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

BILL OF QUANTITIES

REHABILITATION OF FOUR ACADEMIC BUILDING AT NAIC CAMPUS
ABC: ₱ 50,000,000.00 **Bill of Quantities**
COLLEGE/UNIT/CAMPUS: NAIC CAMPUS

Item No.	Description	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
I	PRELIMINARY WORKS AND 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 AND ROOFING WORKS (Pesos _____ _____ _____ and _____ centavos)				
VII	MISCELLANEOUS WORKS (Pesos _____ _____ _____ and _____ centavos)				
VIII	ELECTRICAL WORKS (Pesos _____ _____ _____ and _____ centavos)				

IX	PLUMBING WORKS (Pesos _____ _____ _____ and _____ centavos)				
X.	MECHANICAL AND DRILLING WORKS (Pesos _____ _____ _____ and _____ centavos)				
XI.	FIRE PROTECTION AND FDAS WORKS (Pesos _____ _____ _____ and _____ centavos)				
XII.	PAINTING WORKS (Pesos _____ _____ _____ and _____ centavos)				
	GRAND TOTAL				_____
	Write grand total in words	_____ _____ _____			

Submitted by: Date: _____

Name of Bidder/Bidder's Representative: _____

(Signature over Printed Name)

Position: _____

Construction Company/Contractor: _____

SCOPE OF WORK:

A. **REHABILITATION OF FOUR ACADEMIC BUILDING AT NAIC CAMPUS**

GENERAL NOTES:

1. The project should be finished in 240 calendar days.
2. Actual site inspection is a must. Verify the actual condition of the site, since there is an existing structure.

B. Technical Description

I. Preliminary Works and Earthworks

A. Permit Processing, etc.
   1. Taxes, fees, etc.
   2. Conduct confirmatory soil boring tests.
   3. The Contractor shall be responsible for the processing and payment of all required building permits, clearances, and other regulatory fees necessary for the execution of the Works, up to and including the issuance of the Certificate of Occupancy.
   4. Provide certified true copy of clearances and permits.

B. Mobilization / Demobilization
   Provide the following:
   1. Billboard with project information
   2. Bunkhouse with temporary office
   3. Temporary comfort rooms
   4. Provide temporary perimeter protection such as blue sheet and bracing, to avoid disturbing the soil during excavation.
   5. It includes cleaning up of site, clearing, hauling and disposal of waste and construction debris before and after the construction work at least six 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. All waste materials shall be disposed of by the contractor at his expense.
   6. Restoration of any damages shall also be done before exiting the area.

C. Demolition Works
   1. This work includes demolition of the existing building.
   2. All dismantled materials should be delivered to the PPS yard.
   3. All unwanted debris shall be properly disposed of at the Contractor's expense.

D. Earthworks
   a. Staking out the building lines
      1. The building lines shall be staked out and all lines and grades shown in the drawing shall be established before any excavation is started. Batter boards and reference marks shall be erected at such places where they will not be disturbed during the excavation of the building.
   b. Excavation
      1. This work includes excavation for all footings, columns, wall footings, and tie beams, catch basin, cistern tank, septic tank and storm drainage.
   c. Backfilling Works
      1. Backfill and fills shall be placed in layers not exceeding 150 mm in thickness, and each layer shall be thoroughly compacted by wetting, tamping and rolling.
   d. Additional Fill and Gravel fill
      1. Provide additional fill.
      2. Gravel fill should be 0.05m thick.

E. Soil poisoning
   1. The area should be treated with termite proofing. Termite proofing should be conducted by an accredited termite specialist.
   2. The contractor shall provide a service guarantee covering the treatment of termite infestation or the repetition of the above termite control services without extra cost to the end-user if any manifestation of recurrence or infestation occurs during the guarantee period of one year.

II. Concrete Works

A. Cast-in place concrete
   1. Concrete works include columns, footings, slab, beams, stiffener columns, stairs, lavatory counters, ledge/canopy, roof beams, pathwalk, and all other concrete components needed to complete the structure.
   2. Provide lintel beams for the opening of windows and doors. Use 0.15m x 0.20m reinforced with 2-12 mm Ø bars enclosed with 10mm Ø bars spaced @ 0.20m on

center.
3. Provide concrete pathwalk with 4” CHB zocalo around the perimeter of the building.
4. Strength of concrete to be adopted shall be 3,500 psi at 28 days equivalent to Class A mixture.
5. Provide trial mix for cast-in place concrete.
6. Concrete works should be plain cement finish.
7. Provide necessary tools and equipment needed for concrete works.
8. 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.
9. 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 10 mm Ø deformed bars at 0.30m on center both ways for slab on fill at Ground Floor.
3. See plan for the quantity and sizes of steel reinforcement
4. Provide necessary tools and equipment needed for steel works.
5. See plan for details and extent of work.
6. 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. Use CHB 6” for the perimeter/exterior walls and septic 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:

A. Ceramic colored tiles 16” x 16” for the whole area of ground to the third floor. Use unglazed colored ceramic tiles for the hallway.
B. Use granite tiles with groove for the stairs.
C. For the Comfort Rooms:
1. Use unglazed colored granite tiles 24” x 24” for flooring.
2. Use glazed colored ceramic tiles 12” x 24” for the entire wall from floor to ceiling.
3. Use granite slab for all lavatory concrete counter including 0.60m height on its wall.

D. Consult the end-user for the color preference of tiles and granite slab.

V. Carpentry Works

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

B. Ceiling Works
1. Provide ceiling works for the whole area of ground, second, and third floor.
2. Use 1/4” thick fiber cement board for ceiling board.
3. Use metal furring as ceiling runner and ceiling joist at 0.40m on center both ways.
4. Use wall angle on the perimeter walls.
5. Use rivet or black screw for connections.
6. Provide 3” decorative ceiling cornice/wooden molding to all ceiling perimeter and corners.
7. Provide 3/16” x 1” flat bar coated with primer and paint for ceiling hanger every 1.20m both ways.
8. Use pre-painted spandrel with holes for the whole area of eaves under the concrete gutter.

VI. Trusses and Roofing Works

A. Trusses/Rafters:
   1. See plans for sizes of bar and other details for the installation of steel trusses.
   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 and shall be provided with 12mm. thick gusset plates for member connections and 16mm thick base plates for truss to column connections.
   5. Use galvanized CEE purlins ga. 16, 2” x 6” (1.0mm thick) spaced at 0.60m on center.
   6. Provide 16mm Ø x 0.40m anchor bolts with nuts and washer with 16mm base plate for each support
   7. Provide 12 mm. Ø with nuts and washers for sag rod.

B. Roofing
   1. Adopt gauge 26 (0.6 mm.) rib type pre-painted roofing sheets.
   2. Adopt gauge 26 (0.5 mm) stainless ridge roll.
   3. Adopt gauge 26 (0.5mm)stainless flashing.
   4. All attachment for roofing sheet shall be 2 1/2" teck screw for metal.
   5. Provide water sealant for all attachment (water sealant should be provided for both inside and outside surface of teck screw head).

VII. Miscellaneous Works

Supply and installation of the following:

A. Doors
   1. 24 sets of D-1 (1.0m x 2.10m) Pre-painted powder coated steel flush door with ¼” thick clear glass view window; complete with heavy duty accessories, steel door jamb and lever type door knob.
   2. 12 sets D-2 (0.80m x 2.10m) Pre-painted powder coated steel flush door; complete with heavy duty accessories, steel door jamb and lever type door knob.
   3. 15 units D-3 Phenolic toilet partition system with door for the CR cubicle partitions complete with all accessories such as indicator door lock. (height = 1.90m)

B. Windows
   1. 24 sets of W-1 Jalousy type windows on powder coated aluminum frame with ¼” thick smoked glass and 12mm square bar grills and ¼” x 1” flat bar frame.
   2. 16 sets W-2 casement type windows on powder coated aluminum frame with ¼” thick colored glass complete with all accessories
   3. 40 sets W-2A casement type windows on powder coated aluminum frame with ¼” thick colored glass complete with all accessories
   4. 6 sets W-3 Awning type windows on on powder coated aluminum frame with ¼” thick colored glass complete with all accessories
   5. 12 sets W-4 Awning type windows on on powder coated aluminum frame with ¼” thick colored glass complete with all accessories

C. Roll up Grills
   1. 2 sets D-4 Aluminum roll up shutter door (2.70m x 3.10m)
   2. 2 sets D-5 Aluminum roll up shutter door (5.58m x 3.10m)

D. Stainless Railing
   1. This scope is for stairs, PWD ramp, fire exit and fire escape ladder.
   2. Provide 1.5mm thick (304) stainless tubing for railings. Use 2” and 1” tubing.

E. Waterproofing works
   1. Apply two (2) coats of seal proof flexible waterproofing with 1” concrete toppings for the whole area of all comfort rooms and concrete gutter.

VIII. Electrical Works

1. Supply and installation of panel boards and circuit breakers
   G.E., Himel, Schneider or approved equal. Refer to the Schedule of Load for rating and specifications.
   a. MDP-1 assy.
      Main (300 AT, 400 AF, 65 KAIC 3P, 203V, MCCB) and

Branches (3-125 AT, 22 KAIC, 3P, 1-150 AT, 22 KAIC, 3P, 2-40 AT, 10 KAIC, 2P, 1-15 AT, 10 KAIC, 2P, 1-SPACE)

b. LPP1, LPP2, and LPP3 - 3 assy.
Main (125 AT, 200 AF, 22 KAIC, 3P, 230V, MCCB), and
Branches (8-30 AT, 10 KAIC, 2P, 2-20 AT, 10 KAIC, 2P, 2-15 AT, 10 KAIC, 2P, 2 SPACE)

c. ECB (Disconnecting Mean) - 1 assy.
to be installed at the service entrance concrete pedestal
300 AT, 400 AF, 65 KAIC, ECB with NEMA 3r Panel enclosure

d. MTS (Manual Transfer Switch) - 1 assy.
Manual Transfer Switch with 2-300 AT, 400AF, 65 KAIC, MCCB, mechanical interlock to be installed at the generator housing.

e. ACU Power Panel - 24 assy.
30 AT, 50 AF, 10 KAIC, 2P, 230V Circuit breaker with NEMA 3r panel enclosure to be installed beside the outdoor units of ACUs.

f. Motor pump power panel - 1 assy.
150 AT, 22 KAIC, 3P, 230V Circuit breaker with NEMA 3r panel enclosure
Note: Bolt-on type, NEMA standard should be used.

2. Construction of one (1) set service entrance concrete pedestal. See E-11 for details.
3. Construction of concrete encasement raceway and cable chamber. See E-10 and E-11 for details.
    a. Concrete encasement from CP1 to CP7
    b. 5 sets of cable chamber (CP2, CP3, CP4, CP5, and CP6)
4. Supply and installation of C.U. conductor wires, RSC/IMC conduits, PVC orange conduit, conduit fittings, support brackets/ hangers/ clamps in accordance with the plan.
    a. From panel MDP to service entrance concrete pedestal (Install in concrete encasement raceway). See E-12 for exact location and schedule of load for size and color of conductor wires.
    b. From panel MDP to generator set. (Install in concrete encasement raceway). See E-12 for exact location and schedule of load for size and color of conductor wires.
    c. From panel MDP to panels LPP1, LPP2, LPP3, FACP, water pump, booster and ELP.
    d. From LIghting Power Panels/Aircon Units panels to lighting fixtures/ switches/outlets/ACu power panels and other electrical components in accordance with the plan
    Specifications of materials to be used:
        i. THHN/THWN copper wire 99.99% pure copper conductor, fire retardant, Phelp dodge, Philflex or approved equal. Refer to Schedule of loads for proper size and color coding of wires.
        ii. RSC or IMC metal conduit pipe shall be used for exposed conduits.
        iii. PVC orange conduit pipe embedded all throughout.
        iv. PVC orange utility / square/ junction box with cover, deep type.
        v. Support brackets/ hangers, clamps and rods should be galvanized steel.
5. Supply and installation of electrical fixtures/ switches/ outlets and other electrical components in accordance with the plans.
    Specifications of materials to be used:
    a. 2-18W LED tube light with diffuser, 4ft length (87 sets) Philips, Panasonic, or approved equal
    b. 1-12W LED downlight with 6” surface type round casing (6 sets) Philips, Panasonic, or approved equal
    c. Emergency light twin head with 1 gang outlet (27 sets) Philips, Panasonic, or approved equal
    d. Wide series switches. Panasonic, Philips or approved equal.
    e. Duplex convenience outlet, universal type with ground, wall mounted (54 sets)

6. Supply and installation of a generator set with housing and ACU in accordance with the plan. Submit all the warranty certificates to project inspectors.
    a. One (1) set of Generator Set
       Standby power: 100KVA/80KW
       Prime power: 91KVA/73KW
       Voltage: 230V/60HZ
       Phase: 3 Phase
       Ampere: 250 Amperes
       Power Factor: 0.8
       Noise level: 70 dba
       Engine Speed: 1800
       Tank capacity: 240 L (including generator housing, See E-9 and E-10 for details)
    b. 24 sets of 2.5HP Inverter Split Type wall mounted ACU, 230V, 1Ph, 60Hz, ≥25,488 kJ/hr cooling capacity, 1,650 power input in Watts, R32 refrigerant (including outdoor and indoor unit bracket, copper tubing, drain pipe, refrigerant and accessories).
    c. Construction of generator housing. See E-10 for details.
7. Include tapping to the source, electrical testing and commissioning.
    a. Phase sequence test
    b. Continuity test
    c. Insulation test
       Note:
        a. Electrical testing and guarantee, electrical supervision and final electrical inspection report should be signed and sealed by PEE with notary public.
        b. Contractor's representative should assist the MERALCO crew during the energization, testing and commissioning of electric KWH meter. Load balancing shall be done if necessary.
8. Consult the inspectors for details and extent of work.

IX. Plumbing Works

1. Water Supply Line
    1. Adopt (PN 20) PPR pipes and fittings for water lines.
        a. Supply and installation of 50mm PPR pipes with 2pcs stop valve from source to cistern tank (180 meters)
        b. Supply and installation of 3" Ø PVC pipe from downspout to water tank and second floor canopy and ½" Ø PPR pipe from tank to ground floor with faucet.
        c. Use 50mm Ø from cistern to water tank; 25mm Ø from tank to comfort rooms.
        d. Use 20mm Ø for pipes inside the comfort rooms.
        e. Supply and installation of two (2) units stainless tank with saddle, capsule type with partition; complete with fittings. Thickness: 1.0mm; Length: 2.54m; Height: 2.34m; diameter: 2.20m
        f. Provide one (1) unit cistern tank (Size: 3.0m x 2.0m x 2.0 m with partition)
        g. Provide gate valve for every comfort room
        h. Provide water meter.
    2. Tapping to the source is included.
    3. No pipe should be embedded without testing it to leak.
2. 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 septic vaults fittings.
        a. Use RCP for storm drainage. See plan for the sizes.
        b. Use 4" Ø for sewer lines and downspouts.
        c. Use 2"Ø and 3" Ø for the lavatory.
        d. Use 3" Ø for floor drain
    2. Provide two (2) units septic tank

3. Provide catch basins with RCP and steel grating.

3. Fixtures

   Supply and Installation of the following:

   1. 5 pcs heavy duty faucets (stainless) at ground floor (See Front Elevation)
   2. 16 units heavy duty spray bidet for every cubicle of comfort room
   3. 16 sets colored water closet (tank type)
   4. 15 sets of colored lavatory under the counter with faucet
   5. 1 set of colored lavatory wall hung with faucet
   6. 9 sets of colored urinal with phenolic partition
   7. 13 pcs of floor drain strainer (brass)
   8. 26 pcs roof drain strainer (stainless)
   9. 5 pcs mirror (2.0m x 1.0m x 6.0mm)
   10. 1 pc mirror (0.8m x 1.0m x 6.0mm)

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

X. Mechanical and Drilling Works

A. Well Drilling and Development
   1. Mobilization and Demobilization of one complete drilling rig and accessories
   2. Drilling of 12” Ø bore hole for temporary casing (70ft)
   3. Furnishing and installation of 12” Ø casing (70ft)
   4. Drilling of 10” Ø borehole including soil sampling (600 ft)
   5. Geophysical logging from 0 to 600 ft
   6. Furnishing and installation of 6” Ø casing (500 ft)
   7. Perforation of 6” Ø casing (150 ft)
   8. Development of well (36 hrs)
   9. Final Pumping test (36 hrs)
   10. Cement Grouting (70ft)
   11. Well completion which includes construction of pedestal and site clearing.

B. Supply and Installation of Submersible Pump and Motor Including Control System
   1. One (1) unit 20 HP submersible motor, 220V, 3-phase, 60Hz
   2. One (1) unit 20 HP submersible pump 4” Ø pipe discharge, 11 stages
   3. One (1) unit double throw triple pole switch
   4. Submersible cable 22.0mm
   5. Electrical control system

C. Plumbing and Electrical Works
   1. Supply and installation of water lines and fittings from elevated water tank to building.
      a. Use 2” PPR pipes and fittings.
   2. Feeder line cable (3-lines) THHN 30.0mm and its accessories
   3. Construction of pump house with service entrance post is included

D. Rehabilitation of Existing elevated Water Tank
   1. Repair all damaged parts of the water tank.
   2. This work also includes painting of two (2) coats of epoxy primer and two (2) coats of QDE paint.
   3. Cleaning and application of two (2) coats of food grade paint for the inside of the water tank is included.

XI. Fire Protection and FDAS Works

A. Supply and installation of conductions, PVC conduit/junction box and accessories
   1. 2.0 sq. mm. THHN copper conductor wire, stranded
   2. 20mm Ø PVC orange conduit
   3. PVC orange octagonal junction box, deep type with cover
   4. PVC orange utility box, deep type with cover
   5. Conduit fittings

B. Supply and installation of the following:
   1. 21 units stored pressure type HCFC 123 CEA fire extinguisher
   2. 3 sets Fire alarm bell with break glass switch
   3. 1 loop addressable fire alarm control panel, maximum of 64 devices per loop,

2 wire sensor
4. 30 units smoke detector honeywell brand or approved equal
5. 3 units firehose with cabinet
6. Dry stand pipe 3” with siamese fitting

C. Include testing and commissioning
D. Consult inspectors for details and extent of work

XII. Painting Works

The whole building should be painted both exterior and interior.

1. Concrete and Masonry
    1. Treat the surface with concrete neutralizer. Mix one part with 16 parts water by volume.
    2. Apply latex flat as primer. Repair minor surface imperfections with skim coat. Let dry, then sand. Spot coat with top coat color.
    3. Apply two coats of colored factory mixed dirt resistant semi-gloss latex (factory mixed).
2. Ceiling
    1. This work includes painting of all newly installed ceiling components in the building.
    2. Apply one coat of flatwall enamel white. Allow to dry overnight.
    3. Repair minor surface imperfections with glazy putty. Let dry then sand.
    4. Apply at least two coats of Quick Dry Enamel in the desired color. Allow an overnight inter coating interval.
3. Metal (Roof framing, ceiling joists/runner, metal decking and all other components made of metal)
    1. This work includes painting of all roofing sheets.
    2. Apply red oxide primer by brush or spray. Allow to dry for 24 hours. Apply suitable putty on imperfections.
    3. Apply at least two coats of Quick Dry Enamel in the desired color.
    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.