

Stock Underpasses

Concrete Box Culvert



Save time and money with a concrete box culvert underpass solution designed to meet Transit NZ requirements.

Applications

- On Farm
- Rural Roads
- Public Roads
- Transit Roads

Features

- Durable
- Long lasting
- Strong
- Are designed to comply with HN-HO-72 Traffic Loading with 0-600mm cover
- Full range of sizes available – from 2.5x2m to 5x3m

Benefits

- Quick, safe and convenient stock movement
- Less stress involved in stock movement
- Be able to move stock easily without having to worry about road crossings
- Save time and money
- Reduced labour costs associated with road crossings
- No effluent on road disputes



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Design

The size of underpass required is determined by such factors as herd size, distance from milking shed, head room required and the height of the water table. The design is associated with the individual precast element only, not with the overall contract/job design (eg. installation, jointing, prestressing, post-tensioning, tie rods, etc.) If duct holes are to be provided they must be grouted to fill the cavity, unless specific detailing is provided to ensure minimum steel covers are maintained (30mm). Talk to your local Humes representative about site specific conditions.

Installation

Installation of the underpass is made easier by Humes box culvert lengths being 1.55m long. This facilitates ease of handling and provides the ability to close only one side of the road at a time. The length of a cattle underpass is typically between 12m and 20m. This length is determined by the local body governing the road i.e. Transit or Local Council.

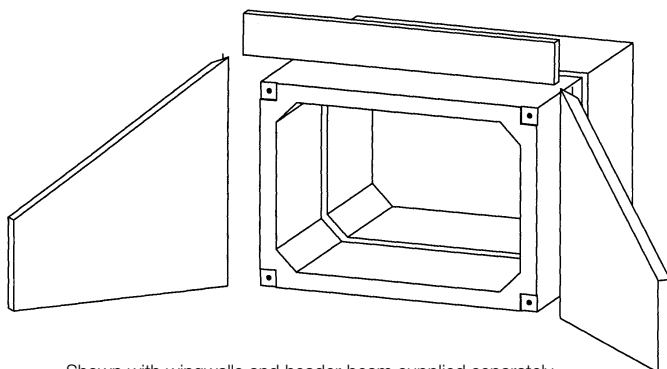
Note: It is important to mortar the shear keys in 0-600 installations in order to achieve full design strength.

Bedding

Safe Bearing Capacity shall exceed 100Kpa unless specific engineering foundation design is undertaken. The bedding material can be sand, cement or granular material. The compacted thickness of bedding can range from 100mm for earth foundation to 150mm for rock foundations.

Backfill

Backfill around the units should be in even layers on both sides simultaneously. Care must be taken to prevent movement of the units during backfilling.



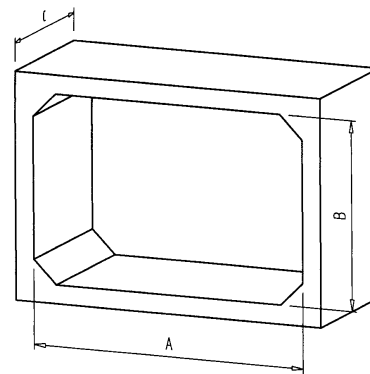
Shown with wingwalls and header-beam supplied separately.

Cover

Cover is the thickness of backfill over the culvert. Most Humes concrete box culvert underpasses are designed to withstand HN-HO-72 Traffic Loading with 0-600mm cover. Alternatively units are available designed for fill heights 600mm – 2000mm.

Manufacturing standards

Precast manufacture is to NZS 3109:1997 with surface finishes to NZS 3114:1987.



Humes Underpass Range

A	B	C	Mass
2.5m	2.0m	1.55m	6.9
2.5m	2.5m	1.55m	7.5
3.0m	2.0m	1.55m	8.6
3.0m	2.5m	1.55m	9.4
3.0m	3.0m	1.55m	10.1
4.0m	2.0m	1.55m	11
4.0m	2.5m	1.55m	11.8
4.0m	3.0m	1.55m	12.6
5.0m*	2.0m	1.55m	14.2
5.0m*	2.5m	1.55m	15.6
5.0m*	3.0m	1.55m	16.6

- Larger sizes may be available in some areas.
- Wall thickness varies due to traffic loads and site conditions.
- * Non-standard special designs required.

Notes:

- 1 All 0-600mm units incorporate deck shear keys and shear reinforcement in the deck slab as required by NZS 3101:1995.
- 2 All 600-2000mm units are designed for positive projecting embankment conditions.
- 3 Masses included in table are based on a nominal concrete density of 2440 kg/m³.

Disclaimer: "Buyers and users must make their own assessment of our products under their own conditions for their own use. All queries regarding product suitability or purpose or installation should be directed to the nearest Humes office for advice and assistance". Availability of product may differ slightly from that available in your area. © Copyright Humes Pipeline Systems 2004.

