



Technical Bulletin 4 – Revision A

Certifying the Structural Design of Conservatories

Introduction

SER is frequently asked to advise on the responsibilities of a Certifier when he/she is certifying in relation to the structure of a conservatory, the design responsibility for which normally lies with the manufacturer or supplier.

As with all certification, the duties of the Certifier are driven by the requirements of legislation. Conservatory structures that are used in domestic situations can be difficult to evaluate using normal structural techniques and the Certifier may have to place greater emphasis on engineering judgement and an assessment of the risks associated with failure when certifying the design of this type of structure. This Technical Bulletin has been prepared to assist Certifiers and their clients on how the structural certification of this type of building may be approached.

For the purposes of the Building Bye-laws (Jersey) 2007 a conservatory is an extension to a building which:

- a) has not less than three quarters of its roof area and not less than one half of its external wall area made from translucent material and;
- b) is thermally separated from a building by walls, windows and doors with the same U-value and draught-stripping provisions as provided elsewhere in the building.

In the Building Bye-laws it is recognised that small conservatories, constructed at ground level, do not need to be brought under building regulation control and these have been excluded from the requirement to obtain a building permit. These include all conservatories, which have an internal floor area not exceeding 20 square metres, which satisfy the criteria listed in Class 6 to Schedule 1 of the Building Bye-laws. All such conservatories are exempt from the requirements of the Bye-laws by Bye-law 3.

Small conservatories which are constructed at the same time as the house are still considered to be an exempt extension and are similarly excluded from building regulation control, and the scope of the SER certification, unless the conservatory is not thermally separated from the house in which case it is not considered to be an exempt extension and will be expected to comply with all relevant Bye-law requirements and will be deemed to be covered by the SER certificate for the dwelling.

Larger conservatories and those built above ground level, therefore fall within a class of building that should be controlled by Building Bye-laws and for which a building permit must be obtained. A conservatory which is not exempt from the Bye-laws which is constructed at the same time as other

building work will normally form part of the building work for which a permit has been issued. It will therefore need to be included within the scope of the design certificate for the other work.

General Approach to Certification

On occasions the Certifier may be appointed to design the foundations of a conservatory (the superstructure of which is to be designed, supplied and erected by a specialist contractor) and certify the full structure. The superstructure may be supplied as a complete unit that has been subject to independent testing and certification by a UKAS accredited scheme (BBA for example). In this instance the Certifier may only need to check that any requirements/limitations relating to the test certification (such as wind and imposed loading) are properly taken into account in the design being certified and that the superstructure is adequately restrained against uplift.

More usually the conservatory will be assembled from individual window and roof components that are separately covered by certification from a UKAS accredited scheme, but have not been tested to work together as an assembled building. In this situation the Certifier must pay particular attention to the connections between individual components, the ability of the conservatory to resist racking loads and uplift, and the possible need for tie members to be installed to prevent eaves spread under imposed loads.

In order for stability to be assured:

- The superstructure formed by the glazed units must be tied together and also anchored securely to the wall of the building to which the conservatory is attached
- The roof must be firmly attached to the wall units
- The superstructure must be anchored to the walls to resist wind uplift forces
- The superstructure shall have sufficient racking resistance to resist the relevant wind loading without undue deflection

Traditionally, conservatories have relied on the glass to provide diaphragm action within the glazing unit, and the roof sheeting to provide similar stressed skin action for the roof structure. For this to be successful it is clearly necessary for the glazing to be adequately fixed within the frame. The test certification should provide evidence that the individual units can resist racking forces. Alternatively lightweight vertical or horizontal bracing may be designed and installed to connect the conservatory to the main building as a means of providing lateral stability.

For the glazed units to provide stability to the conservatory it is necessary for them to be properly tied together and to the roof. Some manufacturers provide joint details that are also covered by their BBA certification. Where this is not available engineering calculations or acceptable test certification will be necessary to justify the design. Adequate fixing of the conservatory to the house wall is also important. Some Guidance on stability issues is provided in the Glass and Glazing Federation publication 'Guide to the Assessment of Stability Requirements for Conservatories' GGF Data Sheet 5.7.10 December 2001

Where the conservatory is to be assembled from components that do not have appropriate test certification it will be necessary for the Certifier to be satisfied that the design can be justified by calculation.

Conservatories Below Escape Windows

The Technical Guidance published in support of the fire safety requirements in Part 2 of Schedule 2 to the Building Bye-laws provides guidance on the provision of emergency escape windows from dwellings. Where a conservatory is to be located below an escape window this has implications for the design of the conservatory roof. In such cases consideration should be given to the design of the conservatory roof to withstand the loads exerted from occupants lowering themselves onto the roof in the event of a fire.

The Role of the Certifier

The basic duties and responsibilities of the Certifier are no different in principal for conservatory design than for any other form of construction and include being satisfied that:

- The conservatory has been designed and constructed to be stable under the actions of wind, snow and any other loads liable to act on the structure
- The correct loadings have been used
- The design of individual wall and roof elements for both bending and racking resistance can be substantiated by test or by calculation
- Individual components are being used in a way that is consistent with any test certification
- Racking loads can be transferred between individual glazing units and to the structure of the building to which the conservatory is attached
- The conservatory superstructure is adequately designed to resist overturning
- The design is compatible with other building elements, such as foundations, which are also covered by the design certificate
- The foundations have been sized and designed to take account of the applied loads and the ground conditions which will be encountered on the site
- Any structural calculations are in accordance with appropriate codes and standards
- Specifications for materials and components are consistent with assumptions contained in the design calculations
- Construction drawings are sufficiently detailed to show how the conservatory needs to be constructed to meet all relevant Bye-law requirements

Plans Accompanying a Design Certificate

A building permit application for a conservatory will normally comprise of architectural floor plans elevations and sections with performance statements for the structural design and glazing. In terms of the plans and details accompanying the certificate of design (building structures) these should include:

- Plans of foundations, floor and roof
- The position, materials and dimensions of foundations, walls, floors, roofs
- Details of construction including any frame and connections
- Tie down details (between the roof and the supporting glazed units/walls and between the vertical glazed units and the supporting walls/floor slabs/foundations)
- Details of the connection to the main structure
- Details of any alterations to an existing structure

As a general rule the plans accompanying the certificate of design should contain sufficient information for the PED to undertake a site inspection to check that the conservatory has been constructed in accordance with the structural design.

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