



TECHNICAL SPECIFICATIONS

FIRE PROTECTION

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:

Mechanical Engineer

PRC No. :

PTR No. :

Issued at ;

Issued on :

1.1 General

- a. Comply with General Provision and all documents referred to therein.
- b. Provide all labour, material, products, equipment and services to supply and install sprinkler system as indicated on the Drawings and specified in this Section of the Specifications.
- c. Sprinkler system to include for:
 - Hydraulically designed automatic wet pipe system and pre-action system.
 - Zoning indicated on Drawings

1.2 Requirements for Acceptance

- a. Provide certificate of compliance that components are compatible and where applicable, certified for intended use by nationally recognized testing agency.
- b. Submittal drawings shall be reviewed and incorporate requirements of local authorities. Drawings shall be certified correct prior to submission to Client.
- c. Submit system layout drawings, component Shop Drawings, specifications, and hydraulic design calculations for Client's review prior to commencing installation.
- d. Submittal data shall be as indicated, but not limited to the following:
 - Shop Drawings: Sprinkler heads and piping system layout
Electrical wiring diagrams
 - Product Data: Piping Sprinkler heads , Pipe hangers and supports
 - Design Data: Sprinkler system design
 - Test Reports
 - Preliminary test on piping system
 - Certificates : Qualifications of Installer
 - Closeout Submittals: As-built drawings of each system
- e. Upon completion of the installation, recalculate systems and submit hydraulic design data based on as-built installation.
- f. Obtain all approvals before proceeding with work

1.3 Reference Standards

The Installations, Material and Equipment shall comply with the latest requirements of the Standard Codes, Guide and other documents issued by the Authorities, Institutions and Organizations referred to in various sections including the following:

- a. American Society for Testing and Materials (ASTM)

A47	-	Malleable iron Coatings/Fittings
A53	-	Pipe Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless
A135	-	Electric-Resistance Welded Steel Pipe
- b. American National Standards Institute (ANSI):

A214	-	Mechanical Joint Fittings
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A21.21 - Mechanical Joint Ductile Iron Pipe

- c. National Fire Protection Association (NFPA):

NFPA 13- Installation of Sprinkler Systems

- d. All sprinkler system components shall be UL listed and/or FM approved.

1.4 Coordination

Refer to final Architectural Reflected Ceiling Plans and coordinate locations of sprinkler heads with lighting and other ceiling mounted components. Coordinate sprinkler piping to avoid interference with all other services.

1.5 Pipes & Fitting

- a. Meet NFPA and requirements specified herein.
- b. Piping and Fittings
- Provide materials specified; however, only one material selection will be allowed for any nominal steel pipe size.
 - Interior suspended piping, 50 mm and smaller: black steel pipe (seamless), ASTM A53, Schedule 40 with cast iron or malleable iron threaded fittings for wet systems.
Alternative Materials: Black steel pipe schedule 40 (ERW), ASTM A135.
- c. Plain-end fittings with mechanical couplings and fittings which use steel gripping devices to bite into the pipe when pressure is applied will not be permitted. Rubber gasketed grooved-end pipe and fittings with mechanical couplings shall be permitted in pipe sizes 65 mm and larger. Fittings shall be UL listed or FM approved for use in wet pipe sprinkler system. Fittings, mechanical couplings, and rubber gaskets shall be supplied by the same manufacturer. Steel piping with wall thickness less than Schedule 30 shall not be threaded. Side outlet tees using rubber gasketed fittings shall not be permitted.
- d. Field fabricated fittings will not be acceptable.
- e. Provide 1200 kPa (175 psia) working pressure fittings of threaded cast iron, threaded malleable iron, and flanged cast iron. Unions are permissible for pipe 50 mm and smaller
- f. Fasten flanges with square or hex headed bolts and heavy hex nuts.
- g. Provide flange gaskets 1.6 mm thick.

1.6 Sprinkler Heads

- a. Sprinkler heads shall be UL listed or FM approved type. Submit samples for approval.
- b. Where pendent type sprinkler heads are shown on the drawings, provide chrome plated recessed sprinkler heads with chrome plated escutcheons.

- c. Where upright type and upright vertical sidewall (cut-off) sprinkler heads are shown on the drawings, provide bronze upright sprinkler heads with bronze finish.
- d. Where concealed type sprinkler heads shown on the drawings, provide concealed sprinkler heads with cover plate having plate finish to architect's requirement.
- e. Use high temperature heads where required to suit the governing authority, and where located in elevator machine rooms, in electrical rooms and near heat producing equipment.

1.7 Escutcheon Plates

Provide split hinge metal plates for piping entering walls, floors, and ceilings in exposed spaces. Provide polished stainless steel plates or chromium-plated finish on copper alloy plates in finished spaces. Provide paint finish on metal plates in unfinished spaces.

1.8 Testing

- a. Test all sprinkler systems to NFPA-13 requirements.
- b. Carry out any additional tests required by the authorities having jurisdictions
- c. Perform tests in the presence of each governing authority's authorized inspector.
- d. Submit certification that systems have been designed and installed in accordance with local requirements.
- e. Perform test before piping is concealed.
- f. Remove all components which will not withstand test pressure, and replace after tests.
- g. Eliminate leaks, or remove and refit defective parts. Caulking of threaded or welded joints will not be permitted.
- h. Repeat tests as often as necessary to obtain certification.

1.9 Sprinkler Installation

- a. Installation, workmanship, fabrication, assembly, erection, examination, inspection, and testing shall be in accordance with NFPA 13, except as modified herein. Install piping straight and true to bear evenly on hangers and supports. Do not hang piping from plaster ceilings. Keep the interior and ends of new piping and existing piping affected by Contractor's operations thoroughly cleaned of water and foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of piping to prevent entry of water and foreign matter. Inspect piping before placing into position. Provide Teflon pipe thread paste on male threads.
- b. Install sprinkler heads symmetrically in ceiling tiles, unless otherwise directed by the Client.

1.10 Protection

- a. Provide guards for sprinkler heads in elevator machine rooms, garbage room, mechanical rooms, storage rooms and where indicated on Drawings.
- b. Assume full responsibility for protecting sprinkler heads during painting. Replace damaged and painted components.

1.11 Field Painting

Cleaning, pre-treat, prime, and paint new fire extinguishing sprinkler systems including valves, piping, conduit, hangers, supports, miscellaneous metalwork, and accessories. Apply coatings to clean, dry surfaces, using clean brushes. Clean the surfaces to remove dust, dirt, rust, and loose mill scale. Immediate after cleaning, provide the metal surfaces with one coat of zinc molybdate primer applied to a minimum dry film thickness of 1.0 mil. Shield sprinkler heads with protective covering while painting is in progress. Upon completion of painting, remove protective covering from sprinkler heads. Remove sprinkler heads which have been painted and replace with new sprinkler heads. Provide printed surfaces with the following:

a. Piping in Finished Areas

Provide primed surfaces with two coats of paint to match adjacent surfaces, except provide valves and operating accessories with one coat of red alkyd gloss enamel applied to a minimum dry film thickness of 1.0 mil. Provide piping with 2-inch wide red enamel bands or self-adhering red plastic bands spaced at maximum of 20-foot intervals throughout the piping systems.

End of Specification

Mechanical Engineer

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