



Republic of the Philippines  
**CAVITE STATE UNIVERSITY**  
 Don Severino delas Alas Campus  
 Indang, Cavite

**BILL OF QUANTITIES**

COMPLETION OF GENERAL EDUCATION BUILDING					
ABC: ₱ 55,000,000.00				Bill of Quantities	
COLLEGE/UNIT/CAMPUS: MAIN CAMPUS/ CAS					
Item No.	Description	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
I	EARTHWORKS (Pesos _____ _____ and _____ centavos)				
II	CONCRETE WORKS (Pesos _____ _____ and _____ centavos)				
III	MASONRY WORKS (Pesos _____ _____ and _____ centavos)				
IV	TILE WORKS (Pesos _____ _____ and _____ centavos)				
V	CARPENTRY WORKS (Pesos _____ _____ and _____ centavos)				
VI	TRUSSES & ROOFING WORKS (Pesos _____ _____ and _____ centavos)				
VII	MISCELLANEOUS WORKS (Pesos _____ _____ and _____ centavos)				
VIII	ELECTRICAL WORKS (Pesos _____ _____ and _____ centavos)				
IX	FIRE PROTECTION WORKS (Pesos _____ _____ and _____ centavos)				

X	PLUMBING WORKS (Pesos _____ _____ and _____ centavos)				
XI	MECHANICAL WORKS (Pesos _____ _____ and _____ centavos)				
XII	PAINTING WORKS (Pesos _____ _____ and _____ centavos)				
<b>GRAND TOTAL</b> _____					
<b>Write grand total in words</b> _____ _____ _____					

Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Name of Bidder/Bidder's Representative: \_\_\_\_\_  
*(Signature over Printed Name)*  
 Position: \_\_\_\_\_  
 Construction Company/Contractor: \_\_\_\_\_

## CAVITE STATE UNIVERSITY

### SCOPE OF WORK:

#### A. COMPLETION OF GENERAL EDUCATION BUILDING

#### GENERAL NOTES:

1. The project should be finished in 300 calendar days.
2. Site inspection is a must. Verify actual site condition. There is an existing building with ground floor.
3. This set of specifications shall govern the methods of construction and the kinds of materials to be used for the proposed project shown in the plans and detailed drawings.
4. All parts of the construction shall be finished with first class workmanship, to the fullest talent and meaning of the plans and these specifications, and to the entire satisfaction of the project inspector and the end-user.

#### B. Technical Description

##### I. Earthworks

###### A. Mobilization/Demobilization

Provide the following:

1. Billboard with project information
2. Bunkhouse with office
3. Temporary comfort rooms
4. Site temporary enclosure may be blue sack or any suitable materials that may enclose the workplace.

###### B. Excavation/ Backfilling/ Clearing

1. This work includes excavation for all catch basins and cistern tank.
2. See plan for details.

###### C. Demobilization includes cleaning up of site, clearing, hauling and disposal of waste and construction debris. Restoration of any damages shall also be done before exiting the area.

###### D. The area should be cleared/cleaned before and after construction work at least ten meters away from the building line. Notify the end-user regarding the properties that need to be hauled away from the site prior to construction.

##### II. Concrete Works

###### A. Ready mix concrete

1. Concrete works include columns, stiffener columns, slab, beams, roof beams, gutter, lavatory counters, ledge/canopy, and all other concrete components needed to complete the structure.
  - Provide lintel beams for the opening of windows and doors. Use 0.15m x 0.20 m reinforced with 10 Ø mm bars.
2. Strength of concrete to be adopted shall be **3,500 psi** at 28 days.
3. Provide concrete pathwalk connecting the Physical Sciences Building, Biological Sciences Building and College of Arts and Sciences Building. See S-15 for details.
4. Concrete works should be plain cement finish.
5. Provide necessary tools and equipment needed for concrete works.
6. Reasonable number of tests on the concrete is required by the implementing agency during the progress of the work. Not less than two (2) cylindrical specimens shall be reserved for the 28th day test. The Contractor shall pay for the cost of material testing.
7. Compression and slump tests shall be made for every batch of concrete. 1 set of tests shall be made from any one batch of concrete and all 3 tests shall be made from the same batch.
8. In case of failure of test cylinders to meet the specified strengths, the Contractor shall at his expense obtain concrete core samples from the poured concrete and the compressive strength of same be taken by a competent testing authority to determine the conclusive strength and integrity of the concrete poured.

###### B. Steel reinforcement

1. Use deformed bar grade 40.
2. Provide necessary tools and equipment needed for steel works.
3. See plan for details and extent of work.
4. The contractor shall furnish 2 copies of the manufacturer's certificate of mill tests of all reinforcing steel. The contractor shall at his own expense employ an approved testing laboratory which shall conduct testing of all reinforcement sizes of each bulk under the supervision of the project inspector.

##### III. Masonry Works

###### A. CHB laying

1. Installation of CHB reinforced with 10 mm Ø deformed bar spaced at 0.60 m. on

center every three layers.

a. CHB 6" for the perimeter/exterior walls and cistern tank.

b. CHB 4" for the interior/partition walls.

2. Masonry works should be plastered plain cement.

#### IV. Tile Works

Supply and installation of the following:

1. Ceramic colored tiles (locally-made) 0.40 m. x 0.40 m. for the whole floor area of the building. Tiles must be accented with dark colors. Use unglazed ceramic tiles for the hallway ramp

2. Use granite tiles with grooves for the stairs.

3. For the comfort room:

a. Ceramic colored tiles 24" x 24" for flooring (un glazed)

b. 12" x 24" glazed tiles for the entire wall (from floor to ceiling)

c. Granite slab for the lavatory concrete counter including 0.6 m of its wall.

4. Consult the end user for color preference of tiles.

#### V. Carpentry Works

1. Provide necessary form lumber and scaffolding needed for the completion of the project.

2. Provide ceiling works for all comfort rooms.

a. Use fiber cement board 3/16" thick for ceiling boards.

b. Use metal furring as ceiling runner and ceiling joist at 0.40 m. on center both ways.

c. Provide decorative wooden molding to all ceiling perimeter and corners.

d. Provide 3/16" x 1" flat bar coated with primer and paint for ceiling hanger every 1.20 m. both ways.

#### VI. Trusses and Roofing Works

A. Trusses:

1. See plans for sizes of pipes and other details for the installation of steel trusses. All pipes should be Schedule 40.

2. This work also includes painting of two (2) coats of epoxy primer and two (2) coats of quick dry enamel black.

3. Provide necessary tools and equipment.

4. All joint connections should be fully welded.

5. Use galvanized CEE purlins (1.5), 2" x 6" at 0.60 m. on center.

6. Provide 16mm Ø plain bar with standard turnbuckle for horizontal cross bracing.

7. Provide 4-16 mm Ø anchor bolts with nuts and washers for each support.

8. Provide 12 mm Ø with nuts and washers for sag rod.

B. Roofing:

1. Adopt gauge 26 (0.5 mm.) rib type pre-painted roofing sandwich panel.

Specifications:

Effective coverage : 1000 mm.

Insulation Thickness : 35 mm.

Insulation Materials : Polyisocyanurate (PIR) or approved equal

Metal Thickness : 0.50 mm.

2. Adopt gauge 26 (0.5 mm.) prefabricated stainless flushing.

3. All attachment for the roofing sheet shall be 4" tek screw for metal.

4. Provide water sealant for all attachment (water sealant should be provided for both inside and outside surface of tek screw head).

#### VII. Miscellaneous Works

Supply and Installation of the following:

1. Doors

**24.0** sets of D-1 Pre-painted steel door with view window, complete with heavy duty accessories

**24.0** sets of D-2 Pre-painted steel door, complete with heavy duty accessories

**16.0** sets of D-3 Aluminum cladding door with aluminum frame, complete with all accessories

- 2.0 sets of D-4 Aluminum frame door with  $\frac{3}{8}$ " thick colored glass on powder coated finish, complete with all accessories  
Note: All door knobs for D-1 and D-2 should be heavy duty lever type.
- 2. Windows
  - 24.0 sets of W-1 Aluminum fixed window with 1/4" thick clear glass on powder coated finish aluminum frame; complete with all accessories.
  - 24.0 sets of W-2 Aluminum sliding window with 1/4" thick clear glass on powder coated finish aluminum frame; complete with all accessories.
  - 41.0 set of W-3 Aluminum casement window with 1/4" thick clear glass on powder coated finish alum. frame; complete with all accessories.
  - 8.0 set of W-4 Aluminum casement window with 1/4" thick clear glass on powder coated finish alum. frame; complete with all accessories.
  - 8.0 set of W-5 Aluminum casement window with 1/4" thick clear glass on powder coated finish alum. frame; complete with all accessories.
  - 16.0 set of W-6 Aluminum awning window with 1/4" thick clear glass on powder coated finish alum. frame; complete with all accessories.
  - 4.0 set of W-7 Aluminum casement window with 1/4" thick clear glass on powder coated finish alum. frame; complete with all accessories.
- 3. Stainless Railing (Stairs, hallway/ terrace, connecting bridge, fire escape, ramp and grab rail for PWD CR).
  - a. Provide 1.5 mm thick (304) stainless tubing for railings. Use 2" and 1" tubing.
  - b. See plan for details and extent of work.
- 4. Fire Escape Ladder
  - a. Provide  $\frac{1}{4}$ " x 2" stainless flat bar with 1" x 2" stainless tubing.
- 5. Waterproofing.
  - a. Provide three (3) coats of waterproofing for the whole gutter, deck and comfort rooms.
- 6. Connecting steel bridge
  - a. Construction of steel bridge from the proposed building to the existing two storey building.

## VIII. Electrical Works

- 1. Supply and installation of panel boards and circuit breakers as indicated in the electrical plan.
  - a. Installation of MDP, ACP, LP and all other panel boards as indicated to the plan (schedule of loads and single line diagram) and their circuit breakers. Bolt-on type Nema Standard should be used. Tap to the source including testing.
- 2. Supply and installation of THHN C.U. wiring/ conductors and PVC conduits/ junction box/ utility box from main/ sub-main panel boards to convenience outlets/ light outlets/ ACU power outlets.  
NOTE: Electrical feeder line layout is to be connected from new 3-75 kVA 3 phase distribution transformers up to MDP located at the ground floor electrical room of General Education building. Provide the necessary connectors & equipment for the wiring installation.
  - a. THHN /THWN stranded wire, 99.9% copper and fire retardant. Phelps dodge or approved equal. See schedule of load for proper color coding of wires. Strictly follow the color coding of wires.
  - b. PVC conduit orange pipe with sizes as indicated on the plan.
  - c. Utility and junction boxes should be PVC and deep type.
- 3. Supply and installation of electrical fixtures/ switches/ outlets and other electrical devices
  - a. Wide series switches (Bticino, National or approved equal)
  - b. 122 sets of duplex, Universal, convenience outlet with ground (Bticino, National or approved equal).
  - c. 40 sets of ACU power outlets (circuit breaker with nema 3r panel enclosure. to be installed beside the outdoor unit of A/C).
  - d. 2-18W (4") LED tube light with diffuser (147 sets)
  - e. Pinlight with 12W LED bulb (134 sets)

- f. Twin head emergency lights and outlet with exit light; 4V 3Ah sealed lead acid, 0.2W x 6 lamps head (45 sets)
  - g. Heavy duty 16" orbit fan (64 units)
  - h. UFO series LED high bay (21 sets) see E-9 for complete specification.
  - i. 1 set of three phase electric kWh meter (CT rated)
  - j. 2-700 AT, 800 AF, 230V Manual transfer switch (mechanical interlock) with metal panel enclosure (1 set).
4. Supply and installation of the distribution transformer and primary lines (power cable).
- a. Three (3) units transformer 75 kVa (brand new) including all its accessories (shall be certified by the supplier that the transformers to be installed are brand new. Submit all tests conducted to the project inspector).
  - b. Three (3) units 45' electrical concrete post, pole dressing, guy wire supports and its accessories (include 5/8" x 10 ft. ground rod, #2 bare copper grounding wire and connectors).
  - c. 3 sets of primary line (power cable 15 kV, 3-120 sq. mm. C.U. XLPE) with messenger wire from existing primary lines to the new distribution transformers (approx. 50 meters linear meter distance). Include tapping to the existing primary lines (Install fuse cut-out with fuse link and lightning arrester to the tapping point)
  - d. Construction of service entrance post and one unit 4" S-40 G.I. post with concrete footing is included.
5. Include tapping to the source, electrical testing and commissioning.
- a. Continuity test.
  - b. Insulation test.
  - c. Phase sequence test
6. Consult inspectors for details and extent of work.
- Note:** Electrical testing and guarantee, electrical supervision and final electrical inspection report should be signed and sealed by Professional Electrical Engineer with notary public.

#### **IX. Fire Protection Works**

Supply and Installation of the following:

- 1. Smoke detector with wirings accessories (69 units)
- 2. Stored pressure type HCFC 123 CEA fire extinguisher (5 units)
- 3. Dry stand pipe 3" Ø with siamese fittings
- 4. Fire Hose (50m) with cabinet (5 units)
- 5. Fire escape ladder and stainless railings
- 6. Sprinkler system, pendant type sprinkler (402 pcs)
- 7. Addressable Fire alarm control panel (1 set)
- 8. Fire alarm bell with control (5 sets)
- 9. Fire pump 30 HP with controller (1 unit)
- 10. Jockey pump 5 HP (1 unit)
- 11. Water pump 2.5HP (1 unit)

#### **X. Plumbing Works**

##### **A. Water Supply Line**

- 1. Adopt (PN 20) PPR pipes and fittings for water lines (Use 2", 1" and 1/2")
  - a. 2" PPR pipe from main line to building
  - b. Provide gate valve for every comfort room.
- 2. Supply and installation of two unit stainless tank , horizontal type with partition thickness = 2.0 mm. ; length = 2.54 m. ; height = 2.34 m. ; dia. = 2.20 m.
- 3. Provide one unit cistern tank. (Size: 3.0 m. x 3.0 m. x 3.0 m.)
- 4. Tapping to the source is included.
- 5. No pipe should be embedded without testing it to leak.

##### **B. Sewer Line**

- 1. Adopt PVC heavy duty orange pipes and fittings (Sanimold type with O-ring or its equivalent) for ventilation, downspout and the whole sewer line system including the septic vault fittings.
  - a. Use 4" Ø for the main line and water closet.

- b. Use 2" Ø for lavatory and ventilation.
  - 2. Provide 4" PVC pipe for downspout.
  - 3. Provide catch basins with concrete reinforced pipes. See plan for sizes.
- C. Fixtures

Provide the following for the comfort rooms:

- 1. Brass floor drain 4" (40 pcs.)
- 2. Colored tank type water closet, counter top type lavatory and urinals.
- 3. Brass Roof Drain Dome Type (31 pcs.)
- 4. Heavy duty spray bidet (20 pcs.)
- 5. Water meter

**Note:** All fixtures must be HCG, American Std, or approved equivalent complete with all accessories.

## XI. Mechanical Works

1. Supply, Delivery and Installation, Testing and Commissioning of Brand New Passenger Elevator
  - a. General Specifications
    - Type: Passenger Elevator Car
    - Rated Capacity: 15 Passenger, Range: 1,150.0 kg
    - Speed: 1.6m/s
    - No. of Stop: Five (5)
    - Floor Destinations: G, 2, 3, 4 and 5
    - Travel height: 15.0m
    - Shaft size: 2.20m x 3.0m
    - Power Supply: 230 volts, 3 phase, 50/60Hz
    - Power Supply Accessories: Automatic Voltage Regulator for each car
    - Counterweight Safety Gear: Required
  - b. Car lift Specifications:
    - Structural car size for 15 passengers
    - Door type: Single panel door
    - Door panel: High gloss stainless steel
    - Door sill: Extruded hard aluminum
    - Wall finished: Subject for the approval of the end-user
  - c. Car and Landing Position Indicator:
    - Car position Indicator: Light emitted (LCDTFT)
    - Light position indicator: Light emitted (LCDTFT)
  - d. Special Features:
    - Arrival Gong: On-Car (Female English Voice Recording)
    - Intercom System: Two-way
    - With: Aluminum ladder pit, out of switch control, emergency power, evacuation control, CCTV wiring provisions and earthquake sensor
  - e. Standard Control Features:
    - Alarm, Automatic return to main floor, Door final timer with alarm, Door pre-opening with chime sound, Emergency light in car fully recessed, light curtain, overloading warning with alarm, control system access for person with disability (PWD) and Braille for visually impaired with railings.
2. Supply, delivery and installation, testing and commissioning of 1 set Brand New Generator with housing (see E-15 for details and specification of Generator and housing).
3. Supply, delivery, installation, testing and commissioning of brand new inverter air conditioning units
  - a. 40 units Wall mounted (2.50HP). Split type air conditioning units 2.50HP, inverter. Use D-smart, Daikin or its equivalent. Include its copper tubing, drain pipe, brackets for indoor and outdoor units and all A/C accessories.

## XII. Painting Works

The whole building should be painted (both exterior & interior) including doors.

### A. Wood

1. Apply one coat of flatwall enamel white. Allow to dry overnight.

2. Repair minor surface imperfection with glazing putty. Let dry then sand.
  3. Apply at least two coats of Quick Dry Enamel in the desired color. Allow an overnight intercoating interval.
- B. Metal
1. Apply epoxy primer by brush or spray. Allow to dry for 24 hours. Apply suitable putty on imperfections.
  2. Apply at least two coats of Quick Dry Enamel in the desired color.
- C. Concrete
1. Treat the surface with concrete neutralizer. Mix one part with 16 parts water by volume.
  2. Apply skim coat as primer. Repair minor surface imperfections with a suitable putty. Let dry, then sand.
  3. Apply at least two coats of colored dirt resistant semi gloss latex paint (factory mixed).  
**Note:** Color of paint will depend upon the preference of the end-user. Paints and its accessories should be BOYSEN or approved equal.
- C. Contractor of the said project must provide an as-built plan of the project at the end of the contract as a requirement for the release of their final billing.
- D. For color/types of any fixtures or materials to be used on site, consult the end-user and the inspector for approval. Consult the plan and the scope of work for the extent of tasks of the contract. If possible, let the end-user sign your sample as proof of approval.
- E. The plans, detailed drawings and these specifications shall be considered as complementing each other, so that what is mentioned or shown in one, although not mentioned or shown in the other, shall be considered as appearing on both. **In case of conflict between the two, generally, the scope of work prevails.**
- F. Resident site engineer is a must for the projects to be undertaken by the contractor of the university. In cases where there are electrical works, it is required that an electrical engineer or a master electrician be a part of the contractor's team to supervise all electrical works. Likewise, master plumbers must supervise plumbing works. It can be considered when only one person is the master plumber and master electrician at the same time as long as his major duty is supervision of both fields. Safety engineer is a must as per DOLE requirement. **Note: All key personnel should be included in the list of personnel for submission.**
- G. In cases of participation in two or more projects, the set of workers and foreman shall be different per project, however, the set of engineers and equipment may be reused.
- H. Construction safety and health program as well as construction schedule (PERT/CPM/S-Curve) shall be provided by the winning bidder.
- I. All public utilities used by the winning contractor in the construction of the project, such as electricity, water, telephone, etc., shall be for the sole account of the contractor.
- J. See plans/consult the end-user and project inspector for details and extent of work. The silence of specifications, plans, special provisions and supplementary specifications as to any detail, or the apparent omission therein of detailed description or definition of the quality of materials and workmanship shall be regarded to mean that only materials and workmanship of first class quality are to be used or employed.