BID FORM (TECHNICAL SPECIFICATIONS)

National Food Authority - Central Office

PURCHASE REQUEST NUMBER:

END-USER:

ITEM / LOT INFORMATION

Item / Lot Description:	**Lot 1: Supply, Delivery, Installation, Testing, and Commissioning of Ricemill and Grain Dryer for the NFA Modernized Warehouses in Support to Buffer Stocking Program at Various NFA Compounds in Region VI**
Quantity:	**Two (2)**
Unit of Measurement (unit/pcs/lot):	**Items**
Enumeration / Inclusions:	**Item 1: Grain Dryer** **Item 2: Ricemill**

REQUIRED SPECIFICATIONS	**OFFERED SPECIFICATIONS** (write down detailed offered specifications)	**REFERENCES** (include supporting documents) **(attach brochure / technical data / website, etc.)**
ITEM 1: 120 MT-Capacity Mechanical Grain Dryer		
I. General Specification		
1. Mechanical Grain Dryer Features		
The mechanical grain drying facility shall be housed inside the warehouse for protection from inclement weather and to keep the quality of paddy being processed.		
Input Capacity: at least 120 MT of Fresh Paddy Per Day		
Wet or fresh paddy can be continuously received and pre-dried while the Batch Type Recirculating Dryer (BRD) is in operation.		
Pre-dried paddy shall be finally dried to 14% MC in the BRD to have a uniformly dried output when the BRD is available.		
The fresh paddy with moisture content as high as 30% shall be dumped at the receiving pit, and then moved to the paddy cleaner.		
The pre-cleaned paddy grains are then conveyed to wet paddy tank to reduce the moisture content using aeration system in to the wet paddy tank.		
The pre-dried grain should pass the hopper scale before it is conveyed to the batch type recirculating dryer for final drying down to 12% to 13% MC.		
The dried paddy shall then pass through the hopper scale before it shall be conveyed into the dried paddy tank for bagging or loading to silos for bulk storage.		
The above system/approach will greatly reduce post-harvest losses, especially during days of continuous rain which coincide with the period of abundant harvest. Wet paddy spoil rapidly if not pre-dried immediately within the day.		
II. Major Components and Ancillary Equipment:		

1. Receiving and Pre-cleaning Section Two (2) sets of grain receiving and pre-cleaning system shall be installed that are capable in receiving paddy in bulk or accept grains loaded in bulk truck and bagged paddy loaded in trucks or in small lots.			
1.1 Two (2) Units Dumping Pit/Receiving Hopper			
	Both receiving hoppers are capable to receive paddy in bulk		
	The paddy receiving hopper is flush-mounted in the roadway.		
	Provided with concrete ramp capable of supporting fully loaded trucks with gross weight of 60 tons.		
	It is made of all steel construction with angle bar stiffeners and supports.		
	Provided with 35 mm round bar grating and a removable checkered plate cover for safety and protection when not in use.		
	Provided with dust suction hood		
	Designed to discharge gain at 30 TPH minimum		
	Provided with manual intake gate to regulate grain flow		
	Size of the hopper shall be based on Manufacturer's design and standard		
1.2 In-line, Interval-type Single Kernel Moisture Measurement System			
	Continues data logging		
	Moisture content reading range: 11MC to 38 MC		
	With histogram and standard deviation features		
	Moisture threshold feature with alarm		
	Real-Time online mobile apps monitoring capabilities or can be monitored from the control room		
	Cloud Storage: 5 years subscription		
1.3 Two (2) Units Paddy Cleaner with Aspirator			
	Minimum Capacity: 15 tph per unit		
	Minimum efficiency: 90%		
	It can remove empty paddy, small, medium and large size impurities.		
	Push button operation and control system with error indicator control		
1.4 Two (2) Units Fresh Paddy Tank			
	Capacity: 30 Tons per unit		
	Hopper Bottom for self-emptying of grains		
	Provided with Level Sensor		
	Auto-discharge/shutter control		
	Provided with individual aeration fans at the bottom of bin		
	Serves as temporary holding bin and/or tempering bins of grains		
	Able to circulate wet paddy when necessary		

1.5 One (1) Unit Automatic Hopper Scale/Flow Scale			
	Minimum Capacity: 30 TPH		
	High throughput Capacity and high weighing accuracy of +/- 0.1%, full scale		
	Data and operation of the equipment can be monitored in the control room		
2. Drying Section			
2.1 Four (4) Units Batch Recirculating Dryers (BRD)			
	Holding Capacity: 30 MT per unit		
	Drying Capacity: 120 TPB combined capacity per day		
	Provided with Automatic Temperature adjustment based on paddy moisture reading		
	Dryer feature should automatically stop when the desired moisture content reaches the set MC value		
	Each main blower of the dryer is equipped with a cyclofan.		
	Performance Criteria for the dryers: a. Moisture gradient: 2.0% max b. Drying rate: 0.6 - 1% /h c. Drying efficiency: 75% min d. Heating system efficiency: 50% min Biomass fuel, direct-fired e. Drying Loss/Spillage: 1.0% max f. Blower flow rate, cmm/kg (cfm/ton): Manufacturer's Standard g. Static pressure, mm H2O (in.H2O): Manufacturer's Standard		
	Product quality (Palay output) - Allowable difference between the laboratory analysis and dryer's performance a. Cracked grain: 3% increase, max b. Head rice: 5% decrease, max c. Hulled/damaged grain: 2% increase, max		
2.2 One (1) Unit Biomass Fed Furnace			
	Heat Transfer Classification: Either direct-fired or indirect-fired type heating system that can adequately supply the needed heat requirement of the dryers		
	Fuel feed type: Cyclonic type or Gravity type or step-grated type fuel feeding system		
	The furnace should conform to the performance requirement of PNS/PAES 242:2010 -Agricultural Machinery – Biomass Furnace – Specifications		
2.3 One (1) Unit Automatic Hopper Scale/Flow Scale			
	Minimum Capacity: 30 TPH		
	High throughput capacity and high weighing accuracy of +/- 0.1%, full scale.		
	Data and operation of the equipment can be monitored in the control room		
3. Bagging Section			
3.1 Two (2) Units Dried Paddy Tank			
	Common wall for two units		

	Capacity: 30 Tons per unit		
	Provided with level sensor		
	Discharge chutes are provided with manual and pneumatic slide gate with dust control system		
4. With manufacturer's, distributor's or bidder's certification that the proposed grain dryer brand, particularly its major components, would only be from a single brand			
III. Other Ancillary Equipment (Inclusion)			
1. Main Control Center			
	The drying facility shall be provided with air-conditioned control room that houses the main control panel and it will serve as office of the facility operator.		
	Walls shall be provided with fixed glass in order for the operator to monitor the drying operation		
	Grain movement and equipment operation are monitored and controlled in the control room		
	The operator can determine which bin is empty, partially or fully loaded and which equipment is operating through the corresponding pilot lights on the mimic flow diagram of the motor control system		
2. Electrical/Motor Control System			
	Provision inside the main control center of centralized electrical control panel using an integrated Programmable Logic Control (PLC) and Supervisory Control and Data Acquisition (SCADA), or equivalent technology and functionalities, that houses all related motor control components such as circuit breakers, magnetic contactors, alarm system, etc.		
	The control panel shall be provided with mimic flow chart where the running status and control of each dryer component is shown and represented by indicator lights.		
	With ammeter and voltmeter readout		
	Provided with on-off push button switch and individual circuit breaker for each motor		
	Provided with individual magnetic starter and overload protection for all electric motors		
	The drying plant equipment should be electrically inter-locked to facilitate operation and prevent human errors. However, in case of emergency or need to vary the sequence of operation, the interlock system can be by-passed by authorized personnel and any individual or set of equipment can be operated independent of the other.		
	All motors shall be (1) three-phase, (ii) 60 hz, and (iii) 440 volts, or as maybe appropriate for the given overall drying facility design.		

	All electrical wires, sub-feeders and feeder lines shall be in conduits and run through wire trays from electric motors to the motor control center		
	Pull boxes shall be provided for every branch circuit		
	An Emergency Manual Switch Button (EMSB) shall be provided for every motor/equipment near the working area for emergency shut-off to avoid accident. Rigid steel conduit shall be used from the motor/equipment to the EMSB		
	The drying plant shall be provided with **three (3) units distribution transformer** in bank to provide power for the facility's three-phase load		
	All needed electrical fixtures and accessories for primary metering to energize the facility as required by the electric cooperatives shall be included and shall be shouldered by the contractor. These include: i. Electric Meter ii. Current Transformer (CT) iii. Potential Transformer (PT) iv. Lightning Arrester v. Other necessary electrical fixtures and accessories		
3. One (1) Unit Diesel-Powered Emergency Power Generating Set			
	Provision of one (1) unit diesel power generating set (gen-set) which is solely dedicated to energize the whole drying facility		
	Gen-set must be able to provide stable and compatible power with the requirement of the whole drying facility including its ancillary equipment		
	Provided with automatic transfer switch (ATS) for smooth and easy operation during occurrence of power interruption from the local electric cooperative		
	Generator house shall be built to protect the generator set and electrical accessories from inclement weather		
4. Air Compressor Source			
	Provision of centralized compressed air room with line filters, air dryers, air tanks which is intended for the pneumatic systems		
5. Provision of grain conveying mechanisms such as bucket elevator and drag chain conveyor to integrate the different stages of drying.			
	Bucket elevator and drag chain conveyor should be provided with service ladder, platform, and catwalk to be used during the conduct of repair and maintenance		
6. Provision of control tank with pneumatic control system			

	Control tank with pneumatic control system in all stages to synchronize grain flow and to avoid grain clogging		
	Pneumatic control system of grain diverters, control tank discharge shutters can be remotely controlled in the control room		
7. Provision of downspout with two-way valve, or three-way valve if necessary.			
	Attached to bucket elevator to divert grain flow from one stage to another stage of the process		
8. Dust Room and Dust Collection System			
	All sections where dust can be generated or emitted due to flowing or moving grains shall be fitted with dust-collection system		
	With Cyclone type separator with airlock valve, or dust filter, or combination of both		
	With centralized collecting conveyor for dryer cleaning fan and cyclofan impurities		
	Sheet metal ducting and connectors shall be airtight		
9. All drying air ducting and manifolds shall be stainless steel and round formed			
10. It shall be provided with features for access to parts during (1) repair, (2) maintenance, and (3) operation such as ladder, service platform, and catwalk.			
11. Biomass Furnace Room			
	Biomass-fed furnace shall be installed in the furnace room		
	Husk bin with auto feed control should be provided in each furnace for ease of loading fuel		
12. Spare parts storage room shall also be provided for safe keeping of supplies needed during the conduct of repair and maintenance			
13. The mechanical drying facility components and ancillaries shall be laid out in a manner that adequate working spaces are provided for every stage of the operating process			
IV. Additional Requirements			
	1. The dried grain shall have no additional discoloration, no traces of unburned fuel or ashes on grain surface and no fermented or musty odor		
	2. The dryer shall be provided with thermocouple and digital temperature controller to measure the actual air temperature entering the grain mass. The dryer is in sync with the furnace		
	3. The dryer shall be provided with automatic moisture control to measure the actual grain MC and to prevent over drying of grains. Moisture control is in sync with the dryer operation. Automatic shut-off of the dryer once the desired grain moisture content is reached		
	4. Adequate provision for fire control		

5. Adequate protection for all moving parts		
6. The noise emitted by the machineries shall not exceed 92 dB		
7. Mechanical grain dryer and its ancillaries shall be free from defects that may be detrimental to its use and shall be free from sharp edges and surfaces that may hurt the operator		
7.1 All metal parts should be machine bend, pressed and cut to avoid rough surfaces and all rough surfaces should be machine finished and smoothed		
7.2 The warning notice shall be in accordance with PNS/PAES 101:2000 – Agricultural Machinery – Technical Means for Ensuring Safety – General		
8. Each component of the drying facility including its ancillaries must be compatible		
8.1 One brand or similarity of brand of all major component is not necessary for as long as the machine capacity and efficiency are compatible with each part and components		
9. The drying facility and its ancillary shall be designed and built to be strong and sturdy to withstand seismic zone 4 earthquake		
10. Main parts of the mechanical dryer which has direct contact with the grain should be made of stainless steel. All other components and parts of the mechanical dryer should be pre-treated and powder coated		
11. The construction shall be rigid and durable without major breakdown of its components within one (1) year of operation		
12. Warranty shall be provided to parts and services within Three (3) years after the date of acceptance of the unit by the end-user, except on fast moving and easy to wear parts such as fan belts and grain buckets. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service		
13. Every mechanical grain dryer unit and its key component shall be provided with basic tools, factory standard, operation and parts manual containing full information on parts list, method of installation and operation. The manual which conforms to PNS/PAES 102:2000 – Agricultural Machinery – Operator's Manual – Content and Presentation shall be provided		
14. Contractor/Manufacturer/Dealer shall provide operation and maintenance training and after-sales service		
Comprehensive training to NFA personnel with the following topics:		
a) Basic fundamental and principle of Grain Drying		

b) System operation and management of Drying Plant		
c) Operation, trouble shooting, repair and maintenance of Drying facility		
15. The mechanical grain dryer shall be tested in accordance with PNS/PAES 202:2015 – Agricultural Machinery – Heated-Air Mechanical Grain Dryer – Methods of Test.		
16. Each component of the drying facility including its ancillary equipment shall be marked at a prominent place with the information below. The following markings and labeling shall conform to PNS/PAES 201:2015:		
Registered trademark of the manufacturer		
Name and address of the manufacturer		
Name and address of the importer/distributor		
Country of manufacture/ Made in the Philippines		
Type; Serial number		
Load capacity, metric tons		
Rated power/voltage/ frequency/ phase, in metric units		
Shipping information		
Dry weight in metric units		
Dimensions in metric units		
Safety/Precautionary markings		
17. Standard set of heavy duty tools appropriate for the conduct of repair and maintenance of the facility which is made of tempered steel and chrome vanadium		
a. One (1) set socket wrench (No. 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 27, 30, 32, minimum)		
b. One (1) set combination wrench (open and box, 10 pcs-size appropriate to the rice milling system)		
c. Adjustable wrench: 300 mm, minimum		
d. Electrical plier: 200 mm, minimum		
e. Screwdriver: Philips and flat head, 300mm, minimum		
f. Grease gun: 250mm cylinder length, minimum		
g. Mechanical pliers: 200mm, minimum		
h. Heavy duty toolbox and roll up tools holder that could accommodate those required tools		
i. Machinery Testing Equipment i. Tachometer ii. Digital Thermometer iii. Airflow meter		
j. Vacuum cleaner		

	Rated input power: 1,000 W, minimum Maximum air flow: 3 cubic meter/minute Capacity: 30 liter, minimum Power cord: 5m, minimum Features: high capacity and high suction		
	18. All component and drying system shall be compliant with PNS/BAFS FABES 201:2015 AMTEC and NFA tested upon installation at contractor's cost for each units as condition for acceptance and final payment		
	19. Process flow layout and schematic diagram of the drying system duly signed and sealed by Licensed Agricultural Engineer.		
	20. Electrical plan and layout duly signed and sealed by a licensed Electrical Engineer as a condition for payment - From transformer to main switch to control panel to machine components.		
	21. Factory Acceptance Test (FAT) prior to delivery of items		
	22. Provision and Installation of 80-tons Capacity Pitless Type Electronic Truckscale with Truckscale House		
	- Please see attached Specifications		
	23. Inventory CCTV system		
	The CCTV system shall improve inventory accuracy, enhance security and optimize operations. It consists of an integrated cameras and sensors to monitor inventory movement and status, providing real-time insight. Creating a digital “eye” on inventory. CCTV System shall provide a full coverage of the internal space of the warehouse, with clear views of the inventory and personnel within the premises.		
Warranty: Shall be provided to parts and services within Three (3) years after the date of acceptance of the unit by the end-user, except on fast moving and easy to wear parts such as fan belts and grain buckets. With two (2) Preventive Maintenance during warranty period. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service			
Delivery Period: Delivery within **one hundred fifty (150) calendar days** from receipt of Notice to Proceed; Installation, test, and commissioning is within **one hundred fifty (150) calendar days** from succesful delivery.			

Place of Delivery: **Various NFA Warehouses in Region VI:** i. NFA Compound, Quintin Salas, Jaro, Iloilo City ii. NFA Compound, Poblacion 5, Dueñas, Iloilo City iii. NFA Compound, PD Monfort, Dumangas, Iloilo City		
Payment Terms: 1. Advanced payment of **15 %** of the contract price upon submission of necessary documents for Advanced Payment. 2. Progress payment of the remaining 85% of the contract amount upon each milestone, as follows: a. Delivery of Main Equipment i. Grain Dryer (**25%** of contract amount) ii. Ricemill (**25%** of contract amount) b. Installation i. Grain Dryer (**10%** of contract amount) ii. Ricemill (**15%** of contract amount) c. Testing & Commissioning of Grain Dryer, Ricemill, and other works (**10%** of the contract amount)		

In compliance with Republic Act No. 9184, Section 18, and the 2016 Revised Implementing Rules and Regulations, Section 18, brand names are only used because of compatibility with existing platforms or equipment which will maintain performance, functionality and useful life.

Prepared by (End-user):

_____

Evaluated by:

_____

Signature of Representative:

Name of Representative:

Position:

Company:

Address:

Telephone/ Fax:

Email:

BID FORM (TECHNICAL SPECIFICATIONS)

National Food Authority - Central Office

PURCHASE REQUEST NUMBER:

END-USER:

ITEM / LOT INFORMATION

Item / Lot Description:	**Lot 1: Supply, Delivery, Installation, Testing, and Commissioning of Ricemill and Grain Dryer for the NFA Modernized Warehouses in Support to Buffer Stocking Program at Various NFA Compounds in Region VI**
Quantity:	**Two (2)**
Unit of Measurement (unit/pcs/lot):	**Items**
Enumeration / Inclusions:	**Item 1: Grain Dryer** **Item 2: Ricemill**

	REQUIRED SPECIFICATIONS	**OFFERED SPECIFICATIONS** (write down detailed offered specifications)	**REFERENCES** (include supporting documents) **(attach brochure / technical data / website, etc.)**
ITEM 2: 8 - 10 TPH CAPACITY RICEMILL			
I. General Specifications			
	1. Ricemill features		
	Input Capacity: 8 - 10 metric tons per hour (tph)		
	Designed to process raw paddy into a high-quality polished rice with mechanisms for objective means of setting milling pressures on the grain		
	Operation: Sophisticated but easy		
	Automated adjustments on machine components as to: - Feed rate - Rubber roll clearance - Paddy separator bed inclination		
	Sensing Gauges for the following components for identification of current load on motor drives and with indication on operating pressure on the grain: - Abrasive whitener - Friction polisher - Mist polisher		
	2. Follows the prescribed milling procedure below:		
	a. At the start of milling operation, dry paddy is fed into the **intake pit** and conveyed to the **millday bin** to prepare the desired volume of input for the continuous milling activity.		
	b. Then from the mill day bin, grain is moved to the the **pre-cleaner** to remove impurities such as straw, chaff and empty grains.		
	c. From the pre-cleaner, paddy is conveyed to the **destoner** to remove particles such as small stones, mud balls and other impurities.		

	d. The pre-cleaned paddy is deposited in the **paddy collection bin** before it subsequently conveyed to the **rubber roll type dehuller**. Attached below the dehuller is the **husk aspirator/separator** which removed the rice hull after dehulling.		
	e. From the dehuller, the grain output moves to the **paddy separator** to separate unhulled paddy from the brown rice.		
	f. Unhulled paddy is returned to the dehuller while the brown rice moves to the **length grader** to sort grains accordingly.		
	g. Then sorted brown rice moves to the **collection bins**.		
	h. From the bins, the brown rice moves to the **1st stage (abrasive) whitener**.		
	i. Then partially milled rice moves to the **2nd stage (abrasive) whitener** then subsequent polishing shall take place using **friction type polisher**.		
	j. Rice bran is removed from the rice grain during the whitening and polishing process.		
	k. Milled rice is moved to the **sifter** (brewer rice removed by the sifter).		
	l. Then milled rice is moved to the **optical/color sorter** to remove damaged and discolored kernels as desired.		
	m. Then milled rice is moved to the **mist polisher**.		
	n. The mist-polished rice is moved to the **length grader** to sort the rice grains according to sizes (where head rice is moved to **head rice collection bin** while broken rice is moved to the **broken rice collection bin**)		
	o. Rice grading can be pre-selected in the **blending station** where desired proportion of head rice and broken rice can be mixed.		
	p. After blending, the graded rice is move to **automatic packing machine** to pack the desired weight/package sizes (from 5kg to 50kg).		
	q. The well packed mist polished rice shall be issued to NFA storage warehouse or for distribution to intended NFA clienteles.		
II. Major Components			
	Component 1: Paddy Receiving & Pre-Cleaning Section		
	1.1 Paddy Millday Bin Paddy stored in the silos shall be moved to the mill day bin by top loading drag conveyor. It will serve as holding bin of paddy for milling. Paddy shall be moved to the feeding hopper using a bottom drag conveyor		
	Capacity: at least 40 MT		
	Auto discharge/shutter control and with level sensor		
	Hopper bottom for self flowing of grains		

	Circular or rectangular in shape which ever is appropriate for ease of operation.		
	It shall be made of all steel construction.		
	1.2 Paddy Receiving Hopper / Dumping Pit Large impurities shall be strained/removed on the steel grating. The grain discharge port shall be provided with flow control valve and can be calibrated to achieve the desired flow rate of 8 to 10tph. The valve can be closed or opened without altering the calibrated flow rate.		
	The paddy receiving hopper is made of all steel construction		
	Flush-mounted on concrete floor - w/ angle-bar stiffener support - 35mm bar grating.		
	With removable checkered plate cover for safety and protection when not in use		
	Provided with dust suction hood to control proliferation of dust inside the mill.		
	Minimum 10 tph discharge port.		
	1.3 Paddy Pre-cleaner From feeding hopper, paddy is moved to the paddy cleaner to remove small, medium and large size impurities, and lightweight impurities		
	Capacity: 8-10 TPH		
	Minimum output cleaning efficiency: 90%		
	Manual or Auto-feed control		
	Multi-stage cleaning that can remove small, medium and large size impurities, and lightweight impurities		
	With clog prevention mechanism		
	Provided with magnetic separator		
	1.4 One (1) Set Paddy De-stoner The machine separates particles by density. The machine will remove materials denser than paddy, such as stones, mud balls, and other small solid impurities..		
	Capacity: 8-10 tph		
	Manual or Auto-feed control		
	1.5 Bulk Weigher		
	With grain flow scale to monitor weight of cleaned paddy prior to dehulling.		
	Capacity: 20TPH		
	Touch pad control system		
	Component 2: Dehulling Section		
	2.1 Paddy Tank It will serve as holding bin of pre-cleaned paddy for dehulling.		
	Capacity: 20MT		
	Auto discharge/shutter control and with level sensor		
	Inclination of the discharge chute compatible to the angle of repose of the paddy for self-flowing of paddy.		

	Provision of ladder and railings for inspection, repair and maintenance of the bin		
	The bin should be painted with rust-proofing primer and with final paint color		
	It shall be made of all steel materials which are brand new		
	2.2 Three (3) sets De-Huller with Husk Aspirator - The three dehullers are use to remove husk of the paddy grain. The combined capacity of the dehullers should be enough to de-husk the paddy coming from the millday bin and the return of un-hulled paddy from the paddy separator. - The husk aspirator is added to separate and blow the husk out of the brown rice and paddy.		
	With combined capacity of 8-10 tph		
	Rubber roll type huller		
	Minimum hulling efficiency: 79%.		
	With automatic and pneumatic adjustment and control of rollers.		
	With magnetic separator to remove ferrous particle from the product		
	With husk aspirator: Rice hull discharge to rice hull tank via drag chain conveyor and bucket elevator		
	Fitted with dust collection system		
	Touch pad operation and electronic control system and with error indicator.		
	Component 3: Separation Section		
	3.1 One (1) set Paddy Separator It separates un-hulled paddy from brown rice. The un-hulled paddy is returned to the De-hulling machine while the brown rice is moved to the brown rice tank in preparation for whitening.		
	Capacity: 7TPH		
	With return elevator to the hulling mechanism and paddy separator		
	With magnetic separator to remove ferrous particle from the product		
	Push button operation and control system or better with error indicator		
	Multi-layer, indented tray		
	Adjustable tray inclination		
	Component 4: Whitening and Polishing Section		
	4.1 Brown Rice Tank It will serve as temporary holding bin of brown rice for whitening / polishing		
	Capacity: 20 MT		
	Auto discharge/shutter control and with level sensors.		

	4.2 Whitening and Polishing Section Whitening or polishing is the process of removing the bran layer and the germ from the kernel through either abrasive or friction polishers. To reduce the number of broken grains during the whitening process, rice is normally passed through two to three whitening machines connected in series.		
	Capacity: 5-6TPH		
	Manual or Auto feed control		
	Three (3) whiteners (gravity type)		
	Abrasive type or combination of abrasive and friction type whitener		
	With magnetic separator to remove ferrous particle from the product		
	With air cooling blowers to reduce rice temperature during processing		
	With negative pressure air wind net system for bran extraction		
	With analog or digital pressure meter and ammeter		
	4.2 Sifter Separates brewer rice by oscillating or vibratory sifter		
	Capacity: 5-6TPH		
	With brewers removing device		
	Oscillating tray-type sifter or a vibratory type		
	Push button operation and control System or better with error indicator		
	4.3 One (1) set Mist Polisher First pass. It is a friction type of whitening machine, which delivers a fine mist of water during the final whitening process. It is a process of mixing a fine mist of water with the dust retained on the whitened rice. The output improves the luster of rice without significantly reducing milling yield.		
	Push button operation and control System or better with error indicator		
	With magnetic filters		
	Fully Automatic with Sensors		
	4.4 Color Sorter A machine that is used to remove damaged and discolored kernels including particles other than white rice kernels.		
	Intelligent optical selector and sorting for rice and with color and defects profiling		
	Intelligent individual defect detection up to 99% (minimum) defect removal		
	Intelligent automation: optical sorter consistently adjust to the incoming product		
	LED lighting technology		
	Able to reject discolored and damaged kernel and eject impurities even during high capacity processing (6 TPH minimum)		

	Operation and control system: easy-to-use touch panel (with display that shows status and error messages)		
	With Infrared camera for glass removal		
	4.5 Length Grader and Rotary Sifter A machine that is used to separate grains into head rice, large and small broken rice, tips and brewers.		
	Capability to sort short, medium and long grains		
	Provision of inspection window		
	Transition pipes are equipped with sampling outlets (every stage)		
	Component 5: Blending and Mixing Section		
	5.1 Three (3) Sets Blending tank (Headrice tank, large broken tank and small broken tank)		
	Capacity per tank: 13 tons each		
	with three (3) automatic flow balancer / volumetric mixer		
	Works with any variety of rice		
	Pneumatically controlled proportioning gate with automatic closing in case of a power failure		
	Measurement system with an impact plate and electronic force transducer		
	5.2 One (1) set Mist Polisher Second pass. It is a friction type of whitening machine, which delivers a fine mist of water during the final whitening process. It is a process of mixing a fine mist of water with the dust retained on the whitened rice. The output improves the luster of rice without significantly reducing milling yield.		
	Push button operation and control System or better with error indicator		
	With magnetic filters		
	Full Automatic with Sensors.		
	Component 6: Bagging/Packaging Section		
	6.1 Two (2) Units Holding Bin/Tank		
	Capacity per tank: 8 tons each		
	Provided with two discharge ports integrated with two lines of milled rice packaging system.		
	Two lines shall be semi-automatic with manual bagging, with built in flow scale function that can accurately bag 5 to 50 kgs, including 10 and 25kgs.		
	With bag sewing machine and belt conveyor.		
	6.2 Rice Hull Compactor		
	Capacity: 60-100 Bales per hour		
	Bale weight: 20-30 kg per bale		
	It shall be used to compress rice husks into bales to reduce space for transport or storage.		
	6.4 Laboratory Equipment		

	6.4.1 One (1) Unit Grader		
	Dimensions : 19-23" x 14-18" x 16-20"		
	Weight : 30-40 lbs		
	Material : Aluminum, stainless steel, or brass		
	Timer : Digital		
	Indent Cylinder : Cylinder no. 12		
	Power Source : 220-240 V, 50/60Hz		
	OTHER REQUIREMENTS: Should include the following parts and features: - Variable speed control - Collection pan tilt adjustment with angle indication - With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.2 One (1) Unit Huller		
	Model / Type : Table Top / Rubber Roll Type		
	Hopper Capacity : 250 grams paddy sample (minimum)		
	Size of Rubber Roll : 35 mm x 100 mm (width x diameter) ±3mm		
	Hulling Capacity : 40 - 50 kilogram/hour		
	Power Source : 220-250V, 50-60 Hz		
	Motor Power : 0.50 - 0.75 H.P., Single Phase		
	Dimensions : 700 x 300 x 700 mm (L x W x H) (minimum)		
	Weight : 70 kilogram (maximum)		
	Hulling Efficiency : 75% in the first pass of the sample (minimum)		
	Other requirements -Must have a spare pair of rubber rolls -Must bear the following: a. Identification or trademark of the manufacturer b. Model and serial number c. Guarantee certificate or marks -With detachable husk collector -Easy to operate -Heavy duty / sturdy -Be able to provide consistent and accurate results -With transparent observation window to monitor the hulling operation		
	6.4.3 One (1) Unit Rice Polisher		
	Model / Type : Table Top / Abrasive		
	Hopper Capacity : 200 grams brown rice (minimum)		

	Polishing Capacity : 10 kilogram/hour (minimum)		
	Power Source : 220-250V, 50-60 Hz		
	Motor Power : 0.50 – 0.75 H.P., Single Phase		
	Dimensions : 400 x 250 x 300 mm (L x W x H) (minimum)		
	Weight : 60 kilogram (maximum)		
	Grit Size of Abrasion Roller : No. 36 or 40		
	Timer Setting : Automatic; adjustable in seconds		
	Polishing Efficiency : 79% if WMR; 81% if RMR (minimum)		
	Other requirements - Must have one spare abrasive roller - Must bear the following: a. Identification or trademark of the manufacturer b. Model and serial number c. Guarantee certificate or marks - Easy to operate - Heavy duty/sturdy - Capable of processing rice samples to different milling degrees		
	6.4.4 One (1) Unit Ductless Fume Hood		
	Dimension (W x D x H) : Interior - 700-950 x 500-700 x 600-850 cm Exterior - 800-1000 x 500-800 x 900-1300 cm		
	Weight : 100-150 kg		
	Blower : Centrifugal blower		
	Volume of Air Treated : 320 ± 10 m3/h		
	Voltage / Frequency : 230 Vac, 50/60 Hz		
	Material : Frame - Powder-coated steel Glass – Tempered or laminated safety glass		
	Type of Filter : Organics - Gases or vapors		
	Other Requirements Should include the following features: -User's manual -Easy to install replaceable filters -Includes universal electric outlet -With light source -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.5 One (1) Unit Digital Thickness Gauge		
	Dimensions (W x H) : 90-120 x 140-160 mm		
	Weight : 250-450 g		
	Operating Temperature : 0-40°C		
	Gauge Type : Digital		
	Digital : LED or LCD		
	Range : 0-25 mm		
	Accuracy : ± 0.001		

	Resolution : 0.01 mm		
	Measuring Force : 1.5 less N		
	Units : Metric		
	Power Source : Battery Operated		
	Other Requirements Should include the following parts and features: -Anvil with groove -User's manual -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance) -Certificate of Calibration from DOST or any accredited Calibration Laboratory.		
	6.4.6 One (1) Unit Tyler Sieve		
	Dimensions (H x D) : 2-5 x 12"		
	Weight : 100-500 g per piece		
	Material : Stainless Steel		
	Mesh Size : U.S.A. mesh no. 10-20		
	Other Requirements: Should include the following features: - Tyler Sieve U.S. mesh no. 10,12,14,16,18 and 20 - User's Manual - With at least one (1) year warranty and after-sales services (e.g. preventive maintenance) - Certificate of Calibration from any accredited Calibration Laboratory		
	6.4.7 One (1) Unit Rice Sieve		
	SIEVE		
	Material : Stainless steel (SS) or Aluminum Gauge 20 (0.035" / 0.89 mm)		
	Perforation : 5.5/64" round or 2.18 mm		
	Frame Diameter : 13.0 - 13.5" or 330 - 343 mm (upper rim) 12.0 - 12.5" or 304 - 318 mm (lower rim)		
	BOTTOM PAN (RECEIVING PAN): Should match the sieve and could easily be removed		
	Material : Stainless steel (SS) or Aluminum Gauge 20 (0.035" / 0.89 mm)		
	Diamter : 13.0 - 13.5" or 330 - 343 mm		
	Height : 2.5 - 3.0" deep or 64.0 - 76.0 mm		
	Other requirements -Heavy duty construction -Smooth surface on joints -Corrosion resistant -Ease of cleaning		
	6.4.8 Two (2) Units Indented Plate		
	Capacity : 100-300 g		
	Material : Stainless steel		

	Indent Size : 4.5 - 5.5 mm		
	Indent Distance : 5-12 mm (center-to-center)		
	Dimensions (L x W) : 30-35 cm x 25-30 cm		
	Other requirements -Heavy duty construction -Smooth surface on joints -Corrosion resistant - Ease of cleaning		
	6.4.9 Two (2) Units Triangular Pan		
	Dimensions (W x H) : 10-13 x 10-13 x 2.5-6"		
	Weight : 1-2.5 lbs		
	Material : Plastic		
	Other Requirements Should include the following features: - Molded plastic - With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.10 One (1) box Disposable Petri Dishes		
	With 480 units in one (1) box		
	Diameter : 90 mm		
	Height : 10-20 mm		
	Metarial : Polystyrene		
	Lid Type : Non-vented		
	Sterilization : Sterile		
	Other Requirements Should include the following features: -With transparent lid -Perfectly flat and smooth surface		
	6.4.11 Ten (10) Units Forceps		
	Length : 5.5”		
	Jaw Curvature : Curved		
	Working Surface : Serrated		
	Handle : Finger rings		
	Material : Stainless steel		
	Usage : Reusable		
	6.4.12 One (1) Unit Chiller (Two-door)		
	Capacity : 14 cu. ft.		
	Dimensions (L x W x H) : 57-61 x 65-69 x 206-210 cm.		
	Technology Type : Inverter		
	Wattage : 190 watts		
	Shelves : Four (4) adjustable coated wire shelves		
	Temperature : ± 2 °C to +8 °C		
	Plug Type : Type A – 2 Flat prong plug		

	Other Requirements -With 7-level temperature control, fan-cooled system, adjusted leveling feet, double glass door with recessed handle and key lock. -At least one (1) year warranty for parts and services		
	6.4.13 One (1) Unit Portable Rice Mill		
	Capacity : 150 – 180 g		
	Husking Rate : 99%, minimum		
	Weight : 20 kg, maximum		
	Time Setting : Digital		
	Voltage : AC 220 V		
	Surface Material : Hard plastic		
	Feed Hopper / Bucket : Stainless steel		
	Other Requirements -With brochures and user manual -Ease of cleaning -Heavy duty		
	6.4.14 One (1) Unit Laboratory Sample Divider		
	Material : Stainless steel		
	Number of Chutes : 14		
	Width of Chutes : 3/8” (9.50 mm) ±5%		
	Sample Pans : 4		
	Hopper Size : 8” x 6-3/4” (203 mm x 171 mm) ±5%		
	Other requirements -Heavy duty construction -Smooth surface on joints -Corrosion resistant -Ease of cleaning		
	6.4.15 One (1) Unit Top Loading Balance		
	Capacity : 2,200 g		
	Weighing Units : Gram (g) and Kilogram (kg)		
	Linearity : ± 0.02 g		
	Readability : 0.01 g		
	Repeatability : 0.01 g		
	Adjustment : Internal		
	External Calibration : 2 kg, F1		
	Leveling : Manual		
	Stabilization Time : < 0.9 s		
	Data Interface : RS232; USB – C		
	Dimensions (WxDxH): 190-220 x 310-330 x 70-100 mm		
	Display : LCD / LED Display		
	Language : English		
	Power Requirements : 100-240 VAC, ± 10%, 50-60 Hz, 0.2 A		

	Other Requirements Should include the following: -One (1) unit Data Printer -Ribbon cartridge: exchangeable, black ink -Paper roll -AC adapter -With calibration certificate from a PAB-accredited calibration laboratory; and -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.16 One (1) Unit Laboratory Working Table		
	Dimensions (WxDxH) : 230-250 x 140-160 x 85-95 cm		
	Material : Granite		
	Frame : Coated stainless steel		
	Weight capacity : 150-250 kg		
	Drawer : 15-20 cm deep per compartment, recessed handles		
	Utility : Built-in retractable outlet		
	Other Requirements -Should include the following: -Rounded edge -Cable management tray for power outlet -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.17 One (1) Unit Analytical Balance		
	Capacity : 100-300 g		
	Weighing Units : Gram (g) or milligram (mg)		
	Linearity : ± 0.02 mg		
	Readability : 0.0001 g or 0.1 mg		
	Repeatability : ± 0.01 mg		
	Adjustment : Internal		
	External Calibration : 200-300 g, F1		
	Leveling : Manual		
	Stabilization Time : < 3 s		
	Data Interface : RS232; USB – C		
	Dimensions (WxDxH): 190-250 x 300-400 x 300-450 mm		
	Draft Shield : Anti-static glass shield with sliding doors, minimum 3 doors		
	Display : LCD / LED Display		
	Language : English		
	Power Requirements : 100-240 VAC, ± 10%, 50-60 Hz, 0.2 A		

	Other Requirements Should include the following: -One (1) unit Data Printer -Ribbon cartridge: exchangeable, black ink, and paper roll -AC adapter -With calibration certificate from a PAB-accredited calibration laboratory; and -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.18 Ten (10) Units Temperature and Humidity Data Logger		
	Dimension (L x W x H) : 80-100 x 90-120 x 15-40 mm		
	Weight : 100-200 g		
	Measurement Parameter : Temperature and humidity		
	Measuring Range : -30-65 °C and 0-100% RH		
	Accuracy : ± 1 °C and ± 4 RH		
	Material : ABS		
	Resolution : 0.1 °C and 0.1% RH		
	Power Source : Battery operated		
	Communication Interface : Micro USB / Type C		
	Display : LED / LCD		
	Other Requirements Should include the following features: -Waterproof -Easy to install -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.19 One (1) Unit Magnifying Lens with Stand & Light Source		
	Light Source : LED		
	Lens Configuration : Single		
	Material : Lens/optical glass, Strut/brass (chromium plating) Shaft/brass (black plating)		
	Power supply : DC12V		
	Dimension : Body/90 x 250 x 140mm Base/80 x 100 x 6mm Strut/ϕ19 x 370mm Shaft/ϕ13 x 160mm ± 20 mm per part		
	Weight : 500-700 g		
	Magnification : 2.0-3.0 x		
	Lens diameter (ϕmm) : 45-55		
	Operation distance : 150 mm		

	Other Requirements Should include the following features: -Includes AC adapter -User's manual -The lens unit comes with angle adjustment joint -Shaft can be moved up and down, back and forth by adjusting nut -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.20 One (1) Unit Refrigerator		
	Capacity : 10 cu. ft.		
	Dimensions (L x W x H) : 59-61 x 54-56 x 166-168 cm.		
	Technology Type : HD Inverter		
	Wattage : 130 watts		
	Refrigerant Type : R600A Refrigerant		
	Shelves Type : Two (2) tempered glass shelves		
	Plug Type : Type A – 2 Flat prong plug		
	Other Requirements -Independent Temperature Control -At least one (1) year warranty for parts and services		
	6.5 Inventory CCTV System		
	The CCTV system shall improve inventory accuracy, enhance security, and optimize operations. It consists of an integrated cameras and sensors to monitor inventory movement and status, providing real-time insights. Creating a digital "eye" on inventory		
With manufacturer's, distributor's or bidder's certification that the proposed rice mill brand, particularly its major components, would only be from a single brand			
III. Auxiliary Components			
	1. Grain bucket Elevators		
	a. Shall be provided in all appropriate components of the ricemill to transport grains from one machine to another machine.		
	b. Capacities must be sufficient/compatible to the rated capacities of each machine.		
	c. Buckets for paddy shall be made from stainless steel (at least 304 grade) while buckets for brown rice and milled rice shall be made of heavy duty food grade plastic cups.		
	d. Elevator leg material must be of appropriate standard thickness to withstand a seizmic zone 4 earthquake.		

	e. Provision of downspout with two-way valve, or three-way valve if necessary, attached to bucket elevator to divert grain flow from a certain stage of processing.		
	f. Installed with inspection port at the elevator leg and access port at the elevator booth for inspection and cleaning.		
	2. Ricehull Tank and Husk Collection System Integrated with Rice Hull Compactor		
	a) The ricehull tank shall be made of 2mm MS plate supported by angle/steel bars.		
	b) Rectangular tank with hopper bottom. Discharge chute is provided with pneumatic control gate/shutter for ease of operation.		
	c) WIth capacity to hold ricehull accumulated over an 8-hour ricemill operation.		
	d) Minimum height must be 5 meter from the ground to the lowest part of the discharge chute to accommodate large cargo trucks during unloading and hull disposal.		
	e) Inclination of the hoppered bottom/discharge chute should comply to the angle of repose of the rice hull (35 – 50 degrees) to achieve complete emptying of the tank.		
	f) Provision of service ladder and railings for the unloading of rice hull, repair and maintenance of the rice hull tank.		
	g) The rice hull bin should be painted with rust-proofing primer and with final paint color		
	h) Provision of appropriate rice hull compactor system to compress rice husks to bales to reduce space during transport or storage.		
	3. Dust Collection System		
	a) All sections where dust can be generated or emitted due to flowing or moving grains shall be fitted with dust-collection system (starting from the dumping or intake pit, mill day bin, pre-cleaner, de-stoner, huller, paddy separator, whitener, mist-polisher, color sorter, length grader, sifter, and grain elevator/conveyors)		
	b) With dust filter for dust and rice bran		
	c) With negative suction air wind net system		
	d) Sheet metal ducting		
	e) All connectors shall be airtight		
	4. Rice Bran Collection System		
	Collects bran generated at the whitener, polisher, sifter and mist polisher machines. It consists of dust collecting filter, bran suction blower, and air ducting.		
	5. Main Control Center		

	The rice mill shall be provided with appropriate air-conditioned control room that houses the main control panel and it will serve as office of the rice mill operator. Walls shall be provided with fixed glass window for the operator to monitor the milling operation. Shall be provided with two glass doors.		
	6. Electrical/Motor Control System		
	Provision inside the main control center of centralized electrical control panel using an integrated Programmable Logic Control (PLC) and Supervisory Control and Data Acquisition (SCADA) or equivalent technology and functionalities.		
	Automation system that houses all related motor control components such as circuit breakers, magnetic contactors and alarm system.		
	The control panel shall be provided with mimic flow chart where the running status and control of each milling component is shown and represented by pilot lights.		
	With interlocking system and emergency button.		
	With individual magnetic starter and overload protection for all electric motors.		
	All motors shall be 3 phase, 60 hz,220 or 440 volts or as maybe appropriate for the given overall rice mill plant design.		
	All electrical wires, sub-feeders and feeder lines shall be in conduits and run through wire trays from electric motors to the motor control center.		
	Pull boxes shall be provided for every branch circuit.		
	An Emergency Manual Switch Button (ESMB) shall be provided for every motor/equipment near the working area for emergency shut-off to avoid accident.		
	Rigid steel conduit shall be used from the motor/equipment to the ESMB.		
	With **three (3) units distribution transformer** in bank to provide power for the rice mill's three-phase load.		
	All electrical related accessories such as but not limited to primary metering, current transformer, potential transformer, lightning arrester, etc. needed to energize the rice mill plant as required by the local electric cooperative shall be included in the rice mill plant.		
	All electrical works shall be in accordance with the Philippine Electrical Code and rules and regulation of the Bureau of Product and Standard.		

	The contractor shall provide all supplies, materials and equipment and perform all the works necessary for the complete execution of all electrical works.		
	7. Emergency Power Generating Set		
	Provision of **One (1) unit diesel stand-by power generating set (gen-set)** dedicated only to energize the whole rice mill facility.		
	The gen-set must provide sufficient electrical power that is compatible with the power requirement of the whole rice mill facility, including its ancillary equipment.		
	Provided with automatic transfer switch (ATS) for smooth and easy operation during occurrence of power interruption from the local electric cooperative.		
	A generator house shall be built to protect the gen-set and its electrical accessories from inclement weather.		
	8. Air Compressor Source		
	Centralized compressed air room with line filters, air dryers, air tanks and with variable permanent magnet motors.		
IV. Additional Requirements			
	1. The rice mill facility should conform to the following performance criteria:		
	Input Capacity: 8-10 tons per hour (tph)		
	Hulling efficiency: 79%, minimum		
	Milling recovery index: 0.95, minimum		
	Percent Head rice index: 0.90, minimum		
	Milling degree: Regular Grade to Premium Grade Milling		
	No. of paddy per kilogram milled rice: 15 Grains Maximum		
	2. The rice mill shall be designed and built rigidly, making it suitable for heavy-duty operation and it can withstand extreme weather conditions to which it can be exposed.		
	3. The construction shall be durable without major breakdown of the major components within the first year of operation. Warranty shall be provided for parts and services within one year or 1920 hours operation whichever comes first after the installation and acceptance of the procuring entity except on consumable parts such as rubber rolls, emery stones and screens. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service.		

	4. Major components of the rice milling system shall be installed on a rigid metal mounting platform with a minimum elevation of 2.5 meters from the warehouse floor. Only the receiving pit shall be built below ground and all other rice mill components and auxiliary equipment shall be installed on-floor level and on elevated platforms. Rice mill personnel can stand and walk freely under the platform to monitor the operation of the rice mill.		
	5. All equipment, bucket elevators, conveyors bins/tanks are serviceable with good accessibility around each machine (service platform, ladder and catwalk). There are provisions for lubrication of the sealed type bearings and belt tightening. When necessary, diverter or overflow valves are provided to divert the flow of grains.		
	6. Ease of access for maintenance, repair, and monitoring works for all components and parts of the rice mill. Path walks with markings/direction and borders. Stairs and risers fitted with safety railings.		
	7. Surge tank or control tank with level sensor and pneumatic-auto discharge shall be installed in such machine component of the rice mill.		
	8. All major components and parts of the rice mill should be painted powder coated or regular paint with rust-proofing primer and final paint color (minimum of 2 coatings)		
	9. Spare parts and tool room shall be built to safe keep all tools and inventory of easily worn out parts of the rice mill.		
	10. Special tools needed to fix critical machine component should be provided.		
	11. The following standard set of heavy duty tools appropriate for the conduct of repair and maintenance of the facility which is made of tempered steel and chrome vanadium should be provided;		
	a. One (1) set socket wrench (No. 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 27, 30, 32, minimum)		
	b. One (1) set combination wrench (open and box, 10 pcs-size appropriate to the rice milling system)		
	c. Adjustable wrench: 300 mm, minimum		
	d. Electrical plier: 200 mm, minimum		
	e. Screwdriver: Philips and flat head, 300mm, minimum		
	f. Grease gun: 250mm cylinder length, minimum		
	g. Mechanical pliers: 200mm, minimum		
	h. Heavy duty toolbox and roll up tools holder. Size that can accommodate the required tools		

	12. A copy of Equipment Manufacturer's Manual and Operator's Manual of rice milling unit, rice milling system, and auxiliary equipment written in English should be provided.		
	13. The Contractor/Manufacturer's/ Dealers shall provide comprehensive training to NFA personnel with the following topics:		
	a.Fundamentals of Rice milling		
	b.System operation and management of rice milling.		
	c.Operation, trouble shooting, repair and maintenance of Rice mill plant		
	14. The rice mill shall be tested in accordance with PNS/PAES 207:2015 – Agricultural Machinery –Rice mill – Methods of Test.		
	15. With the following markings and labeling, which shall conform with PNS/PAES 201:2015		
	Registered trademark of the manufacturer		
	Name and address of the manufacturer		
	Name and address of the importer/distributor		
	Country of manufacture/ Made in the Philippines		
	Type; Serial number		
	Load capacity, metric tons		
	Rated power/voltage/ frequency/ phase, in metric units		
	Shipping information		
	Dry weight in metric units		
	Dimensions in metric units		
	Safety/Precautionary markings		
	16. Factory acceptance test prior to delivery of items.		
	17. Supplier may include other features not mentioned but are necessary for efficient milling of rice.		
	18. The ricemill and its ancillary shall be designed and built to be strong and sturdy to withstand seismic zone 4 earthquake		
	Other Technical Requirement:		
	1.Valid AMTEC test report of the Multi-Pass Rice Mill of the same model as to basic parts and major components and the results should conform to PNS/BAFS PABES 303:2020 Postharvest machinery- Rice mill Specifications.		
	2. Valid Permit To Operate (PTO) or certification from Bureau of Agricultural and Fisheries Engineering (BAFE) of their application for PTO.		
	3. Process flow layout and schematic diagram including 3D perspective of illustration of the Rice Milling System drawn in A3 size paper duly signed and sealed by a licensed Agricultural and Bio-systems Engineer for post-qualification evaluation.		

	4. Electrical plan and layout duly signed and sealed by a licensed Professional Electrical Engineer as a condition for Payment. - From transformer to main switch to control panel to machine components.		
	5. Brochures of the offered Equipment (written in English/Filipino)		
	6. Copy of Equipment Manufacturer's Manual with Parts List of each ricemill system component and all accessories such as pre-cleaner, hulling and husk aspiration system, abrasive whitener, friction polisher, mist polisher color sorter, length grader and blending tank, packaging machine, and bucket elevator written in English or Filipino Vernacular to be presented during post qualification evaluation.		
	CERTIFICATIONS:		
	1. Certification from the bidder that the rice milling unit and each component are branded and have part numbers.		
	2. National Agricultural and Fisheries Machinery Assemblers, Manufacturers, Importers, Distributors and Dealers Accreditation and Classification (NAMDAC) Certification for the Bidder.		
	3. Provision of after sales services:		
	- Certification of two (2) years warranty for services and parts of the rice milling system and other components		
	- Valid Certificate of Distributorship/ Authority to sell, and Commitment to Supply directly issued by the manufacturer		
	-Certification that the supplier will conduct at least 40 hours of training on the proper handling, operation and maintenance of the unit for all NFA MPOs and Engineers.		
	-Manufacturer's, distributor's or bidder's certification that the proposed Ricemill brand have been sold in the Philippine market for the last thirty (30) years from the date of bid opening, accompanied or duly supported by documentary proof. The documentary proof must be verifiable through phone call, ocular inspection or both. a) Record of sales (Official receipt); or, b) Bill of lading, and/or other similar records indicating shipment or delivery of the grain dryer brand to the Philippines (if applicable)		
	4. Certification of guaranteed spare parts availability for at least five (5) years.		

	5. Certification of Very Satisfactory Performance of the Multi-Stage Rice Mill being offered as to: i) Machinery Performance; ii) Machinery Durability; and, iii) Availability of Parts and Service. Who may issue: - The Bidder shall provide list of five (5) customers/clients within the Philippines with addresses and contact numbers, and a certification from at least one (1) customer/client. - Any government or private Agency/Company within the Philippines, duly signed by the Current Head of agency. Excluding the following: - Bidder's Dealers and Authorized Service Centers		
Warranty: Shall be provided to parts and services within Three (3) years after the date of acceptance of the unit by the end-user, except on fast moving and easy to wear parts such as fan belts and grain buckets. With two (2) Preventive Maintenance during warranty period. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service			
Delivery Period: Delivery within **one hundred eighty (180) calendar days** from receipt of Notice to Proceed; Installation, testing, and commissioning is within **one hundred twenty (120) calendar days** from successful delivery.			
Place of Delivery: **Various NFA Warehouses in Region VI:** i. NFA Compound, Quintin Salas, Jaro, Iloilo City ii. NFA Compound, Poblacion 5, Dueñas, Iloilo City iii. NFA Compound, PD Monfort, Dumangas, Iloilo City			
Payment Terms: 1. Advanced payment of **15 %** of the contract price upon submission of necessary documents for Advanced Payment. 2. Progress payment of the remaining 85% of the contract amount upon each milestone, as follows: a. Delivery of Main Equipment i. Grain Dryer (**25%** of contract amount) ii. Ricemill (**25%** of contract amount) b. Installation i. Grain Dryer (**10%** of contract amount) ii. Ricemill (**15%** of contract amount) c. Testing & Commissioning of Grain Dryer, Ricemill, and other works (**10%** of the contract amount)			

In compliance with Republic Act No. 9184, Section 18, and the 2016 Revised Implementing Rules and Regulations, Section 18, brand names are only used because of compatibility with existing platforms or equipment which will maintain performance, functionality and useful life.

Prepared by (End-user):

_____

Evaluated by:

_____

Signature of Representative:

Name of Representative:

Position:

Company:

Address:

Telephone/ Fax:

Email:

BID FORM (TECHNICAL SPECIFICATIONS)

National Food Authority - Central Office

PURCHASE REQUEST NUMBER:

END-USER:

ITEM / LOT INFORMATION

Item / Lot Description:	**Lot 2: Supply, Delivery, Installation, Testing, and Commissioning of Ricemill and Grain Dryer for the NFA Modernized Warehouses in Support to Buffer Stocking Program at Various NFA Compounds in Region XII**
Quantity:	**Two (2)**
Unit of Measurement (unit/pcs/lot):	**Items**
Enumeration / Inclusions:	**Item 1: Grain Dryer** **Item 2: Ricemill**

REQUIRED SPECIFICATIONS	**OFFERED SPECIFICATIONS** (write down detailed offered specifications)	**REFERENCES** (include supporting documents) **(attach brochure / technical data / website, etc.)**
ITEM 1: 120 MT-Capacity Mechanical Grain Dryer		
I. General Specification		
1. Mechanical Grain Dryer Features		
The mechanical grain drying facility shall be housed inside the warehouse for protection from inclement weather and to keep the quality of paddy being processed.		
Input Capacity: at least 120 MT of Fresh Paddy Per Day		
Wet or fresh paddy can be continuously received and pre-dried while the Batch Type Recirculating Dryer (BRD) is in operation.		
Pre-dried paddy shall be finally dried to 14% MC in the BRD to have a uniformly dried output when the BRD is available.		
The fresh paddy with moisture content as high as 30% shall be dumped at the receiving pit, and then moved to the paddy cleaner.		
The pre-cleaned paddy grains are then conveyed to wet paddy tank to reduce the moisture content using aeration system in to the wet paddy tank.		
The pre-dried grain should pass the hopper scale before it is conveyed to the batch type recirculating dryer for final drying down to 12% to 13% MC.		
The dried paddy shall then pass through the hopper scale before it shall be conveyed into the dried paddy tank for bagging or loading to silos for bulk storage.		
The above system/approach will greatly reduce post-harvest losses, especially during days of continuous rain which coincide with the period of abundant harvest. Wet paddy spoil rapidly if not pre-dried immediately within the day.		
II. Major Components and Ancillary Equipment:		

1. Receiving and Pre-cleaning Section Two (2) sets of grain receiving and pre-cleaning system shall be installed that are capable in receiving paddy in bulk or accept grains loaded in bulk truck and bagged paddy loaded in trucks or in small lots.			
1.1 Two (2) Units Dumping Pit/Receiving Hopper			
	Both receiving hoppers are capable to receive paddy in bulk		
	The paddy receiving hopper is flush-mounted in the roadway.		
	Provided with concrete ramp capable of supporting fully loaded trucks with gross weight of 60 tons.		
	It is made of all steel construction with angle bar stiffeners and supports.		
	Provided with 35 mm round bar grating and a removable checkered plate cover for safety and protection when not in use.		
	Provided with dust suction hood		
	Designed to discharge gain at 30 TPH minimum		
	Provided with manual intake gate to regulate grain flow		
	Size of the hopper shall be based on Manufacturer's design and standard		
1.2 In-line, Interval-type Single Kernel Moisture Measurement System			
	Continues data logging		
	Moisture content reading range: 11MC to 38 MC		
	With histogram and standard deviation features		
	Moisture threshold feature with alarm		
	Real-Time online mobile apps monitoring capabilities or can be monitored from the control room		
	Cloud Storage: 5 years subscription		
1.3 Two (2) Units Paddy Cleaner with Aspirator			
	Minimum Capacity: 15 tph per unit		
	Minimum efficiency: 90%		
	It can remove empty paddy, small, medium and large size impurities.		
	Push button operation and control system with error indicator control		
1.4 Two (2) Units Fresh Paddy Tank			
	Capacity: 30 Tons per unit		
	Hopper Bottom for self-emptying of grains		
	Provided with Level Sensor		
	Auto-discharge/shutter control		
	Provided with individual aeration fans at the bottom of bin		
	Serves as temporary holding bin and/or tempering bins of grains		
	Able to circulate wet paddy when necessary		

1.5 One (1) Unit Automatic Hopper Scale/Flow Scale			
	Minimum Capacity: 30 TPH		
	High throughput Capacity and high weighing accuracy of +/- 0.1%, full scale		
	Data and operation of the equipment can be monitored in the control room		
2. Drying Section			
2.1 Four (4) Units Batch Recirculating Dryers (BRD)			
	Holding Capacity: 30 MT per unit		
	Drying Capacity: 120 TPB combined capacity per day		
	Provided with Automatic Temperature adjustment based on paddy moisture reading		
	Dryer feature should automatically stop when the desired moisture content reaches the set MC value		
	Each main blower of the dryer is equipped with a cyclofan.		
	Performance Criteria for the dryers: a. Moisture gradient: 2.0% max b. Drying rate: 0.6 - 1% /h c. Drying efficiency: 75% min d. Heating system efficiency: 50% min Biomass fuel, direct-fired e. Drying Loss/Spillage: 1.0% max f. Blower flow rate, cmm/kg (cfm/ton): Manufacturer's Standard g. Static pressure, mm H2O (in.H2O): Manufacturer's Standard		
	Product quality (Palay output) - Allowable difference between the laboratory analysis and dryer's performance a. Cracked grain: 3% increase, max b. Head rice: 5% decrease, max c. Hulled/damaged grain: 2% increase, max		
2.2 One (1) Unit Biomass Fed Furnace			
	Heat Transfer Classification: Either direct-fired or indirect-fired type heating system that can adequately supply the needed heat requirement of the dryers		
	Fuel feed type: Cyclonic type or Gravity type or step-grated type fuel feeding system		
	The furnace should conform to the performance requirement of PNS/PAES 242:2010 -Agricultural Machinery – Biomass Furnace – Specifications		
2.3 One (1) Unit Automatic Hopper Scale/Flow Scale			
	Minimum Capacity: 30 TPH		
	High throughput capacity and high weighing accuracy of +/- 0.1%, full scale.		
	Data and operation of the equipment can be monitored in the control room		
3. Bagging Section			
3.1 Two (2) Units Dried Paddy Tank			
	Common wall for two units		

	Capacity: 30 Tons per unit		
	Provided with level sensor		
	Discharge chutes are provided with manual and pneumatic slide gate with dust control system		
4. With manufacturer's, distributor's or bidder's certification that the proposed grain dryer brand, particularly its major components, would only be from a single brand			
III. Other Ancillary Equipment (Inclusion)			
1. Main Control Center			
	The drying facility shall be provided with air-conditioned control room that houses the main control panel and it will serve as office of the facility operator.		
	Walls shall be provided with fixed glass in order for the operator to monitor the drying operation		
	Grain movement and equipment operation are monitored and controlled in the control room		
	The operator can determine which bin is empty, partially or fully loaded and which equipment is operating through the corresponding pilot lights on the mimic flow diagram of the motor control system		
2. Electrical/Motor Control System			
	Provision inside the main control center of centralized electrical control panel using an integrated Programmable Logic Control (PLC) and Supervisory Control and Data Acquisition (SCADA), or equivalent technology and functionalities, that houses all related motor control components such as circuit breakers, magnetic contactors, alarm system, etc.		
	The control panel shall be provided with mimic flow chart where the running status and control of each dryer component is shown and represented by indicator lights.		
	With ammeter and voltmeter readout		
	Provided with on-off push button switch and individual circuit breaker for each motor		
	Provided with individual magnetic starter and overload protection for all electric motors		
	The drying plant equipment should be electrically inter-locked to facilitate operation and prevent human errors. However, in case of emergency or need to vary the sequence of operation, the interlock system can be by-passed by authorized personnel and any individual or set of equipment can be operated independent of the other.		
	All motors shall be (1) three-phase, (ii) 60 hz, and (iii) 440 volts, or as maybe appropriate for the given overall drying facility design.		

	All electrical wires, sub-feeders and feeder lines shall be in conduits and run through wire trays from electric motors to the motor control center		
	Pull boxes shall be provided for every branch circuit		
	An Emergency Manual Switch Button (EMSB) shall be provided for every motor/equipment near the working area for emergency shut-off to avoid accident. Rigid steel conduit shall be used from the motor/equipment to the EMSB		
	The drying plant shall be provided with **three (3) units distribution transformer** in bank to provide power for the facility's three-phase load		
	All needed electrical fixtures and accessories for primary metering to energize the facility as required by the electric cooperatives shall be included and shall be shouldered by the contractor. These include: i. Electric Meter ii. Current Transformer (CT) iii. Potential Transformer (PT) iv. Lightning Arrester v. Other necessary electrical fixtures and accessories		
3. One (1) Unit Diesel-Powered Emergency Power Generating Set			
	Provision of one (1) unit diesel power generating set (gen-set) which is solely dedicated to energize the whole drying facility		
	Gen-set must be able to provide stable and compatible power with the requirement of the whole drying facility including its ancillary equipment		
	Provided with automatic transfer switch (ATS) for smooth and easy operation during occurrence of power interruption from the local electric cooperative		
	Generator house shall be built to protect the generator set and electrical accessories from inclement weather		
4. Air Compressor Source			
	Provision of centralized compressed air room with line filters, air dryers, air tanks which is intended for the pneumatic systems		
5. Provision of grain conveying mechanisms such as bucket elevator and drag chain conveyor to integrate the different stages of drying.			
	Bucket elevator and drag chain conveyor should be provided with service ladder, platform, and catwalk to be used during the conduct of repair and maintenance		
6. Provision of control tank with pneumatic control system			

	Control tank with pneumatic control system in all stages to synchronize grain flow and to avoid grain clogging		
	Pneumatic control system of grain diverters, control tank discharge shutters can be remotely controlled in the control room		
7. Provision of downspout with two-way valve, or three-way valve if necessary.			
	Attached to bucket elevator to divert grain flow from one stage to another stage of the process		
8. Dust Room and Dust Collection System			
	All sections where dust can be generated or emitted due to flowing or moving grains shall be fitted with dust-collection system		
	With Cyclone type separator with airlock valve, or dust filter, or combination of both		
	With centralized collecting conveyor for dryer cleaning fan and cyclofan impurities		
	Sheet metal ducting and connectors shall be airtight		
9. All drying air ducting and manifolds shall be stainless steel and round formed			
10. It shall be provided with features for access to parts during (1) repair, (2) maintenance, and (3) operation such as ladder, service platform, and catwalk.			
11. Biomass Furnace Room			
	Biomass-fed furnace shall be installed in the furnace room		
	Husk bin with auto feed control should be provided in each furnace for ease of loading fuel		
12. Spare parts storage room shall also be provided for safe keeping of supplies needed during the conduct of repair and maintenance			
13. The mechanical drying facility components and ancillaries shall be laid out in a manner that adequate working spaces are provided for every stage of the operating process			
IV. Additional Requirements			
	1. The dried grain shall have no additional discoloration, no traces of unburned fuel or ashes on grain surface and no fermented or musty odor		
	2. The dryer shall be provided with thermocouple and digital temperature controller to measure the actual air temperature entering the grain mass. The dryer is in sync with the furnace		
	3. The dryer shall be provided with automatic moisture control to measure the actual grain MC and to prevent over drying of grains. Moisture control is in sync with the dryer operation. Automatic shut-off of the dryer once the desired grain moisture content is reached		
	4. Adequate provision for fire control		

5. Adequate protection for all moving parts		
6. The noise emitted by the machineries shall not exceed 92 dB		
7. Mechanical grain dryer and its ancillaries shall be free from defects that may be detrimental to its use and shall be free from sharp edges and surfaces that may hurt the operator		
7.1 All metal parts should be machine bend, pressed and cut to avoid rough surfaces and all rough surfaces should be machine finished and smoothed		
7.2 The warning notice shall be in accordance with PNS/PAES 101:2000 – Agricultural Machinery – Technical Means for Ensuring Safety – General		
8. Each component of the drying facility including its ancillaries must be compatible		
8.1 One brand or similarity of brand of all major component is not necessary for as long as the machine capacity and efficiency are compatible with each part and components		
9. The drying facility and its ancillary shall be designed and built to be strong and sturdy to withstand seismic zone 4 earthquake		
10. Main parts of the mechanical dryer which has direct contact with the grain should be made of stainless steel. All other components and parts of the mechanical dryer should be pre-treated and powder coated		
11. The construction shall be rigid and durable without major breakdown of its components within one (1) year of operation		
12. Warranty shall be provided to parts and services within Three (3) years after the date of acceptance of the unit by the end-user, except on fast moving and easy to wear parts such as fan belts and grain buckets. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service		
13. Every mechanical grain dryer unit and its key component shall be provided with basic tools, factory standard, operation and parts manual containing full information on parts list, method of installation and operation. The manual which conforms to PNS/PAES 102:2000 – Agricultural Machinery – Operator's Manual – Content and Presentation shall be provided		
14. Contractor/Manufacturer/Dealer shall provide operation and maintenance training and after-sales service		
Comprehensive training to NFA personnel with the following topics:		
a) Basic fundamental and principle of Grain Drying		

b) System operation and management of Drying Plant		
c) Operation, trouble shooting, repair and maintenance of Drying facility		
15. The mechanical grain dryer shall be tested in accordance with PNS/PAES 202:2015 – Agricultural Machinery – Heated-Air Mechanical Grain Dryer – Methods of Test.		
16. Each component of the drying facility including its ancillary equipment shall be marked at a prominent place with the information below. The following markings and labeling shall conform to PNS/PAES 201:2015:		
Registered trademark of the manufacturer		
Name and address of the manufacturer		
Name and address of the importer/distributor		
Country of manufacture/ Made in the Philippines		
Type; Serial number		
Load capacity, metric tons		
Rated power/voltage/ frequency/ phase, in metric units		
Shipping information		
Dry weight in metric units		
Dimensions in metric units		
Safety/Precautionary markings		
17. Standard set of heavy duty tools appropriate for the conduct of repair and maintenance of the facility which is made of tempered steel and chrome vanadium		
a. One (1) set socket wrench (No. 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 27, 30, 32, minimum)		
b. One (1) set combination wrench (open and box, 10 pcs-size appropriate to the rice milling system)		
c. Adjustable wrench: 300 mm, minimum		
d. Electrical plier: 200 mm, minimum		
e. Screwdriver: Philips and flat head, 300mm, minimum		
f. Grease gun: 250mm cylinder length, minimum		
g. Mechanical pliers: 200mm, minimum		
h. Heavy duty toolbox and roll up tools holder that could accommodate those required tools		
i. Machinery Testing Equipment i. Tachometer ii. Digital Thermometer iii. Airflow meter		
j. Vacuum cleaner		

	Rated input power: 1,000 W, minimum Maximum air flow: 3 cubic meter/minute Capacity: 30 liter, minimum Power cord: 5m, minimum Features: high capacity and high suction		
	18. All component and drying system shall be compliant with PNS/BAFS FABES 201:2015 AMTEC and NFA tested upon installation at contractor's cost for each units as condition for acceptance and final payment		
	19. Process flow layout and schematic diagram of the drying system duly signed and sealed by Licensed Agricultural Engineer.		
	20. Electrical plan and layout duly signed and sealed by a licensed Electrical Engineer as a condition for payment - From transformer to main switch to control panel to machine components.		
	21. Factory Acceptance Test (FAT) prior to delivery of items		
	22. Provision and Installation of 80-tons Capacity Pitless Type Electronic Truckscale with Truckscale House		
	- Please see attached Specifications		
	23. Inventory CCTV system		
	The CCTV system shall improve inventory accuracy, enhance security and optimize operations. It consists of an integrated cameras and sensors to monitor inventory movement and status, providing real-time insight. Creating a digital "eye" on inventory. CCTV System shall provide a full coverage of the internal space of the warehouse, with clear views of the inventory and personnel within the premises.		
Warranty: Shall be provided to parts and services within Three (3) years after the date of acceptance of the unit by the end-user, except on fast moving and easy to wear parts such as fan belts and grain buckets. With two (2) Preventive Maintenance during warranty period. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service			
Delivery Period: Delivery within **one hundred fifty (150) calendar days** from receipt of Notice to Proceed; Installation, test, and commissioning is within **one hundred fifty (150) calendar days** from succesful delivery.			
Place of Delivery: **Various NFA Warehouses in Region XII:** i. NFA Compound, Brgy. Dansuli, Isulan, Sultan Kudarat ii. NFA Compound, Brgy. Poblacion, Kidapawan City, North Cotabato iii. NFA Compound, Brgy. Kilada, Matalam, North Cotabato			

Payment Terms: 1. Advanced payment of **15 %** of the contract price upon submission of necessary documents for Advanced Payment. 2. Progress payment of the remaining 85% of the contract amount upon each milestone, as follows: a. Delivery of Main Equipment i. Grain Dryer (**25%** of contract amount) ii. Ricemill (**25%** of contract amount) b. Installation i. Grain Dryer (**10%** of contract amount) ii. Ricemill (**15%** of contract amount) c. Testing & Commissioning of Grain Dryer, Ricemill, and other works (**10%** of the contract amount)		

In compliance with Republic Act No. 9184, Section 18, and the 2016 Revised Implementing Rules and Regulations, Section 18, brand names are only used because of compatibility with existing platforms or equipment which will maintain performance, functionality and useful life.

Prepared by (End-user):

_____

Evaluated by:

_____

Signature of Representative:

Name of Representative:

Position:

Company:

Address:

Telephone/ Fax:

Email:

BID FORM (TECHNICAL SPECIFICATIONS)

National Food Authority - Central Office

PURCHASE REQUEST NUMBER:

END-USER:

ITEM / LOT INFORMATION

Item / Lot Description:	**Lot 2: Supply, Delivery, Installation, Testing, and Commissioning of Ricemill and Grain Dryer for the NFA Modernized Warehouses in Support to Buffer Stocking Program at Various NFA Compounds in Region XII**
Quantity:	**Two (2)**
Unit of Measurement (unit/pcs/lot):	**Items**
Enumeration / Inclusions:	**Item 1: Grain Dryer** **Item 2: Ricemill**

	REQUIRED SPECIFICATIONS	**OFFERED SPECIFICATIONS** (write down detailed offered specifications)	**REFERENCES** (include supporting documents) **(attach brochure / technical data / website, etc.)**
ITEM 2: 8 - 10 TPH CAPACITY RICEMILL			
I. General Specifications			
	1. Ricemill features		
	Input Capacity: 8 - 10 metric tons per hour (tph)		
	Designed to process raw paddy into a high-quality polished rice with mechanisms for objective means of setting milling pressures on the grain		
	Operation: Sophisticated but easy		
	Automated adjustments on machine components as to: - Feed rate - Rubber roll clearance - Paddy separator bed inclination		
	Sensing Gauges for the following components for identification of current load on motor drives and with indication on operating pressure on the grain: - Abrasive whitener - Friction polisher - Mist polisher		
	2. Follows the prescribed milling procedure below:		
	a. At the start of milling operation, dry paddy is fed into the **intake pit** and conveyed to the **millday bin** to prepare the desired volume of input for the continuous milling activity.		
	b. Then from the mill day bin, grain is moved to the the **pre-cleaner** to remove impurities such as straw, chaff and empty grains.		
	c. From the pre-cleaner, paddy is conveyed to the **destoner** to remove particles such as small stones, mud balls and other impurities.		

	d. The pre-cleaned paddy is deposited in the **paddy collection bin** before it subsequently conveyed to the **rubber roll type dehuller**. Attached below the dehuller is the **husk aspirator/separator** which removed the rice hull after dehulling.		
	e. From the dehuller, the grain output moves to the **paddy separator** to separate unhulled paddy from the brown rice.		
	f. Unhulled paddy is returned to the dehuller while the brown rice moves to the **length grader** to sort grains accordingly.		
	g. Then sorted brown rice moves to the **collection bins**.		
	h. From the bins, the brown rice moves to the **1st stage (abrasive) whitener**.		
	i. Then partially milled rice moves to the **2nd stage (abrasive) whitener** then subsequent polishing shall take place using **friction type polisher**.		
	j. Rice bran is removed from the rice grain during the whitening and polishing process.		
	k. Milled rice is moved to the **sifter** (brewer rice removed by the sifter).		
	l. Then milled rice is moved to the **optical/color sorter** to remove damaged and discolored kernels as desired.		
	m. Then milled rice is moved to the **mist polisher**.		
	n. The mist-polished rice is moved to the **length grader** to sort the rice grains according to sizes (where head rice is moved to **head rice collection bin** while broken rice is moved to the **broken rice collection bin**)		
	o. Rice grading can be pre-selected in the **blending station** where desired proportion of head rice and broken rice can be mixed.		
	p. After blending, the graded rice is move to **automatic packing machine** to pack the desired weight/package sizes (from 5kg to 50kg).		
	q. The well packed mist polished rice shall be issued to NFA storage warehouse or for distribution to intended NFA clienteles.		
II. Major Components			
	Component 1: Paddy Receiving & Pre-Cleaning Section		
	1.1 Paddy Millday Bin Paddy stored in the silos shall be moved to the mill day bin by top loading drag conveyor. It will serve as holding bin of paddy for milling. Paddy shall be moved to the feeding hopper using a bottom drag conveyor		
	Capacity: at least 40 MT		
	Auto discharge/shutter control and with level sensor		
	Hopper bottom for self flowing of grains		

	Circular or rectangular in shape which ever is appropriate for ease of operation.		
	It shall be made of all steel construction.		
	1.2 Paddy Receiving Hopper / Dumping Pit Large impurities shall be strained/removed on the steel grating. The grain discharge port shall be provided with flow control valve and can be calibrated to achieve the desired flow rate of 8 to 10tph. The valve can be closed or opened without altering the calibrated flow rate.		
	The paddy receiving hopper is made of all steel construction		
	Flush-mounted on concrete floor - w/ angle-bar stiffener support - 35mm bar grating.		
	With removable checkered plate cover for safety and protection when not in use		
	Provided with dust suction hood to control proliferation of dust inside the mill.		
	Minimum 10 tph discharge port.		
	1.3 Paddy Pre-cleaner From feeding hopper, paddy is moved to the paddy cleaner to remove small, medium and large size impurities, and lightweight impurities		
	Capacity: 8-10 TPH		
	Minimum output cleaning efficiency: 90%		
	Manual or Auto-feed control		
	Multi-stage cleaning that can remove small, medium and large size impurities, and lightweight impurities		
	With clog prevention mechanism		
	Provided with magnetic separator		
	1.4 One (1) Set Paddy De-stoner The machine separates particles by density. The machine will remove materials denser than paddy, such as stones, mud balls, and other small solid impurities..		
	Capacity: 8-10 tph		
	Manual or Auto-feed control		
	1.5 Bulk Weigher		
	With grain flow scale to monitor weight of cleaned paddy prior to dehulling.		
	Capacity: 20TPH		
	Touch pad control system		
	Component 2: Dehulling Section		
	2.1 Paddy Tank It will serve as holding bin of pre-cleaned paddy for dehulling.		
	Capacity: 20MT		
	Auto discharge/shutter control and with level sensor		
	Inclination of the discharge chute compatible to the angle of repose of the paddy for self-flowing of paddy.		

	Provision of ladder and railings for inspection, repair and maintenance of the bin		
	The bin should be painted with rust-proofing primer and with final paint color		
	It shall be made of all steel materials which are brand new		
	2.2 Three (3) sets De-Huller with Husk Aspirator - The three dehullers are use to remove husk of the paddy grain. The combined capacity of the dehullers should be enough to de-husk the paddy coming from the millday bin and the return of un-hulled paddy from the paddy separator. - The husk aspirator is added to separate and blow the husk out of the brown rice and paddy.		
	With combined capacity of 8-10 tph		
	Rubber roll type huller		
	Minimum hulling efficiency: 79%.		
	With automatic and pneumatic adjustment and control of rollers.		
	With magnetic separator to remove ferrous particle from the product		
	With husk aspirator: Rice hull discharge to rice hull tank via drag chain conveyor and bucket elevator		
	Fitted with dust collection system		
	Touch pad operation and electronic control system and with error indicator.		
	Component 3: Separation Section		
	3.1 One (1) set Paddy Separator It separates un-hulled paddy from brown rice. The un-hulled paddy is returned to the De-hulling machine while the brown rice is moved to the brown rice tank in preparation for whitening.		
	Capacity: 7TPH		
	With return elevator to the hulling mechanism and paddy separator		
	With magnetic separator to remove ferrous particle from the product		
	Push button operation and control system or better with error indicator		
	Multi-layer, indented tray		
	Adjustable tray inclination		
	Component 4: Whitening and Polishing Section		
	4.1 Brown Rice Tank It will serve as temporary holding bin of brown rice for whitening / polishing		
	Capacity: 20 MT		
	Auto discharge/shutter control and with level sensors.		

	4.2 Whitening and Polishing Section Whitening or polishing is the process of removing the bran layer and the germ from the kernel through either abrasive or friction polishers. To reduce the number of broken grains during the whitening process, rice is normally passed through two to three whitening machines connected in series.		
	Capacity: 5-6TPH		
	Manual or Auto feed control		
	Three (3) whiteners (gravity type)		
	Abrasive type or combination of abrasive and friction type whitener		
	With magnetic separator to remove ferrous particle from the product		
	With air cooling blowers to reduce rice temperature during processing		
	With negative pressure air wind net system for bran extraction		
	With analog or digital pressure meter and ammeter		
	4.2 Sifter Separates brewer rice by oscillating or vibratory sifter		
	Capacity: 5-6TPH		
	With brewers removing device		
	Oscillating tray-type sifter or a vibratory type		
	Push button operation and control System or better with error indicator		
	4.3 One (1) set Mist Polisher First pass. It is a friction type of whitening machine, which delivers a fine mist of water during the final whitening process. It is a process of mixing a fine mist of water with the dust retained on the whitened rice. The output improves the luster of rice without significantly reducing milling yield.		
	Push button operation and control System or better with error indicator		
	With magnetic filters		
	Fully Automatic with Sensors		
	4.4 Color Sorter A machine that is used to remove damaged and discolored kernels including particles other than white rice kernels.		
	Intelligent optical selector and sorting for rice and with color and defects profiling		
	Intelligent individual defect detection up to 99% (minimum) defect removal		
	Intelligent automation: optical sorter consistently adjust to the incoming product		
	LED lighting technology		
	Able to reject discolored and damaged kernel and eject impurities even during high capacity processing (6 TPH minimum)		

	Operation and control system: easy-to-use touch panel (with display that shows status and error messages)		
	With Infrared camera for glass removal		
	4.5 Length Grader and Rotary Sifter A machine that is used to separate grains into head rice, large and small broken rice, tips and brewers.		
	Capability to sort short, medium and long grains		
	Provision of inspection window		
	Transition pipes are equipped with sampling outlets (every stage)		
	Component 5: Blending and Mixing Section		
	5.1 Three (3) Sets Blending tank (Headrice tank, large broken tank and small broken tank)		
	Capacity per tank: 13 tons each		
	with three (3) automatic flow balancer / volumetric mixer		
	Works with any variety of rice		
	Pneumatically controlled proportioning gate with automatic closing in case of a power failure		
	Measurement system with an impact plate and electronic force transducer		
	5.2 One (1) set Mist Polisher Second pass. It is a friction type of whitening machine, which delivers a fine mist of water during the final whitening process. It is a process of mixing a fine mist of water with the dust retained on the whitened rice. The output improves the luster of rice without significantly reducing milling yield.		
	Push button operation and control System or better with error indicator		
	With magnetic filters		
	Full Automatic with Sensors.		
	Component 6: Bagging/Packaging Section		
	6.1 Two (2) Units Holding Bin/Tank		
	Capacity per tank: 8 tons each		
	Provided with two discharge ports integrated with two lines of milled rice packaging system.		
	Two lines shall be semi-automatic with manual bagging, with built in flow scale function that can accurately bag 5 to 50 kgs, including 10 and 25kgs.		
	With bag sewing machine and belt conveyor.		
	6.2 Rice Hull Compactor		
	Capacity: 60-100 Bales per hour		
	Bale weight: 20-30 kg per bale		
	It shall be used to compress rice husks into bales to reduce space for transport or storage.		
	6.4 Laboratory Equipment		

	6.4.1 One (1) Unit Grader		
	Dimensions : 19-23" x 14-18" x 16-20"		
	Weight : 30-40 lbs		
	Material : Aluminum, stainless steel, or brass		
	Timer : Digital		
	Indent Cylinder : Cylinder no. 12		
	Power Source : 220-240 V, 50/60Hz		
	OTHER REQUIREMENTS: Should include the following parts and features: - Variable speed control - Collection pan tilt adjustment with angle indication - With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.2 One (1) Unit Huller		
	Model / Type : Table Top / Rubber Roll Type		
	Hopper Capacity : 250 grams paddy sample (minimum)		
	Size of Rubber Roll : 35 mm x 100 mm (width x diameter) ±3mm		
	Hulling Capacity : 40 - 50 kilogram/hour		
	Power Source : 220-250V, 50-60 Hz		
	Motor Power : 0.50 - 0.75 H.P., Single Phase		
	Dimensions : 700 x 300 x 700 mm (L x W x H) (minimum)		
	Weight : 70 kilogram (maximum)		
	Hulling Efficiency : 75% in the first pass of the sample (minimum)		
	Other requirements -Must have a spare pair of rubber rolls -Must bear the following: a. Identification or trademark of the manufacturer b. Model and serial number c. Guarantee certificate or marks -With detachable husk collector -Easy to operate -Heavy duty / sturdy -Be able to provide consistent and accurate results -With transparent observation window to monitor the hulling operation		
	6.4.3 One (1) Unit Rice Polisher		
	Model / Type : Table Top / Abrasive		
	Hopper Capacity : 200 grams brown rice (minimum)		

	Polishing Capacity : 10 kilogram/hour (minimum)		
	Power Source : 220-250V, 50-60 Hz		
	Motor Power : 0.50 – 0.75 H.P., Single Phase		
	Dimensions : 400 x 250 x 300 mm (L x W x H) (minimum)		
	Weight : 60 kilogram (maximum)		
	Grit Size of Abrasion Roller : No. 36 or 40		
	Timer Setting : Automatic; adjustable in seconds		
	Polishing Efficiency : 79% if WMR; 81% if RMR (minimum)		
	Other requirements - Must have one spare abrasive roller - Must bear the following: a. Identification or trademark of the manufacturer b. Model and serial number c. Guarantee certificate or marks - Easy to operate - Heavy duty/sturdy - Capable of processing rice samples to different milling degrees		
	6.4.4 One (1) Unit Ductless Fume Hood		
	Dimension (W x D x H) : Interior - 700-950 x 500-700 x 600-850 cm Exterior - 800-1000 x 500-800 x 900-1300 cm		
	Weight : 100-150 kg		
	Blower : Centrifugal blower		
	Volume of Air Treated : 320 ± 10 m3/h		
	Voltage / Frequency : 230 Vac, 50/60 Hz		
	Material : Frame - Powder-coated steel Glass – Tempered or laminated safety glass		
	Type of Filter : Organics - Gases or vapors		
	Other Requirements Should include the following features: -User's manual -Easy to install replaceable filters -Includes universal electric outlet -With light source -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.5 One (1) Unit Digital Thickness Gauge		
	Dimensions (W x H) : 90-120 x 140-160 mm		
	Weight : 250-450 g		
	Operating Temperature : 0-40°C		
	Gauge Type : Digital		
	Digital : LED or LCD		
	Range : 0-25 mm		
	Accuracy : ± 0.001		

	Resolution : 0.01 mm		
	Measuring Force : 1.5 less N		
	Units : Metric		
	Power Source : Battery Operated		
	Other Requirements Should include the following parts and features: -Anvil with groove -User's manual -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance) -Certificate of Calibration from DOST or any accredited Calibration Laboratory.		
	6.4.6 One (1) Unit Tyler Sieve		
	Dimensions (H x D) : 2-5 x 12"		
	Weight : 100-500 g per piece		
	Material : Stainless Steel		
	Mesh Size : U.S.A. mesh no. 10-20		
	Other Requirements: Should include the following features: - Tyler Sieve U.S. mesh no. 10,12,14,16,18 and 20 - User's Manual - With at least one (1) year warranty and after-sales services (e.g. preventive maintenance) - Certificate of Calibration from any accredited Calibration Laboratory		
	6.4.7 One (1) Unit Rice Sieve		
	SIEVE		
	Material : Stainless steel (SS) or Aluminum Gauge 20 (0.035" / 0.89 mm)		
	Perforation : 5.5/64" round or 2.18 mm		
	Frame Diameter : 13.0 - 13.5" or 330 - 343 mm (upper rim) 12.0 - 12.5" or 304 - 318 mm (lower rim)		
	BOTTOM PAN (RECEIVING PAN): Should match the sieve and could easily be removed		
	Material : Stainless steel (SS) or Aluminum Gauge 20 (0.035" / 0.89 mm)		
	Diamter : 13.0 - 13.5" or 330 - 343 mm		
	Height : 2.5 - 3.0" deep or 64.0 - 76.0 mm		
	Other requirements -Heavy duty construction -Smooth surface on joints -Corrosion resistant -Ease of cleaning		
	6.4.8 Two (2) Units Indented Plate		
	Capacity : 100-300 g		
	Material : Stainless steel		

	Indent Size : 4.5 - 5.5 mm		
	Indent Distance : 5-12 mm (center-to-center)		
	Dimensions (L x W) : 30-35 cm x 25-30 cm		
	Other requirements -Heavy duty construction -Smooth surface on joints -Corrosion resistant - Ease of cleaning		
	6.4.9 Two (2) Units Triangular Pan		
	Dimensions (W x H) : 10-13 x 10-13 x 2.5-6"		
	Weight : 1-2.5 lbs		
	Material : Plastic		
	Other Requirements Should include the following features: - Molded plastic - With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.10 One (1) box Disposable Petri Dishes		
	With 480 units in one (1) box		
	Diameter : 90 mm		
	Height : 10-20 mm		
	Metarial : Polystyrene		
	Lid Type : Non-vented		
	Sterilization : Sterile		
	Other Requirements Should include the following features: -With transparent lid -Perfectly flat and smooth surface		
	6.4.11 Ten (10) Units Forceps		
	Length : 5.5”		
	Jaw Curvature : Curved		
	Working Surface : Serrated		
	Handle : Finger rings		
	Material : Stainless steel		
	Usage : Reusable		
	6.4.12 One (1) Unit Chiller (Two-door)		
	Capacity : 14 cu. ft.		
	Dimensions (L x W x H) : 57-61 x 65-69 x 206-210 cm.		
	Technology Type : Inverter		
	Wattage : 190 watts		
	Shelves : Four (4) adjustable coated wire shelves		
	Temperature : ± 2 °C to +8 °C		
	Plug Type : Type A – 2 Flat prong plug		

	Other Requirements -With 7-level temperature control, fan-cooled system, adjusted leveling feet, double glass door with recessed handle and key lock. -At least one (1) year warranty for parts and services		
	6.4.13 One (1) Unit Portable Rice Mill		
	Capacity : 150 – 180 g		
	Husking Rate : 99%, minimum		
	Weight : 20 kg, maximum		
	Time Setting : Digital		
	Voltage : AC 220 V		
	Surface Material : Hard plastic		
	Feed Hopper / Bucket : Stainless steel		
	Other Requirements -With brochures and user manual -Ease of cleaning -Heavy duty		
	6.4.14 One (1) Unit Laboratory Sample Divider		
	Material : Stainless steel		
	Number of Chutes : 14		
	Width of Chutes : 3/8” (9.50 mm) ±5%		
	Sample Pans : 4		
	Hopper Size : 8” x 6-3/4” (203 mm x 171 mm) ±5%		
	Other requirements -Heavy duty construction -Smooth surface on joints -Corrosion resistant -Ease of cleaning		
	6.4.15 One (1) Unit Top Loading Balance		
	Capacity : 2,200 g		
	Weighing Units : Gram (g) and Kilogram (kg)		
	Linearity : ± 0.02 g		
	Readability : 0.01 g		
	Repeatability : 0.01 g		
	Adjustment : Internal		
	External Calibration : 2 kg, F1		
	Leveling : Manual		
	Stabilization Time : < 0.9 s		
	Data Interface : RS232; USB – C		
	Dimensions (WxDxH): 190-220 x 310-330 x 70-100 mm		
	Display : LCD / LED Display		
	Language : English		
	Power Requirements : 100-240 VAC, ± 10%, 50-60 Hz, 0.2 A		

	Other Requirements Should include the following: -One (1) unit Data Printer -Ribbon cartridge: exchangeable, black ink -Paper roll -AC adapter -With calibration certificate from a PAB-accredited calibration laboratory; and -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.16 One (1) Unit Laboratory Working Table		
	Dimensions (WxDxH) : 230-250 x 140-160 x 85-95 cm		
	Material : Granite		
	Frame : Coated stainless steel		
	Weight capacity : 150-250 kg		
	Drawer : 15-20 cm deep per compartment, recessed handles		
	Utility : Built-in retractable outlet		
	Other Requirements -Should include the following: -Rounded edge -Cable management tray for power outlet -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.17 One (1) Unit Analytical Balance		
	Capacity : 100-300 g		
	Weighing Units : Gram (g) or milligram (mg)		
	Linearity : ± 0.02 mg		
	Readability : 0.0001 g or 0.1 mg		
	Repeatability : ± 0.01 mg		
	Adjustment : Internal		
	External Calibration : 200-300 g, F1		
	Leveling : Manual		
	Stabilization Time : < 3 s		
	Data Interface : RS232; USB – C		
	Dimensions (WxDxH): 190-250 x 300-400 x 300-450 mm		
	Draft Shield : Anti-static glass shield with sliding doors, minimum 3 doors		
	Display : LCD / LED Display		
	Language : English		
	Power Requirements : 100-240 VAC, ± 10%, 50-60 Hz, 0.2 A		

	Other Requirements Should include the following: -One (1) unit Data Printer -Ribbon cartridge: exchangeable, black ink, and paper roll -AC adapter -With calibration certificate from a PAB-accredited calibration laboratory; and -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.18 Ten (10) Units Temperature and Humidity Data Logger		
	Dimension (L x W x H) : 80-100 x 90-120 x 15-40 mm		
	Weight : 100-200 g		
	Measurement Parameter : Temperature and humidity		
	Measuring Range : -30-65 °C and 0-100% RH		
	Accuracy : ± 1 °C and ± 4 RH		
	Material : ABS		
	Resolution : 0.1 °C and 0.1% RH		
	Power Source : Battery operated		
	Communication Interface : Micro USB / Type C		
	Display : LED / LCD		
	Other Requirements Should include the following features: -Waterproof -Easy to install -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.19 One (1) Unit Magnifying Lens with Stand & Light Source		
	Light Source : LED		
	Lens Configuration : Single		
	Material : Lens/optical glass, Strut/brass (chromium plating) Shaft/brass (black plating)		
	Power supply : DC12V		
	Dimension : Body/90 x 250 x 140mm Base/80 x 100 x 6mm Strut/ϕ19 x 370mm Shaft/ϕ13 x 160mm ± 20 mm per part		
	Weight : 500-700 g		
	Magnification : 2.0-3.0 x		
	Lens diameter (ϕmm) : 45-55		
	Operation distance : 150 mm		

	Other Requirements Should include the following features: -Includes AC adapter -User's manual -The lens unit comes with angle adjustment joint -Shaft can be moved up and down, back and forth by adjusting nut -With at least one (1) year warranty and after-sales services (e.g. preventive maintenance)		
	6.4.20 One (1) Unit Refrigerator		
	Capacity : 10 cu. ft.		
	Dimensions (L x W x H) : 59-61 x 54-56 x 166-168 cm.		
	Technology Type : HD Inverter		
	Wattage : 130 watts		
	Refrigerant Type : R600A Refrigerant		
	Shelves Type : Two (2) tempered glass shelves		
	Plug Type : Type A – 2 Flat prong plug		
	Other Requirements -Independent Temperature Control -At least one (1) year warranty for parts and services		
	6.5 Inventory CCTV System		
	The CCTV system shall improve inventory accuracy, enhance security, and optimize operations. It consists of an integrated cameras and sensors to monitor inventory movement and status, providing real-time insights. Creating a digital "eye" on inventory		
With manufacturer's, distributor's or bidder's certification that the proposed rice mill brand, particularly its major components, would only be from a single brand			
III. Auxiliary Components			
	1. Grain bucket Elevators		
	a. Shall be provided in all appropriate components of the ricemill to transport grains from one machine to another machine.		
	b. Capacities must be sufficient/compatible to the rated capacities of each machine.		
	c. Buckets for paddy shall be made from stainless steel (at least 304 grade) while buckets for brown rice and milled rice shall be made of heavy duty food grade plastic cups.		
	d. Elevator leg material must be of appropriate standard thickness to withstand a seizmic zone 4 earthquake.		

	e. Provision of downspout with two-way valve, or three-way valve if necessary, attached to bucket elevator to divert grain flow from a certain stage of processing.		
	f. Installed with inspection port at the elevator leg and access port at the elevator booth for inspection and cleaning.		
	2. Ricehull Tank and Husk Collection System Integrated with Rice Hull Compactor		
	a) The ricehull tank shall be made of 2mm MS plate supported by angle/steel bars.		
	b) Rectangular tank with hopper bottom. Discharge chute is provided with pneumatic control gate/shutter for ease of operation.		
	c) WIth capacity to hold ricehull accumulated over an 8-hour ricemill operation.		
	d) Minimum height must be 5 meter from the ground to the lowest part of the discharge chute to accommodate large cargo trucks during unloading and hull disposal.		
	e) Inclination of the hoppered bottom/discharge chute should comply to the angle of repose of the rice hull (35 – 50 degrees) to achieve complete emptying of the tank.		
	f) Provision of service ladder and railings for the unloading of rice hull, repair and maintenance of the rice hull tank.		
	g) The rice hull bin should be painted with rust-proofing primer and with final paint color		
	h) Provision of appropriate rice hull compactor system to compress rice husks to bales to reduce space during transport or storage.		
	3. Dust Collection System		
	a) All sections where dust can be generated or emitted due to flowing or moving grains shall be fitted with dust-collection system (starting from the dumping or intake pit, mill day bin, pre-cleaner, de-stoner, huller, paddy separator, whitener, mist-polisher, color sorter, length grader, sifter, and grain elevator/conveyors)		
	b) With dust filter for dust and rice bran		
	c) With negative suction air wind net system		
	d) Sheet metal ducting		
	e) All connectors shall be airtight		
	4. Rice Bran Collection System		
	Collects bran generated at the whitener, polisher, sifter and mist polisher machines. It consists of dust collecting filter, bran suction blower, and air ducting.		
	5. Main Control Center		

	The rice mill shall be provided with appropriate air-conditioned control room that houses the main control panel and it will serve as office of the rice mill operator. Walls shall be provided with fixed glass window for the operator to monitor the milling operation. Shall be provided with two glass doors.		
	6. Electrical/Motor Control System		
	Provision inside the main control center of centralized electrical control panel using an integrated Programmable Logic Control (PLC) and Supervisory Control and Data Acquisition (SCADA) or equivalent technology and functionalities.		
	Automation system that houses all related motor control components such as circuit breakers, magnetic contactors and alarm system.		
	The control panel shall be provided with mimic flow chart where the running status and control of each milling component is shown and represented by pilot lights.		
	With interlocking system and emergency button.		
	With individual magnetic starter and overload protection for all electric motors.		
	All motors shall be 3 phase, 60 hz,220 or 440 volts or as maybe appropriate for the given overall rice mill plant design.		
	All electrical wires, sub-feeders and feeder lines shall be in conduits and run through wire trays from electric motors to the motor control center.		
	Pull boxes shall be provided for every branch circuit.		
	An Emergency Manual Switch Button (ESMB) shall be provided for every motor/equipment near the working area for emergency shut-off to avoid accident.		
	Rigid steel conduit shall be used from the motor/equipment to the ESMB.		
	With **three (3) units distribution transformer** in bank to provide power for the rice mill's three-phase load.		
	All electrical related accessories such as but not limited to primary metering, current transformer, potential transformer, lightning arrester, etc. needed to energize the rice mill plant as required by the local electric cooperative shall be included in the rice mill plant.		
	All electrical works shall be in accordance with the Philippine Electrical Code and rules and regulation of the Bureau of Product and Standard.		

	The contractor shall provide all supplies, materials and equipment and perform all the works necessary for the complete execution of all electrical works.		
	7. Emergency Power Generating Set		
	Provision of **One (1) unit diesel stand-by power generating set (gen-set)** dedicated only to energize the whole rice mill facility.		
	The gen-set must provide sufficient electrical power that is compatible with the power requirement of the whole rice mill facility, including its ancillary equipment.		
	Provided with automatic transfer switch (ATS) for smooth and easy operation during occurrence of power interruption from the local electric cooperative.		
	A generator house shall be built to protect the gen-set and its electrical accessories from inclement weather.		
	8. Air Compressor Source		
	Centralized compressed air room with line filters, air dryers, air tanks and with variable permanent magnet motors.		
IV. Additional Requirements			
	1. The rice mill facility should conform to the following performance criteria:		
	Input Capacity: 8-10 tons per hour (tph)		
	Hulling efficiency: 79%, minimum		
	Milling recovery index: 0.95, minimum		
	Percent Head rice index: 0.90, minimum		
	Milling degree: Regular Grade to Premium Grade Milling		
	No. of paddy per kilogram milled rice: 15 Grains Maximum		
	2. The rice mill shall be designed and built rigidly, making it suitable for heavy-duty operation and it can withstand extreme weather conditions to which it can be exposed.		
	3. The construction shall be durable without major breakdown of the major components within the first year of operation. Warranty shall be provided for parts and services within one year or 1920 hours operation whichever comes first after the installation and acceptance of the procuring entity except on consumable parts such as rubber rolls, emery stones and screens. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service.		

	4. Major components of the rice milling system shall be installed on a rigid metal mounting platform with a minimum elevation of 2.5 meters from the warehouse floor. Only the receiving pit shall be built below ground and all other rice mill components and auxiliary equipment shall be installed on-floor level and on elevated platforms. Rice mill personnel can stand and walk freely under the platform to monitor the operation of the rice mill.		
	5. All equipment, bucket elevators, conveyors bins/tanks are serviceable with good accessibility around each machine (service platform, ladder and catwalk). There are provisions for lubrication of the sealed type bearings and belt tightening. When necessary, diverter or overflow valves are provided to divert the flow of grains.		
	6. Ease of access for maintenance, repair, and monitoring works for all components and parts of the rice mill. Path walks with markings/direction and borders. Stairs and risers fitted with safety railings.		
	7. Surge tank or control tank with level sensor and pneumatic-auto discharge shall be installed in such machine component of the rice mill.		
	8. All major components and parts of the rice mill should be painted powder coated or regular paint with rust-proofing primer and final paint color (minimum of 2 coatings)		
	9. Spare parts and tool room shall be built to safe keep all tools and inventory of easily worn out parts of the rice mill.		
	10. Special tools needed to fix critical machine component should be provided.		
	11. The following standard set of heavy duty tools appropriate for the conduct of repair and maintenance of the facility which is made of tempered steel and chrome vanadium should be provided;		
	a. One (1) set socket wrench (No. 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 27, 30, 32, minimum)		
	b. One (1) set combination wrench (open and box, 10 pcs-size appropriate to the rice milling system)		
	c. Adjustable wrench: 300 mm, minimum		
	d. Electrical plier: 200 mm, minimum		
	e. Screwdriver: Philips and flat head, 300mm, minimum		
	f. Grease gun: 250mm cylinder length, minimum		
	g. Mechanical pliers: 200mm, minimum		
	h. Heavy duty toolbox and roll up tools holder. Size that can accommodate the required tools		

	12. A copy of Equipment Manufacturer's Manual and Operator's Manual of rice milling unit, rice milling system, and auxiliary equipment written in English should be provided.		
	13. The Contractor/Manufacturer's/ Dealers shall provide comprehensive training to NFA personnel with the following topics:		
	a.Fundamentals of Rice milling		
	b.System operation and management of rice milling.		
	c.Operation, trouble shooting, repair and maintenance of Rice mill plant		
	14. The rice mill shall be tested in accordance with PNS/PAES 207:2015 – Agricultural Machinery –Rice mill – Methods of Test.		
	15. With the following markings and labeling, which shall conform with PNS/PAES 201:2015		
	Registered trademark of the manufacturer		
	Name and address of the manufacturer		
	Name and address of the importer/distributor		
	Country of manufacture/ Made in the Philippines		
	Type; Serial number		
	Load capacity, metric tons		
	Rated power/voltage/ frequency/ phase, in metric units		
	Shipping information		
	Dry weight in metric units		
	Dimensions in metric units		
	Safety/Precautionary markings		
	16. Factory acceptance test prior to delivery of items.		
	17. Supplier may include other features not mentioned but are necessary for efficient milling of rice.		
	18. The ricemill and its ancillary shall be designed and built to be strong and sturdy to withstand seismic zone 4 earthquake		
	Other Technical Requirement:		
	1.Valid AMTEC test report of the Multi-Pass Rice Mill of the same model as to basic parts and major components and the results should conform to PNS/BAFS PABES 303:2020 Postharvest machinery- Rice mill Specifications.		
	2. Valid Permit To Operate (PTO) or certification from Bureau of Agricultural and Fisheries Engineering (BAFE) of their application for PTO.		
	3. Process flow layout and schematic diagram including 3D perspective of illustration of the Rice Milling System drawn in A3 size paper duly signed and sealed by a licensed Agricultural and Bio-systems Engineer for post-qualification evaluation.		

	4. Electrical plan and layout duly signed and sealed by a licensed Professional Electrical Engineer as a condition for Payment. - From transformer to main switch to control panel to machine components.		
	5. Brochures of the offered Equipment (written in English/Filipino)		
	6. Copy of Equipment Manufacturer's Manual with Parts List of each ricemill system component and all accessories such as pre-cleaner, hulling and husk aspiration system, abrasive whitener, friction polisher, mist polisher color sorter, length grader and blending tank, packaging machine, and bucket elevator written in English or Filipino Vernacular to be presented during post qualification evaluation.		
	CERTIFICATIONS:		
	1. Certification from the bidder that the rice milling unit and each component are branded and have part numbers.		
	2. National Agricultural and Fisheries Machinery Assemblers, Manufacturers, Importers, Distributors and Dealers Accreditation and Classification (NAMDAC) Certification for the Bidder.		
	3. Provision of after sales services:		
	- Certification of two (2) years warranty for services and parts of the rice milling system and other components		
	- Valid Certificate of Distributorship/ Authority to sell, and Commitment to Supply directly issued by the manufacturer		
	-Certification that the supplier will conduct at least 40 hours of training on the proper handling, operation and maintenance of the unit for all NFA MPOs and Engineers.		
	-Manufacturer's, distributor's or bidder's certification that the proposed Ricemill brand have been sold in the Philippine market for the last thirty (30) years from the date of bid opening, accompanied or duly supported by documentary proof. The documentary proof must be verifiable through phone call, ocular inspection or both. a) Record of sales (Official receipt); or, b) Bill of lading, and/or other similar records indicating shipment or delivery of the grain dryer brand to the Philippines (if applicable)		
	4. Certification of guaranteed spare parts availability for at least five (5) years.		

	5. Certification of Very Satisfactory Performance of the Multi-Stage Rice Mill being offered as to: i) Machinery Performance; ii) Machinery Durability; and, iii) Availability of Parts and Service. Who may issue: - The Bidder shall provide list of five (5) customers/clients within the Philippines with addresses and contact numbers, and a certification from at least one (1) customer/client. - Any government or private Agency/Company within the Philippines, duly signed by the Current Head of agency. Excluding the following: - Bidder's Dealers and Authorized Service Centers		
Warranty: Shall be provided to parts and services within Three (3) years after the date of acceptance of the unit by the end-user, except on fast moving and easy to wear parts such as fan belts and grain buckets. With two (2) Preventive Maintenance during warranty period. General requirements of the warranty shall be in accordance with PNS/PAES 138:2004 – Agricultural Machinery – Guidelines on After Sales Service			
Delivery Period: Delivery within **one hundred eighty (180) calendar days** from receipt of Notice to Proceed; Installation, testing, and commissioning is within **one hundred twenty (120) calendar days** from successful delivery.			
Place of Delivery: **Various NFA Warehouses in Region XII:** i. NFA Compound, Brgy. Dansuli, Isulan, Sultan Kudarat ii. NFA Compound, Brgy. Poblacion, Kidapawan City, North Cotabato iii. NFA Compound, Brgy. Kilada, Matalam, North Cotabato			
Payment Terms: 1. Advanced payment of **15 %** of the contract price upon submission of necessary documents for Advanced Payment. 2. Progress payment of the remaining 85% of the contract amount upon each milestone, as follows: a. Delivery of Main Equipment i. Grain Dryer (**25%** of contract amount) ii. Ricemill (**25%** of contract amount) b. Installation i. Grain Dryer (**10%** of contract amount) ii. Ricemill (**15%** of contract amount) c. Testing & Commissioning of Grain Dryer, Ricemill, and other works (**10%** of the contract amount)			

In compliance with Republic Act No. 9184, Section 18, and the 2016 Revised Implementing Rules and Regulations, Section 18, brand names are only used because of compatibility with existing platforms or equipment which will maintain performance, functionality and useful life.

Prepared by (End-user):

_____

Evaluated by:

_____

Signature of Representative:

Name of Representative:

Position:

Company:

Address:

Telephone/ Fax:

Email:

TECHNICAL SPECIFICATIONS FOR THE SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF 80-TON CAPACITY PITLESS TYPE ELECTRONIC TRUCK SCALE

1. SCOPE OF WORK

1.1 Preparation of complete and detailed plans/drawings, for scale foundation, abutment pad, ramp, approach, and platform deck.

1.2 Supply and installation of transducers/load cells.

1.3 Supply and installation of the indicator system.

1.4 Supply and installation of the scale's platform deck.

1.5 Provision of structures such as foundation, walls, abutment pad, ramp, and utility lines.

1.6 Provision of a scale house and a separate roller weight shed according to NFA prescribed design with required utility lines.

1.7 Compaction of soil and conduct of Field Density Test (FDT) to assure at least 100% compaction (minimum) based on NFA requirement. All the required fees shall be borne by the Supplier.

1.8 Other related works, such as cutting of trees, dismantling/demolition of existing structure, etc. All expenses shall be on supplier's account.

1.9 Provision of technical and service manuals for the digital indicator.

1.10 Provision of local training for all NFA Branch Engineers and operators per truck scale awarded.

1.11 Supply/delivery/installation of Desktop Computer complete with truck scale to computer interfacing system and ticket printer. (Including operating and maintenance manuals showing the original connection, diagram, and layout: User's Guide, troubleshooting guide, and installation disks, and NFA vehicle management program)

1.12 Supply/delivery/installation of UPS, surge suppressor, AVR, air-conditioning unit, hydraulic jack, and pallet scale.

1.13 Supply/delivery of roller weights (10% of the scale's maximum capacity) with ITDI Certificate.

2. GENERAL REQUIREMENTS

2.1 The truck scale unit shall be of the electronic type. All materials/components used, including the design and construction, shall ensure good performance as follows under normal operating conditions;

2.1.1 Sustained/maintained accuracy of weight reading;

2.1.2 Satisfactory functioning/performance of operating parts.

2.1.3 Should be stable under normal conditions for at least six (6) months, without the necessity of adjustment.

2.1.4 All anchor bolts and nuts (for load cells) shall be made of stainless steel.

2.1.5 It shall be provided with an appropriate backup power supply to enable the whole system to operate in case of primary power failure.

2.2 The truck scale shall be provided with a complete truck scale to computer interfacing system.

2.2.1 The software shall be capable of transferring data from the indicator to the desktop computer.

2.2.2 It shall be provided with an installation disc for the truck scale program, complete with a driver and installation manual.

2.2.3 Truck scale and computer linkage shall be through an RS 232 (com1) connector.

2.2.4 The software should efficiently run on a desktop computer with the following specifications:

DESCRIPTION	
Processor	8 cores (minimum) or better
RAM	8 GB DDR5 or higher
Hard Drive	512 GB SSD
Monitor	18.5" min. Colored LCD/LED
Optical Drive	SATA DVD-ROM
Graphic Controller Type	PCI Expressx16-Plug-in card

Video Memory	6 GB (min), Dedicated
Serial Port	RS 232 (DB9)
USB Port (V3.0 or latest)	4 Rear, 2 Front (Six Ports)
Keyboard	USB
Mouse	USB Optical, with Mouse Pad
Warranty	1 year
Operating System	Pre-installed Windows 11 or higher (32-bit or 64-bit*)

Note: The following must likewise be provided by the supplier:

1) System Drivers
2) Licensed Operating System installer.
3) Truck scale program designed for NFA operation.

2.2.5 Specification for printer

- Dot Matrix, 9 pin, 80 columns
- Brand new with ribbon and manual
- Power cable and parallel connectors (LP T1)

2.3 The design of the scale and scale parts shall be in accordance with accepted engineering practice for the specified conditions of loading, including a definite allowance for shock loading and, in addition, a factor of safety consistent with good scale performance.

3. **CAPACITY/GRADUATION**

3.1 The truck scale must have a capacity of 80,000 kg or 80 tons.

3.2 The graduation must be 10 kg.

4. **INDICATIONS AND PRINTING REQUIREMENTS**

4.1 The indicating unit of the scale must be of the digital readout display.

4.2 Data display must show the weight in kg unit.

4.3 Specification of transducer/load cell:

4.3.1 Backlit LCD graphics display.

4.3.2 Enclosure should be stainless steel and IP69K rated.

4.3.3 With LED Remote Display connectivity.

4.4 Printing Type - Card/ticket (one original and two copies)

4.3.1 The printer output shall indicate the following items:

4.3.1.1 Date (Year/Month/Day)
4.3.1.2 Weighing Number/Consecutive Number/Commodity Code (Alpha and/or Numeric)
4.3.1.3 Gross Weight
4.3.1.4 Tare Weight
4.3.1.5 Net Weight
4.3.1.6 Time
4.3.1.7 Name of Customer
4.3.1.8 Plate Number of Vehicle

4.5 The indicating unit must have a standard response time of at least 0.50 second.

4.6 Its accuracy must not be affected by normal electromagnetic interference (EMI) and radio frequency interference (RFI).

4.7 It must be of solid-state circuitry and provided with circuit protection.

4.8 Weighing Software/Truck Scale Program/Data Recorder

4.7.1 The data recorder must be able to store accumulated net weight data during weighing operations and to give sub-totals and record of each weighing.

4.7.2 It must be able to recall gross, tare, and net weights.

4.7.3 It shall be provided with an installer CD complete with drivers and an installation manual for reference in case the computer bogs down.

4.8 The WSI/WSR standard forms of NFA shall be used as the form to be printed by the supplied printer (see attached sample).

5. **LOAD CELL/TRANSDUCER**

5.1 The load cell/transducers shall be digital and canister-type.

5.2 The load cell/transducers must be stainless steel, waterproof, dustproof, and hermetically sealed. (IP68)

5.3 The upper or lower load receptor/receiver shall have lock pins to prevent the load cell from rotational movement, lateral and torsional effects during loading.

5.4 The junction box (if any) must be installed inside the scale house.

5.5 Specification of transducer/load cell:

5.5.1 Rated capacity shall be of 50 tons (minimum) per transducer.

5.5.2 Supply voltage (excitation voltage) shall be 7.5-28 VDC.

5.5.3 Maximum safe overload shall be a minimum of 150% .

5.5.4 Ultimate overload shall be a minimum of 200%.

5.5.5 Ground insulation resistance shall be a minimum of 2,000 megaohms.

5.5.6 Lightning protection of 80,000A (minimum).

5.5.7 With a built-in diagnostics feature.

5.5.8 Load cell cables should be detachable through a quick connect with a bayonet lock system and with a seal.

5.5.9 Cables should have an exterior braided steel armor, a PVC chemically resistant jacket, and be triple shielded with dual drain wires.

5.5.10 The length of the load cell cable must be long enough to reach and be connected to the junction box inside the scale house.

6. ACCURACY

6.1 The system accuracy shall be at least ±1/2,500 or better.

7. ELECTRICAL INSTALLATION WORK

7.1 The electrical system shall be 220 V ±10%, 60 cycles, single phase.

7.2 The cable connecting load cells/transducers to the power supply shall have an electrostatic shield.

7.2.1 The cable should not be laid parallel to the power line.

7.2.2 Electric apparatus that may generate electrostatic and electromagnetic noise should be grounded.

7.3 A signal/traffic light in the colors of red and green shall be installed conspicuously on the front wall of the scale house. The lights shall be complemented with an electric buzzer for a sound signal.

7.4 A LED display connected to the indicator shall be installed conspicuously in front of the truck scale house.

8. CIVIL WORKS

8.1 Bidder shall submit the structural analysis and computations for the steel deck, beam/girder and concrete foundation/footing.

8.1.1 The concrete foundation and steel deck shall have a minimum of 120% safety overload to match the safety overload of the transducer.

8.1.2 All welded joints shall attain at least 90% of the strength of joined members. Welding job must follow appropriate welding codes and standards.

8.2 All concrete works shall attain a compressive strength of at least 3,500 psi at twenty eight (28) days to be validated through sample testing by appropriate agency.

8.2.1 Mortar grouting on all joints shall use epoxy cement.

8.2.2 Concreting of foundations should be monolithic.

8.2.3 The concrete abutment pads and ramp shall be 2 meters and 5 meters long, respectively.

8.2.4 As deemed necessary, the concreting of the approach on both sides of the truck scale shall be made by the Supplier to complete the project and render it operational. These should be ascertained during the project site inspection of the Supplier.

8.2.5 Concrete slabs should be provided underneath the platform deck, which is interconnected to the foundation.

8.2.6 Bidder shall submit designs and drawings (plans) of the pitless type truck scale showing the foundation, abutment pad, ramp, and platform deck.

8.3 All steel shall be of Structural Grade 230, conforming to the specification for Structural Steel, ASTM A-36.

8.3.1 Main beam

8.3.2 All cross beams should be welded to the main beam.

8.3.3 Platform deck

8.4 The platform deck shall be made of steel (use MS plate) with dimensions of 3.15 m x 22 m and 12 mm thickness (metal base).

8.4.1 The height of the pedestal or pier shall depend on the actual depth of the truck scale platform measured from the top of the steel deck to the bottom of the base plate. Anchor bolts/nuts shall be made of stainless steel materials.

8.4.2 All base plates shall be provided with adjustment bolts for leveling purposes. The "in between" of the base plate and the top of the pedestal shall be properly grouted.

8.4.3 It shall be provided with hydraulic jack hangers beside the steel decks main beams.

8.4.4 The MS plate shall be bolted using stainless steel 12 mm diameter hexagonal bolts, with stainless steel nuts spot welded to the crossbeam. It should also be placed in such a way that no bolt will be placed along the pathway of truck tires.

8.5. All metal surfaces should be painted with epoxy primer (2 coats) and finished with enamel steel paint (dark red). For the main beam, it should have a zebra look (yellow and black) finish.
Ramp concrete gutter should be primed and painted with flat latex paint and finished with gloss latex paint - zebra look (yellow and black) finish.

8.6 The scale house flooring should be provided with ceramic tiles (dirty white color) and should have the same elevation as the truck scale platform deck. An appropriate stair should be provided both at the scale house door and counter.

8.6.1 The pavement between the truck scale platform deck and the truck scale house should be concreted, three (3) meters on each side of the stairs at the counter of the scale house. A total pavement length of six (6) meters.

8.6.2 Both water pipe and electrical wire tapping/connection from the source to the scale house shall be made by the contractor following standard practices.

8.6.3 The downspouts of the scale house and roller weight shed shall be provided with catch basins connected to a drainage pipe.

8.6.4 Both the scale house and roller weight shed should be provided with ceilings. Roof shall be pre-painted green with 0.4 mm base metal thickness.

8.6.5 The scale house shall be provided with a table, 3 chairs (standard mono block-white) a computer rack, and hanging shelves as designed.

8.6.6 The roller weight shed flooring should have the same elevation as the abutment pad connected by a bridge for bringing in the roller weights to the deck.

9. **UPS** - Online - 30 minutes, Sine Wave, 1.25 kVA.

10. Air-conditioning Unit - 1.5 HP, Window-type

11. Automatic Voltage Regulator - 1,000 Watts
Input - 180 - 240 V
Output - 3 - 220 V
- 1 - 110 V

12. Surge Suppressor - Transient Surge Voltage Protector: 240 VAC
- Nominal Line Voltage - 208 VAC, 220 VAC, 240 VAC
- Response Time - less than 5 nanoseconds.

13. Hydraulic Jack - 20 ton capacity

14. Roller Weights - 16 pcs.
- 500 kg nominal weight per pc
- Total of 8 tons (10% of the capacity of truck scale)
- with NFA's markings in welded letters at the cross-section side of the roller weights, size of letter is 8 cm

15. Pallet Scale - Capacity 1000 kg and with certificate of calibration and technical manual.

TECHNICAL SPECIFICATIONS FOR THE SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF 80-TON CAPACITY PITLESS TYPE ELECTRONIC TRUCK SCALE

1. SCOPE OF WORK

1.1 Preparation of complete and detailed plans/drawings, for scale foundation, abutment pad, ramp, approach, and platform deck.

1.2 Supply and installation of transducers/load cells.

1.3 Supply and installation of the indicator system.

1.4 Supply and installation of the scale's platform deck.

1.5 Provision of structures such as foundation, walls, abutment pad, ramp, and utility lines.

1.6 Provision of a scale house and a separate roller weight shed according to NFA prescribed design with required utility lines.

1.7 Compaction of soil and conduct of Field Density Test (FDT) to assure at least 100% compaction (minimum) based on NFA requirement. All the required fees shall be borne by the Supplier.

1.8 Other related works, such as cutting of trees, dismantling/demolition of existing structure, etc. All expenses shall be on supplier's account.

1.9 Provision of technical and service manuals for the digital indicator.

1.10 Provision of local training for all NFA Branch Engineers and operators per truck scale awarded.

1.11 Supply/delivery/installation of Desktop Computer complete with truck scale to computer interfacing system and ticket printer. (Including operating and maintenance manuals showing the original connection, diagram, and layout: User's Guide, troubleshooting guide, and installation disks, and NFA vehicle management program)

1.12 Supply/delivery/installation of UPS, surge suppressor, AVR, air-conditioning unit, hydraulic jack, and pallet scale.

1.13 Supply/delivery of roller weights (10% of the scale's maximum capacity) with ITDI Certificate.

2. GENERAL REQUIREMENTS

2.1 The truck scale unit shall be of the electronic type. All materials/components used, including the design and construction, shall ensure good performance as follows under normal operating conditions;

2.1.1 Sustained/maintained accuracy of weight reading;

2.1.2 Satisfactory functioning/performance of operating parts.

2.1.3 Should be stable under normal conditions for at least six (6) months, without the necessity of adjustment.

2.1.4 All anchor bolts and nuts (for load cells) shall be made of stainless steel.

2.1.5 It shall be provided with an appropriate backup power supply to enable the whole system to operate in case of primary power failure.

2.2 The truck scale shall be provided with a complete truck scale to computer interfacing system.

2.2.1 The software shall be capable of transferring data from the indicator to the desktop computer.

2.2.2 It shall be provided with an installation disc for the truck scale program, complete with a driver and installation manual.

2.2.3 Truck scale and computer linkage shall be through an RS 232 (com1) connector.

2.2.4 The software should efficiently run on a desktop computer with the following specifications:

DESCRIPTION	
Processor	8 cores (minimum) or better
RAM	8 GB DDR5 or higher
Hard Drive	512 GB SSD
Monitor	18.5" min. Colored LCD/LED
Optical Drive	SATA DVD-ROM
Graphic Controller Type	PCI Expressx16-Plug-in card

Video Memory	6 GB (min), Dedicated
Serial Port	RS 232 (DB9)
USB Port (V3.0 or latest)	4 Rear, 2 Front (Six Ports)
Keyboard	USB
Mouse	USB Optical, with Mouse Pad
Warranty	1 year
Operating System	Pre-installed Windows 11 or higher (32-bit or 64-bit*)

Note: The following must likewise be provided by the supplier:

1) System Drivers
2) Licensed Operating System installer.
3) Truck scale program designed for NFA operation.

2.2.5 Specification for printer

- Dot Matrix, 9 pin, 80 columns
- Brand new with ribbon and manual
- Power cable and parallel connectors (LP T1)

2.3 The design of the scale and scale parts shall be in accordance with accepted engineering practice for the specified conditions of loading, including a definite allowance for shock loading and, in addition, a factor of safety consistent with good scale performance.

3. **CAPACITY/GRADUATION**

3.1 The truck scale must have a capacity of 80,000 kg or 80 tons.

3.2 The graduation must be 10 kg.

4. **INDICATIONS AND PRINTING REQUIREMENTS**

4.1 The indicating unit of the scale must be of the digital readout display.

4.2 Data display must show the weight in kg unit.

4.3 Specification of transducer/load cell:

4.3.1 Backlit LCD graphics display.

4.3.2 Enclosure should be stainless steel and IP69K rated.

4.3.3 With LED Remote Display connectivity.

4.4 Printing Type - Card/ticket (one original and two copies)

4.3.1 The printer output shall indicate the following items:

4.3.1.1 Date (Year/Month/Day)
4.3.1.2 Weighing Number/Consecutive Number/Commodity Code (Alpha and/or Numeric)
4.3.1.3 Gross Weight
4.3.1.4 Tare Weight
4.3.1.5 Net Weight
4.3.1.6 Time
4.3.1.7 Name of Customer
4.3.1.8 Plate Number of Vehicle

4.5 The indicating unit must have a standard response time of at least 0.50 second.

4.6 Its accuracy must not be affected by normal electromagnetic interference (EMI) and radio frequency interference (RFI).

4.7 It must be of solid-state circuitry and provided with circuit protection.

4.8 Weighing Software/Truck Scale Program/Data Recorder

4.7.1 The data recorder must be able to store accumulated net weight data during weighing operations and to give sub-totals and record of each weighing.

4.7.2 It must be able to recall gross, tare, and net weights.

4.7.3 It shall be provided with an installer CD complete with drivers and an installation manual for reference in case the computer bogs down.

4.8 The WSI/WSR standard forms of NFA shall be used as the form to be printed by the supplied printer (see attached sample).

5. **LOAD CELL/TRANSDUCER**

5.1 The load cell/transducers shall be digital and canister-type.

5.2 The load cell/transducers must be stainless steel, waterproof, dustproof, and hermetically sealed. (IP68)

5.3 The upper or lower load receptor/receiver shall have lock pins to prevent the load cell from rotational movement, lateral and torsional effects during loading.

5.4 The junction box (if any) must be installed inside the scale house.

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