

SECTION 05

ALUMINIUM WINDOWS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Extent of Work: The extent of aluminium windows, storefronts are indicated on drawings and includes but is not limited to the provision and installation of aluminium windows, doors and frames.

1.02 QUALITY ASSURANCE

- A. Performance and Testing: Fabricate, assemble and erect units to meet or exceed the following performance requirements:

1. Thermal Movement: Fabricate components from manufacturer's stock systems which have been designed to provide for expansion and contraction resulting from ambient temperature range of 50°C.
2. Wind Loading: When tested in accordance with BS 5368 Part (3) the units shall withstand a uniform load of not less than 1.0 KPa, acting inward and also acting outward and the deflection of any member shall not exceed 1/175 of its span.
3. Air Infiltration: When tested in accordance with BS 4315 air infiltration shall not exceed 0.00015 m²/s/m crack length under a wind of 40 km/hr.
4. Water Infiltration: When tested in accordance with BS 4315 there shall be no water infiltration when water at 3.4 liters/m²/min. is applied under a pressure of 0.20 KA for a 15-minute test period.

- B. Codes and Standards: Comply with the applicable requirements of the following codes and standards:

BS British Standards

476 Specification for Fire Tests on Building Materials and Structures.

BSEN 499 Specification for Welding Consumables, Covered Electrodes for Manual Metal Arc Welding of Non-Alloy and Fine Grain Steels.

1449 Part 2: Stainless and Heat Resistant Steel Plate, Sheet and Strip.

4315	Methods of Test for Resistance to Air and Water Penetration.
4870	Specification for Approved Testing of Welding Procedures.
4871	Specification for Approved Testing of Welders Working to Approved Welding Procedures.
4873	Specification for Aluminium Alloy Windows.
5368 Part (3)	Specification for Wind Resistance Tests.
5411 Part (3)	Eddy Current Method for Measurement of Coating Thickness of Non-Conductive Coatings on Non-Magnetic Basis Metals.
6161(7)	Accelerated Determination of Light Fastness of Coloured Anodic Oxidation Coatings Using Artificial Light.
6213	Guide to Selection of Constructional Sealants.
6830	Specification for Continuously Hot-Dip Aluminium/Zinc Alloy Coated Cold Rolled Carbon Steel Flat Products.

1.03 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's specifications, recommendations and standard details for the specified products, including fabrication, finishing, accessories and other components of the work. Include certified test laboratory reports as necessary to show compliance with the requirements.
- B. Shop Drawings: Submit shop drawings for the fabrication and installation of storefront and entrance units and associated components of the work. Include wall elevations, typical unit elevations and full size detail sections of every typical composite member. Show anchors, joint system, weather-stripping, expansion provisions and other elements not included in manufacturer's standard data, including glazing details.
- C. Samples:
 1. Submit samples of each required type and colour of aluminium finish on 300mm long sections and shapes and 150 mm squares of sheet aluminium as required for the units specified. Where colour or texture of finish will

vary slightly for the work, include two or more pieces in each sample, to show the limits of such variations. Samples will be reviewed by the Engineer for color and texture only. Compliance with other requirements shall be the exclusive responsibility of the Contractor.

D. Tests Reports:

1. Submit written, certified test reports for the following tests required by this specification; record the dates, locations and methods of testing and interpret the test result.
 - a. Air infiltration tests.
 - b. Water penetration tests.

PART 2 - PRODUCTS

2.01 MATERIAL AND COMPONENTS

A. General:

2. All openings should be provided with concrete and stone frame having the same thickness of the wall, and all stone lintels should be connected to structural elements.

B. Aluminum Windows:

1. Provide sizes, shapes and profiles as indicated for the windows and window wall system.
2. Provide thickness as necessary to comply with the structural loading requirements, but not less than the following:
 - a. Principal Extrusions: 2.5 mm minimum thickness.
 - b. Principal Formed Sheet Members: 2.5 mm minimum thickness.
 - c. Extruded Glazing Stops and Trim: 1.6 mm minimum thickness.
3. Provide aluminium alloy and temper for each shape, as recommended by the manufacturer to comply with the requirements of performance, fabrication, application of finish and control of colour. Comply with BS 4873.

4. Sealant: Unless otherwise indicated for sealants required within fabricated units, provide type recommended by manufacturer for joint size and movement, to remain permanently elastic, non-shrinking and non-migrating and approved by the Engineer. Comply with "JOINT SEALANTS" section for installation.
5. Glass and Glazing Materials: Provide glass and glazing materials which comply with requirements of "GLAZING" section.

2.

2.03 FABRICATION

A. General:

1. Sizes and Profiles: Required sizes, including profile requirements shall be indicated on approved shop drawings.

2.04 FINISHES

- A. Preparation: After fabrication, prepare aluminium surfaces and carry out anodization in compliance with BS 1615.
- B. Finish: Unless otherwise directed, provide electrostatic polyester powder coated aluminium finish, having a film thickness of not less than 25 microns, medium matte. Apply an approved temporary protective coating of clear acrylic lacquer.

PART 3 - EXECUTION

3.01 INSPECTION

- A. The Contractor shall examine the substrates and the conditions under which entrance and storefront units shall be installed and correct unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Engineer.

3.02 INSTALLATION

- A. Comply with manufacturer's specifications and recommendations for the installation of storefronts and entrances.

- B. Set units plumb, level and true to line, without warp or rack of frames or panels. Anchor securely in place. Separate aluminium and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
- C. Set sill members and other members in a bed of compound, or with joint fillers or gaskets to provide weather tight construction. Fillers and gaskets shall be installed during and after erection of components.
- D. Refer to "GLAZING" section for installation of glass into the work.

3.03 MEASUREMENT AND PAYMENT

- A. Measurement:

Aluminum panels, windows, doors and louvers shall be enumerated stating the type, number of leaves and dimensions