

A Brief History of the Museum

In 1970 a number of civil engineering artefacts were gifted to the Edinburgh and East of Scotland Association of the Institution of Civil Engineers. The Chairman of the Association at the time, Mr Charles Roe FICE FStructE, pondered on what purpose these objects could usefully fulfil and the idea of a local museum was germinated.

The Museum Committee was originally formed in 1971 under the chairmanship of Charles Roe and soon after quite an assortment of items was collected. The problem at the time was where to house the collection. In 1972, following discussions with the Royal Scottish Museum (RSM) it was agreed that the RSM accepted the collection on permanent loan.

The collection really took off when founder member Roland Paxton managed in 1973 to persuade Frank Dinnis, City Engineer of Edinburgh, to donate old instruments and a selection of equipment from Edinburgh Corporation's City Engineer's Department, and in 1977, William Morrison, last partner of Carfrae & Morrison, surveyors and civil engineers in Edinburgh from 1830, to donate the firm's old instruments and equipment.

In 1987 Professor Roland Paxton took on the role as Chairman of the Museum Committee and David McGuigan took on the role as Secretary.

In 1990, the RSM concluded that they could no longer support the loan and a new home for the collection was sought.



Seven cabinets displaying a variety of items are located in the Main Museum Area on the 1st Floor.

Happily, in 1991 when Roland Paxton became an Honorary Research Fellow at Heriot-Watt University, an agreement was made between the Association and the University for the collection to be deposited there. Today the collection is managed as a five year loan to the University.

The collection boasts over 400 items containing such diverse items as original Telford letters, specimens of iron from 19th century world record bridge spans and Sir JW Gordon's fine oil paintings of the eminent Scottish engineers, Thomas Grainger and John Miller, of the notable Edinburgh firm of Grainger and Miller. More comprehensively the holding includes surveying and drawing instruments, flow meters and aids to calculation. There are also a number of items relating to the Forth bridges on display including a hydraulic riveting machine used on the Forth Bridge.

The Museum Committee meets annually and comprises Fellows and Members of the Institution of Civil Engineers and Heriot-Watt University representatives.

Access to the Museum

The museum may be visited by members of the public on weekdays between 9.00am and 6.00pm. Access is free.

A lift is available in the William Arrol Building.

Visitors who would like a guided tour may contact us (see Contact Us below) to arrange a mutually convenient time.

Getting to the University

By car

The Edinburgh Campus is easy to access by car from the centre of Edinburgh (6 miles) and from all major routes leading to the city. The University is half a mile from the Calder Junction of the A720 City of Edinburgh By-pass and the A71 (there are signs for Heriot-Watt University on your approach). Follow signs for Car Park I.

Visitor parking

All visitors to the museum should use Car Park I close to the west end of Boundary Road North. There are two disabled bays adjacent to the west door of the William Arrol Building.

By local bus

The journey to Heriot-Watt University takes approximately 30-40 minutes from the city centre. Lothian Buses offers services 25, X25, 34 and 45. If travelling by service 34 or 45 alight at Boundary Road North, otherwise alight at the main door to the University.

Donations

The Museum is also happy to consider donations of civil engineering artefacts. We regret we do not generally curate books or other printed matter unless they are directly related to items in the collection.

Contact Us

A full online catalogue for the museum can be found at https://web.sbe.hw.ac.uk/ICE_Museum/

If you have any questions, observations or donations regarding the museum please address them to David McGuigan (icescotmuseum@virginmedia.com), Derek Chambers (icemuseum100@gmail.com) or John Andrew (icescotmuseum@gmail.com).

ice | scotland

ice
Institution of Civil Engineers

A Guide to the ICE Scotland Museum



Institution of Civil Engineers
Scotland Museum
at Heriot-Watt University
Edinburgh

**HERIOT
WATT**
UNIVERSITY

Area ① Outside West Door of the William Arrol Building

Bridge Bearings (1997/009)

Rocker and sliding bearings from the Bilston Glen Viaduct, Midlothian. The bearings allow for thermal movements and deflections of the structure whilst supporting a weight of around 30 tonnes. The bearings were replaced in 1999 restoration work on the viaduct which forms part of the Midlothian Strategic Footpath and Cycle Network between Loanhead and Roslin.

Milepost (1981/011)

Cast iron milepost approximately 5 ft high from the former A1 road 1 mile east of Dunbar (OSGR NT 693 777) indicating “D1”, “R13”, “H15”, and “E29” which refer to the mileage to Dunbar, Renton, Houndwood and Edinburgh respectively.

Ship's Rudder (1991/010)

A ship's rudder used as an anchor plate salvaged from the demolition of the former Gattonside Footbridge.

Area ② 1st Floor, Student Crush Area

Tar Tools (Various) (Case 13)

A collection of tools used for laying tar materials.

Portraits (Wall)

Oil portrait of Thomas Grainger MICE (1794-1851) eminent Edinburgh Civil Engineer by Sir John Watson Gordon RSA originally presented to the Institution of Civil Engineers by his daughter Miss Grainger. (1982/001)

Oil portrait of John Miller CE FRSE, Scottish Railway Engineer by Sir John Watson Gordon RSA. (2002/002)

Road related items (Case 12)

A collection of road related items including a Marksman automatic traffic counter, solar calendar time switches, road studs and more.

Area ③ 1st Floor Main display Area

Forth Bridge Hydraulic Riveting Machine (2013/019) (Floor)

A hydraulic riveting machine designed by William Arrol for use during the construction of the Forth Bridge. The exhibit has an information board attached with a full description of how it was used.

Michaelis' Testing Machine (1977/014) (Case 4)

An example of a Michaelis' double-lever machine for testing the tensile strength of concrete or mortar briquette samples. A full description of its workings is presented.

Forth Bridge Commemorative Print of Portraits (2012/002) (Wall)

A commemorative framed print of portraits of those involved in constructing the Forth Rail Bridge by J. Lamb Artist, Photographer and Portrait Painter, Edinburgh. There is only one other such print known.

Plate Rail (1995/007) (Case 7)

Part of a cast iron plate rail found on the Laigh Milton Viaduct over the River Irvine on the former Kilmarnock & Troon Railway during its refurbishment in 1995. The section is 18 in long being cut to half of its original length. It is displayed with a contemporary chair, spike and stone block.

Queensferry Crossing Cable Model (2018/010) & Anchor Plate (Case 3)

A model of a section of a cable from the Queensferry Crossing using original materials. In this model there are 55 strands matching the anchor plate (2017/015) made for 55 strands displayed nearby. The number of strands used in the cables varies between 45 and 109 depending on position and loading conditions. The model was made by Heriot-Watt University technical staff.

Drawing Office Equipment (Case 7)

Case 7 displays a beam compass (2001/002), copper stencil plates (1973/017) and a range of other drawing office equipment used before the advent of CAD.

Bridge Plates and Bridge Section (Wall)

In this area there are also two bridge plates (1991/005 and 1994/010) and a cross-section of the Gattonside Footbridge over the River Tweed near Kelso (1991/010).

Area ④ 1st Floor Corridor to the Chadwick Building.

Forth Bridge Skewback (1998/003) (Through window)

A scale model of a Forth Bridge skewback. It was accurately modelled to one quarter of the actual size for the Exhibition “Scotland Creates” held at the McClellan Galleries, Glasgow in 1990.

John Scott Russel Display Board – Soliton Wave (2015/009) (Wall)

A display board chronicling some of the lifetime achievements of John Scott Russell (1808 - 1882) including his concept of the Soliton Wave.

Area ⑤ Chadwick Building

Winch (with display board) (2004/002)

The winch is from Fleet Mound, Sutherland and operated self-acting sluices (flap valves) on a land reclamation scheme installed by Telford as part of his great north road project in 1816 enlarged in 1834. The winch which may originate from these early dates was only used when too much fresh water on the land side of the Mound was beginning to flood farm land. At most times the flaps operated automatically when the head of water on the land side was higher than the sea level at low tide.

Menai Bridge Link (2001/006)

An exact replica in wood of an original wrought iron link made c.1823 from the anchorage tunnel of the Menai Bridge on the London to Holyhead Road the world's longest span suspension bridge when opened in 1826. The item was originally in the museum on loan from the Welsh Assembly Government. However, it was returned to Wales and replaced by the present wooden replica. The replica was made by the Heriot-Watt Civil & Off-shore Engineering laboratory technicians.

Area ⑥ 3rd Floor Corridor

Photograph of Sir William Arrol (2002/001)

A framed portrait photograph by Lafayette of Sir William Arrol dating from c.1897. It has a brass plate on the bottom rail of the frame bearing the words “Sir William Arrol LL.D. M.P. PRESIDENT 1895-97” (President of the Institution of Engineers & Shipbuilders in Scotland).

Return to William Arrol Building.

Area ⑦ 3rd Floor Landing at top of west stairwell

Level (2017/001) (Case 9)

Early 3 inch brass level by Miller & Adie, Edinburgh (c.1815) understood to have been in use up to about 1950 in Dunion Quarry, near Jedburgh.

Theodolite (1973/018) (Case 8)

5 inch reversing plain theodolite reading to 1 minute of arc made by Adie and Son, Edinburgh and used by Edinburgh city engineers.

Transit Instrument (1987/001) (Case 10)

A transit instrument with 30 inch telescope. It was used to set out the line and level of the Talla Aqueduct in association with the Talla Reservoir works (1897 - 1905).

Water flow meter (1996/001) (Case 10)

Brass water flow meter used in the office of David and Charles Stevenson, CE, Edinburgh (The Lighthouse Stevensons).

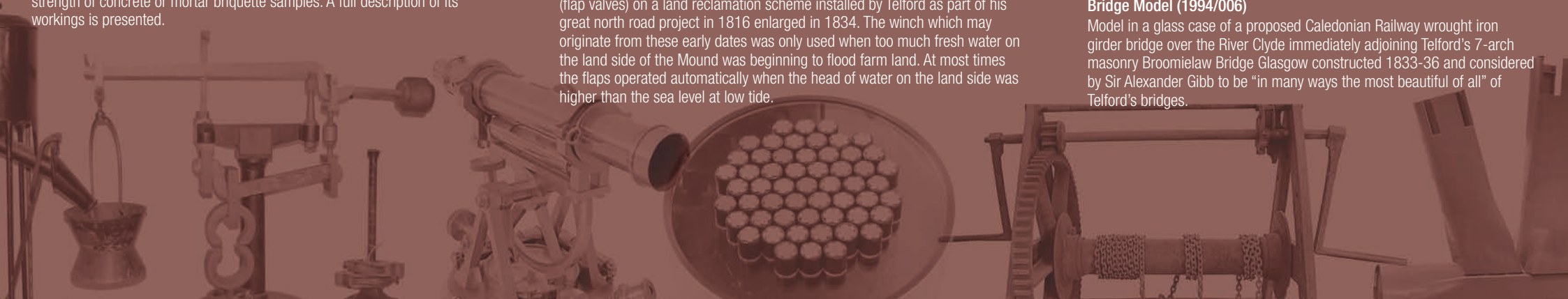
Area ⑧ 2nd Floor Landing on stairwell

Steel Pin (2013/020)

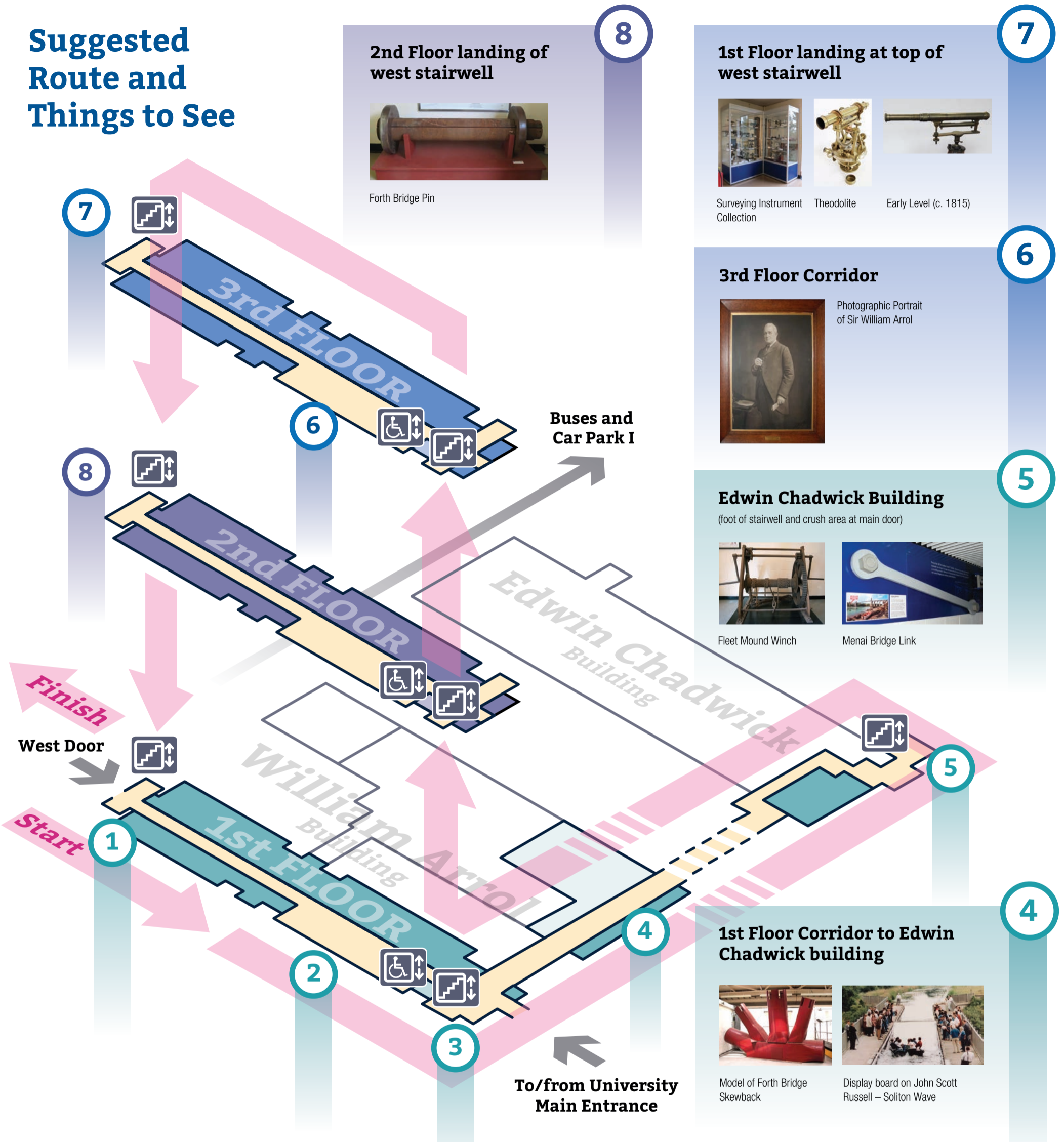
A steel pin used to secure the suspended truss to the Forth Bridge cantilevers. Eight pins are used on the bridge. This example was originally made as a spare at the same time as those used on the bridge

Bridge Model (1994/006)

Model in a glass case of a proposed Caledonian Railway wrought iron girder bridge over the River Clyde immediately adjoining Telford's 7-arch masonry Broomielaw Bridge Glasgow constructed 1833-36 and considered by Sir Alexander Gibb to be “in many ways the most beautiful of all” of Telford's bridges.



Suggested Route and Things to See



2nd Floor landing of west stairwell



Forth Bridge Pin


1st Floor landing at top of west stairwell





Surveying Instrument Collection Theodolite Early Level (c. 1815)

3rd Floor Corridor





Photographic Portrait of Sir William Arrol

Edwin Chadwick Building
(foot of stairwell and crush area at main door)




Fleet Mound Winch Menai Bridge Link

1st Floor Corridor to Edwin Chadwick building

Model of Forth Bridge Skewback Display board on John Scott Russell - Soliton Wave

1 Outside West Door




Bridge Bearings





Ship's Rudder Milepost

2 1st Floor Student Crush Area



Collection of tar laying tools (Case 13)



Portrait of John Miller

3 1st Floor Main Museum Area



Main Museum Area



Queensferry Crossing Cable Model & Anchor Plate (Case 3)





Forth Bridge Riveting Machine Michaelis' Testing Machine (Case 4) Plate Rail (Case 7)