

- c. COA
- d. Comm Room/Records Library
- e. Finance Division
- f. Engineering Services Division
- g. Admin Division
- h. Assessor/TOO/HOO?Cashier

Locations are shown in the plan.

2. C2 - 600mm x 600mm x 19mm Mineral Fiber Acoustical Lay-in Panel on Galvanized Exposed Grid and Framing Finish with Low Sheen White Enamel Paint

- a. Cashier Booth/Pantry
- b. BAC Storage
- c. PSDM Office
- d. Business Dev't Services Storage
- e. Records Library Storage
- f. COA Storage
- g. GAD Storage
- h. FDM Office
- i. Finance Storage
- j. ESDM Office
- k. ESD Pantry/Storage
- l. Admin Supply Unit Storage
- m. ASDM Office
- n. Office of the Port Manager Pantry
- o. Conference Room Storage
- p. GSU Storage
- q. Personal Unit Storage

Locations are shown in the plan.

3. C3 - 12mm Thk. Gypsum Board Painted On 0.40mm Thk. Galvanized Steel Ceiling Suspension System including furring, carrying channel, suspension rod and other miscellaneous items

- a. Pump Room/Access to Pump Room
- b. Elec/Mech Room
- c. PSDM Office Lounge/Toilet
- d. Hallway/Fire Exit
- e. Activity Area
- f. FDM Office Lounge/Toilet
- g. Safety Vault
- h. Conference Room
- i. Audio Visual Room
- j. Conference Room Pantry/Toilet
- k. ESDM Office Lounge/Toilet
- l. Hallway
- m. ASDM Office Lounge

- n. OPM Conference Room
- o. Office of the Port Manager
- p. Port Manager's Office
- q. Port Manager's Office Lounge/Toilet
- r. PM's Access to Quarter
- s. Multi-purpose Hall
- t. Audio Visual Room
- u. Storage
- v. Port Manager's Quarter
- w. Bedroom
- x. Port Manager's Quarter T&B/Toilet
- y. PSD Pantry
- z. Male & Female Toilet
- aa. Janitor's Closet/PWD Toilet
- ab. Conference Room
- ac. Kitchen/Pantry
- ad. Lobby
- ae. Stairwell
- af. Existing Electrical Room

Locations are shown in the plan.

- 4. C6 – 0.40mm thk. Pre-formed & Pre-painted Rib-Type Spandrel Metal Ceiling
 - a. Roof Deck

Locations are shown in the plan.

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.

QUARTZ STONE

- a. Selected quartz stone for toilet countertops, fascia and splashboard. Dimensions as shown on the drawings.

- b. Shall be sound material with uniform and favorable working qualities and with very limited natural faults.
- c. Color, veining and quality shall be approved by Engineer.
- d. Veining shall run vertically on all vertical surfaces and direction of veining shall continue in same directions over horizontal surfaces except as directed by the Engineer.
- e. Sealer
 - e. 1. Shall be a commercial penetrating type free from harmful alkali or acid content
specially prepared for marble work
 - e. 2. Shall have a Ph factor between 7 and 9
 - e. 3. Shall not discolor
 - e. 4. Shall produce a slip resistant surface
 - e. 5. Shall have a flash point not less than 35 °C
- f. Cleaning fluid
 - f. 1. Shall be commercial neutral liquid type especially prepared for marble work
 - f. 2. Shall have a Ph factor between 7 and 9
 - f. 3. Shall be free from crystallizing salts or water soluble alkaline salts
 - f. 4. Shall be biodegradable and phosphate free

INSTALLATION OF DOORS / GLASS PANELS

1. Surface Preparation

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

DOORS

- D-1 - Marine Plywood Finish Double Leaf Flush Door, Fire Pump House (1.50m x 2.15m)
- D-1 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Swing Door (0.90m x 2.15m)
- D-2 - Marine Plywood Wooden Fin. Flush Door W/ 8mm Thk. clear Glass Vision Panel, Lever Type Lockset (0.90m x 2.15m)

- D-3 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Double Swing Door (1.70m x 2.15m)
- D-4 - Marine Plywood Finish Flush Door; Lever Type Lockset (0.90m x 2.15m)
- D-5 - Marine Plywood Finish Flush Door; Lever Type Lockset (0.70m x 2.15m)
- D-6 - Marine Plywood Finish Flush Door; Lever Type Lockset (1.00m x 2.15m)
- D-7 - PVC Door With Vent Louver; Lever Type Lockset (0.70m x 2.15m)
- D-8 - Cold Rolled Steel Fire Rated Emergency Exit Door With Panic Push Bar Lock (1.00m x 2.15m)

GLASS PANEL

(Including Door Schedules In Dimension)

- GP – 1 - 12mm Thk. Fixed Frameless Tempered Clear Glass Partition, With Frosted Window Film, In Powder Coated Aluminum Channel (6.00m x 2.70m)
- GP- 2 - 12mm Thk. Fixed Frameless Tempered Clear Glass Partition, With Frosted Window Film, In Powder Coated Aluminum Channel (4.40m x 2.70m)
- GP – 3 - 12mm Thk. Fixed Frameless Tempered Clear Glass Partition, With Frosted Window Film, In Powder Coated Aluminum Channel (4.00m + 6.00m x 2.40m)
- GP – 4 - 12mm Thk. Fixed Frameless Tempered Clear Glass Partition, With Frosted Window Film, In Powder Coated Aluminum Channel (4.40m + 4.40m x 2.40m)
- GP- 5 - 12mm Thk. Fixed Frameless Tempered Clear Glass Partition, With Frosted Window Film, In Powder Coated Aluminum Channel (4.80m + 4.40m x 2.70m)
- GP- 6 - 12mm Thk. Fixed Frameless Tempered Clear Glass Partition, With Frosted Window Film, In Powder Coated Aluminum Channel (4.3m + 6.00m + 4.40m + 6.00m x 2.40m)
- GP -7 - 12mm Thk. Fixed Frameless Tempered Clear Glass Partition, With Frosted Window Film, In Powder Coated Aluminum Channel (4.50m + 3.25m x 2.40m)
- Frosted GP - 10mm thick tempered frosted glass doors and partitions including accessories (1.75m x 1.85m)

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.

W-1 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Casement Type Window
(2.40m X 1.20m)

W-2 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Casement Type Window
(3.60m X 1.20m)

W-3 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Casement Type Window
(1.20m X 1.20m)

W-4 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Awning Type Window
(2.40m X 0.60m)

W-5 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Awning Type Window
(1.20m X 0.60m)

W-6 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Awning Type Window
(0.60m X 0.60m)

W-7 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Awning Type-cum-Fixed Type Window
(2.40m X 2.80m)

W-8 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Awning Type-cum-Fixed Type Window
(2.40m X 2.50m)

W-9 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Awning Type-cum-Fixed Type Window
(2.40m X 2.20m)

W-10 - 1.50mm Thk. Aluminum Framed Powder Coated Finish With 10mm Thk. Reflective Tempered Glass, Fixed Type Window and Glass Stiffener
(2.80m X 1.20m)

Mirror Glass

Mirror glass shall be of high quality float glass free from imperfections and impurities, 6.3 mm (1/4 inch) thick. Silvering shall be performed by modern continuous operation under controlled conditions. The coating shall be of pure silver and of adequate thickness to provide reflectivity of 83% or more of incident light, and shall be without pinholes or other defects visible to the naked eye.

Refer to plans for locations, dimensions and details.

ITEM 32 : ARCHITECTURAL ITEMS**A3 : FINISHES (LEB)****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 paint.

Location as shown in the plans and elevations.

Interior

- a. Plain cement finished painted with elastomeric paint.
- b. 300mm x 600mm Vitrified Glazed Tiles
- c. 12mm thick Fiber cement board on at least Ga. 25 thick uncoated metal galvanized C- shaped studs framing.

Locations are shown in the plans and elevations.

Stud: 76 mm (3 inches)

3.00 meter length

Track: 76 mm (3 inches)

3.00 meter length

Board: 1.20 x 2.40 x 12mm fiber cement

Fiber Cement Surfaces

SUBMITTALS

- a. Manufacturer's product data for each type of product specified.
- b. Samples
 - (1) 300 mm x 300 mm 2 sets of required mock up.
 - (2) Miscellaneous product samples such as joint tapes and compounds.

Application and Finishing

- 1. Apply and finish fiber cement panels as per specifications by manufacturer for flush-jointed.
- b. Install fiber cement panels in manner which minimizes the number of end-butt joints or to avoid where possible.
- c. Install exposed fiber cement panel with face side out. Do not install imperfect, damages or damp boards. Bat boards together for slight contact at edges and ends with not more than 1.5 mm open space between boards. Do not force into place.
- d. Locate either edge or end joints over supports, except in horizontal applications where intermediate support is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- e. Attach fiber cement panel for supplementary framing and blocking provided for additional support at openings and cutouts.
- f. Space fasteners in fiber cement boards in accordance with referenced application and finishing standard and manufacturer specifications

Methods Panel Application

- a. Follow specifications by manufacturer.
- b. Install fiber cement panel as follows, and as indicated on the drawings.
- c. Apply fiber cement panels to supports as follows:
 - Fasten to steel framing with adhesive and supplementary screws as per recommendation by manufacturer.

Finishing of Fiber Cement Boards

- a. Apply to joint treatment at fiber cement panels joints (both directions); penetrations; fasteners head, surface defects and elsewhere as required to prepare works for decoration.
- b. Finish fiber cement panels as per recommendation by manufacturer.

Protection

- a. Provide final protection and maintain conditions, in a manner suitable to installer that ensures, fiber cement panel construction being without damage or deterioration at time of substantial completion.

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

With mesh:

1st Coat: Elastomeric Wall Covering Sealer

2nd Coat: Elastomeric Wall Covering Basecoat

Reinforcing Membrane: Fiberglass Matting

3rd and 4th Coat: Elastomeric Wall Covering Basecoat

5th Coat: Elastomeric Wall Covering Topcoat**Wall Ceramic Tiles**

- a. Wall tiles shall be glazed ceramic tiles color as per Architect's approval.
- b. Trimmers and moulding shall be lustrous, glazed with size and color corresponding to wall tiles.
- c. Portland cement, sand, bonding compound, lime and water shall conform with the requirements.

FLOORS**F1 600mm x 600mm Unglazed Ceramic Floor Tiles**

1. Ground Floor
 - Storage Room
 1. Pantry
 2. Male & Female Toilets
 3. PWD Toilet
 4. All Gender Toilet
 5. Station Commander's Office
 6. Conference Room
 7. Male & Female Temporary Cell
 8. Male & Female Temporary Cell Toilets
 9. Investigation Room
 10. Interrogation Room
 11. Pantry
 12. Toilets
 13. Port Police Office
 14. Library
 15. Armory
 16. Communication Room
 17. CCTV Room
 18. File Room
 19. Storage Room
 20. Lobby/ Hallway/ Lounge
 21. Nursing Mother's Room/ Diaper Changing Room
 22. Clinic
 23. Control Room
 24. Electrical Room
 25. Health Office / Station
 26. Stairs / Fire Exits
 27. Male & Female Quarters
 28. Male & Female Toilet & Baths
 29. Shower
 30. Manager's Room

31. Guest Rooms

Locations are shown in the plan.

F2 600mm x 600mm Non Slipped Floor Tiles

1. K9's Room
2. Fire Exits
3. Entry Porch
4. Entry Porch (Health Office)

Locations are shown in the plan.

F3 Non- Skid / Rough Cement Floor Finish

1. Ramps

Locations are shown in the plan.

F4 Water Proof Finish

- a. Toilets
- b. Roof Deck
- c. Concrete Canopy

Locations are shown in the plan.

F5 300mm X 300mm Ceramic Tactile

- a. Porch
- b. Service Entrance/ Exit
- c. Fire Exits (Left & Right Side Outside)

Locations are shown in the plan

a. Floor tiles shall be color varies and as shown on the drawings or to be designated by the Architect.

b. Portland Cement, sand, water and adhesive shall conform with the requirements.

c. Floor tiles shall be delivered in the manufacturer's original unbroken packages or containers that are labeled plainly with the manufacturer's name and brand. Containers shall be grade scaled. Materials shall be stored in dry weathertight enclosures, and shall be handled in a manner that will prevent the inclusion of foreign materials and damage by water or dampness.

EXECUTION

Floor Tiles

a. Mortar Preparation

Mortar mix proportion and preparation shall be in accordance with the requirements.

b. Surface Preparation

Surfaces to receive the tiles shall be clean, free of dust, dirt, oil, grease, and other deleterious substances. Floor tile operations in spaces receiving wall tile shall not be started until wall tile installation has been completed. Before tile is applied with a dryset mortar bed, the structural floor shall be tested for levelness or uniformity of slope by flooding it with water. Areas where the water ponds shall be filled and leveled with mortar and shall be retested before the setting bed is applied.

c. Placing of Setting Beds and Floor Tile

Mortar setting beds shall have a minimum thickness of 20mm for floors. The structural concrete slab shall be soaked thoroughly with clean fresh water on the day before the setting bed is to be applied. Immediately preceding the application of the setting bed, the structural slab shall again be wetted thoroughly, but no free water shall be permitted to remain on the surface.

A skim coat of neat Portland cement mortar shall then be applied not more than 4mm thick. The mortar shall be spread until its surface is true and even and thoroughly compacted, either level or sloped uniformly for drainage, as the case requires. A setting bed, as large as can be covered with tile before the mortar has reached its initial set, shall be placed on one operation; but in the event that more setting mortar has been placed than can be covered, the unfinished portion shall be removed and cut back to a clean beveled edge.

All mounted tiles shall be soaked in clean water a minimum of one hour before they are set. Absorptive mounted tile shall be dampened by placing sheets on a wetted cloth in a shallow pan before setting. No free water shall remain on the tiles at the time of setting. Before the initial set has taken place in the

setting bed, a skim coat of neat Portland cement mortar, 0.7mm to 1.6mm thick, shall be trowelled or brushed over the setting bed and/or the back of the tile, or a thin layer of Portland cement, 0.79mm to 2mm thick, may be hand-dusted uniformly over the setting bed and worked lightly with a trowel or brush until thoroughly damp.

The tiles shall then be pressed firmly upon the setting bed, and beaten into the mortar until true and even with the plane of the finished floor line. Beating and leveling shall be completed within one hour after placing tiles or sheets. Borders and defined lines shall be laid before the field or body of the floor. Where floor drains are provided, the floors shall be sloped to drain properly to the drains. Intersections and returns shall be formed accurately.

Cutting of tile, where necessary, shall be done along the outer edges of the floor. As far as practicable, no tiles of less than half size shall be used. Cutting and drilling of tiles shall be done neatly without marring the tile surfaces. The cut edges of tile against trim, bases, thresholds, pipes, built-in fixtures, and similar surfaces shall be ground and jointed carefully. Tile shall fit closely and neatly at all plumbing fixtures and around electrical outlets, pipes and fittings so that cover plates or escutcheons will overlap the tiles properly. Tiles shall be secured firmly in place and loose tiles or tiles sounding hollow shall be removed and replaced. All lines shall be kept straight, parallel, and true, and all finished surfaces brought to true and even planes. The inner edges of borders shall be kept straight and, where practicable, shall form right angles at all returns. The paper and glue shall be removed from mounted tile, without using excess water, within one hour after installing the tiles.

Joints shall be parallel and uniform in width, plumb, level and in alignment. End joints in broken-joint work shall be made as far as practicable, on the center lines of adjoining tiles. Except in special arrangement and design, as indicated or specified, square tiles shall be set with straight joints, and oblong tiles shall be set with broken joints.

Joint widths shall be uniform and spaced to accommodate the tile in the given spaces with a minimum of cutting. Tiles shall be wetted, if they have become dry, before applying grout. Joints 3.2 mm or less in width shall be grouted with a neat Portland cement grout of the consistency of thick cream. Other joints shall be pointed with mortar consisting of one part Portland cement and two parts pointing sand.

The grout or mortar for joints on floors shall be white Portland cement or as specified by the Engineer. Grout pointing mortar shall be forced into joints by using trowel, brush or finger application. Before the grout or mortar sets, the joints of cushion edge tile shall be struck or tooled to the depth of the

cushion, filling all skips or gaps, and the joints of square edged tiles shall be filled completely flush with their surface. Dark cement shall not be seen through grouted white joints.

All surplus mortar or grout shall be removed before it has set or hardened.

d. **Cleaning and Curing**

Floors shall be covered with waterproofed paper with all joints lapped at least 96 mm and allowed to damp cure for at least 72 hours before foot traffic is permitted thereon.

All completed tile work shall be thoroughly sponged and washed diagonally across joints, and finally polished with clean, dry cloth. Acid cleaning of unglazed tile, when necessary, shall not be done within ten days after setting the tile. All metal shall be covered with approved grease and the tile shall be wetted with clean water, before tile is cleaned with 10% muriatic acid solution. After acid cleaning, the tile shall be flushed with clean water, and the grease coating on metal shall be removed.

Finished tile floors shall be covered with clean building paper before foot traffic is permitted on them. Board walkways shall be placed on floors that are to be continuously used as passage ways by workmen. Thresholds shall be covered with boards. Tiles vertical outside corners (external angles) shall be protected with board corners strips in areas used as passage by workmen.

Ceiling

1. **Interior**

1. C1 - 12 mm thick Gypsum Board, painted finish, on 0.40mm thick galvanized steel ceiling suspension system at 0.40 meter on center (furring) 0.60 meter on center (Carrying channel) and 1.20 meters on center both ways (suspension rod) or Approved Equivalent

1. Lobby/ Lounge/ Hallway
2. Investigation Room
3. Interrogation Room
4. Pantry
5. Male & Female Temporary Cells
6. Port Police Office
7. Conference Room
8. Library
9. Armory
10. Communication Room
11. CCTV Room

12. File Room
13. Storage
14. Nursing Mother / Diaper Changing Room
15. Clinic
16. Control Room
17. Electrical Room
18. K9 Room
19. Emergency Exit
20. Male & Female Toilet
21. PWD Toilet
22. All Gender Toilet
23. Toilets
24. File Room
25. Electrical Room
26. Emergency Exits
27. Agencies Office
28. Common Area
29. Manager's Room
30. Guest Room 1
31. Guest Room 2
32. Male & Female Quarters
33. Toilet & Baths
34. Shower

Locations are shown in the plan.

2. C2 - 600mm X 600mm X0.70mm thick Aluminum Clipped - in perforated panels, Bone white or approved equivalent

1. Port Police Office
2. Stacom's Office
3. Investigation Room
4. Interrogation Room
5. Guard-On Duty
6. Health Office
7. Pantry

Location is shown in the plan.

3. C3 - 50mm x 100mm x 5.80m Lightweight Timber Look uPVC Extruded Material Baffle Ceiling Suspended on Metal Track

1. Lobby
2. Stairwell

Location is shown in the plan.

4. C4 - 4mm thick Aluminum Composite Panel Champagne Silver or approved equivalent

1. Entry Porch

Location is shown in the plan.

5. C5 – Painted underside slab

1. R.C. Canopy
2. Entry Porch
3. Reinforce Concrete Canopy
4. Roof Spandrel Area

Locations are shown in the plan.

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.

GRANITE TILES

- a. Selected granite slabs for toilet countertops, fascia and splashboard. Dimensions as shown on the drawings.
- b. Shall be sound material with uniform and favorable working qualities and with very limited natural faults.
- c. Color, veining and quality shall be approved by Engineer.
- d. Veining shall run vertically on all vertical surfaces and direction of veining shall continue in same directions over horizontal surfaces except as directed by the Engineer.
- e. Sealer
 - e. 1. Shall be a commercial penetrating type free from harmful alkali or acid content
specially prepared for marble work

- e. 2. Shall have a Ph factor between 7 and 9
- e. 3. Shall not discolor
- e. 4. Shall produce a slip resistant surface
- e. 5. Shall have a flash point not less than 35 °C
- f. Cleaning fluid
 - f. 1. Shall be commercial neutral liquid type especially prepared for marble work
 - f. 2. Shall have a Ph factor between 7 and 9
 - f. 3. Shall be free from crystallizing salts or water soluble alkaline salts
 - f. 4. Shall be biodegradable and phosphate free

INSTALLATION OF DOORS / GLASS PANELS

1. Surface Preparation

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

DOORS

- D-1 - Frameless 12 mm Thick. Reflective Tempered Glass Double Leaf Door (1.60m x 2.70m)
- D-2 - Frameless 12 mm Thk. Clear Glass Double Leaf Door (1.70m x 2.15m)
- D-3 - Frameless 12 mm Thk. Clear Glass Door (0.90m X 2.15m)
- D-4 - Marine Plywood Painted Finish Flush Door with 8mm thick Fixed Clear Tempered Glass (0.90m X 2.15m)
- D-5 - Marine Plywood Painted Finish Flush Door (0.90m X 2.15m)
- D-6 - Marine Plywood Painted Finish Flush Door with Louver (1.10m X 2.15m)
- D-7 - Marine Plywood Painted Finish Flush Door with Louver (0.90m X 2.15m)
- D-8 - Marine Plywood Painted Finish Flush Door with Louver (0.80m X 2.15m)
- D-9 - Solid Wood Painted Finish Panel Door (0.90m X 2.15m)
- D-10 - Marine Plywood Painted Finish Flush Door with Louver (1.60m X 2.15m)

**D-11 - Cold Rolled Steel Emergency Exit Door in Quick Drying Enamel Finish
With Panic Push Bar Lock (1.10m. x 2.15m.)**

D-12 - Steel Door with 25mm diameter round bars

PB-1 – Prison Steel Bars with 25mm dia. Round Bars (1.35m. x 2.15m.)

PB -2- Prison Steel Bars with 25mm dia. Round Bars (0.6m. x 1.2m.)

GLASS PANEL

**GP – 1 - Frameless 12mm Thk. Clear Tempered Glass Partition
(0.6m. x 2.15m.)**

**GP- 2 - Frameless 12mm Thk. Frosted Tempered Glass Partition
(1.60m. x 2.15m.)**

**GP- 3 - Frameless 12mm Thk. Clear Tempered Glass Partition
(0.50m. x 2.15m.)**

**GP- 4 - Frameless 12mm Thk. Clear Tempered Glass Partition
(3.0m. x 2.15m.)**

**GP -5 - Frameless 12mm Thk. Clear Tempered Glass Partition
(3.60m. x 2.15m.)**

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.

**W-1 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Fixed & Awning Window
(3.50m X 2.20m)**

**W-2 - Frameless 12mm Thk. Reflective Tempered Glass Fixed Window
(3.30m X 2.20m)**

**W-3 - Frameless 12mm Thk. Reflective Tempered Glass Fixed Window
(0.60m X 2.70m)**

**W-4 - Frameless 12mm Thk. Reflective Tempered Glass Fixed Window
(0.90m X 2.70m)**

**W-5 - Frameless 12mm Thk. Reflective Tempered Glass Fixed Window
(3.60m X 2.60m)**

**W-6 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Sliding Window**

(3.50m. x 1.65m.)

- W-7 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Sliding Window (1.10m. x 1.65m.)
- W-8 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Fixed and Sliding Window (1.60m. x 1.65m.)
- W-9 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Sliding Window (2.40m. x 1.65m.)
- W-10 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Fixed & Awning Window (2.60m. x 2.20m)
- W-11 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Fixed & Awning Window (3.30m. x 2.20m)
- W-12 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Awning Window (1.90m. x 2.20m)
- W-13 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Awning Window (1.30m. x 2.20m)
- W-14 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Awning Window (1.0m. x 0.50m)
- W-15 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Awning Window (0.60m. x 0.50m)
- W-16 - 1.5mm thk. Aluminum Framed Powder Coated Fin. With 10mm Thk.
Reflective Tempered Glass Awning Window (0.80m. x 0.50m)
- W-17 – Steel Window with 25mm Diameter Round Bars (1.10m. x 0.50m)

Mirror Glass

Mirror glass shall be of high quality float glass free from imperfections and impurities, 6.3 mm (1/4 inch) thick. Silvering shall be performed by modern continuous operation under controlled conditions. The coating shall be of pure silver and of adequate thickness to provide reflectivity of 83% or more of incident light, and shall be without pinholes or other defects visible to the naked eye.

Refer to plans for locations, dimensions and details.

ITEM 32 : ARCHITECTURAL ITEMS

A4 : FINISHES (INDENT ORDERS)

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
- Photoluminescent Signs and markings
- Tempered Glass Panels (Low-E Glass)
- Gang Chairs
- Green Wall System
- Signages and logos
- UPVC Baffle Ceiling

ITEM 32 : ARCHITECTURAL ITEMS

A5 : FINISHES (GATE & GUARD HOUSE)

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 and painting for the buildings 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

Guard House

1. Exterior
 - a. Plain cement finish painted with elastomeric paint.
 - b. 300mm X 600mm Slate Wall Tiles
2. Interior
 - a. Plain cement finish painted with elastomeric paint.

FLOOR

Shed

1. Non-skid Rough Cement Finish

Guard House

1. 300mm X 300mm Unglazed Ceramic Tile Finish

CEILING

Guard House

1. 12mm thk. gypsum board on 0.40mm thk galvanized steel ceiling suspension system including furring, carrying channel, suspension rod and other miscellaneous items (CF-1)

Canopy

1. Non-skid Rough Cement Finish (CF-2)

Shed & Pedestrian Gate

1. Pre-painted Ribbed Type Spandrel Ceiling (0.50mm x 150mm) (CF-3)

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.

MATERIAL REQUIREMENTS

WALL FINISHES

1. Plain Cement Finish
 - a. Sand shall be clean and hard material. Sand shall be free from deleterious substances and conforming with the requirements of ASTM C 33.
 - b. Cement shall be Portland cement conforming with the requirements of ASTM Designation C 150.
 - c. Water shall be clean and potable.
 - d. Bonding compound shall conform to ASTM C 631.
 - e. Hydrate lime shall conform to ASTM C 206.
 - f. Synthetic fibrous reinforcement shall conform to BS 5139 or ASTM C 1116.
2. Wall Tiles
 - a. Wall tiles shall be slate tiles color as per Architect's approval.
 - b. Trimmers and moulding shall be lustrous, glazed with size and color corresponding to wall tiles.
 - c. Portland cement, sand, bonding compound, lime and water shall conform with the requirements.

FLOOR FINISHES

1. Vitrified Ceramic Unglazed Tiles
 - a. Vitrified ceramic unglazed floor tiles shall be color varies and as shown on the drawings or to be designated by the Architect.
 - b. Portland Cement, sand and water shall conform with the requirements.
 - c. Vitrified ceramic unglazed floor tiles shall be delivered in the manufacturer's original unbroken packages or containers that are labeled plainly with the manufacturer's name and brand. Containers shall be grade scaled. Materials shall be stored in dry weathertight enclosures, and shall be handled in a manner that will prevent the inclusion of foreign materials and damage by water or dampness.

2. Non-skid floor finished shall be applied to ramps.

EXECUTION

WALL FINISHES

1. Plain Cement Finish

- a. Preparation of Surfaces

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.

2. Wall Tiles

a. Mortar Preparation

All mortar setting beds shall be mixed by volume in the proportion of 1 part Portland cement and 3 parts dry sand and not more than 1/10 part hydrated lime.

Mortar materials shall be measured in approved containers, which will insure that the specified proportions of materials will be controlled and accurately maintained during the progress of the work. Measuring materials with shovels, "shovel count", will not be permitted. Unless specified otherwise, mortar shall be mixed in proportions by volume, in an approved mortar box.

The quantity of water shall be controlled accurately and uniformly. The aggregates shall be introduced and mixed in such manner that the materials will be distributed uniformly throughout the mass. A sufficient amount of water shall be added gradually and the mass further mixed until a mortar of the elasticity necessary for purpose intended is obtained. Mortar boxes, pans and wall surfaces shall be kept clean and free from debris or dried mortar. The mortar shall be used before the initial set of the cement has occurred. Re-tempering of mortar in which cement has started to set will not be allowed.

b. Application of Wall Tile

Interior masonry shall be clean, thoroughly dry, sound and sufficiently rough to provide strong mechanical bond. Surfaces shall be evenly damped immediately prior to the application of the scratch coat.

Scratch coat shall be applied to masonry, as backing for wall tile, not less than 24 hours or more than 48 hours before starting the tile setting. The scratch coat shall not be less than 6 mm from the face of the masonry. The scratch coat shall be applied with sufficient pressure to ensure a proper bond with the base for the setting bed. While the mortar is still plastic, the scratch coat shall be cut with a trowel at all internal vertical angles for the depth of the coat with the full height of the tile bed and shall be cross-scratched, in 25 mm centers for the extent of the tile bed.

Immediately before the application of mortar setting bed, the scratch coat shall be moistened thoroughly but not saturated. Temporary screeds shall be applied to the scratch coat with mortar to provide a true and plumb surface, the proper distance back from the finished wall line. The setting bed shall be applied, rodded and floated flush with the screeds over an area not greater than the area to be covered with the tile while the bed remains plastic. The thickness of the setting bed shall not exceed 15mm and the mortar shall not be re-tempered. The setting bed shall be cut with a trowel at all internal corners as specified for the scratch coat.

Mounted tiles shall be soaked in clean water a minimum of one hour before they are set. Absorptive mounted tiles shall be damped by placing sheets on a wetted cloth in a shallow pan before setting. A skim coat of neat Portland cement mortar, mixed with water to the consistency of a pasty, thick cream, shall be applied 0.8mm to 1.6mm thick to the mortar setting bed, or to the back of each tile as laid. The tiles shall then be pressed firmly on the setting bed and tamped until flush and in the plane of the other tiles. The tiles shall be applied before the mortar bed has

taken its initial set.

Intersections and returns shall be formed accurately. Where cutting of tiles is necessary it shall be done at the internal angles of the walls or wainscots. Cutting and drilling tiles shall be done neatly without marring the surfaces. The cut edges of tiles against trim, built-in fixtures, and similar surfaces shall be ground and jointed carefully. The tiles shall fit closely with plumbing fixtures and around electric outlets, pipes and fittings, so that the plates or escutcheons will properly overlap the tiles. Wainscots shall be within one half of the heights indicated without cutting of the tiles.

Bases, caps, bull-nose corners, and all other trimmers moulded or shaped features, and accessories shall be backed thoroughly with mortar and set firmly into place. All lines shall be kept straight and true, and all finished surfaces brought to true and even planes, straight and plumb, and internal corners squared and external corners rounded.

Horizontal joints shall be maintained level and vertical joints plumb and in alignment. The completed work shall be free of broken, cracked, damaged or otherwise faulty tiles.

Joints shall be parallel and uniform in width, plumb, level and in alignment. End joints in broken-joint work shall be made as far as practicable, on the center line of adjoining tiles. Except in special arrangement and design, as indicated or specified, square tiles shall be set with straight joints, and oblong tiles shall be set with broken joints.

Joint widths shall be uniform and spaced to accommodate the tile in the given spaces with a minimum of cutting. Tiles shall be wetted, if they have become dry, before applying grout. Joints 3mm or less in width shall be grouted with a neat Portland cement grout of the consistency of thick cream. Other joints shall be pointed with mortar consisting of one part Portland cement and two parts pointing sand. The grout for walls and other vertical surfaces shall contain non-staining white Portland cement. Grout and pointing mortar shall be forced into joints by using trowel, brush or finger application.

Before the grout or mortar sets, the joints of cushion edge tiles shall be struck or tooled to the depth of cushion, filling all skips or gaps, and the joints of square edge tiles shall be filled completely flush with their surface. Dark cement shall not show through grouted white joints. Care shall be taken to avoid scratching glazed finishes. All mortar or grout shall be removed before it has set or hardened.

c. **Cleaning and Curing**

All completed tile work shall be thoroughly sponged and washed diagonally across joints, and finally polished with clean, dry cloth. Acid cleaning of unglazed tile, when necessary, shall not be done within ten days after setting tile. All metal shall be covered with an approved grease and the tile shall be wetted with clean water, before tile is cleaned with 10% muriatic acid solution. After acid cleaning, the tile shall be flushed with clean water, and the grease coating on metal shall be removed. Acid cleaners shall not be used on glazed tile.

d. **Protection**

Tiled walls outside corners (external angles) shall be protected with board corner strips in areas used as passage ways by workmen. Extreme care should be taken not

to disturb walled tiled until mortar has fully set.

3. 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

With mesh:

1st Coat: Elastomeric Wall Covering Sealer

2nd Coat: Elastomeric Wall Covering Basecoat
Reinforcing Membrane: Fiberglass Matting

3rd and 4th Coat: Elastomeric Wall Covering Basecoat

5th Coat: Elastomeric Wall Covering Topcoat

FLOOR FINISHES

1. Vitrified Ceramic Tiles

a. Mortar Preparation

Mortar mix proportion and preparation shall be in accordance with the requirements.

b. Surface Preparation

Surfaces to receive the tiles shall be clean, free of dust, dirt, oil, grease, and other deleterious substances. Floor tile operations in spaces receiving wall tile shall not be started until wall tile installation has been completed. Before tile is applied with a dryset mortar bed, the structural floor shall be tested for levelness or uniformity of slope by flooding it with water. Areas where the water ponds shall be filled and leveled with mortar and shall be retested before the setting bed is applied.

c. Placing of Setting Beds and Floor Tile

Mortar setting beds shall have a minimum thickness of 20mm for floors. The structural concrete slab shall be soaked thoroughly with clean fresh water on the day before the setting bed is to be applied. Immediately preceding the application of the setting bed, the structural slab shall again be wetted thoroughly, but no free water shall be permitted to remain on the surface.

A skim coat of neat Portland cement mortar shall then be applied not more than 4mm thick. The mortar shall be spread until its surface is true and even and thoroughly compacted, either level or sloped uniformly for drainage, as the case requires. A setting bed, as large as can be covered with tile before the mortar has reached its initial set, shall be placed on one operation; but in the event that more setting mortar has been placed than can be covered, the unfinished portion shall be removed and cut back to a clean beveled edge.

All mounted tiles shall be soaked in clean water a minimum of one hour before they are set. Absorptive mounted tile shall be dampened by placing sheets on a wetted cloth in a shallow pan before setting. No free water shall remain on the tiles at the time of setting. Before the initial set has taken place in the setting bed, a skim coat of neat Portland cement mortar, 0.7mm to 1.6mm thick, shall be trowelled or brushed over the setting bed and/or the back of the tile, or a thin layer of Portland cement, 0.79mm to 2mm thick, may be hand-dusted uniformly over the setting bed and worked lightly with a trowel or brush until thoroughly damp.

The tiles shall then be pressed firmly upon the setting bed, and beaten into the mortar until true and even with the plane of the finished floor line. Beating and leveling shall be completed within one hour after placing tiles or sheets. Borders and defined lines shall be laid before the field or body of the floor. Where floor drains are provided, the floors shall be sloped to drain properly to the drains. Intersections and returns shall be formed accurately.

Cutting of tile, where necessary, shall be done along the outer edges of the floor. As far as practicable, no tiles of less than half size shall be used. Cutting and drilling of tiles shall be done neatly without marring the tile surfaces. The cut edges of tile against trim, bases, thresholds, pipes, built-in fixtures, and similar surfaces shall be ground and jointed carefully. Tile shall fit closely and neatly at all plumbing fixtures and around electrical outlets, pipes and fittings so that cover plates or escutcheons will overlap the tiles properly. Tiles shall be secured firmly in place and loose tiles or tiles sounding hollow shall be removed and replaced. All lines shall be kept straight, parallel, and true, and all finished surfaces brought to true and even planes. The inner edges of borders shall be kept straight and, where practicable, shall form right angles at all returns. The paper and glue shall be removed from mounted tile, without using excess water, within one hour after installing the tiles.

Joints shall be parallel and uniform in width, plumb, level and in alignment. End joints in broken-joint work shall be made as far as practicable, on the center lines of adjoining tiles. Except in special arrangement and design, as indicated or specified, square tiles shall be set with straight joints, and oblong tiles shall be set with broken joints.

Joint widths shall be uniform and spaced to accommodate the tile in the given spaces with a minimum of cutting. Tiles shall be wetted, if they have become dry, before applying grout. Joints 3.2 mm or less in width shall be grouted with a neat Portland cement grout of the consistency of thick cream. Other joints shall be pointed with mortar consisting of one part Portland cement and two parts pointing sand. The grout or mortar for joints on floors shall be white Portland cement or as specified by the Engineer. Grout pointing mortar shall be forced into joints by using trowel, brush or finger application. Before the grout or mortar sets, the joints of cushion edge tile shall be struck or tooled to the depth of the cushion, filling all skips or gaps, and the joints of square edged tiles shall be filled completely flush with their surface. Dark cement shall not be seen through grouted white joints.

All surplus mortar or grout shall be removed before it has set or hardened.

d. **Cleaning and Curing**

Floors shall be covered with waterproofed paper with all joints lapped at least 96 mm and allowed to damp cure for at least 72 hours before foot traffic is permitted thereon.

All completed tile work shall be thoroughly sponged and washed diagonally across joints, and finally polished with clean, dry cloth. Acid cleaning of unglazed tile, when necessary, shall not be done within ten days after setting the tile. All metal shall be covered with approved grease and the tile shall be wetted with clean water, before tile is cleaned with 10% muriatic acid solution. After acid cleaning, the tile shall be flushed with clean water, and the grease coating on metal shall be removed.

Finished tile floors shall be covered with clean building paper before foot traffic is permitted on them. Board walkways shall be placed on floors that are to be continuously used as passage ways by workmen. Thresholds shall be covered with boards. Tiles vertical outside corners (external angles) shall be protected with board corners strips in areas used as passage by workmen.

3. **Plain Cement Floor Finish with Non-metallic Floor Hardener**

a. **Trial Mix**

No plain cement floor finish work shall be started without the approval of the Engineer of the trial mix.

b. **Application**

The concrete sub-floor shall be cleaned and projection, dust, loose particles and other materials which would prevent good bond shall be removed. The sub-floor surface shall be moistened but not soaked, dry cement shall then be sprinkled over it and the mortar shall be spreaded on the setting bed. The surface shall be tamped to assure a good bond over the entire area and screeded to provide a smooth and level bed at proper height.

Mortar mix shall be one part Portland cement to three parts sand. Following the placing of leveling concrete on the floor and after the concrete is free from excess water, a dry mixture of 2 parts of floor hardener and 1 part Portland cement shall be uniformly dusted over the floor. Three kilograms of floor hardener shall be used for every square meter of flooring or in accordance with approved manufacturer's specifications. The dry mixture shall be floated thoroughly into the surface which shall be finished by steel trowelling and cured by water or curing compound for seven (7) days.

4. **Protection**

- a. Before turn over of the building to the Owner, wash pebble surfaces with 1 part muriatic acid to 6 parts clean water.
- b. Apply an overlapping strokes of water shield using brush or by low pressure spraying. Dries to a tack-free surface in 4-6 hours and cures to form an effective water repellant film in approximately 24 hours.
- c. Protect finished surface with specified hardeners and sealants.

INSTALLATION OF DOORS**1. Surface Preparation**

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

DOORS AND WINDOWS**Guard House**

- D-1 - 1.5mm thk. Aluminum Framed Powder Coated Finish (Brown) with 8mm thk. Reflective Tempered Glass Swing Door (0.80m x 2.15m)

INSTALLATION OF WINDOWS**Guard House**

- W-1 1.5mm thk. Sliding Type Window w/ 8mm thk. Reflective Tempered Glass (1.20m x 1.20m)
- W-2 1.5mm thk. Sliding Type Window w/ 8mm thk. Reflective Tempered Glass (0.60m x 1.20m)

AUTOMATIC VEHICLE BARRIER**1. Vehicle Barrier**

- Access Barrier Automat Metal Chain Barrier High Integrated Equipment Barrier Gate
- a. Dimension – 330mm x 232mm x 1030mm
- b. Power / Power Supply - 100W / AC220V±10V ,50Hz / AC110V±10V ,60Hz
- c. Arm Open/Close Time - 2/3/6s
- d. Maximum straight boom length - 2s type: 3m,
3s type 4.5m,
6s type: 6m
- e. Communication Interface - RS485 (Distance <= 1200m) / TCP/ IP

Locations are shown in the plan.

ITEM 32 : ARCHITECTURAL ITEMS**A6 : CARPENTRY, JOINERY WORKS****SCOPE OF WORK**

The work shall consist of furnishing all tools, labor, equipment and materials, unless otherwise specified to complete all carpentry and joinery works shown on the Drawings and specified herein.

GENERAL REQUIREMENTS**a. Lumber Grades**

Lumber shall be of the best grade available, of the respective kinds required for the various parts of work; well seasoned, thoroughly dry and free from loose or unsound knots, sap, shakes or other imperfections impairing its strengths, durability and appearance. All exposed woodwork shall be smooth by dressed and sandpapered unless otherwise indicated or specified. Framing lumber shall be of the rough dimensions unless otherwise shown on the drawings.

b. Substitution of Lumber

Any lumber equally good for the purpose intended maybe substituted for the kind specified, subject to prior written approval of the Engineer. Provided, however, that in the substitution of the cheaper kind of lumber than that specified, a reduction in the contract price equal to the difference in the costs of the two kinds of lumber shall be made.

c. Delivery and Storage

The Contractor shall deliver lumber to the site in undamaged condition. Lumber shall be stacked in such a manner as to insure proper ventilation and drainage, and shall be supported at least 150 mm above-ground. Lumber shall be protected against dampness before and after delivery, and enough protection under cover in well ventilated enclosure, not exposed to extreme changes of temperature and humidity; and in a manner as to provide air-circulation around all surfaces of each pile to insure thorough air-seasoning. Lumber or millwork in buildings shall not be finished until concrete, masonry work and plaster are dry. Lumber shall be delivered at least thirty (30) days before use.

d. Grading of Plywood

Each sheet of plywood shall bear the mark identifying the plywood as to wood species, glue type and grade.

MATERIALS**a. Lumber**

Lumber for various uses shall be one of the species listed for the purpose indicated unless otherwise specified in the drawing. For any use not specified, the lumber shall be the best commercial grade normally used for the purpose, subject to the approval of the Engineer.

All framings shall be done as far as possible with carefully fitted mortise and tenon joints.

All doors, windows, transoms, or other opening where so indicated on plans, shall have frames and sills of the dimensions shown or as hereafter detailed, and all frames coming in contact with concrete shall be anchored by means of 20-d nails, spaced not more than 0.20m, apart, all around the contact surfaces. All frames shall be rabbetted, molded and cut with saw and cut under for water drips.

SPECIE	U S E
Yakal	All door jambs, headers and transom bars, wood plates and all other woodwork in contact with concrete or masonry and where indicated.
Apitong (pressure treated)	All truss members and rafters and where indicated; all wood framings and carpentry, except when in contact with concrete.
Tanguile (Kiln dried)	All exterior and interior mill work, siding, finish and trim, frame work and all other wood works not specifically mentioned; except when in contact with concrete.

b. Plywood

Plywood shall conform to Commercial Standard PSI and shall be of local manufacture.

Plywood to be varnished shall be tanguile or kalantas veneers (as indicated), ribbon grained, water resistant, Class B and of the thickness indicated.

Plywood to be painted shall be tanguile veneer ordinary rotary-cut, water resistant, Class C and of thickness indicated.

Plywood exposed to the outside elements or where indicated shall be waterproof or marine plywood and of the thickness indicated.

c. Fastenings

Fastenings shall be common nails, glue or specified, flat-head wood screws (F.H.W.S.), rough-head wood screws (R.H.W.S.), bolts or lag screws where specified or called for shall be used. Conceal fastenings as much as possible; where not possible, locate them in inconspicuous places, where nailing is permitted through woodwork smooth-finished face, conceal nail heads.

1. Nails

Shall be of the smooth shank, zinc coated, common wire nails of local manufacture, and of types and sizes best suited for the purpose.

2. Wood Screws

Shall be brass or cadmium plated of the best available commercial quality, and of types and sizes suited for the purpose.

PRESSURE-TREATED LUMBER**a. Preservative Treatment**

All lumber indicated to be pressure treated, shall contain any of the following net retention of solid preservative.

- | | | |
|----|------------------|--|
| a. | Boliden Salts - | 45.5 kg. dry chemical per cubic foot of wood |
| b. | Wolman Salts - | 0.31 kg. dry chemical per cubic foot of wood |
| c. | Tenalith Salts - | 0.34 kg. dry chemical per cubic foot of wood |

The Contractor shall submit an affidavit signed by an official of the preservative treatment company to the Engineer. This affidavit shall indicate the net retention of solid preservatives obtained and shall certify that pressure treated lumbers have a moisture content that does not exceed 17 percent upon shipment from the treatment plant.

Where it is necessary to cut or bore pressure-treated lumber on the job, two coats of prepared concentrated preservatives solution shall be applied to the end-cut or bored surfaces.

ROUGH CARPENTRY

All work shall be well fitted, accurately set, and rigidly secured in place. Anchors and bolts (with nuts and washers) straps and tie rods shall be provided as required.

a. Cutting and Fitting

Cutting and fitting to accommodate other work shall be done in the required manner, and cut or damaged work shall be patched and made good.

b. Framing and Structural

Framing and structural lumber shall be well-seasoned, straight, square-edge stacks, and free from loose or unsound knots, bark edges or other defects that will impair its strength.

c. Plates for Walls and Partitions

Plates for walls and partitions shall be of the same width as the studs and shall form continuous horizontal ties.

Structural members shall not be cut, bored or notched for the passage of pipes or conduits without prior approval of the Engineer. All members damaged by such cutting or boring shall be reinforced by means of specially formed and approved sheet metal or steel shapes or remove or replaced with new member as directed.

Anchors, connectors and fastenings not indicated or specified otherwise shall be of the size and types necessary to suit the conditions encountered. Size, type and spacing of nails, screws or bolts for installation of manufactured building materials shall be as recommended by the product manufacturer unless indicated or specified otherwise.

Rough hardware, exposed to weather or in contact with exterior walls or masonry or slabs shall be zinc-coated except as specified otherwise.

All lumber surfaces in contact with concrete or masonry shall be given a brush coat of bituminous paint before installation.

JOINERY WORK

All lumber used for the joinery work shall be of the kinds and grades specified and shall be of the contours, patterns and profiles indicated.

All joints shall be made, installed tight and securely fastened in a manner approved by the Engineer. Exterior joints shall be mitered and interior angles coped. Panels shall be fitted to allow for shrinkage, avoid swelling, and insure that the work remain in place without warping, splitting and opening of joints.

Interior trims shall be approved standard stock moldings, except where special patterns or profiles are indicated.

Joints for cabinet work shall be glued in addition to nails or other fastening device required. Nailing shall be concealed where practicable. Where face nailing is used, nails shall be set for putty stopping.

All exposed surfaces shall be machined or hand sanded finished to an even smooth surface. No hammer marks or other unsightly marks shall be allowed on any wood panel or veneer.

WOOD LAMINATES AND WOOD PLASTIC COMPOSITE PANELS

INTRODUCTION

A. WOOD LAMINATES

A wood laminate is a thin sheet of material used to cover the core of a wood project in order to change the appearance of the material. Laminates may be any material, but typically they are made veneers, which are thin sheets of wood.

High-pressure decorative laminates are characterized by their qualities, durability, and functional performance. High-pressure laminate sheets are available in a wide variety of colours, patterns and surface finishes. They are resistant to wear, scratching, impact, moisture, heat, and staining; and possess good hygienic and anti-static properties, being easy to clean and maintain.

B. WOOD-PLASTIC COMPOSITE

Wood-Plastic Composite architectural products are a sustainable timber alternative with added benefits such as durability and strength.

SCOPE OF WORK

This item shall consist of furnishing all wood laminates and wood composite panels materials, labor, tools and equipment required in undertaking the proper installation as shown on the Plans and in accordance with this specifications.

SPECIFICATIONS

- Wood Laminates: 6mm THK substrate laminated on HPL Accent Matte Finish for Interior Cladding or any approved equivalent by the designing Architect.
- Wood Composite Panels: Supply and Installation of Wood-Plastic Composite panels in sizes: 500mm X 45mm X 50mm including angle bracket support or any approved equivalent by the designing Architect.

SUBMITTALS

A. PRODUCT DATA

Manufacturer's printed product literature, specifications, and data sheets

B. SHOP DRAWINGS

Indicate project layout; dimensions and thickness of panels; connections; details and locations of joints and sealant; methods of anchorage; number of anchors; supports; reinforcement; flashings; accessories; materials; and finishes.

C. SAMPLES

1. Sample materials for selection and verification of finishes, colors, and textures.
2. Sample of panel assembly.

QUALITY ASSURANCE

- A. Fabricator / installer to be accepted by the manufacturer.
- B. Fabricator / installer to have work similar in scope and size to this project.
- C. Take field measurements prior to completion of shop manufacture or fabrication. Coordinate fabrication schedule with construction progress to avoid delay of work. Field fabrication should be allowed to ensure proper fit and keep it to minimum with majority of fabrication being done under controlled shop conditions.

PREPARATION

Ensure surfaces to receive wood laminates and wood-plastic composite panels are structurally leveled, even, smooth, clean, dry, and free from defects detrimental to work. Notify consultant thru writing of conditions unfavorable to proper and timely completion of work. Do not proceed with erection until unsatisfactory conditions have been corrected.

ACCESSORIES

Screws, nuts, washers, bolts, rivets, angle bars and other miscellaneous fastening devices shall be made of non-corrosive materials such as aluminum and stainless steel.

ITEM 32 : ARCHITECTURAL ITEMS

A7 : PAINTING

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 covers the surface preparation, coating materials and application of coatings systems required for the Works.

The work shall consist of furnishing of all labor, materials, equipment and other incidentals necessary for the supply of painting materials and the complete painting of surfaces as shown on the drawings in accordance with this Specification and as directed by the Engineer.

The term paint as hereinafter used includes emulsion paints, varnishes, oils, pigments, thinner and dryers.

All exposed metal surfaces, except metal surfaces embedded in concrete, shall be painted unless otherwise specified.

STANDARD

The following publications listed below, but referred to thereafter by basic designation only, forms a part of these Specifications to the extent indicated by the reference thereto:

Steel Structures Painting Council (SSPC) U.S. Specification JIS K 5628 Red-lead Zinc Chromate Anti-Corrosive Paint.

SUBMITTAL

1. The Contractor shall submit work method statements with lists of materials to the Engineer for approval twenty eight days before the starting of works. This statement shall include following items:
 - a. Type of paint and manufacturer
 - b. Manufacturer's specifications
 - c. Storage and delivery of materials
 - d. Surface preparation
 - e. Finish painting and drying
 - f. Touch-up painting, if any
 - g. Equipment
2. The Contractor, before placing order for the painting materials, shall submit to the Engineer for approval samples of materials. No placing of orders for material shall be

made without his approval.

STORAGE AND DELIVERY

1. The Contractor shall deliver all material to the site in the original labeled sealed cans and containers, with labels intact and seal unbroken.
 - a. Seals shall remain unbroken until after inspection and acceptance of material by the Engineer.
 - b. The Contractor shall deliver materials in ample quantities sufficiently in advance of the need to avoid any delay or interruptions in the works.
2. Paint in thinner shall be stored in accordance with the approved manufacturer's instructions.
 - a. All regulations required for storage of paint shall be observed and all necessary safety signs required by governing codes shall be posted.
 - b. Any damage caused by failure to exercise proper precautions in paint storage shall be repaired.

MATERIAL REQUIREMENTS

PAINT

Paints for the protective coating system shall be the product of a manufacturer approved by the Engineer.

Paints for exterior finish must be with tile like durability and elegance, fast drying, solvent based acrylic, highly suitable for coastal or polluted areas with excellent anti-fungus properties and alkali resistance.

100% Acrylic, water based, quick-drying, easy to clean-up and environmentally friendly, resist dirt, stains, alkali, water, humidity, algae, mold and mildew growth and highly durable paint for interior finish.

An all-purpose synthetic quick dry paint for all types of wood and metal surfaces. It has high gloss, good color retention and outstanding durability.

For pipes, valves and equipment, galvanized and ungalvanized ferrous metal, use a 100% acrylic gloss paint, has excellent resistance to ultraviolet rays and resists chalking, cracking and color fading, dries fast and environmentally friendly.

SCHEDULE OF PAINTING

Architectural Items	
a. Exterior Finishes	
1. On Concrete Walls	
Three Coats, Concrete Masonry Paint	Elastomeric Paint or approved equal
2. Unprimed Ferrous Metal	
First Coat	Red Oxide Primer, #310 or approved equal
Second & Third Coat	Quick Dry Enamel or approved equal
3. On Concrete Block Wall	
Masonry Neutralizer	Masonry Neutralizer #44 or approved equal
Three Coats Concrete Masonry Paint	Elastomeric Paint or approved equal
4. On Wood	
First Coat Exterior Wood Primer	Flatwall Enamel or approved equal
Second & Third Coat Exterior enamel	Quick Drying Enamel or approved equal
b. Interior Finishes Location of the various finishes are listed in the Finish Schedule on the drawings or else will be confirmed by PPA	
1. On primer and coated metal two coats of interior semi-gloss enamel or as indicated in the Schedule finish	Red Oxide Primer #310, Quick Dry Enamel or approved equal
2. On Plaster	
First Coat	Masonry Neutralizer #44 or approved equal
Three Coats	Elastomeric Paint

	or approved equal
3. On Wood	
First Coat Enamel undercoater	Flatwall Enamel or approved equal
Second & Third Coat Exterior enamel	Quick Drying Enamel or approved equal
4. Wood Stain Finish	
First Coat Second & Third Coats Fourth & Fifth Coats	Oil Wood Stain , Lacquer Sanding Seale r#1254 Clear Gloss Lacquer #1250 or approved equal
c. Non – Architectural Items (Piping, valves, equipment, etc.)	
1. Piping, valves, equipment etc. in rooms to be painted	
2. Galvanized pipes and ducts	
Primer – one coat	Red Oxide Primer, #310 or approved equal
Finish – one coat	Quick Dry Enamel or approved equal
3. Black steel pipes	
Primer – one coat	Red Oxide Primer, #310 or approved equal
Finish – one coat	Quick Dry Enamel or approved equal
4. Mechanical Items	
a. Ungalvanized ferrous metal Primer – one coat	Red Oxide Primer, #310 or approved equal
Finish – one coat	Quick Dry Enamel or approved equal or approved equal
b. Galvanized ferrous metal Primer – one coat	Red Oxide Primer, #310 or approved equal
Finish – one coat	Quick Dry Enamel or approved equal or approved equal
c. Submerged galvanized ferrous metal Primer – one coat	Red Oxide Primer, #310 or approved equal
d. Buried miscellaneous ferrous surface valves, & flanged joints (excl. pipe) Primer – one coat	Red Oxide Primer, #310 or approved equal

EXECUTION

SURFACE PREPARATION OF STEEL

1. Steel surfaces shall be cleaned as follows:
 - a. All round welds, burrs and sharp surface projections shall be ground smooth and all weld splatter shall be removed prior to blast cleaning.
 - b. Sand abrasives, if used, shall be clean, and free from salt and extraneous matter. The sand shall pass through a 2.0mm test sieve, and be substantially retained on a 0.18mm test sieve, with at least 25 percent retained on a 0.355mm test sieve.
 - c. Metallic abrasive, if used, shall be sharp, hard and free from dust, and shall pass through a 1.8 mm test sieve.
 - d. Blast cleaning operations shall not be conducted on surfaces that will be wet after blasting and before coating, or when the surfaces are less than 10°C above degree points, or when the relative humidity of the air is greater than 95 percent.
 - e. Any oil, grease, soil, dust or other foreign matter deposited on the cleaned surfaces shall be removed prior to painting. In the event that rusting occurs after completion of the surface preparation, the surfaces shall be cleaned again in accordance with the specified method.
 - f. Particular care shall be taken to prevent the contamination of other corrosive chemicals before the application of the paint. Such contamination shall be removed from the cleaned surface by flash blasting and the paint applied immediately.
 - g. Care shall be taken to prevent contamination of cleaned and painted surfaces by cleaning operations in an adjacent area.
 - h. Surfaces not to be painted shall be suitably protected from the effects of cleaning and painting operations.

SURFACE PREPARATION OF WOOD

1. Wood surfaces shall be sanded to a fresh surface. Surface mould where present, shall be removed by washing, rubbing down and burning off as necessary. Resinous exudation and large knots shall be removed and replaced with filler or other materials approved by the Engineer.
2. Parts of timber to be enclosed in walls shall always be primed unless already impregnated. Priming shall be brushed on and a minimum of two coats applied to

end grain. When the priming paint is hard, all cracks, holds, open joints, etc. shall be made good with hard stopping and rubbed down with fine abrasive paper. Priming of joinery shall be applied only on site after the Engineer has approved such joinery and before it is fixed. For internal surfaces primer coats shall be carefully flatted.

SURFACE PREPARATION OF CONCRETE AND PLASTER

Concrete and cement plaster surfaces to be painted shall be prepared by removing efflorescence, dust, dirt, grease, oil, asphalt, tar, excessive mortar and mortar dropping and by roughening to remove glaze. A zinc sulfate solution shall be applied before prime coat.

SURFACE PREPARATION FOR FIBER CEMENT SURFACES

Shall be dry and clean prior to application of the specified first-coat material. Oil, grease, or rust stains shall be carefully removed by the use of suitable solvent. Wire brushing will not be permitted. After the first coat has become dry and prior to application of finish coats, touch-up coats shall be applied to suction spots.

ALUMINUM FRAMES FOR DOORS AND WINDOWS

All metal surfaces shall undergo pre-treatment process which includes: desmutting, water-rinsing, degreasing/etching, water rinsing, zinc phosphating, water rinsing and acid rinsing.

Powder coating application, shall be factory applied and shall be done in one operation using an electro-static powder gun. The materials to be coated should be well connected to earth. Coating thickness should be kept to a minimum of 60 microns for exposed areas. On details which are to be treated mechanically after coating (drilling, sawing, etc.), the coating film must not exceed 100 microns.

The powder coating shall be oven cured in the range of 20 minutes at 220° C (metal temperature measured on the area with greatest metal thickness). The temperature variation in the oven should not exceed +/- 10° C.

Handling

Coated items should be cooled to no less than 40° Centigrade before handling. Precautions should be taken to avoid damages on the finished coating during stacking, storing and transportation.

Storage and Delivery

Inspect materials delivered to the site for damage. Unload and store with minimum handling. Provide storage space in dry location with adequate ventilation, free from dust or water and easily accessible for inspection and handling. Store materials neatly on the floor, properly stacked on non-absorptive strips or wood platforms. Protect finished surfaces during shipping and handling using manufacturer's standard method.

WOOD REPAIR

Badly decayed areas shall be removed and repaired. Areas and pieces decayed beyond repair shall be replaced with new pieces that match originals in all respects. Moderately decayed areas, weathered, or gouged wood shall be patched with approved patching compounds, and shall be sanded smooth. The source or cause of wood decay shall be identified and corrected prior to application of patching materials. Wet wood shall be completely dried to a moisture content not exceeding 12 percent, as measured by a moisture meter, to its full depth before patching, unless otherwise authorized. Wood that is to be patched shall be clean of dust, grease, and loose paint.

1. Epoxy Wood Repair

Epoxy wood repair materials shall be applied in accordance with manufacturer's written instructions. Health and safety instructions shall be followed in accordance with the manufacturer's instructions. Clean mixing equipment shall be used to avoid contamination. Mix and proportions shall be as directed by the manufacturer. Batches shall be only large enough to complete the specific job intended. Patching materials shall be completely cured before painting or reinstallation of patched pieces.

2. Epoxy Consolidant and Epoxy Paste

Epoxy liquid wood consolidant shall be used:

1. To penetrate and impregnate deteriorated wood sections in order to reinforce wood fibers that have become softened or absorbent.
2. As a primer for areas that are to receive epoxy paste filler. Epoxy paste shall be used to fill areas where portions of wood are missing such as holes, cracks, gaps, gouges, and other voids.

MIXING AND THINNING

Mixing and thinning of paint shall be done in accordance with the approved manufacturer's printed instructions. The pot life of each paint as stated by the manufacturer shall not be exceeded.

WEATHER CONDITION

The paint shall not be applied when the relative humidity is above 85 percent. The paint shall not be applied in rain, wind, fog, dust or mist.

APPLICATION

Workmanship shall be first class in every respect. All work shall be done in a workmanship manner so that the finished surfaces shall be free from runs, chop, ridges, waves, laps and

unnecessary brush marks. All coats shall be applied in such manner as to produce an even film of uniform thickness. Edges, corners, crevices, welds and rivets shall receive special attention to ensure that they receive an adequate thickness of paint.

All painting shall be done by thoroughly experienced workmen.

Safety regulations shall be adhered to at all times, including the wearing of respirators by persons engaged on assisting in spray painting. Adjacent areas and installation shall be protected by the use of cloths or other approved precautionary measures.

Plain enamel and varnish shall be applied carefully with good clean brushes or approved spraying equipment, except that the initial coat on any surface shall be applied with brush. Sufficient time shall be allowed between coats to assure thorough drying and each coat shall be in proper condition before receiving the next coat.

Sanding and dusting as required shall be performed between coats in varnishing work. Finish coat shall be smooth and free from runs, sags, and other defects. Exterior paint shall not be applied during rainy days.

All paint when applied shall provide a satisfactory film and smooth, even surface. Paint shall be thoroughly stirred and kept at a uniform consistency during application. Powdered metallic pigments added at the time of use shall be mixed by adding the powder in small increments to about one-third of the base paint or vehicle, with thorough mixing to obtain a smooth paste. The remainder of the base paint shall then be thoroughly stirred in.

Different brands of emulsion paints shall not be mixed prior to application of the materials.

Where necessary to suit conditions of surface temperature, weather and method of application, the package paint may be thinned immediately prior to application in accordance with the approved manufacturer's directions, but not in excess of 125 cc of suitable thinner per liter (one pint per gallon). Before using, the paint shall be mixed to a uniform consistency and shall be stirred frequently during application.

Paints other than water-thinned paints shall be applied only to surfaces which are completely free of moisture as determined by sight or touch and only such combinations of humidity to be painted as will cause evaporation rather than condensation.

Surfaces which have been cleaned, pretreated and/or otherwise been prepared for painting shall be primed or painted with one coat of finish paint as soon as practicable after such preparation has been completed, but in any event prior to any deterioration of the prepared surfaces.

The first coat of paint on all exterior surfaces shall be applied by brush. Interior prime coats and all other subsequent coats on either exterior or interior surfaces may be applied by brush or spray. Whenever spraying is permitted all areas inaccessible to spray painting shall be coated by brushing or other suitable means. Brushes to be used for application of water-emulsions shall be soaked in water for a period of 2 hours prior to use.

All cloths and cotton waste which might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day.

Upon completion of the work, all staging, scaffolding, and containers shall be removed from the site or destroyed in a manner approved by the Engineer. Paint spots, or stains upon adjacent surfaces shall be removed and the entire job left clean and acceptable to the Engineer.

No smoking shall be permitted in the vicinity where painting is going on.

TOUCH-UP PAINTING

Touch-up painting shall be done with the same paint as used for the original coat. The resulting minimum dry film shall be the same as for the original coat.

Touch-up painting shall include cleaning and painting of field connections, welds and all damaged or defective paint and rusted areas.

During touch-up painting, only loose, cracked, brittle or non-adherent paint shall be removed during cleaning. All exposed edges shall be feathered. Touch-up painting shall be performed in a manner which will minimize damage to sound paint. Rust spots shall be thoroughly cleaned and edges of the existing paint shall be scraped back to sound material.

DRYING

1. No primer or paint shall be forced to be dried under conditions which will cause cracking, wrinkling, blistering, formation of pores which would detrimentally affect the condition of the paint.
2. No drier shall be added to the paint unless specified in the approved manufacturer's instructions.
3. Painted surfaces shall be protected from dust, dirt, and the elements of the weather until dry to the fullest extent practicable.
4. After drying, any areas of paint damaged from any cause shall be removed, the surface again prepared and then touched-up with the same paint and to the same thickness as the undamaged areas as specified in sub-section 4.14.3.7 above.

HANDLING

1. Precautions shall be taken to minimize damage to paint films resulting from stacking for drying.
2. Paint which is damaged in handling shall be scraped off and touched-up with the same paint and in the same thickness as was previously applied to the damaged area at Contractor's expense.

INSPECTION

1. All works and materials supplied under this Specification shall be subject to inspection by the Engineer.
2. The Contractor shall correct such works or replace such materials found defective under these Specifications at his own expense.

ITEM 32 : ARCHITECTURAL ITEMS**A8 : ALUMINUM COMPOSITE PANEL****INTRODUCTION****A. MATERIAL COMPOSITION**

Aluminum Composite Panel (ACP) is a lightweight durable panel made of laminated aluminum and polyethylene core compound, coated with an advanced fluorocarbon paint Polyvinylidene Fluoride (PVDF) to ensure the excellent durability of the surface finish. It is an excellent material for exterior and Interior cladding of new building construction as well as retro fit applications. It also has a high degree of levelness to preserve the fine architectural design and can be roller bended to suit various design shapes. The laminated structure of ACP ensures exceptional strength of the panel.

THICKNESSES:

3mm (Polyester) 4 to 6mm PVDF/+Nano

B. CHARACTERISTICS

1. Flatness—as the composite material is rigid, the flat surface can be preserved. This is considered a major advantage of ACP.
2. Fire Resistance—ACP are laminated at Temperatures from 200° to 250° to bond aluminum sheets to the polyethylene core. The non-flammable aluminum cover sheets protect the plastic core.
3. Light Weight—as the weight is less than ½ to ⅓ Of the weight of porcelain enamel, iron, copper, stainless and other metal panels, consequently it can reduce the weight of the building.
4. Durability—ACP is highly resistant to chemical corrosion due to the PVDF coating. The composite material is rigid, resistant to blows, breakage, and pressure and has high bending and breaking strength.

SPECIFICATION

- I. Aluminum Composite Panel (ACP) must be composed of a density polyethylene core sandwiched between two sheets of aluminum,
- II. It must be strong, lightweight approximately 5.5kg/sqm. But must be exceptionally flat.
- III. The ACP composition
 - Two sheets of aluminum
 - Front side aluminum roll coated with polyvinylidene fluoride PVDF

according to AAMA605.2 requirements.

IV. PVDF coating finish adheres to the following standards.

Testing Item	Standard	Result
Finished coat thickness	ISO 2360 (CNS 8406)	27.6m
Gloss	ASTM D532-89	20 ~ 45 %
Pencil hardness	ASTM D3363-00	2H
Toughness	ASTM D4145-83	2T no rift
Adhesive force	ASTM 3359-97	4B
Impact resistance	ASTM D2794-93	>100 kg. cm.
Abrasion resistance	ASTM D968-93	64.6 L/mil
Mortar resistance	ASTM 605.2-90	24 Hrs. pat test exceed
Humidity resistance	ASTM D714-97	3000 hr no blister
	ASTM D2247-02	
Boiling- water resistance	ASTM D3359-B	Passed
Salt-spray resistance	ASTM D117-03	3000 hr no blister
Acid resistance	ASTM D1308-87	No effect
	AAMA 605.2-91, TEST #7, 7.31	
Alkali resistance	ASTM D1308-87	Passed
Solvent resistance	ASTM D2248-73	Passed
	ECCAT T5 & NCCA No. 11-18	
Color retention	ASTM D2244-93	$\Delta E = 0.34$
Chalk resistance	ASTM D4214-98	No chalking
Gloss retention	ASTM D2244-93	84.2 %

V. Total thickness must be 4.0mm minimum (standard)

VI. Framing must also be made of aluminum to prevent corrosion of the panels.

VII. Aluminum Composite panel supplier must be the same company that will install the framing and will fabricate and install all panels. This is to insure optimum workmanship. All labor and installation must have a warranty of not less than one year.

PATTERN / FINISH / COLOR

A. Panel Color:

PTB ANNEX BUILDING

- Black Galaxy or any approved equivalent by the designing Architect.
- Wooden Finish or any approved equivalent by the designing Architect.

Locations are shown in the Elevation drawings.

PORT OPERATIONS BUILDING

- Mouse Gray or any approved equivalent by the designing Architect.

Locations are shown in the Elevation drawings.

LAW ENFORCEMENT BUILDING

- Champagne Silver or any approved equivalent by the designing Architect.
- Postal Blue or any approved equivalent by the designing Architect.

Locations are shown in the Elevation drawings.

GATE & GUARD HOUSE

- Mouse Gray or any approved equivalent by the designing Architect.

Locations are shown in the Elevation drawings.

SUBMITTALS

A. PRODUCT DATA

Manufacturer's printed product literature, specifications, and data sheets

B. SHOP DRAWINGS

1. Indicate project layout and elevations; dimensions and thickness of panels; connections; details and locations of joints and sealant; methods of anchorage; number of anchors; supports; reinforcement; flashings; accessories; materials; and finishes.

2. Indicate proposed joints details providing watertight and structurally sound panel system that allows no uncontrolled water penetration on inside face of panel system as determined by ASTM E331.

C. SAMPLES

1. Sample of panel system materials for selection and verification of finishes, colors, and sealant colors.

2. Sample of panel assembly.

D. TEST REPORTS (as requested)

Certified test reports for ACP from approved independent testing laboratories indicating compliance with specifications for specified

performance, characteristics, and physical properties.

QUALITY ASSURANCE

- A. Fabricator / installer to be accepted by the manufacturer.
- B. Fabricator / installer to have work similar in scope and size to this project.
- C. Take field measurements prior to completion of shop fabrication. Coordinate fabrication schedule with construction progress to avoid delay of work. Field fabrication should be allowed to ensure proper fit and keep it to minimum with majority of fabrication being done under controlled shop conditions.
- D. Maximum deviation from vertical and horizontal alignment of erected panels should be made.
- E. Assume responsibility for components of exterior panel system including, but not limited to, attachment to sub-construction, panel-to-panel joinery, panel-to-dissimilar-material joinery, and joint seal associated with panel system.

DELIVERY, STORAGE, and HANDLING

- A. Cover exposed surfaces with pressure-sensitive heavy protection paper or apply strippable plastic coating, before shipping to the job site.
- B. Leave protective covering in place until final cleaning of building.
- C. Deliver materials in (manufacturer's) original sealed packaging.
- D. Store panels and accessories in a dry, secure location and protect from weather.
- E. Protect finish and edges of panel.

LOADING AND UNLOADING

- A. Panels must be handled carefully to prevent damage
- B. Panels may buckle if they are not properly supported.
- C. A forklift may be used for panels up to 10 feet (3 meters) long. However, some means of supporting the panel load over a longer distance from the forks may be used.

PREPARATION

Ensure surfaces to receive panels are structurally sound, even, smooth, clean, dry, and free from defects detrimental to work. Notify consultant thru writing of conditions unfavorable to proper and timely completion of work. Do not proceed with erection until unsatisfactory conditions have been corrected.

ACCESSORIES

- A. Extrusions, formed members, sheet, and plate are in accordance with ASTM B209 and recommendations of Manufacturer's
- B. Panel stiffeners are structurally fastened or restrained at ends and secured to rear face of ACP with double-sided tape of sufficient size and strength to maintain panel flatness.
- C. Sealant within panel system to conform with Manufacturer's standards to meet performance requirements.
- D. Fasteners are not exposed except where unavoidable.

ITEM 32 : ARCHITECTURAL ITEMS**A9 : ALUMINUM PERFORATED CEILING PANEL****GENERAL**

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

SCOPE OF WORKS

This Item covers the use of aluminum panel as perforated ceiling panel and shall consist of furnishing and installing materials, tools, labor and equipment necessary for aesthetic purposes as indicated on the Plans and in accordance with this Specifications.

MATERIAL REQUIREMENTS**Aluminum**

The aluminum shall be high strength, heat-treatable alloy which provides good formability and weldability and good corrosion resistance. It shall be suitable for a wide variety of architectural applications and of commercial quality unless specified in the Plans. It shall conform to the applicable requirements of ASTM B 209M, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.

Thickness

Thinner material perforates easier and faster. It shall have a gauge thickness tolerance of + 0.2 mm.

Panel Shape and Size

Panel shape and sizes shall be as indicated in the Plans or as approved by the Engineer.

Aluminum panels shall be equipped with perimeter welded metal frames, return edges, borders mounting holes attachment brackets and clips. It shall be dimensioned as indicated on the Plans and as approved by the Engineer with a width and length tolerances of + 2.0mm and + 4.0 mm respectively.

Perforations**Shape and Size**

The shape of perforations shall be as indicated on the Plans using the standard

shapes

Size : 1200mm X 600mm, T = 0.70mm

600mm X 600mm, T = 0.70mm

Hole Diameter : 2.0mm

Weight : 1.94 kg/ sqm

Powder Coated Finish : Bone White Color with Black tissue felt in- fill to prevent penetration of dust.

In any cases that a custom shape perforations is needed for functional requirement spacing and size of perforation shall be provided.

The hole diameter should not be less than the thickness of the aluminum panel.

Pattern

Staggered pattern perforations shall have an unfinished end pattern that appears incomplete at both ends of the sheet.

For staggered perforations both Round and Square the pattern stagger shall be in the short dimension of the sheet. Holes in a straight row pattern shall be parallel to long dimension of sheet.

Slotted Perforation - Slots shall be identified if to be furnished parallel with either the length or width of the sheet.

Margin

The "margin" on a perforated sheet or plate refers to the distance from the edge of the sheet to the first perforation along the same dimension. "No margin" refers to the last row or set of perforations extending off the sheet or plate.

The long side of a sheet shall be supplied with minimum margins. The short side of a sheet will have either minimum margins or no margins.

CONSTRUCTION REQUIREMENTS

Installation

Install in accordance with manufacturer's installation instructions and approved shop drawings.

1. Level the ceiling height by the use of water level or laser beam.
2. Perimeter trims shall be installed using screw, nails or other applicable fasteners

depending on wall type.

3. The ceiling shall be set out from the center to the perimeter wall. The center to center spacing for Triangle Keel shall be 600mm.
4. The maximum distance from the wall to first suspension part shall be 600mm.
5. The Suspension Part Twin Clamps (together with drop – in anchor installed at the concrete slab) shall be spaced 600mm on center

Note :

The end of the threaded bolt shall be spaced on the drop – in anchor and the other end shall be attached to the suspension Party Twin Clamps using nuts.

6. Tringle Keel shall be attached to the Suspension Part Twin Clamps.
7. When the accessories have been installed, adjustment shall be made to ensure that the whole suspension ceiling is leveled.
8. Slightly push the Aluminum Ceiling Panel upward the ends of the panel until it rest with the triangle keel.

Inspection

When items not meeting specification requirements are discovered, their existence shall be called to the attention of the manufacturer prior to installation. Possible use of such items may be adjudicated among the responsible parties involved, based on the nature of the deficiency and the effect on the performance of the ceiling.

When rejection occurs, the manufacturer shall have the right to examine the rejected material. After removal of the portion not conforming to the specification, resubmission of the lot shall be permitted.

The inspection of specific ceiling areas for acceptability shall be made with lighting conditions corresponding to that of final building occupancy. If temporary lighting must be used, care shall be taken to position lights such that temporary conditions will approximate the final lighting condition.

ITEM 32 : ARCHITECTURAL ITEMS**A10 : CONCRETE WATERPROOFING****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 cover the waterproofing requirements for building as shown on the drawings.

The work shall consist of furnishing all labor, materials, equipment and other incidentals necessary for the integral waterproofing works where required as shown on the drawings and in accordance with the requirements of these specifications as directed by the Project - In -Charged.

SUBMITTAL

1. Material description and physical properties, application details, and recommendations regarding shelf life, application procedures, and precautions on flammability and toxicity.
2. Samples for each waterproofing type.

DELIVERY AND STORAGE

Deliver manufactured waterproofing materials in manufacturer's original, unopened containers, with labels intact and legible. Containers of materials covered by referenced specification number shall bear the specification number, type, and class of the contents. Store and protect materials in accordance with the manufacturer's instructions, and use within their indicated shelf life. Promptly remove from the site materials or incomplete work adversely affected by exposure to moisture. Use pallets and canvas tarpaulins to cover stored materials top to bottom.

PRODUCTS**I. DEEP PENETRATING SEALER**

Deep Penetrating Sealer (DPS) is an environmentally friendly, non-toxic, odorless, clear, water-soluble liquid compound, which is safe and easy to use.

Deep Penetrating Sealer (DPS) penetrates below the surface and chemically reacts with the alkali and lime found in concrete. This reaction creates a silica gel membrane within the pores and capillaries of the concrete, permanently sealing it against the ingress of moisture yet allowing the concrete to breathe. Over a period of time, the silica gel membrane hydrates and solidifies into a crystalline structure, increasing the hardness and strength of both new and old concrete while reducing moisture vapor emissions and permanently stopping the penetration and flow of water and water-borne contaminants such as chlorides and acids, both on the positive or negative side forging a waterproofed and preserved concrete structure.

EXECUTION

- All existing dirt and other surface contaminants adhering on the surface must be thoroughly removed. Apply Concrete Neutralizer using sufficient coats to completely neutralize the surface. Do not wash off. When sufficiently dry, dust lightly to remove crystalline deposits.
- Mix thoroughly the product mixture as per manufacturer's instruction. Any change from the recommended proportion will affect its quality. Scrape the bottoms, sides and corners of the container to ensure complete and full blending. Prepare only enough quantities that can be used within the pot-life period. Do not delay application. Apply DPS by brush or roller or by using an airless spray.
- Allow to cure overnight prior to application of topcoat.

II. FLEXIBLE MODIFIED CEMENTITIOUS

Flexible Modified Cementitious (FMC) is a two-component latex modified cementitious coating. It can be simply achieved by mixing the pre-packed dry-mixing powder with the formulated flexible latex admixture, and subsequent brushing the slurry on various substrates. It protects a wide range of buildings and structural concrete components with excellent resistance to water, aggressive chemicals, long-term weathering, and scratching. It is applicable for those structures subjected to long-term water immersion.

1. Free surfaces from dirt or foreign materials. For the waterproofing to work best, manufacturers recommend the surfaces be sand blasted, bush-hammered or acid-etched.
2. Apply 2 coats of the cementitious waterproofing. The first coat could include the

manufacturer's materials only. The second coating will include a cement-sand mixture and also have chemical and metallic elements too. If supplementary waterproofing is required, then a third coat may be required. This typically includes sand and cement for that extra protection.

Methods of Application

Trowel

Application of the coating is done using the handheld trowel, by simply applying and spreading the coating using the trowel.

Spray

This method uses spraying equipment like the ones used in painting vehicles. It is preferred due to its precise finish and efficiency. It is also faster to use the spray than the trowel method.

Brush

Use a typical brush similar to roll brushes that are used in painting houses. It also has a uniform finish and is faster to use compared to the trowel.

It is good to note that different surfaces will dictate the method of application.

ITEM 32 : ARCHITECTURAL ITEMS

A11 : HANDRAILS, RAILINGS, GUARDRAILS AND GLASS RAILINGS

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 the installation of handrails, railings and guardrails as indicated on the drawings and as specified herein.

SUBMITTAL

1. Manufacturer's technical data for products and processed used in handrails, railing, guardrails system, glass railings including finishes and grout.
2. Shop Drawings showing details of fabrication and installation for each type and of handrail, railing, guardrails and glass railings required including plans, elevations, sections, profiles of rails, fittings, connections, and anchors.
3. Prepare samples of each type of metal handrails & railings stainless steel hairline finish. Where finish involves normal color and texture variations, include sample sets composed of two or more units showing limits of such variations expected in completed works.
 - Include 6" long samples of each distinctly different railing member including guardrails, handrails, top rails, posts, and balusters. Include samples of fittings and brackets if requested by Architect.
 - Include sample of typical welded connection.

QUALITY ASSURANCE

Single Source Responsibility

Obtain handrails, guardrail, glass railings and railing systems of each type and material from a single manufacturer.

STORAGE

Store handrails, guardrail, glass railings and railing systems in clean, dry location, away from uncured concrete and masonry, protected against damage of any kind. Cover with waterproof paper, tarpaulin, or polyethylene sheeting; allow for air circulation inside the covering.

FABRICATION

General

Fabricate handrails and railing systems to design, dimensions and details shown. Provide handrail and railing members in sizes and profiles indicated, with supporting posts and brackets or size and spacing shown, but not less than required to comply with requirements indicated for structural performance.

Shop Assembly

Pre-assembled items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

Welded Connections

Fabricate handrails, guardrail and railing systems of materials for interconnections of members of welding. Use welding method, which is appropriate for metal and finish, indicated and develops strength required to comply with structural performance criteria. Finish exposed welds and surfaces smooth, flush, and blended to match adjoining surfaces.

Form changes in direction of railing members by bending members by metering, or as indicated on the drawing, as approved by the Architect.

Furnish inserts and other anchorage devices for connecting handrails, guardrail and railing systems to concrete or masonry work. Fabricate anchorage devices, which are capable of with standing loading imposed by handrails, guardrails and railing systems.

Coordinate anchorage devices with supporting structure.

- a. For railing, and guardrail posts set in concrete provide pre-chiseled openings and insert posts as indicated on drawings. Fill opening with non-shrink, non-metallic grout.

MATERIALS

General

Comply with standards indicated for forms and types of metals indicated or required for handrail and railing system components.

- a. Stair Railings
As indicated on plans.
- b. Stair Handrail
As indicated on plans.
- c. Guardrail

As indicated on plans.

d. Glass Railings

As indicated on plans.

Refer to plans for the required dimension of various types of stainless steel railings and location.

Fastenings: commercial types, except where special types are shown or required.

Fastenings for all exterior work shall be non-ferrous, unless otherwise shown. Fastenings for steel and aluminum and for all other interior work, where exposed, shall match the fastened metal.

Miscellaneous materials or accessories not listed above shall be provided as specified hereinafter the various items of work and/or indicated on the drawings, or in accordance with manufacturer's specifications.

GLASS FINISHES

All glass materials shall be delivered at jobsite with labels affixed indicating quality, make, type and thickness.

MATERIAL

Use 10mm (13/32") thick tempered glass of clear quality

EXECUTION

PREPARATION

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

INSTALLATION

- a. Safety precaution and procedure shall be observed in determining the sizes and in providing the required clearances by measuring the actual opening to receive the glass.
- b. Secure glass with stainless steel brackets.

METAL FINISHES

Comply with NAAMM "Metal Finishes Manual" for recommendations and designations of finishes, except as otherwise indicated.

EXECUTION

PREPARATION

- a. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors, which are to be embedded in concrete and masonry construction. Coordinate delivery of such items to project site.
- b. Field Measurements
Take field measurements prior to fabrication.

INSTALLATION

GENERAL

- a. Fit exposed connections accurately together to form tight, hairline joints.
- b. Perform cutting, drilling, and fitting required for installation of handrails, guardrail and railing systems. Set work accurately in location, alignment, and elevation, plumb, level, true, and free of rack, measured from established lines and levels.
- c. Field Welding

Comply with applicable AWS specification for procedures of manual shielded metal-arc welding, for appearance and quality of welds made, and for methods used in correcting welding work. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed welded joints smooth and restore finish to match finish of adjacent rail surfaces.
- d. Prior to anchoring, adjust handrails and railing systems to ensure matching alignment at abutting joints. Space posts at interval indicated but not less than that required by design loading.

ANCHORING POSTS

- a. Concrete-Anchored Posts: Provide chiseled opening on concrete base as indicated on the drawings to receive railing posts and required anchoring system. Remove all loose material, insert posts, and fill annular space between post and concrete with non-shrink, non-metallic epoxy grout, mixed and placed to comply with grout manufacturer's directions.

RAILING CONNECTIONS

- a. Welded Connections: Use fully welded joints for permanently connecting railing components by welding. Cope or butt components to provide 100 percent contact or use manufacturer's standard fittings designed for this purpose.

ANCHORING RAILING ENDS

- a. Anchor railing ends to metal surfaces with manufacturer's standard fittings using concealed fasteners, unless otherwise indicated.
- b. Anchor Railing Ends to Concrete or Masonry, use drilled-in expansion shields and concealed hanger bolts, unless otherwise indicated.

PROTECTION

- a. Protect finishes of railing, handrails and guardrails system from damage during construction period by use of temporary protective coverings approved by railing manufacturer. Remove protective covering at time of Substantial Completion.
- b. Restore finishes damaged during installation and construction period so that no evidence remains of correction work. Return items which cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units as required.

ITEM 32 : ARCHITECTURAL ITEMS (A12 TOILET PARTITION)

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

Furnish and install toilet partitions as shown on drawings and as specified herein.

SUBMITTALS

1. Submit shop drawings indicating elevations of partitions, full scale sections, thickness and gauges of metal, fastenings, proposed method of anchoring, the size and spacing of anchors, details of construction, hardware, fittings, mountings, and other related items and installation details.
2. Submit sample one of each item of hardware, fittings, fastening, and each type of panel. The panel sample shall be cross-sectioned not less than 150 mm by 150 mm in size and shall show finish on base material and core of the panel.
3. Submit manufacturer's data literature for each item of hardware, fitting, fastening and each type of panel, complete with description of materials, finishes, and anchoring devices, and appurtenances.
4. Submit one sample of each color of partition for verification that products match the color indicated. Where colors are not indicated, submit the manufacturer's standard color samples for selection by the Architect.

DELIVERY AND STORAGE

Deliver materials to the site in original sealed containers or packages, bearing the manufacturer's name, brand designation, specification number, type, style and finish as applicable. Store and handle materials in a manner to protect them from damage.

MATERIALS

Toilet compartments/cubicles - comprising 20mm thk intermediate panels, doors, and partitions/compartments (compact laminated phenolic board) including door frame system urinal divider, cubicle divider, hardware and accessories in Zinc Alloy finish and all other incidentals to complete.

Sizes, dimensions of doors, cubicles and dividers as shown on plans. Color shall be as selected by Architect. All the accessories shall be of heat chemical and bacteria resistant.

All edges of doors and pilasters are chamfered and finish without any metal trimming.

EXECUTION (INSTALLATION)

Installation of toilet partitions and urinal screens shall be in accordance with approved shop drawings and manufacturer's installation and directions.

ITEM 32 : ARCHITECTURAL ITEMS**A13 : FACILITIES AND DEVICE FOR PERSONS WITH DISABILITY****SCOPE OF WORK**

The work shall consist of furnishing materials, tools, labor, and incidentals necessary for the construction/installation of facilities and device for disabled persons as shown on the Drawings and in accordance with the Implementing Rules and Regulations of Batas Pambansa Bilang 344 and this Specification.

MATERIAL REQUIREMENTS**GRAPHIC SIGNS**

Graphic signs like the International Symbol of Access shall be fabricated from plastic materials, white color with dark blue background. Letters and symbols shall be laminated and raised from the background.

HANDRAILS

Handrail for ramp shall be 45mmØ tubular stainless-steel buff finished. It shall be provided with a small hole as of a Braille system.

GRABRAIL

Grabrail shall be manufactured from gauge 18 tubular stainless steel 50mmØ and provided with safety grip finish.

CONCRETE MATERIALS FOR RAMPS

1. Portland cement shall conform with the requirement of "Reinforced Concrete".
2. Aggregates shall conform with the requirements of "Reinforced Concrete".
3. Temperature bars shall have diameter of 10mm conforming with the requirements of "Concrete Works".

EXECUTION**GRAPHIC SIGNS**

1. Directional and information signs, indicating the location of the ramp for physically handicapped persons, shall be installed / placed at the front of the main entrance of the building. The signed board size and dimensions shall be based on DOTr approved Standard Design, schedule 40, signpost and the text and arrow shall be in accordance with the International Symbol of Access "B". Manual (See attached drawings and tabulation).
2. Signs shall be placed at the entrance and exits of the ramps and toilets, installed at conspicuous locations. The signboards shall be based on DOTr approved Standard Design Manual (See attached drawings and tabulation).

RAMP

The ramp shall be constructed as shown on the drawings and with a non-skid surface and tactile strips.

ITEM 32 : ARCHITECTURAL ITEMS**A14 : MODULARS, TABLES AND CHAIRS OF VARIOUS TYPE INCLUDING ACCESSORIES****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 supply of gang chairs for the buildings as indicated on the drawings and as specified herein.

PTB ANNEX

<i>ITEMS</i>	<i>Unit</i>	<i>Quantity</i>
Office Table (1.20m x 0.70m x 0.75m high)	set	3.00
Office Table (1.00m x 0.60m x 0.75m high)	set	1.00
Wall Mounted Table (2.20m x 0.60m x 0.75m high)	set	1.00
Wall Mounted Table (1.60m x 0.60m x 0.75m high)	set	1.00
Center Table (0.50m x 0.50m x 0.40m high)	set	1.00

Mid back Chair	set	8.00
2 seater - Sofa	set	1.00

1-seater gang chair	set	2.00
3-seater gang chair	set	4.00
4-seater gang chair	set	26.00
5-seater gang chair	set	34.00

Single Bed (0.90m x 2.0m)	set	1.00
Water Dispenser	set	2.00

POB EXTENSION

ITEMS	Unit	Quantity
Executive Table	pc	1.00
L-shape Executive Table	pc	7.00
Working Table with Laminated Partition	pc	84.00
Wall-Mount Working Table	pc	1.00
Working Counter Table	set	1.00
Conference Table (12-Seater)	set	1.00
Conference Table (20-Seater)	set	4.00
Center Table	set	12.00
4-Drawer Filing Cabinet	set	58.00
4-Layer Storage Racks	set	23.00

Chairs	Unit	Quantity
High-back Executive Chair	set	32.00
Mid-back Office Chair	set	97.00
Stool Chair	set	3.00
Kitchen/Dining Table Set (4-seater)	set	3.00
Kitchen/Dining Table Set (6-seater)	set	1.00
Coffee Table Set (2-seater)	set	3.00
Sofa (2-seater)	set	21.00
Sofa (3-seater)	set	9.00

Queen Size Bed	set	1.00
Hanging and Side Cabinet	lot	1.00

LAW ENFORCEMENT BUILDING

ITEMS	Unit	Quantity
Executive Chair	set	1.00
Mid – Back Chair	set	59.00
Visitor's Chair	set	22.00
High Back Chair	set	27.00
2-Seater Sofa	set	15.00
3- Seater Sofa	set	2.00
Reception Desk 3150mm X 600mm	set	1.00
Table: 1500mm X 750mm	set	24.00
Conference Table: 3140mm X 1800mm	set	1.00
Book Shelf 2425mm X 450mm	set	1.00
Table: 1200mm X 750mm	set	5.00
Shelf 2000mm X 500mm	set	2.00
File Cabinet 1000mm X 500mm	set	15.00
Book Shelf 2733mm X 500mm	set	1.00
Book Shelf 4400mm X 500mm	set	1.00
Conference Table 1800mm X 6285mm	set	1.00
Office Partition with Table Table : 1500mm X 750mm Partition Ht : 1200mm		
4 Pax	set	3.00
3 Pax	set	4.00
2 Pax	set	4.00
1 Pax	set	4.00

GATE & GUARD HOUSE

ITEMS	Unit	Quantity
Mid Back Chair	pc	1.00
Desk (2100mm x 575mm)	pc	1.00

SUBMITTAL

1. Shop drawings for all furniture 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 supply 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.

EXECUTION

All materials will be delivered and installed (if needed to be installed) on site.

ITEM 32 : ARCHITECTURAL ITEMS

A15 : SUPPLY AND INSTALL OF PHOTOLUMINESCENT SIGNS AND MARKINGS

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 supply and install of photoluminescent signs and markers for the buildings as indicated on the drawings and as specified herein.

PHOTOLUMINESCENT SIGNS AND PATH MARKERS

Signs and markers are designed to be used in and about buildings to identify and ensure visibility escape routes for compliance with the performance based on Codes (Building & Fire Codes). The signs will be clearly visible and readily understandable under all conditions of foreseeable use, including emergency conditions.

SUBMITTAL

1. Shop drawings 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 Project- In - Charged for approval representative samples of finishing materials. No placing of orders for material for finishing works shall be made without approval.

MATERIALS

PTB ANNEX

Step Nosing - 75.2mm x 33.2mm - 3060mm, loose insert for hidden fixers.

Handrail Strip - 16mm - 3060mm with foam tape

Path Marker - 3060mm

Guidance Strip - 16mm - 3060mm full length with foam tape

Pictogram - 420mm x 230mm / 290mm x 162mm sign size

Running Man - 228mm x 102mm sign size

Flag Mount Bracket – 162mm sign size

Evacuation Map – 210mm x 297mm sign size

Fire Extinguisher Sign – 228mm x 102mm sign size

Exit Down Stairs Sign – 228mm x 102mm sign size

POB EXTENSION

Step Edging (75.2mm X 33.2mm – 3060mm, loose insert for hidden fixers)

Handrail Marker (16mm – 3060mm with foam tape)

Path Marker for Perimeter Demarcation (3060mm)

Guidance Strip for Door Frame (16mm – 3060mm, full length with foam tape)

Pictogram Up Arrow (50ft) (392mm X 223mm)

Pictogram Left Arrow (50ft) (392mm X 223mm)

Pictogram Right Arrow (50ft) (392mm X 223mm)

Pictogram Down Arrow (50ft) (392mm X 223mm)

Fire Extinguisher Sign (228mm X 102mm)

Fire Alarm Sign (100mm X 100mm)

Evacuation Map (216mm X 330mm)

Ceiling Bracket (392mm)

Exit Down Stairs (228mm X 102mm)

LAW ENFORCEMENT BUILDING

Pictogram (392mm X 223mm)

Double Sided Pictogram Directional (392mm X 223mm) /(480mm X 280mm)

Fire Extinguisher Signs (228mm x 102 mm)

Fire Hose Sign (100mm X 100 mm)

Fire Alarm Sign (100mm X 100 mm)

Break Glass Sign (200mm x 100 mm)

Evacuation Map (216mm X 330mm)

Path Markers for Perimeter Demarcation – (3060mm)

Guidance Strip – (16mm -3060mm) with foam tape

Handrail Marker - (16mm – 3060mm) with foam tape

Step Edging -(75.2mm X 33.2mm - 3030mm) loose insert for hidden fixers

Exit Down Stairs (228mm X 10mm)

EXECUTION

INSTALLATION

For versatility the signs and markers can be installed using fixers (screws) or adhesive tape.

The installation method used should be determined by the condition of installation surface screws should be used if there is any doubt about adhesion.

ITEM 32 : ARCHITECTURAL ITEMS

A16 : TERMITE PROOFING, BUKBOK PROOFING

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 Contractor shall hire the services of an approved or accredited pesticide company to furnish all labor, materials, equipment, tools, plant, and services to complete the termite and "bukbok" proofing work hereinafter described.

EXAMINATION OF SITE

Inspect the site of work and examine the premises to fully understand existing conditions with respect to the work involved. Prior to soil stripping, excavation or filling all termite mounds within the area should be demolished, removed and treated.

MATERIAL REQUIREMENTS

CHEMICALS AND EQUIPMENT

For termite proofing, use Termiticide Concentrate acceptable to the PPA and should have license from Fertilizer and Pesticide Authority.

For "bukbok" proofing of kiln dried wood and for untreated wood, use chemical name accredited name/or acceptable to the PPA and should have valid license from Fertilizer and Pesticide Authority (FPA).

The pest control Contractor shall submit the specified chemicals in their original manufacturer sealed containers to the Project Inspector of inspection, sampling and safekeeping. Containers with broken seal shall not be accepted.

Dilution ratings (for Termiticide Concentrate):

1 part Termiticide Concentrate TC to 50 parts water

Pesticides - 1 : 100 concentration

Dilutions shall be done only at the jobsite in the presence of the Project Inspector. The strength of the mixture or solutions shall be made uniform by thorough stirring. All solutions prepared for termite proofing shall be used within 24 hours.

EXECUTION

CONTRACTOR LICENSE AND CERTIFICATION REQUIREMENT

The pesticide company should have a valid license from Fertilizer and Pesticide Authority of the Department of Agriculture.

All pesticide shall be applied by or under the direct supervision of a certified pesticide applicator.

ENVIRONMENTAL AND SAFETY CONDITIONS

Formulation, treatment, storage and disposal of pesticide shall be in accordance with label directions. Water for formulation shall be drawn only from site(s) designated by the Project Inspector, and the filling hose shall be fitted with a backflow preventor meeting local plumbing codes/standards. The filling operation shall be under the direct and continuous observation of the Project Inspector to prevent overflow.

APPLICATION

1. Termite Control

Application of solution shall be done by means of power sprayers fitted with flow meters for accurate monitoring of actual quantity used. At the time of soil treatment application, the soil shall be preferably in a friable condition with low moisture content to allow uniform distribution of the treatment solution throughout the soil. Do not apply pesticide during or immediately following heavy rains, or when conditions will cause runoff and create an environmental hazard. Cover treated area with waterproof sheeting if concrete is not poured on the same day as the soil treatment. Take precautions to prevent disturbance of the pesticide barrier. Before the placement of structural components, re-treatment where soil or fill is disturbed after treatment. Apply pesticide prior to placement of gravel base, vapor barrier or waterproof membrane.

a. Slab on Grade Construction

Establish a horizontal pesticide barrier over areas intended for covering by floors, porches, attached entryways, garages, carports and terraces. Apply treatment solution with a low pressure coarse spray at the rate of four (4) liters solution per square meter. Apply at the rate of seven (7) liters solution per square meter if the fill is washed gravel or other coarse material. Establish a continuous chemical barrier in the voids of hollow block foundation or voids of masonry. Apply treatment at the rate of seven (7) liters per 3 linear meter. Make pesticide band at least 15 cm wide the pesticide evenly distributed throughout. Treat buildings constructed with basement slabs in the same manner.

b. Crawl Space Construction

Establish a vertical pesticide barrier inside of foundation walls, both sides of interior partition walls, around piers, plumbing, and rodding and utility conduits. Apply treatment solution by rodding or rodding and trenching the fill at the rate of 15 liters solution per 3 linear meter, and 30 cm deep from grade to bottom of foundation. Treat both sides of foundation and around all

piers and pipes. Make treated barrier of fill at least 15 cm wide with the pesticide evenly distributed throughout.

c. Dry Pipes and Conduits

Establish pesticide barrier on various dry pipes and conduits such as electrical service entrance, raceways, pipe chase, vents. Use powder type termiticide by injecting it inside the pipe.

d. Termite Mounds

Demolish and treat all termite mounds within the property found after the construction.

2. "Bukbok" Proofing

Kiln-dried wood, plywood, tanguile, apitong, cabinets, dividers, and paneling shall be brushed generously with Pesticides before painting or varnishing.

3. Sun-Dried Wood Treatment

Sun-dried lumber to be used for ceiling joint runners, nailer, etc. shall be brushed with Pesticides before installation of plywood or ceiling panels.

ENGINEERS

The Contractor shall submit to the Engineer for approval, a copy of the pest control company's proposal and chemical application, method/procedure including the description of the equipment to be used before start of work.

INSPECTION AND TEST

Sampling shall be done only in the presence of the Project Inspector.

Amount of sample to be taken: 50 cc each.

CONTRACTOR'S GUARANTEE

Upon completion of work, and on a condition for final acceptance, the Contractor shall submit to PPA a written guarantee from the pesticide company which shall provide that:

1. The soil poisoning treatment shall prevent subterranean termites from attacking the building on its contents for a period of not less than five (5) years.
2. The Contractor shall thereby warrant all works in pest control that all materials and workmanship applied under the contract are of good quality in every respect and will remain as such for not less than five (5) years.

Should there be termite and "Bukbok" infestation within the one (1) year period the Contractor thereby agrees to do all necessary repairs on the damaged portions of the buildings caused by termite infestation to the satisfaction of PPA, at the Contractor's

expense. Retreatment shall also be done by the Contractor after completion of the repairs and at his expense. Such repairs and corrective works shall be done within five days after a written notice from the Owner has been received by the Contractor.

Should there be infestation after the one (1) year period up until the five (5) year guarantee, the pesticide company agrees to do all the necessary repairs at their expense. The pesticide company shall conduct annual inspection of the building and surrounding to check any infestation during the guarantee period. Notice shall be given by the pesticide company to PPA in case there is presence of termites in the surroundings.

ITEM 32 : ARCHITECTURAL ITEMS

A17 : SIGNAGES

SCOPE OF WORK

Furnish materials and perform labor to include miscellaneous works required for the installation of room identification for the toilets and port office.

SAMPLE AND SHOP DRAWINGS

The Contractor shall submit samples for approval by the Architect. Notify the Architect for any changes, clarifications, and discrepancies.
For the room I.D. full size lettering layout and installation method shall be submitted to the Architect for approval before start of work.

MATERIAL REQUIREMENTS

1. PPA LOGO

- Hot dipped cut out 4.5 mm thick Metal sheet screwed at the back.
- 12.5mm thk. Colored Acrylic Plastic Sheet for PPA Logo
- 1mm thk. Acrylic Painted G.I. Metal Sheet Free Standing Lettering

2. ROOM MARKERS

Black acrylic letters, 38mm (1-1/2") high on white acrylic background, 63mm (2-1/2") high, with clear acrylic cover. Lengths shall be as required by the full notation therein.

EXECUTION

WORKMANSHIP

Workmanship shall be executed in high quality comparable with artworks.

MOUNTING

For all mounted assemblies, appropriate mounting hardware and connectors which are concealed shall be sufficiently used.

Assemblies shall be mounted plumb, straight, level, and at prescribed heights.

INSTALLATION

Installation shall be done in a secure and permanent manner at prescribed heights and/or layout. The backwall shall not be mutilated. After the dowels are positioned, fill with expanding grout, or other approved fillers, and retouch, flashed to the backwall surface.

ITEM 32 : ARCHITECTURAL ITEMS

A18 : STEEL DECKS

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 the installation of steel deck as indicated on the drawings and as specified herein.

PRODUCTS

- Materials Provide products of a manufacturer that is regularly engaged in production of steel deck units and accessories.
- Steel Decks:
 - Base Metal Type : ASTM A466 cold – rolled
550 mpa (80,000 psi)
 - Thickness : 0.80mm X 0.90 m
 - Coating : Imported Coil – Zinc – 275 gms/ m²
Local Coil - Zinc – 120 to 150 gms/ m²
 - Length : Transportable

SUBMITTALS

1. Manufacturer's catalog data for steel deck and accessories. Include decking design calculations, or applicable published literature covering the specific type of construction required by this project.
2. Manufacturer's certification that design of steel decks meets the requirements of the local standards.
3. Shop drawing large-scale, cross-sectional detail of decking, various connections, and bearing on supports, methods of welding, attachment of accessories, adjusting plate details, floor layouts, placement directions, structural properties including composite section properties, and other

pertinent details.

4. Samples:

- Approximately one-square foot of steel deck
- Accessories, one of each type
- End closures, one of each type
- Adjusting plates, one of each type
- Mechanical deck fastener (if used), one of each type

4. Welder Certification:

Including a report of welder qualification procedure. Provide qualification of welders and duration of qualification period in accordance with AWS

5. Delivery and Storage

Do not damage or overload decking and accessories during delivery, storage, or handling. Do not use decking for storage or as a working platform until units have been welded into position. Stack decking on platforms or pallets and cover with weather-tight ventilated covering. Elevate one end during storage to provide for drainage.

EXECUTION

1. Inspection prior to installation of decking units and accessories, inspect work-site to verify that the as-built structure will permit the indicated field installation of decking system without modification.

2. Installation

Install steel deck units in accordance with approved shop drawings. Place units on structural supports, properly adjusted, leveled, and aligned at right angles to supports. Report inaccuracies in alignment or leveling to the Project- In- Charged and make necessary corrections before deck units are permanently anchored. Locate end laps over supports only, with minimum lap of 50 mm. Do not use unanchored deck units as a work or storage platform. Permanently anchor all units placed by the end of each working day.

3. Anchorage Methods

After placement and alignment, and after inaccuracies have been corrected, permanently fasten steel deck units in place by welding, or with self-drilling screws or powder-actuated fasteners. Use methods as recommended by the Steel Deck Institute, subject to approval. Length of side and end laps of deck and intervals of fastening shall be as recommended by the steel deck manufacturer. Clamp or weight deck units to provide firm contact between deck units and structural supports while

welding of fastening is being performed.

- **Welding**

Perform welding in accordance with AWS D1.3 using methods and electrodes recommended by the manufacturers of the base metal alloys being used. Only operators previously qualified by test prescribed in AWS D1.3 to perform the type of work required shall make Welds. Location, size and spacing of welds shall be in accordance with the Steel Deck Institute recommendations and as shown on the shop drawings. Clean welds immediately by chipping and wire brushing.

- **Fasteners:** Provide powder actuated or screwed fasteners for anchoring the deck to structural supports and adjoining units. Provide positive locking-type fasteners standard with the Steel Deck Institute and the manufacturer, as approved by the Project-In-Charged.
- **Openings:** Reinforce decks or frames openings as necessary for rigidity and load carrying capacity. Neatly cut or drill holes or other openings required for work of other trades. The deck manufacturer shall approve holes or openings larger than 150 mm in diameter prior to drilling or cutting.
- **Accessories**
 - a. **Adjusting Plates:** Provide in locations too narrow to accommodate full-size deck units and install as shown on shops drawings.
 - b. **End Closures:** Provide end closure to close open ends of cells at columns, walls, and openings in deck.
 - c. **Cover Plates:** Provide metal cover plates, or joint tape, at joints between decking sheets, cellular or non-cellular, to be covered with concrete fill where concrete leakage would be a problem.
 - d. **Column Flashing:** Provide for spaces between floor decking and columns, which penetrate the deck. Field cut flashing to fit column in the field and tack weld to decking and columns.
 - e. **Hangers:** Provide as indicated to support utility system and suspended ceilings. Space devices as indicated.

- **Concrete Work**

Prior to placement of concrete, inspect the installed decking to ensure that there has been no permanent deflection or other damage to the decking. Decking which has been damaged or permanently deflected shall be replaced as approved by the Project-In-Charged. Concrete fill over metal deck is specified in Section entitled, "Cast-In-Place Concrete."

- **Propping**

Provide props in accordance with manufacturer's recommendation. Propping shall consist of substantial timber or steel members supported by a line of props adjusted to prevent settlement during concrete placement and curing. Propping must be designed to support weight of wet concrete plus a temporary construction load. Propping may be erected before or after installation of the decking and shall be left in place until the concrete has reached sufficient strength of at least 70% of its design strength.

- Exposed Soffit Used as Ceiling

Provide propping as shown on table below:

0.80 MM THICK DECKING

Slab Thickness	1.50-2.0	2.01-3.5	3.51-4.5	4.51-6.0
	No. of Props	No. of Props	No. of Props	No. of Props
90-120	1			
2	2	3		
121-150	2	2	2	3
151-180	2	2	2	3

Low density fibre board or similar materials shall be placed between the props and decking panels to reduce effect of unsightly propping lines. Pouring shall be done parallel to the panels.

ITEM 32 : ARCHITECTURAL ITEMS**A19 : LOW-E GLASS AND GLASS WALL PARTITION (PTB ANNEX)****INTRODUCTION**

Low-e glass stands for low emissivity glass. One side of the glass has a special metal coating, known as low emissivity coating. Low-e glass is a type of insulating glass which increases the energy efficiency of the windows by reducing the transfer of heat or cold through the glass.

This means that during cold season, the house stays warmer, and in summer it stays cooler.

SCOPE OF WORK

This item shall consist of furnishing all low-e glass and glass wall materials, labor, tools and equipment required in undertaking the proper installation as shown on the Plans and in accordance with this specifications.

MATERIAL REQUIREMENTS**A. Aluminum**

1. Frames and panel members shall be fabricated from extruded aluminum sections true to details with clean, straight, sharply defined profiles and free from defects impairing strength, durability and appearance.
2. Extruded aluminum sections shall conform to the specification requirements of ASTM B-211.
3. Screws, nuts, washers, bolts, rivets, spider connector and other miscellaneous fastening devices shall be made of non-corrosive materials such as aluminum and stainless steel.
4. Hardware for fixing and locking devices shall be closely matched to aluminum section and adaptable to the type and method of opening.

B. Glass and Glazing

1. All glass and glazing materials shall be delivered at jobsite with labels affixed indicating quality, make, type and thickness. Each glass in glazed position shall resist a design pressure of 244 kilograms per square meter.
2. Glazing materials for glass installation may be:
 - a. Bulk compound such as mastic that are elastic and non-skinning compound.
 - b. Putties – wood sash putty or metal sash quality.
 - c. Sealant – shall be chemically compatible with setting blocks, edge blocks and sealing tapes.

3. Setting and Edge Blocks shall be made of lead or neo-prene, chemically compatible with sealant.
4. Accessories like glazing clips, shims, spacer strips etc. shall be made from non-corroding metal accessories.

SPECIFICATIONS

LOW-E GLASS

- W01 12mm thick Low-E Glass Curtain Wall Framed at the back in Wood Grain Finish on Aluminum (11.55m x 2.80m)
- W02 12mm thick Low-E Glass Curtain Wall Framed at the back in Wood Grain Finish on Aluminum (6.20m x 2.80m)

GLASS WALL PARTITION

- Supply and Installation of 12 mm thick clear tempered glass partition in 25mm X 25mm powder coated aluminum u-channel embedded on top and bottom. (4.475m x 3.00m)
- Supply and Installation of 12 mm thick clear tempered glass partition in 25mm X 25mm powder coated aluminum u-channel embedded on top and bottom. (2.075m x 3.00m)

CONSTRUCTION REQUIREMENTS

1. Safety precautions and procedure shall be observed in determining the sizes and in providing the required clearances by measuring the actual opening to receive the glass.
2. Movable items or parts shall be kept in a closed and locked position until after the glazing compound has thoroughly set.
3. All glass sheets shall be bedded, back puttied, secured in place and face puttied. Secure glass in aluminum frame with non-corrosive clips except where glazing beads are required.
4. Apply putty in a uniformly straight lines, with accurately formed bevels and clean cut corners, then remove excess putty from glass and frames.
5. Set glass in hollow metal doors and in metal frames of interior partitions in felt channels insets or bedded in putty to prevent any rattle.
 - a. Secure glass in wood doors and wooden frames with glazing stops.

- b. Secure stops on doors with screws.
6. Glass breakage caused in executing the work or by faulty installation shall be replaced by the Contractor without extra cost.
 7. Improperly installed glass which does not fully meet the requirements of its grade, will not be accepted and shall be replaced without extra cost.

A. Workmanship

1. All glass shall be accurately cut to fit openings and set with equal bearing on the entire width of plane.
2. Putty shall be neatly run in straight lines parallel with inside of glazing rebate.
3. Corners shall be carefully made. All excess putty shall be removed and surfaces left clean.
4. Apply a thin layer of putty to rebate and set glass. Apply putty by pressing into an even bed secured.
5. Place spring wire or angle glazing clips and run face putty. Remove excess putty from other side flush with edge of rebate.

B. Cleaning

Clean all glass on both sides after putty has been applied completely. Do not disturb edge of putty with scraper. At completion of work leave glass and glazing works free from cracks and rattles and clean on both sides.