


REHABILITATION OF MINI FEED MILL PROCESSING FACILITY TECHNICAL SPECIFICATIONS AND SCOPE OF WORKS

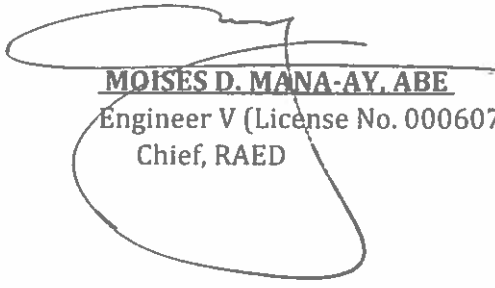
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➤ SPECIFICATIONS

GENERAL DESCRIPTION OF THE WORK

The work to be done and executed shall include the furnishing of labor and materials, equipment, and specialized works in the **REHABILITATION OF MINI FEED MILL** completely as shown in the drawing, reflected in the detailed estimates and as described herein.

All works to be done shall be in the highest quality of workmanship to the fullest intent and meaning of the plans and specifications unless otherwise specified.

PLANS and SPECIFICATIONS:

All drawings, small scale and detail drawings are intended to coordinate with the specifications and to form part thereof, where figures are given, they are to be followed in preference to measurement by scale. Anything shown in the drawings and not mentioned in the specifications or vice-versa or anything not expressly set forth in either but which is reasonably implied shall be furnished and installed as thought specifically shown in mentioned both.

I. GENERAL REQUIREMENTS

➤ B.9. MOBILIZATION AND DEMOBILIZATION

Demobilization shall include dismantling and removal from the site of the Contractor's plant, materials and equipment and all temporary facilities. It shall also include cleanup of the site after completion of the Contract Work as approved by the Engineer and transportation from the site of the Contractor's employees.

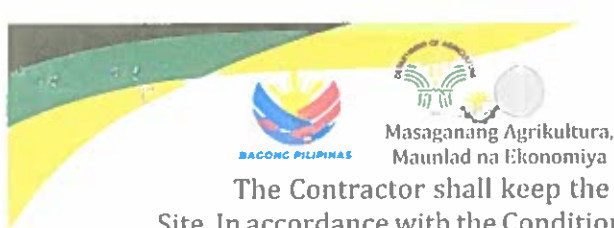
Mobilization, as provided in these Specifications, means preparatory work and operations, including, but not limited to, those necessary for the movement of necessary personnel, plant and equipment to the Site.

The Contractor shall mobilize and move into the Project Site the required construction equipment needed for the successful completion of the Contract Work.

MINIMUM EQUIPMENT REQUIREMENT FOR CONSTRUCTION

	<u>Equipment</u>	<u>Quantity</u>
1.	Concrete Mixer 1 bagger	1 unit
2.	Dump Truck (4.5-6.5 cu. m.)	1 unit
3.	Plate Compactor (5hp)	1 unit
4.	Concrete Vibrator	1 unit
5.	Welding Machine	1 unit
6.	Any Minor Equipment needed to complete the project.	

The Contractor shall furnish the Engineer with a resources schedule, showing in detail the sequence of proposed delivery to the Site of plant and equipment necessary to comply with the proposed construction program.



The Contractor shall keep the Engineer informed of the arrival of plant and equipment on the Site. In accordance with the Conditions of Contract, the Contractor shall not remove construction plant and equipment from the Site without the approval of the Engineer.

Basis of Payment

The quantities determined as provided above shall be paid for at the appropriate contract unit price, for each of the particular pay items shown in the Bill of Quantities which price and payment shall constitute full compensation for furnishing and maintaining such items:

Description	-----Mobilization/Demobilization
Unit of Measurement	-----Lump sum

Payment of 70% of the Lump Sum will be made monthly in the proportion that the progress of mobilization completed in a particular month bear to the total numbers of plant and equipment shown in the approved resources schedule.

The remaining 30% of the Lump Sum will be paid upon certification by the Engineer that the demobilization of plant and equipment has been completed including site clean-up to his satisfaction.

TEMPORARY FACILITY

The contractor shall provide the temporary shelter of all workers and engineers on site, Where and when it is deemed necessary, the Contractor shall furnish lighting facilities, signs and sentry, and other safety facilities and services.

The contractor shall deliver **1 unit- of digital Platform weighing scale for swine** with 1000 kgs capacity.

The contractor shall deliver the specified Equipment upon the issuance of the NTP.

It shall be delivered with good condition and shall conform as specified ... ***Non-conformity from the specifications specified herein shall not be accepted and subject to replacement***

Basis of Payment:

The accepted quantities, measured as prescribed in Section B.1 shall be paid for at the contract unit price for the particular pay items listed above that is included in the Bill of Quantities. The payment shall constitute full compensation for providing the temporary facility and the delivery of office equipment as indicated and prescribed herein.

➤ ITEM B.5 PROJECT BILL BOARD/ SIGNBOARD, SIGNAGES AND OTHER MARKER

The contractor shall implement the COA Circular no. 2013-004, the information and the publicity on programs/projects/ activities of government agencies. A tarpaulin signboard must be suitably framed for the outdoor display at the project location, and shall be posted as soon as the award has been made. The design and format shall conform to the plans and specification as specified.

The Contractor shall provide barricades, barriers and safety signage and be visible at all times when work is being done.

The colors red, black and white shall be those of opaque glossy as specified in the ****fundamental Specifications for Safety Colors for CIE Standard. ****

The height of barricades shall be 1 meter minimum. Barricade with height of more than 1.2 meter shall be approved by the designer.

Basis of Payment:

Work prescribed for Billboard, signages and barricades shall not be measured and paid separately, same shall be deemed to be included in pay items for other items for work. The contractor shall be paid per lump sum as specified in the bill of quantities.

GENERAL

All security and health controls necessary for the execution of the Works such as but not limited to, medical facilities, manpower safety gadgets, sanitary arrangements, explosives and fuel, temporary fencing, safety precautions and fire prevention, shall be established and maintained by the Contractor at his own expense. The Contractor shall make himself responsible for all security and health controls and shall submit to the Engineer for his approval the organization and the regulations for these purposes.

The Contractor shall take all necessary precautions against risks, loss of life or of injury to any person employed on the Works or to employees of the Employer and the Engineer or to visitors

or to persons having good and sufficient reasons to be about the Works, and shall properly safeguard the Works to the satisfaction of the Engineer.

The Contractor shall provide their Workers, Supervisors, Engineers, and Owner's and Engineer's representatives the necessary safety gadgets at the site such as: safety shoes, safety helmets, safety belts, gloves, goggles, gas or dust masks, and Uniforms,

Conformity with the requirements of any duly constituted medical and sanitary authority. The Contractor shall provide first aid units/stations and shall be responsible for and bear all cost in connection with the first aid services including the use of ambulance of injured or sick employees transporting to the hospital. Such first aid services shall be provided to the Employer, the Engineer, and to their employees at the site at no cost to them. The Contractor shall make his own arrangement for the treatment of casualties on the Site in the said project.

The Contractor shall submit to DA-RAED for approval the layout drawings, program of erection and the specifications for temporary works within thirty (30) calendar days following the date of receipt of the Notice to Proceed as stipulated in Article SC – 3.

BASIS OF PAYMENT

Work prescribed for Health and safety shall not be measured and paid separately, same shall be deemed to be included in pay items for other items for work.

II. EARTHWORKS

ITEM 800 – SITE CLEARING and GRUBBING

➤ ITEM. 101 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS

101.1 Description

This Item shall consist of the removal wholly or in part, and satisfactory disposal of all buildings, fences, structures, old pavements, abandoned pipe lines, and any other obstructions which are not designated or permitted to remain, except for the obstructions to be removed and disposed off under other items in the Contract. It shall also include the salvaging of designated materials and backfilling the resulting trenches, holes, and pits.

101.2 Construction Requirements

101.2.1 General

The Contractor shall perform the work described above, within and adjacent to the

roadway, on Government land or easement, as shown on the Plans or as directed by the Engineer. All designated salvable material shall be removed, without unnecessary damage, in sections or pieces which may be readily transported, and shall be stored by the Contractor at specified places on the project or as otherwise shown in the Special Provisions. Perishable material shall be handled as designated in Subsection 100.2.2 Nonperishable material may be disposed off outside the limits of view from the project with written permission of the property owner on whose property the material is placed. Copies of all agreements with property owners are to be furnished to the Engineer. Basements or cavities left by the structure removal shall be filled with acceptable material to the level of the surrounding ground and, if within the prism of construction, shall be compacted to the required density.

➤ ITEM. 803 – STRUCTURE EXCAVATION

Description

This Item shall consist of the necessary excavation for the foundation, underdrains, and **other structures** not otherwise provided for in the Specifications. Except as otherwise provided for pipe culverts, the backfilling of completed structures and the disposal of all excavated surplus materials shall be in accordance with these Specifications and in reasonably close conformity with the Plans or as established by the Engineer.

It shall also include the furnishing and placing of approved foundation fill material to replace unsuitable material encountered below the foundation elevation of structures.

No allowance will be made for classification of different types of material encountered.

Prior to starting excavation operations in any area, all necessary clearing and grubbing in that area shall have been performed in accordance with Item 800, Clearing and Grubbing.

➤ ITEM. 804 – EMBANKMENT

Description

This Item shall consist of the construction of the embankment in accordance with this Specification and in conformity with the lines, grades and dimensions shown on the Plans or established by the Engineer.

Material Requirements

Embankments shall be constructed of suitable materials, in consonance with the following definitions:

1. **Suitable Material** – Material which is acceptable in accordance with the Contract and which can be compacted in the manner specified in this Item. It can be a common material or rock.

Selected Borrow, for topping – soil of such gradation that all particles will pass a sieve with 75 mm (3 inches) square openings and not more than 15 mass percent will pass the 0.075 mm (No. 200) sieve, as determined by AASHTO T 11. The material shall have a plasticity index of not more than 6 as determined by ASSHTO T 90 and a liquid limit of not more than 30 as determined by AASHTO T 89.

2. **Unsuitable Material** – Material other than suitable materials such as:

- Materials containing detrimental quantities of organic materials, such as grass, roots and sewerage.
- Organic soils such as peat and muck.
- Soils with liquid limit exceeding 80 and/or plasticity index exceeding 55.
- Soils with a natural water content exceeding 100%.
- Soils with very low natural density, 800 kg/m³ or lower.
- Soils that cannot be properly compacted as determined by the Engineer.

Prior to the construction of embankment, all necessary clearing and grubbing in that area shall have been performed in conformity with Item 800, Clearing and Grubbing.

Embankments and backfills shall contain no muck, peat, sod, roots or other deleterious matter. Rocks, broken concrete or other solid, bulky materials shall not be placed in embankment areas where piling is to be placed or driven.

Where shown on the Plans or directed by the Engineer, the surface of the existing ground shall be compacted to a depth of 150 mm (6 inches) and to the specified requirements of this Item.

Methods of Construction

Where there is evidence of discrepancies on the actual elevations and that shown on the Plans, a preconstruction survey referred to the datum plane used in the approved Plan shall be undertaken by the Contractor under the control of the Engineer to serve as basis for the computation of the actual volume of the embankment materials.

Effective spreading equipment shall be used on each lift to obtain uniform thickness as determined in the trial section prior to compaction. As the compaction of each layer progresses, continuous leveling and manipulating will be required to assure uniform density. Water shall be added or removed, if necessary, in order to obtain the required density. Removal of water shall be accomplished through aeration by plowing, blading, discing, or other methods satisfactory to the Engineer.

Compaction

Compaction Trials

Before commencing the formation of embankments, the Contractor shall submit in writing to the Engineer for approval his proposals for the compaction of each type of fill material to be used in the works. The proposals shall include the relationship between the types of compaction equipment, and the number of passes required and the method of adjusting moisture content.

Throughout the periods when compaction of earthwork is in progress, the Contractor shall adhere to the compaction procedures found from compaction trials for each type of material being compacted, each type of compaction equipment employed and each degree of compaction specified.

III. PLAIN AND REINFORCED CONCRETE

➤ 900 STRUCTURAL CONCRETE

Item 900) 3500psi- for slab on grade and 3,000 psi for office slab on grade.
Concrete Mixture= 1:3:3

- A. Concrete Column
- B. Concrete Inside Canal
- C. Wall Footing
- D. Slab on grade

Description

This Item shall consist of furnishing, placing and finishing concrete in related structures as mentioned above, in accordance with this specification and conforming to the lines, grades, and

dimension shown on the plans.

Slab on grade

*Thickness of slab on grade shall be of 150mm using 10mm diam. Deformed steel bar as temperature bar spaced at 500mm O.C both ways

* All flooring shall have at least 1.5% slope directed to the canal. for the easy cleaning of animal manure and to maintain the dryness of the flooring.

Concrete Canal shall have at least 2% slope directed to the waste management.as specified on the drawings. any revision shall approve by the designer.

Concrete Aggregates

Except as permitted elsewhere in this section, the maximum size of the aggregate shall be not larger than one-fifth (1/5) of the narrowest dimensions between sides of forms of the member for which the concrete is to be used nor larger than three-fourths of the minimum clear spacing between individual reinforcing bars or bundles of bars.

Water

Water to be used shall be clean and free from alkaline and acid matters.

Concrete Quality

Methods of Determining the Proportions of Concrete

The determination of the proportions of cement, aggregate, and water to attain the required strengths shall be made by one of the following methods, but lower water-cement ratios may be required for conformance with the quality of concrete.

Water-cement ratios for strengths greater than that shown in Table I 900.1 may be used provided that the relationship between strength and I water-cement ratio for the materials to be used has been previously established by reliable test data and the resulting concrete satisfies the Requirements of concrete quality.

Cement ratio shall be no' greater than that required by concrete quality when concrete that is to be subjected to the freezing temperatures which weight shall have a water- cement ratio not exceeding 6 gal per bag and it shall contain entrained air.

Where different materials are to be used for different portions of the work, each combination shall be evaluated separate

TABLE 900.1 MAXIMUM PERMISSIBLE WATER-CEMENT RATIOS FOR CONCRETE (METHOD NO.1)

Specified compressive strength at 28 days, psi /fc	Maximum permissible water-cement ratio			
	Non-air-entrained concrete		Air-entrained concrete	
	U.S. gal. per 42.6 kg of cement	Absolute ratio by weight	U.S. gal per 42.6 kg. cement	Absolute ratio by weight
2500	7 ¼	0.642	6 ¾	0.554
3000	6 ½	0.576	5 ¾	0.465
3500	5 ¾	0.510	4 ½	0.399
4000	5	0.443	4	0.354

Concrete Proportions and Consistency

The proportions of aggregate to cement for any concrete shall be such as to produce a mixture that will work readily into the corners and angles of the form and around reinforcement with the method of placing employed on the work, but without permitting the materials to segregate or excess free water to collect on the surface. The methods of measuring concrete materials shall be such that the proportions can be accurately controlled and easily checked at any time during the work.

REINFORCING STEEL WORKS

Reinforcing steel bars shall conform to the requirements of the following Specifications:

Deformed & Plain Billet Steel Bars for concrete Reinforcement (ASTM A 615), Grade 40,
for Bars 16mm and smaller (40,000 psi) $f_y=275.8\text{Mpa}$

Bars for concrete Reinforcement AASHTO M 31, Grade 60 for Bars 20mm and larger
(60,000psi) $f_y=414\text{Mpa}$.

Deformed Rail - Steel and Plain Bars for Concrete Reinforcement ASTM A 616

If reinforcing bars are to be welded, these ASTM specifications shall be supplemented by requirements assuring satisfactory weldability.

Storage of Materials

Cement and aggregates shall be stored in such a manner as to prevent their deterioration or the intrusion of foreign matter. Cement shall be stored, immediately upon arrival on the site of the work, in substantial, waterproof bodegas, with a floor raised from the ground sufficiently high to be free from dampness. Aggregates shall be stored in such a manner as to avoid the inclusion of foreign materials.

Construction Requirements

Notations: The notations used in these regulations are defined as follows: f_c = compressive strength of concrete F_{sp} = ratio of splitting tensile strength to square root of compressive strength.

STRUCTURAL STEEL

A. STRUCTURAL STEELS (A36) $F_y = 248\text{MPa}$

B. ALL WELDING WORKS SHALL BE DONE BY SKILLED AND LICENSED WELDER

REINFORCING BARS SHALL HAVE 40mm MINIMUM CLEAR DISTANCE FROM WALL FACE EXCEPT FOR WALLS IN CONTACT WITH THE GROUND WHERE A MINIMUM OF 70mm SHALL BE PROVIDED.

Such prices and payment shall be full compensation for furnishing all materials, including metal water stops, joints, joint fillers, weep holes, and rock backing and timber bumpers; for all form and false work; for mixing, placing, furnishing, and curing the concrete; and for all labor, materials, equipment, tools and incidentals necessary to complete the item, except that reinforcing steel shall be paid for at the contract unit price per kilogram for reinforcing steel metal pipes and drains, metal conduits and ducts, and metal expansion angles shall be paid for as structural steel that when the proposal does not include an item for structural steel these miscellaneous metal parts shall be paid for as reinforcing steel.

FORMS AND FALSEWORK

This item shall consist of designing, constructing and removing forms and falsework to temporarily support concrete, girders and structural elements until the structure is completed to the point it can support itself.

Formwork should be:

- Strong enough to withstand dead and live loads.
- Capable of retaining its shape by being efficiently propped and braced horizontally and vertically.
- Designed and constructed to prevent leakage of cement grout, with sealed joints.
- Capable of being removed in various parts without damaging the concrete.

Portland Cement is used):

Type of Formwork	Formwork Removal Time
Sides of Walls, Columns and Vertical faces of n	24 hours to 48 hours (as per engineer's sion)
Removal of props for beams and arches	
i) Span up to 6m	14 days
ii) Span over 6m	21 days

➤ 900.b. MASONRY WORKS

This item is consisting of furnishing All materials, tools and equipment and labor necessary to complete the execution of the masonry works by using 6" and 4" concrete hollow blocks and Concrete Louvers as shown on the plans and herein specified.

CONCRETE HOLLOW BLOCKS

Where the use of CHB is indicated, they shall be true to size without cracks or spurs or other defects that may impair their strength or durability. They shall have three cones.

All concrete hollow blocks shall be a product of a reputable manufacturer
 Use Class "B" concrete-(17.5Mpa concrete) for CHB fillers mixtures (1:3:5)

➤ 900.b. CEMENT PLASTER FINISH

Description

This Item shall consist of furnishing all cement plaster materials, labor, tools and equipment required in undertaking cement plaster finish as shown on the Plans and in accordance with this Specification. (Included the Biogas)

Material Requirements

Manufactured materials shall be delivered in the manufacturer's original unbroken packages or containers which are labelled plainly with the manufacturer's name and trademark.

Cement

Portland cement shall conform to the requirements as defined in Item 700, Hydraulic Cement.

Fine Aggregates

Fine aggregates shall be clean, washed Sharp River sand and free from dirt, clay, organic matter or other deleterious substances. Sand derived from crushed gravel or stone may be used with the Engineer's approval but in no case shall such sand be derived from stone unsuitable for use as coarse aggregates.

Construction Requirements

Mixture

a) Mortar mixture for brown coat shall be freshly prepared and uniformly mixed in the

- proportion by volume of one part Portland Cement, three (3) parts sand and one-fourth (1/4) part hydrated lime.
- b) The finish coat shall be pure Portland cement properly graded conforming to the requirements of this Item and mixed with water to approved consistency and plasticity.
 - c) Finishing of **digester** shall be mixed with heavy-duty waterproofing and applied accordingly with quality workmanship.

IV. ROOFING WORKS

PRE-PAINTED METAL SHEETS LONGSPAN AND OTHER ROOFING ACCESSORIES
ROOFING MATERIALS
RIB TYPE METAL ROOFING (Forest Green color)

This item shall consist of furnishing all plant, equipment, tools, materials, and labor required to perform and complete the rib metal roofing, together with related accessories such as **ridge roll, fascia cover, rivets, soldering**, and downspout when called for on the Plans all in conformity with this Specifications.

ROOF ACCESSORIES
 Rivets and washers

- Rivets and washers shall be galvanized mild iron and shall not be less than 5mm in diameter and 10mm in length.
- Washers shall not be less than 1.5mm thick and 20mm in outside diameter and shall provide a snug fit to the rivet.

A. Preparatory Work

- Preparatory to the installation of the rib type G.I. roofing, purlins should have been placed and spaced properly to fit the length of roofing sheets to be installed.
- The center line of the purlins at end laps shall be 15 cm. From the bottom line of end laps and intermediated purlins should be placed equidistant with each other.
- Ascertain that the top of the purlins should be on the same plane.

Installation of Rib G.I. Sheet

- Provide an end lap of 25cm. minimum length. Each sheet shall be fastened temporarily by 1.83mm diameter by 2.5 cm. long galvanized flat-head nails at valleys of corrugations covered by side or end laps.
- Succeeding upper rows of Rib G.I. sheets shall be installed in the same manner until the entire roof area is covered.
- Rivets shall be provided with a galvanized mild iron washer below and one lead and one galvanized washer above the sheet.
- Rivets shall be sufficiently long to permit the forming a hemispherical head. Riveting shall be done such that the lead washer shall be compressed to provide a water-tight fit around the rivet.

SPECIFICATIONS AND CONTRACT

Base Metal Thickness	Designated Gauge
0.40mm thick	Gauge 28
0.50mm thick	Gauge 26
0.60mm thick	Gauge 24
0.80mm thick	Gauge 22

Fabrications

- a. Fabrication and assembly shall be done in the shop to the greatest extent possible. All materials shall be cleaned and straight. If straightening or flattening is necessary, it shall be done by a process and in a manner that will not damage the materials.
- b. Shearing, flame cutting shall be done carefully and accurately. Flame-cut edges of members shall have all nicks removed. Holes shall not be enlarged by flame-cut. Gas cutting shall be done by the use of a mechanically guided torch.
- c. Welding on structural steel works shall be done in accordance with the standards of American Welding Society AWD Code D.1. Welding works shall only be performed by certified welders.
- d. Bolted connections: Holes for bolts shall be 1.5mm larger than the nominal diameter of the bolt. Holes shall be cleaned cut without torn or rugged edged. Bolt holes shall be at right angles to the member. Bolted parts shall fit solidly together when assembled and shall not be separated by gaskets or any other interposed compressible materials. Contact surfaces within frictions type joints shall be from oil or paint.
- e. Match markings. Members and component parts of structure shall be matched marked to ensure accurate assembly and erection
- f. All structural steel work shall be painted, 01 coat rust converter and 02 coats epoxy primer).
- g. All welded portions shall be inspected and approved by the Project Engineer.

V. ELECTRICAL WORKS

- ITEM 1101. ELECTRICAL WORKS (WIRES AND WIRING DEVICES)
- ITEM 1102. ELECTRICAL WORKS (FIXTURES)

The work to be undertaken here under includes the furnishing of all labor, materials, equipment, tools and supervision to the project and to be completed the good working condition of the electrical system for the proposed building.

All works here under shall comply with the requirement of the latest edition of the National Electrical Code of the Philippines and the Rules and Regulations of the local Electric Company.

MATERIALS and WORKMANSHIP

All materials shall be unused brand new and shall conform to the standard of the underwriter laboratories in every case where such a standard has been established for the particular type of materials to be installed.

- **SERVICE ENTRANCE** Service entrance shall be 220-250 volts, single phase, 2 wires, 60 cycles or as indicated in the plan. The service entrance installation shall be part of the electrical works as indicated therein. The service entrance conduit and accessories shall be installed in the nearest power source up to service entrance cap and the work shall be done in accordance with the latest specification required by Electric Company

- **DISTRIBUTION SYSTEM**
The distribution system shall be 2 wire, 220 volts.

- **WIRING METHOD**

All wiring shall be installed in standard polyvinyl conduit of the Philippines manufacture or equal and shall conform to the underwriter's standards in code.

Conduit shall not be less than 1.5cm nominal diameter and where so indicated, sizes on the plans are a minimum two or more ducts shall be installed in lieu of the larger size.

All wire shall be copper under no circumstance will aluminum or other metallic conductors be permitted to help. All materials to be used shall be new and approved by the underwriter's laboratories.

All joints in junction boxes, those for feeders and service wire shall be joined by a 3m scotch lock. Provide proper sizes and install according to the manufacturer's specification for service and feeder conductors, tape shall be made with heavy-duty all brass or copper solderless connectors.

All boxes shall be hard plastic, an approved product of the reputable manufacturer

All ceiling and wall bracket outlet boxes shall be of deep rectangular flush type gang boxes or sections switch boxes shall be installed where required.

All boxes, including junction and pull boxes shall be sufficient size to provide free space for all conductors enclosed in the box in addition to the fittings. Such as switch mechanisms, receptacles, fixtures, and may be contained in the box.

OUTLET and SWITCH BOXES

Suitable single pole and three-way switches of the flush tumbler type with an appropriate white plastic or aluminum cover plate shall be provided where indicated on the plans.

All convenience outlet receptacles shall be flushed or wall mounted type of various kinds as indicated in the drawings with suitable cover plates.

Switches and receptacles are indicated in the drawings as close as possible to the desired points, however, actual construction conditions may require a change of location and in such cases, and the attention of the engineer shall be called for the final location. Depending solely on his engineering judgment, the engineer may direct minor changes in the location of the switches and receptacles.

Unless otherwise directed by the engineer, the outlet shall be mounted at the following heights above the floor or steps.

Wall switches 1.50m. from finish floor plan

Wall brackets 2.00m. from finish floor line

Convenience outlet 1.60m. from finish floor line

Use flush type switches

1. PANELBOARD

Wall mounted MCCB Fixed Type Bolt-on, Powder Coated Enclosure Main Breaker) enclosure with grounding terminal bus with lugs.

2. CIRCUIT BREAKER

Main Breaker, Circuit breakers and other electrical accessories shall conform to the plans and specifications.

Only one single brand shall be used on the entire project requirements

3. WIRES AND CABLES

THHN/THWN copper wire stranded 600 volts insulation pressure, minimum size of wire for lighting and power system shall be 3.5 sq. mm (AWG no.12 stranded) and 5.5 sq. mm for spare and must be color coded. (or as specified)

Line 1 - Red

Line 2 - Yellow

4. *ELECTRICAL LIGHTING FIXTURES*

Tube light LED tube lamp, with recessed type luminaire mirrored reflector and louver. Aluminum heat sink, No UV and RF interference, patented heat sink with or without optical diffuser, longer life than. Incandescent and fluorescents. No mercury, no ballast required, wide voltage input range and constant current design, solid state, high shock and vibration resistant, mercury free, 60%-plus savings in energy consumption, quiet, no noise, no flickering. Products brands are compliant in accordance with CE, UL, and FCC testing standards.

9W LED lamp shall be low maintenance, rust proof, highly efficient, longer life span, environmentally friendly, and less power consumption.

Use an approved quality brand for the entire LED lights and slim tube LED type or another equivalent brand approved by the Electrical Engineer. Any changes and revisions shall be approved by the designer.

VI. PLUMBING WORKS

- **ITEM. 1002. PLUMBING WORKS (Pipes, Fittings and other accessories- trench drainage cover)**
 - All works, comply with the requirement and provision of the National Plumbing Code of the Philippines.
 - All fixtures shall be separately trapped. The traps shall be placed as near as possible to the fixtures.
 - No fixtures shall be double trapped.
 - Horizontal waste lines shall be secured by hook to the building frames or embedded in concrete whenever necessary.
 - Horizontal waste line receiving the discharge from two or more fixtures shall be provided with vents connected to the station at least 1.20m from floor level.
 - Connection of the water closet shall be made to soil pipe by means of charges and asbestos packing without the use of water, cement.
 - Waste pipe potable water line pipes shall be extended to all the fixtures outlets and equipment from the gate valve near the riser.
 - Provide and install the complete floor drain shown on the plan, stainless, brass or nickel plated 4"x4" with the waste line, P-trap, and vents.
 - All pipes, fitting traps, fixtures, appurtenances, and devices of plumbing and drainage system shall be inspected and approved by the engineer to ensure compliance with all requirements of all codes and regulations referred to in these specifications. 10.
 - Use Series -1000 of any commercial brand sanitary pipes, fittings, accessories, materials, and all works obviously necessary for the proper functioning of all specifications or indicated in the drawing are included in this works.
 - Use PPR Type 3 pipes for all cold-water lines.
 - Use any commercial brand sanitary pipes, fittings, accessories, materials, and all works obviously necessary for the proper functioning of all specifications or indicated in the drawing are included in this works.

VII. DOORS AND WINDWS

• ITEM. AWD-1 DOORS AND WINDOWS

- All doors and windows shall conform to the plans and specifications.
- Hardware: Heavy-duty hardware and coated for corrosion resistance, door hinges shall be fabricated. And shall conform to the plans and specifications.
- Fabrication and installation of steel door for pig pen shall be done accordingly and shall be fully welded on all connection sections. All G.I Pipe as main support shall be of schedule 40 and Vertical pickets shall be of schedule 20 or as specified.

Door Jambs: 50mmx150mm solid wood

All Doors and frames specified herein shall be thoroughly cleaned and chemically treated to ensure paint adhesion. All surfaces of the door and frame exposed to view shall receive a factory-applied coat of rust-inhibiting primer, either air-dried or baked-on. The applied finish paint shall meet the performance requirements and acceptable to the end user.

HARDWARE:

- Where the exact type of finishing hardware specified is not adaptable type as having as nearly practicable the same operation and quality as the ones specified shall be used upon the approval of the engineer.
- All locks shall be new and in good condition in any commercial brand available and shall be installed in the door's frames at the same height of 90cm from the finished floor line.
- Each panel of the hinged door shall be hanged on loosed pin hinges for doors 1.50m but less than 2.00m high and one additional loose pin for every additional 0.65m height of door or fraction thereof.
- All hinges shall be chromium-plated nickel brass or it local equivalent having similar quality.

NOTE:

1. ALTERATION OF DOORS AND WINDOWS MUST CONFORM ARCHITECTS.
2. CONTRACTOR MUST SUBMIT SHOP DRAWINGS PRIOR TO INSTALLATION.

VIII. FINISHES

➤ ITEM. 1003. CEILING WORKS

This item shall consist of furnishing all labor and materials, tools and equipment required in the fabrication and installation of ceiling on pig housing, Biosecurity facility and Feed Room both interior and exterior ceiling using the following materials specifications:

0.4mm Metal cladding
Ceiling connectors and other accessories (Guage #20 Main Channel, gauge # 20 Wall Angle, gauge #20 Carrying Channel, 3/8 x 3/4" and 5/8" x 3/4" Blind Rivets)
10mm thick double sided insulation foam

.Material Requirement:

Ceiling material if not indicated and specified on the plans shall be of 0.4mm spandrel metal ceiling with complete accessories to complete this work as specified in the program of works which is reflected in the detailed unit price analysis.

Construction Requirements:

The height of the Ceiling on the pig housing shall be **2.40m** from the finish floor line up to the soffit of the beam of the structure, whereas, the height of the ceiling on the biosecurity facility and feed room shall be of **2.60m** from the finish floor line up to the soffit of the beam of the structure.

➤ ITEM. 1032. PAINTING WORKS (Repainting of walls & Steel Painting for Trusses, Nameplate on roofing and other Metal support)

• 1032.1 Description

This Item shall consist of furnishing all paint materials, varnish and other related products, labor, tools, equipment and plant required in undertaking the proper application of painting, varnishing and related works indicated on the Plans and in accordance with this Specification.

• 1032.2 Material Requirements

• 1032.2.1 Paint Materials

All types of paint material, varnish and other related product shall be subject to random test as to material composition by the Bureau of Research and Standard, DPWH or the National Institute of Science and Technology. (Use the following approved and tested brand name:

Boysen, Davies, Dutch Boy, Fuller O Brien, or any approved equal).

• 1032.2.2 Tinting Colors

Tinting colors shall be first grade quality, pigment ground in alkyd resin that disperses and mixes easily with paint to produce the color desired. Use the same brand of paint and tinting color to effect good paint body.

• 1032.2.3 Concrete Neutralizer

Concrete neutralizer shall be first grade quality concentrate diluted with clean water and applied as surface conditioner of new interior and exterior walls thus improving paint adhesion and durability.

• 1032.2.4 Silicon Water Repellant

Silicon water repellant shall be transparent water shield especially formulated to repel rain and moisture on exterior masonry surfaces.

• 1032.2.5 Patching Compound

Patching compound shall be fine powder type material like calciumine that can be mixed into putty consistency, with oil base primers and paints to fill minor surface dents and imperfections.

• 1032.2.6 Varnish

Varnish shall be a homogeneous solution of resin, drying oil, drier and solvent. It shall be extremely durable clear coating, highly resistant to wear and tear without cracking, peeling, whitening, spotting, etc. with minimum loss of gloss for a maximum period of time.

• 1032.2.7 Lacquer

Lacquer shall be any type of organic coating that dries rapidly and solely by evaporation of the solvent. Typical solvent are acetates, alcohols and ketones. Although lacquers were generally based on nitrocellulose, manufacturers currently use, vinyl resins, plasticizers and reacted drying oils to improve adhesion and elasticity.

• 1032.2.8 Shellac

Shellac shall be a solution of refined lac resin in denatured alcohol. It dries by evaporation of the alcohol. The resin is generally furnished in orange and bleached grades.

• 1032.2.9 Sanding Sealer

Sanding sealer shall be quick drying lacquer, formulated to provide quick dry, good holdout of succeeding coats, and containing sanding agents such as zinc stearate to allow dry sanding of sealer.

• 1032.2.10 Glazing Putty

Glazing putty shall be alkyd-type product for filling minor surface unevenness.

• 1032.2.11 Natural Wood Paste Filler

Wood paste filler shall be quality filler for filling and sealing open grain of interior wood.

It shall produce a level finish for following coats of paint varnish/lacquer and other related products.

• 1032.2.12 Schedule

Exterior

a) Plain cement plastered finish to be painted -3 coats Acrylic base masonry paint

b) Concrete exposed aggregate and/or tool finish -1 coat water repellant

- c) Ferrous metal -1 coat primer and 2 coats enamel paint
- d) Galvanized metal -1 coat zinc chromate primer and 2 coats portland cement paint
- e) Wood painted finish -3 coats oil based paint
- f) Wood varnished finish - varnish water repellent

Interior

- a) Plain cement plastered finish to be painted - 2 coats acrylic base masonry paint
- b) Concrete exposed agree gate and/or tool finish - clean surface
- c) Ferrous metal -1 coat primer and 2 coats enamel paint
- d) Woodwork sea-mist -3 coats of 3 parts thinner 1 part lacquer
- e) Woodwork varnish - 1st coat, of one part sanding sealer to one part solvent 2nd coat of 2/3 sanding sealer to 1/3 solvent
- f) Woodwork painted - 3 coats of oil base paint finish 109
- g) Ceiling boards textured finish -1 coat oil based paint allow to dry then patch surfaces unevenness and apply textured paint coat

- 1032.3 Construction Requirements

The Contractor prior to commencement of the painting, varnishing and related work shall examine the surfaces to be applied in order not to jeopardize the quality and appearances of the painting varnishing and related works.

- 1032.3.1 Surface Preparation

All surfaces shall be in proper condition to receive the finish. Woodworks shall be hand-sanded smooth and dusted clean. All knotholes pitch pockets or sappy portions shall be sealed with natural wood filler. Nail holes, cracks or defects shall be carefully puttied after the first coat, matching the color of paint. Interior woodworks shall be sandpapered between coats. Cracks, holes or imperfections in plaster shall be filled with patching compound and smoothed off to match adjoining surfaces.

Concrete and masonry surfaces shall be coated with concrete neutralizer and allowed to dry before any painting primer coat is applied. When surface is dried apply first coating. Hairline cracks and unevenness shall be patched and sealed with approved putty or patching compound. After all defects are corrected apply the finish coats as specified on the Plans (color scheme approved).

Metal shall be clean, dry and free from mill scale and rust. Remove all grease and oil from surfaces. Wash unprimed galvanized metal with etching solution and allow it to dry. Where required to prime coat surface with Red Lead Primer same shall be approved by the Engineer.

In addition the Contractor shall undertake the following:

1. Voids, cracks, nick etc. will be repaired with proper patching material and finished flushed with surrounding surfaces.
2. Marred or damaged shop coats on metal shall be spot primed with appropriate metal primer.
3. Painting and varnishing works shall not be commenced when it is too hot or cold.
4. Allow appropriate ventilation during application and drying period.
5. All hardware will be fitted and removed or protected prior to painting and varnishing works.

- 1032.3.2 Application

Paints when applied by brush shall become non-fluid, thick enough to lay down as adequate film of wet paint. Brush marks shall flow out after application of paint. Paints made for application by roller must be similar to brushing paint. It must be nonstick when thinned to spraying viscosity so that it will break up easily into droplets. Paint is atomized by high pressure pumping rather than broken up by the large volume of air mixed with it. These procedures change the required properties of the paint.

- 1032.3.3 Mixing and Thinning

At the time of application paint shall show no sign of deterioration. Paint shall be thoroughly stirred, strained and kept at a uniform consistency during application. Paints of different manufacture shall not be mixed together. When thinning is necessary, this may be done immediately prior to application in accordance with the manufacturer's directions, but not in excess of 1 pint of suitable thinner per gallon of the paint.

- 1032.3.4 Storage

All material to be used under this Item shall be stored in a single place to be designated by the Engineer and such place shall be kept neat and clean at all time. Necessary precaution to avoid fire must be observed by removing oily rags, waste, etc. at the end of daily work.

- 1032.3.5 Cleaning



Masaganang Agrikultura,
Maunlad na Ekonomiya

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All cloths and cotton waste which constitute fire hazards shall be placed in metal containers or destroyed at the end of daily works. Upon completion of the work, all staging, scaffolding and paint containers shall be removed. Paint drips, oil, or stains on adjacent surfaces shall be removed and the entire job left clean and acceptable to the Engineer.

- 1032.3.6 Workmanship in General

- All paints shall be evenly applied. Coats shall be of proper consistency and well brushed out so as to show a minimum of brush marks.
- All coats shall be thoroughly dry before the succeeding coat is applied.
- Where surfaces are not fully covered or cannot be satisfactorily finished in the number of coats specified such preparatory coats and subsequent coats as may be required shall be applied to attain the desired evenness of surface without extra cost to the owner.
- Where surface is not in proper condition to receive the coat the Engineer shall be notified immediately. Work on the questioned portion(s) shall not start until clearance be proceed is ordered by , the Engineer.
- Hardware, lighting fixture and other similar items shall be removed or 'protected during the painting varnishing and related work operations and re-installed after completion of the work.

- 1032.3.7 Procedure for Sea-Mist Finish

- Depress wood grain by steel brush and sand surface lightly.
- Apply sanding sealer.
- Apply two coats of industrial lacquer paint.
- Spray last coat of industrial lacquer paint mixed with sanding sealer.
- Apply wood paste filler thinned with turpentine or paint thinner into the wood surface.
- Wipe off wood paste filler immediately.
- Spray flat or gloss lacquer whichever is specified.

- 1032.3.8 Procedure for Varnish Finish

- Sand surface thoroughly.
- Putty all cracks and other wood imperfections with wood paste filler.
- Apply oil stain.
- Apply lacquer sanding sealer.
- Sand surface along the grain.
- Spray three (3) coats of clear dead flat lacquer.
- Polish surface coated using cloth pad.
- Spray gloss lacquer or flat lacquer whichever is desired or specified.

- 1032.3.9 Procedure for Ducco Finish

- Sand surface thoroughly.
- Apply primer surface white or gray by brush or spray.
- Apply lacquer spot putty in thin coat. Allow each coat for become thoroughly dry before applying next coat.
- Apply primer surfaces and then allow drying in two (2) hours before applying the next coat.
- Apply a coat of flat tone semi-gloss enamel as per color scheme submitted and approved by the Architect/Engineer.

1032.4 Method of Measurement

The areas of concrete, wood and metal surfaces applied with varnish, paint and other related coating materials shall be measured in square meters as desired and accepted to the satisfaction of the Architect/Engineer.

1032.5 Basis of Payment

The accepted work shall be paid at the unit bid price, which price and payment constitute full compensation for furnishing all materials, labor, equipment, tools and other incidental necessary to complete this Item.

This section of the specification covers the complete painting and finishing of the Steel surfaces, the painting of unfinished metal, and other surfaces of all the components of the said facility.

- The work covered by this section of the specification consists of the proper preparation of surfaces, the furnishing of labor, materials, tools, appliances, scaffoldings, and other necessary equipment, and the performing of all operations in connection with painting, varnishing, complete in accordance *with color*

schemes and as specified therein. (Color shall be approved by the supervising engineer /designer or otherwise specified.)

- All paint materials shall meet the requirements of the specifications by the standardization committee on supplies and shall be delivered on the job in the original containing, with labels intact and seal unbroken.
- The painting of the nameplate on the wall which is the "logo and text- DEPARTMENT OF AGRICULTURE and FEED MILL" shall be included in this item. Font of letters shall be verified by the contractor to the designer/ Project -in-charge.
- Except as otherwise noted, the color of the priming coat shall be lighter than the body coat. Paint shall applied 3 coats.

➤ **ITEM.1021. FLOOR FINISHES WORK (LIQUID TILE -GRAY)**

This Item shall consist of furnishing all materials, labor, tools and equipment required in undertaking Tiling works which only covers the biosecurity, feed Room and office.

MATERIALS SPECIFICATION:

DESCRIPTION	LOCATION
LIQUID TILE (LIGHT GRAY)	RAW MATERIALS STORAGE, ANIMAL STORAGE , ESSING AREA
CONCRETE FINISH (BROOM FINISH)	HALLWAY/PATHWAY

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IX. MACHINERY

➤ **MACHINERY- FEED PELLITIZER**

SPECIFICATION

- Brand new
- Capacity: 40KG/HR(min.)
- Mounted on a steel base structure with rubber wheels for easy mobility
- All metal surfaces shall be free from rust
- With set of manufacturer's standard tools required for maintenance
- Prime mover: 5 Horsepower (min.) Induction motor, single phase