## KOROK® COMPONENTS SUMMARY

<table>
<thead>
<tr>
<th>Product Image</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KOROK® C-track 60 x 51 x 60mm 1.15B.M.T.</td>
</tr>
<tr>
<td></td>
<td>KOROK® C-track 60 x 80 x 60mm 1.15B.M.T.</td>
</tr>
<tr>
<td></td>
<td>KOROK® panel 51mm wide 250mm cover 600kg/m³ density</td>
</tr>
<tr>
<td></td>
<td>KOROK® panel 78mm wide 250mm cover 400kg/m³ density</td>
</tr>
<tr>
<td></td>
<td>Hilti DBZ 6/4.5 x 32mm</td>
</tr>
<tr>
<td></td>
<td>6.5 x 32 Rawl Mushroom spikes</td>
</tr>
<tr>
<td></td>
<td>Wafer Tek 10g - 16 x 16mm Class 3</td>
</tr>
<tr>
<td></td>
<td>Wafer Tek 10g - 16 x 30mm Class 3</td>
</tr>
<tr>
<td></td>
<td>Sikaflex-400 Fire Rated Sealant</td>
</tr>
<tr>
<td></td>
<td>Hilti CP606</td>
</tr>
<tr>
<td></td>
<td>PROMASEAL®-A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Image</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KOROK® fire flashing</td>
</tr>
<tr>
<td></td>
<td>KOROK® Angle</td>
</tr>
</tbody>
</table>
C-track or Angle sections are fixed to structural elements (steelwork) at 400mm centres with Hilti X-ENP-19 L15 fasteners.

When fixing C-track or Angle sections to concrete, use 6.5 x 32 Rawl Mushroom spikes or Hilti DBZ 6/4.5 x 32mm at 400mm centres.

The C-track or Angle section must have a continuous bead of fire rated sealant between the track and the structure to which it is fixed.

Panels are fixed together with Wafer Tek 10g - 16 x 16mm screws. For centres see Step 12.

Corner joints should be sealed with fire rated sealant (see component summary for specifics).

KOROK® panels are fixed to the C-track with Wafer Tek 10g - 16 x 16mm screws both sides (400mm centres).

KOROK® panels are fixed to the top and bottom C-track with Wafer Tek 10g - 16 x 16mm screws at 400mm centres both sides.
APARTMENT INTERTENANCY SYSTEMS INSTALLATION

VERTICAL INSTALLATION

1 Vertical installation of the KOROK® panels requires the C-track to be fixed to the supporting structure, e.g., walls, columns, portals, soffits and slabs.

**Plan your setout.**

2 To ensure the C-track is sealed to the structure, a continuous bead of fire rated sealant is run around the perimeter before the C-track or Angle sections are laid and fixed.

Or the sealant can be applied directly to the C-track before fixing in place.

3 Using a masonry drill bit, pre-drill the C-track at 400mm centres.

4 Then use the fixings to secure the C-track.
5 If the surrounding surface is uneven or if you’re not sure you have a good seal, add a continuous bead of fire rated sealant around the perimeter of the C-track where it contacts the surrounding surface.

6 KOROK® panels should be cut 20mm shorter than the structural opening measurement to allow for fitting.

Pull back a 300mm section of the strippable film on the ends of the panels before placing the panels in to the C-track.

Ensure that the first panel is plumbed vertical after fitting into the C-track. Screw fix the panel into place to the C-track.

Subsequent panels are placed in a tilt and snap action.

7 Ensure the tongue and groove are fully locked to maintain the fire and acoustic performance. Remove strippable film at the end of each day’s work.

8 CUTTING OF KOROK® PANELS

KOROK® panels can be cut to length and width with the use of a reciprocating saw or a radial saw with dust extraction. Diamond cutting discs are recommended for radial saws.

Where KOROK® panels are trimmed to width, the cut edge of the panel is fitted into the C-track and so is always the last panel abutting the wall or column. The panel is then sealed and fixed in position as usual.
LAST PANEL

9  Stop short of the end vertical KOROK® C-track by approximately 1 metre and cut out a 600mm Angle section from the top and bottom C-track.

Plan ahead and make an allowance for a 50mm overlap onto the panels installed prior to the last remaining two panels.

10 Cut your end panel (the last panel) ensuring that a distance of 500mm remains between panels for the last two panels to be squeezed into position.

11 Once the final two panels are in position, simply replace the Angle and fix to panels. Screw the C-track and Angle sections to the panels in the normal fashion.

11a When using 51mm KOROK panels seal the 3 close-off panel joints with fire rated sealant to one side.
Panels should be screwed together into every panel joint as per the vertical centres in Table 2 below.

**TABLE 2 - FASTENINGS**

<table>
<thead>
<tr>
<th>Panel Thickness (mm)</th>
<th>Panel Orientation</th>
<th>Max. Wall Height (m)</th>
<th>Panel to Panel Max. Centres (mm)</th>
<th>Sides</th>
<th>KOROK Wall System or similar</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>Vertical</td>
<td>5m</td>
<td>1000</td>
<td>one</td>
<td>KIM01, 02, 03, 04, 05, 08, 09, 12, 13</td>
<td>Measured from floor level</td>
</tr>
<tr>
<td>78</td>
<td>Vertical</td>
<td>6m</td>
<td>1000</td>
<td>one</td>
<td>KIM06, KIM07</td>
<td>Measured from floor level</td>
</tr>
<tr>
<td>78</td>
<td>Vertical</td>
<td>9m</td>
<td>1500</td>
<td>both</td>
<td>KIM06, KIM07</td>
<td>Measured from floor level</td>
</tr>
</tbody>
</table>

**C-TRACK**

C-track is fixed to the KOROK® panels at 400mm centres both sides on the vertical C-track and 250mm centres both sides on the horizontal C-track.

At corners where two lengths of KOROK® C-track intersect, the two pieces must be fixed to each other with 1 Wafer Tek 10g - 16 x 16mm screw.
13 Remove any remaining plastic film and then apply a continuous bead of fire rated sealant between the KOROK® C-track and the KOROK® panels as indicated by the yellow line.

14 Fire rated sealant details for top and sides.
FINAL CHECK
At the completion of the job and at the finish of each day’s work, it is essential that the completed area be thoroughly cleaned of all swarf, rivet stems, nails, drillings and screws etc. normally associated with the installation of metal KOROK® panels. Remove any remaining strippable film, check all fixings are correctly installed, all fire and acoustic rated sealant is applied correctly.

15 Using Angle as an alternative to C-track.
HEAD TRACK PROTECTION

GIB Fyreline® or equivalent PROTECTED HEAD TRACK

GIB Fyreline® or equivalent 13mm x 120mm strip with fire rated sealant is fixed at 250mm centres top and bottom, using 32mm x 16G drywall screws.

METAL FLASHING PROTECTED HEAD TRACK

KOROK® fire flashing is fixed to the panels at 250mm centres, using Wafer Tek 10 x 16mm screws.
### TABLE 3 - KOROK® FASTENERS SPACINGS

<table>
<thead>
<tr>
<th>Use</th>
<th>KOROK® Wall System or similar</th>
<th>Panel Thickness (mm)</th>
<th>Panel Orientation</th>
<th>Maximum Wall Height (m)</th>
<th>Maximum Wall Span/Width (m)</th>
<th>Panel to Panel Maximum centres (mm)</th>
<th>Sides</th>
<th>Tek Screw Panel Perpendicular to C-track (mm)</th>
<th>Panel Face or Joint</th>
<th>Sides of C-track</th>
<th>Tek Screw</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intertenancy - Apartments</td>
<td>KIM01 to KIM05, KIM08 to KIM13</td>
<td>51</td>
<td>Vertical</td>
<td>5m</td>
<td>1000</td>
<td>one</td>
<td>10-16</td>
<td>250</td>
<td>Face</td>
<td>Both</td>
<td>10-16</td>
<td>Measured from floor level</td>
</tr>
<tr>
<td>Intertenancy - Apartments</td>
<td>KIM06 to KIM07</td>
<td>78</td>
<td>Vertical</td>
<td>6m</td>
<td>1000</td>
<td>one</td>
<td>10-16</td>
<td>250</td>
<td>Face</td>
<td>Both</td>
<td>10-16</td>
<td>Measured from floor level</td>
</tr>
<tr>
<td>Intertenancy - Apartments</td>
<td>KIM06 to KIM07</td>
<td>78</td>
<td>Vertical</td>
<td>9m</td>
<td>1500</td>
<td>both</td>
<td>10-16</td>
<td>250</td>
<td>Face</td>
<td>Both</td>
<td>10-16</td>
<td>Measured from floor level</td>
</tr>
</tbody>
</table>

**NOTES**

1. For C-track running parallel to the panels, 10-16 Tek screw fixings at 400mm centres are used each side.
2. 78mm Panel Properties - These span tables are based on ambient conditions. When used as part of a fire rated system, the maximum unsupported vertical span of the KOROK panels is 6.0 metres and the maximum unsupported horizontal span is 5.0 metres. Greater spans are subject to specific engineering design and/or fire engineering assessment.
3. 51mm Panel Properties - These span tables are based on ambient conditions. When used as part of a fire rated system, the maximum unsupported span of the KOROK panels is 5.0 metres vertical or 4.0 metres horizontal. Greater unsupported spans will require specific FRR design.
INSTALLATION INFORMATION

DOORWAYS AND WINDOWS
C-track is cut to the trim size for doors, windows and large penetrations. As the wall is assembled the C-track is fitted and sealed and fixed as per the standard details.

PENETRATIONS
Where penetrations into KOROK® are required, the use of a grinder, Sabre saw or hole saw to remove the steel shell is ideal. The aerated concrete is easily removed.

Penetrations into fire rated construction should be fire rated using certified proprietary systems such as fire collars, fire wraps, intumescent systems etc. The systems are to be installed to the specification of the manufacturer of the product.

KOROK® should be earthed where electrical equipment or unsheathed cables may come into contact with the metal work.

PLUMBING AND ELECTRICAL SERVICES
Copper and brass piping should be isolated from direct contact with the steel shell. Similar care should be taken when contact with dissimilar metals is possible.

SHELF LOADS
KOROK® can be used to carry shelf loads. The capacity of KOROK® to carry shelf loading is dependant upon variables such as shelf design, shelf fastening methods, wall height and shelf location.

FIXING ACCESSORIES
Where practical, services and accessories should be fixed through the male/female shell connections, where the steel shell has greatest thickness (1.2mm B.M.T.).

Where loads are higher e.g. 50 x 50 timber framing for an internal gutter, fixings should extend through the panel.

EXTERNAL WALL INSTALLATION
For external walls, KOROK® can provide site specific details. See our External Wall Systems Brochure.

NEW ZEALAND BUILDING CODE (NZBC) COMPLIANCE

New Zealand Building Code (NZBC) compliance
The NZBC sets out both the legal minimum sound transmission between tenancies (Clause G6) and minimum levels of fire resistance (Clauses C3 and C6). The KOROK® Intertenancy Systems Manual provides guidance on the specification and construction of systems that will both meet and exceed those minimum levels. However, designers should consider the comfort of occupants when selecting a system that will satisfy the occupants’ expectations when using the space rather than the minimum required by law.

NZBC Clause B1 – Structure
The KOROK® Systems meet the requirements for loads arising from self-weight, earthquake, wind, impact and creep and shrinkage.

NZBC Clause B2 – Durability
Under normal conditions of dry internal use KOROK® Intertenancy Systems have a serviceable life in excess of 50 years and satisfy the requirements of NZBC Clause B2 – Durability.

NZBC Clauses C3 - Fire affecting areas beyond the source
KOROK® Intertenancy Systems can be used to provide passive fire protection in accordance with the requirements of NZBC Clause 3 – Spread of fire

NZBC Clause C6 - Structural Stability
Compliance with (NZBC) Clause C6 ‘Structural Stability’.

In order to satisfy the requirements of the New Zealand Building Code (clause 6) relating to “structural stability” designers must ensure that KOROK® elements are supported by primary elements that have at least the same fire rating as the KOROK® system that is used.

Where the primary elements supporting the KOROK® system are outside the fire cell, there is no requirement to apply the same FRR as the KOROK® system. Notwithstanding, post fire stability requirements of the NZBC must also be satisfied.

NZBC Clause G6 – Airborne and Impact Sound
KOROK® Intertenancy Systems, both meet and exceed the minimum requirements outlined in NZBC Clause G6. Consideration should be given to both the minimum requirements and the comfort of occupants.
QUALITY CONTROL
The performance ratings of the published systems have been obtained by independent testing and opinions sourced from organisations with accredited quality assurance. It is of prime importance to pay strict attention to the details of design, construction and workmanship, otherwise the performance could be significantly degraded.

DESIGN GUIDELINES
The recommended maximum unsupported span for KOROK® Fire Rated Systems is 4000mm. Greater spans are subject to specific engineering design.

LIMITATIONS
Adhesive fixing cannot replace mechanical fasteners in KOROK® Fire Rated Systems.
Do not install KOROK® above the span and height limits stated in this booklet without seeking advice from KOROK Building Systems NZ Ltd.

TRANSPORT
Generally the lengths of KOROK® are delivered to site by long trailers and articulated trucks. Therefore access to and on building sites must be adequate to accommodate these types of vehicles.
Off loading and site storage or cranage onto site is the responsibility of the client and suitable arrangements should be made prior to delivery.
KOROK® products are packed and protected against damage during delivery but care must be exercised during unloading.
Lengths must be adequately supported during unloading and where packs are broken and panels lifted by hand, care must be taken not to slide or drag the panel and scrape the finished surfaces of the product.

HANDLING AND STORAGE
KOROK® panels must be stored under clean, dry and ventilated conditions.
Where it is necessary for KOROK® Panels to be stored onsite they should be placed away from the building operations, if possible, in the order in which they will be fixed.
Storage should provide a firm and dry base, protected from the weather, accidental damage and moisture.

The panels should be stored on bearers no more than 2000mm apart. Stack heights are limited to 8 pallets.
Adequate cover must be provided and water must not lie on or between the panel surfaces, which will cause staining and degradation of the surface coatings.
If pallets become wet the KOROK® panels should without delay be separated, wiped with a clean cloth and stacked so that the circulation of air will complete the drying process.

STRIPPABLE FILM
KOROK® panels may be coated with a plastic film to provide protection during handling and transportation. This film has a very short life when exposed to exterior conditions and must be removed immediately after installation.
It must not be left lying in the sun or at the site for more than a few hours. Failure to remove the film will lead to difficulties later with its removal.

CLEANING
At the completion of the job and at the finish of each days work, it is essential that the completed area be thoroughly cleaned of all swarf, rivet stems, nails, drillings and screws, etc., normally associated with the installation of metal panels.
Hot swarf should not be allowed to contact pre-painted sheet material. Any grinding, welding or drilling carried out above the wall level should be done with the panels appropriately covered to avoid swarf contact.
Failure to do so will result in unsightly staining of the surface as the metal particles rust or oxidise.

ON SITE HANDLING
Handle KOROK® panels carefully prior to installation. Avoid knocks, bumps and scratches, which may lead to maintenance issues later.
Store KOROK® panels on site flat or in their pallets and ensure that KOROK® panels are dry prior to installation.

INSTALLATION
Specific design advice should be sought where KOROK® is to be subject to point loads or other distributed loading other than wind.
Ensure connections between KOROK® panels are
INSTALLATION INFORMATION

properly made.
Ensure connections of KOROK® panels to the structure are adequate.

MAINTENANCE
All cladding products are subject to the cumulative effects of weather, dust and other deposits. Maintenance regimes are to be in accordance with maintenance recommendations for New Zealand Steel Products used for roofing and wall cladding.

MATERIAL SAFETY DATA SHEET
A Material Safety Data Sheet (MSDS) is available on request from KOROK® Building Systems NZ Ltd or from our website: www.korok.com

SPECIFICATION
KOROK® have prepared a technical specification suitable for inclusion in contract documents by Architects, Engineers or Builders. This may be freely copied (in full) or reproduced (in full) and is available by contacting us at KOROK® on 0800 773 777 or info@korok.com, or from www.korok.com.

WARRANTY
KOROK® Building Systems NZ Ltd supplies the KOROK® wall system and warrants it to be free from defects in material and workmanship. KOROK® Building Systems NZ Ltd will at its own option replace and/or repair any product found to be defective, provided it has been stored, installed and maintained strictly in accordance with the requirements and recommendations of KOROK® technical literature. This warranty is in addition to any statutory rights to the customer.

KOROK® Building Systems NZ Ltd cannot be held responsible for deterioration to galvanised products caused by poor handling or storage practices after the product has arrived at the customers site.

All KOROK® building products are designed to satisfy New Zealand conditions.

DISCLAIMER
KOROK® Building Systems NZ Ltd reserves the right, at any time, at its own discretion and without notice, to discontinue or change the features, designs, materials, colours and other specifications of its products and to either permanently or temporarily withdraw any such products from sale without incurring any liability.

This booklet is published as a general guide only and must not be used in preference to detailed technical advice from an appropriately qualified person where application differs from those described herein.

To the best of KOROK Building Systems NZ Ltd knowledge, all information is correct at the time of printing.

Whilst every effort has been made to ensure the material contained within this document is accurate and correct, no responsibility or liability, in part or whole by the authors, editors or publishers of this manual will be accepted for misuse, misreading or deviation from the recommended installation details.

DO NOT SUBSTITUTE ANY COMPONENT
KOROK® fire and acoustic rated systems are not generic. Where specified in this manual, branded components must be used when specifying and installing KOROK® systems.

Substituting any component of any system shown in this manual may compromise the performance of the system.

LIABILITY
KOROK® New Zealand accepts no liability if any KOROK® Fire Rated System or Acoustic Rated System is not designed and installed in strict accordance with instructions contained in this publication.

IS THIS PUBLICATION CURRENT?
This publication may be superseded by a new publication. KOROK® Building Systems NZ Ltd accepts no liability for reliance upon publications that have been superseded.

If you are unsure whether this is the current publication, you can check by contacting us at KOROK® on 0800 773 777 or info@korok.com, or on www.korok.com.

This may be freely copied (in full) or reproduced (in full) and is available by contacting us at KOROK® on 0800 773 777 or info@korok.com, or from www.korok.com.
KOROK® PANELS

KOROK® panels are roll-formed from zinc-coated steel strips. The steel from which the shells are manufactured conforms to AS1397:2001. Steel shells have a base metal thickness of 0.4mm B.M.T. with a Z275 zinc coating. These panels have an aerated concrete core and weigh nominally 10.2kg per lineal metre.

KOROK® panels have 250mm coverage when installed.

LOADING COMBINATIONS

All loading combinations are in accordance with NZ4203:1992 and AS/NZS 1170.0:2002.

GENERAL DESIGN NOTES

The designs specified in this manual have been carried out in accordance with NZS4203 and laboratory testing carried out by BRANZ Limited.

The tables and charts are prepared for the use of KOROK® in wall applications i.e. floor systems cannot be modelled from the safe load tables in this manual. Interpolation of the tables is acceptable.

REFERENCES

The following references including standards and codes of practice govern the manufacture of components, use and design and installation of KOROK® systems.

STANDARDS

NZS 2589.1:1997
Gypsum Linings in residential and light commercial construction.

AS 3566:1988
Screws – Self Drilling for the Building and Construction Industry

NZS 4203:1992

AS/NZS 1170.0:2002
Structural design actions. Part 0: General Principles

NZS 7202

MANUFACTURERS DOCUMENTS

Manufacturers and Suppliers Documents, which refer to work in this section are:

- Autex® Insulation Data Sheets
- GIB® Site Guide
- GIB® Fire Rated Systems
- Penetrations and closures in GIB® Fire Rated Systems
- GIB® Noise Control Systems
- Hilti® New Zealand Technical Manual
- Pink® Batts® Data Sheets
- Rondo® Steel Stud & Tracks Installation Manual
- USG® Drywall Steel Stud & Track System
- USG® Boral Plasterboard Installation Manual NZ

PART 1 SPECIFICATION FOR GAP FILLING ADHESIVES

AS 4072:Part 1 - 2005
Components for the protection of openings in fire-resistant separating elements

AS 1530:Part 4 - 2014
Methods for fire tests on building materials, components and structures
KOROK® PANEL PROPERTIES

- Base Metal Thickness 0.4mm B.M.T.
- Mass kg per lineal metre 10.2 nominal
- Mass kg/m² 40.8 nominal

EI 60 kNm² per panel (bending stiffness, minor axis)
EI 387 kNm² per panel (bending stiffness, major axis)
EA 4060 kN per panel (axial stiffness)
GJ 583 kNm² per panel (torsional stiffness)

VERTICAL SPAN WALLS

- Maximum bending moment / panel 1.43 kNm (ULS)
- Maximum axial end crush force / panel 25 kN (ULS) 3.4 kN (SLS)
- Maximum horizontal reaction (crushing on flat) / panel 8.9 kN (ULS) 3.1 kN (SLS)

HORIZONTAL SPAN WALLS

- Maximum bending moment / panel 1.43 kNm (ULS)
- Maximum axial edge crush force per unit length 17 kN/m (ULS) 6k N/m (SLS)
- Maximum horizontal reaction / panel 8.9 kN (ULS) 3.1 kN (SLS)

THERMAL RESISTANCE

- R Value 0.43 W/m²K
- U Value 3.2 W/m²K

DEFINITIONS

ULS: Value shown is for Ultimate Limit State loading
SLS: Value shown is for Serviceability Limit State loading

USE OF TABLES

1. Determine the loads on the KOROK® in accordance with NZS 4203 1992 or AS/NZS 1170.0 as applicable.
2. Use Table 5 - Horizontal Span to ensure that walls spanning horizontally can carry the loads previously calculated. Use Table 6 - Vertical Span to ensure that walls spanning vertically can carry the loads previously calculated. Interpolation of points in the tables is allowed.
3. The Tables have been generated for a range of deflection limits i.e. Span/150, Span/200, Span/250, Span/300 in both the vertical and horizontal KOROK® panel configurations.

SUPPORTING STRUCTURES

KOROK® walls must be supported. The supporting structures themselves must be specifically designed to carry the load of the KOROK® walls. The fastener strengths shown in this section may be used to design the connections. Maximum spacing of fasteners is shown on installation information.

INSTALLATION NOTE

All KOROK® C-track to structure, KOROK® C-track to KOROK®, and KOROK® to KOROK® panel connections shall be in accordance with details specified in this manual unless specified otherwise by the Project Engineer.

1 Refer: BRANZ Reports ST 0538/1 to 5.
2 Refer BRANZ Appraisal No. 559
### TABLE 5 - SHEAR STRENGTH PER FASTENER FOR THE FOLLOWING CONNECTIONS

<table>
<thead>
<tr>
<th>CONNECTION</th>
<th>LOAD DIRECTION</th>
<th>TYPE</th>
<th>DESIGN STRENGTH (Kn)</th>
<th>design strength (kn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel to panel</td>
<td>In-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>1.01</td>
<td>0.83</td>
</tr>
<tr>
<td>Panel sides to C-track</td>
<td>In-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>0.95</td>
<td>0.78</td>
</tr>
<tr>
<td>Panel sides to C-track</td>
<td>Out-of-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>0.91</td>
<td>0.74</td>
</tr>
<tr>
<td>Panel ends to C-track</td>
<td>In-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>0.91</td>
<td>0.74</td>
</tr>
<tr>
<td>Panel ends to C-track</td>
<td>Out-of-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>2.21</td>
<td>0.77</td>
</tr>
<tr>
<td>C-track to concrete</td>
<td>In-plane</td>
<td>6.5x32 Rawl Mushroom spikes</td>
<td>7.84</td>
<td>2.27</td>
</tr>
<tr>
<td>C-track to concrete</td>
<td>Out-of-plane</td>
<td>6.5x32 Rawl Mushroom spikes</td>
<td>7.84</td>
<td>2.27</td>
</tr>
<tr>
<td>C-track to steel support</td>
<td>In-plane</td>
<td>Hilti® X-ENP-10 L15 Nails</td>
<td>4.32</td>
<td>2.31</td>
</tr>
<tr>
<td>C-track to steel support</td>
<td>Out-of-plane</td>
<td>Hilti® X-ENP-10 L15 Nails</td>
<td>4.32</td>
<td>2.31</td>
</tr>
<tr>
<td>KOROK® aluminium bracket to panel joint</td>
<td>Out-of-plane</td>
<td>Hex Head Type 17 14g x 35mm screws</td>
<td>0.92</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Refer: BRANZ Reports ST 0538/3 and ST1259

### TABLE 6 - HORIZONTAL SPAN

<table>
<thead>
<tr>
<th>span (m)</th>
<th>ULS DESIGN</th>
<th>SLS DESIGN L/150</th>
<th>SLS DESIGN L/200</th>
<th>SLS DESIGN L/250</th>
<th>SLS DESIGN L/300</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10.05</td>
<td>9</td>
<td>7.7</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>7.3</td>
<td>6.02</td>
<td>4.94</td>
<td>4.2</td>
<td>3.64</td>
</tr>
<tr>
<td>3</td>
<td>5.04</td>
<td>3.7</td>
<td>3</td>
<td>2.5</td>
<td>2.17</td>
</tr>
<tr>
<td>3.5</td>
<td>3.7</td>
<td>2.42</td>
<td>1.95</td>
<td>1.63</td>
<td>1.39</td>
</tr>
<tr>
<td>4</td>
<td>2.82</td>
<td>1.67</td>
<td>1.34</td>
<td>1.1</td>
<td>0.94</td>
</tr>
<tr>
<td>4.5</td>
<td>1.94</td>
<td>1.19</td>
<td>0.94</td>
<td>0.78</td>
<td>0.66</td>
</tr>
<tr>
<td>5</td>
<td>1.37</td>
<td>0.88</td>
<td>0.69</td>
<td>0.56</td>
<td>0.47</td>
</tr>
<tr>
<td>6</td>
<td>0.72</td>
<td>0.51</td>
<td>0.39</td>
<td>0.32</td>
<td>0.26</td>
</tr>
<tr>
<td>7</td>
<td>0.38</td>
<td>0.31</td>
<td>0.23</td>
<td>0.19</td>
<td>0.15</td>
</tr>
<tr>
<td>8</td>
<td>0.17</td>
<td>0.17</td>
<td>0.14</td>
<td>0.11</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Maximum pressure that can be resisted by a horizontal span (kPa)
Horizontal Span Table has been generated based on a 14m high wall.
For unsupported horizontal spans over 5.0m please contact us at KOROK® on 0800 773 777 for maximum wall heights.

### TABLE 7 - VERTICAL SPAN

<table>
<thead>
<tr>
<th>span (m)</th>
<th>ULS DESIGN</th>
<th>SLS DESIGN L/150</th>
<th>SLS DESIGN L/200</th>
<th>SLS DESIGN L/250</th>
<th>SLS DESIGN L/300</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10.05</td>
<td>9.05</td>
<td>7.75</td>
<td>6.77</td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>7.3</td>
<td>6.05</td>
<td>4.95</td>
<td>4.2</td>
<td>3.64</td>
</tr>
<tr>
<td>3</td>
<td>5.04</td>
<td>3.7</td>
<td>3</td>
<td>2.53</td>
<td>2.18</td>
</tr>
<tr>
<td>3.5</td>
<td>3.7</td>
<td>2.42</td>
<td>1.96</td>
<td>1.64</td>
<td>1.4</td>
</tr>
<tr>
<td>4</td>
<td>2.82</td>
<td>1.68</td>
<td>1.34</td>
<td>1.12</td>
<td>0.95</td>
</tr>
<tr>
<td>4.5</td>
<td>2.23</td>
<td>1.21</td>
<td>0.96</td>
<td>0.79</td>
<td>0.67</td>
</tr>
<tr>
<td>5</td>
<td>1.79</td>
<td>0.9</td>
<td>0.71</td>
<td>0.58</td>
<td>0.49</td>
</tr>
<tr>
<td>6</td>
<td>1.22</td>
<td>0.54</td>
<td>0.42</td>
<td>0.34</td>
<td>0.28</td>
</tr>
<tr>
<td>7</td>
<td>0.89</td>
<td>0.34</td>
<td>0.26</td>
<td>0.21</td>
<td>0.17</td>
</tr>
<tr>
<td>8</td>
<td>0.66</td>
<td>0.23</td>
<td>0.17</td>
<td>0.14</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Maximum pressure that can be resisted by a vertical span (kPa)
Vertical Span Table has been generated to a maximum of 8m wall height. Length of the wall is not a consideration when calculating span.
KOROK® PANEL PROPERTIES: 51MM 600KG/M²

KOROK® PANEL PROPERTIES
• Base Metal Thickness 0.4mm B.M.T.
• Mass kg per lineal metre 10.1 nominal
• Mass kg/m² 40.4 nominal

EI  24 kNm² per panel (bending stiffness, minor axis)
EI  400 kNm² per panel (bending stiffness, major axis)
EA  4060 kN per panel (axial stiffness)
GJ  27 kNm² per panel (torsional stiffness)

VERTICAL SPAN WALLS
• Maximum bending moment / panel 0.96 kNm (ULS)
• Maximum axial end crush force / panel 32 kN (ULS)
• Maximum horizontal reaction (crushing on flat) / panel 1.08 kN (ULS) 0.93 kN (SLS)

HORIZONTAL SPAN WALLS
• Maximum bending moment / panel 0.96 kNm (ULS)
• Maximum axial edge crush force per unit length 5.5 kN/m (ULS) 0.77 kN/m (SLS)
• Maximum horizontal reaction / panel 1.08 kN (ULS) 0.93 kN (SLS)

DEFINITIONS
ULS: Value shown is for Ultimate Limit State loading
SLS: Value shown is for Serviceability Limit State loading

USE OF TABLES
1. Determine the loads on the KOROK® in accordance with NZS 4203 1992 or AS/NZS 1170.0 as applicable.
2. Use Table 8 - Horizontal Span to ensure that walls spanning horizontally can carry the loads previously calculated. Use Table 9 - Vertical Span to ensure that walls spanning vertically can carry the loads previously calculated. Interpolation of points in the tables is allowed.
3. The Tables have been generated for a range of deflection limits i.e. Span/150, Span/200, Span/250, Span/300, in both the vertical and horizontal KOROK® panel configurations.
4. The walls must be checked for both ultimate limit state (ULS) loading and serviceability limit state (SLS) loading.
5. Vertical Span Tables have been generated to a maximum unsupported span of 5m height.
6. Horizontal Span Tables have been generated based on a 5m high wall.
7. Unsupported vertical panel spans greater than 5m are subject to specific design.
8. Unsupported horizontal wall spans greater than 4m are subject to specific design.
9. These Span Tables are based on ambient conditions. When used as part of a fire rated system, the maximum unsupported span of the KOROK® panels is 5.0 metres vertically and 4.0 metres horizontally. Greater unsupported spans will require specific FRR design. Please contact us at KOROK® on 0800 773 777.

SUPPORTING STRUCTURES
KOROK® walls must be supported. The supporting structures themselves must be specifically designed to carry the load of the KOROK® walls.

The fastener strengths shown in this section may be used to design the connections. Maximum spacing of fasteners is shown on installation information.

INSTALLATION NOTE
All KOROK® C-track to structure, KOROK® C-track to KOROK®, and KOROK® to KOROK® panel connections shall be in accordance with details specified in this manual unless specified otherwise by the Project Engineer.

1 Refer: BRANZ Reports ST 1134 and ST 0538/1 to 5.
### KOROK® PANEL PROPERTIES: 51MM 600KG/M³

#### TABLE 8 - SHEAR STRENGTH PER FASTENER FOR THE FOLLOWING CONNECTIONS

<table>
<thead>
<tr>
<th>CONNECTION</th>
<th>LOAD DIRECTION</th>
<th>TYPE</th>
<th>DESIGN STRENGTH (Kn) ULS</th>
<th>design strength (kn) sls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel to panel</td>
<td>In-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>1.01</td>
<td>0.83</td>
</tr>
<tr>
<td>Panel sides to C-track</td>
<td>In-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>0.95</td>
<td>0.78</td>
</tr>
<tr>
<td>Panel sides to C-track</td>
<td>Out-of-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>0.91</td>
<td>0.74</td>
</tr>
<tr>
<td>Panel ends to C-track</td>
<td>In-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>0.91</td>
<td>0.74</td>
</tr>
<tr>
<td>Panel ends to C-track</td>
<td>Out-of-plane</td>
<td>10x16 galvanised Steeltite wafer head screws</td>
<td>2.21</td>
<td>0.77</td>
</tr>
<tr>
<td>C-track to concrete</td>
<td>In-plane</td>
<td>6.5x32 Rawl Mushroom spikes</td>
<td>7.84</td>
<td>2.27</td>
</tr>
<tr>
<td>C-track to concrete</td>
<td>Out-of-plane</td>
<td>6.5x32 Rawl Mushroom spikes</td>
<td>7.84</td>
<td>2.27</td>
</tr>
<tr>
<td>C-track to steel support</td>
<td>In-plane</td>
<td>Hilti® X-ENP-10 L15 Nails</td>
<td>4.32</td>
<td>2.31</td>
</tr>
<tr>
<td>C-track to steel support</td>
<td>Out-of-plane</td>
<td>Hilti® X-ENP-10 L15 Nails</td>
<td>4.32</td>
<td>2.31</td>
</tr>
<tr>
<td>KOROK® aluminium bracket to panel joint</td>
<td>Out-of-plane</td>
<td>Hex Head Type 17 14g x 35mm screws</td>
<td>0.92</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Refer: BRANZ Reports ST 0538/3 and ST 1259

#### TABLE 9 - HORIZONTAL SPAN

<table>
<thead>
<tr>
<th>span (m)</th>
<th>ULS DESIGN L/150</th>
<th>SLS DESIGN L/200</th>
<th>SLS DESIGN L/250</th>
<th>SLS DESIGN L/300</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>7.66</td>
<td>6.22</td>
<td>4.98</td>
<td>4.15</td>
</tr>
<tr>
<td>2.5</td>
<td>4.90</td>
<td>4.25</td>
<td>3.18</td>
<td>2.55</td>
</tr>
<tr>
<td>3</td>
<td>3.40</td>
<td>2.46</td>
<td>1.84</td>
<td>1.23</td>
</tr>
<tr>
<td>3.5</td>
<td>2.50</td>
<td>1.55</td>
<td>1.16</td>
<td>0.93</td>
</tr>
<tr>
<td>4</td>
<td>1.91</td>
<td>1.04</td>
<td>0.78</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Maximum pressure that can be resisted by a horizontal span (kPa)
For horizontal panel, the maximum unsupported span is 4m.

Unsupported horizontal wall spans greater than 4m are subject to specific design.

#### TABLE 10 - VERTICAL SPAN

<table>
<thead>
<tr>
<th>span (m)</th>
<th>ULS DESIGN L/150</th>
<th>SLS DESIGN L/200</th>
<th>SLS DESIGN L/250</th>
<th>SLS DESIGN L/300</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>7.66</td>
<td>6.22</td>
<td>4.98</td>
<td>4.15</td>
</tr>
<tr>
<td>2.5</td>
<td>4.90</td>
<td>4.25</td>
<td>3.18</td>
<td>2.55</td>
</tr>
<tr>
<td>3</td>
<td>3.40</td>
<td>2.46</td>
<td>1.84</td>
<td>1.23</td>
</tr>
<tr>
<td>3.5</td>
<td>2.50</td>
<td>1.55</td>
<td>1.16</td>
<td>0.93</td>
</tr>
<tr>
<td>4</td>
<td>1.91</td>
<td>1.04</td>
<td>0.78</td>
<td>0.62</td>
</tr>
<tr>
<td>4.5</td>
<td>1.51</td>
<td>0.73</td>
<td>0.55</td>
<td>0.44</td>
</tr>
<tr>
<td>5</td>
<td>1.22</td>
<td>0.53</td>
<td>0.40</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Maximum pressure that can be resisted by a vertical span (kPa)
The length of the wall is not a consideration when calculating span.