e100189c03 rev a.doc

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Attention: Tracey Morah

Band Rotunda – Updated Report on Slab Investigation Work

Background

Wellington City Council have engaged Spencer Holmes Limited to undertake a report on the condition of the band rotunda. In 2010 test samples of the floor structure of the Fisherman's table (the old band rotunda roof) we undertaken in order to help determine the condition of the concrete and actual make up of the floor structure.

Extent of Investigation

The extent of investigation was to diamond cut four 100mm diameter test cores in random locations acceptable to the restaurant these were drilled and retrieved by specialist contractors Concrete Solutions Ltd.

Findings of Investigation

The cores show that the floor to the "Fisherman's Table" restaurant was not built in accordance with the construction drawings, in particular the raised timber floor detailed in the construction drawings was not constructed, and a structural topping slab of approximately 100mm thick has been poured over the existing roof slab instead.

The topping slab appears to have been poured directly over the old roof without removing the existing mastic asphalt roof membrane and there appears to be no key or bond of the new to the existing.

This topping slab is heavier than the timber floor and acts as an additional superimposed dead load of around 2.4 kPa to the floor further reducing the available live load carrying capacity of the whole floor structure.

The test cores however showed the original roof slab has also not been built in accordance with the original design and is thicker at 7" (approx 180mm) deep instead of the 6" (152mm) slab shown on the drawings. This increase in depth does increase the strength of the slab and largely offsets the additional load.

We did not observe any deterioration of the top surface similar to the bottom of the slab however we note the sample cores only cover a very small sample area in comparison to the total floor. The asphalt membrane is about 25mm thick and appears to be still in good condition and may have assisted in protecting the top surface of the existing slab.

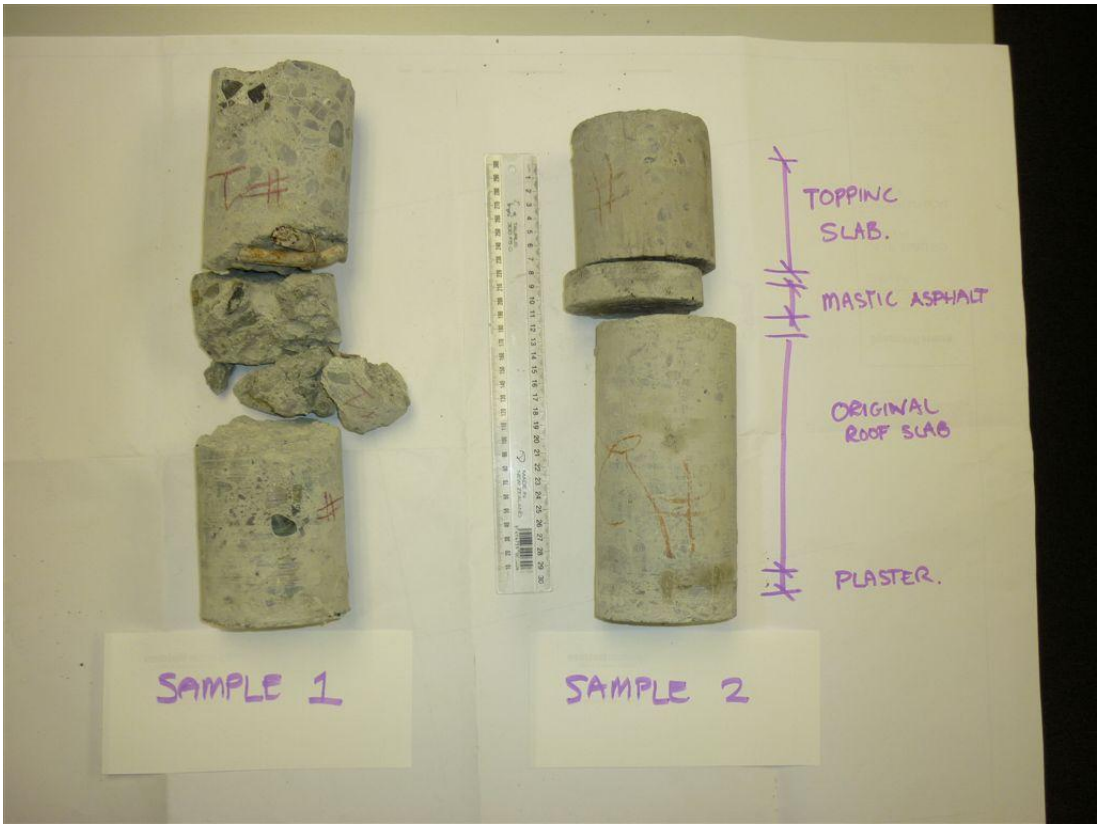

Photo 1 – Core Samples 1 and 2

Photo 2 – Core Samples 3 and 4

Strength of Floor

We re-assessed the strength of the floor structure based on the findings of the test cores and although the available strength of the slab was reduced from our original assumptions we were of the opinion that the existing floor substructure, in its present condition in 2010, would be adequate for normal restaurant activities with a maximum uniformly distributed load of 2.0kPa.

Accordingly we recommend the use and loading of the floor for the restaurant be limited to normal restaurant and dining activities (as per previous recommendations) and intensive crowd loading not be permitted to avoid damage to the structure.

Recommended Remedial Work

We have investigated further possible remedial works with the option to accept the ongoing degradation of the slab but providing new "bolt on" steel structure and new ceiling structure to prevent failure of the slab and mitigate hazard to users.

The works would entail

- Removal of all loose plaster work and spalling concrete to the ceiling
- Treatment of exposed reinforcing and concrete with a paint system
- Repair of corroding reinforcement to the existing beams and columns
- Installation of new steel beams under the floor to strengthen and support the floor slab
- Installation of a new "structural" timber framed ceiling between the steel beams to prevent any plaster from falling on to users and to improve the appearance of the ceiling.

The option had merits in that it could be done as a staged exercise or as part of any refurbishment work over the next few years.

The existing timber partition walls for the office / stores and some plant and fit out in the community centre and restaurant is in the way. This would make some of the work more difficult and expensive but we believe it is feasible and could be staged in such a way to minimise the effect on the operations.

We note the fit out, particularly in the restaurant portion of the downstairs tenancy, is in quite poor condition and requires some refurbishment in the near future.

We have prepared preliminary schematic drawings for the repairs in order for a quantity surveyor to provide a more accurate costing on this option.

These schematic drawings E100189 P01 to P02 are included with the report.

Summary and Recommendations

Based on the results of the investigation undertaken in 2010 we confirm that the floor slab and substructure are near the end of its lifespan and require significant refurbishment programmed in the short to medium term, less than 5 years to extend the life of the overall building.

The testing also showed that the floor slab has not been built in accordance with the original construction drawings with an additional non-structural topping slab added during the refurbishment increases the load on the floor.

We re-assessed the strength of the floor structure and based on these findings, although the strength of the slab is reduced we were of the opinion that the floor substructure, in its present condition in 2010, would be adequate for normal restaurant activities with a maximum uniformly distributed load of 2.0kPa.

The use and loading of the floor for the restaurant should be limited to normal restaurant and dining activities and intensive crowd loading not be permitted to avoid damage to the structure. The tenant of the restaurant of the restaurant should be notified so that appropriate management measures can be put into place.

We have also investigated further the option from the original report of accepting the ongoing degradation of the slab but providing new "bolt on" steel structure and to prevent failure of the slab and mitigate hazard to users.

The works will be disruptive to the community centre and restaurant but we believe it is feasible and could be staged to minimise effect on the operations.

We have prepared preliminary schematic drawings for the repairs in order for a quantity surveyor to provide a more accurate costing. These drawings are attached to this report for your review.

Should you have any queries about this matter please don't hesitate to contact the writer at your earliest convenience.

Yours faithfully
Spencer Holmes Limited

Jon Devine
Director

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