

- All voids, cracks, nicks, etc., will be repaired with proper patching material and finished flush with surrounding surfaces.
- Marred or damaged shop coats on metal shall be spot-primed with appropriate metal primer.
- Defective or damaged items and/or components, which cannot be repaired or restored to initial conditions, shall be removed and replaced to the satisfaction of the Architect at no additional cost to the Owner.

#### **Cleaning**

- Upon completion of the building, the Painting Contractor shall remove all paint spots from all finished work, remove all empty cans and leave the entire premises free from rubbish or other debris caused by his work. He shall remove his equipment from the premises. He shall clean off all glass free from paint spots and smears and shall present the work clean and free from all types of blemishes.

#### **Products**

##### **General:**

- Materials are specified to establish the standards of grade and quality desired for the work, principal pigments and vehicle types and minimum percentage of solids content by volume.
- The top quality / first class paints.
- The products of Manufacturers not named may be submitted for use provided they are equal in quality and grade to the primers and finishes specified as approved by the Architect. If substitute paint products are desired, a statement shall be submitted to the Architect giving the Manufacturers name, proposed primer and finish for each paint system, analysis for each type of paint, and the use or uses intended. Failure to submit such statements will be cause for rejection.
- In cases where the name of a brand or supplier is mentioned under a particular specification, only paint or primer of that manufacturer is acceptable and no substitution shall be permitted on the grounds that the brand specified is not available in the local market. Materials of one manufacturer shall not be applied over that of another, except in the case of shop primer coat.

##### **Color, Gloss and Texture:**

- Refer to Finish Schedule. All work is to be completed without deviation from these unless written approval is received from the Architect. No extra cost shall be allowed because of the color variety scheduled.

#### **Execution**

##### **General:**

- Work-in-place, on which specified work is to be applied, shall be examined to insure that conditions are satisfactory for application of specified materials. Any defect, which may influence satisfactory completion of specified work, shall be report, in writing, to the Architect. Absence of such notification will be construed as acceptance of work-in-place.
- Do not apply exterior paint in damp or rainy weather or until surfaces have thoroughly dried from the effects of such weather.
- Before start of painting, remove finish hardware, accessories, plates, lighting fixtures, and similar items, as approved by the Architect, except UL Labels on Fire Door and Frames, which must not be removed. Use only workmen skilled in the applicable building trade for removal and reinstallation of finished item in-place.
- The following items shall be masked or protected with suitable covering:
  - Sealing, caulking and glazing compounds (unless otherwise directed by the Architect).
  - Glass.
  - Gauges, thermometers and other recording devices.

- Moving parts of machinery and other mechanical equipment - such as: shafts, couplings, valve stems, and the like.
- Coated decorative sheet metal work.
- Sprinkler heads and the like.
- U.L. Labels

#### **Surfaces Preparation As Applied To Various Substrates**

##### **(a) Wood**

###### **New Surface:**

- Surface to be painted should be clean and dry, free from oil, grease, dust, dirt, contaminants and all loose girt or mortar; sand rough edges remaining, countersink nail heads for putty applications.
- Dust off surfaces completely then wipe with a clean rag.

###### **Repainting:**

- Remove scaling, flaking, blistering, and peeling off paint, wire brushing, scraping, or water blasting. Let dry.
- For glossy areas, sand and dust clean.
- In case of mildew infestation, treat with FUNGICIDAL WASH SOLUTION by swabbing or brushing. To ensure proper treatment, allow either solution to remain in surface for 24 hours. Brush off and rinse with water.

##### **(b) Metal**

###### **New Surface:**

- Surface to be painted should be clean and dry, free from oil, grease, dust, dirt, wax, solder flux, and other contaminants by wiping with mineral spirits or paint thinner.
- Remove rust by wire brushing, sanding or scraping.
- Where maximum performance of protective coatings is necessary (e.g. Industrial Plants), prepare surface by blast cleaning.

###### **Repainting:**

- Sand wire brush or scrape rusted metals and apply METAL ETCHING SOLUTION to remove rust. Let it stay for 10 to 15 minutes. Be sure to wash off surface thoroughly with mineral spirits, letting it dry before applying paint. Primer should be applied a few hours after application of metal etching solution before rust sets in.

##### **(c) Concrete**

###### **Repainting:**

- Remove all loose, scaling, flaking and peeling off paint using PAINT AND VARNISH REMOVER by wire brushing, scraping, or water blasting. Let dry.
- For chalking old paint, use CHALK BLOCKER.
- In case of mildew infestation, treat with fungicidal wash solution or bleach solution (1:3, laundry bleach to water, respectively) by swabbing or brushing.
- To ensure proper treatment, allow to stand on surface overnight before washing off residue. Let dry.

#### **Paint Application**

- **General:** Specified work shall be done by skilled painters in a workmanlike manner. All spaces shall be broom-cleaned before painting is started. Surface to be painted shall be clean, dry, smooth and adequately protected from dampness. Each coat of paint shall be allowed to dry at least twenty-four (24) hours before succeeding coat is applied. Finish work shall be uniform, of approved color, smooth and free from runs, sags, defective coverage, clogging or excessive flooding. If surfaces are not adequately covered, as determined by the CPDMO Architect/Engineers/Inspectors, further coat shall be applied to the satisfaction of the CPDMO Technical Group. Edges of paint adjoining other materials or colors shall be sharp and clean without overlapping.



- *Paint Mixing:* Paint mixing and thinning shall be done only in accordance with directions of Manufacturer. Paint must be strained free from all skin and extraneous substances and shall be thoroughly mixed in a clean container during use.
- *Methods of Application:* Exterior first coats and Interior first coats shall be applied by brush, except on shop-primed surfaces, which shall be applied by brush or roller. All primer shall be applied by brush. Succeeding coats over field-primed surfaces and all coats over shop-primed surfaces may be applied by brush roller or spray. Distemper brushes are to be of approved type and less than 15 cm in width. Rollers for applying enamel shall have a short nap. Spray equipment shall be as recommended by the manufacturer of the paint used. Areas inaccessible to spray painting shall be coated by brushing or suitable method.
- *Coating:* Consecutive coats of paints are to be slightly differing tints except in the case white. Each coat shall be allowed to harden before the next is applied. Rubbing down between coats is to be done with fine abrasive paper.
- *Wood Finishing:* Wood to have natural satin varnish finish shall be stained as required and sealed as soon as such items are delivered to the job site. Seal all ends to exclude moisture. Knotting shall be carried out by using shellac dissolved in spirit or approved ready mixed compound.
- *Defects in Masonry, Concrete, Plaster and Fiber Cement Board:* Small cracks, holes, and other similar imperfections in masonry, concrete and plaster surfaces, which show up after the prime-sealer has been applied to the surface, shall be filled with an approved sparkling compound before application of succeeding coats.
- *Woodwork and Metal Work:* Primed or undercoated woodwork and metalwork shall not be left in an exposed or unsuitable situation for an undue period before completing the painting process. Stopping and filling shall be deemed to be included for all metal works, plaster works, and wood work specified to be used to produce a surface ready for priming and painting.
- *Final Touch-Up:* Upon completion, finish work shall be touched-up and restored where damaged and left in good condition.

#### **Painting Schedule**

##### **General:**

- Painting Systems shall be applied to surfaces as scheduled. All walls to be painted shall be plastered prior to painting. All under slabs to be painted shall have fair-faced concrete.
- Film Thickness: As recommended by paint manufacturer for the paint specified, includes thickness in mils and number of coats.

#### **09999 Paints Restoration**

- Provide all the restoration works and rehabilitation on all affected areas to follow existing features and assembly.

##### **LAN**

- CAT 6 24 AWG 4 pairs twisted pairs poly-ethylene insulated hyper grade non-plenum UTP cable
- Information outlet for data 8 pin cat 6 with 3 gang face plate, with RJ45 snap in jade keystone style pop up.
- RJ 45 plug
- Information outlet for data 8 pin cat 6, with single gang type face plate with RJ 45 snap in jade keystone style flush type.

## **Division 15 – Mechanical**

### **15700 Heating Ventilating and Air-Conditioning Equipment**

#### *A. Air-Conditioning System*

##### **Scope of Work**

- This item shall consist of supply of all air-conditioning ready for use with complete metal flat form and support, complete piping system with accessories including labor, tools, equipment, testing, commissioning, and the satisfactory performance in undertaking the proper installation of the system as shown on the Plans and in accordance with this Specifications

##### **Equipment Requirements**

- 1 HP wall mount split type ACU standard models
- 2.5 HP ceiling suspended split-type ACU Standard models
- 2 HP wall mount split type
- 3 ton 36,000BTU-HR Ceiling suspended split type ACU Standard models

### **15050 Basic Mechanical Materials and Method Duct System**

- Galvanized iron sheets shall be used for the exhaust and fresh air duct system installation of any brand that would fit on the general requirement with gauge of # 22 & # 24 according to its purpose and location supported by a 3/8" dia. Every 1.5 meters or nearer. Sealant shall be provided on all air duct joints. All item to be used hereunder shall be presented with plans and drawing of its use for approval before any installation has to be made.
- Fabrication/installation of exhaust (300mmx200mm) and fresh air (600mmX250mm) duct grills shall also be 3" dia. Which will be provided on all simulator units (see grill and flexible drop detailed section) with complete accessories (grill holder, etc)

### **15130 Motors**

#### *Exhaust Blower*

Required exhaust blower shall be a centrifugal type with 24 inches in dia. Backwardly (SWSI) single width single inlet with capacity of approximately 6,340 CFM against 1.75 inches water gage static pressure. Belt driven by 5.0 HP, 30 dia, 220/240 volts, 60 hertz, 1,750 rpm power electronic motor.

### **15400 Plumbing Fixtures & Equipment**

##### **Scope of Work**

- This item shall consist of supply of all plumbing system with accessories including labor, tools, equipment, testing, commissioning, and the satisfactory performance in undertaking the proper installation of the system as shown on the Plans and in accordance with this Specifications

##### **Material Requirements**

#### **A. Waterline / Water Distribution**

##### *Material:*

- Use Polypropylene (PPR) type system for waterline pipes and fittings, confer to Project Architect the brand and approved equivalent in conformity with the existing lines.
- Provision for proper hangers and supports.
- Provide sample for approval.



*Application:*

- Make the necessary preparation works for the installation of water system on the specified area.
- Existing area and lower floor level shall be considered on the chipping works that additional precautionary measures shall be done.
- Ensure proper installation of the system, tap to the nearest water distribution area.
- Testing and commissioning shall be done in the presence of the Engineer and Owner or his representative.
- All restoration and rehabilitation works shall be done on the affected areas to the same features with the existing or as per the required finish.

**B. Sanitary Lines / Sanitary Sewerage**

*Material:*

- Use HDPE Pipe and fittings for sanitary lines, in conformity with the existing lines.
- Provide proper hanger and supports.
- Fixtures such as water closet, wall hung lavatory, urinals, strainer and counter type lavatory shall follow specifications on plan. Provide sample for approval.

*Application:*

- Make the necessary preparation works for the installation of sanitary system on the specified area.
- Ensure proper installation of the system, tap to the nearest sewer area.
- Testing and commissioning shall be done in the presence of the Engineer and End-User or his representative.

**Plumbing Fixtures and Accessories**

*Material:*

- Watercloset
- Wall hung lavatory
- Urinals
- Strainer 4x4
- Counter type lavatory
- Submit samples for approval of CPDMO and End-Users

**Division 16 - Electrical**

*Workmanship and Materials*

- All works shall be done in accordance with the requirements of the latest edition of the Philippine Electrical Code and National Safety Code. Nothing contained in these specifications or shown on the plan shall conflict with the requirements of these Codes, any discrepancies should be consulted to the Project Inspector / Electrical Engineer.
- All materials and equipment to be used and installed hereunder shall be of the approved type bearing the stamp or approval of the proper authorities concerned. Locally made or constructed materials shall first be approved before installation.
- All works shall be done in workmanlike manner and should present a neat and mechanical appearance when completed.

*Plans*

- The accompanying drawings shall indicate the general arrangement of the equipments, outlets and other works. When it is necessary to deviate from the arrangement indicated on plans in order to meet the structural conditions, such deviation shall be made at the expense of the Contractor and upon approval from the Project Inspector / Electrical Engineer.
- The outlets and circuit breakers shown on the plan are diagrammatic and approximately correct as to location. Minor changes shall be made through the Contractor at his own



expense. The exact location of all outlets and switches shall be determined by the Project Inspector/Electrical Engineer and the same shall be located accordingly. The Contractor shall be responsible for the accurate location of all outlets with respect to doors, partitions, water pipes, cabinets and other facilities.

## **16050 Basic Electrical Materials and Methods**

### **Conductors and Cables**

- Wires and cable for lights and power shall be type THHN/THW 600 volts insulation approved type building wire. No. 3.5 mm THHN shall be used from the panel board to the last outlet, and shall be the smallest wire that should be used, unless otherwise No. 8.0mm wires THNN and larger shall be stranded and be connected to the panel boards and equipment by solder less connectors sufficiently large to enclose all strands of the conductor and be securely fastened. They shall not get loose under vibration and normal strain. Wire splices shall be mechanically and electrically secured and soldered. Joints taps and splices in wires larger than No. 10 AWG shall be made with the use of solder less connectors. They shall be tapped with electrical tape to the thickness of the wire insulation.
- Wires and cables shall be continued from outlet, or outlet to pull boxes without splices. Conductors shall not be drawn in conduits until plaster is dry and the conduits are cleaned and free of moisture. Conductors of other systems shall not occupy the same conduit and boxes used for light and power.
- Complete supply and installation of wires and cables shall be included in this scope of works.

### **Conduit System**

- PVC electrical conduit pipes and accessories, are primarily required for this work. Conduit runs shall be well supported especially on ceiling and slab. All conduits placed on walls and partition shall be embedded, exposed layout will not be allowed. Conduit ends shall be provided with an end bell or adapter with locknut and bushing. Conduit shall enter knockouts squarely. Locknuts and bushing shall be used at termination of conduits in outlets, pull or junction boxes, panels and cabinets. Locknuts shall be screwed tight. Bends and offsets shall be avoided if possible.

### **Restrictions:**

- Supply and installation of all material not shown in the drawing nor mentioned in this specification but necessary for the completion of the construction works shall be included. Coordination with CPDMO Project Inspector should be done for proper installation of all wiring systems.

### **Wiring Devices**

- All wiring devices to be used hereunder shall be new and of approved type. All wall switches shall be top-action quiet-matic type, wide series, bases to be fire-resistant and non-absorptive material. When more than one switches is indicated in the same location, they shall be mounted in gang under a common plate.
- Convenience outlet shall be duplex-type, universal & flush-type with fire-resistant non-absorptive bases, all duplex 3-wire grounding type with paneled slots receptacles minimum rating of 10 amperes at 250 volts.
- Suitable single pole and heavy-duty switches shall be installed where indicated on the plans. National brands wiring devices are primarily required. Equivalent brand shall be presented for approval. Minor relocations and re-circuiting shall be the liability of the Contractor.
- Following features shall be as follows: one gang one way switch; two gang one way switch; three gang one way switch, two gang three way switch, duplex flush type convenience outlet universal type complete with plate cover and strap, "Panasonic" or approved equal.



### **Boxes and Pull boxes**

- All conduit boxes and fittings shall be PVC manufactured by reputable electrical manufacturers. All conduit boxes not over 100 cubic inches in size, if constructed of sheet metal, the metal shall not be less than No.14 US gauge and shall be set flush with the surface of the structure in which they are installed and where conduit runs are concealed. Care shall be exercised to line up all outlet boxes, 4" octagon type and 1-1/2" depth. When more than two conduits enter the outlet box, the 2-1/8" depth type box shall be removed. All outlet boxes indicated to be used for lighting fixtures shall be provided with standard flat metal covers.
- Horizontal or vertical gang boxes shall be installed as indicated or when required. All conduit boxes, junction boxes, and blank outlet boxes shall be fitted with standard flat metal conduit box covers.

### **Lighting Fixtures**

- Horizontal downlight 6" diameter, flush mounted with 18 watts CFL bulb, and mirrorized reflector
- 1200mmx300mm fluorescent lamp fixture, recessed type with T5 fluorescent fixture, including electronic ballast with louver and mirrorized aluminum reflector and 2x28w T5 fluorescent lamp

### **Circuit breakers, Panel Boards and Accessories**

- The contractor shall furnish and install the required circuit protection as shown on the plans.
- The enclosure shall be galvanized steel of code thickness and shall be installed plumb and symmetrical with the surrounding devices.
- Circuit Breakers:
  - 20, 30, 40 AT/50 AF, 2pole, 240V circuit breaker in Nema 3R enclosure.

#### **16070 Hangers and Supports**

- All electrical pipes and accessories shall be using appropriate hangers and support follow existing features. Exposed layout on walls and partition inside offices shall not be allowed. Chipping works required.

#### **16080 Testing of System**

- Complete testing of the system involved in operation and provision of all system apparatus for making test and guarantee for a period of one (1) year after acceptance of the project and shall agree to repair and make good at his expense.

#### **16090 Restoration and Repair**

- Restoration and repainting of damaged walls, windows, ceiling and exposed conduits shall be the Contractors liability.

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### **NOTE**

The foregoing list of item of works does not in anyway limit the responsibility of the Contractor to perform all other works necessary for the completion of the project, PROPOSED RENOVATION OF INDUSTRIAL PHARMACY, BIO PHARMACEUTICALS AND MICROBIOLOGY LABORATORY College of Pharmacy.

### **GUARANTEE**

The Contractor shall guarantee all works under this contract to be free from any technical, mechanical and electrical defects and shall replace and repair to the satisfaction of the

Project Architect / Engineer and/or to the Chief of CPDMO on any part or portion of the work which may fail within a period of one (1) year after the final acceptance of the system provided such failure is due to defects in the material or workmanship.

#### COMPLETION PERIOD

The Contractor is given **One Hundred Eighty (180) calendar days** to execute the renovation works including the installation of all system requirements. The Contractor shall coordinate to the CPDMO Inspector and End-users for the schedule of testing of systems and other related job.

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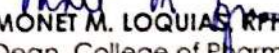
  
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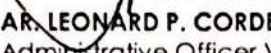
  
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