



Canal &  
River Trust

## **LIFT BRIDGES – OXFORD CANAL**

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### **HERITAGE REPORT**



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## I. CONTEXT

The timber lift bridges on the Oxford Canal are quintessential of this waterway. The main engineer for the Oxford Canal was James Brindley although he died in 1772 when his assistant Samuel Simcock took over. James Barnes was appointed resident engineer in 1786 to complete the works from Banbury to Oxford. These lift bridge were built as a cheaper means to provide a crossing for farmers over the canal. Timber lift bridges are present on other waterways such as the Northampton Arm of the Grand Junction Canal but to a different design.

There are 21 lift-bridges remaining on the Oxford Canal, from north of Claydon to Oxford. Originally there would have been many more (95 according to the Oxford Canal Conservation Area Statement produced by Cherwell). The brick abutments with stone fenders and copings have been repaired over time, and the timber lift bridges replaced. There are still in places remnants of where former lift bridges once stood but have since been removed, in the form of the abutment or brick 'narrow'.

Some of those lift bridges are on a 'right of way' or provide essential access to farmers while others have become obsolete and are kept permanently in the up position.

Bridge 193 (Chisnell) had a partial collapse of the northern approach wall on the off-side in July 2013. This bridge is still operational but the abutment hasn't as yet been rebuilt. Bridge 215 (Caravan) collapsed on the 26<sup>th</sup> August 2014 damaging heavily the off-side abutment that slid into the waterway, blocking the navigation and rendering this bridge unusable.

According to our asset management system, only one bridge has a condition 'D', all others are A to C, but the grades have been since re-assessed.

A major work project (P/09243) has been set-up to look at 18 of these bridges (missing out 170, 221, and 238) and this document has been produced to support this project.

## II. HERITAGE CONSIDERATIONS

### DESIGNATIONS

#### Listing:

19 lift bridges are listed Gr II on the Oxford Canal.

Br 237 and 238 were listed in 1972, the bulk in 1987/ 1988, with a further seven in 1992. The listing description (see Appendix A) for those listed in the first three phases, refer to the designer as being James Brindley.

Of these, one structure has its timber bridge missing (no. 237) and therefore hasn't been included in our assets as a 'bridge' and isn't counted amongst the 21 lift bridges. Bridge 237 was listed in 1972 but our last record of the bridge deck dates back to 1965 and there are no further records of when the deck was removed.

Of the 19 listed bridges:

- The vast majority, 14 are in Cherwell (with a further three non-listed),
- three are in Oxford (234, 237 -missing- and 238)
- one in South Nortamptonshire (189), and one in Stratford on Avon (141), both listed.

The three bridges that are not listed (in Cherwell: 164C, 205 and 221) are within a conservation area.

#### Conservation Area Statement:

The Cherwell's Oxford Canal Conservation Area Statement states that "the lift bridges in fields have become the iconic symbols of the canal.(6.30) That these timber bridges give the Oxford Canal much of its "visual and architectural character" (6.40) and that although there are timber lift bridges elsewhere on the canal network, these are "quite distinct" (6.41).

This document describes them as follows: "The bridge consists of a timber-framed boarded deck attached to a diagonal pair of heavy balance beams extending over the offside abutments. In addition, there are iron rods on either side of the bridge and a fairly ephemeral railing. Beneath the beams and attached to the top of the abutments are interlocking segments of cast-iron gearing." (6.42)

## HERITAGE SIGNIFICANCE

### Heritage Values

The Oxford Canal is an early and supreme example of a contour canal, linking Oxford with Coventry via Banbury and Rugby. The Act to build it was passed in 1769 but its engineer, James Brindley died shortly after, in 1772. By 1774 it had only reached Napton. The section between Napton and Banbury was built between 1775 and 1778 under Samuel Simcock. James Barnes was appointed in 1786 to continue the works from Banbury to Oxford, once additional funds had been found. He completed it by 1790, but as by then funds were limited, the southern part has the reputation to have been built cheaply. It is also the section that, with the competition from the Grand Junction Canal and then the railway saw the biggest drop in boat movement and was threatened with complete closure in the mid-20<sup>th</sup> century. The northern section between Hawkesbury and Braunston was straightened in the 1830's to shorten the route and address the competition from the Grand Junction Canal.

The timber lift bridges have strong **evidential value** as they are remnants of the canal age and are also of **historical value** as a physical illustration of the financial constraints and the resulting innovative design to build accommodation bridges more cheaply.

Even though the bridge decking is made of timber which by nature would over time be expected to be renewed, the **special interest** of the structure lies in the tilting design for the deck that is of a different design to other timber lift bridges found on the network and is intrinsic to the Oxford Canal. A document in the Warwick county archive reveals that six bridges were rebuilt between 1824 and 1850 alone, two were abandoned/ removed (202 and 242), one was rebuilt in bricks (243).<sup>1</sup>

The design has been attributed to James Brindley although no evidence has been as yet found to support this. The timber lift bridge that is the furthest north (bridge 141) is located just north of Claydon, between Napton and Banbury, the junction Samuel Simcock completed after James Brindley died. The majority of the remaining bridges are south of Banbury, the section built by James Barnes. A drawing in William Weston's (1763-1833) notebook depicts a drawbridge with a reference to the Oxford Canal but of a different design. (see appendix).

Given the timber lift bridges are of a unique design to the Oxford, and have very simple lines these also have strong **aesthetic values**. Although archive research has revealed that the bridge design has evolved over time with the current flat deck depicted in the early 20<sup>th</sup> century as being curved. (see drawing in appendix).

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<sup>1</sup> Warwick County Archives 'Engineer's notebook, containing rough notes and sketches of parts of the canal. Bridges, buildings, machinery etc . Ref CR1590/517 c. 1883-1896.

### III. LEGISLATION

With regard to bridges 193 and 215, Cherwell has been informed of the collapses. Minimum works have taken place to ensure no further deterioration occurs. Masonry and the actual timber bridge at 215 have been salvaged.

The emergency works at 215 might need listed building consent which can be applied for retrospectively. Should any further works of a temporary nature need taking place, subject to their nature, these might also need to be applied for and it might be worth considering one application encompassing both elements. The reconstruction of the bridge abutments (at both 193 and 215) and the reinstatement of the lift bridge (at 215) can be applied for separately once the reason for the failure has been fully understood.

It is worth noting that Cherwell doesn't currently require listed building consent for the replacement or reinstatement of a timber deck to the same design, recognising that this element of the bridge although of high heritage value, also has a limited life-span. Other authorities might take a different view on this.

A site visit with Cherwell's conservation officer was carried out on the 16<sup>th</sup> September to view the damages at bridge 215, and the principle of a modern structural solution to improve the abutments has been discussed.

Since the ERR Act, new tools are available which might be appropriate to facilitate a maintenance regime for these bridges while reducing the legislative burden and number of applications required, more specifically a Listed Building Heritage Partnership Agreement or a Local Listed Building Consent Order. This would apply best to those bridges in Cherwell and possibly the few in Oxford. Alternatively, an informal HPA could be useful and Cherwell has expressed an interest in developing one of those for these bridges.

If the Trust fails to act it is likely that several of these bridges would be considered for the Heritage at Risk register. The local authority (or English Heritage under the authority of the Secretary of State) could force us to undertake repair works (section 49 of the 1990 Act) or carry out works and charge us for those (section 54). The local authority cannot take enforcement action against us for our failure to preserve these collapses if no unauthorised works have been carried out. But the local authorities have powers under other legislation if the condition of the bridges is detrimental to the amenity of the neighbourhood (under s215 of the Planning Act 1990) or if the condition of the bridge is dangerous (under s77 of the Building Act 1984).

Under section 22 of the British Waterways Act 1995 the Trust does have a duty to have regard to the desirability of protecting and conserving buildings, sites and objects of archaeological, architectural, engineering or historic interest. This does not mean that the Trust must always act to protect and conserve specific buildings but it may have to justify why it cannot protect or conserve a listed building that has fallen into disrepair in its ownership.

## **IV. CONCLUSION**

The lift bridges are of high heritage value for their timber tilting deck with lever arm design primarily and the narrow with stone fenders secondly, and the Trust has a duty to preserve these bridges.

Bridge 215 needs to be reinstated and the others preserved.

### **Priorities**

1/ The preservation of the historic fabric of the remaining lift-bridges

The Trust has commissioned under-water diving survey to assess the condition of seven bridge abutments at this stage, including 193 & 215. A topographical survey will also be commissioned. This will enable to inform future interventions to prevent further collapses.

2/ The reinstatement of the timber deck at bridge 215 and 237.

The existing deck for 215 is intact and can be reinstated once the abutments are rebuilt. This is unlikely to happen before the next stoppage season (October 2015), unless an exceptional closure can be approved by Directors, as the Oxford will be closed before Christmas this year and it is unlikely that the design and listed building consent can be sorted on time. Early 2015 the GU is closed for winter works until the end of February, and the Oxford must therefore be opened to navigation for these two months. There is only a four weeks period of opportunity in March 2015 although this might not be sufficient time to carry out the work.

Bridge 237 has its deck missing and it needs reinstating.

3/ Compliance with listed building regulations and the Trust's Standards.

The project manager will need to liaise closely with the heritage adviser throughout the project and ensure relevant information is provided to support LBC. Any failure to comply with the relevant legislation might lead to legal action and to reputational damages.

The design must be sympathetic and preserve the special interest of the listed structure. As much of the existing fabric as possible must be preserved. Timber decks will need to be rebuilt to their unique design and the abutments need to integrate stone fenders.

4/ The development of a Heritage Partnership Agreement

The heritage adviser will compile an HPA, carrying out relevant archive research to support this while the project manager must work closely with the HA to ensure all supportive technical information is being made available.

## **APPENDIX:**

### **A. Listing names and descriptions**

**br 141: (1992) OXFORD CANAL BOUNDARY LIFT BRIDGE (141) AT SP 452 512**

Accommodation lift-bridge. L C18 origins, C19 and C20 alterations. Tilting, wooden plank deck with wooden hand rails and two balance beams set at a raking angle. Brick abutments with concrete sills. Brick wing walls with trailing edges and stone rubbing blocks on faces to canal. One of an important series of Oxford Canal lift-bridges, of a type now rare in England.

**br 170: (1992) OXFORD CANAL HAYNES LIFT BRIDGE (170) AT SP 469 391**

Accommodation lift-bridge. L C18 origins, C19 and C20 alterations. Tilting, wooden plank deck with wooden hand rails and two balance beams set at a raking angle. Brick abutments with concrete sills. Brick wing walls with trailing edges and stone rubbing blocks on faces to canal. One of an important series of Oxford Canal lift-bridges, of a type now rare in England.

**Br 171: (1992) FOXES LIFT BRIDGE (171) AT SP 470 389 OXFORD CANAL**

Accommodation lift-bridge. L C18 origins, C19 and C20 alterations. Tilting, wooden plank deck with wooden hand rails and two balance beams set at a raking angle. Brick abutments with concrete sills. Brick wing walls with trailing edges and stone rubbing blocks on faces to canal. One of an important series of Oxford Canal lift-bridges, of a type now rare in England.

**Br 173: (1992) HADDONS LIFT BRIDGE (173) AT SP 476 385 OXFORD CANAL**

Accommodation lift-bridge. L C18 origins, later alterations. Tilting, wooden plank deck with wooden hand rails and two balance beams set at a raking angle. Brick abutments with concrete sills. Brick wing walls with trailing edges and stone rubbing blocks on faces to canal. One of an important series of Oxford Canal lift-bridges of a type now rare in England.

**Br 175: (1988) TILTING BRIDGE APPROXIMATELY 800 METRES NORTH OF TWYFORD ROAD  
CANAL BRIDGE OXFORD CANAL**

Canal bridge. Late C18, repaired C20. Wooden tilting bridge, with inclined counterweight beams, has been renewed. Brick abutments, which splay outwards and diminish, have projecting limestone fender blocks. This tilting bridge, designed by James Brindley, is largely found on the Oxford Canal.

**Br 176 (1988) TILTING BRIDGE APPROXIMATELY 400 METRES NORTH OF TWYFORD ROAD  
CANAL BRIDGE OXFORD CANAL**

Canal bridge. Late C18, repaired C20. Wooden tilting bridge with inclined counterweight beams, has been renewed. Brick abutments, which splay outwards and diminish, have projecting limestone fender blocks. This tilting bridge, designed by James Brindley, is largely found on the Oxford Canal.

**Br 181: (1988) TILTING BRIDGE APPROXIMATELY 250 METRES SOUTH OF KING'S SUTTON LOCK OXFORD CANAL**

Canal bridge. Late C18, partly rebuilt C20. Wooden tilting bridge with inclined counterweight beams has been renewed. Abutments splay outwards and diminish. Eastern abutment is in brick with projecting limestone fender blocks and bullnose brick copings; western abutment has been renewed in concrete block. This tilting bridge, designed by James Brindley, is largely found on the Oxford Canal.

**Br 182 (1988) TILTING BRIDGE APPROXIMATELY 700 METRES SOUTH OF KING'S SUTTON LOCK OXFORD CANAL**

Canal bridge. Late C18, partly rebuilt C20. Wooden tilting bridge, with inclined counterweight beams, has been renewed. Abutments splay outwards and diminish. Eastern abutment is in brick with limestone fender blocks and bullnose brick copings; western abutment has been renewed in cast concrete. This tilting bridge, designed by James Brindley, is largely found on the Oxford Canal.

**Br 183: (1988) TILTING BRIDGE APPROXIMATELY 700 METRES SOUTH OF KING'S SUTTON LOCK OXFORD**

Canal bridge. Late C18, partly rebuilt C20. Wooden tilting bridge, with inclined counterweight beams, has been renewed. Abutments splay outwards and diminish. Eastern abutment is in brick with limestone fender blocks and bullnose brick copings; western abutment has been renewed in cast concrete. This tilting bridge, designed by James Brindley, is largely found on the Oxford Canal.

**Br 186: (1988) TILTING BRIDGE APPROXIMATELY 150 METRES NORTH OF NELL BRIDGE (NOT INCLUDED) OXFORD CANAL**

Canal bridge. Late C18, partly renewed. Wooden tilting bridge, with inclined counterweight beams, is of considerable age but is probably not original. Brick abutments, which splay outwards and diminish, have projecting limestone fender blocks and retain some stone copings. Cast-iron plates on both sides are inscribed "186". This tilting bridge, designed by James Brindley, is largely found on the Oxford Canal.

**Br 189: (1992) BELCHERS LIFT BRIDGE NUMBER 189, AT SP 495 329 OXFORD CANAL**

Accommodation lift-bridge. L C18 origins, C19 and C20 alterations. Tilting, wooden plank deck with wooden hand rails and two balance beams set at a raking angle. Brick abutments with concrete sills. Brick wing walls trailing edges and stone rubbing blocks on faces to canal. One of an important series of Oxford canal lift-bridges, of a type now rare in England.

**Br 193: (1992) OXFORD CANAL CHISNELL LIFT BRIDGE (193) AT SP 497 304**

Accommodation lift-bridge. L C18 origins, C19 and C20 alterations. Tilting wooden plank deck with wooden hand rails and two balance beams set at a raking angle. Brick abutments with concrete sills. Brick wing walls with trailing edges and stone rubbing blocks on faces to canal. One of an important series of Oxford Canal Lift-bridges, of a type now rare in England.



**Br 215: (1987) OXFORD CANAL TILTING BRIDGE APPROXIMATELY 750 METRES SOUTH OF PIGEONS LOCK**

Tilting canal bridge and embankment walls. Late C18 by James Brindley, restored 1983. Wooden bridge; brick walls with some stone details. Flat bridge with long raking counterweight beams is dated 1983. Splayed embankment walls, in purple brick with stone and bullnosed red-brick copings, slope away from the bridge, and have large rusticated stone blocks set into the brickwork beneath the bridge to act as fenders.

**Br 219: (1992) SHIPTON LIFT BRIDGE (219) SP 4850 1675, OXFORD CANAL**

Accommodation lift-bridge. L C18 origins, C19 and C20 alterations. Tilting, wooden plank deck with wooden hand rails and two balance beams set at a raking angle. Brick abutments with concrete sills. Brick wing walls with trailing edges and stone rubbing blocks on faces to canal. One of an important series of Oxford Canal lift-bridges, of a type now rare in England

**Br 231: (1987) OXFORD CANAL TILTING BRIDGE APPROXIMATELY 600 METRES NORTH OF DUKE'S CUT**

Tilting canal bridge and embankment walls. Late C18 by James Brindley. Wooden bridge; brick walls with stone details. Flat wooden bridge with long raking counterweight beams. Widening embankment walls have brick copings, sloping away from the bridge, and have large rusticated stone blocks set into the brickwork beneath the bridge to act as fenders. This type of bridge is unique to the Oxford Canal.

**Br 233: (1987) OXFORD CANAL TILTING BRIDGE APPROX 300M SOUTH EAST OF DUKE'S CUT**

Tilting canal bridge and embankment walls. Late C18 by James Brindley. Wooden bridge; brick walls with stone details. Flat wooden bridge with long raking counterweight beams. Widening embankment walls have brick copings, sloping away from bridge, and have large rusticated stone blocks set into the brickwork beneath the bridge to act as fenders. This type of bridge is unique to the Oxford Canal.

**Br 234: (1987) OXFORD CANAL TILTING BRIDGE APPROXIMATELY 650 METRES SOUTH EAST OF DUKE'S CUT**

Tilting canal bridge and embankment walls. Late C18 by James Brindley. Wooden bridge; brick walls with stone details. Flat wooden bridge with long raking counterweight beams. Widening embankment walls have brick copings, sloping away from the bridge, and have large rusticated stone blocks set into the brickwork beneath the bridge to act as fenders. This type of bridge is unique to the Oxford Canal.

**Br 237 (deck missing): (1972) OXFORD CANAL BRIDGE NUMBER 237**

Designed by James Brindley. Built circa 1790. Counterweighted wooden drawbridge. Red brick retaining walls on either bank of canal.

**Br 238: (1972) OXFORD CANAL BRIDGE NUMBER 238**

Designed by James Brindley. Built circa 1790. Counterweighted wooden drawbridge. Repaired 1967 (dated). Red brick retaining walls on either bank of canal.

## **B. EXTRACT FROM CHERWELL CONSERVATION AREA STATEMENT**

6.30. "One of the most important defining features of the Oxford Canal are its bridges. The lift bridges in fields have become the iconic symbols of the canal, despite being built as cheaply as possible to save money. The bridges distinguish the canal from the similarly sized and equally winding River Cherwell in open views of the valley. Along the route of the conservation area there are only a handful of bridges across the river that pre-date the construction of the M40, yet there were ninety-five built across the canal."

6.40 It is the lift-bridges or draw-bridges on the southern Oxford Canal give it much of its visual and architectural character. Whilst picturesque features within the landscape, they were not popular with the working boats; because they were once quite vital to the farmers and other local people, they were usually left in the 'down' position, which meant that boat crews had to spend a great deal of their time dealing with them. A large number of them were removed between the 1950s and 70s. Now the surviving ones are generally left open due to modern agricultural practices and canal usage. Together they form the largest collection of such bridges surviving in the country. Within the conservation area there are 18 surviving lift bridges, clear evidence of 11 others, and possible indications of two more.

6.41 The most northerly on the canal (Bridge 141) is a few yards outside the boundary of the conservation area, in Warwickshire, but close enough to impact upon it visually. There are the abutments of two removed bridges to the north of Banbury and a replaced modern version above the town's lock, but the rest are all on the part of the canal extended southwards at the end of the 1780's.

6.42 There are many different types of drawbridges and the Oxford Canal's are quite distinct. Typically the canal was narrowed at the bridge into a brick or stone lined bridge hole to save costs. The bridge consists of a timber-framed boarded deck attached to a diagonal pair of heavy balance beams extending over the offside abutments. In addition, there are iron rods on either side of the bridge and a fairly ephemeral railing. Beneath the beams and attached to the top of the abutments are interlocking segments of cast-iron gearing. Normally, the weight of the beams ensures that the bridge deck is in the 'up' position.

6.43 The lift bridge design is very simple but quite effective, and visually distinctive, especially when the bridges are well maintained and painted in the corporate black and white colour scheme. They do require periodic replacements, a process often neglected for as long as possible in the period before the waterway began to flourish again. The bridge by Banbury Lock was removed in 1975 but replaced by a modern hydraulically operated one when the Castle Quay shopping centre was built. The modern lift bridge at Thrupp is electric powered. Mill Lane Bridge in Lower Heyford is a modern version made of aluminium which replaced an earlier iron version installed early in the 20th century.

6.44 Complete bridge replacements are rare; where bridges have proven to be inadequate for modern traffic, the majority have been widened or bypassed. At Lower Heyford and Nell's Bridge a new bridge has been added immediately alongside the older one and the original bridge at Enslow Wharf has been bypassed completely.

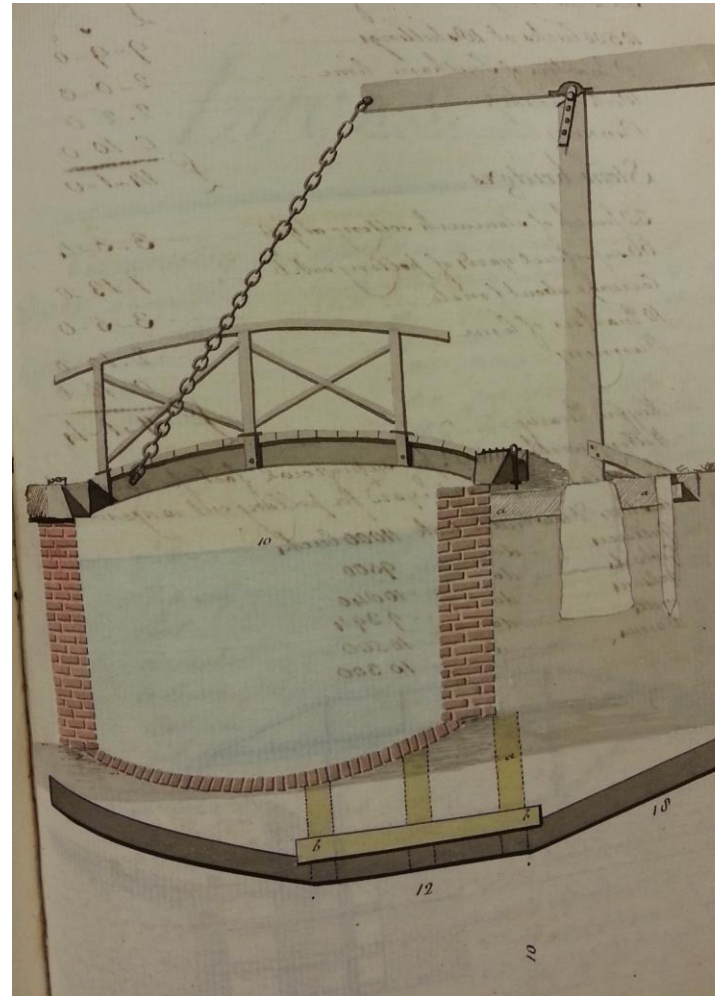
The ICE and Warwick county archive have been visited but further research is required.

*Draw bridge.*

*Carpentry to a Drawbridge*

		Contents	£	s	d
2 Ballances	18	7x7* 10x10			
2 Ballance posts	13	8x8* 8 12x12			
2 Anchor pieces	8	15x6			
2 Braces	7	7x4			
6 Anchor pieces for sills to lay on	4	10x10			
4 Piles	11	5x5			
2 Sills	12	10x10			
1 Rail	10	10x8 1/2	10.3	2/6	16 16
1 Scel	10	9x8			
3 Spring pieces	11	5x5			
2 D <sup>st</sup> ends	11	8x5			
90 feet of 2 inch planks					
6 posts for rail	4.6	4x3			
8 Braces	4.6	3x3			
2 Shank rails	11	3 1/2 x 3			
Workmanship					
Iron work					
			C. 2. 16	2. 12	6
			3. 0. 20	3. 5	6 2
			£	24	14 8
				60	2 6

13 Hollingsworth allowed for the ledges on the Oxford Canal



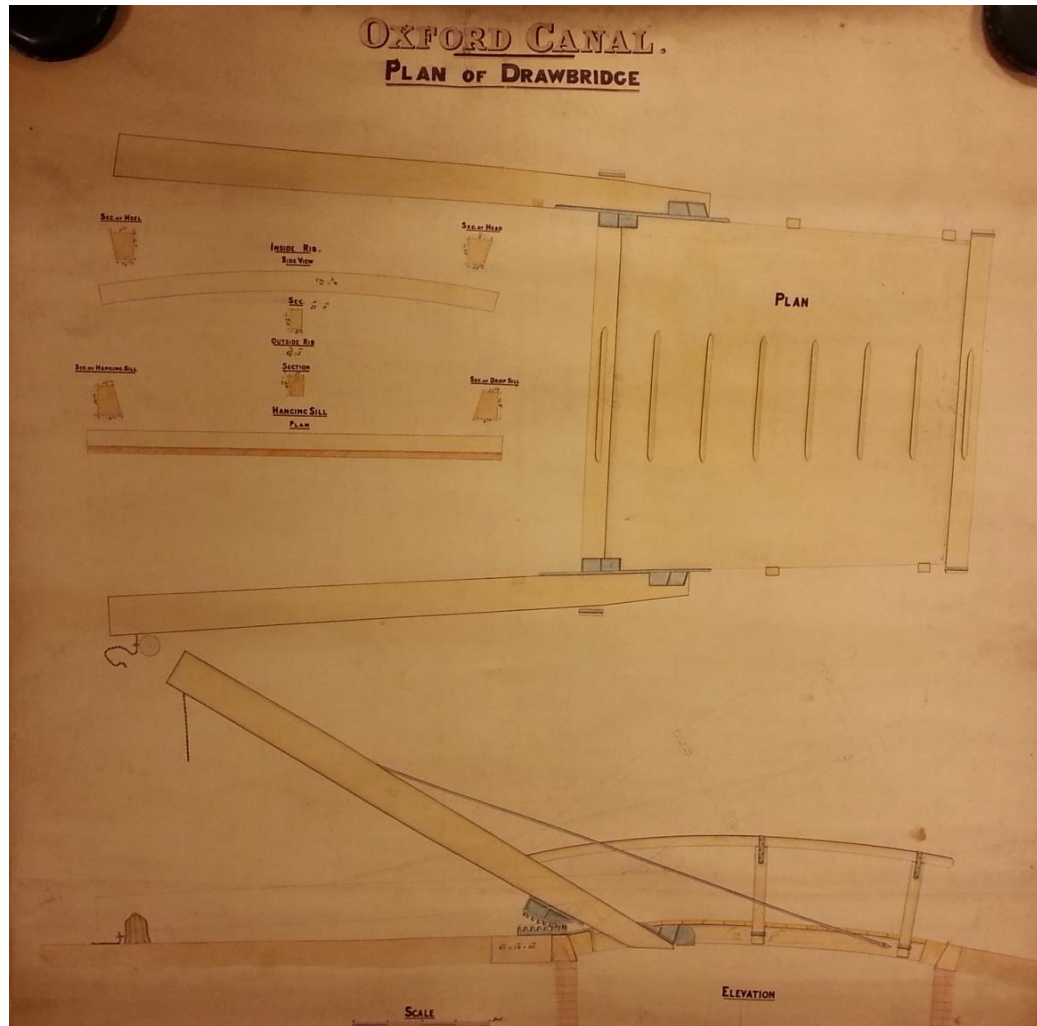
Extract from William Weston's notebook. **ICE archive.**

Early map for the Oxford Canal refer to 'drawbridge' another term for lift-bridge.

Weston's makes reference to the 'Oxford bridges' on his notes on drawbridge and alongside an illustration. It states "Hollingsworth (?) allowed for these bridges on the Oxford Canal...£60.26" having worked out the actual cost to be £24.14s.







**Warwick county archive  
ref CR1590/P255**

Drawing not dated. Archive dates it to 1859 but typography might indicate an early 20<sup>th</sup> century drawing instead.

Note curvature of the deck and handrail and grip provision on the deck.

