

Petima Pty Ltd  
Factory 52, 37-39 East Street  
Daylesford VIC 3460

## **RE: SPA and Tridek SIPs Structural Assessment Report**

### **Appendix C SPA SIPs (EPS/XPS/PUR core)**

#### **Floor Loading Capacity and Span Tables For CLASS 1 and 10 BUILDING of 1.5Kpa LIVE LOAD For Non-Cyclonic Areas**

##### **Assessment Items**

The items have been checked are as listed below:

- Floor framing and flooring: SPA SIPs with SIP/box spines
- Floor framing and flooring: SPA SIPs with MGP10 timber spines
- Floor framing and flooring: SPA SIPs with LVL timber spines

##### **Note:**

Wind loads calculated in accordance with AS1170.2 and AS4055 for non-cyclonic areas. SIPs like all timber products will creep under the action of long term loads. It is recommended that long term deflections should be estimated using a factor of 4 TO 7 times the initial deflections for SIPs Panels. Timber joining spline deflections should use a factor of 2 for long term creep effect.

This appendix must be used in conjunction with the SPA and Tridek SIPs Structural Assessment Report, prepared by Metroeng Pty Ltd, dated 9 June 2021

Yours Faithfully,



Huade He  
B.Eng, MIEAust, CPEng, NER, APEC Engineer, IntPE(Aus), RBP, RPEQ, BSP TAS  
Principal Civil/Structural Engineer  
For and on behalf of Metroeng Pty. Ltd.

## Building Code of Australia Compliance

The Loading Capacity and Span Tables complies with the following provisions of Building Regulations 2018 (Victoria):

- NCC 2019 Building Code of Australia - Volume Two
  - 2.1.1 P2.1 (a)
  - 2.1.1 P2.1 (b) (i) and (ii)
  - 2.1.1 P2.1 (b) (iii)
  - 2.1.1 P2.1 (b) (iv) for non-cyclonic areas only
  - 2.1.1 P2.1 (c) for non-cyclonic areas only
  - 3.0.2 (a)&(b)
  - 3.0.3 (a)&(b)
  - 3.0.3 (c)(i)
  - 3.0.3 (c)(ii) for non-cyclonic areas only
  - 3.0.3 (c)(iv)
- Relevant Australian Standards
  - AS/NZS 1170.0-2002 Structural design actions Part 0: General principles
  - AS/NZS 1170.1-2002 Structural design actions Part 1: Permanent, imposed and other actions
  - AS/NZS 1170.2-2011 Structural design actions Part 2: Wind for non-cyclonic areas only
  - AS1170.4-2007 Structural design action Part 4: Earthquake actions in Australia
  - AS4055-2012 Wind loads for housing for non-cyclonic areas only
  - AS1720.1-2010 Timber structures Part 1: Design methods
  - AS1684.2-2010 Residential timber-framed construction Part 2: Non-Cyclonic Areas
  - AS1684.4-2010 Residential timber-framed construction Part 4: Simplified Non-Cyclonic Areas

**Floor framing Span Table: SPA SIPs with SIP/box splines 1.5kPa LIVE LOAD**

	EPS/XPS CORE								BOX/SIP spline
	CARPET/TIMBER FLOORING				TILE FLOORING				
Panel Thickness	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span	
115	2.4	3.0	2.6	2.7	2.0	2.5	2.3	2.8	
145	2.4	3.1	2.7	3.1	2.0	2.5	2.3	2.8	
165	3.1	3.7	3.2	3.4	2.6	3.3	2.8	3.3	
215	3.7	4.3	3.7	3.9	3.1	3.9	3.2	3.9	
265	4.3	4.8	4.1	4.4	3.6	4.6	3.6	4.3	
315	4.9	5.3	4.5	4.8	4.0	5.1	3.9	4.7	

**Floor framing Span Table: SPA SIPs with MGP10 timber splines 1.5kPa LIVE LOAD**

Panel Thickness	EPS/XPS CORE								SINGLE MGP10 spline
	CARPET/TIMBER FLOORING				TILE FLOORING				
	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span	
115	2.6	3.3	2.8	3.3	2.1	2.7	2.4	2.9	90 x 45
145	2.7	3.5	2.9	3.5	2.2	2.8	2.5	3.0	120 x 45
165	3.5	4.3	3.5	4.2	2.9	3.7	3.0	3.7	140 x 45
215	4.3	5.2	4.1	5.0	3.6	4.6	3.6	4.3	190 x 45
265	5.2	6.1	4.7	5.7	4.3	5.5	4.1	5.0	240 x 45
315	6.1	7.0	5.3	6.4	5.0	6.4	4.6	5.6	290 x 45

Panel Thickness	PUR CORE								SINGLE MGP10 spline
	CARPET/TIMBER FLOORING				TILE FLOORING				
	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span	
115	2.2	2.8	2.5	2.7	1.8	2.3	2.1	2.6	90 x 45
145	2.7	3.5	2.9	3.5	2.2	2.8	2.5	3.0	120 x 45
165	3.0	3.9	3.2	3.8	2.5	3.2	2.7	3.3	140 x 45
215	3.8	4.9	3.8	4.5	3.1	4.0	3.2	3.9	190 x 45
265	4.6	5.9	4.3	5.2	3.8	4.8	3.7	4.5	240 x 45
315	5.4	6.9	4.9	5.9	4.4	5.7	4.2	5.1	290 x 45

**Floor framing Span Table: SPA SIPs with 2/MGP10 timber splines 1.5kPa LIVE LOAD**

		EPS/XPS CORE								2/MGP10 spline
		CARPET/TIMBER FLOORING				TILE FLOORING				
Panel Thickness	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection			
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span		
115	2.7	3.3	2.9	3.3	2.2	2.9	2.5	3.0	2/90 x 45	
145	2.7	3.5	2.9	3.5	2.2	2.8	2.5	3.0	2/120 x 45	
165	3.8	4.8	3.7	4.5	3.1	4.0	3.2	3.9	2/140 x 45	
215	4.8	6.0	4.5	5.4	4.0	5.1	3.9	4.7	2/190 x 45	
265	5.9	7.2	5.2	6.3	4.9	6.3	4.6	5.5	2/240 x 45	
315	6.9	8.3	5.9	7.1	5.8	7.4	5.2	6.2	2/290 x 45	

		PUR CORE								2/MGP10 spline
		CARPET/TIMBER FLOORING				TILE FLOORING				
Panel Thickness	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection			
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span		
115	2.4	3.0	2.6	2.7	1.9	2.5	2.3	2.7	2/90 x 45	
145	2.7	3.5	2.9	3.5	2.2	2.8	2.5	3.0	2/120 x 45	
165	3.3	4.3	3.4	4.0	2.7	3.5	2.9	3.5	2/140 x 45	
215	4.3	5.5	4.1	5.0	3.6	4.5	3.6	4.3	2/190 x 45	
265	5.3	6.8	4.8	5.8	4.4	5.6	4.2	5.0	2/240 x 45	
315	6.3	8.1	5.5	6.6	5.2	6.7	4.8	5.7	2/290 x 45	

**Floor framing Span Table: SPA SIPs with LVL timber splines 1.5kPa LIVE LOAD**  
**Hyspan LVL or equivalent**

Panel Thickness	EPS/XPS CORE								SINGLE LVL spline
	CARPET/TIMBER FLOORING				TILE FLOORING				
	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span	
115	2.6	3.3	2.8	3.3	2.2	2.8	2.5	3.0	90 x 45
145	2.8	3.6	3.0	3.6	2.3	2.9	2.6	3.1	120 x 45
165	3.6	4.6	3.6	4.3	3.0	3.8	3.1	3.8	140 x 45
215	4.5	5.8	4.3	5.2	3.8	4.8	3.7	4.5	190 x 45
265	5.5	7.0	4.9	5.9	4.6	5.9	4.3	5.2	240 x 45
315	6.4	8.2	5.6	6.7	5.4	6.9	4.9	5.8	290 x 45

Panel Thickness	PUR CORE								SINGLE LVL spline
	CARPET/TIMBER FLOORING				TILE FLOORING				
	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span	
115	2.3	2.9	2.6	2.7	1.9	2.4	2.2	2.6	90 x 45
145	2.8	3.6	3.0	3.5	2.3	2.9	2.6	3.1	120 x 45
165	3.2	4.0	3.3	3.9	2.6	3.3	2.8	3.4	140 x 45
215	4.0	5.2	3.9	4.7	3.3	4.2	3.4	4.1	190 x 45
265	4.9	6.3	4.5	5.5	4.0	5.2	3.9	4.7	240 x 45
315	5.8	7.4	5.1	6.2	4.8	6.1	4.4	5.3	290 x 45

**Floor framing Span Table: SPA SIPs with 2/LVL timber splines 1.5kPa LIVE LOAD  
 Hyspan LVL or equivalent**

		EPS/XPS CORE								2/LVL splines
		CARPET/TIMBER FLOORING				TILE FLOORING				
Panel Thickness	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection			
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span		
115	2.8	3.3	3.0	3.3	2.3	3.0	2.6	3.1	2/90 x 45	
145	2.8	3.6	3.0	3.6	2.3	2.9	2.6	3.1	2/120 x 45	
165	4.0	4.8	3.9	4.7	3.3	4.3	3.4	4.1	2/140 x 45	
215	5.2	6.0	4.7	5.7	4.3	5.5	4.1	5.0	2/190 x 45	
265	6.3	7.2	5.5	6.6	5.3	6.8	4.8	5.8	2/240 x 45	
315	7.5	8.3	6.3	7.5	6.3	8.1	5.5	6.6	2/290 x 45	

		PUR CORE								2/LVL splines
		CARPET/TIMBER FLOORING				TILE FLOORING				
Panel Thickness	Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection		Maximum span (m) for Span/300 deflection		Maximum span (m) for 12mm deflection			
	single span	continuous span	single span	continuous span	single span	continuous span	single span	continuous span		
115	2.5	3.2	2.7	2.7	2.0	2.6	2.4	2.8	2/90 x 45	
145	2.8	3.6	3.0	3.5	2.3	2.9	2.6	3.1	2/120 x 45	
165	3.6	4.6	3.6	4.0	2.9	3.8	3.1	3.7	2/140 x 45	
215	4.7	6.0	4.4	5.3	3.9	4.9	3.8	4.6	2/190 x 45	
265	5.8	7.2	5.2	6.2	4.8	6.1	4.5	5.4	2/240 x 45	
315	6.9	8.3	5.9	7.1	5.8	7.4	5.1	6.1	2/290 x 45	