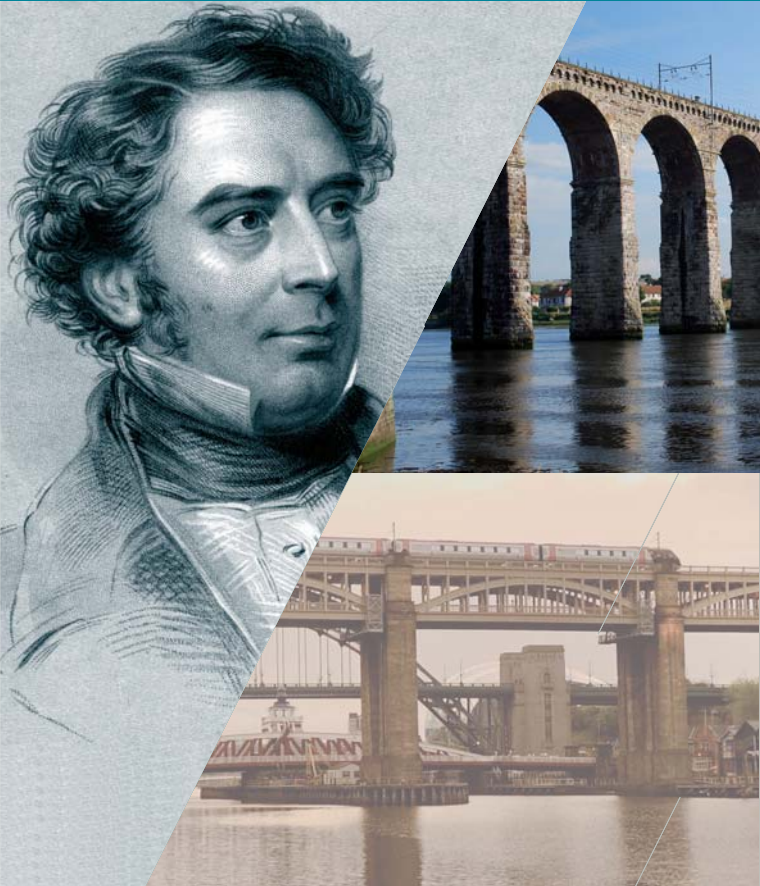


# Robert Stephenson

Engineer  
1803-1859



**Northumbria Trail**  
 Sites and Locations to Visit



## Robert Stephenson FRS, MP (1803-1859)

### Background

Robert Stephenson was born on 16 October 1803 at Willington near Newcastle. He was largely brought up by his father George, known as the 'father of the railways', as his mother died when he was only two.

### Career

Robert began assisting his father's engineering activities, both in locomotives and railway construction, at Killingworth and Hetton. He then moved on to co-founding the world's first purpose built locomotive factory in Newcastle upon Tyne, where at the age of 19 he was made managing partner. In this factory Robert's original designs established the basis of all future steam locomotive development on both sides of the Atlantic.

His reputation as a civil engineer was made as Engineer-in-Chief of the London & Birmingham Railway 1833-8 where he overcame the most complex problems in this outstanding engineering feat, which included many innovative bridges.

His invention of the box girder bridge as a continuous beam to span the Menai Straits 1845-50 resulted in the Britannia Bridge, a structure of outstanding engineering and architectural merit. Completed in 1848, his box girder bridge at Conwy, North Wales, is still in existence.

Whilst Robert had to establish his office in London and travel far afield in pursuit of his career, he retained an affinity to Newcastle referring to it as 'his native town'. Engineering monuments to his prowess in the North East remain for all to see.

### Civil Engineer

In 1830 Robert became a member of the Institution of Civil Engineers. He served as President, 1856-1858, following an extraordinary career: his contribution to the world is as meaningful now as it was in his lifetime.

Robert died at his home at 34 Gloucester Square, London on 12 October 1859. He was one of the greatest engineers, recognised as such by a grateful British nation who honoured him by burial in the centre nave of Westminster Abbey.



# Newcastle upon Tyne & Gateshead

This leaflet and the places you can visit will give an insight into the background of Robert Stephenson's upbringing, education, early career and creation of impressive engineering structures which remain in daily use as part of life in the North East.

## 1 5 Greenfield Place

**Location:** South of A168 Westgate Road  
Newcastle upon Tyne



Following his marriage to Fanny Sanderson in June 1829, Robert and his wife occupied this house in Newcastle spending several happy domestic years together. They moved to Haverstock Hill, London in 1833. Fanny died of cancer in 1842. They had no family. The house is privately owned.

## 2 Central Station

**Location:** Neville Street  
Newcastle upon Tyne

Forming part of the Newcastle to Berwick railway planned in 1844, the Central Station is the work of John Dobson, the Newcastle architect with Robert Stephenson being responsible for the engineering work.

Its great arched roofs and spectacular combination of curves is considered by some to be the finest station in the world. The station was brought into use in 1850 with Robert Stephenson, guest of honour at a dinner on the main platform.



## 3 Robert Stephenson & Co.

**Location:** Forth Street & South Street  
Newcastle upon Tyne



Founded in 1823, this venue was previously known as Forth Street Works. It was at this works that the definitive form of the steam locomotive was created. Robert Stephenson designed and directed

the construction of Rocket 1829 and many other famous locomotives such as Planet 1830 and Patentee 1833.

Boiler/Plate shop and offices 1848, form part of a vast locomotive complex. These significant historical buildings were saved from imminent demolition in 1987 and authentically restored by the Robert Stephenson Trust.

## 4 Stephenson Monument

**Location:** Westgate Road/Neville Street  
Newcastle upon Tyne

This Grade II\* Listed Monument, was designed in 1849 by John Graham Lough in order to promote Newcastle as a leading industrial centre. Not until April 1859 was the actual size plaster model exhibited in the nearby Literary and Philosophical Society before being sent to London

to be cast into bronze. George Stephenson is on the pedestal. The corner projections of the monument hold four figures representing spheres of Stephenson's activity in the mining, locomotive manufacturing and railway industries. Robert Stephenson is thought to be the model for two figures, one holding the miners lamp and the other with an outside cylinder locomotive. The other two figures represent a blacksmith and a plate-layer. The monument was inaugurated at an elaborate ceremony on 3 October 1862.



## 5 The North of England Institute of Mining and Mechanical Engineers

**Location:** Neville Hall, Westgate Road  
Newcastle upon Tyne

As an apprentice mining engineer under Nicholas Wood and stating a preference for mechanical engineering, Robert was elected President of the Institution of Mechanical Engineers 1849-53 and Vice-President of the Mining Institute 1853-9. In his will, he left generous bequests to both the Mining Institute and the Literary & Philosophical Society.



## 6 Literary and Philosophical Society

**Location:** 23 Westgate Road  
Adjacent to Neville Hall (above)  
Newcastle upon Tyne



Robert made use of the facilities at the Lit & Phil Society after school, borrowing books on science and mechanics to further his own and his father's education. Continuing to be a member until his death, he was elected President 1855-59.

## 7 Alderman Fenwick's House, Formerly the Queen's Head Hotel

**Location:** 98 Pilgrim Street  
Newcastle upon Tyne

This prestigious merchant's house became a thriving coaching inn during the late 18th century and then a desirable hotel, the Queen's Head. Robert Stephenson must rank as one of its most famous guests during his frequent visits to Newcastle. External viewing only.



## 8 Dean Street Arch

Location: **Dean Street  
Newcastle upon Tyne**

This magnificent semi-elliptical masonry arch flanked by three small arches, forms part of a spectacular viaduct system and the East Coast Main Line. The plans were submitted by Robert Stephenson for the Newcastle & Berwick Railway Bill to gain Parliamentary Committee approval in 1845. The original arch was later widened in 1894.

## 9 High Level Bridge

Location: **Over the River Tyne  
Continuation of St Nicholas Street  
[B1307] Newcastle upon Tyne**



Regarded as one of the finest pieces of architectural ironwork in the world, this structure consists of a series of tied arches. Designed by Robert Stephenson, it was the first bridge to carry both road and rail traffic. Ceremonially opened by Queen Victoria in 1849, the bridge has been sensitively restored for posterity.

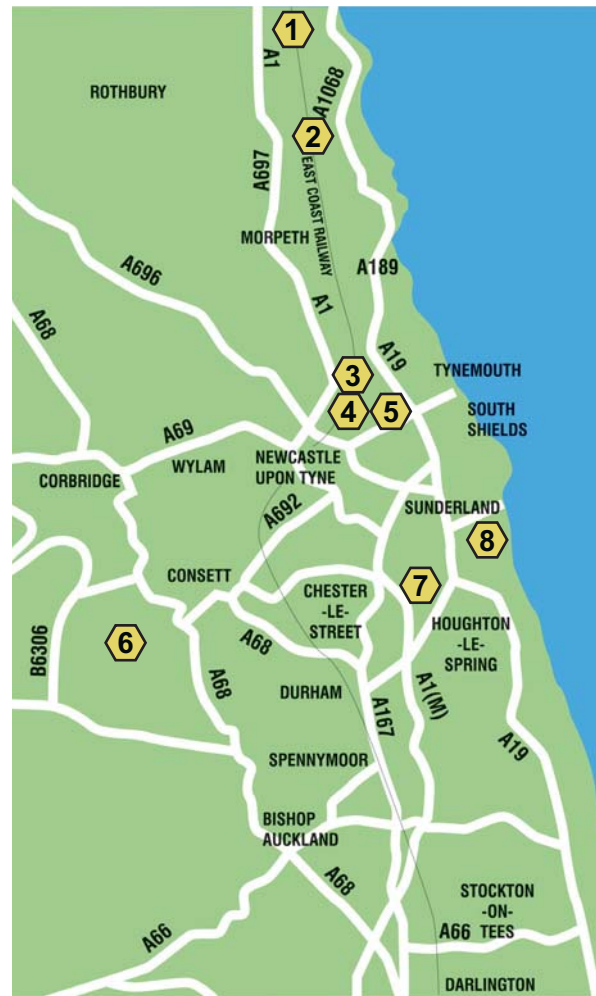
## 10 Skew bridge in masonry and plate girder

Location: **Half Moon Lane  
Gateshead**

Oblique span bridge of a former single box girder with masonry abutments constructed at Robert Stephenson & Co in 1848. The bridge was originally part of the Newcastle and Berwick Railway, of which Robert Stephenson was appointed Engineer-in-Chief in 1845. The construction of the works throughout was directed by his assistant engineer Thomas Harrison.

# Robert Stephenson Trail Northumbria

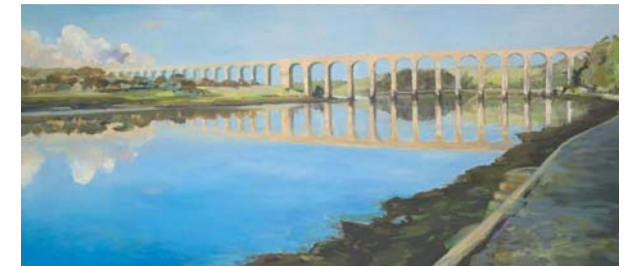
This leaflet shows places you can visit to gain an insight into the background and works of Robert Stephenson. The North East has more than 80 museums and many, including the Stephenson Museum North Shields, Head of Steam: Darlington Railway Museum, Locomotion: The National Railway Museum at Shildon and Beamish Open Air Museum, display Stephenson related exhibits.



## 1 Royal Border Bridge

Location: **Over the River Tweed**

Opened by Queen Victoria in 1850, this majestic masonry viaduct of 28 arches over the Tweed completed the rail connection between London and Edinburgh. The viaduct was designed by Robert Stephenson, with George Barclay Bruce as his resident engineer. The painting below depicts the Royal Border Bridge and was commissioned by ICE North East.



## 2 East Coast Main Line Viaducts

Location: **River Aln**

In addition to the rail bridges crossing the Tyne and Tweed, 4 major masonry arch bridges were constructed to the designs of Robert Stephenson over rivers in Northumbria to complete the Newcastle and Berwick Railway opened in 1849. The crossing at River Aln is a representative example of this type of structure.

## 3 Dial Cottage

Location: **108 Great Lime Road,  
West Moor, Killingworth**

Late in 1804 the Stephenson family moved from Willington Quay to Killingworth where George, the father, was employed as a brakesman at the West Moor pit. Having established a consultancy to repair stationary engines, George enjoyed the salaried position ofenginewright from 1812, allowing him to ensure that his son had a good education.

### 3 Dial Cottage ... continued

Robert was initially sent to the village school at nearby Longbenton and then 1815-19 to Dr Bruce's Academy in Percy Street, Newcastle. Encouraged by his father, Robert constructed the sun-dial placed over the cottage door. The house is privately owned.



### 4 St Bartholomew's Parish Church

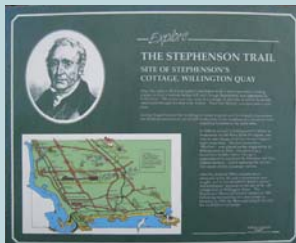
**Location:** Station Road, Forest Hall  
Newcastle, NE12 9NQ

Built in 1790, the church has many Stephenson associations. Robert Stephenson's sister Frances was buried in the graveyard aged 3 weeks on 4 August 1805. A year later his mother Frances aged 37 was buried there on 16 May 1806. As a flautist, Robert joined the church's orchestra which accompanied the Sunday service. During the church's renovation, he gave money for a new stained glass window. On 24 March 1855, he wrote to the vicar Dr John Besley *it is the only church which I can associate my early boyhood, that is from 1804 until 1822.*

### 5 Willington Quay

**Location:** East of Wallsend on the River Tyne  
beside Pedestrian Tunnel entrance

In 1803 George and Fanny Stephenson moved to a cottage in Willington Quay where he was employed as a brakesman on a fixed engine. Robert, their only son, was born there on 16th October. The site is marked with an interpretation board however the cottage is no longer in existence.



### 6 Hownes Gill Viaduct

**Location:** Off the A692 between Castleside and Consett



Part of the Waskerley Way railway walk, this elegant structure was the work of Thomas Bouch, the designer of the infamous first Tay Bridge. Robert Stephenson, as consultant, modified Bouch's design to provide adequate foundations and stronger piers to this impressive viaduct.

### 7 Victoria Viaduct

**Location:** To the east of Fatfield on the A182  
View from James Steel Park. Car park off Shepherd Way in Fatfield.

The design of this majestic viaduct was suggested by James Walker. Acting as a consultant, Robert Stephenson's modifications included three small arches instead of solid abutments, much to Walker's annoyance. Thomas Harrison was the engineer.



### 8 Sunderland Bridge over the Wear

**Location:** Bridge Street, Sunderland



Sunderland's first bridge was in cast & wrought iron to a design by Thomas Paine 1791 and built by Roland Burdon M.P. in 1796. Whilst working on the Hetton Railway 1821-2, the iconic bridge must have made a lasting impression on Robert Stephenson. Following damage to the South abutment in 1853 as the result of nearby blasting, the reconstruction of Paine's bridge in 1858-59 was one of Robert Stephenson's final projects. As the original structure no longer remains a blue plaque has been erected to denote the site.

## Robert Stephenson

### One of Tyneside's Most Famous Sons

On the death of Robert Stephenson, the President of the Institution of Civil Engineers, Joseph Locke stated:

*"Robert Stephenson achieved some of the greatest works of art which have been witnessed in our day and an eminence in the scientific world rarely reached by any practical professional man."*

8 November 1859, Vol. 19, Proc. ICE

### Further reading

- **Robert Stephenson - The Eminent Engineer**  
Edited by Michael R Bailey; Ashgate Publishing, Ltd, 2003
- **Robert Stephenson - Railway Engineer**  
John Addyman and Victoria Haworth; North Eastern Railway Association and Robert Stephenson Trust, 2005
- **Robert Stephenson - Engineer and Scientist - The Making of a Prodigy**  
Victoria Haworth; Robert Stephenson Trust, 2004

### With thanks to:



The Robert Stephenson Trust

www.robertstephensontrust.com

### Further Information

For more information on this leaflet, the annual Robert Stephenson Awards or any civil engineering enquiries, please contact the Institution of Civil Engineers North East Region:

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