

10.11.09

Our Reference
09.283
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Structural Assessment Report

**Project - Refurbishment Glenmore Hotel,
96 Cumberland Street, The Rocks**

1.00 Introduction

Ashby Doble Pty Limited have been engaged by the lease holder of the Glenmore Hotel to provide an assessment of the structural impact of the proposed alterations to the heritage-listed building.

2.00 Existing Building

The existing building is a three storey building with accessible roof top constructed in 1921. The structural system consists of load bearing masonry walls with timber and steel framed floors.

The building has been continuously used as a hotel, and has undergone varying levels of upgrade and remedial works over the life of the building. These works are detailed in the Conservation Management Plan prepared by City Plan Heritage for the Sydney Harbour Foreshore Authority.

At the time of our inspection the building was in a reasonable condition for a building of this age.

3.00 Proposed Works

The proposed alterations are outlined on architectural drawings Nos. 2042 - DA000, DA010, DA030, DA100, DA101, DA110 – 113, DA300, DA301, DA400 and DA401.

The works involve complete refurbishment of the existing building, and can be divided into three sections:

Section 1 – Construction of a new infill building within the courtyard along the northern side of the building.

Section 2 – Refurbishment of roof deck.

Section 3 – Minor modifications throughout existing building.

We have reviewed the impact of these structural alterations on the building, and provide comments as follows:

3.01 Section 1 – Infill Building – Northern Courtyard

It is proposed to construct a four storey section of building within the existing courtyard area at the northern end of the building. This section of building will house the fire egress stair, the new lift to provide disabled access throughout the building, as well as services for the building, including a cool room on the basement floor, refuse area on the ground floor, small finishing kitchen on the first floor, and small rooftop kitchen on the upper level. Housed over the top of this section of building will be a plant area.

The structure associated with this building will be a combination of masonry walls with reinforced concrete floors. It is proposed at this point in time to construct the lift shaft out of reinforced concrete walls. The fire stair will be a steel stair, incorporating the existing stair and modifying, as required, to ensure access to the various levels of the building.

It is proposed to found the new structure on rock to ensure that this building has compatible foundations to the existing structure, thus ensuring no differential vertical movement between the sections of the building.

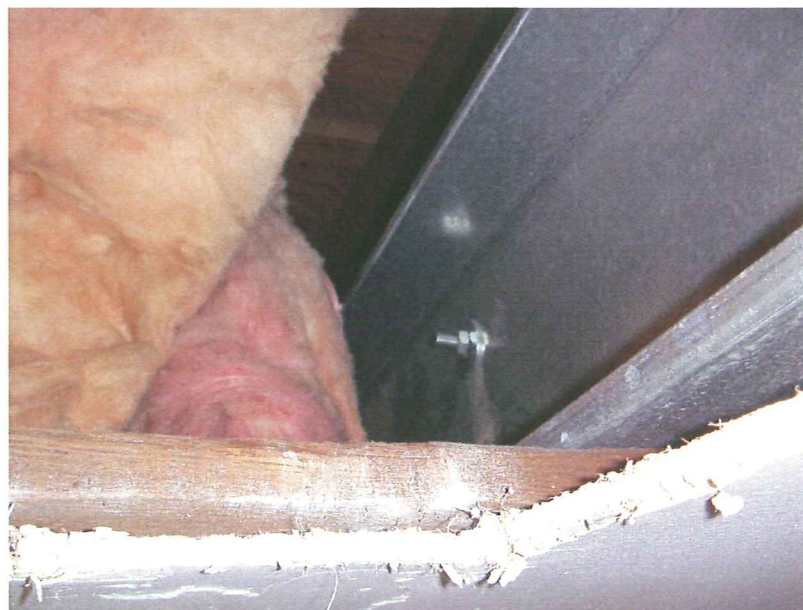
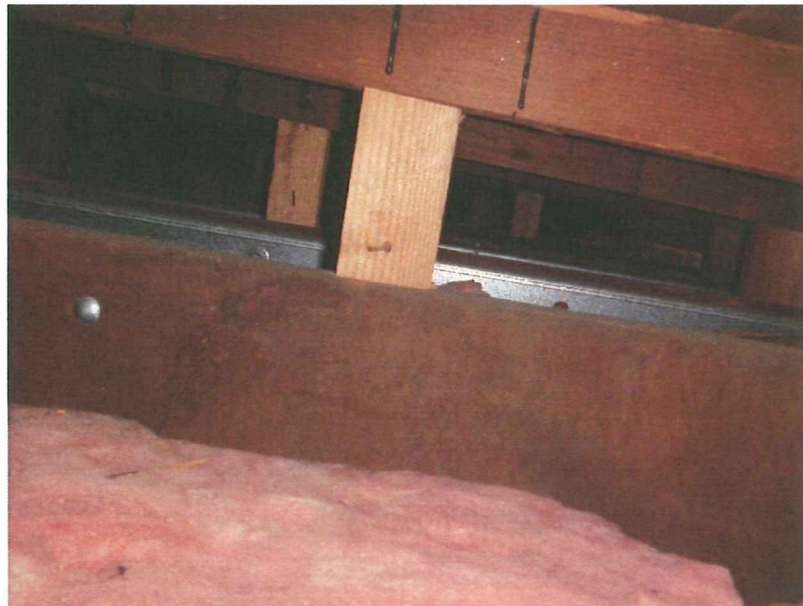
We recommend the use of reinforced concrete floors, as opposed to timber floors, for the following reasons:

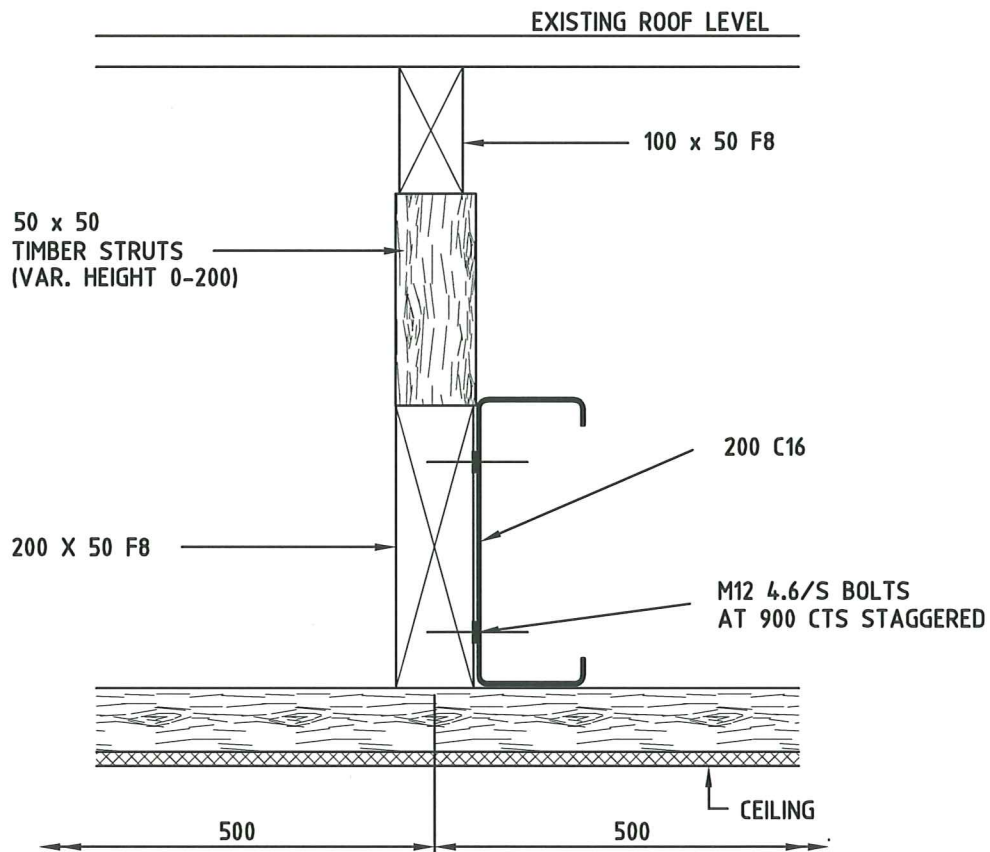
- Durability of materials.
- Preferred acoustic separation between floors.
- Better fire rating between floors.
- Superior load-carrying capacity for thinner floor plates.
- A superior diaphragm action for the floors.
- Better waterproofing in areas such as the refuse area and kitchens.
- Better interface with reinforced concrete lift shaft.

It is currently proposed to rebuild a portion of the northern boundary wall to the courtyard, which will become a load bearing wall. This section of the wall will incorporate the wall of the new lift shaft.

3.02 Section 2 – Roof Structure

Ashby Doble Pty Limited completed a preliminary review of the existing roof structure of the Glenmore Hotel in 2005. A follow-up inspection was completed in November 2009 to confirm that the configuration of the roof structure remained the same. The existing roof structure is a combination of timber rafters with steel C-purlins bolted to the sides of the rafters. Refer to photograph and sketch below.





STRUCTURAL CONFIGURATION
OF EXISTING ROOF FRAMING

NOT TO SCALE

In review of the heritage information provided in the Conservation Management Plan document, we note that there have been ongoing issues associated with waterproofing to the roof and parapet structure over the life of the building, with leaking of the roof structure and cracking in the parapet first noted as far back as 1933. Ongoing repairs and maintenance of the roof structure have been completed continuously over the life of the building, with a reinforced concrete collar beam being installed to restrain the tops of the parapet walls in the 1970's.

We have also been instructed by the architects that it is proposed to create the roof structure as thin as possible, to ensure that the SHFA request, which is to provide for the roof floor level to be lowered as much as possible, to be accommodated. Bearing these items in mind, we believe that the rooftop floor should be a reinforced concrete deck, and make these recommendations for the following reasons:

- The use of a reinforced concrete deck will be able to provide the required load rating to satisfy the current loading codes, while maintaining a thin plate structure.
- The reinforced concrete deck will provide a better quality of tie-in to the existing walls, to ensure no spreading of the upper level walls and ongoing cracking of the parapet structure.
- The waterproofing capabilities of this element will be superior to that of a steel and timber framed and sheeted roof structure, ensuring long-term, maintenance-free operation of the floors below the roof structure.
- The acoustic separation provided by the reinforced concrete floor would be better than provided by a lightweight floor structure.
- We have noted in the Heritage Report that there has been termite activity within the building in the past and, accordingly, the use of additional timber within the building will create some level of risk and ongoing maintenance to the structural system.
- The reinforced concrete structure will provide better restraint locations for perimeter balustrading support, which will be provided around the interior of the parapet.

Accordingly, based on our assessment, we believe that the use of a reinforced concrete deck will provide a far better solution in terms of loading capacity, thickness of structure, waterproofing and reduction in ongoing maintenance than the use of a timber and steel frame structure.

3.03 Section 3 – Internal Alterations Basement, Ground Floor and First Floor

It is proposed that minor structural alterations will be completed within the existing basement, ground and first floor levels of the building. These works will incorporate the removal of small sections of wall within the basement and the first floor kitchen area, and the opening up of four internal walls on the first floor. These works are outlined on the demolition plans.

These works will require the installation of some new steel elements, which will ensure the transfer of load down through the masonry walls of the building to the foundations.

We note that over the life of the building there has been termite activity which has affected the timber structure and, accordingly, we recommend that during the process of the refurbishment the floor joists be assessed in the floor structures to ensure they are in good condition and comply with appropriate loading requirements.

4.00 Conclusion

We believe that the structural works outlined above will provide for a building that, while having a high level of structural integrity, will also be a low maintenance structure, ensuring longevity and cost-effective maintenance for many years to come.