

*Drawn, compiled and  
published by the architect.*

**CARLISLE - GLASGOW TRUNK ROAD A74**

**HARTHOPE SECTION**

**Completed February, 1965.**

**Consulting Engineers—  
Babtie Shaw & Morton, C.C.E.,  
Glasgow.**

**Main Contractors—  
Murdoch Mackenzie, Limited,  
Motherwell.**

INAUGURATION OF HARTHOPE SECTION

OF

CARLISLE - GLASGOW TRUNK ROAD A.74

ON

26th MARCH, 1965

BY

DR. J. DICKSON MABON, M.P.  
Joint Under-Secretary of State for Scotland

---

Consulting Engineers:

Babtie, Shaw & Morton, C.C.E.  
Glasgow.

Main Contractors:

Murdoch Mackenzie Limited,  
Motherwell.

---

The Harthope Section of the A.74 Trunk Road on the Lanark/Dumfries County Boundary involved the construction of  $2\frac{1}{2}$  miles of dual 24 feet wide carriageways together with seven concrete structures carrying the carriageways over the Evan Water and its tributaries. The new carriageways climb the last 250 feet towards Beattock Summit which is 1036 feet above sea level.

Along the narrow floor of the steep-sided valley, the limited space available was fully taken up by main railway lines, the Evan Water and the old road. In order to design the new carriageways for modern high speed traffic it was necessary to improve the old road for one carriageway and carve a bench into the face of the valley for the other. At Harthope the governing feature of the railway viaduct dictated the alignment and adjoining spans were utilised for the dual carriageways and the river. (Fig. 1).

The 1 in 19 gradient of the old road up the Summit Hill was rather steep for heavy vehicles and thereby restricted the traffic capacity. The new northbound carriageway overcomes this difficulty by having an average gradient of 1 in 45 from the viaduct to the Summit. The old road is, however, acceptable in part for downhill traffic and consequently a length has been retained and improved for the new southbound carriageway. This has led to the wide separation and variation in the level of the carriageways, with the river flowing between as an attractive feature. (Fig. 2).

FIG. 1  
HARTHOPE  
VIADUCT  
LOOKING  
NORTH.



FIG. 2  
GENERAL VIEW  
OF EVAN  
WATER VALLEY  
LOOKING SOUTH.

The structures comprise four box culverts, two elliptical culverts and the Evan Water Bridge. The box culverts are each 12 feet square, varying in length from 100 feet to 190 feet and support the carriageways over the Glenthirston, Harthope and Howcleuch Burns. The two elliptical culverts at Harthope, which were provided to enable the river to follow its original course under the new embankments and in the case of Harthope South between the piers of the viaduct are 18 feet wide by 21 feet 6 inches high. Harthope South, the longer of the two is 366 feet in length. (Figs. 3, 4 and 5).



FIG. 3 HARTHOPE CULVERT NORTH.



FIG. 4  
HARTHOPE  
CULVERT  
SOUTH.

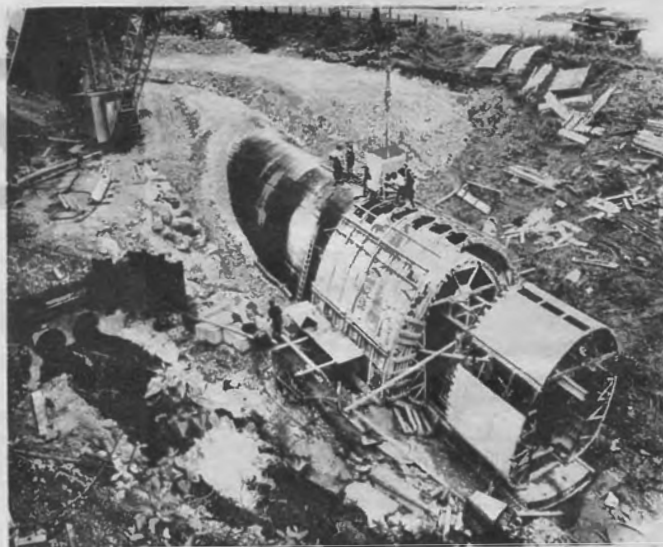


FIG. 5  
HARTHOPE  
CULVERT  
SOUTH  
DURING  
CONSTRUCTION.

SCOTTIS  
ROADS  
ARCHIVE

The Evan Water Bridge carries the south-bound carriageway over the river on a 50 feet span skew crossing; the concrete surfaces of this bridge are visible from the lay-by on the old road and have received a decorative tooled finish. Much of the valley is to be landscaped and planted with trees to improve further its attraction to travellers. (Fig. 6).



FIG. 6 EVAN WATER BRIDGE.

All structures are of reinforced concrete, the total volume poured being 9,000 cubic yards, having an average crushing strength at 28 days of 7,200 lbs. per square inch.

The formation of the carriageways in the rugged hillside involved heavy excavation totalling some 650,000 cubic yards. The Pylon Cut on the northbound carriageway has a rock face 70 feet high on the west side and typifies the massive nature of the work.

At the peak of the construction programme the Contractor had a labour force of 200 men backed by over 100 units of mechanical equipment. The Contract was completed in 22 months which represents a very creditable performance by the Contractor considering the scale of the excavations and the limitations imposed on continuous working by the relatively close spacing of the structures. This factor also had a bearing on the cost of the Contract which will amount to approximately £1 million.

---

The Works were constructed for the Secretary of State for Scotland and approved by the Chief Road Engineer of the Scottish Development Department (Roads Division).

The Consulting Engineers and Contractors acknowledge the assistance received from the County Surveyors of Lanarkshire and Dumfries-shire and their staffs during the execution of the Works.

