

- 3.2.4 Do not leave gaps between joint fillers.
- 3.2.5 When handling, do not stretch, puncture, twist, or tear pre-formed joint fillers.
- 3.2.6 Use bond breaker tapes between sealants and joint fillers, compression seals, or back of joints.
- 3.2.7 Begin tooling of non-sag sealant immediately before setting and curing begins, unless otherwise instructed by the manufacturer.
- 3.2.8 When tooling, form smooth, uniform heads to eliminate air pockets. Remove excess sealant from adjacent surfaces. Do not use tooling agents that damage the sealant or adjacent surfaces. Provide concave and flushed joints, unless otherwise indicated in drawings.
- 3.2.9 When installing pre-formed foam sealants, install immediately after removal of protective wrapping. Do not stretch, twist, or pull the material. Ensure continuity between ends, turns, and intersections of joints. When applying during low temperatures, apply heat to sealant as needed following prescriptions by manufacturer.
- 3.2.10 Install all gaskets within tolerances and conditions allowed by the manufacturer. Use the appropriate adhesives and when required, always provide watertight joints.
- 3.2.11 For fire-stopping sealants, comply with installation requirements established by the testing and inspecting agency.

3.3 CLEANING AND PROTECTION

- 3.3.1 Remove excess sealant and smears adjacent to joints. Only use appropriate cleaning materials.
- 3.3.2 Protect accomplished joint sealer work during and after curing period.
- 3.3.3 In case of damages before the time of Substantial Completion, remove damaged and deteriorated portions but cutting and immediately replace and reseal with new materials such the original work and repair work is indistinguishable.

END OF SECTION

- 1.6.1.2 Shop Drawings shall include elevations of each door design, door details, frame details for each frame type, shall be drawn to scale, with proper dimensions, complete with indications for locations of reinforcement and preparations for hardware, anchorages, accessories, joints and connections, glazing frames, and other glazing requirements.
- 1.6.1.3 Submit painted steel swatches from manufacturer's color charts following the color indicated in the drawings. Submit samples for each type of exposed finish not less than 75mm X 125mm in size and must be of the same thickness as the actual material.
- 1.6.1.4 Submit glazing samples with complete description of glazing performance.
- 1.6.1.5 Use the same door designation as indicated in the drawings.

1.6.2 EXECUTION APPROVAL ATTACHMENTS

1.6.3 Detailed work methodology indicating manufacturer's instructions for installing anchorages, sleeves, concrete inserts, anchor bolts, and other similar items.

1.7 QUALITY ASSURANCE

- 1.7.1 Engage manufacturers with significant experience in completing projects of the same size and scale as of the project.
- 1.7.2 Ensure material and assembly consistency.
- 1.7.3 Manufacturers shall have good records in on-time delivery, provides support services in installation demonstration, and with good after-sales service records.
- 1.7.4 Only source required metal door assemblies from a single manufacturer unless manufacturer is proven to be a poor performer.
- 1.7.5 No door assembly from two different manufacturers shall be allowed for installation on site unless the door assemblies are proven consistent and similar in make to the approved shop drawings. Submit new shop drawings for every manufacturer.

1.8 WARRANTIES

Material and installation of door assemblies shall be warranted for two (2) years.

2. PART 2 PRODUCTS

2.1 FINISHES

- 2.1.1 Comply with finish color and texture as indicated and required in the technical working drawings.
- 2.1.2 All steel doors and frames shall have a layer of factory-applied, rust-inhibiting primer. Comply with ANSI A250.3 for performance and acceptance criteria.
- 2.1.3 Final paint finish of the door assembly shall be factory-applied. Comply with ANSI A250.3.
- 2.1.4 In case of damages during handling on site, restore finishes to its original condition as delivered.
- 2.1.5 For fire rated doors, manufacturer shall provide one-coat of baked-on prime coat paint.
- 2.1.6 Primers shall be of rust-inhibitive enamel or paint, applied via air-dry or baking.

2.2 STEEL DOORS

- 2.2.1 For both fire-rated and non-rated fire doors, use GA No. 18 Steel for all door faces and use Ga. No. 16 Steel for hinge and lock rails, and top and bottom channels.
- 2.2.2 All doors both non-fire rated and fire-rated steel door and access door systems shall comply with ANSI/SDI 100.
- 2.2.3 Hot-rolled steel sheets used as material for door facing shall comply with ASTM 569/A 569M, Commercial Steel (CS), Type B. All sheets shall be free of scale, pitting, and other surface defects.
- 2.2.4 Cold-rolled steel sheets used as material for door facing shall comply with ASTM A 366/A 366M, Commercial Steel (CS), Type B, stretcher-leveled.
- 2.2.5 Metallic-Coated Steel Sheets used as material for door facing shall comply with ASTM A 653/A653M, Commercial Steel (CS), Type B with A40 (ZF120) zinc-iron alloy galvanized coating, stretcher-leveled.
- 2.2.6 Only use electrolytic Zinc-Coated Steel Sheet for unexposed applications. Comply with ASTM A 591/A 591M, Commercial Steel (CS), Class B coating.

2.3 FABRICATION

- 2.3.1 Prepare doors to receive specified hardware, i.e. lock rails, door handles, door sills.
- 2.3.2 Unless otherwise indicated, all doors shall be 44mm thick as measured from finish to finish of top and bottom channels and rails.

08 00 00	DIVISION 8 DOORS, WINDOWS, and OPENINGS
08 21 1	Flush Wood Doors

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

This section includes provisions on door specifications for the following areas:

- 1.2.1 Solid—core and Hollow—core doors with laminated facing situated in Toilet, Service Areas, and other areas as specified in the technical working drawings.
- 1.2.2 Other wooden doors as needed on the project.

1.3 RELATED SECTIONS

- 1.3.1 Division 6 Wood and Plastics Rough Carpentry
- 1.3.2 Division 6 Interior Architectural Woodwork
- 1.3.3 Division 8 Door Hardware

1.4 GENERAL PROVISION

- 1.4.1 Submit Shop Drawings for approval prior to purchase from manufacturer and production of door assemblies for delivery.
- 1.4.2 For Fire rated doors, comply with NFPA 80.
- 1.4.3 Comply with hardware requirements. Double check door hardware schedule

1.5 MAINTENANCE, DELIVERY, STORAGE

- 1.5.1 All door assemblies delivered shall be properly protected and accurately labeled according to its location and type of handle. Door quantities shall be consistent with requirements on the technical working drawings.
- 1.5.2 Store delivered doors according to standards specified by the manufacturers in their written instructions.
- 1.5.3 Store doors in dry, weather-protected areas. Ensure that storage areas are weather tight.
- 1.5.4 Do not deliver doors during bad weather.

1.6 SUBMITTALS

1.6.1 PRODUCT APPROVAL ATTACHMENTS

- 1.6.1.1 Submit product data for each type of door. Declare core details, material and construction of edge, factory-finish and colors.
- 1.6.1.2 Samples at least 200mm X150mm, of actual thickness for each material finish and wood specie. The sample should be a complete assembly using actual glue and wood for use in the project site, reflecting actual laminate to be used for approval. Include brochures for laminate options and other samples for finish choice. Samples shall be cut from the corner portion of the door.

1.6.2 EXECUTION APPROVAL ATTACHMENTS

- 1.6.3 Detailed work methodology on installation and restoration instructions.
- 1.6.4 Shop drawings indicating location, size, actual dimensions of openings on site, hand of each door, elevations, construction details, and required hardware blocking. Show location of mortises and holes for hardware, anticipate cut-outs for hardware.

- 3.2.3.4 Test swinging of doors and ensure that operation is free and smooth. Re-hang or replace door assemblies otherwise.
- 3.2.3.5 Install hardware appropriate hardware. Refer to Division 8 "Door Hardware" for details.
- 3.2.3.6 Clean and restore all door surfaces and finishes damaged during installation back to original conditions.

END OF SECTION

- 1.6.1.2 Submit product data on fasteners and sealants.
- 1.6.1.3 Submit sample section cuts showing final finish and profile of framing material. Do not manufacture and install on site without approval from the architects. Sample profiles shall be cut in 200mm lengths. The sample profile should be submitted as a complete assembly showing the corners of the door. Do not submit disintegrated samples.
- 1.6.1.4 Submit sample cuts of glazing material at least 200mm X 200mm. Show true color and make of glazing. Only approved glazing can proceed with fabrication and site installation.
- 1.6.1.5 Submit shop drawings of all profiles cut at the jamb, head, lock-stile. Indicate nominal thickness of all aluminum sections to be used in the assembly. No aluminum section shall be less than 1.2mm thick.

1.6.2 EXECUTION APPROVAL ATTACHMENTS

- 1.6.2.1 Submit design calculations and shop drawings. Properly label dimensions and material specifications for each part. Indicate location and specification of hardware and fastener. Indicate door assembly labels and areas of installation.
- 1.6.2.2 Submit detailed work methodology indicating order of installation of the assembly.
- 1.6.2.3 Submit restoration procedures upon completion of work.

1.7 QUALITY ASSURANCE

- 1.7.1 Only source door assemblies from experienced manufacturers with good records in the timely delivery and installation of door assemblies. Manufacturer shall be capable of providing field services during and after construction.
- 1.7.2 Only source aluminum door assemblies from one manufacturer/ a single source.
- 1.7.3 Only engage installers with specialized expertise in the installation of door assemblies in a project size and scope similar to the project.
- 1.7.4 Conduct pre-installation walk thru meetings to inspect readiness of installation area.
- 1.7.5 Provide a mock-up installation complete with surface preparation techniques. Have the mock-up approved prior to complete installation.
- 1.7.6 Do not proceed with work when assemblies delivered have defects due to workmanship, color, finish, sheen, and other conditions degrading the quality and appearance of the material.
- 1.7.7 Do not conduct installation works in environmental conditions not recommended by the manufacturer.
- 1.7.8 Comply with manufacturer's prescribed tolerances.

1.8 WARRANTIES

- 1.8.1 Ensure two (2) year warranty beginning after the date of substantial completion. Warranty shall include replacement and repair of defective units or hardware installed.
- 1.8.2 In case of breakage of glass due to improper safety management, the contractor shall replace all breakage.

2. PART 2 PRODUCTS

2.1 ENTRANCE DOORS

- 2.1.1 Use aluminum frames compliant with ASTM B221; 6063-T5 and T6 alloy and temper. Major load-supporting aluminum sections shall be of minimum 3mm nominal thickness. No aluminum section with a supporting function in the assembly shall be lesser than 1.2mm thick, unless otherwise approved by the architect.
- 2.1.2 All storefront doors shall comply as indicated on technical working drawings.
- 2.1.3 All storefront doors situated along the faculty rooms shall be standard pre-assembled storefront system complete with narrow door stiles.

2.2 GLAZING

- 2.2.1 All glazing shall be minimum 6mm thick, shall be impact-resistant, and adhered with weatherproof silicone sealants, and weatherproofed extruded EPDM glazing gaskets.
- 2.2.2 All glazing shall be free of warp and twist
- 2.2.3 Refer to Section 08810 Glass and Glazing requirements.

2.3 ACCESSORIES

- 2.3.1 DOOR STOPS: Install heavy duty flooring door stops to match all operable door leaves. Use heavy duty floor stops of steel chrome, hairline finish installed at flooring.
- 2.3.2 DOOR SWEEPS AND DRIP CAPS: Equip all aluminum storefront doors with door sweeps and drip caps.

08 00 00	DIVISION 8 DOORS, WINDOWS, and OPENINGS
08 51 00	Metal Windows

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 all metal windows as specified on technical working drawings.

1.3 RELATED SECTIONS

- 1.3.1 Hardware
- 1.3.2 Glazing

1.4 GENERAL PROVISION

- 1.4.1 All metal windows of jalousie type, fixed, casement, or awning types shall be powder coated aluminum finish, white-colored.
- 1.4.2 Submit brochures, samples/ shop drawings window door assemblies drawn to scale for the approval of the architect. No material can be installed on site without the approval of the architect. All materials shall be approved prior to mass fabrication.
- 1.4.3 Refer to technical working drawings and Division 8 Hardware for details on metal window hardware specifications.
- 1.4.4 All aluminum frame members shall withstand minimum 25psf wind load and shall be provided with internal reinforcing if necessary.
- 1.4.5 Use EPDM Rubber between glazing and framing.
- 1.4.6 Only use lever-type handles and latch type locking mechanisms for casement and awning windows.
- 1.4.7 Comply with manufacturer's standards for the structural attachment of framing members.
- 1.4.8 Use standard side hung hinges for casement windows opening from 0 to 30 degrees.
- 1.4.9 Use standard top hung hinges for awning windows, opening from 0 to 80 degrees.
- 1.4.10 All exposed areas shall be finished with Class 1 electrolytically deposited color in clear anodized finish.
- 1.4.11 Comply with gravity, wind, and earthquake load requirements as per the National Structural Code of the Philippines (NSCP).
- 1.4.12 Consider thermal movements from ambient and surface temperature changes.

1.5 MAINTENANCE, DELIVERY, STORAGE, AND HANDLING

- 1.5.1 Protect installed and finished window assemblies with strippable membrane, with proper markings for safety. Keep membrane on glass until substantial completion of project.
- 1.5.2 All window assemblies shall be safely stacked horizontally with heavy duty spacers unless otherwise specified by the manufacturer.
- 1.5.3 Upon substantial completion, restore glazing and thoroughly clean glass surface.
- 1.5.4 Comply with manufacturer's lead-time requirements for fabrication and delivery so as not to disrupt construction schedule.
- 1.5.5 All materials shall be delivered in protective packaging, sealed, undamaged, and properly labeled. All labels shall indicate precise location and orientation of window assemblies. Handle all deliveries with care.
- 1.5.6 Maintain temperature, humidity, and ventilation on site and storage area within recommended limits by the manufacturer.
- 1.5.7 Adjust all moveable parts until operation is ensured smooth and safe prior to acceptance.

- 2.2.1 All glazing shall be minimum 6mm thick, shall be impact-resistant, and adhered with weatherproof silicone sealants, and weatherproofed extruded EPDM glazing gaskets.
- 2.2.2 All glazing shall be free of warp and twist
- 2.2.3 Refer to Section 08810 Glass and Glazing requirements.

2.3 ACCESSORIES

- 2.3.1 WEATHERSTRIPPERS/ JAMB SEALS: Install weather strippers to seal doors at meeting stiles for pairs of doors, door tubing, and astragals.
- 2.3.2 LATCH HANDLES: *Only use lever-type door handles with finish matching the storefront finish. Submit samples and brochures of locks to be used to the architect for approval.*
- 2.3.3 HINGES: Use standard friction hinges for top-hung and casement windows. For top-hung windows, hinges shall be unhandled. Refer to technical working drawings to determine handedness for casement windows. Comply with technical working drawings. Comply with manufacturer's recommendations for maximum allowable weight capacity of hinges. Only use stainless steel grade 430 for all hinges.
- 2.3.4 FASTENERS AND ACCESSORIES: Use fasteners and accessories of the same fastened metal as the aluminum

3. PART 3 EXECUTION

3.1 INSTALLATION AND PREPARATION

- 3.1.1 Only uncrate/unpack delivered window assemblies upon commencement of installation. Check labels to match indicated location and orientation.
- 3.1.2 Check plumb-ness of receiving window units. Inspect gaps and allowable tolerances to match manufacturer's requirements.
- 3.1.3 Examine and verify all actual field measurements prior to fabrication. Reflect recorded measurements on shop drawings for approval.
- 3.1.4 Clean and prepare all substrates prior to installation. Comply with manufacturer's cleanliness requirements.
- 3.1.5 *Follow manufacturers' approved standard installation procedures for installation.*
- 3.1.6 Align all assemblies and ensure smooth operation of all operable windows and adjust accordingly. All assemblies shall be free of warp and twists of any kind.
- 3.1.7 Test windows in locked conditions to withstand static air pressure at 1.57 psf. Test in accordance to ASTM E 283.

3.2 PROTECTION

- 3.2.1 Protect all areas adjacent to area of work to avoid damages.
- 3.2.2 Protect installed products until completion of project.
- 3.2.3 Upon completion of project, remove temporary coverings and protection of adjacent areas.
- 3.2.4 Remove all construction debris from the project site in a safe and proper manner. Dispose debris properly.
- 3.2.5 Clean all installed products in accordance to manufacturer's prescriptions.
- 3.2.6 Touch-up, repair, and replace damaged products prior to Substantial Completion.

END OF SECTION

1.4.4.21 Other required hardware finish

1.5 MAINTENANCE

- 1.5.1 Store all hardware in properly labeled containers, with complete sets to match appropriate installation procedures.
- 1.5.2 Secure all hardware storage and secure all hardware keys.
- 1.5.3 Only deliver the keys directly to the owner and/or bonafide representative of the owner upon substantial completion of the project.
- 1.5.4 Tag each hardware item and its completed set properly for appropriate identification of pieces. Match tags/ identifications with related hardware. Include basic installation instructions in all labels.
- 1.5.5 Store hardware in cool and dry areas.

1.6 SUBMITTALS

1.6.1 PRODUCT APPROVAL ATTACHMENTS

- 1.6.1.1 Submit product brochures detailing the mechanisms and handedness of hardware to match the doors and windows it is specified for. Brochures should include complete hardware codes and a list/code of areas of installation.

1.6.2 EXECUTION APPROVAL ATTACHMENTS

- 1.6.2.1 Submit detailed work methodology indicating installation requirements and procedures.
- 1.6.2.2 Indicate on shop drawings the proper labels and codes to match the hardware specifications as indicated on technical working drawings.
- 1.6.2.3 Deliver keys directly to Owner complete with proper labels.

1.7 QUALITY ASSURANCE

- 1.7.1 Source all hardware type from a single manufacturer to ensure uniform quality.
- 1.7.2 Suppliers shall be recognized architectural hardware suppliers with manufacturing capability suitable to the quantity and quality required by the project.
- 1.7.3 Tag all hardware with proper identifying labels related to hardware schedule. Include installation requirements.

1.8 WARRANTIES

- 1.8.1 Manufacturer/ contractor shall agree to replace all defective hardware within two (2) years from date of substantial completion.

2. PART 2 PRODUCTS

2.1 GENERAL PRODUCTS

- 2.1.1 Provide Panic Exit Devices for Fire Rated applications/means of egress intended for fire.
- 2.1.2 All hardware finishes shall be in satin stainless steel finish. Be sure that all hardware are of consistent finishes.
- 2.1.3 Use hardware that is compliant with UL requirements and conforming to NFPA No. 80 requirements.
- 2.1.4 Use hardware compliant to the following:
 - 2.1.4.1 Mortise Hinges: Mortise Hinges: ANSI / BHMA A156.1.
 - 2.1.4.2 Locks and Latches: ANSI / BHMA A156.2
 - 2.1.4.3 Tubular locks: Grade 3 type tubular locks shall not have less than 5 pin tumblers.
 - 2.1.4.4 Cylindrical locks: Grade 2 cylindrical locks shall not have less than 6 pin tumblers.
 - 2.1.4.5 Deadbolts: ANSI / BHMA A156.5; Grade 2.
 - 2.1.4.6 Door Closers: UL Listed.
 - 2.1.4.7 Fire Exit Devices: BHMA / ANSI A156.3, Grade 1, UL Listed.
 - 2.1.4.8 Door Coordinators: ANSI/BHMA A156.3, Type 21A; UL Listed for installation on labeled frame
 - 2.1.4.9 Seals and Weather stripping: BHMA / ANSI A156.22
 - 2.1.4.10 Aluminum Extrusions: B6060+5.
 - 2.1.4.11 Neoprene with service temperature of 40°C to 70°C.
 - 2.1.4.12 PVC extrusions with service temperature of -5°C to 70°C.
 - 2.1.4.13 Silicone with service temperatures of -60°C to 230°C.
 - 2.1.4.14 EPDM with service temperature of -40°C to 100°C.
 - 2.1.4.15 Threshold: BHMA / ANSI A156.21.

08 00 00	DIVISION 8 DOORS, WINDOWS, and OPENINGS
08 80 00	Glazing

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

This section includes provisions on glazing requirements as specified above the ring beam of the project, central to the atrium/entrance lobby. Also included in this section are glazing requirements in all other areas of the project as indicated, i.e. wall partitions, clerestory windows, specialized glazing as instruction boards, or as indicated on drawings.

1.3 RELATED SECTIONS

- 1.3.1 Metal Windows
- 1.3.2 Louvers and Screens
- 1.3.3 Metal Fabrications

1.4 GENERAL PROVISION

- 1.4.1 Only use tempered/heat-treated glass on all portions of the project site.
- 1.4.2 Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

1.5 MAINTENANCE, DELIVERY, STORAGE AND HANDLING

- 1.5.1 Protect glazing materials from damage. Wrap delivered glazing in protective film to protect it from scratches and breakage.
- 1.5.2 Use wood blocks to separate glass panes and avoid breakage.
- 1.5.3 Protect glass from edge damage during handling and installation. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.
- 1.5.4 Apply primers to joint surfaces where required for adhesion of sealants, as determined by pre-construction sealant-substrate testing.

1.6 SUBMITTALS

1.6.1 PRODUCT APPROVAL ATTACHMENTS

- 1.6.1.1 SAMPLE: Submit 300mm X 300mm sample glazing with sealant samples showing actual thickness and color of glaze and sealant.
- 1.6.1.2 PRODUCT DATA OF SEALANT: Include manufacturer's standard curing procedures, installation requirements, Type, Grade, and Class.

1.6.2 EXECUTION APPROVAL ATTACHMENTS

- 1.6.2.1 Complete shop drawings, i.e. elevations, sections, and key plans showing exact area of installation.

1.7 QUALITY ASSURANCE

Source all glazing from a single manufacturer to ensure uniformity.

1.8 WARRANTIES

3.2 EXAMINATION

- 3.2.1 Conduct pre-fabrication on-site meetings to inspect actual site conditions prior to fabrication. Inspections shall be in the presence of manufacturing.
- 3.2.2 Check installation tolerances, including size, squareness, and offsets at corners. Check if functionality of weep systems will not be impeded.
- 3.2.3 Do not commence glazing works until unacceptable conditions are corrected.

3.3 FABRICATION

- 3.3.1 Verify actual dimensions of frames and receiving areas on site prior to fabrication of glazing.
- 3.3.2 Fabricate glass according to exact measurements needed on site. FIELD CUTTING IS NOT ALLOWED.

3.4 PROJECT CONDITIONS

- 3.4.1 Do not proceed with glazing works when glazing is wet due to rain and/or subject to condensation due to ambient weather conditions.

3.5 PROTECTION & CLEANING

- 3.5.1 Affix non-permanent labels on installed glass surfaces for safety purposes. Use DO NOT CROSS streamers. DO NOT PAINT or use permanent markers on the glass. Ensure safety labels are non-permanent.
- 3.5.2 Remove non-permanent labels and clean surfaces upon substantial turnover.
- 3.5.3 Examine installed glazing at every key point of construction. Remove and replace broken, chipped, cracked, abraded, or any form of damages on glass, including vandalism and damages caused by natural conditions.
- 3.5.4 Wash glass on both surfaces prior to date of inspection for turnover.
- 3.5.5 Comply with manufacturer's methods for glass cleaning.

END OF SECTION

- 2.1.2Glazing quality shall be low-iron, ultra-clear with 91% visible light transmission.
- 2.1.3Minimum nominal thickness shall be 6.0mm
- 2.1.4Mirror Edges: Flat and slightly rounded or buffed on corners. Seal edges with edge sealer
- 2.1.5Fabricate mirror sizes according to sizes indicated on approved shop drawings.
- 2.1.6Only install mirrors whose grade and quality does not decline upon exposure to areas with heavy moisture.

2.2 MISCELLANEOUS HARDWARE

- 2.2.1Unless otherwise approved by the architect, no extra accessories will be allowed on mirrors other than anchors and inserts that have *no impact on the exposed side of the mirror.*
- 2.2.2Use compatible mirror mastics as prescribed by manufacturers.

3. PART 3 EXECUTION

3.1 EXAMINATION

- 3.1.1Examine substrates or surface areas on which mirrors are to be mounted. Check for compliance with installer's requirements on tolerances, substrate preparations, and other conditions affecting work.
- 3.1.2Proceed with installations once substrate conditions are acceptable.
- 3.1.3Check installation requirements of approved manufacturer's prescribed mastic. Comply with written installation instructions.

3.2 INSTALLATION

- 3.2.1Provide 3mm air space between back of mirrors and mounting surface for air circulation to avoid undue damages on silver coating of mirror.
- 3.2.2Use pressure sensitive adhesive tapes and appropriate mirror hardware that do not affect the exposed side of the mirrors. Comply with manufacturer's written instructions on adhesives.
- 3.2.3Mirror installation shall appear seamless.

3.3 CLEANING AND PROTECTION

- 3.3.1Protect mirrors from breakage and contamination during construction. Cover surfaces with protective films.
- 3.3.2Do not expose edges of mirrors to standing water.
- 3.3.3Keep installed mirrors clean. Wash exposed surfaces of mirrors clean and dry, free of visual damages prior to substantial completion.
- 3.3.4Do not use chemicals that damage the quality of the mirror film and the glass surface.

END OF SECTION

- 1.6.2.1 Shop drawings, i.e. floor plans and wall elevations highlighting area of application and tile setting layout. Indicate start of tile, end of tile, grout distances, tolerances, dimensions of cuts for drains, and similar utility holes. Show dimensions of tiles cut from original tile dimensions.

1.7 QUALITY ASSURANCE

- 1.7.1 Employ tile setters with minimum experience from projects of the same size and scale as the project.
1.7.2 Only install approved tiles sourced from the same manufacturer.
1.7.3 Observe standard tolerances for slopes and drains.
1.7.4 Do not install tiles with visible defects such as chipped edges.
1.7.5 Ensure maximum bonding of tiles to substrates. When tapped, no more than 20% of the tile surface area shall emanate a hollow sound.

1.8 WARRANTIES

Two (2) years.

2. PART 2 PRODUCTS

2.1 FLOOR TILES

- 2.1.1.1 Refer to Technical Working drawings for coverage of area of application

2.2 WALL TILES

- 2.2.1.1 Refer to Technical Working drawings for coverage of area of application.

2.3 MORTARS AND ADHESIVES

- 2.3.1 Portland cement: to CSA-A5, type 10.
2.3.2 Sand: to ASTM C144, passing 16 mesh.
2.3.3 Hydrated lime: to ASTM C207, Type N. Latex additive: formulated for use in Portland cement mortar and thin set bond coat.
2.3.4 Mortar bed for floors: 1 part Portland cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included. Mortar bed for walls 1 part Portland cement, 1/5 Dry set mortar: mix to manufacturer's instructions.
2.3.5 Organic adhesive: pre-mixed.
2.3.6 Mix bond and levelling coats, and grout to manufacturer's instructions.
2.3.7 Adjust water volumes to suit water content of sand.
2.3.8 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.
2.3.9 Dry set mortar: to ANSI A118.1.

2.4 GROUT

- 2.4.1 COLOR: dark grey, brand and type compliant to manufacturer's prescriptions of the approved tile.
2.4.2 Portland cement grout: as recommended by tile manufacturer.
2.4.3 Dry curing wall grout: as recommended by tile manufacturer.
2.4.4 Grout preparation: to manufacturer's instructions.

2.5 CLEANING COMPOUNDS

- 2.5.1 Use materials compatible to the approved material. Cleaning materials shall not impede bonding of tile setting materials.
2.5.2 Do not use caustic and acidic cleaning materials.

3. PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- 3.1.1 Check conditions and quality of substrates to be ready to accept finish. Apply tile to clean and sound surfaces.

09 00 00	FINISHES
09 67 0	Fluid-Applied Flooring

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

This section includes standard performance and high performance fluid-applied flooring systems. Comply with areas of application as indicated in the drawings.

1.3 RELATED SECTIONS

- 1.3.1 Concrete Finishes

1.4 GENERAL PROVISION

- 1.4.1 Secure approval from architect for final finish style and application. Submit finish samples. Refer to the Submittal portion of this section for details.
- 1.4.2 Coordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- 1.4.3 Conduct pre-installation meeting months prior to commencing work of this Section to verify project on-site installations and project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's installation instructions and manufacturer's warranty requirements.
 - 1.4.3.1 **MOCK-UPS: Mock-Up:** Construct mock-up where in obscure areas. Mock-up areas shall be 2m x 2m in dimensions, using proposed procedures, colors, textures, finishes and quality of work to judge quality of work, substrate preparation, operation of equipment and material application.
 - 1.4.3.2 Do not proceed with work completion prior to written acceptance of mock-up. When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain part of finished work.
 - 1.4.3.3 Assemble and install components only when temperatures are suitable to the requirements of the manufacturer. Maintain materials, substrates, and surrounding temperature suitable to manufacturer's required conditions.

1.5 MAINTENANCE, DELIVERY, STORAGE & HANDLING

- 1.5.1 Deliver materials in manufacturer's original packaging with identification labels intact and in sizes suitable to the project.
- 1.5.2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- 1.5.3 Comply with local codes in the proper disposal of waste materials.

1.6 SUBMITTALS

1.6.1 PRODUCT APPROVAL ATTACHMENTS

- 1.6.1.1 Manufacturer's product data, including manufacturer's SPEC-DATA product sheet.
- 1.6.1.2 Manufacturer's installation instructions.
- 1.6.1.3 Catalog pages illustrating products to be incorporated into project.
- 1.6.1.4 Material Safety Data Sheets (MSDS) of manufacturer- required products.

1.6.2 EXECUTION APPROVAL ATTACHMENTS

- 1.6.2.1 Submit 300 x 300 mm samples of each fluid-applied flooring system specified to show color and texture with specified coats cascaded.

3. PART 3 EXECUTION

3.1 GENERAL EXAMINATION AND PREPARATION

- 3.1.1 Verify that conditions of substrates previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's instructions prior to fluid-applied flooring installation.
- 3.1.2 Remedy all unacceptable conditions. Remove all items not necessary that affects quality of work. Coordinate schedules with construction manager.
- 3.1.3 Do not proceed with work completion until all substrates and preparations are acceptable.
- 3.1.4 If substrate is concrete, ensure that the surfaces have been properly cured in accordance to requirements by the manufacturer. Follow manufacturer procedures.
- 3.1.5 Test moisture content of concrete. Match manufacturer's requirements.

3.2 GENERAL APPLICATION

- 3.2.1 Comply with COSH and other safety requirements as specified by manufacturer.
- 3.2.2 Comply with Exterior painting section of this specification for detailed application requirements.
- 3.2.3 Apply components in accordance with manufacturer's written instructions.
- 3.2.4 Remove oil and grease by detergent cleaning. Dry surface areas prior to application.
- 3.2.5 Unless otherwise advised by manufacturer, acid etch smooth surfaces for improved adhesion. Use acids compliant to manufacturer's product.
- 3.2.6 Finished texture of acid wash smooth concrete shall be similar to 40-60 grit sandpaper.

3.3 CLEANING AND PROTECTION

- 3.3.1 Remove surplus materials, rubbish, tools and equipment from project site. Dispose properly in accordance to local codes.
- 3.3.2 Protect installed product from any damages during construction. In case of damages, repair any damaged surface prior to substantial turnover.
- 3.3.3 Repair any damages incurred to adjacent materials during installation of material. Verify that conditions of substrates previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's instructions prior to fluid-applied flooring installation.

END OF SECTION

09 00 00	FINISHES	
09 96 5	A. CEILING SUSPENSION ASSEMBLIES	

PART 1 GENERAL

2. PART 2 PRODUCTS

2.1 Ceiling Board

- 2.1.1 Fiber cement board 4.5mm: paint finish Odorless Anti-Bacterial Latex paint flat White.
- 2.1.2 Ceiling joist :triple furring .5mm thick
- 2.1.3 1/4" thk marine plywood in wooden frame(see Reflected Ceiling Plans and Details)
Refer to Technical Working drawings for coverage of area of application.

3. PART 3 EXECUTION

3.1 EXAMINATION

- 3.1.1 COORDINATION: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
- 3.1.2 Furnish cast-in-place anchors and similar devices to other trades for installation well in advance of time needed for coordinating other work.
- 3.1.3 Measure each ceiling area and establish the layout of ficem board panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and conform to the layout shown on reflected ceiling plans.

3.2 INSTALLATION

- 3.2.1 GENERAL: Install ficem board panel ceilings to comply with publications referenced below per manufacturer's instructions and CISCA "Ceiling Systems Handbook."
- 3.2.2 Suspend ceiling hangers from building's structural members and as follows:
 - 3.2.2.1 Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of the supporting structure or of the ceiling suspension system. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, counter splaying, or other equally effective means.
 - 3.2.2.2 Splay hangers only where required and if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3.2.2.3 Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with the location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 - 3.2.2.4 Secure wire hangers to ceiling suspension members and to supports above with a minimum of 3 tight turns. Connect hangers either directly to structures or to inserts, eye screws, or other devices that are secure, that are appropriate for substrate, and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 3.2.2.5 Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 - 3.2.2.6 Secure bracing wires to ceiling suspension members and to supports with a minimum of 4 tight turns. Fasten bracing wires to concrete with cast-in-place or post-installed anchors. Install edge moldings and

- 1.1.6 Material Safety Data Sheets
- 1.1.7 Work Program and Methodology Submittals

1.2 SUMMARY

This section includes provisions on painting works as indicated in the technical working drawings, particularly painting and varnishing works, and other painting applications as needed to complete the project.

1.3 RELATED SECTIONS

- 1.3.1 Metal Fabrications
- 1.3.2 Exterior Walls
- 1.3.3 Interior Walls
- 1.3.4 Floor Surface
- 1.3.5 See drawings for location, quantity and extent of surfaces to receive paint and varnish.
- 1.3.6 All pertinent provisions of the General Conditions form part of this Section.

1.4 GENERAL PROVISION

- 1.4.1 Only use appropriate painting products on surface areas.
- 1.4.2 Comply with gloss levels as specified herein or on technical working drawings.
- 1.4.3 Furnish rags, paint brushes, rollers, air brush equipment, masking tapes, and other similar accessories as needed to complete work indicated.

1.5 MAINTENANCE, DELIVERY AND STORAGE

- 1.5.1 Furnish extra materials from the same products applied for maintenance purposes to owner upon substantial completion.
- 1.5.2 Store materials in tightly covered containers that are accurately labeled. Keep containers in well ventilated areas with comfortable ambient temperatures as prescribed by manufacturers.
- 1.5.3 Paint containers shall be free of foreign materials and residue.
- 1.5.4 Store unused rags, brushes, and other accessories in clean and dry storage areas.
- 1.5.5 Store used rags, brushes, and other accessories such that it does not impeded the working environment of other construction trades. Ensure that used materials are not stored such that it becomes a safety hazard.

1.6 SUBMITTALS

1.6.1 PRODUCT APPROVAL ATTACHMENTS

- 1.6.1.1 Submit color swatches for each type of product for approval. Color swatches should indicate type of finish. Include surface preparation requirements and application instructions. Indicate coat requirements. Attach shop drawings cross referencing the location of application areas and full extent of painting coverage.

1.6.2 EXECUTION APPROVAL ATTACHMENTS

- 1.6.3 Submit detailed work methodology. Indicate number of coats per paint product to be applied. Manufacturer's instructions are acceptable

1.7 QUALITY ASSURANCE

- 1.7.1 Establish a mock-up for each surface type with a different painting material. Do not proceed with painting the complete assembly without the approval of the architect.
- 1.7.2 Only source from manufacturers with minimum of 15 year experience in the market, manufacturing products as specified.

- 3.2.5.3 Use metal etchers as prescribed by the manufacturer.
- 3.2.5.4 Use wire brush to scrape rusted materials.
- 3.2.5.5 After scraping rust, use water to wash surfaces clean and dry for at least 15 minutes before application of primer.
- 3.2.5.6 Comply with manufacturer's written instructions as warranted.
- 3.2.5.7 Ensure adhesion of approved material to substrates.

3.3 APPLICATION

- 3.3.5 Prime and finish all metal assemblies prior to any installation on project.
- 3.3.6 Use applicators and techniques suited for the quality coating of the substrates.
- 3.3.7 Do not apply to wet or damp surfaces.
- 3.3.8 Uniformly apply coatings using methods prescribed by manufacturer. Do not allow runs, sags, brush marks and inconsistent sheens.
- 3.3.9 Apply as many coats as necessary for uniform appearance.
- 3.3.10 Paint surfaces behind movable equipment and furniture.
- 3.3.11 Paint backsides to match exposed surfaces.
- 3.3.12 Paint access panels, including back sides, removable hinges and covers, and other items to match exposed surfaces.
- 3.3.13 Primers may be omitted if fabrications are factory-primed.
- 3.3.14 Comply with manufacturer's written instructions for application conditions.
- 3.3.15 Do not apply finish coats in imminent weather.
- 3.3.16 Ensure that application is uniform.

3.4 INSPECTION OF FINISHED SURFACES PRIOR TO ACCEPTANCE

- 3.4.5 Secure approval from architect as endorsed by construction supervisor.
- 3.4.6 Installed fabrications shall be repainted and re-finished in case of any damages incurred during installation. Final installed fabrication permanently fixed to the project shall be in good condition.
- 3.4.7 Rejected surfaces shall be made good by the Contractor.
- 3.4.8 MASONRY (NEW SURFACE):
 - 3.4.8.2.1 All areas to be painted must be dry and free of dirt, grease, oil, dust, loose grit or mortar and other contaminants.
 - 3.4.8.2.2 Treat with Concrete Neutralizer at least a week prior to painting. Apply sufficient coats, let dry, then brush off white crystals that form on the surface.
 - 3.4.8.2.3 Apply one coat Concrete Primer & Sealer.
 - 3.4.8.2.4 Fill up all hairline cracks and crevices with Concrete Putty. Allow to dry, sand smooth, dust off, then spot prime before applying finish coats.
- 3.4.9 MASONRY (OLD SURFACE):
 - 3.4.9.2 Remove scaling, flaking, blistering and peeling off paint either with the use of paint remover, wire brushing, or scraping.
 - 3.4.9.3 For chalking old paint, use Masonry Surface Conditioner as primer.
 - 3.4.9.4 In case of mildew infestation, treat with Fungicidal Wash Solution by scrubbing or brushing. To ensure adequate treatment, allow to remain on the surface for twenty four (24) hours. Brush off and rinse with water. Let dry.
- 3.4.10 WOOD (NEW SURFACE):
 - 3.4.10.2 All areas to be painted must be dry and free of dirt, dust, grease, oil and other foreign matter.
 - 3.4.10.3 Sand surface until wood is smooth to touch and no splinters or rough edges remain.
 - 3.4.10.4 Dust off completely, then wipe with clean rag.
 - 3.4.10.5 Apply one coat of Interior Primer & Sealer or Exterior Wood Primer.
 - 3.4.10.6 Fill nail holes, cracks, dents and damaged areas with Plastic Wood Dough or Glazing Putty.

10 00 00	SPECIALTIES
10 80 1	Toilet and Bath Accessories

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

This section includes provisions on toilet and bath accessories as needed for project completion. Accessories include:

- 1.2.1 Tissue Dispensers
- 1.2.2 Soap Dispensers and Holders
- 1.2.3 Grab Bars
- 1.2.4 Towel Bars
- 1.2.5 Curtain Holder
- 1.2.6 Other accessories as needed and indicated

1.3 RELATED SECTIONS

- 1.3.1 Mirrors
- 1.3.2 Interior Architectural Woodwork
- 1.3.3 Rough Carpentry
- 1.3.4 Hardware

1.4 GENERAL PROVISION

- 1.4.1 Furnish all insets and anchorages required to set accessories in concrete as structurally stable as possible.
- 1.4.2 Verify accessory locations on technical working drawings.

1.5 SUBMITTALS

1.5.1 PRODUCT APPROVAL ATTACHMENTS

- 1.5.1.1 Submit full-size samples of units to the Architect for design review and approval. Submitted samples shall show actual finish, type, and make of material for installation.

1.5.2 EXECUTION APPROVAL ATTACHMENTS

- 1.5.2.1 Shop drawings showing setting locations of accessories based on actual site measurements. Indicate distances from nearest finish lines both measure horizontally and vertically. Indicate actual tile joints on shop drawings if any.

1.6 QUALITY ASSURANCE

- 1.6.1 Ensure that all finishes installed are approved. Use appropriate anchorages, of stainless steel make to ensure structural stability of installation.
- 1.6.2 Ensure that installed accessories do not fall off due to rustication of anchors and inserts.

2. PART 2 PRODUCTS

2.1 GENERAL MATERIALS

- 2.1.1 Verify finish of material approved by architect.
- 2.1.2 Stainless Steel: AISI Type 302, with polished No. 4 finish, 22 gauge (0.34") minimum, unless otherwise indicated.
- 2.1.3 Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

DIVISION 12
FURNISHINGS

12 00 00	FURNISHINGS
12 36 61.16	Solid Surface Countertops

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

This section includes provisions on solid surface countertops as indicated in the following areas:

- 1.2.1 Pantry/Kitchen/ Toilet
- 1.2.2 Information and Display Counters
- 1.2.3 Other parts of the project as indicated on technical working drawings

1.3 RELATED SECTIONS

- 1.3.1 Plumbing Fixtures Section
- 1.3.2 Interior Architectural Woodwork
- 1.3.3 Rough Carpentry

1.4 GENERAL PROVISIONS

- 1.4.1.1 Comply with dimensions as indicated in technical working drawings.
- 1.4.1.2 Verify actual dimensions of countertops prior to fabrication. Check and coordinate location of utilities. Fabricate countertops such that utilities are not affected in functionality.

1.5 SUBMITTALS

1.5.1 PRODUCT APPROVAL ATTACHMENTS

Submit product data, including:

- 1.5.1.1 Material description and product code
- 1.5.1.2 Samples for selection at least 100mm x 100mm in size. Show final edging of material.
- 1.5.1.3 Submit data on adhesives to be used for countertop installation. Include brand of adhesive and instructions on installation detailing surface preparations.

1.5.2 EXECUTION APPROVAL ATTACHMENTS

- 1.5.2.1 *Submit detailed requirements for subsurface preparation.*
- 1.5.2.2 Submit manufacturer's required detailed installation methodology, indicating corner blocks needed. Methodology shall clearly indicate surface preparations and tolerances.

1.6 QUALITY ASSURANCE

- 1.6.1 Source from a bonafide fabricator of countertops with skilled installers.
- 1.6.2 Source from fabricators with timely and good in-service records.

1.7 WARRANTIES

- 1.7.1 Comply with warranty requirements by manufacturer

DIVISION 13
SPECIAL CONSTRUCTION

13 00 00	SPECIAL CONSTRUCTION
13 85 0	Detection and Alarm

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

This section includes provisions on Smoke Detection systems as needed by the project. Included in provisions are the furnishing, installation, and connection of the fire alarm equipment to form a complete coordinated system ready for operation. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, control units, fire safety control devices, annunciators, power supplies, and wiring as shown on the drawings and specified. The fire alarm system shall not be combined with other systems such as building automation, energy management, security, etc.

1.3 RELATED SECTIONS

- 1.3.1 Electrical Fixtures

1.4 GENERAL PROVISION

- 1.4.1 Comply with requirements of local and national codes.
- 1.4.2 Ensure that equipment installed are compatible. Source from a single manufacturer to ensure fit.
- 1.4.3 Comply with designer's specifications as indicated on technical working drawings.
- 1.4.4 Turnover operation manuals to owner upon substantial completion.

1.5 MAINTENANCE

- 1.5.1 Test functionality of smoke detection systems prior to substantial turnover.

1.6 SUBMITTALS

1.6.1 PRODUCT APPROVAL ATTACHMENTS

- 1.6.1.1 PRODUCT DATA, including operation manuals, installation procedures,

1.6.2 EXECUTION APPROVAL ATTACHMENTS

- 1.6.2.1 SHOP DRAWINGS
Show locations of Smoke Detectors on floor plans. Show measurements as per actual site conditions. Show wiring diagrams.

1.7 QUALITY ASSURANCE

Source all equipment and pertinent accessories to complete the system from a single manufacturer to ensure compatibility.

1.8 WARRANTIES

All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of one year from the date of acceptance of the entire installation.