

09 December 2019

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Roberts Pizzarotti
Level 54, Governor Phillip Tower
1 Farrer Place
Sydney NSW 2000

Concord Hospital Redevelopment

Radiation Bunker Concrete placement

To Whom it may concern,

To assist our client, Roberts Pizzarotti, in their application for an out-of-hours application, the following outlines the structural requirements to construct a concrete radiation bunker at the Concord Hospital Site. The concrete bunker has been designed in consultation with a radiation shielding consultant with wall thickness, construction joint location and configuration determined based on their advice. The concrete placement for the radiation bunker is non-conventional when compared to normal concreting construction techniques and requires careful planning and execution to achieve the desired outcome.

An issue to address when constructing large concrete pours such as these bunkers, is the heat-of-hydration that occurs where an exothermic reaction forms between water and cement. As a result of this exothermic reaction and the volume of concrete of the thick walls, a temperature gradient develops in the concrete. This could lead to temperature stresses across the concrete section and possible cracking, as the interior of the concrete section remains hot and the outer surface of the wall contracts as the surface cools. To mitigate this problem, controlled placement of concrete, with a constant pour rate will assist so the temperature of the heat-of-hydration does not fluctuate considerably.

The concrete construction joint configuration and location have been determined to the required radiation shielding performance as the pour break/construction joints have the tendency to 'open' as the concrete shrinks and potentially could have adverse effects on the shielding performance. If an unplanned construction joint was required due to time constraints in the concrete pour, the shielding performance of the radiation bunker could be compromised.

Should you require anything further please contact the undersigned.

Yours faithfully,
TAYLOR THOMSON WHITTING (NSW) PTY LTD
in its capacity as trustee for the
TAYLOR THOMSON WHITTING NSW TRUST



Glen Fowlie
Director

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