

# The Re of the Olympic stadium

The Olympic Stadium of Helsinki is both architectural and historic monument. It is one of the best examples of modern Finnish architecture, and is said to be the most beautiful stadium in the world. It has been altered and enlarged several times. During the Second World War it suffered in the bombings of Helsinki, fortunately not seriously. The present complex thus is a result of several rebuilding periods but still characterized by the elegance of 1930's modern functionalism. The Helsinki Stadium was originally built in 1934-38. The building of the stadium was a great national campaign. Finland was a young nation, having become independent in 1917 and having suffered the horrors of a civil war in the spring 1918. After these stages the young country wanted to gain a modern, progressive image. Both architecture and sport were to be the means in the campaign to achieve this. Our sportsmen had been successful in the Olympic games in Stockholm in 1912 and in Antwerp in 1920. A national campaign was started to build a temple for sports as a monument to independence. A two stage architectural competition was organized in 1932-33 and it was won by architects Yrjö Lindegren and Toivo Jäntti. The work-

ing description was simple: "The stadium will be built of concrete".

The Finnish sportsmen continued to have success in the Games in Antwerp in 1920, in Paris in 1924 and in Amsterdam in 1928. This increased the general will to support the financing of the stadium. All sorts of products, drinks, suits, cigarettes, bread, plywood products, shoes, sweets etc. marked by a sign of stadium were sold to collect money for the construction works.

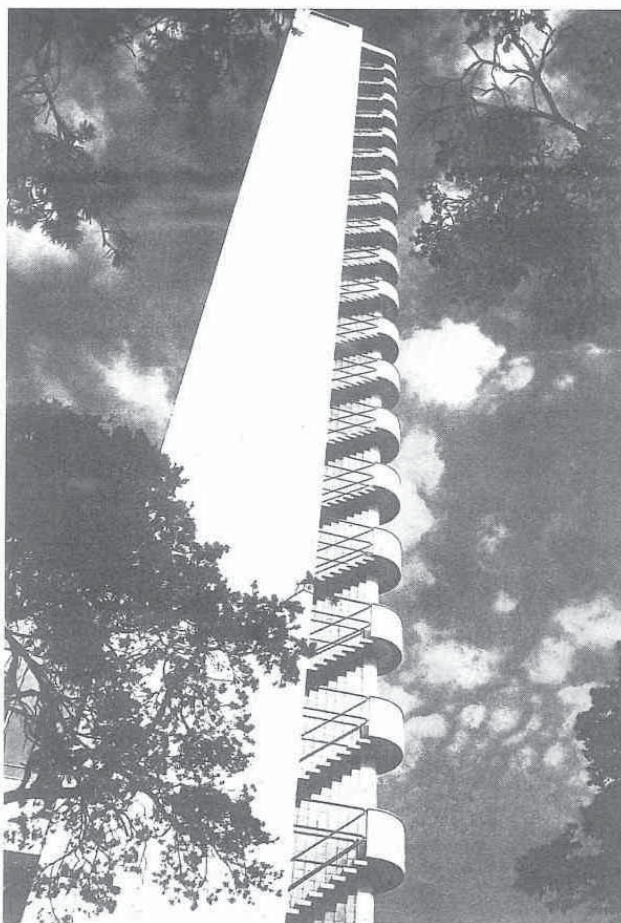
The architecture and the construction of the stadium was avant-garde functionalism. The 72 meters high whitewashed concrete tower is still seen from all over the city of Helsinki and marks the site of the stadium. The oval grandstand and a thin concrete wall bind together the bearing joint pillars. The main (western) stand is covered by a thin concrete roof, which is supported by slim iron pillars with mushroom capitals. The whole edifice was made of cast reinforced concrete. All the details were carefully designed by the architects. Steel, glass and wood were the additional materials, used colours were white, blue, natural concrete grey and a dark wood brown. The whole construction formed a continuous system expressing a beauty of tensions.<sup>1</sup>

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# Building

## n of Helsinki 1991-94

The construction works were followed by the whole nation. A famous photographer, Foto Roos, documented the works daily. These photos are carefully archived in the Finnish Museum of Sports. These detailed photographs give a clear description about those days building technology. Japan canceled of hosting the Olympic Games in 1940, and Finland was chosen instead to organize the Games. The original concrete auditorium was enlarged by a provisional wooden stage. However the Games were canceled because of the Second World War. The stadium suffered, though



1 The tower of the Stadium is a landmark seen from all over the City of Helsinki. Foto Roos 1938 / *Toranj stadiona je značajan orijentir u slici grada Helsinkija, foto: Roos, 1938.*

fortunately not seriously, in the war. After the war Finland was chosen as the site for the Games for 1952 after London in 1948. Again, a new rebuilding period started, the seating stage was enlarged by additional concrete constructions and a new provisional wooden seating stage. Yrjö Lindegren, who was a talented and skillful architect, had been the architect responsible for the Stadium from the beginning up until this Olympic period. However he died in the autumn 1952 and so the later works were planned by his partner Toivo Jäntti. After the Olympic Games



the wooden enlargement was taken down and the vast spaces under the seating stage were rebuilt as offices and a youth hostel. The original functional beauty has, perhaps, dimmed in recent times but, however, the Olympic Stadium is considered to be a national monument, which should be preserved both for its historical and architectural value.

### **European Championship in Athletics 1994**

In October 1989 the European Athletic Association decided that the European Championship in Athletics in 1994 would be hosted by Finland. The Olympic Stadium in Helsinki would be the main venue. The presumption behind the decision was that the stadium would be refurbished before the Championships. The decision started an extensive process entailing the complete renovation of the Olympic Stadium.

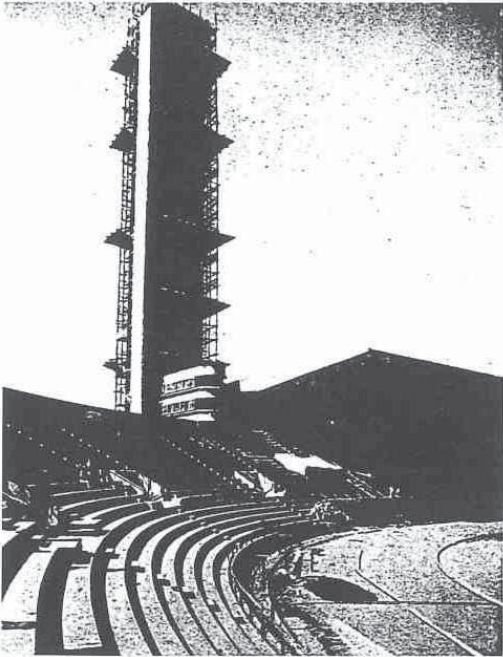
### **The refurbishment project 1991-1994**

When it was decided that the European Championship in Athletics was to take place in Helsinki, a detailed technical survey of the Stadium was started. It was found that the reinforced concrete constructions of the seating stage were in a critical state. The northern curve of the seating stage was immediately closed because it was near to collapse. The high tower and the painted surfaces had at some time been repainted with synthetic paints and the surfaces were now flaking. Part of the interior spaces were dilapidated. On the basis of the technical survey it was recommended that: - all supporting constructions be repaired, - the seating stage construction be repaired and covered by waterproof surface, - the benches with their iron supports be renewed, - a new rain water channels to be built on the sports field and the drainage renewed, - new protective surface coating on all concrete roofs to prevent carbonization, - damp-proof insulation of all open concrete planes, - all moving joints to be repaired, - re-plastering and painting of the tower, - repair of all the iron fences and rails.<sup>2</sup>

In the 1930s concrete was new and it was considered to be an eternal material. Now we know that this is not

true. The concrete deteriorates through the actions of rain and frost. The most problematic phenomena of the concrete is the carbonization. When the reinforced concrete is cast, a protective layer on the irons is formed. The fresh concrete is alkaline and this protects the reinforcement irons against rusting. In time the cement in concrete carbonizes during a chemical process where the carbon-dioxide of the air joins with the calcium of cement. This process continues at a rate about 1 to 2 mm per year and when it reaches the reinforcement irons, these begin to rust. The volume of the rusting iron grows and eventually blows the concrete surface away. Water can now enter the inner parts of the construction and the deterioration process will accelerate. This process had violated the Stadium which - as I mentioned already - was completely cast in concrete. The damage to the constructions led to a very substantial rebuilding. The Stadium is owned by a foundation in which the State and the City of Helsinki have the major responsibility. The budget for the refurbishment was calculated as c. 35 million dollars. The State and the City of Helsinki decided to divide the costs 50% to 50%. The planning of the refurbishment started and the execution was divided into several phases. Although the Stadium is generally considered to be a national monument, it is not protected by any legal measures. First in the spring 1991, when the works started, it was realized that the execution of the refurbishment meant that large parts of the original construction would be demolished. In practice the preservation of the architectural values of the stadium was threatened. Thus the National Board of Antiquities (NAB) was contacted. The Ministry of Culture gave a small sum of money for a historical inventory and documentation of the Stadium. The inventory and documentation is, to my mind, an essential part of the planning of a reparation of any historically valuable building. Now the inventory and documentation work was carried out during the dusty and noisy construction works. It was discovered that lots of original details such as doors, windows, electrical and water installations were still in use in the building but were planned to be replaced with new ones. Some heavy discussions with the planners and decision makers led to





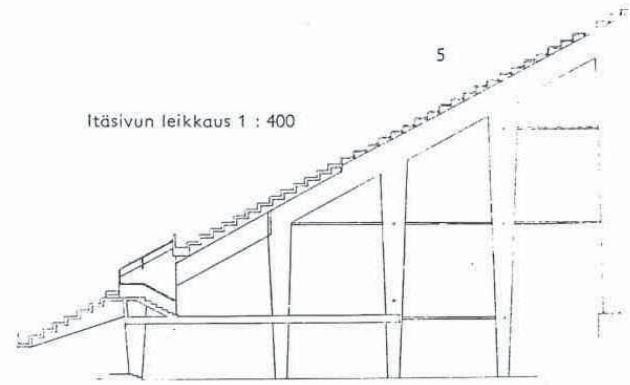
Tornin rakennustelineet

2

HELSINGIN STADION



Kaarteen leikkaus 1 : 400

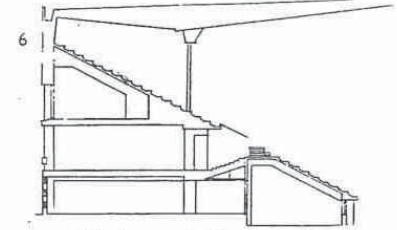


Itäisivun leikkaus 1 : 400

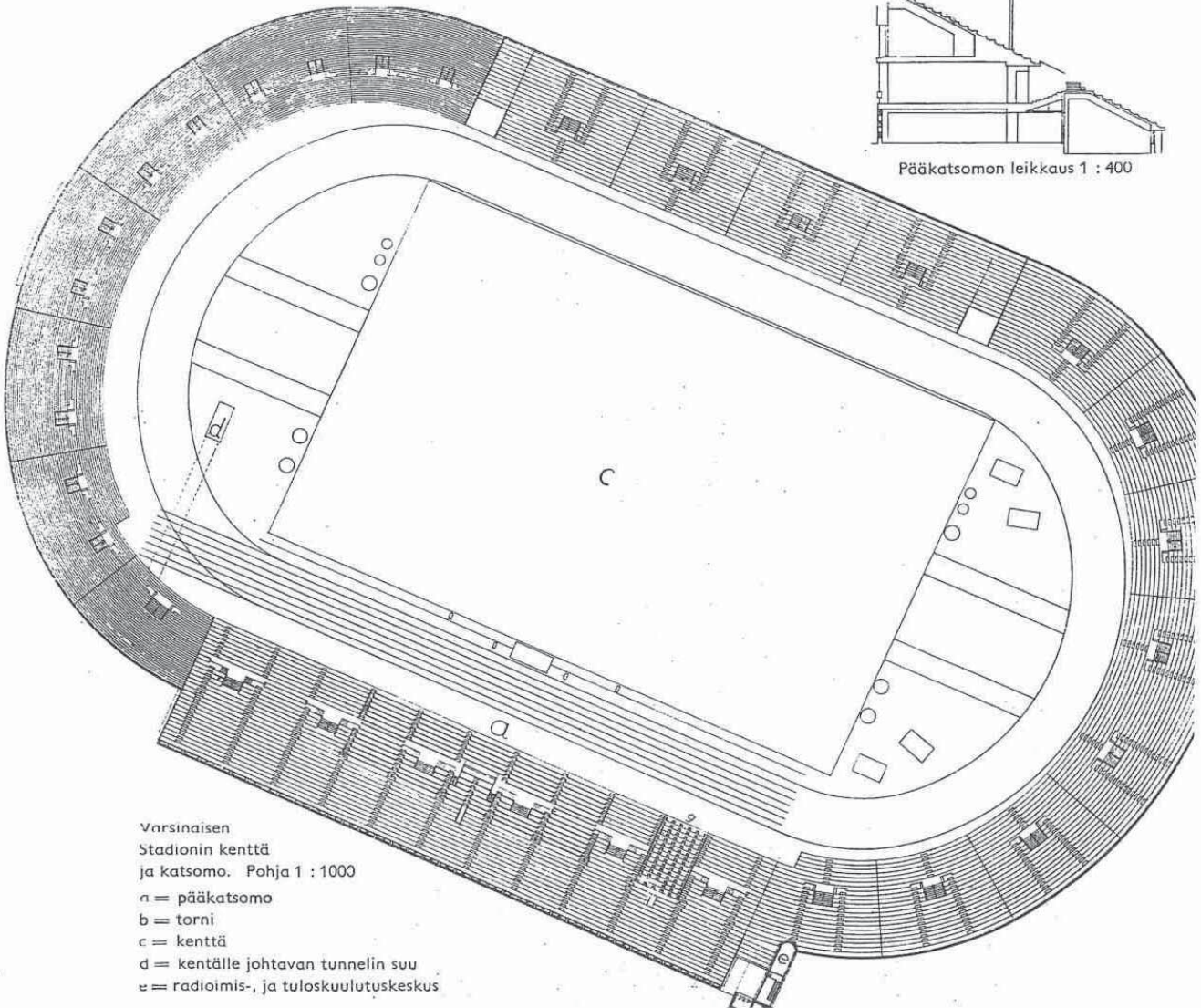
maavallikatsomo

rautabet.rakenne

puurakenne



Pääkatsomon leikkaus 1 : 400



Varsinaisen  
Stadionin kenttä  
ja katsomo. Pohja 1 : 1000  
a = pääkatsomo  
b = torni  
c = kenttä  
d = kentälle johtavan tunnelin suu  
e = radioimis-, ja tuloskuulutuskeskus

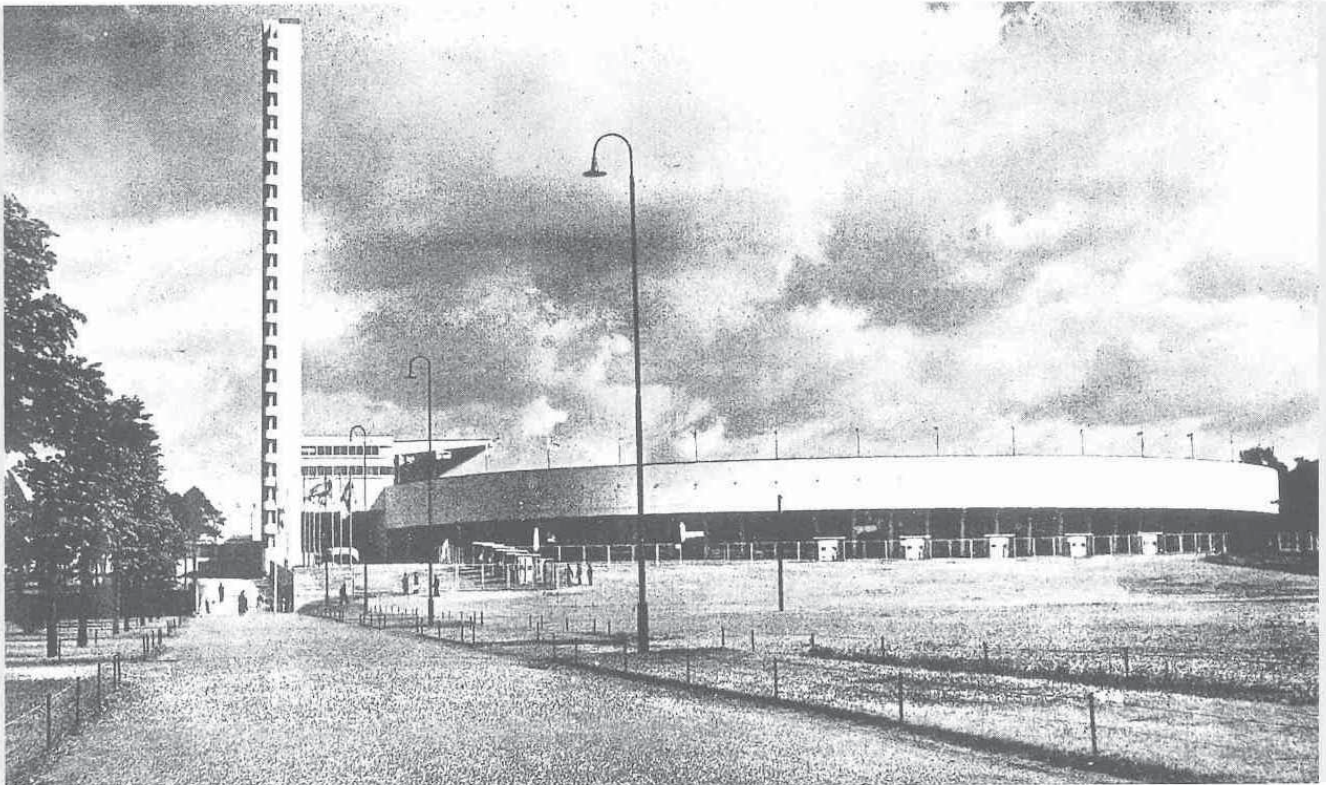


the decision that all those original details which could be repaired (conserved) would be preserved instead of replacing them with new ones.

At the same time, the crude repair of the deteriorated concrete parts continued. There were alternative ways to repair the concrete seating stages: - it would have been possible to remove the completely deteriorated horizontal planes and cast new parts on site, i.e. to use similar method than was used in 1930's<sup>3</sup>, - or to install

The renovation of the seating stage planes was especially crude work. Only the main seating stage, which was protected by a roof and the lower eastern stage, which was under a shelter of the upper eastern stage and cast directly on the ground could be repaired instead of being completely renewed.

The renewed seating stages and other concrete constructions were finally covered with a thick plastic coating in order to protect the new concrete against car-



3 The Stadium in 1938 seen from the south. Foto Roos / *Stadion snimljen s juga, foto: Roos, 1938.*

prefabricated elements on the supporting pillars. The latter method needed additional new beams to bind together the bearing pillar system. Unfortunately the latter method was chosen although it meant to changing the original continuous construction. The Stadium as a progressive modern construction lost a lot of its original avant-garde elegance. The former high jumper is now a disabled veteran standing with the air of crutches. The horizontal supporting constructions were treated by sandblasting the carbonized surfaces and the rust irons, and then rust-protecting the irons and casting a new concrete layer on top.

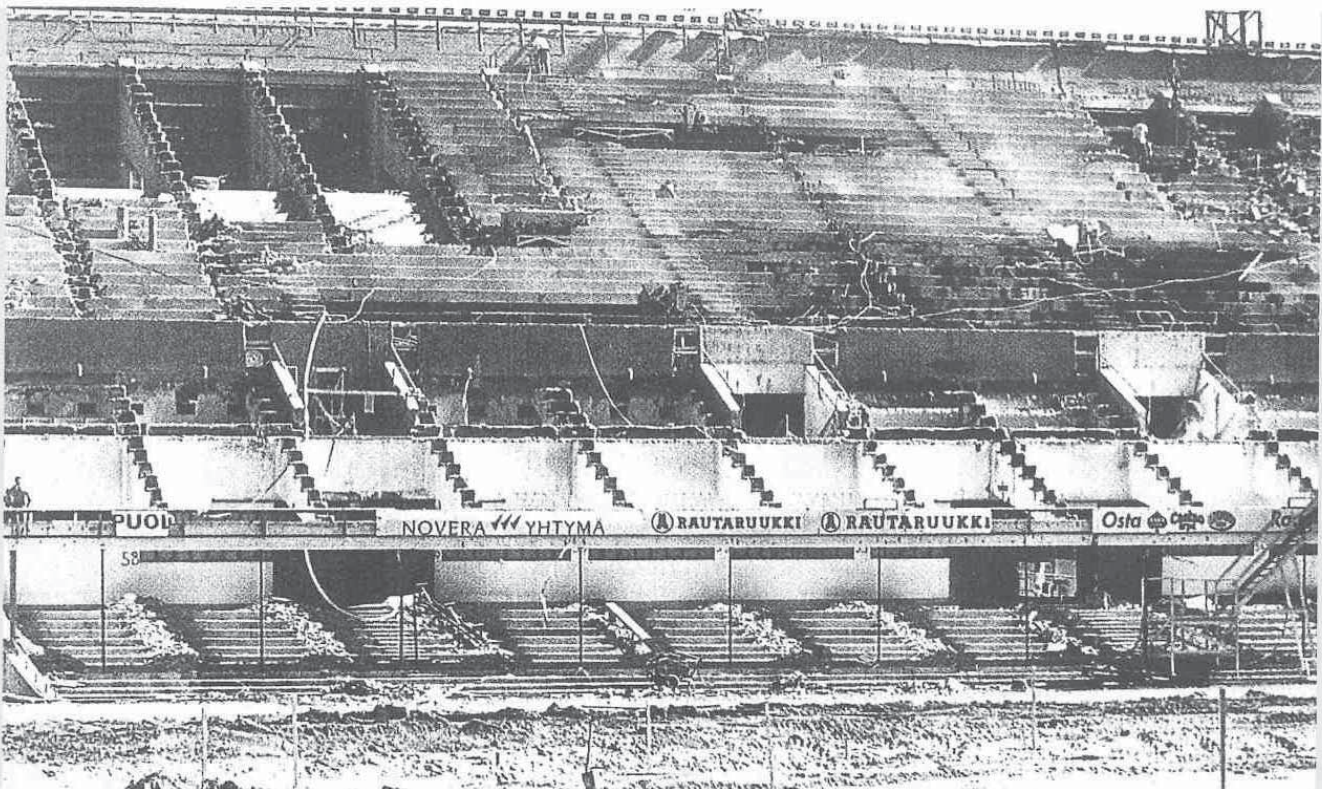
bonization. This, to my mind, is a theoretical utopia. The important characteristics of the original architecture of the stadium were the effects of simple materials, the mineral grayness of the concrete and wooden benches with their simple steel supports. The clumsy new look of the seating stages does not respond to the original. The repair of the inner rooms and spaces was more gentle, especially after the restoration specialists from the National Board of Antiquities had been allowed to participate in the decisive meetings. The knowledge revealed by the historical inventory and documentation helped the ongoing planning to pay attention to the orig-



inal parts of the Stadium. In fact the planning policy was changed and a lot of costs were saved, when e.g. the original windows and doors were repaired instead of being renewed.

The tower was considered to be an object of special care. It is a white, extraordinarily elegant and daring 72 meters high and 7,15 x 4,77 meters large reinforced concrete construction. It is a landmark which everybody knows. It had been painted many times but the latest

the iron parts were sandblasted, repainted and reused. When the refurbishment project was begun the attitude in the project had simply been to rebuild the whole Stadium and modernize it without any respect for the existing old rotten past. It was difficult for the antiquity authorities to enter the project in the middle of the work. The attitudes towards protection were unfriendly and adverse. Only little could be saved. The scale of the concrete constructions is enormous, and in the noisy, fast



4 The stages during the refurbishment 1992 / *Tribine u jednoj fazi obnove, 1992.*

layers were synthetic paint which had demolished the plaster. The plaster was removed, and a new, specially for this purpose developed plaster, so called Stadium plaster, was put on and painted with cement paint.

Much had been planned and executed before NAB entered the Project. The works in the northern curve were almost completed. The new benches and their iron supports differed much from the original ones. NAB demanded that in the following construction phases the benches should be design to look close to the originals. In the main seating stage it was decided that only the wooden parts of the benches would be renewed, while

and large process the preservation of some small details was considered useless peanuts. Fortunately, the architect, who in the beginning had not understood the values of protection but rather had ideas to create a new look for the Stadium (e.g. to paint the stages blue and white like the Finnish flag), soon agreed with the protection.

### **The conclusions**

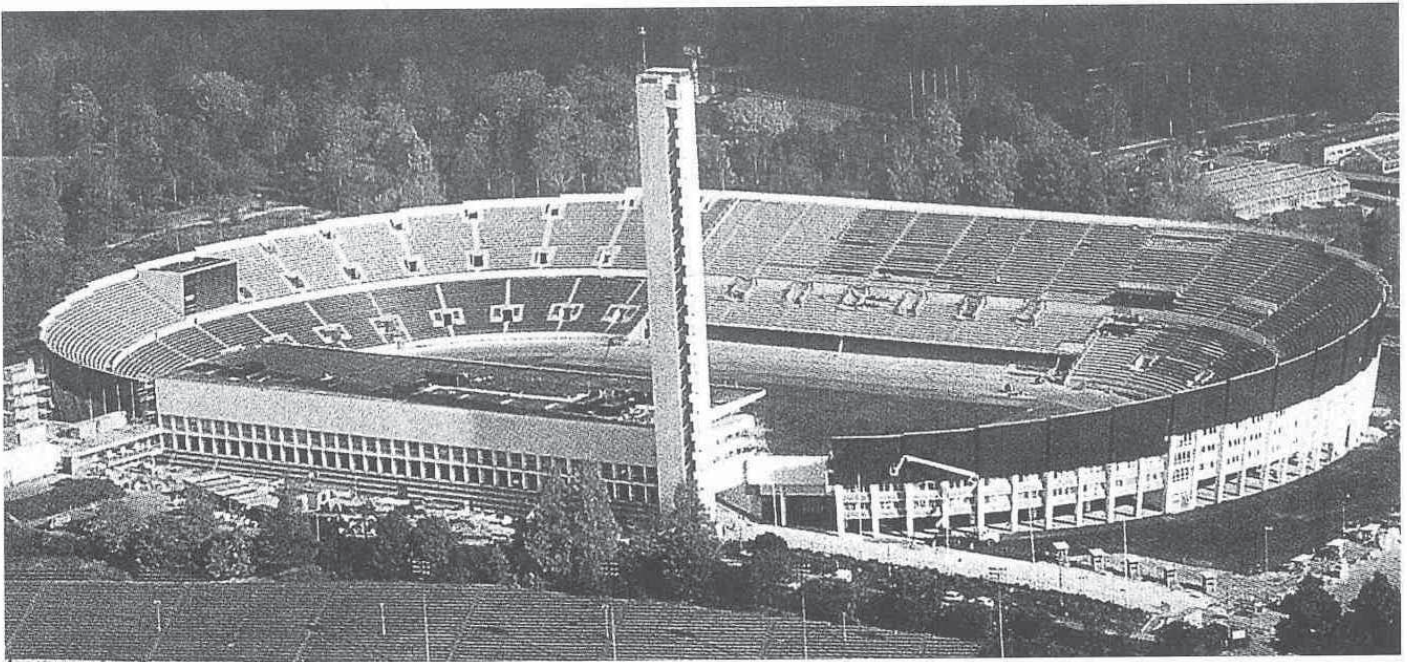
This almost three year repair process taught a lot. It was depressing to realize that concrete constructions are far from eternal, they are vulnerable, in need of continuous



maintenance and are difficult or impossible to repair. My generation was educated to believe in continuous scientific and technical progress but now we have to understand that much of what was false. The contemporary world like the Stadium is built mainly of concrete. Modern housing, highways and bridges, and new city centres created by modern building technology, are fragile. We are facing an enormous task. We are obliged to live with these modern constructions and to find

the modern needs of sports. To reconcile the ever developing technical improvements with the puristic language of the original architecture is a difficult but inspiring task for the restaurateur of modern movement buildings.

At present the inventories of the modern movement architecture are being made in many countries<sup>4</sup>. The built environment will be rebuilt and only some gems of modern architecture will be protected as monuments.



5 The present stage of the Stadium / *Sadašnji izgled stadiona*

methods to keep them in an economical way. During this century mankind has built more than during all the earlier generations. This generation has spread human influence to every corner of the globe and the effects have mostly been harmful for the earth, waters and air. The renovation process of the Stadium taught us that the eternal beauty, which was expressed in the modern architecture of the 30's, was a dream. Now we are facing the reality, we have to choose what will be preserved of the buildings of the modern movement.

Modern buildings are a big part of the national property of modern societies. They cannot be converted to museums but must be kept in every day use. So, the Olympic Stadium of Helsinki is still used as the main scene of big sports events and it is necessary to meet

The Olympic Stadium of Helsinki is to my mind such a gem. Although it lost its material and technical authenticity during the renovation, it still has its symbolic value left. It may not be valued by dogmatic antiquarians, but it still is the Finnish Olympic Stadium symbolizing modernity, belief in healthier and better future.



## Notes

1 Lindegren, Yrjö and Jäntti, Toivo, 1940. "Helsingfors olympiska stadion", pp 85 - 93, Arkitekten, Journal of the Finnish Association of Architects. Helsinki.

2 The minutes of the meetings of the Building Committee for Refurbishment of the Olympic Stadium, 1991-1994 and the Working Descriptions of the project, copies in the Archives of the national Board of Antiquities.

3 Discussions with architect Markku Aalto and construction engineer Mikko Vahnen during the years 1991-94.

4 The International Working Party for Documentation and Conservation of Buildings, Sites and Neighborhoods of the Modern Movement, DOCOMOMO, was founded in Eindhoven Holland in 1990 to start and to coordinate the protection of Modern Movement buildings internationally. The organization has produced guidelines, journals, articles and books on this matter.

## Sažetak

### Maija Kairamo

#### Obnova helsinškog Olimpijskog stadiona 1991-94.

Helsinški Olimpijski stadion je arhitektonski i povijesni spomenik, prvotno izgrađen 1934-38. iz lijevanog armiranog betona. Arhitektura i konstrukcija bile su tipa avangardnog funkcionalizma. Glavno mjesto događanja Olimpijskih igara 1952. bio je Helsinški stadion. Smatra se da je stadion nacionalni spomenik koji mora biti sačuvan, kako zbog svoje povijesne, tako i arhitektonske vrijednosti.

Sadašnji je kompleks rezultat nekoliko razdoblja obnove. U listopadu 1989. Europski atletski savez odlučuje da će Finska biti domaćin Eurpskog prvenstva u atletici 1994. Glavno mjesto događanja je Olimpijski stadion u Helsinkiju. Pretpostavka, koja je stajala iza ove odluke, bila je da će stadion biti "dotjeran" prije prvenstva, ali je bila nužna cjelovita obnova Olimpijskog stadiona.

Tridesetih godina beton je smatran vječnim materijalom. Ali, beton propada i taj se proces s vremenom ubrzava. Štete na konstrukciji nametnule su potrebu značajne obnove. Proračun namijenjen "dotjeravanju" bio je oko 35 milijuna dolara.

Premda je u obnovi izgubio svoju materijalnu i tehničku autentičnost, Olimpijski stadion još uvijek ima svoju simboličku vrijednost spomenika.