James Hardie® Internal Fire and Acoustically Rated Floor Solution

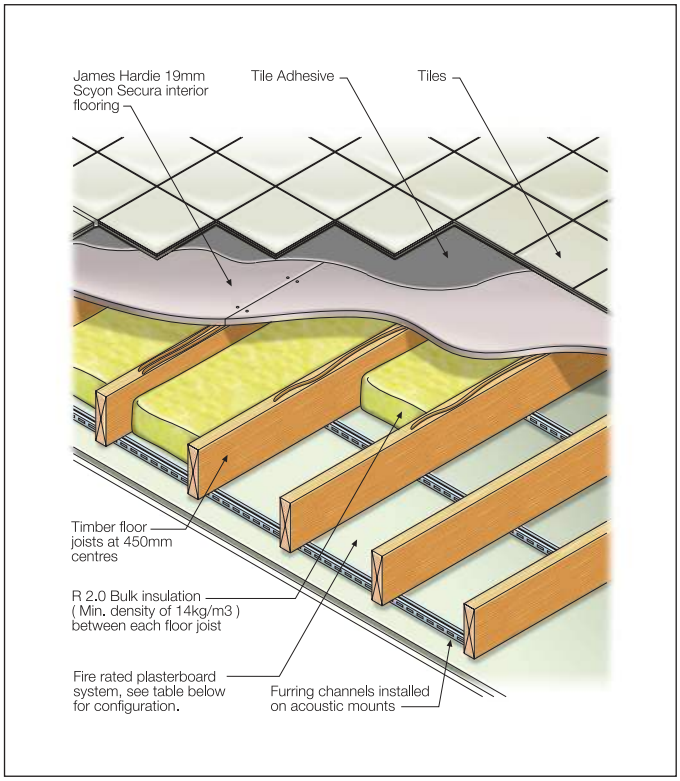

FIGURE 1: JAMES HARDIE FLOOR SOLUTION OVERVIEW

The new James Hardie® light weight internal floor solution is a fire and acoustically rated robust floor solution built from Scyon™ Secura™ interior flooring. The new light weight floor solution:

- delivers cost savings of up to 20% compared to traditional concrete slab construction*
- has no upper storey concrete curing delays which can lead to a 2 week project time saving.
- uses Scyon™ Secura™ interior flooring:
  - 19mm thick Scyon floor substrate
  - non combustible
  - fully sealed on six sides and made from Scyon to minimise board movement helping to prevent squeaking associated with timber floors
  - requires no additional trimmers
  - can be tiled directly without an underlay sheet
- needs no internal floor scaffolding as required by concrete slabs
- delivers up to a 120/120/120 fire rated level from the underside, see table 1
- minimum 190 deep floor joist**
- allows the immediate commencement of the upper floor and roof structure
- delivers a thermally insulated floor solution
- allows the ground floor footing to be reduced thus reducing building costs

NOTE
Always refer to the relevant external experts including fire and acoustic engineers to determine if this solution is applicable for your specific project.

Structural

Scyon™ Secura™ interior floor sheets are structurally designed to withstand the domestic and residential activities for self-contained dwellings (Category A1) of Table 3.1 of AS/NZS 1170.1 - 'Structural design actions - Permanent, imposed and other actions' of 1.8kN concentrated load and a UDL (Uniformly Distributed Load) capacity of 2kPa at 450mm floor joist centre's.

* Based on an independent quantity surveyor analysis on a 200mm concrete slab and two storey construction.

** Subject to the required floor joist height. The minimum floor joist depth must be verified by a structural engineer.

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Fire and Acoustic

The following table outlines the floor system's fire and acoustic performance.

TABLE 1

JH SYSTEM	CEILING LINING SYSTEM	FIRE RATED LEVEL (FRL)	ACOUSTIC DATA					
			R_W		$R_W + C_{tr}$		$L_{n,w} + C_I$	
			Tiled	Carpet	Tiled	Carpet	Tiled	Carpet
1	Furred on acoustic mounts + 2x13mm Boral FireSTOP plasterboard	60/60/60 from below RISF *30 min	61	60	55	54	57	36
2	Furred on acoustic mounts + 13 + 16mm (Boral FireSTOP or Lafarge FireShield) plasterboard	60/60/60 from below RISF *60 min	62	61	56	55	56	35
3	Furred on acoustic mounts + 2 x 16mm Boral FireSTOP plasterboard	90/90/90 from below RISF *60min	61	60	54	53	57	35
4	Furred on acoustic mounts + 3 x 16mm Boral FireSTOP plasterboard	120/120/120 from below RISF *90min	62	61	56	55	55	34

* RISF = Resistance to the Incipent Spread of fire. The above fire ratings are from the underside only.

NOTES

1. Floor joists to be a minimum 190x45 seasoned timber floor joist at 450mm centres. The floor joist must be designed by a structural engineer.
2. Table 1 must be read in conjunction with important notes on page 4.
3. If steel floor joists are to be used, only JH system 2 and Lafarge fireshield plasterboard can be used.
4. Supporting walls must be fire and acoustically rated to suit the floor systems fire and acoustics performance from both sides of wall.

Sustainability

Light weight construction incorporating fibre cement products results in one of the most energy efficient and environmentally responsible building systems employed in the Australian building industry.

Embodied energy is the energy consumed by all of the processes associated with the production of a product/system. It's one important indicator used to assess the environmental damage caused by a product or system on the environment. The higher the number the greater the impact of the system is on the environment and future generations. The below results were calculated by Dr Bill Lawson and clearly show how the James Hardie floor internal solution delivers an embodied energy over three times less than a 200mm thick concrete slab.

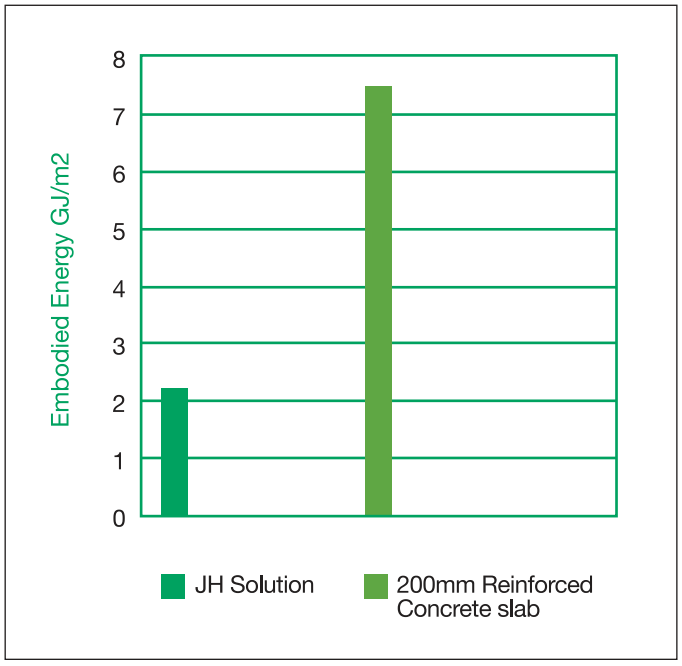

FIGURE 1: EMBODIED ENERGY SOLUTION COMPARISON

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Construction Details

The details below outline floor to wall junction details, see figures 2 to 4. For more detailed information refer to the current James Hardie fire and acoustically rated walls technical specification and the Timber Development Association in your state. The below figures must be read in conjunction with this supplement.

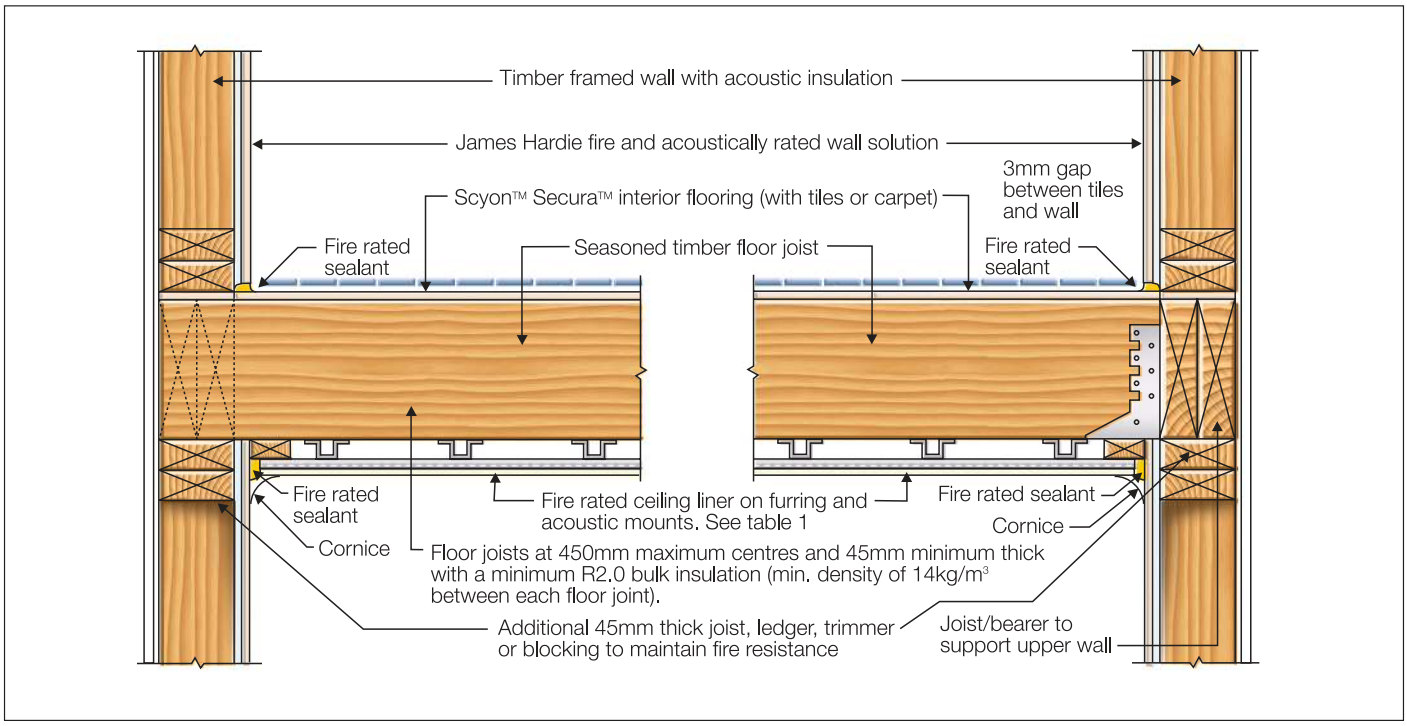

FIGURE 2: FLOOR TO WALL JUNCTION - OPTIONS 1 & 2

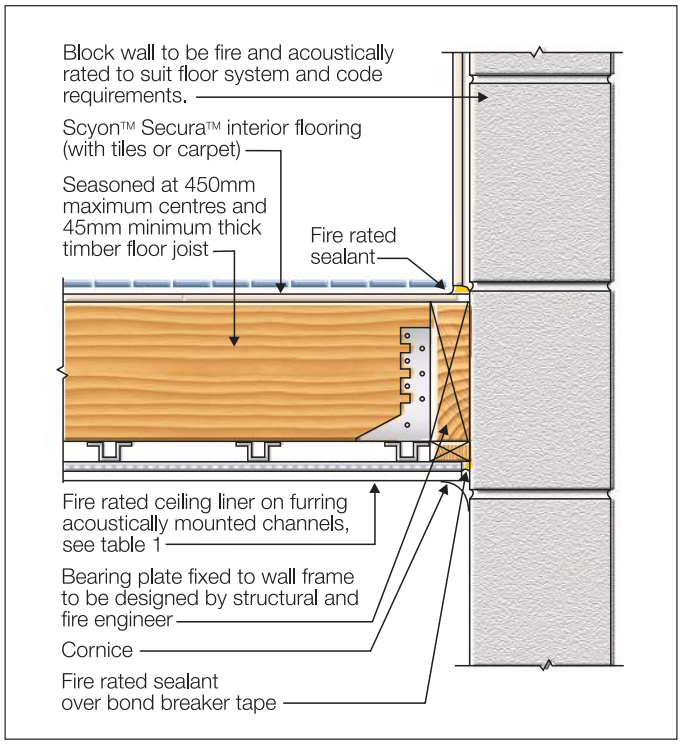

FIGURE 3: FLOOR TO MASONRY WALL JUNCTION - OPTIONS 3

NOTE

Ensure supporting walls are fire and acoustically rated to suit floor and comply with relevant code and regulations from both sides.

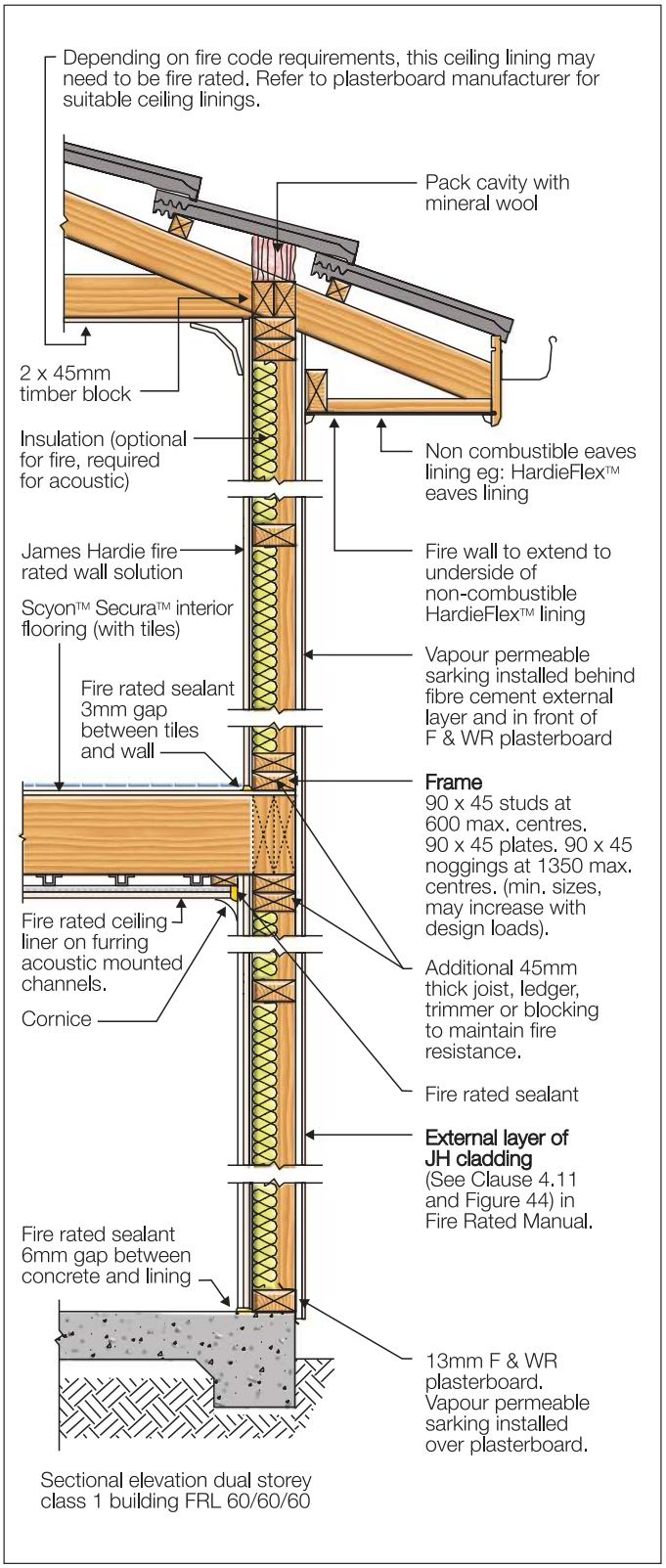

FIGURE 4: FIRE RATED WALL OVERVIEW - 60/60/60

NOTE
For 90/90/90 and 120/120/120 FRL walls refer to the current James Hardie fire and acoustically rated design and technical specification manuals.

IMPORTANT NOTES: Table 1

1. The acoustic values in table 1 are based on an acoustic opinion produced by Heggies Pty Ltd (AAAC approved). All acoustic values are to be verified on site. The Rw (Weighted Sound Reduction Index) is a single number index used to rate the sound insulation of a partition, against noises such as speech, which do not have significant low frequency components. The index given is the expected performance in a laboratory which tests to AS1191 “Acoustics – Method for Laboratory Measurement of the Airborne Sound Transmission Loss of Building Partitions”, and determined according to the procedure in AS/NZS 1276.1 “Acoustics - Rating of Sound Insulation Buildings and of Building Elements.” – Part 1: Airborne Sound Insulation. The rating obtained on a building site, called the Weighted Apparent Sound Reduction Index (R’w) may differ from the laboratory results.

2. C and Ctr are adaptation terms which when applied to the Rw value result in a single number index which provides a more reliable indicator of the ability of the partition to isolate against certain types of noise. In particular, the Rw combined with the Ctr value gives a more reliable indicator of the ability of the partition to isolate against traffic noise, or noise containing low frequency components. In several countries the Rw combined with the Ctr is simplified to a single number rating, RA, 2. That is to say, RA,2 = Rw + Ctr. Refer also to AS/NZS 1276.1:1999 - Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation.

3. The expected tolerance is ±2dB for Rw and ±3dB for Rw + Ctr. This allows for variations in the test method, the difference between laboratories and the accuracy of the estimating techniques.

4. The Ln,w + CI is a single number index used to rate the sound isolation of a floor/ceiling partition against footfall noise, particularly high healed, hard surfaced shoes. The Ln,w + CI value is the expected performance in a laboratory that tests to ISO 10140-3:2010 Acoustics - Laboratory measurement of sound Insulation of building elements - Part 3: Measurement of impact sound insulation and determined according to the procedure in ISO 717-2:1996/Amd 1:2006 Acoustics - Ratings of sound insulation in buildings and building elements - Part 2: Impact sound insulation.

5. The expected tolerance of opinions is ±3dB for the Ln,w + CI. The expected tolerance allows for variations due to the test method, differences between laboratories, and accuracy of the estimate. The Ln,w + CI rating does not quantify the amount of low frequency noise to the room below the partition when a person walks on the floor above. This low frequency noise can be significant with lightweight floor/ceiling systems. The field rating may differ significantly from the laboratory result.

6. The opinions are based on the wall being of good construction and assume the face joints finished, the perimeters acoustically and fire caulked and that there are no acoustical weaknesses in the building elements, such as but not limited to, the walls, floors and ceilings.

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