

A Bridge too Narrow: Wimborne's 'Leigh Arch', ca 1845–1977*

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It took just under 130 years for the Southampton & Dorchester's skinflint construction to cause the railway's closure north of Wimborne. The tight budget meant that at many places even turnpike users were subject to the "great inconveniences" of level crossings.¹ But at the north end of Wimborne station the Ringwood, Longham, Leigh turnpike had to be bridged, to lessen the rising gradient towards Poole.² Suitable provision was made in the S&D's parliamentary survey, deposited on 30th November 1844, and thus in the company's act of 21st July 1845.³ As we shall see, the few months between these two events was to prove critical in the 1970s.

The S&D's engineer, William Scarth Moorsom, allowed a nominal twenty-foot clearance over the turnpike. However, as so often, realities on the ground led to changes when the bridge (S&D No 11; later LSWR 75) was built. We are fortunate to have two engineering drawings of early designs.⁴ One, undated, shows a single-track span, each rail supported by two six- by twelve-inch timbers bolted together and tensioned with iron rods. While the rails would have been 18 feet above the highway, the highway clearance was only 16 feet – the height of the approach embankment. The span was on a skew of around 57 degrees as the railway curved tightly, giving a mere twenty-foot span on the square between the abutments – themselves wide enough for just a single line. In general terms, this design reflected the very economical construction of many of the S&D's underbridges.

This design almost certainly pre-dated the other, approved by Moorsom on 14th February 1846. The latter, presumably more expensive (the estimate was just under £447, although the figures do not tally exactly), used cast-iron flat girders 28 feet 3 inches long.⁵ This permitted a slightly wider square span – 22 feet 10 inches. Unfortunately no elevations of the abutments and wing walls survive, so we cannot be sure of the intended headway. It is possible the earlier design was used, although the skew was now around 59 degrees. Although the trackbed timbers were now only 17 inches above the girders' bottom flange, the potential gain in headway was no more than a few inches. In any case there was no point in raising the embankment since sixteen feet was all that legislation – to which we shall return – required.

There is no doubt the bridge was built using cast iron, and so likely that these drawings reflect the general approach, if not every detail, taken during construction.⁶ While the evidence is a little ambiguous, it is unlikely the bridge could accommodate the second track anticipated by the 1845 act and eventually laid in 1857. Captain Coddington's inspection for the Board of Trade (BoT) said the "...bridges, (over) the line..." could accommodate double track, which strongly suggests that underbridges did not.⁷ Moreover

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the BoT's report on the doubling noted that ten underbridges – probably the total – between Ringwood and Wimborne had been rebuilt to take the second line.⁸ Finally, the LSWR's accounts journal for November 1857 records expenditure of £28 5s on girders for a Wimborne bridge in connection with the doubling – the turnpike bridge is the most likely candidate.⁹

The two girders differed, and their cross-sections (Fig. 1) support the contention there was initially only room for a one track, although they also suggest Moorsom made provision for a second. To take the latter point first: Girder B was designed to carry a greater load – the web was, at two inches, half an inch thicker than A's, and the bottom flange extended six inches on each side; whereas for A it was six inches on the loaded side and just three on the other. The late Len Tavender suggested this would have allowed cross timbers for a second track to be bolted to B, and to take its share of the increased load. In any case, B's more substantial section was required partly to carry the larger load resulting from the rails being set a foot closer towards this girder.¹⁰ It is surely no coincidence that the resulting three-foot clearance between the inner rail and B would, had the arrangement been mirrored, have provided the six-foot gap found on the S&D's short double-track sections.

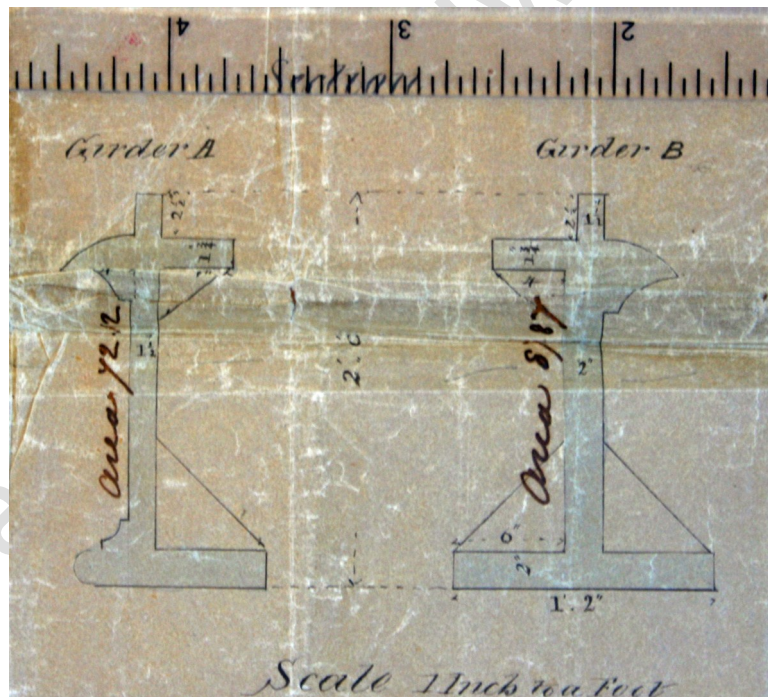


Figure 1. Cross-sections of cast-iron girders, Bridge 11 (1846). Source: DHC D-611/5.
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I am largely persuaded by these arguments. However further attention to the flange design supports the contention there was initially only room for one line. First, while Tavender's conjectural drawing shows bolting holes for the cross timbers on both sides of B's bottom flange, on the original they are only shown on one side. Of course, it is

possible the design was modified before casting. More significantly, both girders were drawn with decorative upper flanges on their outer faces; this would have made it difficult to lay a second track, at least in the fashion shown in the original drawing, if B was intended as a central girder. And finally, the 1846 drawing for B *does* show a set of bolt holes for the cast-iron pillars which supported the safety handrail, suggesting that this was provided on both sides of a single-track span. Thus, while accepting the drawings do not necessarily reflect what was built, on balance I am convinced that, taken, in conjunction with the BoT reports, this evidence shows there was just the one span.

Were the abutments built for double track? It is unclear. In November 1845 the LSWR intimated to the S&D's directors that while it did not yet want a second track beyond Redbridge it would probably "wish to have the whole of the masonry on the line double". In response the S&D agreed to ask "whether it would not be more advantageous to make the earthworks for the double line at once".¹¹ Unfortunately there is no record of the LSWR's reply other than confirmation of the Redbridge section, in January 1846.¹² By October 1846, the LSWR had firmly decided against immediate doubling of the track, but Moorsom reported that the second line could be laid in the future "without any interruption of the traffic, and with safety and without increased expense".¹³ This tends to suggest that the earthworks were indeed being made for double track. On the other hand, when discussing the finished permanent way Coddington reported two widths for the "formation level" on embankments – fifteen feet for a single track, 30 for double. This suggests that not all the earthworks had been built full width; although there is perhaps some ambiguity to what Coddington meant by 'formation'.

At Wimborne it might have made sense to build in advance of necessity by, for example, using any surplus spoil from the deep cutting at Merley, south of the River Stour. The base layer of the LSWR terrier, which probably dates from around the railway's construction, is unhelpful as it only shows there was enough land for a double-track embankment; we know this from Coddington's report.¹⁴ Later maps and plans all post-date the doubling. Mid-to-late 20th-century photographs are consistent with the abutments having been built for double track, but after so many decades with their concomitant modifications and repairs, we cannot have much confidence in this evidence – it would be much more convenient if there were clear signs of contrasting brickwork, signalling a later widening! The general arrangement and much of the detail of the wing walls in the 20th-century echo those from the first of the 1846 drawings, suggesting that perhaps the original contractors did simply widen the abutments. But of course it is also possible the bridge was rebuilt to the same design a decade later.

The square span was a much more important consideration for the bridge's later history. The Railways Clauses Consolidation Act 1845, passed on 8th May and incorporated into the S&D's act, specified the minimum dimensions for turnpikes – a clear 35 foot span with a headroom of 16 feet.¹⁵ While these figures could be set aside by a company's authorizing act, the S&D's contained no such provision. As Tavender pointed out, even a square span of 22 feet 10 inches fell well short of the statutory requirement. But this was

the measurement at the top of the abutments – as these were inclined at 1:10 (the ‘batter’), at road level the span was only around 20 feet.¹⁶ Matters were made slightly worse when the bridge was strengthened at an unknown date prior to December 1890. The abutment walls under the girders were made vertical, reducing the square span at the top by a little over three feet and that at the base by five or six inches.¹⁷

It might seem odd that Coddington made no comment on this breach of statutory requirements, but we must remember the Board of Trade’s remit extended no further than the public safety of the lines it was inspecting. Thus while level crossings and overbridges merited some attention from this perspective, the ‘mere’ inconvenience to turnpike users of a narrow underbridge did not: Coddington was only concerned whether such structures would bear a train’s load. It is possible the turnpike’s trustees were consulted.¹⁸ Even if they were, they had no powers under the 1845 act to vary the latter’s provisions. In practice, of course, their connivance would have made a huge difference. In Moorsom’s defence, it is also clear that by 1846 engineers as distinguished as Locke, Robert Stephenson, Brunel and Cubitt were complaining about the 1845 act’s requirements; not least because many roads were not as wide as the requisite spans.¹⁹

By 1885 the LSWR was aware that the S&D’s cast-iron bridges needed rebuilding to deal with heavier loads; some were probably modified within a couple of years.²⁰ But it was not until January 1896 that rebuilding of Bridge 75 with more substantial, wrought-iron beams was authorized, the work being completed by the following January.²¹ This involved moving the outer girders around three feet farther from the longitudinal centre line. Only the central girder remained on the abutment’s vertical section; the outer ones rested on what had originally been the wing walls. Although this must have involved completely remodelling the original parapets, the abutments and wing walls were probably not altered much. Photographs from the bridge’s demolition in 1975-77 suggest it might have involved little more than altering a few courses of brickwork and installing – presumably heftier – bedstones. The distinctive 1:10 batter was obvious to the end. While



Plate 1. Abutments to Bridge 75, probably in February 1977, looking west and showing the vertical brickwork strengthening the original cast-iron spans and the bedstones for the replacement wrought-iron girders.

Photo: C. Divall.

the outer girders were now around 32 feet long and the central one 28' 3", the square span remained the same. The headway was recorded by the LSWR as 14' 9", although after 1945 the highway authority variously gave it as 14' 3", 14" 0" and even, in the 1970s, as low as 13' 9".²² It is impossible to know whether these changes resulted from the road surface becoming progressively built up or increasing caution on the highway authority's part.

Bridge 75 in the 20th century

Mentioned as "the Leigh bridge" in 1884, at an unknown date Bridge 75 became known colloquially as Leigh Arch.²³ From the railway's perspective, the bridge seems to have led an uneventful life for several decades. Detailed records for 1909-34 reveal minor repairs to the brickwork in December 1922, and the recurrence of minor defects in 1930. Thereafter we have to rely on anecdote and photographs – the latter show rebuilt and repaired parapets, along with some repaired brickwork in the vicinity of some of the outer bedstones and to the wing walls.

However the increasing volume of motor traffic on the old turnpike, classified by the Ministry of Transport in 1922 as the A31, was to cause real problems, probably as early as the inter-war period.²⁴ While the low headroom and narrow carriageway were undoubtedly inconvenient for drivers – Hants & Dorset, for example, had to use restricted-height buses – vulnerable road users, such as cyclists and pedestrians, were in real danger. Their numbers must have risen significantly as houses spread along Leigh Road to the east and the council housing on Leigh Park, started between the wars, expanded. The only footway, barely two feet wide in part, was on the north side of the bridge, forcing pedestrians from the council estate to cross the busy road. According to one county councillor's recollection in 1973, in the mid-1930s the Southern Railway had agreed to build a pedestrian subway "but then the war came along and the scheme was killed."²⁵ This rings true: an undated plan shows a subway through the northern embankment – peripheral details (of housing) are consistent with the mid 1930s, and the engineer's stamp on the drawing is to a SR pattern.²⁶ By March 1973 – when the only regular trains north of Wimborne were to the army's petroleum depot at West Moors – the situation was so bad that local residents, led by Mrs Winifred White, demonstrated by partly blocking the road as they walked under the bridge; they later sent a petition to the MP demanding action.²⁷

Behind the scenes, Dorset County Council, under intense pressure for some years from Wimborne Urban District Council, had already taken steps to have the danger removed.²⁸ Someone had spotted that Bridge 75 did not meet the statutory dimensions, and by 1972 the council had served notice on the Southern Region to bring the structure into line. Not surprisingly given the low volume of traffic – barely 5000 tons of petrol and general stores in 1971 – on 1st October 1972 the railway gave the Ministry of Defence (MoD) notice trains would be withdrawn from the following May. This in turn prompted a flurry of correspondence and meetings between BR and the MoD as the latter wished to keep the

trains. BR suggested the MoD take over the route north of Wimborne – the goods service to there was safe until at least 1975 – and pay for rebuilding the bridge, estimated at a minimum of £75 000 in 1972 but rising to £110 000 a year later. In response in June 1973 the MoD, which was not allowed to spend money on property it did not already own, asked BR to finance the work. This was agreed in principle, as long as the MoD leased the route – at a rate which would repay the capital, at nine per cent interest and with a ten per cent profit element – over 20 years. By September the Ministry was apparently having second thoughts, because it would become liable for the entire branch if BR were to cease using Wimborne; BR would not commit itself beyond 1978.²⁹ Not surprisingly by November the Ministry had decided to switch to road transport, from May 1974, and the bridge's fate was sealed, much to the relief of many locals.³⁰

There is some disagreement over the date of the last trains. At the time I recorded Friday 31st May as the scheduled date for the final goods service, with last-minute hiccups bringing a fortnight or so's reprieve – although I didn't see any of these trains run. A special passenger train organized by the fledgling Swanage Railway Society, the Wessex Wanderer, ran to West Moors on Saturday 1st June, garnering a good deal of local publicity, including a press photograph of it on the bridge, as 'the last train'.³¹



Plate 2. Bridge 75 looking east on 1 June 1974, with the last passenger train, the 'Wessex Wanderer'.
Source: DHC D-DPA/1/BF/41. Reproduced with permission of the Dorset History Centre.

It seems however that freight trains were still running occasionally as in late June a newspaper reported the service would be withdrawn "by 30th July".³² Several photographs of what probably *is* the last goods train – 33 111 plus two fitted vans returning from the depot – have, many years later, been dated variously between July and October 1974. There is little doubt that the line was taken out of use on and from Monday 14th October 1974, although I have yet to see any official documentation. My contemporary notes say that a train – perhaps preparing for track-lifting – ran to just west of West Moors level crossing on or around that date: but I was relying on sympathetic school friends for information on events that far east! By 25th October a sleeper blocked the line

immediately south of Bridge 75, although a flat wagon was still berthed just to the west of Bridge 74. Cycling to school at around 0850 on Monday 28th October I spotted 33 101 coming over Leigh Arch with the now-loaded flat; since the rails across the bridge had gone by the following Sunday (3rd November), this was quite possibly the last ever train. Counter claims are welcome.

It took a little longer for the danger to vulnerable road users to be removed. Not everyone was happy with the headlong rush to mass motoring and road-based distribution in and around south east Dorset.³³ The OPEC oil crisis which started in October 1973 gave some – such as the indefatigable Ruth Colyer of Shillingstone – hope that the railway might be retained, both for petrol trains and, in the longer term, a rapid-transit service for the expanding population around Verwood. The North Dorset Liberal Party were particularly vocal in this regard, although they insisted a pedestrian subway must be built if the bridge were retained.³⁴ In June 1974 Dorset County Council's Planning and Transportation [sic] Committee recommended buying the trackbed in order to maintain the right-of-way for future use, although as this was thought to be at least a decade off, there was no suggestion that Leigh Arch be kept.³⁵ In all likelihood none of this made any difference to the speed of demolition. The spans were removed in March 1975, but the abutments remained until at least 1977 – BR did not sell the land for road widening until December that year.³⁶ A photograph from February 1977 suggests that in the meanwhile a footway might have been cut through the northern embankment, roughly where the subway had been proposed. This would have offered some relief to pedestrians, although they would still have had to cross the busy road. I was no longer living permanently in the area and cannot remember.

And finally...

Much fun can be had speculating about an alternative history in which Moorsom bridged the Leigh turnpike at the statutory width (and height), removing the immediate cause of closure north of Wimborne. Would the MoD depot at West Moors have remained rail served? I think it unlikely, given the MoD's longer-term switch to road transport at many of its rail-served facilities; not to mention the shift to pipelines for large-scale petroleum movements. And then there is BR's eventual withdrawal from Wimborne, in May 1977, the prospect of which weighed so heavily in the MoD's decision. Nonetheless, it is just possible that if the line had remained open for, say, another decade, the track-bed's potential as part of a rapid-transit or revived regional network might have been more fully appreciated. But that is another story.

Acknowledgements

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- 1 P. Brown, *Many and Great Inconveniences: The Level Crossings and Gatekeepers' Cottages of the Southampton & Dorchester Railway* (n.p.: South Western Circle, 2003).
- 2 R. Good, *The Old Roads of Dorset*, (Bournemouth: Horace G. Commin, 2nd edn, 1966), pp. 131-2.
- 3 Plans and sections of the Southampton and Dorsetshire Railway, Dorset History Centre [DHC] QDP(M): R3/9. Southampton & Dorchester railway act, DHC NG-AP/1845/1.
- 4 Plans, sections and elevations of turnpike road bridge No. 11, Wimborne Minster, etc. (1846), DHC D-611/5.
- 5 In his otherwise useful analysis, Len Tavender wrongly attributes the estimate for the cast-iron to the timber design. L. Tavender, *The Dorchester and Southampton Line* Ringwood Papers No 3 (Ringwood: AE Baker, 1995), figs 16, 17.
- 6 Copy of the Circular from Board of Trade... on the subject of Bridges under their Lines of Railway, etc., Cmnd 7961 (London: HMSO, 1896), p.43.
- 7 Board of Trade [BoT], Report on the Southampton & Dorchester (22 May 1847), TNA MT6/4/30. There is some ambiguity over the status of viaducts.
- 8 BoT, Report on second line of rails, etc. (29 Sep. 1857), TNA MT6/15/34; LSWR Terrier Brockenhurst to Hamworthy Junction (n.d., pos. ca 1847), pp.77-103; LSWR Diagram of System Book No. 7, etc. (n.d., post 1907), SWC Portfolio P32.
- 9 LSWR Accounts Journal (21 Nov. 1857), TNA RAIL411/568.
- 10 Tavender, *Dorchester and Southampton* (note 5), fig. 16.
- 11 Southampton & Dorchester Railway Company minute, min.121 (6 Nov. 1845), Southampton Archives Office D/Z 416.
- 12 S&D minutes, min. 172 (17 Jan. 1846); J.G. Cox, *Castleman's Corkscrew: The Southampton and Dorchester Railway 1844-1848* (Southampton: City of Southampton, 1975), p.14. It is possible that the LSWR's records might tell more.
- 13 S&D minutes, min. 386 (8 Oct. 1846). Moorsom's statement was disingenuous – approval to build the viaduct over the Stour was still some months off.
- 14 LSWR Terrier, Lymington Junction to Hamworthy Junction (n.d. ca 1850), BRB Residuary Archive, York, e:\cd1\MV104_QCD\00139.JPG.
- 15 The Railways Clauses Consolidation Act 1845, section 49. Available at legislation.gov.uk/ukpga/Vict/8-9/20/section/XLIX/enacted (accessed 7 Feb. 2022).
- 16 Tavender, *Dorchester and Southampton* (note 5), fig. 17.
- 17 Tavender, *Dorchester and Southampton*, fig. 17; Railways (Under-bridges): Copy of Circular from the Board of Trade, etc., Cmnd 7961 (1896), p.43. LSWR/SR book of condition and maintenance records, Southampton & Dorchester Line Structures (ca 1909-34), private collection. Tavender seems to have confused the publication date of the BoT's paper with that of its survey
- 18 Records of the Ringwood, Longham and Leigh Turnpike (1759-1867), Hampshire Archives and Local Studies. See calm.hants.gov.uk/Record.aspx?src=CalmView.Catalog&id=47008&pos=2 (accessed 7th Feb. 2022). I have not consulted this source.
- 19 'Government and the Railroads', *Morning Post* (17 Jun. 1847).
- 20 LSWR Engineering Committee (12 May 1885, 4 Aug. 1886), TNA RAIL 411/44.
- 21 LSWR Engineering Committee (8 Jan. 1896), TNA RAIL 411/48; Capital Expenditure Authorized, TNA RAIL 411/607. The total cost of this and the reconstruction of the flood opening at Bridge 8 (Millbrook) was estimated at £690 but – unusually – came in at less, £371/13/11.
- 22 LSWR/SR book of condition (note 17).
- 23 'Wimborne Annual Supper', *South Western Gazette* no. 36 (Mar. 1884): 4-5, at 5.
- 24 sabre-roads.org.uk/wiki/index.php?title=A31/History; sabre-roads.org.uk/wiki/index.php?title=1922_Road_Lists/Zone_3_Class_I (both accessed 8 Feb. 2022).
- 25 *Western Gazette* (16 Nov. 1973).
- 26 Copy plan of proposed new subway, Leigh Road, Wimborne, n.d. [ca 1930s], Somerset Heritage Centre A/CWO/5/3/161.
- 27 bournemouthcho.co.uk/news/features/snapshotsofthepast/11878228.the-day-leigh-arch-came-down/ (accessed 20th Feb. 2022); *Western Gazette* (23 Nov. 1973).
- 28 *Western Gazette* (15 Jun. 1973). DCC had probably acted on behalf of the Department of the Environment, which was the highway authority as the A31 was a trunk road. Copy letter, G.L. Vizard (County Surveyor's department, DCC) to R. Colyer (26 Mar. 1974), author's collection.
- 29 *Western Gazette* (21 Sep. 1973).
- 30 Ministry of Defense [sic] (Army): School of Petroleum (West Moors) (1972-73), TNA AN121/608; *Western Gazette* (23 Nov. 1973). Letter, AW Bruce, Asst. Div. Mgr BR(SR), to C. Divall (6 Dec. 1973); Letter, GW Owens, QMG Secretariat MoD, to C. Divall (30 Jan. 1974); Letter, PR Handley, DoE, to R. Colyer (30 Jan.

1974), all author's collection.

31 sixbellsjunction.co.uk/70s/740601sr.html (accessed 20th Feb. 2022).

32 *Western Gazette* (21 Jun. 1974).

33 C. Divall, 'Railway modernism losing out: lessons from an English conurbation, 1955–1975', in Martin Emanuel, Frank Schipper and Ruth Oldenziel, eds, *A U-Turn to the Future: Sustainable Urban Mobility since 1850* (New York & Oxford: Berghahn, 2020), pp.91–120.

34 E.g. *Bournemouth Evening Echo* (1 Dec. 1973, 20 Dec. 1973, 4 Jan. 1974); *Western Gazette* (1 Feb. 1974).

35 *Western Gazette* (21 Jun. 1974).

36 LSWR Terrier (note 14).