

LIGHT GAUGE STEEL FRAME (LGSF) PROTECTION AT LOW LEVEL



Disclaimer: This technical document has been prepared by LABC Warranty exclusively for the benefit of our registered customers. Its sole purpose is to provide guidance on the utilisation and interpretation of technical requirements pertinent to the Warranty cover offered by LABC Warranty. Please note that this document is not intended for circulation or use beyond the aforementioned purpose. The information presented herein is for general guidance only and does not constitute professional advice. Registered customers and any other party accessing this document are advised not to rely solely on the information contained within. Nothing in this document is intended to establish, nor should it be construed as creating, any contractual or legal obligations. In the event that any third party chooses to rely on the information provided, they do so entirely at their own risk. LABC Warranty explicitly disclaims any duty of care or liability that may arise from the use of or reliance on this document by any third party, howsoever arising.

Introduction

This technical document provides additional guidance relating to how the Functional Requirements in the Technical Manual may be satisfied when the external ground level has been found to have been raised to within 150mm of the structural frame for more than 15% of the perimeter length of the building on projects using light gauge steel frame (LGSF) superstructure.

Please note, for the purposes this document, the term light gauge steel framing applies to both light gauge steel wall panelled framing and module construction where light gauge steel floor cassettes are utilized.

What is the situation?

The increasing demand for ground levels to be raised to within 150mm of the damp proof course or underside of the frame, for more than 15% of the perimeter around the individual home to meet additional planning accessibility requirements is resulting in light gauge steel framing being at a greater risk of exposure to dampness and subsequent deterioration / reduced durability.

For normal situations where a maximum of 15% of the external perimeter is below 150mm, to accommodate level access provisions to the principle entrance, our Technical Manual guidance states that LGSF members (floor joists, ring beams, wall base rails, etc.) being less than 150mm above external ground level: the structural frame elements should be pre-galvanised to 600g/m² zinc coating (Z) to provide an increased level of protection.

What are the Warranty providers concerns?

The increased amount of protection required by LGSF when a greater amount of the perimeter walls base is being exposed to the effects of raised ground levels (beyond 15%) is not being accounted for in specifications. When presented with raised external ground levels, often unplanned or as a result of late amendments to external layouts, Warranty Surveyors are raising concerns regarding durability and service life of the frame members.

Warranty stance

Our stance is, that where raised ground levels exceed the current 15% maximum stated in our Warranty guidance, then additional protective measures must be taken to protect the affected LGSF.

Failure to provide this increased level of protection is considered to compromise the ability of the LGSF members and associated materials within the construction element and its ability in meeting with the Functional Requirements and Performance Standards stipulated by the Technical Manual, notably those relating to durability, moisture resistance, and those relating to achieving the required service life.

What Developers should action after reading this document?

In all situations, Developers must ensure that the construction of the ground floor meets the requirements of regional Building Regulations, and our Warranty standards to be met for: structure, site preparation, and resistance to moisture and contaminants.

Where these standards and requirements are not met, the Developer must provide justification for the alternative proposal, before the installation of the frame and satisfy the Warranty surveyor that the Functional requirements of our Technical Manual can still be met.

LIGHT GAUGE STEEL FRAME (LGSF) PROTECTION AT LOW LEVEL



Situations where more than 15% of the external perimeter of an individual building (e.g. a single plot in a row of terraced homes) has external ground levels that are less than 150mm from the lowest steel will only be considered on a case-by-case basis.

For any proposals submitted to the Warranty provider in those such instances, the designer must, in addition to pre-galvanising the affected members with a 600g/m² zinc coating, include the following as a minimum:

- Cement-bonded particleboard sheathing boards that achieve Service Class 3 in accordance with BS EN 13986 'Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking'; **and**
- Have a drainage strategy for the associated sub-structure wall cavities and sub-floor voids below the LGSF, to ensure water does not collect in these areas.

Acceptable drainage strategies

Infiltration – the free drainage to ground of water in the wall cavities or sub-floor voids relies on ground conditions being capable of free drainage as required. Therefore where this is proposed, the drainage capability of the ground shall be determined by an appropriately detailed site specific ground investigation report and confirmed with percolation testing – the number and location of percolation tests shall be determined by the Warranty surveyor.

Free draining to ground will only be acceptable where it is supported by an Engineers statement confirming that discharging water to ground will not create an instability that affects the grounds ability to support the loads attributed to the foundations and other surrounding elements e.g. drainage, drives, roads, pathways.

Collection to an outfall – the collection of water from the wall cavities and sub-floor voids using in-situ cast concrete in the solum which is set to a fall to direct collected water into proprietary drainage sumps or channels located either within the sub-floor void or externally, and discharge to a designated outfall or drainage system.

This approach can only be accepted where supplemented by a Drainage Engineers design which takes into account all influencing factors e.g. rates of water collection and discharge, accessibility for inspection and maintenance, and risk of surcharging.

Please note – where ground is affected by contamination, the above strategies may not be suitable. In such instances, the advice of specialist consultants should be sought and used to inform any designs and determination of the necessary protection measures for inclusion.

Void depths below the LGSF structure

Floors should have a 150mm minimum void below the floor. And where there is a potential for the soil to heave, the minimum void depth should be increased as follows:

- High potential – 150mm (300mm total).
- Medium potential – 100mm (250mm total).
- Low potential – 50mm (200mm total).

Sub-floor ventilation

Sub-floor ventilation should be provided with ventilators on at least two opposing sides of the Plot, with air bricks appropriately ducted in accordance with the manufacturer's instructions.

Sub-floor ventilation should be provided to whichever gives the greater opening area:

- 1500mm² per meter run of external wall.
- 500mm² per m² of floor area.

In all circumstances, Developers are encouraged to engage at the earliest possible time, and discuss your site specific situation with your Risk Management Surveyor before associated works start on site.