

A View from the Bridge

for the Friends of the Union Chain Bridge

Restoration Progress Supplement – No 4 – January 2021

Here's the link to the latest drone update – 13th January

<https://vimeo.com/500098163>

The Restoration contract resumed in wintry conditions on January 4th, after the Christmas and New Year break and the Spencer team continued with the essential preparatory works leading up to the start of dismantling in the second half of the month. This is the contract projection between now and the end of 2021, when the works are expected to be complete and the Bridge re-opened to the public.

SEPTEMBER 2020 – JANUARY 2021

Phase 1 - Preparation

Erection of comprehensive on-site welfare and maintenance facility at Chain Bridge Honey Farm. All the Bridge elements will be taken to this contract hub for refurbishment.

Construction of a compound adjacent to the Scottish tower for essential construction vehicles and cranes; and to allow vehicles to turn before returning to the B6461

Provision of a compound on the English bank, above the English tower and the construction of a temporary cable anchor for the Blondin cableway, a temporary access system to carry the Woodliner crane described in Newsletter no 3, and cradles and an under-Bridge platform to allow workers close access to the Bridge structure for dismantling the Bridge elements.

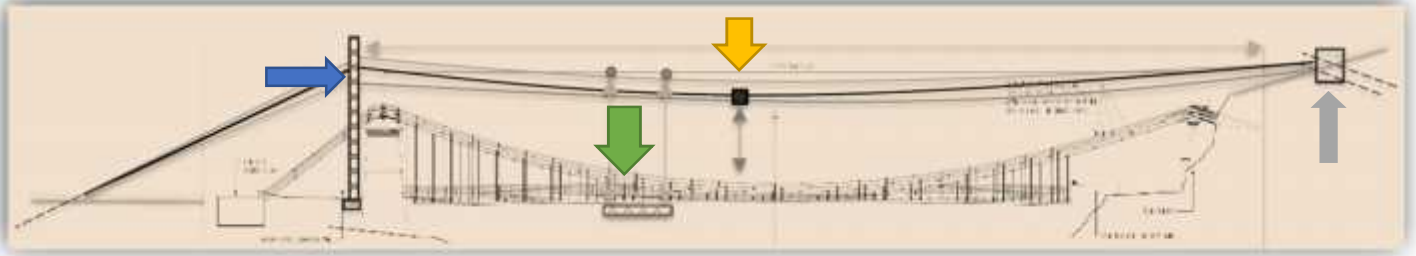
Diversion of the BT cable suspended below the Bridge via a downstream installation.

Construction of a temporary lattice tower on the Scottish side, adjacent to the masonry tower, to accommodate the cableway.

Construction of a steel-frame access tower in front of the English masonry tower, to allow essential masonry repair works to be carried out and to provide access to the top of the tower for the installation of new rock anchors.

Removal of the decking plywood highway surface, exposing the timber substructure

All the above now completed



Sketch of the access system – Spencer Group/VIM



The drawing above is a more accurate representation of the current dismantling arrangements than that shown in our April 2019 Newsletter and on pages 38 and 39 of *Spanning the Centuries* when it was planned to dismantle the Bridge - and later to re-assemble it - from pontoons moored in the River Tweed underneath the superstructure. This drawing shows the Spencer Group solution, with the



“Blondin” aerial cableway (see details below) and associated installations. The **blue arrow** shows the lattice tower adjacent to the Scottish masonry tower, to accommodate the cableway. The **green arrow** shows the under-deck cradle which will allow workmen to access the Bridge decking from beneath, replacing the pontoon-mounted cherrypicker which was originally proposed. Other cradles suspended on to the two Bridge footpaths will enable the workforce to dismantle the Bridge components from deck level. The **yellow arrow** identifies the cable for the Woodliner self-propelled crane (*left*) described in Newsletter 3, while the **grey arrow** shows the location of the English-side temporary cradle anchor for the cableway and the Woodliner dock.

JANUARY to APRIL 2021

Phase 2 - Dismantling



Phase 2 of the restoration began on January 18th with the removal of the 1903 steel cable wires (*left, arrowed*) and their hangers. You’ll recall that these were installed by the Tweed Bridges Trustees after they had received a report from their Surveyor, H Sneyd-Kinnersley, that the Bridge was becoming unsafe and incapable of supporting the loads to which it was subject. Recent surveys have shown that the rope serves no useful purpose and may actually have been damaging the Bridge by restricting its natural movement. It will not be replaced. We’ll be referring to the rope again in our March Newsletter.

The following work will be undertaken during the second phase:

Removing the 1903 cables and their hangers **completed week-ending 22 Jan - see Gallery**

Removing the entire handrailing and balustrades

Removing the entire timber bridge deck

Removing all the hanger rods

Removing all the suspension chains

All the removed components will be taken to the Honey Farm hub where the items which will be reused will be logged and stored ready for refurbishment.



During Phase 2 of the restoration, the Blondin access system (using technology employed in installing and maintaining ski-lifts and cablecar systems in the Alps) will come into its own, carrying cradles over the Bridge and a platform beneath, to allow the team close access to all parts of the Bridge structure during the dismantling process, and avoid the need to work from a pontoon in the river, as was originally intended.

The cradles and platforms are clearly seen in the film clip accompanying this Newsletter. The link is at the top of page 1.

Spencers and their French sub-contractors VLM have installed five cables supported by the temporary lattice tower and anchor on the Scottish side (*shown above*) and a temporary cable anchor on the English side (*left*) above the English masonry tower – virtually a second suspension system above the suspension bridge.

The first cable runs high along the centre of the Bridge, to support



the Woodliner cable crane for the transportation of Bridge parts and materials. The remaining cables, also sitting high above the Bridge, will be used to support the access cradles and platform. Two hang slightly outbound of the main Bridge suspension chains to allow the suspenders (or hangers) for the underslung platform to hang either side of the Bridge; the remaining two hang slightly inside the main Bridge suspension cables to accommodate the personnel access cradles.

The timber deck elements are the first to be removed; the main transverse and longitudinal elements are about 5.5m long and are being taken off starting from the centre of the span and working outwards (*left*)

APRIL to JUNE 2021

Phase 3 - Restoration

At the end of Phase 2, nothing will be left of the Bridge apart from the two masonry towers which will themselves be fully restored during Phase 3, using special mortars and, where necessary, stone from the same Swinton Quarry (some 7 miles distant on the Scottish side) that supplied the original stone in 1819/20.

To ensure that the components are properly tracked and restored in the correct order, they will be checked out of storage in small batches and transferred to an on-site blasting facility where they will be grit-blasted to remove the existing paint and rust before a detailed inspection. If any damage is identified the component will be replaced.

All the components will then be repainted at an on-site painting facility before being checked back into storage ready for re-assembly.

JUNE-SEPTEMBER 2021

Phase 4 – Re-assembly, Road remodelling and Parking provision

SEPTEMBER-DECEMBER 2021

Phase 5 – Reinstatement of Compounds etc and Contract Completion

Photo Gallery



The removal of the Bridge decking is a long and painstaking job and a working day in the middle of the Bridge in mid-January requires considerable personal insulation.



January 18th at 9am; an early morning staff briefing at the start of a week that would see the removal of all the wire rope hangers and the two wire ropes themselves, as well as the continuing removal of the decking materials and completion of the English tower access platform.



The English tower access platform; a substantial steel erection immediately in front of the English tower, to be used for several operations including the de-tensioning of the chains prior to disconnection; the reception of chains hauled across by a series of winches; to facilitate the boring of multiple-strand anchors into the rock; and the restoration and, where necessary, the replacement of the tower masonry. The Rose and Thistle crest (and that on the Scottish tower) will be removed from the tower for restoration. The Woodliner cable crane can just be seen in its dock above the tower.



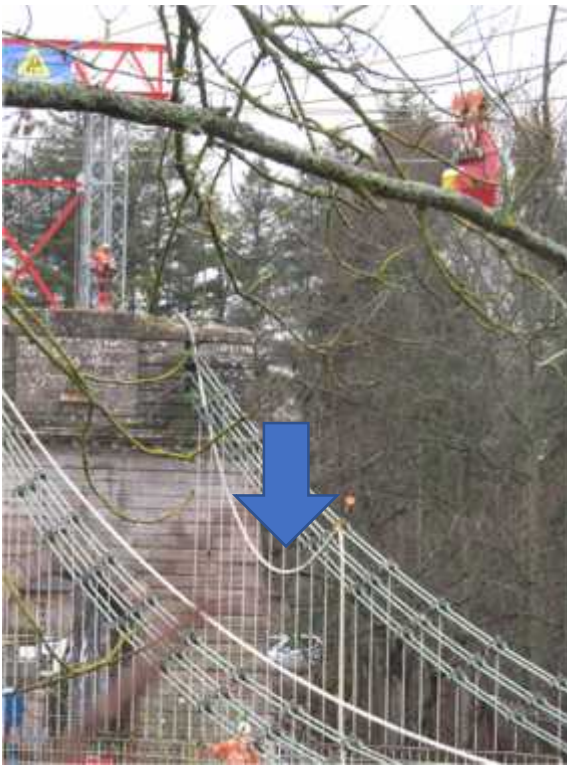
Removal of the decking material has continued daily since work resumed after the Christmas break.



January 19th – Working from one of the personnel cradles at wire rope level and from the underslung platform at deck level, members of the Spencer workforce detach and remove the last of the wire rope hangers, at the English end of the Bridge, having worked their way across from the Scottish tower. Five days are allowed for completion of this work, but it is achieved in two days.



Another image of the cradle and platform; the man in the foreground is adjusting the working height of the platform with a ratchet spanner.



On January 20th the downstream wire rope (arrowed) is detached and lowered to the deck 117 years after its installation. It is thought that during that time it served no purpose except as a secondary means of deck support, an insurance measure, to take the strain of the Bridge if the primary support – the chains themselves – suffered catastrophic failure.

The Woodliner cable crane, which assisted in the process, is visible behind the tree branch.



The rope, (arrowed) having been fully lowered to the deck, is now cut into manageable lengths for removal to the Project depot.

The Project Team

The Spencer Group Northumberland County Council Scottish Borders Council Museums Northumberland
The Friends of the Union Chain Bridge The National Lottery Heritage Fund

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