


<p>American Standard ISS In-wall Bath & Shower Mono including shower valve and faucet.</p>	<p>8 sets – Shower Area Bedroom</p>	
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XXVI.D Septic Tank

- a. Construction of two (2) sets of septic tanks (3.0 x 2.5m) is included in scope of work (see detail).
- b. Use 4" thick CHB for septic tank walls and apply 20mm thick plastering for all internal surfaces.
- c. Septic tank outlet shall be connected to the nearest campus drainage.
- d. Provide solid vent pipe with vent cap extending 300 mm above top of mounds.
- e. Install cleanouts and extension from piping to clean out at grade as indicated. Use 4-inch- (100-mm-) PVC pipe with threaded PVC cap.
- f. Apply two (2) coats of cementitious waterproofing and 20mm plastering on inner faces and bottom floor of septic tanks.
- g. Perform testing of completed septic tank system piping and structures according to authorities having jurisdiction. Fill underground structures with water and let stand overnight. If water level recedes, locate and repair leaks and retest. Repeat tests and repairs until there is no leakage.

XXVI.E Catch Basin

- a. Provide fourteen (14) sets of 0.60 x 0.60 x 0.695m Catch Basin with movable cover located as per plan (*see detail*).
- b. Use 4" thick CHB and apply 12mm thick plastering on inner faces and exposed surfaces of catch basin.
- c. Storm drains shall be connected to nearest drainage with 1% slope.

PART E. ELECTRICAL AND AUXILIARY WORKS

XXVII. Electrical Works

All electrical works shall comply with the provisions of the Philippine Electrical Code (PEC) 2017 Edition with rules and regulations of the national and local authorities concerned in the enforcement of electrical laws and regulations of the utility companies concerned.

All electrical works shall be performed by a Registered Master Electrician (RME) or a non-licensed electrical practitioner under the immediate supervision of a Registered Electrical Engineer (REE).

1. The scope of work covers furnishing of all materials, labor, equipment, accessories, and all necessary services to complete the electrical system of the project as per plan and specifications.
2. Items, materials, and equipment not specifically mentioned in this scope or drawing but are necessary and critical for safety and efficient operation of the entire electrical system shall be deemed as included within this scope and shall be provided by the Contractor.
3. All materials & equipment shall be brand new and approved type for the purpose and location.
4. All metering equipment, instrument transformers and distribution transformers shall be tested at FICELCO prior to installation.
5. Upon completion of all works, the Contractor shall apply for the permanent electrical service connection of the building. Any additional fees required shall be charged to the contractor.
6. The Contractor shall verify site conditions and dimensions before ordering equipment or performing work to avoid conflicts and ensure compatibility before installation.
7. All materials & equipment shall be installed as per manufacturer's specifications and instructions.

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XXVII.A Conduits, Boxes, Fittings & Accessories

- Provision and installation of conduits, fittings and accessories for service entrance, feeders and branch circuits.
- All conduits shall be embedded on concrete where possible.
- Conduits or raceways through which moisture may contact live parts shall be sealed or plugged at either or both ends.
- Provide end bells for 32mmØ and larger conduits terminating on panel boards, boxes and gutters.
- Provide long elbow for bends of conduit 32mmØ and larger.
- Provision and installation of boxes, fittings and accessories for all outlets, junction points and switch points.
- Additional pull boxes shall be provided if necessary, to facilitate wire pulling and for maintenance purposes and shall be installed in an inconspicuous location.
- Pull boxes shall be accessible to the front.
- Pull boxes installed outdoor shall be NEMA 3R type.

XXVII.B Wires & Wiring Devices

- Provision and installation of electrical wirings such as, but not limited to, branch circuit conductors, switch wirings, feeder conductors, service entrance conductors, equipment grounding conductors as per plan.
- All wires shall be copper stranded, 600V THHN/THWN-2 Phelps Dodge or approved equal.
- All conductors of the same circuit and, where used, the grounded conductor and all equipment grounding conductors and bonding conductors shall be contained within the same raceway, auxiliary gutter, cable tray, cable bus assembly, trench, cable, or cord.
- Provision and installation of wiring devices such as convenience outlets, special purpose outlets, switches.
- Provide duplex convenience outlet for emergency lights and exit signs.
- All receptacle outlets shall be 3 prong, universal type with ground.

XXVII.C Panel Boards and Circuit Breakers

Provision and installation of Panel Boards:


PANEL	CIRCUIT BREAKERS	ENCLOSURE/AUX.
MDP	Main: 2 – 500AT / 600AF, 3P, 240V 65KAIC bolt-on MCCB with Mechanical interlock Branches: 3 – 70AT / 100AF, 3P 240V 22KAIC bolt-on MCCB 3 – 100AT / 100AF, 3P 240V 22KAIC bolt-on MCCB 1 – 150AT / 250AF, 3P 240V 42KAIC bolt-on MCCB 1 – 200AT / 250AF, 3P 240V 42KAIC bolt-on MCCB 2 – 250AT / 250AF, 3P 240V 42KAIC bolt-on MCCB	NEMA 3R GA#16 powder coated enclosure, Swing type dead front, hinged type door latch w/ key, nameplate and directory holder Auxiliary: Digital display metering c/w accessories; Current, Voltage, Frequency
LP1	Main: 1 – 70AT / 100AF, 3P, 240V 22KAIC bolt-on MCCB Branches: 18 – 15AT / 60AF, 2P 240V 10KAIC bolt-on MCCB	NEMA 3R GA#16 flush mounted, powder coated enclosure, swing type dead front, hinged type door w/ push lock, nameplate and directory holder
LP2	Main: 1 – 70AT / 100AF, 3P, 240V 22KAIC bolt-on MCCB Branches: 18 – 15AT / 60AF, 2P 240V 10KAIC bolt-on MCCB	NEMA 3R GA#16 flush mounted, powder coated enclosure, swing type dead front, hinged type door w/ push lock, nameplate and directory holder
PP1A	Main: 1 – 100AT / 100AF, 3P, 240V 22KAIC bolt-on MCCB Branches: 18 – 20AT, 2P 240V 10KAIC bolt-on MCCB	NEMA 3R GA#16 flush mounted, powder coated enclosure, swing type dead front, hinged type door w/ push lock, nameplate and directory holder

PP2A	Main: 1 – 70AT / 100AF, 3P, 240V 22KAIC bolt-on MCCB Branches: 12 – 20AT / 60AF, 2P 240V 10KAIC bolt-on MCCB	NEMA 3R GA#16 flush mounted, powder coated enclosure, swing type dead front, hinged type door w/ push lock, nameplate and directory holder
PP1B	Main: 1 – 150AT / 250AF, 3P, 240V 42KAIC bolt-on MCCB Branches: 11 – 30AT / 60AF, 2P 240V 10KAIC bolt-on MCCB 7 – 50AT / 60AF, 2P 240V 10KAIC bolt-on MCCB	NEMA 3R GA#16 flush mounted, powder coated enclosure, swing type dead front, hinged type door w/ push lock, nameplate and directory holder
PP2B	Main: 1 – 200AT / 250AF, 3P, 240V 42KAIC bolt-on MCCB Branches: 9 – 30AT / 60AF, 2P 240V 10KAIC bolt-on MCCB 4 – 40AT / 60AF, 2P 240V 10KAIC bolt-on MCCB 3 – 50AT / 60AF, 2P 240V 10KAIC bolt-on MCCB 2 – 60AT / 60AF, 2P 240V 10KAIC bolt-on MCCB	NEMA 3R GA#16 flush mounted, powder coated enclosure, swing type dead front, hinged type door w/ push lock, nameplate and directory holder
LPPA, LPPB, LPPC, LPPD (Typical)	Main: 1 – 40AT / 63AF, 2P, 240V 10KAIC DIN Rail MCB Branches: 1 – 15AT / 63AF, 2P 240V 10KAIC DIN Rail MCB 3 – 20AT / 63AF, 2P 240V 10KAIC DIN Rail MCB 1 – 30AT / 63AF, 2P 240V 10KAIC DIN Rail MCB	Plastic panel box with metal base, flush mounted
LPPE, LPPF (Typical)	Main: 1 – 63AT / 63AF, 2P, 240V 10KAIC DIN Rail MCB Branches: 1 – 15AT / 63AF, 2P 240V 10KAIC DIN Rail MCB 4 – 20AT / 63AF, 2P 240V 10KAIC DIN Rail MCB 2 – 30AT / 63AF, 2P 240V 10KAIC DIN Rail MCB	Plastic panel box with metal base, flush mounted










- All panel boards shall have a grounding terminal bus with terminal lugs.
- All panel boards shall have plastic engraved nameplate & circuit directory. Nameplates shall be fastened with screw and not by adhesive.
- Acceptable brands for panel board and circuit breakers shall be G.E., Schneider or Siemens. Use one brand only all throughout.
- The contractor shall furnish specification / data sheet of panelboards.
- This scope also includes provision and installation of dedicated circuit breakers for equipment:
 - 20AT / 30AT / 50AT, 2P, 240V safety breaker in plastic enclosure for Air Conditioning Units
 - 30AT, 2P, 240V safety breaker in NEMA 3R enclosure for Water pump motor

XXVII.D Lighting Fixtures

- This Item includes provision and installation of all lighting fixtures, emergency lights, exit sign, including lamp holders and accessories.
- The Contractor shall provide and install lighting fixtures in accordance with the specifications as summarized below:

SPECIFICATION	LOCATION / AREA	REQUIRED QUANTITY	FIXTURE
FSL LED Recessed Circular Downlight 4W, 230V, 280 lumens, 4000K cool white, 90mmØ, white frame	As per plan	6 sets	

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FSL LED Recessed Circular Downlight 6W, 230V, 390 lumens, 4000K cool white, 100mmØ, white frame	As per plan	82 sets	
FSL LED Recessed Circular Downlight 6W, 230V, 430 lumens, 6500K daylight, 100mmØ, white frame	As per plan	9 sets	
Omni LED Recessed Circular Downlight 10W, 230V, 825 lumens, 4000K cool white, 110mmØ, white frame	As per plan	16 sets	
Omni LED Recessed Circular Downlight 10W, 230V, 825 lumens, 6500K daylight, 110mmØ, white frame	As per plan	37 sets	
Omni LED Recessed Circular Downlight 20W, 230V, 1450 lumens, 4000K cool white, 155mmØ, white frame	Mess hall 1	16 sets	
Omni LED Recessed Circular Downlight 20W, 230V, 1500 lumens, 6500K daylight, 155mmØ, white frame	As per plan	55 sets	
LED Surfaced type Circular Downlight 9W, 230V, 900 lumens, 6500K daylight, 120mmØ, white frame	Fire exit stairs	8 sets	
Omni LED Bulb 9W 230V, 6500K daylight, 900lm E27 base	Stock room	2 pcs	
Pendant Light vintage black cone w/ 5W, 230V, 400 lumens, 3000K warm white LED Bulb	Mess hall 2	4 sets	
LED Recessed Downlight COB 2 x 20W, 4000 lumens, 6500K daylight, aluminum housing + clear glass cover	Lobby	6 sets	