

Product specification

Avro Hollows, Newton Heath, Manchester

The scope of work includes the detailing, supply and installation of all components to the balcony including, fixings, flashings, gaskets and sealants to provide an enclosed balcony space, also known as a sunspace or wintergarden, which is an external unheated space protected from the wind and rain but openable to allow plenty of ventilation.

There are four blocks with a similar configuration, as follows:

Dobson Court
Lancaster Court
Lincoln Court
Shackleton Court

Supplied in compliance with the relevant standards set out below and the following drawings:

- 12732 - Initial plan and elevation drafts_Avro Hollows fin

Manufacturer

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Drawings

Design drawings are prepared by the Sunparadise specialist reseller who are be responsible for the design, supply and installation of the system. All design drawings will be approved by the architect prior to manufacture.

Design

The design of the system has been based upon the loadings as found in BS 6399-2 & EN1991-1-4. Whilst we believe our assessments to be reasonable, they are fundamental to the design. The system is bespoke and is designed to suit the specific project requirements; all dimensions are stated in mm and can be varied to suit. A full set of structural design calculations for the aluminium profiles and glass will be provided as part of the design service on receipt of order.

Scope of works

The elements will be prefabricated and pre-glazed in a factory in a four-sided construction known as WD-100.

Each element will comprise aluminum extrusions; polyester powder coated prior to assembly, assembled with preformed extruded corners.

Infill sections will be single glazed glass (as specified below), or a choice of other suitable materials, which is fully supported on four sides and internally glazed.

The frameless sliding folding opening system consists of individual glass panes which span between horizontal aluminium extrusions, the glass is all in one plain (to prevent forming a ledge which pigeons can rest on) and is supplied complete with a tensioning system to ensure the glass does not rattle in the wind. There are 3mm design gaps between glass joints to allow natural daily ventilation.

The system is drained on each transom.

The system is bespoke, designed to suit the specific project requirements.

Description

There are 4 stacks of inset balconies per block which are located on the four corners of the block with two stacks on the front elevation and two on the rear. The balconies form a continuous stack which extend from the ground floor to the 15th Floor. Each stack is 3400mm wide.

To replace the existing balustrade with storey high elements which are secured to the outside face of the existing concrete floor slab which will be retained. The balcony element spans from one floor to the next with no requirement for fixing to the side reveals of the balcony opening.

The interface between the balcony system and the insulated render system should be considered. It is good practice to extend the insulated render system into the balcony because the balcony wall

will form part of the external façade. If the render system is 130mm thick then the balconies will effectively reduce in width by 260mm.

The installation of the balcony system on the outside face of the concrete slab will normally mean that the location of the balcony balustrade is further out thus extending the depth of the balcony, this could be as much as 150mm.

System features

The balcony element is formed with powder coated aluminum extrusions mechanically fixed on the corners and powder coated prior to assembly. Horizontal transoms are connected to vertical members with all the extrusions being drained. The system comprises a balustrade section and an upper opening section.

The balustrade section will be subdivided into 3 equal vertical zones and will be supplied glazed internally with aluminum glazing beads. The filling in the balustrade will be 5mm thick powder coated aluminum plate which will be designed to withstand barrier loadings up to 1100mm above finished floor level.

The upper section of the element will be fully openable using a sliding folding system of 6mm clear toughened frameless safety glass. A parental lock/ventilation stay will be fitted onto each element to allow the first glass to be opened 100mm and to be secured in the open position. A wall restraint stay will be supplied to allow the glass to be opened into the open position and secured in the open position. The stay can be used to secure one or all of the glasses in the open position.

The elements are secured to the outside face of the existing concrete slab using galvanised steel fixing brackets and stainless-steel anchors, no additional structure is required. The horizontal zone in front of the concrete floor slab is sealed with a noncombustible insulation to prevent the passage of smoke up the balcony stack.

All junctions between elements and the insulated render system and to form the horizontal detail between elements are made using 1.5mm thick powder coated aluminium pressings which are retained in position using EPDM gaskets.

If required a 3mm thick aluminium drainage tray and aluminium spitter pipe will be installed at the front edge of the slab / bottom of the glazed element to each balcony which will discharge straight out of the balcony, this is only designed to discharge any water from within the balcony (which is minimal) and is not linked to the roof drainage system. A fire stop is installed on each horizontal floor slab to provide a continuous 30-minute barrier.

Materials

Aluminium extrusions:

Aluminium alloy AlMgSi0, 5 F22.

Extruded aluminum, four-sided elements to be pre-glazed in controlled factory conditions.

All aluminium extrusions are supplied with a polyester powder coated finish in a standard RAL colour from the Interpon D range.

Polyester powder coating:

- a. Painted surfaces are coated to Interpon D1036
- b. The coating thickness is between 60-120 my.
- c. Application is done industrially after the following preliminary treatment to the aluminium:
- d. Alkaline degreasing
- e. Alkaline
- f. Neutralization and deoxidation
- g. Rinsing and drying
- h. Application of polyester powder
- i. Hardening at 210°C

Characteristics of the coating system:

Corrosion class K3 (DS419) equivalent to a corrosive environment found in a densely built-up area in an industrial district coastal region where the material is above water level

Aluminium extrusion colour:

RAL **** gloss 80%±5%.

Glazing bead:

Extruded aluminium profiles to facilitate internal glazing, RAL ****.

Folding glass profiles & end pieces:

Aluminium sections are stop ended with a cast plastic section which is supplied coloured to RAL 7021.

Fillings:

5mm thick aluminium plate – internally glazed

Project specific calculations are provided to ensure loading criteria is met.

All fillings are internally glazed

Folding glass:

Clear toughened unframed security glass (BS 6206 class A).

(Security glass is delivered with a flatness tolerance of 2mm per. linear metre)

Sliding gear is hung from the top rail

Parental lock/ventilation opening stay is supplied as standard and fitted to the 'first' glass.

A ventilation stay is supplied at each end of the element.

Single glazed folding glass is openable 90°

Locking strap to secure the glass in the open position

Ventilation:

Stainless steel ventilation opening stays are supplied as standard (to keep the 1st glass in a semi open position of approx. 100mm).

A 3mm design gap vertically between each of the open glass sections provides natural trickle ventilation.

The trickle venting requirement through the primary façade must be matched through the balcony system

Fixing brackets:

S275 hot dip galvanised mild steel C brackets fixed to the outside face of the concrete floor slab.

Each bracket will be installed 200mm in from the element corner, additional brackets are supplied along the length of the element as required by the design of the system.

Fixings:

All fixing are M10 x 40 supplied in A2 grade stainless steel.

Concrete anchors:

M10 x 120 FAZ II through-bolts in A2 grade stainless steel.

Fire stop:

A 30 minute fire/smoke stop is installed between horizontal floors. The insulation will be continuous along the full length of the horizontal floor slab of the balcony opening.

Aluminium pressings:

1.5mm aluminium closure pressings are supplied to the perimeter frame internally & externally and secured using mechanical fixings and EPDM gaskets. Larger aluminium fascia panels between floors will be designed to suit project specific requirements and dimensions in a suitable thickness of aluminium up to a maximum of 6mm thick.

Pressing have a powder coated finish RAL ****

Standards

Design to: BS EN 1090-2 Execution of steel structures and aluminium structures. Part 2. Technical requirements for steel structures.

BS 6399-1: 1996 Imposed loads for use in designing buildings

BS6399-2: 1997 Loading for buildings. Part 2: Code of practice for wind loads,

CSN EN 1991-1-4 Eurocode 1: Actions on structures - Part 1-4: General actions - Wind loads

BS 952-1:1995 Glass for glazing

BS EN ISO 1461:2009. Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods.

BS 572:1985 Specification for interchangeable conical ground glass joints

BS EN 12600:2002 Glass in building. Pendulum test. Impact test method and classification for flat glass.

BS 6262-4:2005 Glazing for buildings. Code of practice for safety related to human impact

BS 4873:2016 Aluminium alloy windows and doorsets

BS 8118-1:1991 Structural use of aluminium. Code of practice for design

BS 8118-2:1991 Structural use of aluminium. Specification for materials, workmanship and protection

BS 8579: 2020 Guide for the design of balconies and terraces

BS EN 12206-1:2004 Paints and varnishes. Coating of aluminium and aluminium alloys for architectural purposes. Coatings prepared from coating powder