

Dec 2014



20 December 2014

Auckland Council
c/o: Jimmy Rodger
Via email to jimmy.rodger@aucklandcouncil.govt.nz

WAIKARAKA PARK GRANDSTAND – STRUCTURAL CONDITION AND IMMEDIATE PUBLIC SAFETY ISSUES

Dear Jimmy,

Holmes Consulting Group LP have undertaken a qualitative visual survey of the existing reinforced concrete grandstand structure at Waikaraka Park in order to provide Auckland Council with an assessment of possible hazards to immediate public safety.

We understand that the structure is currently shut due to concerns over the condition of some areas of the concrete, and questions regarding the overall condition and capacity of the structure as a result.

Based on our on-site review, we believe that the concrete cracking and reinforcing corrosion visible around the building does not pose an immediate risk to the overall stability of the structure. However, where these items are present over areas of seating or access they do pose a potential risk to the public during use of the structure.

The purpose of this letter is to summarise the areas of structure where we believe work is required to mitigate these *immediate* risks to any users of the structure, largely due to possible over-head hazards from loose sections of concrete. We have also outlined some general techniques that could be used to make these areas more secure, and noted which of these would be required in order to open up the upper-level seating for public use for a period of approximately 3-4 months while further assessment work is completed. This letter does not go into all of the exact details of how these safety/securing works might be carried out, but these could be provided if the decision is made to progress with some of these options and Holmes Consulting Group is engaged to assist further.

The signs of cracking and corrosion of the structure does indicate that a programme of significant remedial repair work is required if the intention is to continue to use the structure on an ongoing, long-term, basis.

This letter does not deal with any hazards associated with the overall capacity of the structure to resist seismic loads in line with current requirements. We would strongly recommend that this aspect of the building is considered as soon as possible so that the Council and all stakeholders associated with the grandstand can make well-informed decisions about the possible future of the structure and plan for any other works that

Holmes

Consulting

Group LP

Auckland

Telephone

+64 9 965 4769

Facsimile

+64 9 965 4760

Internet Address

www.holmesgroup.com

Level 1

39 Market Place

PO Box 90745

Victoria Street West

Auckland 1142

New Zealand

Offices in

Hamilton

Wellington

Christchurch

Queenstown

San Francisco



might be required as part of this. We expect that it is quite possible that the existing structure could be an earthquake prone building. We would be happy to assist with the analysis of this aspect, and we can include this in our scope and fee proposal for any works going forward.

In the meantime, please find the following initial assessment of the on-site hazards, and feel free to get in touch with any questions you may have on this.

Areas Identified as Immediate Risks to Public Use of the Waikaraka Park Grandstand Structure, and Recommended Mitigation Measures:

1. The underside of the two concrete stair structures at the North and South ends:
= Areas of cracked concrete that represent an over-head hazard if they dislodge.
We recommend;
 - For immediate, on-going use, install 9mm minimum plywood linings across the underside of these two structures, packed off battens and framing, to support any patches of concrete that may come loose. This would need to be applied to the underside of the upper-ramp on the Northern stair as well (as this sits over a public-access route).
 - Install a new 75x6 SHS strut between the top of the main stair column and the main structure adjacent, with 2xM12 concrete fixings each end.
 - If the intention is to continue to use the structure past April 2015: Breakout all loose concrete, clean back all exposed reinforcing steel, treat the exposed reinforcing steel with a rust-inhibitor paint, grout/mortar patch these areas, and apply a suitable paint or protection coating.

2. The underside of the upper-level concrete seating structure:
= Localised areas of cracked concrete across the whole soffit, and along the whole Eastern edge, that represent an over-head hazard if they dislodge.
We recommend;
 - For immediate, on-going use, manual breakout of all loose concrete is required. Use of a hydro-blasting equipment may be suitable for some of these areas, but this should be discussed with a contractor that is experienced in this technique to determine suitability.
 - If the intention is to continue to use the structure past April 2015: Breakout all loose concrete, clean back all exposed reinforcing steel, treat the exposed reinforcing steel with a rust-inhibitor paint, grout/mortar patch these areas, and apply a suitable paint or protection coating.

The Appendix attached with this letter includes sample photos of these areas of immediate safety concern, for reference purposes only.



Additional Areas That Do Require Remedial Work, but are Not an Immediate Risk to Public Safety:

3. The topside of the upper-level concrete seating structure:
 - = Degradation of the protection coating over the top surface of the concrete structure will expose the concrete below to the elements.
 - If the structure is to be used past April 2015, we recommend;
 - Replacement of the protection coating system.
 - Repair or replacement of any corroded fixings to the handrail along the Eastern edge (only one such case noted on-site in December 2014).

4. The topside of the lower-level concrete seating structure:
 - = Localised areas of cracked concrete across the whole top surface that have exposed the reinforcing steel, allowing it to corrode.
 - If the structure is to be used past April 2015, we recommend;
 - Breakout all loose concrete, clean back all exposed reinforcing steel, treat the exposed reinforcing steel with a rust-inhibitor paint, grout/mortar patch these areas, and apply a suitable paint or protection coating.

5. Further to the above items dealing with the immediate risks to public use of the structure, we also recommended that a Detailed Seismic Assessment (DSA) of the structure is completed in the near future. We expect that this assessment would be likely to show that the structure is earthquake prone and will require some strengthening work to improve its seismic performance.

Recommended Short-term Works Required to Allow Access to the Upper-level Seating for a Period of Approximately 3-4 Months Only:

- Complete the install of the plywood linings and the SHS struts from Item 1 in the recommendations above.
- Keep the perimeter of the structure fenced off to prevent access to the lower-level seating and to ensure people cannot walk within 1.5m of the front edge of the grandstand (where there are significant areas of loose concrete over-head). Install additional solid barricades (framing + plywood) in the stairs up to these areas to prevent access.
- The intention here would be to allow use of the upper-level seating while more work is done to assess the remedial work required to the seating areas (and to possibly obtain quotes for completing this) and to complete a DSA study of the structure. Any required work can then be completed in 2015 outside of the main racing season.



We hope that the information and recommendations above are of use. Please feel free to get in touch with any questions you may have on this, or to discuss how we can assist further on the assessment of this structure.

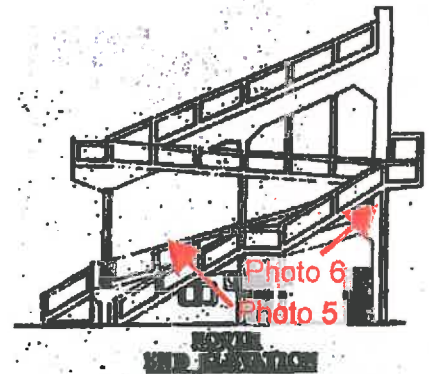
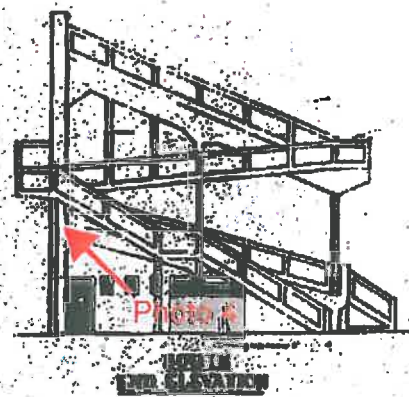
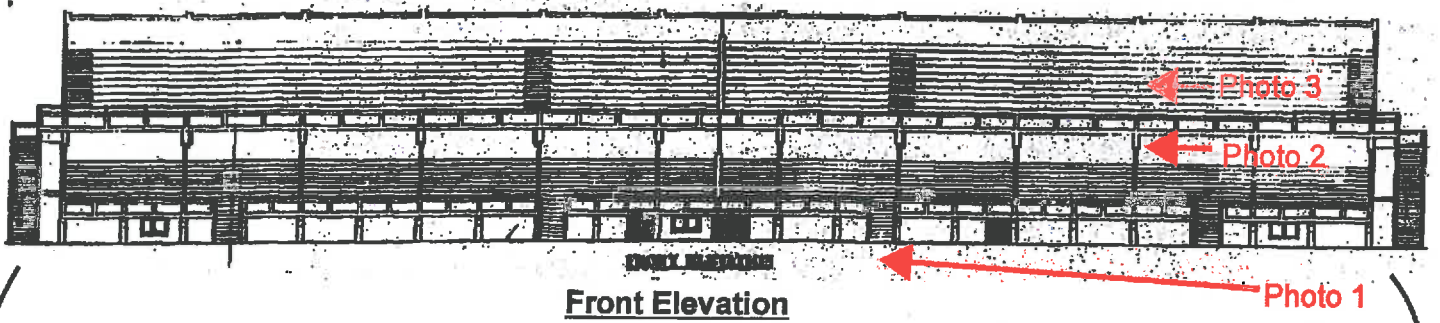
Yours sincerely

Nick Carman
STRUCTURAL ENGINEER



Appendix - Reference Photos:

Photo Locations:



South Stair

North Stair



Photo 1



Photo 2



Photo 3



Photo 4

Indicative plywood linings/protection to stairs

75SHS strut position



Photo 5

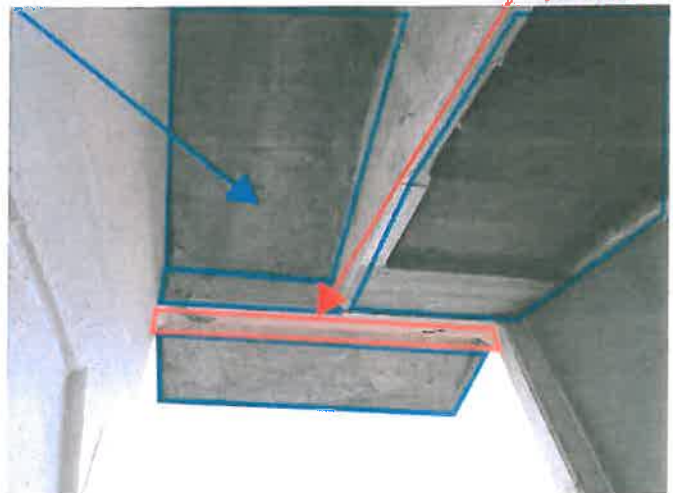


Photo 6