TBT ENGINEERING
CONSULTING GROUP

September 23, 2010

TBTE Ref. No. 10-636

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Re: Concrete Pavements
Fire / Paramedic Station, Sage Creek
Winnipeg, Manitoba

The geotechnical report for the Sage Creek fire/paramedic station was submitted by TBT Engineering August 27, 2010. Since that time it has been decided to utilize concrete for the exterior pavements. This letter provides geotechnical recommendations for the concrete pavement structure.

Site Conditions

The general subsurface conditions at the site consist of topsoil overlying clay fill which is underlain by clay. The thick stratum of clay overlies deeper till deposits. A discontinuous silt zone was noted at several test locations

A layer of topsoil was encountered at the surface of all boreholes and varied from 50 to 100 mm thick. Clay fill with trace to some sand, and gravel and organics was identified underlying the topsoil at all borehole locations and extended to depths up to 1 m. A thick clay deposit was encountered beneath the fill. The upper metre of the clay is black and organic. The clay is generally stiff to firm, and softens with depth.

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Concrete Pavements

Concrete pavements have now been specified for this site. The proposed concrete pavement may consist of the following typical section:

Material	**Thickness**	**Compaction / Specifications**
Concrete	200 mm	n/a SPECIFICATION CW 3310 – R13
Granular Base	150	100 % SPMDD CW 3110 – R11
Granular Sub-Base (50 mm Limestone)	150	100 % SPMDD CW 3110 – R11
Crushed Limestone (150 mm Limestone)	Minimum 450	100 % SPMDD CW 3110 – R11
Geotextile		TABLE CW 3130.1 – Separation/Reinforcement Geotextile Fabric Requirements
Prepared Sub-grade		95% SPMDD CW 3110 – R11

The pavement structure should be installed in accordance with the appropriate City of Winnipeg specifications as indicated.

The pavement structure described above will be subject to some long-term slab movements due to swelling/shrinkage of the clay subgrade. To fully minimize the rate and magnitude of total and differential pavement movements, subgrade preparations would require excavations to below two metres as well as complete removal of all existing fills, softened/disturbed or organic clay and/or silt.

The above pavement structure will expose black organic clays which are to be surface compacted. .Any soft or excessively wet soil detected at the subgrade level should be excavated at least an

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additional 300 mm, and replaced with a 150 mm down limestone material (bridging material) overlying geotextile. Where silt is exposed or close to the subgrade elevation, pumping conditions may be encountered. Sufficient time for the pumping condition to subside should be provided between fill placement lifts and prior to pouring concrete.

The anticipated subgrade materials are very sensitive to disturbance. Equipment and/or worker traffic on this material should be kept to a minimum during excavation to prevent excessive disturbance and loss of strength.

To limit the effects of slab movement and reduce random cracking, control joints should be provided at regular intervals in the slab and where heavier loading is anticipated

Closure

We trust the above addresses your requirements at this time, and we look forward to working with you on this project. Please contact us at your convenience should you have any questions.

Yours truly,
For TBT Engineering

Wayne Hurley, P. Eng.
Vice-President, Engineering

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