



## BRANZ Appraised

Appraisal No. 1084 [2019]

## REIDBAR™ GROUT SLEEVE SYSTEM



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#### BRANZ Appraisals

Technical Assessments of products for building and construction.



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### Product

- 1.1 The ReidBar™ Grout Sleeve System is reinforcement bar mechanical connectors for precast concrete building elements such as panels and columns. The system includes ReidBar™ Grout Sleeves, ReidBar™ continuously threaded reinforcement bars, and Ramset grout and epoxy filler to make the connections.

### Scope

- 2.1 The ReidBar™ Grout Sleeve System has been appraised for use as reinforcement bar mechanical connectors as specified in NZS 3101 for the structural connection of precast concrete structural elements.
- 2.2 The following conditions and limitations apply to the ReidBar™ Grout Sleeve System:
  - the reinforcing bars must be ReidBar™ continuously threaded complying with AS/NZS 4671; and,
  - the system must not be used where the in-service temperature may drop below -5 °C; and,
  - the system must not be used where fatigue may develop; and,
  - installations must be subject to specific engineering design.

### Building Regulations

#### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the ReidBar™ Grout Sleeve System, 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. ReidBar™ Grout Sleeve System meets the requirements for loads described in B1.3.3 as relevant. See Paragraph 8.1-8.5.

**Clause B2 DURABILITY:** Performance B2.3.1 [a] not less than 50 years. The ReidBar™ Grout Sleeve System meets this requirement. See Paragraph 9.1 - 9.4.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The ReidBar™ Grout Sleeve System meets this requirement and will not present a health hazard to people.

## Technical Specification

4.1 The components of the ReidBar™ Grout Sleeve System supplied by RamsetReid are:

- **ReidBar™ Grout Sleeves** – In sizes suitable for splicing the ReidBar™ reinforcing bar listed below. The ReidBar™ Grout Sleeves are manufactured from Grade 600/3 Spheroidal Graphite Cast Iron, manufactured using a proprietary casting process.

- RB12GS
- RBA16GS
- RB20GS
- RBA20GS
- RB25GS
- RB32GS

The ReidBar™ Grout Sleeves are marked with the model number and manufacturing batch number.

- **ReidBar™ reinforcing bar** – In diameters 12mm, 16mm, 20mm, 25mm and 32mm. The ReidBar™ reinforcing bar is a continuously threaded, hot rolled Grade 500E reinforcing bar that is manufactured in New Zealand to meet the requirements of AS/NZS4671:2001.
- **Ramset™ POZIFLO Grout HS** – a cementitious grout.
- **Ramset™ Epcon™ C8, EXTREM™ Filler** – two part epoxy which is used in the threads of the grout sleeve.

## Handling and Storage

5.1 The ReidBar™ Grout Sleeve System must be kept clean and dry before installation.

## Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the ReidBar™ Grout Sleeve System. 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 The ReidBar™ Grout Sleeve System is reinforcement bar mechanical connectors for precast concrete building elements such as panels, columns, and foundations. The connections are made between horizontal precast element surfaces, with the sleeves and ReidBars™ in the vertical orientation. The system includes ReidBar™ Grout Sleeves and ReidBar™ continuously threaded reinforcement bars. The ReidBar™ Grout Sleeves and ReidBar™ are cast into the individual precast elements. The ReidBar™ connections are made by using Ramset POZIFLO Grout HS injected into the sleeves. The completed connection will transfer tension and compression forces between precast concrete structural elements.

### Structural Design

- 8.1 The ReidBar™ Grout Sleeve System meets the requirements for use as mechanical connections in particular for structures designed for earthquake effects as defined by NZS 3101:Part 1.
- 8.2 No portion of the ReidBar™ Grout Sleeve System shall be located within a column joint region, or within one effective depth of the member from the critical section of a potential plastic hinge in a beam where stress reversals in spliced bars could occur.
- 8.3 In a column framing top and bottom into beams or other moment resisting elements, the centre of the ReidBar™ Grout Sleeve System must be within the middle quarter of the storey height of the column unless it can be shown that a high level of protection is provided against the formation of plastic hinge regions, as defined in Appendix D of NZS 3101:Part 1.
- 8.4 The ReidBar™ Grout Sleeve System meets the stiffness requirement of NZS 3101:Part 1 Clause 8.9.1.3 and so does not need to be staggered within the member but may all be placed at the one location.
- 8.5 The ReidBar™ Grout Sleeve System has not been assessed for use in situations where fatigue may develop.



### Durability

- 9.1 The ReidBar™ Grout Sleeve System will meet the performance provisions of NZBC B2.3.1 [a] – not less than 50 years, provided that the concrete cover to the connectors meets the minimum requirements of NZS 3101:Part 1 Clause 3.11.3 and Table 3.6 as appropriate.
- 9.2 Designers must consider the larger diameter of the ReidBar™ Grout Sleeve System when designing the members for the purposes of concrete cover to the elements.
- 9.3 Joints between precast concrete panels where exposed to weather or moisture conditions must be sealed and maintained so that moisture does not reach the connectors

### Maintenance

- 9.4 The ReidBar™ Grout Sleeve System will not normally require maintenance. However, if damage occurs to the cover concrete then repairs must be carried out to ensure the integrity of the structure.

## Installation Information

### Installation Skill Level Requirement

- 10.1 Installation of the ReidBar™ Grout Sleeve System is carried out by Precast Concrete manufacturers or building contractors under the supervision of a Chartered Professional Engineer.

### General

- 11.1 The ReidBar™ Grout Sleeve System must be installed in accordance with the Technical Literature and the technical information given by RamsetReid.
- 11.2 The reinforcing bar should be free of any excessive dirt, concrete, slurry, rust or other contaminant that may affect the performance of the ReidBar™ Grout Sleeve System.
- 11.2 The ReidBar™ threaded reinforcement must be tightened to the recommended torque and adhered using Ramset™ Epcon™ C8 EXTREM™ Filler into the ReidBar™ Grout Sleeves following the instructions in the Technical Data Sheet. ReidBar™ Grout Sleeves and ReidBar™ starter bars must be accurately aligned before concreting the individual precast elements. Starter bars must be casted in projecting the sleeve embedment length plus the designed space between the individual precast elements.
- 11.2 The grouting of the ReidBar™ Grout Sleeves with Ramset POZIFLO Grout HS must be carried following the instructions in the Technical Data Sheet.



## Basis of Appraisal

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

### Investigations

- 12.1 Assessments of the durability and structural aspects of the ReidBar™ Grout Sleeve System have been made by BRANZ technical experts.
- 12.2 The manufacturer's Technical Literature and Installation Instructions have been reviewed by BRANZ and found to be satisfactory.
- 12.3 Site inspections have been undertaken by BRANZ to assess the practicability of installation.

### Quality

- 13.1 The manufacture of the components of the ReidBar™ Grout Sleeve System have 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.
- 13.2 The quality of the ReidBar™ Grout Sleeve System supplied by RamsetReid is the responsibility of RamsetReid.
- 13.3 The ReidBar™ is covered by ACRS accreditation, certification no 40503.
- 13.4 Chartered Professional Engineers specialising in structural design are responsible for incorporating the ReidBar™ Grout Sleeve System within the design of the structure.
- 13.5 Building contractors are responsible for the quality of the installation of the ReidBar™ Grout Sleeve System in accordance with the instructions of RamsetReid.
- 13.6 Building owners are responsible for the maintenance of the structure such that suitable concrete cover to the ReidBar™ Grout Sleeve System is maintained.

## Sources of Information

- NZS 3101:Part 1:2006 Concrete structures standard Part 1 – The design of concrete structures.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



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13 December 2019

REIDBAR™ GROUT SLEEVE  
SYSTEM



In the opinion of BRANZ, **ReidBar™ Grout Sleeve System** 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 **ITW New Zealand [trading as RamsetReid]**, 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. **ITW New Zealand [trading as RamsetReid]**:
  - 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 **ITW New Zealand [trading as RamsetReid]**.
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 **ITW New Zealand [trading as RamsetReid]** or any third party.

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**For BRANZ**

**Chelydra Percy**

Chief Executive

Date of Issue:

13 December 2019