



BRANZ Appraised

Appraisal No.570 [2007]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 570 (2007)**

**THRU-JOIST
BRACKETS FOR
TIMBER JOISTS**

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Product

1.1 THRU-JOIST brackets are a range of formed galvanised steel brackets for reinforcing Radiata Pine floor joists to allow holes to be made for services.



Scope

2.1 THRU-JOIST brackets have been appraised for use as reinforcement to timber floor joist at holes made for services. They are for use in non-specific design situations where floor joist sections are specified in accordance with NZS 3604 or AS 1684.2 Radiata Pine up to and including stress grade F8.

2.2 THRU-JOIST brackets are for use in internal dry, protected environments.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, THRU-JOIST brackets, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. THRU-JOIST brackets, meet the requirements for loads arising from self-weight, imposed gravity loads arising from use and creep [i.e. B1.3.3 (a), (b) and (f)]. See Paragraphs 8.1 - 8.5.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1. THRU-JOIST brackets, meet this requirements. See Paragraph 9.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. THRU-JOIST brackets meet this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

Building Code of Australia (BCA 2007)

4.1 In the opinion of BRANZ, THRU-JOIST brackets, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the Building Code of Australia (BCA 2007):

BCA 2007 Volume 2 – Class 1 and Class 9 Buildings

Part 2.1 Structural Provisions: Performance Requirement P2.1. THRU-JOIST brackets, meet this requirement. See Paragraphs 8.1 - 8.5.

4.2 This is an Appraisal of an **Alternative Solution** in terms of Building Code of Australia compliance.

Technical Specification

5.1 THRU-JOIST brackets are available in four sizes TJ140 for 140 x 45 mm joists, TJ190 for 190 x 45 mm joists, TJ240 for 240 x 45 mm joists and TJ290 for 290 x 45 mm joists. THRU-JOIST TJ140, TJ190 and TJ240 brackets are 300mm long and the TJ290 bracket is 400 mm long. THRU-JOIST brackets are 45mm wide to suit ex 50mm gauged timber joists.

5.2 The brackets are manufactured from zinc-coated G250 coil steel with a base metal thickness of 1.15 mm for TJ140 and TJ190 brackets and 1.5 mm for TJ240 and 2.0 mm for TJ290. The coating class is Z275. The steel is punched and folded to form the brackets. Each bracket has a central drilling circle and nail holes for a specific nailing pattern.

5.3 Nails are 30 x 3.15 mm (35 x 3.15 mm for Australia) hot dip galvanised which are supplied by the installer.

Delivery, Handling and Storage

6.1 THRU-JOIST brackets must be kept dry under cover until used.

Technical Literature

7.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for THRU-JOIST brackets. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

8.1 Floor and floor joists are to be designed and constructed in accordance with NZS 3604 or AS 1684.2.

8.2 Australia Radiata Pine Stress Grades up to and including F8.

8.3 THRU-JOIST brackets provide a means of reinforcing joists around service holes such that the strength and stiffness performance of the joists is not affected.

8.4 The TJ140 THRU-JOIST bracket has a 100mm diameter drilling circle for holes up to a 68mm diameter, the TJ190 THRU-JOIST bracket has a 135mm diameter drilling circle and the TJ240 and TJ290 has a 185mm diameter drilling circle for holes up to a 121mm diameter. Holes can be placed in any position within the drilling circle. To obtain falls for plumbing discharge pipes holes can be drilled at varying heights with the drilling circles on adjacent joists.

8.5 There are no limits on where THRU-JOIST brackets can

be installed along the length of joists other than where multiple THRU-JOIST brackets are on one joist there must be a minimum spacing of 1.5m between centres.

Durability

Serviceable Life

9.1 THRU-JOIST brackets are expected to have a serviceable life of at least 50 years, provided they are designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.

Maintenance

10.1 THRU-JOIST brackets will not normally require maintenance. However, if damage occurs to the floor structure, then repairs or replacement must be carried out to ensure the integrity of the floor system.

Spread of Fire

11.1 The use of THRU-JOIST brackets with fire rated (FRR) (Australia FRL) suspended floor constructions has not been assessed and is outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

12.1 Installation of THRU-JOIST brackets can be carried out by any competent building contractor.

General

12.2 THRU-JOIST brackets must be installed in accordance with the information contained within the Technical Literature. The location of holes required in the floor joists is marked taking account of any required falls for plumbing discharge pipes.

12.3 THRU-JOIST brackets are located and installed firmly up against the underside of the joists. The brackets are then nailed to the joists. Every hole in the bracket must be nailed. Holes up to 68 mm in diameter can be drilled in the TJ140 THRU-JOIST brackets drilling circle. Holes up to 121 mm diameter can be drilled in the other THRU-JOIST brackets drilling circles.

Inspections

12.4 The critical areas of inspection are that the brackets sit tightly to the timber joist and that all nail holes are nailed with the correct size nail.

Basis of Appraisal

The following is a summary of the technical investigations carried out.

Tests

13.1 BRANZ has carried out flexural and shear tests on timber joists incorporating THRU-JOIST brackets.

Other Investigations

14.1 Structural and durability assessments have been provided by BRANZ technical experts.

14.2 Site visits to assess installation methods, the practicability of installation and to examine completed installations, have been made by BRANZ.

14.3 The Technical Literature has been examined by BRANZ

and found to be satisfactory.

Quality

15.1 The manufacture of THRU-JOIST brackets has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

15.2 The quality of THRU-JOIST brackets supplied is the responsibility of Brace-It Ltd.

15.3 The installer is responsible for the quality of the installation.

15.4 Building owners are responsible for the maintenance.

Sources of Information

- AS 1684.2-2006 Residential timber-framed construction.
- AS/NZS 1365: 1996 Tolerances for flat-rolled steel products.
- AS 1397: 2001 Steel sheet and strip—Hot-dip zinc coated or aluminium/zinc coated.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3604:1999 Timber framed buildings.
- Building Code of Australia, Volume 2 Class 1 and 10 Buildings, Australian Building Codes Board, 2007.
- New Zealand Building Code Handbook Department of Building and House, Third Edition May 2007.
- The Building Regulations 1992, up to, and including amendment June 2007 Amendment.



BRANZ

In the opinion of BRANZ, THRU-JOIST is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal. The Appraisal is issued only to Brace-It Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Brace-It Ltd:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
3. Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
4. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Brace-It Ltd**.
5. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to **Brace-It Ltd** or any third party.

For BRANZ

C Preston
Chief Executive

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