

**DSI References**

Owner City of Red Deer, Canada
+++ Contractor Cover-All Buildings, Calgary, Canada
+++ Consulting Engineers J.R. Spronken & Associates, Calgary, Canada
DSI Unit DSI Canada Ltd., Western Division, Surrey, Canada
DSI Scope and installation of 64t of DSI Monostrand Tendons

**DSI Monostrand System Prevents Loss of Material**

The Canadian city of Red Deer, an important industrial location of the Province of Alberta, is located between the cities of Calgary and Edmonton. As is common for the region, the winters in Red Deer are very cold, which especially affects the city's road network. Each year, large quantities of sand and de-icing salts are used to free the city streets from ice and packed snow. Up to now, these materials were stored unprotected from the elements. This resulted in loss of material due to atmospheric exposure and in environmental problems caused by de-icing salts that contaminated surrounding soil.

Within the scope of a relocation program of several civic service buildings, the City of Red Deer decided to build a covered storage facility for sand and de-icing salts in April 2007. By appropriately storing these materials, the city will save considerable cost and protect the environment.

In order to achieve the main goal of preventing material loss, the consulting engineers chose a post-tensioned slab-on-grade structure that would result in a monolithic slab with no cracks. With a length of about 78m, a width of 38m and a thickness of 0.355m, the slab is very large.

Since the slab needs to hold a lot of weight and support loading and moving equipment, a tremendous amount of post-tensioning is required. All in all, DSI supplied 58,000m (64t) of 0.6" Extruded Monostrand and 2,160 special Monostrand Anchorages. Other than slab edge reinforcing, there is no rebar installed in the slab. To compensate for temperature shrinkage, the strands, which were installed both transversely and longitudinally, were stressed in a staged pattern.

DSI supplied, installed and stressed all of the post-tensioning materials. With winter quickly approaching, time was especially scarce. Consequently, materials had to be delivered to the site quickly and the layout had to be completed as soon as possible so concrete could be poured. Post-tensioning was successfully completed within a mere 5 ½ weeks from the date of receiving the order to proceed. Due to the tight schedule, all of the strands were fabricated on site by pulling the strand directly from the bulk packs.

Everything proceeded seamlessly, and the contractor was able to pour the concrete one week earlier than originally scheduled. The structure was completed according to schedule to allow use during the coming winter months.

