

**Zeitschrift:** IABSE structures = Constructions AIPC = IVBH Bauwerke  
**Band:** 4 (1980)  
**Heft:** C-13: Sports halls and stadia

**Artikel:** Abha Sport Centre, Abha (Saudi-Arabia)  
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**DOI:** <https://doi.org/10.5169/seals-16533>

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## 1. Abha Sport Centre, Abha (Saudi-Arabia)

*Client: Directorate General for Youth Welfare, Riyadh*

*Architect: Rais & Tukan, Riyadh*

*Engineer: Abalkhail, Riyadh*

*Contractor: Saudi-Asfalt Construction Co Ltd  
(subsidiary company of Nya Asfalt AB, Sweden)*

*Quantities of material:*

*Concrete: 50,000 m<sup>3</sup>*

*Re-bars: 3,000 m<sup>3</sup>*

*Prestressing steel: 50 t*

*Synthetic surfaces: 22,000 m<sup>2</sup>*

*Works duration: 1978-1981*

### General

Abha Sport Centre is situated about 20 kms from Abha, the capital of the Asir province in south-western Saudi-Arabia. Abha has a population of about 30,000. The town and its sport centre are situated in the mountain chain near the Red Sea at a level of 7,000 feet.

As a way to invest in the youth welfare, during the fast development of the country, the authorities are today building sport centres all over Saudi-Arabia. Abha Sport Centre is such a one giving possibilities to practise different kinds of activities and also offers a service-block with buildings for administration, kitchen, restaurant, library, auditorium (for 190 persons) sleeping accomodation and a Mosque.

The constructions for activities are the Stadium, Gymnasium, the swimming-pool and the 22 different playing fields, all surrounded by open green areas, well decorated with small concrete constructions such as reflecting pools and umbrellas.

For water the area is served by a distribution system from drilled holes. A water-tower of rather interesting design built like a cut pyramid, decorated with concrete blocks is placed in the middle of the area.

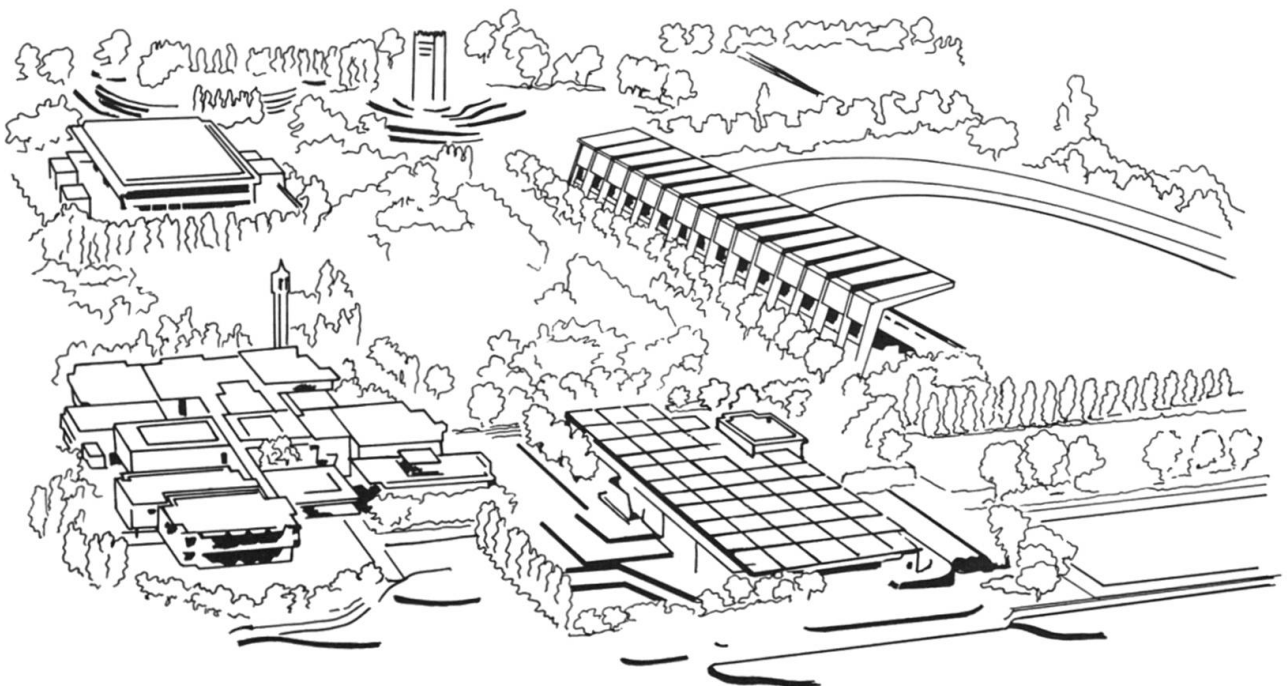
The electrical distribution is secured by a standby diesel generator set.

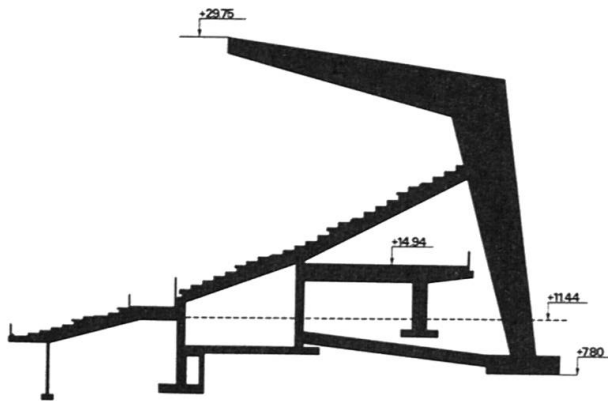
Large parking areas will be built in order to serve all visitors, who arrive either by car or by bus. A few pedestrian bridges and tunnels are constructed above the road system to avoid having people walking through the traffic.

The client is also planning to build a theatre and a V.I.P. guest house within the 202,500 m<sup>2</sup> large wall surrounded area.

### Stadium

The construction consists of a football ground surrounded by a running track all with synthetic surfacing materials and with the whole field lit by 45 m high steel-masts. The big roofed grandstand situated along one side of the field is built for 10,000 spectators. The 150 m long building has a roofcover of concrete cassettes, all supported by 22 m high non-tensioned reinforced cantilevers with ca 10 m.





**Section through stadium**

Besides toilets and changing-rooms there is also a Royal loge. The construction is carried out in 9,000 m<sup>3</sup> concrete (reinforced by 1,000 t steel), a great deal of it consisting of prefabricated elements such as bleachers, roof-cassettes, parapets and beams.

The static stability is achieved by prestressed beams between the column footings and a frontier wall and by a non-tensioned beam from the upper part of this wall to the main canopy column, (just under the bleachers). The dimension of the footings to the columns are 2.9×3.6 m. The foundations are based on weathered rock. The whole construction has a width of 30 m.

### Gymnasium

The sports hall is carried out in 4,600 m<sup>3</sup> concrete, reinforced by 320 t steel. The roof construction consists of prefabricated elements supported by 12 pres-

tressed beams 35 m long, with dimensions 0.6×2.2 m and 6 m; the anchorage is placed in two 66 m long non-tensioned main beams at each long side, dimensions 1.8×2.65 m, all supported by 8 high columns 10 m high, dimensions 1.4×1.4 m and with neoprene bearings at the top. The 4.5×4.5 m foundations are placed on rock. The main beams are cast in situ and the 12 secondary beams are cast on the ground and will later be lifted into position and prestressed.

The hall is equipped with 600 seats and designed with squash halls and changing rooms below the grandstands. In the adjacent buildings the floor structures are constructed with hollow concrete blocks hourdis as permanent formwork.

### Water-tower

The concrete reservoir is placed on four 13 m high columns. The 20 m high element-covered building is decorated at the top with blocks which gives the construction a characteristic appearance, shaped like a cut toothed pyramid. Also a larger underground reservoir is built near the tower.

### Swimming-pool

The plant consists of two pools, the main pool and a children's pool. The whole building is in concrete and will have a roof supported by a column-beam-system, covered with concrete-elements.

### Youth Hostel

The service block has its ground floor-slab directly on filled up soil. Walls and floor structures are cast in situ as is the 20 m high Minaret. The latter is decorated with a golden crescent at the top.

A great deal of Abha Sport Centre will be painted white and in places covered with ceramic tiles (both interior and exterior) and will also have a little marble cladding.

(R. Mårtensson)

