

Julia Bullock

From: Ben Savage
Sent: 31 January 2023 09:41
To: Planning
Subject: FW: NYM/2021/0263/LB
Attachments: Design Access and Heritage statement REV B.pdf; NYM_2021_0263_LB.pdf; 5. NYCC BADS 2022 392 001 - GENERAL ARRANGEMENT.pdf

Hi,

We've carried out a drainage survey of the existing outflow pipe that was located on the downstream elevation. It was found that the existing pipe was part of the highways drainage and only a small damaged section towards the outflow was found. We will be able to connect to this existing network with no changes from the original drawings.

The weep hole specification has already been detailed on the previous drawing, if you would like further information let me know what is required. I've attached the drawing again for information.

I've also added detail for the protection of the mortar as requested in section 6.

Kind Regards

Ben Savage

Assistant Engineer – Bridges and Design Services
North Yorkshire County Council

From: planning@northyorkmoors.org.uk <planning@northyorkmoors.org.uk>

Sent: 10 October 2022 10:07

To: Ben Savage <

Subject: NYM/2021/0263/LB

Importance: High

Reference: NYM/2021/0263/LB.

The North York Moors National Park Authority Planning Service welcomes public engagement in all aspects of its work. You have received this email in relation to a current planning matter. The attached correspondence contains important information which you are advised to retain for your records. If you have any queries, please do not hesitate to contact us. When replying it's best to quote our reference number, which is included in the attached letter.

Kind regards

Chris France

Chris France
Director of Planning
North York Moors National Park Authority
The Old Vicarage

North Yorkshire County Council

Beck Hole Bridge Maintenance



Heritage Statement

Rev B

January 2023

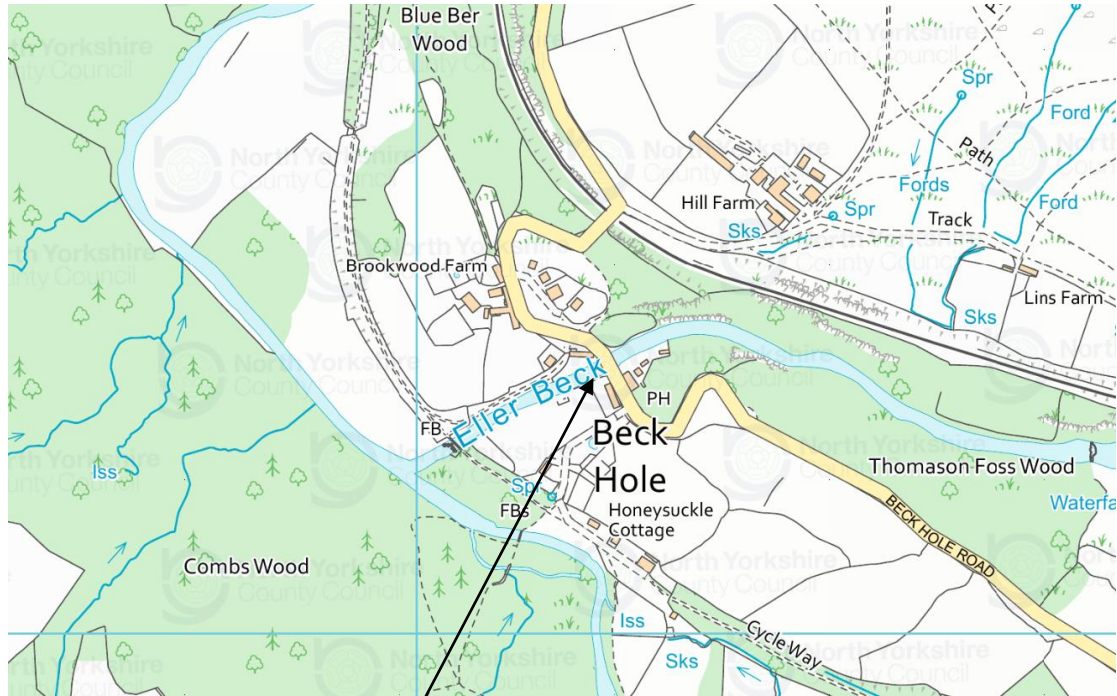
1 Introduction

This design and access statement has been prepared to accompany the detailed planning application for the masonry repairs of Beck Hole Bridge, Beck Hole, North Yorkshire.

This statement has been prepared in accordance with the current guidance as part of North Yorkshire County Council's detailed application for the masonry repairs to Beck Hole Bridge. It is submitted as part of a package of information intended to show how repairs will not affect the Listed Status of the bridge.

2 The Site

The application site is in the centre of Beck Hole, as shown on the location plans below.



Beck Hole Bridge



OS GRID REF 482165, 502231

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Beck Hole Bridge is a two span Grade II listed Masonry arch structure carrying the Beck Hole loop Road to Goathland over Eller Beck in the centre of Beck Hole. The original construction date is believed to be the 19th century. The two arches have a spans of 6.3m each with a maximum rise of 3.5m and the arch barrels are 425mm thick at the crown.

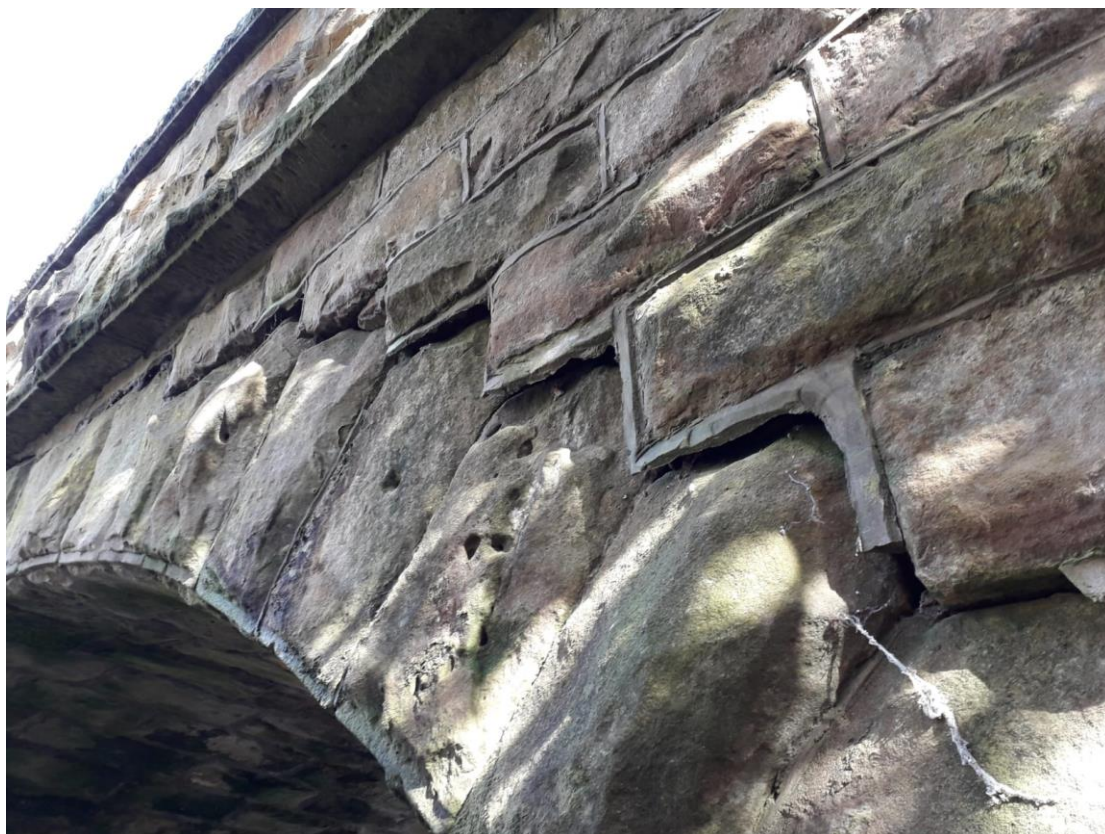
The South of the bridge the approach is by a very steep hill which leads to a gentle humped profile over the bridge. The approach from the North is flat but curved. This results in traffic speeds over the bridge being quite low but the likelihood of conflict on the bridge is high. The bridge is only wide enough for single way traffic at 3.8m

The stone is Rusticated sandstone. The structure has two semi-circular arches of voussoirs with cutwaters on both sides of the centre pier. Pilaster piers at each end rising through plain parapet over moulded band. The parapet has slightly raked with cambered coping with flat caps to piers.

3 Consultation

The sections of parapet, spandrel and wing walls for dismantle and rebuild (see attached drawings) will be carefully taken down and cleaned of all mortar before being used for the reconstruction, it is not thought any new stone will be needed however any stone badly damaged or weathered will be replaced with new, expected to be less than 5% of the total amount of stone taken down. Where possible existing masonry shall be reused in the repairs, existing masonry that is to be reused shall not be redressed before use and shall be incorporated back in their original positions. The rebuilding is on a like for like basis ensuring that only minimal changes in the appearance of the bridge are noticed.

Any stone work incorporated into the works shall match the colour, texture, surface finish, character, kind and size of existing stonework as closely as possible. Stone shall be good, hard, durable quality, uniform in texture and free from iron bands, spots, sand holes, flaws, shakes and other imperfections. Imported stone used as part of a structure with existing stone adjacent to it shall be of a similar compressive strength to that existing stone. The sizes of the stones shall be selected to blend into the structure with no discernible difference between the original, undamaged, structure and the new. It is requested that the Contractor provides samples of the selected replacement stone before an order is placed.



The nature of the works is due to the deterioration and movement of the South-West spandrel wall and South-East wing wall. The works are to ensure the structure is suitably safe for public use and that no loss of character is endured if the stonework falls down.

Physical Context

Beck Hole Bridge is Grade II Listed.

The maintenance works required have been chosen to best remedy the defect in the structure to improve the lifespan of the structure. The proposal is to reuse the existing stonework, where possible. A quicklime mortar mix is to be introduced to help alleviate the saturation in the structure. The repairs shall have minimum impact on the appearance of the bridge.

Social Context

The bridge carries Beck Hole Road over Eller Beck. It is not such a vital link as the road loops round but carries ensures the village of Beck Hole is connected at both sides. It provides a picturesque location for tourism during the summer.

Amount

The amount of masonry which is to be repaired has been limited to the South-West spandrel wall and South-East wing wall where bulging and movement has occurred. The remaining stonework is to be left, as it is in a good condition. The areas, which include stonework in the spandrel, parapet and wing wall are illustrated in the drawings. All stone removed shall be placed back in original locations as best as possible.



Layout

The layout of the structure will not change as part of the development and therefore this will not affect the local surroundings. The masonry repairs shall replicate the existing as far as possible within the specific guidelines required for a listed building application.

Landscaping

There has been some vegetation growth around the rebuild section and will be removed during works. Ivy has started to grow within the stonework and is causing structural damage to the structure.

Appearance

The change in appearance of the bridge due to these works is minimal, existing stone is to be reused, where possible. If any new stonework is incorporated into the works, it shall match the colour, texture, surface finish, character, kind and size of existing stonework as closely as possible. Stone shall be good, hard, durable quality, uniform in texture and free from iron bands, spots, sand holes, flaws, shakes and other imperfections. Imported stone used as part of a structure with existing stone adjacent to it shall be of a similar compressive strength to that existing stone. The sizes of the stones shall be selected to blend into the structure with no discernible difference between the original, undamaged, structure and the new. Where possible existing masonry shall be reused in the repairs, existing masonry that is to be reused shall not be redressed before use.

Drainage

A drain survey was carried out on 26th January 2023 and found that the existing outflow pipe, located on the downstream elevation is connected to existing drainage gully's. There is a small collapsed section located approx. 2m from the outflow that will be replaced with like for like. The 2no. new drainage gully's will be sank into the road surface area where water is collecting and connected to the existing pipe network. This will be done to DMRB standards.

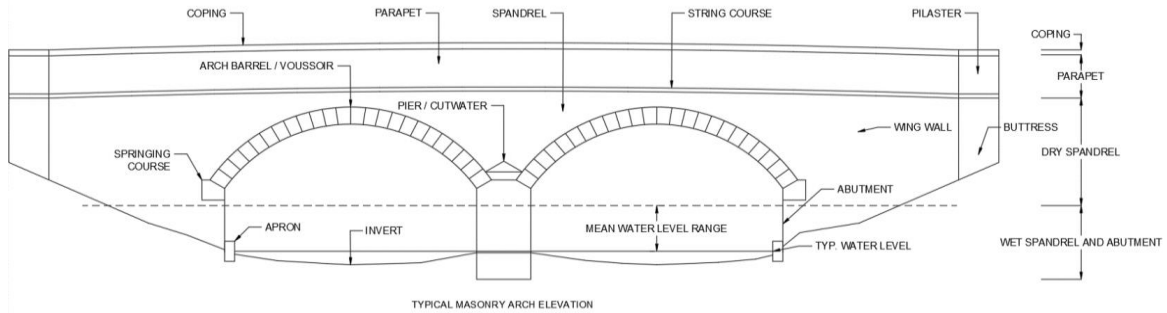
Weep holes

A 100mm clay pipe weep hole will be added to the downstream elevation to prevent hydrostatic pressure build-up on the spandrel wall. Refer to general arrangement for specification and location.

A 100mm clay pipe weep hole will be added to the south-east wing wall to prevent hydrostatic pressure build-up. Refer to general arrangement for specification and location.

Mortar

Due to the structures listed status, there is a requirement to rebuild the structure using a more traditional mortar mix. There will be three different mixes used on the rebuild.



1. Copings (Water-Shredding) mix:

- **1 Part - Prompt natural cement** - In accordance to NFP 15-314:1993;
- **2 Parts – Sharp sand** (Suitably graded);
- Slate Gallets as required to minimise joint thickness.

2. Parapets & Dry spandrel wall mix:

- **1 Part – CL90-Q Quicklime (Powdered)** – In accordance to BSEN 459-1:2010 and is CE marked;
 - i. **20% - Trass** as a proportion of the quicklime. **Trass** in accordance with DIN 51043;
- **1 Part – Coarse sharp sand**;
- **2 Parts – Fine sharp sand** (Locally sourced, such as cooks or similar approved or plastering sand).

3. Wet Spandrels & Abutments mix:

- **1 Part – CL90-Q Quicklime (Powdered)** – In accordance to BSEN 459-1:2010 and is CE marked;
- **1 Part – Trass** - in accordance with DIN 51043;
- **1 Part – Fine sharp sand**;
- **1 Part – Coarse sharp sand**.

Protection and working method of lime mortar

Hot Lime Mortar mixing method:

1. Mortar is to be mixed in a pan-mixer (Drum mixer is not suitable for hot mixing lime);
2. Mix quicklime, trass and naturally moist aggregate and leave to 'dry-slake' for about 3-5 minutes or until super-fine dust begins to form or rise from the mix;
3. The maximum temperature at the dry-slake stage will be around 150 degrees C, sometimes up to 175 degrees C, depending on the moisture content of the sand. It must not be left to become too hot;

4. Incrementally add water sufficient to make a mortar of the desired consistency;
5. Leave for 10-15 minutes before use. A little more water may need to be added during beating.

Repointing method:

1. Joints should never be struck, finished proud of the masonry or feathered over the edge of the stonework. Instead, the mortar joint should be slightly recessed or flush.
2. Joints should be solidly filled with mortar and later brushed back with a stiff bristle brush to remove excess.

After care:

1. Mortar must be protected with hessian sheets after pointing if using in wet weather;
2. If works are done between October – March, hessian sheeting must be left on until April to protect the mortar and allow suitable carbonation.

Where there is a risk of frost this should be supplemented with a plastic sheet and further layer of hessian.

Access

Access to and from the bridge is gained from the road. Access to the upstream and downstream elevations is gained via land adjacent to the bridge. It is not proposed to change any access routes to and from the bridge.

A temporary scaffold will be erected on the elevations of the bridge to allow the works to be carried out, this shall be in no way attached to Beck Hole Bridge.

Heritage statement

The reconstruction of the stonework on the Grade II listed bridge is now at essential stage. The reconstruction is needed for the safety of the travelling public due to the deteriorating strength of the parapets and spandrel walls and also the visual appearance of the listed structure.

The change in appearance of the bridge due to these works is minimal. All stonework taken down will be reused and incorporated back into the structure. It is not expected new stone will be needed. The existing structure uses a cement type mortar, which will be replaced with a more traditional hot mixed quicklime mortar and a natural cement, refer to drawings for extent and location.

Any correspondence should be given in writing to:-

Mr Ben Savage

Bridges and Design Services,
North Yorkshire County Council
County Hall
Northallerton
DL7 8AH