COSTS

The greater part of the cost of the bridge was borne by Learmonth, but the Cramond District Road Trustees thought they *"had acted liberally in contributing between £8-9000."* Due to alteration in design from three to four spans, early in 1830, and other factors, an extra cost of nearly £4000 was incurred which Learmonth at first refused to meet. It was only after receiving personal confirmation of an earlier assurance from his friend Telford that *"you have a good bridge and at a comparatively moderate sum"* that Learmonth finally agreed to meet Gibb's account in full in August 1832.

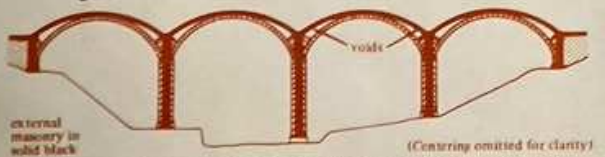
COMPLETION 1832

It is often thought that the bridge was open for traffic at the end of 1831 but this was not so in any meaningful sense as the roadway was not formed. By 27 February 1832 nearly half of the kerbs, channels and footway pavement on the bridge had been laid and the parapets were ready for setting. On 8 May 1832 Atherton, the Resident Engineer, certified *"the bridge is now completed in a substantial manner, no cracks, skirps or defects arising from bad workmanship being perceptible throughout . . ."* Metalling of the carriageway by the Trust was authorized by Learmonth on the following day.

There is a good story, which perhaps should be taken with a pinch of salt, that the bridge was finished ahead of time and its Trustees wished to take it over immediately, but Gibb said, *"Na, na, the briggie's mine . . . until the time specified in the contract for its completion"* and he charged a penny for every foot passenger and wheel.

POINTS TO LOOK FOR ON SITE and POSTSCRIPT

1. The direct line and high level of the bridge which is typically Telford.
2. The impression of lightness that the external arches and pilasters give to the bridge elevation. Try to envisage the delicate operation of arch formation from the narrow pilasters before the main arch spandrels were built.



Dean Bridge—Progress of masonry work on striking upper arch centering.

3. The high quality of the Craigleith stone masonry. The piers are particularly fine. Look for the close joints and nipper indentations on the ashlar blocks.

A road on the line of the present Queensferry Road from near the bridge to what is now Queensferry Terrace was completed c.1834, but it was not until c.1850 that building commenced on the Dean lands and Learmonth's investment was recouped.

Renovation work on the parapets was carried out in 1964/65 when badly spalled stonework was cut out and replaced with indents of Craigleith stone which had been salvaged from the demolition of Waterloo Bridge, London. The bridge continues in good heart and now carries over 7,000,000 vehicles annually.

Part of a plan of Edinburgh 1823.

Abridged from Paxton, R. A., 'Our Engineering Heritage', 2nd ed. Edinburgh & East of Scotland Assoc. Institution of Civil Engineers 1981.
Copies of this leaflet can be obtained from the Director of Highways, 19 Market Street, Edinburgh EH1 1DL.

LOTHIAN REGIONAL COUNCIL

DEAN BRIDGE, EDINBURGH
TELFORD PLAQUE REPLACEMENT

by

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President, Institution of Civil Engineers

24 NOVEMBER 1982

INTRODUCTION

The new plaque is a replacement for one stolen last year which informs the visiting public:-

DEAN BRIDGE

1832

DESIGNED BY THOMAS TELFORD
BORN ESKDALEMUIR 1757
THIS PLAQUE WAS ERECTED IN 1957
BY THE INSTITUTION OF CIVIL ENGINEERS
TO COMMEMORATE THE BICENTENARY OF
THE BIRTH OF THOMAS TELFORD
FIRST PRESIDENT OF THE INSTITUTION

It was felt to be appropriate during the sesquicentenary of this outstanding example of our national heritage that the replacement of the plaque should be marked with a small ceremony and by issuing this historical leaflet.

Sir A. Whittaker unveiling the original plaque in 1957. (Courtesy Edinburgh Evening News and E.P.L.)

ORIGIN

The main *raison d'etre* for Dean Bridge was a private building speculation. On the west side of Edinburgh the recently completed buildings in Moray Place, Ainslie Place and adjacent streets had extended the New Town to the deep ravine of the Water of Leith. But, as The Scotsman, on 12 October 1825, reported, *"the westward march of improvement is not to stop here. A spirited individual has purchased the extensive range of ground known by the name of the Dean . . . nearly 140 acres . . . The buildings to be erected here may be considered as forming a third New Town . . . the streets will run south and north or east and west, as in the Old New Town. Near the middle of the ground will be occupied by two squares and a Circus . . . such a splendid suburb will require a new communication with the town . . . a handsome bridge is to be thrown over the ravine . . ."*

The spirited purchaser was undoubtedly John Learmonth, a coach-maker of 3 Prince's Street and later Lord Provost (1831-3). He had feued the land from Sir John Nisbet and as part of the agreement had bound himself to erect *"a handsome and sufficient bridge over the Water of Leith."* Learmonth looked to the Road Authority for financial assistance, as the new route would be shorter and almost level compared with the 'dangerous abominably hilly road' via Bells Mill bridge. The Cramond District Road Trust agreed to contribute to the cost of the bridge provided that its design was approved by Telford and in the event he designed it himself.

DESIGN AND CONSTRUCTION 1829-32

In Telford's words, *". . . a contract was entered into with Mr John Gibb of Aberdeen. The arches are 90 feet in span, and the edifice 106 feet in height from the bed of the river to the surface of the roadway; the breadth of the carriageway, 23 feet, with a footpath on each side of 8 feet; so that the whole breadth between the parapets is 39 feet; the total length is 447 feet.*

My design originally consisted of three arches, but the foundation was found to be so much dislocated that . . . prudence induced me to change the design into four arches. Projecting from the piers and abutments are pilasters and solid masonry . . . other arches, of 96 feet span and 10 feet rise are constructed, and the face of these, projecting before the main arches and spandrils, produces a distinct external soffit of five feet in breadth; and this, with the . . . piers, are the distinguishing features. Inside the spandrils are longitudinal walls, and the interstices are covered with flat stones.

It remains to be explained by what method the ascititious or external arches were executed, so as to allow of their subsiding freely upon the centering, without obstruction from the lower spandril-walls . . . The course pursued, was, by striking the centres of the lower arches as soon as the arch-stones were laid, and immediately proceeding in like manner with the turning of the upper arches, and also striking their centres previously to the completion of the lower spandrils. This was a delicate operation and is understood to have been unprecedented; for the four upper arches of 96 feet span each were supported solely upon their pilasters of five feet projection from the main piers, and five feet wide (see last fig.).

The entire success which attended the execution of the Dean Bridge, and the expedition with which the work was carried on, are in a great measure attributable to the judicious manner in which the machinery and scaffolding were constructed. The bridge was commenced in October 1829 and completed (with the exception of the parapets) in December 1831, without any accident whatever–the cost being £18,556 exclusive of making roads of approach."

Dean Bridge. Note the stone cross-tie and the good quality of the masonry work. Telford's hollow form of construction has not only proved strong but also has greatly facilitated inspection through the years.

Masonry lifting shears or nippers

Dean Bridge. Forming arches. Note machinery, scaffolding and modus operandi.