

Special Inspection Report

Project: Bank Street Melksham,

Job No: 1004010

Structure: Bank Street

Parish: Melksham

Substage No:

WCC No:

O.S. Ref: ST 823 610

Prepared by: J Haines

Date: 12th May 2004

Introduction

Following expansion of a town centre supermarket a developer contribution was secured to improve pedestrian facilities from the supermarket to the town centre. The Town Council have requested that the money is used to provide a pedestrian barrier to the edge of the raised pavement along the western side of Bank Street.



Wiltshire County Council have given Ringway Parkman a brief to investigate the feasibility of fixing the barrier to the existing pavement together with some minor associated works in connection with Street Lighting and minor area enhancements.

The existing pavement consists of cast in situ concrete slabs supported off a random rubble stone wall to the front face. It is believed that there are no construction records available from when the slabs were installed.

Design Criteria

The provision of the barrier is covered by BS 7818 (1995), Specification for Pedestrian Restraint Systems in Metal.

There are four allowable classes of barrier ranging from a light duty class 1 to a heavy-duty class 4. For this particular situation class 3 will be used which is the minimum requirement where crowd loading could be encountered. This class also mirrors the BS5400 bridge parapet design for pedestrians. Whilst BS7818 covers the entire barrier make up including geometry, materials and workmanship it is assumed that the barrier having been chosen by the Client from a reputable and experienced fabricator meets these criteria.

In the absence of any design details for the existing footway slabs the only way to check their suitability for mounting the posts is by insitu testing. BS 7178 suggests that when insitu testing is undertaken then a partial safety factor of 1.2 shall be used and held for fifteen minutes with no distress being evident.

In Situ Testing

A temporary steel post was fixed to one of the better of the existing slabs using similar fixings to those proposed for the final fixing. On testing the post a crack opened up across the footway slab at approximately 80% of the required loading, and not allowing for any factors of safety. This test confirmed that even the best of the existing footway slabs are unsuitable for mounting the barrier.



Other Options Investigated

Ringway Parkman looked into the possibility of recasting sections of the footway slabs on top of the subsoil to provide a suitable fixing for the parapet. On closer inspection of the site a number of disused cellars were discovered and judging by the age of the buildings it is assumed that there would also be others for neighbouring properties. The footway slabs formed the ceiling of the cellars and where visible the concrete was measured at 150mm thick with a corrugated iron permanent soffit former. Therefore in the absence of a suitable bearing subsoil the new slabs would have to be designed to current standards as self-supporting and together with the added expense of consultation with affected property owners it is not believed that the available budget will cover the cost of undertaking this work.

Another option briefly investigated would be to cast a new ground beam in front of the existing footway for fixing the railings. This would in effect narrow the main road by 300 – 400mm which will cause a restriction at the northern end of Bank Street. There also appears to be a number of Utilities in the area immediately in front of the wall and these would have to be diverted so again this option is not considered to be feasible on the current budget.

Conclusions

The existing slabs are not sufficiently robust to provide the required mounting strength for a public barrier designed to class3 loading. It is also not believed that a suitable alternative method of mounting could be carried out for the immediately available budget.

Report Prepared by:

Date: 12th May 2004

Julian Haines
Assistant Engineer
Ringway Parkman

Addendum

This page forms an addendum to the original report.

Following issue of the previous report (dated 12th May) Ringway Parkman excavated trial holes in the carriageway at the base of the stonewall in order to accurately locate the position of any services present. This work was undertaken on 21st May 2004.



Two holes were excavated, one opposite the Flower shop and the second adjacent to the small flight of steps near the Home Appliance showroom.

The first hole was dug to a depth of 700mm and extended 1000mm out from the wall. The high voltage electricity service was located 750mm out from the wall at a depth of 600mm. No other services were found. There was also a precast concrete kerb laid flat adjacent to the wall and approximately 100mm deep. The purpose and extent of this kerb is not known. The second hole was dug to a similar dimension however no services or buried kerbs were found at this location.

Conclusion

From the trial holes taken it is believed that a wall could be built in front of the existing wall without diverting any utility apparatus. The wall would not have to be designed as a retaining wall as the existing wall is adequate, the new wall will however have to resist the forces imposed by the railings. A brief outline design suggests that the new construction would need to be

founded 700mm below the existing road level in order to achieve sufficient active pressure on the front face to resist overturning, with reinforced concrete used in order to keep the construction slender and thus minimise any restriction to the carriageway.

A budget estimate for the construction works would be £400/m based on the 110m length of reconstruction required. On top of this would be any decorative stone facing if required and the costs of supplying installing the barrier.