

# The civil engineer



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For years, civil engineers have had a great impact on the development and progress of any nation. Engineering legends bring forth a distinctive view on the progress, development, and history from 1700 to present. The civil engineering field encompasses a broad spectrum of specialties and subspecialties (Weingardt 2005). It involves proficiency in transportation, environmental services, water resources, and sewerage, structural and technical design. Engineering legends feature remarkable individuals from a wide social spectrum and world horizons, who not only left a landmark in the engineering field, but also greatly influenced their communities and the civil engineering industry at large.

Benjamin Wright was born in Wethersfield, Connecticut on 10 October, 1770 just prior to the American Revolution. The family then moved to Rome in the upstate New York where his father did some farming. In Rome, he decided to take up civil engineering. This gave him the attributes of being very accurate, honest, and reliable. At 24, he was hired by William Weston to help him carry out surveys on the canals which would later become the complex network of the Erie Canal. Just during this period, Wright was elected to the New York Legislature due to his unquestionable leadership qualities (Wengardt 2005).

He made his triumphant entry into the engineering field when he supervised the construction of the canal between the Schuylkill and the Susquehanna Rivers. He brought in a new technology involving the Troughton, which is a collection of tools that could offer very sophisticated results in the engineering and surveying field. He later moved on to develop the Middlesex Canal which connected Boston and Lowell. This canal had 20 locks, 50

bridges, and 7 aqueducts. Weston was again hired to carry out surveys on several other canal projects. This he did with Wright as his immediate assistant (Webster 1999). They began with the connection between Mohawk and Woo Creek. Several boats could move up and down the Mohawk River by the year 1798 and this was because they had built several canals.

However, a major challenge that lingered in their line of duty was the issue of reaching Lake Ontario and Albany which is the state's capital. This was coupled with the problem of inadequate funding which forced them to wait for about two decades before the American government could allocate funds for the project. Weston moved to England in the year 1800 together with the then married Wright. While in England, Wright on his own landed a commission from the Western Inland Lock and Navigation Company (Boyer and Dubofsky 2001). He was bestowed with the task of surveying the basin of Mohawk River right from Schenectady to Rome. This terrain was very rugged and required proper survey as the results would be employed to develop the entire waterway. Wright laid a very practical route within the canal right from Rome to the Waterford. This constituted the New York Canal Commission. It earned Wright the title of being the New York county judge (Weingardt 2005).

Weston was offered a marvelous job of chief engineer of the Erie project. Weston refused the offer since America and Britain were still on war from 1812. This prompted American engineers to rise to the occasion. With Judge Wright's very diligent leadership, the project kicked off in the year 1817 when Wright was made the chief engineer. They had serious technical and political difficulties in undertaking their duties. This project was carried

out using whatever available implement and tool that could be accessed during this era in history. They used wheelbarrows, horses, mules and any other crude implement that could be used. With its completion in the year 1827, this canal revolutionized the entire transport system between the East and the West parts of the Union (Weingardt 2005). Indeed, the New York State Archives recorded a phrase: “Wright and his assistants built the longest canal in the world with the least time, with the least experience, for the least money, and the greatest public benefit.”

Under his leadership, Wright produced a number of marvelous engineers in the field. These included but not limited to Canvass White of 1790 to 1834 and James Geddes of 1763 to 1838. White travelled overseas in 1817 and developed several canals in Europe. He is the man who researched the Europe’s underwater applications for Portland’s cement industry. He returned to America with lots of expertise and a number of complex and efficient surveying instruments from the Great Britain. He also championed the development and invention of the waterproof, hydraulic cement which he produced from limestone. Wright developed Union, Raritan and Delaware canals in his lifetime. He later became the president of Cohoes Company which dealt in waterpower (Weingardt 2005).

After the Erie project, Wright still supervised a series of projects in the country. He engaged himself in the early developments of the railroads. In this capacity, he became the chief engineer of Chesapeake and Ohio canals of 1828 to 1831. Another project was the St. Lawrence Ship Canal of 1832. Among the railroads, he developed were the New York and Erie railroad of 1833 and the Tioga and Chemung railroad of 1836. His assistant during

these projects was the young energetic Charles Ellet of 1810 to 1862. He became the first American to design the wire cable suspension bridge. He was named the American Brunel due to his contributions to the bridge construction industry (Newnan and Williams 2004).

In the event of crowning up his career, Wright served both as an engineer and a Street commissioner in the city of New York. This was during the 1830's. He retired at the age of seventy. He established the Erie School of Engineers which operated in collaboration with the Erie Canal to bring life to every town and also the entire nation.