Case Study: Snowdon Visitor Centre

Category: Galvanizing, Sustainability
Source: Galvanizers Association



At 1,085 metres, this unique visitor centre is one of the highest building in the UK, responding to one of the most extreme climatic locations: the mountain endures facing winds of 120mph, temperatures that can go below -200C and 5 m of rain every year.

The combination of extreme weather conditions and the logistical difficulties of building on top of a mountain meant a collaborative effort was needed by the design team and client.
The list of special design considerations for this unique project is endless - life cycle costs, building life, sustainable development and complex design considerations.

The entire frame for instance was constructed from galvanized steel sections which had to be sized to resist the significant wind speed and snow loadings that the building would be subjected to. In order to optimise the frame design, special 3-D software was used to model the building and efficiently calculate load paths. This also had to take into account the temporary stability of the frame as it was being erected in stages. The structure was pre-assembled at Shotton so that all adjustments and fixings for secondary cladding items could be finalised. Once this process was completed, the frame was then taken away to be galvanized before being transported to the summit. Despite the difficult weather conditions, the entire primary frame was transported to the summit and assembled in little over a week.

The majority of the exterior is clad in granite with large glazed openings providing unrivalled views of the summit and surrounding landscape. In order to make the windows secure during the winter shutdown, galvanized steel roller shutters were integrated in to the window and cladding assembly. The severity of the weather conditions, with high levels of water saturation and constant freeze thawing, called for an extremely robust shutter design. The shutter assembly including guides, access panels and running gear were all exposed to the elements, so achieving the correct levels of material protection was critical. One interesting concern was that locals thought the galvanized shutters would cause glare and reflection problems, for this reason, all components were pre-exposed so that the finish had a chance to dull down to its normal gunmetal grey colour before installation.

The external balustrade to the platform is constructed from galvanized steel components which are designed to be easily dismantled for winter removal. If they were left in situ, the weight of the horizontal sheets of wind driven rhyme ice build would cause them to buckle. The simple key clamp system with mesh infill panels provided an elegant and durable solution.


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