Road Structures - Overview

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In this article:

Road structures are a key asset group in a road network. They often critical points of risk (a broken structure makes a whole road inaccessible) and require support from a specialist structural engineer to manage over the long term.

Types of Structures that Cross Water

Type	Definition	Photo Example
Bridge	A ***bridge*** is a structure that carries a roadway or over a physical obstruction, such as a river, lake, or even another road or railway.	
Major Culvert	A ***major culvert*** is a tunnel structure that allows running water to pass under a roadway or railway. Culvert is also useful for water drainage or bridging the gap over a physical obstruction. A major culvert is where the cross section area is greater than 3.4m^2 and therefore managed as a structure.	

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Causeway	A ***causeway*** (also known as a low-water crossing, low-water bridge or ford) is a low-elevation roadway traversing over a waterbody that stays dry above the water when the flow is low, but is designed to get submerged under high-flow conditions such as floods. Occassionally it is always wet with low flows.	
River Crossing	A ***river crossing*** (also sometimes known as a ford or a wet crossing) is a shallow place with good footing where a river or stream may be crossed by a vehicle getting its wheels wet. A river crossing may occur naturally or be constructed. River crossings are likely to be impassable during high water. A River Crossing is not a structure but is often used to identify where a structure may be needed.	

Bridge vs. Culvert

A bridge is different to a culvert primarily because it is constructed of piers, abutments and a deck, where a culvert is all enclosed as either circular (tube) or rectangular with two sides, a floor and a roof.

Other Structures

Type	Description	Photo Example
Tunnel	A ***tunnel*** is a passage built underground, for example to allow a road or railroad to go through a hill or under a river. A tunnel can be like an extra large culvert but for the purpose of carrying vehicles rather than water. While most tunnels are lined some tunnels can simply be a passageway dug through hard rock and requiring no lining.	

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Retaining Wall	A ***retaining wall*** is a relatively rigid wall used for supporting soil laterally so that it can be retained at different levels on the two sides. Retaining walls are structures designed to restrain soil to a slope that it would not naturally keep to. Retaining walls incluse seawalls as they are fundamentally the same type of structure.	
Gantry	A ***gantry*** is a structure that crosses over an area and can be used to display, support or suspend objects (e.g. ITS equipment or cameras).	

Erosion Protection

Not strictly a structure but sometimes like a light retaining wall where its purpose is to stop erosion rather than retaining the earth behind it.

Type	Description	Photo Example

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Erosion Protection	Erosion protection is an asset or assets that have been placed or constructed to limit or prevent soil from being washed away by water or blown away by wind.