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Dear Shaun

Test Street Subdivision - General Review

Further to your brief of 15 September 2005, we have reviewed the proposed consent application for subdivision at Test Street, including the Tonkin and Taylor Geotechnical Report. We have the following comments:

Site Geomtery with regards to NZS 4404.

NZS4404 generally requires an access road grade of 1:10, locally steeper up to 1:8. The proposed access road has a persistent grade of 1:8, which may have ramifications regarding access for refuse trucks, fire wagons and heavy vehicles. The Council should consider whether they wish to make an exception to this general requirement for road access grade on this site.

NZS4404 also makes recommendations on minimum road radii, based upon superelevation and prevailing traffic speed. The proposed access includes a tight radius corner of approximately 20m. According to NZS4404, this supposes a maximum speed of 20km/h, which might be appropriate. NZS4404 also suggests a widening of 2.0m above the proposed 6.0m road width for a corner of this radius; however the proposal does not indicate any local widening of the road at the corner.

Geotechnical Report

Limited Testing carried out

The Tonkin and Taylor geotechnical report is based upon 2 mechanically excavated trial pits at the eastern end of the site (proposed Lot 9) and a number of extremely shallow (<0.25m deep) hand-excavated pits throughout the remainder of the site. The 2 mechanically excavated pits encountered soft or very soft soils, whilst the hand excavated pits were all halted in stiff to very stiff soils.

Whilst this testing regime is suitable for initial assessment of general ground conditions, the possibility of further soft ground conditions across the general area of the site cannot be excluded on the basis this investigation. It is possible that shallow ground water may soften soils below the depth investigated. Whilst the assumed soil parameters (phi=33°) may be appropriate for very stiff silts, they may be overly optimistic for softer saturated soils. Also, ground water is assumed to be deep across the site, yet there appears to be no evidence to support this.

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No scala penetrometer tests appear to have been carried out, and the presumption of 100kPa allowable bearing capacities (300kPa ultimate capacities) must be verified with site-specific testing at the time of construction.

Scala Penetrometer test could also be used to infer a likely design CBR. A design CBR of up to 7% is proposed. This must be verified with appropriate testing, which should include laboratory remoulded CBR tests at both natural moisture contents. These should also be soaked if there is any possibility that pavement subgrade may be subject to wetting.

Eastern Section of Site

The maximum slope of 2:1 (26.5°) on Lot 9 is described as having shallow scarps and "under-runners", which may also be signs of a larger scale slope failure. We would recommend a site-specific geotechnical report in the event that this Lot is to be developed. This site specific geotechnical assessment could include a slope model with more pessimistic soil strength and ground water parameters, and possible surcharge effects from building construction.

Also, the tight corner encroaches upon this area and some retaining structures may be required to provide the required road width and grade. These will require specific design, in light of the soft soils encountered in that locale.

Fill Construction

The geotechnical report proposes allowable fill slopes of 2:1 for the road construction. We recommend that this fill is made either with imported selected granular fill, or that extremely tight controls are made upon the placement of reworked loess soils. Loess is an extremely sensitive soil, and in our experience the reworked strengths of this material can be dramatically lower than when in-situ, both in terms of stable slope height and design CBR for road construction. In either case, wherever fill construction will provide structural support, it must be engineered with proven methods and site verification tests.

These preliminary comments are based only upon the information provided. No site visit has been made.

If you require any further advice, or wish further input, we will be delighted to offer our services.

Regards,

Lee Paterson
Structural / Geotechnical Engineer.