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FLETCHER CONSTRUCTION

8 March 2002

Dear Mike,

MANGERE WASTEWATER SCHEME UPGRADE

In response to your call regarding the performance of the Xypex Admix used in the filter bed gallery floor slab of the UV facility, I comment as follows.

Similar projects overseas have suffered from significant leakage through cracks that have formed in the floors. This has occurred despite the presence of a high percentage of steel for structural and crack width purposes. In this project the 400mm thick gallery floor slab is subjected to 9.0m head of water pressure, with associated steel durability issues from the effluent water entering cracks.

Xypex Admix C-1000NF was used primarily for its ability to "self-heal" fine cracks under water pressure and was added to the 35 Mpa 19mm concrete mix. A total of 349m³ of concrete was used with an average Xypex dose rate of 3.0kg/m³ for the two pours on 31 January and 8 February 2001.

Xypex Admix was also included in the 150m³ of concrete for the gallery roof in September 2001.

After initial water testing, the filter beds were progressively brought online from December 2001 and the water pressure increased proportionately. This resulted in most existing cracks displaying jets of water up to 40mm high, 95% of which shut down over the period December to mid February. The remaining leaks have subsequently sealed themselves.

The inclusion of Xypex Admix enabled the cracks to self heal under a considerable head of pressure and remedial work has been avoided.

Regards,

Wayne Telfer

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