PROJECT Sepang Formula 1 Race Track, Malaysia

CLIENT Malaysia Airports Berhad

CONTRACT SUM RM 308, 450, 000.00

CONTRACT PERIOD 14 Months

YEAR OF CONSTRUCTION September 1997 to December 1998

JOINT VENTURE PARTNERS Ahmad Zaki Sdn Bhd
Murray & Roberts (M) Sdn Bhd

F1 DESIGN CONSULTANT Tilke GMBH (Germany)

LOCAL LEAD DESIGN CONSULTANT Iktisas Ingenieurs Sdn Bhd

Project Components

RACING TRACK	5.6 km
GRAND STAND	
Main Grandstand	32,000 Seats
Natural Grandstand	80,000 - 100,000 Seating Capacity
PIT BUILDING	25,000 m^2
WELCOME CENTRE	8,200 m^2
ANCILLARY BUILDINGS	11,110 m^2
CONCRETE PADDOCK	91,000 m^2
CAR PARKS	30,000 Capacity
SERVICE ROADS	13.0 Km
SURFACE DRAINAGE	65.2 Km
LANSCAPING AND EROSION CONTROL	600 Acres
WATER SUPPLY	26.2 Km
SEWERAGE SYSTEM	6.2 Km
RESERVOIR	1 No.
SEWERAGE TREATMENT PLANT	1 No (30,000 PE)

The Project

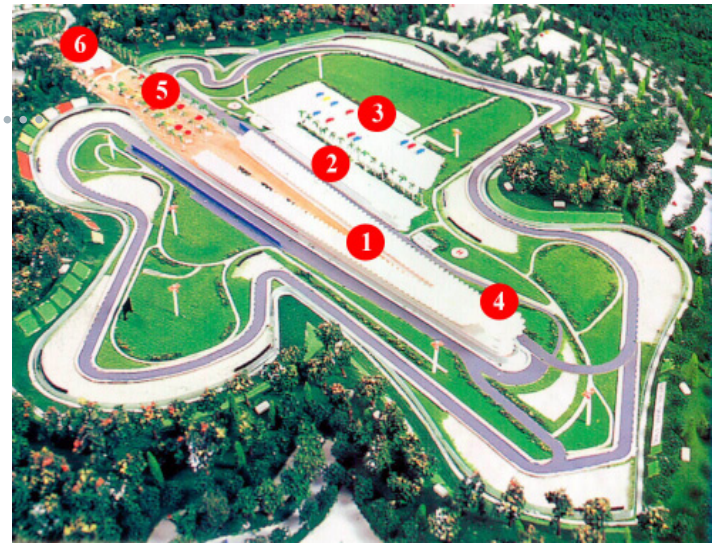
▲ *The Canopy Tower at the tip of the Main Grandstand*

Hailed by the international sports arena as 'the best F1 track in the world', and voted the world's 'most challenging' track by the drivers, the Sepang F1 Circuit is a proud achievement by WCT Engineering Berhad, the lead member in a joint venture between Ahmad Zaki Sdn Bhd and Murray & Roberts (M) Sdn Bhd.

The state-of-the-art circuit was officially opened by the Malaysian Prime Minister Dato' Seri Dr. Mahathir. It was completed in a record time of 14 months and in recognition of its ultramodern facilities, it is the only circuit in the world allowed to incorporate the F1 logo in its official name.

9 million cubic metres of earth had to be removed to build the track in a stadium-type concept, where it is recessed in a valley making it possible for all spectators to see at least 50% of the circuit no matter where they sit. Almost 2000 workers were involved in the construction of the project at peak.

The Track



▲
1. *Main Gradnstand*
2. *Pit Building*
3. *Paddock Building*
4. *VIP (Canopy) Tower*
5. *Pedestrian Mall*

Asphaltic pavements design for racing circuits differs with that for normal roads. A racing circuit's pavement requires very high quality control with respect to stability, skid resistance, surface regularity, durability and finished level. Non-compliance of these factors would be hazardous to Formula One racecars that run at breathtaking speeds.

pecial materials and stringent quality control in executing the pavement works were adopted comprising of material control, workmanship and skilled workforce during the execution of the works.

The Sepang circuit has been built in a stadium-type concept, with the track recessed in the valley making it possible for all spectators to see at least 50% of the circuit no matter where they sit.
Special kerbs and tyre barriers were built.

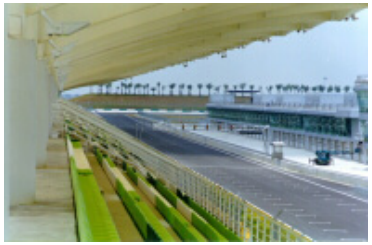
Smooth river stones were used for the gravel beds along the track.

▲ *Kerbs - positive, negative and flat kerbs.*

Tyre barriers to FIA requirements ▶

▲ *Smooth river stones used for the gravel beds (top and right)*

The Facilities

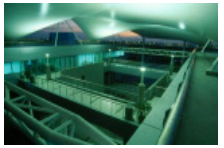


◀ *View of pit building from Main Granstand*

The two-storey Pit Building facing the main grandstand houses all the main facilities, one of the largest in the world, it has an approximate area of 9450m² and is 350m in length.

▲ *Pit Building*

There are 30 pit garages, 15 team rooms, photographers areas with 3 darkrooms, a race control room, time-keeping room, paddock clubs, management offices, conference rooms and media centre for approximately 600 journalists. The second floor of the Pit Building alos houses the royal lounges and garden.



▲ *Top: Viwe of the Pit Building from the Main Grandstamd; Right: Construction of Pit Building in progress*

▲ *Top: Main Grandstand; Middle: Contruction of the Main Grandstand in progress; Bottom: View from Paddock Rooftop viewing area*

The track can accommodate up to 130,000 spectators at a time with 32,000 seats at the main grandstand, 18 corporate suites and an 80,000 to 100,000 seating capacity at the natural grandstand.

In April 2000, a project to upgrade Turn 1, Turn 7, Turn 10 and Turn 11 into covered seating areas with sun protection was started by WCT Engineering. In five months, the design and build contract on a fixed lump sum of RM 19,373,000.00 was completed. Four new grandstand areas were added at the turns which can accommodate for a further 18,000 spectators.

▲ *Clockwise from Top: Covered Grandstand, Covered Grandstand, Hillstands*

The Main Grandstand is the first double-frontage grandstand design to be designed and built for a racetrack. The Canopy Tower at the tip of the Main Grandstand has become one of Malaysia's most prominent landmark on its own with a roof design resembling that of a hibiscus flower. Textile membrane roofing material was used on all grandstand roofing .

▲ *Textile Membrane Roofing of the Canopy Tower*

The 'Welcome Centre', at the entrance of the circuit, is a pedestrian mall bridging the four-storey double frontage gandstands and accomodating restaurants, bars, exhibition areas, retail outlets and an automotive museum. The roof terrace is designed as a meeting and function area.

▲ *Landscaped mall area*

A medical centre equipped with a small operating theatre to handle minor surgery .

▲ *Top: Welcome Centre; Bottom: Construction of Welcome Centre and surrounding works in progress*