ITEM 01 : SURVEY AND LAYOUT WORKS

GENERAL

1. Work under this Contract shall be subject to "General Requirements," which contain provisions and requirements essential to these specifications and apply to this section, whether or not referred to herein.

2. This Section sets forth provisions relating to Layout Works required under this Contract.

GENERAL REQUIREMENTS FOR LAYOUT WORK

1. Data and information developed as work herein shall be reviewed with the Engineer when requested.

2. Layout works may be reviewed, verified or checked at any time by and at discretion of the Engineer.

3. Layout work found incorrect, and any work installed improperly due to incorrect layout work, shall be corrected by the Contractor as directed by the Engineer.

4. Checking or verifications of work herein by the Engineer shall not relieve the Contractor from responsibility for providing work in compliance with requirements of contract documents.

5. No work under this Contract shall be permitted to proceed until respective layout work have been provided and verified correct.

OTHER LAYOUT WORK

1. Other layout work required of Contractor shall be based upon lines and levels developed.

2. Layout work herein shall be provided to the extent as necessary to assure all work is placed and positioned as required by Contract drawings, approved shop drawings or other related instructions issued by the Engineer.

3. Interior Layout Work

   Layout, locations and dimensions shall be rechecked and verified with the drawings prior to making roughing-ins or setting of other work.

ITEM 02 : EXCAVATION AND BACKFILLING

GENERAL

General Requirements contain provisions and requirements essential to these Specifications; and apply to this Section, whether or not referred to herein.

SCOPE OF WORK

1. This Section sets forth general requirements applicable to excavation and backfilling works required for the foundation of buildings.

2. Each Section in which this Section is referenced shall include same as part of that Section; unless otherwise specified.

GENERAL PROVISIONS

1. Excavated materials required and approved for backfill shall be stockpiled in areas approved by the Engineer.

2. Remove all unsuitable or excess materials from the site.

3. Each phase of excavation and backfilling work shall be approved by the Engineer as completed prior to removing earthwork equipment from the site or prior to proceeding with subsequent operations which cover or disturb completed phases of works.

EXCAVATION

1. General

   The excavation shall conform to the dimensions and elevations indicated for each building and structure, except as specified hereinafter, and shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services and for inspection, except where the concrete for walls and footings is authorized to be deposited directly against excavated surfaces. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory materials encountered below the grades shown shall be removed as directed and replaced with satisfactory materials; satisfactory materials below the depths indicated without specific direction of the Engineer shall be replaced at no additional cost to PPA to the indicated excavations grade with satisfactory materials, except that concrete footings shall be increased in thickness to the bottom of the overdepth excavations. Satisfactory/backfill shall be placed and compacted as specified in paragraph: "Backfilling." Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done as directed by the Engineer.

2. Drainage

   Excavation shall be performed such that the areas of the site including its immediate surroundings and other areas affected by the operation will be continually and effectively drained. Waters shall not be permitted to accumulate in the excavation. The excavation shall be drained by pumping or other satisfactory methods to prevent softening of the foundation bottom, undercutting of footings, or other actions detrimental to proper construction procedure and stability of the structures.

3. Classification of Excavation:

   Excavation will be unclassified regardless of the nature of material encountered and excavated.

4. Blasting will not be permitted.

5. Excavated Material:

   Satisfactory excavated material required for fill or backfill shall be placed in the proper sections of the permanent work as required. Satisfactory excavated material in excess of that required for the work under this section shall be made available for use in other portions of the permanent

site work required for the permanent work; and unsatisfactory material shall be Contractor's responsibility. No satisfactory material shall be wasted or used for the convenience of the Contractor unless so authorized. Stockpiles and waste materials shall be placed, graded, and shaped for proper drainage giving due consideration to drainage from adjacent properties.

6. Final grade of surfaces to support concrete:

   Care shall be taken not to disturb the bottom of the excavation. Excavation to final grade shall not be made until the concrete is just ready to be placed.

BACKFILLING

1. Satisfactory materials shall be used in bringing fills to the lines and grades indicated and for replacing unsatisfactory material. Satisfactory material shall be free from roots and other organic matter, trash, debris, and stones larger than 75mm in any dimension.

2. Backfilling shall not begin until construction below finish grade has been approved, underground utilities systems have been inspected, tested and approved; forms removed and the excavation cleaned of trash and debris. Backfill shall be brought to indicate finish grades and shall not be placed in wet, muddy or spongy areas. Backfill shall be of satisfactory materials placed and compacted as specified.

   Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted to required thickness with power driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around pipes to avoid damage to coatings or wrappings. Backfill shall not be placed against foundation walls prior to seven (7) days after completion of the walls. As far as practicable, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall.

3. Placing

   Satisfactory material shall be placed in horizontal layers not exceeding 20cm in loose depth and then compacted. No material shall be placed on surfaces that are wet, muddy or spongy.

4. Compaction shall be accomplished by sheep-foot rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used.

5. Tests shall be performed on backfill as required by the Engineer. Compaction shall be up to 95 percent maximum dry density per ASTM.

PROTECTION

Settlement or washing that occurs in graded or backfilled areas prior to acceptance of the work shall be repaired and graded re-established to the required elevations and sloped at no additional cost to PPA.

GRAVEL BEDDING

Gravel bedding shall be in accordance with specifications.

ITEM 03 : CONCRETE WORKS

GENERAL

General Requirements contain provisions and requirements essential to these specifications; and apply to this Section, whether or not referred to herein.

SCOPE OF WORK

The work shall include reinforced concrete structures such as reinforced concrete footings with or without tie-beams, reinforced concrete columns girders, slabs, other cast-in-place and precast concrete including excavation and backfilling work.

The work shall consist of furnishing of all labor, materials, equipment and other incidentals necessary for the supply of concrete materials and the complete construction of the concrete structures for the building shown on the drawings in accordance with these specifications and as directed by the Engineer.

GENERAL REQUIREMENTS

Concrete works shall conform with the requirements of "Reinforced Concrete" except noted otherwise in this Section.

SHOP DRAWINGS

Together with requirements, the Contractor shall show the following in the shop drawings:

1. Surface finish

2. Fitting to be embedded

MATERIAL REQUIREMENTS

1. Concrete shall consist of Portland cement, fine and coarse aggregates and water and shall conform with the requirements of "Reinforced Concrete".

2. Deformed bars to be used shall conform with the reinforcement requirements in Section of "Reinforced Concrete". The size shall be as shown on the drawings.

3. In lieu of the temperature bars on concrete ground slab, monofilament polypropylene synthetic fibrin fibers shall be used as admixture to prevent the formation of temperature / shrinkage cracks and increase impact resistance of ground slabs. The dosage rate shall be 0.91 kg. per cubic meter of concrete.

   The supplier is required to submit a "Mill Certificate" that the materials delivered to site shall be proven to meet or exceed the following properties:

TECHNICAL PROPERTIES	Unit	Minimum
A. Physical Characteristics:		
Length	Mm	12
Shape	Microns	18
Density	gm nominal	0.91

FORMWORKS

GENERAL REQUIREMENTS

Materials and construction of formwork shall be in accordance with formwork requirements in Reinforced Concrete.

REMOVAL OF FORMWORK

The minimum stripping and striking time for formwork shall be as follows unless otherwise approved by the Engineer.

Conditions	Minimum Period
Vertical sides of beams, wall, piles, pile caps and columns lift not exceeding 1.2m	24 hours
Vertical sides of beams and walls, lift exceeding 1.2m	48 hours
Soffits of main slabs and beams (props left under)	5 hours
Removal of props from beams and main slabs and other works	10 days

CONCRETE

CLASSES OF CONCRETE AND USAGE

1. Strength Requirement

Concrete strength shall conform with the requirements in Section of "Reinforced Concrete".

SLUMP TEST

Tests shall be made in conformity with ASTM C 143, and unless otherwise specified by the Engineer, slump shall be within the following limits:

Structural Element	Slump for Vibrated Concrete	
	Minimum (mm)	Maximum (mm)
Precast concrete	80	180
Wall, column and beam, 25cm max. thickness	80	180
Concrete slab	80	150
Lean concrete	70	150

CONCRETE COVER FOR REINFORCEMENT

Minimum concrete cover for reinforcement shall be as follows:

Net Concrete Cover	Minimum Cover (mm)
Concrete cast against and permanently exposed to earth	75
Concrete exposed to earth or weather:	
Primary reinforcement	50
Stirrups, ties, and spirals	40
Concrete deck slabs:	
Top reinforcement	50
Bottom reinforcement	35
Concrete not exposed to weather nor in contact with ground:	
Primary reinforcement	40
Stirrups, ties, and spirals	25

CONSTRUCTION JOINTS AND WATERSTOPS

Construction joints shall be provided where shown on the drawings or when approved with written permission of the Engineer. Special care shall be used in preparing concrete surfaces at joints where bonding between two sections of concrete is required. Unless otherwise indicated on the drawings, such bonding will be required at all horizontal joints in walls.

Waterstop material shall be an elastomeric plastic compound, the basic resin of which shall be polyvinyl chloride, and containing any additional resins, plasticizers or other materials needed for the material to comply with the requirements specified.

The waterstop shall be fabricated by an extrusion process such that it will be dense, homogeneous, free from holes and other imperfections. The cross section of the waterstop shall be uniform and symmetrical along its entire length.

Surfaces shall be prepared as follows:

The surface of concrete upon or against which the placement of contiguous concrete or masonry is later required shall be struck off true to the elevations indicted on the drawings after the concrete has been placed. Thereafter as soon as the condition of the concrete permits it, and before the concrete has hardened appreciably, i.e. normally within 2 hours after being deposited, all water, scum, laitance and loose aggregate shall be removed from the surface by means of wire or bristle brooms in such a manner that the course aggregate is left lightly exposed, and the surface cleaned. No raking will be permitted.

The Contractor shall then take all necessary precautions to ensure that all surfaces thus prepared shall be kept free from storage piles, drippings, staining or foreign matter, which could adversely affect the concrete or the bond between the concrete layers.

Waterstops for all joints shall be continuous around the corners and at intersections, either in horizontal or vertical direction, as indicated on the drawings. Field splices and joints shall be made in accordance with the waterstops manufacturer's instructions, using a thermostatically controlled-heating iron.

ITEM 04 : MASONRY WORKS

GENERAL

General Requirements contain provisions and requirements essential to these Specifications and apply to this Section, whether or not referred to herein.

SCOPE OF WORK

This Section includes the furnishing of all labor and materials to complete the work as shown on the drawings and specified herein. The works shall include but not necessarily be limited to the following:

1. Supply and installation of concrete hollow block (CHB) walls with reinforcement

2. Plastering

3. Installing temporary works like scaffolding, platforms, steps, etc.

GENERAL PROVISIONS

The following publications of the issues below but referred to thereafter by basic designation only form a part of these specifications to the extent indicated by the reference thereto:

American Society for Testing and Materials (ASTM) Publications:

A 615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

A 33 Concrete Aggregates

C 129 Specification for Non-Load Bearing Concrete Masonry Units C

144 Specification for Aggregate for Masonry Mortar

C 270 Mortar for Unit Masonry

MATERIAL REQUIREMENTS

Materials shall conform to the respective specifications and other requirements specified below

CONCRETE HOLLOW BLOCKS (CHB)

CHB shall be of standard manufacture, machine vibrated with fine and even texture and well-defined edges and conforming with the requirements of ASTM C 129. Unless otherwise specified on the Drawings, It shall have a minimum compressive strength of 4.14 MPa (600 psi). CHB shall be non-load bearing uniform and essentially smooth as normally achieves by standard molding methods and shall be free from any cracks, flaws or other defects.

BEDDING MORTAR

Mortar shall be composed of 1 part of Portland cement, 3 parts of sand and ½ part of lime. It shall have a compressive strength of [14 MPa (2,000 psi)] at 28 days and shall comply with property specifications for type N mortar set forth in ASTM Specification C 270 and as modified herein, proportioned and tested in an approved laboratory at the expense of the Contractor. When tested for water retention, the mortar shall have a flow after suction, of 75 percent or more when mixed to an initial flow of 125 to 140 percent. When tested for compressive strength, mortar shall be mixed to a flow of 100 to 115 percent. Aggregate for mortar shall conform to ASTM C 144.

PLASTER

Plaster shall comply with the same specification as those for bedding mortar and will include the use of synthetic fibrous reinforcement of type and dosage recommended by the manufacturer.

REINFORCING STEEL BARS AND RODS

Minimum yield strength of reinforcement shall conform with the specifications in Section of Reinforced Concrete.

SAMPLES AND TESTING

1. The following shall be submitted for approval and in addition, representative samples shall be taken periodically from on-the-site stockpiles as required for testing or checking during the progress of the work.

Anchors and ties	:	Two of each type proposed for use
Concrete Hollow Blocks	:	Shapes, sizes and kinds in sufficient numbers to show full range of quality and texture.

2. Sampling and testing, unless otherwise specified, shall be performed by an approved independent commercial testing laboratory at the expense of the Contractor. Certified copies of laboratory test reports, including all test data, shall be submitted at least 10 days before delivery of the units or mortar materials represented by the tests to the project site.

3. Mortar shall be laboratory-proportioned and tested. Certified copies of approved laboratory-established proportions shall be submitted with the required test reports and test data. Approved laboratory-established proportions shall not be changed and materials with different physical or chemical characteristics shall not be used in mortar for the work unless additional evidence is furnished that the mortar meets the specified requirements.

EXECUTION

1. GENERAL

No unit having a film of water on its surface shall be laid. Masonry shall be laid plumb, true to line, with level courses accurately spaced. Bond pattern shall be kept plumb throughout. Corners and reveals shall be plumb and true. Vertical joints shall be shoved tight. Each unit shall be adjusted to final position while mortar is still soft and plastic. Any unit that is disturbed after mortar has stiffened shall be removed and relaid with fresh mortar. Courses shall be so spaced that backing masonry will level off, flush with the face work at all joints where ties occur. Chases and rake-out joints shall be kept free from mortar or other debris.

2. Anchorage to concrete. Anchorage to abutting columns shall be provided only where indicated. Details shall be as indicated including anchorage to underside of beams and slabs.

3. Cutting and fitting, including that required to accommodate the work of others shall be done by masonry mechanics. Wherever possible, full units of the proper size shall be used in lieu of cut units. Cut edges shall be clean, true and sharp. Openings shall be carefully cut, formed or otherwise neatly made for recessed items and for electrical, plumbing, or other mechanical installations so that wall plates, cover plates, or escutcheons required by the installation will completely conceal the openings and will have bottoms in alignment with lower edge of masonry joints. Webs of hollow masonry units shall be cut to the minimum required for the installation. Reinforced masonry lintels shall be provided as indicated above openings over 300mm wide, for pipes, ducts and cable trays, unless steel sleeves are used.

4. Embedded Items

Spaces around built-in items shall be filled with mortar. Openings around flush-mounted electrical outlet boxes in wet locations shall be pointed flush with mortar including flush joints above the boxes. Anchors, ties, accessories, flashing, pipe sleeves and other items required to be built-in shall be built-in as the masonry work progresses. Anchors, ties, and joint reinforcement shall be fully embedded in mortar.

5. Unfinished work shall be stepped back for jointing with new work. Toothing may be resorted to only when specifically approved. Before laying new work, loose mortar shall be removed and the exposed joint shall be thoroughly cleaned.

6. Protection

Surfaces of masonry not being worked on shall be properly protected at all times. At the end of each workday period and when rain is imminent, the top of exposed masonry shall be covered with a strong non-staining waterproof membrane well secured in place and in a manner that will prevent moisture. Adequate provisions shall be made during construction to prevent damages by wind.

7. Mortar

Materials shall be accurately measured in laboratory-established proportions and mixed with as much water as may be necessary to produce the wettest workable consistency possible. Mortar shall be placed in final position within one hour after mixing. Mortar not used or that has started to set within this time interval shall be discarded.

8. Jointing

Joints in exposed-to-view except control joints, joints to be pointed or caulked or sealed, and openings around flush-mounted electrical outlet boxes in wet locations shall be tooled slightly concave with the mortar thoroughly compacted and pressed against the edges of the units. Tooling shall be done when the mortar has been thumbprint hard. The tooled joint shall be finished to uniformly straight and true lines and surfaces, smooth and free of tool marks.

9. Placing Reinforcing Steel

Prior to placing grout, all reinforcement shall be cleaned of loose, flaky rust, scale, grease, mortar, grout or other coating which might destroy or reduce its bond with grout. Details of reinforcement shall be as indicated in the drawings. Reinforcing shall not be bent or straightened in a manner injurious to the steel. Bars with kinks or bends not shown on the drawings shall not be used. Placement of reinforcement shall be inspected and approved prior to placing grout. One piece vertical bars extending from floor to floor or roof above shall be provided. Vertical bars shall be spliced only where indicated.

a. Positioning Bars

Vertical bars shall be positioned accurately at the centerline of the wall. A minimum clearance between the bars and masonry units of 12mm and between parallel bars of one diameter of the reinforcement shall be maintained. Vertical reinforcing shall be held in place using metal supports, centering clips, spacers, ties or caging devices located near the ends of each bar and at intermediate intervals of not more than 192 diameters of the reinforcement.

b. Splices

Splices shall be located only as indicated. Splices shall be staggered in adjacent bars at least 600mm. Bars shall be lapped a minimum of 40 diameters of the reinforcement.

PAINTING AND CLEANING

Mortar daubs or splashing, before setting or hardening, shall be completely removed from masonry unit surfaces that will be exposed or painted. Before completion of the work, all defects in joints or masonry to be exposed or painted shall be raked out as necessary, filled with mortar, and tooled to match existing joints. Masonry surfaces shall not be cleaned, other than removing excess surface mortar until mortar in joints has hardened. Masonry hardened surfaces shall be left clean, free of mortar daubs, dirt, stain and discoloration, including scum from cleaning operations and with tight mortar joints throughout. Metal tools and metal brushes shall not be used for cleaning.

ITEM 05 : ROOFING

GENERAL

All G.I. Sheet should meet the requirements of the government standard specifications for galvanized coating of irons sheet.

1. **Pre-painted Galvanized Iron Sheet**

   Corrugated, Tri-rib, or Tile Design and plain sheet shall be carefully spelter on both side with pure virgin spelter. The spelter shall be supplied so that paint coating is uniform, dense and practically free pin holes. The sheet herein specified are commercial pre-painted roofing, gauge 26.

2. **Sheet Metal Works**

   Pre-painted roofing sheet will laid and lap properly screwed in both directions and well anchored to the purlins.

   All joints of plain sheets flashing and moulding shall properly screwed or riveted with standing seams lapping and moldered to insure its water tightness.

3. **GUTTER & Flushing**

   All gutters & flushing's shall be no. gauge 26, Spanish type of special order of the size. They shall be securely supported in placed by means of 1" G.I nail at on center. It shall have a pitch of 1/8" per foot conductor.

4. **CONDUCTORS**

   Shall be 3" diameter PVC pipe properly supported from eaves and anchored to the wall with clips and end to the street canals.

ITEM 06: ARCHITECTURAL WORKS AND FINISHES

GENERAL NOTES:

The contractor should observe special consideration to indent order items that require longer lead time and checking of material availability under specified conditions of sale, the acceptance of which by the supplier constitutes a contract of sale.

The following are listed as the indent items:

20mm thick Phenolic Toilet Partition and accessories, Roofing, Aluminum Composite Panels (including Honeycomb designed Aluminum panels and Brise soleil), Photoluminescent Signs and markings, Elevator and Escalator, Gang Chairs, Signanges and logos, UPVC Baffle Ceiling and PVC interlocking ceiling panels among others.

ITEM 06 a : FINISHES

GENERAL

General Requirements contain provisions and requirements essential to these Specifications; and apply to this section, whether or not referred to herein.

SCOPE OF WORK

The work covered by this section consist of furnishing all labor, materials, equipment, tools and incidentals necessary to undertake, complete all finishing works as indicated on the drawings and as specified herein.

Wall, floor, ceiling and other finishing works shall include but are not limited to the following:

WALLS

Exterior

a. Plain cement finished painted with elastomeric base paint.

Location as shown in the plans and elevations.

Interior

a. Plain cement finished painted with elastomeric paint.

Plain Cement Finish

a. Surface Preparation

All surfaces shall be cleaned and projections, dust, loose particles and other materials, which would prevent good bond, shall be removed.

Plaster shall not be applied directly to concrete and masonry surfaces coated with bituminous compounds and surfaces previously painted or plastered.

All surfaces shall be thoroughly wetted before plastering.

b. Trial Mix

A trial mix of at least three (3) different water-cement ratios for a proposed mix shall be prepared under full scale conditions and adequate workability. The proportions by weight of cement to the weight of sand shall not be less than one part of Portland cement to two parts of sand.
The proportion of cement-sand and water necessary to produce the cement plaster of

the required consistency shall be subject to the approval of the Engineer. Such approval may be withdrawn at any time and a change in proportions may be required. Based on the approved mix proportions, the Contractor shall prepare a list showing the number of kilograms of the various materials to be used in the cement plaster finish mix.

No cement plaster finish shall be started without an approved trial mix by the Engineer.

c. Cement Finish Application

A brown coat with sufficient pressure shall be applied to fill the gaps, and to secure a good bond. Moistened for 48 hours, each coat of cement plaster shall be kept after application and allow to dry.

A finish coat shall be applied after the brown coat has set. The brown coat shall be moistened before application of the finish coat. Finish coat shall be floated to plumb, even planes and surfaces.

Final plaster finishes shall be rubber sponged.

d. Tolerance

The Contractor shall finish plaster work plumb, level, square and true within tolerance of 3mm in 3 meters, without cracks and other imperfections.

e. Patching and Cleaning

Upon completion of the building, and when directed, all loose, cracked, damaged or defective plastering shall be cut out and re-plastered in a satisfactory and approved manner.

Painting Works

a. Surface Preparation

Allow new masonry to dry for 14 days (for exterior surfaces) to 28 days (for interior surfaces) under normal conditions before painting. Surface to be painted should be clean and dry, free from oil, grease, dirt, dust, contaminants, and all loose grit and mortar.

Without mesh:

1st Coat: Elastomeric Wall Covering Sealer

2nd and 3rd Coat: Elastomeric Wall Covering Basecoat

4th Coat: Elastomeric Wall Covering Topcoat

Ceiling

1. Interior

C1 - 4' x 8' x ¼" thk Gypsum Board or Approved Equivalent

2. Exterior

C2 (Eaves) - Spandrel

SUBMITTAL

1. Shop drawings for all finishing and painting works for the building shall be submitted in advance to allow twenty-eight days for review and approval. Shop drawings shall indicate materials and details of finishing works. The Contractor shall be responsible for all errors of detailing and fabrication, and for the correct finishing work items shown on the shop drawings.

2. The Contractor, before placing order for the finishing materials shall submit to the Engineer for approval representative samples of finishing materials. No placing of orders for material for finishing works shall be made without his approval.

3. Samples of all walls finishes, measuring not less than 1000mm x 1000mm shall be submitted to the Engineer for approval as to its finish texture and workmanship.

INSTALLATION OF DOOR

1. Surface Preparation

   Ensure surfaces to receive panels are structurally sound, even, smooth, clean, dry, and free from defects detrimental to work.

   DOOR

   D-1 - Fabricated G.I. Gate

INSTALLATION OF WINDOWS

1. Surface Preparation

   Ensure surfaces to receive panels are structurally sound, even, smooth, clean, dry, and free from defects detrimental to work.

   WINDOW

   W-1 - Concrete Louvers

ITEM 07 : ELECTRICAL GENERAL REQUIREMENTS

GENERAL

APPLICATION

This section applies to all sections of "Electrical Division" of this project except as specified otherwise in each individual section.

WORK INCLUDED

The work to be done under this division shall include the furnishing of all tools, labor, supervision, equipment, fixtures and all necessary materials, each complete and in proper working condition unless one or other is specifically excluded or stated otherwise in this specifications but not limited to the following items of works.

a. All works and material for a complete lighting and power systems including cables and conduits, circuit breakers, panel board and connection to all lighting fixtures and power outlets, motor appliances, switches, supports and accessories.

b. All excavation works, backfilling, dewatering, removal of surplus earth, preparation of formworks and pouring of concrete envelopes as indicated on the drawings or as required to complete the installation.

c. All steel support for conduits, wires, panel board, boxes, lighting fixtures, etc. as indicated or as required to complete the installation.

d. A complete grounding system as required by the governing codes.

e. A complete testing of all electrical systems.

f. All items incidentals to and or required for the proper completion such as painting of boxes, conduits and the likes.

g. Coordination with other trade Contractors.

h. Coordination with other companies/offices including handling of all materials related to material testing and application of electrical permits.

i. Preparation of necessary shop drawings required for the proper execution of the works subject to the approval of the Engineer.

SUBMITTALS

Obtain approval before procurement, fabrication or delivery of items to the job site. Partial submittals will not be entertained and will be returned without review. Submittals shall include the manufacturer's name, trade name, place of manufacturer, catalogue model of number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference and technical society publication references, and other information necessary to establish contract compliance of each item to be furnished.

1. Shop Drawings

In addition to the requirements of the contract clauses, shop drawings shall meet the following requirements:

a. Drawings shall be a minimum of 210 mm x 297 mm in size or in A3 size, except as specified otherwise.

b. Drawings shall include wiring diagrams and installation details indicating the proposed location layout and arrangement, control panels, accessories, and other items that must be shown to assure a coordinated installation.

c. Wiring diagrams shall identify circuit termination and the internal wiring for each item of equipment and its interconnection.

d. Drawings shall indicate adequate clearances for operation, maintenance and replacement of equipment devices. If the layout is disapproved, revise the layout and resubmit.

ITEM 08 : PROJECT BILLBOARD

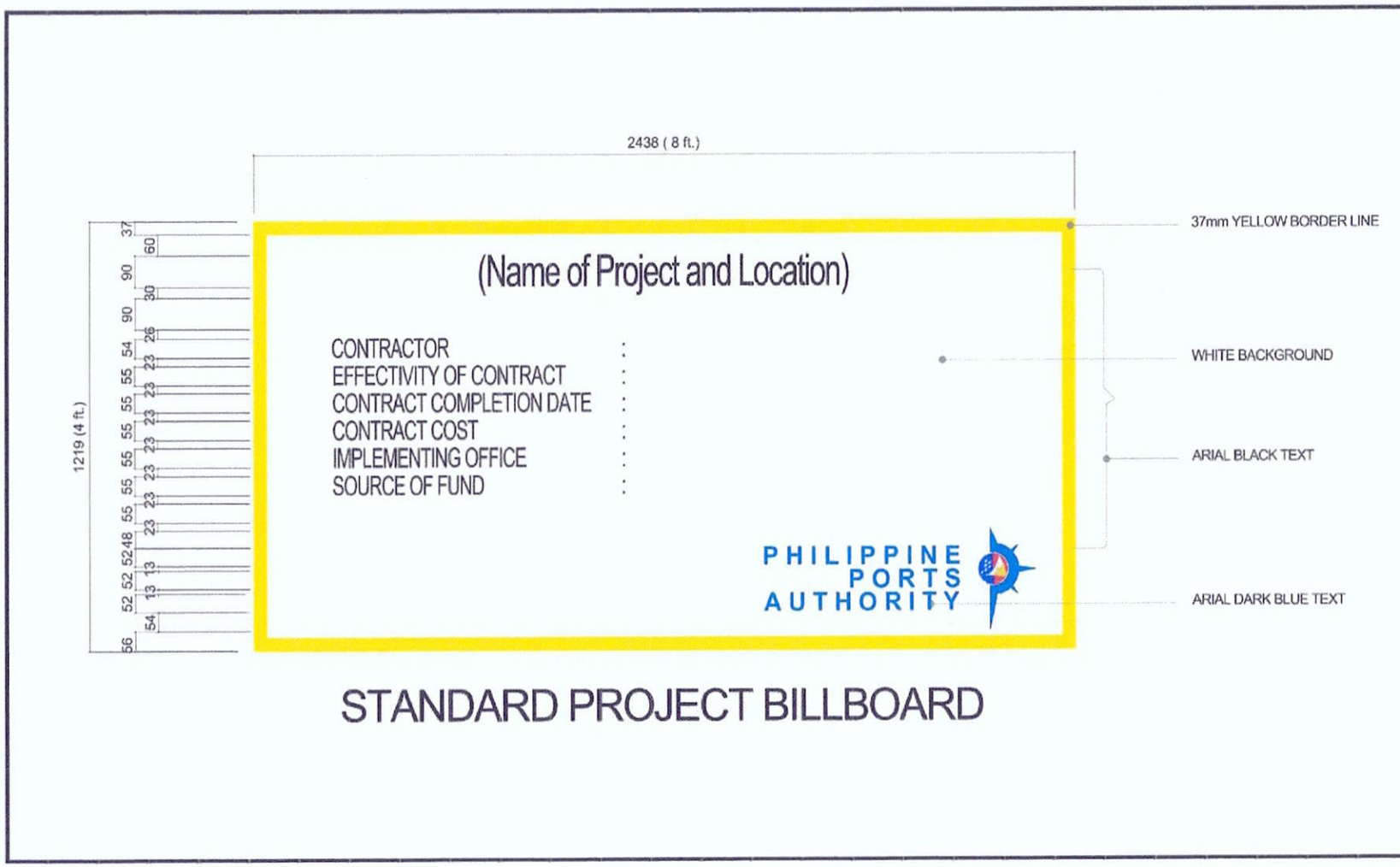
SPECIFICATION

The Project Billboard shall be installed at location(s) designated by the Engineer.

The size and specifications of materials for the standard billboard shall be 4ft. x 8ft. (1,200mm x 2,400mm) using ½ inch (12mm) marine plywood or tarpaulin poster on 3/16 inch (5mm) marine plywood.

Project billboards shall not contain Name(s) and/or picture(s) of any personages.

See attached drawings for further details of the standard billboard.



STANDARD PROJECT BILLBOARD