

Technical Guidance & Design Considerations

SVELTE® 60 & 80 Composite Flooring Solutions for Car Parks

INTRO:

The multi-level car park is a unique type of building in which all the elements of the structure are normally exposed and the structure is subject to moving vehicular loading. Steel is the best material to use in car park construction because it satisfies all the requirements of good car park design and build. It is proven to be one of the fastest methods of construction and can accommodate a wide range of car park layouts. Steel is also lightweight, reducing foundation requirements, and extremely robust; it is fire retardant and can withstand vandalism. Steel Car Park Construction is particularly beneficial where a new raised deck car park is required over an existing surface-level car park or as an extension to an existing multi-storey.

DESIGN CONSIDERATIONS:

The primary consideration when using steel decking in composite slab construction for car parks is ensuring adequate corrosion protection of the steel sheeting. Typically, the panels are coated with Z275 galvanised protection, but for enhanced durability—especially in external or corrosive environments—a Z450 coating is recommended. This makes Z450 ideal for car park applications.

It's important to carefully seal the slab surface, with particular attention to detail around columns and any slab penetrations. Inadequate sealing may allow moisture and salts to permeate the slab, reaching the decking surface and accelerating corrosion. In such conditions, a higher ratio of crack-control reinforcement beyond standard code requirements may also be necessary.

When designing composite slabs with steel decking—particularly in car park structures—it's important to carefully consider slab depth, span, and the type of deck profile used. Designing within the tolerance of the decking type will result in a better overall finish.

Equally crucial is the concrete pour method. To ensure surface regularity and prevent compound deflections in both the deck and its supports, suspended slabs must be poured to a uniform thickness. Avoid heaping the concrete during placement.

CRUSHED-END SVELTE® 60 & 80 DECK SHEETS:

Galvanised or pre-coated steel beams with pre-welded shear studs will assist with durability concerns. These configurations eliminate the need for through-deck welding and typically require end caps for all trapezoidal decking profiles, dramatically reducing project costs and construction programme. Svelte® 60 & 80 crushed-end solution, which is particularly well-suited for long single-span applications due to its structural properties. By using crushed-end deck sheets, conventional end caps are no longer required, reducing installation time, especially beneficial for large-scale applications. Labour and programme savings can be achieved. A larger concrete section can form around the shear studs, enhancing their performance. Grout loss during pouring is minimised. Acoustic and fire profile fillers are no longer necessary.

Get in contact today to learn more about the benefits of working with SVELTE®