

Technical Guidance & Design Considerations

SVELTE® & UNIFLOOR® Durability of Steel Deck Composite Floors

INTRO:

Metalcraft composite steel decking systems, SVELTE® and UNIFLOOR®, are designed to achieve a service life of up to 50 years when designed and installed in accordance with the conditions outlined in the New Zealand Steel Durability Statement (August 2019). Compliance with these conditions contributes to the durability requirements of NZBC -Clause B2.

SVELTE® and UNIFLOOR® steel decking is protected with a standard galvanised coating of Z275 or Z450 enhanced galvanised coating. NZ Steel Galvsteel® Product Durability Statement and applicable coating systems available to download: www.metalcraftroofing.co.nz

CORROSION FACTORS IN COMPOSITE STEEL DECKS TYPICALLY INVOLVE TWO KEY ZONES:

- **TOP-DOWN EXPOSURE** -Water can enter through concrete percolation paths or cracks and if oxygen is present, this ingress can activate corrosion of the embedded steel.
- **SOFFIT EXPOSURE** -The underside of the deck is vulnerable to airborne contaminants and moisture accumulation, especially in open environments like car parks or coastal areas.

DESIGN CONSIDERATIONS:

EXPOSURE ZONES B, C & D - Determining the exposure zone to be used on your building project can be referenced using NZS 3604:2011. The zones relate to the severity of exposure to wind-driven salt, with B being low risk, C medium risk and D high risk.

MICROCLIMATE - Local environmental effects and those produced by the erection of a structure or installation of equipment shall be considered. On-site factors, such as airborne pollutants, require additional consideration that may increase the local corrosive atmosphere.

BUILDING DESIGN - What use is the steel deck, formwork or composite slab? Designing the steel deck as sacrificial formwork will negate any need for additional coating systems or future maintenance. In a composite slab, the properties of the steel decking contribute to overall structural integrity, with the concrete and steel working together to support construction loads. Designing to minimise condensation and promote good ventilation enhances the durability of SVELTE® and UNIFLOOR® profiles. Minimum ground clearance is 450mm (600mm recommended for maintenance) to the lowest point of the steel decking soffit.

BUILDING TYPE: CLOSED/SHELTERED/EXPOSED

CLOSED – A dry, enclosed environment not exposed to airborne contaminants or direct moisture

SHELTERED - Open to airborne contaminants, yet protected from rain washing

EXPOSED - Exposed to airborne contaminants and direct rain

PRODUCT SPECIFICATION

Standard galvanise Z275 zinc coating weight of 275g/m² and galvanise Z450 zinc coating weight of 450 g/m². Some approaches can be adopted to improve the intended durability, such as enhancing the galvanised coating to Z450 metal coating and/or applying a suitable painting system to the steel deck soffit, which has multiple benefits, including durability and aesthetics.

LIFE TO FIRST MAINTENANCE (LFM)

The expected life to first maintenance is the estimated duration of effective protection of the steel galvanised coating against deterioration. Considering product warranties and assurances, maintenance needs to be considered and should be included as part of the building lifecycle.

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