To Whom It May Concern

STRUCTURAL ASSESSEMENT
MAIN LOUNGE TIMBER FRAMED BALCONY CONSTRUCTION
at 14 Hollywood Ave, Titirangi 0604

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Structural Engineer and part owner of the property with partner Judy Newton

0. Preliminary Notes

a) The balcony was built some time before the current owners, Judy Newton & Alex Vartzbed purchased the property in June 2004.
b) At the time of the purchase, the deck appeared to be fairly new. The natural finish of the timber treatment was barely weathered and a splice in the balustrade handrail was perfectly jointed.
c) The balcony floor is approximately 2.1m above the footpath below and as such, would need to be consented.
d) There is no record of this balcony in the property file.
e) The balcony is now, in September 2021, at least 17 years old and shows no sign of excessive deformations or overstress.
f) I undertook this structural assessment primarily to satisfy myself but also Auckland Council as the Consenting Authority, should this be required, that the balcony was built in accordance with the NZ Building Code current in 2004.
g) The means of compliance is by comparing the As-Built construction of the balcony with NZS 3604:1999 “Timber-framed buildings”, incl. Amendment 1 dated 30 December 2000. This was the revision current in June 2004 and cited in the Verification Method V1 of the NZ Building Code (NZBC) section B1 “Structure”. As specified in that document, the barrier construction must comply with the NZBC Acceptable Solution B1/AS2. The revision current in June 2004 was Amendment 5 dated 1 July 2001. Extract of the relevant articles of both documents are included in this assessment.

1. Executive Summary

The numbers below refer to NZS 3604:1999 “Timber-framed buildings”, incl. amendment 1 dated 30/12/2000 and current in June 2004. Verifications carried out are as per art. 7.4.1.2:

a) Decking span and size comply with art.7.4.3.
b) Joists span, size and spacings comply with table 7.1(b).
c) Bearer span, size and tributary width comply with table 6.6B.
d) Piles size do not comply with section 6 but are the object of specific engineering design (SED) and have sufficient capacity. We have no definitive means of verifying the size of the footing but assume it complies as outline in parag. 2e).
e) Stringer size and fixings comply with table 6.7.
f) Barrier verifications carried out as per NZBC B1/AS2 Amendment 5 dated 1 July 2001 and current in June 2004. The numbers below refer to that document:

f1) Top rail span and size comply with Table 1 (Type 1).

f2) Balusters size and spacings comply with Table 2 (top rail Type 1).

f3) Balusters fixed to boundary joist or end joist with 2-M12 bolts. Complies with art. 2.3.4 (Fig. 4). However, existing diam. 32mm round washers need to be replaced by 50x50x3 square washers.

Baluster distance to nearest joist exceeds 85mm in some instances. SED shows the 190x45 boundary joist is stronger than the compliant minimum size 140x45 but will deflect more. Serviceability criteria of barriers are partly subjective. From my experience with this handrail over the years I can confirm that the handrail feels sufficiently stiff and I deem it is acceptable.

f4) Boundary joist connection to intermediate joist does not comply with art. 2.3.5 (Fig. 4), SED shows 2-M12 coachscrews, embedded 150mm min into the end of the intermediate joists are required.

f5) Palings size do not comply with art 2.5.1. SED show the palings' cross-section has sufficient capacity. Gaps between palings comply.

f6) Fixing of palings to bottom rail complies with art 2.5.2, except the bottom rail is formed by the boundary joist.

f7) Fixing of palings to top rail complies with art 2.5.3, except the palings are skew nailed directly into the top rail and there is no batten as specified in art. 2.5.3 (Fig. 3).

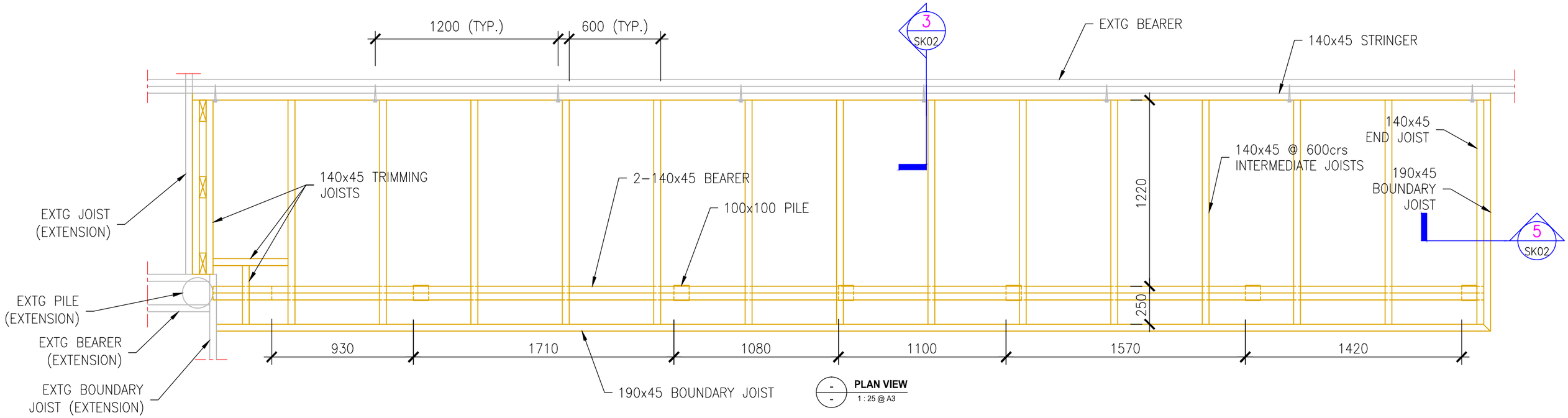
The balcony is bolted to the building at the inboard end through the stringer and doesn't project more than 2m from the building. Therefore, it doesn't require subfloor bracing as per art. 7.4.2

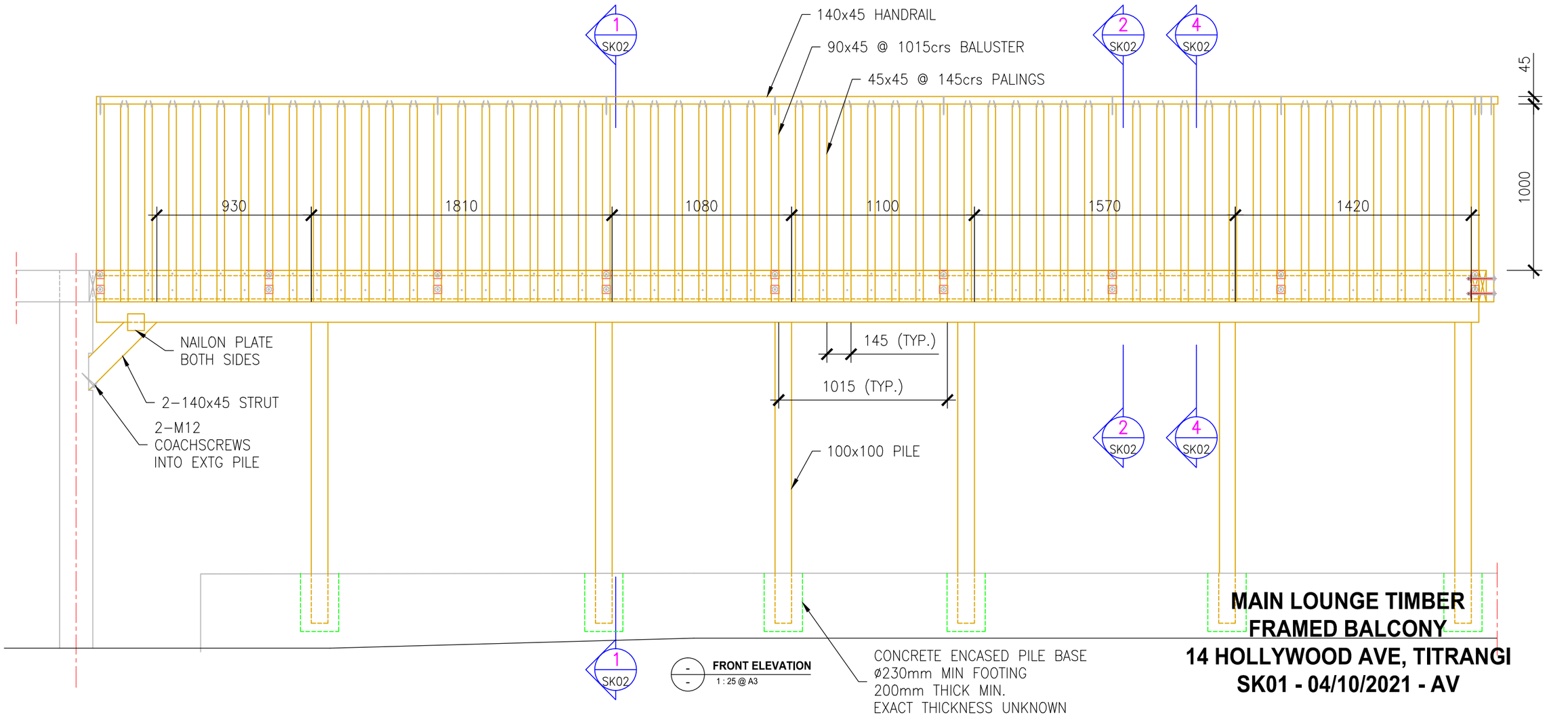
In summary

A) Construction of the balcony fully complies with the NZBC section B1/VM1 current in June 2004.

B) The barrier mostly complies with the NZBC section B1/AS2 current in June 2004, except:
   i) connection of the balusters to the boundary joist: the diam. 32mm round washers should be replaced by 50x50x3 square washers.
   ii) the connection of the boundary joist to the intermediate joists should be upgraded to 2-M12x200 coachscrews (150mm embedment into joist).

FULL REPORT AVAILABLE ON DEMAND





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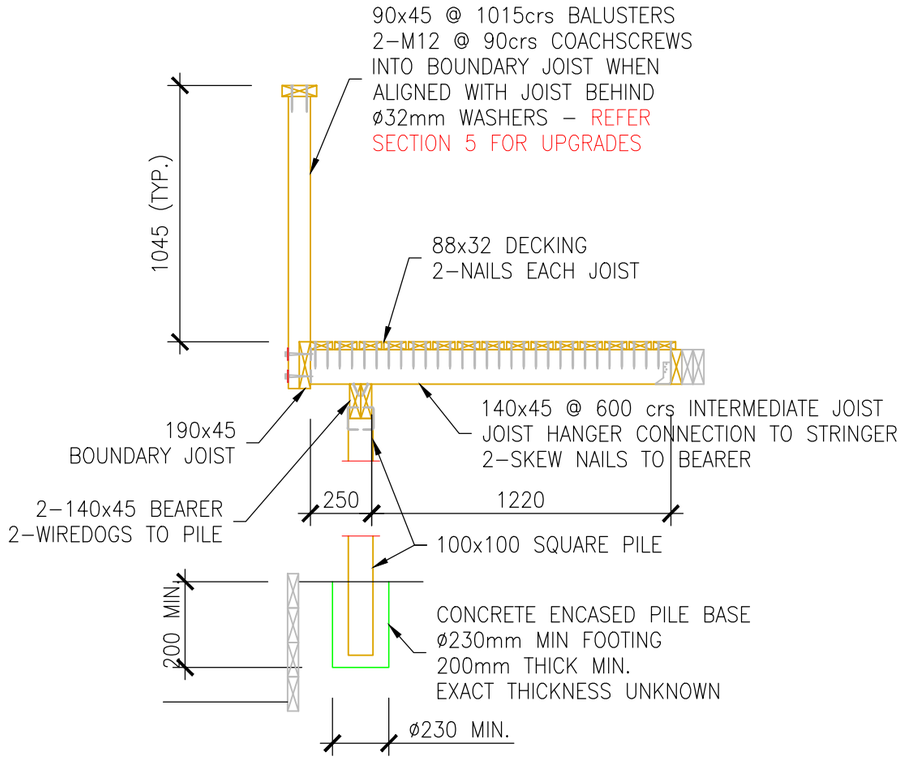
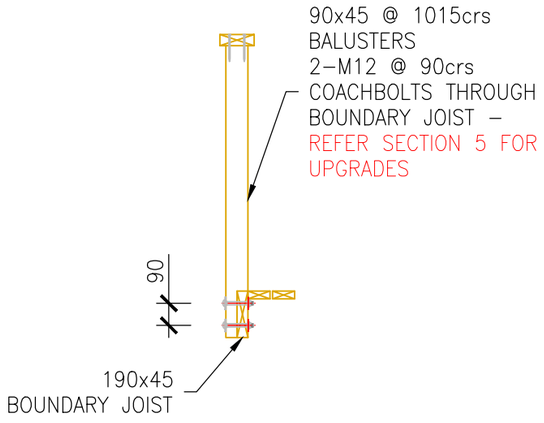
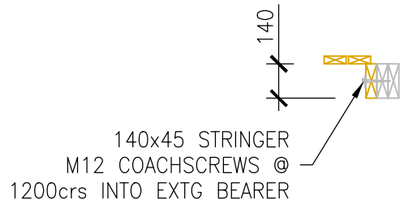


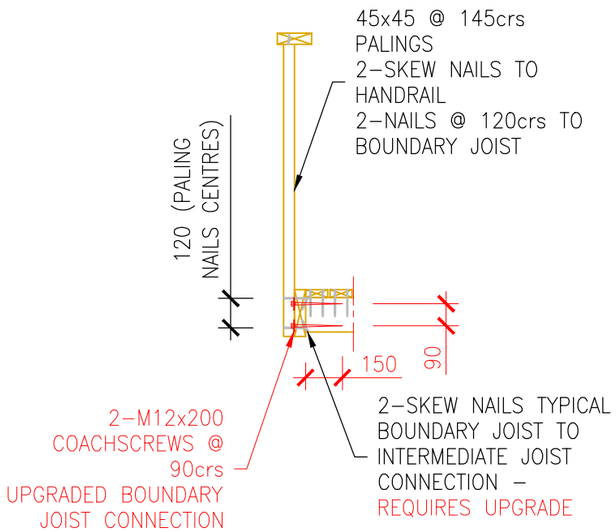
1 SK01 **SECTION AT PILE**
1 : 25 @ A3



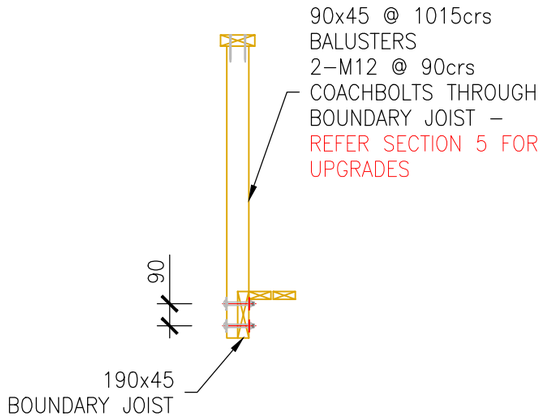
2 SK01 **SECTION AT TYPICAL BALUSTER TO BOUNDARY JOIST CONNECTION**
1 : 25 @ A3



3 SK01 **SECTION AT STRINGER CONNECTION**
1 : 25 @ A3



4 SK01 **SECTION AT TYPICAL PALING**
1 : 25 @ A3



5 SK01 **SECTION AT BALUSTER TO END JOIST CONNECTION**
1 : 25 @ A3

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