


 DSI References

Owner City of Richmond ,
Richmond, Canada +++ **General Contractor** Dominion Fairmile Construction Ltd., Vancouver, Canada +++ **Architect** Cannon Johnstone Architecture Inc, Victoria, Canada +++ **Engineering** (roof panels & building façade) Fast & Epp Structural Engineers, Vancouver, Canada +++ **Engineering** (overall structure) Glotman Simpson Consulting Engineers, Vancouver, Canada +++ **Contractor** (roof panels) StructureCraft Builders Inc., Delta, Canada +++ **Subcontractor** (galvanizing) Ebco Metal Finishing, Richmond, Canada **DSI Unit** DSI Canada Ltd., Western Division, Surrey, Canada **DSI Scope** Supply of over 1.300 galvanized Ø19mm and 28mm DYWIDAG THREADBAR[®], supply of accessories



Innovative Roof Design for Modern Skating Oval in Canada with DYWIDAG Systems

The western Canadian city of Richmond in the south of Vancouver is looking forward to the 2010 Olympic Winter Games: the modern ice skating rink, Richmond Oval, was opened to the public in December 2008. The 2010 Olympic Winter Games' long track speed skating will take place on the Oval's 400m long skating track.

The 32,000m² Richmond Oval will accommodate 8,000 visitors during the 2010 games. After the Olympics, the Richmond Oval will be converted to house multi-purpose areas for other forms of sport. The Oval will be used as a sports and wellness center both before and after the Winter Games.

What is especially interesting about the Richmond Oval is its roof structure. The uniquely designed wooden roof is wave-shaped and features one of the longest spans in North America with an approximate surface area of 26,300m². The blue tinged "beetle wood" of British Columbia's mountain pine beetle ravaged forests was deliberately chosen for the

Richmond Oval's roof to showcase this unique British Columbian product to the world.

Working with wood on such a large scale introduces special problems not encountered in smaller wood structures. The designers solved these problems by including steel elements along with the wood. The problem of maintaining the curve in each of the roof's unique wave-shaped panels was solved by using DYWIDAG THREADBAR[®].

Each panel of the roof is made of many small pieces of wood assembled in a V-shaped length which is curved along its bottom edge. To maintain that curve, a galvanized bolt runs directly below the curve, tying the ends of the panel together and maintaining the tension in the segments. As a result, the DYWIDAG THREADBAR[®] used for the roof are clearly on display as an integral part of the roof structure.

For the roof of the new skating oval, DSI supplied over 1,300 galvanized 19mm 517/690 MPA, GR 75 (BST 500/550) DYWIDAG THREADBAR[®]s with associated hardware. In addition, 54 galvanized 28mm 517/690 MPA, GR 75 (BST 500/550) DYWIDAG THREADBAR[®] were used for the lobby roof.

Because of the visual prominence of the bolts in the roof design, couplers were not acceptable to the designer. This meant that the DYWIDAG THREADBAR[®] (average length = 13.1m) had to be supplied full length: a challenge not only for shipping, but also for galvanizing.

Because the longest locally available galvanizing kettle could only accommodate lengths of up to 9.2m, all the bars had to be double dipped rather than just single dipped. Fortunately, full length threadability was not required for this project, and the galvanizer was skilled enough to double dip the 19mm DYWIDAG THREADBAR[®] without bending them in the process.

All bars had to be individually tested for threadability at both ends. In addition, there were over 204 uniquely identified bar lengths, each of which had to be individually tagged in order to facilitate assembly at the contractor's shop.

The contractor, StructureCraft, who had chosen DSI because of its specialized systems, was very satisfied with the DYWIDAG Post-Tensioning Systems supplied.

