

DESIGN BRIEF

(This will also serve as part of the Terms of Reference)

Space/Design Requirements that has to be considered in the design of the 2-storey Academic Building 2, 2-storey Administration Building and 2-storey Birthing Center.

1. Administration Building

Director's Office	55 square meter
Faculty Office	74 square meter
Supply Room	42 square meter
Admin Officer Office and Staff	58 square meter
Registrar's Office	20 square meter
Cashier's Office	20 square meter
Accounting Office	20 square meter
Pantry	20 square meter
Conference Room	57 square meter
Male and Female Toilet	24 square meter
Hallway , Stairs, Corridor and Fire Exit	210 square meter
Total Floor Area	600 square meter

2. Academic Building

Nursing Skills Lab	120 square meter
LRC	48 square meter
Multidisciplinary Lab.	101 square meter
Library	50 square meter
Student Center	20 square meter
Multi Purpose Room	175 square meter
Male and Female Toilet	25 square meter
Hallway, Stairs, Corridor and Fire Exit	176 square meter
Total Floor Area	715 square meter

3. Birthing Center (2-storey building) – The foundation should be designed to support a 3rd additional floor for future expansion. The Center must be compliant with DOH and Philhealth guidelines.

Lodging Rooms	126 square meter
Birthing Center area	159 square meter
Total Floor Area	285 square meter

DESIGNS AND CONSTRUCTION

Revised October 30. 2013

The following are the minimum documents/ information to be submitted by the winning bidder

- a. Proof of structural quality and integrity of a completed building, which used new materials/technology to be employed in the Project.
- b. Detailed engineering design (DED) analyses and computations.
- c. Quantity estimates for the buildings/structures.
- d. Detailed Construction Management Plan including Construction schedule.
- e. Supporting data:
 - (1) Simple longitudinal and cross sectional profiles of the Sub-Project site.
 - (2) Geotechnical investigation report (soil investigation/as applicable)/geological information report; and
 - (3) Building drainage design report

Governing Codes and Specifications for the construction of the 2- storey Academic Building 2, 2-storey Administration Building and 2-storey Birthing Center Building.

The Detailed Engineering Design for Classroom Building shall be governed by the following Design Codes and Specifications:

- (1) P.D. No. 1096, the National Building Code of the Philippines (NBCP), its 2004 Revised IRR and its various Referral Codes (RCs) such as R.A. No. 9514, the 2008 Fire Code of the Philippines (FCP), P.D. No. 1067, the Water Code of the Philippines, P.D. No. 856, the Sanitation Code of the Philippines, *Batas Pambansa* (B.P.) No. 344, the Law to Enhance the Mobility of Disabled Persons and its IRR/ Annexes, the National Structural Code of the Philippines (NSCP), Volume I, 2010, Philippine Electrical Code (PEC), 2009, Revised National Plumbing Code, the 2000 Architectural Code, etc.
- (2) Applicable US Standards:
 - American Institute of Steel Corporation (AISC), as applicable
 - American Concrete Institute (ACI), as applicable
 - American Iron and Steel Institute (AISI), as applicable
 - American Welding Society (AWS), as applicable
 - American Society for Testing and Materials (ASTM), as applicable,
- (3) Philippine National Standards or PNS Appendix G of PEC1 – 2009.
- (4) R.A. No. 6716 about rainwater collection system.

Architectural Design for School Building

a. Classroom Size

The size of the classroom must be 7 meters (m) in width / depth x 9 meters (m) in length measured from center to center of the walls.

b. Windows – Front and Side

- (1) Front Window - Semi Fixed Glass Windows in Aluminum Casement and with 6mm thick clear glass.
Side Window – Semi Fixed Glass Windows in Steel Casement and with 6mm thick clear glass.
- (2) The total area of window openings must be at least equal to 10 square meters (sqm) to provide for natural ventilation and illumination.
- (3) The window sill must not be lower than 900 millimeters (mm) and higher than 1,100 mm from the floor.
- (4) The window panels, when opened, must not be an obstruction along the corridor.
- (5) The window must allow the entry of daylight even if it is closed.
- (6) Window openings must be bilateral fenestration.

c. Doors

- (1) a. Main Door- Steel Doors
b. Service Door- Flush Door
c. Common Toilet –Flush Door
- (2) The swing – out should be 180 degrees.
- (3) The doors must be 900 mm in clear width and 2,100 mm in clear height.
- (4) The doors must withstand normal wear and tear and shall be provided with keyed lever – type locksets or its equivalent.
- (5) PVC doors shall not be used. If doors made of materials other than metal are to be introduced by the Contractor, these must thoroughly tested for toxicity (normal and burning conditions) and shall have the prior acceptance/approval by CPDMO.

d. Wall and Finishes

(a) Exterior and Interior Walls

- (1) Painted cement plaster finish for all interior walls, plastering works shall be provided with Semi gloss latex paint, applied as per manufacturer's specifications.
- (2) For areas exposed to moisture, use CHB with cement plaster finish painted with gloss latex paint.

e. Floor Finishes

1. Vinyl Tiles - Directors Office and Staff, Faculty Room, Conference Room, Admin and Officer and Staff.
Ceramic Tiles Non Skid– Hallway, Stair and Corridor, LRC, Library, Multi-purpose Room, Pantry, Cashier and Registrar office.
Ceramic Tiles 30x30 (Non Skid) – Toilets
Plain Cement – MDL, Student Center, Nursing Skills Lab
Epoxy Paint – Supply Room
2. The first floor finish elevation of the corridor must be above the level of flood indicated/identified in the Site Appraisal Reports (SAR) PLUS 0.20 m (8 inches)
3. A ramp must be provided with a maximum slope of 1:12 in compliance with the Accessibility Law (B.P. No. 344) and properly labeled.

f. Suspended Ceiling and Ceiling Cavity

Ground Floor No Ceiling and Second Floor Hardiflex on metal stud

The clear height of rooms from finished floor line (FFL) to finished ceiling line (FCL) must be at least 2,700 mm.

Maintenance access to the ceiling cavity must be through the corridor.

The ceiling height of the toilets may be lower than 2,700 mm, only for as long the same still fully satisfies the minimum requirements under P. D. No. 1096, the National Building Code of the Philippines (NBCP).

g. Roof and Roof Cavity

The Proponent's choice of roofing material must be adequately protected from rust/oxidation, salt air, acid rain or other sources and forms of corrosion and leaks. If of metal, the roofing sheets shall be of the thickest material commercially available in the Philippines.

The minimum horizontal clear length of eaves (excluding gutter, if introduced) shall be: front = 1.50 m; rear = 1.0 m; and sides = 1.0 m i.e. no interior gutter. The building, maintenance access to the roof cavity must be through the corridor.

If the roof design is gutter less i.e. no gutter, downspout and catch basin, a trench drain shall be provided with both sides of the trench drain properly sloped toward the drain. The trench drain may be grated or an obstruction to the surface movement. If the roof design is gutter less, extreme care must be taken by proponent such that filling water and spray shall not cause inconvenience or damage to users/ properties or the neighboring users/ properties.

h. Partitions

The partition must be from floor to ceiling using dry wall fiber cement board (hardiflex) partitions on metal studs and tracks.

i. Circulation and emergency Egress: Corridors (Single-Load), Main Staircases, Service/Emergency Egress Staircases, Fire Exit Ladders and Railings.

The minimum single-load corridor clear width shall be 2.40 m for all school building types. All main staircases shall have a minimum flight width of 2.4 m. The flight width for the service staircase/emergency egress/fire exit i.e. the second staircase shall be from 1.2m to 1.80 m (2.4 or 3.6 m total staircase width). The fire exit ladder shall have a minimum clear width of 0.6 m. All stair treads shall provide all weather

traction, particularly if the treads are wet and shall have a sloped finished for easy drainage. The stair nosing shall be of sturdy metal and round-edged to prevent injury. The staircase, corridor and ramp railings shall be of metal pipe construction and securely anchored to the staircase, corridor and ramp.

j. Glass Coat Board (4 units)

The Classroom must be provided with a built-in Glass Coat board measuring 2.4 meters (m) wide or longer by 1.22 meters (m) tall with appropriate thickness, with appropriate mounting height and materials and finish specifications.

k. Painting

Where applicable, metal, wood, and plastic components must be coated using UP such as maroon, green and beige. (subject to CPDMO approval).

The ceiling (suspended ceiling, suspended slab soffit and stair slab soffit) shall also use UP color while the roof shall be colored maroon. The paints/ coloring materials must maintain their quality for at least five (5) years.

- l. Natural ventilation shall be primarily supplied by the operable awning windows. However, whenever such windows are fully closed for good reason, the source of natural ventilation shall be fixed louvers above the operable louvers, particularly for classroom walls situated at 2 m or less from perimeter wall (or firewall of an adjoining property) that measures higher than 3 m above the natural or finished grade line (NGL/FGL). Design may be modified by the winning bidder but subject to CPDMO approval.

Artificial ventilation inside each classroom shall be by 2 units of oscillating ceiling fans.

m. Seismic Load

For School Buildings Baler , Province of Aurora, the structure shall be designed to withstand earthquakes for Seismic zone of the area as determined by Phillvolcs.

n. Live Loads

The minimum occupancy or live loads shown in Table 1 shall be used in the design.

Table 1. Live Loads

Structure Part	Live Load
Classrooms	1.9 kpa
Corridors/stairs	4.8 kpa
Roof	1.0 Kpa

Note: kpa = kilopascals

o. Design Life

The structure shall have a design life of at least 25 years.

p. Building Foundation

The foundation and sizing of column shall be designed and based on the result of the geotechnical/soil investigation and soil bearing capacity test. Consistent with

best practices, the Contractor shall undertake the prior appropriate studies/ investigations for use as basis/ bases for the foundation and structural design of each Sub-Project. Back filling of the base foundation shall be considered to ensure more stable structural foundation.

Consistent with law and with industry practice, the Contractor's designer and builders shall assume the full professional responsibility and civil liability for the foundation and structural design, supervision and construction of the Proposed 2-Storey Academic, 2-Storey Administrative and 2-Storey Birthing Center Buildings.

r. Wall Vibration

Walls must not unduly vibrate due to impact caused by any part of an adult human body and must neither be dented nor punctured by deliberate punches or kicks by adult humans.

s. Sub-floor for the upper floor of the Proposed 2-Storey Academic, 2-Storey Administration and 2-Storey Birthing Center Buildings.

The sub-floor shall only be of suspended concrete slabs (which are either cast-on-site/cast *in situ* concrete or pre-concrete). Sub-floor materials that are highly flammable, that do not uphold the fire integrity among the floors, that may contain formaldehydes or other potentially harmful substances, that conducts/ transfers radiant heat and which do not possess positive acoustical properties are not considered the equivalent of a suspended concrete slab and must not be used in the Proposed 2-Storey Academic, 2-Storey Administrative and 2-Storey Birthing Center Buildings project.

Rib type or double tee suspended slab soffits are acceptable but subject to CPDMO acceptance of the quality of their structural connections and finish.

Electrical Design Standards

(1) Service Entrance (by others)

- (a) Service entrance conduit shall be made of intermediate metallic conduit (IMC) or rigid steel conduit (RSC). Underground runs shall be encased in concrete envelope when crossing a roadway. Ends of conduits shall be provided with a sealing compound.
- (b) Exposed service entrance conduits shall be painted with epoxy primer in three (3) coats application.
- (c) Conduits shall be properly reamed.
- (d) The service entrance shall be at least 1.60 m above the natural grade line.

(2) Branch circuit conduits, boxes, fittings and support shall run parallel to walls, columns and beams of the building.

- (a) Metal boxes, gutters, supports and fittings shall be painted with epoxy primer in three (3) coats prior to installation.
- (b) Polyvinyl Chloride (PVC) solvent shall be applied on all PVC pipe joints/connections.

- (c) End bells shall be used at the end of PVC pipes and locknut and bushing shall be used for metallic conduit on all boxes and gutters termination.
 - (d) Branch circuit conduits shall be either metallic or non-metallic as applicable.
- (3) Ceiling-mounted lighting fixtures

Flexible metallic tubing shall be used as drop pipe from a junction box to a lighting fixture.
- (4) In-sight disconnecting means

Watertight type straight or angle connectors shall be used from pumps, condensing units and other equipment that will be in possible contact with water or rain.
- (5) Centralized paneling

Breaker and wire gutter shall be used for proper arrangement of main distribution panel (MDP). Circuit breaker to be used shall be bolt-on type with at least 10kaic for branch circuit breaker and 18kaic for main breaker.
- (6) Stub-out conduits for spares

15-mm diameter PVC or IMC pipes shall be provided as stub-out conduits at different panel boards as per schedule of loads. Ends of stub-out conduits shall be threaded and capped.
- (7) Wires and Wiring Devices
 - (1) Wires shall be properly designed in accordance with Article 3.10 and the grounding system shall conform to Article 2.50 of PEC. Heat Resistant Thermoplastic with nylon insulated for 600volts working pressure type THHN.
 - (2) Wiring devices must be of modern type and approved for both location and purpose. (Switch-15amp and 10amp for Receptacle)
- (8) Lighting and Fixtures
 - (1) Each Classroom must be provided with an energy efficient Lighting product(s) (e.g. T5 or T8 lamps with electronics ballast) that can produce 250 lux at the table top.
 - (2) Duplex universal convenience outlet (CO) of grounding type must be provided on each windowless side of the classroom.
 - (3) The corridor must be provided with a lighting product(s) that can produce 5,000 lumens (or 50 lux illumination measured at waist level)

Structured Cabling for LAN, telephone and Cable TV

Sanitary and Plumbing Design Standards

Waste and vent line piping system

The drain, waste and vent line piping system must be in accordance with the American Society for Testing and Materials (ASTM) D-2729, ISO 4435 and ISO 3633.

Waterline piping system

The system must be according to E DIN1988 for Polypropylene Random Copolymer (PP-R) type 3 pipe and ASTM A53/A53M. The system must provide for a waterline service entrance.

Toilet units must be separate for women's and men's. For the mens Toilet, the main fixtures shall include: urinal, water closet, counter sink, and facial mirror. For the Women's Toilet, the main fixtures shall include: water closet, lavatory, facial mirror, and grab bar. Special facilities for differently-abled persons shall be provided. The specific types and numbers of fixtures shall depend on the School Type.

Construction Materials

Construction materials for the Project must conform for the DPWH Standard Specifications for Public Works Structures, Volume III, 1995 (Blue Book).

New materials which are not covered by the Blue Book, however, must pass the requirements of the Product Accreditation Scheme prescribed under DPWH Department Order No. 189, series of 2002, and be accredited by the DPWH before they are used in the Project.

Reinforced Concrete

- (1) For structural members, minimum compressive strength of 21 megapascals (mpa) (3,000 pounds per square inch or psi) 28 days test (Fc).
- (2) For non-structural members minimum compressive strength of concrete shall be 17 mpa (2,500 psi).
- (3) Reinforcing bars shall be ASTM A706 with a minimum yield strength, of 413 mpa for 16-mm diameter and larger, and 275 mpa (40,000 psi) for 12-mm diameter and smaller. Alternately, ASTM 615 can be used subject to the conditions specified in the code, as follows:
 - a. The actual yield strength based on mill tests does not exceed fy by more than 125 mpa; and
 - b. The ratio of the actual tensile strength to the actual yield strength is not less than 1.25.
 - c. Plumbing Fixtures

These must be according to the American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME), A112.19.4m, A112.19.3, A112.19.5.
 - d. Drainage system

The storm drainage system must be sized according to the rainfall intensities, slope, and roof areas of the building. Provision shall made for the future installation of rainfall collection/harvesting system in compliance with R.A. No.

6716 “An Act Providing for the Construction of Water Wells in all *Barangays* in the Philippines”. (Gray Water

- e. Septic vault (Anaerobic Type Sewage Treatment Facility) – by others

All concrete septic tanks shall be protected from corrosion by coating with an approved bituminous coat or by other acceptable means.

- f. Toilets

- a. The Toilets shall be integrated into the commercial buildings.

- b. The Toilets shall be properly ventilated and provided with running water through a piped water supply system. The proponent shall construct the water supply connection to the existing Academic Building.

Structural Steel

This shall be ASTM A36 with minimum yield strength, f_y , 248 mpa (36000 psi). All structural steel works shall be painted with the red oxide primer and shall be final coated with the aluminum silver paint

Radiant Heat Control

Provision shall be made to control radiant heat from roofing especially at uppermost level of the building by installing heat resistant ceiling board like gypsum and or fiber cement board, which may be provided with fire retardant and thermal insulation materials.

Resistance to Termites

Where applicable, the structure must be resistant to termites for at least (5) years.

Protection from Corrosion

Where applicable, the structure must be protected from the corrosion/ rust up to at least five (5) years.

Fire protection

Fire protection requirements for the school building shall be mainly be as per R.A. No. 9514, the 2008 Fire Code of the Philippines (FCP) and its 2009 or later IRR. However, the Proponent must always check which of the following is the most stringent : 1) P.D. No. 1096, the 1977 National Building Code of the Philippines (NBCP) and its 2004 Revised IRR; 2) R.A. No. 9514, the 2008 FCP and its 2009 IRR; 3) the National Fire Protective Association (NFPA) codes, standards or related issuances; or 4) other applicable local fire safety standards. The most stringent rule shall always be applied for all Projects.

Noise Level Limit

Revised October 30. 2013

The sound transmission class/noise reduction rating of the building /structure and its component materials, including walls partition and floor slabs, must reduce noise level such that it will be the accepted standards on noise reduction. Appropriate sound-absorbing or sound insulation material must be used on walls and partitions to reduce transmission inside the classroom.

For school building, acoustic materials, finishes or treatments shall be used on walls, ceiling and ceiling cavities in the event of reverberation/echoing of sound inside the lower level/classroom.

Protection from Toxicity

The classrooms must be designed in such a way that its location is far from sources of noxious elements such as paint, varnish, toilet, chemical storage and garbage collection/storage/ handling points. The building and finishing material to be used like panel/ceiling boards, paints, varnish, etc. must not contain or emit any carcinogenic or toxic substances which may pose risk on the health of occupants (such as asbestos, polychlorinated biphenyls/PCB, benzene and the like). The materials to be used, (MSDS) must be presented by the proponent to the CPDMO for evaluation.

Newly constructed classrooms should be well ventilated prior to occupancy to purge remove the airborne contaminants trapped and emitted inside the room during the painting, sanding, varnishing, etc. Purging of airborne contaminants and ventilation of the rooms should be at least one week or until such time that discernible odor is gone. There should be no toxic airborne contaminants prior to building occupancy.

Resistance to water penetration

The structure shall be free from water leaks.

Other Requirements

- a. Since the Contractor will undertake Design-Build Services, the conduct of the soil investigations and of the requisite environmental investigations, should all be undertaken by the Contractor on their account.
- b. All architectural and engineering design plans, designs, drawings/details, schedules, specifications, bill of quantities (BOQ), detailed cost estimates and similar regulated professional practice documents must be signed and dry-sealed by registered and licensed Filipino professionals in accordance with law. The “As-Built” Drawings for each Sub-Project and its Components are to be transmitted to CPDMO by the Contractor within Two (2) months after the issuance of the Certificate of Completion for each Project.

Attention shall be given to the relevant items of work in the following Part of the Construction.

- Part A – Earthwork
- Part B – Plain and Reinforced Concrete Works
- Part C – Finishing
- Part D – Electrical

- Part E – Sanitary/ Plumbing Works

Detailed Construction Plan

The Contractor shall prepare a Detailed Construction Management Plan (DCMP) as part of the Detailed Engineering Design (DED) that it shall submit to the CPDMO for review and concurrence. The DCMP shall be based on the preliminary Construction Plan submitted in the Technical Proposal of the Contractor's Bid, as updated and detailed to fit the elements of the DED. The DCMP must identify the procedures, processes and management systems that the Proponent will apply to ensure the implementation of the Construction Works.

As a minimum, the DCMP must define the following:

- a. Construction organization and management structures for the Contract Package, identifying key personnel and positions, Contractors, and sub-contractors.
- b. Construction methodology and procedures, including pre-fabrication if any.
- c. Quality control and assurance system for all Works.
- d. Construction schedule, milestones, and S-curve covering all Contract Package components and each Sub-Project, i.e., school site.
- e. Major construction equipment and materials to be used.
- f. Construction Safety and Health Program in accordance with Department Order No. 13, series of 1998, of the Department of Labor and Employment (DOLE). (Should be PCAB Accredited)
- g. Measures and procedures for:
 - (1) Control and monitoring of the Construction schedule as against actual Constructions works;
 - (2) Supervision and monitoring of the quality control and assurance system for the Works, including the integrity of tests conducted;
 - (3) Monthly updating of the Construction Plan and monthly progress reports;
 - (4) Development and approval of Construction documentation; and
 - (5) Survey and condition monitoring;
- h. Strategies for:
 - (1) Managing risks; provisions of personal protective equipment (PPE's)
 - (2) Obtaining all necessary approvals and permits from national and local government authorities; and
 - (3) Details of records management and indexing protocols that will enable referencing of all design and construction records to the Contract Package work type and location.

Test Requirements

The Contractor shall undertake tests during Construction in accordance with the schedule of minimum testing requirements for items of works and materials covered by the Blue Book. If any Construction materials proposed by the Contractor are not covered by the Blue Book, these materials shall first pass the evaluation and accreditation system of the DPWH BRS, and approved by CPDMO, before the new materials are used in the project.

Completion of Construction

- a. The Contractor shall fully comply with the following requirements for the completion of Construction:
 - (1) All Tests for Construction comply with the pertinent provisions of the construction law.
 - (2) All parts of the Project have been completed in accordance with the DED, as certified by CPDMO, including the rectification of all defects.
 - (3) The completed Project can be safely and reliably placed into normal use and occupancy by the prospective business locators.
- b. The Contractor must deliver the Projects to CPDMO no later than the Construction Completion Deadline. As evidence of delivery, the Contractor shall send to CPDMO a Construction Completion Notice for the Project when the Contractor has finished Construction of the Project. The CPDMO shall conduct and finish the Punch List Inspection of the Project and monitor recording of the results within fifteen (15) days from the receipt of the Construction Completion Notice.
- c. The CPDMO shall notify the Contractor at least three (3) days before the conduct of the Punch List Inspection of the Project. The Contractor shall have the right to be present during the conduct of the Punch List Inspection; and Punch List Inspection shall continue even if the Contractor fails to be present on the date of the Punch List Inspection.
- d. If the representative from the CPDMO determine after the Punch List that no items needed to be rectified, the CPDMO shall accept the Project and issue the Certificate of Completion no later than the last day of the month following the month when the Project successfully passed the Punch List Inspection. If the representative from the CPDMO determines after the Punch List Inspection that some has to be rectified, then Contractor shall rectify the problem before the Project will be finally accepted by the CPDMO.
- e. Upon completion of its rectification works the Contractor shall notify the CPDMO by sending a Rectification Completion Notice in writing, stating that a Rectification Inspection may be conducted. The CPDMO shall conduct and finish the Rectification Inspection of the Project within fifteen (15) days from receipt of the Rectification Completion Notice. If the CPDMO have determined that all the items stated in the punch list have been rectified, the CPDMO shall accept the Project no later than the last day of the month following the month when the Project successfully passed the Rectification Inspection. If there are still defects

discovered after the first Rectification Inspection, the process shall be repeated until all the items in the punch list have been rectified by the Contractor as determined by the CPDMO; provided, that rectification must be completed, and Rectification Completion Notice must be sent to the CPDMO, no later than the Final Rectification Deadline. The Final Rectification Deadline with respect to a Project is the date which is sixty (60) days from the relevant Construction Completion Deadline.

- f. The Proponent must submit (1) the As-Built Drawings, (2) an Asset Register to include a description of all assets constructed, (3) the Construction Completion Report for each Sub-Project under the Contract Package, to the CPDMO not later than two (2) months after the issuance of the Certificate of Completion of the Project.

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Recommending Approval

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Revised October 30. 2013

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