

GLASS BALUSTRADES

TRADE SPECIFICATION

GENERAL

- a) This Trade Specification gives information regarding the procurement of materials, installation of materials and on-site working methods to ensure the correct standards and compliance is achieved on site. This trade specification is to be read alongside working drawings, BDW Standard Details, manufacturer's literature and the Barratt Construction Best Practice Guide. Any statutory requirement relating to the Trade Specification takes precedent. If any doubts remain regarding the information given or further clarity is required, these concerns must be communicated to the Commercial Department BEFORE proceeding.
- b) **BDW Trading Limited**
Barratt Homes and David Wilson Homes are trading names of BDW Trading Limited "the Company".
- c) **Clearing**
The Contractor is responsible for clearing up and safe removing waste materials arising from execution of the Works, as part of this Trade Specification.
- Waste materials must be removed as work progresses, ensuring that all waste materials have been removed following the completion of the works and taken to waste segregation area for sorting by subcontractor.
- Failure to comply with this requirement resulting in the Company's labour performing this task will result in contra charges.
- d) **Contract Conditions**
The Contractors attention is drawn to the Company's Conditions of Contract and General Terms.
- e) **Defective Workmanship**
All defects arising from poor workmanship by the Contractor or, by the Contractor not carrying out the Works in accordance with this Trade Specification are to be remedied by the Contractor at no cost to the Company.
- Failure by the Contractor to carry out this contractual obligation, resulting in an alternative Contractor being instructed to carry out such remedial work, will incur the Contractor with the cost thereof.
- Should any element of work, undertaken by a preceding trade, be considered deficient and inhibiting progression by this trade, all such defects must be brought to the attention of BDW Site Management for remedy prior to the commencement of the works.
- f) **Health & Safety**
All operatives are to be inducted on site in accordance with Barratt Health and Safety Policy.

It is the responsibility of the contractors to provide their own PPE equipment that must be worn at all times while on site. All necessary PPE based on your assessment of risk or where required by statutory provision or site rules to be supplied by contractor.

All operatives are to be in possession of a valid CSCS Card.

No 240v tools are allowed on site.

Where fall protection systems have been provided these shall be used at all times.

g) **Materials**

It is the Contractors responsibility for checking materials delivered directly to site for any damage, colour variation and correct quantities prior to unloading. Should significant quantities of damaged materials be identified, these must be reported to the supplier before accepting the consignment.

The Contractor is responsible for unloading, protecting and safe storing of all of their own materials to avoid damage and surface contamination.

The Contractor must ensure that all materials are satisfactory for use and have not been subject to deterioration and conform to the relevant BSS, if applicable or Agrément Certificates, NHBC and Local Authority requirements. Failure resulting from the Contractor using unsuitable or damaged materials will result in the Contractor being liable for any costs in rectifying the same.

h) **Site Condition**

The Contractor is to examine the drawings, visit the site in order to ascertain position of site office, compound, electricity and water supplies.

Accessibility may vary depending on the location, soil type, weather conditions and such like. These factors must be taken into consideration at tender stage as no claims will be entertained for additional costs due to adverse site conditions.

i) **Sub-Contractor**

The Contractor must not further sub-contract any part of the Works to another Contractor without the prior knowledge and written approval of the Company.

It is essential that the Contractor liaises with all other trades associated with the Works to ensure the sub-structure is installed correctly and appropriately prior to work being carried out.

Where fire proofing or fire stopping measures are likely to follow this trade, it is essential the preparation work is sufficiently prepared. Please make reference to the Fire Proofing Trade Specification and associated standard details and drawings to ensure knowledge of requirements. If in doubt, please ask for clarification, prior to signing this document.

Manufacturing engineering judgements should be requested for non - standard applications. Please contact Group Design and Technical for assistance.

1. QUOTATION

- 1.1 The Contractor must provide a fully inclusive lump sum (labour and materials) fixed price quotation per House Type for GLASS BALUSTRADE works broken down in to the following sections:

2. DESIGN

- 2.1 The design must be in accordance with the Approved Documents to the Building Regulations applicable at the date of the submission of the Initial Notice and the latest versions of the following reference documents and criteria:

Regardless of any lesser requirements of the British Standards and Building Regulations referred to below, laminated glass shall always be used irrespective of whether the balustrade is fully-framed, partially-framed or free-standing. The glass must remain in-situ if a glass panel fails. Handrails must also be provided to free-standing balustrades as specified.

Handrails to framed / partially framed balustrades should be provided where required in accordance with the relevant British Standards and Building Regulations.

Fire Spread – Where glass balustrades will form part of an External Balcony. Refer to Divisional Technical / Group Technical for specific requirements.

BS 6180: 2011 Barriers in and about buildings – Code of Practice.

BS 6399: Part 1: 1996 - Loading for Buildings Part 1 – Code of Practice for dead and imposed loads and BS EN 1991.

BS EN 12600: Glass in Buildings.

Approved Document K 2013 edition – for use in England.

Must have a minimum height 1100mm.

Must not have gaps in the barrier greater than 100mm.

Must not be easily climbed by a child.

- 2.2 Handrails are to be provided to free-standing balustrades which must:

- (i) be attached to the glass in such a manner that should a glass panel fail it will remain in position and will not fail if the design load is applied across the resulting gap;
- (ii) be made of brushed stainless steel, PPC or anodised aluminium;
- (iii) Extend over all glass panels and joints must be sleeved and located at the centre of a panel.

3. CALCULATIONS & TESTING

- 3.1 All structural calculations to be prepared by a chartered structural engineer with a proven experience in glass design.
- 3.2 Calculations must be prepared to demonstrate that the glass construction and fixing assemblies proposed are structurally adequate and that deflections under imposed loads do not exceed the stated criteria.
- 3.3 Calculations must include an assessment of the structural integrity in the event of one glass pane in the laminate failing.
- 3.4 The following tests must be undertaken to ensure containment from a person falling against them by resisting horizontal forces:
- (i) Proof load testing of balustrades support fixings.
 - (ii) Load testing on glass balustrades assembly on or off site. A minimum of 3no. tests or 1% of the of the glass balustrade installation (whichever is the greater) shall be subject to physical testing. Residual deflections shall not exceed 0.5mm when subject to load testing.
 - (iii) The following imposed load criteria must be met:
 - BS 6399 Part 1 1996 Table 4 as a minimum, loads to be increased in areas susceptible to over-cladding.
 - Normal Residential Case (increased loads are applicable for areas susceptible to overcrowding):
 - 0.74 kN/m Horizontal uniformly distributed live load.
 - 1.0 kN/m² Uniformly distributed load applied to infill.
 - 0.5 kN Point Load applied to part of infill.
 - Loads imposed by abseiling maintenance.
 - Impact loads to BS EN 12600.
 - (iv) Vertical deflection limit L/65 i.e. 17mm maximum.
- 3.5 Testing shall be undertaken by a UKAS testing authority with written results provided to the divisional office and NHBC prior to installation.

4. GLASS

- 4.1 All glass balustrades, regardless of whether they are fully, partially-framed or free-standing, must consist of laminated glass construction which will remain in place following breakage. Monolithic glass of any type must not be used.
- 4.2 The temper and thickness of glass is subject to detailed design calculations and design risk assessment. Heat strengthened laminate glass is the preferred construction but combinations of toughened and heat strengthened glass will also be considered. Glass thermal safety calculations required where annealed laminate glass is considered.



- 4.3 All toughened glass used in laminate build-up must be heat soak tested and records provided at the time of delivery to site. Records must identify individual batches of glass.
- 4.4 All exposed glass edges must be abraded and polished.
- 4.5 All safety glass to be permanently marked in a visible position to be agreed with the divisional office.
- 4.6 Glass Interlayers must be PVB or Du Pont Ionoplast and carry a 12-year warranty against delamination.
- 4.7 Laminated glass shall be free of bubbles, defects, inclusions, edge damage and scratches as limited by BS EN ISO 12543-6: 1998 Glass in building-Laminated glass and laminated safety glass—Part 6 Appearance.

5. FIXINGS

- 5.1 All anchor bolts, fixings screws, nuts and bolts shall be made of grade A2 or A4 stainless steel.
- 5.2 All brackets and shims shall be fabricated from galvanised steel, stainless steel or structural grade aluminium.



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TRADE SPECIFICATION AGREEMENT

This Specification Agreement relates specifically to the Company's development at
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I confirm that I have read and understood the foregoing Specification and any necessary associated documentation referenced, such as standard specifications, drawings or quoted details and that my prices include for all items contained therein and will "Remain Fixed" for a period of:
..... as outlined in the Enquiry letter.

SIGNED:

FOR AND ON BEHALF OF:
.....

DATE:

N.B. The contractor is to sign this Agreement and return it with his Quotation. Any prices received without this Agreement will be excluded from consideration.

- Revised: First Release 01.05.2015
- Rev A – 1st July 2017
- Rev B – 1st January 2019
- Rev C – 1st February 2022