

Contract Architecture

## The Olympic Arch of Turin



### IN SHORT

#### The Olympic Arch of Turin

Arch height: **69 m**  
 Arch length: **55 m**  
 Weight: **460 t**  
 Footbridge length: **368 m**  
 Max. footbridge height: **11.8 m**  
 Project: **Hugh Dutton**  
 Inauguration: **October 30, 2006**  
 Customer: **Agenzia Torino 2006**  
 The group that won the competition:  
**Studio Benedetto Camerana**  
 Executing company: **Sermeca, Falcone**



The giant arch constructed in 2006 for the Olympic Winter Games became known as the symbol of that sporting event, and served as evidence of the many changes in recent years in the region of Piemonte. The construction of such a complex project was made possible due to the Winter Games being presented to the World.

### The choice of the arc

The 2006 Olympic Winter Games, besides beautiful memories, have left behind in the city of Turin some new structures built especially for the event. Among these structures is one of the showiest, the enormous arch that connects the area of the former Olympic Village with Lingotto area of Renzo Piano. Constructed out of the necessity to be able to join the two areas of the city separated by the railway, this arch 69 meters tall and 55 meters wide red arch in steel, together with the 400 meters long pedestrian footbridge, which spans it below, became a symbol of the Piemonte region. The arch, which moving loads in pure compression are born by the cement structures, is stabilized by the supporting aerial element that helps to maintain its plane.

"At the beginning the idea of working on the arch came from looking at the parabolic arches of the wholesale Markets - remembers Hugh Dutton, creator of the project - and, subsequently it was translated in a structure of high structural efficiency using a series of suspension cables that, not only hold up the deck, but also stabilize the arch and distribute the weight along its length, according to a structural mechanism similar to that of a bicycle wheel."

### Birth of a symbol

The idea to create a symbol for the city was decided during the planning phase of the project, and it was in part of determining the choice of the team members that would complete the construction. "At the beginning of the design competition - recalls the architect **Benedetto Camerana**, coordinator of the Olympic Village project - in 2006 he pointed out the bridge as the only element potentially useful to construct as a strong and innovative symbol that the Olympic games needed.

That is the reason why I have asked Hugh Dutton to join our team, precisely to respond to this plan and to help make the bridge a unique symbol. I was already familiar with Hugh's brilliant projects: he started out as an architect, and later became partner with **Peter Rice**, one of the greatest engineers of the 20th century. Hugh and Peter had already worked on the project of a bridge suspended from an arch. Based on these shared ideas, they carried out the huge task of designing the shape. Hugh has the task of designing the tensions and details. I just supervised and protected his work." Crossing above the railroad and joining the ex industrial zone to the Lingotto, the arch symbolizes the passage from the industrial Turin to the city of services and technology.

"I think this arch has already become a symbol of Turin - continues Camerana -, a city that's changing. It is still an industrial city, with industries that now feature more innovative technologies. Since it opened to the public, the bridge has been used by people crossing from one side of the city to the other, as well as by those who just want to look at it. So yes, I'd say that the arch and the bridge have helped to change Turin's identity.

"When I look back and reconsider the job we did - adds Dutton -, I now appreciate more than before the contribution that our red arch has made to the city of Turin as symbol of optimism and regeneration."

### Critical issues faced and overcome

To construct the masterpiece on time was not easy, due to logistical problems. The hardest part was crossing the railway - much harder than crossing a river. Trains kept passing by while the work was going on. We only stopped the rail traffic for a few hours one night so we could position the main structure. To raise and position the arch, a delicate little thing weighing 500 tons and 69 meters high, we worked at dawn one Sunday, from 6 in the morning until midday. Secondly, there was the fact that the structure is completely asymmetrical. The bridge is curved, in order to link two existing places in the city that are not on the same axis. The curve causes the arch to incline and almost rotate. In its declension every element has a different dimension. It is a unique project, just as I expected from Hugh Dutton", concludes the architect Camerana.

To resolve a few technical and structural issues as well as a few aesthetic problems caused by a raised metal structure subject to sedimentary shifts, weather and severe changes in temperature, the companies executing the job, Sermeca and Falcone, commissioned Mondo.

### Ad hoc solution

An alternative technical proposal was decided based upon a comparison between **Fulvio D'Alessandro**, the Italian Contract Manager of Mondo, and eng. **Benedetto** of ATI Sermeca - Falcone. During the preliminary phase, inspections were done to verify the typology and the characteristics of the origins of an important metallic structure. During the engineering phase, a multilayer containing epoxy resin was considered for the pedestrian passage. Nevertheless considering the suspended structure, with connecting steel cables and bracing pillars, it was presumable to foresee structural oscillations, movements on the transversal and longitudinal axes, consequent expansions after sudden temperature changes, and therefore creating a possible fragility of the flooring. Therefore I intended to propose a solution borrowed from the outdoor sports field that would be able to guarantee carrying capacity, load distribution, resistance, dimensional stability, acclimation to the different environmental conditions, resiliency, durability," remembers Fulvio D'Alessandro.

Then the proposal, done by eng. Benedetto, was forwarded to the architect, Dutton, for the variance survey and the color selection of the Sportflex tile flooring. We didn't create just a simple floor - concludes D'Alessandro -, but a real composite and multilayer system with elements thought of specifically for the sport, and that can also be adapted to the various engineering demands of the civil yards." The result was a technical ad hoc

solution created to satisfy the client's demands: a self-installing system designed for outdoor usage with high dimensional stability, and resistance to abrupt temperature changes bad weather and natural expansions of the metallic structures. A solution assembled in work and constituted by: a supporting and stabilizing sub layer with crossed fiberglass enclosed in a cellular vinyl composite (3 mm thickness); a further stabilizing and insulating **Everlay "A"** foil (1.2 mm thickness); resilient **6 mm Sportflex** floor tiles with high mechanical resistance and "footstep" type embossed texture. The three layers were assembled onsite with two-component polyurethane adhesive, that together create a single monolithic 10.5 mm layer.

## **Not only a symbol**

It is correct to emphasize the symbolic aspect of the masterpiece, but let's not forget the arch practical function that joins the two parts of the city divided by the railroad and previously connected only by two crossovers. During the Olympic Games, the bridge helped the athletes to cross the railroad when moving from the Olympic Village to the sport centers during the competitions. Once nce the Games ended, the arch continued to be used as a pedestrian connection between the residential district risen in the ex Olympic Village and the railway station, and between the center of Lingotto and the subway station. "The arch is raised above the bridge, aesthetic and dynamic, embodying the dynamism of the new Turin. The project aims to minimize the quantities of materials used to appear athletic and efficient, to be in line with the sporting spirit of the Olympic Games," comments Dutton.

## Focus

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### PEOPLE - ARCHITECTS Benedetto Camerana



Benedetto Camerana, architect, landscapist, PhD in History of architecture and urbanism.

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### PEOPLE - ARCHITECTS Hugh Dutton



The architect Hugh Dutton (class 1957) currently lives in Paris where he teaches architecture at the Ecole Speciale d'Architecture

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### PEOPLE - ARCHITECTS Peter Rice (1935 – 1992)



Peter Rice was an Irish structural engineer

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### PEOPLE - ARCHITECTS Sermeca



Sermeca was founded in 1962 from the desire to meet the needs of man and at the same time to change them

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### PEOPLE - ARCHITECTS Falcone F.Ili



For over fifty years the company Falcon F.Ili designed and created steel structures in civil and industrial context

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The Hugh Dutton Associés created a group on flickr dedicated to the Turin's Olympic arch They have numerous fans who upload their photos every day. "We immensely like to discover that the footbridge became a place where citizens like to leave signs of their lives: lovers who celebrate their union , for example, inspired by Federico Moccia's novel, 'I Want you',and they leave padlocks suspended to the protective net", commented the architect of the Olympic arch Hugh Dutton.

### Slideshow

