



PROJECT TITLE: REPAIR/REHABILITATION OF PAGASA TRANSIENT BUILDING

LOCATION: PAGASA Science Garden, Senator Miriam P. Defensor-Santiago Avenue, Brgy. Central, Diliman, Quezon City

SCOPE OF WORKS AND TECHNICAL SPECIFICATIONS

Part B. GENERAL REQUIREMENTS

Pre-Construction Meetings

- Prior to the start of construction, Contractor's material men whose presence is required must attend pre construction meetings as directed for the purpose of discussing the execution of work. In this conference the contractor determines the necessary precautions in mitigating the effect of construction on environmental aspect and medical services.

Progress Reports/ Construction Photographs

- The Contractor shall prepare and submit progress reports to the project engineer every 30 days after the start of the project up to its completion, showing the work completed, work remaining to be done, status of construction equipment and materials at the site.
- The Contractor shall take photographs during the process of the work once a month. At the completion of the project final photographs shall be sent to the End-user. The photographs shall be neatly labeled, dated and identified in a little box in the lower right hand corner, showing the date of exposure, project name, location and direction of view.
- The Contractor shall provide a log-book available at the site, which contain daily activities on the site including weather conditions, delivery, manpower and other matter pertaining to the situation of the project. It will also serve as data for the contractor and project monitoring.

Transmittal forms and Request letters

- Transmittal forms and Request letters shall be filled out in typewritten or ink with no alterations or inter line actions unless initialized dates before submittal. Shop drawings shall be submitted as the same size as the contract drawing when practicable, but in no case it shall exceed dimension of the contract drawings.

Cleaning up

- The Contractor shall at all times keep the construction area including storage area used by him free accumulations of waste material or rubbish. Upon completion of construction, the Contractor shall leave the work and premises in clean, neat workmanlike conditions satisfactory to the End-user.

Permits and Clearances

- The contractor shall be responsible for securing all necessary permits and clearances related to the project.

Construction Safety and Health

- The contractor shall provide safety signage/early warning signs visible at the jobsite and barricades as precaution.
- No Contractor or subcontractor shall require any employee to work in surroundings or under working conditions that are unsanitary, hazardous, or dangerous to his health or safety.
- The contractor shall furnish his workers with protective equipment for head, eyes, face, hands and feet, lifeline, safety belt/harness, protective shields and barriers whenever necessary by reason of the hazardous work process or environment.
- All PPE and Devices shall be in accordance with the requirements of OSHS and should pass the test conducted and/or standards set by the Occupational Safety Health Center (OSHC).
- All workers, shall be in proper uniform and shall conform with the DOLE D.O. No. 13 series of 1998, Guidelines Governing Occupational Safety and Health in the Construction Industry.
- During the execution of the work, the Contractor shall keep the site clean. All wreckage rubbish, excess materials, temporary works no longer required will be removed from site.

Protection of Existing Structures

- The contractor must protect the existing structures, utility systems during construction.

Temporary Power and Water Service

- The contractor shall provide a sub-meter for electrical and water consumption.
- The Contractor shall provide and maintain temporary electrical service including installation of temporary power and lighting within the construction site. The electrical service shall be adequate in capacity to supply power to construction tools and equipment without over-loading the temporary

equipment and wiring for power and lighting shall be in accordance with the applicable provisions of the local governing codes. At the completion of the construction work all temporary wiring, lighting, equipment and devices shall be removed.

- The Contractor shall provide and maintain temporary water supply services, complete with necessary connections and appurtenances. Installed water supply lines shall be used as a source of water for construction purposes subject to the approval of the Project Engineer. The Contractor shall pay the cost of operation, maintenance and restoration of the water system. All temporary water service including equipment and piping shall be removed upon completion of work and all worn out and damaged parts of the permanent system shall be replaced and restored in first class condition equal to new.

Project Billboard / Safety Signage

- The Contractor shall install two (2) Project Information Signs at/or near the beginning and the end of the project or at the discretion of the Engineer. The new billboard layout and dimensions are as follows:

- Tarpaulin Dimensions: 1.22m x 2.44 m
- Thickness of Marine Plywood: 5mm
- Background: White

The billboard shall consist of the following data:

- Title of the Project
- Contractor
- Location
- Implementing Agency
- Brief Description of Project
- Approved Budget of the Contract
- Project Details

- The contractor is required to install safety signage both inside and outside the construction site. These signs should be strategically placed to ensure that all workers, visitors, and passersby are aware of potential hazards and safety protocols. The signage must comply with relevant safety standards and regulations to effectively communicate important safety information and emergency procedures.

Occupational Safety and Health Program

- This item covers the implementation of construction safety in all stages of project procurement, including requirements, provisions, and instructions for the guidance of the Engineer.
- The Contractor shall furnish their workers with protective equipment for eyes, face, hands, and feet, lifeline, safety belt/harness, protective shields, and barriers whenever necessary due to the hazardous work process or environment.
- For General Construction Work, the required basic PPEs for all workers shall be Safety Helmet, Safety Gloves, and Safety Shoes. Workers within the construction project site shall be required to wear the necessary PPE at all

times. Moreover, all other persons who are either authorized or allowed to be at a construction site shall also wear appropriate PPEs.

- All Personal Protective Equipment (PPE) is subject to the approval of the Project Monitoring Engineer and should meet specified standard requirements:
 - The Safety Helmets/Hard hat shall meet the specifications contained in the technical guidelines issued by the Specialize department in accordance to international standards- OSHA or ANSI z89. Safety Helmets should be inspected by the safety officer to ensure that it is safe and reliable to use. It should be free from cracks and proper shock-absorbing lining of the helmet and should be in good condition.
 - Safety Shoes must meet the minimum requirements according to PNS ATM F2412:2016 and PNS ASTM F2413:2016 for the impact resistance and compression resistance at the toe area of the footwear
 - Impact Resistance – 75 ft-lbs (101.7 J)
 - Compression Resistance – 2500 lbs (11,121 N)

Mobilization / Demobilization.

- The contractor upon receipt of the notice to proceed shall immediately mobilize and transport his plant, equipment, materials and employees to the site and demobilize or remove the same at the completion of project.

Note: Where no numerical indications appear on the plans, all drawings shall be carefully followed according to the plans and specifications indicated, but where numerical notations are indicated, such numerical notations shall be followed.

Item 801 - Removal of Structures and Obstruction

Description

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

Note: *Salvaged materials which are damaged thru negligence shall be replaced or restored at the Contractor's expense.*

Scope of Works

- The contractor shall request to the end-user for temporary shut off of power and water supply for the preparation of demolition.
- Remove all existing finishes and repair and prepare all surfaces for finishes.
- Material having salvage value (esp. steel trusses, electrical wires, panel board, ACU) shall be turn over to the End-user or to the Project Monitoring

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Engineer. All debris or waste accumulated as a result of demolition shall become the property of the contractor and shall be removed from the premises by the contractor and disposed of in a legal and proper manner.

- Furnish, install, and maintain in safe conditions at all times temporary protection required to ensure safety for persons and property during demolition and removal work.
- Furnish, install, and maintain dust covering to prevent the spread of dust beyond the immediate area where demolition is being performed.
- Remove existing Electrical wiring devices as required in walls, floors and furnishing to be demolished and replaced new, refer to the electrical drawings.
- Remove all existing lighting fixtures and replaced new, refer to the electrical drawings.
- All electrical, plumbing and mechanical work (Demolition and new) is to be performed by licensed contractor's engineer.
- Removal of wall mounted type air conditioning unit in a proper way. All air conditioning unit shall be protected from damage and placed in safe storage or turn over to the end-user during demolition.
- Prior to the start of demolition work general contractor shall determine the location of load bearing partitions and columns and provide temporary supports as required by removal or relocation of such partitions to ensure all temporary supports are carried to sufficient bearing materials.
- Removal of existing countertop tiles in the kitchen and comfort rooms and replacement with new ones; refer to the approved drawing plan.
- Existing floor tiles and wall tiles are to be removed and replace with new, refer to approved plan layout for clarifications.
- Existing water closets in the ladies' and men's comfort rooms on the ground floor are to be removed and replaced with new ones.
- Existing drop-in sink are to remained and shall protect from damage.
- All existing acoustic ceiling are to be removed and replace with new, refer to the approved plan layout for clarifications.
- Existing fascia board is to be removed and replace with new.
- All existing steel casement windows on **ground floor** must be removed during demolition and restored before being reinstalled.
- All existing windows on second floor are to remained and shall protect from damage. Removal of Wall Glass box.
- All existing doors are to be removed and replaced with new as shown in the drawings.
- Existing roof sheets and gutters on the **right and left sides of the building** are to be removed and replaced with new ones, as shown in the drawings. The existing roof sheets in the middle part of the building must remain, with roof sealant applied as needed.
- Existing downspout is to be removed.
- All existing roof framing/steel trusses on the **right and left sides of the building** are to be removed and replace new, refer to structural drawings.
- Demolition of wall for door openings of the two rooms at the second floor.

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- Demolition of the existing concrete ramp.
- Partial demolition of the front staircase to accommodate the construction of a new concrete ramp.
- Re-installation of Air conditioning units.

Hauling

Description

This item shall consist of hauling of existing furniture or movable equipment inside of the building. Bookcases, chairs, cabinets, bed frames, and tables are examples of items that should be turned over to the end-user or Project Monitoring Engineer and shall be stored in secured location.

Part D. REINFORCED CONCRETE

Item 900 - Structural Concrete

Description

This item shall consist of furnishing, placing and finishing concrete in the buildings and related structures, flood control and drainage, ports, and water supply structures in accordance with this specification and conforming to the lines, grades, and dimension shown on the Plans.

Material Requirements

- Concrete shall be composed of Portland cement; fine and coarse aggregates, water and admixture as specified all thoroughly mixed and brought to proper consistency, uniformity and temperature for final placement.
- Concrete shall be Portland cement of a brand approved by the End-user and conforming to ASTM Standard.

Scope of Works

- All structural concrete works shall be Job Site Mix.
- All concrete works shall be done in accordance with Government Specifications for Concrete and or the latest edition of the American Concrete Institute (ACI) requirements for Reinforced Concrete.
- Use Class "A" (1:2:4) for footings, suspended slabs, columns, beams and electrical hand hole.
- All slab not less than 0.10 m in thickness. All slab reinforcement shall be 0.10 m in thickness and reinforcement shall be 0.02 m. clear from the bottom and 0.015 m. clear from the top of the slab.
- The design was based on a 3,000 lbs. concrete. Design mix proportion to produce 3,000 lbs. strength after 28 days.
 - o Footing
 - o Columns

- Beams
- Suspended Slab
- Ramp

Item 902 - Reinforcing Steel

Description

This item shall consist of furnishing, cutting, bending, fabricating, welding, and placing of steel reinforcement with or without epoxy coating of the type, size, shape and grade required in accordance with this Specification and in conformity with the requirements shown on the Plans.

Scope of Works

- Fabrication and Installation of Reinforcing Steel for the following:
 - Footings
 - Columns
 - Beams/Grade Beams/Roof Beams
 - Suspended Slab
- Reinforcing Bars shall be deformed conforming to ASTM A615, Standard Specification for deformed and Plain Carbon-Steel Bars for Concrete Reinforcement as follows:
 - 16mmØ bars shall be Grade 60.
 - 10mmØ-12mmØ bars and smaller shall be Grade 40.
 - Dowels and tie bars shall conform to the requirements of AASHTO M31 (ASTM A615)/PNS 49.
 - Reinforcement shall be clean and free from loose, rust, scales and any coatings that will reduce bond.

Item 903 - Formworks and False works

Description

This item covers the furnishing, fabrication, installation, erection, and removal of forms and falseworks for cast-in-place concrete.

Material Requirements

- Concrete form shall be phenolic board, steel or other suitable materials. Form surfaces requiring standard or special finish shall be phenolic board or a non-absorptive hand pressed fiberboard or other suitable materials. Phenolic board shall not be less than 12 mm thick and shall be free from irregularities, dents and sags. Forms shall be coated with non-staining form coating compound such as form oil of the approved make.

Scope of Works

- Construct all formwork complete with centering coarse molds conform to shape, form line grade, maintain rigid to prevent deformation. Provide formworks for the followings:
 - a. Columns
 - b. Beams
 - c. Suspended Slab
- The formworks to be utilized shall be designed and constructed for multiple uses, with a maximum of three uses specified for beams and columns, and up to two uses specified for slabs.
- Forms shall be substantial and sufficiently tight to prevent leakage of mortar and shall be braced or tied to maintain the desired position, shape, and alignment during and after concrete placement.
- Forms shall be removed in a manner, which shall prevent damage to concrete structures. Forms shall not be removed without prior approval of the Project Monitoring Engineer. Any repairs of the surface imperfections shall be performed at once and curing shall be started as soon as the surface is sufficiently hard to permit it without further damage. The minimum time period for removal of forms shall govern where it exceeds the minimum specified curing period. Where the formwork for one element supports the formwork for another element, the greater time period shall apply to both elements. Forms shall not be removed before the expiration of the minimum day/s specified below:
 - a. Footings - 2 days
 - b. Column - 4 days
 - c. Beams & Girders --allow one day per ft. with a minimum of 7 days.

Part E. FINISHINGS AND OTHER CIVIL WORKS

Item 1001 – Sewer System

Description

This item shall consist of furnishing all materials, equipment and labor for the complete installation of storm drainage system which include all pipings, gutters, canals, catch basins, junction boxes, handholes, manholes and other appurtenant structures, and sewerage system which include all sanitary sewer piping and septic vault/tank where no public sewer exist, from the building to the point of discharge.

Scope of Work

- Pipe laying of Sewer and vent lines. Pipes and fittings for sanitary lines shall conform to PNS 195.
- Waste stack/Sewer lines shall be Unplasticized Polyvinyl Chloride (PVC-U). Pipes and fittings conforming to ASTM D2729 / PNS 65:1993 for

Piping systems for soil and waste discharge inside buildings. Use 4 inches diameter pvc-u, **series 1000**

- Vent Stack/Vent lines shall be Unplasticized Polyvinyl Chloride (PVC-U). Pipes and fittings conforming to ASTM D2729 / PNS 65:1993 for Piping systems for soil and waste discharge inside buildings. Use 2 inches diameter pvc-u, **series 600**
- The pipes shall be laid in accordance with grades and alignment indicate or shown in the plans.
- Sewer lines should be tap to the existing sewer line.
- Construction of new waste pipe lines on second floor and tap to the existing septic tank.
- All piping above the ground shall be run parallel with lines of the building unless otherwise indicated on the plans.

Item 1002 - Plumbing

Description

This item shall consist of furnishing all materials, tools, equipment and fixtures required as shown on the plans for satisfactory performance of the entire plumbing and fire protection system including installation in accordance with the latest edition of the Revised National Plumbing Code, Uniform Plumbing Code of the Philippines, The Fire Code of the Philippines, The National Building Code, and this Specification.

Scope of Works

- Installation of plumbing fixtures and fittings.
 - a. Water closet shall be vitreous china, free standing toilet combination, round front bottom outlet siphonic washdown bowl with push button, double flushing, trapway; concealed, 4/6 liters per flush, measuring 725x370x775mm with cover complete with fittings and mounting accessories. Model make color shall be submitted for approval prior to delivery at jobsite by the Monitoring Engineer/End-user or unless otherwise specified on the plans. **(12 sets)**
 - b. Countertop lavatory/Counter Basin shall be white ceramic with single hole measuring 415 x 415 x 150mm with complete fittings. Faucets shall be made of stainless steel. **(4 sets)**
- Installation of Bathroom/Toilet Accessories;
 - c. Shower head and fitting shall be movable, round hand shower and rain shower measuring 8 inches diameter with escutcheon arm complete with stainless steel shower valve and control lever, all exposed surface to be chromium finish. Faucets shall be made of stainless steel for interior use. **(8 sets)**

- d. Grab bars shall be made of 304 Stainless steel pipe measuring 4cm dia. x 60 cm provided with safety grip and mounting flange. **(8 sets)**
- e. Floor drains shall be made of stainless steel beehive type, measuring 4in x 4in, and provided with detachable stainless strainer, expanded metal lath type. **(12 sets)**
- f. Bidet spray shall be 304 stainless steel with 2-way angle valve with complete fittings. **(12 sets)**
- g. Bathroom storage corner rack shall be aluminium with 3 layers, wall mounted. **(8 pcs)**
- h. Bathroom hook rack shall be mounted at the back of pvc toilet doors. **(8 pcs)**
- i. Facial Wall Mirror shall be mounted on the wall measuring 600x800mm. **(9 pcs)**
- j. Basin Faucet shall be SUS 304 Stainless Steel Faucet. **(9 sets)**

- Pipes laying for water lines. Pipes and fittings for water lines shall conform to PNS 65:1993 – Unplasticized Polyvinyl Chloride (uPVC) Pipes for Potable Water Supply.
- Tapping from an existing public water main of the site distribution to include supply & installation of main water meter and sub-water meters.
- All pipes shall be cut accurately to measurements and shall be worked into place without springing or forcing. Care shall be taken so as not to weaken the structural portions of the building.

Item 1003 - Carpentry and Joinery Works

Description

This item shall consist of furnishing all required materials, fabricated woodwork, tools, equipment and labor and performing all operations necessary for the satisfactory completion of all carpentry and joinery works in accordance with the Plans and this Specifications.

Scope of Works

- Lay-out and Installation 4.5mm thk. Fiber Cement board on 19mmx25mm Metal Furring spaced at 400mm on center, 12mmx38mm Carrying channel spaced at 1200mm on center, and shall be in accordance with the dimensions shown on the approved plans.
- Lay-out and Installation of PVC ceiling panels, refer to architectural drawings.
- Supply and installation of wood moulding for ceiling.
- Layout and Installation of Senepa/Fascia Board on Metal framing.

- Lay-out and Installation of cubicle partitions. Refer to the approved plan. Use HPL PVC Toilet Partition for walls and doors with complete accessories including door lock indicator.

Doors, Windows and Fenestration

Scope of Works

DOORS:

- Supply and installation of 2100x800mm single leaf swing wooden doors and 2"x5" door jamb with complete accessories. (9 sets)
- Supply and installation of 2100x600mm single leaf swing wooden doors and 2"x5" door jamb with complete accessories. (2 sets)
- Supply and installation of 2100x1800mm Double swing glass door with 6mm thickness, one-way vision glass on uPVC Frame. (1 set)

WINDOWS:

For Existing Windows

- Re-painting of steel casement window panel with 6mm thk clear glass.

For New Windows

- Supply and Installation of W 2.8m x H 1.20m Steel Casement with 1/4" thk. Glass, Swing-type (2 sets)
- Supply and Installation of W 2.1m x H 1.20m Steel Casement with 1/4" thk. Glass, Swing-type (2 sets)
- Supply and Installation of W 0.75m x H 1.20m Steel Casement with 1/4" thk. Glass, Swing-type (8 sets)
- Supply and Installation of W 0.6m x H 0.6m Steel Casement with 1/4" thk. Glass, Awning-type (3 sets)

Item 1004 – Hardware

Description

This item shall consist of furnishing and installing all building hardware required to: (1) ensure rigidity on joint/connections of different parts of the structures and (2) equip in a satisfactory operating condition parts of the structure such as doors, windows, cabinets, lockers, drawers and other similar operating parts in accordance with the Plans and this Specification.

Item consists of the followings:

- o 2x4 door hinge
- o door knob, lever type with 3 keys
- o door knob, ball type (Bathroom Doors)
- o automatic hinge door closer

Item 1013, 1014 & 1038 – Roofing Works

Description

This item shall consist of furnishing all equipment, tools, materials and labor required to properly install and complete the Pre-painted metal sheet, together with related accessories such as ridge/hip rolls, valleys, gutters, flashing and thermal insulation in accordance with the Plans and this Specification.

Scope of Works

- Fabrication and installation of roof framing on both the right and left sides of the building.
- Installation of 2"x4"x1.2mm Metal Purlins spaced at 600mm on center with 2"x2"x3" purlins connector.
- Installation of 12mm plain sagrod and sagrod bracing with turning buckle.
- Installation of pre-painted metal sheets, rib type, long span, with a thickness of above 0.6mm (color: Emerald Green), **on both the right and left sides of the building only.**
- Apply roof sealant to the existing roof sheets in the middle of the building.
- All pre-painted metal sheet and roofing accessories shall be oven baked painted true to profiles indicated on the plans as per approval of the Project Monitoring Engineer.
- Installation of Pre-painted Metal Roofing Accessory, 0.6mm thk, Flashing
- Installation of Pre-painted Metal Roofing Accessory, 0.6mm thk, Plain G.I Sheet
- Layout and Installation of Reflective Insulation, 10mm thk, Double Sided. Install insulation in such a way as to ensure free movement of air through all vents. Install blocking to provide a minimum 76mm clearance around all sides of recessed lighting fixtures.
- Reflective insulation materials shall consist of low emittance.

Item 1016 - Waterproofing

Description

This item shall consist of furnishing all waterproofing materials, labor, tools, equipment and other facilities in undertaking the proper installation works required in accordance with the Plans and this Specification.

Scope of Works

- Application of Cementitious Waterproofing on Toilet floor of the two rooms at the second floor.
- Water use for waterproofing shall be clean, clear and potable.
- One brand or type of waterproofing material shall be used on the project.

- Waterproofing materials shall be stored in a weather-tight enclosure to avoid moisture damage and absorption.

Item 1018 – Ceramic and Granite Tiles (Tile Works)

Description

This item shall consist of furnishing and installing ceramic and granite tiles materials including cementitious/adhesive materials, tools and equipment including labor required in the proper installation of floor, wall and countertop as shown on the Plans and in accordance with this Specification.

Scope of Works

FLOOR FINISHES

- Ground Floor:
 - Porch – (400x400mm Non-skid ceramic floor tiles)
 - Receiving Area – (400x400mm Glossy Ceramic Floor Tiles)
 - Kitchen Area – (400x400mm Glossy Ceramic Floor Tiles)
 - Men’s room – (400x400mm Glossy Ceramic Floor Tiles)
 - Ladies room – (400x400mm Glossy Ceramic Floor Tiles)
 - Men’s Comfort Room – (400x400mm Non-skid ceramic floor tiles)
 - Ladies Comfort Room – (400x400mm Non-skid ceramic floor tiles)
 - Common Comfort Room – (300x300mm Non-skid ceramic floor tiles)
- Second Floor:
 - Service Area – (400x400mm Glossy Ceramic Floor Tiles)
 - Room 1 – (400x400mm Glossy Ceramic Floor Tiles)
 - Room 2 – (400x400mm Glossy Ceramic Floor Tiles)
 - Comfort Room 1 – (400x400mm Non-skid ceramic floor tiles)
 - Comfort Room 2 – (400x400mm Non-skid ceramic floor tiles)
 - Common Comfort Room – (300x300mm Non-skid ceramic floor tiles)

WALL FINISHES

- Ground Floor:
 - Men’s Comfort Room – (300x600mm ceramic wall tiles)
 - Ladies Comfort Room – (300x600mm ceramic wall tiles)
 - Kitchen concrete wall partition one side – (500x600mm stone cladding wall tiles)
 - Stairs up to 2nd Floor – (300x300mm ceramic with stair nosing)
- Second Floor:
 - Comfort Room 1 – (300x600mm ceramic wall tiles)
 - Comfort Room 2 – (300x600mm ceramic wall tiles)

COUNTER TOP

- Lay-out and Installation of 600x600mm glazed tiles and trims on counter top at the ground floor kitchen.
- Lay-out and Installation of slab synthetic granite at the ground floor and second floor toilet's lavatory counter top.

Note:

- *Tile works shall not be started until rough-ins for plumbing, electrical and others trades have been completed and tested. The work of all other trades shall be protected from damage.*
- *The contract must submit a design sample of tile selection for approval of the End-user or Project monitoring engineer.*

Item 1021 - Cement Floor Finish

Description

This item shall consist of furnishing all material, labor, tools, and equipment in undertaking cement floor finishing in accordance with the Plans and this Specification.

Scope of Works

- Floor topping on the bathroom floors in the second.
- The ramp at the front of the building must have a cement broom finish.

Item 1027 - Cement Plaster Finish

Description

This item shall consist of furnishing all material, labor, tools, and equipment in undertaking cement plaster finish in accordance with the Plans and this Specification.

Scope of Works

- Cement plaster smooth finish on Exterior and Interior walls as shown in the drawings. Use Class B mixture.
- All concrete surfaces including those indicated as cement finish, other than floors and steps and surfaces where other applied finish is required shall be given a finish done and applied in the following manner:
- Immediately after removal of forms, all projecting wire and bolts and other devices used for tying forms shall be cut-off at least one-half cm. beneath the finish surface. All holes, voids, depressions, and other defects shall be thoroughly wetted and then painted up solid with cement mortar putty of the same proportion as the mortar in the bodywork.

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Item 1032 - Painting Works (Masonry, Wood and Steel)

Description

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

Scope of Works

- Painting of interior and exterior masonry walls, **except for the exterior masonry walls at the back of the building.**
- Painting for Window grills, window metal frame, metal railings, trusses and other steel/metal indicated in the plan.
- Painting for Wooden Panel Doors.
- Surface Examination – No painting shall be done under conditions, which will jeopardize the quality or appearance of painting or finishing.
- Preparation – All surfaces shall be in proper condition to receive the finish. All woodwork shall be sandpapered to smooth and finished dusted clean; all knotholes, pitch pockets, or sappy portions shall be shellacked or sealed with wood filler. Nail holes cracks or defects shall be carefully puttied after the first coat. Matching the color paint or stain, all imperfection in plaster shall be filled with patching. Compound and smoothed off to match adjoining surfaces.
- All Exterior Concrete walls shall be painted 3 coats of HI-Performance Elastomeric Paint.
- All Interior Concrete walls shall be painted 3 coats of HI-Performance Acrylic Latex Paint.
- For Exterior and Interior walls. Skim coat shall be used to patch uneven surface before application of first coat.
- Ferrous metal shall be painted one (1) coat primer and two (2) coats enamel paint.

Note: Choice of Color

The End-user or Project Monitoring engineer must first be consulted after he/she has given the color scheme. No painting job shall be done unless it has met the approval of the end-user or Project Monitoring engineer regarding the color.

Varnishing

- All wood work to be varnished must first be thoroughly sandpapered and all cracks hole, and other defects must be thoroughly and carefully filled with the first quality colored or white putty tinted to match the desired finish.
- No man-on-the-job wood filler will he allowed. It should be a first quality wood filler.
- Before varnishing a sample must be applied for approval of the owner.

Item 1046 - Masonry Works

Description

This item shall consist of furnishing all necessary materials, tools, equipment and labor necessary to complete the execution of the masonry works as shown on the Plans.

Materials

- Portland cement shall conform to ASTM standards. Use only one brand for the whole structural and masonry works.
- Fine aggregates for concrete, mortar, grout, or plaster: stone screenings or other materials with similar characteristics: clean, hard, strong, durable, free from dusts, lumps soft or flaky particles, shale, alkali, loam or clay.
- Coarse Aggregates: Gravel; Well- drained, clean, hard particles of gravel or crushed rocks, 25mm (1") dia. Maximum for slab. Clean, washed sand.
- Steel reinforcements: As manufactured by National Steel Corporation or approved equal. Structural Grade Steel: with minimum $F_y = 227.37$ MPa. (3300 Psi), Intermediate Grade Steel: with minimum $F_y = 275.8$ MPa (4000 psi)
- Tie wires: Ga. 16 galvanized iron (G.I.) at joints or laps of placed reinforcements as indicated in the plans. Refer to structural plans and general construction notes to conform the above values. Use steel conforming to ASTM standards, deformed, for concrete and masonry requirements.
- Water: Fit for drinking, free from injurious amount of oil, acids, alkali, organic materials and other deleterious substances.

Scope of Works

- For all exterior walls use 6" concrete hollow blocks locally manufactured All 6" hollow blocks shall be reinforced with 10 mm diameter vertical bars spaced at 0.40 m and 10mm diameter horizontal bars 0.60 m. for every 3 layers.
- All interior walls use 4" hollow blocks shall be reinforced with 10 mm diameter vertical bars spaced at 0.40 m and 10 mm. diameter horizontal bars at every 3 layers.
- Reinforcement for concrete hollow blocks shall be done in accordance with the structural plans as to size, spacing and other requirements.

Item 1047 – Metal Structures

Description

This work shall consist of furnishing, fabricating, hauling, erecting, welding and painting of metal structure and accessories constructed in accordance with the Plans and this Specification.

Scope of Works

- The roof framing shall be fabricated and installed in accordance with the dimensions shown on the approved Plans.
- To prevent rusting, steel trusses, purlins and other metal steel should be painted with at least two coats of red oxide paint.
- All railing posts shall be set plumb unless otherwise indicated in the Plans.
- The metal railing shall be fabricated in accordance with the dimensions shown on the approved Plans. In case of welded railings, all exposed joints shall be finished by grinding or filing after welding to give a neat appearance.

Note:

- *Use E70 electrodes for all Welds in Structural Steel.*

Item 1051 – Railings

- This work shall consist of furnishing, fabricating, and installing the railings for buildings and other similar structures of the material or combination of materials in accordance with this Specification and in conformity with the Plans.

Scope of Works

- Construction of metal handrail for PWD Ramp shall conform to the requirements of ASTM A276M, Standard Specification for Stainless Steel Bars, and shapes or as called for in the plans

Material Requirements

- Metal Handrail
 - ✓ Stainless steel pipe S40, 1 ½” diameter
 - ✓ NSS-308 Stainless Steel Welding Rod
 - ✓ 1.5mm THK. 304 Stainless Steel Round Flange Cover
 - ✓ 1 1/2” dia x 1.5mm Round Base Plate
 - ✓ M8x50mm Flange Bolts

Item – Additional

Drop-Down Fire Escape Ladder

Scope of Works

- Construction and installation of wall-mounted metal drop-down fire escape ladders, to be positioned on both the right and left sides of the building.

Material Requirements

- ✓ 1 1/2" x 1 1/2"x 2mm Tubular
- ✓ 1"x2"x2mm Tubular
- ✓ 1/4"x2mm Flat Bar
- ✓ Dyna bolt, 3/8 x70mm
- ✓ Welding rod E70
- ✓ Base plate 4"x4"x5mm

Part F. ELECTRICAL

Item 1100 – Conduits, Boxes and Fittings

1100.1 Description

This item shall consist of furnishing and installation of the complete conduit work consisting of electrical conduits; conduit boxes; conduit fittings and other electrical materials in accordance with the Plans and this Specification.

1100.2 Scope of Works

- All conduits, conduit boxes, conduit fittings, pull boxes and other electrical materials base on the plans and specification shall be installed including furnishing.
- All conduits and boxes shall be embedded in concrete unless otherwise specified on the plan.
- All Junction boxes shall install covers.
- Conduits for ACU system feeder lines and main feeders shall be installed accordingly to the plan.
- Threadless couplings and connectors shall not be used in threaded conduit ends unless listed for the purpose.
- Where a conduit enters a box, fitting, or other enclosure, a locknut and bushings shall be installed to protect the wire from abrasion unless the design of the box, fitting, or enclosure is such as to afford equivalent protection.
- Installation of pull-boxes above the panel boards.
- Construction of two (2) 50cm x 50cm x 60cm handhole for ACU main feeder line. Refer to the Plan.
- Testing of all items mention above.

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1100.2 Specifications

- Exposed conduit in sub-power house shall be Intermediate Metal Conduit (IMC).
- IMC shall be made of either steel with protective coatings or stainless steel.
- Markings in each length of IMC shall be clearly and durably marked at least every 1500mm with the letters IMC. Each length shall be marked as required in Subsection 1.10.1.21 of Article 1.10, Requirements for electrical installations of PEC, Part I.
- The standard length of IMC shall be 3000mm, including an attached coupling, and each end shall be threaded or unthreaded shall be permitted.
- IMC shall be having a minimum size of metric designator 16 (trade size ½) and a maximum size of metric designator 103 (trade size 4).
- PVC Conduit shall be made of rigid (non-plasticized) polyvinyl chloride (PVC).
- PVC conduit and fittings shall be composed of suitable non-metallic material that is resistant to moisture and chemical atmosphere.
- Markings in each length of PVC conduit shall be clearly and durably marked at least every 3000mm as required in Subsection 1.10.1.21 (A) of Article 1.10, Requirements for Electrical Installations of PEC, Part I.
- The physical and mechanical properties of PVC conduit shall conform to the requirements of PNS 14:2005, Unplasticized Polyvinyl Chloride (uPVC) electrical conduit – Specification.
- PVC shall have a minimum size of metric designator 16 (trade size ½) and a maximum size of metric designator 155 (trade size 6).
- Pull boxes shall be grey coated and shall have cover.

Item 1101 – Wires, Cables and Wiring Devices

1101.1 Description

This item shall consist of furnishing and installation of all wires and wiring devices consisting of electric wires and cables, wall switches, convenience receptacles, heavy duty receptacles and other devices in accordance with the approved Plans and this Specification.

1101.2 Scope of Works

- All wires and wiring devices shall be installed including furnishing.
- All branch circuits shall have grounding wire from Panel Boards to electrical devices.
- The contractor shall have labelled all electrical devices such as convenience outlets and switches with corresponding branch circuit in the Panel Board for easy troubleshooting. Refer to schedule of loads.
- The contractor shall allot 150mm minimum extension of wire for switch boxes and convenience outlet boxes.
- The contractor shall allot minimum of 1500mm extension of wire for lighting fixture junction boxes inside a flexible conduit.

- All wires shall be tagged for phasing identity.
- All wires shall be terminated to wiring devices and to circuit breakers according to the plan.
- The contractor shall perform 3-phase test.
- All wires going in panel board shall be neat and tidy.
- Installation of GFCI according to the Plan.
- Installation of power source to Intermediate Distribution Panel (IDP).
- Installation of power source for Fire Alarm Control Panel (FACP).
- Provide four (4) Power Outlets for portable Water Heaters at second floor comfort rooms. Consult PAGASA engineer in-charge for this additional loads.
- Testing all items mention above.

1101.3 Specifications

- All wires shall be Phelps Dodge Thermoplastic High Heat-Resistant Nylon-Coated (THHN) copper wires rated 600V.
- All wires shall be stranded type.
- The minimum diameter size of conductors shall be 2.0mm² for copper
- All wires shall be color coded as Red for Line 1, Yellow for Line 2, Blue for Line 3 and White for Grounding.
- Switches shall have LED indicator.
- Receptacles shall be 3-pin socket (grounding type).
- Items to be used shall complied to DTI-BPS Mandatory Product Certification; Philippine Standard (PS) Quality and/or Safety Certification Mark Licensing and the Import Commodity Clearance (ICC) Certification.

Item 1102 – Panel Boards and Other Overcurrent Protection Devices

1102.1 Description

This Item shall consist of furnishing and installation of the distribution panel boards at the location shown on the approved Plans complete with circuit breakers, all accessories completely wired and ready for service.

1102.2 Scope of Works

- Installation of panel boards shall be embedded in wall concrete.
- Main and branch circuit breakers for panel boards shall have the rating, capacity and number of poles as shown on the approved Plans.
- Panel boards, main and branch circuit breakers shall be labelled accordingly to the schedule of loads.
- The contractor shall provide decorative electrical panel board cover to hide the panel board in a wall. Probably painting with wood frame.
- The body of the metal panel boards shall be properly grounded.
- The contractor shall provide grounding terminal in each panel board.

- Installation of panel boards of lighting and power outlets.
- Installations of panel board of Fire Alarm Control Panel (FACP).
- Installation of panel boards for Air-conditioning Units.
- Provide four (4) spare circuit breaker for portable water heaters.
- The contractor shall submit a proposal of preliminary Test and Inspection Plan.

1102.3 Specifications

- Panel Boards shall be NEMA 1 enclosure and shall be grey coated.
- Circuit Breakers shall be Schneider Electric Miniature Circuit breaker.
- Main circuit breaker shall be 3-pole 3-phase and branch circuit breaker are 2-pole single phase according to the schedule of loads.
- Panel boards shall have busbar capacity more than the full-load current accordingly to the Plan.

Item 1103 – Lighting Fixtures and Lamp

1103.1 Description

This Item shall consist of furnishing all lighting fixtures, accessories and fixings necessary for installation as shown on the Plans and in accordance with this Specifications. A light fixture or luminaire is an electrical device to create artificial light that serves as a tool to direct light using reflective and shielding materials.

1103.2 Scope of Works

- Installation of LED panels recessed type, surface type and suspended type (accordingly to the Plan) shall be fit into ceiling, properly reinforced the mounting and properly grounded. Refer to the Plan.
- Installation of Chandelier's and shall be properly reinforced the mounting. Refer to the Plan.
- Installation of LED Strip light in an Aluminium track with cover. Refer to the plan.
- Installation of LED 3-bulb suspended/pendant lighting and properly reinforced the mounting. Refer to the Plan.
- Installation of 4" LED spotlight according to the Plan. Refer to the Plan.
- Installation of downlight fixture, surface type, recessed type. Refer to the Plan.
- Installation of MR16 fixture shall be based on the Plan.
- Installation of modern type LED cylindrical upside-down lighting fixture shall be based on the Plan.
- Installation LED Emergency light at corresponding location. Refer to the Plan.
- Provide individual power outlet for emergency light.
- All lighting fixture body shall be properly grounded.
- Upon completion of installation of lighting fixtures and after circuitry has been energized, electrical energy shall be applied to demonstrate capability and compliance with requirements. When possible, malfunctioned units at the Project Site shall be rectified, then retested to demonstrate compliance; otherwise,

defective items shall be removed and replaced with new units and another test shall be conducted.

1103.3 Specifications

- LED panel light **60cm x 60cm surface type** shall be 60Watts with LED driver and color temperature shall be 6000k.
- LED panel light **120cm x 30cm surface type** shall be 60Watts with LED driver and color temperature shall be 6000k.
- LED panel light **120cm x 30cm suspended type** shall be 60Watts with LED driver and color temperature shall be 6000k.
- Modern LED Chandelier must be minimum overall width with 1 meter and shall 3000k color temperature of lighting.
- Modern 3 bulbs pendant lighting fixture shall be 3000k color temperature of bulbs and the body of lighting shall be aluminium materials.
- 4" LED spotlight shall be 4000k color temperature.
- RGB LED strip light shall have individual power adapter and with 44 key IR control for each location that is specified on the Plan.
- RGB LED strip light shall be programmable with different colors and all color must be available.
- Aluminium track for LED strip light shall be 20mm x 20mm with plastic cover.
- 6" vertical downlight fixture surface type shall be aluminium material, water proof and color black. The color temperature of bulbs shall be 3000k 9watts. Refer to the Plan for location.
- 4" vertical downlight fixture recessed type shall be aluminium material and color white. The color temperature of bulb shall be 4000k. Refer to the Plan for location.
- MR16 fixture shall have GU10 socket, ceramic material and shall be color white. Color temperature of bulb shall be 4000k. Refer to the Plan for location.
- Modern type LED cylindrical upside down lighting fixture shall be aluminium material, water proof and color black. The color temperature of bulbs shall be 3000k 3watts. Refer to the Plan for location.
- LED emergency light shall be 3.6V 900mAh Ni-CD battery with overcharge and discharge protection. Injection-moulded thermoplastic ABS housing. Adjustable Headlamps. 3000k color temperature.

Item 1104 – Auxiliary System

1104.1 Description

This Item shall consist of furnishing and installation of all materials, components and equipment to complete the requirements for Auxiliary System in accordance with the Plans and this Specification.

1104.2 Scope of Works

- Installation of wall plate CATV outlet, single port.

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- Installation of conduits for Co-axial cable shall be embedded in concrete. Refer to the Plan.
- Installation of Co-axial cable and termination of cables.
- Installation of indoor CATV box.
- Labelling of CATV outlet is a must.
- At the completion of the installation works, the entire installation shall be subject to the test before final placing in service under the full responsibility of the Contractor. Unless otherwise specified, all test shall be carried out in conformity with the requirement of Philippine Electrical/Electronics Code or with this Specification.
- After each test, the contractor shall immediately submit copies of a test report to the Engineer.
- Testing certificates shall be provided by the speciality contractor prior to final turnover.

1104.3 Specification

- CATV Outlet shall be single port, with wall plate cover
- Co-axial cable shall be RG-6.
- Indoor CATV panel box shall be place inside the IDF panel.
- Conduit, boxes and fittings shall conform to the requirements if **Item 1100.**
- Cable and wiring devices shall conform to the requirements of **Item 1101.**

Item 1105 – Network and Cabling System

1105.1 Description

This Item shall consist of furnishing and installation of Network Cabling, equipment and associated components to form a complete coordinated system ready for operation in accordance with the Plans and Specifications.

1105.2 Scope of Works

- Installation and layout of conduits for UTP cable shall be embedded in concrete.
- Installation of UTP cable in every data outlet/port is directly from Intermediate Distribution Frame (IDF). Splicing is strictly prohibited.
- Installation of Data outlet/port with grid and plate.
- Termination of UTP cables in every port and to managed switched/patch panel shall be done by the contractor.
- Configuration of the network system shall be done by the contractor.
- Installation of WIFI access point shall be done also by the contractor.
- All cables and hardware shall be 100% tested for defects in installation and to verify cable performance under installed conditions. All conductors of each installed cable shall be verified useable by the Contractor prior to system acceptance.

- All UTP and fiber optic cable field testing shall be performed with an approved test device. 100% of cables installed shall be tested and shall all result to PASS remarks channel or permanent link.
- All field tester shall be factory calibrated each calendar year by the field test equipment manufacturer.

1105.3 Specifications

- Conduit, boxes and fittings shall conform to the requirements if **Item 1100**.
- Cable and wiring devices shall conform to the requirements of **Item 1101**.
- UTP cable shall be CAT6.
- Data outlet shall be single port with grid and plate.
- WIFI access point shall be 300Mbps ceiling mounted.

Item 1200 – Air Conditioning and Ventilating System

1200.1 Description

This Item shall consist of furnishing and installation of air conditioning, refrigeration and ventilation systems, inclusive of necessary electrical connections, ductworks, grilles, pipes and condensate drains and all other necessary accessories, ready for service in accordance with the Plans and this Specification.

1201.2 Scope of Works

- Installation and layout of conduits for outdoor units of ACU and Exhaust Fans including main panels shall be embedded in concrete. Refer to the Plan.
- Installation of exhaust fan ceiling cassette and wall mounted. Refer to the Plan.
- Providing individual power outlet for each exhaust.
- Conduits for ACU system feeder lines and main feeders shall be installed accordingly to the plan.

1201.3 Specifications

- Exhaust fan shall be 220V, 12in x 12in dimension, color white.
- Ceiling cassette exhaust fan shall have air duct hose going to outside ceiling ventilation.

Item 1208 – Fire Alarm System

1208.1 Description

This Item shall consist of furnishing, installation and connection of the fire alarm wiring and equipment to form a coordinated system ready for operation in accordance with the Plans and Specifications.

1208.2 Scope of Works

- Installation of boxes, conduit and fittings shall be embedded in concrete including FACP panel.
- Installation of Smoke Detector, Heat Detector, Alarm Horn w/ Strobe Light, Fire Alarm Control Panel, Manual Pull Station Switch and fire alarm cable.
- The Contractor shall terminate the cables to the devices and FACP.
- Upon completion of installation of Fire Alarm System and after circuitry has been energized, triggering the devices shall be applied to demonstrate capability and compliance with requirements. When possible, malfunctioned units at the Project Site shall be rectified, then retested to demonstrate compliance; otherwise, defective items shall be removed and replaced with new units and another test shall be conducted.

1208.3 Specifications

- All fire alarm devices mention above shall be compatible with each other.
- Alarm horn shall be modern with LED strobe light.
- Fire alarm cable shall 2C shielded type.
- Fire Alarm Control Panel shall be at least 6 zone, 220V main power supply, 27.2VDC internal power supply, 12V 12.8Ah li-on battery pack, end of line device and end of line resistance value (6.8k ohms, 5% tolerance, 0.25W color
- Installation conduits, wires and boxes shall be in accordance with the requirements of Article 7.60 – Fire Alarm Systems of the Philippine Electrical Code.
- The inspection, testing and maintenance of fire alarm system shall comply with the requirements of Chapter 10 – Inspection, Testing and Maintenance of the National Fire Alarm Code (NFPA 72).