BUSCK
PRESTRESSED CONCRETE LTD

Precast

Product Brochure

Busck Prestressed Concrete Ltd manufactures precast concrete wall panels, stairs, stair treads, beams, columns, slabs, landscaping products, anything you desire to meet your project's design. This includes special surface finishes, shapes and textures.

Contact Busck's experts if you have any queries as we are always willing to work through options to ensure you achieve the best and most economic solution.

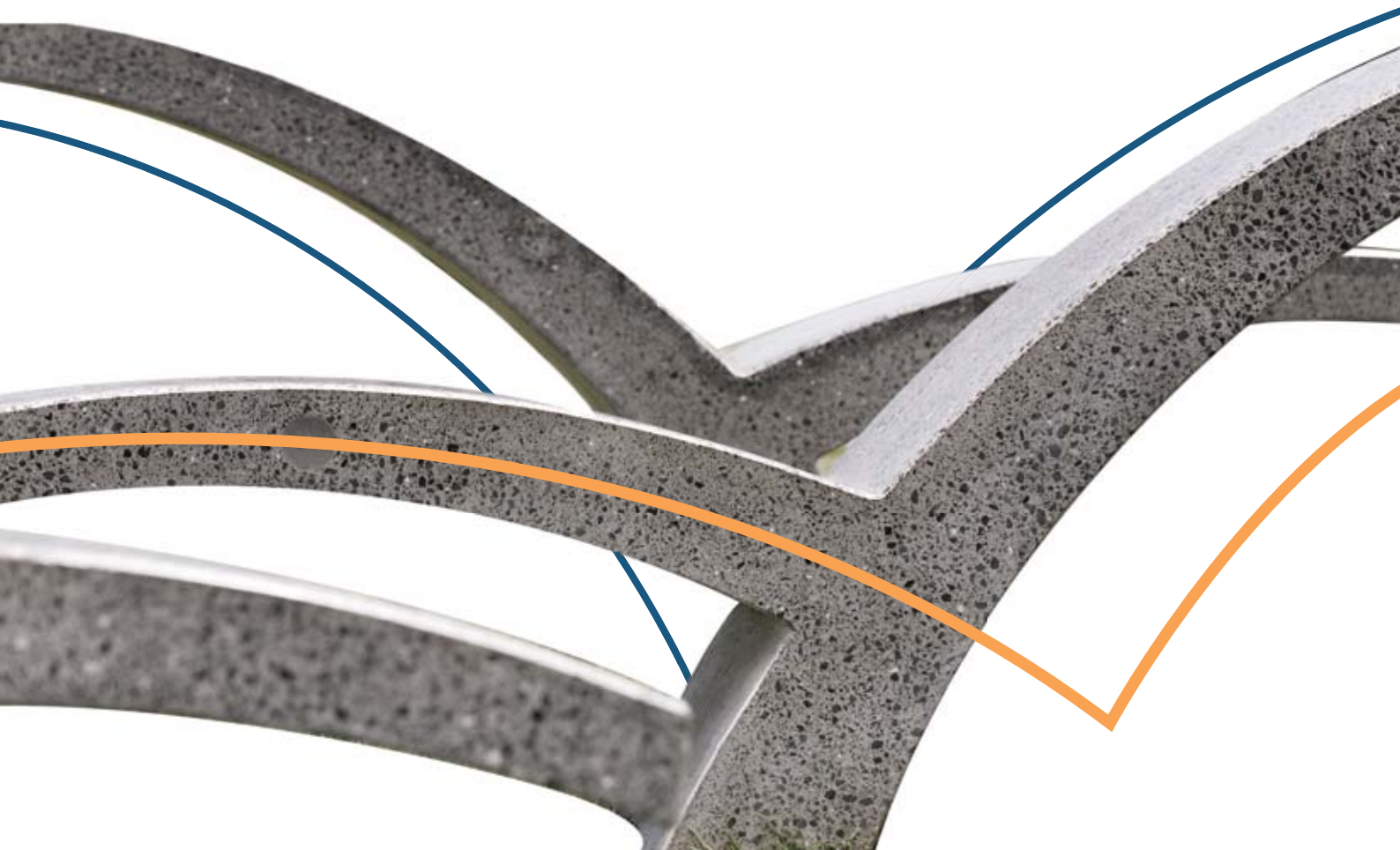
Off-site manufactured precast concrete:

- speeds up construction,
- reduces contractors people and resources,
- provides superior quality and finish to on-site,
- reduces waste on-site.

ECAAS ISO 9001 CERTIFIED QUALITY MANAGEMENT

concretenz PRECAST CERTIFIED PLANT

Busck's operations are ISO9001 certified as well as being a Certified Plant meeting the high standards set by Concrete NZ.



Architects

General

With the acquisition of Bradford Precast in 2018, Busck has grown to the extent that it is now one of the largest precasting operations in New Zealand. Busck also set high quality performance and standards that have influence across the entire industry. Busck precast work ranges from small, niche architectural housing to large, technically challenging commercial projects.

Busck is renowned for its thorough attention to detail and sound processes which ensure an exceptionally high level of accuracy and staff familiarity with the project. Always New Zealand's leaders in their field, Busck's management expertise and skilled operators have continually accepted challenges, building an impressive fount of knowledge and experience, and a reputation to match.

Durability

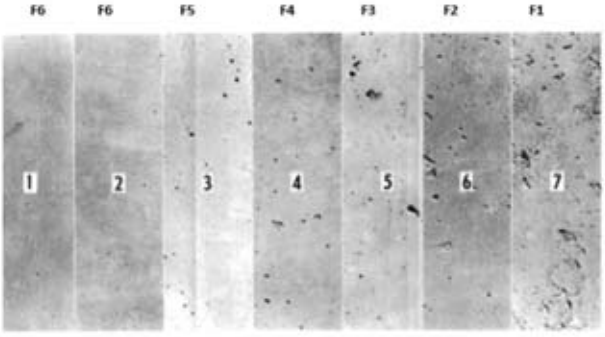
Busck's precast concrete products are typically manufactured with the strength and cover to reinforcement to achieve 50 year design life in exposure classifications A1, A2, B1 & B2 prescribed in section 3 of the New Zealand standard NZS3101:Part 1:2006. Longer design life and/or precast concrete elements in environmentally more extreme environments, such as coastal marine areas are achievable.

Surface Finishes

NZS3114:1987 prescribes the descriptions and tolerances for formed finishes "F1" to "F6" and manual finishes "U1" to "U11"eg. "U3" for steel trowelled manual surface quality. Concrete surfaces are influenced by quality of vibration, trowelling and mould material used in production. Cost increases as the expectations of the quality of the surface improves.

Busck precast products generally achieves, at worst, "F5" finish off a steel mould. Contractors should allow for minor remedial work on-site to receive an exposed painted finish.

Architects have the option of specifying textured, exposed aggregate, rebated, lettering, polished (honed) finishes.



Fire Rating

Three elements define the fire rating of concrete units in accordance with section 4 of NZS3101:2006.

1) Insulation – thickness of concrete and other materials that separate occupancies in the building.

2) Integrity – the criteria of integrity are considered satisfied if the precast element meets the criteria of both insulation and structural adequacy for that period.

3) Structural adequacy – section geometry of the concrete element, distance from the surface to the centre of the reinforcement and/or strand called "axis distance" and continuity at the supports.

Specified in the form eg. 60/60/60 for a 60 minute fire rating. Seek advice from fire protection suppliers in regards to their tested products when detailing fire rated penetrations through precast elements.

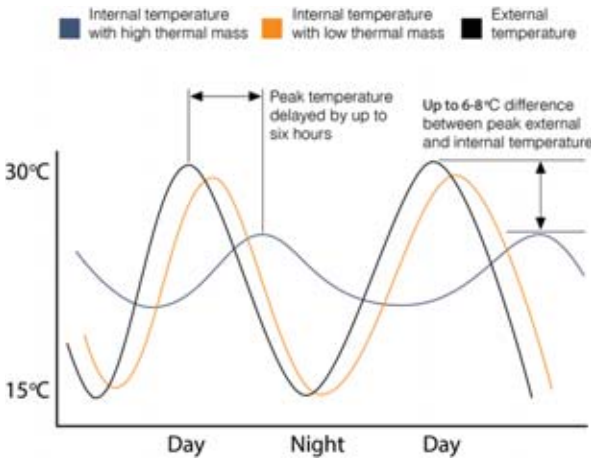
Contact Busck for solutions to increase fire rating.

Thermal Rating

Estimated thermal resistance ratings for materials associated with precast concrete elements are:

Thermal Rating	
Material	R rating/100mm thick ($m^2.°C/w$)
Concrete	0.045
Timber	0.77
Expanded poly.(type2)	2.77
Gypsum plasterboard	0.62

Solid concrete generates a natural "heat sink" known as thermal mass. Well detailed precast concrete buildings have the capacity to store heat when the weather is cool and keep the inside cooler for longer when the weather is warm. An excellent solution for your residential or commercial building to reduce energy costs and environmental impact.



Consulting Engineers

Design

Precast concrete elements incorporated into the design of any structure provide a durable, weather-tight, energy efficient shell and a stable, strong backbone to resist gravity loads as well as lateral forces induced by New Zealand's active seismicity. Busck Prestressed Concrete Ltd manufacture these quality critical elements to comply with the buildings structural engineers and architects detailed design and specification.

We encourage designers to involve our expertise early in the design process to ensure the best, most cost effective solutions are detailed, for example, element size for safe, practical handling and transportation. Busck offer this design advice, as well as cost estimates on request, freely.

Manufacturing

One benefit of precasting is our ability to make quality products on a daily basis. To achieve this our precast products are manufactured using concrete that achieves a minimum stripping strength of 20MPa overnight by purchasing concrete that is a minimum 40MPa at 28 days cast on steel heated beds.

Every precast concrete unit is reproduced by our experienced draughting team on a shop drawing showing cast in inserts, weld-plates, brackets, reinforcement, roughened surfaces and formed rebates to be installed to match the designers details and our moulding orientation. Busck's technical experts apply a lifting design assuming on-site rigging. It is important all shop drawings are rigorously checked to ensure the consultants needs are met prior to manufacture.

Our people use the latest AutoCad software as well as Rivet and Solid Works 3D capability to ensure everything connects as it should.

Contractors

Handling and Storage

Busck's precast products are usually cast with Reid swiftlift lifting anchors to our design to suit our lifting equipment. Specifically designed lifting clutches, chains and hooks are to be used to lift the units. These lifting points should be used without substitution. All lifting gear needs to be certified and regularly checked for any wear or damage because concrete elements can be abrasive.

Busck precast products, if stored on-site, needs to be dunnaged near the lifting points and dunnage blocks need to be aligned directly on top of each other so as to not induce large point loads on the units below. Care needs to be taken as to the bearing capacity of the ground the units are stored on. Racks for storing panels should be designed by a suitably qualified engineer.

Contractors should contact Busck technical staff early in the design process to ensure precast concrete element sizes are kept safely practical to be handled and transported.

Every precast concrete unit is reproduced by our experienced draughting team on a shop drawing showing cast in inserts, weld-plates, brackets, reinforcement, roughened surfaces and formed rebates to be installed to match the designers details and our moulding orientation. A lifting design using the Concrete NZ - Precast sector standard rigging codes is applied and shown on the shop drawing. It is important all shop drawings are rigorously checked, lifting process is understood and approved by the contractor to ensure their needs are met prior to manufacture.

Handling weights of Busck precast products will be noted on the shop drawings. We generally allow 2500kg per cubic metre of concrete volume plus some compensation for reinforcement content.

Propping

Temporary propping of precast concrete elements is designed by the contractor's temporary works engineer to ensure stability under gravity as well as lateral forces from wind and earthquake during construction.

The Good Practise Guidelines for **"Safe Work with Precast Concrete"** published by Worksafe New Zealand is an essential resource for all contractors handling precast concrete elements. Refer to https://worksafe.govt.nz/topic-and-industry/concrete/working-with-pre-cast-concrete/

Surface Finish

Contractors should allow to remediate air holes and minor defects before applying paint finishes to exposed surfaces. Refer to NZS3114:1987 that describes the allowable tolerances. Lifting anchor recesses will also need to be filled.

Drilling Penetrations and Installing Fixings

Busck strongly recommends before any holes are drilled for services or fixings into precast concrete elements, that contractors seek approval of the designer.

Holes for fixings can be drilled using a hammer drill or “dyna-drill” ensuring you maintain minimum edge distances, spacings as well as avoiding the reinforcement to achieve the required embedment. If in doubt seek advice from the fixing manufacturer as to the suitability and the load carrying capacity of their products.

Specifications

Written specification clauses

Busck precast products in general comply with the following standards:

(i) NZS 3101:2006 'Concrete Structures Standard Part 1 & 2' Amendment 3.

(ii) NZS 3109:1997 'Concrete Construction'

(iii) AS/NZS 4671:2001 'Steel Reinforcing Materials'

(iv) BS 5896:1980 'Specification for High Tensile Steel Wire and Standard for the Prestressing of Concrete'

Design

(i) The design of Busck precast units shall be in accordance with the requirements and recommendations of NZS 3101:2006 'Concrete Structures Standard Part 1 & 2' and/or any recognised international Standard or part thereof, for example BS 8110:2007 'The Structural Use of Concrete'.

(ii) The Busck precast products shall be designed for exposure classification A1/A2/B1/B2 as per table 3.6 in NZS 3101:2006 for 50 year design life.

(iii) The Busck precast units shall have a FRR (Fire Resisting Rating) of 90/90/90. Penetrations through the precast elements shall be reinstated to the required FRR by an approved fire protection system.

Manufacture

(i) Materials, execution of stressing prestress strand and workmanship of the Busck precast units shall conform with Busck ISO 9001 Quality Assurance Operating Procedures.

(ii) The tolerance for length of the Busck precast units shall be in accordance with NZS 3109 Table 5.1 (usually +/- 10mm).

Materials

(i) Concrete shall be specifically mixed depending on environmental conditions and should have a 28 day cylinder strength of 40MPa as a minimum.

(ii) All concrete shall show signs of thorough compaction otherwise rejected if repair cannot be undertaken to bring the unit back to the original specification.

(iii) An air entraining agent complying with BS EN 934-2-2001 may be included in the concrete mix to improve workability.

(iv) Reinforcement steel shall be clean and free from deleterious substances. Superficial rust is acceptable, however reinforcement with corrosion that has caused surface pitting shall be rejected.

Temporary Propping

(i) Design of temporary propping, back propping, bracing systems and ground conditions to support prop loads shall be carried out by a suitably qualified Engineer.

(ii) It is the Contractor's responsibility to ensure the propping system used on site meets the criteria as detailed in the aforementioned design.

Fixing & Penetrations

(i) Fixing to the precast units shall be in accordance with the approved details only and shall not impair or reduce the strength of the unit in any way.

(ii) Documentation of tested fixings proposed for the project shall be submitted to the Specifying Engineer prior to installation.

Handling, protection and placing units

(i) The precast units shall be designed to sustain all lifting stresses. Rigging codes are provided on contractor approved shop drawings. Refer to Rigging Guidelines.

(ii) The precast units shall be lifted only at the lifting position as nominated by the manufacturer.

(iii) The precast units shall be handled using certified lifting hooks or cluthces. Chain angles must not exceed 30 degrees to the vertical and must be checked regularly for wear and tear.

(iv) Dunnage used for storing the precast units needs to be of suitable quality and placed on 'good' ground at the correct points.

(v) Where units are stacked one above the other, bearing dunnage shall be positioned in vertical lines.

(vi) The precast shall be handled and placed according to references contained in the Worksafe NZ - "Good Practise Guidelines, Safe Work with Precast Concrete."

(vii) The units shall not be damaged in any way including chips and cracks during the erection and placing phase. Any damage should be brought to the attention of the supervising Engineer immediately.

Gallery

Exposed selected aggregates

Broom finish

Polished/honed

Pattern

Textures

Rebates

Sandblasted

Structural Precast

Panels

Beams

Treads

Balconies

Stairs

Busck manufacture all sizes and profiles of Precast Concrete Stairs.

Whether it be a big commercial project or one off for your house, we pride ourselves on offering a quality cost affective product.

We have a range of standard stair moulds that can be adjusted to fit almost any stair geometry.

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Landscaping Precast

Sculptures

Picnic Tables

Architectural Precast

Residential

Commercial

Oasis Apartments

A silicon mat was layed on a steel bed to form the brick impression in the precast panel face. The colour was applied on-site.

Oasis Apartment brick faced wall panels

Oasis Apartment stairs

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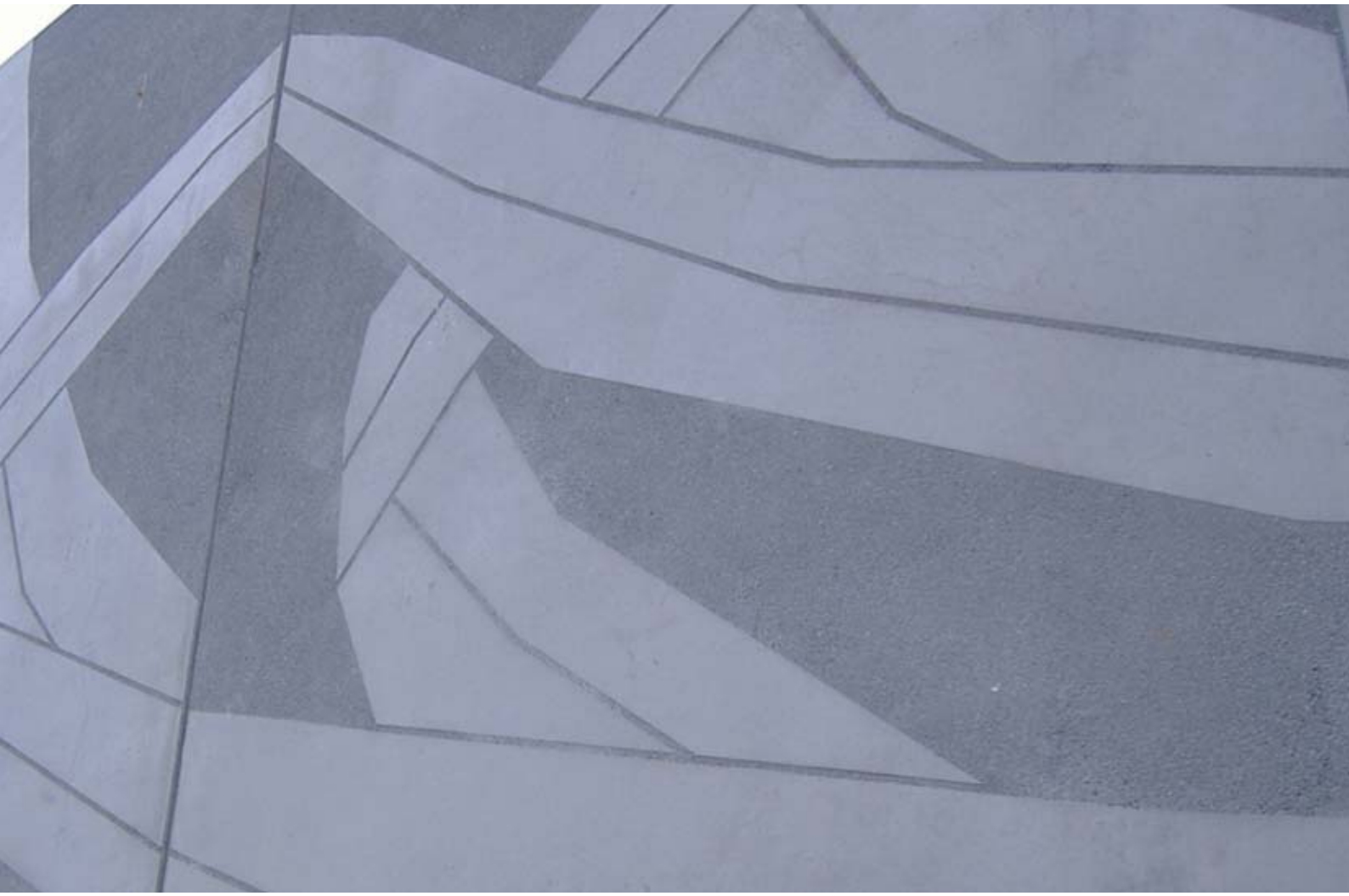
Sylvia Park Offices



BUSCK
PRESTRESSED CONCRETE LTD

Whangarei

8 Fraser Street
Whangarei 0110
phone: 09 438 3059

Ashburton

7 Malcolm Mcdowell Road
Ashburton 7772
phone: 03 928 8013

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email: info@busck.co.nz
BUSCK website: http://busck.co.nz/