



~ BUILDING CONSULTANTS ~ BUILDING INVESTIGATIONS ~ EXPERT ADVICE ~ SCOPES OF WORK ~

SPECIAL PURPOSE/ INSPECTION REPORT

**Units Plan 119 Urambi Village
Attn: Treasurer N. Brown
36/85 Crozier Circuit
Kambah ACT 2902**

24 January 2011.

Reference: Water penetration to concrete floors.

Introduction

In accordance with instructions from Mr N Brown, Peter Leary attended the above property site on 24 January 2010. The consultant met with Mr Brown.

The purpose of this site visit was to inspect the property in preparation to compile a report in response to the following request for service:

Please inspect the community centre and compile a report regarding ongoing water ingress. Removal of vinyl floor has exposed a damp surface.

Assumptions

The consultant was advised that the previous floor covering of the community centre, activity room was sheet vinyl and that this vinyl had contracted, exposing cracks between sheets laterally across the room.

The consultant was advised that the proposed new flooring was to be planked vinyl and the installer has advised that it is impossible to lay this product with the floor slab in its current condition.

Investigation

The consultant inspected the floor of the activity room and found this to be constructed as a raft slab in direct contact with the ground. The proximate floor level is only slightly higher than the surrounding ground levels and concrete porch. An inspection and test was conducted to the tiled porch which is constructed along one side wall of the activity room and this test revealed this porch to be virtually level and in some cases sloping inwards towards the external wall of the activity room. Given this, it would be reasonable to assume that water does pool adjacent to the external brickwork of the activity room and this would be contributing to the moisture levels associated with the brick walls and to some degree the concrete slab.

There are large windows which run the length of the south facing wall and these windows appear to be installed directly on top of the concrete raft slab and the edge detail of this slab has no visible slope or step to prevent water ingress under these window frames.

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This condition is a result of the design and the consequence of this is any driving rain which imposes on the windows will, to some degree, enter the building and cause dampening of the brickwork, window frames and concrete slab.

The consultant used an electronic moisture detector to determine the moisture levels of the brickwork and concrete slab and this test revealed that the slab and base line of the brickwork are all displaying values higher than acceptable for the purpose of laying sheet vinyl. Some areas of the concrete slab are displaying alarmingly high levels of moisture. The test was conducted over various areas of the concrete slab and this test revealed the slab to be globally high in moisture content. This test confirms that there is no single cause of high moisture levels and the most likely cause is failure or breaching of the vapor barrier below the concrete slab, combined with the aforementioned inadequate drainage measures of the porch and base window flashings.

The moisture test was also conducted to the base brickwork and this test revealed that the damp proof course (a normally installed membrane to prevent moisture rising through masonry walls) appears to have been installed one course of brickwork higher than floor level. This scenario, combined with the low proximity of floor level to external ground levels may also be contributing to the excessive moisture levels within the concrete slab.

Lounge room

The consultant also inspected an adjacent lounge room which has a carpeted floor. The inspection revealed carpet in the area adjacent to a large sliding door to be degraded as a result of ongoing water ingress. The inspection noted that the construction method of the sliding door is equal to the installation method adopted in the activity room, where the flat concrete slab with no appreciable sloping or step and is contributing to allow water entry and saturation of the sliding door sill material. This saturation is confirmed by the visible break down of the timber material where water is allowed to enter and saturate the carpet. It was also noted that the proximate levels between internal floor level and external paving level are such that any pooling water would be allowed to permeate in and under the sliding door.

Conclusion

According to the inspection and tests made, the consultant concludes that the higher than acceptable moisture levels within the concrete slab are resultant of the following factors:

- Failure or breaching of the sub concrete vapor barrier
- Pooling water on the adjacent tiled porch due to reverse slope
- Rising damp, due to the proximate location of the installed damp proof course material of the external brickwork
- Water penetration in and around the cedar sliding door and window units due to breaching or inadequacies of the sub sill flashing material



Recommendations

The consultant makes the following recommendations to assist in the drying process and ongoing management of high moisture levels.

Ventilation and proper air management is vital in obtaining the best case scenario for moisture levels within the activity room. It is suggested that during daylight hours, fans be installed to move air throughout the activity room and doors and windows should be left open to allow for adequate ventilation. It is suggested that this activity be continued and moisture levels within the slab be monitored to determine if the above actions are effective. Should the concrete slab attain acceptable moisture levels for the purpose of laying floor coverings it is suggested that no coverings be laid until such time as further back up rains are encountered. Following on from adequate rain fall, it is suggested that the concrete slab be tested again to ensure that moisture levels have not risen.

The above action may or may not be successful and if not successful the following recommendations would apply.

Consideration should be given to installing a different floor covering and adhesive system with ceramic tiles being one recommended solution. Should ceramic tiles be acceptable for the purpose of a floor covering in the activity room, it is suggested that the tile supplier and layer be well advised of the moisture issues, such that they are able to recommend the most adequate adhesive and sealants. It should be noted that this room is quite expansive and that adequate expansion joints should be installed at regular intervals throughout the tiled floor so as to cater for the eventual and predicted tile growth that would normally occur with moisture levels such as those measured today.

Should vinyl floor be the only acceptable solution, it is recommended that the vinyl supplier and layer be advised of the moisture levels and requested to suggest a compatible sealant or membrane so as to be installed below any glue lines and to be compatible with the selected glue. It should be noted that many suppliers and manufacturers do not recommend the use of adhesives over membranes and that also membrane manufacturers may not recommend their product for this situation.

The consultant also recommends that the water ingress and pooling which is being encountered in the courtyard area, be managed by use of roof coverings with adequate storm water drainage measures. This work may entail the alteration of pergolas in the courtyard to allow adequate fall and installation of guttering and downpipes. It is thought that if water can be controlled on the courtyard area such that it does not come in contact with the external walls this can contribute to the drying process and will also prevent water ingress under doorways and window units.



Garden bed within courtyard.

As a side issue, the consultant was requested for his opinion regarding the addition of a garden bed to confine the earth which is present in the courtyard. Of particular concern was, if this garden bed was confined by means of a retaining wall, would additional measures be required to prevent water ingress within the garage which abuts this area. The consultant concludes that provided the garden bed retaining wall has adequate drainage measures installed in the form of weep holes which drain out to the adjacent storm water pit and these weep holes are carefully managed to ensure they do not block up over time, then there is no valid reason why additional measures would be required to prevent water ingress into the adjacent garages.

The above opinion is based on the fact that no artificial irrigation is utilised within the newly formed garden bed. Should additional irrigation be installed then water ingress into the adjacent garage would be unpredictable and difficult to manage.

Should you require additional testing of the moisture levels within the concrete slab during the drying process, please do not hesitate to contact the consultant, we would be happy to assist.

End of report.

Should you have any queries regarding this correspondence, please do not hesitate to contact our office.

Yours faithfully

Peter Leary
Manager

We trust the above is sufficient to meet your request. Please do not hesitate to contact our office should you require any further information or assistance.

The author hereby makes himself available to provide verbal evidence, clarification or expansion of any information provided herein.

This report refers specifically to the matters requested for opinion of the author. Therefore this report may not contain the full extent of our investigations nor does it contain all information gathered during our investigations.

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The opinions expressed in this report are that of the author and are based on the skills, training and experience gained throughout 24 years licensed practice.

I trust the information included in this report, being impartial to any party is of assistance in any proceedings.

Should you need further information regarding this report please do not hesitate to contact the author.

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