STRUCTURAL DESIGN STATEMENT

Hurlstone Agricultural High School (Hawkesbury)

Prepared for Conrad Gargett / 25 Spetember 2017/Rev A

HASH-00-SD-ST-RP-0001

161108

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Conrad Gargett Ancher Mortlock Woolley
Level 12
77 Pacific Highway
North Sydney NSW 2060

Attention: Phil Baigent

Hurlstone Agricultural High School (Hawkesbury)

Structural Design Statement

Dear Phil,

1.0 Purpose of the Works

The purpose of these works is to build a new school that comprises much of the site to provide teaching and learning facilities. The project involves the construction of 4 new education buildings ranging from one to three storeys which comprise of Staff / Administration, Gymnasium/Sports Hall, Science / Technology and Library. The buildings are to be connected by a central elevated circular walkway.

A future fifth building comprising a 3 storey boarding accommodation facility is proposed in the Eastern portion of the site (not part of this development).

2.0 Compliance

The structural design of Hurlstone Agricultural High School (Hawkesbury) will be in accordance with the following Australian Standards:

AS 3600 Concrete Structures

AS 4100 Steel Structures

And the structure shown would be sufficient to carry the relevant loads specified on our drawings and in

AS 1170.0 Structural design actions – General principles

AS 1170.1 Structural design actions – Permanent, imposed and other actions

AS 1170.2 Structural design actions – Wind actions

AS 1170.4 Structural design actions – Earthquake actions in Australia

3.0 Foundations

The foundations for the new buildings will likely be a combination of shallow footings and concrete grout-injected piles in accordance with the geotechnical report 85644.00 by Douglas Partners dated November 2016. Further testing has been carried out to locate the depth to bedrock and the extent of uncontrolled fill for the site. It is likely that the majority of the piled foundations will terminate in the sands / clays to keep the buildings bearing on single strata.

4.0 Proposed Structure

The proposed structure is to generally be of reinforced and post-tensioned concrete construction. Ground level slabs will generally be supported on soil, pending further geotechnical investigation. The upper floors will typically be post-tensioned banded slabs supported on concrete columns and walls. Transfer structures are to be kept at a minimum. There are to be lightweight pitched steel roofs over the Library and Technology buildings which will be supported by cantilevered concrete columns. The Gymnasium will have an all steel roof with steel columns. The administration building is to have a green roof and so will require a reinforced and post-tensioned concrete roof structure.

5.0 Retaining Structures

The site is very flat and will require only minor soil retention associated with landscaping and civil engineering works. A Gabion retaining wall is proposed along the sides of the administration building and the rear of this building will have a reinforced concrete retaining wall.

6.0 Structure Global Lateral Stability

Globally the concrete structures will be braced by reinforced concrete shear walls that will help transfer any seismic or wind loads down to the footings and eventually back out of the structure and into the underlying soils. The pitched steel roofs above the Library and Technology buildings will be supported by the cantilevered concrete columns which will transfer lateral loads down to the concrete floor diaphragm. Below this, the floor diaphragm will redistribute loads into the shear walls and ultimately down into the rock as described above. The gymnasium will utilize steel braced frames to resist lateral loads and transfer these loads to appropriate footings.

7.0 Construction Sequence

As it is a greenfield site, we do not anticipate any sequencing issues in terms of construction as there are no existing buildings that require demolition. The timing of civil engineering works associated with storm water management will have to be coordinated where they affect the building design and construction.

Should you require anything further please contact the undersigned.

Yours faithfully
TAYLOR THOMSON WHITTING (NSW) PTY LTD

Hung Nguyen
Technical Director

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