



BRANZ Appraised

Appraisal No. 983 [2023]

SIMPSON STRONG-TIE BOTTOM PLATE ANCHOR SOLUTIONS

Appraisal No. 983 [2023]

This Appraisal replaces BRANZ
Appraisal No. 983 [2018]

Amended 13 May 2025

BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Simpson Strong-Tie Bottom Plate Anchor Solutions are a range of structural fastenings for use in timber-framed building construction for fixing bottom plates to concrete slabs and timber mid- or sub-floors.
- 1.2 Simpson Strong-Tie Bottom Plate Anchor Solutions are used to resist earthquake and wind loads on the bottom plates of timber-framed buildings designed and constructed in accordance with NZS 3604. The range consists of screw-type anchors and timber fasteners, an acrylic injection system and an epoxy injection system which are both used with a threaded rod. Simpson Strong-Tie Bottom Plate Anchor Solutions are suitable to be used as proprietary bracing system holdowns to concrete slab-on-ground and timber mid- or sub-floor construction. They are also for fixing non-bracing internal and external walls to concrete slabs-on-ground.

Scope

- 2.1 Simpson Strong-Tie Bottom Plate Anchor Solutions have been appraised for use as wall bracing system holdowns and bottom plate anchors to concrete slab-on-ground and timber mid- or sub-floors in buildings designed and constructed in accordance with NZS 3604. Simpson Strong-Tie Bottom Plate Anchor Solutions are suitable for use with concrete slabs where the concrete strength at 28 days is not less than 20 MPa. They are for use in internal, dry, protected environments.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Simpson Strong-Tie Bottom Plate Anchor Solutions, 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. Simpson Strong-Tie Bottom Plate Anchor Solutions meet the requirements for loads arising from imposed gravity loads, earthquake and wind [i.e. B1.3.3 (b), (f), and (h)]. See Paragraphs 8.1 and 8.2.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years. Simpson Strong-Tie Bottom Plate Anchor Solutions meet this requirement. See Paragraphs 9.1 and 9.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Simpson Strong-Tie Bottom Plate Anchor Solutions meet this requirement.

Technical Specification

4.1 Simpson Strong-Tie Bottom Plate Anchor Solutions components and accessories supplied by Simpson Strong-Tie New Zealand Ltd are as follows:

Simpson Strong-Tie Bottom Plate Screw Anchors

- Simpson Strong-Tie Screw Anchors are steel screw-type bolts with a serrated coarse thread and are coated with a mechanical galvanised layer of ≥ 12 microns. The Screw Anchors have a hexagonal or washer head and a nominal shank diameter of 10 or 12 mm. They are identified with 'THD' stamped on the bolt head along with the diameter and length and the Simpson Strong-Tie sign "®". Refer to Table 1 for Screw Anchor types and product codes.

Table 1: Simpson Strong-Tie Bottom Plate Screw Anchors

Product Code	Anchor Type
Titen HD® THD10MG 10 mm Concrete Screw	10 mm diameter concrete screw
Titen HD® THD12MG 12 mm Concrete Screw	12 mm diameter concrete screw
Titen HD12150WHMG 12 mm Concrete Screw	12 mm diameter concrete screw

Simpson Strong-Tie AT-HP® Blue Acrylic Injection System

- The Simpson Strong-Tie AT-HP® Blue Acrylic Injection System is an acrylic resin used in conjunction with M12 or M16 Grade 4.6 threaded rod, supplied and cut to length by the building contractor. Refer to Table 2 for anchor types and product codes.

Table 2: Simpson Strong-Tie AT-HP® Blue Acrylic Injection System

Product Code	Anchor Type
AT-HP® with 12 mm ATR	Acrylic Anchoring Adhesive with M12 Grade 4.6 threaded rod in a 14 mm diameter hole embedded 120 mm into concrete.
AT-HP® with 16 mm ATR	Acrylic Anchoring Adhesive with M16 Grade 4.6 threaded rod in an 18 mm diameter hole embedded 120 mm into concrete.

Simpson Strong-Tie SET-XP® Epoxy Adhesive System

- The Simpson Strong-Tie SET-XP® Epoxy Adhesive is a two-part, epoxy-based anchor-grouting material used in conjunction with M12 or M16 Grade 4.6 threaded rod, supplied and cut to length by the building contractor. Refer to Table 3 for anchor types and product codes.

Table 3: Simpson Strong-Tie SET-XP® Epoxy Adhesive System

Product Code	Anchor Type
SET-XP® with 12 mm ATR	Epoxy Anchoring Adhesive with M12 Grade 4.6 threaded rod in a 14 mm diameter hole embedded 120 mm into concrete.
SET-XP® with 16 mm ATR	Epoxy Anchoring Adhesive with M16 Grade 4.6 threaded rod in an 18 mm diameter hole embedded 120 mm into concrete.

Accessories:

- Mixing nozzle suitable for use with AT-HP® [Simpson Strong-Tie code 'MN1'].
- Mixing nozzle suitable for use with SET-XP® [Simpson Strong-Tie code 'EMN22'].
- Hole Cleaning Brush for holes up to 18 mm diameter [Simpson Strong-Tie code 'ETB6'].
- Blow-Out Pump for Hole Cleaning [Simpson Strong-Tie code 'PUMP'].
- Acrylic Dispensing Tools as listed in Table 4 and Table 5.

Table 4: AT-HP Dispensing Tool

Dispensing Tool	Compatible Cartridge Model Number	Cartridge Capacity
Simpson Strong-Tie DT300 or Standard Caulking Gun	AT-HP300BLUE	300 ml

Table 5: Set-XP Dispensing Tool

Dispensing Tool	Compatible Cartridge Model Number	Cartridge Capacity
Simpson Strong-Tie EDT22S or EDT22AP	SET-XP650-AU	650 ml

Bracing System Holdown Connectors

- Bracing System Holdown Connectors are made of pressed steel and used in combination with holdown anchors to resist the vertical loads at each end of a brace panel. Refer to Table 6 for anchor types and product codes.

Table 6: Bracing System Holdown Connectors

Product Code	Anchor Type
DTT1Z (Pair)	38 mm wide, 181 mm tall, 2 mm thick with ZMax galvanised finish, fixed to timber stud with 6 x galvanised #9 gauge SD Connector screws
HTT4	64 mm wide, 314 mm tall, 3 mm thick with Z275 galvanised finish, fixed to timber stud with 18 x galvanised #10 gauge SD Connector screws

- 4.2 Accessories used with Simpson Strong-Tie Bottom Plate Anchor Solutions, which are supplied by the building contractor are as follows:
- M12 or M16 Threaded Rod, Grade 4.6 steel, cut to length by the contractor.
 - 50 x 50 x 3 mm galvanised washers with either a 12 or 16 mm hole as required.
 - Concrete masonry drill bits capable of forming the required hole size and depth.
 - Oil-free compressed air supply of a minimum of 550 kPa pressure can be used as an alternative to the Blow-Out Pump for the purposes of cleaning holes.
 - Impact Driver capable of achieving an installation torque of 200 Nm for M10 Titen HD® Anchors and 515 Nm for M12 Titen HD® Anchors.

Handling and Storage

- 5.1 Simpson Strong-Tie Bottom Plate Anchor Solutions components and accessories should be stored in a clean, dry area until they are used. Their exposure to the elements after installation should be kept to a minimum. Closing the building in within the required time to protect the framing timber from the environment will be suitable.

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- Technical data sheet DTT1 — Tension Tie & Holdown Version TDS-DTT1-AUNZ25.
 - DTT1 Tension Tie & Holdown Installation Instructions Version F-C-DTT1-AUNZ25.
 - THD Installation Guides Bottom Plate.
 - THD Installation Guides Brick Walls.
- 6.2 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 Simpson Strong-Tie Bottom Plate Anchor Solutions are a range of structural fastenings used to resist earthquake and wind loads on timber-framed buildings designed and constructed in accordance with NZS 3604. They are for fixing the bottom plates of walls to concrete slab-on-ground and timber mid- or sub- floor construction. They include fasteners for in-situ concrete foundation edge detail, internal slab detail, and timber mid-floor or sub-floor framing.
- 7.2 Simpson Strong-Tie Bottom Plate Anchor Solutions are suitable for use with concrete slabs where the concrete strength at 28 days is not less than 20 MPa.

Structure

Simpson Strong-Tie Bottom Plate Anchors

- 8.1 Simpson Strong-Tie Bottom Plate Screw Anchors may be used for fastening timber bottom plates to slabs in concrete slab-on-ground construction, in line with the requirements of NZS 3604, Clauses 7.5.12.3 and 7.5.12.4. The fasteners suitable for this purpose are given in Table 7. Fasteners listed in Table 8 are also suitable, however they achieve characteristic strengths exceeding the minimum requirements for bottom plate fasteners.
- 8.2 The Titen HD Washer-Head Style 12 mm Screw Anchor meets the strength requirements of a bottom plate anchor without utilising a 50 x 50 x 3 mm washer as required for compliance with NZS 3604.

Table 7: Simpson Strong-Tie Bottom Plate Anchors

Fastener	Minimum Edge Distance ¹	Minimum Embedment Depth
Titen HD® THD10MG 10 mm Concrete Screw	45 mm	70 mm
Titen HD® THD12MG 12 mm Concrete Screw	48 mm	95 mm
Titen HD® Washer-Head Style 12 mm Screw Anchor ²	48 mm	95 mm
AT-HP® with 12 mm Threaded Rod	45 mm	120 mm

¹The edge distance is to the centre of the drilled hole. Refer to Paragraph 9.2 for further information regarding protection of fastenings. Fastener length to be selected to achieve minimum embedment depth.

²Titen HD® Washer-Head Style 12 mm Screw Anchor has not been assessed for bracing system holdown characteristics.

Bracing System Holdown Anchors

- 8.3 The range of Simpson Strong-Tie Bottom Plate Anchor Solutions includes fasteners that may be used for proprietary bracing system holdown bolts to concrete slab-on-ground construction and are given in Table 8. The Technical Literature of the proprietary bracing system must be referenced to determine the required holdown characteristic strength for the bracing elements.

Table 8: Bracing System Holdown Anchors

Fastener	Wall Type	Characteristic Strength	Minimum Edge Distance*	Minimum Embedment Depth
Titen HD® THD10MG 10 mm Concrete Screw	Internal wall/ external wall - formed concrete foundation	16.9 kN	50 mm	85 mm
Titen HD® THD12MG 12 mm Concrete Screw		18.6 kN	48 mm	95 mm
Titen HD® THD12MG 12 mm Concrete Screw	External wall - formed concrete foundation	20.9 kN	55 mm	135 mm
AT-HP® with 12 mm Threaded Rod		17.3 kN	45 mm	120 mm
AT-HP® with 16 mm Threaded Rod		22.9 kN	55 mm	120 mm
SET-XP® with 12 mm Threaded Rod		34.5 kN	45 mm	120 mm
SET-XP® with 16 mm Threaded Rod		30.7 kN	55 mm	120 mm

*The edge distance is to the centre of the drilled hole. Refer to Paragraph 9.2 for further information regarding protection of fastenings. Fastener length to be selected to achieve minimum embedment depth.

Bracing System Holdown Solutions

- 8.4 In addition to anchors used solely for bottom plate fixing, and anchors used for bracing system holdowns, the solutions given in Table 9 cover concrete slab-on-ground, concrete slab-on-ground with thermal slab edge insulation, and timber mid- or sub-floors. Each solution consists of a specific combination of holdown connectors plus anchors, and has specific installation requirements.
- 8.5 The Technical Literature of the proprietary bracing system must be referenced to determine the required holdown characteristic strength for the bracing elements and Bracing Units achieved when utilising the Simpson Strong-Tie Bottom Plate Anchor Solutions for the Bracing element end stud hold downs. The fasteners for these systems have only been assessed for vertical loads and therefore additional bottom plate anchors must be used to meet in plane and out of plane shear requirements.

Table 9: Bracing System Holdown Solutions

Anchor	Connector	Wall Type	Characteristic Strength	Anchor Minimum Edge Distance ¹	Anchor Minimum Embedment Depth
SDWH27 [pair] 7 mm Timber Screw	DTT1Z [pair ²]	Timber-framed mid- or sub-floor	18.5 kN	22.5 mm	108 mm
Titen HD® THD8MG 8 mm Concrete Screw [pair]	DTT1Z [pair ³]	Internal/ External Wall – formed concrete foundation ⁴	17.6 kN	35 mm	78 mm
Titen HD® THD12MG 12 mm Concrete Screw	HTT4	Internal/ External Wall – formed concrete foundation	18.6 kN	48 mm	95 mm

¹ The edge distance is to the centre of the drilled hole. Refer to Paragraph 9.2 for further information regarding protection of fastenings. Fastener length to be selected to achieve minimum embedment depth.

² Connectors can be installed on opposing stud faces on a minimum 45mm thick stud into the same 45 mm wide joist or bearer below, or can be installed adjacent on the same stud face with the anchor screw into two adjacent 45 mm wide joists or bearers below.

³ Connectors must be installed on opposing stud faces on a minimum 45 mm thick stud so the spacing between anchors is at least 88 mm.

⁴ Concrete slab can be constructed with or without thermal slab edge protection.

Durability

Serviceable Life

- 9.1 Simpson Strong-Tie Bottom Plate Anchor Solutions 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.
- 9.2 In situations where the distance between the concrete slab edge and bottom plate fasteners is proposed to be less than 50 mm, a suitable form of protection must be provided to the slab edge to prevent any ingress of moisture and airborne salts that would otherwise contribute to the corrosion

of the fastener. Selection and detailing of such protection is the responsibility of the designer and is outside the scope of this Appraisal.

Maintenance

- 10.1 Simpson Strong-Tie Bottom Plate Anchor Solutions will not normally require maintenance. However, if damage occurs to claddings or linings covering the fastenings, then repairs or replacement of the cladding or lining must be carried out to ensure the ongoing structural integrity of the fastenings.
- 10.2 In instances where a form of protection is provided to the slab edge to provide protection to the fasteners, the protection must be maintained throughout the life of the building to ensure the ongoing structural integrity of the fastenings.

External and Internal Moisture

- 11.1 Simpson Strong-Tie Bottom Plate Anchor Solutions are protected from moisture by the exterior cladding and internal lining systems of the building, which must meet the provisions of NZBC Clause E2 and Clause E3.

Installation Information

Installation Skill Level Requirement

- 12.1 Installation must be carried out in accordance with the Simpson Strong-Tie Bottom Plate Anchor Solutions Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

Fastener Installation

- 13.1 Installation instructions are provided for Simpson Strong-Tie Bottom Plate Anchor Solutions components. All Simpson Strong-Tie Bottom Plate Anchor Solutions must be installed in accordance with the Technical Literature.
- 13.2 Simpson Strong-Tie Screw Anchors are installed by drilling a 8, 10 or 12 mm diameter hole [corresponding with the bolt diameter] into the concrete to the depth specified in the Technical Literature. Simpson Strong-Tie Screw Anchors shall be tightened with an impact driver until they are snug against the bottom plate or Bracing System Holddown Connector. Timber Screw Anchors are installed without pre-drilling and driven until they are snug against the Bracing System Holddown Connector.
- 13.3 The Simpson Strong-Tie AT-HP® Blue Acrylic Injection System and SET-XP® Epoxy Adhesive fastenings are installed by drilling a 14 mm diameter hole for a M12 threaded rod, or an 18 mm diameter hole for a M16 threaded rod into the concrete to the depths specified in the Technical Literature. The hole shall then be cleaned using a hole cleaning brush and the Simpson Strong-Tie Blow-Out Pump as described in the Technical Literature. Oil-free compressed air supply of a minimum of 550 kPa pressure can be used as an alternative to the Blow-Out Pump for the purposes of cleaning holes. Following the cleaning process, the Simpson Strong-Tie AT-HP® Blue Acrylic or SET-XP® Epoxy Adhesive is injected to fill the hole to between $\frac{1}{2}$ and $\frac{3}{4}$ full, starting at the bottom and slowly withdrawing the nozzle as the hole fills to avoid air pockets. A clean, oil free length of threaded rod in the appropriate diameter must then be promptly inserted into the hole, rotating the rod slowly by hand until it contacts the bottom of the hole. Following this, the rod must remain undisturbed for the duration of the curing time, as scheduled in the Technical Literature. The Simpson Strong-Tie AT-HP® Blue Acrylic changes in colour from blue to grey when cured, which gives a visual indication that the anchor is ready to be loaded. A nut and a 50 x 50 x 3 mm square washer are then placed onto the exposed thread and tightened until snug.
- 13.4 Prior to wall lining application, when all timber framing moisture content is at 20% or less as specified by the wall lining manufacturer, fasteners must be checked for tightness.

Inspections

- 14.1 The Technical Literature of Simpson Strong-Tie Bottom Plate Anchor Solutions, and the bracing system proprietor, must be referred to during the inspection of installations.

14.2 Critical areas of inspection for wall bracing systems are:

- The bracing schedule; and,
- Bracing rating and fastener strength; and,
- Holdown fastener type, and,
- Edge detail and distance.

Health and Safety

15.1 Suitable precautions should be taken when drilling concrete to prevent the inhalation of concrete dust. Care should also be taken when using power tools.

Basis of Appraisal

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

Tests

16.1 Testing of the Simpson Strong-Tie Bottom Plate Anchors and Bracing System Holdown Connectors was carried out by BRANZ in accordance with BRANZ Evaluation Method EM1 [1999], as required by NZS 3604.

Other Investigations

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

17.2 Observations have been made by BRANZ to assess the practicability of installation, and to examine completed installations.

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

Quality

18.1 The manufacture of Simpson Strong-Tie Bottom Plate Anchor Solutions has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

18.2 The quality of Simpson Strong-Tie Bottom Plate Anchor Solutions supplied is the responsibility of Simpson Strong-Tie New Zealand Ltd.

18.3 Designers are responsible for the design of buildings incorporating the Simpson Strong-Tie Bottom Plate Anchor Solutions, and the proprietary bracing systems.

18.4 Building contractors are responsible for the quality of construction of the building structure in accordance with the Technical Literature.

18.5 Building owners are responsible for the maintenance of wall claddings and linings as applicable so that the Simpson Strong-Tie Bottom Plate Anchor Solutions remain protected during their service life.

Sources of Information

- BRANZ Evaluation Method EM1: Method for Evaluating the Strength and Stiffness of Structural Joints, 1999.
- 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.

Amendments

Amendment No. 1, dated 13 May 2025

This Appraisal has been amended to add Bracing System Holdown Connectors and to include the Technical Literature.



In the opinion of BRANZ, **Simpson Strong-Tie Bottom Plate Anchor Solutions** 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 **Simpson Strong-Tie New Zealand 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. **Simpson Strong-Tie New Zealand 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 **Simpson Strong-Tie New Zealand 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 **Simpson Strong-Tie New Zealand Ltd** or any third party.

For BRANZ



Claire Falck

Acting Chief Executive

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