Gavin R.Brown & Associates c.c.
CONSULTING CIVIL & STRUCTURAL ENGINEERS

CK 2007/016191/23
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Ref: 8118/ub/grb/05.12.2018.

05 December 2018

Premier Property Management
2 The Boulevard
Westway Office Park
3630

Attention: Mr Colin Schenk

RE: INSPECTION OF TIMBER ROOF CONSTRUCTION OVER THE METHODIST CHURCH BUILDING AT MUSGRAVE ROAD, DURBAN.

Dear Sir

Terms of Reference

Gavin Brown and Associates were requested by Mr Colin Schenk of Premier Property Management to provide a quotation to carry out an exploratory inspection of the timber roof construction and to provide a report on the status of the timber roof including recommendations for corrective work. A quotation was supplied to Mr Schenk on the 16th of October 2018 which was duly signed and accepted on the 26th of October 2018.

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Field work

The field work was carried out by our Professional Roof Inspector Mr Zane Essack who was assisted by Engineering technician Mr Lungelo Phakathi and Professional Roof Erector Mr Andrew Gove of GWR Roofing.
According to Mr Schenk the Main Church Building is 125 years old.

The roof construction comprises Marseilles clay tiles supported on timber battens and site assembled timber trusses and bearers. The roof has a +/- 45° pitch and the framing consists of two parapet gables with a valley intersection on the northwest elevation.
A “Cherry Picker” with an articulated boom was used to gain access to the roof. Roof tiles were removed in places to allow for inspection of the various timbers making up the roof structure.
It was observed that the roof construction comprises 38mm x 38mm SA Pine tiling battens which are being supported on 76mm x 38mm Oregon pine rafters spaced at 750mm centres, which are then in turn being supported on 90mm x 150mm Oregon Pine bearers spaced at 1680mm centres. The bearers are being supported on timber trusses that are spaced at +/- 3500mm centres. These trusses are isolated from bearers, rafters and battens by tongue and grooved boarding that is placed between the underside of the 90mm x 150mm bearer on the top of the truss rafter. It was observed that this tongue and grooved board has been damaged by wood borer infestation.
The 38mm x 38mm tiling battens have been damaged by rot and have become brittle. It was observed that there is significant vertical deflection of the weakened battens.
The 76mm x 38mm rafters and 90mm x 150mm bearers have been severely damaged by wood borer. In instances the damage is so severe that the timber disintegrates with the slightest hand pressure.
It was observed that an acrylic waterproofing membrane has been used at the valley intersections and the ridge tile closest to the parapets. It appears that there are some broken tiles beneath the membrane that could be a possible point for storm water ingress.

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Conclusion

All the structural timber above the primary trusses are either severely damaged by wood borer or rot. The tongue and grooved boards; 90mm x 150mm bearers; 76mm x 38mm rafters and 38mm x 38mm tiling battens must all be replaced in its entirety to achieve a stable roof structure. The primary trusses could not be inspected entirely due to them being isolated from the secondary timber by the tongue and grooved boards, however when viewed from the underside(interior) there does not appear to be the widespread damage caused by wood borer as is evident in the secondary timber that occurs above the tongue and grooved boarding.

There are areas on the roof where the water tightness could be compromised where storm water ingress could occur.

Recommendations

All the existing secondary timber above the primary truss including the tongue and grooved boards must be replaced in their entirety.

The secondary timber must be replaced with treated SA Pine timber. It is recommended that the primary trusses also receive treatment in the form of a brush on insecticide like Timber-life's CTX108 or equivalent.

Due to the fact that the original Oregon Pine is a stronger material than SA Pine. The replacement rafters and bearers will have to be slightly deeper and wider than the existing Oregon Pine timber sections. As a result of this the roof height will be raised by 108mm. The size of the new SA Pine Rafters will be 76mm x 76mm Grade S5 and the size of the new bearers will 76mm x 220mm grade S5.

An engineering construction drawing must be prepared for the remedial works which must be carried out by a specialist roofing carpenter, preferably a Category A ITC accredited roof erector.

We envisage that the remedial works will be carried out in phases. Once all the infected timber is removed from the roof then only must treatment of the existing trusses commence.

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It is recommended that a ceiling be installed on the eaves.
The valley linings and headwall flashing along the parapets must be refurbished when the remedial works are being carried out.

Should you require any additional information or assistance please do not hesitate to contact the writer.

Yours Faithfully
Gavin R Brown and Associates cc

U. Brahmadu

Ugasen Brahmadu (Associate)
(signed electronically)

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PHOTOGRAPHS

Figure 1- PORTION OF EXPOSED ROOF

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Figure 2- DEFLECTING BATTENS

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Figure 3- WOOD BORER DAMAGE ON 90 x 150 BEARER

Figure 4- WOOD BORER DAMAGE ON BEARER AND RAFTER

Figure 5- BROKEN TILES ON VALLEY

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