

Fielders KingFlor® Formwork and Composite Slab Design Guide - Using KingFlor® Technical Literature and RAPT Software

1. Introduction

This guide provides structural engineers with a practical workflow for designing composite slabs with Fielders KingFlor® metal decking profiles in compliance with current Australian Standards for both the construction-stage (formwork) and in-service stage (reinforced composite slab), using relevant Fielders technical literature, together with a third-party analysis and design software known as "RAPT".

Important Notes regarding the RAPT Software:

1. The RAPT Software is owned, maintained and / or licensed by a third party or third parties with no affiliation to BlueScope Steel Limited, trading as "Fielders" (ABN 16 000 011 058). Fielders does not certify or make any representation or warranty of any kind in relation to the availability, performance, accuracy, completeness or compliance of the RAPT Software or any of its outputs. Any decision to access and use the RAPT Software for your design or project is entirely at your discretion and professional judgement and may be subject to terms and conditions imposed by the software's owner or licensor.
2. The methodology outlined in this guide assumes use of the latest version of the RAPT Software. It is your responsibility to ensure you are operating the latest version of the RAPT Software.
3. The RAPT Software is available for download here: <https://www.raptsoftware.com>

2. Design Workflow

Step 1 - Verify KingFlor® Formwork Capacity

Use Fielders published span tables for the relevant KingFlor® profile to check the formwork stage requirements for your project. Select the appropriate metal deck profile and identify the maximum unpropped span for the given slab thickness, profile shape and gauge/BMT.

- [Fielders KingFlor® KF40 User and Installation Guide](#)
- [Fielders KingFlor® KF70 User and Installation Guide](#)
- [Fielders KingFlor® RF55 User and Installation Guide](#)
- [Fielders KingFlor® KF57 User and Installation Guide](#)
- [Fielders KingFlor® SlimDek210 User and Installation Guide](#)

Step 2 - In-Service Design with RAPT

Most Fielders KingFlor® profiles have been pre-defined in the RAPT Materials library and can be specified into any slab design run by the user. RAPT can then be used to undertake the Ultimate and Serviceability Stage design checks of composite slabs poured on KingFlor® metal deck profiles.

The appropriate Fielders metal decking will need to be selected by the user under:

User Defined > Metal Decking.

The user will need to ensure the concrete slab design width is a whole multiple to the cover width of the metal decking,

e.g. if 1xRF55 deck (cover width = 600mm) is selected, the slab width will need to be a 600mm in Frame > Span.

The RAPT Help file contains further information on how to define KingFlor® profiles in your design.

3. Fire Resistance Design

Fire design shall be in accordance with the Deemed to Satisfy provisions of AS/NZS 2327:2017 Amd 1:2020 Section 7.

4. Example Workflow

A typical workflow for a composite design adopting KingFlor® metal decking is as follows:

1. Perform formwork checks using published KingFlor® span tables in relevant manuals.
2. Model the in-service reinforced composite slab structure in RAPT with the correct KingFlor® profile, slab width, spans, loading, etc.
3. Undertaken Strength and Serviceability design checks in RAPT.
4. Ensure slab depths and reinforcement satisfies the DTS provisions for Fire Design AS/NZS 2327:2017 Amd 1:2020 Section 7.

5. References

- AS2327:2018 Composite Structures
- AS3600: 2018 Concrete Structures
- AS4100: 2020 Steel Structures
- Fielders KF40® product manual
- Fielders RF55® product manual
- Fielders KF57® product manual
- Fielders KF70® product manual
- Fielders SlimDek 210® Design & Installation Manual
- RAPT user manual