

Project Title : CONSTRUCTION OF NEW PAGASA SYNOPTIC BUILDING,
POWERHOUSE AND OBSERVER'S QUARTER
Location : PANGLAO

CONSTRUCTION SPECIFICATIONS

The specification shall govern the methods of construction and kinds of materials to be used for the proposed building shown in the plans and detail drawings.

The plans, detail drawings and these specifications shall be considered as complementing each other, so whatever mentioned or shown in one, although not shown or mentioned on the other, shall be considered as appearing on both. In case of conflict between the two, it should be referred to the designing Architect/Engineer for solution.

GENERAL CONDITION:

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 Architect/Engineer and the Owner. The construction shall conform to all requirements of the National Building Code, as well as the rules & regulations of the Municipality/*Province* , Philippines.

CLEARING THE SITE:

The building site shall be leveled and cleaned of any rubbish, roots & objectionable matters to a suitable sub-grade. All such unsuitable material shall be removed from the building site and spread uniformly over the areas adjacent to the proposed building, or be disposed otherwise, as may be directed by the Architect/Engineer in charge of the construction.

STAKING-OUT THE BUILDING LINES.

The building lines shall be stake out and all lines and grades in drawings established before any excavation is started. Batter boards and reference marks shall be erected in such places where they will not be disturbed during the excavation of the building.

EXCAVATION:

All excavations shall be made to grade indicated in the drawings. Where the building site is covered with any kind of fill, the excavation of footings shall be made deeper until the stratum for safe bearing capacity of the soil is reached. Whenever water is encountered on the excavation process, it shall be removed by bailing out or pumping carefully not to disturb the surrounding soil practices or removed.

BACKFILLS:

After concrete foundations are hard enough to withstand pressure resulting from fills, materials removed from excavation shall be used for backfill around them.

Backfill and fill shall be placed in layers not exceeding 150mm in thickness. Each layer shall be thoroughly compacted by wetting and rolling.

CONCRETE WORKS:

All concrete shall be mixed thoroughly until there is a uniform distribution of cement and aggregates, and should be deposited near its final position, care being taken to avoid the segregation of aggregates. Water to be used for mixing concrete shall be clean and free from injurious amount of oil, acids alkalis, salt and other organic materials.

CONCRETE PROPORTIONS:

All concrete work shall be done in accordance with the standard specification for plain and reinforced concrete as adopted by the Philippine Government. Cement to be used shall be *Portland* cement or any other equivalent brands readily available in the locality. Alternative cements so selected must meet the requirements of Portland and pozzolan cements and approved the Architech/Engineer in charge of the construction.

The following proportions of concrete mixtures shall be used for the various parts of the building.

Columns & Footings	Class A (1:2:4)
Conc. Holl. Blk. Ftgs	Class B (1:2 ½:5)
Reinforced Conc. Beams & Slabs	Class A (1:2:4)
Conc. Slab floor on fill	Class C (1:2:6)
Septic Vault covers	Class A (1:2:4)

Class A concrete shall be a mixture of 1-part cement, 2 parts fine aggregates and 4 parts Coarse aggregates by volume, plus enough clean water to make mixture into Pliable paste.

Class B concrete shall be a mixture of 1-part cement, 2½ parts fine aggregates and 5 parts coarse aggregates by volume, plus enough clean water to make mixture into pliable paste.

Class C concrete shall be a mixture of 1-part cement, 3 parts fine aggregates and 6 parts coarse aggregates by volume, plus enough clean water to make mixture into pliable paste.

The **Fine Aggregate** for concrete shall consist of natural sand, or of finest materials with similar characteristics, clean, hard and durable grains, free from organic materials or loam.

The **Coarse Aggregate** for concrete shall consist of crush rock of durable and strong qualities, or coarse aggregates to be used shall vary from 20 mm to 40 mm (¾" to ½").

FORMS FOR CONCRETE WORKS:

All forms for concrete works shall be properly braced or tied together so as to maintain the correct to prevent bulging and water seepage.

Forms shall not be removed until the concrete has attained sufficient strength to support it own weight and any loads that maybe placed on it. Side forms must be placed under the beams or girders until they have attained their strength.

CONCRETE SLAB FLOORS ON FILL

Concrete slabs on fill shall be poured on a gravel bed of not less than 50 mm thick Each concrete slab course to poured shall not be more than one meter wide, and each course shall be poured alternately to the indicated floor finish.

CONCRETE ROOF SLAB

It shall be made waterproof by adding *waterproofing* compound to the concrete mixture with a proportion of *1 package waterproofing* for every one bag cement used in the based on class A concrete.

STEEL REINFORCING BARS:

All steel reinforcing bars to be used shall be round deformed bars with lugs or projections on their sides to provide a greater bond between the no. 16 G.I. wire.

An steel reinforcing bars shall conform to the number, size and spacing as indicated in the drawings for footings, columns, slabs, beams and concrete block walls schedule of steel reinforcements. All metal reinforcements shall be installed free from rust, scale or other coating which will destroy or reduce the bond with concrete.

CONCRETE HOLLOW BLOCKS:

Concrete hollow blocks to be used shall be **100 mm** thick unless otherwise specified.

The concrete hollow block walls shall be laid, and the cells filled with cement mortar consisting of 1 part Portland cement and 3 parts sand by volume. They shall be reinforced with round deformed bars, 10mm diameter, spaced 0.60m and 0.80 m centers horizontal & vertical respectively. All exposed surfaces of concrete hollow blocks walls shall be finished with cement plaster. The mixture of cement plaster for concrete hollow block wall finished shall be 3 part cement 4 parts sand.

LUMBER:

Lumber to be used in this construction shall be well seasoned, thoroughly dry and free from loose or unsound knots, shakes or other imperfections impairing their strength or appearances. The lumber to be used is *Wood* unless others specified.

FRAMES:

All woods frames from doors shall be done as much as possible with carefully fitted mortise 2 tenon joints. All windows & door frames to be installed w/ wood preservative after they have been installed in place.

WATERPROOFING WORKS USING TORCH APPLIED MEMBRANE

1. Apply One coat of Bituminous primer to be applied by brush, roller, squeegee or spray equipment and left 3-4 hours to become tack-free.
2. Position the rolls of *Waterproofing Membrane* and unroll the membrane in the location to be torched later. Place subsequent roll next to first, overlapping by at least 100mm. Re-roll the membrane without changing the original orientation.
3. Slowly commence unrolling again, heating the underside with a gas torch, causing the surface to melt and adhere strongly to the *Primed Surface*. It should be firmly and evenly pressed down using a solid rubber roller.
4. Overlapping joints of 100mm on the sides and 150mm at the ends are to be securely sealed and any bleed-outs are to be removed.

ELECTRICAL WORKS:

The electrical works shall be done in accordance w/ the approved plans and under the direct supervision and control of a licensed Electrical Engineer or Master Electrician.

All electric works & materials shall conform to the provisions of the latest edition of the Philippine or National Electric Code.

The electrical wiring shall be installed three coliable PVC electrical conduit, fittings and appearances conforming with 180 dimensions.

The type of electrical services to be supplied to the building shall be 220V, AC, single phase.

There shall be only one service drop from the nearest Local Electric Company pole to the proposed building. Electric wires for light and power shall not be smaller than 13.5 sq.mm (no.12) 600V insulation.

The space circuit shall be provided with an empty PVC pipe, size 19mm dia. w/c should extend at least 300 m above the ceiling line. The grounding lines shall be color coded for easy identification. The panel board shall be provided w/ a directory.

PLUMBING WORKS:

All plumbing works shall be done in accordance with the approved plans and under the direct supervision of a licensed Sanitary Engineer or Master Plumber.

The plumbing installation shall conform with the provisions of the National Plumbing Code and the rules and regulations of the locality.

Piping for drain, vent, waste shall be PVC push on type. For in house water supply installation PVC pipe and fittings shall be used.

STORM DRAINAGE:

All downspout from roof gutters shall end in concrete catch basin connected w/ PVC pipes 100 mm dia. leading to the street gutter or main storm drainage line.

PAINTING:

All painting works shall be done with the use of Latex Paint/Enamel Paint Products.

Before any painting is done, all surfaces shall be cleaned, smoothed and freed from dust, dirt, grease, rust or other foreign substances. All paints shall be spread evenly and carefully.

No painting shall be done on outside work in extremely cold frostily, foggy or dump weather. Painting to be done on cold weather should be performed when the temperature is above 50°F.

No adulteration of paint with other brands shall be allowed.

SAFETY AND HEALTH:

General Requirements

1. The need for and use of Personal Protective Equipment (PPE) is essential in any job to protect employees from risk of injury or illness by creating a barrier against workplace hazard.
2. The minimum personal protection for Contractor's workers in a construction site shall be Contractor's uniform and I.D., safety helmet and safety shoes. Other safety protective devices or equipment may be required for specific jobs or operations and shall be worn as prescribed by the Safety and Health Officer.
3. Wearing of Contractor's uniform and I.D., safety helmet and safety shoes is absolutely MANDATORY regardless of position and nationality.
4. No person shall be subjected or exposed to a hazardous environmental condition without protection.
5. Wearing of slippers, sleeveless, shorts and worn-out pants is strictly prohibited.
6. Hand, foot, eyes, ears and nose protection will be required in certain specific activity subject to Safety and Health Officer recommendation.

7. The Safety and Health Officer shall conduct inspection of workers PPE, once a month to determine its effectiveness and necessity. All worn-out PPE must be replaced immediately.

Warning Signs and Barricades

General Requirements

1. Accident-prevention signs shall be visible when work is being performed and shall be removed or covered promptly when hazards no longer exist.
2. Danger signs shall be used only when an immediate hazard is present.
3. Accident-prevention tags shall be used as temporary means of warning workers of existing hazards such as defective tools or equipment.
4. The Safety and Health Officer must determine if a warning or protective type of barricade is required.
5. Barricades are required around work areas, excavation, holes or openings in basement levels elevated platforms, around overhead work and whenever necessary to warn people of falling or tripping hazard.
6. Barricade must be kept at least 1 meter high and maintained square and level in a workman like manner.
7. Barricade must be erected before the hole is cut and extended as the excavation progresses.
8. Safety nets or other fall protection system shall be installed to protect workers against falling debris.

Electrical

General Requirements

1. Plan and review of electrical wiring layout in accordance with existing electrical safety law.
2. Direct tapping of tools or equipment is prohibited.
3. Use of jumper or fusible link is prohibited.
4. Joint splice insulation must be properly ensured.
5. Lock-out / tag-out should be applied.
6. Protective barriers should be applied when works are done at high tension cable or post.
7. Electrical sign boards must be posted at the construction site.
8. All electrical tools and equipment must be unplugged when not in use.
9. Use of weatherproof sockets and plugs at exterior works.
10. All electrical cable lines and sources must be properly identify.

Welding and Cutting Operations

1. Welding or cutting operations shall not be permitted in rooms or areas containing combustible materials or in proximity to explosives or flammable liquids, dust, gases or vapors until all fire and explosion hazards are eliminated.
2. A portable fire extinguisher shall be provided at the place where welding and cutting operations are being undertaken.