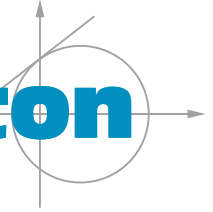


Infrastructure

stahlton

ENGINEERED CONCRETE
A division of [Fulton Hogan Ltd](#)



Product brochure

 **Fulton Hogan**





Infrastructure

We at Stahlton, a division of Fulton Hogan Limited, pride ourselves on manufacturing prestressed & precast concrete products to the highest standards. We have a proven track record across a wide range of applications in the infrastructure sector, including reservoirs, traffic barriers, noise walls, retaining walls, wastewater tanks, underpasses and culverts.

Stahlton supplies precast concrete to any location in New Zealand. We are located around three major centres in New Zealand, Auckland, Otaki (75km north of Wellington) and Christchurch. Our extensive product range can be seen across New Zealand, offering our clients excellent, efficient technical solutions.

Our dedicated technical & design team bring a wealth of knowledge to the New Zealand precast concrete industry. We can design and manufacture precast concrete products to meet the requirements of your project.

With over 50 years' experience, versatility and our ability to work with our clients on any project has helped us grow into one of Australasia's most trusted manufacturers of concrete products and civil contractors.



At Stahlton, we pride ourselves on providing our customers quality, safety driven, products and services. All Fulton Hogan businesses are ISO9001 certified and our Stahlton Auckland and Christchurch plants have been certified by Precast New Zealand Incorporated.



Architects

Durability

Stahlton precast concrete products typically meet exposure classifications A1, A2, B1 & B2 as per table 3.6 in NZS3101:Part1:2006 for a 50 year life. Harsher environments and greater design life can be achieved through specific design and detailing.



Wharf with precast concrete access stairs

Thermal rating

Estimated thermal resistance ratings for various materials per 100mm of thickness:

| Material | R rating (m ² oc/w) per 100mm thick |
|---|--|
| Concrete (density = 2400kg/m ³) | 0.045 |
| Softwood | 0.77 |
| Polystyrene (expanded) | 2.77 |

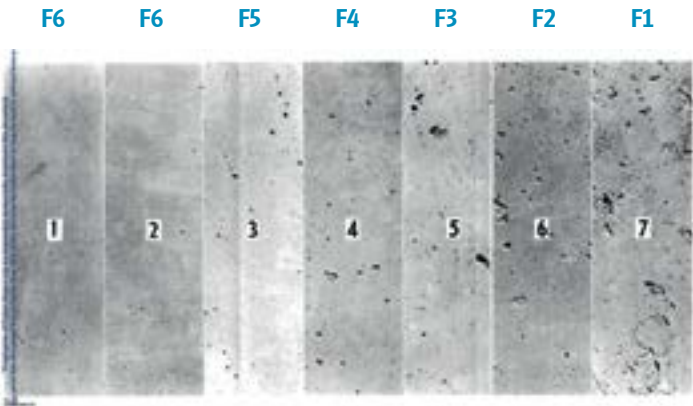
The values are a guide only. Please contact Stahlton for further information.

Fire rating

Refer NZS3101:Part1:2006 Section 4 for minimum element thicknesses to achieve the rating required. Please contact Stahlton if you wish to discuss further. Any penetrations through the precast concrete elements must also be fire rated. Advice should be sought from the fire protection suppliers regarding suitability on their tested products.

Surface finishes

Refer NZS3114:1987 for the descriptions of the various surface finishes available for you to specify your needs; off the mould, eg. "F6" (number 1 & 2 on photo below) to "F1" (number 7), off the trowel, eg. "U3" or any special surface like timber boards, polished (honed), exposed aggregates, etc. Stahlton can typically achieve F5 finishes. However, we can also tailor the finish to suit your specific needs at an additional cost.



Timber board finish

Consulting Engineers

Infrastructure precast concrete elements usually cannot be designed as an isolated structural element. For this reason units are made to details and actions supplied by others. Units are manufactured to size from minimum 40MPa concrete formed in steel or timber moulds to allow a daily production cycle.

Stahlton precast concrete products can have any cast-in bracket, insert or weld plate cast in to provide the desired connection detail.

Designers should contact Stahlton technical staff early in the design process to ensure the most effective use of the associated structural and architectural detailing. To ensure precast concrete element sizes are kept reasonable and practical to be handled and transported. Preliminary design advice, cost estimates and specifications are available on a no obligation basis.



Noise barriers

Case Study

Browns Road Bridge

Stahlton Engineered Concrete completed the precast for Fulton Hogan's Rail division on the Browns Road Bridge in Manurewa. The brief was to have minimal disruption for the main truck line and it was agreed that the best way forward was to make the bridge in a kitset form off site.

There was a small window of opportunity for Fulton Hogan to dismantle the existing bridge and replace it with the new structure - a job with no room for error.

The bridge deck mould was a full size model of the completed bridge and was divided into 10 individual deck units; a total of 450 sheets of plywood were used to line the mould.

There was 3 pours for the pile caps that weighed 67 tonnes each, followed by 13 wall panels ranging from 27 to 45 tonnes each, plus 10 bridge decks weighing 49 tonnes each.

Within the structure there were a total of 1100 grout sleeves with only a 10mm tolerance, all components went together without a hitch.

In total there was 500m³ of self compacting concrete used and 140 tonnes of reinforcing within the structure. Approximately 5000 man hours went into the project.

The methodology used in this project is a credit to the caliber of the people involved who were prepared for the challenge facing big risks. Well done to the team on completing such a difficult project.



The first bridge deck unit being cast



The bridge deck mould



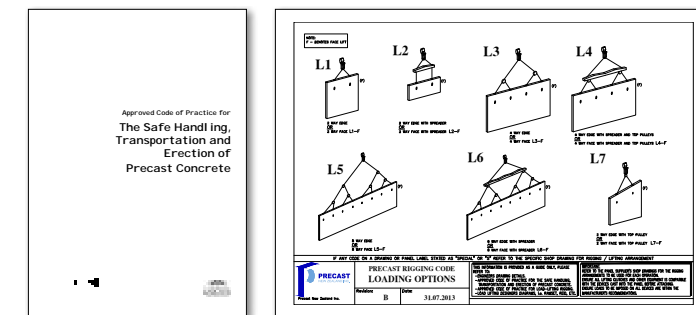
Transporting the bridge deck units to Browns Road

Contractors

Handling, transport & erection of precast concrete

Stahlton precast concrete products are usually lifted using specifically designed lifting chains and and lifting clutches. The Stahlton elements will arrive on site with provision for lifting clutches. These anchoring points should be used without substitution.

Precast concrete elements can be very large and be cast in odd shapes. Most units will require centre of gravity calculations and specific design for the lifting anchors and the process can be best described using the the following documents as a valued resource. Stahlton produce shop drawings for all the individual precast concrete elements we manufacture. These shop drawings go through a rigorous approval process where the designers and contractor have an opportunity to review and verify the unit to be produced can constructed correctly and most importantly, safely for all concerned.



Please note the "Approved Code of Practise for The safe Handling, Transportation and Erection of Precast Concrete" has been updated by Precast New Zealand Incorporated. Also refer to www.precastnz.org.nz

All lifting gear should be checked for any wear or damage regularly as concrete elements can be abraive.

Stahlton precast concrete products need to be dunnaged near the lifting points if stored on site. The dunnage blocks need to be aligned 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 suitability of the ground the units are stored on and should be checked by a suitable qualified engineer.

Handling weights of Stahlton 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.

Surface finish

Refer NZS3114:1987 for the descriptions of the various surface finishes to meet your projects specification.

Minor blemishes to precast surfaces are unavoidable and allowable as a tolerance noted in the surface finish descriptions in NZS3114:1987. The contractor should allow for some filling of air holes and smoothing of minor defects prior to applying paint finishes.

Penetration & fixings

An Information Bulletin IB95 Drilling, Cutting or Forming Holes in Suspended Concrete Floor Slabs, published by CCANZ, is available on the Stahlton website. Stahlton recommend this document is read and adhered to. The same principles and processes should apply for all our precast concrete products.

Stahlton products can have penetrations formed or core drilled through with approval from the design engineer. If a strand is cut on-site, temporary prop either side of the penetration immediately, then contact your engineer as a design check will need to be done to ascertain whether the unit is still structurally sound.

Fixings can be drilled into Stahlton products using a hammer drill or "dyna-drill", maintaining minimum edge distances and avoiding the reinforcement to gain adequate embedment. Advice should be sought from the fixing manufacturer as to the suitability and the load carrying capacity of their products in Stahlton products.

Gallery



Reservoirs



Retaining walls



Noise barriers



Reservoirs

Specifications

Written specification clauses

Stahlton Precast products in general comply with the following standards:

- (i) NZS 3101:2006 'Concrete Structures Standard Part 1 & 2'
- (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 Stahlton infrastructure precast concrete products 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 Stahlton Precast products shall be designed for exposure classification A1/A2/B2/B2 as per table 3.7 in NZS 3101:2006 for 100 year design life.
- (iii) The Stahlton 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.

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 strand with corrosion that has caused surface pitting shall be rejected for the main longitudinal reinforcement of the unit.

Manufacture

- (i) Materials, execution of stressing prestress strand and workmanship

of the Stahlton Precast units shall conform with Stahlton Engineered Concrete ISO 9001 Quality Assurance Operating Procedures.

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

Handling, protection & placing units

- (i) The Precast units shall be designed to sustain all lifting stresses.
- (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 clutches. 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 in from the end of the units.
- (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 Occupational Safety & Health approved code of practice entitled 'Safe Handling, Transportation and Erection of 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.

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.

Fixings & 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.



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