

3.11 RF55® Fire Resistance Tables

Table 3.11.A	RF55 Fire Resistance - Floor Live Load 1.5kPa - Single Span
Table 3.11.B	RF55 Fire Resistance - Floor Live Load 3.0kPa - Single Span
Table 3.11.C	RF55 Fire Resistance - Floor Live Load 5.0kPa - Single Span
Table 3.11.D	RF55 Fire Resistance - Floor Live Load 1.5kPa - Double Span
Table 3.11.E	RF55 Fire Resistance - Floor Live Load 3.0kPa - Double Span
Table 3.11.F	RF55 Fire Resistance - Floor Live Load 5.0kPa - Double Span
Table 3.11.G	RF55 Fire Resistance - Floor Live Load 1.5kPa - Continuous Spans
Table 3.11.H	RF55 Fire Resistance - Floor Live Load 3.0kPa - Continuous Spans
Table 3.11.I	RF55 Fire Resistance - Floor Live Load 5.0kPa - Continuous Spans

Fire Resistance Tables Notes

The fire resistance tables are to be used to design fire rated KingFlor composite slabs that meet the assumptions below. For designs outside the parameters below and specified on the tables refer to the KingFlor Designer Suite or your local Fielders representative. For propping requirements refer to the temporary propping tables.

All fire resistance tables assume a BMT of 0.6mm. For design with other BMT's use KingFlor Designer Suite or contact your local Fielders representative.

Notation

Dcs = depth of composite slab.

L = Span between permanent supports.

Bars - N12@200 indicates N12 bars at 200mm centres.

Fire Reo - 1xN16/300 indicates 1 N16 bar at 300mm centres (in multiples of pan spacings)

Loads

Construction Live Load 1.0kPa

Ceiling & Services Load 0.35kPa

Partitions Load 0.5kPa

Short & Long-Term Factors

Short-term factor $\psi = 0.7$

Long-term factor $\psi = 0.4$

Combination-term factor $\psi = 0.4$

Concrete Properties

Normal wet density of concrete 2400kg/m³

Normal dry density of concrete 2350 kg/m³

Concrete strength $f_c = 25\text{MPa}$

Exposure Classification A1 with moderate crack control

Cover to top reinforcement is 30mm

Reinforcing

Steel Yield Strength $f_{sy} = 500\text{MPa}$

Mesh

Mesh is to be located in the top of the slab. Where the mesh code ends with a 'T' (eg. RL918T), the larger bars are to be located perpendicular to the decking ribs with the smaller perpendicular bars on top. Laps in mesh are to occur midspan.

Bars

Bars where required, are to be placed over internal permanent supports, on top of mesh. Length of bars are to be 0.6 x larger span + width of support. The bars are to be located 0.3 x span from edge of support for internal supports.

Fire reinforcement (Fire Reo) is to be located in the bottom of the slab in accordance with AS 3600:2001, Table 5.5.3 (A) "Fire Resistance Periods for Slabs". Bars are to be continuous & lapped at supports.

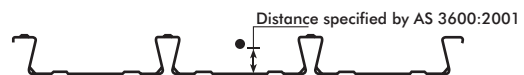


Figure 3.11.A Fire Reinforcement Detail

Spans

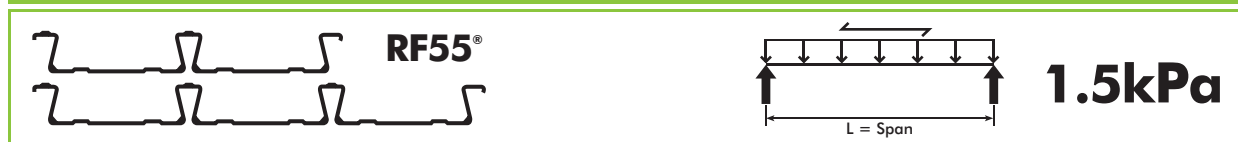
Spans L1, L2, L3 etc. cannot differ by more than 5% from both L1 and Ln.

Span is considered to be the larger of L1, L2...Ln.

Support width 50mm

The fire resistance tables have been prepared with the assumptions stated above. More refined designs can be obtained from Fielders or by using the KingFlor Designer Suite. Contact your local Fielders representative for design assistance.

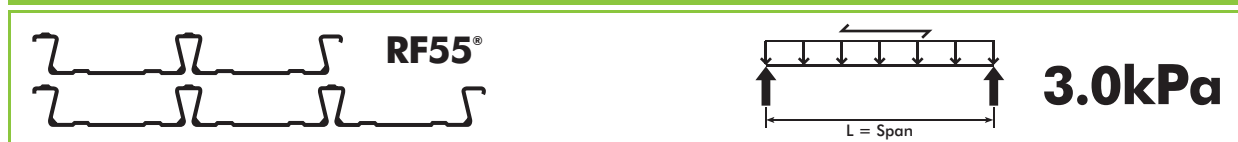
RF55® Fire Resistance Single Span - Floor Live Load 1.5kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	100	SL72	-	-	100	SL72	-	-	140	SL102	-	-
1,500	100	SL72	-	-	100	SL72	-	-	140	SL102	-	-
2,000	100	SL72	-	-	100	SL72	-	1xN10/400†	140	SL102	-	-
2,500	100	SL72	-	1xN10/600†	100	SL72	-	1xN10/200†	140	SL102	-	1xN10/200†
3,000	100	SL72	-	1xN10/400†	100	SL72	-	1xN10/200†	140	SL102	-	1xN12/200†
3,500	100	SL72	-	1xN10/400†	100	SL72	-	1xN12/200†	140	SL102	-	1xN16/200†
4,000	120	SL92	-	1xN10/200†	120	SL92	-	1xN12/200†	140	SL102	-	1xN16/200†
4,500	140	SL102	-	1xN10/200†	140	SL102	-	1xN12/200†	150	SL102	-	1xN16/200†
5,000	160	SL81	-	1xN10/200†	160	SL81	-	1xN12/200*	165	SL81	-	1xN16/200†
5,500	190	RL918T	-	1xN10/200†	195	RL918T	-	1xN12/200*	195	RL918T	-	1xN16/200†
6,000	215	RL918T	-	1xN10/200†	215	RL918T	-	1xN16/200†	215	RL918T	-	1xN16/200†
6,500	250	RL1018T	-	1xN12/200†	250	RL1018T	-	1xN16/200†	250	RL1018T	-	1xN16/200†
7,000	275	RL1118T	-	1xN12/200†	275	RL1118T	-	1xN16/200†	275	RL1118T	-	1xN16/200†

Table 3.11.A RF55® Fire Resistance - Single Span - Floor Live Load 1.5kPa

RF55® Fire Resistance Single Span - Floor Live Load 3.0kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	100	SL72	-	-	100	SL72	-	-	140	SL102	-	-
1,500	100	SL72	-	-	100	SL72	-	-	140	SL102	-	-
2,000	100	SL72	-	-	100	SL72	-	1xN10/200†	140	SL102	-	-
2,500	100	SL72	-	1xN10/600†	100	SL72	-	1xN10/200†	140	SL102	-	1xN12/200†
3,000	100	SL72	-	1xN10/400†	100	SL72	-	1xN10/200†	140	SL102	-	1xN12/200†
3,500	115	SL82	-	1xN10/200†	115	SL82	-	1xN12/200†	140	SL102	-	1xN16/200†
4,000	135	SL92	-	1xN10/200†	135	SL92	-	1xN12/200†	140	SL102	-	1xN16/200†
4,500	155	SL102	-	1xN10/200†	155	SL102	-	1xN12/200†	155	SL102	-	1xN16/200†
5,000	175	SL81	-	1xN10/200†	180	SL81	-	1xN12/200*	180	SL81	-	1xN16/200†
5,500	210	RL918T	-	1xN10/200†	210	RL918T	-	1xN12/200*	210	RL918T	-	1xN16/200†
6,000	235	RL1018T	-	1xN12/200†	240	RL1018T	-	1xN16/200†	245	RL1018T	-	1xN16/200†
6,500	265	RL1118T	-	1xN12/200†	265	RL1118T	-	1xN16/200†	265	RL1118T	-	1xN16/200†
7,000	295	RL1118T	-	1xN12/200†	295	RL1118T	-	1xN16/200†	295	RL1118T	-	1xN20/200†

Table 3.11.B RF55® Fire Resistance - Single Span - Floor Live Load 3.0kPa

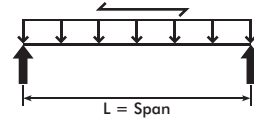
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- * 40mm
- ‡ 60mm

Shaded cells denote that internal span fire reinforcement is required.

Refer to the start of this section for additional parameters used to calculate the above table.

RF55® Fire Resistance Single Span - Floor Live Load 5.0kPa



5.0kPa

Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	100	SL72	-	-	100	SL72	-	-	140	SL102	-	-
1,500	100	SL72	-	-	100	SL72	-	-	140	SL102	-	-
2,000	100	SL72	-	1xN10/600†	100	SL72	-	1xN10/200†	140	SL102	-	1xN10/200†
2,500	100	SL72	-	1xN10/400†	100	SL72	-	1xN10/200†	140	SL102	-	1xN10/200†
3,000	105	SL82	-	1xN10/400†	110	SL82	-	1xN10/200†	140	SL102	-	1xN12/200†
3,500	125	SL92	-	1xN10/200†	130	SL92	-	1xN12/200†	140	SL102	-	1xN16/200†
4,000	150	SL102	-	1xN10/200†	150	SL102	-	1xN12/200†	150	SL102	-	1xN16/200†
4,500	170	SL81	-	1xN10/200†	175	SL81	-	1xN12/200†	175	SL81	-	1xN16/200†
5,000	205	RL918T	-	1xN10/200†	205	RL918T	-	1xN12/200†	205	RL918T	-	1xN16/200†
5,500	230	RL1018T	-	1xN10/200†	230	RL1018T	-	1xN16/200†	230	RL1018T	-	1xN16/200†
6,000	260	RL1118T	-	1xN12/200†	260	RL1118T	-	1xN16/200†	260	RL1118T	-	1xN16/200†
6,500	305	RL1118T	-	1xN12/200†	305	RL1118T	-	1xN16/200†	305	RL1218T	-	1xN20/200†
7,000	360	RL1218T	-	1xN12/200†	360	RL1218T	-	1xN16/200†	360	RL1218T	-	1xN20/200†

Table 3.11.C RF55® Fire Resistance - Single Span - Floor Live Load 5.0kPa

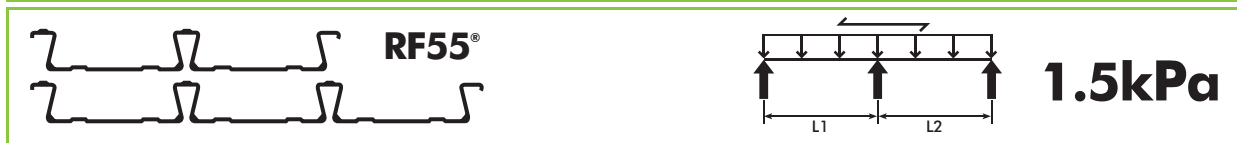
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- † 20mm
- * 40mm
- ‡ 60mm

Shaded cells denote that internal span fire reinforcement is required.

Refer to the start of this section for additional parameters used to calculate the above table.

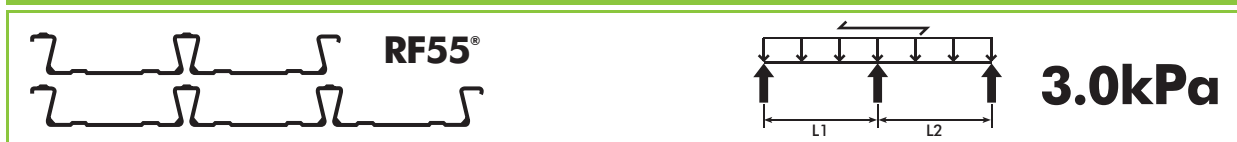
RF55® Fire Resistance Double Span - Floor Live Load 1.5kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
3,000	105	SL72	N10@400	1xN10/600†	105	SL72	N10@400	1xN10/400†	140	SL102	N10@400	-
3,500	105	SL72	N10@400	1xN10/600†	105	SL72	N10@400	1xN10/200†	140	SL102	N10@400	1xN10/200†
4,000	105	SL72	N10@250	1xN10/600†	105	SL82	N10@300	1xN10/200†	140	SL102	N10@400	1xN10/200*
4,500	110	SL82	N10@200	1xN10/600†	110	SL82	N10@200	1xN10/200*	140	SL102	N12@300	1xN12/200*
5,000	115	SL92	N12@250	1xN10/600†	115	SL92	N12@250	1xN10/200*	140	SL102	N12@200	1xN16/200†
5,500	130	SL92	N12@225	1xN10/600†	130	SL92	N12@200	1xN10/200*	140	SL102	N12@200	1xN16/200*
6,000	145	SL102	N12@200	1xN10/600†	150	SL102	N12@200	1xN10/200*	150	SL102	N12@200	1xN16/200*
6,500	165	SL81	N12@200	1xN10/600†	165	SL81	N12@200	1xN10/200†	165	SL81	N12@200	1xN16/200*
7,000	180	SL81	N12@200	1xN10/400†	180	SL81	N12@200	1xN10/200*	180	SL81	N12@200	1xN16/200*

Table 3.11.D RF55® Fire Resistance - Double Span - Floor Live Load 1.5kPa

RF55® Fire Resistance Double Span - Floor Live Load 3.0kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
3,000	105	SL72	N10@400	1xN10/600†	105	SL72	N10@400	1xN10/200†	140	SL102	N10@400	1xN10/200†
3,500	105	SL72	N10@200	1xN10/600†	105	SL72	N10@200	1xN10/200†	140	SL102	N10@400	1xN10/200†
4,000	105	SL72	N12@200	1xN10/600†	105	SL72	N12@200	1xN10/200†	140	SL102	N10@400	1xN16/200†
4,500	115	SL82	N12@200	1xN10/600†	115	SL82	N12@200	1xN10/200†	140	SL102	N12@200	1xN16/200†
5,000	135	SL92	N12@200	1xN10/600†	135	SL92	N12@200	1xN10/200†	140	SL81	N12@200	1xN16/200*
5,500	150	SL102	N12@200	1xN10/600†	150	SL102	N12@200	1xN10/200†	150	SL81	N12@200	1xN16/200*
6,000	160	SL81	N12@200	1xN10/600†	165	SL81	N12@200	1xN10/200†	165	SL81	N12@200	1xN16/200†
6,500	180	SL81	N16@300	1xN10/600†	180	SL81	N16@300	1xN10/200†	185	RL918T	N16@200	1xN16/200†
7,000	200	RL918T	N16@200	1xN10/600†	205	RL918T	N16@200	1xN10/200†	205	RL918T	N16@200	1xN16/200†

Table 3.11.E RF55® Fire Resistance - Double Span - Floor Live Load 3.0kPa

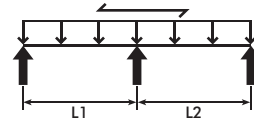
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- * 40mm
- † 60mm

Shaded cells denote that internal span fire reinforcement is required.

Refer to the start of this section for additional parameters used to calculate the above table.

RF55® Fire Resistance Double Span - Floor Live Load 5.0kPa



5.0kPa

Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	1xN10/400+	140	SL102	N10@400	-
3,000	105	SL72	N10@250	1xN10/600+	105	SL72	N10@250	1xN10/200+	140	SL102	N10@400	1xN10/200+
3,500	110	SL82	N12@250	1xN10/600+	105	SL72	N12@200	1xN10/200+	140	SL102	N10@400	1xN12/200+
4,000	115	SL92	N12@200	1xN10/600+	115	SL82	N12@175	1xN10/200+	140	SL102	N10@200	1xN12/200*
4,500	130	SL92	N16@300	1xN10/600+	130	SL92	N16@300	1xN10/200+	140	SL81	N12@275	1xN16/200*
5,000	145	SL102	N16@300	1xN10/600+	145	SL102	N16@300	1xN10/200+	150	SL81	N12@200	1xN16/200
5,500	160	SL81	N16@300	1xN10/600+	160	SL81	N16@300	1xN10/200+	165	SL81	N16@300	1xN16/200+
6,000	180	SL81	N16@275	1xN10/600+	180	SL81	N16@275	1xN10/200+	180	SL81	N16@275	1xN16/200+
6,500	205	RL918T	N16@200	1xN10/600+	205	RL918T	N16@200	1xN10/200+	205	RL918T	N16@200	1xN16/200+
7,000	225	RL1018T	N16@175	1xN10/600+	225	RL1018T	N16@175	1xN10/200+	225	RL1018T	N16@175	1xN16/200+

Table 3.11.F RF55® Fire Resistance - Double Span - Floor Live Load 5.0kPa

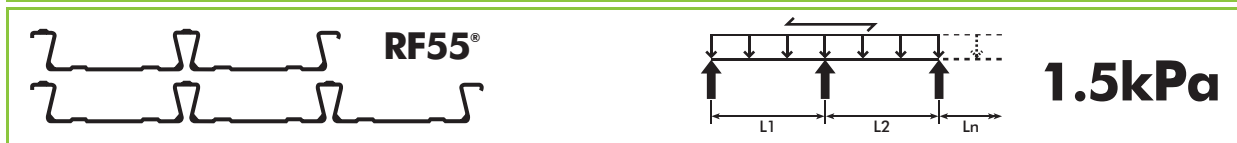
The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- * 40mm
- ‡ 60mm

Shaded cells denote that internal span fire reinforcement is required.

Refer to the start of this section for additional parameters used to calculate the above table.

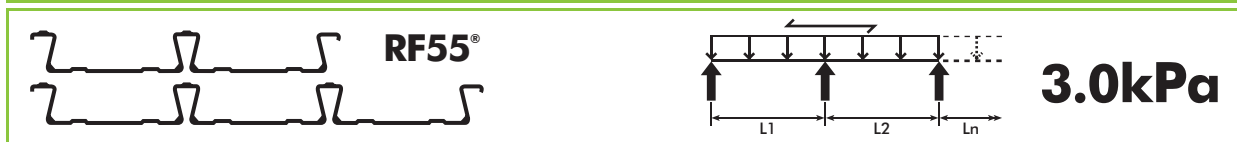
RF55® Fire Resistance Continuous Span - Floor Live Load 1.5kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
3,000	105	SL72	N10@400	1xN10/600†	105	SL72	N10@400	1xN10/600†	140	SL102	N10@400	1xN10/400†
3,500	105	SL72	N10@400	1xN10/600†	105	SL72	N10@400	1xN10/200†	140	SL102	N10@400	1xN10/400*
4,000	105	SL82	N10@400	1xN10/600†	105	SL82	N10@400	1xN10/200†	140	SL102	N10@400	1xN10/200*
4,500	115	SL92	N10@400	1xN10/600†	115	SL92	N10@400	1xN12/200†	140	SL102	N10@250	1xN12/200*
5,000	130	SL102	N10@400	1xN10/400†	130	SL102	N10@400	1xN12/200†	150	SL102	N10@350	1xN16/200†
5,500	145	SL102	N10@325	1xN10/400†	145	SL102	N10@325	1xN12/200†	150	SL102	N10@350	1xN16/200*
6,000	160	SL81	N10@400	1xN10/400†	160	SL81	N10@400	1xN12/200†	165	SL81	N12@400	1xN16/200*
6,500	180	SL81	N10@325	1xN10/200†	180	SL81	N10@325	1xN12/200†	180	SL81	N12@300	1xN16/200†
7,000	205	RL918T	N12@200	1xN10/200†	205	RL918T	N12@200	1xN12/200†	205	RL918T	N16@300	1xN16/200†

Table 3.11.G RF55® Fire Resistance - Continuous Span - Floor Live Load 1.5kPa

RF55® Fire Resistance Continuous Span - Floor Live Load 3.0kPa



Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	1xN10/600†	140	SL102	N10@400	-
3,000	105	SL72	N10@400	1xN10/600†	105	SL72	N10@400	1xN10/400†	140	SL102	N10@400	1xN10/400*
3,500	105	SL72	N10@325	1xN10/600†	105	SL72	N10@325	1xN10/200†	140	SL102	N10@400	1xN10/200*
4,000	110	SL82	N10@250	1xN10/600†	110	SL82	N10@250	1xN10/200†	140	SL102	N10@400	1xN12/200*
4,500	125	SL92	N10@250	1xN10/600†	125	SL92	N10@250	1xN10/200†	145	SL102	N10@400	1xN16/200*
5,000	140	SL102	N10@250	1xN10/600†	140	SL102	N10@250	1xN10/200†	150	SL102	N10@300	1xN16/200*
5,500	160	SL81	N10@250	1xN10/600†	160	SL81	N10@300	1xN10/200†	160	SL81	N10@300	1xN16/200*
6,000	180	SL81	N10@250	1xN10/400†	180	SL81	N10@250	1xN10/200†	180	SL81	N10@250	1xN16/200*
6,500	215	RL918T	N12@200	1xN10/400†	215	RL918T	N12@200	1xN10/200*	215	RL918T	N12@200	1xN16/200*
7,000	235	RL1018T	N16@300	1xN10/400†	235	RL1018T	N16@300	1xN10/200*	235	RL1018T	N16@300	1xN16/200*

Table 3.11.H RF55® Fire Resistance - Continuous Span - Floor Live Load 3.0kPa

The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- * 40mm
- † 60mm

Shaded cells denote that internal span fire reinforcement is required.

Refer to the start of this section for additional parameters used to calculate the above table.

RF55® Fire Resistance Continuous Span - Floor Live Load 5.0kPa												
								5.0kPa				
Span (mm)	60 minutes				90 minutes				180 minutes			
	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo	Dcs	Mesh	Bars	Fire Reo
1,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
1,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,000	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
2,500	105	SL72	N10@400	-	105	SL72	N10@400	-	140	SL102	N10@400	-
3,000	105	SL72	N10@300	1xN10/600+	105	SL72	N10@300	1xN10/400+	140	SL102	N10@400	1xN10/400+
3,500	110	SL82	N10@200	1xN10/600+	110	SL82	N10@200	1xN10/200+	140	SL102	N10@400	1xN10/200*
4,000	120	SL92	N10@200	1xN10/600+	125	SL92	N10@200	1xN10/200+	145	SL102	N10@400	1xN12/200*
4,500	140	SL102	N10@200	1xN10/600+	140	SL102	N10@200	1xN10/200+	150	SL102	N10@200	1xN12/200*
5,000	155	SL81	N10@200	1xN10/600+	160	SL81	N10@200	1xN10/200+	160	SL81	N10@200	1xN16/200+
5,500	175	SL81	N10@200	1xN10/600+	180	SL81	N10@200	1xN10/200+	180	SL81	N10@200	1xN16/200+
6,000	200	RL918T	N16@300	1xN10/600+	200	RL918T	N16@300	1xN10/200+	200	RL918T	N16@300	1xN16/200+
6,500	235	RL1018T	N16@300	1xN10/400+	235	RL1018T	N16@300	1xN10/200+	225	RL1018T	N16@300	1xN16/200+
7,000	245	RL1018T	N16@250	1xN10/400+	245	RL1018T	N16@250	1xN10/200*	245	RL1018T	N16@250	1xN16/200+

Table 3.11.1 RF55® Fire Resistance - Continuous Span - Floor Live Load 5.0kPa

The bottom cover for fire reinforcement shall be determined in accordance to Clause 5.5.3 and Table 5.5.3(A) of AS 3600:2001. The marked reinforcements require additional thickness for the bottom cover approximately within the following ranges:

- † 20mm
- * 40mm
- † 60mm

Shaded cells denote that internal span fire reinforcement is required.

Refer to the start of this section for additional parameters used to calculate the above table.