

**Republic of the Philippines**  
**Department of Science and Technology**  
**PHILIPPINE ATMOSPHERIC, GEOPHYSICAL AND**  
**ASTRONOMICAL SERVICES ADMINISTRATION**  
**( P A G A S A )**

SPECIFICATIONS FOR THE PROPOSED REDEVELOPMENT OF HMTS ANNEX, REPAIR ROOM AND STORAGE ROOM LOCATED AT 1<sup>ST</sup> FLR., WFFC BLDG., AGHAM RD., BRGY. PINYAHAN, QUEZON CITY

Project Title:

**PROPOSED Redevelopment of HMTS Annex, Repair Room and Storage Room**

Location:

**1<sup>st</sup> floor Weather & Flood Forecasting Center Bldg., Agham Road, Brgy. Pinyahan, Quezon City, 1100**

## **OUTLINE SPECIFICATIONS FOR GENERAL CONSTRUCTION:**

### **I. INTENT AND APPLICATION OF THE PROVISIONS OF THIS SECTION**

A. The Scope of Work covered within these Specifications

B. This section is prepared in a concise manner, the intention of which is to save time and effort in locating important contents within these Specifications.

C. Execution of this Section shall be coordinated and harmonized to each corresponding elaborated section of these same specifications.

**D. In case discrepancies exist between this Section and its corresponding elaborated sections, notify the Procuring Entity immediately for clarification; their decision shall be final.**

E. The Contractor shall bear the responsibility of checking all the numbers and units as indicated in the Bill of Quantities. It is understood that the Contractor shall supply and install the required units in accordance with the Plans and the Specifications.

F. In their bid proposal, the bidders may propose materials or equipment or makes other than those specified in the BOQ and/or Specifications, provided they are of equivalent specifications and functionalities.

G. During project implementation, the winning bidder/contractor may propose substitution of materials or equipment or makes other than those specified in the Contract documents shall be subject to the approval of the Procuring Entity for the following reasons only:

1. That the materials or equipment proposed for substitution is equal or superior to the materials or equipment specified in construction efficiency

and utility provided that any and all costs relative thereof shall be shouldered by the Contractor.

2. Or that the materials or equipment specified cannot be delivered to the job site on time to complete the work of the other Contractors due to conditions beyond the control of the Contractor.

## II. GENERAL CONDITIONS OF PLANS AND SPECIFICATIONS

The execution of this Specification, Plans and other related Contract Documents shall be subjected to the rules and regulations as provided in the General Conditions of the Contract. **The Plans and specifications shall be interpreted by the Procuring Entity and or his/her representative.** The Contractor is enjoined to confer with the Procuring Entity on items for clarification before submitting his bid. No excuses shall be entertained for misinterpretation of the Plans and specifications after the award of contract. All work as deemed required by the Procuring Entity shall be carried out properly by the Contractor.

- A. The Contractor shall consult the Procuring Entity on portion of the work not mentioned in the Specification and not illustrated on the Plans. He shall not work without proper instruction or detailed plans approved by the Procuring Entity, otherwise he shall be responsible for the in acceptance of the work done without details. In such case, the Contractor shall make good the work at his own expense.
- B. No alteration or addition shall be allowed without the consent and proper documentation approved by the Procuring Entity, even such change is ordered by the Procuring Entity. The Contractor shall bring the case to the Procuring Entity. Request for approval of such changes, alteration, deviation of work shall not be done without the consent of the Procuring Entity. Changes may be presented to the Procuring Entity in the form of shop drawings.

TWO (2) SET of clean Plans and specification shall always be kept at the jobsite to be available to the Procuring Entity or their representative upon his request during the construction.

### SECTION 1: SCOPE OF WORK

- A. The Contractor shall conduct thorough inspection of the existing job site conditions.
- B. The scope of work shall include all additions necessary in order to implement the whole set of approved Plans, Working Drawings and Specifications.
- C. The Contractor shall secure and do all the legwork necessary for all pertinent permits needed for the Procuring Entity to occupy and use the building,
- D. The Contractor shall construct All Architectural, Structural, Electrical, Sanitary/ Plumbing, Mechanical / in accordance with the Plans and Specifications. All

items shown on the Plans but not mentioned in the Specifications shall be included. Discrepancies shall be verified with the Procuring Entity.

- E. The Contractor shall submit details and shop drawings, templates, and schedules required for the coordination of the work of the various trades. Drawings should include information on all working dimensions, arrangement and sectional views, connections and materials.
- F. **Final Cleaning As Pre-requisite To Final Acceptance:** Final cleaning shall be by the Contractor prior to the Procuring Entity's final inspection for certification of final acceptance. Final Cleaning shall be applied on each surface or unit of work and shall be of condition expected for a first class building cleaning and maintenance program.
- G. The Contractor shall be responsible for the safety and safe working practices of its respective employees, servants and agents.

## **SECTION 2: SITE WORK**

**A. VISIT AND ACCEPT SITE, AS IS.** The following works shall be included:

1. **Site Clearing:** Protection and/or removal of existing structures with the approval from the Procuring Entity.
2. **Removal of improvements above and below grade** (if any) necessary to permit construction and other work as indicated. The Procuring Entity and Lessor must be consulted prior to any demolition. Coordination with PAGASA Authorities / Facilities Group & proper investigation is to be conducted to avoid damage on existing utilities. Rubbish shall be legally and properly disposed of. Other items for relocation / demolition will be discussed in the Pre-Bid Conference.

## **B. SITE SAFETY REQUIREMENTS:**

1. The Contractor shall, maintain a temporary board – up, security for the proper execution of site up-keeping. Such board-up shall be built where necessary and required by PAGASA for its full length except for such openings as may be necessary for the proper execution of the work, in such case, openings shall be provided with doors which shall be kept closed at all times except in actual use.

## **C. TEMPORARY SITE FACILITIES**

1. Temporary Provisions:
  1. The Contractor shall provide all temporary lighting, power, water supply and all necessary facilities sufficient enough for the simultaneous use of all possible fields of work to complete the project.
  2. The Contractor shall provide at necessary no. of units of Fire extinguishers.

## D. STORAGE AND FILING OF MATERIALS

1. **Delivery:** Contractor shall ensure that materials are properly turned over and delivered on site in good quality and condition. A time and delivery record shall be available.
2. **Storage:** Contractor's materials shall be arranged properly and accordingly in terms of sizes, quality, quantity, category and time of use.
3. All cement, lime and other materials affected by moisture shall be stored on platforms and protected from weather. Materials shall be stored as to insure the preservation of their quality and fitness for their work. Stored materials shall be located so as to facilitate prompt inspection.
4. Should it be necessary at any time to move materials, sheds or storage platforms, the Contractor shall do so at his own expense.

## SECTION 3: MASONRY

### A. CONCRETE MASONRY UNITS

1. **Masonry Units (CHB):** 100mm thick for all interior walls and 150mm for all exterior walls unless otherwise indicated. Use 400 psi for non-load bearing blocks and 700 psi for load bearing blocks where required.
  - a. Where full height walls are constructed with concrete hollow blocks, these shall extend up to the bottom of beam or slab unless otherwise indicated on plans. Provide stiffener columns & lintel beams as specified in the structural drawings or as specified or as deemed required to assure a stabilized wall due to height & other considerations.
2. **Sand:** S-1, washed, clean and greenish in color.
3. **Mortar:** One part "Portland" cement and two parts sand and water but not more than three parts sand and water.
4. **Plaster bond:** Apply to all wall areas prior to plastering.

## SECTION 4: DOORS AND INTERIOR WINDOWS :

Refer to Schedule of Doors and Windows

### A. DOORS AND FRAMES

1. **MAIN ENTRANCE DOOR – Heavy Duty Floor Hinge Glass door, 12mm thick tempered, frameless glass door.**

Note: The contractor shall exercise the utmost care in dismantling, transfer and installation of the Procuring Entity-supplied glass doors. In case of any damage, the contractor shall replace the glass door without additional cost to the Procuring Entity.

## B. FINISHING HARDWARE

The following Hardware Sets are furnished for whatever assistance it may afford the Contractor. The Contractor shall verify Plans and Specifications for hardware quality. Should any particular item be omitted, Contractor shall provide similar or equivalent item or hardware same as required.

All door hardware must be ANSI A156.2 approved.

1. **Locksets** shall be Heavy duty lever type handles, HAFELE, Bonco or Hope Brand with locked keys and profile cylinders.

- a. All locks shall have three (3) keys with the lock number stamped for identification. Verify number of duplicates.
- b. Schedule: Use extra heavy duty industrial / commercial series of door hardware.

All other necessary hardware such as latch bolts, catch locks, door chain fasteners, door stops, wall stops and holders, push plates, handles, etc. shall be of type, size and design suitable for the purpose.

## C. GLASS AND GLAZING

1. Schedule: The contractor shall submit glass sample with performance data and certifications from the manufacturer.

### a. Windows

1. 6 mm thick clear tempered glass for aluminum steel awning windows on building interiors.

## SECTION 5: FINISHES

Refer to Architectural Plans for location. Verify plans for other finishes not specified or omitted herein. Sample of all materials shall be submitted to the Procuring Entity for approval as to color and quality workmanship.

### A. FLOOR FINISHES

1. **Vinyl Tiles:** Supply and installation of 2.0 mm thk. x 300 mm x 300 mm homogenous vinyl. Contractor shall submit samples for Procuring Entity's approval. After work completion, vinyl tiles shall be cleaned, free from all cement, dirt, or other substances, with two coats of water emulsion wax, each coat polished to produce a well-polished finish. *Manufacturer: Armstrong*
2. **Tiles:** Supply and installation of 600 mm x 600 mm or 800mm x 800mm unglazed tiles; polished / unpolished / textured and colored: set on tile adhesive setting with 3 - 5 mm spacing between tile. For HMTS Annex office. Submit Samples for approval.

3. **Tiles:** Supply and installation of 9 to 10 mm x 400 mm x 400 mm for Repair Room. Refer to Schedule of finishes. Submit sample for Procuring Entity's approval.
4. **Tiles:** Supply and installation of 200 mm x 300 mm for Wall & table top Tiles. Refer to Schedule of finishes. Submit sample for Procuring Entity's approval.

## B. WALL FINISHES

1. **Plain Cement Plaster Finish:** 10 mm. thick. on vertical, on masonry and for all concrete hollow block surfaces, painted finish as indicated in the Drawings and for all areas not otherwise noted with other finishes.
2. **Tiles:** Supply and installation of 200 mm x 300 mm for Wall & table top Tiles complete with all PVC trims 20-30mm mortars setting beds with the tile grout 3-5mm. Refer to Schedule of finishes. Submit sample for Procuring Entity's approval.

## C. CEILING FINISHES

1. **Plain Cement Plaster Finish:** 10 mm. thick, on slab and for all concrete hollow block surfaces, painted finish as indicated in the Drawings and for all areas not otherwise noted with other finishes.
2. **Dismantling & Cleaning Works:** Removal of some parts of existing ceiling as affected by the new ceiling layout and finish.
3. **Acoustic Mineral Ceiling Boards:** Installation of 15 mm x 600 mm x 600 mm, with 5-year warranty to withstand humidity conditions up to at least 90deg F/ 90% RH without visible sag; in white color
4. **Gypsum Board:** Supply and installation of moisture resistant 12mm thick Boral Gypsum board panels and metal furring and hanger rods

## D. PAINTING WORKS

All materials shall be Environmental protection Agency (EPA) certified and approved.

### Painting Materials:

1. Submit various painting materials specification data and sample to be used for Procuring Entity's approval.
2. All primers, thinners and putty, also waterproofing for internal and external application shall be the same brand as the specified material.
3. Painting materials including its application must be covered with minimum of five- (5) year guarantee to be rendered by the painting manufacturer.
4. Use **BOYSEN or DAVIES** only for all painted works.

**Application:**

1. All sample paint shall be submit on at least 300-mm x 300-mm plywood panel, color and shade as per approval by the Procuring Entity.
2. Application shall be as per paint Manufacturer's specification and recommendation.
3. Provide all drop cloth and other covering requisite for protection of floors, walls, aluminum, glass, finishes and other works.
4. All applications and methods used shall strictly follow the Manufacturer's Instructions and Specifications. All surfaces including masonry wall shall be thoroughly cleaned, puttied, sandpapered, rubbed and polished; masonry wall shall be treated with Neutralizer.

All exposed finish hardware, lighting fixtures and accessories, glass and the like shall be adequately protected so that these are not stained with paint and other painting materials prior to painting works. All other surfaces endangered by stains and paint marks should be taped and covered with craft paper. *Manufacturer: Boysen or Davies Paint*

**Painting Schedule:****1. Interior**

- a. **Interior Concrete or Masonry Painted** - Three (3) coats **water-based** masonry plain semi-gloss finish. Sample Shades for Procuring Entity's Approval.
- b. **Plain Flat Finish: Acrylic water-based paint** on ceilings, three (3) coats. **FLAT**
- c. **Plain Semi-gloss in Acrylic water-based Epoxy paint** on interior walls, columns, on all other interior concrete surfaces. (3) coats

**2. Exterior**

- a. **Exterior Concrete or Masonry Painted** - Three (3) coats **weather proof paint** masonry plain semi-gloss finish. Sample Shades for Procuring Entity's Approval.

**SECTION 6: MEZZANINE & STEEL WORKS****General**

1. Mezzanine shall be free-standing and shall not use existing walls or building columns for vertical support.
2. Mezzanine shall be capable of being erected, dismantled, and relocated with hand tools.
3. During construction the contractor shall be responsible for maintaining the structure in a stable condition and ensuring no part shall be overstressed under construction activities. This includes all existing structure forming part of, or affected by, the works.
4. If during construction any part of the works shows sign of distress, excessive deflection, conflict of components or other problems. The contractor shall immediately notify the engineer who shall investigate and issue such constructions as are considered necessary.

5. Stair Handrail: Handrail on stairs will be a welded, one-piece assembly. Stair handrails will have end returns that continue horizontally for 12" past the rear of the top tread. The same is true at the bottom except the distance is measured from the front nosing and increased to 12" plus the depth of one tread. Handrail will be provided at both sides of the stair. Handrail shall fasten to the outside of the stringers to facilitate a plumb rail without the use of any shims. Handrail shall be free of any sharp edges or protrusions. Ends of handrail shall be designed to avoid hooking on clothing and therefore avoid the possibility of that encouraging an accident.
6. **Beam-to-Column Connections:** Beam to column connections shall be capable of transferring bending moments and must be shown to have adequate capacity to insure structural stability without contribution of base plate connection.
7. **Beam-to Beam Connections:** the beam reaction shall be transferred to the support by means of bolting the purlin to a structural angle that is factory welded to the main support girder. This single-angle Type 2 "Simple - Framing" connection shall be welded in the factory in the form of an "L" to provide the necessary.
8. Framing: Structural support beams shall be sized to satisfy the structural specifications.
9. Base Plate Connections: Base plate shall be fully welded around the entire perimeter of the mezzanine column. Base plates as a standard shall be centered on the column to facilitate a uniform transfer of axial load to the foundation. Centered base plates will also contribute to reducing sway and adding to the lateral stability of the structure.
10. Columns: Structural support columns shall be sized to satisfy the structural specifications.
11. Stair: Stair assembly will have treads factory welded to stringers. Stair width shall not be less than 600mm. Treads will be designed such that the openings between treads is less than 4 inches creating a closed design. Maximum rise per tread shall not exceed 7". Minimum run per tread shall not be less than 11".
12. Decking Fascia: The entire perimeter of the mezzanine will be enclosed with fascia to give the structure a finished appearance.
13. Paint: The surface of the steel will be cleaned of rust and dirt that will impede the adhesion of the paint. The mezzanine will receive 2 component, polyurethane acrylic enamel. All components shall be painted.
14. Decking: Standard decking shall be roof deck with a plywood deck surface.
  - a) Roof decking shall be a minimum of 20 gauge, 1 ½" B-deck, painted white on the underside, with a minimum steel yield strength of 33,000 Psi.
  - b) Plywood shall be a minimum of ¾" Tongue and Groove Plywood with a minimum span rating of 24" OC.

## **SECTION 7: ELECTRICAL SPECIFICATION**

### **1.0 GENERAL DESCRIPTION**

1.1 The work to be done under this DIVISION of the Specifications consist of the fabrication, furnishing delivery and installation, complete in all details of the Electrical Work, at the subject premises and all work materials incidental to the proper completion of the installation, except those portions of the work which are expressly



stated to be done by others. All work shall be done in accordance with the governing Codes and Regulations and with the Specifications, except where same shall conflict with such codes etc., which latter shall then govern. The requirements with regards to materials and workmanship specify the required standard for the furnishing of all labor, materials and appliances necessary for the complete installation of the work specified herein and indicated on the drawings. The Specifications are intended to provide a broad outline of the requirement and are not intended to include all details of design and construction.

## **1.2 LAWS/CODES and REGULATIONS:**

The work under this DIVISION shall be executed in accordance with the latest requirements of the following:

- Building Code of the Philippines
- Philippine Electrical Code
- Laws, ordinances, and regulations of the locality having jurisdiction over the project.
- Power and telephone utility companies
- UAP Doc. 301

The requirements of the above mentioned governing laws/codes and the requirements of the companies having involvement/participation are hereby made part of this Specifications and the ELECTRICAL CONTRACTOR is required to comply with the same.

This does not relieve the ELECTRICAL CONTRACTOR from complying with requirements of specifications or drawings in excess of above laws and ordinances, codes and requirements which are not prohibited by the same.

## **1.3 GUARANTEE**

The ELECTRICAL CONTRACTOR shall guarantee that the electrical system is free from all grounds and defective materials and workmanship for a period of one (1) year from the date of acceptance of the work. All defects arising within the guarantee period shall be remedied by the ELECTRICAL CONTRACTOR at his own expense.

The ELECTRICAL CONTRACTOR shall indemnify and save harmless PROCURING ENTITY from and against all claims, suits, actions, or liabilities for damages arising from injuries, disabilities or loss of life to persons or damage to public or private properties resulting from fault or any act of contractor or his representative in the execution of this work.

The partial acceptance of the work for the purpose of making partial payments, based on the estimated cost satisfactorily completed by the ELECTRICAL CONTRACTOR, shall not be considered as final acceptance of that portion of the work.

## **1.4 DRAWINGS & SPECIFICATIONS**

1.4.1 The electrical plans, which constitute an integral part of these Specifications, shall serve as the working drawings. The plans indicate the general layout and arrangement of the complete electrical system and other works.

1.4.2 The drawings and specifications are meant specifically to be complementary to each other and where it is called for by one shall be binding as if called for by both. Anything which is basically required to complete the installation for proper operation but not expressly mentioned on the drawings and/or specifications shall be furnished and installed by the ELECTRICAL CONTRACTOR at no extra cost to the PROCURING ENTITY as though specifically stipulated or shown in both.

1.4.3 Procuring Entity shall have the final decision on any apparent conflict between the drawings and specifications or on any under and controversial point in either or both.

1.4.4 All dimensions and locations shown on the plans are approximate and shall be verified in the field, as actual locations, distances, and levels are governed by actual conditions.

## **2.0 SCOPE OF WORK**

### **2.1 Work Included**

The work to be done under this section of work shall include the furnishing of all tools, labor, equipment, fixtures and materials, each complete and in proper working condition unless one or other is specifically excluded or stated otherwise in these Specifications but not limited to the following principal items of work:

2.1.1 Furnish and install a complete grounding system.

2.1.2 Perform terminations for all electrical system.

2.1.3 Complete testing of all electrical systems.

2.1.4 Preparation of "As-built" drawings.

2.1.5 If any item of works or material has been omitted which are necessary for the completion of the Electrical Work as outlined herein before, then such items shall be and hereby included in this section of work.

## **3.0 PROCEDURE**

### **3.1 Workmanship**

The ELECTRICAL CONTRACTOR shall execute the work in the most thorough, prompt and workmanlike manner and in accordance with the plans and specifications. The installations shall be done thru standard methods and good engineering practices.

### 3.2 Materials

All materials to be installed shall be brand new except as otherwise noted on the plans or specifications. The materials shall be as specified. No substitution of materials is allowed. Should the ELECTRICAL CONTRACTOR find it necessary to use another type/brand of materials instead of the specified item, he shall first obtain approval from the PROCURING ENTITY prior to installation. Any substituted material installed without the approval of the PROCURING ENTITY shall be subject to replacement.

### 3.3 Coordination

It is the sole responsibility of the ELECTRICAL CONTRACTOR to conduct coordination of his activities with the following:

- 3.3.1 Other trades and suppliers
- 3.3.2 Procuring Entity/Engineer
- 3.3.3 PAGASA

### 3.4 Deviation From The Plans

No deviation from the plans is to be made unless given notice or approval by the PROCURING ENTITY.

### 3.5 Record Drawings and „As-Built” plan.

The ELECTRICAL CONTRACTOR is required to keep an active record of the actual installation during the progress of the job. This shall be the reference in the preparation of the „As-Built” plans which shall include all pertinent information, complete in all aspect of the actual installation, and all new information not originally shown in the contract drawings. The „As-Built” plans shall be prepared by the ELECTRICAL CONTRACTOR at his expense and shall be submitted to the Procuring Entity for approval upon the completion of the work. The approval of the „As-Built” drawings shall be a **pre-requisite for the final acceptance of the electrical works.**

Submit two (2) copies of the “As-Built” drawings signed and dry sealed by the ELECTRICAL CONTRACTOR’S Registered Professional Electrical Engineer. Original tracing/reproduceable copy shall also be submitted to the PROCURING ENTITY.

### 3.6 Samples & Shop Drawings

3.6.1 30 days prior to the installation or fabrication of materials the ELECTRICAL CONTRACTOR shall submit to Procuring Entity the following for approval.

- a. Shop drawings of panel boards showing arrangements of circuit breakers, bus bar sizes, lugs, etc. Indicate all dimensions.
- b. Shop drawings or samples required as noted in the drawings.
- c. Samples and catalogs of materials intended to be installed.

3.6.2 The ELECTRICAL CONTRACTOR shall also submit to the Procuring Entity without delay shop drawings and other submittals which may be required by Procuring Entity during the progress of construction.

3.6.3 The above requirements shall be submitted to the Procuring Entity at the earliest possible time to give allowance for checking and verification. These shall be complete in all aspects.

3.6.4 Submit two (2) sets of each shop drawings.

### 3.7 Electric Power

The ELECTRICAL CONTRACTOR shall be responsible for his own electric power needed for the execution of the job.

### 3.8 TEST

Conduit tests on all electrical conductors installed in the presence of the PROCURING ENTITY's representative.

3.8.1 check for grounds

3.8.2 insulation resistance test

3.8.3 continuity test for all outlets

3.8.4 voltage level test

3.8.5 phase relationship

3.8.6 check circuit connections at panel boards, all single phase circuit shall be connected to phase as shown in the load schedule.

### 3.9 Submit Reports On Tests

All reports must be formal, typewritten and properly identified.

3.10 All defects found during the test shall be repaired immediately by the ELECTRICAL CONTRACTOR.

3.11 All tools, equipment and instruments needed to conduct tests shall be on the account of the CONTRACTOR.

## 4.0 METHODS & MATERIALS

### 4.1 Conduits

#### 4.4.1 Polyvinyl Chloride Conduit (PVC)

a. Standard trade sizes, schedule 40

b. Coupling & fittings - standard couplings for joints by solvent weld process.

c. Telephone System & other auxiliary system.

#### 4.4.2 Installation of Conduits

a. Installation is in accordance with PEC and of good engineering practice.

- b. Use standard trade sizes locknut and bushing at each end terminating in boxes/panel boards. Ensure electrically continuous conduit system.
- c. Provide independent conduits supports using hangers, supports or fastenings spaced in accordance with good engineering practice and PEC.
- d. conduits must be securely fastened with approved cups and screw in wall and in ceiling, nails are not acceptable
- e. Use adjustable trapeze hangers for horizontal parallel runs.
- f. Conduits bends shall not be more than the equivalent of three (3) 90 degree bends between pulling points.
- g. Conduit threads cut on job shall have same effective lengths, thread dimensions, and taper as factory threads.
- h. Cut ends of conduit square with hand or power saw and ream to remove burrs and sharp edges. Do not use wheel cutter.
- i. All new branch circuits shall be laid out up to the new panel distribution board for approximately 15 meters for each circuits.
- j. Clamps shall be galvanized malleable iron one-hole straps, beam clamps or other approved device with necessary bolts and expansion shields.
- k. Trapeze hangers shall be used for parallel runs of conduits. Install conduit clamps at end of each run and at each elbow. Paint hangers one prime coat of red lead or zinc chromate, and one finish coat of an approved color. Hangers are not detailed but must be adequate to support combined weight of conduit, conductors and hangers. Submit shop drawings for approval.
- l. All underground conduits installed shall be provided with concrete encasement at least 8cm. thick outer face of conduit.
- m. The new color coded supply/feeder wires shall be laid out properly up to the Old Electrical Room of DIC Building using the specific conduit and fittings. Submit sample for approval.
- n. The existing convenience outlet (1) in HMTS Annex office shall be relocated in the new stock room.
- o. The two existing convenience outlets shall be replaced with new devices.
- p. No wiring shall be exposed.

#### 4.2 Wires

1. Wires shall be annealed copper, 98% or better conductivity, insulated, single, except as noted in the drawings.
2. 600 volt class type as indicated in the plans.
3. Wires greater than no. 8 mm<sup>2</sup> shall be stranded.
4. Minimum size shall be #3.5 TW for power circuits.
5. Minimum size shall be #2.0 TW for lighting circuits.
6. Telephone wires shall be no. 22 AWG jacketed type, 4 wires.
7. Use standard methods in pulling wires.
8. Splices of wires/cables shall be done inside junction boxes or auxiliary gutters using standard connectors. No wires shall be spliced inside conduits.
9. All wires and cables shall be color coded as follows:

#### 4.2 Connectors

Use solderless mechanical pressure - type lugs, copper

### 4.3 Insulation

All splices shall be properly insulated using 3M electrical tape. Application of insulation tape shall be equivalent to the insulation of the wire concerned. Use filler compound, "Scotch fillat sharp edges to provide smooth surface before taping.

### 4.5 Panel board & Circuit Breaker

4.5.1 NEMA type/enclosure unless noted, PEC rules and regulations, circuit breaker type shall be 230V, number of pole as required.

4.5.2 Panel boards shall contain a single brand of circuit breakers and as manufactured by "Schneider Electric", "Cutler Hammer" or "GE".

4.5.3 All circuit breakers used as main shall be "Bolt on" type molded case, thermal magnetic protective, quick make, quick break, trip free from handle, trip indicating, number and size as shown in the schedule. Internal common trip for 2 and 3 pole breakers.

4.5.4 Breaker minimum interrupting capacities shall be based on NEMA and UL test procedures.

a. 230 volt breakers - 10,000 rms. Symmetrical amperes at 240V A/C (minimum)

4.5.5 All circuit breakers used as branches rated at below 100 AT and specifically installed in lighting panel boards shall be be „bolt-on“.

4.5.6 Word "space" indicated in the schedule shall mean that complete bus, insulators, etc. shall be included ready to accept future circuit breaker of the same frame size as the largest branch circuit breaker.

### 4.6 Lightning

4.6.1 All lighting fixtures when installed shall be free of leaks, warps, dents and other irregularities.

4.6.2 The hanger, cable, supports, channel, frames and brackets of all kinds for safety and proper installation of lighting fixtures shall be furnished and installed by the contractor at his own expense.

4.6.3 All lighting fixtures, sample and catalogue shall be submitted for PAGASA review and approval prior to order. NO lighting fixture shall be installed without approval of PAGASA.

4.6.4 Lighting fixtures shall be wired with approved fixture wire. Each fixture shall be wired to a single point with an adequate slack for proper connection.

4.6.5 All lighting fixture shall be protected from damage during installation. Any broken lighting fixtures, gloves, receptacles, stems and the like, shall be replaced with new parts, at no cost to PAGASA.

4.6.6 Specifications: Pin Light 12W Downlight: Voltage: 86-286V, LUMENS: 720lm / 390lm; CCT: Daylight; Measurement: 150x 65mm (6inches)

4.6.7 Specifications: Drop Light 25Ccm single head with LED light bulb.

#### 4.7 SWITCHES AND DUPLEX 3-PIN CONVENIENCE OUTLET

Switches and three-pin outlet shall comply with NEMA Standards. The rating switches and single and three-phase outlet with one conductor shall be as specific herein. All switches and three-pin outlets shall be flushed-mounted, impact resistant and splash proof type.

##### 4.7.1 Switches

Switches for lighting fixture shall be on the toggle quite and flush mounted and fixed to the wall 1.30m above the finished floor level. The rating shall be 10A, 230 VAC single phase.

##### 4.7.2 Duplex 3-pin Convenience Outlet

All outlets shall be provided with separate earthing pins connected to the part in the feeder cable. Outlet for 10A and with rated voltage not exceeding 250 volts shall be according to the PEC for 2-pole thee-wire (indoor).

### SECTION 8: PLUMBING / SANITARY WORKS

#### PSW 1.0 SCOPE OF WORKS

**1.1** The work to be undertaken under this section shall consist of the furnishing of 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 accordance with the applicable drawing and this section of that specifications consisting of, but not necessarily limited to the following:

- a. Soil, waste and vents pipe system, within the building up to sewer line.
- b. Water service connection from main building distribution system.
- c. Furnishing, installation and testing of lavatories, accessories including controls & piping works.
- d. Furnishing and installation of all plumbing fixtures, fittings, trims and accessories.
- e. All work shall be performed in accordance with the requirements of all applicable laws of the Republic of the Philippines and all local codes and ordinances.

**1.2** The contractor is required to refer to all mechanical, electrical, structural and architectural plans and specifications all shall investigate all possible interference and conditions affecting his work in this section and that of the other sections.

**1.3** All plumbing works to be done and sizes of pipe to be used shall be of the sizes, which are required and in accordance with the NATIONAL PLUMBING CODE OF THE PHILIPPINES.

## **PSW 2.0 GENERAL**

### **2.1 DRAWING AND SPECIFICATIONS:**

- a. The contract drawings and the specifications are complimentary to each other, and any labor or materials called for by both, if necessary for the successful operation of any other particular types of equipment shall be furnished and installed without additional cost of Procuring Entity.
- b. All dimensional locations of fixtures, equipment, floors and roof drains risers and pipe. Chases shall be verified on the architectural drawings and manufacturer's catalogs.
- c. Upon completion of the work as described herein, the Contractor shall at his own expense furnish the Procuring Entity originals and three (3) sets of "AS BUILT" Plans for future reference and maintenance purposes.

### **2.2 PROTECTION:**

The contractor shall protect all his work and materials loss, injury or defacement. Protection of fixtures and materials shall be provided by boards, papers and/or cloth as required and any loss, damaged or deface material shall be replaced by the Contractor at his own expense.

### **2.3 INSTALLATION AND WORKMANSHIP:**

- a. All labor shall be performed in a first-class, neat and workman like manner by mechanic skilled in their work shall be satisfactory to the Project Architect.
- b. No piping in any location shall be closed up, furred in or covered before testing and the examination of same by the inspector, Procuring Entity or their representatives.

## **PSW 3.0 WATER SUPPLY**

- a. **Pipes and fittings for waterline** shall be as SPECIFIED BY PAGASA.
- b. **Valves**-All valves, unless otherwise specified shall be gate valves of size as indicated in the drawings: for hot water supply, valves and fittings shall be insulated of a thickness equal to that of the insulation on the adjoining pipe, securely fastened in place.

### **3.1 SANITARY DRAINAGE**

Soil and waste Pipes and Fittings:

- a. Soil and waste pipes and fittings shall be PVC pipes (POLYVINYL CHLORIDE) series 1000 Neltex.
- b. Vent Pipes and Fittings:



- Vent pipes and fittings shall be PVC pipes
- c. Shower and Floor Drains:  
Shower and floor drains shall be of high grade, strong, tough, and even grained metals.
  - d. Cleanouts:
    - 1. Ceiling cleanouts shall be of the same material as pipe with sealed screw type, raised head plug.
    - 2. Floor cleanouts shall be cast-iron body with brass plug, colt-type or countersunk head; METMA brand.

### **3.2 HANGERS, INSERTS AND PIPE SUPPORTS**

- A. Provide suitable and substantial hangers and supports for all piping.
- B. Support horizontal piping in accordingly approved sizes where pipe clamps are too short to connect to the building construction.

### **PSW 4.0 EXECUTION**

#### **4.1 GENERAL INSTALLATION OF PIPES**

- A. Install pipes approximately as shown on the drawings, as straight and direct as possible forming right angles parallel lines with walls and other pipes, and neatly spaced unless otherwise indicated. Care shall be taken not to weaken the structural portions of the building.
- B. Maintain minimum slope of 3mm (1/8 inch fall per foot) on all soil, waste and drain lines 100mm in diameter.
- C. Do not install pipes or other apparatus in a manner which will interfere with full swing of the doors and windows.
- D. The arrangement, position and connection of pipe fixtures, drains, valves and the like indicated on the drawings shall be followed as closely as possible, the right is reserved by the Procuring Entity to change location and elevations to accommodate conditions which may arise during the progress of the work prior to installation, without additional cost of the Procuring Entity for such changes. The responsibility for accurately laying out of the work rests with this Contractor. Should be found that any work if laid out caused interference, the matter shall be reported to the Engineer before connecting the work.
- E. Ream all screwed pipes smooth before installation. Do not bend, flatten, split or injure pipes in any way.
- F. Use reducing fittings, in making reduction in size of pipe. Bushing will not be allowed unless specifically approved.
- G. Where chrome plated piping is installed, cut and thread pipe. Bushing will not be allowed unless specifically approved.
- H. Carry fixture connections, concealed in building constructions, to points above floor, break out close to underside of fixture and rise exposed to fixture.
- I. No piping shall be installed which will provide a cross or interconnection between a distribution supply of drinking water of Domestic use and pollution or waste pipe, the water line shall be placed above the waste pipe in ground installation.

## 4.2 INSTALLATION OF WATER SUPPLY PIPES AND FITTINGS

- A. The piping shall be extended to all fixtures, outlets and equipment. Ends of pipes and outlets shall be capped or plugged and left ready for future connections.
- B. Branch pipe from service line may take off of main, bottom of main, or side of main, using such cross over fittings as may be required by structural or installation conditions.
- C. All service pipes, valves and fittings shall be kept at sufficient distance from other work to permit finished covering not less than 12.7mm (1/2") from such other work and not less than 12.7mm between finished coverings on the different services. No have been inspected and approved.
- D. Where the branch serves more than one fixture, the branch shall be increased in size in proportion to sizes as shown on the drawings.
- E. Cast bronze unions shall be installed at the connection to all equipment so that they may be conveniently disassembles.
- F. Upon completion of water system, flush out lines and all valve sets to clear system of particles and dirt.

## 4.3 INSTALLATION OF SOIL, WASTE, VENT AND DRAINAGE PIPING

- A. **Horizontal Drainage Pipe and Vent Piping**  
Horizontal waste pipe 75mm (3") and smaller shall have minimum grade of 6mm (1/4") per foot, and for 100mm (4") and larger, 3mm (1/8") per foot. Vertical vent pipes may be connected to a vent lines carrying other fixtures, the connection to be at least 1.20m (4 feet) above floor on which the fixtures and located to prevent the use of any vent lines as waste lines. Horizontal waste lines receiving the discharge from two (2) or more fixtures shall be provided with vents, unless separate venting of fixtures noted.
- B. **Fittings** - All changes in pipes sizes on soil waste line shall be made with reducing fittings or recessed reducers. All changes in direction shall be made with the appropriate use of 45 wyes, half wyes, long sweep quarter bends, or elbows may use in soil and waste lines where the change in direction of flow is from horizontal to vertical, and on the discharge from water closets. Where it become necessary to use short radius fittings in any other location, the approval of the Procuring Entity shall be obtained before they are installed.
- C. **Traps** - Each fixture and place of equipment connection to the drainage system except fixture with continuous waste shall be equipped with a trap. Traps shall be placed as near to fixtures as possible.

## 4.4 FIXTURES AND EQUIPMENT SUPPORTS AND FASTENINGS

All fixtures and equipment shall be supported and fattened in a satisfactory manner.

- A. Where secured to concrete on hollow block, walls, they shall be fastened with 6mm (1/4") brass bolts with twenty threads to the inch and of sufficient length to extend at least 75mm (3") into solid concrete on hollow block work; fitted with loose tubing or sleeve inserts, shall be securely anchored and installed flushed with the finished wall and shall be completely concealed when the fixtures are installed.

- B. Where though bolts are used, they shall be provided with name plates and washers at backsets so that head, nuts and washer will be concealed by plaster. Bolts and nuts shall be hexagonal and screw shall be provided chromium brass washers.
- C. Upon completion of work, all fixtures, trimmings, and equipment shall be thoroughly cleaned, polished and left in first class condition for final acceptance.

#### **4.5 CLEANING AND PAINTING**

- A. Prior to acceptance of the work, thoroughly clean all exposed metal surface and rid of grease, dirt or other foreign material. Chrome or nickel - plated piping"s, fitting and trimming shall be polished.
- B. Pipe hangers, supports and all other iron work in concealed spaces shall be thoroughly cleaned and painted with one coat of red lead and a finish coat of oil enamel paint.
- C. All exposed soil, waste and vent piping or cast iron that are asphalt or tar-coated shall be given two (2) coats of shellac and two (2) coats of oil paint.

#### **4.6 WATER SYSTEM TEST**

- A. Upon completion of the roughing-in and before fixtures, the entire water piping system shall be tested at a hydrostatic pressure of one and half ( 1-1/2 ) times the expected working pressure in the system when in operation, and proven tight at this pressure or not less than 150 psi gauge.
- B. Where a portion of the water piping system is to be concealed before completion, this portion shall be tested separately in a manner to that described for the entire system, and in the presence of the Procuring Entity or its representative.

#### **4.7 DRAINAGE SYSTEM TEST**

- A. The entire drainage and venting system shall have necessary opening which can be plugged to permit the entire system to be filled with water to the level of the highest vent stack and/or vent above the roof.
- B. The system shall hold this water for a full thirty (30) minutes during which time there shall be no drop more than four inches 100mm (4").
- C. If and when the Procuring Entity decides that an additional test is needed, such as an air or smoke test on the drainage system, the Contractor shall perform such test without additional cost to the Procuring Entity.

### **SECTION 9: MECHANICAL WORKS**

#### **ACUs to be installed are shown in the mechanical plans.**

- A. The contractor shall supply and install of two (2) air-conditioning unit, 3HP wall mounted, 230volts single phase, 60hz. Brand: Trane or Carrier.
- B. The contractor shall install of refrigerant lines, drain pipes and electrical supply on all ACUs
- C. The contractor shall provide the protection or bracket needed for ACUs

## **SECTION 10: STRUCTURED CABLING SYSTEM FOR DATA AND VOICE CONNECTIVITY**

The scope of work for this project is to install Structure Cabling that will cater the internet needs of HMTS. These items include but are not limited to the following:

1. Includes the laying out of UTP Cable as specified in the drawing. The UTP cable must be CAT 6 type. Each connection shall be terminated from the corresponding nodes to the network switch which will be provided by HMD. Connection from the network switch to the ICT room will be coordinated with ICT personnel.
2. Each nodes will be installed within the modular and specified wall portions for Xerox machine. The contractor will provide the data outlet including the faceplate with shutter. Cables connected to the network switch will be terminated with RJ 45 and RJ 45 Jacket.
3. Provide and install molding as protection of cables that will be laid out outside the modular.
4. Provide and install stainless ramp as protection of cable laid out from the wall to the conference table as specified in the drawing.
5. The contractor shall be responsible for the proper coordination of all items to ensure that all items requiring Structure cabling are installed as required.
6. Obtain approvals from the ICT Group inspection authority of any changes requested by the inspection authority.
7. Clean all equipment during construction and on completion of the contract
8. Remove all surplus materials, cutting and packaging and debris from the site during the progress and at final completion of the work.
9. Execute work in a FIRST-CLASS and workmanlike manner.
10. Installation of Structure Cabling with high adhesive standard.
11. All material shall be used brand new of the type of specified and approved by certification and free from defect.
12. All cable should be covered by plastic moulding on wall and stainless ramp on floor. No cables should be expose.

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