

Panel for Historical Engineering Works Newsletter

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Felixstowe Pier

By Ian Anderson



Felixstowe is possibly more well-known as Britain's largest container port, but it was originally created by Colonel Tomline as a seaside resort, with a dock basin. Situated at the extreme south east corner of Suffolk, the dock basin was opened in 1886. Prior to this a railway from Ipswich to Felixstowe had been built to serve a pier jutting out into the River Orwell estuary, plus a hotel, next to the proposed dock. The 610ft long pier opened in 1876. It was intended by Col. Tomline to serve passengers travelling to the continent, but when the Great Eastern Railway took over the railway, they had other ideas, developing Parkeston Quay for the same purpose across the water by Harwich, opening it in 1883. The pier carried on receiving passenger-carrying GER steamers until the First World War, when it became part of a naval base as well as serving the

adjacent Naval Air Station up to the Second World War. The pier was eventually demolished in 1950-1.

To properly receive visitors, the town of Felixstowe needed a nearer station than the dock, so a new one was built, which opened in 1898. Felixstowe's second pier was proposed by the Coast Development Company Ltd, opposite South Hill, as one of a trio developed by the company, including Southwold Pier and Claremont Pier, Lowestoft. Felixstowe Pier was presented as a Bill to Parliament on 28 May 1900 and received Royal Assent as part of the Pier and Harbours Confirmation (No2) Act 1900 on 30 July 1900. It was the longest pier in East Anglia, and, unusually for the time, built of hardwood timber, as opposed to the normal material iron or steel. Hardwood like Jarrah or Greenheart is resistant to worm attack and more cost effective than metal. The pier was originally intended to be 1300yds long, but soundings had satisfied the promoters that the Company's Belle steamers could draw up safely with the pier at 900 yards long. The pier was finished at 903 yds/2709ft from gangways to the sea wall, by 26ft wide, except at the shore end where it was 56ft wide. The shore end had shelters, waiting rooms, pier-master's offices, parcels office and lavatories. At the end was a T-head 4ft below the rest, with inclined paths up to the general level, for landing steamer passengers. On the north side was a 3ft 6in gauge electric tramway. The company Engineer was Mr A E Carey, Messrs Fasey and Son were the Contractors, and Mr A W Wheeler the Resident Engineer. The pier opened on Saturday 1st July 1905. The Coast Development Company also had the Belle fleet of steamers, operated between London Bridge and Yarmouth. Soon after the opening ceremony the Woolwich Belle announced her approach by firing rockets, bringing a good complement of passengers and took a large number on board, bound for Walton and Clacton Piers. Built to carry passengers along the length of the pier, the 3ft 6in tramway took electricity from the Felixstowe UDC supply. The three original toast rack cars were scrapped in 1931 and replaced by one mounted on the four-wheeled truck of an ex-Ipswich tram. The Coast Development Company was succeeded by the Coast Development Corporation Ltd but was forced into liquidation in 1915 and would be wound up in 1922. East Coast Piers Ltd, who operated the tramway in the summer, acquired both the pier and the tramway in 1922. Between the wars the shore end widening had the Amusement Hall plus the New Pier Café.

A Pier Pavilion had been present since 1906, albeit initially as a large tent on the present Leisure Centre site, next to the pier. A more permanent structure was erected in its place from 1909. The Pier pavilion was eventually remodelled and extended in late 1937 to early 1938. After 30 years, and after consideration of various sites the sea front position of the Pier Pavilion was chosen for a new Leisure Centre, which opened c1984.

At the outbreak of World War II the tramway service on the pier was suspended and never resumed after the war. Like most piers

Felixstowe Pier was sectioned in two places for defence purposes and, like other piers, it was never to recover. The remote seaward end was neglected during the war, and was demolished afterwards, leaving the pier much shorter.

The pier was acquired by Stan Threadwell of Pier Amusements Ltd in 1966.

In 1996 a £2.5 million plan to refurbish the pier was announced, of which £750,000 was required for immediate repairs. It was proposed to rebuild the pier and develop the shore end with ten-pin bowling, roller-skating, café, shops and bar. The remaining deck was to have kiosks along the length with a new landing stage at the end, but all the plans came to nothing. In 1999 a charitable trust was set up to try and save the pier, and draw up plans for the future. It wanted to build a £15million Sea Dome with one of the world's largest revolving restaurants as part of a five-deck 200ft wide pier with tenpin bowling, shops, snack bars, family entertainments with children's attractions, bars, and a heritage centre and exhibition hall. It would have also featured a landing stage for pleasure boats and a lighthouse 150ft above sea level. In 2002 the scheme was abandoned, the trust was wound up and the pier reverted to Pier Amusements Ltd, who applied for a demolition order in 2004.

The shoreward end still maintained an amusements hall c117ft long x c112ft wide, founded on six rows of eight square concrete piles supporting a grid of reinforced concrete beams and slab. The building had access on the seaward side to look at, but not go on to, the remaining pier neck, c644ft long (450ft often quoted for some reason) x26ft wide, which was considered too dangerous and closed in 1999. Up to then the pier had had a long history of fishing from the neck. In December 2011, a hole suddenly appeared in the floor of an unused part of the building after one of the supporting piles shifted in the shingle. Plans were announced in June 2012 to demolish the existing pier and replace it with a modern design. The pier's owners, Pier Amusements Felixstowe Ltd, intended to replace the existing shoreward building and the existing pier beyond, with a multi-million pound two-storey entertainment and conference centre. Designed by Engineers Haydn Evans Consulting of Ipswich, the project included an observation tower, a restaurant and retail units, with a semicircular seaward end. The plans were given the go-ahead by Suffolk Coastal District Council in October 2012, with the provisional opening date of Easter 2014. However, by September 2014 it was evident that there were difficulties, with the costs of the project causing delays, in particular the marine works, and the owners were now looking at a phased scheme. By August 2015 it was announced that a scaled-down project for the new pier costing £3 million would start in Autumn 2016, with work taking 36 weeks and an opening date of June 2017. October 2016 saw work start on demolishing the existing building at the shoreward end of the pier. The new pier building finally opened on the 5th October 2017, with a boardwalk around three sides. It is a steel portal frame with a curved roof comprising cellular steel beam rafters. It contains the Pier Fish Co shop at the

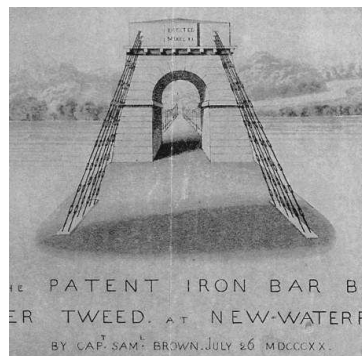
entrance, the main Family Entertainment Centre, Lorenzo's plus the Boardwalk Café Bar on the south side.




The new (2017) mainly single storey shoreward entrance building comprises main steel portal frames at c20ft centres, of c112ft span & c23ft eaves height, with curved cellular steel beam rafter members. Foundations for the new building comprise a Larsen sheet pile-edged shoreward base, with four rows of nine 515mm dia. steel circular cased piles to seaward, supporting longitudinal and transverse reinforced concrete beams and slab deck under the main building. There are perimeter walkways of timber boarding on the north, east and south sides. The north and east sides are supported on reinforced concrete beams cantilevered off the main beam grid. The south walkway is separate from the main grid of piles, having its own grid of five rows of 330mm dia. cased steel piles, parallel with the main 515mm piles, supporting large secondary timbers, and joists and decking on top.

Union Chain Bridge 1820 – Scottish Anchorages Revealed by Radar

By Roland Paxton



Scottish tower from a plate of details by Brown [London, J. Taylor 1822]. No anchorages shown



The writer on behalf of the bridge's 'Friends' thanks all who have supported this venture, Heriot-Watt University; Northumberland County Council, lead authority with the Scottish Borders Council for the ongoing refurbishment; ICE-PHEW; and Adrok for its state-of-the-art radar contribution, enthusiasm, dedication and generosity. Dr Stove and I plan to follow up this account with more comprehensive joint articles on the modus operandi of determining hidden structural detail on this and other historic bridge applications for The International Journal of Remote Sensing [ed. Prof Arthur Cracknell].

Robert Pearson Brereton

By Stephen K Jones

This year, the bicentenary year of the Institution of Civil Engineers, is also the two hundredth anniversary of the birth of Robert Pearson Brereton (1818-1894) on 4 April 1818 and 2018 saw the opening of 'Being Brunel' at the SS Great Britain which includes a replica of Brunel's London Duke Street office, an office later occupied by Brereton. Three of the Brereton family were civil engineers in the Victorian era; Robert Maitland Brereton (1834 - 1911), Cuthbert Arthur Brereton (1850-1910) and the distantly related but more well-known Robert Pearson Brereton. Robert Maitland and Robert Pearson were second cousins and the grandsons of John Brereton (1723-1785) of Brinton and a great grandson was Cuthbert Arthur Brereton. Robert Pearson took over responsibility for the majority of Brunel's uncompleted works when he died in 1859. This article however, will highlight a project begun and undertaken by Brereton and which was celebrated with a commemorative plaque earlier this month (September 2018) – the new dock at Porthcawl.

Robert Maitland Brereton was descended from John Brereton's son, John Brereton (1752 - 1823) his son; the Rev. Charles David Brereton (1790 - 1868) of Little Massingham, Norfolk, whose youngest son was Robert Maitland Brereton. He trained under Brunel from 1852-1856 when his second cousin Robert Pearson Brereton was Brunel's chief assistant and he would be employed under Brunel on the PSS Great Eastern, the rebuilding of Paddington Station, the Saltash railway bridge, the South Devon and the Cornwall Railways and then moving away from Brunel on the Great Indian Peninsula Railway. He would go on to become consulting engineer for the first large irrigation enterprise (some 7,000,000 acres) in the Great Valley of California and undertake other work in the USA, before returning as Commissioner to the Duke of Sutherland in Scotland, 1886-89. He married Alice, daughter of Isaac Fairchild of Waterloo, New York State, in 1873 and had three sons and a daughter.

Cuthbert Arthur Brereton was descended from John Brereton's son also John Brereton (1753-1823), through his son William John Brereton (1787-1851) and his son John Brereton (1813-1861). He worked under Robert Pearson Brereton, whom he referred to as uncle, from 1868 to 1871. He went to become resident engineer on the Llynvi Valley and

Ogmore Railways and the Porthcawl Docks from 1872 to 1876. He moved on to other work but after 1879 he returned to working with Robert Pearson Brereton and through him, with Henry Marc Brunel and Sir John Wolfe Barry. A variety of work followed including railways and the London underground lines. With Wolfe Barry he was involved with the construction of Barry Docks and Railways, the Middlesbrough Docks, the Surrey Commercial docks. A prominent work was Kew Bridge on the Thames, known as the King Edward VII Bridge, which opened in 1903. Possibly because of his activity in south Wales he met Frances Ann Caroline Jenner of Wenvoe Castle, Glamorgan, marrying her in 1880.

Robert Pearson Brereton was descended from John Brereton's son; Robert John Brereton (1760-1831) and his son Robert John Brereton (1796-1858). Like Brunel his middle name; 'Pearson', came from his mother's side, although unlike Brunel's 'Kingdom' it was not a surname. He joined Brunel in 1836, aged 17, the same year his secretary Joseph Bennett joined. Brunel's chief assistant, and his first pupil, was John Hammond (c1800-1847) who worked with him from the early 1830s. On the death of John Hammond in 1847 Brereton became the chief of his engineering staff. He had lost an eye in a gunpowder explosion while working on the Great Western Railway. In 1845 Brunel described Robert Pearson Brereton as, 'my assistant, a peculiarly energetic persevering young man.' In a letter to Herschel Babbage, his resident engineer in Italy, 'I think of bringing Brereton over to you for the tunnel. He has more experience than any man I have...' Robert Pearson Brereton duly went to Italy in 1845 to assist in the construction of the Genoa to Turin Railway. He worked on the Chepstow Railway Bridge and his signature appears on drawings prepared in Duke Street around 1850 and it is recorded that an inscription on the up line section of the bridge that Brunel had been assisted by Brereton, and the resident engineer of the South Wales Railway; William George Owen.

As a tubular suspension bridge the Chepstow bridge was followed by the Royal Albert Bridge across the Tamar at Saltash. In 1854 Brereton was sent to help William Glennie (1797-1856) the resident engineer on the bridge, who was in poor health. Much of his time in the next five years was spent on this project. He was instrumental in developing ways to excavate underwater to prepare for the construction of the central pier. In 1857 he assisted Brunel when the first span was floated into position, and he then supervised the lengthy process to raise it 100 feet (30 m) to the top of its piers. Brereton supervised the floating out of the second span in 1858 without Brunel's help and saw through the raising of this span, the completion of the bridge and opening of the line. When the Prince Consort agreed that the bridge could be called the Royal Albert Bridge he consented to open it in person at a ceremony on 3 May 1859 Brunel being absent on the Continent for the sake of his health and Brereton represented him on the occasion. The Chairman of the Cornwall Railway following the opening of the Royal Albert Bridge, described him as 'always ready, always able, always full of energy.'

He was not, despite taking part in discussions frequently, a member of the ICE but that was rectified shortly after Brunel's death on 10 January 1860 when he was balloted and duly elected as a Member with the President George Parker Bidder in the Chair. He succeeded Brunel as engineer to the PSS Great Eastern and this along with his