

AR-0824-ALUMINIUM DOORS AND WINDOWS

1.0 DESCRIPTION OF WORK

The work shall cover the provision and installation of aluminium doors, windows and frames as shown in the Drawings or as specified herein, including labour supervision, materials, equipment and incidentals required and necessary to complete the system.

2.0 REFERENCE STANDARDS

- a. American Society for Testing and Materials (ASTM)
- b. Standar Industri Indonesia (SII)
- c. Technical Specification AR-0714 - Caulking and Sealing
- d. Technical Specification AR-0821 - Finish Hardware
- e. Technical Specification AR-0825 - Glass and Glazing.

3.0 GENERAL PROCEDURES

3.1 Samples and Technical Data

Samples of sections and finishes which shall include proposed types of aluminium extrusion, anodising, colour and finishing, shall be submitted to the Engineer for approval prior to delivery.

Samples of the aluminium products shall be tested in a laboratory designated by the Engineer or should be provided with tested data.

This shall include the test for :

- Coat thickness
- Staining
- Weight
- Corrosion.
- Cost of samples and testing shall be the Contractor's responsibility.

3.2 Shop Drawing

Shop Drawing which shall include all detailing, framing, fastening and anchoring system of the work, shall be prepared by the Contractor and shall be submitted to the Engineer for approval prior to installation.

All dimensions shall be verified on the field and shall be shown in the Shop Drawings.

The Contractor shall be responsible for any discrepancies on the dimensions and final fitting of all parts of the work, co-ordination with other work, and all necessary work to accommodate the work covered in this section, so as to achieve the intentions of the design.

3.3 Handling and Storage

Aluminium work and fittings shall be supplied in accordance with the Drawings, free from twists, buckles and defects.

Immediately after delivery, aluminium work and fittings shall be properly stacked in a clean dry place and protected from damage or abrasion prior to and after installation.

All items shall be kept clean and free from droppings of mortar, plaster, paint and others.

4.0 MATERIALS

4.1 Aluminium

All aluminium work for doors, windows and frames shall be as manufactured by a manufacture who has had the prior approval of the Engineer.

Unless otherwise specified, all doors, windows and louver sections shall be of anodised extruded aluminium alloy, fitted out with standard manufacturer's hardware and neoprene weather-stripping and flashing.

4.2 Glass and Glazing

Glass for aluminium doors and windows shall be in accordance with Technical Specification AR-0825.

Neoprene/gasket for glazing of aluminium works shall be in accordance with Technical Specification AR-0825.

4.3 Finish Hardware

All locks and fittings shall be in accordance with the requirements of Technical Specification AR-0821.

4.4 Aluminium Perforated Sheet

Aluminium perforated sheet for parapet and others as indicated in the drawings, shall have the following characteristics :

- Thickness of 3 mm
- Hole of 7 mm diameter
- Hole distance of 50 mm
- Hole pattern indicated in the drawing
- Item to be substituted shall be approved by the Engineer.

5.0 CONSTRUCTION REQUIREMENTS

5.1 Fabrication

No work shall commence on fabrication or erection until the Shop Drawings submitted by the Contractor have been approved by the Engineer.

All components shall be accurately manufactured and assembled to the correct shape and size as set forth in the Drawings, and be fitted in locations shown thereon.

5.2 Installation

The first installed item should be approved by the Engineer as the standard and sample for the next installation.

The Contractor shall be responsible for the sound construction of the components.

Where joints are not detailed in the Drawings, they shall be positioned and constructed so that they will transmit the loads and resist the stresses to which they will be subjected.

All components shall be true to the pattern.

When fixed direct to masonry or concrete reveals, the frame shall be provided with angle fixing lugs at not exceeding 0.5 m centres.

All aluminium parts in contact with cement or plaster shall be protected by colourless varnish or plastic coating.

All aluminium parts in contact with steel elements shall be coated with special paint as recommended by aluminium manufacturer, so as to prevent electrolytic deterioration of aluminium composition.

Various non-aluminium fixtures attached to aluminium sections shall be of materials which will not react electrolytically, such as stainless steel, nylon, neoprene and others.

All fastenings shall be concealed, unless otherwise required. All joints shall be flush-joints with all cutting and drilling done before anodising.

Lock, door closer and hinge shall be provided as specified by the Drawings and in accordance with Technical Specification AR-0821.

Sealant shall be used in strict accordance with the manufacturer's recommendation and in accordance with Technical Specification AR-0714.

Installation for Aluminium perforated sheet indicated on the drawing.

5.3 Guarantee

The Contractor shall furnish to the Owner, a written guarantee covering the satisfactory installation, operation and condition of all aluminium doors and windows as specified herein for a period of one year after the date of final acceptance. During this period the Contractor shall repair or replace any defective work at his expense.

AR – 0825 – GLASS AND GLAZING

1.0 DESCRIPTION OF WORK

This work shall cover the provision and installation of all glass, mirror and glazing as shown in the Drawings and as specified herein.

2.0 REFERENCE STANDARDS

- a. Standar Industri Indonesia (SII)
- b. Persyaratan Umum Bahan Bangunan di Indonesia (PUBI)
- c. American Society for Testing and Materials (ASTM)
- d. Technical Specification AR-0602 – Carpentry
- e. Technical Specification AR-0824 - Aluminium Doors and Windows
- f. Technical Specification AR-1011 - Washroom Accessories.

3.0 GENERAL PROCEDURES

3.1 Samples and Technical Data

Samples and technical data of proposed materials and components specified herein, shall be submitted to the Engineer for approval prior to delivery.

3.2 Handling and Storage

Glass and mirror shall be neatly stored in a clean dry place and be protected from damage. Sheets shall be separated by an approved material, placed to minimise stress on the glass while in storage. Sheets which have been delivered in a damp condition shall be separated and dried before storage.

Glass and mirror shall not be stored laid flat.

4.0 MATERIALS

4.1 Glass

All glass for exterior or interior doors and windows, unless noted elsewhere, shall be selected clear float or obscured glass sheet such as Asahi product or approved equal, with nominal thickness depending on table glass sheet area or as indicated in the Drawings.

4.2 Mirror

Mirrors shall be selected clear mirror sheet such as Asahi product or approved equal, with nominal thickness as specified by the Drawings.

4.3 Neoprene/Gasket

Neoprene/gasket or other equal synthetic material shall be used throughout, unless otherwise specified, for all glazing in metal/aluminium frames.

Type and dimension of neoprene/gasket shall be made suitable for each metal/aluminium frame.

5.0 CONSTRUCTION REQUIREMENTS

5.1 General

Drawings only indicate approximate glass size. True sizes and proper edge clearances shall be determined by field measuring the actual unit to receive

the glass, and by following glazing dimensions and instructions provided there by.

Each glass and/or mirror sheet shall be clearly labelled and marked of type, thickness and other data required.

All labels shall to be removed after the Engineer's approval.

All glass, mirrors and glazing shall be installed in accordance with the manufacturer's installation instruction.

A sample of finished installed glass such as window or door shall be approved by the Engineer prior to mass production.

5.2 Installation

5.2.1 Clearances and Cutting Tolerances.

Clearances and cutting tolerances shall be as follows:

- a. Nominal face clearance between glass and frame shall be 3 mm.
- b. Nominal edge clearance between glass and frame shall be 6 mm all around.
- c. Minimum rabbet depth shall be 16 mm.
- d. Maximum cutting tolerances for all glass shall be + 3 mm or - 1.5 mm.
- e. Gasket clearance, depending on the gasket used, an additional clearance should be set.

5.2.2 Preparation of Surface for Glazing.

Operative sashes shall move freely and properly in the frame of the unit prior to glazing. Movable items shall be secured, fixed, or in a closed and locked position until glazing compound has thoroughly set.

The surfaces of all rabbets shall be clean and dry and shall be primed with one coat of primer as specified by the neoprene/gasket manufacturer.

Prior to setting, glass surfaces to which neoprene/ gasket is to be applied shall be clean of dust, moisture, slip sheet chemicals or shop coating applied by the glass manufacturer.

5.3 Mirror Installation

Mirrors shall be installed with mirror screws which have stainless steel caps, at places as indicated by the Drawings.

Screws shall be placed strongly to hold mirror in its place.

5.4 Replacement and Cleaning

Each panel of glass shall be marked immediately after glazing with whiting or similar to signify completion.

Checked, broken and imperfect glass shall be replaced at no additional cost to the Owner. Upon completion of the work, all glass surfaces shall be thoroughly cleaned, with all labels, paint spots and other defacements removed.

Care and caution shall be taken not to scratch glass surface. Washing down shall be with mild soap or neutral detergent and water. Paraffin, turpentine, petroleum or similar solvents may be used for removing persistent marks.

AR – 0903 – CEILINGS

1.0 DESCRIPTION OF WORK

This work shall cover the furnishing and installation of all ceilings frames and panels as indicated in Drawings and/or hereinafter specified.

2.0 REFERENCE STANDARDS

- a. American Society for Testing and Materials (ASTM)
- b. National Fire Protection Association (NFPA)
- c. Standar Industri Indonesia (SII)
- d. Technical Specification AR-0602 – Carpentry
- e. Technical Specification AR-0721 - Building Insulation
- f. Technical Specification AR-0914 - Paintings.

3.0 GENERAL PROCEDURES

3.1 Samples and Technical Data

Prior to material delivery, Contractor shall submit samples and technical data to the Engineer for approval.

3.2 Shop Drawing

Prior to fabrication and installation, Contractor shall submit Shop Drawing to the Engineer for review and approval.

3.3 Handling and Storage

All materials shall be delivered to the project site in original containers, bundles or packages with seals unbroken and labels intact, and shall be stored in a clean dry place and protected from damage.

4.0 MATERIALS

4.1 Fibre Cement Board

Fibre cement board in designated areas such as toilets and storage or generally wet areas, shall have 6 mm minimum in thickness, such as Harflex or approved equal.

Size shall be as indicated in the Drawings.

4.2 Ceiling Frames

4.3 Wood Frames

Ceiling frames of wood in size as indicated in the Drawings shall be used to hold fibre cement board in designated room as indicated in the Drawings.

These wood frames shall be in accordance with Technical Specification AR-0602.

4.4 Structural Support Members

Structural support members for holding adjustable rods, lighting fixtures, air conditioning accessories and others specified, shall be of steel profile in shape and sizes as indicated by the Drawings. A Shop Drawing is needed to be submitted by the Contractor.

This structural support shall comply with the requirements of SII.

4.5 Wood Trim

Wood trim for ceiling cornice shall be in accordance with the Technical Specification AR-0602.

4.6 Wood Board

Wood board shall comply with the requirement of Technical Specification AR-0602, in thickness and size as indicated in the drawing.

5.0 CONSTRUCTION REQUIREMENTS

5.1 General

Prior to commencement of herein referenced ceiling board work, rooms and areas having ceiling shall have windows, doors, glazing, air conditioning system and moisture producing construction work completed.

Ceiling tile grid shall be established using the centreline of perimeter tiles, in order to balance the pattern, and to ensure no cuts less than one-half of tile width or as indicated in the Drawings.

5.2 Fibre Cement

Prior to fibre cement installation in storage rooms, all wood ceiling frames shall have preservative treatment as specified in Technical Specification AR-0602.

Fibre cement tile in storage rooms shall be installed to ceiling frame by nail or other fasteners as recommended by the fibre cement manufacturer.

Jointing between fibre cement tile in storage rooms shall be done by giving distance/joint 5 mm.

5.3 Painting

Fibre cement ceiling panel shall be painted in accordance with Technical Specification AR-0914 in colour as specified by Colour Scheme which shall be given separately.

Structural support members which are made of steel shall be anti-rust coated with suitable paint in colour as specified by Colour Scheme.

Type of paint and painting work shall be in accordance with Technical Specification AR-0914.

5.4 Cleaning and Protection

Following erection, dirty or discoloured surfaces of ceiling and runners shall be cleaned in accordance with the manufacturer's recommendations and left free from defects.

Damaged or improperly installed components shall be removed and be replaced as directed by the Engineer without any additional cost to the Owner.

AR-0906 - RUBBER FLOORING

1.0 DESCRIPTION OF WORK

This work shall consist of the provision and laying of all rubber flooring as shown on the Drawings including the preparation of surfaces to which it is to be placed.

This work shall include, but will not be restricted to, supply of labour, materials, and tools to be used for preparation of surfaces, application of adhesives, laying tiles, cleaning up making good any defects

2.0 REFERENCE STANDARDS

American Society for Testing and Materials (ASTM)

3.0 GENERAL PROCEDURES

3.1 Samples and Technical Data

Prior to material delivery, Contractor shall submit samples and technical data and method statements to the Engineer for approval.

3.2 Shop Drawing

Prior to installation, the Contractor shall submit Shop Drawings to the Engineer for review and approval. Shop Drawings shall show general layout of panels and details of any special cut-outs or special treatment of stair treads, removable panels, etc.

3.3 Handling and Storage

All materials shall be delivered to the project site in bundles or packages with seals unbroken and labels intact, and shall be stored in a clean dry place and protected from damage.

4.0 MATERIALS

4.1 Rubber Flooring

Rubber flooring shall consist of tiles of 600 mm by 600 mm by 6 mm thickness with raised circular disc design safety rubber flooring of high durability. The material from which the tiles are made shall be non-fading, slip resistant, and shall be fire retardant (meeting ASTM E-84 flame spread rating of 25 or less).

Tile colours shall be advised by the Engineer.

Rubber flooring shall be Disc-O-Tile safety rubber flooring by R.C. Musson Rubber Co. or equivalent.

4.2 Adhesives

Adhesives used shall be in accordance with the rubber flooring manufacturer's recommendations and appropriate for the surface to which the tiles are to be laid.

5.0 CONSTRUCTION REQUIREMENTS

5.1 Surface Preparation

The surfaces to which rubber flooring tiles are to be laid shall be made smooth, clean and dry.

5.2 Laying

Rubber flooring tiles shall be installed in a neat and professional manner with tight seams or joints, and with an adhesive appropriate for the surface in accordance with the approved method statements.

AR – 0910 – RAISED ACCESS FLOOR

1.0 DESCRIPTION OF WORK

This work shall consist of the provision and construction of a raised access floor system comprising 600 mm by 600 mm structural panels on a rigid structural grid supported by adjustable pedestals. A stringer system shall be a grid network or 600 mm running in one direction with cross stringers running perpendicular to the main stringers. The raised access floor system shall provide an under-floor space for accommodating electrical wiring, mechanical service lines. This work shall include but will not be restricted to supply of labour, materials, and tools for completing the work, cleaning up making good any defects

2.0 REFERENCE STANDARDS

American Society for Testing and Materials (ASTM)

3.0 GENERAL PROCEDURES

3.1 Samples and Technical Data

Samples, technical data of proposed materials specified herein and method statements, shall be submitted to the Engineer for approval prior to delivery and fabrication.

3.2 Shop Drawings

The Contractor shall prepare and submit Shop Drawings showing details of various parts, panel layout, details of special panels, methods of fixing, dimensions and any other required details to the Engineer for review and approval.

3.3 Handling and Storage

Panels, supports and components shall be delivered suitably packaged to prevent damage due to handling or weather.

Immediately after delivery, all components shall be properly stacked and protected prior to installation.

4.0 TECHNICAL REQUIREMENTS

4.1 Loading

Floor panels shall be capable of supporting a uniform live load of 30 kPa with a deflection not exceeding 1 mm or a concentrated load of 5 kN without deflecting more than 2 mm with a safety factor of 3 based on the yield strength of the materials being used.

4.2 Fire Resistance

Panel (complete with covering) shall be fire retardant with ASTM E-84 flame spread rating of 25 or less).

4.3 Panels

Panels shall be 600 mm by 600 mm by 32 mm thickness fibre-reinforced calcium sulphate, edge-banded on 4 edges with a galvanised steel plate on the underside. The upper surface shall have a bonded covering of vinyl flooring material.

4.4 Pedestals and Stringers

Pedestals shall be made of steel with foot plates, heads to support panels and to accept stringer attachment and shall have screw jacks to permit adjustment of panel support head.

Stringers shall be made of steel and shall be designed such that they can be easily removed or replaced following completion of the installation.

Surface protection of pedestals and stringers shall be galvanised or coated by some other method approved by the Engineer.

4.5 Plenum Seals

Where the raised access floor is used as a plenum, seals shall be used on the upper edges of stringers, at edges of floors against walls and at all other places necessary to ensure sealing of the plenum void.

5.0 CONSTRUCTION REQUIREMENTS

5.1 Setting Out

The Contractor shall accurately survey the area in which the computer access floor is to be constructed in order to establish a basis for design of panel layout.

Following completion and approval of the panel layout design, the centres of each support shall be set out by marking on the sub-floor.

5.2 Installation of Pedestals and Stringers

Pedestals shall be accurately placed according to the setting out using the method proposed by the contractor and approved by the Engineer. The tops of pedestals shall be adjusted by means of their screw jacks to an accuracy of + or - 1 mm using surveying methods. Stringers shall be firmly attached to the heads of pedestals in accordance with the approved method statement.

5.3 Setting Panels

Panels shall be placed on the pedestal/stringer system, working outwards from one corner of the floor.

5.4 Levelling and Adjustment

Any panel which is out of level or is not seated firmly and all four corners shall be removed, supports adjusted in height and the panel replaced. This procedure shall be repeated until all panels are level and correctly seated. The installation shall be laterally stable in all directions whether panels are in place or not and the finished assembly shall be free of vibration or rocking panels.

5.5 Special Panels

Panels which have special shapes or cut-outs for cables etc. shall be designed in order to accommodate the cut-out and shall be strengthened and/or supported as necessary.

AR – 0914 – PAINTING

1.0 DESCRIPTION OF WORK

This work shall consist of the provision and application of all shop and field painting work, for all the structural and non-structural components of the buildings, including all surfaces designated to be painted as shown in Drawings or Colour Scheme and in related Specifications, unless otherwise noted.

This work shall include but will not be restricted to supply of labour, materials, scaffolding and tools to be used for preparation of surfaces, application of paint, making good any defects and cleaning of any splashes to other work. All coating shall be as required in this Specification or determined by the Engineer.

2.0 REFERENCE STANDARDS

- a. Persyaratan Umum Bahan Bangunan di Indonesia (PUBI)
- b. American Society for Testing and Materials (ASTM)
- c. Steel Structure Painting Council (SSPC)
- d. Swedish Standard Institution (SIS)
- e. British Standard (BS).

3.0 GENERAL PROCEDURES

3.1 Detail and Colour Card

Full details and colour card of proposed materials and manufacturers shall be submitted before construction. Failure to do so may lead to rejection of materials on site and failure to meet program requirements.

All materials shall be of such quality as to produce first class and durable finishes and to be at least equal requirements of the relevant standards.

3.2 Sample Panels and Test Areas

Before painting with a particular system commences, the Contractor shall paint test areas or sample panels to demonstrate that the specified thickness and finish to the paint film is being obtained all shall be approved by the Engineer.

The paints, equipment and method of application used for test areas or sample panels shall be representative of those to be used for the work.

Test areas or sample panels shall be retained and shall form the standard for all subsequent work.

Contractor shall be responsible in providing samples and sample panels.

3.3 Delivery and Storage

All coating shall be fresh stock and be of new and first quality, delivered at job site in unopened original manufacturer's containers, and stored in the dry, watertight, lockable enclosure.

All coating materials shall be in sealed containers and labelled so as to plainly show the designated name, formula or specification number, batch number, colour, date of manufacture and manufacturer's directions

3.4 Inspection and Testing

Scaffolding used for painting shall be retained in position while work is being carried out and for a period up to three days after completion, or alternatively, other means shall be provided to give reasonable access for the Engineer to inspect prepared surfaces and paint films.

The Engineer shall have free access to all work locations, and warehousing facilities and the right to inspect the preparation of all surfaces and the application of all paintings.

3.5 Non Conformity

Before any deviation from this Specification, the Engineer shall be consulted. Failure to do so will in no way relieve the Contractor of his responsibility for satisfactory compliance with standards and procedures set forth in this Specification.

The Engineer shall have the right to reject any work which is not carried out in accordance with this or any other applicable Specifications. All expense incurred by the correction of rejected work shall be borne by the Contractor.

Causes for rejection of work or portions shall include but not be limited to the following :

- a. Surface preparation considered unsatisfactory by the Engineer for any reason
- b. Failure of Contractor to apply the minimum number of coats of the appropriate thickness
- c. Failure of Contractor to allow minimum specified drying time between coats.

4.0 MATERIALS

4.1 General

All coating materials shall conform to the specifications shown in the painting schedule herein and to the requirements hereinafter specified.

All primers and finish coats to be used in this work shall be provided by the same designated manufacturer, and shall not be mixed with paint from other sources or of dissimilar compositions.

For the purpose of establishing a basis of quality, the paints specified herein are based upon paints as manufactured by ICI, Danapaints, Moliwex or equal.

4.2 Primers

Primer to be used shall be as following or equal :

- a. Alkali Resisting Primer/Alkali Resistant Sealer for masonry, plaster and concrete surfaces
- b. Aluminium Wood Primer Sealer for wood surfaces
- c. Quick-Drying Metal Primer Chromate/Zinc Chromate Primer for steel and miscellaneous metal surfaces.

4.3 Finish Paints

Finish paint to be used shall be as following or equal :

- Vinyl Acrylic Emulsion/Acrylic Emulsion for masonry, plaster, concrete and wood surfaces
- Vinyl Acrylic Emulsion for wood surfaces
- Synthetic Super Gloss/Synthetic Enamel for steel and miscellaneous metal surfaces.

4.4 Colour and Tints

Designated areas shall be subject to colour selection stated in Colour Scheme or as approved by the Engineer after samples showing alternative colours and textures recommended have been furnished as per point 3.2. above. The same thing shall be carried on for colour, tint or texture of pre-finish surfaces.

Shades of stain shall match the respective colour specimen selected by the Engineer and shall conform to manufacturer's standard colour.

5.0 CONSTRUCTION REQUIREMENTS

5.1 Preliminary, Preparation and Treatment

5.1.1 General

All paints shall be used in accordance with the manufacturer's application instructions and shall comply with the specified standard in SSPC or equal

Hardware, hardware accessories, machined surfaces, plate, lighting fixtures, and similar items in contact with surfaces to be painted shall be removed, masked, or otherwise protected prior to surface preparation and painting operations.

Such protection shall be done by workmen skilled in the trades involved. Exposed nails and other ferrous metal on surfaces to be painted with water-based paints shall be spot primed with zinc chromate primer as appropriate to condition, and then a top coat shall be applied

Surfaces to be painted shall be cleaned prior to application of paint or surface treatments. Existing painted surfaces not designated for re-painting shall be cleaned in a manner which shall leave the surface so treated, as possible to new condition, or shall if unpainted, be wire brushed or buffed with a light sanding tool, and touched up to remove all evidence of rust, corrosion or abrasion

Oil and grease shall be removed with clean cloths and cleaning solvents which have low toxicity and flash-point in excess of 38°C

Cleaning and painting shall be scheduled in such a way that ensures dust and other contaminants from the cleaning process do not fall on wet or newly painted surfaces.

5.1.2 Masonry, Plaster and Concrete Surfaces

Masonry, plaster and concrete surfaces to be painted shall be prepared by removing chalk, dust, dirt, grease, oil, asphalt, tar, excessive mortar or mortar droppings and by roughening the surfaces to remove glaze

Surface deposits of free iron shall be removed prior to painting. Immediately before coating, surfaces to be painted shall be uniformly and thoroughly dampened, with no free using a fog spray. Sufficient time shall be allowed to elapse between sprayings to allow water to be absorbed.

5.1.3 Wood Surfaces

Wood surfaces to be painted shall be cleaned to remove dirt, oil and other foreign substances, using mineral spirits, scraper and/or sand paper.

Wood surfaces shall be primed and finish coated as specified by Colour Scheme.

Small, dry seasoned knots shall be surface scraped and thoroughly cleaned before application of the priming coat. Pitch on large, open, unseasoned knots and all other beads or streaks of pitch shall be scraped off, or if still soft, shall be removed with mineral spirits or turpentine and the resinous areas thinly coated with a knot sealer. The surface shall be checked to ensure that finishing nails have been flush set or recessed and filled. Then all holes and surface imperfections shall be primed.

After priming, all holes and imperfections in finish surfaces shall be filled with putty or plastic wood filler, and shall be coloured to match the finish coat.

5.1.4 Steel and Metal Surfaces

All steel and metal surfaces shall have all millscale, dust and rust removed by wire-brushing or shall be dry sandblasted to white metal (Sa 2½/SP-10).

Excessive wire-brushing with power operated, rotary, wire brushes, resulting in a burnished effect to the steel surface, shall be avoided.

All steel and metal surfaces contaminated by oil or grease shall be washed with clean white spirit. Oil or grease may, in locations approved by the Engineer, be removed from the surfaces of ferrous surfaces by washing with a proprietary water soluble mixture of solvent and detergent followed by rinsing with clean water.

Washing of steel/metal surfaces, where required to remove soluble salt deposits shall be carried out using clean water and where conditions permit, hosepipes and scrubbing brushes shall be used.

Surfaces shall be primed with priming paint as soon as possible after completion of the preparation process.

The rate of progress of surface preparation shall be controlled to ensure that preparation and priming are carried out on the same day.

Further surface preparation shall be carried out where there is evidence of rusting or contamination resulting from prolonged exposure before priming.

After the surface is prepared in a manner acceptable to the Engineer, one coat of zinc chromate primer shall be applied to the steel work at the fabrication shop.

Primer shall be applied by brushing to ensure a continuous film without holidays.

Primer coat shall be applied immediately after the surface preparation without any time lag.

Fabricated steel/metal with the shop coat of primer after its erection in the field shall be carefully examined and shall be treated with a touch-up coat of zinc chromate primer wherever the shop coat has been abraded, removed or damaged during transit/erection, defaced during welding/riveting and also over the field welds, bolts and nuts adopted for structure.

After touching up, the second coat of zinc chromate primer shall be applied over the erected steel work.

5.2 Paint Application

5.2.1 General

All finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks and variation in colour, texture and finish. The covering of each coat shall be complete and each coat shall be so applied as to produce film of uniform thickness.

Special attention shall be given to insure that all surfaces including edges, corners, crevices, welds and rivets receive a film thickness equivalent to that of adjacent painted surfaces.

Adjacent areas and installation shall be protected using drop cloths or other approved precautionary measures. Other material surfaces adjacent to surfaces to receive water-based paints shall be primed and/or touched up prior to the application of water-based paints.

The first coat of paint on concrete surfaces shall include such repeated touching up of suction spots or overall applications of primer-sealer as necessary to produce a uniform colour and gloss.

5.2.2 Coating Progress

Sufficient time shall elapse between application of successive coats to permit acceptable drying. This period shall be modified as necessary to suit varying weather conditions.

When the applied coating is left exposed for long periods, it may develop a whitish layer of zinc salts. This salt layer shall be washed off with fresh water and dried subsequently to facilitate secure intercoat bonding.

Thinner shall not be added to any coating materials unless approved by the manufacturer as necessary for proper application.

Oil base or oleoresinous solvent-type paints shall be considered dry for re-coating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and the application of another coat of paints does not cause lifting or lessens adhesion of the undercoat.

Coating shall be as follows :

a. Masonry, plaster and concrete surfaces.

- Prime coat : two (2) coats of Alkali Resisting Primer/Alkali Resistant Sealer @ 40 microns thickness.
- Finish coat : two (2) coats of Vinyl Acrylic Emulsion/Acrylic Emulsion @ 35 microns thickness.

b. Wood surfaces.

- Prime coat : two (2) coats of Aluminium Wood Primer sealer @ 30 microns thickness.
- Finish coat : two (2) coats of Vinyl Acrylic Emulsion/Acrylic Emulsion @ 30 microns thickness.

c. Steel and miscellaneous metal surfaces.

- Prime coat : two (2) coats of Quick Drying Metal Primer Chromate/Zinc Chromate Primer @ 40 microns thickness.
- Finish coat : two (2) coats Synthetic Super Gloss/Synthetic Enamel @ 40 microns thickness.

5.2.3 Storage, Mixing and Thinning

At time of application, paint shall show no sign of hard settling, excessive skinning, livering or other deterioration.

Paint shall be thoroughly mixed using electric mixer, stirred, strained in a strict conformance with the manufacturer's recommended procedure and kept uniform consistency during application.

Where necessary to suit conditions of surface, temperature, weather and method of application, package paint may be thinned immediately prior to application in accordance with the manufacturer's directions, but not in excess of 0.5 litre to suitable thinner per 4 litres.

The use of thinner for any reason shall not relieve the Contractor from obtaining complete surface coverage.

No alteration or mixing of materials on premises shall be permitted, except as specified for priming, sizing or undercoats, and where tinting is required to produce proper colour.

5.2.4 Atmospheric Conditions

Paints other than water-based coatings shall be applied only to surfaces that are completely free of surface moisture as determine by sight or touch.

Paint shall be applied in an environment conducive to controlled drying.

5.2.5 Time Between Surface Preparation and Painting

Surfaces that have been cleaned, pre-treated and/or otherwise prepared for painting shall be given a coat of the specified first coat material as soon as practicable after such preparation has been completed, but in any event prior to any deterioration of the prepared surface.

5.2.6 Method of Application

Prime coat for masonry, plaster and concrete surfaces and finish coat may be applied by brush or roller for detail coating brush can be used.

Prime coat for wood surfaces shall be applied by brush and finish coat may be applied by brush or roller.

Prime coat for steel and miscellaneous metal surfaces and finish coat may be applied by spray.

All doors for interior use shall be spray painted.

5.3 Special Requirement

Rollers for applying enamels shall have a short nap.

Brushes used for emulsion paint shall be soaked in water for a period of 2 hours prior to use.

Upon completion of the work, staging, scaffolding and containers shall be removed from the site or disposed of in an approved manner. Paint spots, oil or stains upon adjacent surfaces shall be removed and the entire job left clean and acceptable to the Engineer on final inspection. The scaffolding shall not affect floor or wall surface all damage is Contractors responsibility.

All protective masking applied to surfaces or designated items previous to painting, shall be removed after final coat has been allowed to firm-up sufficiently so that smudged areas result from removal of masking.

5.4 Reinstallation of Removed Items

Following the completion of painting of each space, removed/ covered items as indicated under section 5.1. of this Technical Specification, shall be reinstalled by workmen skilled in the trade involved.

5.5 Protection and Cleaning

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

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TS - 09250 -- GYPSUM PANEL

1.0 DESCRIPTION OF WORK

This work shall cover the furnishing and installation of all gypsum panel and frames for the work as indicated in the Drawings and/or herein after specified.

2.0 REFERENCE STANDARDS

- a. Australian Standard (AS).
- b. American Standard for Testing and Materials (ASTM).
- c. Technical Specification AR 0602 Carpentry.
- d. Technical Specification AR 0914 – Painting.

3.0 GENERAL PROCEDURES

Samples and Technical Data

Samples and technical data of materials to be used shall be submitted to the Engineer to be approved, prior to delivery to the site.

Shop Drawings

Prior to installation, Contractor shall prepare and submit Shop Drawings to be approved by the Engineer.

Shop Drawings shall consist of type of materials, dimension, sizes, quantity of materials, detail of connection, detail of installation and other details to be required to complete the installation.

Handling and Storage

Gypsum panel shall be delivered to the site immediately prior to installation to reduce the risk of damage.

Gypsum panel shall be stacked neatly and supported properly on strong level bearer spaced at 450 mm centres, with end bearers not more than 150 mm from ends of stack.

Gypsum panel shall be stored under cover off the ground on a level surface and adequately protected from the weather.

4.0 MATERIALS

4.1 Gypsum Panel

Gypsum panel shall be from a product having *control density* technology and having minimum thickness and sizes as indicated in the Drawings, such as CSR, Jayaboard or approved equal.

Gypsum panel shall consist of the followings :

- a. Standard type for rooms with ordinary treatment, which complying with AS 2588-1983.
- b. Water resistant type for wet area which complying with AS 3740-1989 and ASTM C630.

4.2 Jointing Cement

Jointing cement for gypsum panel shall be in accordance with the manufacturer.

4.3 Fasteners

Fasteners such as screw from the type in accordance with the type of installation shall be as recommended by the gypsum panel manufacturer and complying with AS 2589-1983.

4.4 Miscellaneous Accessories

Other accessories for installing gypsum panel, such as mentioned below, shall be as recommended by the gypsum panel manufacturer :

- Adhesive,
- Perforated tape,
- Prime coat specially for gypsum panel surfaces,
- And other as required to complete the installation.

5.0 CONSTRUCTION REQUIREMENTS

5.1 General

Prior to installation, Contractor shall check the elevation, the alignment of the surfaces, partial area, sizes and type of construction and/or installation against the specified Drawings.

Installation of gypsum panel and its accessories shall be in accordance with the manufacturer instruction manual.

Edge type of gypsum panel, whether recessed or square, shall be selected based on the type of installation as shown in the Drawings.

5.2 Installation

Frames for gypsum panel to be installed for ceiling, partition or other places as shown, which consist of wood sizes 5 cm x 10 cm x 6 cm, or as specified in the Drawings, shall be in accordance with the requirements of Technical Specification AR 0602.

Frames made of hot dip galvanised steel shall be in accordance with the standard from the gypsum panel manufacturer.

Prior to installation, frames made of wood shall have been coated with preservative treatment specified in Technical Specification AR 0602.

Gypsum panel shall be installed to the frames using nail, screw or fasteners in adequate diameter and length.

Joints between gypsum panels shall be finished by jointing tape and adhesive and shall be carried out in accordance with the manufacturer instruction.

5.3 Painting

Gypsum panel surfaces shall be dry, free from dust, oil, grease or any other foreign material and all imperfect surfaces shall have been repaired prior to painting work.

Apply the gypsum surfaces with prime-coat specially made for gypsum panel to cover the porous surfaces.

Allow the prime-coat to dry overnight and after lightly sanding, apply and approved finish paint as specified in Technical Specification AR 0914.

Colour of finished paint shall be as stated in Colour Scheme.

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TS -- 09300 -- TILE WORK

1.0 DESCRIPTION OF WORK

The work shall consist of the furnishing and installation of all tiles as shown in the Drawings and/or hereinafter specified.

2.0 REFERENCE STANDARDS

- a. Persyaratan Umum Bahan Bangunan di Indonesia (PUBI -- 1982).
- b. Spesifikasi Bahan Bangunan Bagian A (SK SNI S-04-1989-F).
- c. Standar Industri Indonesia (SII).
- d. Technical Specification AR0404 -- Cement Mortar.

3.0 GENERAL PROCEDURES

3.1 Samples and Technical Data

Samples and technical data of proposed materials shall be submitted to the Engineer for approval prior to delivery.

Provide full range of colours and textures for tile as available for selection and samples of those selected.

Cost of samples shall be the Contractor's responsibility.

3.2 Handling and Storage

All materials shall be delivered to the project site in original containers, bundles or packages with seals unbroken and labels intact, and shall be stored in a clean dry place and protected from damage or rain.

Extra materials shall consist of not less than two standard packages for each colour, type and size of field tile used in this work, and one standard package for each colour and type of base tile.

4.0 MATERIALS

4.1 General

All tiles shall be new, free from any defect and of first quality, from a manufacturer with a proven record in this field of production. Tiles shall be of the type as specified herein and in colour as specified by Colour Scheme to be issued later.

4.2 Ceramic Tiles

Glazed ceramic tiles for toilet's floor in sizes as indicated by the Drawings shall be of non-slip type.

Glazed ceramic tiles for other places in sizes as indicated by the Drawings shall be of normal glazed surface type.

4.3 Granito Tiles

Granito tiles in sizes as indicated in the Drawings shall be of polished type, such as from Essenza or approved equal.

4.4 Cement Mortar

Cement mortar shall consist of cement and sand mixture with addition of some admixture in quantity as recommended by the manufacturer. Material

of cement mortar and admixture shall be in accordance with the requirements of Technical Specification AR 0404.

Special adhesive for fixing the tiles, if specified in the Drawings or as directed by the Engineer, shall comply with the requirements of AS 2358, ANSI 118.1, 118.4 and BS 5385, such as AM 30 Mortarflex or approved equal.

4.5 Cement Grout

Cement grout shall be factory prepared port land powder mixture grout, factory pre-coloured in colour as selected, such as AM 50 Coloured Ceramic Grout or approved equal, and AM 55 Epoxy Grout or approved equal specifically for chemical/acid resistant tiles.

4.6 Water Repellent

Water repellent to prevent fungus on tile surfaces without affecting the breathing of tiles and to dry out the moisture through the surfaces, shall be from a proven product, such as Barra Sil N, Silicosol, Febsilicon or approved equal.

5.0 CONSTRUCTION REQUIREMENTS

5.1 Preparation.

Installation of tiles shall be deferred until hangers, electrical, mechanical, and other works that are to be upon, in or behind tiles have been installed and satisfactory protection of adjoining work has been provided.

Stops, returns, caps, trimmers and special shapes shall be provided as required for sills, jambs, stair nosing and other conditions to provide a complete and neatly finished installation.

5.2 Setting Tiles.

Surfaces to receive application of tiles shall be dry, clean and free of dirt, dust, oil, grease and other deleterious matter.

Cement mortar for tiles on floor, exterior wall and other waterproof part shall consist of the mixture of 1 cement, 2 sand, and some admixture as recommended, unless otherwise specified in the Drawings.

Cement mortar for tiles on other places shall consist of 1 cement and 3 sand. The thickness of mortar shall be 2.5 cm minimum, except otherwise noted in the Drawings.

Prior to installation, all ceramic tiles shall be submerged into the water.

Mortar for tiles on wall shall be applied both on wall and back of tiles, and then fix the tiles to their place as planned and as shown in the Drawings.

Mortar for tiles on floor shall be placed on sand layer of thickness as shown in the Drawings, unless otherwise specified. Tiles for toilet's floor shall be applied incline towards the floor drain hole.

Tile bases or coves shall be solidly backed with mortar as required and specified herein. Each tile shall be brought to true, even and level plane using a beating block. A test of plane distortion shall be made with a trade approved level. Positive compression of each tile is required to establish proper bond. Tile that is out of true plane or misplaced shall be removed and reset.

Tile shall be laid from the centrelines of borders, if any, so as to symmetrize the patterns with no cuts less than one-half of the tile width.

Joints shall be straight, level, perpendicular and of even width exceeding 1.6 mm. Walls shall be built of full courses, that may extend to a greater height but in no case lower than the height shown on Drawings.

Vertical joints shall be maintained plumb for the entire height of the tile work.

Tile shall be cut with a suitable trade approve cutting tool and rough edges shall be ground smooth.

Damaged, defective or badly cut tile shall be replaced by the Contractor at his expense.

5.3 Grouting

Tile shall have the edges wetted and shall be grouted full with a plastic mix of neat suitably coloured cement grout, immediately after a respective area of tile has been set. The joints shall be tooled slightly concave, and the excess cement mortar shall be cut off and wiped from the face of the tile.

Interstices or depressions left in the mortar joint after the grout has been cleaned from the surface, shall be roughened at once and filled to the spring line of the cushion edge before the mortar begins to harden.

5.4 Cleaning and Protection

Upon completion, wall and floor surfaces shall be thoroughly cleaned. Acid shall not be used for cleaning glazed tiles.

Protect adjacent construction, membranes and finishes as necessary.

Protect tile work under construction. Provide coverings, barrier and other as necessary.

TS – 09545 – METAL PANEL

1.0 DESCRIPTION OF WORK

The work shall cover the furnishing and installation of all metal panel and accessories for ceiling as indicated in Drawings and/or hereinafter specified.

2.0 REFERENCE STANDARDS

- a. American Society for Testing and Materials (ASTM).
- b. Technical Specification AR 0914 -- Painting.

3.0 GENERAL PROCEDURES

3.1 Samples and Technical Data

Prior to material delivery, Contractor shall submit samples and technical data of materials to be used to the Engineer for approval and review.

3.2 Shop Drawings

Prior to fabrication and installation, Contractor shall submit Shop Drawings to the Engineer for review and approval.

Shop Drawings shall include information on type and data of material, dimension, quantity, method of connection, fabrication and installation and other details as required.

3.3 Handling and Storage

All materials shall be delivered to the project site in original containers, bundles or packages with seals unbroken and labels intact, and shall be stored in a clean dry place and protected from damage.

4.0 MATERIALS

4.1 Aluminium Spandrel

Aluminium spandrel shall be YKK Spandrel Type K 98702 or approved equal complete with all accessories.

5.0 CONSTRUCTION REQUIREMENTS

5.1 General

Prior to commencement all above-ceiling work shall be inspected and approval.

5.2 Installation

Aluminium spandrel panels shall be installed in accordance with the manufacturer's instruction.

The panel pattern shall be as shown on the Drawings. The pattern shall be symmetrical about the centreline.

All joints shall be as tight as practicable.

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TS – 09930 – TRANSPARENT COATING

1.0 DESCRIPTION OF WORK

The work shall consist of the provision and application of all wood and timber coatings work as shown in the drawings or Colour Scheme and in related Specification, unless otherwise noted.

The work shall include but not to be restricted to supply or labours, materials, equipment and tools to be used for preparation surfaces, application of paint, making good any defects and cleaning of any splashes to other work.

All coatings shall be as required in this Specification or determined by the engineer.

2.0 REFERENCE STANDARDS

- a. American Society for Testing and Materials (ASTM).
- b. British Standard (BS).
- c. Technical Specification AR 0602 –Carpentry.

3.0 GENERAL PROCEDURES

3.1 Detail and Colour Card.

Full details and colour card of proposed materials and manufacturers shall be submitted before construction. Failure to do so may lead to rejection of materials on site and failure to meet program requirements.

All materials shall be of such quality as to produce first class and durable finishes and to be equal requirements of the relevant standards.

3.2 Sample Panels and Test Areas.

Before painting with a particular system commences, the Contractor shall paint test areas or sample panels to the paint film is being obtained.

The paints, equipment and method of application used for test areas or samples panels shall be representative of those to be used for the work.

Test areas or sample panels shall be retained and shall form the standard for all subsequent work.

Contractor shall be responsible in providing samples and sample panels.

3.3 Delivery and Storage.

All coating shall be fresh stock and be of new and first quality, delivered at job site in unopened original manufacturer's containers, and stored in the dry, watertight, lockable enclosure.

All coating materials shall be in sealed containers and labelled that plainly show the designated name, formula or specification number, batch number, colour, date of manufacture and manufacturer's directions.

3.4 Inspection and Testing

The Engineer shall have free access to all work locations, and warehousing facilities and the right to inspect the preparation of all surfaces and the application of all paintings.

3.5 Non conformity.

Before any deviation from this specification, the Engineer shall be consulted. Failure to do so will in no way relieve the Contractor of his responsibility for satisfactory compliance with standards and procedures set forth in this Specification.

The Engineer shall have the right to reject any work which is not carried out in accordance with this or any other applicable Specifications. All Expense incurred by the contractor.

Causes for rejection of work or portions shall include but not be limited to the following:

- a. Surface preparation considered unsatisfactory by the Engineer for any reason.
- b. Failure of Contractor to apply the minimum number of coats of the appropriate thickness.
- c. Failure of Contractor to allow minimum specified drying time between coats.

4.0 MATERIALS.

4.1 General.

All coating materials shall conform to the Specification shown in the painting schedule herein and to the requirements hereinafter specified.

All painting materials to be used in this work shall be provided by the same designated manufacturer, and shall not be mixed with paint from other sources or dissimilar compositions.

For the purpose of establishing a basis of quality, the paints specified herein are based upon paints as manufactured by Ultrac or approved equal, but the designation thereof shall not be construed as being proprietary.

4.2 Wood Filler.

Wood filler of Ultrac WF - 115 or approved equal, shall be used to fill and to close pores of wood surfaces.

4.3 Colour Varnish.

Colour varnish of colour as specified in Colour Scheme which shall be issued later, shall be of Ultrac P -- 01 or approved equal.

4.4 Sandpaper

Type of sandpaper shall be suitable with the requirements in point 5.2.2. of this Technical Specification and shall be approved by the Engineer.

5.0 CONSTRUCTION REQUIREMENT

5.1 General

Varnish coating shall be applied to all wood surfaces as shown in the Drawings.

Varnish coating shall be applied after all wood / timber works have been installed in accordance with the Drawings and Technical Specification AR 06200.

5.2 Application

5.2.1 General

Application of varnish coating shall be in accordance with the manufacturer's instruction.

Application of varnish coating shall be carried out as follows:

First coating

1 x coat wood filler shall be used to fill and cover all wood pores and scouring all wood surfaces by using sandpaper no. 300, shall be carried out after wood filler has dried.

Second Coating

2 – 3 x coats of varnish in colour as specified in the Colour Scheme which shall be issued later.

Prior to application of the next coat, the former coat which shall be dried in between 3 hours minimal, shall be scoured with soft sandpaper and continued by cleaning all the dirties away.

Third Coating

1 x coat of varnish clear matt shall be applied as a finished coat.

5.2.2 Application to Doors

Varnish shall be applied in the method as described in 5.1 except that second and third coatings shall be applied by spraying.

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1863.

2. The second part is a report from the Secretary of the Treasury, dated January 10, 1863.

3. The third part is a report from the Secretary of the Interior, dated January 15, 1863.

4. The fourth part is a report from the Secretary of the Navy, dated January 20, 1863.

5. The fifth part is a report from the Secretary of the War, dated January 25, 1863.

6. The sixth part is a report from the Secretary of the State, dated January 30, 1863.

7. The seventh part is a report from the Secretary of the War, dated February 5, 1863.

8. The eighth part is a report from the Secretary of the Navy, dated February 10, 1863.

9. The ninth part is a report from the Secretary of the War, dated February 15, 1863.

10. The tenth part is a report from the Secretary of the Navy, dated February 20, 1863.

11. The eleventh part is a report from the Secretary of the War, dated February 25, 1863.

12. The twelfth part is a report from the Secretary of the Navy, dated February 30, 1863.

13. The thirteenth part is a report from the Secretary of the War, dated March 5, 1863.

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15. The fifteenth part is a report from the Secretary of the War, dated March 15, 1863.

16. The sixteenth part is a report from the Secretary of the Navy, dated March 20, 1863.

17. The seventeenth part is a report from the Secretary of the War, dated March 25, 1863.

18. The eighteenth part is a report from the Secretary of the Navy, dated March 30, 1863.