CLIFTON SUSPENSION BRIDGE TRUST

CONSERVATION AND MAINTENANCE OF THE CLIFTON SUSPENSION BRIDGE



Trish Johnson CEng FICE, CSBT Bridge Master

CLIFTON SUSPENSION BRIDGE TRUST

Content of Presentation

- Background
- Conservation and Maintenance of the Bridge – including current painting project
- Future Projects
- Challenges



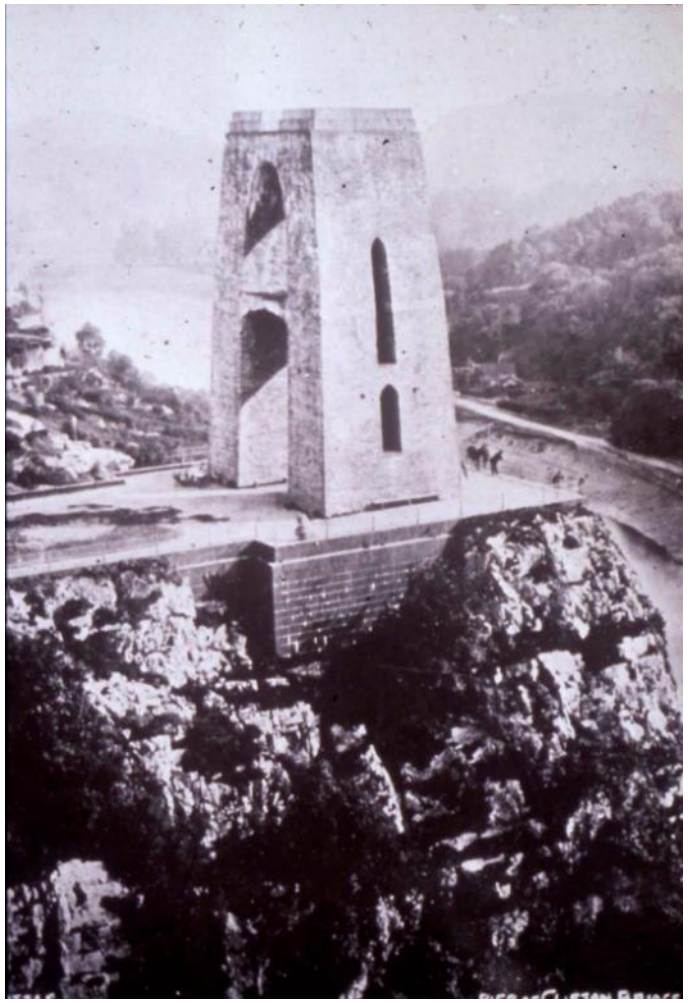
Background



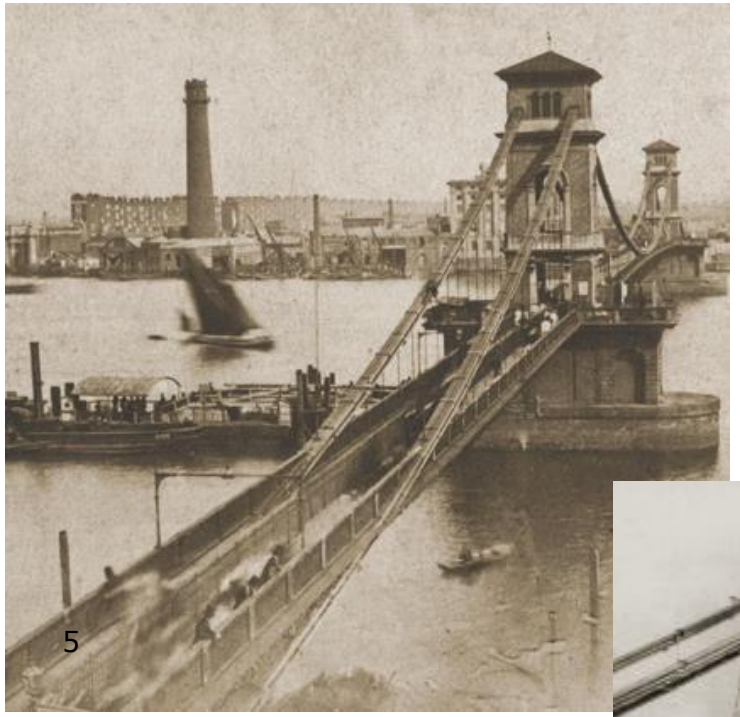
Not Just Brunel!

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A new start!







THE 1952 ACT

PART IV

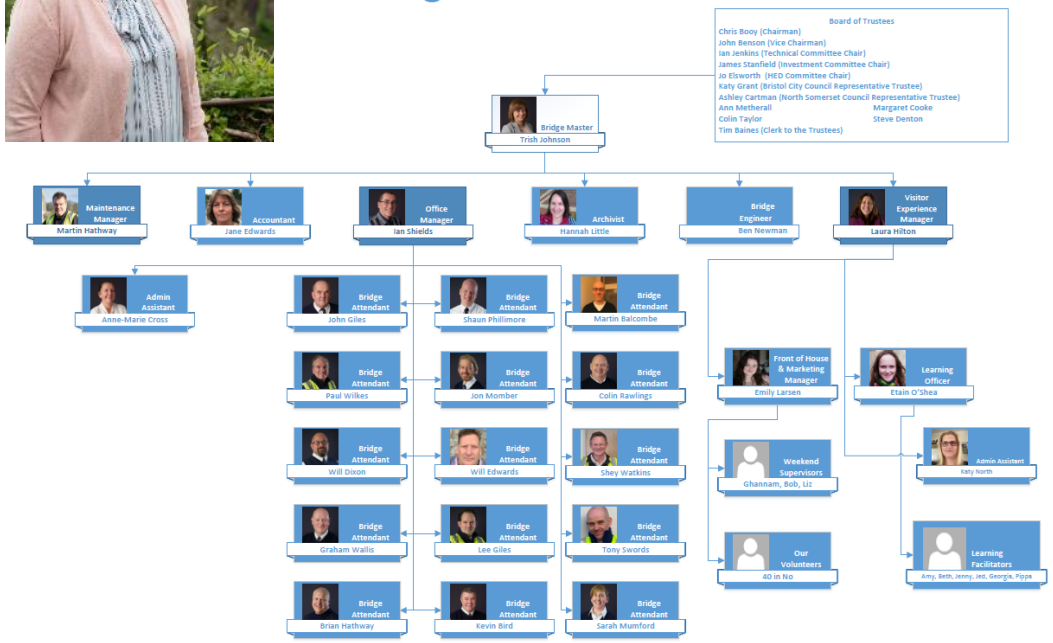
POWERS IN RELATION TO THE BRIDGE

40.—(1) It shall be the duty of the Trustees to maintain the bridge as transferred to them by virtue of this Act in proper repair and working order. Maintenance of bridge.

Current Management



Organisation Chart







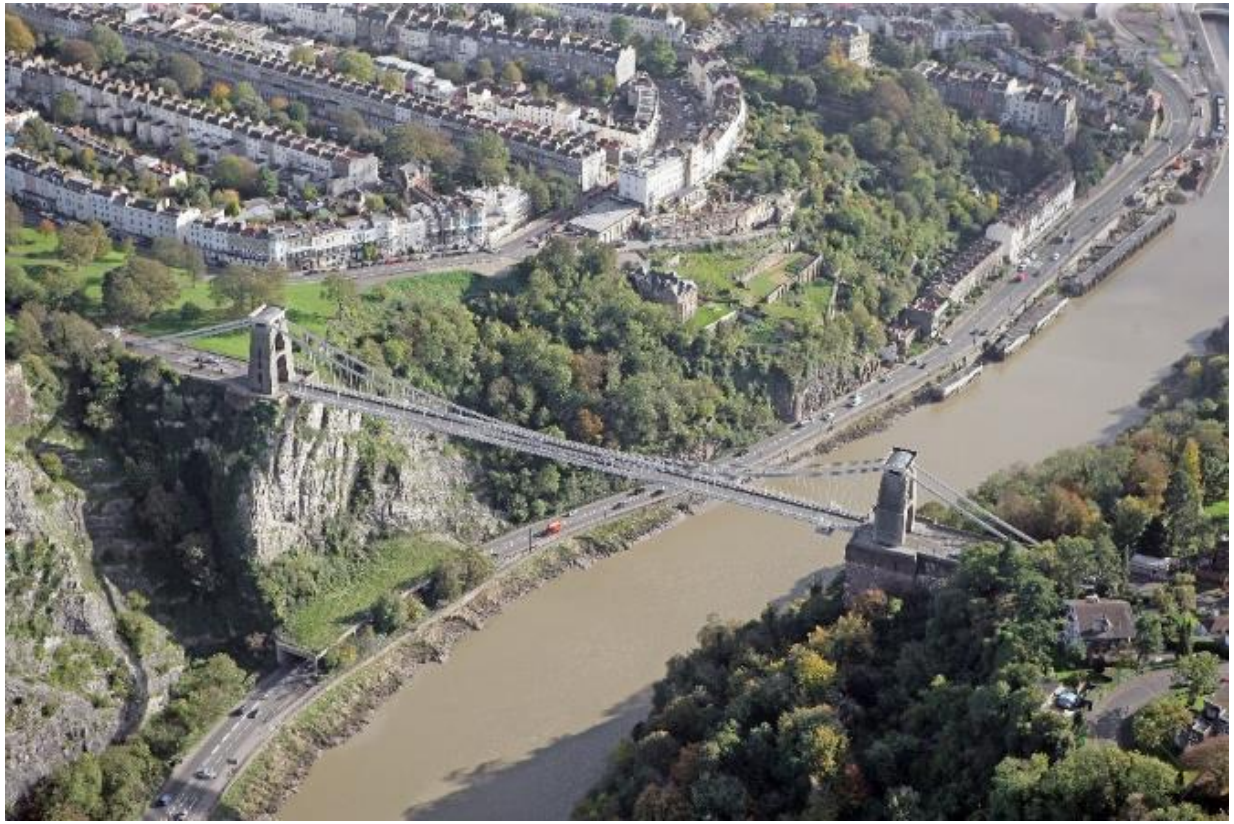









Location



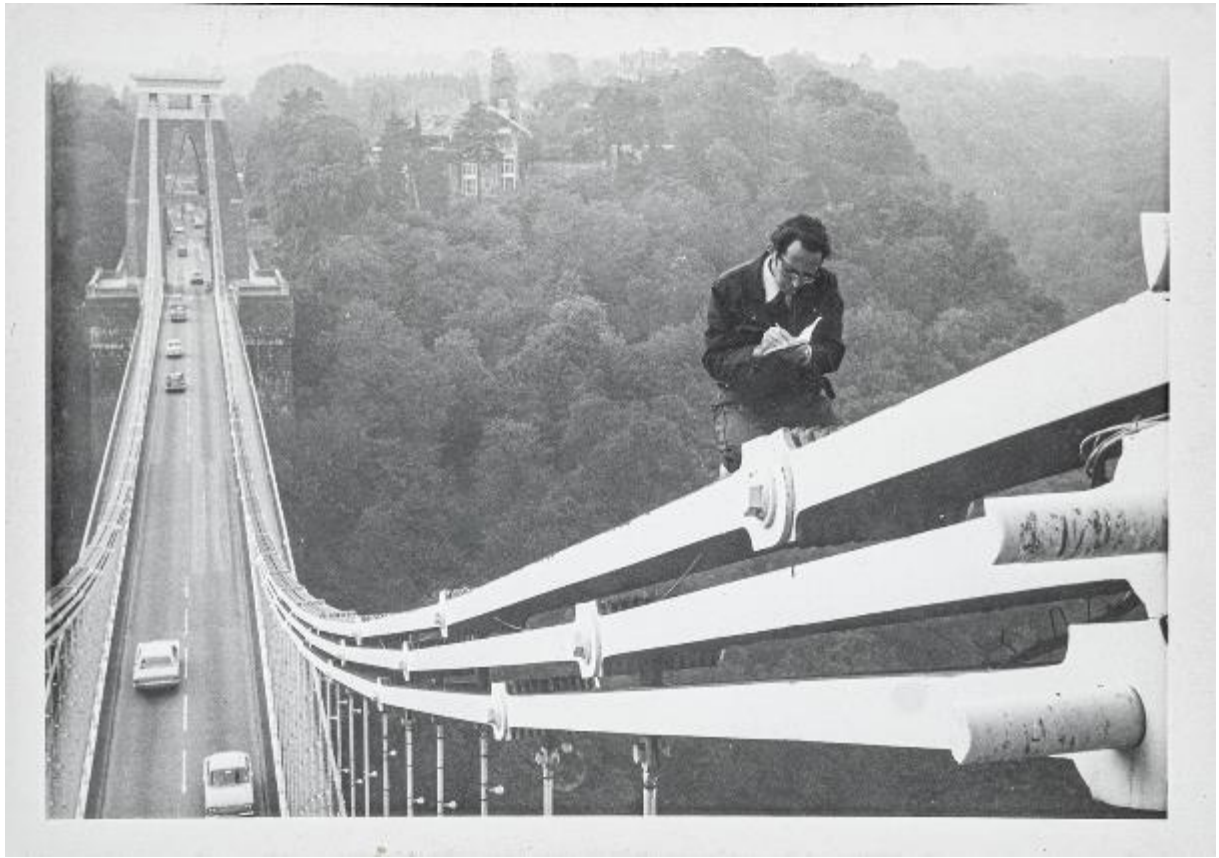


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Conservation and Maintenance of the Bridge



Bridge chains

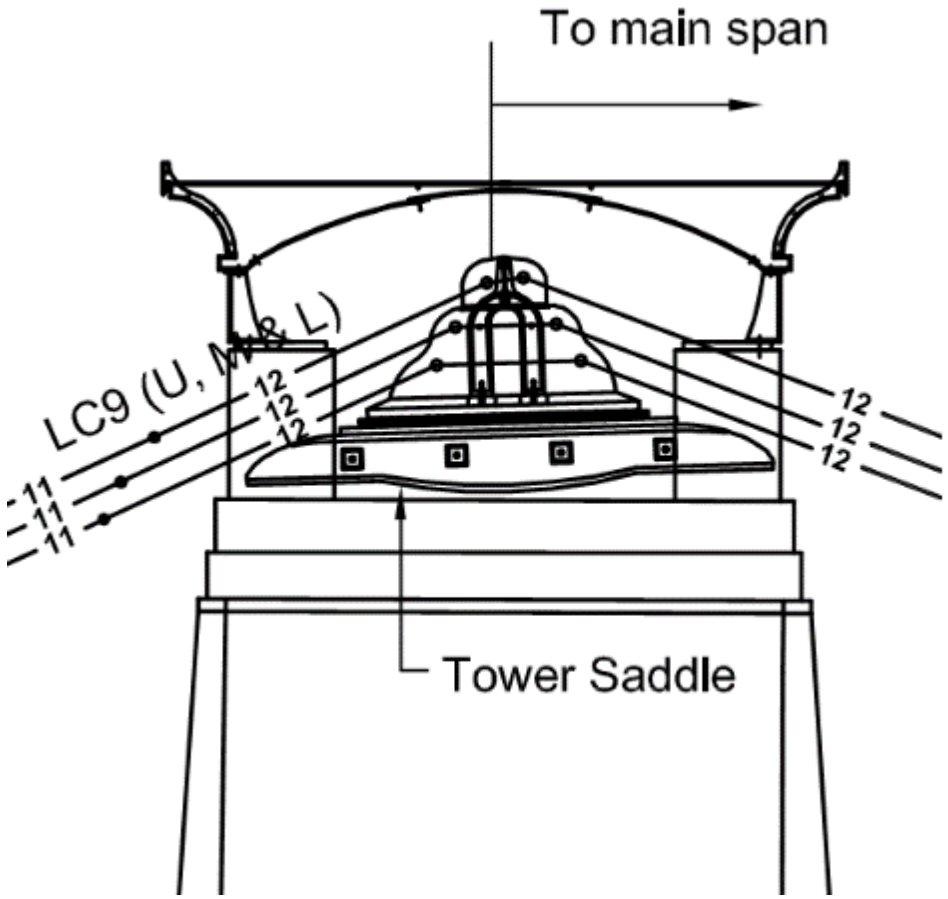




Bridge chains

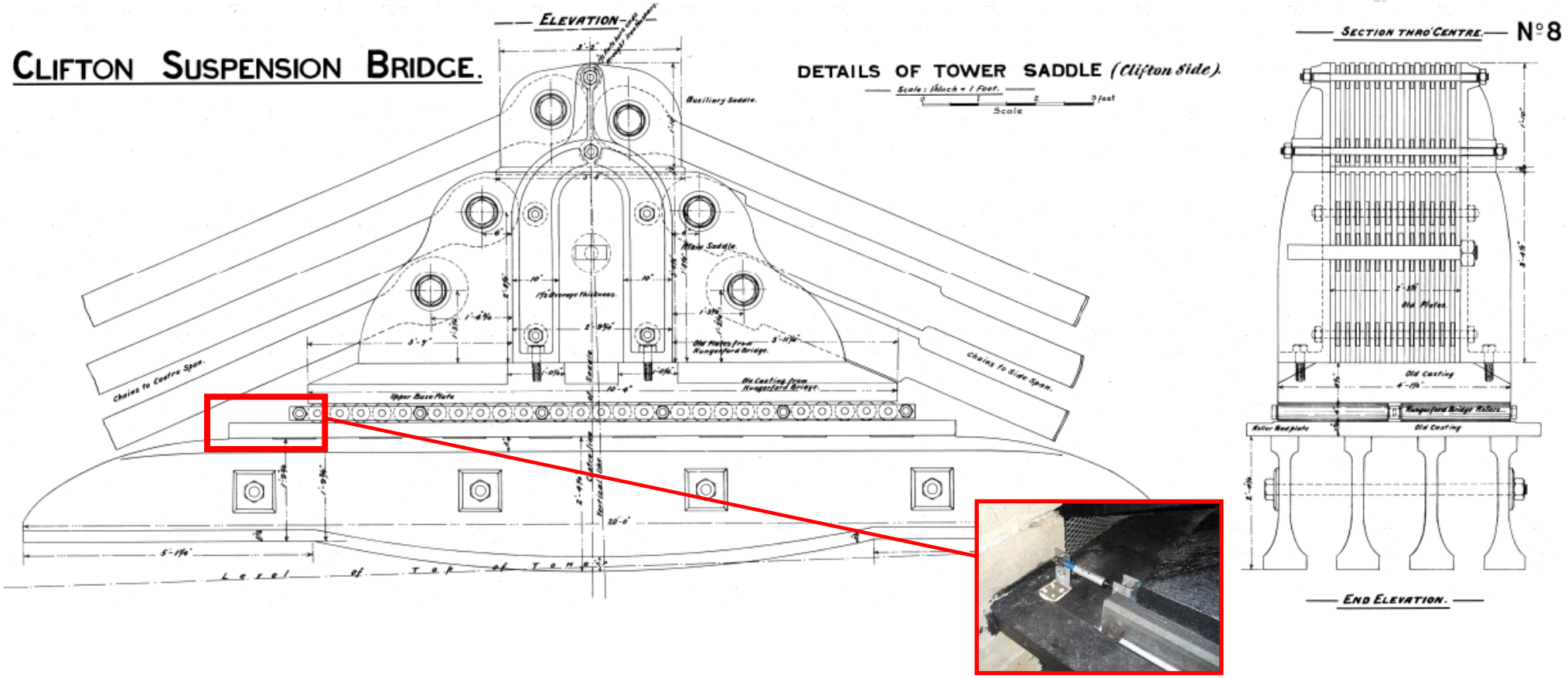


Tower chain saddles

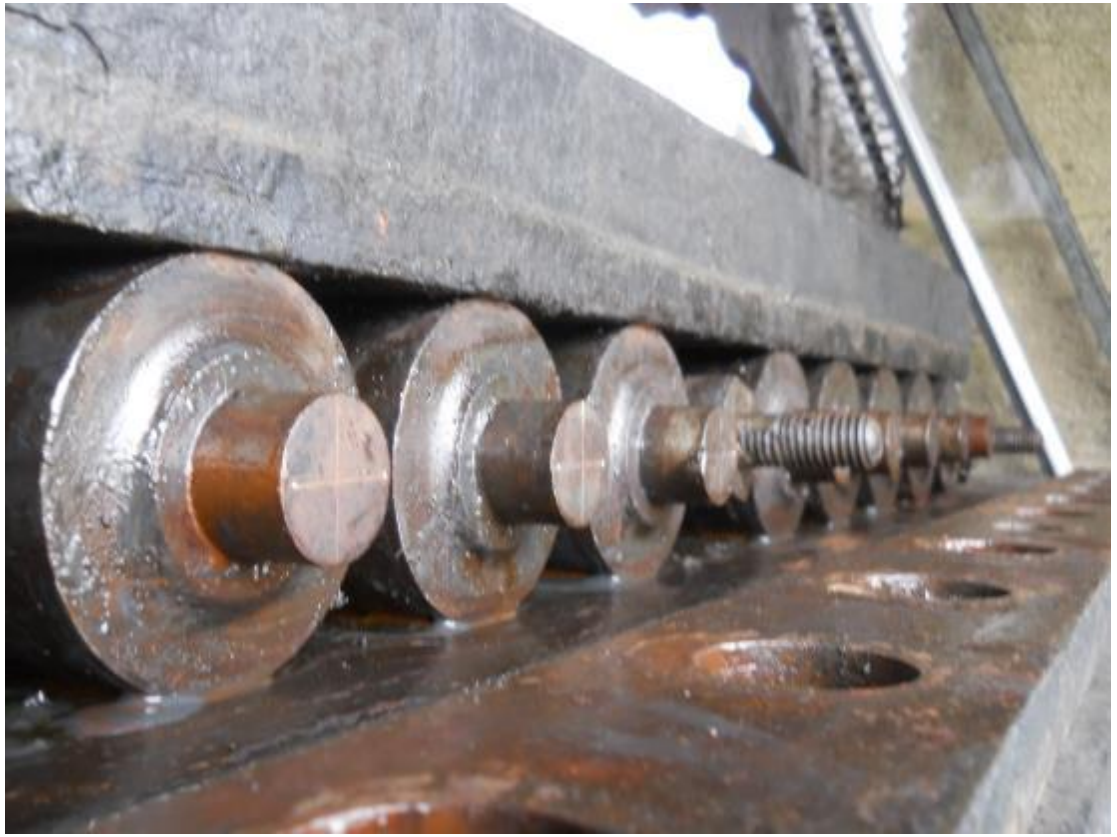




Tower chain saddle movement monitoring



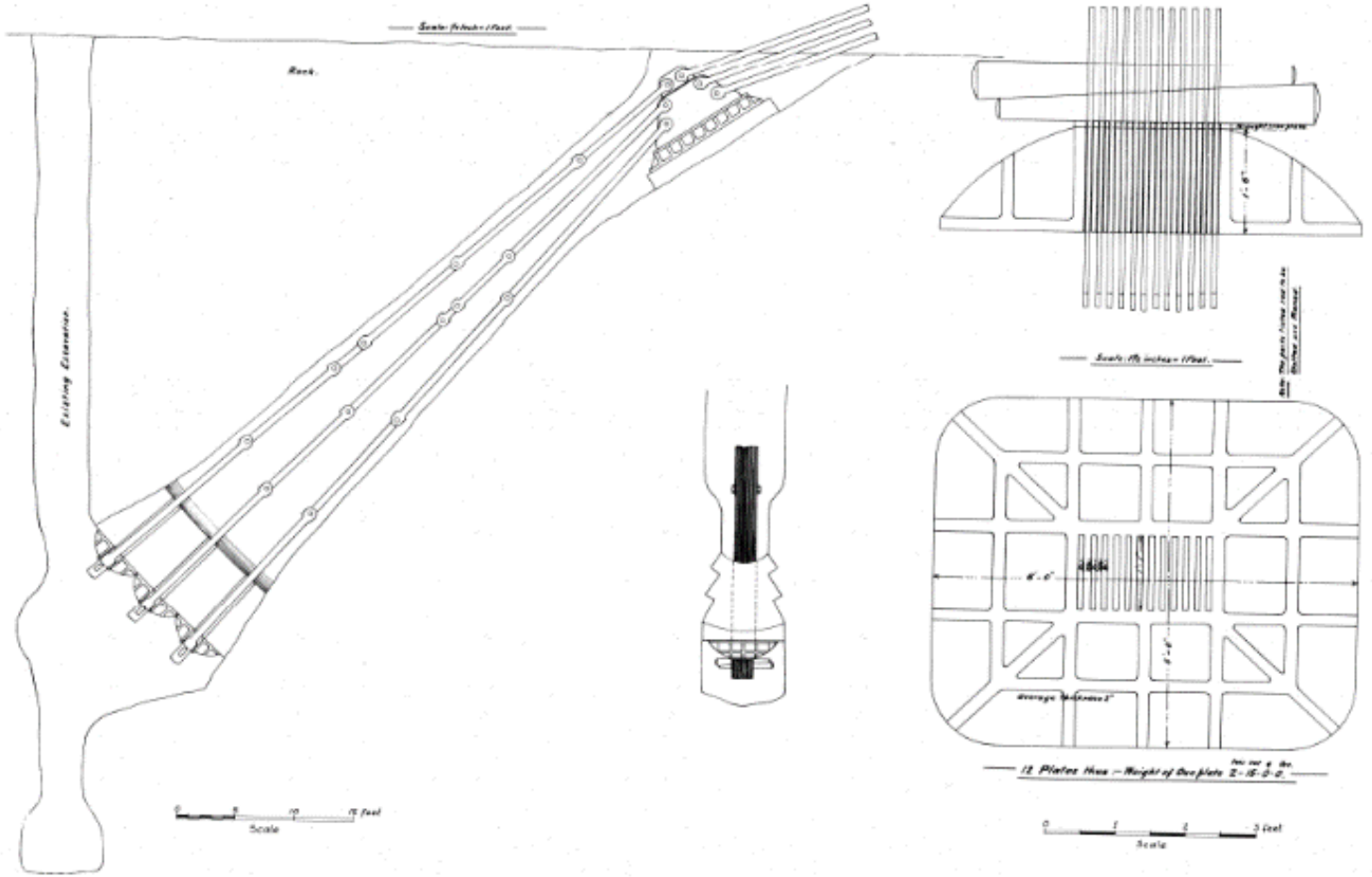
Tower chain saddles





Bridge anchorage chains





Anchorage strengthening, 1925 and 1939



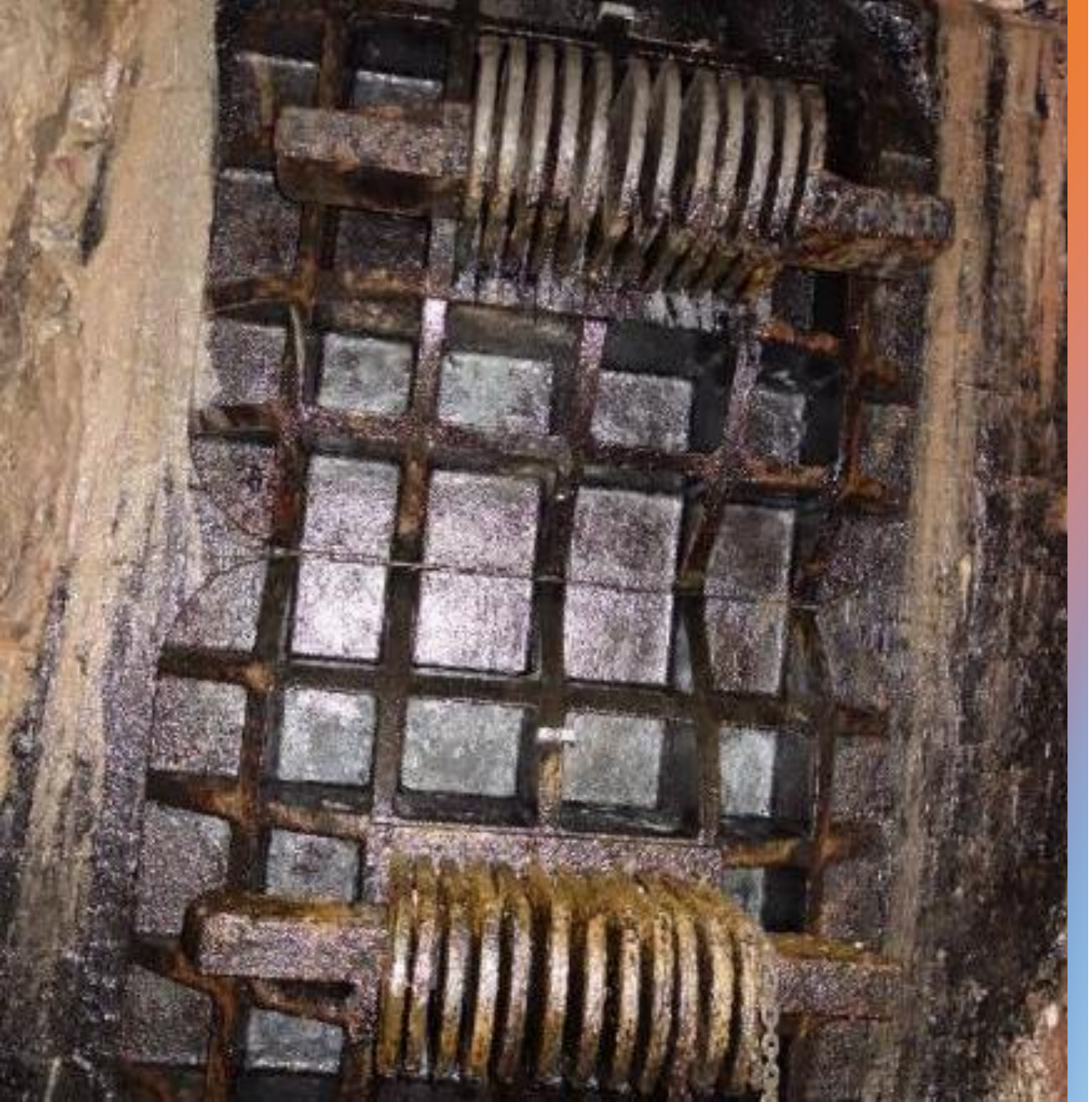
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Anchorage inspections



Only 20m to go!



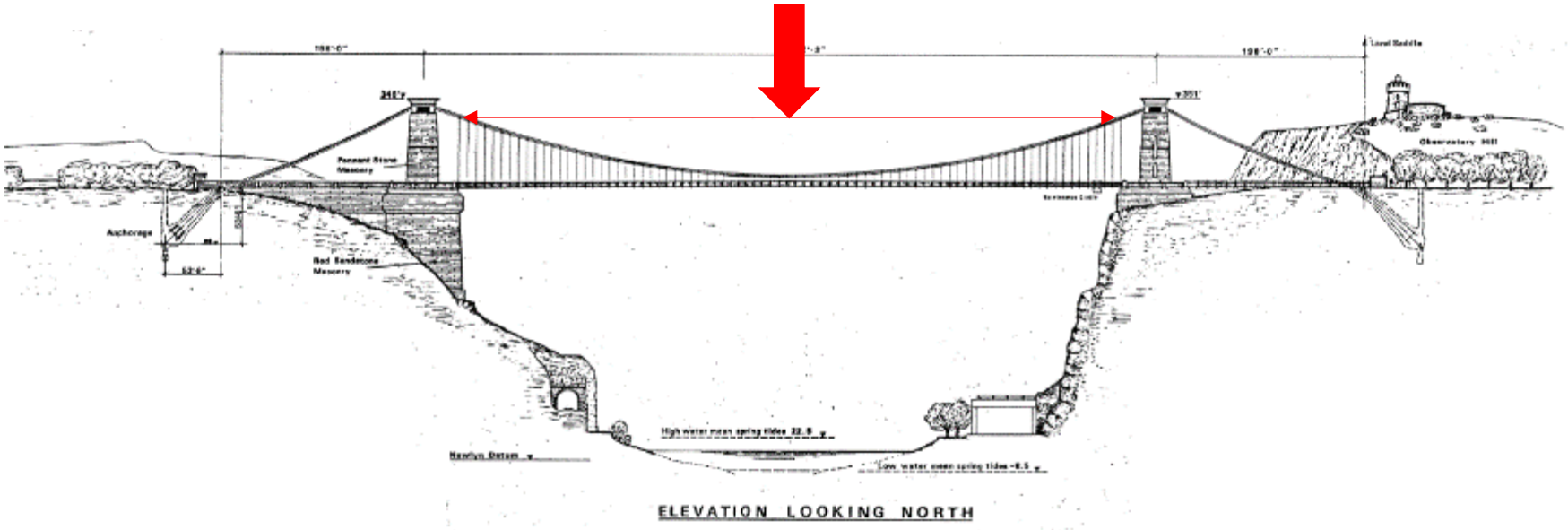


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Anchorage plates

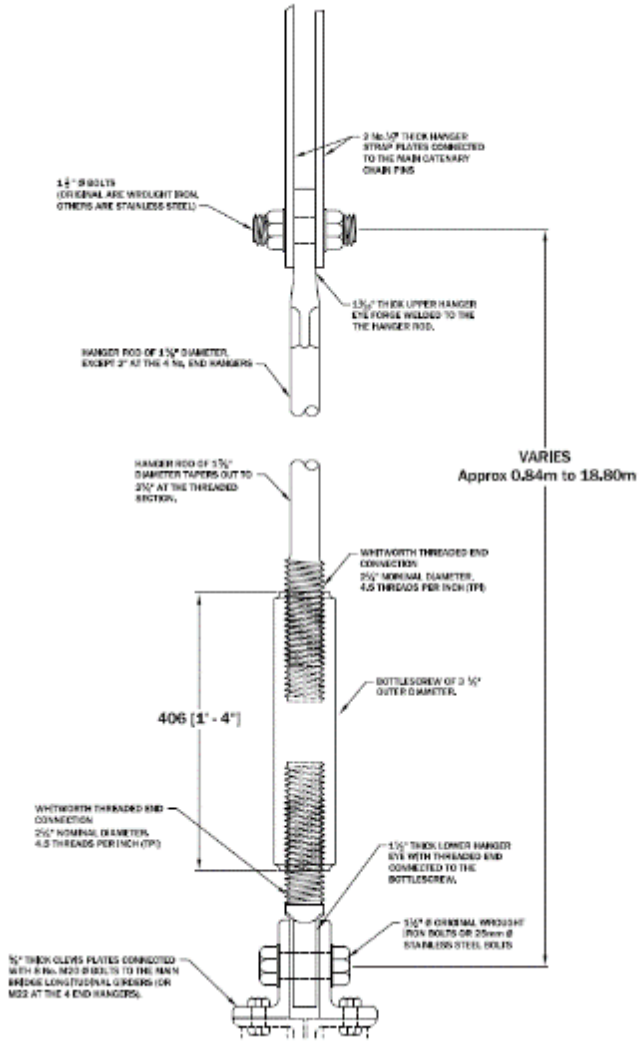
Hanger Refurbishment

2009-2022: Hanger refurbishment

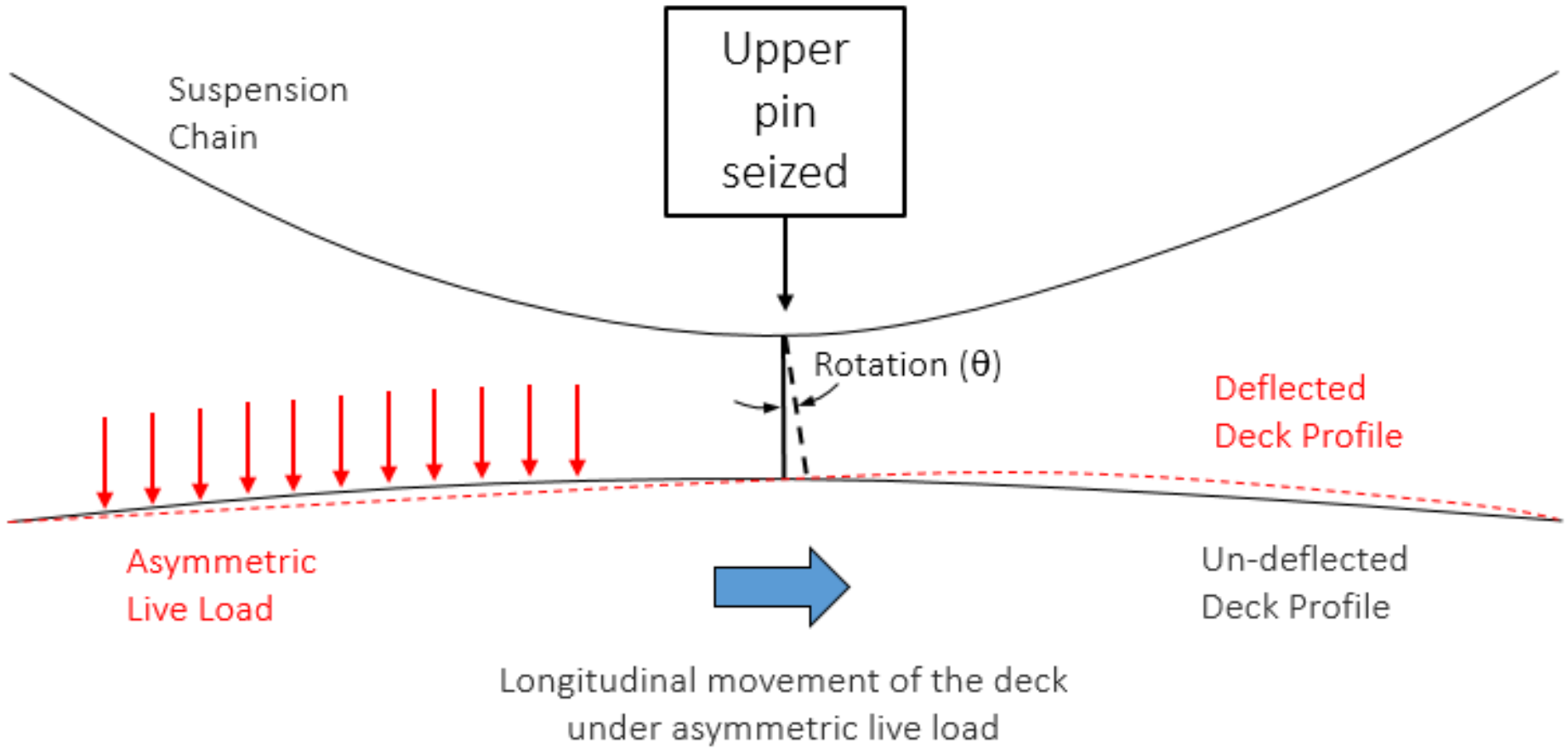


2009 Short Hanger Failure





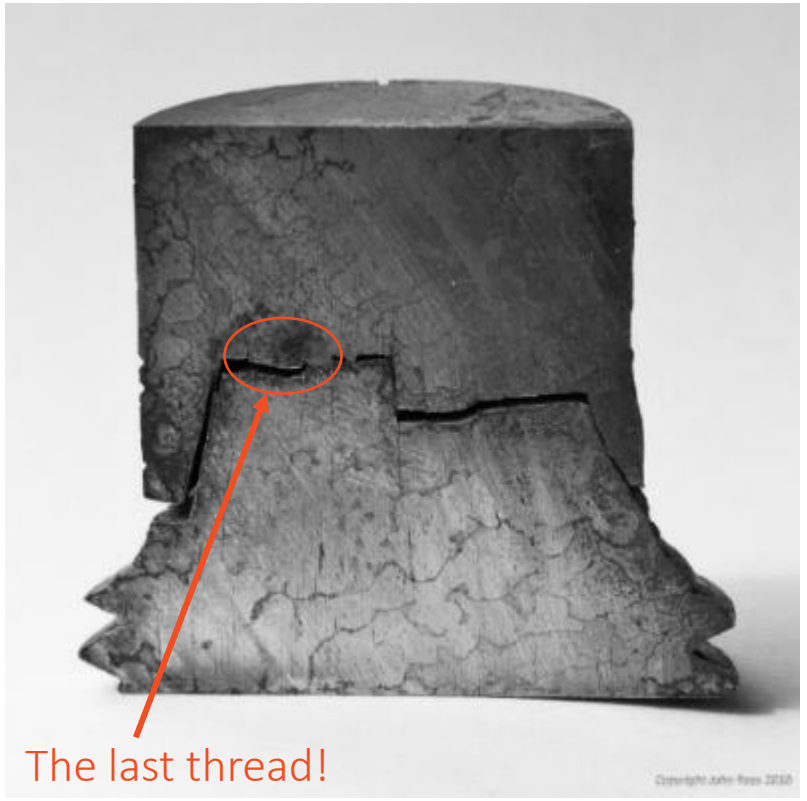
Hanger Refurbishment



A slow process!



Axis of bridge



Reactive maintenance – Hanger Refurbishment











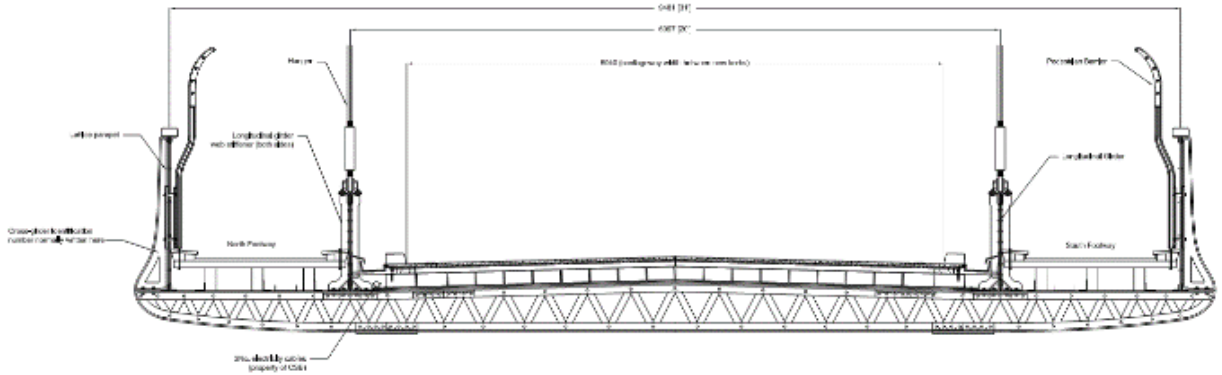
Limited Hanger Replacement





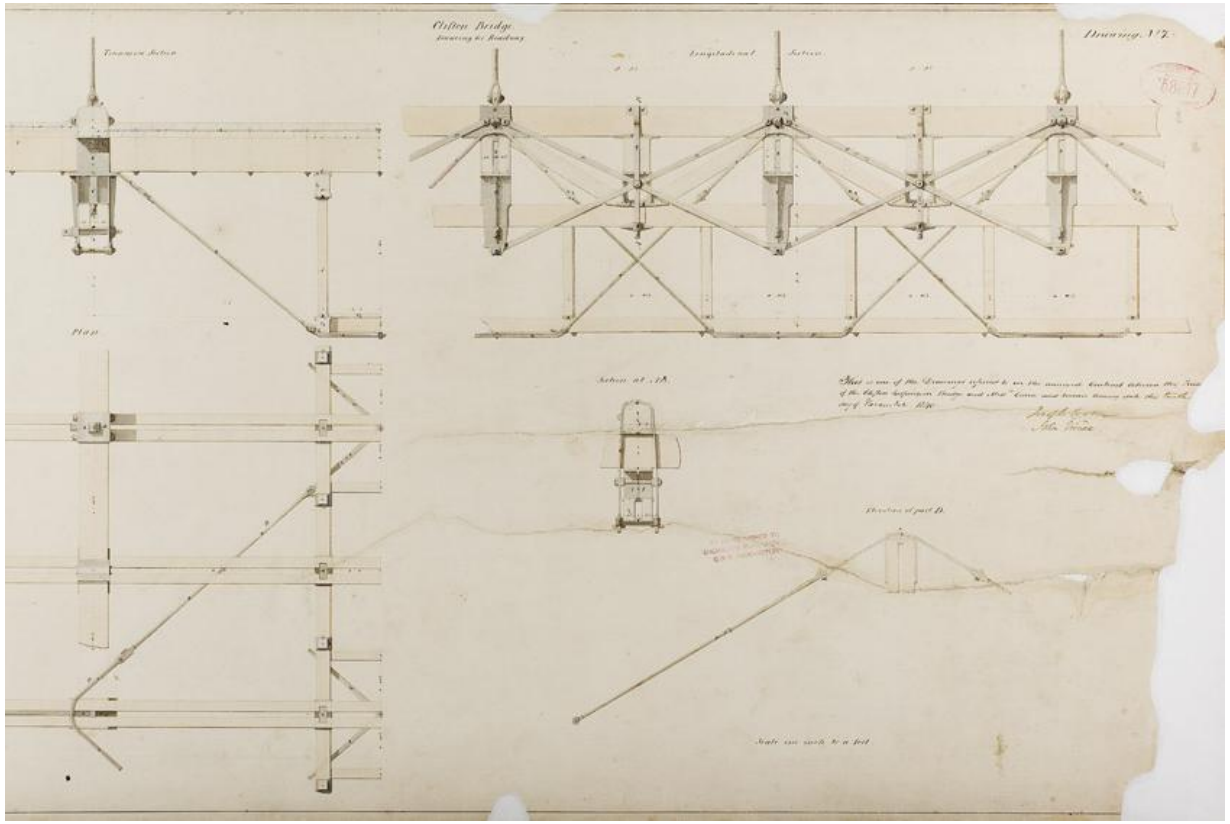
Bridge Deck

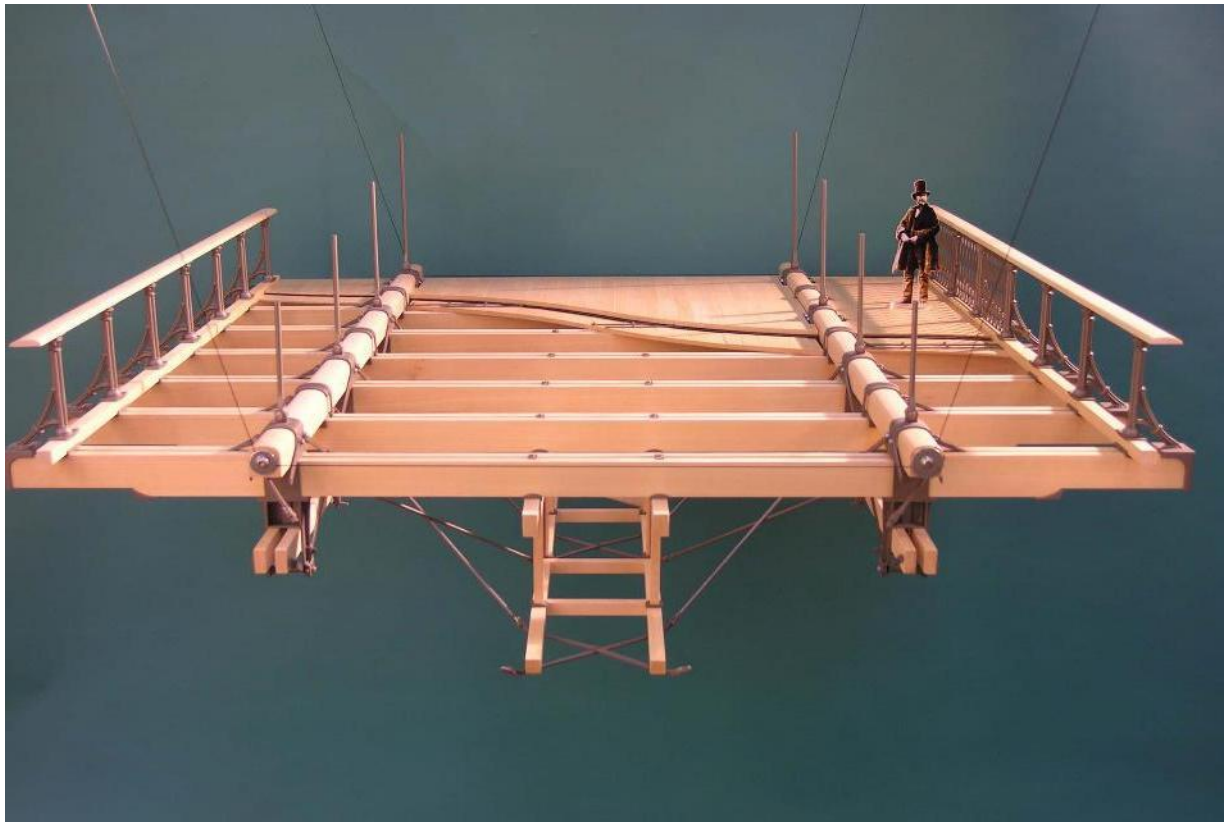




Typical Cross Section Through Bridge Deck

Brunel's Design

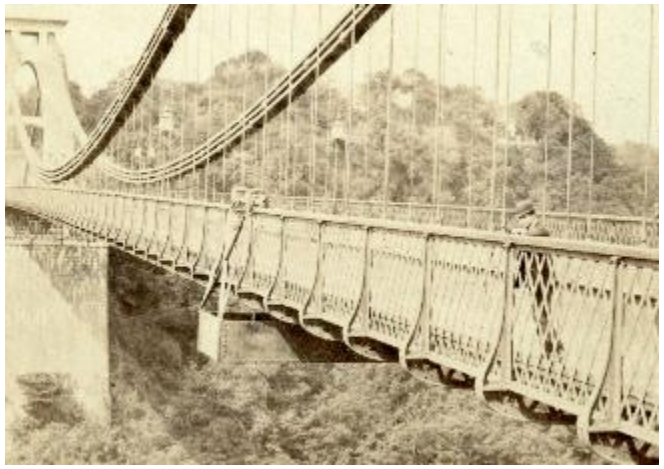




The bridge deck underneath



Underdeck gantry











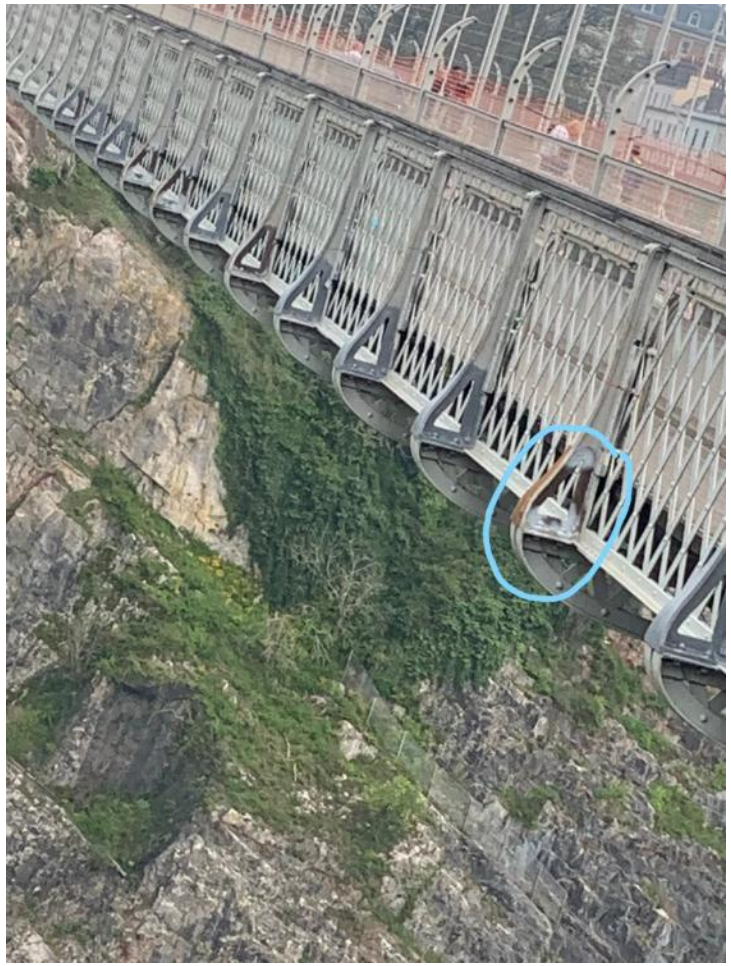
1955 Underdeck Painting



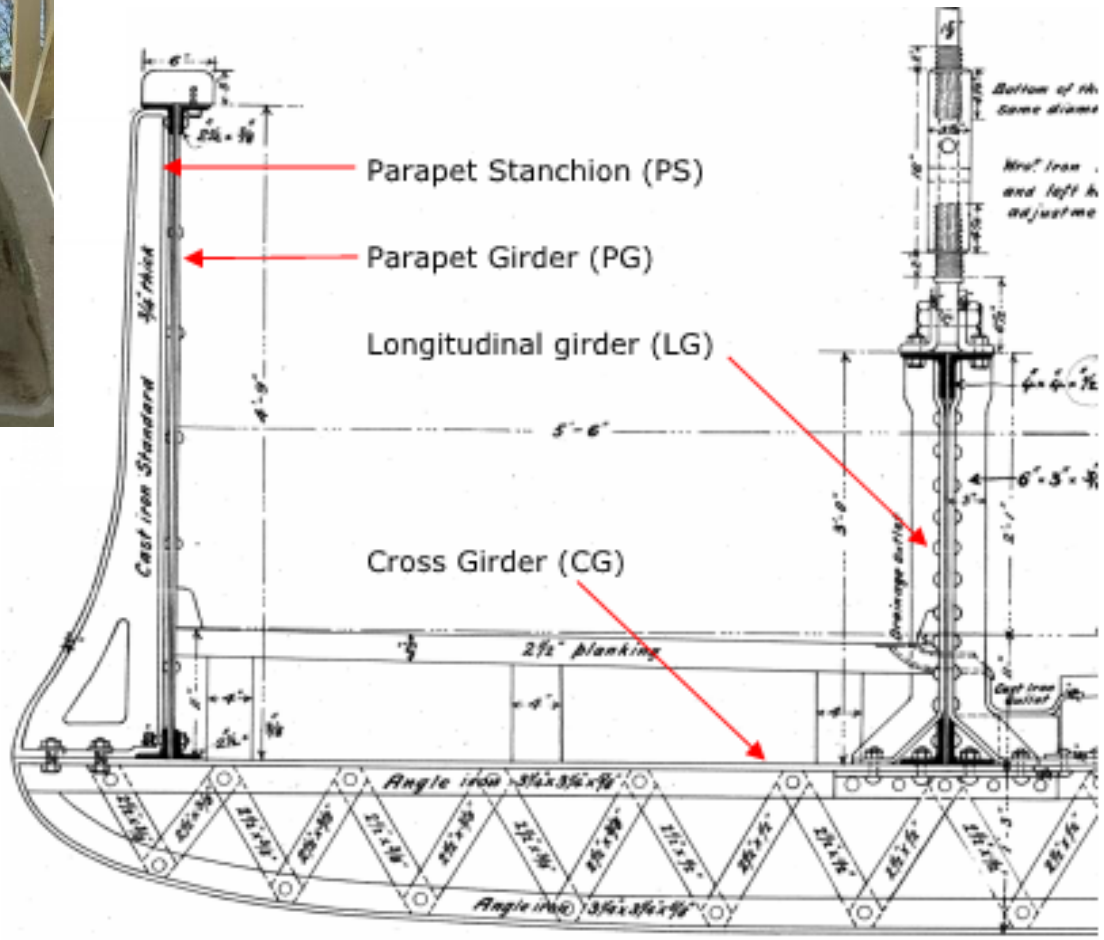
2016-2017 Underdeck Painting



Planned Maintenance – Stanchion Replacement







Planned Maintenance – Stanchion Replacement





Planned Maintenance – Stanchion Replacement







Foundation Stability Study

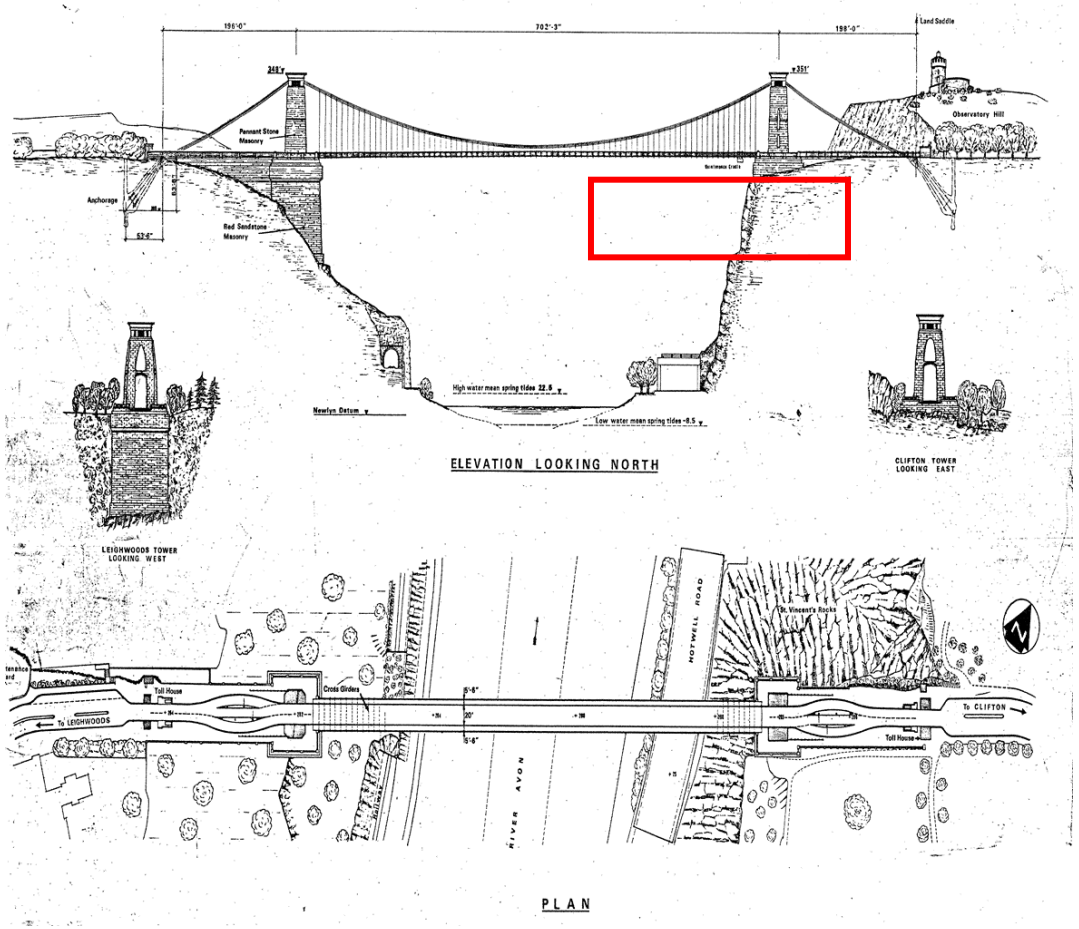
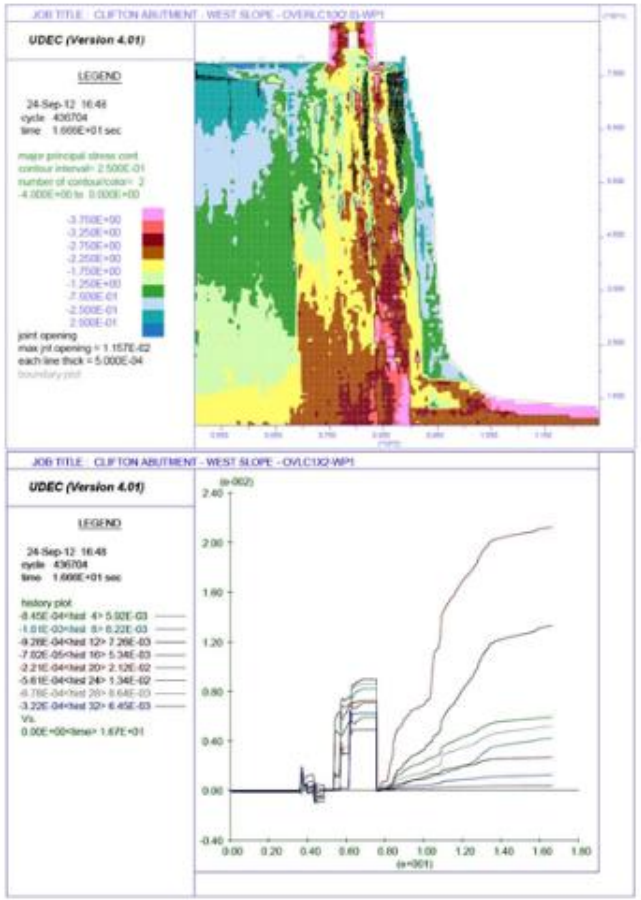


FIGURE III-B.25

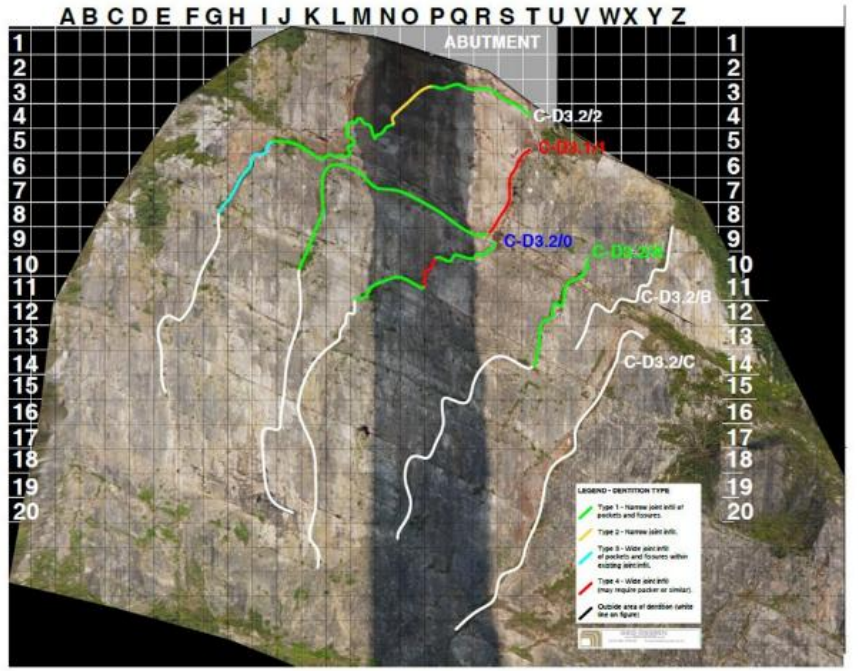


CLIFTON ABUTMENT - ZONE B (SOUTH WEST SLOPE)
UDEC ANALYSIS - OVERLOADING CASE (LC1) x 2

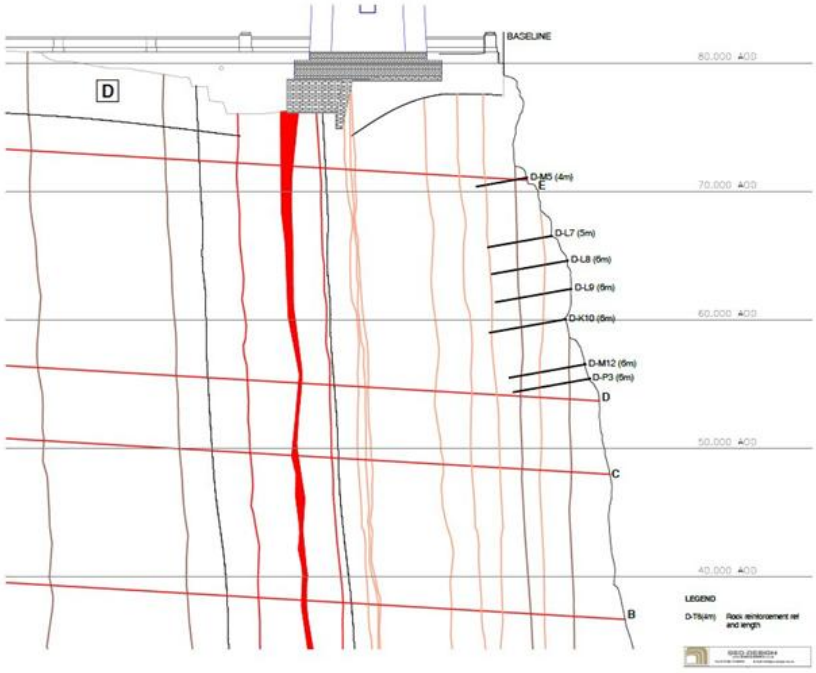
Top: Induced major principal stress field
Bottom: Histories of x-displacement

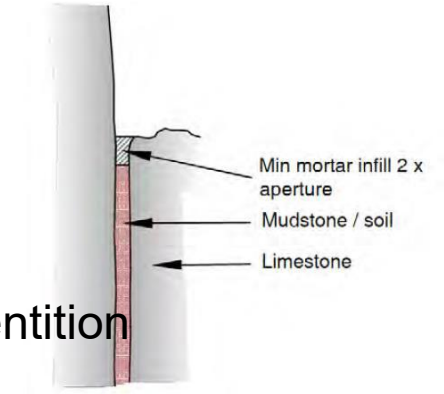
Works – Abutment Stability



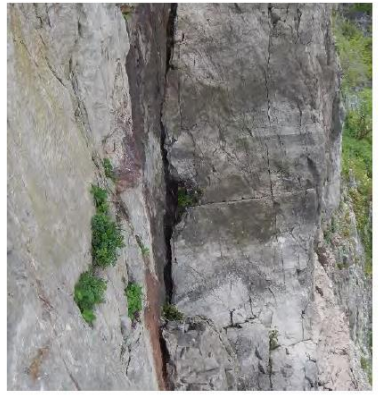


Rock Bolt Locations & Lengths





Dentition



Archive







ACCREDITED MUSEUM

Bridge Refurbishment Project



Replace timber gantry rail

Remove, repaint, reinstate anti-climb barrier (162 panels & posts)



Repaint latticework

MPI of 162 stanchions

Replace 3No. stanchions

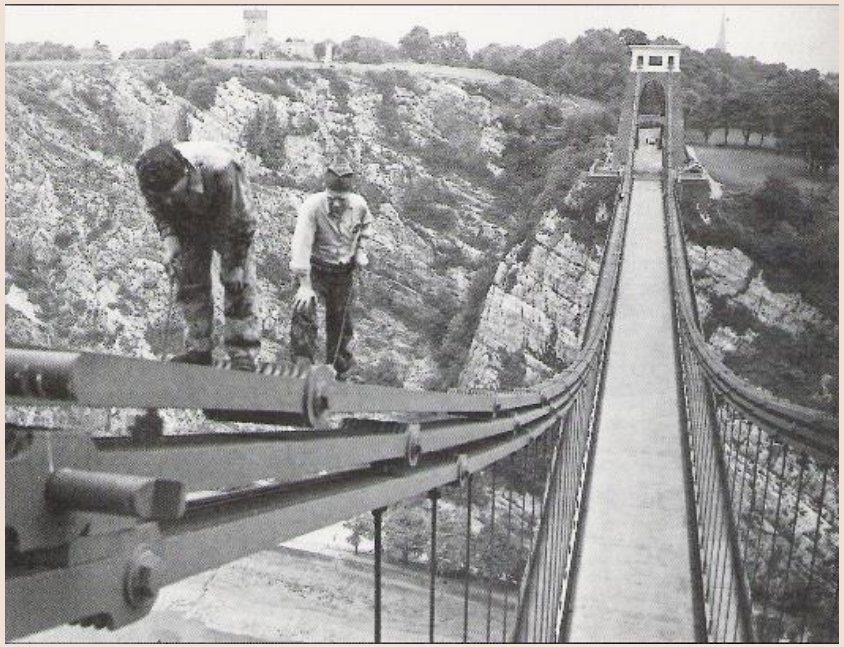
Project Team



Previous Projects

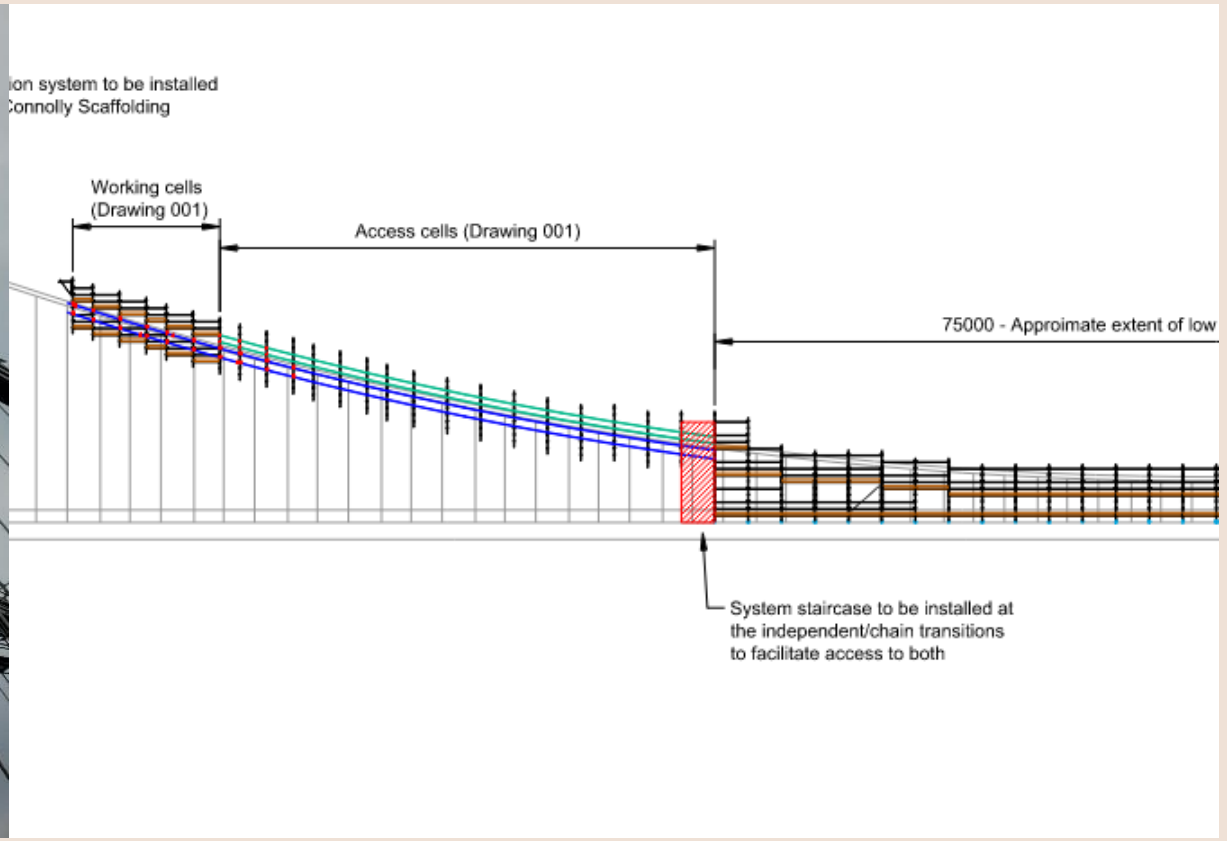






Access Methodology





Chain Painting





Parapet Painting





Lighting


CLIFTON SUSPENSION BRIDGE
CLIFTON SUSPENSION BRIDGE TRUST
LIGHTING DESIGN
STAGE 2
Rationale - Architecture.
Combined kit of parts.









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FUTURE PROJECTS



Gantry Replacement

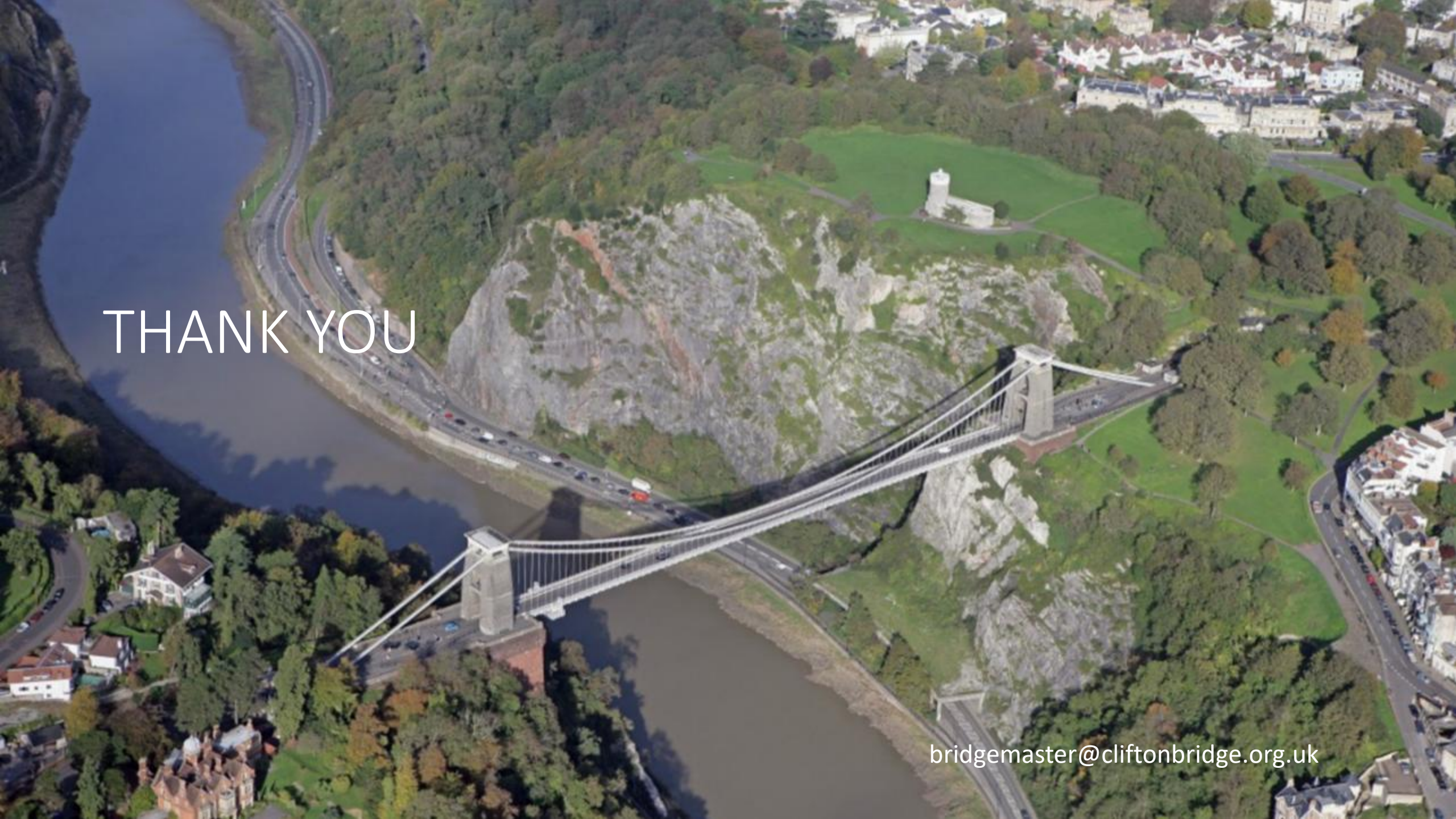




Challenges

- Understanding what was done in the past – records
- Our unknowns – know what we don’t know
- Grade 1 Listed Structure
- Visitor Attraction
- Open to traffic / pedestrians
- Budgets / Programming
- Maintain to perpetuity
- Media




THANK YOU
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