

City of Winnipeg
Planning, Property & Development
1499 Buffalo Place
Winnipeg, MB
R3T 1L7

April 30, 2012

Attention: Lou Chubenko

Project: Floor Slab Investigation
644 Parkdale Street

On April 27, 2012 the National Testing Laboratories Ltd. conducted an investigation of the floor slab at the St. James Centennial Pool & Recreation Centre located 644 Parkdale Street in Winnipeg, Manitoba. It was reported that the flooring in the fitness centre is lifting from the floor slab due to high relative humidity levels within the concrete. Recent measurements performed by another firm indicated the relative humidity of the floor slab was 99%. The purpose of the investigation was to determine the thickness of the concrete slab, presence of vapour barrier below slab, and the subsurface conditions below the slab.

The floor slab was cored in one location within the Body/Mind Fitness Classroom, 2.5 m north of the entrance to classroom. The concrete slab thickness was recorded, and the underlying granular base material was probed for an estimate of relative density. The relative density of the granular base at this location was considered to be compact to dense. There was no void between the concrete slab and the granular base. The granular base was then hand augered to a depth of 0.75 m below the surface of the floor slab. The augering was terminated at that depth due to very difficult augering conditions because of the presence of approximately 40 mm aggregate within the granular base. There was evidence of vapour barrier present 100 mm below the underside of the concrete slab. The vapour barrier was placed between layers of the granular base. There was no evidence of free water in the test hole, the granular base was considered moist, but not saturated.

The core location was backfilled with sand and capped with grout. The concrete core and granular base samples were returned to our laboratory. Photos of the concrete core sample and granular base material are attached to this report.

The granular base samples obtained from various depth of the test hole were tested for moisture content. A summary profile of the test hole is shown in the table below.

Core No.	Core Location	Depth (mm)	Material	Moisture Content (%)
1	Body/Mind Fitness Classroom	0 to 145	concrete	n/a
		145 to 245	20 mm granular base	4.0
		245	vapour barrier	n/a
		245 to 450	20 mm granular base	3.9
		450 to 600	20 mm granular base	3.9
		600 to 750	40 mm granular base	3.9

Based upon our investigation, it was not evident why there are high relative humidity results in the concrete slab. It may be possible that the concrete slab is drawing moisture from the granular base immediately below the slab above the vapour barrier. Typically the vapour barrier is directly below the concrete slab, however, at times it is used with some base material above it. Having granular base material above the vapour barrier allows for the concrete slab to draw moisture in an attempt to prevent curling of the slab as it cures. This practice may be the root cause of the high RH% readings.

We appreciate the opportunity to assist you in this project. Please call if you have any questions regarding this report.



Jason Thompson, C.E.T.
Manager, Materials Testing Services



Figure 1 - Concrete core adjacent to core location



Figure 2 - Granular base course at underside of concrete slab



Figure 3 – Granular base obtained from test hole



Figure 4 – Poly vapour barrier present 100 mm below underside of concrete



Figure 5 – Granular base at a depth of 0.75 m below top of concrete slab



Figure 6 – Core sample obtained from concrete slab