



# **ADVICE NOTE**

## **AN02:**

# **CULVERTS AND BRIDGES**

<b>REVISION RECORD</b>				
<b>Version</b>	<b>Date</b>	<b>Description</b>	<b>Originator</b>	<b>Checked</b>
	09.08.11	DRAFT	AMD	--
1	27.09.11	FINAL – BOARD APPROVED	AMD	DJS
2	09.07.13	New logo added	LSQ	DJS
3	23.04.18	Amendments	TR	DJS

The Board reserve the right to update or change this living document at any time without notice.

## BRIDGES

**The Board's Byelaw No. 17 (d) states:**

*No person shall without the previous consent of the Board –*

- (d) erect or construct or cause or permit to be erected or constructed any fence, post, pylon, wall, wharf, jetty, pier, quay, bridge, loading stage, piling, groyne, revetment or any other building or structure whatsoever in, over or across any watercourse or in or on any bank thereof;*

Therefore, any person wishing to install or alter a bridge on a Board maintained watercourse will require the Board's prior consent.

## ADVICE FOR PERSONS WISHING TO BRIDGE A BOARD MAINTAINED WATERCOURSE

Clear span bridges are generally acceptable, subject to the Board's formal consent.

The channel beneath a bridge crossing may need to be lined to prevent vegetation growth from blocking the watercourse as this area will no longer be accessible to the Board's machinery. The bank slopes must also be protected against erosion. Full channel lining on larger watercourses may not be required as toe line protection may be acceptable.

The environmental impact of this requirement will need to be considered with mitigation for loss of habitat provided where appropriate.

A typical example is given in Appendix A.

## CULVERTING OF BOARD MAINTAINED WATERCOURSES

**The Board's Byelaw No. 17 (c) states:**

*No person shall without the previous consent of the Board –*

- (c) make or cut or cause or permit to be made or cut any excavation or any tunnel or any drain, culvert or other passage for water in, into or out of any watercourse or in or through any bank of any watercourse;*

## CULVERTING OF PRIVATE WATERCOURSES

**Section 23 (1) of the Land Drainage Act 1991 states that:**

*"No person shall-*

*(a) erect any mill dam, weir or other like obstruction to the flow of any ordinary watercourse or raise or otherwise alter any such obstruction; or*

*(b) erect any culvert that would be likely to affect the flow of any ordinary watercourse or alter any culvert in a manner that would be likely to affect any such flow, without the consent in writing of the drainage board concerned."*

### ADVICE FOR PERSONS WISHING TO CULVERT

The Board considers it beneficial for watercourses to remain open wherever possible for both flood risk management and environmental purposes. Culverting can exacerbate the risk of flooding and increase the maintenance requirements for a watercourse. It also destroys wildlife habitats, damages a natural amenity and disrupts watercourse connectivity for wildlife. It is therefore important that watercourses and their associated habitats are protected and enhanced for the benefit of present and future generations.

The Board will therefore only approve an application to culvert a watercourse if there is no reasonably practicable alternative, or if the detrimental effects of culverting would be so minor that they would not justify a more costly alternative.

The Board considers that culverting can have the following detrimental effects, which should be addressed when making an application:

- increased impact of flooding
- loss of floodwater storage
- increased likelihood of flooding due to blockage
- increased difficulties in providing for drainage connections
- difficulties in the repair, maintenance and replacement of culverts
- increased health and safety hazards
- loss of wildlife habitat and adverse effects on connectivity and wildlife habitat
- reduced groundwater recharge
- increased difficulty in detecting the origins of pollution and in monitoring water quality

The potential loss of floodwater storage, conveyance and habitats must be fully considered. Where proposals are likely to result in a loss of floodwater storage, conveyance or habitat the Board expects appropriate mitigation measures to be provided at the applicant's expense.

Culvert pipe diameters should be as large as is reasonably practicable when considering the size of the watercourse and other nearby hydraulic structures. Larger culverts promote connectivity and are an alternative to the creation of mammal passage. Pipe diameters, lengths and invert levels should, where practical, be agreed with the Board's Officers prior to making a formal consent application.

The culvert pipe should be bedded upon and backfilled with a granular material. A suitable upstream and downstream headwall should also be provided. Typical culvert and headwall construction details are provided in Appendix B.

The culverting of longer sections of a watercourse may require the provision of manholes to ensure accessibility. Where required, manholes should be provided:

- at changes in pipe direction
- at changes in pipe size
- at significant changes in pipe gradient
- at appropriate intervals
- with an access point with a minimum clear opening measuring 600mm square or diameter
- that are labelled 'LMDB' on Board maintained watercourses. These can be provided at a charge from the Board's Strubby depot by prior appointment

The Board expects that where a culvert application is approved, the riparian owner(s) will retain ownership and responsibility for future maintenance costs. The Board may consider adopting culverts on Board maintained watercourses subject to the payment of a commuted sum of money calculated to fund the whole life costs of the structure

## **FURTHER GUIDANCE**

The Board has the following documents available:

- Consent Application Form
- Lindsey Marsh Drainage Board Byelaws
- Planning and Byelaw Policy

The Board has also produced a series of other advice notes including:

- AN01: Buildings, Structures, Planting and Fencing
- AN03: Environmental Considerations
- AN04: Stability of Garden Fences Close to Board Maintained Watercourses
- AN05: Service Crossings
- AN06: Surface Water

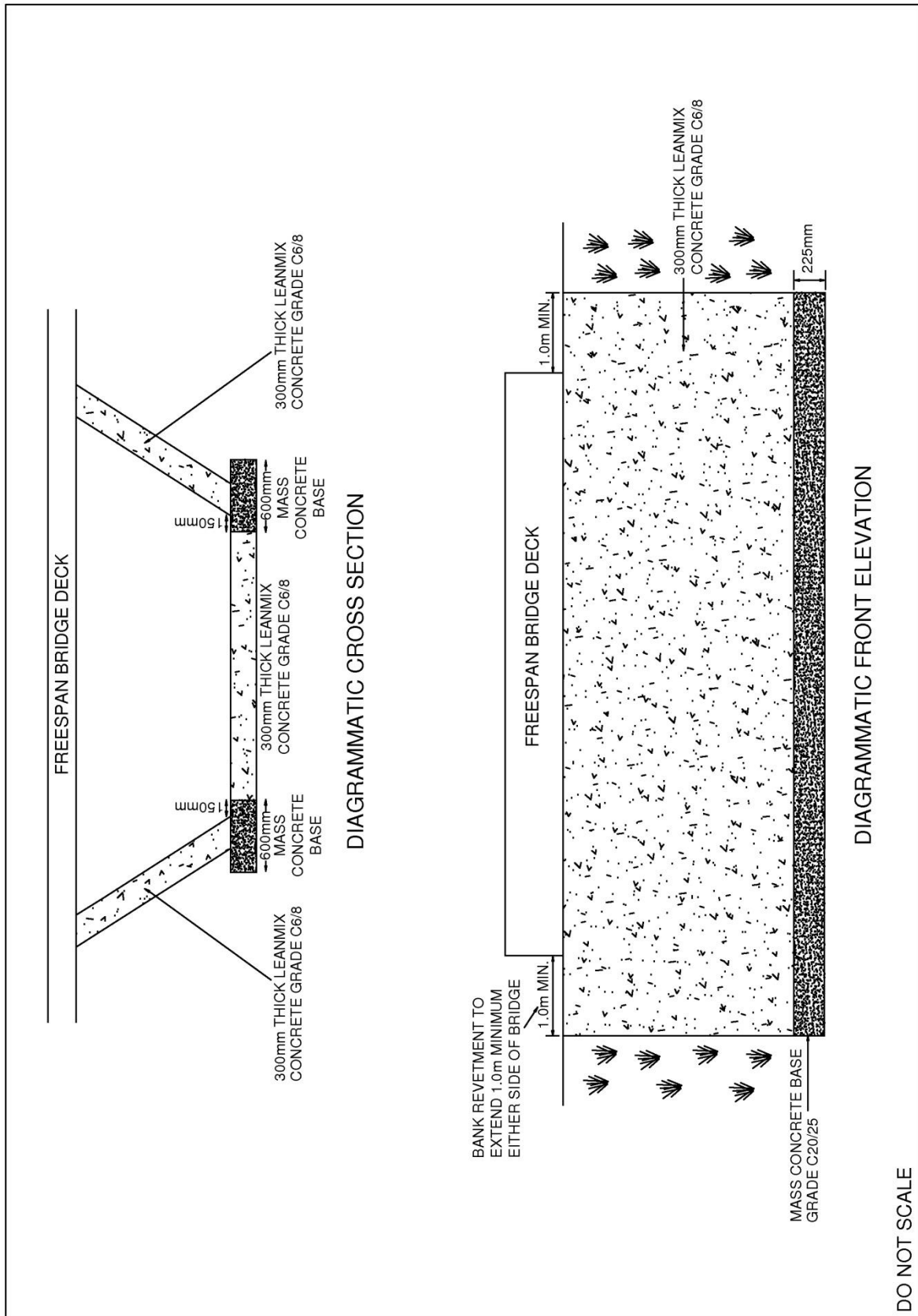
The above documents are available from the Board's office during normal working hours or alternatively, can be downloaded electronically from <http://www.wmc-idbs.org.uk/LMDB/Services/byelaws-and-planning.aspx>

If you would like to discuss any of the information in this document or associated advice notes please do not hesitate to contact the Board's Planning and Byelaw Officer using the details provided below.

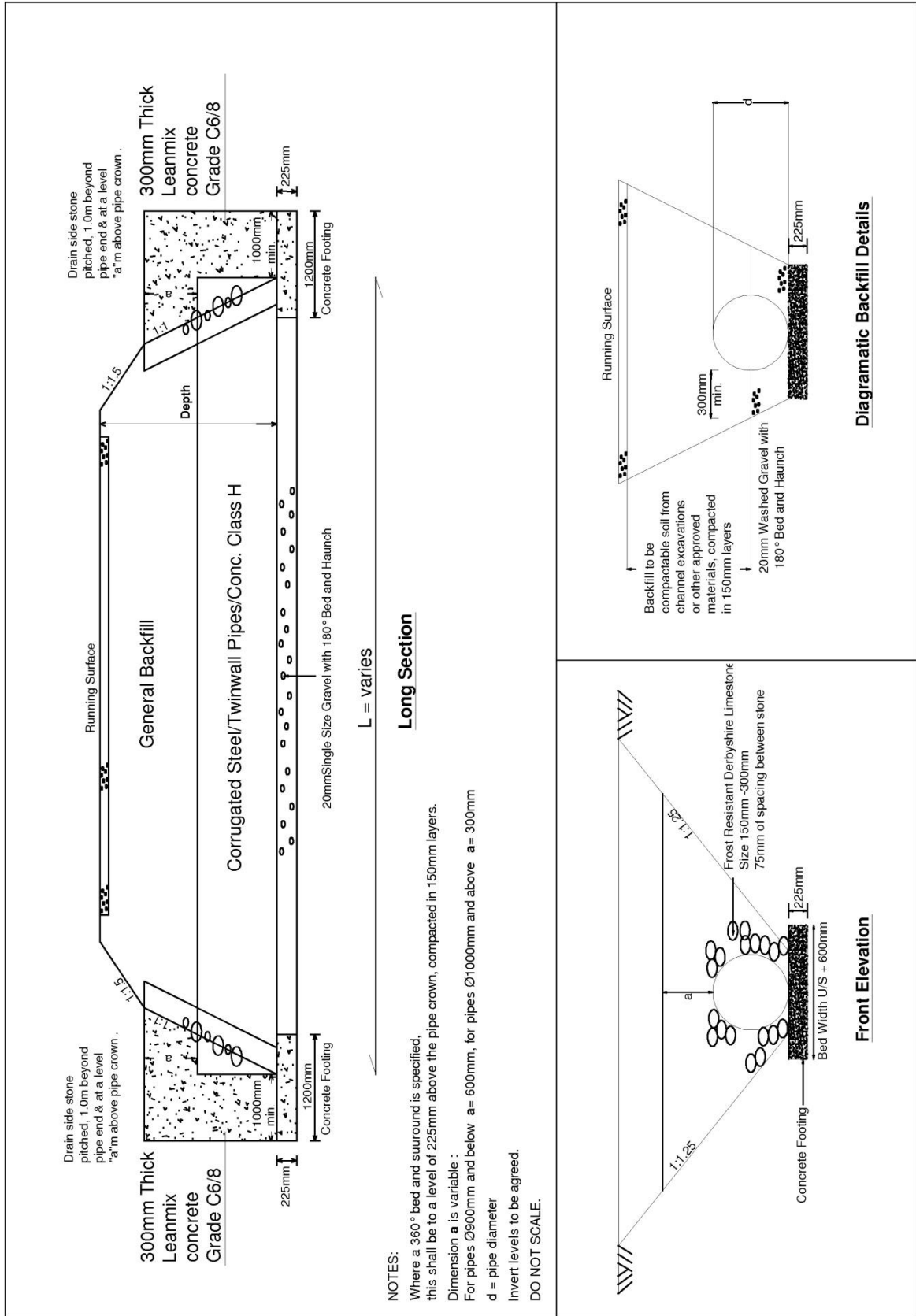
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APPENDIX A – LINING OF WATERCOURSE BENEATH BRIDGES



# APPENDIX B – CULVERT CONSTRUCTION DETAILS



**NOTES:**

Where a 360° bed and surround is specified, this shall be to a level of 225mm above the pipe crown, compacted in 150mm layers.

Dimension **a** is variable :

For pipes Ø900mm and below **a** = 600mm, for pipes Ø1000mm and above **a** = 300mm

**d** = pipe diameter

Invert levels to be agreed.

DO NOT SCALE.



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