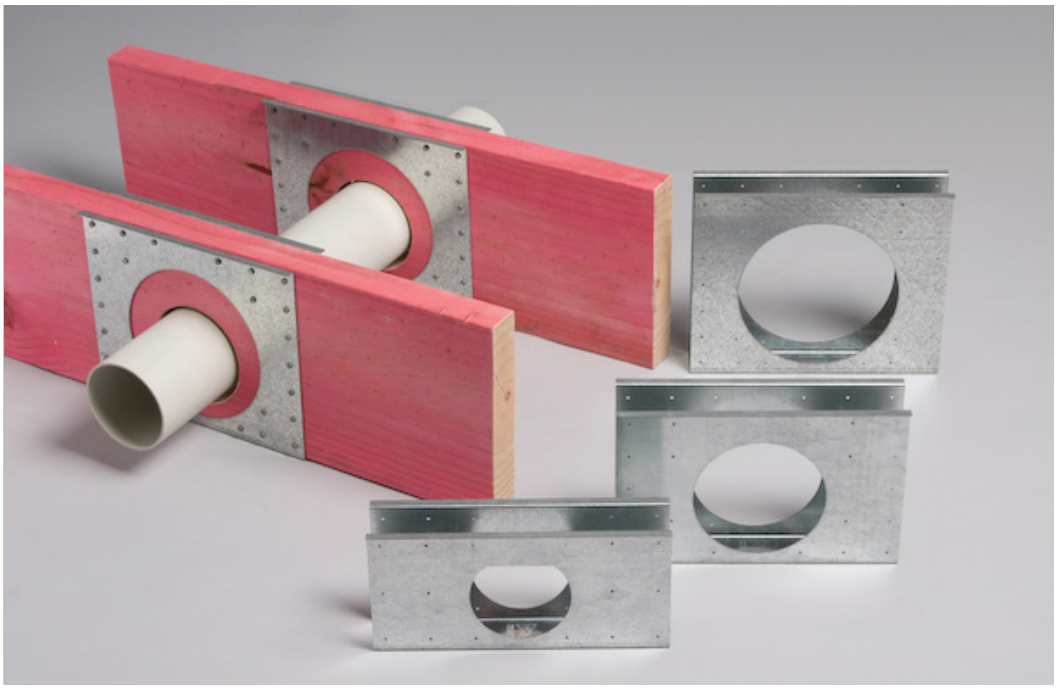
BRANZ Appraised
Appraisal No. 570 [2019]

THRU-BRACKETS FOR TIMBER FRAMING



Appraisal No. 570 (2019)

This Appraisal replaces BRANZ Appraisal No. 570 (2014)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 THRU-brackets are a range of formed galvanised steel brackets for reinforcing Radiata Pine solid timber and LVL floor joists (THRU-JOIST), studs (THRU-STUD) and top plates (THRU-TOP PLATE) to allow holes to be made for services.

Scope

2.1 THRU-brackets have been appraised for use as reinforcement to timber floor joists, studs and top plates at holes made for services. They are for use in non-specific design situations where floor joists, studs and top plates are specified within the scope of NZS 3604, up to, and including SG10 and LVL10.

2.2 THRU-TOP PLATE brackets have been appraised for use in NZS 3604 Wind Zones up to, and including Extra High.

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

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, THRU-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-brackets meet the requirements for loads arising from self-weight, imposed gravity loads arising from use, snow, wind and creep [i.e. B1.3.3 (a), (b) (g), (h) and (q)]. See Paragraphs 7.1 - 7.10.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years. THRU-brackets meet this requirement. See Paragraph 8.1.

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

Technical Specification

4.1 A range of THRU-brackets are available as set out in Table 1.

Table 1: THRU-brackets range

	Depth (mm)	Length (mm)	Width (mm)	Drilling circle diameter (mm)	Max hole diameter (mm)
THRU-JOIST (Single)					
TJ140	140	300	45	90	68
TJ190	190	300	45	137	121
TJ240	240	300	45	187	121
TJ290	290	400	45	187	121
THRU-JOIST (double)					
TJD140	140	300	90	90	68
TJD190	190	360	90	137	121
TJD240	240	400	90	187	121
TJD290	290	400	90	187	121
THRU-STUD					
TS90	90	200	45	59	59
THRU-TOP PLATE					
TTP	90	350	-	59	59
TTPE	90	350		30 x 190*	30 x 190*

* Slot dimension 30 mm wide x 190 mm long

4.2 The brackets are manufactured from zinc-coated G250 coil steel with a base metal thickness of 1.15 mm through to 2.0 mm depending on the bracket size. 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.

4.3 Nails are 30 x 3.15 mm hot-dip galvanised which are supplied by the installer.

4.4 12 g x 35 mm galvanised screws are provided for use on the THRU-TOP PLATE bracket.

Handling and Storage

5.1 THRU-brackets must be kept dry and under cover until used.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for THRU-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

7.1 Floor and wall framing is to be designed and constructed in accordance with NZS 3604.

7.2 THRU-brackets are for use in non-specific design situations with timber grades up to and including SG10 and LVL10.

7.3 THRU-brackets provide a means of reinforcing joists, studs and top plates around service holes such that the strength and stiffness performance of the timber is not affected.

7.4 THRU-brackets are required to match the framing timber they are designed for:

- THRU-JOIST brackets must match the joist depth, i.e. TJ140 = 140 x 45 mm joist.
- THRU-STUD brackets are designed for use on 90 x 45 mm studs.

7.5 The TJ140 THRU-JOIST bracket has a 100 mm diameter drilling circle for holes up to a 68 mm diameter, the TJ190 THRU-JOIST bracket has a 135 mm diameter drilling circle and the TJ240 and TJ290 brackets have 185 mm diameter drilling circle for holes up to a 121 mm diameter. The THRU-STUD brackets and THRU-TOP PLATE brackets have a maximum hole diameter of 59 mm. Holes can be placed in any position within the drilling circle. To obtain falls for plumbing discharge, pipe holes can be drilled at varying heights within drilling circles on adjacent joists. The THRU-STUD bracket can be located at varying heights to achieve falls.

7.6 THRU-JOIST brackets can be installed in any location along the length of a joist. Where multiple brackets are required, they must be installed at a minimum spacing of 1500 mm between centres.

7.7 THRU-JOIST brackets will not significantly change the stiffness performance of the original floor joists. This may be important where floors have been designed to have a deflection limit of L/360, for example, in a wet area or under a tiled floor finish.

7.8 THRU-STUD brackets can be installed anywhere along the length of the stud. Where multiple brackets are required:

- Brackets must be installed at a minimum spacing of 1500 mm between centres; or,
- In the bottom quarter of the stud, two brackets can be installed at minimum 300 mm centres. In these situations the number of brackets are limited to two brackets per stud.

7.9 THRU-TOP PLATE brackets, when used in NZS 3604 Extra High wind zones, must have an additional dwang installed directly to the underside of the top plate.

7.10 THRU-TOP PLATE brackets are designed to be limited to one bracket per stud bay.

Durability

Serviceable Life

8.1 THRU-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

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

Spread of Fire

10.1 The use of THRU-brackets with fire rated (FRR) suspended floor constructions or walls has not been assessed and is outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

11.1 All design and building work must be carried out in accordance with the THRU-brackets Technical Literature and this Appraisal by competent and experienced tradespersons conversant with the THRU-brackets. Where the work involves Restricted Building Work (RBW) this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License class.

General

12.1 THRU-brackets must be installed in accordance with the information contained within the Technical Literature. The location of holes should take account of any required falls for plumbing discharge pipes.

12.2 THRU-brackets are located and installed firmly against the joists, stud or top plate. The brackets are then nailed or screwed to the framing. Every hole in the bracket must be fixed off prior to the holes being drilled. 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. The THRU-STUD and THRU-TOP PLATE brackets drilling circle can be drilled with a 59 mm maximum diameter hole.

12.3 THRU-JOIST brackets are normally installed from under the joist. However, if access to the joist is only available from above, the THRU-JOIST bracket may be seated over the top of the joist. This may be necessary in situations where the floor has been removed and the ceiling below is still in place, for example. Performance of the bracket, and the resulting strength of the joist, will not be affected by doing so.

Inspections

12.4 The critical areas of inspection are that the brackets sit tightly to the timber joist, stud or top plate and that all holes are nailed or screwed with the correct fixing.

12.5 THRU-brackets that are covered by this Appraisal are easily identified by the Appraisal number and logo being pressed into the spine of the bracket.

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-brackets. Compression and tension testing has been carried out on studs incorporating the THRU-STUD brackets.

Other Investigations

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

14.2 Site inspections were carried out by BRANZ to assess installation methods, the practicability of installation and to examine completed installations.

14.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

15.1 The manufacture of THRU-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-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 of the building.

Sources of Information

- AS 1397: 2011 Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium.
- AS/NZS 1365: 1996 Tolerances for flat-rolled steel products
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3604: 2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

BRANZ

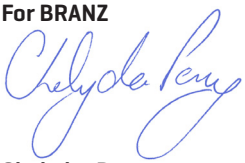
In the opinion of BRANZ, THRU-Brackets for Timber Framing are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

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;
   d) 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.
3. 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.
4. 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.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Brace-It Ltd or any third party.

For BRANZ



Chelydra Percy
Chief Executive

Date of Issue:
18 December 2019