

Project No: 3788

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For the attention of Ben Blackledge

Re: Remedial works for the Cantilever Walkway – Stables Market, Camden

Dear Ben,

Following your request, this letter outlines the main remedial repairs of the Walkway in Stables Market, Camden.

From several site visits carried out, we have observed that sections of the structural elements of the Walkway show severe corrosion. Based on a survey done to the structural elements of the Walkway and based on the results from a material testing performed on those elements (carried out by ESG), we have calculated which structural elements have sufficient capacity and which elements require strengthening.

For the structural elements that require strengthening, we recommend the following structural repairs are completed as shown in drawing 3788/200, 3788/201, 3788/202 and 3788/203 issued 28-11-2016:

1) End Primary Beam – P1

Due to the poor structural condition of beam P1 (high level of corrosion - Figure 1), we recommend a new structural system to substitute the existing primary beam.



Figure 1: Existing condition of primary beam P1

As the existing primary beam cannot support the proposed imposed loads on the walkway, we analyzed several options:

- New beam

This solution comprised of a new fabricated box section cantilevering from the existing building (see sketch 3788/SK/160726/MPC-walkway CB01).

The idea was to place a box section between the top of the bottom flange of the existing primary beam and the bottom flange of the secondary beams. Due to the limited space between the bottom flange of the primary beam and the secondary beam, the box section would have to have been circa 120 mm x 500 mm with 30 mm thickness.

This solution was rejected due to buildability and health and safety risks due to the heavy weight of the beam.

- New beam supported by a column

A second solution consists of a new box section supported at the end by a new column.

The reason we studied a solution with a column at the end of the cantilever walkway was to reduce the size of the box section presented in the previous solution (see sketch 3788/SK/160726/MPC – walkway CB02).

This solution was rejected due to the negative visual appearance of the column and the clash between the column and the existing services.

- New truss

A third option consists of a new truss consisting of a new box section placed on top of the existing beam, supported by a tension plate at the end of the cantilever.

This solution was chosen and is shown in drawing 3788/201. For clarity, the existing beam will remain insitu, but we will not be relying on it for the structure integrity of the Walkway.

2) Link Bridge connecting the Provender Store and the Walkway

Due to the link bridge connecting the Provender Store to the Walkway, we recommend the strengthening of the following elements:

- Secondary beams: strengthening of the secondary beams (SB3-14 and SB3-15) supporting the link bridge by means of a steel plate welded to the beams' top flange;
- Primary beam- P15: due to the additional load from the link bridge, we recommend strengthening the beam by using of two steel plates bolted on both sides of the primary beam;

These repairs are shown on detail B and detail D on drawing 3788/200.

3) Secondary Beams SB3-16 and SB3-17

As shown in Figure 2, secondary beams SB3-16 and SB3-17 have the top flanges broken.



Figure 2: Secondary beams SB3-16 and SB3-17 showing poor structural condition

Therefore, we recommend that remedial works are undertaken to reinstate the structural integrity of those beams as soon as possible. We recommend welding an angle, on top of the primary beam in order to support both secondary beams. This repair is shown on detail F on drawing 3788/200.

4) Long Stable Corner – Secondary Beam SB3-6 and bricks missing

In the Long Stable corner there is a secondary beam (SB3-6) where large sections of the flange are corroded (see Figure 3). Therefore, we recommend placing a new beam underneath the existing secondary beam. This new beam will then be connected to the primary beams (P6 and P7).



Figure 3: Secondary Beam SB3-6

As shown in Figure 4, close to secondary beam SB3-6, there are some bricks missing from the Walkway.



Figure 4: bricks missing from the walkway

Therefore, we recommend placing a new channel beam to fit the brickwork and then connect it to the primary beam (P7) at one end, and to the Long Stable's brick wall at the other end of the beam.

These repairs are shown on detail E on drawing 3788/202.

5) Secondary Beams

For all the secondary beams that due to high levels of corrosion are not in adequate structural condition, we recommend a structural repair to guaranty the structural integrity of the walkway.

Therefore, we had initially recommended to weld a steel plate at the bottom of the secondary beams. But since the existing secondary beams, due to high levels of corrosion, weren't in reasonable condition to allow welding the steel plates, other two solutions were proposed: an I-beam or a T-beam underneath the existing secondary beams.

From these two options, the client decided to choose the option with the I-beams underneath the existing secondary beams.

These repairs are shown on detail B on drawing 3788/200, detail E on drawing 3788/202 and detail G on drawing 3788/203.

If you need any further information, please do not hesitate to contact me.

Yours sincerely,

Miguel Costa
Structural Engineer