18 FIBROBETON CATCHES THE SPEED OF FORMULA 1

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SUMMARY: In the light of 18 years' experience of success in the GRC sector, Fibrobeton continues the tradition of presenting products, new solutions and different projects to the market, through new products developed in-house that suit common GRC production systems.

The latest example of this is the Formula 1 Grand Prix racing circuit and its buildings in Istanbul, where our Fibrobeton cladding panels and decorative products have been used. By using GRC for this project, we know that extra value has been added to the GRC market by being a part of the Formula 1 series, which is followed widely around the world.

The Formula 1 Grand Prix Istanbul racing circuit project is owned by Fiyas, an Istanbul Chamber of Commerce organization, and the Union of Chambers and Commodity Exchanges of Turkey organization. It was constructed by the Evren Group and its concept, design and detailed project planning carried out by Ismet Koseoglu of Orion Arc. Ltd.

The circuit, with associated buildings, occupies an area of 2,215,000 m^2. More than 10,000m^2 of Fibrobeton architectural elements and cladding panels were used. The project execution period, starting with the design, and including the project planning, control and installation, lasted just six months following its transfer to the joint working group of the owner and the contractor. It has proved itself a great success in the world of GRC.

Detailed information on the project, the reasons why Fibrobeton was used and the project design, as well as project application stages and Fibrobeton's contribution to the project and future perspectives are also presented in the paper.
KEYWORDS: Architectural elements, Fibrobeton, GRC, Istanbul Formula 1 circuit.

FORMULA 1 GRAND PRIX TRACK/CIRCUIT AND FACILITIES PROJECT

The project site is located on the Asian side of Istanbul, 6km from the junction of Kurtkoy on the north side of the TEM (TransEuropeanMotorway), linking Istanbul to Ankara. The site is close to the newly constructed Sabiha Gokcen Istanbul Airport. In addition to easy access from the TEM and the airport, the site is located within the greenbelt surrounded by forest and cultivated green fields. The area is free from pollution and pleasantly attractive to outdoor activities.

Figure 1 - Photo of construction of Formula 1 track

The project space is a total of 2,215,000m^2. The length of the track is 5,333m. Istanbul Grand Prix was designed by Hermann Tilke who also designed the tracks in Sepang (Malaysia), Bahrain and Shanghai (China). Architectural and application projects were realised by Mr İsmet Köseoğlu from the Orion Architectural Company and the construction works completed by Evren Contracting Company. One of the important characteristics of the track is that it is driven anti-clockwise. This makes Istanbul F1 one of three anti-clockwise tracks including San Marino and Brazil. The width of the track ranges between 14 and 21.5m. The track includes 13 bends – six curve to the right and the remaining seven curve to the left – the sharpest of which has a radius of 15m; and four straights including the start–finish straight of 655.5m.

Inside the F1 Istanbul facilities, there are two VIP towers covering an area of 1,000m^2 with seven storeys and 37m height; and paddock buildings covering an area of 33,000m^2 with two storeys for VIPs, the team, pit buildings and towers.

One important issue for the organizers is spectator capacity. Formula 1 has expanded its target group, thanks to the newly added tracks, bringing 130,000 people together in Istanbul.

Figure 2 - Photo of paddock buildings

The concept design and detailed project of the Formula 1 track and facilities were executed by the Orion Architectural Company. The paddock buildings were identified as areas to use GRC. The scope, which covers the pit buildings, VIP buildings and towers, required many details including GRC, standard concrete and woodwork mounting. As it is easily formed, GRC has been preferred for solving problems.

During the design phase the aim was to create arches of 15m span. This element was also to have a natural surface which appears as a fair-faced concrete.

In addition to GRC's characteristic of being easily formed, the ability to divide the arch systems of 15m into two parts in order to produce them, its lightness and ease of assembly meant that there was no need to use other materials.

Figure 3 - Photo of pit buildings

The error rate was minimized as the precast elements were manufactured at the factory, away from the building site.

By mutual agreement with the architect who knew that Fibrobeton could provide solutions in GRC, we decided to produce larger-sized panels and decorative elements to effect timely shipment and complete the assembly within the set period of time. This was the only way to complete it in the defined period.

According to the first design plan, the arch cladding element of 15m would be produced with eight pieces of approximately 2m each. This would increase the number of assembly operations thus affecting the time, fixing cost and labor. The aim was to produce this arch system of 15m with only two pieces.

One panel would be over 10m^2, and it accommodated exposure to load by its structure being much more rigid, with more ductile elements used in the mounting procedure to allow movement. Although the weight per material has been slightly increased, the total fixing and labor cost has been decreased by more than 50%.

Figures 4 and 5 - Photo of pit buildings and GRC elements

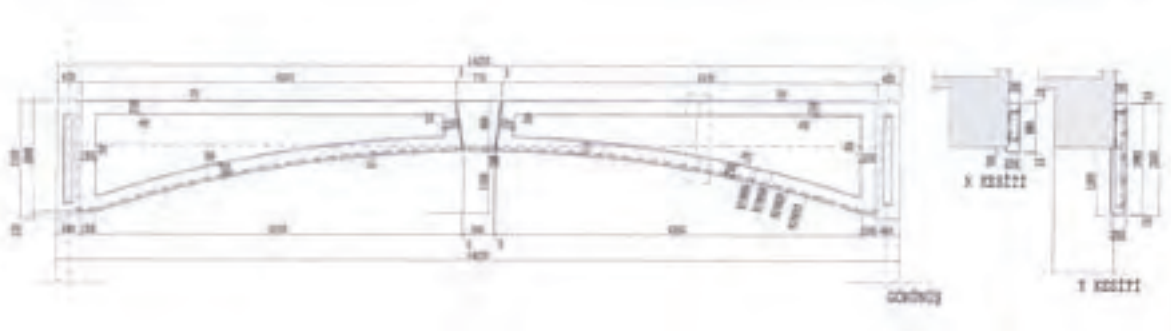

Figure 6 - Drawings of GRC elements used on pit buildings

Moreover, the production quantity has also been reduced by 50%. We have executed the largest assembly of mono-block panels manufactured so far. Further, Fibrobeton GRC production took place, in harmony and conformity with the joints and sizes of the aluminium cladding panels also designed by the architect İsmet Köseoğlu. Additionally, all wall copings were produced by Fibrobeton in GRC instead of marble.

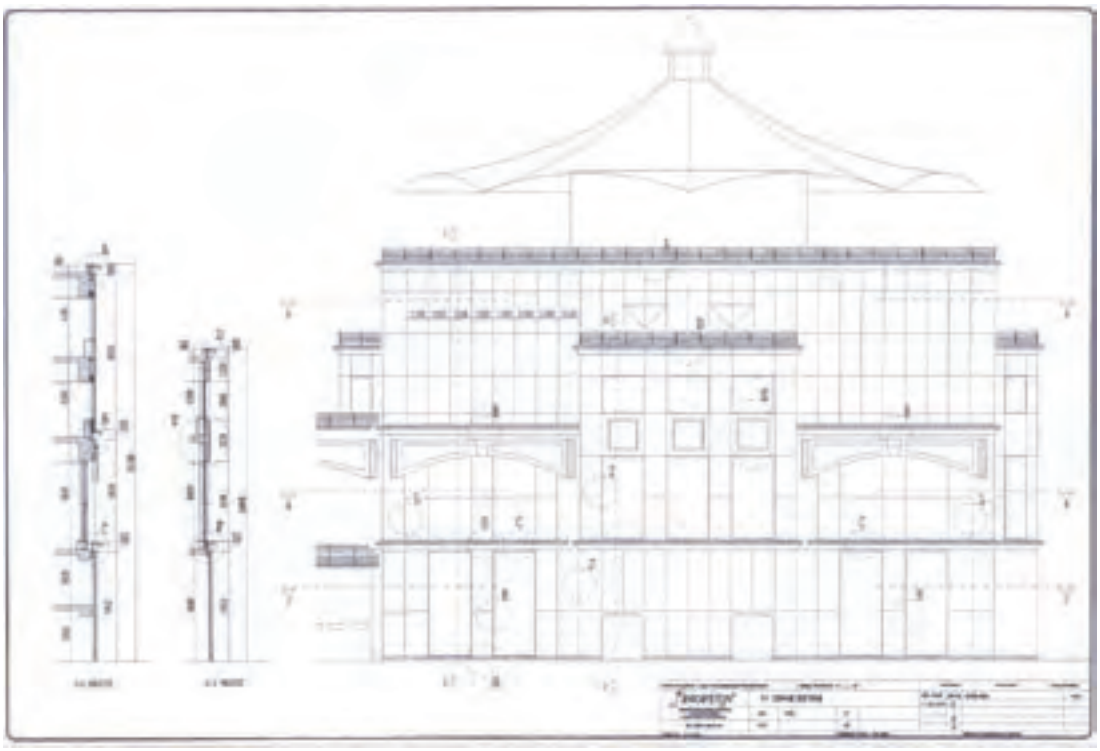

Figure 7 - Drawings of pit buildings

In addition, various pieces of equipment were designed during execution in order to increase the speed of assembly.

The total surface area of Fibrobeton GRC panels used is 10,000m^2. The installation was achieved by three teams working simultaneously using a mobile and tower crane.

Figure 8 - Photo of VIP building

Figure 9 Formula 1 Istanbul racing circuit: external view

In conclusion, we are proud to have taken part in the most important world event of 2005 in Turkey by fulfilling our obligations as required and as usual for us, and in which GRC has been used for the first time in Formula 1 Grand Prix.

MEVLANA CULTURAL CENTER

The Mevlana Cultural Center was built 900m away from the Mevlana Museum in Konya, the largest city of Turkey, in order to introduce ancient Rumi culture and its reflections into both Turkish and world culture. Transportation services are provided by taxi, shuttle services and intercity buses.

Mevlana philosophy and Mevlevi teachings and practices are based on religious feelings and human spirit. What lies beneath Mevlana philosophy is the avoidance of religious, language and racial discrimination. Therefore, it has been requested that the aphorism be translated into numerous languages, which will be written in the open whirling area. As seen below, the relief bearing 'Either seem as you are or be as you seem' has been written in 11 different languages on the curving cladding panels of flying joists (in Italian, Arabic, English, Latin, Spanish, German, Russian, Turkish, Portuguese, Japanese and Bosnian languages).

Every panel has been moulded circularly within the sizes of 3–3.30m. This makes altogether more than 10m^2. This makes 45 panels in 11 different languages of cladding of flying beam with the radius of 60m. We used mobile cranes to install the GRC panels to the flying beams. This project has shown us again that our job is creating 'haute couture'.

Figure 10 - Photo of Mevlana Cultural Center

HEADQUARTERS OF THE NATIONAL MOVEMENT PARTY – ANKARA, TURKEY

The Headquarters of the National Movement Party is located in Ankara and sits on 4,000m^2 of land. The total built area is 28,000m^2; the building is designed in high-tech style and also reflects the national architecture, embracing the old and the new in a sensitive balance.

The President of the Academy, Professor Architect Georgi Stoilov, who is past-president of the International Union of Architects and Honorary Fellow of the American Institute of Architects was interviewed by a Turkish daily newspaper during the Congress in Istanbul. He declared that 'the National Movement Party Headquarters as the "Best Building of Turkey", was rewarded for the successful performance of the design and construction team led by Dr Alp and the building materials which "Fibrobeton" used in the building.'

Fibrobeton, a GRC product, is now widely preferred in Turkey and abroad due to its high quality resulting from years of systematic engineering, detailing, developing, research, practice, and the talented and devoted team behind the rewarding operation.

Figure 11 - Photo of Headquarters of National Movement Party