

Hynds Landspan Bridge System

Technical Guide R4.1

Hynds bridge units simplify the construction process, allowing for the rapid completion of works and offering a more cost effective option than the in-situ construction process.



0723 | RURAL | R4.1 HYNDS LANDSPAN BRIDGE SYSTEM

Applications

Stock and farm vehicle crossings
Rural and commercial

Product Attributes

Purpose designed
Precast and pre-stressed
Low cost, quick installation
Simplifies preparation and consent of site plans or council approval

Approvals/Standards

Bridge Design Load 0.9HN(HPMV) Rural
Bridge in accordance with the NZTA Bridge Manual (Appendix D)
Seismic zone factor = 0.45(max). Elastic design

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

HYNDS
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Design Specifications

- 50 years design life.
- Bridges are available in various spans to suit beam lengths ranging from 10 to 16 m (refer to Table 1 for options).
- Other sizes may be available subject to specific design.

TABLE 1 Bridge Beam Units

| Land span | BR10ØTBC | BR12ØTBC | BR14ØTBC | BR16ØTBC |
|-----------------------|----------|----------|----------|----------|
| Beam Length(m) | 10 | 12 | 14 | 16 |
| Beam width | 1.05 | 1.05 | 1.05 | 0.840 |
| Bridge width | 4.2 | 4.2 | 4.2 | 4.2 |
| Beams | 4 | 4 | 4 | 5 |

Lightly trafficked rural bridge loading

The design load covers all the loads expected to 0.9 HN loading used by NZ road legal vehicles or trucks.

- The following restrictions apply:
 - Bridge is used for single lane traffic
 - Speed limit is below 70 km/hr
 - Maximum axle and axle set limits for Class 1 roads are complied with or the structure can be bypassed
 - Use of route by logging trucks unlikely
 - Low traffic volume (<100 VPD)
 - Road cannot become a through route

Abutment Options

There are two standard abutment options from 300mm to 2300mm high. Other heights may be available subject to specific design.

Handrail

- Hynds supply a light duty handrail system and side kerbs (type LD) suitable for farm applications.
- A medium duty handrail system and side kerbs (Type PR) is also available to meet AS/NZS1170.1 pedestrian barrier requirements.

Deck finish

- The Hynds Landspan Bridge beams have a broomed finish to the top surface providing a non-slip surface to the bridge deck.
- Differential camber between the pre-stressed beams and manufacturing and installation tolerances may result in a small step varying between 5 and 15 mm between the precast concrete beams. This variation is purely cosmetic and has no effect on the structural integrity of the deck.

Multi-span options

Multi-span options are also available. Contact Hynds for more information.

Installation Requirements

- Hynds provide PS1 and PS4 producer statements for the design and manufacture of the precast and pre-stressed concrete bridge components.
- The asset owner/contractor is responsible for arranging and providing the PS1 – Design and PS4 – Construction Producer Statements, for the site selection and installation design, and construction supervision respectively.
- The asset owner/contractor is responsible for obtaining all the necessary resource and building consents as determined by the local authorities.
- Site selection and installation includes determining the bridge span and height to suit hydraulic requirements, foundation investigation and specification of erosion protection requirements. This work should be undertaken by a consulting engineer familiar with local conditions at the proposed bridge site. Contact Hynds for suggestions in your area.



FIG. 1 Typical Landspan Bridge



FIG. 2 LD Handrail

**Abutment Bridge
Showing Standard 4 beam design**

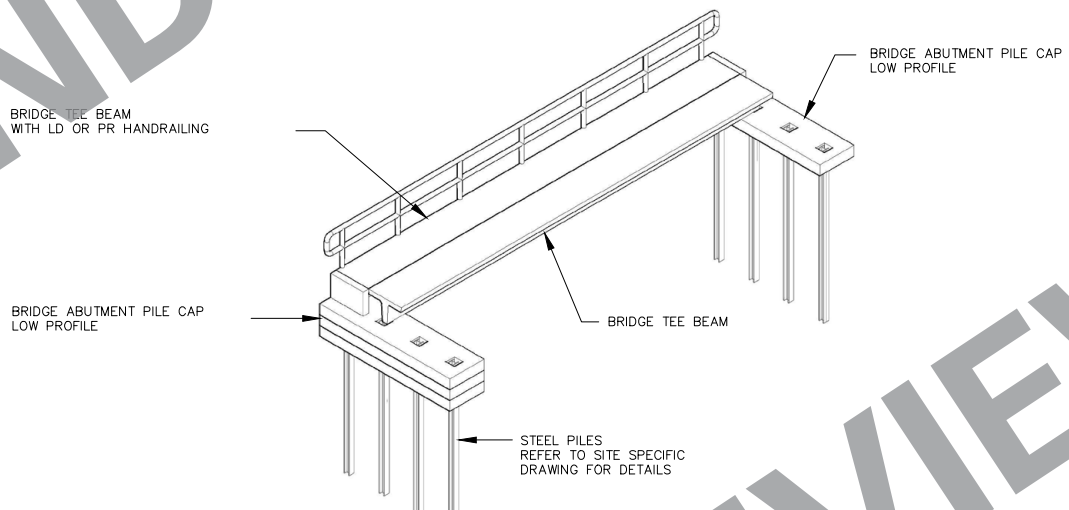


FIG. 3 Landspan Low Profile

**Abutment Bridge
Showing Standard 4 beam design**

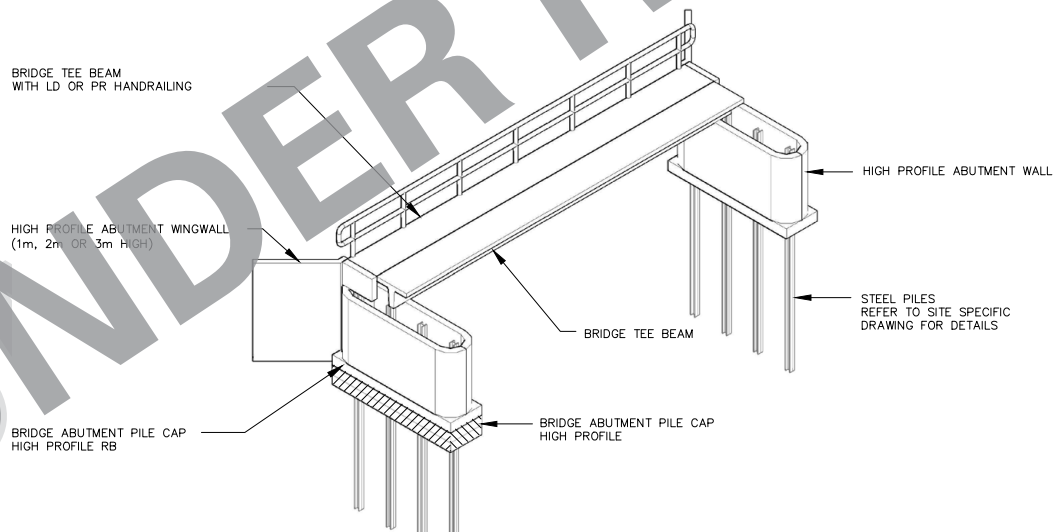


FIG. 4 Landspan High Profile

Lifting and Handling

All Hynds Landspan Bridge Systems incorporate Swiftlift lifting anchors for safe lifting and must be used with the correct lifting clutch.

Hynds Pipe Systems has designed and manufactured Landspan Bridge Systems 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 systems:

1. 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
2. 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:
 - a. Transporting the element as close as practical to ground level (300mm recommended)
 - b. Establishing and maintaining exclusion zones
 - c. Transporting only precast concrete elements that are unlikely to topple if they were to hit the ground
 - d. 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 Landspan Bridge Systems 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.

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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.