



BRANZ Appraised

Appraisal No. 1059 [2019]

KOROK® 51 MM WALL SYSTEM AND KOROK® KIT SYSTEMS

Appraisal No. 1059 [2019]

Amended 29 June 2020



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems are used to construct fire and acoustically rated walls and partitions within building envelopes.
- 1.2 The KOROK® panels are made from aerated concrete encased in profiled galvanised steel sheet formwork and are non-loadbearing, whilst the structural elements of the wall system can be loadbearing.

Scope

- 2.1 The KOROK® 51 mm Wall System and KOROK® 51 mm Wall System and KOROK® KIT Wall Systems have been appraised for use as non-loadbearing 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® KIT Wall System panels are installed in vertical orientation. For the intertenancy wall systems the panels are fixed to the timber or steel framing with aluminium brackets at the panel face or joints at maximum 3.5 m intervals vertically and 0.6 m intervals horizontally. The total height of the KOROK® panels in a single wall must not exceed 14 m.
- 2.3 For the KOROK® 51 mm plain wall panel the maximum unsupported span for the panels between structural supports is 8 m. The overall height or length of a KOROK® 51 mm plain wall will be determined by the structural support. When used as part of a fire rated system, the maximum unsupported span of the KOROK® panels is 6 m for vertical orientation and 4 m for horizontal orientation. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.
- 2.4 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems have been appraised for use in intertenancy walls when used with the wall framing, wall insulation and wall lining specified in this Appraisal.

Building Regulations

New Zealand Building Code [NZBC]

- 3.1 In the opinion of BRANZ, the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems, 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® 51 mm Wall System and KOROK® KIT Wall Systems meets the requirements for loads arising from self-weight, earthquake, impact and creep and shrinkage [i.e. B1.3.3 (a), (f), (j), and (q)]. See Paragraphs 7.1 - 7.2.



CLAUSE B2 DURABILITY: Performance B2.3.1 [a], not less than 50 years, and B2.3.1 [b] 15 years. The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems meet these requirements. See Paragraphs 8.1 - 8.3.

CLAUSE C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.4 [a] and C3.6. The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems will meet or contribute to meeting these requirements. See Paragraphs 11.1 - 10.6.

CLAUSE F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems meet this requirement.

CLAUSE G6 AIRBORNE AND IMPACT SOUND: Performance G6.3.1. The KOROK® KIT Wall Systems will contribute to meeting this requirement. See Paragraphs 13.1 - 13.2.

Technical Specification

4.1 The KOROK® KIT Wall panels are non-loadbearing panels that are attached to the structural frames of buildings to provide intertenancy walls, internal walls and partitions.

4.2 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems covered by this Appraisal, and as described in the Technical Literature are:

- KIT01
- KIT02
- KIT04
- KIT06
- 51 mm plain panel
- KIT01A
- KIT03
- KIT05
- KIT06A

KOROK® Panels

4.3 KOROK® panels are manufactured from aerated concrete encased in a galvanised steel permanent formwork. The permanent formwork is roll-formed from galvanised steel coil. The steel has a base metal thickness of 0.4 mm with a Z275 coating.

4.4 The KOROK® panels are supplied in lengths sized to suit. They are 51 mm or 78 mm thick. The long edges are tongue and groove having an effective coverage of 250 mm. The concrete core has a nominal minimum density of 600 kg/m³ for 51 mm panels and nominal minimum density of 400 kg/m³ for 78 mm panels.

Accessories

4.5 Accessories and materials used with the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems that are supplied by KOROK Building Systems NZ Limited are:

- KOROK® C-track - 60 x 51 x 60 x 1.15 mm [bmt] or 60 x 80 x 60 x 1.15 mm [bmt] galvanised steel C-section.
- KOROK® angle - 50 x 60 x 1.15 mm [bmt] galvanised steel angle.
- KOROK® metal fire flashing - 0.7 mm [bmt] galvanised steel.
- Aluminium brackets - 75 x 50 x 40 x 3 mm aluminium angles.
- 25 mm and 32 mm x 6g GIB® Grabber™ scavenger head drywall self tapping screws.
- Fasteners for panel to panel connection [10 gauge by 16 mm tek screws], panel to C-track and angle connection [10 gauge by 16 mm or 32 mm tek screws], C-track and angle to concrete and C-track and angle to steelwork [various, see Technical Literature].

4.6 Accessories used with the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems that are supplied by KOROK Building Systems NZ Limited or the building contractor are:

Plasterboard:

- 10 mm, or 13 mm GIB® Standard Plasterboard.
- 10 mm, or 13 mm GIB® Noiseline Plasterboard.

Insulation:

- Autex GreenStuf SW90.
- Pink Batts R2.2.



Framing:

- Light gauge steel framing.
- Timber framing.

Fire rated sealants:

- Hilti CP606.
- Sika 400 PU.
- Promat Promaseal A.
- Promat Promaseal Grafitex Graf 4T.

Technical Literature

- 5.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems. 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

- 6.1 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems Technical Literature contains design information and procedures required to allow building designers to design structures incorporating the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems. This includes incorporating both fire rated systems and noise control systems depending upon the users requirements.
- 6.2 KOROK® 51 mm plain panels may be laid up either horizontally or vertically. The maximum unsupported length of plain KOROK® 51 mm plain panels allowed between structural supports is 8 m for vertical orientation and 5 m for horizontal orientation. Where the plain wall panel is being used as a fire rated system, the maximum unsupported length allowed between structural supports is 6 m in vertical orientation and 4 m in horizontal orientation. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.

Structure

General

- 7.1 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems are for use within concrete framed structures that have been designed in accordance with NZS 3101, timber framed structures that have been designed in accordance to NZS 3603 or NZS 3604, or steel framed structures that have been designed in accordance with NZS 3404.

Design

- 7.2 Design of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems 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. Any variations to the design of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems must be carried out by a suitably qualified design engineer considering all loading types as specified in Paragraph 3.1. These variations are outside the scope of this Appraisal.

Durability

- 8.1 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems are expected to have a durable life of at least 50 years.
- 8.2 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.



- 8.3 The ability of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems and other incorporated elements to remain durable is dependent on them remaining dry in service.

Maintenance

- 9.1 In the event of damage to linings or claddings, these should be repaired immediately. No further maintenance is required.

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to the combustible components of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems from heat sources such as heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solution C/AS2 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

Fire Affecting Areas Beyond The Fire Source

Internal Surface Finishes

- 11.1 1 The KOROK® Panels used in the Systems consist of steel shells with a base metal thickness of 0.4 mm in accordance with Table A1 of NZBC Verification Method C/VM2 when the bare KOROK® Panel is used with a waterborne or solvent borne paint coating $\leq 0.4\text{mm}$ thick as the interior surface finish this is deemed to have a Group Number of G1-S.
- 11.2 KOROK® 51 mm Wall System and KOROK® KIT Wall Systems that incorporate GIB® plasterboard without a finishing has been tested in accordance with ISO 5660 and achieves a Group number of 1-S.
- 11.3 KOROK® 51 mm Wall System and KOROK® KIT Wall Systems that incorporate a gypsum plasterboard meeting the requirements of Table A1 of NZBC Verification Method C/VM2 as the interior surface finish with an applied finish of a waterborne or solvent borne paint coating $\leq 0.4\text{mm}$ thick is deemed to have a Group Number of G2-S in accordance with Table A1 of NZBC Verification Method C/VM2.
- 11.4 For the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems that incorporate other interior surface finishes, the Material Group Number must be obtained from the manufacturer or supplier of the finish product or system, for the complete lining system.
- 11.5 Refer to Table 4.3 of NZBC Acceptable Solution C/AS2 to determine where the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems may be used according to their Group Number.

Fire Resistance Ratings (FRRs)

- 11.6 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems can be used to provide FRRs as required by NZBC Acceptable Solutions C/AS1, C/AS2 and NZBC Verification Method C/VM2.
- 11.7 The Technical Literature gives the Fire Resistance Ratings for the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems listed in Paragraph 4.2. These vary in rating from 30 minutes up to two hours depending on the system chosen. Refer to the Technical Literature for details of available FRRs.
- 11.8 Where KOROK® 51 mm plain panel is used as part of a fire rated system then the maximum unsupported span of the KOROK® panels between structural supports is 6 m [vertical orientation] and 4 m [horizontal orientation]. 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

- 12.1 In order to satisfy the requirements of NZBC C6 Structural Stability for the KOROK® 51 mm plain panel, 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

- 13.1 The Technical Literature gives several different KOROK® noise control systems for walls with Sound Transmission Class [STC] ratings of 55 to 76 which comply with the requirement of NZBC for intertenancy walls.



- 13.2 KOROK® 51 mm plain panels walls have an STC rating of 36. Whilst this will not meet the requirements of NZBC for intertenancy walls, these walls may be used to reduce airborne sound to a lesser extent.

Installation Information

Installation Skill Level Requirement

- 14.1 All building work must be carried out in accordance with the Technical Literature and this Appraisal by competent and experienced tradespeople conversant with the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems. 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

- 15.1 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems must be installed in accordance with the specifications contained in the Technical Literature.

Inspections

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

Cutting Panels

- 15.3 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 or c-track section.

Health and Safety

- 15.4 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.
- 15.5 Where powder-actuated fasteners are used Worksafe guidelines on the use of powder-actuated hand-held fastening tools must be followed.

Framing

- 15.6 The structural frame to which the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems will be attached must be as per the design engineer's specifications, and must be plumb, level and in true alignment.

Fixing

- 15.7 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

- 16.1 Structural testing and assessments have been carried out to determine the structural performance of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems. The test methods and results have been reviewed by BRANZ and found to be satisfactory.
- 16.2 Fire testing and assessments have been carried out to determine the performance of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems under fire conditions. The test methods and results have been reviewed by BRANZ and found to be satisfactory.
- 16.3 Sound insulation testing has been carried out to determine the acoustic performance of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigation

- 17.1 The KOROK® 51 mm Wall System and KOROK® KIT Wall Systems Technical Literature has been examined by BRANZ and found to be satisfactory.
- 17.2 Site visits were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.
- 17.3 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.
- 17.4 Fire assessments of the systems have been carried out by an independent fire assessment body.

Quality

- 18.1 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.
- 18.2 KOROK Building Systems NZ Limited is responsible for the quality of the product supplied.
- 18.3 Quality on site is the responsibility of the installer.
- 18.4 Design engineers are responsible for incorporating the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems into the design of their buildings.
- 18.5 Building owners are responsible for the maintenance of the KOROK® 51 mm Wall System and KOROK® KIT Wall Systems in accordance with the instructions of KOROK Building Systems NZ Limited.

Sources of Information

- AS ISO 9705-2003 (R:2016) Fire tests – Full-scale room test for surface products.
- AS/NZS 1170 Structural design actions.
- NZS 3101.1 & 2: 2006 Concrete structures standard.
- NZS 3404.1 & 2: 2009 Steel structures standard.
- NZS 3603:1993 Timber Structures Standard
- 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 29 June 2020

This Appraisal has been amended to add the KIT06 and KIT06A wall systems, and to increase some unsupported spans.



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08 July 2019

KOROK® 51 MM WALL SYSTEM
AND KOROK® KIT SYSTEMS



In the opinion of BRANZ, **KOROK Building Systems NZ Limited** 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

Chelydra Percy

Chief Executive

Date of Issue:

08 July 2019