

Redbrick

**Redbrick Structural
Engineers Ltd**

Ms A. Brackenbury
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Our Ref: 7788/KW

13th June 2024

Structural survey
Bishop's Drive Bridge, Southwell, Newark, Notts

Dear Ms Brackenbury,

We are writing with regard to the above property.

Introduction

We were instructed by Ms A. Brackenbury of Southwell Town Council, The Old Courthouse, Burgage, Southwell, Notts to carry out a Structural Survey of Bishop's Drive Bridge, Southwell, Newark, Notts. To this end one of our Chartered Structural Engineers visited the bridge.

The bridge is a brick arch bridge with the abutments at each end shaped as a curved arch. The bridge has recently suffered damage due to high water levels. The outer brickwork forming part of the abutments has suffered distress in places. The purpose of this report is to comment on these distressed areas and to recommend any remedial measures should they be required.

The bridge is orientated on a northwest/southeast axis and passes over Potwell Dyke.

(Continued)

Committed to Quality

*The***Institution
of
Structural
Engineers**

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Company no. 07895841 Registered at 3, Ford Close, Fernwood, Newark

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Notts
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Report Caveats

Details within this report specifically exclude items generally considered in a valuer's report such as the location of the bridge, its value and other aspects such as boundaries and searches, etc.

No testing of materials or monitoring or long-term investigation has been undertaken. We have not inspected those parts of the bridge, which were covered, unexposed or inaccessible, and we are therefore unable to report that any such part of the structure was free from defect.

No in-depth investigations of the locality, ground conditions or services have been made and we have no direct knowledge of the history of the bridge.

This report is not an assessment of the load bearing capacity of the bridge.

External observations

Bridge deck

The bridge deck was 3.4m wide and 5.3m long.

There was timber handrailing to both sides of the bridge.

The top of the abutments formed kerbs above the asphalt bridge deck. The height of the kerbs was approximately two brick courses. The kerbs comprised transverse blue bricks with large intermediate coping stones.

Left hand side abutment elevation (looking southeast)

The abutments appeared to be 225mm (9") thick brickwork.

There had been previous remedial work carried out to this side of the bridge. This had involved infilling with concrete behind the abutment.

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Right hand side abutment (looking southeast)

The kerb/top of abutment to the front half of the bridge deviated outwards. Possibly part of the deviation had been originally built in, but part was probably due to the outward leaning of the top of the abutment.

The face of the abutment, in front of the arch, has lent out by approximately 25mm.

To the upward outside curve of the arch there were some individually loose/missing bricks.

There was vegetation growing against the abutment.

Underside of bridge arch

The underside of the arch was rendered.

The render appeared to be in a reasonable condition.

Discussion

Outward lean to front of arch

The front of the arch to the right-hand side abutment leans outward slightly. This has probably been a very gradual outward rotation over a number of years.

The movement will have been exacerbated by recent heavy rainfall. The heavy rainfall will have resulted in higher water levels and hence faster flowing water in Potwell Dyke.

Remedial measures will be necessary.

Loose bricks

The absence of the few bricks to the front of the arch, to the right-hand side abutment, will have been due to the recent heavy rainwater and faster flowing water in the Dyke. The raised velocity of the water will have led to the more rapid erosion of the mortar holding in place individual bricks.

Remedial measures will be required.

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Conclusions and recommendations

The front of the arch to the right-hand side abutment (looking southeast way from Southwell) leans out slightly. This has probably been a gradual movement, that has been exacerbated by recent heavy rainfall.

The absence of the few bricks to the front of the arch, to the right-hand side abutment, will have been due to the recent poor weather.

In light of these and previous comments we would recommend the following remedial measures:

- *Re-build front of right-hand abutment* – Prior to any re-building work secure ply to underside of arch and prop with scaffold tubes. Props to be supported off scaffold boards and braced. Once propped, carefully take down, 225mm wide, out of alignment brickwork to front of arch and re-build to correct vertical alignment.

Use 'Ibstock old county' or similar bricks (a water-resistant brick). Anchor back new brickwork to structure with stainless steel masonry ties where possible. Between every other brick course reinforce with stainless steel ladder masonry reinforcement – 'Bricktor' or similar. Use 'Spec Mix' mortar w/ integral water repellent or again similar;

See attached sketch sheet no. 7788/01 for the proposed elevation.

- *Replace/re-secure missing bricks* - carefully remove loose water and insert new bricks into remaining voids. Use bricks and mortar as described above:
- *Vegetation* - remove any vegetation growing next to either abutment.

Please note the following repairs will not increase the load bearing capacity of the bridge.

If further assurances are required, then additional investigative measures will be necessary.

(Continued)

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If you have any queries, please call.



Yours sincerely

A handwritten signature in black ink, appearing to read 'Kevin Wright', with a stylized flourish at the end.

Kevin Wright

Chartered Structural Engineer

BSc (hons) MICE MStructE CEng

Project <u>RIGHT HAND SIDE ABUTMENT.</u>			
Made by 	Date 31/5/24	Checked by 	Job number/Sheet number 7788 / 01.

