

POST CONSTRUCTION installations on ROOFS and SERVICE ACCESS



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On occasions when we have been invited to inspect a roof over a shopping centre we are stunned by the amount of post construction activity the roof is subjected to. This can vary from the inappropriate installation of aerials, ventilators, extractor ducts, air conditioning units and more recently alternative energy systems. Damage from regular foot traffic is another cause for concern.

The vast majority of roof structures are designed as inaccessible with imposed loading based on access for the installation of the cladding and thereafter maintenance of the cladding system and gutters only.

Occupancy within shopping centres is transient which gives rise to changing demands for services such as extractor fans and ducts for restaurants, fire vents and auxiliary air conditioning units. Most extractor fans require a 600mm square opening in the cladding which is positioned randomly between purlins, often without any additional supporting steelwork, the fan and duct are supported by the cladding. Regularly the painted steel supports with small base plates are placed directly in the pan of the cladding, invariably between purlins. Occasionally raw wooden blocks are used as bearers. The support frames for solar heaters pose an even greater risk as the loading is much greater. Some PV panels have

support systems that utilize concrete blocks as ballast which can considerably increase the loading to the cladding and supporting steelwork. Fire vents are frequently attached to and supported by the cladding in a manner that impedes the thermal movement of the cladding. In addition to the increased risk of crevice corrosion at the interface of the supports with the cladding plus the accumulation of debris around the supports there is an increased risk of flooding of the pans during heavy rain. Inadequately designed back-flashing to fire vents (which are over a metre wide) contribute to the flooding of adjacent pans. The placement of conduits and pipes in pans pose similar problems. Such obstructions can also cause the accumulation of hail, resulting in flooding. Whilst cable trays laid transversely across the cladding ribs near gutters may prevent/reduce the flow of hail into unguarded gutters the accumulated hail behind the tray can exceed the design loading. The loading from foot traffic during the installation of these items is often much higher than that associated with maintenance of the cladding.

Sections of these roofs are subjected to regular high levels of foot traffic for maintenance of non-cladding items resulting in considerable damage to the cladding and flashings. Areas most susceptible to damage are the points of access onto the roof, jumping from one level to another, eaves and areas behind parapets which are used as hoisting points together with access for cleaning windows, etc. These areas need to be protected with suitable designed ladders, platforms and walkways.

In all cases the protective coating/s to the cladding system suffers irreparable damage thereby greatly reducing its durable working life.

