Republic of the Philippines
Tarlac State University
FACILITIES DEVELOPMENT AND MANAGEMENT OFFICE
PLANNING AND MONITORING UNIT
Romulo Boulevard, San Vicente, Tarlac City
Tel. No. (045) 982-1624; (045) 606-8160

PROJECT: **REFURBISHMENT OF CET LIBRARY COMFORT ROOM WITH STOCKROOM AND CBA LIBRARY COMFORT ROOM**

LOCATION: **MAIN CAMPUS, TARLAC STATE UNIVERSITY**

DURATION **45 CALENDAR DAYS**

TECHNICAL SPECIFICATION

SECTION 1. GENERAL CONDITIONS AND REQUIREMENT

1.1. SCOPE OF WORK

1.1.1. The project shall comprise of the **REFURBISHMENT OF CET LIBRARY COMFORT ROOM WITH STOCKROOM AND CBA LIBRARY COMFORT ROOM** which shall include the supervision and furnishing of labor, supplies, materials, equipment, and other incidental services that are essential to properly implement and produce the desired work output.

1.2. CONTRACT DRAWINGS

1.2.1. Details and extent of work are shown in the Drawings accompanying these specifications.

1.2.2. Sketches and other details not shown in the Drawings shall be furnished by the Engineer/Architect during the pace of construction.

1.3. PARTS OF THE SPECIFICATIONS

1.3.1. These Specifications include the following parts whose applicable provisions are binding on this contract:

SECTION 1. GENERAL CONDITIONS AND REQUIREMENTS
SECTION 2. DEMOLITION, HAULING, DISPOSAL AND REPAIR WORKS
SECTION 3. MASONRY AND PLASTERING WORKS
SECTION 4. FLOORING AND WALL FINISHING WORKS
SECTION 5. CEILING WORKS
SECTION 6. PAINTING WORKS
SECTION 7. DOORS AND WINDOWS
SECTION 8. ELECTRICAL WORKS
SECTION 9. PLUMBING WORKS

1.3.2. These Specifications are intended to supplement the provisions of the General Building Code in order to provide the proper construction. In the case of difference between plans and specifications, these specifications shall govern. It is the duty of the Contractor to examine both carefully, compare and verify dimensions and data furnished by the TSU in the case of discrepancy between figures and drawings, the matter should be immediately brought to the Engineer/Architect before any adjustment shall be made by the Contractor.

1.4. WORKMANSHIP

1.4.1. All operations required under any and all parts of the specifications shall be undertaken in a neat, workmanlike manner. Only skilled personnel with sufficient experience in similar operations shall be allowed to undertake the same.

1.5. INSPECTION OF SITE

1.5.1. The Bid may be deemed to have been based on data, regarding physical conditions at the sites. The Contractor acknowledges and warrants that he has inspected and examined the site and their surroundings and has satisfied himself by submission of his Tender as to the nature of the work and materials necessary for the completion of the works, and the means of access to the sites, the accommodation he may require, and that he has obtained for himself all necessary information as to risks, contingencies and other circumstances which may have influenced or affected his Tender. No increase in cost or extension of time will be considered for failure to inspect and examine the site condition.

1.6. VARIATIONS

1.6.1. The Engineer/Architect reserves the right to make slight changes in details of work or materials as he may deem advisable. These changes may include revision or modifications of shapes and dimension of elements that may involve additional expenses to the Contractor shall be covered by appropriate adjustment of the contract price.

1.7. CONFLICT BETWEEN PLANS AND SPECIFICATIONS

1.7.1. Should there be any conflict between indications on drawings and provisions in specifications same shall be referred to the Engineer/Architect of TSU for resolution.

1.7.2. Any omission in the specifications of work or works to be undertaken but necessary for the completion of work, shall be undertaken by the Contractor as if indicated on drawings, without extra compensation. Such works shall be done in the usual manner as required as to the quality of both materials and workmanship.

1.8. REJECTIONS

1.8.1. Materials or workmanship not in reasonable conformance with the provision of these specifications shall be rejected at any time during the progress of the work. The Contractor shall receive copies of reports of rejection of materials and workmanship made by the authorized technical representative of TSU. Any part of the work that he has been done and is not of the quality required by reasonable interpretation of the plans and specifications shall be torn down or removed immediately and rebuild or otherwise remedy such work in accordance with the requirements of the plans and specifications.

1.9. ESTABLISHED GRADE LINE, LOT AND BOUNDARIES

1.9.1. The Contractor shall inspect and examine the individual site conditions. No increase in cost or extension of time will be considered for failure to examine site condition. Control points and elevations will be furnished by the TSU and the Contractor shall be responsible for all other surveys and measurements required to accurately complete the work.

1.10. AS-BUILT DRAWING AND PICTURES

1.10.1. The Contractor with the approval of the Engineer/Architect shall mark down all the revisions, omissions and/or additions to the various works on two sets of drawing plans as the construction progress. One set of the plans as marked shall be submitted to the Engineer/Architect after the completion of work.

1.10.2. The Contractor shall submit to the TSU As-Built Drawings incorporating all changes made and noted in the marked Drawings retained by him/her. The As-Built Drawings shall be prepared on reproducible form and submitted together with at least three (3) copies of A3 (11.7 in. X 16.6 in.) and three (3) copies of Blue Print Tracing Size (20 in. X 30 in.).

1.10.3. The Contractor shall submit to the TSU pictures of the site before and after construction in reproducible and printed forms.

1.11. PERMITS

1.11.1. It shall be the responsibility of the Contractor to secure all permits of every description required to initiate and complete the work under this Contract, except permits obtained by the TSU. The Contractor shall be responsible for complying with all the requirements for the processing and approval of all relevant and necessary permits, including those to be obtained by TSU.

1.12. MOBILIZATION AND DEMOBILIZATION

1.12.1. Upon receipt and acceptance of the Notice to Proceed, the Contractor shall immediately mobilize the work force, equipment, and materials, and take possession and secure the project site.

1.12.2. Upon final completion of the work, the Contractor shall commence the demobilization of the work force, equipment, and materials and turn over the project site to TSU.

1.13. BILLBOARD

1.13.1. Upon possession of the project site, the Contractor shall immediately erect the Billboard, showing the relevant details of the project, at the location and position designated by the TSU and of the dimensions and materials approved by the TSU.

1.14. TEMPORARY FACILITIES

1.14.1. Upon possession of the project site, the Contractor shall immediately erect temporary facilities such as field office, storage for equipment and materials, latrines, electric and water supply connections, etc., at the location designated by, and using only materials and the manner of construction approved by, the TSU.

1.15. CONSTRUCTION OCCUPATIONAL SAFETY AND HEALTH

1.15.1. The Contractor shall be responsible in ensuring the safety and health of the personnel assigned at the project site and other parties who may be affected in the implementation of the project.

1.15.2. The Contractor shall submit to TSU a copy of the Construction Occupation Safety and Health Program for the project that is duly approved by the Department of Labor and Employment before commencing with the work.

1.15.3. The Contractor shall designate a competent and qualified Safety Officer for the whole duration of the project.

1.15.4. The Contractor shall comply with the Construction Safety Guidelines for the Infrastructure Projects during the COVID-19 Public Health Crisis, as prescribed in the Revised Omnibus Guidelines on the Implementation of Community Quarantine that was promulgated by the Philippines by the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF).

1.15.5. All personnel assigned to the project are expected to report for work in their proper uniforms, basic safety gears (helmets, boots or shoes), and identification cards (IDs). The uniforms, basic safety gears, and IDs shall be provided by the Contractor at his/her own expense.

1.15.6. The Contractor shall establish and implement safety procedures for all relevant jobs, tasks, and operations.

1.15.7. The Contractor shall erect temporary barricades, install early warning and precautionary signs and, and provide other safety devices that may be required to keep the job site safe and secured. Use roof sheet or plywood for temporary barricade with standard height and stable framing within the construction site as indicated in the plan: do not use "Blue Sack".

1.15.8. The Contractor shall maintain, at the project site, ample supplies of expendable materials for the safety and health of its personnel and other affected parties such as safety tape, first-aid kits, safety gloves, dust masks, etc., the cost of which shall be included in the contract price.

1.15.9. The Contractor shall keep a record of all incidents (near-miss or accident) and report the same to the TSU Architect/Engineer.

SECTION 2. DEMOLITION, CLEARING, DISPOSAL AND REPAIR WORKS

2.1. SCOPE OF WORKS

2.1.1. Demolition, clearing, disposal and repair works shall include the removal and repair of all affected structures needed to complete the project.

2.2. PREVENTION OF DAMAGE TO ADJOINING PROPERTY

2.2.1. The Contractor shall exercise all care to protect and maintain adjacent properties, trees, materials and such other facilities such as conduits, drains, sewers, pipes and other wires that are to remain in the property and shall restore without cost to TSU all property that may be damaged for whatever reason in the execution of the work.

2.2.2. The Contractor shall demolish and repair all the affected areas/structure during construction.

2.3. HAULING AND DISPOSAL

2.3.1. All unusable materials, and debris resulting from the performance of work shall be removed from the premises and disposed of in the location and manner that shall be approved by TSU. All materials that can be reused shall be hauled and arranged properly by the Contractor before turning them over to TSU.

SECTION 3. MASONRY AND PLASTERING WORKS

3.1. SCOPE

3.1.1. The work includes the furnishing of all materials, labor, equipment, and the performing of all necessary operations in connection with masonry and plastering works.

3.2. MATERIALS

3.2.1. All masonry units shall be approved quality, sound, free from cracks and other imperfections.

3.2.2. Non-load Bearing Concrete Hollow blocks shall be used with a minimum compressive strength of 500 psi. Method of sampling for quality test shall be one (1) quality test for every 10,000 units or fraction thereof, with three (3) specimens for compression test.

3.2.3. Reinforcing steel bars shall conform to ASTM Designation A-615-68 specifications for the structural grade.

3.2.4. Concrete Aggregates – Shall conform to "Specifications for Aggregates" (ASTM G33 latest revision). Sand and gravel shall be well graded and free from any deleterious materials. Sand and gravel shall be washed and crushed, respectively.

3.2.5. Cement and aggregates shall be stored in a manner as to prevent their deterioration or the intrusion of foreign matter Materials of deteriorated quality or which has been damaged shall not be used for concrete. Cement whose quality is questionable shall be tested by standard mortar test to determine its suitability for use.

3.3. MASONRY AND PLASTERING

3.3.1. Mortar of cells of CHB's shall consist of one (1) part to cement to two (2) parts sand by volume with sufficient water. It shall be workable cement-sand mixture attaining a 28^{th} day compressive strength of 1500 psi.

3.3.2. Vertical and horizontal reinforcements shall be provided in masonry. CHB walls shall be reinforced as follows:

Thickness	Horizontal Reinforcement	Vertical Reinforcement
100mm	10mmΦ @ 600mm O.C.	10mmΦ @ 600mm O.C

3.3.3. Mortar for plastering shall be proportioned one (1) part cement to three (3) parts sand with sufficient water. Use 50 mm thick cement plastering for exterior walls and 25 mm thick cement plastering for interior walls.

3.4. WORKMANSHIP

3.4.1. CHB's shall be laid plumbed and leveled accurately. Laid units of blocks shall be wetted before laying another unit or layer. Damaged units shall not be used. Units shall be cut accurately to fit all plumbing ducts, opening for electrical works; all holes shall be neatly patched.

3.4.2. Units shall be placed while the mortar is soft and plastic, and shall be used within two and a half (2.5) hours of initial mixing. Mortar that has stiffened should not be used. Any unit disturbed to the extent that the initial bond is broken after initial positioning shall be removed and re-laid in fresh mortar. All cells of CHB units shall be fully grouted.

3.4.3. Where CHB walls adjoin columns, beams and walls, dowels with the same size as the vertical or horizontal reinforcement shall be provided.

3.4.4. No construction support shall be attached to the CHB wall except where specifically permitted by the Engineer.

SECTION 4. FLOORING AND WALL FINISHING WORKS

4.1. SCOPE OF WORK

4.1.1. The work covered under this section shall include the furnishing of labor, supply materials, and equipment to complete the flooring and wall finishing works in strict accordance to the drawings to properly conduct and produce the desired work.

4.2. MATERIALS AND PREPARATION

4.2.1. Prepare the floors and walls to install directly to their corresponding surfaces. Deliver materials to the job in the manufacturer's unopened containers with the manufacturer's brand and name clearly marked thereon.

4.2.2. Porcelain Floor Tiles, Porcelain Wall Tiles, etc. - All cement surfaces to receive tiles or similar finish shall be structurally sound, plumb, level and true, free from dust, dirt, grease, calcimine water or other foreign matter.

4.3. TILE INSTALLATION

4.3.1. Lay tiles in straight square patterns and cover from wall to wall. Where manufacturer's instruction requires priming of concrete floors, work the primer well into the surface of the concrete with stiff brushes or a straight edge steel trowel, using the minimum quantity, which will assure complete coverage. Allow primer to dry thoroughly. Install tile in such, a manner that each tile is in contact with each adjacent tile and that the entire under surface of each tile will be securely bonded.

4.3.2. Layout the field from the midpoint of the axis of the room so that the opposite end tile will be equal width. Width of the tile shall be subject to the variation required by the dimensions of the room and the size of the tile used. Scribe end tile to the wall and cut in a manner that will insure clean sharp edges.

4.3.3. Apply adhesive in accordance with manufacturer's recommendation. Secure cove base to walls with adhesive as specified for floor tiles.

4.4. CLEANING

4.4.1. Clean flooring of adhesive and other soiling. Remove adhesive with a putty knife and steel wool or with a cloth moistened with a neutral soap of a type approved by the manufacturer. The use of solvents and wet mopping is prohibited.

4.5. PROTECTION

4.5.1. After cleaning, protect the floor until acceptance of the building.

4.6. GUARANTEE

4.6.1. Floors shall be guaranteed by the manufacturer against defects-in its floor tiles and by the Contractor against defects in workmanship for a period of one year from date of completion.

SECTION 5. CEILING WORKS

5.1. SCOPE OF WORK

5.1.1. This section shall include all materials, labor, materials, tools, scaffolding, equipment and services necessary to complete the ceiling works in strict accordance to the drawings to properly conduct and produce the desire work.

5.2. SUBMITTAL

5.2.1. Submit product information from manufacturers for each type of product specified to include brochures, catalogs, sample and certificates of tests reports, quality compliance and accreditation from foreign manufacturer for authenticity of local distributed materials.

5.3. DELIVERY, STORAGE AND HANDLING

5.3.1. Deliver materials in manufacturer's original unopened packages clearly marked with identifying information. Protect materials as recommended by the manufacturer.

5.3.2. Store materials, keep dry, and protect against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels on level surface to prevent sagging.

5.4. MATERIAL

5.4.1. 4.5 mm thick Fiber Cement Board for Ceiling. Approved brand, type and quality.

5.4.2. Metal Furring Channel shall be 0.60 mm thick x 19 mm x 50 mm spaced at 600mm (max.).

5.4.3. Carrying Channel 0.80 mm thick x 12 mm x 38 mm spaced at 1200 mm (max.).

5.4.4. Wall Angle shall be 0.40 mm thick 25 x 25 mm.

5.4.5. Complete with concrete nails, screws, double U-clip and complete accessories.

5.5. INSTALLATION

5.5.1. Framing for furred ceilings shall be installed at the locations indicated and shall conform to the standards.

5.5.2. Ceiling framing shall be suspended plumb from structural slab or steel roof frame by hanger wires or straps, spaced at not less than 1.20 m on centers. Hanger wires shall be wrapped around the reinforcing bars, of the supporting concrete-slab construction with twists before concrete is placed or shall be shaped into a 100 mm diameter loops and

embedded at least 50 mm in the concrete, or shall be attached to approve inserts. Hanger wires shall be looped around bottom chord of open-web steel joist and shall receive three full turns around itself, or around structural steel members or to attached beam clamps and shall receive three full turns around itself. Hanger Strap shall be hung plumb and connected with 10 mm galvanized bolts and nuts to anchors made of hanger strap set in the concrete, or shall be looped around structural framing and connected to itself with 10 mm galvanized bolts and nuts.

5.5.3. Where channels are spliced, the ends shall be overlapped not less than 300 mm with flanges of channels interlocked and securely fastened with rivets.

5.5.4. Framing is not required for ceilings attached to structural members, except for framing openings as specified. Furring as hereinafter specified shall be attached directly to structural members.

5.5.5. Steel channels shall be provided where steel furring is indicated for screw attachment of boards.

5.5.6. Furring shall be spliced with 200 mm nested laps securely tied near each end of lap, with two loops of 1.0 mm tie wire. Splices shall be staggered.

5.5.7. Where board abuts dissimilar wall materials, perimeter of ceilings shall be finished with an edge bead trim strip applied to wall and accurately aligned with the finished ceiling. Board edges adjoining walls shall be laid on the horizontal leg of the trim strip against a continuous bead of approved type sealant.

5.5.8. Special framing for beams, columns, soffits, and other special items shall be sized and built to the shapes or forms indicated by rigidly securing each intersection with board screws.

5.5.9. Support members shall be provided at ceiling openings such as required for access panels, recessed light fixtures, and for air supply or exhaust. Support members of not less than 38 mm main runner channels and suspension wires or straps shall be located to provide at least the minimum support specified herein for furring and board attachment.

5.5.10. Board shall be applied with the separate boards in moderate contact but not forced into place at internal and external corners the cut edges of the boards shall be concealed by the overlapping covered edges of the abutting boards. The boards shall be so staggered that the corners of any boards will not meet a common point except in vertical corners.

5.5.11. Board shall be applied to the ceilings with the long dimension of the board, at right angles to the furring members. Board may be applied with the long dimension parallel to furring members that are spaced 0.40 m on centers when attachment members are provided at end joints.

5.6. CLEANING AND PROTECTION

5.6.1. Promptly remove any residual joint compound from adjacent surfaces not indicated to receive texture.

5.6.2. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure board assemblies are without damage or deterioration at the time of construction complete.

SECTION 6. PAINTING WORKS

6.1. SCOPE OF WORK

6.1.1. The Contractor shall furnish all materials, labor, equipment, and services required to complete the entire painting work as specified in the plan. Painting work shall include the painting of the proposed structure, painting and repainting of interior walls, exterior walls and other affected areas or structures as specified hereinafter and required thereto.

6.1.2. The Contractor shall furnish all tools, brushes, spraying equipment, tackles, scaffolding, ladder, pails, and other equipment required to complete the entire painting work.

6.2. MATERIAL

6.2.1. All paint materials shall be delivered to the job-site in their original containers with labels and seals unbroken.

6.2.2. With the exception of ready-mixed materials in original containers all mixing shall be done at the jobsite. No materials are to be reduced or changed excepts as specified by the manufacturer of the said materials. The use of white zinc (lithopones) will not be allowed.

6.3. COLORS

6.3.1. All colors of paints shall be in accordance with the color scheme approved by the TSU.

6.3.2. Samples of the color to be used shall be submitted and those approved shall be strictly followed. No painting shall be started before these color schemes are approved by the Engineer/Architect.

6.3.3. Finishes for the different portions of the work shall be specifically indicated in the Schedule of Specifications.

6.4. SURFACE EXAMINATION AND PREPARATION

6.4.1. The Contractor prior to the commencement of the work shall examine the surfaces to be applied with paints not to jeopardize the quality and appearance of a painting of finishing work.

6.4.2. No painting shall be done under conditions which may jeopardize the quality or appearance of the painting or finishing.

6.4.3. All surfaces to receive paint should be cleaned and in proper condition.

6.4.4. Concrete and masonry surfaces shall be coated with concrete neutralizer and allowed to dry before any painting primer is applied.

6.4.5. When surfaces are dried, apply the 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 in the Plan in accordance with the approved color scheme.

6.4.6. Metals shall be clean, dry and free form mill scale and rust. Remove all grease and oil from surfaces. Wash unprimed galvanized metal with the etching solution and allow it to dry.

6.4.7. Metal surfaces shall be primed with epoxy primer as specified before final/top coat is applied.

6.4.8. For epoxy-primed surfaces, topcoat/finishing coat should be applied not more than seven (7) days after priming to ensure good inter-coat adhesion. Otherwise, re-priming is needed.

6.4.9. Voids, cracks, and all other kinds of defects shall be repaired with proper patching materials and finished flush surrounding surfaces.

6.4.10. Marred or damaged shop coats on metal shall be spot primed with appropriate metal primer.

6.5. APPLICATION

6.5.1. All paints and other coatings shall be mixed and applied strictly in accordance with the manufacturer's printed instructions.

6.5.2. No painting work shall be done during rainy or damp weather.

6.5.3. Paints, when applied by brush, shall be non-fluid; thick enough to lay down an adequate film of wet paint. Brush marks shall be flawed out after the application of paint.

6.5.4. Paints prepared for application by roller must be similar to brushing paint. It must be non-sticky when thinned to spraying viscosity to break up easily into droplets.

6.6. MIXING AND THINNING

6.6.1. 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.

6.6.2. When thinning is necessary, this may be done immediately prior to application in accordance with the manufacturer's directions, but not more than 1 pint of suitable thinner per gallon of paint.

6.6.3. Kerosene shall not be used as paint thinner. Paints of the different manufacturers shall not be mixed.

6.7. STORAGE

6.7.1. All materials to be used for this Item shall be stored in a single place to be designated by the Architect and such place shall be kept neat and clean at all time.

6.7.2. Necessary precautions to avoid fire must be observed by removing oily rags, waste, etc. at the end of daily work.

6.8. CLEANING

6.8.1. All cloths and cotton waste which are fire hazards shall be placed in a metal container or destroyed at the end of daily work.

6.8.2. Upon completion of the work, all staging and scaffolding shall be removed and paint containers shall be properly disposed.

6.8.3. Paint drips, oil, or stains on adjacent surfaces shall be removed and the entire job left clean and acceptable to the supervising Architect/Engineer.

SECTION 7. DOORS AND WINDOWS

7.1. SCOPE OF WORK

7.1.1. The Contractor shall furnish all materials, labor, equipment, tools and services necessary to complete all work herein specified and shown on drawings.

7.1.2. All existing doors and windows shall be removed and replaced with appropriate items as shown on plans. See engineer's approved shop drawings and details showing fabrications. Protect glass from breakage before and after installation.

7.1.3. Provide all hardware/s not herein specifically mentioned but are necessary to complete the work. The architect shall approve all such hardware/s.

7.2. DOORS AND WINDOWS

7.2.1. Where so shown on drawings, doors and windows shall be of following type unless otherwise specifically noted in the Schedule of Specifications with complete necessary hardware.

7.2.1.1. Melina Panel Door and 0.50 mm thick G.I. Jambs: Single Swing with S4S Kiln Dried Wood. Approved type and quality.

7.2.1.2. 60cm*210cm and 35mm thick PVC Door and Jambs with Louvers and complete accessories. Approved brand and quality.

7.2.1.3. White Powder Coated Aluminum Frame Awning Windows shall be 6mm thick reflective glass. See schedule of windows in the plan.

7.2.1.4. Glasses to be installed shall be of types and thickness as noted in the Schedule of Specifications and as indicated on drawings.

7.2.1.5. All glasses shall be accurately cut to fit and with equal bearing on entire width of pane. Thin layer of putty shall be applied to rebate and set glass; pressing until an even bed is secured. Remove excess putty from each side flush with edge of rebate.

7.2.1.6. All door with width not more than 0.9 m shall have three hinges, and four hinges for more than 0.9 m width: Approved brand and quality.

SECTION 8. ELECTRICAL WORKS

8.1. SCOPE OF WORK

8.1.1. The work under this section shall include the furnishing of labor, materials, equipment, and services required to construct and install the new electrical system which include, but is not limited to, the following main items:

8.1.1.1. All tapping shall be executed inside the ceiling unless indicated in the plan and on the mounting type of equipment.

8.1.1.2. If anything has been omitted in any items of work on materials usually furnished, which are necessary for the completion of the Electrical Works as outlined herein before, then such must be and are hereby included in this section of the work.

8.2. CODES, REGULATIONS AND ORDINANCES

8.2.1. The electrical items under this contract is to be installed according to the requirements of the latest Philippines Electrical Code, the rules and regulations of the Authority concerned and the requirements of the Power Company. Nothing contained in these specifications or shown on the drawings shall be construed as to conflict with the National and Local Ordinances or Laws governing the installation of electrical work, and all laws and ordinances are hereby made part of these specifications. The Contractor is required to meet the requirements thereof.

8.3. PLANS AND DRAWINGS

8.3.1. The Contract Drawings, which constitute an integral part of this contract, shall serve as workings drawings. They indicate the general layout of the complete electrical system and show arrangements of feeders, circuits, outlets, switches, control panel boards, service equipment, fixtures, and other works.

8.3.2. The Contractor shall check architectural, structural, and plumbing plans to avoid possible installation conflicts. Should drastically changes from original plans be necessary to resolve such conflicts, the Contractor shall notify the Engineer/Architect and shall secure from him written approval and agreement concerning necessary changes and adjustments before altered installation work is started.

8.4. SAMPLES AND DRAWINGS

8.4.1. The Contractor shall submit to the Engineer/Architect for approval samples of conduit, wire, wiring devices finished plates and of any item as may be required by the Engineer/Architect.

8.4.2. Prepared and submit for approval shop drawings or catalogs of equipment appliances and fixtures.

8.5. MINOR MODIFICATIONS

8.5.1. The plans as drawn are based upon architectural plans and details show conditions as accurately as is possible to indicate then in scale. The plans are diagrammatical and do not necessarily shown all fittings, etc., necessary to fit the conditions. The locations of lighting fixtures, convenience outlets, air conditioning outlets and switches shown on the plans are approximate. The Contractor shall be responsible for the proper location in order to make them fit with architectural details.

8.6. STANDARD OF MATERIALS

8.6.1. All materials shall be new and shall conform to the standards specified in the Philippine Electrical Codes and other such as IEEE, AIA, IEEA and NEMA, for every case where such standard has been established for the particular type of materials in question

8.6.2. All materials on all systems shall comply with the following specifications unless specifically accepted, and all materials were not specified shall be of the best of their respective kind.

8.6.3. Samples of all materials shall be submitted for approval as required by the Engineer/Architect.

8.7. INSTALLATION REQUIREMENTS

8.7.1. GROUND TESTS

8.7.1.1. The entire installation shall be free from improper grounds and from short circuits.

8.7.1.2. Copper ground rods shall be arranged in triangular orientation and at least 3m apart from each other. Ground testing shall be performed and shall meet the standard resistance required by the NFPA, IEEE and PEC.

8.7.2. PERFORMANCE TEST

8.7.2.1. It shall be the responsibility of the Contractor to test all systems of the entire electrical installation for proper operational conditions. These conditions shall apply to the power and lighting installations as well as the fire alarm system and motors.

8.7.3. WIRE AND CABLE

8.7.3.1. Wires shall be color coded as follows:

Line 1 --- Black Line 2 --- Red

8.7.3.2. All wires shall be copper, soft-drawn, and annealed, shall be of 98% conductivity, shall be smooth and fine and of a cylindrical form and shall be within 1% of the actual sized called for.

8.7.3.3. All wires and cables shall comply with the requirements as to the particular usage.

8.7.3.4. All wires and cables for lighting and power system shall be moisture and heat resistant rubber or thermoplastic insulate. It must be in conformity with the Philippine Electrical Code when used in damp or unit location. Wires shall be stranded for sizes #12 AWG.

8.7.3.5. For lighting systems, no wire shall be smaller than #12 AWG shall be used.

8.7.3.6. All wires and cables to be used shall be approved brand.

8.7.4. PIPES

8.7.4.1. Wiring shall be done in PVC Pipe for embedded and in RSC or EMT for run exposed; it shall be Schedule 40.

8.7.4.2. No tubing shall be used in any system smaller than ½" electric trade size, nor shall have more than four 90-degree bends in any one run and where necessary pull boxes shall be provided as directed.

8.7.4.3. No wire shall be pulled into any conduit until the conduit system is complete in all details and in the case of concealed work until all rough plastering or masonry has been completed in every detail.

8.7.4.4. The ends of all conduits shall be tightly plugged to exclude plaster, dust, and moisture while the building is in the process of construction. All conduit ends shall be reamed to remove all burrs.

8.7.5. OUTLETS BOXES AND FITTINGS

8.7.5.1. At all outlets of whatever kind for all systems, there shall be provided a suitable fitting, which shall be either a box or other device especially designed to receive the type of fitting to be mounted thereon.

8.7.5.2. The Contractor shall consult with the Contracting Officer as to the nature of the various fittings to be used before installing his outlet fittings, and shall conform strictly in the use of fittings to the nature of the compliance to be mounted on them, so that the work, when completed will be finished design.

8.7.5.3. At all outlets on concealed conduit work, provide galvanized pressed steel outlet boxes of standard make. The boxes shall be especially designed for apparatus required.

8.7.6. JUNCTION AND PULL BOXES

8.7.6.1. Junction and pull boxes shall be provided as indicated or as required for facilitating and pulling of wire and cables. Pull boxes in finished places shall be located and installed with the permission and to the satisfaction of the contracting officer.

8.7.7. WALL SWITCHES

8.7.7.1. Wall switches shall be rated at 15 amperes, 250 volts, one way or as required. Switches shall be with LED, quiet and automatic action type, silver contact, feather touch operation, colored matte black. Switches to be used shall be approved brand by the Engineer/Architect.

8.7.7.2. Weatherproof cover shall be provided for the lighting switches of common comfort rooms located at the second floor and third floor.

8.7.8. PLATES

8.7.8.1. All switch and receptacle plates shall be of Bakelite white finish, and of approved brand.

8.8. LIGHTING SYSTEM

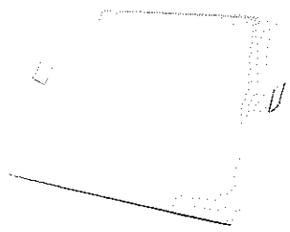
8.8.1. The lighting system shall be complete in every aspect, all indicated on the plan or specified.

8.8.2. All work for the lighting system inside the ceiling shall be done utilizing knob and tube work and lighting circuits shall be balanced at the panels.

8.8.3. Mounting heights of devise shall be as follows:

Local Switches: 4'5"

8.8.4. Install all lighting fixtures and lamps as specified or at locations shown in plans or as directed by the Engineer/Architect.



12W Square LED Recessed
Panel Light

8.8.5. Submit samples of each fixture to the Engineer/Architect for approval prior to installation

8.8.6. All lighting fixtures shall be selected by the Engineer/Architect.

SECTION 9. . PLUMBING WORKS

9.1. SCOPE OF WORK

9.1.1. Furnish all materials, labor, tools, equipment and other facilities and the satisfactory performance of all work necessary for the complete installation, testing and operation of the plumbing system in accordance with the applicable drawings and this section of the specifications consisting of, but not necessarily limited to the following.

9.1.1.1. All existing plumbing fixtures shall be removed and replaced with appropriate items as shown on plans.

9.1.1.2. Provide all hardware/s not herein specifically mentioned but are necessary to complete the work. The architect shall approve all such hardware/s.

9.1.1.3. Any and all other work involved in providing the complete operational of the domestic water supply system, sanitary plumbing and storm drainage systems to the above-named project. All work shall be performed in accordance with the requirements of all applicable laws of the Republic of the Philippines and all codes and ordinances of the locality.

9.2. REQUIREMENTS

9.2.1. All plumbing work to be done and sizes of pipes to be used shall be in accordance with the National Plumbing Code of the Philippines and the requirements and ordinances of the locality.

9.2.2. The Plumbing Contractor is required to refer to all architectural, structural, electrical and mechanical plans and specifications and shall investigate all possible interference and conditions affecting his work.

9.2.3. It is needed that the drawings shall show every pipe, fitting, valve and appliance. All such items, whether specifically mentioned or not, indicated on the drawings, shall be furnished and installed if necessary, to complete the system in accordance with the best practice of the plumbing trade and to the satisfaction of the Engineer/Architect.

9.2.4. The Plumbing Contractor shall assume the cost of the entire responsibility for any change in the work shown on the Contract Drawings which may be occasioned by the approval of materials other than those specified.

9.3. APPROVAL

9.3.1. The Contractor shall submit for the Engineer/Architect's approval, the complete list of manufacturer's names of all equipment and materials he proposes to use.

9.3.2. After the approval of the above list, and before purchase of any equipment or material, the Contractor shall submit to the Engineer/Architect's approval the detailed information consisting of manufacturer's bulletins and shop drawings.

9.4. WORKMANSHIP AND INSTALLATION

9.4.1. All work shall be performed in first class and neat workmanship by Mechanics/Plumbers skilled in their trades, and such Mechanical/Plumber and their work shall be satisfactory to the Engineer/Architect.

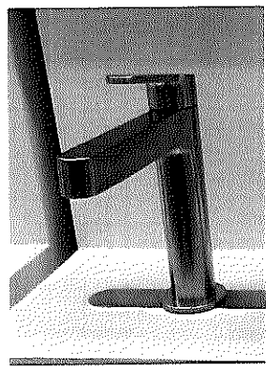
9.4.1.1. The work throughout shall be executed in accordance with the best practice of the trade and in the best and most thorough manner under the direction of a licensed Master Plumber or Sanitary Engineer and to the satisfaction of the Engineer/Architect, who will interpret the intent of the Contract drawings and specifications and shall have the power to reject any work and/or materials which are not in full accordance therewith.

9.4.2. No piping in any location shall be closed-up furred-in or before the examination and testing of the same by the Engineer/Architect, TSU of their representative.

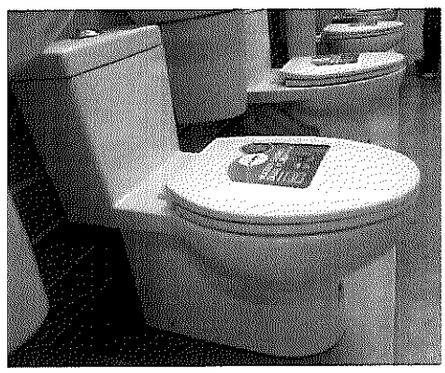
9.5. PLUMBING FIXTURES AND ACCESSORIES

9.5.1. All plumbing fixtures shall be Philippines standard with complete accessories.

9.5.1.1. Wall Hung Lavatory with manual shutoff single handle type faucet S304 stainless finish and complete accessories (valve, p-trap, etc.). Approved type, quality and brand.



9.5.1.2. Water Closet Dual Flush, push button type w/ heavy duty stainless Bidet Faucet and complete accessories– 4/6 liters standard or equal water closet pan and cistern complete with heavy duty soft closing seat and cover. Approved type, quality and brand.



9.5.1.3. Mirrors shall be 6 mm Beveled Edge Lead Free Mirror with 16mm Ø Stainless Mirror Holder. Approved type, quality and brand.

9.5.1.4. Wall-mounted Soap Shelf. Approved type, quality and brand.

9.5.1.5. Floor Drain should be stainless steel. Approved type, quality and brand.

9.5.1.6. Hose Bibb should be heavy duty brass body with thread: Approved type, quality and brand.

9.6. JOINTING

9.6.1. PVC Pipes and Fittings – socket type with PVC solvent cement, elastomeric rubber O-ring gasket, or as per the Manufacturer's recommendations.

9.6.2. Polypropylene – High density pipes and brass fittings and joints shall be used.

9.6.3. Dissimilar Pipes – Adaptor fittings shall be used.

9.7. DEFECTIVE WORK

9.7.1. If the inspection or test shows any defect, such defective work or material shall be replaced and the test shall be repeated until satisfactory to the Project-In-Charge.

9.7.2. All repairs to piping shall be made with new materials at the expense of the Contractor.

9.7.3. No caulking of screwed joints or holes will be accepted.

9.8. PERFORMANCE TEST

9.8.1. It is the responsibility of the Contractor to test all system of the entire plumbing installation for proper operational condition. The test shall be conducted in the presence of the TSU.

-o- END OF SECTION -o-

Prepared by:

ENGR. ALEXANDER JHON S. TABAQUERO
Civil

ENGR. MISAEL REIGH MIEL V. CABANSAG
Electrical

Checked by:

ENGR. CRISPIN I. FLORA
Electrical

ENGR. RYAN M. LAYUG
Head, PMU, Civil/Plumbing

Recommending Approval:

AR. FERDINAND S. VALENCIA
Director, FDMO / Architectural

DR. MARLON V. GAMIDO
VP, Administration and Finance

Approved:

DR. MYRNA Q. MALLARI
President
12-28-21