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Force 10 International Corrosion Protection

Note: This document is subject to revision and updates are available on request from Force 10 International Pty Ltd.

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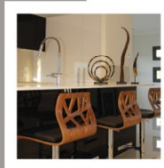
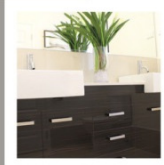

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Force 10 Floor System – Corrosion Resistance and Life Expectancy

Effects from Salt Spray and Recommended Protection

Salt spray from breaking waves and onshore winds significantly accelerates the corrosion of metal connectors. The ocean salts, which are primarily sodium chloride but include other compounds, accumulate on the metal surfaces and accelerate the electrochemical reactions that cause rusting and other forms of corrosion. The combination of salt accumulation on the surface and the high humidity common too many coastal areas significantly accelerates the corrosion rate of steel and other metals commonly used for connectors or other building materials.

The longer a surface remains damp during normal daily fluctuations in humidity, the higher the corrosion rate. Onshore winds carry both salt and moisture inland accelerating the corrosion of all exposed metal surfaces (such as meter boxes, light fixtures, flashings, metal windows & doors, hinges, window hardware, deck hardware, piling hardware, AC compressors, attic fans etc.). Even house and car windows facing the beach may be covered with a film of salt from sea mist each morning.

The pitting of exterior metal components do reduce salt spray corrosion may be slowed by applying neutralizers to metal parts. Alternatively, rinsing the building with fresh water to remove salt crystals may help, but using materials appropriate for the location is always the best course of action. The use of **hot-dipped galvanized materials and fasteners** is the best way to slow the endless assault of salt corrosion as this provides a life in excess of 50 years.

Force 10 Floor system

Footings and Stumps:
Metal stumps, Duragal finish with a steel plate, or with a 2 x 300mm long x 16mm diameter rods is welded to the bottom of the stump. The stump is positioned in a concrete pad; the bottom of the stump being at least 100 mm above the bottom of the stump hole and the concrete falling away from the steel at the top of the footing. In more severe application (near sea or salt spray areas) the stumps and structural steel work can be **hot dip galvanised for** protection with added tax epoxy applied to the footing..

Floor System:
The floor uses 2.0mm Galvaspan G450 Z350 steel bearers Henrob riveted back to back and 1.2mmTrucore G500 AZ150 joists. Floor bearers are provided with pre-punched holes for ease of on-site assembly. The steel floor joists nest securely inside the structural bearers. In more severe application (near sea or salt spray areas) the stumps and structural steel work can be hot dip galvanised for protection

Floor sheeting is magnesium oxide sheeting, compressed fibre cement or MGO board sheeting or StructaFlor or TermiFlor (or similar) particleboard flooring. It is glued to all joists and bearers as well as being screwed.

Item	Australian Standard
Truecore G500 Steel Stud, joist, truss	AS 1397:2001, Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated AS 1365 Tolerances for flat-rolled steel products
Galvanised Steel G450 Bearers	AS 1397:2001, Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated AS 1365 Tolerances for flat-rolled steel products

Durability

For durability the Force 10 building system is "Deemed to Satisfy" as defined by the NCC (National Construction Code Part 1 or 2) and this is covered by ensuring that all steel members and fixings in floors, walls and roofs have a zinc coating which provides protection against corrosion.

In normal circumstances, this is sufficient to avoid corrosion provided the steel components are maintained in a dry condition. In this regard, note that all wall and roof framing is protected from the exterior environment, i.e. completely encapsulated by weather tight linings, flashings and cladding.

To ensure complete protection in salt spray areas it is recommended that:

1. Bearers, joists and posts /sumps are **hot dip galvanised** for a life in excess of 50 years – for examples see F10 08 Corrosion Protection Appendix.pdf
2. External exposed items are maintained on regular inspections
3. **Tar epoxy** can be applied to all external surfaces as extra protection for a minimal cost
4. **Sub floor can be sealed** underneath to minimise salt spray .

Sub floor

For steel sub-floor framing, there is a possibility that corrosion may occur due to wind borne sea spray in buildings close to the sea or subject to other aggressive environmental factors. In these severe applications (near sea or salt spray areas) the stumps and structural steel work can be **hot dip galvanised** for protection.

Therefore for buildings within 1 km of the sea or subject to aggressive environments, all sub-floor components including columns, bracings, bearers, joists, fittings etc **should be treated with an approved protection system prior to construction**. After erection of the sub-floor, all damaged mastic should be cleaned and touched up with an approved protection system) prior to installation of the flooring materials.

Alternatively, **the sub-floor may be fully enclosed** (with minimal ventilation as defined in the NCC (National Construction Code Part 1 or 2). In all areas, verandas and decks should be roofed to avoid corrosion in the sub-floor steel framing.

Termite resistant

The Force 10 floor, wall and roof truss systems (the primary elements) are made from steel and are **termite and borer resistant**. Because of this, the panels, floor framing and roof trusses do not require additional chemical treatments to protect them from pest attack as they are not known to present a potential risk of attack from subterranean termites

Recommended Maintenance

More regular maintenance is required of the areas of the building that are not naturally washed by rain. These areas include the underneath of verandas, decks and buildings where the Force 10 floor system is used, roofing visible through exposed eaves, fascia or guttering. The buildings lifespan may be reduced from not following a regular maintenance program because night time condensation in these areas can combine with salt and pollution on surfaces resulting in accelerated corrosion.

The sub-floor should then be inspected annually and damaged areas (if any) cleaned and touched up with an approved protection system (e.g. Tar Epoxy or similar).

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