



## Introducing the new H2S treated I-Joist from LP Building Products.

LP™ SolidStart™ I-Joists help make true and uniform floors and ceilings possible for residential and commercial construction.



| DESIGN VALUES |            |        |        |       |                       |                       |
|---------------|------------|--------|--------|-------|-----------------------|-----------------------|
| Series        | Depth (mm) | Weight | Moment | Shear | $EI_{xx} \times 10^9$ | $G_w A_w \times 10^6$ |
|               |            | (kg/m) | (kN-m) | (kN)  | (N.mm <sup>2</sup> )  | (N)                   |
| LPI™ 53-T     | 225        | 3.25   | 10.5   | 12.4  | 488                   | 2990                  |
|               | 241        | 3.35   | 11.4   | 13.3  | 574                   | 3190                  |
|               | 302        | 3.75   | 14.7   | 15.7  | 967                   | 3940                  |
|               | 356        | 4.11   | 17.4   | 17.7  | 1412                  | 4620                  |
|               | 406        | 4.45   | 19.9   | 19.7  | 1911                  | 5260                  |
| LPI™ 70-T     | 225        | 3.97   | 14.2   | 12.4  | 651                   | 3040                  |
|               | 241        | 4.07   | 15.4   | 13.3  | 769                   | 3240                  |
|               | 302        | 4.48   | 19.9   | 15.7  | 1286                  | 4000                  |
|               | 356        | 4.84   | 23.6   | 17.7  | 1871                  | 4690                  |
|               | 406        | 5.18   | 27.0   | 19.7  | 2528                  | 5340                  |

### NOTES:

- LP™ SolidStart™ I-joists shall be designed for dry-use conditions only. Dry-use applies to products installed in dry, covered and well ventilated interior conditions in which the equivalent moisture content in timber will not exceed 16%.
- Moment and Shear values shall be adjusted by k1 for load duration from AS1720.1.
- Moment cannot be increased using k9 greater than 1.0.
- Deflection calculations shall include both bending and shear deformations.

$$\text{Deflection for a simple span, uniform load: } \Delta = \frac{5wL^4}{384EI} + \frac{wL^2}{G_w A_w}$$

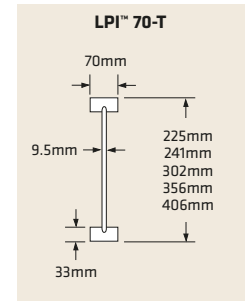
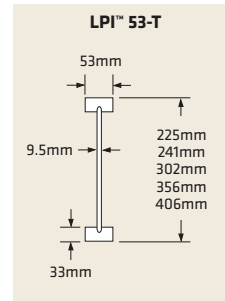
Where:  $\Delta$  = deflection (mm)       $EI$  = bending stiffness (from table)  
 $w$  = uniform load (kN/m)       $GA$  =  $G_w A_w$   
 $L$  = design span (mm)

Equations for other conditions can be found in engineering references.

| REACTION AND BEARING CHARACTERISTIC VALUES |            |                   |                 |                        |                 |                       |
|--|------------|-------------------|-----------------|------------------------|-----------------|-----------------------|
| Series                                     | Depth (mm) | End Supports (kN) |                 | Interior Supports (kN) |                 | Flange Bearing (N/mm) |
|  |            | W/out Stiffeners  | With Stiffeners | W/out Stiffeners       | With Stiffeners |                       |
| LPI™ 53-T                                  | 225        | 9.3               | 11.5            | 20.7                   | 22.6            | 370                   |
|  | 241        | 9.3               | 11.9            | 20.7                   | 23.0            |                       |
|  | 302        | 9.3               | 13.1            | 20.9                   | 24.5            |                       |
|  | 356        | 9.3               | 14.2            | 20.9                   | 25.8            |                       |
|  | 406        | 9.3               | 15.3            | 21.0                   | 27.1            |                       |
| LPI™ 70-T                                  | 225        | 9.5               | 11.6            | 21.7                   | 24.1            | 500                   |
|  | 241        | 9.5               | 12.0            | 22.0                   | 24.4            |                       |
|  | 302        | 9.5               | 13.4            | 22.9                   | 25.5            |                       |
|  | 356        | 9.5               | 14.7            | 23.7                   | 26.5            |                       |
|  | 406        | 9.5               | 15.9            | 24.5                   | 27.5            |                       |

### NOTES

- End and Interior Reaction Capacity shall be limited by the Flange Bearing Capacity or the bearing capacity of the support material, whichever is less. The Flange Bearing Capacity, per mm of bearing length, is based on the compression perpendicular-to-grain of the I-joist flange, accounting for arised edges, and may be further limited by the bearing strength of the support material. The bearing capacity of a timber support is based on the species of the timber or type of composite timber.
- Reaction Capacity is for instantaneous load duration and shall be adjusted using k1.
- The reaction and bearing table values are based on a minimum bearing length of 38mm for end supports and 63mm for internal or cantilever supports.
- No end support reaction increase for web stiffeners when detail F5 is used.



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File: 11-0349  
Date: 16 November 2011

Attn: Al Huber  
Louisiana Pacific Corporation  
Suite 2000  
414 Union Street  
NASHVILLE TN 37219

Ref: LPI Series 53-T & 70-T I-Beam Characteristic Values - 2011

Dear Al,

Please find attached below as an appendix to this letter, the final values for the new series LPI 53-T & 70-T I-Beams. This work has been carried out by us in conjunction with the test results from APA testing carried out in August and October, 2011, at Red Bull, California, and reference by report T2011P-61 from APA.

The resulting test data has been first analysed by your engineering department, and then we have now completed a check of this analysis, with application of the data to the following codes:

- Reference US and International (ISO) specifications for evaluation of test methods
- AS/NZS 4063.3:2010 Characterization of structural timber - Test methods
- AS/NZS 4063.2:2010 Characterization of structural timber - Determination of characteristic values
- ASTM D 5055-08a "Standard Specification for Establishing and Monitoring Structural Capabilities of Prefabricated Wood I-Joists"
- ISO TC165/CD 22389 "Timber Structures – Bending Applications of I-Beams – Part 1: Structural Testing, Evaluation and Characterization"

The use of the ISO standard for this work was due to the fact that we do not have a standard for I-joists in Australia. This work has been carried out by my staff, and under my supervision, and I am satisfied that the resulting I-Beam characteristic values are in accordance with all relevant requirements for Australia, and are suitable for use in all forms of construction in accordance with the Building Code of Australia.

Should you require any further information, please do not hesitate to contact my office.

Yours faithfully,  
  
HR DESIGN GROUP P/L  
Stephen Hunt *BEng (Civil), CPEng*

Web site: [www.hrdesigngroup.com.au](http://www.hrdesigngroup.com.au)  
(MIEAust #368737), (RPEQ #3731), NPER  
 Dated: 16 November 2011  
Building products, stress and engineering together

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# LP™ SolidStart™ I-Joists - Residential Floor Span Tables

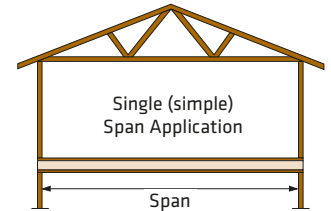
## TO USE:

1. Determine span condition as either single or continuous & select the appropriate table. If span is continuous, verify that it meets the continuous span criteria listed in the General Notes below.
2. Identify dead load condition as either 40 kg/m<sup>2</sup> or 100 kg/m<sup>2</sup>.
3. Select joist centres.
4. Scan down the column until you meet or exceed the span of your application.
5. Select the LPI™ Series & depth

**CAUTION:** For floor systems that require both single span & continuous span joists, it is a good idea to check both before selecting a joist. Some conditions are controlled by continuous span strength rather than single span deflection.

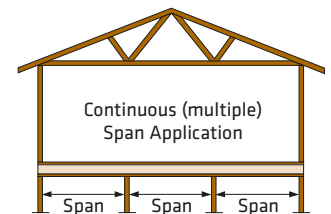
### SINGLE SPAN - MAXIMUM ALLOWABLE SPANS (m)

|   | Depth (mm) | LPI™ Series | Joist Spacing (mm) |     |     |     |     |
|---|------------|-------------|--------------------|-----|-----|-----|-----|
|   |            |             | 300                | 400 | 450 | 480 | 600 |
| Timber Floor<br>40 kg/m <sup>2</sup> Dead Load  | 225        | LPI™ 53-T   | 5.1                | 4.8 | 4.5 | 4.4 | 4.2 |
|   | 241        | LPI™ 53-T   | 5.3                | 5.0 | 4.8 | 4.7 | 4.5 |
|   | 302        | LPI™ 53-T   | 6.1                | 5.7 | 5.5 | 5.4 | 5.1 |
|   | 356        | LPI™ 53-T   | 6.7                | 6.2 | 6.0 | 5.9 | 5.6 |
|   | 406        | LPI™ 53-T   | 7.2                | 6.7 | 6.5 | 6.4 | 6.0 |
| Tile Floor<br>100 kg/m <sup>2</sup> Dead Load   | 225        | LPI™ 53-T   | 4.8                | 4.5 | 4.3 | 4.2 | 3.9 |
|   | 241        | LPI™ 53-T   | 5.0                | 4.6 | 4.5 | 4.4 | 4.1 |
|   | 302        | LPI™ 53-T   | 5.7                | 5.3 | 5.1 | 5.1 | 4.8 |
|   | 356        | LPI™ 53-T   | 6.2                | 5.8 | 5.6 | 5.5 | 5.2 |
|   | 406        | LPI™ 53-T   | 6.7                | 6.3 | 6.1 | 6.0 | 5.7 |
| Timber Floor<br>40 kg/m <sup>2</sup> Dead Load  | 225        | LPI™ 70-T   | 5.5                | 5.1 | 5.0 | 4.9 | 4.6 |
|   | 241        | LPI™ 70-T   | 5.7                | 5.3 | 5.2 | 5.2 | 4.8 |
|   | 302        | LPI™ 70-T   | 6.5                | 6.1 | 5.9 | 5.8 | 5.4 |
|   | 356        | LPI™ 70-T   | 7.2                | 6.7 | 6.5 | 6.3 | 6.0 |
|   | 406        | LPI™ 70-T   | 7.7                | 7.2 | 7.0 | 6.8 | 6.5 |
| Timber Floor<br>100 kg/m <sup>2</sup> Dead Load | 225        | LPI™ 70-T   | 5.1                | 4.8 | 4.6 | 4.6 | 4.3 |
|   | 241        | LPI™ 70-T   | 5.3                | 5.0 | 4.8 | 4.8 | 4.5 |
|   | 302        | LPI™ 70-T   | 6.1                | 5.7 | 5.5 | 5.4 | 5.1 |
|   | 356        | LPI™ 70-T   | 6.6                | 6.2 | 6.0 | 5.9 | 5.6 |
|   | 406        | LPI™ 70-T   | 7.2                | 6.7 | 6.5 | 6.4 | 6.0 |



### CONTINUOUS SPAN - MAXIMUM ALLOWABLE SPANS (m)

|   | Depth (mm) | LPI™ Series | Joist Spacing (mm) |     |     |     |     |
|---|------------|-------------|--------------------|-----|-----|-----|-----|
|   |            |             | 300                | 400 | 450 | 480 | 600 |
| Timber Floor<br>40 kg/m <sup>2</sup> Dead Load  | 225        | LPI™ 53-T   | 5.6                | 5.2 | 5.0 | 5.0 | 4.7 |
|   | 241        | LPI™ 53-T   | 5.8                | 5.4 | 5.2 | 5.2 | 4.9 |
|   | 302        | LPI™ 53-T   | 6.6                | 6.2 | 6.0 | 5.9 | 5.5 |
|   | 356        | LPI™ 53-T   | 7.3                | 6.8 | 6.6 | 6.5 | 6.1 |
|   | 406        | LPI™ 53-T   | 7.9                | 7.3 | 7.1 | 7.0 | 6.6 |
| Tile Floor<br>100 kg/m <sup>2</sup> Dead Load   | 225        | LPI™ 53-T   | 5.6                | 5.2 | 5.0 | 5.0 | 4.7 |
|   | 241        | LPI™ 53-T   | 5.8                | 5.4 | 5.2 | 5.2 | 4.9 |
|   | 302        | LPI™ 53-T   | 6.6                | 6.2 | 6.0 | 5.9 | 5.5 |
|   | 356        | LPI™ 53-T   | 7.3                | 6.8 | 6.6 | 6.5 | 6.1 |
|   | 406        | LPI™ 53-T   | 7.9                | 7.3 | 7.1 | 7.0 | 6.6 |
| Timber Floor<br>40 kg/m <sup>2</sup> Dead Load  | 225        | LPI™ 70-T   | 6.0                | 5.6 | 5.4 | 5.3 | 5.0 |
|   | 241        | LPI™ 70-T   | 6.3                | 5.8 | 5.6 | 5.5 | 5.2 |
|   | 302        | LPI™ 70-T   | 7.1                | 6.6 | 6.4 | 6.3 | 5.9 |
|   | 356        | LPI™ 70-T   | 7.8                | 7.3 | 7.0 | 6.9 | 6.5 |
|   | 406        | LPI™ 70-T   | 8.4                | 7.8 | 7.6 | 7.5 | 7.0 |
| Timber Floor<br>100 kg/m <sup>2</sup> Dead Load | 225        | LPI™ 70-T   | 6.0                | 5.6 | 5.4 | 5.3 | 5.0 |
|   | 241        | LPI™ 70-T   | 6.3                | 5.8 | 5.6 | 5.5 | 5.2 |
|   | 302        | LPI™ 70-T   | 7.1                | 6.6 | 6.4 | 6.3 | 5.9 |
|   | 356        | LPI™ 70-T   | 7.8                | 7.3 | 7.0 | 6.9 | 6.5 |
|   | 406        | LPI™ 70-T   | 8.4                | 7.8 | 7.6 | 7.5 | 7.0 |



## GENERAL NOTES:

1. Span is the clear distance between supports. Calculation is based on clear span plus 1/2 the bearing lengths.
2. The LP™ SolidStart™ I joists must span at least 2 adjacent spans to be continuous. To prevent uplift, short span should be > 0.5 times the long span. For continuous span conditions that do not meet this criteria, use the single span table. Always use the longest span with either table.
3. For loading conditions not shown, contact your LP Building Products representative.
4. Live loads: 1.5kPa distributed & 1.8kN concentrated.

## DESIGN ASSUMPTIONS:

1. The single spans listed are the clear distance between supports.
2. The spans are based on uniform floor loads only as listed for each table.
3. Live load deflection has been limited to the lesser of L/360 or 9mm. Permanent Load deflection has been limited to lesser of L/300 or 12mm, & dynamic performance is checked as the maximum of 2mm deflection under a 1kN static load.
4. The spans are based on an end bearing length of at least 38mm & intermediate bearing length of 63mm.

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