3.2.4Do not leave gaps between joint fillers.
3.2.5When handling, do not stretch, puncture, twist, or tear pre-formed joint fillers.
3.2.6Use bond breaker tapes between sealants and joint fillers, compression seals, or back of joints.
3.2.7Begin tooling of non-sag sealant immediately before setting and curing begins, unless otherwise instructed by the manufacturer.
3.2.8When 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.
3.2.9When 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

3.3.1Remove excess sealant and smears adjacent to joints. Only use appropriate cleaning materials.
3.3.2Protect accomplished joint sealer work during and after curing period.
3.3.3In 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

DIVISION 08
DOORS, WINDOWS, and OPENINGS

08 00 00	DIVISION 8 DOORS, WINDOWS, and OPENINGS	
08 11 0	Steel Doors and Frames	

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
1.1.8Finish Hardware Schedule and Door Schedule
1.1.9Schedule of Doors and Windows

1.2 SUMMARY

1.2.1This section includes provisions on both fire-rated and non-rated Wooden Doors, Steel Doors, Steel Door Frames, Louvers, and Vision panel assemblies.

1.3 RELATED SECTIONS

1.3.1Joint Sealants
1.3.2*Door Hardware*
1.3.3Glazing

1.4 GENERAL PROVISION

1.4.1Check all door assembly requirements on the technical working drawings. Check quantities according to types of door assemblies. In case of discrepancies, submit a request for interpretation to the Architect. Do not place final orders for door assemblies without approval and verification from the architect.
1.4.2Verify actual dimensions of all openings through field measurements and indicate on shop drawings based on actual conditions. Ensure the door fabrications shall be consistent with actual dimensions. Indicate actual dimensions of pre-installed anchorages and indicate on shop drawings.
1.4.3Manufacturers shall provide complete instructions on anchorage requirements for door assemblies. Contractor to comply with manufacturer's requirements.
1.4.4Provide proper labels on all doors. Indicate fire rating, location, and testing results according to ratings required. Do not paint over door labels. All labels shall be affixed by the manufacturer.

1.5 MAINTENANCE, DELIVERY, STORAGE AND HANDLING

1.5.1All Door Assembly deliveries shall be completely protected by crates, cardboard wrapping, or other means of protection as warranted by the manufacturer.
1.5.2Inspect doors and frames upon delivery. Do not accept damaged deliveries and do not accept deliveries inconsistent with drawing requirements.
1.5.3Storage of delivered door assemblies shall be completely weather protected. Use appropriate wood blockings and take care to store door assemblies according to the manufacturer's requirements. Do not store door assemblies in areas with high humidity and other areas that can affect the quality of the finish.

1.6 SUBMITTALS

1.6.1PRODUCT APPROVAL ATTACHMENTS
1.6.1.1 Detailed Shop drawings of each type of door indicated in the drawings as listed according to the Schedule of Doors. Be sure to indicate door designation, type, location of door installation, model of door, material description, core description, construction details, label compliances, sound and fire resistance ratings and finishes.

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.

1.6.2EXECUTION APPROVAL ATTACHMENTS

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

1.7 QUALITY ASSURANCE

1.7.1Engage manufacturers with significant experience in completing projects of the same size and scale as of the project.

1.7.2Ensure material and assembly consistency.

1.7.3Manufacturers shall have good records in on-time delivery, provides support services in installation demonstration, and with good after-sales service records.

1.7.4Only source required metal door assemblies from a single manufacturer unless manufacturer is proven to be a poor performer.

1.7.5No 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

2.1.1Comply with finish color and texture as indicated and required in the technical working drawings.

2.1.2All steel doors and frames shall have a layer of factory-applied, rust-inhibiting primer. Comply with ANSI A250.3 for performance and acceptance criteria.

2.1.3Final paint finish of the door assembly shall be factory-applied. Comply with ANSI A250.3.

2.1.4In case of damages during handling on site, restore finishes to its original condition as delivered.

2.1.5For fire rated doors, manufacturer shall provide one-coat of baked-on prime coat paint.

2.1.6Primers shall be of rust-inhibitive enamel or paint, applied vie air-dry or baking.

2.2 STEEL DOORS

2.2.1For 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.

2.2.2All doors both non-fire rated and fire-rated steel door and access door systems shall comply with ANSI/SDI 100.

2.2.3Hot-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.

2.2.4Cold-rolled steel sheets used as material for door facing shall comply with ASTM A 366/A 366M, Commercial Steel (CS), Type B, stretcher-leveled.

2.2.5Metallic-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.

2.2.6Only 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

2.3.1Prepare doors to receive specified hardware, i.e. lock rails, door handles, door sills.

2.3.2Unless otherwise indicated, all doors shall be 44mm thick as measured from finish to finish of top and bottom channels and rails.

2.3.3Comply with ANSI A250.8.
2.3.4Fabricate steel door and frame assemblies to be rigid, neat, and free from warps, buckling, and other defects visually affecting its appearance. Close top and bottom edges of doors such that fabrication is integral.
2.3.5Square off all edges unless otherwise required.
2.3.6For allowable tolerances, comply with SDI 117
2.3.7Provide for countersunk flat or oval heads for exposed screws and bolts.
2.3.8Comply with ANSI A115 series specifications for door and frame hardware preparation. Prepare doors and frames to receive concealed finish hardware. Provide cutouts, reinforcements, spaces, and other similar provisions as applicable.
2.3.9*For frames, fabricated with mitered corners. Continuously weld until face is seamless. Mechanically interlock or* continuously weld stops and rabbets. Comply with ANSI/SDI 100.

2.3.10	Allowable clearances shall be as follows:	
2.3.10.1	Jambs and heads	3.2mm
2.3.10.2	Between pairs of doors	6.4mm
2.3.10.3	Bottom of door	19mm

2.4 GLAZING, HARDWARE AND ACCESSORIES
2.4.1Provide a minimum of four anchors for each door jamb. Wall to jamb anchors shall be located opposite each other and in same relative position on side jambs.
2.4.2Provide floor anchors drilled for at least 9mm at bottom of each jamb member.
2.4.3For zinc-coated inserts, bolts, and fasteners, refer to manufacturer's standard units and comply with ASTM A 153, Class C or D as applicable.
2.4.4Provide weather-stripping and sound-stripping for jambs, heads, and sills as shown on drawings.
2.4.5All glazing for vision panels shall be of wired, safety glass as indicated in schedules.
2.4.6Provide Astragals as required by NFPA 80 for fire rated spaces.
2.4.7Provide for door louvers where indicated.
2.4.8*Provide door silencers where required.*

3. PART 3 EXECUTION
3.1 GENERAL INSTALLATION
3.1.1Comply with manufacturer's requirements for general installation procedures
3.1.2Comply with SDI 105.
3.1.3Comply with NFPA 80.
3.1.4Set frames in accurate positions. Plumb, align and brace securely until permanent anchors are set.
3.1.5Remove temporary braces and spreaders upon completion of installation.
restore all damaged surfaces.
3.1.6Provide at least three wall anchors per jamb. Use acceptable masonry wire and T-anchors where needed.
3.1.7Always install additional anchors for door assemblies higher than the standard 2100mm height.
3.1.8For smoke-control doors, comply with NFPA 105.

3.2 CLEANING AND ADJUSTEMENTS
3.2.1Restore all surfaces damaged during installation. Smooth any rusted or damaged areas.
3.2.2Remove protective wrappings upon substantial completion of project.

END OF SECTION

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

1. **PART 1 GENERAL**

1.1 RELATED DOCUMENTS

1.1.1Technical 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 on door specifications for the following areas:
1.2.1Solid –core and Hollow-core doors with laminated facing situated in Toilet, Service Areas, and other areas as specified in the technical working drawings.
1.2.2Other wooden doors as needed on the project.

1.3 RELATED SECTIONS

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

1.4 GENERAL PROVISION

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

1.5 MAINTENANCE, DELIVERY, STORAGE

1.5.1All 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.
1.5.2Store delivered doors according to standards specified by the manufacturers in their written instructions.
1.5.3Store doors in dry, weather-protected areas. Ensure that storage areas are weather tight.
1.5.4Do not deliver doors during bad weather.

1.6 SUBMITTALS

1.6.1PRODUCT 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.

1.6.2EXECUTION APPROVAL ATTACHMENTS
1.6.3Detailed work methodology on installation and restoration instructions.
1.6.4Shop 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.

1.7 QUALITY ASSURANCE

1.7.1Only engage the services of qualified manufacturers with punctual delivery records and quality products.
1.7.2Only obtain flush wood doors from a single manufacturer. In case of a change of manufacturers, ensure approval of new samples.
1.7.3Manufacturers shall properly label all doors in accordance to specifications in the technical working drawings.

1.8 WARRANTIES

1.8.1Manufacturer's warranty should include an agreement to repair or replace door assemblies with workmanship and material issues. *Material issues include all forms of warping of core and/or face veneers.*
1.8.2All doors shall be guaranteed of good quality for at least two (2) years from date of Substantial Completion.

2. PART 2 PRODUCTS

2.1.1INTERIOR SOLID-CORE DOORS

2.1.1.1 Exposed Vertical and top Edges shall be of closed-grain hardwood.
2.1.1.2 Core shall be glued wood stave or structural composite lumber.
2.1.1.3 Stiles and rails shall be bonded to the core, and the entire door face, planed abrasively prior to veneering.
2.1.1.4 Performance Grade shall be Heavy-Duty, WDMA I.S. 1-A.
2.1.1.5 Door thickness shall be 44mm.
2.1.1.6 Fire rating of Interior Solid-Core Doors shall not be less than 45minutes, unless otherwise required by the architect.

2.1.2INTERIOR HOLLOW-CORE DOORS

2.1.2.1 Use premium grade facing, with exposed vertical and top edges of any closed-grain hardwood, standard duty. Compliant to WDMA I.S.1-A.
2.1.2.2 Door thickness shall be 44mm.

2.1.3HEAVY DUTY FIRE-PROTECTION-RATED DOORS

2.1.3.1 Door material shall not contain urea formaldehyde, with mineral core specified according to required fire-protection. Stiles, edges, and astragals where needed shall also be of fire-retardant materials. Complete assemblies with intumescent seals.
2.1.3.2 Color and finish of edges and astragals shall be of the same color as the door facing unless otherwise specified.
2.1.3.3 Mineral-core doors shall be of non-combustible mineral product with 125mm blocking for top-rail, mid-rail, and bottom-rail.

3. PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

3.1.1Check delivered door assemblies and match with appropriate openings. Check swings and handle requirements. Double check plumb jambs. Reject assemblies not fit to project requirements.
3.1.2Ensure that openings are ready to accept door installation.
3.1.3Check finishes of doors to be free from imperfections. Do not install doors that are not finished according to the approved finish.

3.2 INSTALLATION

3.2.1Comply with manufacturer's written instructions and NFPA 80 for installation procedures.
3.2.2Seal edges of doors, cutouts, and mortises after fitting and machining.
3.2.3Ensure alignment and correct fit of doors. All clearances shall be uniform and beveled as indicated on drawings or as specified:

3.2.3.1 Provide 3.2mm clearances at heads, bottom of doors to top of finish, jambs, and between pairs of doors.
3.2.3.2 Where a threshold is required, provide 6.4mm clearances between bottom of door and top of threshold. Provide a door bottom seal.
3.2.3.3 Bevel all doors at 3 ½ degrees along the lock and hinge edges.

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

08 00 00	DIVISION 8 DOORS, WINDOWS, and OPENINGS	
08 42 00	Entrances	

1. PART 1 GENERAL

1.1 RELATED DOCUMENTS

1.1.1Technical Architectural Drawings
1.1.2Specifications
1.1.3*Requests 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

1.2.1This section includes provisions on aluminum framed doors for entrances as specified on technical working drawings. Verify door specifications on drawings.

1.3 RELATED SECTIONS

1.3.1Hardware
1.3.2Glazing

1.4 GENERAL PROVISION

1.4.1Comply with door specifications as indicated in the technical working drawings. Aluminum-framed doors powder coated aluminum metal. Submit brochures, samples/ shop drawings showing door assemblies drawn to scale for the approval of the architect.
1.4.2Do not install handles on aluminum.
1.4.3All aluminum frame members shall withstand minimum 25psf wind load and shall be provided with internal reinforcing if necessary.
1.4.4Use EPDM Rubber between glazing and framing.
1.4.5Include top and bottom mohair in assembly.
1.4.6Only use H-type handles, installed vertically.
1.4.7Only use lever-type door locks.
1.4.8Comply with manufacturer's standards for the structural attachment of framing members.
1.4.9Use standard pivot hinges.
1.4.10 Use heavy-duty soft-closing door closers. Install alongside the top rail.
1.4.11 Use heavy-duty deadbolt locksets with keying mechanisms to be installed at the bottom rail only.
1.4.12 All exposed areas shall be finished with a Class 1 electrolytically deposited color in clear anodized finish.

1.5 MAINTENANCE, DELIVERY, STORAGE, AND HANDLING

1.5.1Protect installed and finished doors with strippable membrane, with proper markings for safety. Keep membrane on glass until substantial completion of project.
1.5.2Upon substantial completion, restore glazing and thoroughly clean glass surface.
1.5.3Comply with manufacturer's lead-time requirements.
1.5.4All materials shall be delivered in protective packaging, sealed, undamaged, and properly labeled. All labels shall indicate precise location and orientation of doors. Handle all deliveries with care.
1.5.5Maintain temperature, humidity, and ventilation on site and storage area within recommended limits by the manufacturer.
1.5.6Adjust all moveable parts until operation is ensured smooth and safe prior to acceptance.
1.5.7Label all keys to match all doors prior to turn-over.

1.6 SUBMITTALS

1.6.1PRODUCT APPROVAL ATTACHMENTS
1.6.1.1 Submit data on manufacturing and installation details.

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.

1.6.2EXECUTION 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

1.7.1Only 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.

1.7.2Only source aluminum door assemblies from one manufacturer/ a single source.

1.7.3Only engage installers with specialized expertise in the installation of door assemblies in a project size and scope similar to the project.

1.7.4Conduct pre-installation walk thru meetings to inspect readiness of installation area.

1.7.5Provide a mock-up installation complete with surface preparation techniques. Have the mock-up approved prior to complete installation.

1.7.6Do 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.

1.7.7Do not conduct installation works in environmental conditions not recommended by the manufacturer.

1.7.8Comply with manufacturer's prescribed tolerances.

1.8 WARRANTIES

1.8.1Ensure two (2) year warranty beginning after the date of substantial completion. Warranty shall include replacement and repair of defective units or hardware installed.

1.8.2In case of breakage of glass due to improper safety management, the contractor shall replace all breakage.

2. PART 2 PRODUCTS

2.1 ENTRANCE DOORS

2.1.1Use 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.

2.1.2All storefront doors shall comply as indicated on technical working drawings.

2.1.3All storefront doors situated along the faculty rooms shall be standard pre-assembled storefront system complete with narrow door stiles.

2.1.4All storefront door finish shall be clear anodized finish, finish and color approved by the architects.

2.2 GLAZING

2.2.1All glazing shall be minimum 6mm thick, shall be impact-resistant, and adhered with weatherproof silicone sealants, and weatherproofed extruded EPDM glazing gaskets.

2.2.2All glazing shall be free of warp and twist

2.2.3Refer to Section 08810 Glass and Glazing requirements.

2.3 ACCESSORIES

2.3.1DOOR STOPS: Install heavy duty flooring door stops to match all operable door leafs. Use heavy duty floor stops of steel chrome, hairline finish installed at flooring.

2.3.2DOOR SWEEPS AND DRIP CAPS: Equip all aluminum storefront doors with door sweeps and drip caps.
2.3.3WEATHERSTRIPPERS/ JAMB SEALS: Install weather strippers to seal doors at meeting stiles for pairs of doors, door tubing, and astragals.
2.3.4LATCH HANDLES: Only use lever-type door handles with finish matching the storefront finish. Submit samples and brochures of cylinder locks to be used to the architect for approval.
2.3.5CYLINDER LOCKS: Only use cylinder locks as locking mechanisms unless otherwise approved by the architect. Submit samples and brochures of cylinder locks to be used to the architect for approval.
2.3.6HINGES: Only use offset-pivot hinges installed according to manufacturer's prescriptions.

3. PART 3 EXECUTION

3.1 INSTALLATION AND PREPARATION

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

3.2 PROTECTION

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

END OF SECTION

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

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

1.2.1This section includes provisions on all metal windows as specified on technical working drawings.

1.3 RELATED SECTIONS

1.3.1Hardware
1.3.2Glazing

1.4 GENERAL PROVISION

1.4.1All metal windows of jalousie type, fixed, casement, or awning types shall be aluminum anodized
1.4.2Submit 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.
1.4.3Refer to technical working drawings and Division 8 Hardware for details on metal window hardware specifications.
1.4.4All aluminum frame members shall withstand minimum 25psf wind load and shall be provided with internal reinforcing if necessary.
1.4.5Use EPDM Rubber between glazing and framing.
1.4.60nly use lever-type handles and latch type locking mechanisms for casement and awning windows.
1.4.7Comply with manufacturer's standards for the structural attachment of framing members.
1.4.8Use standard side hung hinges for casement windows opening from 0 to 30 degrees.
1.4.9Use 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

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

1.6 SUBMITTALS

1.6.1PRODUCT APPROVAL ATTACHMENTS

1.6.1.1 Submit data on manufacturing and installation details, indicating step by step work methodology and substrate preparation requirements.

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 window assembly. 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.

1.6.2EXECUTION 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 all hardware and fastener. Indicate window assembly labels and areas of installation. Shop drawings must show corrected dimensions of openings to receive the window assembly.

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

1.7.1Only source assemblies from experienced manufacturers with good records in timely delivery and quality installation. Manufacturer shall be capable of providing field services during and after construction.

1.7.2Only source aluminum window assemblies from one manufacturer/ a single source to ensure uniformity of material as specified on technical working drawings.

1.7.3*Only engage installers with specialized expertise in the installation of window assemblies in a project size and scope* similar to the project.

1.7.4Conduct pre-installation walk thru meetings to inspect readiness of installation area. Comply with manufacturer's requirements.

1.7.5Provide a mock-up installation complete with surface preparation techniques. Have the mock-up approved prior to complete installation.

1.7.6Do 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.

1.7.7Do not conduct installation works in environmental conditions not recommended by the manufacturer.

1.7.8Comply with manufacturer's prescribed tolerances.

1.8 WARRANTIES

1.8.1Ensure two (2) year warranty beginning after the date of substantial completion. Warranty shall include replacement and repair of defective units or hardware installed.

1.8.2In case of breakage of glass due to improper safety management, the contractor shall replace all breakage.

2. *PART 2 PRODUCTS*

2.1 FIXED, TOP-HUNG, AND CASEMENT WINDOWS

2.1.1Use 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.

2.1.2All window assemblies shall comply with make and design as specified in the technical working drawings. Validate and verify measurements as per actual conditions on site prior to fabrication and installation.

2.1.3All metal windows of jalousie type, fixed, casement, or awning types shall be of anodized aluminum finish, silver-colored, hairline finish aluminum metal in its metal parts, unless otherwise approved by the architects. No material can be installed on site without the approval of the architect.

2.2 GLAZING

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

2.3 ACCESSORIES

2.3.1WEATHERSTRIPPERS/ JAMB SEALS: Install weather strippers to seal doors at meeting stiles for pairs of doors, door tubing, and astragals.
2.3.2LATCH 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.
2.3.3HINGES: Use standard friction hinges for top-hung and casement windows. For top-hung windows, hinges shall be unhanded. 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

3.1.1Only uncrate/unpack delivered window assemblies upon commencement of installation. Check labels to match indicated location and orientation.
3.1.2Check plumb-ness of receiving window units. Inspect gaps and allowable tolerances to match manufacturer's requirements.
3.1.3Examine and verify all actual field measurements prior to fabrication. Reflect recorded measurements on shop drawings for approval.
3.1.4Clean and prepare all substrates prior to installation. Comply with manufacturer's cleanliness requirements.
3.1.5Follow manufacturers' approved standard installation procedures for installation.
3.1.6Align 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.
3.1.7Test 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.*
3.2.2Protect installed products until completion of project.
3.2.3Upon completion of project, remove temporary coverings and protection of adjacent areas.
3.2.4Remove all construction debris from the project site in a safe and proper manner. Dispose debris properly.
3.2.5Clean all installed products in accordance to manufacturer's prescriptions.
3.2.6Touch-up, repair, and replace damaged products prior to Substantial Completion.

END OF SECTION

08 00 00	DIVISION 8 DOORS, WINDOWS, and OPENINGS	
08 70 00	Hardware	

1. **PART 1 GENERAL**

1.1 RELATED DOCUMENTS

1.1.1Technical Architectural Drawings
1.1.2Specifications
1.1.3*Requests 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

1.2.1This section includes provisions for finish hardware for doors and windows where intended for this project.

1.3 RELATED SECTIONS

1.3.1Section Steel Doors and Frames
1.3.2Flush Wood Doors
1.3.3Interior Architectural Woodwork
1.3.4Rough Carpentry

1.4 GENERAL PROVISION

1.4.1Comply with specifications as indicated in the door hardware schedule.
1.4.2*The contractor shall provide a key-cabinet of a hinged-panel type that can be secured by a lockset. The Key cabinet* shall house all keys to all portions requiring a locking mechanism. Situate the key cabinet in an secure area, not exposed to the public, and accessible only to the owner's administrators.
1.4.3Use appropriate hardware size in proportion to the door/window/panel/any surface requiring the hardware. Check load capacity of hardware, especially hinges to match the load requirements of the door/window/panel/any surface requiring the hardware mechanism.
1.4.4The contractor shall provide and install all necessary hardware intended for the project. This includes the following but not limited to:

1.4.4.1 Hinges
1.4.4.2 Locks and Dummy Trims
1.4.4.3 Cylindrical locks with lever handle
1.4.4.4 Tubular locks with lever handle
1.4.4.5 Deadbolts
1.4.4.6 Fire Exit and Panic Exit Devices
1.4.4.7 Door Closers
1.4.4.8 Floor Closers
1.4.4.9 Door stops
1.4.4.10 *Door trims*
1.4.4.11 Silencers
1.4.4.12 Door pulls
1.4.4.13 Push plates
1.4.4.14 Armor Plates
1.4.4.15 Kick Plates
1.4.4.16 Flush bolts
1.4.4.17 Door Viewers
1.4.4.18 Door Coordinators
1.4.4.19 Flush pull
1.4.4.20 Door seals and weather-stripping

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.

2.2 DOOR HARDWARE FOR METAL/ALUMINUM FRAMED STOREFRONT DOORS

2.2.1Coordinate with requirements of manufacturers.
2.2.2Comply with required hardware as specified in the technical working drawings.
2.2.3Only install cylindrical deadbolts with keying mechanisms on the lower rails of doors.
2.2.4Use heavy-duty UL Listed cylindrical deadbolts to be installed on bottom rail of door.
2.2.5Install heavy-duty door closers on the top rail.

2.3 DOOR HARDWARE FOR WOOD PANEL DOORS

2.3.1*Coordinate with requirements of manufacturers.*
2.3.2Comply with required hardware as specified in the technical working drawings.
2.3.3Verify installation and hardware mechanisms and secure fit with door panels.
2.3.4Use heavy duty cylindrical locks with lever-type handles. Verify handedness of each lever-type installation.
2.3.5Use heavy-duty UL Listed cylindrical deadbolts to be installed on bottom rail of door.
2.3.6Install heavy-duty door closers on the top rail.
2.3.7Install heavy-duty door closers alongside top rail.

2.4 DOOR HARDWARE FOR TOILETS

2.4.1Use heavy-duty privacy locksets, lever-type handles. Verify handedness of each lever-type installation.

2.5 KEYING SYSTEM

2.5.1Provide at least three sets of keys for every lock, group, or set of locks. Test all key sets and verify matching locks. Label properly and store all key sets in key cabinet to be provided by contractor.
2.5.2Provide a master key for all utility spaces.
2.5.3Situate all keys in hinged key cabinet, wall mounted key cabinet. Situate key cabinet in a secure area accessible to administrative staff or security personnel only. Provide extra 50% capacity in the key cabinet on top of all required *keysets. Label key sets accordingly.*

3. PART 3 EXECUTION

3.1 GENERAL INSTRUCTIONS

3.1.1Comply with manufacturer's instructions for lockset installations.

3.2 GENERAL INSTALLATION

3.2.1NUMBER OF HINGES REQUIRED:

Comply with the following quantities of hinges, unless otherwise specified in the technical working drawings and/or as needed/recommended by the manufacturer to comply with warranties.

Provide two (2) pieces hinge for doors with heights up to 1500mm.
Provide three (3) pieces hinge for doors with heights over 1500mm but not over 2290mm.
Provide four (4) pieces hinge for doors with heights over 2290mm but not over 3000mm.
For doors over 3000mm in height, provide additional hinge for each additional 750mm of door height or fraction thereof.

3.2.1.1 LOCATION OF HINGES:
TOP HINGE: Not over 244mm from inside of frame rabbet at head to center line of hinge.
BOTTOM HINGE: Not over 264mm above bottom of door frame to center line of hinge
CENTER HINGE: Located at equal distances between top and bottom hinges.

3.3 CLEANING AND PROTECTION

3.3.1Protect hardware from damages by covering.
3.3.2Ensure all hardware are working and operating smoothly at the time of substantial turnover.

END OF SECTION

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

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 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

1.3.1Metal Windows
1.3.2Louvers and Screens
1.3.3Metal Fabrications

1.4 GENERAL PROVISION

1.4.1Only use tempered/heat-treated glass on all portions of the project site.
1.4.2Comply 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

1.5.1Protect glazing materials from damage. Wrap delivered glazing in protective film to protect it from scratches and breakage.
1.5.2Use wood blocks to separate glass panes and avoid breakage.
1.5.3Protect 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.
1.5.4Apply primers to joint surfaces where required for adhesion of sealants, as determined by pre-construction sealant-*substrate testing.*

1.6 SUBMITTALS

1.6.1PRODUCT 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.

1.6.2EXECUTION 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

Comply with manufacturer's requirements for warranties. Warrant glazing for at least two (2) years from substantial completion of project.

2. PART 2 PRODUCTS

2.1 GENERAL PRODUCTS

2.1.1FLAT GLASS: Compliant to ASTM C 1036 "Standard Specification for Flat Glass".
2.1.2HEAT-TREATED GLASS STANDARD: Compliant to ASTM C 1048 requirements.
2.1.3*CLEAR FLOAT GLASS: Type*

2.2 SILICON SEALANT, AND OTHER GLAZING ACCESSORIES

2.2.1Only use clear sealants.
2.2.2Select glazing compatibility of sealant with other materials on the assembly, namely frames and glass and other parts of the system.
2.2.3GASKETS: Neoprene extrusions of size and shape as needed by the assembly. Use color intended for the project. Comply with ASTM C 542.
2.2.4SETTING BLOCKS: : Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness
2.2.5SPACERS: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.
2.2.6EDGE BLOCKS: Neoprene, EPDM or silicone blocks, as required for compatibility with glazing sealants, of size and hardness required to limit lateral movement (side-walking) of glass.
2.2.7COMPRESSIBLE FILLER RODS: Closed-cell or waterproof- jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.

3. PART 3 EXECUTION

3.1 GENERAL EXECUTION

3.1.1Do not proceed with glazing works when glazing is wet due to rain and/or subject to condensation due to ambient weather conditions.
3.1.2Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 150mm (6") from corner, unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.
3.1.3Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 3.175mm (1/8") minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
3.1.4Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.
3.1.5Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.
3.1.6Tempered Glass: Glass shall have clean-cut, factory fabricated edges. Field cutting will not be permitted.
3.1.7Provide compressible filler rods of equivalent back-up material, as recommended by sealant and glass manufacturers.
3.1.8Force sealant into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.
3.1.9Tool exposed surfaces of sealant to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.
3.1.10 Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement.
3.1.11 Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.
3.1.12 Lock-Strip Glazing: Comply with ASTM C 716 and gasket manufacturer's printed recommendations. Provide supplementary wet seal and weep system unless otherwise indicated.

3.2 *EXAMINATION*

3.2.1Conduct pre-fabrication on-site meetings to inspect actual site conditions prior to fabrication. Inspections shall be in the presence of manufacturing.

3.2.2Check installation tolerances, including size, squareness, and offsets at corners. Check if functionality of weep systems will not be impeded.

3.2.3Do not commence glazing works until unacceptable conditions are corrected.

3.3 FABRICATION

3.3.1Verify 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

3.4.1Do 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

3.5.1Affix 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.*

3.5.2Remove non-permanent labels and clean surfaces upon substantial turnover.

3.5.3Examine 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.

3.5.4Wash glass on both surfaces prior to date of inspection for turnover.

3.5.5Comply with manufacturer's methods for glass cleaning.

END OF SECTION

08 00 00	DIVISION 8 DOORS, WINDOWS, and OPENINGS	
08 81 4	Mirrors	

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 mirrors as installed in toilet areas and other areas as indicated on the drawings.

1.3 RELATED SECTIONS

1.3.1 Rough Carpentry
1.3.2 Toilet and Bath Accessories

1.4 GENERAL PROVISION

1.4.1 Mirrors installed in Toilets and Baths shall be adhered to the backing material using prescribed adhesives. No bolts and screws shall protrude or be reflected on the mirror.
1.4.2 Unless otherwise indicated on the technical working drawings, all mirrors in toilet areas shall be mounted 150mm *above the top of the lavatory.*
1.4.3 Align and flush all mirrors with the wall tile layout. Indicate in shop drawings and secure mounting height approvals from the architect.

1.5 SUBMITTALS

1.5.1 PRODUCT APPROVAL ATTACHMENTS

1.5.1.1 Sample showing final finish edges of the material. Sample size shall be 300mm x 300mm, adhered to backing material. Samples shall be properly labeled indicating thickness and grade/quality of mirror.

1.5.2 EXECUTION APPROVAL ATTACHMENTS

1.5.2.1 Submit shop drawings showing mounting height of mirrors. Reflect actual heights of lavatory, and neighboring finishes as seen on site. Reflect distances from existing finishing grooves such as tiles and similar items.

1.6 QUALITY ASSURANCE

Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and National Association of Mirror Manufacturers (NAMM) in its publication "MIRRORS, Handle with Extreme Care, Tips for the Professional on the Care and Handling of Mirrors", unless more stringent requirements are indicated.

1.7 WARRANTIES

1.7.1 Warranties shall include replacement of item in case of cracks or defects in mirror silver coatings and other damages occurring due to undue cause, i.e. changes in ambient temperature, that damage the final quality of the mirror.
1.7.2 Warranties shall be in effect after installation, during construction and one (1) year from substantial completion of project.

2. PART 2 PRODUCTS

2.1 GLASS

2.1.1 Compliant to ASTM C 1503, must be low in lead content and shall be copper free.