

Glazing Proposal

January 2017

Introduction

This document has been compiled to detail a proposal for the refurbishment of roof glazing.

The system we are proposing to use is our Multi-Link-Panel, which is a pre-fabricated, self-supporting aluminium-framed roof glazing panel. This panel is non fragile to ACR(M)001:2014

Also available in the same non fragile panel is our in-line access hatch which allows access through the panel from below, but blends into the roofing system making it hardly noticeable.

This panel can be fitted with various types of polycarbonate glazing depending on the visual appearance required. For this project we are proposing 6mm clear solid polycarbonate which has the appearance of glass with the added benefit of being lighter and virtually unbreakable.

Multi-Link Product Description

The Multi-Link-Panel is a modular, pitched roof glazing system, manufactured in a controlled environment by Twinfix. The panel consists of 6mm clear solid polycarbonate glazing sheet with integral, extruded aluminium glazing bars. The panel is reinforced to create a frame designed to meet the HSE requirements on fragility, aimed at protecting people from trip falls through glazed roofs.

The unique, interlocking design of the glazing bar, which allows rapid 'fix and link' installation of the Multi-Link-Panels, also incorporates a water management system to ensure effective external drainage of the roofing system.

Factory manufactured to individual specification ensures quality controlled panel assembly. This is impossible to achieve with on-site construction. Delivered to site pre formed with the polycarbonate already attached to the glazing bar makes the installation very fast.

By combining the lightweight characteristics of polycarbonate sheet and aluminium glazing bars, the Multi-Link-Panel is particularly light and easy to handle. The patented fix and link design, together with the pre-assembled nature of the panel, can cut installation time by two thirds when compared to traditional split-bar glazing methods.



Key Advantages of the Multi-Link-Panel glazed with polycarbonate

The Twinfix Multi-Link-Panel NF (Non Fragile) glazing system offers a number of benefits when being considered for use in Station and Depot applications. These can be summarised as follows:

Safety: These glazing panels fully conform to HSE Non Fragile roof light requirements as they pass the Health & Safety Executive's recommended drop test, ACR[M]001:2014 Test for Fragility of Roofing Assemblies, with a 'B' designation. This test is outlined in the HSG33 document.

Maintenance/Life Expectancy: Polycarbonate is virtually unbreakable and its use will eliminate the maintenance costs involved in repairing and replacing broken glass. The impact resistance of polycarbonate means that there is no risk of it cracking and leaking, nor breaking and causing glass dust, shards or debris to fall onto passengers and staff below.

UV Coated: The polycarbonate glazing sheet has a UV treatment that protects it from visible yellowing and hazing.

Quick Installation: The Multi-Link-Panel is a modular system made to size in our factory and delivered to site ready to fit. This, combined with its innovative fixing method results in fast installation, maximising possession times. Handling during installation is also easier and safer as the glazing panels are constructed from materials that are both strong and light in weight.

Light Weight: 6mm solid polycarbonate glazing weighs only 7.2 Kg/sq.m, substantially less than glass alternatives (6mm glass weighs 15 Kg/sq.m).



Access Panels

Access panels are available for our Multi-Link-Panels glazed with solid polycarbonate. These were developed at Network Rail's request and are designed to meet Heritage requirements as the hatch is in line with the polycarbonate panel so is hardly discernible.

From the ground it is barely visible and allows staff to carry out gutter maintenance safely from below.



Fragility

These days the safety of people on roofs is paramount. This applies to those carrying out maintenance, and those who have no real right to be up there in the first place!

There is a drive to prevent death and injury resulting from falls through rooflights and roof assemblies. To this end the Construction Design and Management Regulations (CDM) encourage designers and contractors to specify non-fragile rooflights.

The Health & Safety publication HSG33 'Health and Safety in Roof Work' highlights that falls through fragile roof glazing, often found in older rooflights, are a common cause of fatalities in the construction industry. This also applies to intruders who gain roof access. The report discusses the use of non-fragile materials for roof glazing. It is the responsibility of the specifier to ensure that non-fragile rooflights are installed, or to put alternative safety measures in place.

The drop test for measuring fragility is defined by HSE in ACR[M]001:2014. This employs a 45 kg bag that is dropped from 1.2 metres on to the roofing assembly.

The following are the classifications that result from the test:

No of Tests	Result	Classification
After 1 Drop Test	45 kg bag falls through roof	FRAGILE
After 1 Drop Test	45 kg bag is retained on roof	CLASS C
After 2 Drop Tests	45 kg bag is still retained on roof	CLASS B
After 2 Drop Tests	45 kg bag is still retained on roof and following careful inspection, no significant damage is apparent which could affect the life of the roof	CLASS A

You can see that there are four different classifications for roofs, ranging from FRAGILE through to a Class A.



A Class C indicates that the impactor passes through the test sheet on the second drop (so only withstands one drop).

A Class B means that after two drops the impactor remains on the roofing assembly and does not pass through the test sheet.

A Class A is the same as a Class B but the sheet and its fixings must not show any signs of damage, damage being classified by ACR as:

'Any tearing at the fixings, fractures in the sheet or the assembly support structure, delamination of the sheet or damage to the surface protection which could accelerate the degradation process should be seen as sufficient to withhold a Class A rating'

Class A designations are virtually impossible to achieve using lightweight thermoplastic materials.

The Twinfix Multi-Link-Panel Non-Fragile System is designated a Class B product in accordance with ACR[M]001:2014. At Twinfix we never classify our products as Class A because it is not possible to know whether there is any hidden damage to the fixings or surface protection of the polycarbonate glazing, even though the human eye may not see any visible signs of such damage.

We have in-house Approved Testing Equipment to carry out Fragility Drop Tests in accordance with the strict guidelines of the HSE. Different glazing options and panels in a range of sizes can be tested.

Examples of Multi-Link-Panels fitted with 6mm Solid Polycarbonate

Below are some examples of our Multi-Link-Panels fitted with 6mm clear solid polycarbonate,



Directors
S Kench | D Smith
V Evans | P Greenfield

Registered in England. Company number: 2457221

