



BRANZ Appraised

Appraisal No. 559 [2007]

KOROK® SYSTEM

Appraisal No. 559 [2007]

Amended 01 March 2018



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 The KOROK® System incorporates KOROK® panels that are used to construct non-loadbearing standard, fire and acoustically rated walls and partitions within the building envelope.
- 1.2 KOROK® panels are made from lightweight aerated concrete encased in profiled galvanised steel sheet steel formwork.

Scope

- 2.1 The KOROK® System has been appraised for use as non-loadbearing standard and fire and acoustically rated internally located walls and partitions for all buildings of all importance levels as defined by AS/NZS 1170.
- 2.2 The KOROK® panels may be installed with either a vertical or horizontal orientation. The maximum span for the panels between structural supports is 8 m. The overall height or length of a KOROK® System wall will be determined by the structural support. When used as part of a fire rated system, the maximum span of the KOROK® panels is 4 m. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the KOROK® System, if designed, installed, used 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. The KOROK® System meets the requirements for loads arising from self-weight, earthquake, wind, impact and creep and shrinkage [i.e. B1.3.3 (a), (f), (h), (j), and (q)]. See Paragraphs 8.1 - 8.2.

CLAUSE B2 DURABILITY: Performance B2.3.1 (a), not less than 50 years, B2.3.1 (b), 15 years, and B2.3.1 (c), 5 years. The KOROK® System meets these requirements. See Paragraphs 9.1 - 9.3.

CLAUSE C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.4 (a) and C3.6. The KOROK® System will meet or contribute to meeting these requirements. See Paragraphs 11.1 - 11.9.

CLAUSE F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The KOROK® System meets this requirement and will not present a health hazard to people.

CLAUSE G6 AIRBORNE AND IMPACT SOUND: Performance G6.3.1. The KOROK® System will contribute to meeting this requirement. See Paragraphs 12.1 - 12.2.

Technical Specification

General

- 4.1 The KOROK® System is a non-loadbearing wall system that is attached to the structural frames of buildings to provide internal walls and partitions.

KOROK® Panels

- 4.2 KOROK® panels are manufactured from lightweight aerated concrete encased in a galvanised steel permanent formwork. The permanent formwork is roll-formed from zinc coated steel strips. The steel has a base metal thickness of 0.4 mm with ZM275 zinc coating. Paint coated steel coil may also be used for one or both faces.
- 4.3 The KOROK® panels are supplied in lengths of up to 8 metres. They are 78 mm thick and 288 mm deep. The long edges are tongue and groove so the pitch of the panels when installed is 250 mm.
- 4.4 The KOROK® panels are available in nominal densities of 400 kg/m³, 600 kg/m³, 800 kg/m³ and 1000 kg/m³.

Accessories

- 4.5 Accessories and materials used with the KOROK® System that are supplied by KOROK Building Systems NZ Limited are:
- KOROK® C-track - 60 x 80 x 60 x 1.15 mm [base metal thickness] C-section available in galvanised steel and powder coated to match the paint coated steel coil.
 - KOROK® angle - 50 x 60 x 1.2 mm [bmt] angle available in galvanised steel and powder coated to match the paint coated steel coil.
 - Fasteners for panel to panel connection, panel to C-track and angle connection, C-track and angle to concrete and C-track and angle to steelwork.
- 4.6 Accessories used with the KOROK® System that are supplied by KOROK Building Systems NZ Limited or the building contractor are:
- Light gauge steel framing.
 - 10 mm GIB® Standard Plasterboard.
 - 13 mm GIB Fyreline®.
 - 13 mm GIB Noiseline®.
 - 25 mm and 32 mm x 6g GIB® Grabber™ scavenger head drywall self tapping screws.
 - Pink® Batts® R1.8 [75 mm].

Packaging, Handling and Storage

- 5.1 KOROK® panels are delivered to site in packages. They must be handled with care to avoid physical damage, particularly to the bottom edges and the finished exposed faces, and must be stored so that they are protected from the weather under clean, dry and ventilated conditions. They should be stored on bearers no more than 2 m apart.
- 5.2 Accessories used with the KOROK® System must also be handled with care to avoid damage. Components such as sealants and grouts must be stored in dry locations protected from the weather. Other components should be stored so that they are protected from the weather.

Technical Literature

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

Design Information

General

- 7.1 The KOROK® System Technical Literature contains design information and procedures required to allow building designers to design structures incorporating the KOROK® System. This includes incorporating both fire rated systems and noise control systems depending upon the users requirements.
- 7.2 The maximum length of KOROK® panel allowed between structural supports is 8 m. Where the system is being used as a fire rated system, the maximum length of KOROK® panel allowed between structural supports is 4 m. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.
- 7.3 KOROK® panels may be laid up either horizontally or vertically.

Structure

General

- 8.1 The KOROK® System is for use within concrete framed structures that have been designed in accordance with NZS 3101 and/or steel framed structures that have been designed in accordance with NZS 3404.

Design

- 8.2 Design of the KOROK® System must be in accordance with the information and methods given in the Technical Literature and must be carried out by a suitably qualified design engineer considering all loading types as specified in Paragraph 3.1.

Durability

- 9.1 The KOROK® System is expected to have a serviceable life of at least 50 years.
- 9.2 Where KOROK® panels will experience regular use of chemical cleaning agents, or be in the presence of vapours that may attack galvanised steel components during service, then KOROK Building Systems NZ Limited should be contacted to determine the correct panel coating selection is made to ensure the required service life of the system is achieved.
- 9.3 The ability of the KOROK® System and other incorporated elements to remain durable is dependent on them remaining dry in service.

Maintenance

- 10.1 Where KOROK® panels are exposed an inspection should be carried out at least annually to ensure that no undue degradation is occurring. Where items such as corrosion are identified, then the cause must be determined, and repairs must be made to restore the system.
- 10.2 Where KOROK® panels are not exposed then no maintenance should be required. In the event of damage to linings or claddings, these should be repaired immediately.

Prevention of Fire Occurring

- 11.1 The KOROK® System has not been assessed for construction associated with heating appliances and must not be used as such.

Fire Affecting Areas Beyond The Fire Source

Internal Surface Finishes

- 12.1 The KOROK® System has been tested in accordance with ISO 5660 and has a Group Number of 1-S. Refer to Table 4.1 of NZBC Acceptable Solutions C/AS2 to C/AS6 to determine where the KOROK® System may be used according to its Group Number.
- 12.2 When an applied finish is used over the KOROK® System, the Material Group Number must be obtained from the manufacturer or supplier of the finish product or system, for the complete lining system.

Fire Resistance Ratings (FRRs)

- 12.3 The KOROK® System can be used to provide FRRs as required by NZBC Acceptable Solutions C/AS1 – C/AS7 and NZBC Verification Method C/VM2.
- 12.4 The Technical Literature gives four different fire rated wall systems incorporating KOROK® panels. These vary in rating from 90 minutes up to 4 hours depending on the system chosen. Refer to the Technical Literature for details of available FRRs.
- 12.5 Where KOROK® walls are used as part of a fire rated system then the maximum span of the KOROK® panels is 4 m. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.

Structural Stability During Fire

- 13.1 In order to satisfy the requirements of NZBC C6 Structural Stability, designers must ensure that fire rated elements are supported by building elements having at least the same FRR as the fire rated element they are supporting.

Airborne and Impact Sound

- 14.1 The Technical Literature gives four different KOROK® noise control systems for walls with Sound Transmission Class (STC) ratings of 40 to 75. Only systems Two, Three and Four in the Technical Literature give solutions greater than STC 55 as required by the NZBC for intertenancy walls.
- 14.2 KOROK® noise control systems One, Two and Three in the Technical Literature are based on KOROK® panels with concrete density of 400 kg/m³. KOROK® noise control system Four is based on KOROK® panels with a concrete density of 600 kg/m³.

Installation Information

Installation Skill Level Requirement

- 15.1 Installation must always be carried out in accordance with the KOROK® System Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

General

- 16.1 The KOROK® System must be installed in accordance with the specifications contained in the Technical Literature.

Inspections

- 16.2 For inspection, reference must be made to the specific building design documentation and the Technical Literature.

Cutting Panels

- 16.3 KOROK® panels can be cut to length with the use of a sabre saw, circular saw or evacuated grinder to minimise dust. Where KOROK® panels are trimmed to width, the cut section of the panel is fitted with track and is always the last panel abutting the wall, column or soffit. The panel is then sealed and fixed with an angle section.

Health and Safety

- 16.4 Suitable safety glasses, ear muffs and face masks must always be worn when cutting KOROK® panels. The recommended installation practices of the insulation manufacturer must be followed when insulation is installed.
- 16.5 Where powder-actuated fasteners are used OSH guidelines on the use of powder-actuated hand-held fastening tools must be followed.

Framing

- 16.6 The structural frame to which the KOROK® System will be attached must be as per the designer's specifications, and must be plumb, level and in true alignment.



Fixing

- 16.7 The fixing of all KOROK® panels, channels and angles must be strictly in accordance with the Technical Literature.

Basis of Appraisal

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

Tests

- 17.1 Fire testing has been carried out to determine the performance of the KOROK® System under fire conditions. The test methods and results have been reviewed by BRANZ and found to be satisfactory.
- 17.2 Sound insulation testing has been carried out to determine the acoustic performance of the KOROK® System. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 18.1 The KOROK® System Technical Literature has been examined by BRANZ and found to be satisfactory.
- 18.2 Site visits were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.
- 18.3 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.

Quality

- 19.1 KOROK Building Systems NZ Limited's manufacturing process and details of the quality and composition of the materials have been examined by BRANZ and found to be satisfactory.
- 19.2 KOROK Building Systems NZ Limited is responsible for the quality of the product supplied.
- 19.3 Quality on site is the responsibility of the installer.
- 19.4 Designers are responsible for incorporating the KOROK® System into the design of their buildings.
- 19.5 Building owners are responsible for the maintenance of the KOROK® System in accordance with the instructions of KOROK Building Systems NZ Limited.

Sources of Information

- AS/NZS 1170 Structural design actions.
- NZS 3101.1 & 2: 2006 Concrete structures standard.
- NZS 3404.1 & 2: 2009 Steel structures standard.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 11 May 2009.

This Appraisal has been amended to update the reference from NZS 4203 to AS/NZS 1170.

Amendment No. 2, dated 01 March 2018.

This Appraisal has been amended to update the Appraisal Holder and the System name.



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KOROK® SYSTEM



In the opinion of BRANZ, the **KOROK® 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 **KOROK Building Systems NZ Limited**, 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. **KOROK Building Systems NZ Limited:**
 - 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 **KOROK Building Systems NZ Limited**.
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 **KOROK Building Systems NZ Limited** or any third party.

For BRANZ

Chris Preston

Chief Executive

Date of Issue:

07 December 2007