1. PART 1 GENERAL

1.1 RELATED DOCUMENTS

1.1.1Technical Architectural Drawings
1.1.2Specifications
1.1.3Schedule of Finishes

1.2 SUMMARY

Refer to this section parallel to the schedule of floor and wall finishes as indicated in the technical working drawings.

1.3 RELATED SECTIONS

1.3.1Concrete Finishes
1.3.2Thermal and Moisture Protection

1.4 GENERAL PROVISION

1.4.1Ensure that all concrete mixes follow the specifications of structural designers and architects.
1.4.2Do not modify the appearance, strength, and durability of the concrete architectural elements without any approval issued by the architect of record and the structural designer of record. Submit a request for approval for any modifications proposed. Any modifications found on site without corresponding approvals are subject to re-work at the expense of the contactor.
1.4.3No concrete topping should be less than 50mm thick.

1.5 SUBMITTALS

As required by structural consultant.

1.5.1PRODUCT APPROVAL ATTACHMENTS

1.5.1.1 Submit manufacturer's product data, particularly application and installation instructions for cement, cementitious materials, additives, admixtures, bearing pads, and other materials used. Submit material certificates as signed or certified by manufacturers.

1.5.1.2 For concrete surfaces subject to weather exposure and surface water run-off, submit the manufacturer's data of the approved waterproofing material. Include manufacturer's application and installation instructions for waterproofing, particularly data on concrete surface finish and conditions as needed.

1.5.1.3 Submit mix design for each concrete mix to be used.

1.5.2EXECUTION APPROVAL ATTACHMENTS

1.5.2.1 Detailed work methodology, indicating at least the following

1.5.2.1.1 Date and time of application
1.5.2.1.2 Area of application
1.5.2.1.3 Restoration and cleaning procedures upon completion of work.

1.6 QUALITY ASSURANCE

Repair and replace areas of concrete topping that fail to bond with the substrate, produces a hollow sound when tapped, and disintegrates.

1.7 WARRANTIES

Contractor agrees to a two (2) year warranty to rectify work, which deteriorates excessively or otherwise fails to perform as required, due to failure of materials and or workmanship.

3.2 CONDITION OF SURFACES

3.2.1 When topping hardened concrete, remove dirt, loose material, oil, grease, paint or other contaminants. Ensure that the surface is washed clean.

3.2.2 Roughen surface of base slabs that are not suitable for bonding performance by chipping or scarring before cleaning.

3.2.3 Before placing topping mixture, dampen slab surface. Do not leave standing water on the surface. Apply approved epoxy adhesive on dampened surface. Place topping mix while epoxy adhesive is not fully dry.

3.2.4 For reinforced toppings, maintain position of reinforcing mesh through necessary chairs or supports.

3.2.5 Consistently mark locations of joints in base slab and align with joints on the top course.

3.3 PLACING AND COMPACTING

Float Finish: Spread-topping mixture evenly over prepared base to the required elevation and strike-off. Use highway straightedge, bull float, or darby to level surface. After the topping has stiffened sufficiently to permit the operation, and water sheen has disappeared, float the surface at least twice to a uniform sandy texture. Re-straighten where necessary with highway straightedge. Uniformly slope surface to drains.

Where joints are required, construct to match and coincide with joints in base slab. Provide other joints as shown on drawings.

3.4 TROWEL FINISH

After floating, begin first trowel finish operation using power driven trowels. Continue troweling until surface is ready to receive final troweling. Begin final troweling when a ringing sound is produced as trowel is moved over surface. Continue final trowel operation to produce finished surface free of trowel marks, uniform in texture and appearance.

3.5 CURING AND PROTECTION

3.5.1 Protect freshly placed topping from premature drying and excessive cold or hot temperatures. Apply evaporation retarder to topping surfaces in hot, dry, or windy conditions before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying topping, but before float finishing.

3.5.2 Begin curing immediately after finishing topping. Cure by one or a combination of the following methods, according to topping manufacturer's written instructions:

3.5.2.1 Moisture Curing: Keep surfaces continuously moist for not less than seven days with water. Cover topping surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

3.5.2.2 Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 300mm (12 inches), and sealed by waterproof tape or adhesive. Cure for not less than seven (7) days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3.5.2.3 Curing Compound: Apply uniformly in two coats in continuous operations by power spray or roller according to manufacturer's written instructions. Re-coat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

END OF SECTION

1.6.1.3 For prefaced concrete masonry units, submit material samples showing final face of the material for the approval of the architect. Concurrently acquire finishing approval from the architect. Submit a raw-surfaced sample and another sample containing the finished face of the material.

1.6.2EXECUTION APPROVAL ATTACHMENTS
1.6.3Submit a detailed work methodology showing the time and date of application. Indicate steps and procedures to be followed down to the finishing stage of the material. Include instructions on jointing and mortar applications.

1.7 QUALITY ASSURANCE

1.7.1Source exposed masonry units from a single source and ensure uniform texture and color.
1.7.2Source mortar materials from a single supplier to ensure material compatibility.
1.7.3Ensure that masonry units are compliant to fire performance characteristics as require by the code. Employ material that has undergone testing compliance with ASTM E 119.
1.7.4Do not install masonry units with defects such as chipped corners, discoloration, and other such defects that affect the face and strength of the material. Dispose all defecting masonry units properly.
1.7.5Do not apply concentrated loads on the masonry assembly for at least 12 hours after erection.
1.7.6Prevent ground, mortar or soil from staining the face of masonry to be left exposed. Immediately remove ground or mortar in contact with the masonry and restore to original condition.
1.7.7Do not lay wet masonry units. When laying masonry units during inclement weather, ensure that the area of application is protected from bad weather by temporary rainwater protection such as tents and tarpaulin films.
1.7.8Do not lay masonry units with ground stains.

2. PART 2 PRODUCTS

2.1 MORTAR AND GROUT MATERIALS

2.1.1Portland Cement: ASTM C-150, *Type I, except use Type III for construction below 40*
2.1.2Degrees F. Provide natural color or white cement as required to produce required mortar color.
2.1.3Hydrated Lime: ASTM C-207, Type S.
2.1.4Aggregate for Mortar: ASTM C-144, except for joints less that 1/4 inch use aggregate graded with 100% passing the No. 16 sieve.
2.1.5Aggregate for Grout: ASTM C-404.
2.1.6Water: Clean and potable

2.2 CONCRETE HOLLOW BLOCKS

2.2.1Size: manufacturer's standard units, at least 200mm height, 100mm thick, and 400mm long or approved equivalent.
2.2.2Face: rough face for plastering
2.2.3Minimum compressive strength: 800psi for each CHB
2.2.4Reinforcements: laid in mortar in both horizontal and vertical spaces following specifications by structural engineer.

2.3 EXPOSED CONCRETE MASONRY UNITS

2.3.1Size: manufacturer's standard units, at least 600mm height, 75mm to 100mm thick, and 1200mm long or approved equivalent.
2.3.2Face: *rough face for use as exposed surface*
2.3.3Minimum compressive strength: 1000psi for each CHB or as certified by manufacturer.
2.3.4Solid load-bearing blocks shall comply with ASTM C-90n normal weight
2.3.5Hollow load-Bearing Block shall comply with ASTM C-90n normal weight.

2.4 JOINT REINFORCEMENT, TIES AND ANCHORS

2.4.1Where anchorage is needed to connect to structural framework, comply with specifications by structural designer. Complete all joint reinforcement, ties, and anchors as needed for the structural soundness of the assembly.
2.4.2Use galvanized metallic accessories appropriate to the load requirements of the assembly.

3.3.16 Consolidate grout at the time of placement. Consolidate grout pours 300mm or less in height by mechanical vibration or puddling.

3.3.17 Consolidate grout pours exceeding 300mm in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.

3.4 CONCRETE HOLLOW BLOCKS

3.4.1 **Apply architectural plaster as indicated on the technical working drawings**

3.5 CONCRETE MASONRY UNITS

3.5.1 **For prefaced masonry units, ensure that obtained masonry units are of a rough surface material.**

3.5.2 **Prepare masonry unit surfaces as indicated in the technical working drawings and as advised by the manufacturer. Do not apply chemicals on the material that are detrimental to original face and make of the material.**

3.6 CLEANING AND PROTECTION

3.6.1 Clean unit masonry as Work progresses by dry brushing to remove mortar fins and smears before tooling joints.

3.6.2 After mortar has set, reached initial curing; within 7 days of completion of work for custom masonry units, clean exposed masonry as follows:

3.6.2.1 Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.

3.6.2.2 Cut out any defective mortar joints and holes and re-point with mortar.

3.6.3 Protect non-masonry surfaces from contact with cleaning solution by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.

3.6.4 Clean Concrete Masonry Units with proprietary masonry cleaner. Thoroughly wet surface of masonry.
Scrub using non-metallic brushes. Immediately rinse with water. Do small sections at a time. Work from top to bottom. Do not use high pressure cleaning methods.

3.6.5 Cleaned surface shall appear as represented by mockup wall panel.

3.6.6 Maintain protective boards at exposed external corners that may be damaged by construction activities. Provide protection without damaging work.

3.6.7 Protect the base of walls from rain-splashed mud and mortar droppings.

END OF SECTION

1.5.3Do not exceed the allowable working stress of the assembly, including considerations on its materials, anchors, and connections. Consider the following:

1.5.3.1 For Top Rail of Stair Railings, Guardrails, and hand rails, comply with the following structural loads:

1.5.3.1.1 Any point of the railings shall be capable of withstanding concentrated load at least 136 kgs, whether applied vertically or horizontally.

1.5.3.1.2 The railing assembly shall be capable of withstanding a uniform load of 135kg per linear meter.

1.5.4Ensure that all metal fabrications are compliant to structural requirements, such that it is capable of withstanding structural loads as determined by professional structural designers. Determine allowable design working stresses according to following standards:

1.5.4.1 For aluminum materials, comply with AA 30 "Specifications for Aluminum Structures"

1.5.4.2 For Stainless Steel fabrications, comply with ASCE 8, "Specification for the Design of Cold-Formed Stainless Steel Structural Members."

1.5.4.3 For Cold-Formed Structural Steel, comply with AISI SG-673, Part I, "Specification for the Design of Cold-Formed Steel Structural Members.

1.5.4.4 For Structural Steel, comply with AISC S335, "Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary."

1.6 MAINTENANCE AND STORAGE

1.6.1Ensure that assemblies are protected from corrosion due to weather and chemical exposure. Apply protecting films and keep materials away from corrosives.

1.6.2When metal works are completed, restore any defects incurred on the assembly during the time of construction. No discoloration or any early markings indicative of early stages of corrosion will be accepted upon substantial completion of work.

1.6.3Regularly clean surfaces where fabricated assemblies are completed, stored or kept. Ensure that the areas of work and storage are free of corrosive substances.

1.6.4Clean all metal fabrications and ensure that items are free of marks, bulges, discolorations, prints, finger marks, etc. Wrap in polyethylene or an equivalent protective material and keep completed metal works protected until substantial completion.

1.7 SUBMITTALS

1.7.1PRODUCT APPROVAL ATTACHMENTS

1.7.1.1 Submit product data. Describe steel composition, including nominal thicknesses for hollowed tubes, finish type. Include detailed description of paint products to be affixed on the steel parts, weld points, etc.

1.7.1.2 For metal assemblies to accept paint works, submit manufacturer's data on the proper handling of paint products, including instructions on application, storage, and maintenance.

1.7.1.3 Indicate areas of application on all requests for approval.

1.7.2EXECUTION APPROVAL ATTACHMENTS

1.7.2.1 Submit a detailed work methodology, indicating at least the following

1.7.2.1.1 Date and time of application

1.7.2.1.2 Area of application

1.7.2.1.3 Welder's certificates compliant to the Quality Assurance portion of this section.

1.7.2.1.4 Shop drawings showing the location of the installation on the project site. Detail all dimensions. Show typical weld points, cross section details of railings, clearly defining relative points of measurement for survey and/or laying out. All drawings shall be to scale. Include plans, elevations, sections, and other drawings required. Properly label all components of the assemblies. If using hollowed sections, indicate nominal thicknesses. If using steel plates, indicate gauge of plate. Label all bolts and anchors, including prescriptive sizes if any. Certify that assemblies on the shop drawings are structurally sound, otherwise drawings will be forwarded to the structural engineer for verification. Clearly label finish types and verify that finish types are consistent with technical working drawings issued. In case of inconsistencies, submit requests for clarification.

1.8 QUALITY ASSURANCE

2.1.3ALUMINUM

2.1.3.1 Refer to technical working drawings to verify temper, finish, and coats of the Aluminum.

2.1.3.1.1 For Extruded Bars and Shapes, comply with ASTM B 221, 6063-T6

2.1.3.1.2 For Extruded Pipe and Tube, comply with ASTM B 429, 6063-T6.

2.1.3.1.3 For Drawn Seamless Tubes, comply with ASTM B 483, 6063-T832

2.1.3.1.4 For Plate and Sheet, comply with ASTM B 209, 6061-T6

2.1.3.1.5 For Die and Hand Forgings, comply with ASTM B 247, 6061-T6

2.1.3.1.6 For Castings, comply with ASTM B 26, 356.0-T6.

2.1.3.1.7 Minimum Thickness of Plates shall be 3mm.

2.1.3.1.8 Minimum Extrusions shall be 3mm.

2.1.4FASTENERS

Use zinc-coated fasteners for exterior use or where built into exterior walls. Performance Requirements of Fasteners shall be as follows:

2.1.4.1.1.1 When using Bolts and Nuts, use Regular hexagon head type compliant with ASTM A 307, Grade A.

2.1.4.1.1.2 When using Lag Bolts, use Square head type FS FF-B-561.

2.1.4.1.1.3 When using Machine Screws, use Cadmium plated steel FS FF-S-92.

2.1.4.1.1.4 When using Wood Screws, use Flat head carbon steel FS FF-S-111.

2.1.4.1.1.5 When using Plain Washers, use Round, carbon steel, FS FF-W-92.

2.1.4.1.1.6 When using Toggle Bolts, use Tumble-wing type, FS FF-B-588, type, class, and style as required

2.1.4.1.1.7 When using Lock Washers, use Helical spring type carbon steel, FS FF-W-84

2.1.4.1.1.8 When drilling expansion anchors, comply with FS FF-S-325, Group VIII anchors, expansion, non-drilling, Type I (Internally threaded tubular expansion anchor) and machine

2.1.5PAINT

Use shop primers to ensure protection of metal fabrications. Use primers as follows:

2.1.5.1 For ferrous metals, use fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated. Primer should be compatible with field-applied topcoats and compliant to requirements of FS TT-P-645.

2.1.5.2 For galvanized steel, use primers with zinc-dust, zinc-coated steel compatible for priming zinc-coated steel and finish paint systems as indicated. Comply with SSPC-Paint 5.

2.1.6CONCRETE FILL AND REINFORCEMENT

Comply with Division 03 Sections for normal weight concrete. Use reinforcements compliant with ASTM A615, Grade 60 unless otherwise directed.

3. PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

3.1.1Properly label metal assemblies, and fixtures such as urinals and lavatories in coordination with labels of receiving anchors to avoid incorrect installations.

3.1.2Coordinate with concrete casting schedule and material deliveries to ensure the proper integration of anchorage to be *embedded in concrete or masonry construction.*

3.2 GENERAL INSTALLATION

3.2.1Provide anchorage and fastening devices in all necessary areas to structurally secure metal fabrications in place. Use toggle bolts, lag bolts, and other masonry inserts and connectors as required for structural soundness without compromising the aesthetic quality of exposed areas.

3.2.2Plumb, set, level, align, edge, measure, and layout all metal fabrications from established lines and levels to ensure accurate fabrication and installation.

3.2.3Comply with AWS Code for procedures of manual shielded metal-arc welding for all feld weldng work.

3.2.4Remove all welding flux immediately.

3.2.5Finish all exposed welds to match adjacent metal surfaces.

3.2.6Coat all exposed steel or metal fabrications for corrosion protection.

3.6.5Do not install ladder rungs in areas where its exposure destroys building aesthetics. Secure an approval from the architect as to the appropriate location of the ladders and rungs.
3.6.6Submit shop drawings on rungs, ladders, and safety cages and secure approval prior to fabrication and installation.

3.7 METAL GRATINGS

3.7.1Where required or as indicated in the drawings, provide metal bar gratings.
3.7.2Fabricate gratings such that it is able to carry designed structural loads.
3.7.3When required by the drawings of the architect, provide hinges on gratings that require access for maintenance.

3.8 RAILINGS AND HANDRAILS

3.8.1Fabricate all railings and handrails to comply with all indications on approved shop drawings.
3.8.2Fabricate all assemblies such that splicing and on-site disassembly is minimized.
3.8.3When splicing is necessary due to delivery or installation restrictions, ensure that all units are properly labeled and coordinated for reassembly.
3.8.4Join railing and hand-railing members by butt welding, unless otherwise indicated.
3.8.5At tees, intersections, and crossings, weld around all creases to ensure sound jointing. Where hollowed tubes are specified, joints must be welded such that corrosives are not allowed into the interiors of the tubes.
3.8.6Anticipate all anchorages during fabrications and where possible, ensure a nearly homogenous and sound connection.
3.8.7Especially for hollow tubes, Close all exposed pipe ends by welding a 4.7625mm thick steel plate to ensure that corrosives do not enter the interiors of the tubes, unless otherwise indicated.
3.8.8Grind all joints and anchorages smoothly to match adjacent surfaces.
3.8.9Handrails, posts, and other steel sections shall be at least schedule 20 to schedule 40 or as required by the Structural Consultant to carry design loads.
3.8.10 Finish railings and handrails in compliance to interior painting requirements if painted finish is specified in the drawings. Refer to Division 09 Section "Interior Painting".
3.8.11 Stainless steel railings and handrails shall be in hairline finish unless otherwise indicated in the drawings or as approved by the architect.
3.8.12 Secure handrails to walls with proper wall brackets and end fittings unless otherwise indicated on drawings as approved by the structural designer.
3.8.13 Follow required slopes for handrails and railings as indicated in drawings, or to match the alignment of the stairs, ramp, and similar sloping surfaces. Follow slope installations according to approved shop drawings.
3.8.14 Use steel flanges as indicated in approved shop drawings. Accurately follow technical working drawings.

3.9 NOSINGS

3.9.1Provide steel nosing as required in the technical working drawings
3.9.2Only use anti-slip strip and nosing surfaces.
3.9.3Nosing shall be at least 25mm thick and shall run along the full length of the step/tread. Check that strips are installed in alignment or as indicated in the drawings.
3.9.4Level all accepting nose strips and use patching compounds to fill cracks, holes, and other depressions or irregularities on the treads/steps.
3.9.5Clean surfaces of application and check that receiving steps/treads are free of any substances, i.e. wax, dust, oil, salts that affect the adhesion of the nosing strip. Do not use solvents that disintegrate and loose adhesion due to thermal conditions. Where necessary support adhesive with screws, rivets, and similar anchorage devices.
3.9.6Do not join nosing strip materials. Nosing strips must run homogenously along the tread.
3.9.7Unless otherwise specified in drawings, embed nosings in concrete steps or curbs and flush with riser and tread face levels.

3.10 ACCESS PANELS

3.10.1 Verify location of Access Panels as indicated in technical drawings. Always place Access Panels in obscure locations, accessibly by service personnel.
3.10.2 No Access Panel shall be lesser than 600mm X 600mm in dimensions.
3.10.3 For access panels placed on ceilings, locate it adjacent to the nearest to the wall.
3.10.4 Fabricate access panels according to materials as indicated in the drawings or as needed in the project site.
3.10.5 Fabricate access panels using materials that comply with fire rating as required by the code.

05 00 00	DIVISION 5 METAL
05 51 36	Decorative Metals

1. PART 1 GENERAL

1.1 RELATED DOCUMENTS

1.1.1 Technical Architectural Drawings
1.1.2 Specifications
1.1.3 Requests for Interpretation
1.1.4 Product Samples and Brochures
1.1.5 Manufacturer's Data Sheets and Certificates
1.1.6 Material Safety Data Sheets
1.1.7 Work Program and Methodology Submittals

1.2 SUMMARY

1.2.1 This section includes provisions on ornamental metals intended for the project, such as decorative steel for elevators and customized metal works with ornamental and intricate patterns, such as

1.2.1.1 Decorative metal signage
1.2.1.2 Miscellaneous ornamental steel requirements as intended for the project

1.3 RELATED SECTIONS

1.3.1 Exterior Painting
1.3.2 Metal Fabrications

1.4 SUMMARY

1.4.1 This section includes provisions on ornamental metals intended for the project, such as decorative steel for elevators and customized metal works with ornamental and intricate patterns, such as

1.4.1.1 Decorative metal signage
1.4.1.2 Miscellaneous ornamental steel requirements as intended for the project

1.5 GENERAL PROVISIONS

1.5.1 Fabricate all ornamental metals in conformance to design, dimensions, sizes, and other specifications indicated on technical working drawings or as approved by the architect.
1.5.2 Ornamental metals shall be delivered on site and installed on the project in its completely finished state.
1.5.3 Before fabrication, submit sample swatches of the finished metal showing a complete modular assembly for the approval of the architect.
1.5.4 Restore any finishes damaged during installation work.
1.5.5 Prior to fabrication, submit Shop Drawings to the Architect of Record for approval. Indicate structural anchorage on the shop drawings.
1.5.6 Submit approved shop drawings by the architect to the structural designer for approval on structural soundness. Ensure that shop drawings have sufficient data to check structural computations.
1.5.7 Protect all ornamental work until substantial completion of the project. Ensure that surfaces are free of scratches.
1.5.8 Do not exceed the allowable working stress of the assembly, including considerations on its materials, anchors, and connections. Ensure that all metal fabrications are compliant to structural requirements, such that it is capable of withstanding structural loads as determined by professional structural designers. Determine allowable design working stresses according to following standards:

1.5.8.1 For aluminum materials, comply with AA 30 "Specifications for Aluminum Structures"
1.5.8.2 For Stainless Steel fabrications, comply with ASCE 8, "Specification for the Design of Cold-Formed Stainless Steel Structural Members."
1.5.8.3 For Cold-Formed Structural Steel, comply with AISI SG-673, Part I, "Specification for the Design of Cold-Formed Steel Structural Members.
1.5.8.4 For Structural Steel, comply with AISC S335, "Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary."

1.7.1.4 For finished steel, submit finish steel swatches at least 100mm x 100mm in size if steel plates for the approval of the architect. Properly label the swatches according to finish, grade, and grain whether satin, hairline, or as indicated on the drawings.

1.7.1.5 For ornamental steel to be finished in paint, submit finish steel swatches at least 100mm x 100mm in size if steel plates and at least 100mm cut portions if hollowed tubes, angular bars, flats, and similar components. Each submitted swatch shall be fully primed and finish coated, compliant to Division 09 Exterior Paint Section. Submit swatches in every color required on the ornamental steel work and only apply paint finish on metal sections conforming to approved drawings. Submit painted angle bars when painted angle bars are indicated on approved drawings; submit painted steel plates where painted steel plates are indicated on approved drawings, and so on. For example, where steel plates are indicated to receive different colors, submit one swatch of steel plate for every color specified.

1.7.2EXECUTION APPROVAL ATTACHMENTS

1.7.2.1 Submit a detailed work methodology, indicating at least the following

1.7.2.1.1 Date and time of fabrication

1.7.2.1.2 Area of installation

1.7.2.1.3 Welder's certificates compliant to the Quality Assurance portion of this section.

1.7.2.1.4 Shop drawings dedicated to showing the location of the installation on the project site. Detail all dimensions. Show typical weld points, cross section details, clearly defining relative points of measurement for survey and/or laying out. All drawings shall be to scale. Include plans, elevations, sections, and other drawings required. Properly label all components of the assemblies. If using hollowed sections, indicate nominal thicknesses. If using steel plates, indicate gauge of plate. Label all bolts and anchors, including prescriptive sizes if any. Certify that assemblies on the shop drawings are structurally sound, otherwise drawings will be forwarded to the structural engineer for verification.

1.7.2.1.5 Submit separate shop drawings with a clearly defined legend for finish types, especially for metal fabrications to receive paint finish. On the finish legend, clearly indicate the color and finish boundaries on the metal assembly.

1.8 QUALITY ASSURANCE

1.8.1Ensure fabricators are experienced in fabricating metal assemblies similar to the items indicated in the technical working drawings of this project. Fabricators should observe systematic proceedings and shall be capable of accomplishing required fabrication in the given amount of time.

1.8.2Ensure installers are equally familiar with fabricators and are in constant communication on the proper installment procedures.

1.8.3Certify that all welders for fabrication assemblies have satisfactorily passed AWS qualifications for welding in accordance to the structural welding code-steel D1.1, D1.2, and D1.3.

1.8.4The contractor is to make sure that all metal fabricators and installers are duly supervised by qualified professional engineers, licensed and experienced in supervising construction works.

1.8.5Contract experienced firms in the application of finish coatings to high-performance metal surfaces such as aluminum extrusions.

1.8.6Do not cut or disassemble delivered metal assemblies on site. If assemblies delivered are incompliant to module specifications, have the fabricator redo the assembly work.

1.9 WARRANTIES

For exterior metal assemblies, metal fabricators are to comply with minimum five (5) years warranty, and for interior ornamental metals such as signage one (1) year warranty, certifying against rusts, corrosion, and any form of metal deterioration.

2. PART 2 PRODUCTS

2.1 METALS

All metal fabrications exposed to views or areas with high user traffic shall be free from surface blemish. Do not use deteriorated materials. Unless otherwise specified or indicated in the technical working drawings, follow the

2.1.4.1.1.4 When using Wood Screws, use Flat head carbon steel FS FF-S-111.
2.1.4.1.1.5 When using Plain Washers, use Round, carbon steel, FS FF-W-92.
2.1.4.1.1.6 When using Toggle Bolts, use Tumble-wing type, FS FF-B-588, type, class, and style as required
2.1.4.1.1.7 When using Lock Washers, use Helical spring type carbon steel, FS FF-W-84
2.1.4.1.1.8 When drilling expansion anchors, comply with FS FF-S-325, Group VIII anchors, expansion, non-drilling, Type I (Internally threaded tubular expansion anchor) and machine

2.1.5PAINT

Use shop primers to ensure protection of metal fabrications. Use primers as follows:

2.1.5.1 For ferrous metals, use fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated. Primer should be compatible with field-applied topcoats and compliant to requirements of FS TT-P-645.

2.1.5.2 For galvanized steel, use primers with zinc-dust, zinc-coated steel compatible for priming zinc-coated steel and finish paint systems as indicated. Comply with SSPC-Paint 5.

2.1.6CONCRETE FILL AND REINFORCEMENT

Comply with Division 03 Sections for normal weight concrete. Use reinforcements compliant with ASTM A615, Grade 60 unless otherwise directed.

3. PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

Comply with Division 05 50 0 Metal Fabrications Section of this Specifications.

3.2 GENERAL INSTALLATION

Comply with Division 05 50 0 Metal Fabrications Section of this Specifications.

3.3 GENERAL FABRICATION

Comply with Division 05 50 0 Metal Fabrications Section of this Specifications.

3.4 GENERAL FINISHES

3.4.1Prepare steel fabrications to receive the finishes as specified in drawings.
3.4.2Exposed fasteners shall be finished of the same material as the fastened metal including color and texture of the steel fabrication, unless otherwise indicated in the approved drawings.

3.5 ORNAMENTAL METALS, MISCELLANEOUS TRIMS, and OTHER DECORATED ITEMS

3.5.1Provide stainless steel sections with finish profile and size as intended in detailed architectural drawings.
3.5.2For signage as indicated in architectural working drawings, use stainless steel in hairline finish, cut and jointed seamlessly to a homogenous appearance. Anchor ornamental signage plates to structural concrete and follow plate thicknesses, impressions and depressions as specified in architectural detail drawings.
3.5.3Buff, clean, and smoothen signage edges.
3.5.4Protect finished metals from damage due to construction. Apply strippable temporary protective covering on completed and installed work to be removed only upon substantial completion of the project.
3.5.5Touch up and restore all finish surfaces damaged during installation work.

3.6 MISCELLANEOUS HARDWARE

The contractor shall furnish all custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for all rough support and anchoring work.

END OF SECTION

DIVISION 06
WOOD AND PLASTICS

06 00 00	DIVISION 6 WOOD AND PLASTICS	
06 10 0	Rough Carpentry	

Do not hammer lag screws into place. Provide malleable washers under screw heads where necessary. Install screws with anchorage embedment into piece lagged of not than 60% of screw length of 8 diameters. Place lag screws by screwing in an angle perpendicular to the surface it will adhere to.

END OF SECTION

1.6.1.3 On ornamental wood work requiring veneer and laminates, submit sample finished work at least 200mm X200mm, showing applied veneer sheets and edgework. Label each sample according to the location of installation. State color, code, grade, thickness, and brands of the laminates as well as the adhesives used.

1.6.1.4 On ornamental wood work requiring opaque paint finish, submit sample finished work at least 200mm X200mm, showing applied finish paint. Label each sample according to the location of installation. State color, code, number coats, and brands of paints and primers used.

1.6.1.5 Submit one sample each of all cabinet hardware and accessories. State product code and labels of each accessory in coordination with labels on shop drawings.

1.6.2EXECUTION APPROVAL ATTACHMENTS

1.6.3Shop drawings showing location of each woodwork item and actual dimensions, lines, levels, and reference elevations on the actual area of installation. Drawings must be drawn in full detail, showing locations and sizes of furring, blocking, hanging strips, veneer layers, surface finish, hardware type, miter joints, etc.

1.7 QUALITY ASSURANCE

1.7.1For repeating ornamental woodwork in typical areas, i.e. typical cabinet pantries, fabricate and install one build mockups for each form of construction and finish required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for the completed Work:

1.7.2Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.

1.7.3Notify Architect seven days in advance of dates and times when mockups will be installed.

1.7.4Demonstrate the proposed range of aesthetic effects and workmanship.

1.7.5Obtain Architect's approval of mockups before starting interior architectural woodwork fabrication and installation on other units.

1.7.6Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

1.7.7Demolish and remove mockups when directed.

1.7.8Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 WARRANTIES

Provide lumber only from wood manufacturers and suppliers offering a minimum of five-year warranty.

2. PART 2 PRODUCTS

Comply with requirements of referenced quality standard for moisture content of lumber in relation to relative humidity conditions existing during time of fabrication and in installation areas. Provide wood with moisture content not greater than 12 percent (%).

2.1 WOOD PRESERVATIVES

Wood preservative shall not contain copper chrome arsenic (CCA) or any of the following toxic substances:

2.1.1Methyl Bromide and Chloropicrin

2.1.2Chlorpyrifos Fenitrothion

2.1.3Cupirichydroxide.

2.1.4And other harmful chemicals

2.2 PLYWOOD

Provide solid wood edging for all work requiring marine plywood.

Use Type I C-marine type plywood in thicknesses compliant to drawing details. Marine plywood quality shall be of premium grade quality, with weight/density as follows:

5mm thick C-Marine Type shall be 6.7kgs more or less per piece
9mm thick C-Marine Type shall be 12.0kgs more or less per piece
10mm thick C-Marine Type shall be 13.4kgs more or less per piece
11mm thick C-Marine Type shall be 14.7kgs more or less per piece

1. **PART 1 GENERAL**

1.1 RELATED DOCUMENTS

1.1.1Technical Architectural Drawings
1.1.2Specifications
1.1.3Requests for Interpretation
1.1.4Work Program and Methodology Submittals

1.2 SUMMARY

This section includes provisions on architectural woodwork, namely:
1.2.1Custom ornamental wood panels for movable walls

1.3 RELATED SECTIONS

1.3.1Interior Architectural Woodwork
1.3.2Flush Wood Doors

1.4 GENERAL PROVISION

1.4.1Refer to the architect's working drawings on custom ornamental paneling to identify work requirements, i.e. dimensions, mounting heights, hardware specifications, wood type, staining, and other similar details necessary to complete work.
1.4.2Paneling includes wood furring, blocking, and shims for installing paneling, unless concealed within other construction before paneling installation
1.4.3Include and provide all fastening items necessary to complete and install all woodwork. Refer to Division 5 Section Metal Fabrication for metal fastening and anchorage specifications.
1.4.4Coordinate timely sample submission for approval such that the completion work schedule is kept free of delays. All samples, shop drawings, and similar submittals should be approved before the required schedule of placing orders for delivery on site. The architect is not responsible for sample approvals submitted at a much later time.

1.5 MAINTENANCE

1.5.1Keep completed and installed architectural woodwork free of dust, discoloration, defects, and similar irregularities throughout construction.
1.5.2Restore all defects, replace dysfunctional hardware, hinges, and touch up all damaged paint and finish work such that all woodwork are turned to its original condition at the time of substantial completion of the project.

1.6 SUBMITTALS

1.6.1PRODUCT APPROVAL ATTACHMENTS

1.6.1.1 Submit all wood treatment data for each type of wood specified, including: Type of preservative solution, pressure process used, amount of preservative retained, and moisture content of wood after kiln drying.

1.6.1.2 On ornamental wood work requiring wood transparent stains, submit sample stained and finished wood cut at least 150mm if the lumber is in strips, and 200mm X200mm if the wood is in sheets. Label each sample according to the location of installation. State specie, dimensions, manufacturers of wood, and indicate all wood stains applied on each wood material. State color, chemical composition, brand, and amount of all stains and finish coatings applied. Only submit the actual wood to be used for installation or as specified by the architect in the technical working drawings. Wood installed on site that differs from the approved material is subject to rework.

1.6.2EXECUTION APPROVAL ATTACHMENTS

1.6.2.1 Shop drawings showing location of each woodwork item and actual dimensions, lines, levels, and reference elevations on the actual area of installation. Drawings must be drawn in full detail, showing locations and sizes of furring, blocking, hanging strips, surface finish stain legends,

1.7 QUALITY ASSURANCE

3.1.3Obtain and comply with Woodwork Manufacturer's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained and stabilized so that woodwork is within plus or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period.

3.1.4Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of work.

3.1.5All woodwork installations shall be plumb, level, true, and straight with no distortions. Install to a tolerance of 3mm in 2.40m for plumb and level and with no variations in flushness of adjoining surfaces.

3.1.6Anchor woodwork to anchors or blocking integrally attached to substrates. Secure woodwork to substrate, grounds, or horizontal and vertical levels by means of concealed fasteners, blind nailing, concealed stripping and blocking as required to complete installation. Ensure that anchoring work is done as neatly as possible. Always install for uniform appearance unless otherwise required by drawings approved by the architect.

3.1.7Adjust all damaged and defective woodwork where possible to eliminate functional and visual effects.

3.1.8Fabricate woodwork to dimensions, profiles, & details as indicated in approved shop drawings. Ease edges to radius indicated for the following:

3.1.8.1 Corners of cabinets & edges of solid wood (lumber) members less than 25mm in nominal thickness: 1.59mm (1/16 inch).

3.1.8.2 Edges of rails and similar members more than 25mm in nominal thickness: 3.175mm (1/8 inch). All arises on joinery are to be rounded to a radius of 1.5mm whether shown on the drawing or not.

3.2 CLEANING AND PROTECTION

3.2.1Clean, lubricate, and adjust all hardware to ensure smooth and true operation, latching and movement of cabinetry.

3.2.2Clean woodwork on all exposed and semi exposed surfaces.

3.2.3Touch up applied finishes to restore defective areas.

3.2.4Provide protective films for on all ornamental woodwork so that all completed work remains in good visual and functional conditions at the time of Substantial Completion.

END OF SECTION

1.4.1.3 Submit product test reports from qualified independent testing agency.
1.4.1.4 Field quality control reports or project references.

1.4.2EXECUTION APPROVAL ATTACHMENTS
1.4.3Detailed Work methodology

1.5 QUALITY ASSURANCE

1.5.1Only engage experienced installers and applicators with experience in completing integral waterproofing work of similar size and scope of the project.
1.5.2Obtain integral waterproofing materials from one same bonafide manufacturer. Make sure that all waterproofing products used are compatible as certified by the manufacturer.

1.6 WARRANTIES

Manufacturer to submit a certification guaranteeing a five (5) year warranty.

2. PART 2 PRODUCTS

2.1.1HYDROPHILIC INTEGRAL WATERPROOFING

2.1.1.1 Minimum cement content of concrete mix with integral waterproofing shall be 350kg/ cu.m.
2.1.1.2 Concrete shall contain high range reducer such that free water-cement ratio shall not exceed 0.45 to ensure concrete workability for placement.
2.1.1.3 When subjected to sulfuric acid tests, use 5% sulfuric acid exposed for 70 days. Minimum weight loss for concrete shall be 20% less the original weight.
2.1.1.4 Concrete shall contain any admixture to comply with absorption requirements resulting to water-repellency for at least 15 years, without detrimentally affecting the structural strength and properties of the concrete.
2.1.1.5 When including slump-retaining Superplasticizer as admixture for the purposes of reducing batching water requirements, superplasticizers shall be sourced from acceptable manufacturers and shall comply with ASTM C494, Type F.
2.1.1.6 When using evaporation retardant, curing compound, water stops, polypropylene fiber reinforcement, and similar accessories, obtain materials that are compatible to the approved waterproofing cementitious material. Follow recommendations of approved manufacturer.
2.1.1.7 Dosage of the waterproofing admixture shall be at 2% by mass of all cementitious content of the concrete up to a maximum of 8kg/m3 (13.5 lb. / cu. yd.).

3. PART 3 EXECUTION

3.1 APPLICATION

Comply with recommendation of the manufacturer.

3.2 EXAMINATION

Check that site conditions are ready for concrete pouring. Coordinate with manufacturer for pre-inspection schedule. Acquire certification from the manufacturer that site conditions are acceptable for placement.
For mixing, transporting and placing concrete under conditions of high temperature or low temperature, follow concrete practices as referred to in ACI 305R-10 (Hot Weather Concreting) and ACI 306R-10 (Cold Weather Concreting) respectively. For flatwork being placed in either hot, dry or windy conditions, surface humidity must be maintained by fogging or use of monomolecular film (evaporation retardant). Shotcrete walls must be water cured following the procedures in ACI 308 or treated with a curing compound conforming to ASTM C309.

3.3 PREPARATION

Conduct trial mixes to determine workability, setting times, and strength.

3.4 CONCRETE PLACING

3.4.1Comply with COSH safety requirements as well as other regulations for health and safety. Comply with manufacturer's instructions as stated on the material safety data sheet provided by the manufacturer.

07 00 00	DIVISION 7 THERMAL AND MOISTURE PROTECTION	
07 19 3	Polyethylene Sheet Damp-proofing/ Vapor Barrier	

1. PART 1 GENERAL

1.1 RELATED DOCUMENTS

1.1.1Technical Architectural Drawings
1.1.2Specifications
1.1.3Requests for Interpretation
1.1.4Product Samples and Brochures
1.1.5Manufacturer's Data Sheets and Certificates
1.1.6Material Safety Data Sheets
1.1.7Work Program and Methodology Submittals

1.2 SUMMARY

This section includes provision on polyethylene sheets used to serve as damp-proofing/ vapor-barrier work under all floor and stair slabs in contact with the ground.

1.3 RELATED SECTIONS

1.3.1Architectural Concrete
1.3.2Concrete Finishes

1.4 GENERAL PROVISION

1.4.1Verify with structural specifications. Ensure that polyethylene barriers do not compromise the structural strength of concrete.

1.5 SUBMITTALS

1.5.1PRODUCT APPROVAL ATTACHMENTS
1.5.2Submit product samples of damp roofing polyethylene sheets not less than 1000 mm X 600 mm long, showing the 600mm overlap on one side as required. Properly label samples. Indicate grade and brand of damp roofing material.
1.5.3Submit product data on adhesives used for overlap. Submit brand, label, and manufacturer's instructions for storage and application.

1.5.4EXECUTION APPROVAL ATTACHMENTS
1.5.5Submit detailed work methodology. Clearly state the required overlap

1.6 QUALITY ASSURANCE

1.6.1Obtain all materials for damp-roofing and waterproofing from a single source at all times, unless otherwise recommended by manufacturer.
1.6.2Only engage installers with relevant experience in installing damp roofing materials, to a size and scope similar to that of the project.

2. PART 2 PRODUCTS

2.1 ADHESIVE AND MISCELLANEOUS MATERIALS

Use adhesive compounds as recommended by the manufacturer for bonding to substrate and overlaps, for sealing of seams in membrane, and for sealing of joints between membrane and flashings, adjoining surfaces and projections through membrane.

When using Plastic Cement, comply with ASTM D4586, Type 1. Sand shall comply with ASTM C 144 or ASTM C897.

2.2 POLYETHYLENE SHEET DAMPROOFING

07 00 00	DIVISION 7 THERMAL AND MOISTURE PROTECTION
07 55 3	Building Insulation

1. PART 1 GENERAL

1.1 RELATED DOCUMENTS

1.1.1Technical Architectural Drawings
1.1.2Specifications
1.1.3Requests for Interpretation
1.1.4Product Samples and Brochures
1.1.5Manufacturer's Data Sheets and Certificates
1.1.6Material Safety Data Sheets
1.1.7Work Program and Methodology Submittals

1.2 SUMMARY

This section includes provisions for both thermal and acoustic insulation materials installed in the following areas:
1.2.1Mechanical Equipment areas to disperse excess noise
1.2.2Thermal Insulation under Sheet Metal Roofing

1.3 RELATED SECTIONS

1.3.1Sheet Metal Roofing

1.4 GENERAL PROVISION

1.4.1Refer to Technical Working Drawings to identify areas of application.
1.4.2For Thermal Insulation Material under Metal Sheet Roofing, install insulation on all surface areas beneath the Sheet Metal Roofing, where specified by the architect. See products in this section for descriptions on insulating material. All insulating materials installed under sheet metal roofing shall be supported with a 10mm square welded wire mesh, primed and painted according to provisions in Division 9 Interior and Exterior Painting Sections. Comply with color and paint finish as specified by the architect.
1.4.3For Mechanical Equipment areas, use ASTM E-84, Class A, non-combustible, fire retardant wool with aluminum foil on one side, mounted and supported by Metal Furring Assemblies and/or built up steel assemblies using, with facing material 10mm square welded wire mesh, primed and painted. Comply with Division 9 Interior and Exterior Painting Sections. Comply with color and paint finish as specified by the architect.
1.4.4Test acoustical installations for machine and equipment areas. Ensure that when all acoustical installations in place, no point outside the mechanical equipment room that is subject to work conditions requiring focus shall receive noise levels higher than 80db at a time when all mechanical equipment installed are running.
1.4.5Do not use Spray-Applied Insulation unless otherwise approved. If approved, do not apply spray insulation until all installation of pipes, ducts, conduits, and other similar openings are completed. Do not seal or obstruct such similar openings with spray-applied insulation.
1.4.6Do not block necessary openings such as pipes, ducts, conduits, wirings, windows, and similar items.

1.5 MAINTENANCE

1.5.1Upon delivery on site, protect insulation materials from physical damage. Store away from wet areas or areas with high moisture content. Comply with manufacturer's instructions on handling and storing.

1.6 SUBMITTALS

1.6.1PRODUCT APPROVAL ATTACHMENTS
1.6.2Material and Safety Data Sheets for all Insulating Materials
1.6.3Technical Data Sheets for all Insulating Materials
1.6.4Product Sample 300mm x 300mm for each insulating material.
1.6.5Manufacturer's written installation, maintenance, storage, and protection instructions.

1.6.6EXECUTION APPROVAL ATTACHMENTS

3.2.1Comply with the installation requirements and instructions by the manufacturer of approved material insulation.
3.2.2Do not pierce or cut through insulation material aluminum facing. When faces are accidentally cut, replace damaged sheets.
3.2.3Single-layer installation of insulation sheets is acceptable provided installed work is free of tears and damages.
3.2.4Do not install torn insulation sheets.
3.2.5For mineral wool, ensure that the wool density is sufficient to absorb above level acoustic noise. Comply with ASTM C 1015 and manufacturer's written instructions.
3.2.6Separately prime and paint metal assemblies prior to installation of insulation whether under sheet metal roofing or on horizontal and vertical surfaces of rooms with mechanical equipment. Comply with Division 9 Interior Paints Section of this specifications for painting requirements. *Only paint touch ups are allowable upon installation.*
3.2.7Do not smear finishing paint on insulation material. Completed insulation installation shall be clean, and free of smears and other unwanted smudges. Restore all affected insulation sheets as needed.
3.2.8All metal assemblies supporting insulation shall be primed with red oxide, and non-gloss painted elastomeric paint, black color unless otherwise indicated on drawings and approved by architect. Comply with paint division of this specifications.
3.2.9All metal assemblies supporting insulation work shall be fabricated according to approved shop drawings.
3.2.10 When using mineral wool, do not place insulation assemblies near lighting fixtures and other electrical equipment not fire rated or protected from contact with insulation material.
3.2.11 All aluminum facing shall be set placed towards areas of high humidity.
3.2.12 Where there are openings such as windows, access panels, duct ends, electrical devices and boxes, ducts, air registers, and any such similar openings, neatly cut the insulation sheets such that these openings are not obstructed and are able to function, Show all opening locations on shop drawings. Neatly seal by manufacturer-approved adhesive tape the cut insulation sheets to ensure adhesion to nearby surfaces. Maintain visual neatness of installation.

3.3 PROTECTION

Protect installed insulation from weather exposure and other construction work that exposes it to damages. Schedule insulation installation work such that no critical construction work conflicts with its installation.

END OF SECTION

1.6.1PRODUCT APPROVAL ATTACHMENTS

1.6.1.1 Submit all product data sheets, material safety data sheets, and technical specifications.

1.6.1.2 Submit all product and manufacturer certificates.

1.6.1.3 Submit Product samples at 300mm x 300 mm of each sheet metal material

1.6.1.4 Submit Manufacturer's written instructions for handling, installation, and cleaning.

1.6.2EXECUTION APPROVAL ATTACHMENTS

1.6.3Detailed work methodology

1.6.4*Shop drawings, namely roof plan indicating boundaries and location of finish area and detailed drawings of* connections for rolls, ridges, hips and valleys, gutters, and other special connections as required to complete roofing installation and as indicated in technical working drawings. Show purlin distances, riveting details and/or any applicable fastening method. Submit these drawings to both architectural and structural consultants.

1.7 QUALITY ASSURANCE

1.7.1Only engage installers with specific training experience in installing sheet metal roofing works.

1.7.2Installers shall be supervised by the manufacturer's technical representative.

1.7.3Only source material from one manufacturer to ensure uniform application. Coordinate construction schedules properly to ensure timely completion.

1.7.4Only source materials from tried and tested manufacturers with minimum of five year satisfactory performance in the field of roofing systems.

1.7.5Metal roof panel systems shall have no water leakage tested compliant to ASTM E1646.

1.7.6All sheet panels shall be designed such that it is capable of supporting 140kgs temporary concentrated loads at mid-span in installed conditions, unless otherwise specified by the structural designer.

1.8 WARRANTIES

1.8.1Warranty period by manufacturer shall at least be two (2) years from Substantial Date of Completion.

2. PART 2 PRODUCTS

2.1 METAL ROOF PANELS

2.1.1Use Rib-Type, standard nominal dimensions, seam type, and thickness by manufacturer as specified and approved by architect.

2.1.2Base metal type shall be Galvalume steel sheet, G90, conforming to ASTM A653, Galvalume steel sheet AZ50, conforming to ASTM A792 for painted and unpainted panels, Galvalume steel sheet AZ55, conforming to ASTM A792 for unpainted panels.

2.1.3Texture of surfaces shall be smooth. Follow finish on sample approved by architect.

2.1.4Color Fading shall not be more than 5 Hunter, tested according to ASTM D 2244.

2.1.5Chalking shall not be in excess of a No.8 rating, tested according to ASTM D 4214.

2.1.6Solar Reflectance Index shall be calculated according to ASTM E 1980.

2.1.7Fire Classification shall be Class A-90.

2.2 ACCESSORIES AND FASTENERS

2.2.1Color and material of all accessories and fasteners shall be uniform to that of approved sample.

2.2.2Use Rubber-Asphalt sealing compound, compliant to CAN/CGSB-37.29.

2.2.3Cleats shall be of same material and temper sheet metal, minimum 50mm wide with thickness or gauge as approved/ indicated by the architect in the technical working drawings.

2.2.4Conceal all fasteners, unless otherwise indicated or approved by the architect.

2.3 LONG SPAN ROOFING (CRIMP LOK SYSTEM)

This item is specified particularly for continuous roofing with a span beyond 18M, unless otherwise specified by the architect.

2.3.1Base metal type shall be Cold Rolled Steel; 275 MPa or 40,000 psi.

2.3.2Substrates shall be Galvalume 55, Aluminum-Zing Alloy-coated steel complying with ISO 9364.

2.3.3Paint coating shall be oven-baked epoxy primer and regular polyester finish.

07 00 00	DIVISION 7 THERMAL AND MOISTURE PROTECTION
07 92 0	Joint Sealants

1. PART 1 GENERAL

1.1 RELATED DOCUMENTS

1.1.1 Technical Architectural Drawings
1.1.2 Specifications
1.1.3 *Requests for Interpretation*
1.1.4 Product Samples and Brochures
1.1.5 Manufacturer's Data Sheets and Certificates
1.1.6 Material Safety Data Sheets
1.1.7 Work Program and Methodology Submittals

1.2 SUMMARY

1.2.1 This section includes provisions on joint work in the following areas:
1.2.1.1 Exterior and interior joints between all fenestration frames, i.e. louvers, doors, windows, skylights, and similar fenestration components and wall masonry.
1.2.1.2 Exterior and interior joints for concrete pavement and flooring.
1.2.1.3 Exterior and interior joints for unit pavers and pre-cast concrete curbs.

1.3 RELATED SECTIONS

1.3.1 Architectural Concrete

1.4 GENERAL PROVISION

1.4.1 Use airtight and watertight elastomeric joint sealants.
1.4.2 Provide joint sealants where indicated on technical working drawings and in standard areas for joint sealing, unless otherwise specified by the architect.
1.4.3 Unless otherwise indicated on drawings, joint sealers shall match the color and type of the adjacent finish.
1.4.4 Do not install joint sealers in ambient and substrate temperatures not within the recommendations of the manufacturer. Do not install joint sealers when substrates are wet due to rain or other condensation.
1.4.5 Remove all contaminants on the substrate that affect the adhesion of joint sealers.
1.4.6 Comply with manufacturer's requirements on required width of joints for accepting joint sealers.
1.4.7 Install all joint sealers within 21 to 30 days from completion of waterproofing work.
1.4.8 Provide fire-resistant joint sealers in areas prone to combustive behavior, namely utility areas, electrical rooms, and service chutes.
1.4.9 Where applicable, bond breaker tapes shall be utilized to prevent adhesion to rigid surfaces that can cause sealant failure.
1.4.10 Use non-staining absorbent type masking tapes compatible with joint sealant surfaces.

1.5 MAINTENANCE, DELIVERY, STORAGE, AND HANDLING

1.5.1 Deliver all joint sealing products in sealed containers, complete with labels and instructions. Containers with tampered seals shall not be accepted.
1.5.2 Comply with manufacturer's instructions for proper storage of all joint sealing materials.
1.5.3 Ensure that cleaners use chemical cleaners of type and make compatible to the joint sealant used.

1.6 SUBMITTALS

1.6.1 PRODUCT APPROVAL ATTACHMENTS
1.6.1.1 Submit samples of all joint sealers in exposed areas. Ensure that the color of the joint sealer is approved by the Architect. Indicate area of application on the sample submittal. Include a list of alternative colors as provided by the manufacturer.
1.6.1.2 Submit product data for all joint sealer products required. Include technical data and material safety data sheets, indicating proper methods for storage and application.