# Section VI. Specifications

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| **Notes on Specifications**  A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Procuring Entity without qualifying or conditioning their Bids. In the context of international competitive bidding, the specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of economy, efficiency, and fairness in procurement be realized, responsiveness of Bids be ensured, and the subsequent task of bid evaluation facilitated. The specifications should require that all goods and materials to be incorporated in the Works be new, unused, of the most recent or current models, and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.  Samples of specifications from previous similar projects are useful in this respect. The use of metric units is mandatory. Most specifications are normally written specially by the Procuring Entity or its representative to suit the Works at hand. There is no standard set of Specifications for universal application in all sectors in all regions, but there are established principles and practices, which are reflected in these PBDs.  There are considerable advantages in standardizing General Specifications for repetitive Works in recognized public sectors, such as highways, ports, railways, urban housing, irrigation, and water supply, in the same country or region where similar conditions prevail. The General Specifications should cover all classes of workmanship, materials, and equipment commonly involved in construction, although not necessarily to be used in a particular Works Contract. Deletions or addenda should then adapt the General Specifications to the particular Works.  Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for goods, materials, and workmanship, recognized international standards should be used as much as possible. Where other particular standards are used, whether national standards or other standards, the specifications should state that goods, materials, and workmanship that meet other authoritative standards, and which ensure substantially equal or higher quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the SCC.  **Sample Clause: Equivalency of Standards and Codes**  Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted subject to the Procuring Entity’s Representative’s prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Procuring Entity’s Representative at least twenty eight (28) days prior to the date when the Contractor desires the Procuring Entity’s Representative’s consent. In the event the Procuring Entity’s Representative determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.  These notes are intended only as information for the PRO Procuring Entity or the person drafting the Bidding Documents. They should not be included in the final Bidding Documents. |

**TERMS OF REFERENCE**

Design & Build Infrastructure Projects

Project Title : **Design and Build of Infrastructure Project: Repair / Renovation of Various Hospital Facilities Phase 3 at Rizal Medical Center**

Project Description:

1. Proposed Construction of New Warehouse Building
2. Proposed Repair/Renovation of Dormitory Building
3. Proposed Major Repair of Dietary Building
4. Proposed Conversion of Old Warehouse to Administrative Offices
5. Proposed Renovation of Engineering and Facilities Management Building

Location : Rizal Medical Center, Pasig Boulevard, Pasig City

1. **INTRODUCTION**

Background and Rationale:

The RMC in its objective to be at par with the best Level 3 flagship hospitals of the Department of Health, has identified a number of Infrastructure Projects and earmarked an amount to undertake and implement these in order to achieve the objective.

While the quality of health service is dependent on the quality of the physical facilities delivering health care, infrastructure resources for health must be carefully safeguarded and maintained, through appropriate funding among others in order to meet health system goals in general and health institutional objectives in particular, through intensive capital outlay and regular infrastructure funding programs.

In this light, the Rizal Medical Center is developing a series of Infrastructure Projects entitled Repair and Renovation of Various Hospital Facilities Phase 3 of Rizal Medical Center.

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Specific Objectives: To engage the services of Design and Build General Contractor

1. To prepare the Schematic Plans for the abovementioned projects;
2. To prepare the Detailed Architectural and Engineering Design (DAED) of the project based on the approved schematic plans;
3. To prepare and submit to the end-user the final Bill of Quantities including the Detailed Estimates for evaluation;
4. **PROJECT REQUIREMENTS**
5. Preliminary Information/Studies for Design and Construction.
6. **PROJECT COMPONENTS**

Site and space planning were governed by the standards, rules and regulations on the design of Level 3 hospitals as prescribed by the Department of Health and other concerned agencies. Building design shall conform to the provisions of the National Building Code of the Philippines (PD 1096), Accessibility Law (BP 344), National Structural Code of the Philippines, Electrical Engineering Law (RA 7920), Mechanical Engineering Law (RA 5336), Plumbing Code (RA 1378, 1993-1994 Revisions), Fire Code (RA 9514) and other laws and regulations covering environmental concerns and local ordinances and regulations.

* 1. Pre-Detailed Design

1. Engineering Surveys and Investigations
   1. Surveys and investigations of the site includes boundaries of the property, elevations and contours (at 0.5m interval), soil tests, location, dimension, floor elevations and other pertinent data on existing buildings and improvements (roads, parking areas, mature trees) and existing utility lines (e.g. water, power, telephone).
2. Design Development Drawings
   1. Preparation of the following drawings for design development based on the schematic plans prepared by the DOH
      1. Perspective View
      2. Floor plans, two (2) sections and four (4) elevations, including complete space allocation.
3. Detailed Design
4. Preparation of the following Detailed Design Drawings (see DOH Checklist of Drawings Requirements) based on the Design Development Drawings and Design Parameters :

Detailed Architectural Plans (refer to Checklist of Drawings Requirements and Design Parameters).

Detailed Structural Plans (refer to Checklist of Drawings Requirements and Design Parameters).

Detailed Electrical Plans (refer to Checklist of Drawings Requirements and Design Parameters).

Detailed Storm Drain, Sanitary and Plumbing Plans (refer to Checklist of Drawings Requirements and Design Parameters).

Detailed Mechanical Plans (refer to Checklist of Drawings Requirements and Design Parameters).

Structural Computations, including Soil Boring Test Results and Seismic Analysis (if applicable) and Electrical Design Computations.

General Notes and Technical Specifications describing type and quality of materials and equipment to be used, manner of construction and the general conditions under which the project is to be constructed.

Detailed Bill of Qualities, Cost Estimates including a summary sheet indicating the unit prices of construction materials, labor rates and equipment rentals.

Summary of Works

1. Construction

As a rule, contract implementation guidelines for procurement of infrastructure projects shall comply with Annex “E” and guidelines for the implementation of contracts for DESIGN AND BUILD infrastructure projects shall comply with Annex “G” of IRR, RA 9184. The following provisions shall supplement these procedures:

No works shall commence unless the contractor has submitted the prescribed documentary requirements and the DOH/RMC has given written approval. Work execution shall be in accordance with reviewed and approved documents.

The contractor shall be responsible for obtaining all necessary information as to risks, contingencies and other circumstances which may affect the works and shall prepare and submit all necessary documents specified by the concerned Building Officials to meet all regulatory approvals as specified in the contract documents.

The contractor shall submit a detailed program of works within fourteen (14) calendar days after the issuance of the Notice to Commence for approval by the procuring entity that shall include, among others:

1. The order in which it intends to carry out the work including anticipated timing for each stage of design/detailed engineering and construction;
2. Periods for review of specific outputs and any other submissions and approvals;
3. Sequence of timing for inspection and tests;
4. General description of the design and construction methods to be adopted;
5. Number and names of personnel to be assigned for each stage of the work;
6. List of equipment required on site for each stage of the work; and
7. Description of the quality control system to be utilized for the project.

Any errors, omissions, inconsistencies, inadequacies or failure submitted by the contractor that do not comply with the requirements shall be rectified, resubmitted and reviewed at the contractor’s cost. If the contractor wishes to modify and design or document which has been previously submitted, reviewed and approved, the contractor shall notify the DOH/RMC within a reasonable period of time and shall shoulder the cost of such changes.

As a rule, changes in design and construction requirements shall be limited only to those that have not been anticipated in the contract documents prior to contract signing and approval. The following guidelines shall govern approval for change or variation orders:

1. Change Orders resulting from design errors, omissions or non-conformance with the performance specifications and parameters and the contract documents by the contractor shall be implemented by the contractor at no additional cost to the DOH.
2. Provided that the contractor suffers delay and/or incurs costs due to changes or errors in the DOH performance specifications and parameters, the contractor shall be entitled to either one of the following:

An extension of time for any such delays under Section 10 of Annex “E” of IRR (RA 9184); or

Payment for such costs as specified in the contract documents, provided, that the cumulative amount of the variation order does not exceed ten percent (10%) of the original project cost.

1. The contract documents shall include the manner and schedule of payment specifying the estimated contract amount and installments in which the contract will be paid.
2. The contractor shall be entitled to advance payment subject to the provisions of Section 4 of Annex “E”, IRR (RA 9184).
3. The DOH shall define the quality control procedures for the design and construction in accordance with the DOH guidelines and shall issue the proper certificates of acceptance for sections of the works or whole of the works as provided for in the contract documents.
4. The contractor shall provide all necessary equipment, personnel, instruments, documents and others to carry out specified tests.
5. This design and build projects shall have a minimum Defects Liability Period of one (1) year after contract completion or as provided for in the contract documents. This is without prejudice to the liabilities imposed upon the engineer/architect who drew up the plans and specification for building sanctioned under Section 1723 of the New Civil Code of the Philippines.
6. The contractor shall be held liable for design and structural defects and/or failure of the completed project within the warranty period of 15 years for permanent structures/buildings as specified in Section 62.2.3.2 of the IRR (RA 9184)
7. **IMPLEMENTATION ARRANGEMENT**
   1. Reporting Protocol

Contact Person

* 1. Rizal Medical Center **Relito M. Saquilayan, MD, MHA**

Hospital Director Medical Center Chief II

Chief Administrative Officer **Buddy A. Ortego, DVM, MM**

Chief Administrative Officer

Infracom Chairman **Roel Tito A. Marcial, MD, MBA-H**

Medical Specialist IV

Hospital Engineer: **Jennifer L. Quintero, CE, MMHA**

Engineer IV

* 1. DOH HFDB Director**:** **Arch. Ma. Rebecca M. Peńafiel**

Director III

1. Architect-in-charge: **Arch. Eric A. Guerrero, MHA**

Architect IV

1. **ELIGIBILITY REQUIREMENTS:**
2. Basic

The eligibility requirements for Design and Build Scheme shall comply with the applicable provisions of Sections 23 – 24 of IRR of RA 9184.

A modified set of requirements integrating eligibility documents and criteria for infrastructure projects and consulting services shall be adopted in accordance with Annex G - Guidelines for the Procurement and Implementation of Contracts for Design and Build Infrastructure Projects Annex “G” of IRR of RA 9184.

* + - 1. The Design and Build Contractor must have completed projects in the amount of at least fifty percent (50%) in the last five (5) years and must have the network and resources in place to mobilize the Design and Build Services.

1. Specialized

The Pre-Detailed Design and Detailed Design portion of the contract must be done by an eligible license architect or architectural firm with a joint venture agreement with the Bidder and with the minimum number of professionals as described below:

* + - * 1. Project Coordinator
    1. Licensed Architect or Engineer
    2. At least 10 years experience in overall project management
    3. Superb oral and written communication skills, organization skills and excellent administrative abilities.
       - 1. Architect
    4. Licensed Architect
    5. Preferably with at least 5 years experience in hospital and hospital-related projects
    6. Proficient in the use of Autocadd softwares
       - 1. Structural/Civil Engineer

* + 1. Licensed Structural/Civil Engineer
    2. Preferably with at least 5 years experience in hospital and hospital-related projects
    3. Proficient in the use of Autocadd softwares
       - 1. Electrical Engineer
    4. Licensed Professional Electrical Engineer
    5. Preferably with at least 5 years experience in hospital and hospital-related projects
    6. Proficient in the use of Autocadd softwares
       - 1. Mechanical Engineer
    7. Licensed Professional Mechanical Engineer
    8. Preferably with at least 5 years experience in hospital and hospital-related projects
    9. Proficient in the use Autocadd softwares
  1. Sanitary Engineer
     1. Licensed Sanitary Engineer
     2. Preferably at least 5 years experience in hospital and hospital-related projects
     3. Proficient in the use of Autocadd softwares
  2. CADD Operator (preferably one for architecture and one for each engineering specialty)
     1. At least with a Bachelor’s Degree in Architecture or Engineering
     2. Proficient in the use of Autocadd softwares

1. **APPROVED BUDGET COST**

The total Approved Budget for the Contract for the following Design & Build Projects is ***Thirty-One Million Eight Hundred Twenty-Two Thousand Four Hundred Forty Pesos (PhP31,822,440.00)***:

1. Proposed Construction of New Warehouse Building
2. Proposed Repair/Renovation of Dormitory Building
3. Proposed Major Repair of Dietary Building
4. Proposed Conversion of Old Warehouse to Administrative Offices
5. Proposed Renovation of Engineering and Facilities Management Building

**VII. TIME FRAME**

The Design and Build Contractor is required to complete the Project within an indicative period as shown below, to start upon the contractor’s receipt and signing of the Notice to Proceed. The time frame to be followed for the project is as follows:

**Design and Construction Schedule:**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Months** | | | | | | | | | | | | | | | | | |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** |
| **ACTIVITY** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Pre-Design** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Detailed Design** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Application and**  **Issuance of**  **Building Permit** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Construction** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. **MINIMUM REQUIREMENTS FOR CONSTRUCTION SAFETY AND HEALTH**
   1. General Requirements

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.

In order to meet this general requirement, the contractor must:

1. Initiate and maintain programs (written or otherwise) to comply with this general requirement.
2. Provide frequent and regular inspections of the job sites by competent persons.
   * Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to prompt corrective measures to eliminate them.
3. Prohibit the use of any machinery, tool, material, or equipment that is not in compliance with applicable requirements.
4. Permit only those employees adequately trained to operate machinery or equipment.
5. Provide training for all employees in:
   * Recognition and avoidance of unsafe conditions
   * Workplace safety and health requirements
   * Applicable hazards, safe handling, and personal protective equipment necessary for handling poisons, caustics, flammables, and other harmful substances relevant to their job duties.
   * Specific hazards and procedures for entering confined spaces if applicable
6. Provide provisions for medical care and first aid.
7. Develop an effective fire protection and prevention plan.
8. Insure appropriate housekeeping measures including clear walkways and removal of combustible scrap and debris.
9. Require the wearing of appropriate personal protective equipment such as hard hats, safety glasses, steel toe shoes, or other appropriate protective equipment in all operations where there is an exposure to hazardous conditions.
10. Develop an emergency action plan covering designated actions employers and employees must take to ensure employees safety from fire and other emergency.
    * Plan must be in writing for employers with greater than 10 employees
    * All employees must be trained upon initial assignment on the parts of the plan the employee needs to know in the event of an emergency.
11. Provide access to hand washing facilities, toilets, and an adequate supply of drinking water.
12. Provide safety and health signs that are clearly visible to construction workers and public
13. Conduct regular safety meetings.

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|  | Republic of the Philippines Department of Health **RIZAL MEDICAL CENTER**  Pasig Blvd., Pasig City 1600  Tel. No. (02)671-9740 | DOHcolored |

*Source: Colorado State University*

*Occupational Health and Safety Section*

*Department of Environmental Health*

*Fort Collins, Colorado*

**SUBJECT : ARCHITECTURAL DESIGN PARAMETERS**

**Codes and Standards**

The Architectural Works shall be in accordance with the following Laws, Codes and Standards.

**• Laws and Codes:**

1. National Building Code of the Philippines and its Latest and Amended IRR
2. RA 9266 or Architecture Law and its Latest and Amended IRR
3. RA 4226 or Hospital Licensing Act and its Latest and Amended IRR
4. BP 344 or Accessibility Law and its Latest and Amended IRR
5. AO 35, s. 1994 or AO Pertaining to the Control of Radiation Hazards
6. RA 9514 Fire Code of the Philippines
7. Existing Local Codes and Ordinances.
8. And other Laws that applies to the projects

**• Standards:**

1. Bureau of Product Standards (BPS)
2. Underwriters Laboratory (UL)
3. DOH Technical Guidelines for Hospital & Health Facilities Planning and Design

**General Drawing Guidelines**

*General*

* All drawings shall be computer-drafted. Drawings shall be submitted both in printed and electronic copies.
* Keep the same orientation for all plans. The north orientation shall be indicated in all architectural floor plans. The orientation of the architectural plans shall be consistent with all the engineering plans.
* Existing buildings and new works shall be clearly indicated and labeled in the site plans.
* Detailed plans shall have a scale not smaller than 1: 50 meters.
* Spot detailed plans, elevations, and sections shall have a scale not smaller than 1: 10 meters.
* Avoid notes such as ‘see architectural detail’ or ‘see structural’. Always refer with a callout to the specific detail drawing and sheet number.

*Site Plans*

* The site plans shall have a scale not smaller than 1 : 400 meters.

*Floor Plans*

* All plans shall be 1: 100 meters. The same scale shall be used for the rest of the architectural, structural, sanitary, plumbing, electrical and mechanical plans, except for each trade’s site plan, detailed plans and spot details.
* Elevation callouts shall be indicated on the floor plans and shall be consistent with the elevation drawing.
* Section line callouts on the floor plans shall be consistent with the section drawing.
* Floor plans shall be indicated with boxed room callout numbers, including the callout for floor finishes and wall finishes.
* Floor elevations shall be indicated in the floor plans. This shall be in reference to the natural grade line or the established finished floor lines of the adjoining existing buildings.
* The location of mechanical equipment, e.g. air conditioning shall be indicated in the floor plans. This shall be consistent with the mechanical and electrical plans.
* Door callouts shall be circles with the proper numbering, e.g. D-01.
* Window callouts shall be hexagons with the proper numbering, e.g. W-01.

*Elevations and Sections*

* Finish floor lines and top of truss lines shall be consistent in all the elevations, sections and structural plans and details.

*Reflected Ceiling Plans*

* Reflected ceiling plans shall be indicated with boxed room callout numbers, including the callout for ceiling finishes and lighting fixtures.
* Ceiling height relative and in reference to the finish floor line shall be indicated in the reflected ceiling plans in each room with boxed dimensions. This is to ensure that the ceiling heights of all rooms are established whether or not reflected in the sections.
* The description and location of the fixtures, e.g. lighting, smoke detectors, aircondition vents, exhaust fans, in the reflected ceiling plans shall be consistent with the electrical and mechanical plans.

*Roof Plans*

* Location of all downspouts shall be indicated in the roof plans.

*Doors and Windows*

* Door and window schedules shall indicate the type of door or window, the number of sets, the location/s of the door or window, the materials and accessories included and other special specifications, e.g. color or finish.

*Details*

* Provide a minimum of one (1) bay section of a scale not smaller than 1 : 50 meters for each major building preferably cut along the area with special construction design.
* Provide spot detail plans, elevations and sections of a scale not smaller than 1:10 meters for special designs with aesthetic treatment and ornamentation.
* Provide detail plans of a scale not smaller than 1 : 50 for all areas needing tile pattern, e.g. lobby, corridor, entrance walk, showing the position and pattern of tiles.
* Centerline location of plumbing fixtures shall be indicated in detail plans with lines of reference and its corresponding dimensions. This is to indicate the exact locations of the plumbing/sanitary roughing-ins.

**Site Works**

* The Master Site Development Plan of the Hospital shall include the following:
  1. Contour and survey of the lot, including bearing and distance of the property line
  2. Road network and curbs and sidewalks
  3. Parking spaces
  4. Reference location of existing trees
  5. Reference location and footprint of existing buildings, with the corresponding building names and dimensions, including distances between adjacent buildings, and distances between buildings and the nearest property line
  6. Reference location of utilities, e.g. water reservoirs, septic tank, wastewater treatment plant, powerhouse, transformers, waste storage area, security outposts
* The layout of the buildings on the site shall be zoned according to the service it provides:
  + 1. The outer zone shall include all front line services, e.g. emergency, out-patient, x-ray, laboratory and other ancillary department.
    2. The inner zone shall include the wards.
    3. The deep zone shall include services like the operating room, delivery room, nursery, intensive care unit and other sensitive hospital services.
    4. The service zone shall include non-medical services but are essential to hospital operations, e.g. dietary, engineering, linen and laundry, and morgue.
* There shall be a separate road network and entry/exit for the public and the service vehicles, e.g. ambulance, waste collection vans, delivery trucks.
* In limited lot areas, buildings should at least be spaced four (4) meters apart to allow natural light and ventilation.
* Covered walkways shall be provided for access and connection to all the buildings.
* Ramps shall be provided in all main entrances of the buildings and other access openings to walkways leading to other buildings.

**Building Architectural Works**

*Floor Plans*

* The structural, sanitary, plumbing, electrical and mechanical designs are required to refer to the architectural plans and specifications in case of discrepancies. If an engineering design will have any possible conflict or interference on the architectural design, the latter may be adjusted provided that the aesthetic value will not be compromised.
* The architectural and engineering plans shall be consistent all throughout in terms of dimensions and locations of columns, beams, walls, roof line, conduits, ducts, pipes, and fixtures, among others. Column and beam grid lines shall also be consistent in all the architectural and engineering plans.
* Verify and coordinate floor plans with the mechanical, electrical and sanitary design with regard to the requirements for mechanical rooms, AHU rooms, electrical rooms, pipe chase, and other engineering requirements.
* Public toilets shall have provisions and fixtures for persons with disability as required by BP 344. If enough space allows, toilets specially made and designated for persons with disability is preferable.

*Walls*

* Exterior walls shall be 200mm. thick, while interior walls shall be 150mm. thick. This is indicative of the finished wall thickness including the plastering and tile works.
* The walls of the rooms for X-ray, CT Scan, MRI, Cobalt, Linear Accelerator, and other radioactive equipment shall conform to the requirements of the manufacturer’s specifications and as regulated by the Bureau of Health Devices and Technology (BHDT) by virtue of DOH-AO 35, s. 1994 or AO Pertaining to the Control of Radiation Hazards
* Toilet wall tiles shall be 200mm. X 250mm. for areas of six (6) square meters or below. Toilet wall tiles shall be 300mm. X 300mm. for areas above six (6) square meters.
* Layout and work on wall and floor tiles must be aligned, plumb, level, and square.
* All edges, corners and intersections of toilet tiles, including the top-most tile not reaching the ceiling shall be provided with polyvinyl chloride tile trims.
* Tile color and design shall be approved first before installation.

*Floors*

* Laboratory and Operating Room floor finish shall be roll-form anti-static anti-bacterial homogenous vinyl with welded joints. It shall cove upwards to the sides of the wall up to a minimum of 200mm. from the floor.
* If floor tiles in two adjacent rooms with different material, color or design meet at the door opening, the cut shall be located middle of the door thickness when in a closed position. Provide details in the floor pattern design.
* Floors at the openings of toilets for persons with disability shall be sloping. Indicate in the plans and sections.
* The size of the toilet floor tiles shall be 200mm. X 200mm. for areas of six (6) square meters or below. Toilet floor tiles shall be 300mm. X 300mm. for areas above six (6) square meters. Indicate the tile pattern.
* The size of the kitchen floor tiles shall be 300mm. X 300mm. Indicate the tile pattern.
* The size of the floor tiles of the offices and wards shall be 300mm. X 300mm, or bigger depending on the proportion to the size of the room. Indicate the tile pattern.
* The size of the floor tiles of the lobby and corridor shall not be less than 400mm. X 400mm. The tile size of 600mm. X 600mm. is recommended for bigger areas. Indicate the tile pattern.
* Layout and work on wall and floor tiles must be aligned, plumb, level, and square.
* All edges, corners and intersections of toilet tiles, shall be provided with polyvinyl chloride tile trims.
* Tile color and design shall be approved first before installation.

*Ceiling Works*

1. The following rooms shall have a minimum ceiling height:
2. Operating Room – 3000mm., to accommodate the ceiling-mounted OR light
3. Cath Laboratory – 3000mm., to accommodate ceiling-mounted equipment
4. X-ray Room – 2700mm., to accommodate ceiling-mounted equipment
5. CT Scan – 2700mm., to accommodate ceiling-mounted equipment
6. Dietary Kitchen – 3000mm. or no ceiling if below a concrete slab
7. Wards of 4 beds and up – 3000mm., to provide better natural ventilation

* Ceiling height for areas with special aesthetic treatment, e.g. lobby, major conference room, auditorium, executive office, shall be proportional to the area or room or as required by the designer. However, this shall not be lower than 3000mm. Provide details.
* If acoustic boards on aluminum T-runners would be used for the ceiling, layout should be on center and avoiding cut pieces. If the remaining perimeter of the ceiling is less than 600mm. wide, it shall be designed complimentary with fiber cement boards on light gauge metal furrings. Likewise with acoustic boards in big areas, e.g. offices, and wards, shall be designed in a way to break the redundancy. Provide details.
* Soffit of exterior beams and slabs shall have drip moulds to prevent damage due to water sipping into the eaves or ceiling. Section details shall be required to show the drip mould.

1. *Doors and Windows*

* Major rooms that require security shall have sturdy doors e.g. wood panel, and metal.
* Minor rooms that do not require security shall at least have wood flush doors.
* Toilets and other wet areas shall have polyvinyl chloride doors.
* Heavy-use doors, e.g. kitchen, operating rooms, delivery rooms, should be provided with stainless steel kick or push plates and door closers.
* Fire escape doors, should be provided with panic hardware and door closers, and shall conform with the requirements of the Fire Code of the Philippines.
* Aluminum frames of glass doors shall be powder-coated.
* Door finish and color shall be approved first before application.
* Window sills shall be slightly sloped outwards to prevent damage to windows and paint due to water sippage. Section details shall be required to show this slope.
* All doors of a high-occupancy room shall swing outwards and as required by the Fire Code of the Philippines.
* Door jambs with no moulding/casing installed on concrete walls shall have construction grooves all around. Provide details.
* All doors and windows shall have reinforced concrete lintel beams. Provide details.

1. *Stairs, Ramps and Corridors*

* Ramps for persons with disability shall have a slope not higher than 1 : 12. Handrails and clearances shall conform with the requirements of BP 344.
* Regular stairs shall have risers at 150mm. high and treads at 300mm. wide. Fire stairs could have a maximum riser at 200mm. and tread at 250mm. Handrails shall be 1100mm. high. Clearances shall conform with the requirements of the Fire Code of the Philippines.
* Corridors shall have a minimum unobstructed width of 2450mm. This shall be measured clear from the surface of the finished wall and not on-center of the rough CHB wall.
* Corridors shall not be areas for temporary or permanent storage of stretchers, wheelchairs, trolleys, food carts, oxygen tanks or other movable hospital equipment. Storage or parking spaces shall be provided for these.
* Corridors and exit doors shall conform with the requirements of the Fire Code of the Philippines.

1. *Fixtures and Accessories*

* Three-way electrical light switches shall be provided at the foot and the top of the stairs per floor. Likewise at both ends of a long corridor.
* Electrical light switches shall be located by the knob side of the door.
* Electrical switches and outlets shall be installed plumb and level.
* Public toilets shall always be provided with heavy-duty soap dispensers and electric hand dryers.
* Public toilets shall always be provided with stainless steel handrails in conformity to the requirements of BP 344.
* A drainage line shall be provided for window-type airconditioners. Likewise, split-type airconditioners located in the interior part of the building shall be so located adjacent to areas with drainage lines, e.g. toilets, downspouts, balconies.

1. *Roofing Works*

* The section of the roof gutters shall be designed, in case of a clogged downspout, so that the overflow of water will be directed outside of the building and not towards the eaves or interior ceiling to prevent any damage. Provide details.
* Avoid valley or inside gutters in roof design. But in cases required in aesthetic design, valley or inside gutters shall be in stainless steel or concrete gutters with membrane-type waterproofing, and the section shall be designed with a capacity for big volume to prevent any damage due to overflow. Provide details.
* Parapets, designed as a roof protection from the winds, must be designed to satisfy the preceding parameters. Provide details.
* The slope of the roof shall not be less than 30 degrees.

1. *Painting*

* Painted ceiling shall be in flat latex finish, while cornices and mouldings shall be in gloss enamel finish.
* Painted interior wall shall be at least in semi-gloss latex finish for ordinary rooms, e.g. offices, unless specified to a higher type of paint.
* Patient-related rooms, e.g. emergency rooms, out-patient department and wards, shall be in anti-bacterial and odor-absorbent paint finish.
* Special rooms, e.g. operating rooms, delivery rooms, and laboratory shall also be in anti-bacterial and odor-absorbent paint finish.
* Painted exterior wall shall be at least in moisture-resistant/water-repellant solvent-based paint finish, textured or smooth, unless otherwise specified.
* Paint color and shade shall be approved first before application.

**Specific Requirements**

* **Provide spot detail plans and sections of the following:**

1. Gutter, eaves, and parapet
2. Ceiling - covelight, special connections and design, mouldings, valances
3. Stairs - handrail, and baluster design
4. Ramps - handrail design and floor pattern
5. Doors, windows and gates - grille works,
6. Special Architectural Treatment and Design, e.g. façade design, special window and door, counter/nurse station counter
7. Special Carpentry Works, e.g. partitions, cabinetry
8. Other details as may be required

* **Provide Room Data Sheets, including detailed floor plan, ceiling plan and sections of the following rooms, in coordination with the requirements of the electrical, sanitary and mechanical designs:**

1. Private Wards, including bed head panel fixtures and outlets with specific dimensions of the location of fixtures and accessories, and in coordination with the requirements of the electrical and mechanical engineering design.
2. Nurse Station
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(All blanks shall be filled as required by or applicable to the project.)

**Summary of Materials**

* Materials to be used shall be fire-resistant, non-toxic, moisture-resistant and termite-resistant, e.g. fiber cement board, light-gauge steel frame, polyvinyl chloride ceiling panels.
* Wet areas, e.g. toilets, and kitchen shall use non-skid/non-slip vitrified ceramic floor tiles.
* Heavy traffic areas, e.g. lobby, and corridor shall use heavy-duty seamless granite floor tiles or a higher type of floor material.
* Vinyl floor tiles for areas like offices shall be homogenous and not less 2mm. thick.
* Ramps and stairs shall use non-skid/non-slip floor tiles, materials as specified.
* Aluminum T-runners shall be powder coated.
* Metal rod hangers with adjustable clips, and not galvanized iron wires, shall be used to support and suspend the aluminum T-runners and light gauge metal furrings.
* Roofing sheets shall be Ga.# 24 aluminum-coated, pre-painted, and pre-formed.

**Drawing Requirements:** See attached DOH checklist of drawings.

**---End of Scheme---**

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|  | Republic of the Philippines Department of Health **RIZAL MEDICAL CENTER**  Pasig Blvd., Pasig City 1600  Tel. No. (02)671-9740 | DOHcolored |

**SUBJECT: DESIGN PARAMETERS (STRUCTURAL/CIVIL WORKS)**

* 1. Codes and Standards

The Civil/Structural Design shall be in accordance with the following Codes and Standards

* + Codes
  1. National Structural Code of the Philippines (NSCP) 2001
  2. National Building Code of the Philippines and its revised IRR
  3. Accessibility Law
  4. Local Codes and Ordinances
* Standards

1. Bureau of Product Standards (BPS)
2. Philippine National Standards (PNS)
3. DPWH Blue Book
4. American Concrete Institute (ACI)
5. American Society for Testing Materials (ASTM)
6. American Welding Society (AWS)
7. Site Works

Based on Master Site Development Plan of the Hospital, provide where applicable complete design and details of hospital road (concrete with curb and gutter, including drainage) network, walkways parking areas and fencing.

* 1. The main hospital road shall be capable of two way traffic (at least 6mts. width) with a minimum thickness of 150mm (8 inches). Concrete strength should be at least 3000psi. Interior road (leading to support facilities) shall be so designed to accommodate delivery vehicles, and fire trucks in case of emergency.
  2. Walkway should be at least 100mm thk with concrete strength of 2500psi. Ramps should be provided, instead of steps, for any change in elevations.
  3. Parking area slabs should be at least 150mm thk with concrete strength of 3000psi.
  4. Fences should be see through in front of the hospital while the Tree (3) other sides should be concrete hollow blocks with minimum height of 2 meters and to be provided with perimeter lighting. See-through fence design will be made of 32mm square bars spaced at 100mm on center and provided with three (3) concrete hollow blocks (45mm high) zocalo wall.

1. Buildings
   1. The hospital buildings should be designed using seismic importance factor of 1.25 for immediate occupancy category. Buildings should be designed in accordance with NSCP Requirements up to Magnitude 7 for those near seismic source Type A. Seismic gaps between buildings (old and new) should be properly observed.
   2. The hospital buildings should be designed also using wind importance factor of 1.15 (especially for design of trusses/roofing system). Concrete gutters and parapet walls should be provided as additional protection to the roofing system during strong typhoons.
   3. The structural designer should verify with Philippine Volcanology and Seismology (PHIVOLCS) the distance of the proposed hospital to nearest active fault lines and with the DENR for geo-hazard mapping.
   4. Soil investigation (at least three bore holes) should be conducted to determine soil bearing capacity and recommended foundation design (applicable even for one storey structure).
   5. The structural designer is encouraged to use fire-resistive and non-toxic materials.
2. Details – the following shall be provided:
   1. Connection details of beams and columns following the requirements of NSCP on confined areas.
   2. Connection of trusses to beams and columns
   3. Splicing details of reinforcing bars on columns and beams and the required bar cut-off points.
3. Summary of Materials
   1. Concrete shall be Portland cement and conforming to ASTM Specification C150, Type I to Type II
   2. Coarse Aggregates shall consist of washed gravel, crushed stone or rock or a combination thereof conforming to ASTM C33
   3. Concrete Hollow Blocks shall be a standard product of recognized manufacturer conforming to PNS 16 with at least 350psi strength.
   4. Reinforcing Bars shall conform with PNS Grade 60 for 16mm dia. and above and PNS Grade 40 for 12mm dia and below.
   5. Structural steel shall conform with ASTM A36/A6M
   6. Bolts and Studs shall conform with ASTM A 325
   7. Welding electrodes shall be E60 or E 70 and conform with AWS
4. Drawing Requirements: See attached checklist

**---End of Scheme—**

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**SUBJECT : SANITARY/PLUMBING DESIGN PARAMETERS**

* 1. **Codes and Standards**

The Sanitary/Plumbing Design shall be in accordance with the following Codes and Standards.

* **Codes:**

1. National Building Code of the Philippines and Its New IRR
2. Fire Code of the Philippines
3. National Plumbing Code of the Philippines (NPCP)
4. Sanitation Code of the Philippines
5. Existing Local Codes and Ordinances.

* **Standards:**

1. Bureau of Product Standards (BPS)
2. Philippine National Standards for Drinking-Water
3. Underwriters Laboratory (UL)
4. DOH National \ Laboratory (NRL)
5. DOH Health Care Waste Management Manual
6. National Water Resources Board (NWRB)
7. National Plumbers Association of the Philippines (NAMPAP)
8. Philippine Society of Sanitary Engineers, Inc. (PSSE)
   1. **Site Works**
      * Based on the Master Site Development of the Hospital, the Site Works shall provide complete layout of the following:
9. Storm Drainage Network, indicating Drainage Manholes and Pipe Culvert;

1. Sewerage Pipe Network, indicating Sewage Manholes, Sewage pipes and the location of the proposed Sewage Treatment Plant; and
2. Water Supply Network, indicating the location of Water Service entrance, Cisterns, Elevated Water Tank and proposed Pump House.

* + The Storm Drainage Network shall accommodate the magnitude of peak rates of surface run-off including drainage coming from the buildings. The system shall be capable of handling the design flows routing to the designated outfall;

For rainfall calculation and sizing of drainage pipes, refer to Table-D2, Appendix-D, National Plumbing Code of the Philippines and current rainfall record from PAGASA.

* The Sewerage Pipe Network design shall accommodate all sewage coming from all the facilities, conveyed by gravitational flow leading to the proposed Sewage Treatment Plant;

Per capita wastewater demand: 100-130 gal/capita/day per bed

* The Water Supply Network shall include the provision of Fire Hydrants, accessible Drinking Fountain that will serve as testing point for safe and potable water supply;

Per capita water demand: 130-150 gal/capita/day per bed

* 1. **Building Facilities Sanitary/Plumbing System**

Sewerline and Vent System

* Provide complete Sewerline and Vent System from all (Domestic) plumbing fixtures and floor drains, laid by gravity flow leading to the Sewage Treatment Plant (STP);
* For Demand Weight of Fixtures in Fixture Units; refer to Appendix A, Table A-2, NPCP

Wastewater line and Vent System

* For all Areas dealing with Laboratory activities and generating infectious wastes, provide separate Wasteline and Vent System routing into a proposed Neutralization Tank prior to discharge to the Sewage Treatment Plant;
* For all Wash Areas dealing and generating with oil/grease at the Dietary, provide separate Wasteline and Vent System and solely tap to the proposed Grease Trap and then connect its effluent to the Sewage Treatment Plant.
* For Estimated Demand Weight of Fixtures in Fixture Units; refer to Appendix A, Table A-2, NPCP

Waterline System

* Provide complete cold water supply pipes to all plumbing fixtures. From the main water source, the water shall be pumped to the Elevated Water Tank (EWT) and conveyed to the fixtures by gravity system and or distributed to fixtures by transfer pumped with constant pressure through a Pneumatic Storage Tank, which ever is feasible.
* Provide complete Hot water system with portable water heaters for selected Areas as required and or specified by the Owner.

Storm Drainage System

* Complete Storm Drainage System shall be provided for all roofs, canopies, concrete ledges and balconies including condensate drains laid for gravity flow connected to a leader/pipe line leading to the natural ground level storm drainage network.

Sewage Treatment Plant

* Provide complete detailed design of Sewage Treatment Plant commensurate to the Bed capacity of the health facility; Adapt a Biological process of sewage treatment in compliance to the parameters set under the provision of Environmental Statutory Laws specifically DENR Administrative Order No. 35
  1. **Specific Requirements**
* Provide details of the following:

1. Grease Trap (for Dietary and Motorpool)
2. Neutralization Tank
3. Cistern Tanks and Elevated Water Tanks (c/o Mechanical)
   1. **Summary of Materials**

* Sewer and Vent pipes; Unplasticized Polyvinyl Chloride (uPVC) extra series 1000 (Conforming to ISO 3633 ASTM D2729 including Trims and Fittings)
* Storm Drainage pipes; Downspouts, Unplasticized Polyvinyl Chloride (uPVC) extra series 1000( Conforming to ISO 3633 ASTM D2729 including Trims and Fittings , BPS Certified)
* Drainage Pipes; 250mm dia. and below, Non-Reinforced Concrete Pipe (NRCDP)

300mm dia. and above, Reinforced Concrete Pipe (RCDP)

* Drainage Manholes; Street Inlet, Curb Inlet, Traffic Type Reinforced Concrete

Area drain/Catch Basin, Reinforced Load Bearing CHB

* Sewage Manholes; Traffic Type Reinforced Concrete with Standard Steel Brass Cover
* Wastewater pipeline; Extra Heavy (XH) Single Hub, Hubless Cast Iron Pipes and Fittings (CIP) conforming to ASTM Standard 888
* Cleanouts; Cast Iron Brass with counter sunk plug (BPS Certified)
* Floor Drains/Deck Drains; Cast Iron Brass (BPS Certified)
* Gutter Drains; Cast Iron Dome Type Brass (BPS Certified)
* Cold Waterline pipes; for buildings, Polypropylene Pn10 Fusion Weld Pipes including Trims and Fittings (BPS Certified)
* Hot Waterline System; for buildings, Polypropylene Pn20 Fusion Weld Pipes including Trims and Fittings (BPS Certified)
* Trench Grating; Galvanized/Stainless Steel Iron grates
* Plumbing Fixtures including Trims, Fittings and accessories; (BPS Certified)

1. Water Closet-Tank Type push button flush
2. Lavatory-(Pedestal/Counter Type) with C-spout spray faucet
3. Kitchen Sink-Ga#16 Stainless Steel seamless bowl with gooseneck faucet
4. Urinal-Wall hung Flush valve type
   * Plumbing Fixtures at Sterile Areas;
     1. Scrub-Up Sink-Ga#16 stainless Steel (single/double bowl) compartment with Knee operated and or censor controlled spay faucet
     2. Surgical Soap Dispenser-Ga#16 Stainless Steel foot operated
     3. Laboratory Sink-Ga# 16 Stainless Steel deep seated seamless bowl compartment with C-Spout spray faucet
   1. **Drawing Requirements:** See attached DOH checklist standards based on Revised IRR of the National Building Code of the Philippines (PD 1096)

**---End of Scheme---**

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**SUBJECT : MECHANICAL WORKS DESIGN PARAMETERS**

* + - 1. **Codes and Standards**

The Mechanical Design shall be in accordance with the following Codes and Standards.

* **Codes:**

1. National Building Code of the Philippines and Its New IRR
2. Fire Code of the Philippines
3. Mechanical Engineering Code of the Philippines (ME Code)
4. Existing Local Government Codes and Ordinances.

* **Standards:**

1. Bureau of Product Standards (BPS)
2. Philippine National Standards (PNS)
3. Underwriters Laboratory (UL) and Factory Mutual (FM)
4. International Electrotechnical Commission (IEC) 1988
5. National Fire Protection Association (NFPA)
6. National Fire Protection Association (NFPA) 99 Standard for Health Care Facilities.
7. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).
8. Center for Disease Control and Prevention (CDC) Manual.
   * + 1. **Automatic Fire Sprinkler System**

The automatic fire sprinkler system shall be composed of complete plans and drawings of the following:

1. Site Development Plan and Vicinity Map, indicating the location of the buildings, firewater reserve tank, firewater line, yard loop and private fire hydrant.
2. General Notes, Legends and Symbols including Schematic Diagram of the Fire Sprinkler System and Schematic Diagram of Alarm Monitoring System.
3. Floor Layout and Isometric Layout of the Automatic Fire Sprinkler System indicating pipe sizes and the location of the pipes, valves, sprinkler heads, riser nipples, fire hose cabinets, sprinkler main riser, drain pipes, cross mains, branchlines, inspector’s test connections, hangers and sway braces.
4. Equipment Schedule, Detail drawings, fire pump and jockey pump layout.
5. Architectural, Structural, Electrical and Plumbing drawings of the Firewater tank and Pumphouse.

* An automatic fire sprinkler shall be provided in all hospital building except for those fire resistive one (1) storey hospital building.
* Hazard Classification shall be Light Hazard Occupancy.
* Area of coverage shall be 146 square meters and water density shall be 4.07 lps/sq. m.
* Protection area per sprinkler head shall be 20 square meters at 2.2 meters minimum distance between sprinklers and 4.2 meters maximum spacing.
* All floor control valves shall be equipped with supervisory switch, water flow detector and drain system.
* Water supply shall be horizontal split case centrifugal firepump with diesel engine or AC motor and a vertical in-line jockey pump with controller.
* Firewater reserve tank shall be ground level monolithic concrete tank sized for a minimum of 30 minutes.
* Hydraulic calculations report shall be based on NPFA-13 format.
  + - 1. **Ventilation and Air Conditioning System**

The ventilation and air conditioning system shall be composed of complete plans and drawings of the following:

1. General Notes, Legends and Symbols including Schematic Diagram of the Ventilation and Air Conditioning System.
2. Floor Layout of the Ventilation and Air Conditioning System indicating the capacity and location of the air conditioners and fans.
3. Duct layout indicating duct sizes, route and location of the dampers, diffusers, return air register, hangers and sway braces.
4. Refrigerant piping layout indicating pipe sizes, location of valves, hangers and sway braces.
5. Equipment Schedule and Details drawings of Air Conditioners and Ventilating System.

* Air conditioning system shall be provided in all patients private rooms, radiologic and imaging area, operating rooms, delivery rooms, laboratories, critical care areas, offices and other areas where conditioned air is necessary.
* Cooling Load calculations report shall be manual or computer generated, hourly analysis program which includes heat transmission coefficients, solar heat gain factors and corrected cooling load temperature difference calculations.
* Split type air conditioners will be used at areas with larger capacities.
* Window type air conditioners shall be used in areas with exterior wall exposure.
* Centralized air conditioning will be used only if feasible.
* Design of all critical areas shall be laminar or positive pressure, wherein the supply air is 10% more than exhaust air.
* All infectious isolation rooms, such as TB and SARS, shall be negative pressure, wherein the exhaust air is more than 10% of the supply air.
* Maintain an air change rate greater than or equal to 12 air changes per hour or 145 liters per second per patient.
* Ceiling cassette type exhaust fans with integral air diffuser shall be provided in all toilets.
* Ceiling fans, orbit type with 360° oscillation shall be provided in all non air conditioned rooms, such as patient wards, work areas, nurse station, etc.
  + - 1. **Medical Gases and Vacuum System**

The pipeline system of medical gases and vacuum shall be composed of complete plans and drawings of the following:

1. Site Development Plan and Vicinity Map, indicating the location of the buildings, medical gases manifold and vacuum housing.
2. General Notes, Legends and Symbols including Schematic Diagram of the Medical Gases and Vacuum System and Schematic Diagram of Alarm Monitoring System.
3. Floor Layout and Isometric Layout of the Medical Gases and Vacuum System indicating pipe sizes and the location of the pipes, valves, zone valves, alarms, outlet stations, cross mains, branchlines, hangers and sway braces.
4. Equipment Schedule, Details drawings and equipment layout.
5. Architectural, Structural, Electrical and Plumbing drawings of the Medical Gases and Vacuum Housing.

* Medical gases and vacuum system shall be provided throughout the hospital.
* Medical gas supply system shall be provided through manifold system and bulk system.
* The pipeline system shall be equipped with zone valves and alarm system.
* Vacuum pumps shall be duplex type each with a capacity to handle the total load without loss of vacuum in the system.
* Gas outlets shall be single, double, triple or more units for the following services; oxygen, air, nitrous oxide and vacuum.
* Flow calculations shall be based on NFPA 99 Standard for Health Care Facilities.
* Piping shall be of seamless type “K” or “L” hard tampered copper tubing suitable for silver brazing. Joint and fittings for copper tubing shall be cast bronze designated for brazing.
  + - 1. **Elevator System**

The elevator system shall be composed of complete plans and drawings of the following:

1. General Notes, Legends and Symbols including Schematic Diagram.
2. Floor Layout, Elevator Shaft Plan and Machine Room Plan.
3. Equipment Schedule, Detail drawings and Equipment layout.
4. Architectural, Structural, Electrical and Plumbing drawings of the Elevator System.

* Hospital bed type elevator shall be provided in all multi-storey hospital buildings.
* The minimum car size shall be 1,500mm wide and 2,150mm long.
* The car door opening shall be not less than 1,100mm and 2,100mm high.
  + - 1. **Summary of Materials**

1. **AUTOMATIC FIRE SPRINKLER SYSTEM**
   1. The firepump shall be UL Listed/FM Approved, diesel engine or electric motor driven, designed specifically intended for an automatic water sprinkler protection system.
   2. The jockey pump shall be UL Listed/FM Approved, electric motor driven, 220V, 3-phase, 60 hertz, and electric power connection.
   3. Sprinkler head shall be UL Listed/FM Approved, pendant, upright or sidewall unit, 83 LPM flow capacity per head and temperature fusing at 57.5° C to 74°C.
   4. The alarm assembly shall be UL Listed/FM Approved, constructed and installed that any flow of water from the sprinkler system equal to or greater than that from the single automatic head shall result in an audible and visual signed in the vicinity of the building.
   5. Alarm and supervision system of the automatic water sprinkler shall include the monitoring water flow switch at each floor of the building, fire pump and jockey pump running condition and power supplies, level of water in the reservoir and control valves.
   6. Pipes shall be B.I. Schedule 40. Screw fittings shall be used for inside piping.
2. **AIR CONDITIONING AND REFRIGERATION SYSTEM**
   1. Refrigerant pipes shall be copper tubing, type L or K black steel pipe, Schedule 40 for size of 100mm diameter and smaller. Pipe over 100mm shall be black steel pipe Schedule 40.
   2. Black steel pipes shall be standard seamless, lap-welded, or electric resistant welded for size of 50mm diameter and larger, screw type for size 38mm diameter and smaller, fittings for copper tubing shall be cast bronze fitting designed expressly for brazing.
   3. Pipe insulation shall be performed fiberglass or its equivalent. The insulating materials shall be covered with 100mm x. 13mm thick polythelene film, which shall be overlapped not less than 50mm.
   4. Ducts shall be galvanized sheet steel of standard gauges.
   5. Ductwork insulation materials shall be rigid board made of styropor or equivalent 25mm thick for ground and top floor, 13mm thick for intermediate floor.
3. **MEDICAL GASES AND VACUUM SYSTEM**
   1. Medical gas manifold and vacuum plant shall be UL Listed/FM Approved.
   2. All gas outlet stations shall be UL Listed/FM Approved, quick connect type, or DISS type, stainless steel or PVC faceplate mounted on a chrome-plated, zinc die-cast cover plate.
4. **ELEVATOR SYSTEM**
   1. The hospital elevator shall machine room less, or traction type only.
   2. The elevator system shall be UL Listed/FM Approved.
      * 1. **Drawing Requirements:** See attached DOH Standard Checklists based on Revised IRR of the National Building Code of the Philippines (PD 1096)

**---End of Scheme---**

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**SUBJECT: ELECTRICAL DESIGN PARAMETERS**

* + - 1. **Codes and Standards**

The Electrical System Design Parameters shall be in accordance with the following Codes and Standards.

* **Codes:**

1. Philippine Electrical Code
2. National Electrical Code
3. Fire Code of the Philippines
4. National Building Code of the Philippines and Its New IRR
5. Existing Local Codes and Ordinances

* **Standards:**

1. Bureau of Product Standards (BPS)
2. Underwriters Laboratory (UL)
3. National Fire Protection Association
4. International Electrotechnical Commisssion (IEC)
5. Illumination Engineering Society (IES)
6. National Electrical Manufacturer’s Association (NEMA)
7. DOH Manual on Technical Guidelines for Hospital and Health Facilities Planning and Design
   * + 1. **Site Works**

Based on the Master Site Development of the Hospital, the Site Works shall provide complete Electrical layout of the following:

1. Substation/Power House to the new proposed structures.
2. KVA rating and other specifications of Transformer.
3. Switchgear requirements
4. Panelboard Layout
5. Electrical Metering Devices
6. Service Conductors and Conduit Layout
7. Grounding System
8. Emergency Standby Generators
9. Street and Perimeter Lighting System
   * + 1. **Building Facilities Electrical System** 
          1. Lighting System

* Provide and install adequate normal branch circuits for Lighting System to all areas using the standard Lighting Design Analysis. Utilize the standard Illumination requirements per area of concern using the preferred particular type of luminaires.
  + - * 1. Power System
* Provide and install adequate normal branch circuits for the Power System.
  + - * 1. Standby/Emergency System
* Provide and install adequate life safety and critical emergency branch circuits for lighting or utilization equipment connected to the alternate power source.
  + - * 1. Auxiliary System
* Provide and install the following Auxiliary System:

1. Communication System
   * Telephone System
   * Local Area Network System
   * Public Address Paging System
   * Private Branch Exchange (PABX)
   * Nurse Call System
   * Master or Cable Antenna Television
2. Fire Alarm System
3. Security System.
4. Lightning Protection System

* The building lightning protection system shall include roof-mounted air terminals grounding conductors, ground rods, conduits, clamps, and auxiliary equipment as required for a complete and operational lightning protection system.

1. **Provide Details of the following:**
2. Lighting Fixtures/Luminares
3. Panelboard and Circuit Breakers
4. Switchgear and other Metering Devices
5. Electrical and Hospital Equipment
6. Installation and Termination of Auxiliary and other Special Devices and Equipment
7. Power and Telephone Handholes (as may be required)
8. Pedestal and Service Entrance to Bldg.
9. Grounding System Layout
10. Substation/Power House and Electrical Room
11. Transformer and Generator Mounting
12. Others as may be required.
13. **Summary of Materials**
14. General Lighting Luminares: Fixtures type shall be as indicated on the Lighting Layout Plan.
    * Fluorescent Lamp shall be Linear, circular or self ballasted compact fluorescent lamps.
    * Fluorescent lamps shall be cool or warm white and lampholders shall be made of thermosetting plastic.
    * Fluorescent Ballast: Magnetic or Electronic type with high power factor or high frequency energy saving type.
    * Fluorescent Fixture housing shall be steel sheet with high reflectance powder coat paint finish.
    * Downlights and Pinlights shall be of heavy gauge spun aluminum equipped with lamp as indicated on the drawings.
    * Other Special Lighting requirements shall be as approved by the implementing agency.
15. Wiring Devices: Wiring devices shall be non-automatic control devices, the contact is guaranteed by the pressure of the special spiral springs.
    * Switches shall be of 15A, 250V or 300V except as otherwise noted and approved. Terminals shall be screw-type or quick-connected type.

* General use receptacle shall be 15A, 240V grounding type unless otherwise indicated on the drawings.
* Special purpose receptacles shall be as called for on the drawings. Matching plugs shall be supplied.

1. Panelboards and Circuit Breakers: The Panelboard and Circuit Breakers shall be equipped with molded-case circuit breakers and shall be the type as indicated in the panelboard schedule and details.

* Provide molded-case circuit breakers of frame, trip rating and interrupting capacity as shown on the drawings. The circuit breakers shall be quick-make, quick break, thermal-magnetic, trip-indicating and shall have common trip on all multiple breakers with internal trip mechanism.
* All current-carrying parts of the panelboards shall be plated. Provide solid neutral (S/N) assembly when required. The assembly shall be isolated from the enclosure.

1. Electrical Conduits, Boxes and Fittings: All conduits, boxes and fittings shall be standard rigid steel, zinc coated or galvanized.

* Rigid Steel Conduits (RSC)
* Rigid Metal Conduits (RMC)
* Intermediate Metal Conduits (IMC)
* Electrical Metallic Tubing (EMT)
* Unplasticized Polyvinyl Chloride (uPVC) if required shall be schedule 40.

1. Conductors: Wires and cables shall be of the approved type and unless specified or indicated otherwise, all power and lighting conductors shall be insulated for 600 volts.

* The conductors used in the wiring system shall be of soft-annealed copper having a conductivity of not less than 98% of that of pure copper and insulated for 60 °C Temperatures.
* All conduits of convenience outlets and wireways for lighting branch circuit homeruns shall be wired with a minimum of 3.5 mm square in size.

1. Nurse Call System:

* The Nurse Call System shall have the following control panel, bed head panel, ancillary call and annunciating equipment.
* Wiring shall consist of data cable and 24V supply to each bed head unit.
* Two levels of call will be provided by the system:
  1. Patient to Nurse. A patient to Nurse shall be actuated by means of the wall-mounted or handset mounted call push button of bed head panel.
  2. Nurse to Nurse. Call of nurse to nurse shall be considered, as emergency call and shall be instigated by operation of the Emergency Pull/Push Switch mounted on call units of bed head panel.
  3. Bedhead panel shall be of different type depending on the patient bedroom class and as may be required. Multiplexed bedhead panel shall be available to operate sound distribution system.
  4. Bathroom shall be provided with pull cord unit and reset unit.
  5. Room indicator lamp shall be installed above the door of each patient’s bedroom along the corridor.
  6. Nurse stations shall be equipped with indicator unit to provide indication (audible and visual) of the zone and type of call.
  7. Emergency indication shall be included in some acute areas but arranged “for staff use only” in the event of urgent assistance being required.
  8. The system shall be of solid state switching with all items connected to internal printed circuit boards readily interchangeable for maintenance purpose.

1. Master Antenna Television (MATV) and Cable Television (CATV) System:

* Two sources of TV signals shall be provided to the building. One (1) shall be from a master antenna installed at the roof or within a suitable area of the building and the other will be from a commercial cable television service.
* The master antenna system shall consist of FM, VHF and UHF antennas, combiner, distribution amplifier, coaxial cables, splitters, tap-offs and TV outlets.
* There shall be individual trunking for master antenna and cable television rising in the building.

1. Structured Cabling & Telephone System:

* A minimum provision for estimated 500 mixed PABX extension and direct telephone lines shall be required for tertiary hospitals.
* Final details of the system shall follow specific requirements, quantity and type of service.

1. Fire Detection and Alarm System:

* The Fire Detection and Alarm System shall be of multiplex, microprocessor-controlled addressable or zonal conventional fire detection, alarm and communication system.
* The system shall consist of full integration automatic fire detection, voice alarm communication and fire fighters telephone system.
* The system shall consist of control station, mimic panel initiating and indicating devices, control modules and system of wirings.
* Actuation of the protective signaling system shall occur by manual pull station, automatic smoke or heat detector, sprinkler flow switch and tamper switch.
* The system shall be able to monitors the status of flow switches and supervisory switches installed at the Sprinkler System risers. These monitoring points are also addressable or the conventional zonal in the same way as the detectors are making them easily recognizable at the control panel.
* Occupant notification shall be accomplished automatically. Notification will be general, audible alarm type complying with appropriate section of NFPA.
* The system shall be installed with provisions for future connection to the nearest fire services station in the locality.

1. Security System:

* The Security system shall include intrusion detection and alarm, CCTV, access control or as may be required.
  1. **Drawing Requirements:** See attached DOH Standard Checklists based on Revised IRR of the National Building Code of the Philippines (PD 1096)

**---End of Scheme---**

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|  | Republic of the Philippines Department of Health **RIZAL MEDICAL CENTER**  Pasig Blvd., Pasig City 1600  Tel. No. (02)671-9740 | DOHcolored |

Checklist of Drawing Requirements in the preparation/evaluation/approval of Detailed Architectural and Engineering Plans and other Documents for Infrastructure Project Implementation

*Reference: Revised Implementing Rules and Regulations of the National Building Code of the Philippines (PD 1096*)

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| Project | **:** |  |
| Location | **:** |  |

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| **SHEET**  **NUMBER** | **SHEET CONTENTS** | | **REMARKS\*** |
|  | **ARCHITECTURAL DRAWINGS** (as applicable) | |  |
| A – 1  (a…n) | Perspective, Site Development Plan, Vicinity Map/Location Plan (2.00 Kms. Radius) Table of Contents | |  |
| A – 2  (a…n) | Floor Plans (scale 1:100m minimum) including furniture layout when necessary | |  |
| A – 3  (a…n) | Four (4) Elevations (scale 1:100m minimum) | |  |
| A – 4  (a…n) | Two (2) Sections (scale 1:100m minimum) including spot details when necessary | |  |
| A – 5  (a…n) | Roof Plan/s showing downspouts (scale 1:100m minimum), including detail of gutter, downspout, etc. | |  |
| A – 6  (a…n) | Reflected ceiling plan/s (scale 1:100m minimum), including details | |  |
| A – 7  (a…n) | Details of Stairs, fire escapes/exits, accessible ramps, etc. (scale 1:50m), including details of railings, treads, risers, etc., in the form of plans, elevation/section | |  |
| A – 8  (a…n) | Details of Toilets (1:50 m) including accessible toilets in the form of plans, elevation/section | |  |
| A – 9  (a…n) | Details of specialized design features (scale 1:50 m) such as partitions, cabinets, etc. and accessible design features | |  |
| A – 10 (a…n) | Detail of typical bay section from ground to roof (scale 1:50 m) | |  |
| A – 11 (a…n) | Details of special rooms (1:50 m) in the form of plans, elevations/section | |  |
| A – 12 (a…n) | Schedule of doors, gates, emergency exits, etc. (scale 1:50 m), including specifications for materials and hardware | |  |
| A – 13 (a…n) | Schedule of windows (scale 1:50 m), including specifications for materials and hardware | |  |
| A – 14 (a…n) | Schedule of finishes for interior and exterior floors, walls, ceilings | |  |
| Architectural Technical Specifications | | |  |
| Architectural Scope of Works | | |  |
| Architectural Bill of Quantities | | |  |
| ***\**** *To be marked as either Complying or Non Complying/Complete or Incomplete by the evaluator or to*  *be filled with supporting comments (use additional sheets if necessary)* | | | |
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| **SHEET**  **NUMBER** | **SHEET CONTENTS** | | **REMARKS\*** |
|  | **ARCHITECTURAL INTERIOR DESIGN DRAWINGS** (as applicable) | | |
| AID – 1 (a…n) | Floor Plans showing layout of floor finishes (scale 1:100m minimum) | |  |
| AID – 2 (a…n) | Floor Plans showing layout of furniture/finishing partitions, cabinets, etc. (scale 1:100m minimum) | |  |
| AID – 3 (a…n) | Interior Elevations and Sections showing wall patterns, ceiling sections, etc. (scale 1:100m minimum) | |  |
| AID – 4 (a…n) | Details of Partitions, Cabinets, Furniture, Ceiling and other Interior Design Features (scale 1:100m minimum) | |  |
| AID – 5 (a…n) | Architectural Interior Perspective/s | |  |
| Architectural Interior Design Technical Specifications | | |  |
| Architectural Interior Design Scope of Works | | |  |
| Architectural Interior Design Bill of Quantities | | |  |
| ***\**** *To be marked as either Complying or Non Complying/Complete or Incomplete by the evaluator or to*  *be filled with supporting comments (use additional sheets if necessary)* | | | |
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| Project | **:** |  |
| Location | **:** |  |

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| **SHEET**  **NUMBER** | **SHEET CONTENTS** | | **REMARKS\*** |
|  | **STRUCTURAL DRAWINGS** (as applicable) | |  |
| S – 1 (a…n) | General Notes and Construction Standards | |  |
| S – 2 (a…n) | Site Development Plan | |  |
| S – 3 (a…n) | Foundation Plan/s (scale 1:100m minimum) | |  |
| S – 4 (a…n) | Floor Framing Plan/s (scale 1:100m minimum) | |  |
| S – 5 (a…n) | Roof Framing Plan (scale 1:100m minimum) | |  |
| S – 6 (a…n) | Schedule and Detail of Footings and Columns | |  |
| S – 7 (a…n) | Schedule and Detail of Beams and Floor Slabs | |  |
| S – 8 (a…n) | Detail of Trusses | |  |
| S – 9 (a…n) | Details of Stairs, Ramps, Fire Exits | |  |
| S – 10 (a…n) | Other Spot details | |  |
| Structural Analysis and Design (for 2 storey building and higher) | | |  |
| Boring and Land Test Results (for 3 storey building and higher) | | |  |
| Seismic Analysis | | |  |
| Structural Technical Specifications | | |  |
| Structural Scope of Works | | |  |
| Structural Bill of Quantities | | |  |
| ***\**** *To be marked as either Complying or Non Complying/Complete or Incomplete by the evaluator or to*  *be filled with supporting comments (use additional sheets if necessary)* | | | |
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Architectural and Engineering Plans and other Documents for Infrastructure Project Implementation

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| Project | **:** |  |
| Location | **:** |  |

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| **SHEET**  **NUMBER** | **SHEET CONTENTS** | | **REMARKS\*** |
|  | **ELECTRICAL DRAWINGS** (as applicable) | |  |
| E – 1 (a…n) | General Notes and Legends | |  |
| E – 2 (a…n) | Location and Site Plan | |  |
| E – 3 (a…n) | Lighting Layout (scale 1:100m minimum) including details | |  |
| E – 4 (a…n) | Power Layout (scale 1:100m minimum) including details | |  |
| E – 5 (a…n) | Auxiliary System Layout (scale 1:100m minimum) including details | |  |
| E – 6 (a…n) | Schedule and Detail of Loads | |  |
| E – 7 (a…n) | Riser Diagram | |  |
| E – 8 (a…n) | Other Detail | |  |
| Electrical Computation | | |  |
| Design Analysis | | |  |
| Electrical Technical Specifications | | |  |
| Electrical Scope of Works | | |  |
| Electrical Bill of Quantities | | |  |
| ***\**** *To be marked as either Complying or Non Complying/Complete or Incomplete by the evaluator or to*  *be filled with supporting comments (use additional sheets if necessary)* | | | |
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**AUXILIARY SYSTEM INCLUDES THE FF:**

1. Nurse Call System
2. Telephone System
3. Paging System
4. LAN System
5. Fire Alarm System

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| **SHEET**  **NUMBER** | **SHEET CONTENTS** | | **REMARKS\*** |
|  | **PLUMBING/SANITARY DRAWINGS** (as applicable) | |  |
| P – 1 (a…n) | General Notes and Legends | |  |
| P – 2 (a…n) | Location and Site Plan | |  |
| P – 3 (a…n) | Storm Drainage Layout (scale 1:100m minimum) including actual length of tapping line to Main Drainage Line | |  |
| P – 4 (a…n) | Waterline Layout (scale 1:100m minimum) including actual length of tapping line from main water source when applicable | |  |
| P – 5 (a…n) | Sewerline Layout (scale 1:100m minimum) including actual length of tapping line to septic tank or existing sewerline | |  |
| P – 6 (a…n) | Isometric Layout, showing waterline, sewerline and drainage line | |  |
| P – 7 (a…n) | Detail of connections, catch basins, downspouts, etc. | |  |
| P – 8 (a…n) | Detail of Septic Tank/Sewer Treatment Plant | |  |
| Design Analysis | | |  |
| Sanitary Technical Specifications | | |  |
| Sanitary Scope of Works | | |  |
| Sanitary Bill of Quantities | | |  |
| ***\**** *To be marked as either Complying or Non Complying/Complete or Incomplete by the evaluator or to*  *be filled with supporting comments (use additional sheets if necessary)* | | | |
| Evaluated by: |  |  | |
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| **SHEET**  **NUMBER** | **SHEET CONTENTS** | | **REMARKS\*** |
|  | **MECHANICAL DRAWINGS** (as applicable) | |  |
| M – 1 (a…n) | General Notes and Legends, Site Development Plan, Location Plans | |  |
| M – 2 (a…n) | Floor Plans/Isometric Drawings (scale 1:100m minimum) showing Ventilation and Air Conditioning Systems and other installations | |  |
| M – 3 (a…n) | Floor Plans/Isometric Drawings (scale 1:100m minimum) of Medical Gaspipeline System and Details | |  |
| M – 4 (a…n) | Floor Plans/Isometric Drawings (scale 1:100m minimum) of Air-conditioning Systems and Details | |  |
| M – 5 (a…n) | Floor Plans/Isometric Drawings (scale 1:100m minimum) of Fire Suppression Systems, fire sprinkler system, wet stand pipe, dry standpipe and other installation | |  |
| M – 6 (a…n) | Details Water Tank, Flow Diagram (scale 1:50m) | |  |
| M – 7 (a…n) | Details of Firewater Supply Sytem (scale 1:50m) | |  |
| M – 8 (a…n) | Detail of Elevators, Escalators, Dumbwaiters, etc. (scale 1:50m) | |  |
| M – 9 (a…n) | Detail of Other Machinery/Equipment (scale 1:50) | |  |
| M – 10 (a…n) | Longitudinal and Transverse Section of Building (scale 1:100m) showing manner of support of machines/equipment | |  |
| Mechanical Technical Specifications | | |  |
| Mechanical Scope of Works | | |  |
| Mechanical Bill of Quantities | | |  |
| ***\**** *To be marked as either Complying or Non Complying/Complete or Incomplete by the evaluator or to*  *be filled with supporting comments (use additional sheets if necessary)* | | | |
| Evaluated by: |  |  | |
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