Civil Engineering in Warwickshire

Within the County of Warwickshire lies a rich heritage of the work of the Civil Engineer. Much of this heritage is associated with transport in its various forms.

The northern and eastern district is crossed by the route of the Holyhead Road (not the modern A5 route but one following the A45 road through Dunchurch, Coventry and Stonebridge), improved in the 1820s under the direction of Thomas Telford, Engineer to the Holyhead Road Commission. Under Telford's direction the existing turnpike route was improved by rebuilding the road to his detailed specification with a carriageway 30 ft. wide provided with drainage ditches on both sides. In addition, the steep gradients on the road were reduced by cutting and embanking. Several examples of this can be found, from Knightlow Hill on the modern A45 road to the east and at Meriden Hill where an existing narrow road with a 1 in 12 gradient was replaced by a new alignment with the gradient reduced to 1 in 20.

Prior to the coming of the canals and, later, the railways, much of the long distance freight traffic was carried by packhorses and several examples remain of packhorse bridges with their characteristic narrow pathways and low parapets. There is a good example at Pedlars' Bridge, north of Brinklow. Before and since the days of packhorses, many hundreds of highway bridges have been built around the County. Early bridges were normally of the arch type, utilising stone or brick. Many of these older highway bridges dating from the 14th and 15th centuries are still in use today. Clopton Bridge at Stratford upon Avon, Bidford Bridge and Castle Bridge at Warwick, all over the River Avon, are excellent examples of the stonemason's craft. A particularly large example of arch bridge building in brick dating from 1800 can be found at Wixford, over the River Arrow.

From the late 18th century onwards, bridge builders had a new material – cast iron. Again, the nature of the material lent itself to the arch form. The bridge over the Avon at Hampton Lucy, built in 1829, is a good local example. The next development was the use of wrought iron, a material without some of the disadvantages of cast iron, and this was normally used in bridges of the lattice girder type. A very unusual bridge spans the disused railway cutting to the south of Hunningham Hill on Ridgeway Lane, a track which leads south towards Ufton. This bridge, built in 1850, was, briefly, the longest wrought iron lattice girder bridge in the world with a clear span of 150 ft. At a later date the bridge has been propped at its third points to give extra support.

Steel bridges were built from the end of the 19th century onwards starting with the Forth railway bridge of 1890 and numerous examples are found in the area. Reinforced, and later pre-stressed concrete has also, from the beginning of the 20th century, been extensively used for bridge construction. Princes Drive Bridge in Leamington Spa, dating from 1923, is an early example of construction in reinforced concrete.

The coming of the canals in the mid 18th century was a major development in transport technology and Warwickshire is crossed by some of the major waterways of the Midlands.

The earliest was the Coventry Canal, completed finally in 1790 after many years of delay, together with the Oxford Canal, also finally completed in 1790. A little later the Warwick and Birmingham and Warwick and Napton canals, which make an end on junction at Saltisford, opened up a new route from Birmingham to the south-east. The building of the canals required civil engineering on a much larger scale than before with numerous bridges, locks , aqueducts and tunnels being required. Shrewley Tunnel has a very unusual, if not unique, feature in that the towpath, when leaving the canal at the west end of the tunnel, passes through a short steeply graded tunnel of its own before reaching the village street. Good examples of aqueducts in stone and cast iron can be found over the River Avon between Warwick and Leamington Spa, at Wootton Wawen, Yarningale and the longest cast iron aqueduct in England at Bearley (Edstone). The brick and iron aqueduct which carries the Warwick & Napton Canal over the Great Western Railway to the west of Leamington Spa was, of course, built later in 1852 when the railway came along. Hatton lock flight, with 21 locks, is one of Britain‘s largest flights of locks.

The earliest railway in the County was the Stratford and Moreton Tramway, opened in 1826 with its fine brick bridge over the River Avon at Stratford. From the opening of the London & Birmingham Railway in 1828 with its branch to Leamington Spa, the development of railways within the region was rapid. The Great Western arrived in 1852 with the completion of the Birmingham and Oxford line through Leamington Spa. This development was followed by the Oxford, Worcester & Wolverhampton Railway which passed just to the south of the County through Moreton in Marsh, both the Great Western and the O.W.W.R. having branches to Stratford upon Avon. Following the closure of the railway south of Stratford, the route has been re-used as a footpath and cycle way which passes over a viaduct and large bridge over the River Avon, constructed in 1903 when the line between Stratford and Honeybourne was rebuilt . The development of railways lead to the creation of some fine engineering structures including the London & Birmingham Railway viaduct at Wolston, the bridge near Hunningham Hill referred to above, and the great cutting at Harbury.

Early civil engineers were active in the provision of power for industry, both wind and water mill being employed. The best example of a windmill in the County is Chesterton Windmill, which dates from 1632, with its unique arcaded tower. Working water mills include Charlecote Mill and Wellesbourne Mill. The supply of coal gas for lighting and other purposes came early to the area with the opening of Warwick Gas Works in 1822. The frontage of the works with the end towers which originally housed the gas holders, has been preserved in Birmingham Road, Warwick.

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