Spectacular SkyDome: A Sports Fan’s Fantasy Come True

By Robert M. Bradford

When the 1989 American League East champions, the Toronto Blue Jays, threatened once again this fall to become the first Canadian team to play in a World Series, America held its breath. But had the unthinkable happened, and baseball fans had to travel to Toronto to see the world championship decided, they would at least have had the chance to experience the newest and greatest sports stadium in the world—spectacular SkyDome!

It sets so many standards for design, engineering and construction that they are impossible to list. The world’s first retractable roof. The world’s largest live-action scoreboard. Built in the deepest excavation ever dug in North America. And nestled comfortably in the shadow of the world’s tallest building—the CN Tower.

SkyDome isn’t just a baseball game or a football game, or a rock concert. SkyDome is a total experience that captivates the visitor and makes all else irrelevant.

“The entertainment centre of North America,” is how the man charged with getting SkyDome built described it in a presentation to the Ontario General Contractors Association early along in the conception stage. “SkyDome will live seven days a week and draw people to it even when there is no specific event on” said Chuck Magwood, the first president of the Dome Stadium Corporation.

Project of Epic Proportions

SkyDome is a structure into which a 32-story apartment building could be completely enclosed. The project used 105,000 cubic yards of concrete and sits on over two million square feet of floor plates. Four miles of temporary handrails were used during construction and there are 15 miles of railing in the finished product. Every statistic and detail of SkyDome’s design and construction marks it as a construction project of epic proportions, and the complete structure is worthy of the distinction.

You could fit an average-sized bungalow into each of the building’s double-T precast concrete footings.

Without question the single most notable aspect of the SkyDome is its roof; 7,000 metric tons of steel covering eight acres which can be fully closed or opened to 91 percent full exposure in 20 minutes.

The SkyDome roof is the first of its kind in the world and already Japanese businessmen are looking at adapting the technology. It is a
huge framed parabolic arch structure
with 5,000 tons of movable sections
that are supported by 54 14-ton
wheel assemblies and moved along
rails built into the structure.

The roof is 674 feet (205 metres)
wide at its broadest point has a sur-
face area of 339,343 square feet
(32,525 m$^2$). The inside height is
282 feet (86 metres). So
sophisticated are the mathematics of
the roofs design that it would pro-
bably have been impossible to create
without the use of a minicomputer
based CAD system.

“The geometry of the roof, the
number of pieces that come in at all
different angles, have been a real
challenge,” said David Lane, vice-
president of Dominion Bridge On-
tario, the company which supplied
and installed the structural steel for
the roof. “It’s a drafter’s nightmare
to be able to ensure that what’s put
on paper will be welded and
fabricated at a certain angle that’s
three dimensional. Not only do the
angles swing in one direction, for
example, but they may also tilt at
another.”

Rod Robbie and Mike Allen are
the brilliant joint-venture partners
who combined their talents to
design SkyDome and its unique
roof

“We took the position that the
stadium itself, although a complex
project, was relatively easy to design
when compared with the difficulty
of designing a retractable roof,” said
Rod Robbie before the project was
completed.

“The genius of Mike Allen’s solu-
tion came because he realized that
nesting and telescoping are the same
thing. He managed to figure out a
way of dividing (the roof) into four
parts-two of which were spherical
and two parabolic. The result is
two rectangular shells that fit over
each other and two quarter domes
that fit underneath those.”

Sports Fan’s Fantasy

The story of SkyDome is much
more than just a story about the
engineering triumph of the roof. In-
side, the building is a sports fan’s
fantasy come to life.

Original seating design called for
54,000 seats for baseball and 56,000
for football, although somewhere
during the construction process a
few thousand seats just mysteriously
disappeared. At field level 23,000
movable seats are positioned to pro-
vide optimum sightlines depending
upon the sport.

There are also 161 private boxes
for those who can afford the
millions it costs to lease one for 10
years. Built into the stadium to give
an “on the field” feeling, the boxes
feature two-tiered balconies
overlooking the field’ a lounge area,
kitchenette, wet bar and washrooms. Even SkyDome’s regular seats are better than most sports fans have ever encountered. They are 19 inches wide, no more than 20 per row and you can actually get your knees in comfortably without kicking over your beer.

Another first for SkyDome puts the fan right into the action. The world’s largest replay/scoreboard measures 35 feet high (10.6 metres) by 115 feet wide (34.8 metres) and delivers a picture as clear as the 24-inch console in your living room. It is three times larger than any ever built by its manufacturer, Sony.

Also watching the game at SkyDome will be the guests in the 70 rooms of the SkyDome Hotel which overlook the playing field.

The 364-room hotel was one of the later additions to the SkyDome concept and for about $800 you can get one of the good rooms with a lounge on one level and a bedroom on a second.

**Skydome is a total experience that captivates the visitor and makes all else irrelevant**

Then there is the rest of SkyDome—the facilities and attractions that make it so much a total experience. Choose one of four restaurants from which to watch the game, or enjoy a drink at a 600-foot-long bar. McDonalds holds the snack concessions and has put its largest Canadian restaurant into the SkyDome.

Then there’s also a 50,000-square-foot fitness centre, an entertainment centre with indoor golf and theatres, retail and commercial space and more.

**Construction Challenges**

If designing SkyDome was a challenge for the Robbie/Adjeleian Norr Consortium, so too was construction of the super project by general contractor Ellis-Don Ltd. Fifteen cranes and 550 tradespeople were onsite at the peak of construction and since the project was on a “fast track” system, Ellis-Don was getting the working drawings as they were being completed. “It’s like buying a jigsaw puzzle where
you only get one piece at a time,” said the project’s first project manager Len McLeod, before he left Ellis-Don mid-project (and was replaced by Tony Van Loon).

To heighten the challenge for the general contractor, time became a critical factor almost from day one. There was political and public pressure for a completion in time for the Blue Jays ’89 opener on June 3 and everything seemed to be working against that goal. First there were the labour mikes of the summer of 1988 which held up work for about seven weeks. Then followed a wet fall which impeded the closing-in process.

At the beginning of the project, the city of Toronto’s anti-development factions held up the necessary approvals and permits for six months longer than was necessary, but that didn’t change the date the project was supposed to be completed.

Time was a factor for all of the contractors onsite, including the drywall contractors. Cesaroni Contracting Ltd., an AWCI member, had the contract for the major drywall aspects of the job and the company had over 100 workers on the project between December 1988 and June 1989. As well as doing all of the common areas, private boxes and other parts of the SkyDome itself, Cesaroni was also called upon to go to work in the SkyDome hotel when another company, Brunswick Drywall, went bankrupt in the middle of the work. There were 130 tradesmen on that part of the project and they didn’t finish up until last month.

Peter Koropisz, president and general manager for Cesaroni, says the job wasn’t just your run-of-the-mill contract. “It was design/build,” he said, and day-to-day you “just didn’t know what you were getting into.”

Koropisz also talks about tight delivery schedules for materials on-site. Often there would be a half day wait just to get suppliers trucks onto the job.
Story Behind the Dome

Ground breaking for SkyDome took place in October, 1986, but before that first shovel was planted on Toronto’s “railway lands,” at the foot of the city’s financial district, there was a lot of political spadework which had to come first.

Back in the days when the Tories ran Ontario, the project began as some loose remarks passed between higher-ups. Quite likely it came over lunch or dinner at Winston’s between former premier Bill Davis and former Metro Toronto chairman, Paul Godfrey. Both are big sports fans, both were amongst the prime movers for the project later on and both were inclined to the creation of monuments for whatever their own reasons.

The early trial balloons turned into a special commission to study the question of siting such a project. The commission reviewed about a dozen sites, some of which offered some distinct advantages over the congested downtown location eventually chosen. And when the commission came up with their choice, there was some resentment from unsuccessful groups about Toronto once again getting the cream off the top, as well as some speculation that insider politics had as much to do with the site selection as anything else.

As design of the SkyDome got underway in 1983, a provincial Crown Corporation—the Stadium Corporation of Ontario—was set up to develop and build the project. Then financing became the next question. What began as a $225-million project has come out somewhere near $500 million but SkyDome is seen by its investors as an instant profit-maker.

The Ontario and Metro Toronto governments got the financing started with $30 million each. The rest of the project was financed by the private sector, by selling $5-million shares in the project and through various other marketing initiatives undertaken by the Stadium Corporation (i.e., sale of box and club seats).

From the very first baseball pitched in the new facility this June, SkyDome has promised to be a financial success for the private investors who shared the original vision. With hefty ticket prices, watery beer at $3 per glass and even the traditional ballpark hotdog at $2.50 ($6.50 in the private boxes), gone are the days when a couple of young baseball fans could pool their pennies for a spot in the bleachers. But for those with the price of admission, SkyDome is an experience the sports fan will never forget!