2009 Outstanding Architectural Project

Surrey 2010 Olympic Games Preparation Center

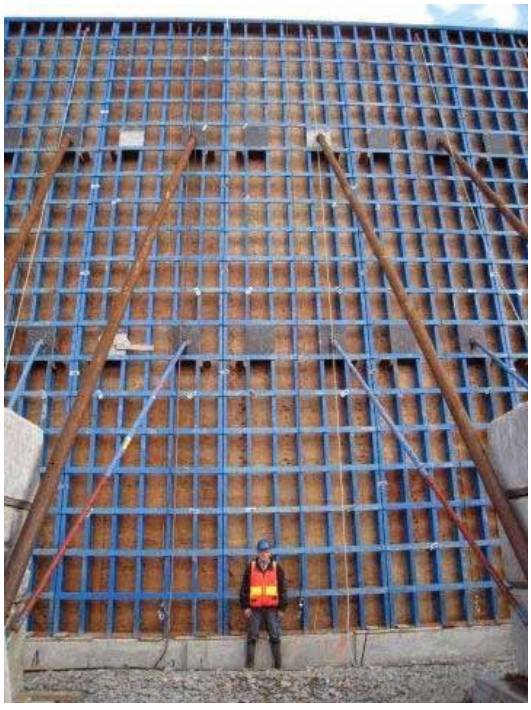
In February 2010, Vancouver hosted the Winter Olympic Games. In preparation for the quickly approaching games, new buildings were constructed all over the Vancouver area. A high-profile example of one such building is the Surrey 2010 Olympic Games Preparation Center. This center played a prominent part in the Winter Olympics as a training venue for Olympians and volunteers as well as a central location for all recruitment and logistics.

The use of architectural structural shotcrete and the schedule savings versus conventional poured concrete proved to be the crucial component that saved the day for this critically-schedule-dependant project.

Because the early phases of the Olympic Games Preparation Center project got off to such a late start, our company was approached and asked just how fast this architecturally intense design could be done. The walls ranged in size up to 40 ft (12.19 m) high with curved tops, extensive reveals, recesses, and block-outs. Also, the specified finish was a light sandblast and two coats of clear sealer, so there was no room for repair or remedial work. This project had to be done in one-quarter of the time normally allowed for conventional forming and had to be perfect—the first time around.

The project management company allowed for 24/7 production to ensure delivery of this time-sensitive project, and even then there was slim hope by the design and management team that the 6 weeks alloted to produce the structure would be enough.

The time from when the first excavator bucket went into the ground, until the milestone date of structural completion was reached was reduced to 3-1/2 weeks without the need for even a second shift! This may seem amazing in itself, without the fact that it was done during a 50-year record-breaking snowfall and freezing period. Through up to 3 ft (0.914 m) of snow and sub-zero weather conditions for the entire duration



of the project, shotcrete was the only concrete being placed. Our company worked under extreme time constraints and achieved results of the highest quality.

All of the vertical portions of this project were placed using shotcrete. From the footings up, all of the walls were formed on one side and shot against, including several sections where the walls had to run by the level of suspended slab interrupting on the inside. The need for continuity in the exterior finish was of the highest importance. All of the reinforcing steel for the suspended slabs had to be doweled out on the inside face of the walls and special care had to be taken to ensure that conditions vital to the building envelope were not compromised.

There were countless instances where the shotcrete process was used on a structural wall, building envelope, finished product, and the architectural feature. Not only were the walls architecturally challenging in a level-of-finish aspect, but they were also challenging in a logistic aspect. They ranged up to 40 ft (12.19 m) high with curving tops that were recessed, with multiple reveal lines, and an abnormally high amount of block-outs. The formwork was erected to the full height for all of the walls to ensure the continuity of reveals and to maintain the truest line of construction. To conventionally form and pour a 40 ft (12.19 m) high wall with all of these elements would have required six times the formwork material; taken at least five times longer; and there would have been no way to ensure the consolidation around all of the block-outs, which were randomly stacked in multiple layers.

The formwork panels used were a large contributing factor to the success—these high-lift-shoot panels were designed for this project and, specifically, for shotcrete. The ability to stand these 40 ft (12.19 m) high panels quickly and easily due to the decreased weight, in comparison to conventional forming, was also a major governing factor to help reduce the cost and time of the overall project.

Conventional formwork was ruled out as impossible to achieve all of the desired results—

Photo courtesy of Mike Ber, www.Surrey.com

regardless of the extreme time constraints—due in part to a number of factors: cost, labor, and the challenges involved in effectively vibrating around numerous block-out recesses and reveals. Shotcrete proved to be not just the best solution, but the only solution! At the end of the day, the shotcrete process offered significant cost and time savings over conventional forming.

The significance of the shotcrete work to the 2010 Winter Olympic Games Preparation Center can only be described as the integral component to the entire structure, and a cornerstone to conquering the demanding schedule.

The Outstanding Architectural Project

Project Name
Surrey 2010 Olympic Games Preparation Center

Project Location
Surrey, British Columbia, Canada

Shotcrete Contractor
Conshot Systems, Inc.*

General Contractor
Septra Projects Ltd./
Turnbull Construction Services Ltd.

Architect/Engineer
CEI Architecture Planning Interiors

Material Supplier/Manufacturer
RMC Ready Mix Ltd.

Project Owner
City of Surrey

*Corporate Member of the
American Shotcrete Association