pressure resulting from placement and vibration of the concrete, and shall be maintained rigidly in correct position. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Forms for exposed surface shall be lines with form grade plywood. Bolts and roods used for interval ties shall be so arranged that when the forms are removed, they shall not be less than two (2) centimeters from the formed surface.

Removal of forms or shoring is subject to approval by the engineer, and under no circumstances shall bottom form and shoring be removed until after the members have acquired sufficient strength to support their weight and the load thereon. Forms shall remain in place for a minimum time as follows:

Columns, sides of beams, shear and bearing walls ------- 3 days

Beams ------- 14 days

Re-shore immediately after stripping beams and girders that support subsequent formwork.

3.6.2 Cleaning and Oiling Forms

Before placing concrete, the contact surface if the forms shall be cleaned of incrustations of mortar, grout or other foreign material. Forms shall be coated with standard form oil that can effectively prevent sticking and will not stain the concrete surfaces.

3.6.3 Removal of Forms

Forms shall be removed in a manner, which shall prevent damage to concrete structures. Forms shall not be removed without prior approval of the Project Manager. Any repairs of the surface imperfections shall be performed at once and curing shall be started as soon as the surface is sufficiently hard to permit it without further damage. The minimum time period for removal of forms shall govern where it exceeds the minimum specified curing period. Where the formwork for one element supports the formwork for one element supports the formwork for another element, the greater time period shall apply to both elements. Forms shall not be removed before the expiration of the minimum time specified below:

Element	Time Period
Walls columns, sides of beams and girders, and slabs on grade	1
Pan joist forms (side only): 76 cm (30 inches) Wide or less over 76 cm (30 inches) wide	3

Where design live:	less than the dead load	greater than dead load

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

Joist, beam or girder, soffits: (Clear span between structural support):		
Under 3.00 m (10 ft.)	7	4
3.00 m (10 ft) to 6.00 m (20 ft.)	14	7
Over 6.00 m (20 ft)	21	14
One-way floor slabs: (Clear span between structural supports)		
Under 3.00 m (10 ft)	4	4
3.00 m (10 ft) to 6.00m (20 ft)	7	4
Over 6.00m (20 ft)	10	7

Sufficient shoring members to support dead loads including construction loads on beams and slabs shall be provided for a period of eight (8) days in addition to the seven (7) days specified thereto. The time for removal of forms for structures not included thereto shall be as directed by the Project Manager. Concrete work shall be protected from damage during construction.

3.7 Reinforcing Steel

3.7.1 General

Steel reinforcement shall be provided together with all the necessary wire tie chairs, spacers, support and other necessary devices.

3.7.2 Cutting and Bending

Reinforcing steel shall be accurately cut and bent in accordance with the approval detailed reinforcement drawings. Reinforcing steel shall not be straightened or re-bend in a manner that will injure the material. Bars with kink or with bends not shown on the approved detailed reinforcing drawings or with cracks or splits of the bends shall not be used. All the bars shall be bent cold. If Contractor elects to have reinforcing steel cut and bent off the site, he shall provide, maintain and operate a small cutting and bending shop on the site and maintain and representative stock of steel. This provision is to take care of minor revisions and additions in an expeditious manner.

The Project Manager may require the contractor to prepare and submit bar cutting schedule prior to fabrication of reinforcing steel bars.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

3.7.3 Placing Reinforcement

Reinforcing steel shall be accurately placed in accordance with approved detailed reinforcement drawings and shall be adequately secured against displacement by using specified tie wires or approved clips at all intersections. After it has been installed, reinforcing steel shall be inspected by the Project Manager for compliance with requirements as to size, shape, length, splicing, position and number. Reinforcing steel shall be supported by concrete or metal supports, spacers or metal hangers, except for surfaces exposed to the ground or to the weather, where supports shall be concrete. Wooden support spreaders shall not be used. At surfaces where attractive appearance is required, the supports shall be of the type, which shall not cause subsequent staining or marring of the exposed surface.

3.8 Joints in Concrete

3.8.1 Construction Joints

Construction joints shall be provided where indicated in the drawing or as directed by the Project Manager. Joints not indicated on the drawings shall be constructed and located as not to impair the strength of structures. When a construction joint is to be made, the surface of the hardened concrete shall be thoroughly cleaned and all Latinate removed. In addition, the joint shall be thoroughly wetted and sloshed with a coat of neat cement grout immediately prior to placing of new concrete.

3.8.2 Expansion and Contraction Joints

Expansion and contraction joints shall be provided where indicated and shall be in accordance with details.

3.8.3 Preformed Strips

Preformed strips shall be placed before the adjoining, concrete is poured. The joint scalier shall be applied after concrete on both sides of the joint have poured and after the joint lines have been trued.

3.9 Self-Levelling Concrete

(1) Standards – All aspects of the installation must be in accordance with the requirements of BS 8204 (Installation of Resilient floor coverings) and BS 8203 (Installation of textile floor coverings) and supplementary specifications.

(2) Preparation – The surface should be free of oil, grease, weak material, laitance and contaminates. All sub-floors, including concrete and highly polished surfaces (e.g. power floated concrete, marble, terrazzo and ceramic tiles), should always be mechanically textured. The floor should then be either vacuumed or swept clean.

(3) Surfaces – All surfaces must be primed with Acrylic Primer (Porous substrates) and Epoxy Primer (non-porous substrates).

(4) Mixture – in single units of the ratio of 20kg powder to 3.6-3.8 liters of water. Do not add extra water because long term performance may be impaired. A 65mm by 40mm flow ring should be filled with pre-mixed Self-levelling compound. Using a Flow chart, a spend ratio of between 230mm and 260mm should be obtained to ensure that a correct mix is passing through the pump. After applying the material onto the primed floor, simply use a hand trowel to spread. Maximum application thickness of 6mm on to epoxy primer.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

(5) Protection and Completion – Ensure the screed is not subject to draughts during the first 6 hours of curing as this may lead to cracking and crazing. Take up doorways with polythene to prevent air movement. Prevent contamination by following trades (e.g. plastering), including water spillage.

(6) Cleaning – Immediately after use all tools and equipment should be cleaned with water. Cured material can be removed mechanically or by acid etching.

3.9.1 Methods of Measurement and Basis of Payment

(1) The Project Manager shall be in accordance with the dimension in the plan or as otherwise direct the measurement of completed work. The quantities to be paid for under this section shall be measured as follows:

(a) The volume to be paid for under this item shall be the number of cubic meters of concrete placed and accepted. Payment for concrete shall be constructed to include the cost of forms, false works, curing, fasteners and accessories necessary to complete this item of work.

(b) The quantities for reinforcing steel to be paid for shall be the final quantity placed and accepted in the completed structure. No measurement for payment shall be made for splices added by the Contractor for his convenience. Payment for the accepted quantities for reinforcing steel shall be deemed to include the cost tie wires, separators, wire, supports, hangers, chairs and other materials necessary to complete the work.

The quantities measured as provided above shall be paid for at the contract price for each of the pay item, which price and payment shall be full compensation for furnishing and placing all materials, labor, equipment, tools and incidentals necessary to complete the work.

4.0 MASONRY

4.1 Scope of Work

The work includes furnishing and placing of concrete masonry units in conformity with the lines, grades and cross-sections shown on the drawings and in accordance with the specifications.

4.2 Applicable Documents

The latest edition of the following specifications and standards shall form part of this specification to the extent required by the references thereto.

ASTM America Society for Testing Materials

C144 Standard Specification for Aggregate for Masonry Mortar

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

PSA Product Standards Agency Publications (Philippines)

PNS 16 Specification of Concrete Hollow Blocks

4.3 Material Requirements

4.3.1 Concrete Hollow Blocks

Concrete hollow blocks shall be a standard product of recognized manufacturer to PNS 16, as indicated on the drawings. Exterior and interior masonry units shall be non-load bearing units. However, load-bearing units may be provided in lieu of non-load bearing units. For non-load bearing units, the required compressive strength shall be 25 kg/cm^2 or 2.48 Mpa.

4.3.2 Cement, Reinforcing Steel and Water

Cement, reinforcing steel and water shall be as specified in Section 3.0.

4.4 Construction Requirements

4.4.1 Workmanship

Masonry walls shall be placed level and plumb all around. One section of the walls shall not be placed in advance of the others, unless specifically approved. Unfinished work shall be stepped back for joining with the new work; tooting shall not be permitted. Heights of masonry work shall be checked with an instrument at sills and heads of openings, to maintain the level of the walls. Door and window frames, louvered openings, anchors, pipes and conduits shall be installed carefully and neatly as the masonry work progresses. Spaces around door frames shall be filled solidly with mortar. Drilling, cutting, fitting and patching to accommodate the work of others, shall be performed by skilled workers. Bolts, anchors, inserts, plugs, ties and miscellaneous metal work specified elsewhere shall be placed in position as the work progress. Chases of approved dimensions for pipes and other purposes shall be provided, where indicated or necessary. Top of exposed walls and partitions, not being worked on, shall be covered with a waterproof membrane, well secured in place. Wall and partitions shall be structurally bonded or anchored to each and to concrete wall beams, and columns.

4.4.2 Mortar Mixing

Mortar materials shall be measured in approved container to insure that the specified proportions of materials are controlled and accurately maintained during the progress of the work. Unless specified otherwise, mortar shall be mixed in such a manner that the materials will be disturbed uniformly throughout the mass. A sufficient amount of water shall be added gradually and the mass further mixed, not less than 3 minutes, until a mortar of the plasticity required for the purpose intended shall be obtained. The mortar shall be mixed in a manner such that the quality of water can be controlled accurately and uniformly. Mortar boxes, pans of mixing drums shall be kept clean and free of debris or dried mortar. The mortar shall be used before the initial setting of the cement has taken place; retempering of mortar in which cement has started set shall not be permitted.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

4.4.3 Proportion of Mortar Grout

Fine mortar grout shall be mixed in the volumetric proportion of one part Portland cement. ¼ part hydrated lime and 3 parts sand. Coarse grout shall be mixed in proportion of one part Portland cement, ¼ hydrated lime, 3 parts sand and 3 parts pea gravel passing a 3/8-inch sieve.

4.4.4 Use of Fine and Coarse Grout

Fine grout shall be used in grout spaces less than 50 mm in my horizontal dimension or when clearance between reinforcement and masonry id more than 17mm.

4.4.5 Mortar Joints

Mortar joint shall be uniform in thickness, and the average thickness of any three consecutive joints shall be 9.50 mm. "Gage rods" shall be made and approved prior to starting the work and shall be used throughout the work. Changes in coursing or bonding after the work has started shall not be permitted. The jointer shall be slightly larger than the width of the joints, so that complete contact is made along the edge of the units, compressing and sealing the surface of the joint. Joints in masonry, which will not be exposed, shall be stuck flush. Joints shall be brushed to remove all loose and excess mortar. All horizontal joint shall be on level and vertical joins shall be plumbed and aligned from the top to the bottom of the wall with a tolerance of plus or minus 12 mm.

4.4.6 Concrete Masonry Unit

The first course of concrete masonry unit shall be laid in full bed of mortar, for the full width of the unit; the succeeding courses shall be laid with broken joints. Concrete masonry units with the cells verticals shall have bed-joints formed by applying the mortar to the entire top of the surface of the inner and outer face shall, and the head joints formed by applying mortar of a width of about 25 mm to the ends of the adjoining units lay previously. The mortar for joints shall be smooth, not furrowed, and shall be of such thickness that it will be forced out of joints as the units are being placed in position. Where anchors, bolts, ties and reinforcing bars occur within the cell of the units, such cells shall be solidly filled with mortar or grout as the work progress.

4.4.7 Reinforcement

Horizontal tie reinforcement shall be provided where indicated. Reinforcement shall be continuous and provided in the longest available lengths. Reinforcement above and below openings shall extend and be embedded into the columns, unless otherwise shown on the drawings. Spices shall overlap not less than 150 mm. Reinforcement shall be embedded in the mortar joints in the manner that all parts shall be protected by mortar. The two top courses of filler block walls shall have their cores filled with grout when placed in position.

Unless otherwise shown on the drawings, the size and spacing of bars shall be as follows:

For Vertical Bars:

150 mm (6") CHB - 10 mm (3/8") dia. At 600 mm

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

(24") on centers

100 mm (4") CHB - 10 mm (3/8") dia. At 600 mm

For horizontal bars: - 10 mm (3/8") dia at 600 mm

(24") on center (every third Course)

for 150 mm

(6") and 100 m (4") CHBs.

4.4.8 Bounding and Anchoring

Masonry walls and partitions shall be accurately anchored or bonded at points where they intersect, and where they abut or adjoin the concrete frame of the building. All anchors shall be completely embedded in mortar.

4.4.9 Grout Placement

Grout shall be performed on the interior side of wall, except as approved otherwise, sills, ledges, offsets and other surfaces to be left exposed shall be protected form grout falling on such surfaces and be and shall be removed immediately. Grout shall be stirred before placing to avoid segregation of the aggregate and shall be sufficiently fluid to flow into joints and around the reinforcement without leaving any voids. Grout shall be placed by pumping or pouring from buckets equipped with spouts, in lifts not exceeding 1.2 meters high. Grout shall be puddle thoroughly to eliminate voids without displacing the masonry units form its original position. Masonry units displaced by grouting operation shall be removed and re-laid to its proper alignment using fresh mortar grout.

4.4.10 Tests and Test Reports

The testing requirements stated herein or incorporated in referenced contract documents may be waived provided certified copies of report of tests from approved laboratories preformed on previously manufactured materials are submitted and approved. Test reports shall be accompanied by notarized copies from the manufacturer certifying that the previously tested material is of the same type, quality manufacturer, and make.

4.5 Method of Measurement and Basis of Payment

In measuring the quantity of masonry units for payment, the dimensions to be used shall be as shown on the plans or as directed by the Project Manager in writing. Projections extended beyond the faces of the wall shall not be included. The area to be paid for in this section shall be the number of square meters of concrete masonry wall and partition placed and accepted in accordance with the plans and specifications. Payment of accomplished work shall be deemed to include the cost of mortar grout, reinforcing steel, tie wires, false work and other necessary works to complete this item.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

The quantity of concrete masonry walls and partition shall be paid for at the contract unit price shown in the bid schedule, which payment shall be full compensation for furnishing and placing all materials, labor, equipment, tools and incidentals necessary to complete the work.

5.0 METALS

5.1 Scope of Work

The work includes the furnishing, fabrication, erection or installation of structural steel roof framing, Stainless Handrails and miscellaneous metal work in accordance with this specification and as shown in the drawings.

5.2 Applicable Specifications & Standard

The latest edition of the following specifications and standards refereed to hereinafter by basic designation only, shall form part of the specification:

ASTM American Society for Testing and Materials

A36/A36M Specification for Structural Steel

A53 Steel Pipe Zinc Coated Welded and Seamless Black and Hot-Dip

A307 Bolts and Studs, 60, 000 psi Tensile Strength

A325 Standard Specification, high Strength Bolts for Joints

A570 Hot-rolled Carbon Steel Sheet and Strip, Structural Quality

A611 Steel, Cold-Rolled Steel, Carbon, Structural Quality

AWS American Welding Society

D1.1 Structural Welding Code, Steel

AISC American Institute of Steel Construction, Specification for the Design, Fabrication, Erection of Structural Steel for Buildings.

AISI American Iron Steel Institute, Specification for the Design of Light Gage Cold-Formed Steel Structural Members

5.3 Material Requirement

5.3.1 Structural Steel Shapes Plates and Bars

Unless otherwise shown or specified on the drawing, structural steel shapes plates and bars shall conform to ASTM specification A36/A6M.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

5.3.2 Hot-Formed Steel Sheet and Strip

Unless otherwise shown or specified on the drawings, hot-formed steel and strip shall conform steel and strip shall conform to ASTM A570.

5.3.3 Bolts, Nuts and Washer

It shall conform to specification STM A370, with a minimum yield point of 33, 000 psi, unless otherwise shown in the drawings. Heavy hexagonal structural bolts, heavy hexagonal nuts and hardened washers, shall be quenched and tarpapered medium-carbon steel bolts, nuts and washers complying with ASTM A325.

5.3.4 Screw and Expansion Bolts

Screw and Expansion colts be of standard commercial grade, and of the sizes and types indicated as approved by the

5.3.5 Electrodes

Electrodes for are welding shall be E60, or E70, AWS D1.1

5.3.6 Galvanizing

Unless otherwise specified, galvanizing shall be of standard quality, hot-dipped process of 1.25 ounces per square foot of coating. Galvanized surface that are damaged prior to final acceptance shall be repaired using and approved repair compound to the satisfaction of the Project Manager.

5.3.7 Railings/Handrails

Handrails sizes and material composition are those specified in the approved drawings as well as with the vertical railings. Joints and surfaces that are damaged prior to final acceptance shall be repaired using and approved repair compound to the satisfaction of the Project Manager.

5.3.8 Miscellaneous Metals

Miscellaneous metals including fastenings, anchorage's and incidentals not specifically mentioned herein or in other section of this specifications but are required to complete the work, for which there are no detailed drawings, shall be provided and installed in accordance with standard practice of the trades as approved by the Project Manager.

5.3.9 Delivery, Storage and Handling

Fabricated materials delivered to job site shall be stored in clean and protected dry areas in manufacturer's protective package. Structural steel materials to be stored shall be placed on skids above the ground. It shall be kept clean and properly drained. Skids placed near enough together to prevent injury from deflection shall

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

support long members, such as purlins and chords. The Contractor shall check the quantity and quality f materials turned over to him against the delivery list and repot promptly in writing my shortage or damage discovered.

5.4 Construction Requirements

5.4.1 General

Fabrication and erection of structural steel shall be in accordance with AISC specification for the design. Fabrication and erection of structural steel for buildings, except as specified herein. The Contractor shall submit to the Project Manager for approval shop drawings showing the proposed method of fabrication and installation of all metal work. No work shall be started until the shop drawings have been approved. And all work shall conform to the approved shop drawings.

5.4.2 Fabrication of Steel Structure

The work shall be well formed at the shape and size shown and assembles as detailed. Structural members shall be fabricated and assemblers in the shop to the greatest extent as possible. Shearing and punching shall be produced in clean, true lines and surfaces with burrs removed. Nuts shall be drawn up tight. Joints, which ate to be exposed to the weather, shall be waster lights. Hole shall be cut, drilled or punched at right angles to the surface of the metal and shall not burning enlarge made ort. Holes in base or bearing plates shall be drilled.

(1) Welding

Structural steel shall be welded in accordance with the standard code of Are and Gas Welding in Building Construction of the American Welding Society. Qualified welders shall perform all welding work only.

(2) Shop Painting

Unless otherwise specified of indicated in the drawings, all structural steel work (except galvanized surfaced and surfaces that will be painted with epoxy) shall be given a shop coat of red lead or zinc chromate primer.

5.4.3 Erection

The steel structure shall be erected true to line and grades. Bracing's and supports shall be installed whenever necessary to take care of all the loads to which the structure may be subjected. Such bracings shall be left in place as ling as may be required for safety. As erection progress, the work shall be securely bolted to take are of all the dead loads, wind and erection stresses. No reaming of undersize bolt holes shall be permitted, and erection bolts shall not be used for lining up members.

(1) Drift Pins

Drift pins may be used only to bring together several parts; they shall not be used in such a manner as to distort or damage the metal.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

(2) Gas Cutting

The use of gas cutting torch in the fields for correcting fabrication errors shall not be permitted on any major member in the structural framing. Its use may be permitted only when the member is not under stress, and subject to the approval of the Project Manager.

(3) Base Plates and Bearing Plates

Base plates and large bearing plates shall be supported in steel wedges or shims until the supported members have been plumbed, following which the entire bearing are shall be grouted with no-shrink cement grout.

(4) Grouting Mortar for Setting Base Plates

Concrete grout shall be a non-shrinking type grouting mortar. The mortar subject to the approval by the Project Manager can either be a mixture of Portland cement, well graded fine aggregate, aluminum powder; and water or an approved commercial grouting mortar containing non-metallic chemical oxidizing agent. If adopted, the approved product shall be delivered to the site of the work in original sealed container bearing the trade name of the manufacturer. Surfaces to receive the mortar shall be clean and shall be clean and shall be moistened thoroughly before placing the mortar. Exposed surfaces of mortar shall be water cured we burlap for at least seven (7) days.

(5) Setting Up

Steel shall be erected plumb, level and properly guyed. In setting or erecting structural steel, the individual piece shall be considered plumb or level where the error does not exceed 1 to 500.

(6) Inspection

The Contractor shall give the Project Manager at least fifteen (15) days notice prior to the start of work at the mill shop, so that the required inspection may be made. The term "mill" means any rolling mil, shop or foundry where material for the work is to be manufactured or fabricated. No materials shall be rolled or fabricated until the said inspection has been provided.

The Contractor shall furnish the Project Manager with copies of the certificate mill reports of the structural steel structure preferably before but not later than the delivery of steel structure to the job site.

The Contractor shall furnish all facilities for inspection and the Project Manager shall be given free access to the mill or shop and premises at all times. The Contractor shall furnish without charge all labor; machinery, materials and tools necessary to prepare test specimens.

Inspection at the mill or shop is intended as a means of facilitating work and avoiding errors. It is expressly understood that it will not relieve the Contractor form any responsibility for imperfect materials or workmanship and the necessity for replacing the same. The acceptance of any materials or furnished member at the mill or shop by the Project Manager shall be preclude their subsequent rejections if found defective before final acceptance of the work. Inspection of welding works will be in accordance with the provision of Section 5 of the "Standard Code for Arc and Gas Welding in Building Construction" of the American Welding Society.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

5.5 Method of Measurement and Basis of Payment

(1) The quantity of structural steel roof framing to be paid for shall be the number of kilograms completed in place and accepted. Payment for the accepted quantities shall be deemed to include the cost of steel plates, anchor bolts buckles, sag rods, cross bracing, purlins mounting accessories and other works necessary to complete this work item.

(2) The quantity to be paid for stair nosing and railing shall be the number of linear meter placed and accepted. Payment shall be construed to include the cost of false work, anchors, and other materials used in mounting this item and including the wooden handrails (where indicated in plans).

The quantity determined as provided above shall be paid for the contract price for each of the pay item listed in the bid schedule, which price and payment shall be full compensation for furnishing and placing all materials, labor, equipment, tools and incidentals necessary to complete the work.

6.0 ROOFING

6.1 Scope of Work

This section includes the furnishing of all plant, tools, equipment, materials and other in the installation of waterproofing and roofing, including miscellaneous sheet metal works as required providing a waterproof installation.

6.2 Description

The work includes installation of pre-painted Rib-type Long Span roofing (0.5mm thk) complete with hardware and accessories.

6.2.1 General

The work includes furnishing all materials and requirements performing all operations to provide a long span corrugated twin ribbed roofing and miscellaneous roofing work as required to provide an acceptable installation. Surfaces to which metal formed roofing sheets are to be applied shall be thoroughly cleaned and prepared, free from any defects that may affect the application. Metal formed roofing shall be locked and lapped and installed as applicable. Details shall be in accordance with manufacturer's recommended installation practice.

Metal formed roofing and sheets and accessories shall be carefully handled at all times in strong and handling to prevent damage to the surfaces, edges and ends and shall be slightly elevated for drainage.

Metal formed roofing and sheets and accessories shall be delivered to the site in the original sealed container or packages bearing the manufacturer's name and brand designated where materials are covered by a reference specification number, type and class as applicable.

6.3 Installation

Lay and install the first sheet with turned down edge towards the outside of the area to be covered. Overlap the next sheets to the previous sheet in such a manner that the exposed edge I turned down and the covered edge is turned up. Side up fasteners should be done by rivets and washers spaced from 300mm to 450mm on centers.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

Care should be exercised in the proper anchorage of all roof frames.

Ridge strips for ridge rolls and ridge flashings are attached to the roofing sheets by means of rivets. Other flashings are to be fabricated from plain sheets of the same materials as the roofing in accordance with the details and/or site requirements. These are also attached to roofing sheets by means of rivet.

6.3.1 Temporary Protection

Metal formed roofing sheets surfaces requiring protection from stains, discoloration, surface abrasion and other construction abuses shall be suitably protected in accordance with the manufacturer's recommendations.

6.3.2 Final Clearing

Upon completion, the Contractor shall clean the metal formed roofing sheets surfaces and drain line of burrs, leaves, stones and other foreign matter that may impair the flow of water. Surface shall be kept clean by periodic inspection.

6.4 Elastomeric Waterproofing Membrane (Roof Deck Slab, Shear Wall, Comfort Rooms and Other locations where necessary)

6.4.1 Scope of Work

The Contractor shall furnish and install all materials and labor required to provide waterproofing on designated locations.

6.4.2 Material

Elastomeric water proofing membrane shall be liquid applied single component and made by a reputable manufacturer.

6.4.3 Preparation

All surfaces to be waterproofed should be clean, sound and dry. Concrete surfaces should have a light steel-trowel followed by a fine hair-broom or equivalent finish that is dry and free from dust, oil and other contaminants. Remove all high spots. Moss and lichen must be removed physically followed by treatment with fungal wash down through and allowed to dry. Lattence should be removed from concrete by grit blasting, wire brushing or wet jet blasting and allowing to dry.

6.4.4 Water Testing

All waterproofed surfaces, roof, siding, gutter and downspout system shall be tested for water tightness by flushing or flooding, with water as directed by the Consultant. Floodwater shall be kept on gutters, downspouts for a minimum time of twenty-four (24) hours. If any leak occurs, the works shall be repaired or reconstructed. Test shall be repeated until satisfactorily result has been attained.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

6.5 Methods of Measurement and Basis of Payment

The accepted quantities measured as prescribed in the bill of quantities shall be paid for at the appropriate contract unit price for the pay item listed as shown in the bid schedule, which price and payment shall be full compensation for placing all materials, labor, equipment, tools and incidentals to complete the work.

This section calls for the furnishing, fabrication and installation of doors and windows in accordance with the plans and specifications.

7.2 Material Requirements

7.2.1 Wood Doors

(1) General

Doors schedule, color and design shall be in accordance with the plans. Door panels shall have 44-mm thickness, unless otherwise specified or shown on plans, except for counter doors, which shall be 31 mm thick.

(2) Door Types

(a) Hollow Core Doors

Except as otherwise specified, flush door shall be done in accordance with the detail as shown on the plans. The plywood edge protection shall be around and into the outside frame of the door in order to prevent "peeling off" of the plywood veneers at the edges.

(3) Lumber

Lumber for doors shall be of commercial grade, of the approved quality of each kind, well seasoned, thoroughly dry and free from loose or unsound knots, shakes, pitch pockets, or other imperfections affecting its strength, durability or appearance.

(a) Door frames in contact with concrete shall be yakal, good grade of design size and thickness as indicated in the drawings. Application of black coal tar between contract surfaces shall be provided.

(b) Door studs, nailed and frames shall be tanguile, S4S and kiln dried with not more than fourteen percent (14%) moisture content.

(4) Plywood

Plywood for interior flush doors shall be tanguile, first class and of commercial standard. For toilets and baths, use marine plywood.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

(5) PVC Doors

PVC doors for interior shall be of best quality. PVC doors shall be 44 mm. thick. and shall also be provided with bottom louvered portions as indicated in the plans.

(6) Flush Doors (Wooden Hollow-core Flush Doors)

Wooden Hollow-Core Flush Doors shall be 44 mm. thick. And use 6 mm thick marine plywood. Provide paint finish.

(7) Windows

Windows shall be awning-type Analok windows with clear glass and security grill. Refer to approved schedule of doors and windows for exact requirement of windows.

7.2.2 Hardware

Hardware for doors and windows shall be acceptable foreign and local products of the types, materials, sizes and mechanism as indicated on the drawings, and shall be free from any mark or other defect. Submit samples for Construction Officer's or Architect's approval.

Hinges and door closer shall be the type size and capacity as indicated on the drawings, however, the Contractor shall verify each hardware item as to weight and other load of doors and windows, and minor modifications may be made without change in construction cost.

Each vent shall be a solid bronze, polished, cam locking handle and strike.

7.3 Construction Requirements

7.3.1 Installation of Doors

Doors shall be installed only after the completion of other works, which may affect the moisture content of the door. Doors shall be fitted and trimmed as required by the opening they will cover. Doors shall have a clearance of 3 mm at the side and top and shall have a bottom clearance of 6 mm over thresholds or as shown on details. The lock edge shall be leveled at the rate of 3-mm in 50 mm. Cuts made on the jambs shall be sealed immediately after cutting, using a clear water-resistant varnish or sanding sealer.

Doors with surfaces receive paint finish may be furnished factory primed, and doors with natural finish may be furnished factory pre-finished. Final furnishing shall be done in site in accordance with painting and varnishing specifications.

7.3.2 Installation of Builders Hardware

(1) Door knobs, lock and larch strikes

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

All lock and latch strike shall be installed in door frames at the same height from the floor. Door knobs shall be so located that the center of the knob is 0.90 m form the finished floor.

(2) Butt Hinges

Each panel of hinged door shall be provided with two (2) butts for doors1.50 m or less in height; three (3) butts, over 1.50 m high and not over 2.10 m in height. Doors of a greater height than 2.10m, unless otherwise specified, shall be provided with an additional one- (1) butt for each 0.65-m or fraction thereof.

Size of the Butt Hinges required as follows:

Thickness of Door	Width of door	Size of Butt Hinges
21 mm or 25 mm (7/8" or 1")	Verify to plan	63 mm (2-1/2")
28 mm (1-1/8")	Verify to plan	75 mm x 75 mm (3" x 3")
44 mm (1-3/4")	Verify to plan	100mm x 100mm (4" x 4")
56 mm x 63 mm (2-1/4" x 2-1/2")	Verify to plan	125 mm x 125 mm (5" x 5")

7.4 Method of Measurement and Basis of Payment

(1) The quantities for doors to be paid for shall be the number of square meter and/or number of units of door panel completed and accepted. Payment of this item shall be deemed to include the cost of jambs, heads, door frames, nailers, glass pane (if any), lockset, hinges and finish hardware.

(2) The quantities accomplished for steel or aluminum casement and glass jalousie windows shall be measured in square meters of area and/or number of units completed and accepted. Payment of this item shall be construed to include the cost of window jambs, sill, transom, mullions, glass jalousie, aluminum frames, mouldings and finished hardware.

(3) The quantities accomplished for each type of steel window shall be paid in square meters of area and/or number of units completed and accepted for each item of work. Payment for these items shall be considered to include the cost of steel frames, glass panels, finished hardware, grills, mouldings and glazing and incidental works.

(4) The quantities accomplished for doors/windows screen shall be paid in square meters of area and/or number of units completed and accepted for each item of work. Payment for this item shall include the cost of aluminum frames, screen, accessories and other incidental works necessary to complete the work.

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)

The quantities measured as stipulated above, shall be paid for at the contract unit price for each item, which price and payment shall be fully compensation for furnishing and placing all materials, labor, equipment, tools and incidentals necessary to complete the work described on this section.

8.0 MISCELLANEOUS

8.1 Signage

Informative and directional signage must be installed in conspicuous places. It shall be made of stainless steel, high quality acrylic lettering, and/or other materials stated in the plans and/or bill of quantities.

13.1.1 Construction Requirements

The area to be installed shall be free from any foreign materials to ensure strong contact surface. If welded, the finish must be free from weld excess and precise welding process must be observed.

8.2 Basis of Payment

All work performed and measured and as provided for in the Bill of Quantities shall be paid for the Unit Bid of Contract Unit Price which payment shall constitute full compensation including labor, materials, tools and incidentals necessary to complete this Item

NOTE: *THE CONTRACTOR'S PROPOSAL SHALL COVER ALL ITEMS AND OTHER INCIDENTAL WORKS NECESSARY TO COMPLETE EACH ITEM OF WORKS MENTIONED ABOVE. IN CASE OF DISCREPANCIES BETWEEN THE ABOVE MENTIONED SPECIFICATIONS IN THE BILL OF QUANTITIES, THE CONTRACTOR MUST IMMEDIATELY COORDINATE WITH THE CONCERNED OFFICE FOR VERIFICATION.*

CONFORME:
(Company Name)
(Name and Signature of Authorized Representative)