THE CONCRETE FLOOR THAT LIFTS A HOUSE

Firth

RIBRAFT® TC3

REBUILD RIGHT™

RIBRAFT® TC3 TICKS ALL THE BOXES

- Designed to comply with MBIE guidelines
- Comprehensively tested system
- Market leader with Ribraft® technology
- Able to be re-levelled multiple times
- Cost effective
- Technical support for designers and installers
- Can be re-levelled without the need for specialist contractors
- Constructed with durable concrete
- Finished floor level closer to ground than timber alternatives
- Allows internal access garages
- Installed by trained Ribraft® TC3 installers. Contact your local Firth Representative or download a list of installers at **www.firth.co.nz**

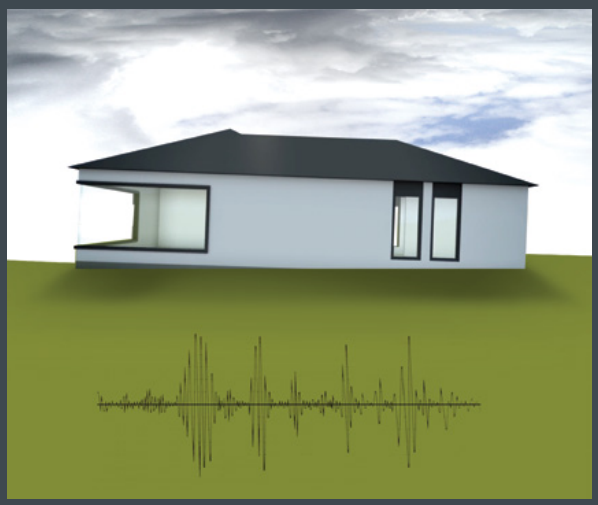
TC3 SLAB ON NEW BUILDING

Firth RIBRAFT® TC3

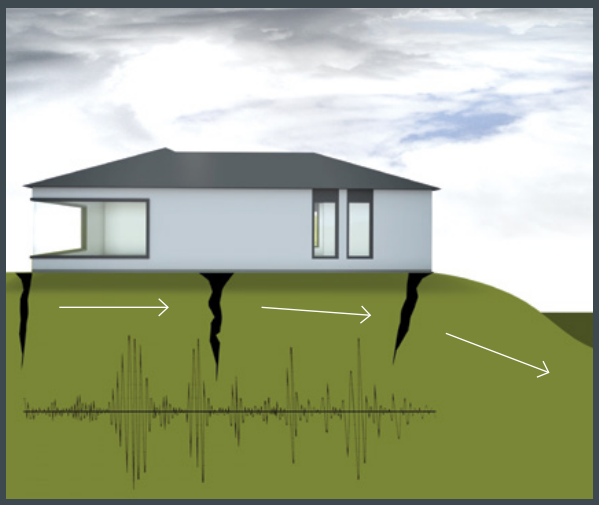
THE TESTED SEISMIC FLOOR SYSTEM RIBRAFT® TC3

Liquefaction, as the name implies occurs when sandy material acts like a liquid when it is shaken. The extent and seriousness of liquefaction depends upon many variables such as the intensity of shaking, the depth of the ground water and the strength of the fine grained soils. A geotechnical engineer will be able to interpret the results of ground probes to determine whether in the future large earthquake liquefaction is unlikely (TC1), possible (TC2) or probable and large (TC3).

Liquefaction has the potential to cause the land to settle or spread laterally. The Firth Ribraft® TC3 system has been specifically designed and intensively tested to comply with the Ministry of Business, Innovation, and Employment's guidance on repairing and rebuilding houses affected by the Canterbury earthquakes.



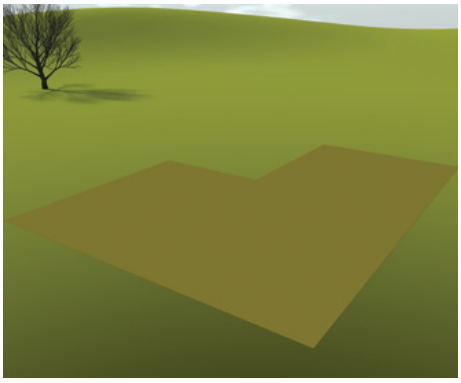
EXAMPLE OF LIQUEFACTION SETTLEMENT



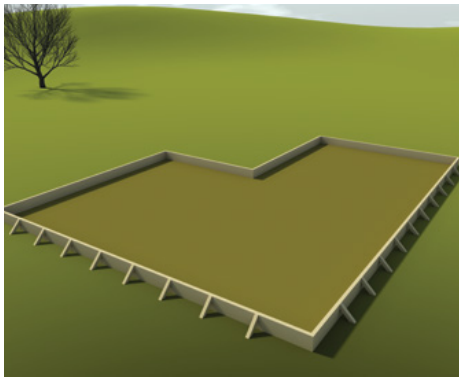
EXAMPLE OF LIQUEFACTION LATERAL SPREAD

REBUILD RIGHT™

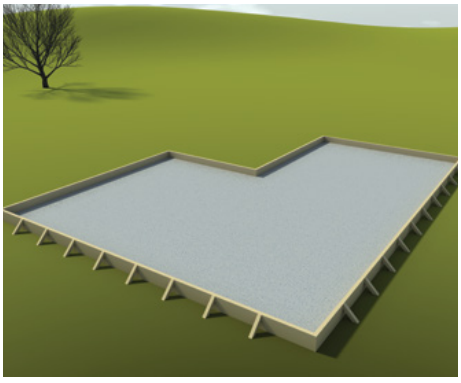
THE FIRTH RIBRAFT® TC3 FLOOR CONSTRUCTION



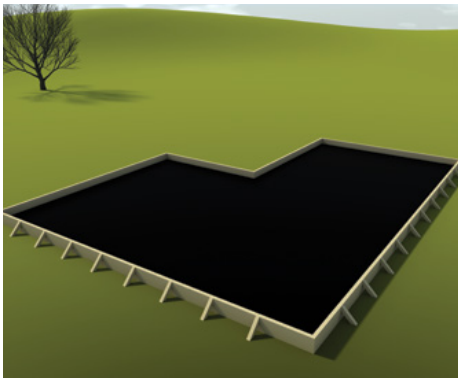
1 As with Firth's standard RibRaft® floors, organic topsoil is removed on the building site.



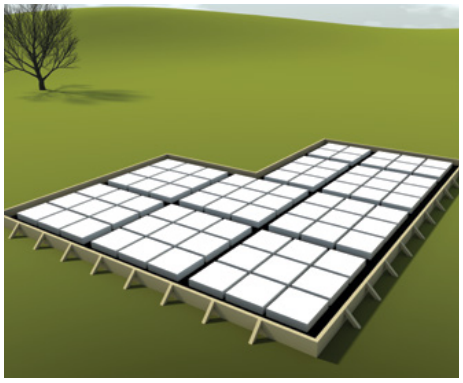
2 The floorslab area is boxed to specification, but you will notice the height of the boxing is higher than a standard RibRaft®.



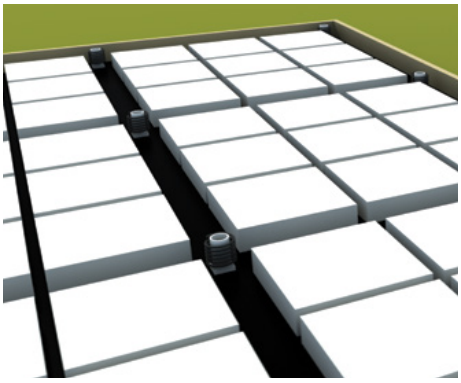
3 Within this boxed area, a Jacking slab is poured to a height of 180mm* using a specifically engineered seismic resilient Firth concrete mix. (*Sizes may change depending on the specific solution designed for your site.)



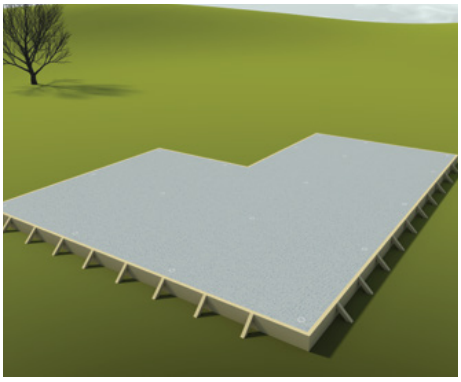
4 After this first slab has been completed to the specified finish, and the floor has cured, a polythene membrane is placed on top, covering the entire floor. This acts as a vapour barrier between the slabs.



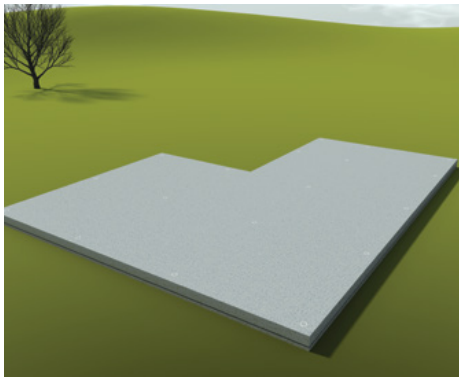
5 Directly on top of this polythene membrane, we now construct a RibRaft® floor to a height of 320mm*. (*Sizes may change depending on the specific solution designed for your site.)



6 In specified points within the RibRaft™ slab construction (clear of any wall framing), predetermined by engineers, a new innovative RaftJack™ housing is installed within the top slab.



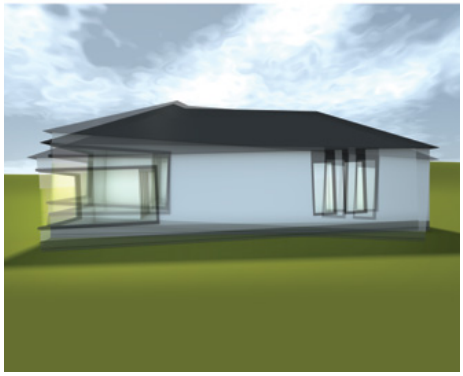
7 The specifically engineered seismic resilient Firth concrete mix coupled with high ductility reinforcement (designed to MBIE guidelines) is poured within an engineered grid of polystyrene and reinforcing rods and mesh.



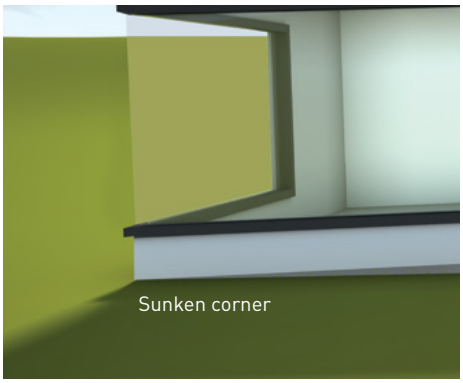
8 Once cured, boxing is removed to reveal a twin-slab floor.

VISIT
FIRTH.CO.NZ/RIBRAFTTC3
FOR MORE

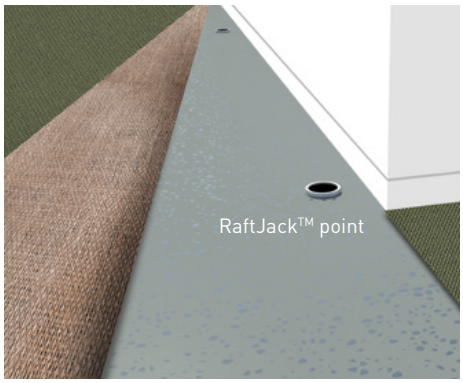
FIRTH RIBRAFT® TC3 FLOOR EXPECTED SEISMIC PERFORMANCE



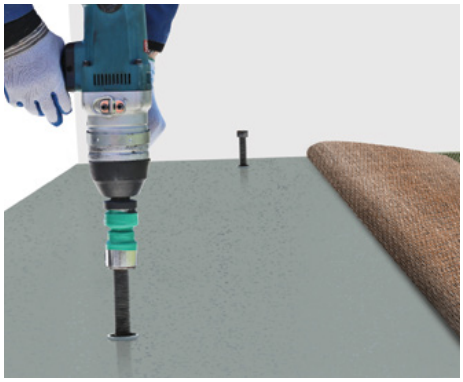
In the event of a seismic event, the TC3 floor is expected to perform exactly as the proven RibRaft® floors have performed.



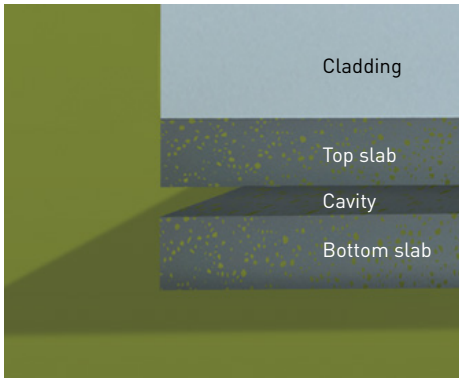
Here's where we see the true innovation of the Firth RibRaft® TC3 system. In TC3 zoned environments, geotechnical engineers expects less stable ground structure will have a greater risk of vertical movement causing the house to sink in one or more places.



1 A small team of qualified tradesmen will enter the house and from the building's floor plans identify and uncover the RaftJack™ points within the concrete floor. The RaftJack™ points are positioned clear of wall framing for ease of access. As a result, no structural element of the house will be disturbed. Internal walls and cladding remain intact throughout. Only floor coverings require removal for access.



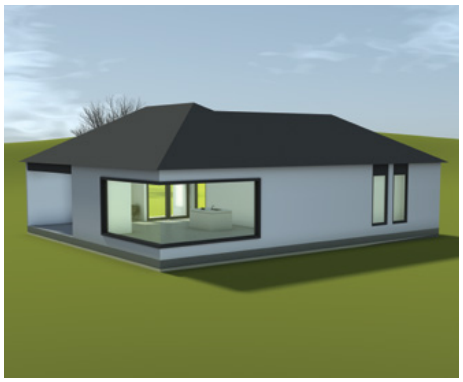
2 Using a standard rattle gun, they insert and screw high tensile threaded bolts into the various RaftJack™ points raising the upper slab up off the lower slab until the upper slab (and house) is level.



3 Between the lower sunken slab and upper levelled slab there will clearly now be a cavity.

4 A specially designed Firth concrete mix is pumped into the cavity to fill it and left to cure.

5 When cured, the RaftJack™ bolts are simply removed by unscrewing them. The jack point holes covered and floor covering relaid.



6 Should another seismic event occur, the same steps outlined are carried out. There is no minimum number of times a house can be re-levelled.

VISIT
FIRTH.CO.NZ/RIBRAFTTC3
FOR MORE

WHY FIRTH RIBRAFT® TC3 IS THE ULTIMATE FLOORING TECHNOLOGY FOR PEOPLE WANTING TO REBUILD RIGHT™ ON LIQUEFACTION PRONE LAND

1 **TESTED TECHNOLOGY**
The Firth Ribraft® TC3 solution has been extensively tested to confirm the performance of all its components.

2 **COST**
The Firth Ribraft® TC3 solution is very cost effective and often costs considerably less than other solutions.

3 **PEACE OF MIND**
Firth introduced New Zealand to Ribraft® technology in 1996. The system has been extensively reviewed by building officials and the system has been awarded a CodeMark certificate of conformity by the Ministry of Business, Innovation, and Employment. The system being deemed to comply with all relevant sections of the NZ Building Code including structure, durability, external moisture, Hazardous Building Materials and energy efficiency.

4 **INSTALLATION TIME**
Innovations in concrete mix design, modulation and design/installation guidance often means that Firth Ribraft® TC3 solutions can be installed faster than other options. Often construction is complete within five days.

5 **RE-LEVEL MULTIPLE TIMES**
Firth Ribraft® TC3 floor is designed to be re-levelled as often as seismic activity affects the floor/house. This is not a one-time solution.

6 **SERVICE**
The system is designed to ensure that services such as water, sewer and electricity are provided a high degree of protection. However, if a repair is required after a large earthquake, it is only likely to be required at the perimeter.

7 **RIBRAFT® TC3 MAKES LAND SUSCEPTIBLE TO LIQUEFACTION VIABLE**
The cost effectiveness, attention to detail and proven history of obtaining building permits means that you can confidently build knowing your investment is being protected.

8 **INDIVIDUALLY ENGINEERED FOR EACH SITE**
Every Firth Ribraft® TC3 floor is engineered to meet MBIE guidelines regarding performance in TC3 environments. Firth can provide a list of designer who have been trained in the design of the Firth Ribraft® TC3 system. Every Ribraft® TC3 is installed by a trained Firth Ribraft® TC3 installer.

9 **FREE ADVICE**
If you would like to know if the Firth RibRaft® TC3 system will work for you on your land, we will happily offer our engineers' advice for FREE. Simply give us a geotech report and plan or house design and we'll give you our expert view.

10 **PILE TECH**
If Firth Ribraft® TC3 doesn't work for your site due to conditions, then a hybrid Ribraft® screw pile solution in conjunction with Pile Tech can be offered.

REBUILD RIGHT™

FIRTH PROTOTYPE RIBRAFT® TC3 SLAB IN TESTING

VISIT

FIRTH.CO.NZ/RIBRAFTTC3

To see a step by step guide to TC3

CALL

0800 FIX TC3 (0800 349 823)

EMAIL

RibraftTC3@firth.co.nz

Firth

RIBRAFT®

TC3