# Lusit Precast Engineered Retaining Wall System

Technical Guide D15.5

The Lusit Retaining Wall system is a precast concrete engineered wall suitable for a wide variety of ground retention uses.



## Applications

Retaining Wall applications

Motorways, courtyards, parking areas, walkways, basements, stairwells

Containment bunds

Silage bins

## **Product Attributes**

Engineered	to	ΝZ	codes

Self supporting

Functional & elegant

Durable - 100 years design life

Simple installation

## Concrete - 50mpa

## **Approvals/Standards**

Concrete Structures Standards NZS 3101:Part 1:2006

## Quality

ISO 9001:2008 Quality Management Standard

We are the supply partner of choice for New Zealand's civil construction industry, specialising in water and infrastructure based solutions.



## The Lusit Retaining Wall system is a precast concrete engineered wall suitable for a wide variety of ground retention uses.

One of the key advantages of Lusit is the flexibility of design to suit varying applications.

## LAS system - Lusit Angle Support

## **Features**

- Pre-production of units means saving of on site project time as not weather dependent
- High quality construction
- Specifically designed steel forms and reinforcing baskets
- Available in heights from 1 to 4 metres, in 200mm increments. Wall thickness of 150, 200 and 250mm, depending on height and load.
- Precision, versatility, durability, structural integrity, and speed of installation.

## **Design Criteria**

- Three different loading capabilities:
  - Light duty: Level backfill behind wall (up to 2.5kPa surcharge)
  - Medium duty: 0-20° sloping backfill behind wall or up to 12kPa surcharge)
  - 3. Heavy duty: TNZBM 2003 HN-HO loading
- In cases where vehicular traffic is allowed, no wheel loadings permissable within 1 metre of inside edge of Lusit panel.
- Backfill to be GAP65 with 60° maximum allowable batter, with 100mmØ Novacoil drain behind base of wall.
- Maximum specific weight of backfill: 18kN/m<sup>3</sup>

## **Transport and Storage**

- All LAS panels are delivered on H/D wooden pallets (returnable). Panels up to 1.6 metres high delivered in upright position, with taller panels delivered face down.
- LAS panels fitted with 2.5 Tonne Reid swiftlift anchors cast into back face for lifting (if panels are fitted with loops near the top these are for alignment only, and must not be used for lifting).
- LAS panels to be unloaded individually, to avoid damage
- All Hynds Box Culvert System incorporate Swiftlift lifting anchors for safe lifting and must be used with the correct lifting clutch.

- Hynds Pipe Systems has designed and manufactured Hynds Box Culvert System with a minimum dynamic factor of 1.2. This dynamic factor requires that all the following conditions are observed when lifting, moving or placing the system:
  - Lifting with mobile plant (such as an excavator or similar) where equipment is specifically exempt from the requirements of the PECPR Regulations 1999, subject to the conditions outlined in the New Zealand Gazette,
    - No. 104, September 2015 and
  - e. Lifting, travelling and placing over rough or uneven ground where anchor failure is not anticipated to cause harm or injury, by adopting procedures such as:
    - I. Transporting the element as close as practical to ground level (300mm recommended)
    - II. Establishing and maintaining exclusion zones
    - III. Transporting only precast concrete elements that are unlikely to topple if they were to hit the ground
    - IV. Inspecting lifting anchors both after transportation and before final lifting into place
- Refer to "Safe work with precast concrete Handling, transportation and erection of precast concrete elements" published by Worksafe New Zealand (October 2018)
- Shock loads resulting from travelling with suspended Hynds Box Culvert System over rough terrain and uneven ground may exceed design, dynamic and safety factors of the lifting systems. It is essential that care is taken during lifting and transporting as additional stresses could result in anchor failure.

**Note:** if storing on site LAS panels should be stored upright (on level ground) or lying face down no more than 2 high with distance packers between. Upright storage is preferred.



## NOTES for Light Duty Lusit LAS Element

- 1. Minimum allowable bearing capacity of soil foundation = 100 kPa (qu = 150kPa (NZS 3604, Sec 3, Good Ground)
- 2. Placement and compaction of backfill to be done a minimum of 7 days after insitu footing pour, or when concrete has reached a minimum strength of 25MPa
- 3. Concrete = 50MPa
- 4. Reo = Grade 500E
- 5. Reo Cover (40mm min)
- 6. Min Lap Length 40 X Bar Dia
- 7. Dimensional tolerance: Table 5.1-NZS3109:1997
- 8. Design Loading:
  - 0 2.5kPa surcharge, 0 degree backslope
  - Max. specific weight of backfill max = 18kN/m3
  - EQ horizontal acceleration coefficient Kh=0.2 (NZBC B1/VM4)
- 9. Exposure classification B2. Design life 100 years NZS3101 Tables 3.1 & 3.6





FIG. 3 Whangaparaoa



FIG. 2 Highbrook



## Branches Nationwide Support Office & Technical Services 09 274 0316

Disclaimer: While every effort has been made to ensure that the information in this document is correct and accurate, users of Hynds product or information within this document must make their own assessment of suitability for their particular application. Product dimensions are nominal only, and should be verified if critical to a particular installation. No warranty is either expressed, implied, or statutory made by Hynds unless expressly stated in any sale and purchase agreement entered into between Hynds and the user.

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