



**REPUBLIC OF THE PHILIPPINES**  
**WESTERN MINDANAO STATE UNIVERSITY**  
 NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
 Effective Date: 08 - Sep - 2021

**PROJECT TITLE:** CONSTRUCTION OF SCHOOL BUILDING COMPONENT FOR INFRASTRUCTURE AND SMART CAMPUS DEVELOPMENT, OPERATIONALIZATION OF FACE-TO-FACE CLASSES AND UPGRADING / PROCUREMENT OF EQUIPMENT

**PROJECT LOCATION:** WMSU-MAIN CAMPUS, LOT-A NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY

**SUBJECT:** SUMMARY OF WORKS, GENERAL REQUIREMENTS AND TECHNICAL SPECIFICATIONS

**I. SUMMARY OF WORKS**

**A. INTRODUCTION**

The works in this Contract for the **CONSTRUCTION OF SCHOOL BUILDING COMPONENT FOR INFRASTRUCTURE AND SMART CAMPUS DEVELOPMENT, OPERATIONALIZATION OF FACE-TO-FACE CLASSES AND UPGRADING / PROCUREMENT OF EQUIPMENT** to be located at **WMSU-MAIN CAMPUS, LOT-A NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY**. The WMSU-Physical Plant and Engineering Services shall perform the construction management services including the management of projects deliverables and all issues arising from this Contract Document.

**B. NAME OF PROJECT**

**CONSTRUCTION OF SCHOOL BUILDING COMPONENT FOR INFRASTRUCTURE AND SMART CAMPUS DEVELOPMENT, OPERATIONALIZATION OF FACE-TO-FACE CLASSES AND UPGRADING / PROCUREMENT OF EQUIPMENT** to be located at **WMSU-MAIN CAMPUS, LOT-A NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY**.

**C. START AND COMPLETION OF DATES**

The Contractor shall be held responsible for meeting intermediate dates as contained within the attached documents. Such dates are binding, and damages will apply to intermediate as well as end dates:

Start on Site : Based on date stipulated on Notice to Proceed

Punch listing :

All Works Complete :



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

---

#### **D. WORK AREAS**

All works shall be done within the confine of the lot boundaries. Provides temporary work enclosures on all sides affected by building repair works. Provide appropriate announcements boards and signage's, to include all construction permits, clearances, and duration of works.

#### **E. SCOPE OF WORK - GENERAL**

1. The drawings, technical specifications and boq are intended to be complementary. Anything shown on the drawings but not mentioned in the specifications and vice-versa shall be done as if were mentioned or indicated in both. Anything not expressly set forth in either but is reasonably implied or required in the process of completing any item within the scope of work shall be taken into account as though specifically mentioned or indicated in both.
2. The Contractor shall furnish all materials, labor and necessary equipment to complete the project. Construction shall be under the direct supervision of the WMSU - Physical Plant and Engineering Services Director.
3. Procurement of all necessary permits, licenses, inspection and other fees that may be required by the Local or National authorities shall be secured at the expense of the Contractor.
4. All changes in plans, such as addition, alteration and substitution of materials to be used shall have prior approval of the WMSU - Physical Plant and Engineering Services Director.
5. The WMSU - Physical Plant and Engineering Services shall in no way be liable for any damage/destruction of work or for the expense of replacement. The Contractor shall provide protections and be responsible for their own works at all times. Any damage in their own part shall be replaced or repaired at their own expense.
6. Unless otherwise specified, all materials shall be new and of best quality of their respective kinds of purpose.
7. Where no mention is made in this specification or in plans regarding the kind of materials, reference should be made to the WMSU - Physical Plant and Engineering Services Director as to the kind of work to which it pertains.



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

---

**E.1 GENERAL REQUIREMENTS**

- a. Perimeter Fence
- b. Project Billboard
- c. Occupational Safety and Health Program
- d. Mobilization and Demobilization
- e. Permits and Clearances

**E.2 DEMOLITION / EARTH WORKS**

- a. Demolition/Removal of Concrete Structures with Equipment
- b. Column Footing Manual Excavation with Equipment
- c. Filling of Gravel Bedding Materials including compaction with Equipment

**E.3 TERMITE CONTROL WORKS**

- a. Soil Poisoning

**E.4 CONCRETE WORKS**

- a. Reinforced Concrete Column & Wall Footing
- b. Reinforced Concrete Beams
- c. Reinforced Concrete Columns
- d. Reinforced Concrete Slab-on-Fill

**E.5 FORMS AND FALSEWORKS**

- a. Building Formworks and Falseworks

**E.6 MASONRY AND PLASTERING WORKS**

- a. 100 mm Concrete Hollow Block (CHB) Non-Bearing Wall
- b. 150 mm Concrete Hollow Block (CHB) Non-Bearing Wall
- c. Cement Plaster Finish
- d. Concrete Column Molding Finish



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

---

**E.7 CARPENTRY AND JOINERY WORKS**

- a. Installation of Fiber Cement Ceiling on Metal Framing on Metal Framing System

**E.8 DOORS, WINDOWS, GLASS AND GLAZING, AND RAILINGS**

- a. Fabrication, Supply and Installation of All Doors
- b. Fabrication, Supply and Installation of All Windows
- c. Installation of Metal Railing

**E.9 TILE AND COUNTERTOP WORKS**

- a. Installation of Glazed Ceramic Floor Tiles including Tile Adhesive as Indicated in the Drawings
- b. Installation of Unglazed Ceramic Wall Tiles including Tile Adhesive as Indicated in the Drawings
- c. Installation of Non-Skid Floor and Wall Tiles including Tile Adhesive as Indicated in the Drawings

**E.10 METAL WORKS**

- a. Roof Truss

**E.11 ROOFING WORKS**

- a. Pre-Painted G.I. Sheet Roofing (Rib Type-Long Span)

**E.12 PAINTING WORKS**

- a. Paint of Masonry and Concrete Surfaces

**E.13 PLUMBING WORKS**

- a. Water Supply Including Fittings
- b. Sanitary Line System Including Fittings
- c. Plumbing Fixtures
- d. Water Tank

**E.14 STORM DRAINAGE AND SEWERAGE SYSTEM**

- a. Catch Basin – Concrete/CHB
- b. Septic Vault – Concrete/CHB



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

---

**E.15 ELECTRICAL WORKS**

- e. Conduits, Boxes and Fittings
- f. Wires and Wiring Devices
- g. Lighting/Power Fixtures (Lightings, Switches & Outlets)
- h. Panel Boards including Circuit Breaker

**E.17 AS-BUILT (RECORD) DRAWINGS AND RELATED DOCUMENTS**

**II. GENERAL REQUIREMENTS**

The works shall be carried out according to the Technical Specifications and shall govern the methods of construction and the kind of materials to be used for the **Construction of School Building Component for Infrastructure and Smart Campus Development, Operationalization of Face-to-face Classes and Upgrading / Procurement of Equipment** as shown in the plans and detail drawings.

The plans, detailed drawings, boq and this Specification, shall be considered as complementing to each other, so that what is mentioned or shown in one, although not mentioned or shown in the other, shall be considered as appearing on both. **In case of discrepancy, between the Technical Specifications and Approved Detailed Drawings, the Technical Specifications shall prevail.**

All works shall be carried out in coordination with carpentry, masonry, electrical, and other building works. Materials not conforming to Specifications shall be rejected

**A. GENERAL CONDITIONS**

Prior to execution of works, the Contractor shall verify the existing condition of the structural and project boundaries. Total demolition of existing portion of the structure within the proposed project site is required.



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

## **B. CONTRACTOR'S OFFICE & ACCOMODATION**

Provision of Contractor's Temporary Facility is required. The structure of the building shall be adequate, rainproof, spacious, airy and hygienic with proper lightings and toilet facilities. The area shall be kept neat and clean. Any garbage or sewage shall be disposed at a location and in a manner approved by WMSU-Physical Plant and Engineering Services Office.

Space allocation for storage of various materials such as cement, reinforcement steel and petroleum products, etc. shall be clearly separated to avoid contamination. Petroleum products shall be stored and handled in a way that avoids contamination of ground water. Workshops shall be installed with oil and grease traps for the same purpose.

The Contractor shall provide, at its own expense, adequate temporary accommodation and toilet facilities for its own workmen and keep the same in good conditions. The Contractor shall construct suitable soak pits along with room of pit-type latrines. Sufficient water must be provided and maintained in the toilets. Proper methods of sanitation and hygiene should be employed during the whole project duration. The above-mentioned temporary structures shall be removed on the completion of the works at Contactor's own cost. All materials and labor cost shall be provided by the Contractor.

The Contractor shall provide at his own expense calibrated meters for each water and electricity connection and pay billings thereof.

## **C. SAFETY MEASURES**

The Contractor shall be responsible for safety of all workmen and other persons entering the Works and shall be all at his own expense take all measures necessary to ensure their safety. Such measures shall be subject to the approval of WMSU-Physical Plant and Engineering Services shall include but not limited to:

1. Appropriate personal protective equipment (helmet, dust mask, safety shoes, vest, and hand gloves) must be provided and worn by workmen.
2. First Aid Cabinet must be fully equipped and readily available for treatment of sickness and injuries;
3. Provide safety and emergency regulations for fire and electric shock prevention;
4. Safe control of flowing water; and
5. Conduct regular safety meeting.



**REPUBLIC OF THE PHILIPPINES**  
**WESTERN MINDANAO STATE UNIVERSITY**  
 NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
 Effective Date: 08 - Sep - 2021

**D. NOTICE BOARD**

The Contractor shall erect notice board (4' x 8') at the site giving details of the Contract in the format provided by COA. It shall be removed upon receipt of Certificate of Completion.

PROJECT TITLE	LOCATION
CONTRACTOR :	
DATE STARTED :	
CONSTRUCTION COMPLETION DATE :	
CONSTRUCTION DURATION :	
CONTRACT AMOUNT :	
SOURCE OF FUND :	
IMPLEMENTING OFFICE :	WESTERN MINDANO STATE UNIVERSITY
<b>WESTERN MINDANAO STATE UNIVERSITY</b> NORMAL ROAD, BARANGAY BALIWASAN, ZAMBOANGA CITY	

**E. ENVIRONMENTAL PROTECTION WORKS**

The environment means surrounding area including human and natural resources to be affected by execution and after completion of works. The Contractor shall take all precautions for safeguarding the environment during the course of construction of the works. He shall abide by all prevalent laws, rules and regulations governing pollution and environmental protection. The Contractor shall prohibit employees from cutting trees and the former shall be the responsible for the action of the latter.

Waste materials must be collected, stored, and transported to approved dump / disposal area.

The WMSU-Physical Plant and Engineering Services shall have the power to disallow the method of construction and / or the use of any borrow / quarry area, if the stability and safety of the works or any adjacent structure will be compromised, or there is undue interference with the natural or artificial drainage, or the method or use of the area will promote undue erosion.



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

---

#### **F. MATERIALS AND WORKMANSHIP**

All materials and equipment used in the Works shall be new and best in quality, design and performance. All materials used shall be of the quality specified and where not specified shall be in accordance with the relevant Standards Acceptable by the University Architect or the Physical Plant and Engineering Services Director.

All materials and work necessary for the efficient functioning of the installation shall be provided even if not explicitly mentioned in the Contract Documents.

All works shall be carried out to the best engineering practice by fully competent tradesmen.

#### **G. VARIATION ORDERS**

A Change Order may be issued by Physical Plant and Engineering Services to cover any increase/decreased in quantities of original work item in the contract.

An Extra Work Order may be issued by Physical Plant and Engineering Services to cover the introduction of new work necessary for the completion, improvement or protection of the project which was not included as items of work in the original contract, such as, where there are subsurface or latent physical conditions at the site differing materially from those indicated in the contract, or where there are duly unknown physical conditions at the site of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the work or character provided for in the contract.

In Under no circumstances shall contractor proceed to commence work under any Change Order or Extra Work Order unless it has been approved by the Director of the Physical Plant and Engineering Services or his duly authorized representative.

#### **H. DELAYS**

In the event the Contractor falls behind the Project Schedule, then he may be required to accelerate his work. In such cases, the Contractor shall immediately apply appropriate extra resources at his own expense until such time as the schedule slippage has been recovered.





REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

---

## I. SITE DIARY OR MANUAL FIELD / LOGBOOK

The Contractor shall keep Site Diary or Manual Field Book wherein full details of the work carried out during each day shall be fully recorded. The Site Diary or Manual Field Book shall be available for inspection by the WMSU-Physical Plant and Engineering Services anytime during normal office hours. It shall include:

1. Project Name;
2. Contractor's Name;
3. Contractor's Representative;
4. Weather Conditions, rainfall, and water level (indicate "NO WORK "if unworkable days)
5. Description, quality, and location of work performed;
6. Shift and working hours;
7. Number and category of workers working at the site;
8. Test carried out and results;
9. Inspection carried out by WMSU-PPES;
10. Problems or abnormal occurrence;
11. DEFECTIVE / Non-Compliant Work & Corrective Action.
12. Site Instructions;
13. Visitors; and
14. Accidents (if any)

## III. TECHNICAL SPECIFICATIONS

### A. GENERAL REQUIREMENTS

#### A-I. Perimeter Fence

1. The Contractor shall provide temporary perimeter fence constructed using 8ft Wide Laminated Blue/Orange Sheet stapled or nailed in coco lumber at every 1.2 meters distance, 2 meters offset from the construction site and a minimum of 2.4 meters in height.
2. The contractor, upon completion of work, shall remove the temporary perimeter fence and all temporary facilities and clear the site acceptable to the procuring entity.



**REPUBLIC OF THE PHILIPPINES**  
**WESTERN MINDANAO STATE UNIVERSITY**  
 NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
 Effective Date: 08 - Sep - 2021

**A-II. Project Billboard**

1. The Contractor shall erect a (4' x 8') notice board at the project site, giving details of the Contract in the format provided by the Commission on Audit (COA). The said project billboard will be removed only upon receipt of Certificate of Completion.

<b>PROJECT TITLE</b>	
<b>LOCATION</b>	
CONTRACTOR	:
DATE STARTED	:
CONSTRUCTION COMPLETION DATE	:
CONSTRUCTION DURATION	:
CONTRACT AMOUNT	:
SOURCE OF FUND	:
IMPLEMENTING OFFICE	: WESTERN MINDANO STATE UNIVERSITY

**WESTERN MINDANAO STATE UNIVERSITY**  
 NORMAL ROAD, BARANGAY BALIWASAN, ZAMBOANGA CITY

**A-III. Occupational Safety and Health Program**

1. The Contractor shall be responsible for safety of all workmen and other persons entering the project site and shall be all at his own expense to take all necessary measures to ensure their safety.
2. All Safety Measures to be taken shall be subjected to the approval of the WMSU-Physical Plant and Engineering Services Director and shall include but not limited to the following:
  - a. Appropriate Personal Protective Equipment such as hard hats, dusk mask, safety shoes, reflectorized vest, hand gloves and the like shall be provided and worn by all workmen on site;
  - b. First Aid Cabinet must be fully equipped and readily available for treatment of sickness and/or injuries;
  - c. Provide Safety emergency regulations for fire and electric shock preventions;
  - d. Safe control of flowing water, and
  - e. Conduct regular safety meeting.



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

#### **A-IV. Mobilization and Demobilization**

1. The work shall consist of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract.
2. It shall be computed based on the equipment requirements of the project stipulated in the proposal and contract booklet.
3. It shall not exceed 1% of the Estimated Direct Cost (EDC) of the civil works items.
4. Mobilization shall include all activities and associated costs for transportation of Contractor's personnel, equipment, and operating supplies to the site; building; and other necessary general facilities for the contractor's operation at the site.
5. Demobilization shall include all activities and costs for the transportation of personnel, equipment and supplies not required or included in the contract from the site; including the disassembly, removal and site cleanup, of offices, buildings and other facilities assembled on the site specifically for this project.
6. This work includes mobilization and demobilization required at the time of award.
7. If additional mobilization and demobilization activities and costs are required during the performance of the contract as result of changed, deleted or added items of work for which the Contractor is entitled to an adjustment in contract price, compensation for such cost will be included in the price adjustment for the item or items of work changed or added.

#### **A-V. Permits and Clearances**

1. All works covered by this specification shall be complete and functional in all respects and shall comply with the rules, regulations and requirements of local authorities having jurisdiction over the installations and all other relevant statutory requirements.
2. The Contractor shall apply from all local authority necessary permits and certificates. These shall include but are not limited to building permit, occupancy permits and associated construction permits. The timing for the applications shall be such that, to the opinion of the WMSU-Physical Plant and Engineering Services, the overall work progress will not be affected.
3. Upon completion of the Works, the Contractor shall carry out all necessary tests on the various systems of the installations as required by agency or the local authorities, and shall apply for and obtain all certificates and approval from the relevant authorities for the work done and shall submit same to WMSU-Physical Plant and Engineering Services.
4. The Contractor shall arrange for local authorities' inspections and obtain the required approval and permits or certificates from the local authority at a time as directed by WMSU-Physical Plant and Engineering Services.
5. The Contractor is to note that the contracted works will not be considered as practically complete prior to the receipt of the approval of certificates.



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

---

**B. DEMOLITION / EARTH WORKS**

**B.I Demolition / Removal of Miscellaneous Finishing and Pay Items inside the structure with small tools**

1. Works in this item herein include the removal of existing Columns, Beams, Solid walls, Tiles, Red Cement Flooring, Plumbing and Electrical fixtures and Roughing-Ins, including handling, salvaging, piling, and disposing off the cleared materials with all leads and lifts.
2. Materials obtained from the scope of demolition and removal of items inside the structure shall be properly turned over WMSU-Property Management Office (PMO) for assessment. Demolished materials assessed by PMO for discarding shall be disposed of by the Contractor.
3. Burning of demolished or any unwanted materials shall not be allowed.

**B.II Excavation and Backfill**

1. The Contractor shall verify the dimensions and levels shown on the drawings and shall notify the Physical Plant and Engineering Services or representatives of any discrepancy which may affect the dimensions or levels of such parts of the Works. Such notification by the Contractor shall be given in sufficient time to allow the agency to prepare drawings or schedule showing his amended requirements.
2. Excavation shall be taken down to the depths shown on the drawings or to such depths as required by the Physical Plant and Engineering Services. Where necessary, the Contractor shall have on hand sufficient pumping equipment for dewatering during the process of excavation and construction.

**C. TERMITE CONTROL WORKS**

**C.I Soil Poisoning**

1. Works under this section shall apply the Cordoning method, this method is usually adopted when there is no visible evidence of termite infestation. Trenches in concentric circles, squares or rectangles are dug 150mm to 220mm wide and at least one meter apart and applied with Type I working solution at the rate of 8 liters per linear meter.
2. At the time soil poisoning is to be applied, the soil to be treated shall be friable condition with low moisture content so as to allow uniform distribution of the toxicant agents. Toxicant shall be applied at least twelve (12) hours prior to placement of concrete which shall be in contact with treated materials.



REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

3. Treatment of the soil on the exterior sides of the foundation walls, grade beams and similar structures shall be done prior to final grading and planting or landscaping work to avoid disturbance work to avoid disturbance of the toxicant barriers by such operations.
4. Areas to be covered by concrete slab shall be treated before placement of granular fill used as capillary water barrier at a rate of 12 liters per square meter with Type I working solution after it has been compacted and set to required elevation. Additional treatment shall be applied as follows.
  - a. Type In critical areas such as utility openings for pipes, conduits and ducts, apply additional treatment at the rate of 6 liters per linear meter in a strip 150mm to 200mm wide.
  - b. Along the exterior perimeter of the slab and under expansion joint, at the rate of 2.5 liters per linear meter in a strip 150mm to 200mm wide in shallow trench.

#### D. CONCRETE WORKS

1. Materials for concrete shall be from approved source by the Engineer-In-Charge.
2. All concrete works shall be done in accordance with the standard specification for reinforced concrete.
3. Cement to be use shall be Portland cement or any brand in the market that passes ASTM Standard for Portland Cement.
4. Reinforced concrete- 3000 PSI @ 28-days. Concrete mix shall be subject to adjustment to attain the required strength or desired mix consistency, subject to approval of the Engineer-in-Charge.
5. Portland cement, Type 1
6. Manufactured or river-run run Gravel G1 for structural concrete,  $\frac{3}{4}$  "max properly graded
7. Coarse Sand for structural concrete
8. Water: Use potable water free from alkaline or deleterious substance that may affect the strength of concrete. Use of rain water will not be permitted.
9. All materials shall be free from clay, lumps or any deleterious object or matter that will impair the strength of concrete.
10. Mix proportion of concrete for Footings, Beams & Columns shall be 1: 2: 4 (Cement: Sand: Gravel) in accordance with current industry standards or best practices.
11. Mix proportion of concrete for Floor, Slabs & Ramps shall be 1: 2  $\frac{1}{2}$ : 5 (Cement: Sand: Gravel) in accordance with current industry standards or best practices.
12. Slump of concrete shall not exceed 3 inches
13. Placement of concrete shall be in accordance to standard norms, when using portable concrete mixers.
14. Cure concrete sprinkling water and wetted continuously for 7-day period
15. Main Steel reinforcements shall be ASTM A615, deformed steel bars, Grade 60. Stirrups shall be ASTM Grade 40.



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

16. Supply, fabricate and install reinforcing steel as shown on Drawings. Placing of steel reinforcements shall be in accordance with current industry (local) code (or ACI-347)
17. Tie wires shall be Gauge 16
18. Provide concrete spacers or plastic spacers to meet the required concrete cover as shown on Drawings.
19. Steel reinforcements shall be free from mill scales, rusts, oils, contamination that will impair the bonding property to concrete.
20. Storage
  - a. All reinforcements shall be delivered to the site either in straight lengths or cut and bent.
  - b. No reinforcement shall be accepted in long lengths, which have been transported bent over double.
  - c. Any reinforcement, which is likely to remain in storage for a long period, shall be protected from the weather to avoid corrosion and pitting.
  - d. All reinforcement which has become corroded or pitted to an extent which, in the opinion of PPES, will affect its properties, shall either be removed from site or may be tested for compliance at the contractor's expense.
  - e. Reinforcement shall be stored at least 150 mm above the ground on a clean area free of mud and dirt and sorted according to category, quality, and diameter.

## **E. FORMS AND FALSEWORKS**

### **E-I. Building Formworks & Building False Works (Scaffolding)**

1. All forms shall be designed by the Contractor for a safe construction activity and installed to dimensions shown on the Drawings.
2. All materials for formworks shall be durable and free from warps, dilapidation and shall produce a neat surface upon stripping.
3. All joints shall be free from mortar leak during placement of concrete.
4. Stripping of forms shall only commence after the concrete has gained sufficient strength (min of 7 days) for major structural elements.
5. All Formworks shall be carefully removed without shock or disturbance to the concrete.
6. No formworks shall be removed until the concrete has attained sufficient strength to support its own weight and carry loads that maybe placed on it.
7. Side forms of beams and girders may be removed earlier than bottom forms, but the additional post or shoring must be placed under the beam or girder until it attains the sufficient strength.



**REPUBLIC OF THE PHILIPPINES**  
**WESTERN MINDANAO STATE UNIVERSITY**  
 NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
 Effective Date: 08 - Sep - 2021

8. The minimum periods, which shall elapse between completion of placing concrete and removal of forms, are given below:

	Minimum Time	Minimum % Design Strength
Beams	14 Days	80%
Slabs	14 Days	70%
Columns	2 Days	70%
Sides of Beams	1 Day	70%

**F. MASONRY AND PLASTERING WORKS**

**F-I. 100 mm & 150 mm Concrete Hollow Block (CHB) Non-Bearing Wall**

1. All new CHB reinforcing bars must be properly anchored/attached to the reinforcing bars of the existing CHB walls. Adequate trimmer bars of size & length shall be provided within the new openings as indicated in drawings.
2. Deliver to site CHB units undamaged and free from breakage to edges or corners.
3. Concrete hollow block units shall be nominal 100 x 200 x 400 or 150 x 200 x 400 (as indicated in plan) stretcher blocks, all cells grouted with steel reinforcements shown on Drawings, (350min) psi when tested to applicable ASTM Standards and Industry norms.
4. Erect CHB units to plumb and true to alignment within acceptable tolerance.
5. Mix proportion for grouting and setting bed shall be 1: 3 (Cement: sand), maximum proportion. The Contractor shall make necessary adjustments to suit project requirements without extra cost to the Company.
6. Damaged unit masonry shall not be used.
7. The Contractor shall provide and maintain extra units or numbers at site without extra cost to WMSU-Physical Plant and Engineering Services Office.
8. All masonry units and associated materials shall satisfy test requirements of ASTM C190, C140), non- load bearing test.
9. Install all CHB based on anchorage details as shown in drawings.
10. Interior walls shall be of Smooth Plain Cement Plaster finish unless otherwise specified in the plans.

**F-II. Cement Plaster Finish**

1. All surfaces to be rendered or cement plastered shall be clean from any loose material or contamination to provide strong bond between plaster and the surface.
2. Mix proportion shall not be less than 1 part of cement to 4 parts of screened sand Necessary adjustments shall be made to provide a strong and consistent mix, free from cracking due to rapid hydration of plaster





REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

mix.

3. Tampering of previously mix concrete will not be permitted.
4. All surfaces to receive paint finish shall be smooth whilst surfaces to receive tiles shall be rough to provide better adhesion or bond.
5. Water shall be potable and clean.

## **G. CARPENTRY AND JOINERY WORKS**

### **G-I. Installation of Fiber Cement Ceiling on Metal Framing System as Indicated in the Drawings**

1. Works herein shall include supply and installation of fiber cement ceiling board on metal furring ceiling joist. All materials to be used herein shall be free of cracks, dents, and other imperfections.
2. 3.5 mm thick x 4' x 8' fiber cement board shall be used for interior ceiling in the entire second floor and third floor.
3. Interior ceiling joints shall be sealed without forming any bubble and joints shall be finished flush to make the ceiling in one piece.
4. Fiber Cement Boards shall be riveted by 1/8" Ø x 1/2" blind rivet to 0.40 mm thick x 3/4" x 2" metal furring, spaced at 0.60m both ways.
5. Metal furring ceiling joist shall have adequate hangers and carrying metal runners to stay in perfect line and level.
6. Prior to enclosure of ceiling, all dimensions, alignment of metal frames, material specifications, electrical and auxiliary rough ins, carrying metal runners shall be checked to comply with standard installation requirements.

## **H. DOORS, WINDOWS, GLASS AND GLAZING, AND RAILINGS**

### **H-I. Fabrication, Supply and Installation of All Doors**

1. This work item includes fabrication or supply and delivery of all Doors
2. Furnish all materials and labor, use of tools for the fabrication, delivery and installation of doors as shown on Drawings and herein specified.
3. Door frames, jambs, and panels shall be of standard size and thickness, unless otherwise specified in the plans/drawings.
4. All Solid Wooden Doors shall be kiln dried and treated. Lever type doors, Panel doors ready for installation with the provisions for locksets, door keys, and hinge completely operational.
5. The frames shall be plumb-set and squared in the frames working of walls or building partitions. Locks of doors shall be filled at the lock block, 1000 mm above the finished floor level.





REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

- Locks shall be installed in conformity with the templates and instructions supplied with the locksets.
- The Contractor shall submit sample cross sections of door frames to be installed to the WMSU-Physical Plant and Engineering Services (PPES) or to the Office of the University Architect (OUA) for approval. Fabricated doors and shutter shall be finished square, smoothly sanded, and free from damage or dent.
- Deliver all doors and windows free from any damage. Store materials to avoid contamination from soil or unwanted materials.

#### H-II. Fabrication, Supply and Installation of All Windows

- This work item includes fabrication or supply and delivery of all Windows.
- Furnish all materials and labor, use of tools for the fabrication, delivery and installation of doors and windows as shown on Drawings and herein specified.
- Windows and window frames shall conform to the size, designs and kinds of materials in the details of windows as indicated in the plans. Aluminum (analok) window frames, jambs, and panels shall be of standard size and thickness.
- All windows shall use 3/16" thick clear glass in 2"x6" Aluminum (Analok) window jamb and frame unless otherwise specified in the drawings.
- Deliver all windows free from any damage. Store materials to avoid contamination from soil or unwanted materials.

#### H-III. Installation of Railings

- Ramp railings shall conform to the size, designs and kind of materials in the details of ramp railings detail as indicated in the plans and drawings.

### I. TILE AND COUNTERTOP WORKS

#### I-I. Installation of Floor Tiles including Tile Adhesive

- Works herein shall include supply and placing of unglazed ceramic & non-skid floor tiles as indicated in the plans and drawings.
- The surface where the tile is laid must be level, true to elevation, dry and free from oil and other sediments.
- Allow at least 7 days curing of the scratch coat and setting bed.
- Main entrance and Lobby shall be finished with 6mm thick x 600mm x 600mm Ceramic Glazed floor tiles.
- All tiles of toilets shall be finished with 6mm thick x 300mm x 600mm Non-Skid Ceramic floor tiles.
- The Tile grout color and aluminum nosing with rubber for the stair nosing shall be subject for the WMSU-Physical Plant and Engineering Services Director's approval.
- The Contractor shall submit sample of tiles to the WMSU-Physical Plant and Engineering Services for approval of type,



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

quality, and color.

8. All materials to be used herein shall be brand new and passing Philippine Standard material quality control requirements. It shall have cast, stamp, or indelible marks on it like manufacturer's trademarks or name, weight, type, or classes of products when so required.
9. Before the tiles are placed, the surfaced shall be brushed cleaned and wetted. The surface shall be tested for levelness or conformity of slope by flooding it with water.
10. Tiles shall be installed by applying heavy duty adhesive to backs of tile and firmly pressing tile into the floating coat to true plane and position.
11. Joints shall be maintained uniformly wide by aligning spacer lugs on tile edges. All joint lines shall be kept straight and true to profiles, plumbed and internal corners rounded using the appropriate trims.
12. Flooring shall be sloped to floor drain as shown in the plans.
13. All tile work finishing shall be adequately protected from damage during the progress of construction. Chipped, cracked, or broken tile shall not be used, and all defective work shall be replaced and repaired to the approval of the WMSU-Physical Plant and Engineering Services at Contractor's expense.

#### **I-II. Installation of Wall Tiles including Tile Adhesive**

1. Works herein shall include supply and placing of unglazed ceramic tiles as indicated in the plans and drawings.
2. The surface where the tile is laid must be level, true to elevation, dry and free from oil and other sediments.
3. Allow at least 7 days curing of the scratch coat and setting bed.
4. All tiles of toilets shall be finished with 6mm thick x 300mm x 600mm Unglazed Ceramic wall tiles.
5. The Tile grout color and aluminum nosing with rubber for the stair nosing shall be subject for the WMSU-Physical Plant and Engineering Services Director's approval.
6. The Contractor shall submit sample of tiles to the WMSU-Physical Plant and Engineering Services for approval of type, quality, and color.
7. All materials to be used herein shall be brand new and passing Philippine Standard material quality control requirements. It shall have cast, stamp, or indelible marks on it like manufacturer's trademarks or name, weight, type, or classes of products when so required.
8. Before the tiles are placed, the surfaced shall be brushed cleaned and wetted. The surface shall be tested for levelness or conformity of slope by flooding it with water.
9. Tiles shall be installed by applying heavy duty adhesive to backs of tile and firmly pressing tile into the floating coat to true plane and position.



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

10. Joints shall be maintained uniformly wide by aligning spacer lugs on tile edges. All joint lines shall be kept straight and true to profiles, plumbed and internal corners rounded using the appropriate trims.
11. All tile work finishing shall be adequately protected from damage during the progress of construction. Chipped, cracked, or broken tile shall not be used, and all defective work shall be replaced and repaired to the approval of the WMSU-Physical Plant and Engineering Services Director at Contractor's expense.

## **J. METAL WORKS**

### **J. I. Roof Truss**

1. Works herein include supply, fabrication and installation of steel half truss type roof framing system as shown in the plans. Before assembling and installing the roof system, the Contractor shall submit sample of all roof framing member sections for approval of University Engineer.
2. All steel materials to be used herein shall be free of rust, dirt and oil. All materials to be used herein shall be brand new and passing Philippine Standard material quality control requirements. It shall have cast, stamp or indelible marks on it like manufacturer's trademarks or name, weight, type or classes of products when so required.
3. Welding works being done for rafters shall be verified by University Engineer for welding penetration and length requirements.
4. Steel purlins are then placed equidistantly as per plans and should have angle straps and sag rods to prevent lateral buckling. It should be placed properly to fit the length of the roofing sheets.
5. The top of the ridge line purlins should be at the same plane. All steel materials herein shall be painted with metal primer for rust protection. The Contractor shall provide temporary erection bracing and shoring, and make actual measurements in the field prior to fabrication and installation of roof framing system.
6. Materials steel and metals for the Works shall meet the requirements of ASTM A36, hot-rolled shapes and plates.
7. All steels shall be primed with epoxy-based paint with -2- finish coats, grey colored paint. Substrate preparation shall meet the requirements of the applicable Clauses of the Steel Structures Painting Council, for industrial type of construction. All surfaces shall be free from mill scale, rusts, oils or any contaminants detrimental to adhesion of paint.
8. Welding works shall be in accordance with Structural Welding Code (American Welding Society-D1.1, latest edition). Welding electrodes shall be as indicated in drawings, minimum, meeting the requirements of AWS A.5. All welders shall meet the qualifications under the AWS Codes and standards.
9. All Works under this item shall be subject to verification by the University Engineer prior to commencement of fabrication. Contractor is to submit SHOP DRAWINGS for WMSU-PPES Director review prior to execution.
10. Roof framing Trusses/Rafters shall be constructed, erected, and properly anchored to the roof beams or columns as



REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES - FR - 007A.00  
Effective Date: 08 - Sep - 2021

indicated in drawings

## K. ROOFING WORKS

### K.I. Pre-Painted G.I. Sheet Roofing (Rib-Type Long Span)

1. Works herein shall include supply and installation of 0.60mm thick pre-painted Rib-Type Long Span roofing sheets, roofing sheets and accessories as shown in the plans.
2. All roofing materials should be free from rust, dirt, and oil during time of installation. 2-1/2" TekScrews and 1/8 x 3/8 rivets shall be placed at top of corrugation and shall have gutter or silicon sealant application to prevent leakage.
3. Unnecessary holes made on the roofing materials shall be rejected.
4. Pre painted stainless steel box type gutter shall be bolted with at least 450 mm each way under the roofing sheets and shall be properly secured to the framework. Rivets alongside of the valley shall be fastened at every second corrugation.

## L. PAINTING WORKS

1. Painting works shall be as indicated on Drawings and described in the Bill of Quantities. Includes substrate preparation, application of neutralizers, putty, sanding, cleaning, protection, etc. to provide a strong or durable paint coating, following manufacturer's written instructions and acceptable trade practices.
2. Provide materials that are suitable for the job and or type of construction.
3. Paint materials shall be of the brand specified herein or approved equal by the Physical plant and Engineering Services Director.
4. Examine substrate and conditions under which painting will be performed. Proceed with the work only when conditions are satisfactory.
5. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.
6. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall into wet, newly-painted surfaces.
7. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.



## L.II. Paint of Masonry and Concrete Surfaces

1. Perimeter Concrete Facade
  - a. Concrete, concrete masonry, rendered smooth
  - b. One (1) coat of Acrylic Concrete Primer and Sealer by roller, let dry for 2 hours.
  - c. Putty surface imperfections, hairline cracks with Concrete Putty using putty knife.
  - d. One (1) coat Acrylic Concrete Primer and Sealer by roller let dry for 2 hours
  - e. Finish with two coats Latex Semi-Gloss by roller allow two hours' interval between coats.
2. Interior Walls
  - a. Concrete, concrete masonry, rendered smooth
  - b. One (1) coat of Acrylic Concrete Primer and Sealer by roller, let dry for 2 hours.
  - c. Putty surface imperfections, hairline cracks with Concrete Putty using putty knife.
  - d. One (1) coat Acrylic Concrete Primer and Sealer by roller let dry for 2 hours
  - e. Finish with two coats latex semi-gloss paint by roller allow two hours' interval between coats.
3. All fiber cement board ceiling surfaces shall be painted as follows;
  - a. Apply one coat of Acrylic Concrete Primer Sealer by brush, roller or spray. Let it dry for 2 hours.
  - b. Repair surface imperfections with Concrete Putty using putty knife let it dry for 2 hours and sand
  - c. Apply one coat of Acrylic Concrete Primer Sealer by brush, roller or spray. Let it dry for 2 hours.
  - d. Finish with two coats Premium Washable Paints by brush, roller or spray allow 2 hours between coats
  - e. Reduction / Cleaning - Water

REVIEWED AND CHECKED BY:

**ARCH. JOSEPH ANDREW L. SAHIAL, uap**  
Director for Physical Plant and Engineering Services



REPUBLIC OF THE PHILIPPINES  
**WESTERN MINDANAO STATE UNIVERSITY**  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
**PHYSICAL PLANT AND ENGINEERING SERVICES**



WMSU - PPES - FR - 007A.00  
Effective Date: 08 - Sep - 2021

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**M. PLUMBING WORKS**

1. The Work to be done under this section consist of the fabrication, complete in all details, of the Plumbing Works, at the subject premises and all work and materials incidental to the proper completion of the installation.
2. All plumbing works included herein shall be executed according to the requirements of the National Plumbing Code of the Philippines, and the Rules and Regulations of the Local Municipality (Zamboanga Water District).
3. Read the drawing in connection with other related drawing and specifications. The Physical Plant and Engineering Services director and the Master Plumber shall be notified immediately of any discrepancy found therein.
4. The contractor shall determine the actual location depth and invert discrepancy of all existing pipe and structures to conform with the proposed sanitary utilities.
5. The contractor's rates shall include for fixing the sanitary wares and fittings to walls and/or floors complete with all necessary fittings, accessories and bracket, including all necessary joints and connections to supply work and overflow pipes.
6. No broken or chipped sanitary wares and fittings shall be use.
7. The location of pipes can be transferred whenever required for proper execution of other trades or condition that such changes of locations meet the requirements.
8. All slopes for horizontal branches shall maintain  $1 - \frac{1}{2}\%$  as minimum unless noted otherwise.
9. Unless otherwise indicated, all fixtures shall be vented.
10. Size of water supply pipes to fixtures shall be in accordance with the manufacturer's instructions.
11. Unless otherwise specified, all downspout, sewer and vent pipes shall be PVC pipes.
12. All floor drain shall be 4" Stainless steel in good quality.
13. All water supply line from main water line shall have individual control gate valve.
14. All sewer pipe must be taped to the existing septic vault.
15. Use 3  $\emptyset$  PVC pipe S-1000 for ventilation.
16. Use 3  $\emptyset$  PVC pipe S-1000 for sanitary.
17. Use  $\frac{1}{2}$ "  $\emptyset$  PPR pipe PN-20 for water supply.
18. In every water closet, lavatory and sink must provide 3  $\emptyset$  PVC S-1000 pipe for ventilation.
19. All sanitary wares and fittings are to be properly protected during the construction works and cleaned before



REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

handling over the building.

20. Isolated Leak Test or partial pre-test of areas shall be tested prior to installation of ceiling materials or storage of materials in the area to preclude any damage threat during total system final test.
21. Building Sewer Test
  - a. It shall be tested by plugging the end of the building sewer at its points of connection with the public sewer or private sewage disposal system and completely filling the building sewer with water from the lowest to the highest point thereof, or by approved equivalent low-pressure air test, or by such other test as may be prescribed by the Physical Plant and Engineering Services.
  - b. The Building Sewer shall be watertight at all points.
22. Water Piping Test
  - a. Upon Completion of a section or of the entire water supply systems, it shall be tested and proved tight under a water pressure not less than the working pressure under which it is to be used plus 50%.
  - b. The water used for test shall be obtained from a potable source of supply.
  - c. A 344.5 Kpa air pressure may be substituted for the water test.
  - d. In neither method of test, the piping shall withstand the test without leaking for a period of not less than fifteen (15) minutes.

#### **N. STORM DRAINAGE & SEWERAGE SYSTEM**

1. All works herein shall be done in accordance with the latest edition of the Philippine Plumbing Code, rules and regulations of the National Building Code and shall comply with the requirements of the Local City Ordinances and issued Approved Plans.
2. All materials and fixtures to be used herein shall be brand new and passing Philippine Standard material quality control requirements.
3. Septic vault shall not be installed below in any structures.
4. Septic vault must be built water tight of concrete, (100mm Thick CHB with 25mm plaster and 100mm thick concrete slab cover) as specified in the drawings.
5. The bottom of the vault shall be made of 100mm thick concrete slab on 100mm thick gravel bedding.
6. The bottom of the vault should have 10% slope towards the manhole in the center to facilitate cleanout.
7. Septic vault must have 2 (two) leaching chambers and 1 (one) digestive chamber as indicated in the drawing.





REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES - FR - 007A.00  
Effective Date: 08 - Sep - 2021

8. Components are provided with 500mm x 500mm manholes and tight covers for maintenance and necessary repairs.
9. Inlets and outlets shall be of 4" Ø PVC pipe S-1000 and shall be submerged and arranged in such a way that neither sludge nor scum be unduly disturbed.
10. Inlets and outlets shall be arranged so as to deliver the sewage to the middle thirds of the vault dept. for instance, in vault 1.20m deep, the inlet and outlet shall be submerged 0.40m.
11. The vault shall be vented through the sanitary tees in the outlet and inlet having top ends open and screened to make the vault mosquito-proof.
12. Not less than 0.20m of air space should be left between the top of the sewage and under part of the vault cover.
13. Additional length of 1000mm shall be added to the vault for the for the filter (leaching well).

**No Revisions in the design shall be done without the prior knowledge and approval of the WMSU-Physical Plant and Engineering Services, any revisions done without approval shall cause responsibility of the designer to cease as a whole.**

## **O. ELECTRICAL WORKS**

1. All works herein shall be done in accordance with the latest edition of the Philippine Electrical Code (PEC). Relatively the same, it should follow rules and regulations of the National Building Code enforced by the building official of City of Zamboanga, and of local electric cooperative the Zamboanga City Electric Cooperative (ZAMCELCO).
2. Motor loads shall be provided with magnetic contactor coupled with overload relay as over-current-protection, and the setting shall be 125% of the motor full load current.
3. All non-current carrying electrical materials such as motor frames, metal enclosures, pull boxes and panel shall be adequately grounded in accordance with the latest edition of the PEC.
4. Electrical wiring installation shall be done in polyvinyl chloride conduits (PVC). Minimum size for all conduits shall be 20mm diameter electrical trade.
5. All wires shall be copper and thermoplastic insulated type "THHN" except the Main Feeder Conductors which is THWN. The minimum size for power is 3.5mm<sup>2</sup>/ and lighting shall be 2.0mm<sup>2</sup>/ and shall be color coded as follows:





REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES - FR – 007A.00  
Effective Date: 08 - Sep - 2021

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- |                     |                            |
|---------------------|----------------------------|
| Line A              | -Red                       |
| Line B              | -Blue                      |
| Line C              | -Yellow                    |
| Neutral             | -Yellow with green stripes |
| Equipment Grounding | -Green                     |
6. All lamps' fixtures shall be LED type, daylight white, must be dimmable, controlled via hand gestures/voice command and light switch incase electronic control fails.
  7. All Outlets shall be three (3) prong type, to address proper grounding.
  8. All Exhaust fan and lights in each comfort room must be coupled with one switching controller.
  9. The mounting height of all wiring devices shall be as follows:
    - A. Light switches 1400mm above floor finished.
    - B. Convenience outlets 300mm above floor finished or as required.
    - C. Panel boards shall be installed 1800mm above floor finished line.
    - D. Prepare an exposed power source 500mm above the finished floor and flushed against the wall behind the Water closet for the supply and installation of the Water closet sensor toilet flush valve.
    - E. Prepare an exposed power source 700mm above the finished floor and flushed against the wall behind the Urinal for the supply and installation of the Sensor urinal flush valve.
    - F. Prepare an exposed power source 600mm above the finished floor and flushed against the wall behind the lavatory female and male toilet for the supply and installation for the controller of the sensor lavatory faucet.
    - G. Overhead Projector Outlet must be mounted flush with the finished ceiling and provided with extra length of wire not less than 2m to account for retractable movement.
    - H. Automatic Sliding Door Outlet must be mounted above the door trim/frame inside of the electronic control box.
    - I. Prepare an exposed power source for Hand Dryer 1200mm above the finished floor and flushed against the wall behind the unit; and
    - J. Convenience Outlet for Auxiliary must be mounted 300mm below finished ceiling.
  10. There shall be adequate and effective equipment grounding. Ground resistance should be no more than 5 ohms. If ground resistance exceeds 5 ohms, additional ground rods shall be provided.
  11. 10. Conductors, Main Breaker, Feeders and Circuit Protection to be used shall be of quality type to ensure safety.
  12. Main panel board bus bar must be copper and not less than 1/16" x 3/4" (Ampacity 100 – 149 A) in dimension.



REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES -FR – 007A.00  
Effective Date: 08 - Sep - 2021

13. Grounding Electrode Conductor shall not be smaller than 80mm<sup>2</sup>/ copper (Cu) or 125mm<sup>2</sup>/ Aluminum (Al).
14. All electrical installation shall be done under the direct supervision of a valid license and experienced Electrical Engineer (PEE or REE).
15. Tapping of the underground service entrance to the existing terminal box must be done by the WMSU Electrician under direct supervision of the University Electrical Engineer.
16. No Revisions in the design shall be done without the prior knowledge and approval of the WMSU-Physical Plant and Engineering Services, any revisions done without approval shall cause responsibility of the designer to cease as a whole.

REVIEWED AND CHECKED BY:

**ENGR. RICARDO B. GONZALES**

University Electrical Engineer

**P. AS-BUILT (RECORD) DRAWINGS AND RELATED DOCUMENTS**

1. The Contractor shall maintain a neat and accurately marked set of As-Built Drawings which shall be provided to WMSU-Physical Plant and Engineering Services for review and approval prior to final acceptance of the Work.
2. The As-Built Drawings shall represent the Work as constructed and document changes to the Work shown on the Project Plans, and shall show the actual as-constructed conditions of installed or modified systems, equipment, and material.
3. The As-Built (Record) Drawings shall show, by field measured dimensions, the exact locations of all underground work, including all piping and components, and the final elevations and locations of all improvements constructed, modified or adjusted.
4. Record drawings shall be available for inspection by the agency at all times and shall be updated at least weekly with all Field or Site Instructions and other written directives, Contract Change Orders, and Contract adjustments shown thereon and initialed by the Agency. Progress payments or portions thereof may be withheld if As-built Drawings are not kept up to date.
5. Unless otherwise specified in the Special Provisions, the Contractor shall submit two (2) sets of As-Built Drawings to WMSU-Physical Plant and Engineering Services at the final inspection. These As-Built Drawings shall include



REPUBLIC OF THE PHILIPPINES  
WESTERN MINDANAO STATE UNIVERSITY  
NORMAL ROAD, BALIWASAN, ZAMBOANGA CITY  
PHYSICAL PLANT AND ENGINEERING SERVICES



WMSU - PPES - FR - 007A.00  
Effective Date: 08 - Sep - 2021

certification by the Contractor that the As-Built Drawings are a true representation of the Work as actually constructed.

6. The Work will not be formally accepted until the As-Built Drawings are provided to and approved by the to the WMSU-Physical Plant and Engineering Services. Final payment or a portion thereof may be withheld if final As-Built Drawings are not provided.

APPROVED BY:

A handwritten signature in blue ink, appearing to read 'ARCH. JOSEPH ANDREW L. SAHIAL'.

**ARCH. JOSEPH ANDREW L. SAHIAL, uap**  
Director for Physical Plant and Engineering Services