



TECHNICAL SPECIFICATIONS

PLUMBING AND SANITARY

ACA I, ACA II, BOY'S DORMITORY

Project : **CONSULTANCY FOR THE REHABILITATION OF SCHOOL BUILDINGS
(ACA I, ACA II, AND DORMITORY BUILDING I)**

Client : **PHILIPPINE SCIENCE HIGH SCHOOL**

Location : **GOA, CAMARINES SUR**

Prepared By:

Noted By:

Engr. Fernando L. Ballasio
Sanitary Engineer

PRC No. : **0001730**

PTR No. : **3798727**

Issued at : **MUNTINLUPA CITY**

Issued on : **11-FEB-2020**

PLUMBING WORKS

1.1 General Standards of Construction

- a. The General Conditions apply to all work under this section of the specifications

1.2 Scope of Work

Unless otherwise specified, the Contractor or his sub-contractor shall furnish all materials, tools, equipment, apparatus, appliances, accessories, transportation, labor and supervision required for the complete installation and testing of the Plumbing System ready for use in accordance with the best practice of the Plumbing Trade as listed herein but not limited to the following.

1. The Plumbing Contractor is required to refer to all architectural, structural, mechanical, fire protection and electrical plans and investigate all the possible interference and conditions affecting his work
2. All work shall comply with the pertinent provisions of the Plumbing Code of the concerned city, the Code on Sanitation of the Phil., and/or the Revised National Plumbing Code of the Philippines.
3. Tapping from an existing public water main / or deep well of the building distribution system to include supply and installation of main water meter.
4. All building sanitary drains, waste and venting system including floor drains
5. Sewage collection and disposal system including sewer junction boxes, sewer manholes if any and up to final disposal point
6. Building storm drainage system including deck and roof drains, canopy drains, and plant boxes drains
7. Building storm under drains and collection system including peripheral collector line into storm manholes / or sump pits if any and up to existing storm drains.
8. Testing for leakage of all water supply and distribution system, drains waste and venting system plus pressure testing and disinfection of the water supply and distribution.
9. Preparation and submission of two (5) sets of as-built plans, hard copy & e-files (cadd)
10. Furnishing of written one (1) year warranty on the Plumbing system.

1.3 Work Included

ACA II

- a. Replacement of drains, downspouts, and other plumbing works related to it
- b. Renovation of fixed laboratory tables and cabinets, including its piping and plumbing systems and fixtures (Chemistry Laboratory)
- c. Repair/replacement of aircon pipe at dark room.
- d. Renovation of fixed laboratory tables and cabinets, including its piping and plumbing systems and fixtures (Research Laboratory)

ACA I

- a. Piping works from pump house to the whole building

BOY'S DORM

- a. C.R. fixtures
- b. C.R.'s and kitchen sinks

1.4 Approval of Shop Drawings

- a. The drawings show the general arrangement of all piping. However, where local and/or actual conditions at the jobsite necessitate a deviation or rearrangement, the Contractor shall prepare and submit the new arrangement for the Client's approval.
- b. Small scale drawing do not possibly indicate all offset, fittings and other parts of the system required. The Contractor shall arrange such work accordingly, furnishing such fittings, traps valves and accessories as may be required to meet such conditions.

1.5 Codes Application & Ordinance

- a. The work covered in this contract to be installed according to the specification codes, ordinances and requirement of the following:
 - Revised National Plumbing Code of the Philippines.
 - The Code on Sanitation of the Philippines.
 - Department of Environment and Natural Resources Environmental Regulations.
 - Ordinances of Concerned City or Municipality
- b. All construction permits and fees required for the work shall be obtained & at the expense of the Contractor. The Contractor shall furnish the Client final certificates of inspection after the completion of the work.

1.6 Workability

- a. All work shall be performed in first class and neat workmanship by mechanics skilled in their work shall be satisfactory to the Client.

- b. The Plumbing Contractor is required to refer the General Conditions and to all architectural, structural, electrical, mechanical, fire protection plans specifications and shall investigate all possible interference's and conditions affecting his work.

1.7 Materials

1.7.1 General

- a. Except as specified, the Contractor shall submit for the Client's approval, a complete set of materials he proposes to use
- b. The Contractor shall assume the cost of the entire responsibility for any change in the work as shown on contract drawings which may be occasioned by approval of materials other than those specified.

1.7.2 Pipes and Fitting Schedule

- a. Cold Water Lines – shall be PPR-C PN 20, approved by the Designer
- b. Sewer Lines - shall be polyvinyl chloride (PVC) pipes, series 1000 II, "Moldex", Neltex, Emerald, Atlanta or Crown brand. Fittings shall be solvent cement joint to ASTM D2729
- c. Sewer Lines - shall be polyvinyl chloride (PVC) pipes, series 1000 II, "Moldex", Neltex, Emerald, Atlanta or Crown brand. Fittings shall be solvent cement joint to ASTM D2729
- d. Downspout – shall be polyvinyl chloride (PVC) pipes, series 1000 II, "Moldex", Neltex, Emerald, Atlanta or Crown brand. Fittings shall be solvent cement joint to ASTM D2729.
- e. Storm Drainage Line – shall be polyvinyl chloride (PVC) pipes, series 1000 II, "Moldex", Neltex, Emerald, Atlanta or Crown brand. Fittings shall be solvent cement joint to ASTM D2729.
- f. Underdrain Pipes – series 1000 II, "Moldex", Neltex, Emerald, Atlanta or Crown brand. Fittings shall be solvent cement joint to ASTM D2729.

1.7.3 Other Materials

- a. Drains – JPI as indicated
 - Roof Deck
 - Floor/
 - Canopy
- b. Hose Bibbs – 20 mm standard hose connections, male tapered threads, polished chromium plated.
- c. Outdoor Pipe Lines, Appurtenances:

- d. Drainage Junction Boxes – 140 kg / sq. c.m. reinforced concrete with pre-cat reinforced concrete cover.
- Trust Blocks – 140 kg. / sq. c.m. plain concrete.
 - Sewer Junction Boxes - 140 kg. / sq. c.m. reinforced concrete with C.I grating cover.
 - Area – Drain / Catch Basin – 140 kg. / sq. c.m reinforced concrete with C.I grating cover.
 - Cistern – 210 kg. / sq. c.m. reinforced concrete.

1.8 Approval of Materials

1.8.1 General

- a. Each Length pipe, fittings, traps, fixtures and device used in the Plumbing System shall have cast, tamped or marked on it, the manufacturer's trade mark or name, the weight, type and classes of product when so required by the Standard.
- b. Within thirty (30) days after award of the Contract, the Contractor shall submit for the Clients' approval, the names of suppliers and materials proposed including trade names and / or samples of the materials if deemed necessary.
- c. Brand names mentioned in his specifications are only for the purposes of indicating the desired quality and design.

1.9 Quality Testing & Criteria

1.9.1 General

- a. Materials intended to be substituted for the accepted only after a formal request for substitution, accompanied by:
 - Reason for substitutions;
 - Certificate of test indicating quality, compared to those originally specified.
- b. Cost testing of materials, whether on originally specified items or on substitutions, shall be to the account of the Contractor.
- c. Results of test shall be submitted to the Client for evaluation at least 15days before the materials is due for installation on the job.

1.10 Soil, Waste Drain & Vent Pipes

1.10.1 General

- a. All pipes and fittings, unless specifically noted shall be as specified on section 1.10.2 Product on this specification.
- b. All cast iron soil & drainage pipes shall be pitched 6mm per 300 mm but no case flatter than 3mm per 300mm.

1.10.2 Traps

Every plumbing fixture shall be separately trapped by a vented water sealed trap as close to the fixture outlets as the conditions allow, but in no case at a distance greater than 600mm. In case of the upper or the only fixture on a soil extended full size through the roof, a vent shall not be required when said fixture has its center stack. Traps shall be of the same diameter as the waste pipes from fixtures which they shall serve, all traps shall have a water seal of at least 32 mm with brass thumbscrew cleanout at the bottom of the seal.

1.10.3 Vents

- a. Vent shall be taken from the crown fixture, except for water closet traps, in which case, the branch line shall be vented below and trap and above all small waste inlets, so connected as to prevent obstructions. Each vent pipe shall be run separately above the fixtures into the adjacent soil pipes, a distance not more than 1.50 meters. If more than distance, the vent shall run independently through the roof.
- b. A vent shall be wherever practicable, direct extension of a soil or waste line.
- c. Main vent risers at 4.5 meters along or more shall be connected at the roof with the main water or soil pipes below the lowest vent outlet with forty-five degree (45) connection.
- d. All vertical or vent pipes shall be carried up at least 600 mm above the roof of the building and the open side ends are to be entirely and securely covered with gals. 16 mesh copper cloth.
- e. Vent pipes in roof spaces shall be run as close as possible to the underside of roof with horizontal piping pitched down to stacks without forming traps. Where an end or circuit vent pipe from fixtures it shall be connected in the main vent or vent stack.
- f. Air Admittance Valves (AAV's) installation shall be as per manufacturer's recommendation and/or as per standard details shown on plans, Studor Brand or equal.

1.10.4 Roughing-in

Roughing – in for pipes and fixtures shall be carried with the building construction. Correctly located openings of proper sizes shall be provided where required in the walls and floors for the passage of pipes all items to be embedded in concrete shall be thoroughly clean and free from all rust, scale and paint.

1.10.5 Fittings

All changes in pipe sizes on soil waste and drain lines shall be made with reducing fittings or reducers. All changes in direction shall be made by the appropriated use (45) wyes, or long sweep bends elbow may be used in soil and waste lines where the change in direction is from the horizontal to the vertical and on the discharge from the water closet.

1.10.6 Materials

Materials for backfilling shall be free of debris or big rocks. Backfill shall be placed in horizontal layers, properly moistened and compacted to an optimum density that will prevent excessive settlement and shrinkage.

1.11 Miscellaneous

1.11.1 Cleanout

Cleanout shall be of the same size as the pipe, the location of which is extended to an easily accessible place.

1.11.2 Traps

- a. Every Plumbing fixtures of equipment requiring connections to the drainage system shall be equipped with trap.
- b. Each trap shall be placed as near as possible to the fixture. No fixture shall be double-trapped.

1.11.3 Valves & Hose Bibbs

- a. Valves shall be provided on all water supplies or fixtures as specified.
- b. Hose bibbs shall be made of brass with 15 mm male inlet threads hexagon shoulders and 20 mm connections.

1.11.4 Pipe Hanger & Support

- a. Horizontal runs of pipe shall be hung with adjustable wrought iron or malleable iron pipe hangers spaced not over 3 m apart, except hub and spigot soil pipes which shall have hangers spaced not over 1.52 m apart and located near the hub.
- b. Hangers shall have short turn buckles or other approved means of adjustment.
- c. Inserts shall be of cast steel and shall be of type or received a machine bolt or nut after installation.
- d. Vertical runs of pipe shall be supported by wrought iron clamps or collars spaced not more than 9 m apart.
- e. Water and Vent pipes – 65 mm and larger; band type 6.4 mm x 25 mm flat mild steel or black iron with 15 mm round rod with plates and nuts; 50 mm and smaller split ring type with 10 mm iron rods with insert plate; toggle bolts, clamps or expansion shield.

1.11.5 Pipe Sleeves

- a. Pipes sleeves shall be installed and properly secured in place at all points where pipes pass through masonry or concrete.
- b. Pipes sleeves shall be of sufficient diameter to provide approximately 6.1 mm clearance around the pipe of insulation.

- c. Pipes sleeves in walls and partitions shall be in cast iron, wrought iron or steel pipe. Pipes sleeves in concrete beams or concrete slabs shall be wrought iron or steel pipe.

End of Specification

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