless Steel balance tank should be provided with 10000 Lit capacity Bulk Milk Cooler. From BMC the Milk shall be transferred to Road Milk Tanker (RMT) through food grade quality flexible hose of adequate (min 10 m) length. SS304 Pipes of 51mm size will be provided from the Balance tank via in-line file & Milk Transfer by pump up to BMC. Balance tank should be provided with 51 mm stop valve piping for 10 KL with SS304 51mm 3 Way Plug valve with union, SS304 51mm pipe, SS304 51mm Bend, SS304 51mm Unions and SS304 pipe support, all the specified pipes and fitting are in one lot.

10. REFRIGERATION SYSTEM

The refrigeration system shall be designed to comply with ARI Standard 520 -2004 & to meet the requirements of the milk collection system of ISO 5708, class II. The refrigeration system shall be of direct expansion type with R404a or CFC free, environmentally friendly refrigerant to cool the raw milk from reception temp. to 4°C in the prescribed period mentioned. The evaporators of the system shall form a part of the milk tank body as dimpled jacket in the bottom plate in case of rectangular open tank or at least up to 1/3 height of circular closed tank. The refrigeration system



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shall be direct expansion type to perform cooling function in an ambient temperature of 46°C with air cooled condenser.

- I. **COMPRESSOR** The refrigeration compressor shall be adequate to ensure that milk is cooled to 4°C. In the prescribed time limit & suitable to operate at 0°C Suction temp & 60°C condensing temperature (air cooled condenser) assuming 46°C ambient Temperature. The refrigeration compressor(s) shall be energy efficient hermetically sealed reciprocating/scroll. The compressors selected should be energy efficient consume least power to meet the cooling load requirements.
- II. **CONDENSER** The condenser shall be air cooled finned tube type having sufficient heat transfer area designed for extremely high ambient temperature given above.
- III. **RECEIVER** For refrigeration circuit a suitable size liquid receiver mounted on the skid near compressor to assist system to store refrigerant during pump down cycle as well as in case of maintenance.
- IV. **THERMOSTATIC EXPANSION VALVE** Suitable size & capacity Thermostatic expansion valve should be provided in the refrigeration circuit of the bulk milk cooler. TX valve should be maximum operating pressure type and of adequate capacity to feed optimum of refrigerant to the milk cooling tank evaporator.
- V. **REFRIGERANT PIPE, FITTING AND CONTROLLER** All pipes, valves, fittings & controls shall comply with the latest relevant BIS code applicable. Isolation valves at suction & discharge sides of compressors is provided for compressor isolation, during maintenance of the system All the pipes shall be clamped properly with fixed support. In case of double compressor system, pipe fitting & control should be designed in such a way that both the compressors can run independently. The tubing shall be insulated wherever necessary.

11. ELECTRICAL CONTROL PANNEL

- I. Control Panel Three control panels shall be provided, one for the main power supply tapping, second for the refrigeration unit and third for the milk tank. Each panel shall be provided with MCBs of suitable ratings for switching and protection as per the system requirement. The incoming and outgoing power supply terminals shall be covered and secured with a lead seal to prevent tampering. The door of the panels should be provided with lockable handles.
- II. Main Control Panel This panel should be suitable to tap the incoming State Electricity Board supply and feed the refrigeration unit, agitator motor and milk unloading pump (from balance tank) and dispatch pumps. It should be provided with necessary phase indication lamps (LED type), contactors, MCBs, ammeter, voltmeter, energy-meter, frequency-meter, push buttons etc.

Note: The switch gears, contractor, relays, used in all the panels should be of reputed makes L& T / Siemens/ ABB/ Eaton/ LS/ Hanger.

- III. Refrigeration Control Panel The panel shall be provided with motor starters, ON/OFF push buttons & necessary MCBs, control wiring, line voltage controller to guard the compressor is provided in the refrigeration system, the control panel shall be provided with a sequence



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controller & timer to start one compressor at a time to avoid power supply surge. The panel shall also have facility to operate refrigeration unit on auto/ manual mode. As soon as the milk temperature reaches to pre-set value, the compressor should be switched off to avoid freezing of milk.

12. VOLTAGE STABILIZER (SERVO TYPE) AND SINGLE-PHASE PREVENTER

The system should have Voltage stabilizer conforming to following features and single-phase preventer of suitable rating individually correct the voltage of each phase. Auto low – high cut out. Phase sequence Preventer. Stabilizer should be supplied as per BMC load (electrical) capacity.

13. CABLES & ELECTRICAL SWITCH GEARS

All electrical switchgears including change over switch, controls & electrical cables required for the complete system shall be of suitable rating & of standard company. All cables flexible or armoured should be as per site measurement & site load. Switch make Copper armoured cable should be provided from WBSEDCL meter to stabilizer & Stabilizer to generator minimum 30m of specific size & above if required as per site condition. **Changeover of suitable size and capacity must be supplied by the supplier.**

14. EARTHING

The earthing should be carried as per IS: 3043-1987 (re-affirmed 2001) “code of practice for earthing”. The chassis, framework and the fixed parts of the metal casing of the tanks where used shall be provided with two separate earthing terminals, Earthing for Alternator & Panels. The earthing terminals shall be of adequate size, be protected against corrosion and shall be metallicity clean. Under no circumstances shall a movable part of the enclosure be insulated from the part carrying terminal when the movable part is in place. The earthing terminal shall be identified by means of the “[]” marked in a legible and indelible manner on or adjacent to the terminals.

15. INSTALLATION

The installation work should be carried in best workman like manner in conformity to the relevant codes of practices of BIS standards applicable for mechanical & electrical installation. Installation shall take place in Murshidabad district.

16. COMMISSIONING

Supplier should arrange commissioning & performance trial runs of the bulk milk cooling system to the satisfaction of the client The supplier shall supply all the consumables required during commissioning of the plant.

17. TOOLBOX

A GI sheet toolbox containing one set of all necessary tools required for regular maintenance of the unit shall be supplied along with the BMC. 1000-1400 RPM blower - 1No(s).

18. MANUAL

One sets of operation & maintenance manual, containing complete details of starting up, putting off, critical checks and day to day maintenance of the complete system shall be supplied. The manual should also have the required electrical circuit diagrams.



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19. FIRE EXTINGUISHER

BMC should have fire extinguisher with unit.

20. DIP STICKS

Facilities to measure Milk Quantity SS Dip sticks of AISI304 with calibrated chat.

21. WATER HEATER (Geyser)

Instant Electric water of capacity heater 20 Liters with suitable output capacity of hot water along with CPVC Pipelines to collection point with BMC (with ISI mark).

Sd/-

Managing Director
Bhagirathi Cooperative Milk
Producers Union Limited



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TECHNICAL SPECIFICATION 10000 LITERS CAPACITY BMCU MILK TANK

SL. NO.	DESCRIPTION	DETAILS
A	MILK TANK AND EQUIPMENTS	CYLINDRICAL HORIZONTAL CLOSED TYPE
1.	Capacity-Net	10000 Liters
2.	Capacity-Gross	11000 Liters
3.	MOC	AISI SS 304
4.	Type	Completely closed type in Shape of Elliptical Horizontal
5.	Overall Surface finished	Minimum 220grits/ Pvc coated, 2B Finished.
6.	Over-all Weight	As per ISO-5708 Type 2A II (Latest Version) Standard
7.	Thickness -Inner shell -Outer shell	As per ISO-5708 Type 2A II (Latest Version) Standard 1.6 MM
8.	Overall Dimension	As per ISO-5708 Type 2A II (Latest Version) Standard
9.	CIP Facility	Using Balance Tank and Rotating Disc & Nozzle Spray System in tank to cover all the internal surface (Min 3 Nozzle Spray).
10.	No. of Agitator	2(Two)
11.	RPM of Agitator	21-30
12.	Type of Insulation	By injection in situ of high density (Min. 40Kg/m ³) CFC free Polyurethane Foam without any imperfection and Hygroscopicity.
13.	Thickness of Insulation	50 mm or as per specified NDDDB/IS Standard.
14.	Density of insulation	40Kg/ m ³
15.	Facilities to measure Milk Quantity	SS Dipsticks with Laminated calibrated chart or digital dipstick.
16.	Manhole cover	SS304 with SS fastening. Insulated cover with rubber gasket & locking arrangement.
17.	SS304 51mm 3-way plug valves, 51mm Pipes, 51mm Support for Clamping of SS Line, 51mm bends & 51mm unions.	Pipe clamp should be of SS304 with 51mm, all in one Lot.
18.	Milk Pump	IDMC/ Alfa Laval/ Fristamp/ Swastik / Zeutech make 3HP three phase with outlet 51 mm having SS shroud Impeller and body also SS304, with adjustable legs coupled with motor (Min rate flow 12KLPH) L&T Make Dol Type starter having relay of suitable range to be provided.
19.	Tank Leveling	The tank shall be with adjustable ball feet to adjust the level as per ground surface at location.
20.	Ladder	Suitable SS304 quality detachable ladder shall be provided with the tank to enter the tank for manual cleaning, as and when required or manual cleaning arrangements as designed by the purchaser.
21.	Inner Vessel	All inner joints should be TIG welding and attachments should have finish not less than 150 grit.



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		Proper welded with no sharp edges to avoid contamination.	
22.	Filter	AISI 304 SS fine wire mesh (Dish type)	
23.	Tank & Pipe cleaning Brushes	One Tank cleaning brush & one 1800mm long pipe cleaning brush.	
24.	SS Pipeline	AISI SS 304 Quality non-welded all pipelines should be 51mm. All pipeline joints shall be fitted with SMS Union.	
25.	Level Display indicator/ Inspection Arrangement	Must provide Data Logger system which indicate: Temperature - Measures the internal temperature of the milk in the cooler Quantity/ Volume - Monitors the volume or quantity of milk stored in the cooler. Level (Liquid Level) - Indicates the milk level within the cooler, often displayed as a percentage.	
26.	Spare & Tools	51mm SMS union	01 Lot
		51 mm bend	
		51 mm T	
		51mm Butterfly Valve	
		51mm 3way valve	
		C Spanner	
		51mm rubber hose pipe (food grade)	12 metre
		A GI sheet box containing one set of all necessary tools required. 1000 to 1400 RPM blower (Heavy duty)	01 no(s)
		One fire extinguisher set.	01 no(s)
		Water Heater (Geyser)	01 no(s)
		Changeover of suitable capacity	01 no(s)
		B	REFRIGERATION
1.	Type	Direct Expansion	
2.	Make of Compressor	Emerson hermetically sealed scroll Type (4 no. Compressor)	
3.	Model	ZB48 Suitable to meeting the cooling time 3 hour to bring down the Milk temp from 35 to 4°C as per ISO 5708 2AII norms.	
4.	Type of Refrigerant	R404a	
5.	Cooling capacity of compressor, R404a	22000 Kcal/hr at 0 °C Evaporating temperature and 55 °C condensing temperature.	
6.	Cooling capacity of condenser, R404a	38640 Kcal/hour at Ambient Temp.	
7.	Make of Condenser	Emerson/ Danfoss	
8.	Model of Condenser	Copper Construction Fin & Tube Type	
9.	No. of Condenser	4	
10.	No. of Fans	8(Eight) 18” sweep Dia. Easily repairable*	
11.	Thermostatic Expansion Valve	8 Lit * 4 nos.	
12.	Thermostatic Expansion Valve, make.	Emerson/ Danfoss, MOP	



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13.	Control Panel	Refrigeration Panel body should be made by SS sheet. Automatic cut off & restart system, Digital temperature controller, Auto & Manual facility, digital voltage & Amp meter, Emergency stop switch, HP & LP trip system, ON delay & OFF delay timer, Single phase cut off system should be provided.
C	DESIGN PARAMETERS	
1.	Standards	ISO 5708/2A II
2.	Ambient temp.	48 °C
3.	Maximum Cooling time for I st milking	3 hour, 35 to 4 °C
4.	II nd milking	1.5hour, 10 to 4 °C
5.	Safe Operating Temp.	43 °C
D	VOLTAGE STABILIZER	SERVO CONTROLLED SINGLE PHASE
1.	Make & Stabilizer	ASABA/Luminous/ABB India/Globe: 62.5KVA
2.	Input Voltage	340V- 480V
3.	Out Voltage	415V
4.	Protection	1. High/Low voltage output cut off 2. Overload Protection 3. Short Circuit Protection 4. By-pass Arrangement* 5. Single Phasing* 6. Noise Filtering 7. Phase Failure Relay- VSPD2 * 8. Input/ Output Volt-meter on GEB and DGSet
E	ELECTRIC CABLE AND ELECTRICAL SWITCH GEARS	Cable should be of Polycab / Finolex supply cable from DG set to stabilizer should be of 10 sq.mm x 4 core and supplier will have to provide also cable of 10 sq.mm x 4 core copper armoured cable from GEB Meter to Wall mount change over switch. Cable Laying should be in conduit pipe. Cable 30 meter in supplier scope. Switch gears make - L&T/ Siemens/ ABB/ Eaton/LS/Hager.
F	EARTHING AS PER I.E STANDARD	It should be carried as per IS:3043 - 1987 (reaffirmed 2001) - "Code of practice for earthing". Earthing as per comprising of following: 1. Earthing plate would be of Galvanized Iron plate 2. Earth pit would be 3m deep 3. Distance between two plates would be at least 1.5m 4. Earth Link test would be carried out and should be less than 1 ohm. 5. Total earthing 4 no(s) for BMC* 6. Total earthing 3 no(s) for DG* 7. Earthing connection to BMC Unit, Control panel & Stabilizer shall be through GI earthing strips.
G	ADDITIONAL REFRIGERATION SPARES TO BE SUPPLIED	Thermostatic Expansion Valve, Dryer Filter, High- & Low-pressure tripping safety switch. 2 sets for each BMC unit must be supplied.



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- The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and when no applicable standard is mentioned, to the latest Indian Standards.
- In any case there is a confusion regarding specification, the supplier must quote the rate as per BIS/NDDB Specification.

Sd/-
Managing Director
The Bhagirathi Cooperative Milk
Producers' Union Limited



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Annexure – I

AFFIDAVIT

(To be furnished in a Twenty Rupees Non-Judicial Stamp Paper duly certified by Notary Public)

1. I/We the undersigned solemnly declare that all the statements made in the documents, records etc., attached with this application are true and correct to the best of my/our knowledge.
2. I/We the undersigned do hereby certify that neither my/our firm/company has been blacklisted by any Milk Union, Milk Federation or NDDDB in the past.
3. I/We the undersigned do hereby certify that we have understood the terms and conditions and shall unconditionally comply to the terms and conditions of the Tender/Reverse Tender document.
4. I/We do hereby declare that I/we shall supply IDMC make BMC and Milk Silo only.
5. I/We the undersigned authorize (s) and request any bank / person / firm / corporation / Government Departments to furnish pertinent information deemed necessary and requested by The Bhagirathi Cooperative Milk Producers' Union Ltd. to verify the statement made by me/us or to assess my/our competence and general reputation.
6. I/We the undersigned, understand(s) that further qualifying information / clarifications on the statement made by me / us may be requested by The Bhagirathi Cooperative Milk Producers' Union Ltd and agree(s) to furnish such information/clarification within seven days from the date of receipt of such request from The Bhagirathi Cooperative Milk Producers' Union Ltd.
7. I/We agreed to execute a formal Agreement embodying the terms & conditions of the Tender.

Dated Signature of Applicant with Seal:

To be signed by the officer authorized by the Firm/Company
to sign on behalf, the Firm/Company with company's seal)

Note: In case of sole proprietary concern,
affidavit should be signed only by the sole proprietor.

(Title of the Officer)

(Title of the firm/Company) (Date)

The above named deponent has understood the contents well and solemnly and sincerely declared and affirmed by the deponent in my presence at.....and signed before me on this day of (Seal).

(Signature of the Notary Public)