



Project Fact Sheet

Renault F1 Team CFD Centre



PRODUCT ABM Design and Build, Matière CM4 16.32m span buried structure

Project Renault F1 Team Computational Fluid Dynamics (CFD) Facility, Enstone, Oxfordshire
Client Renault F1 Team
Completion Date Matière structure completed December 2007, facility due to open July 2008.
Design Team Ridge - Property & Construction Consultants
The Cowyards, Blenheim Park, Oxford Road, Woodstock, OX20 1QR
Description The Renault F1 Team's new Computational Fluid Dynamics ("CFD") Facility is an environmentally-friendly, computerised wind tunnel – a world-class subterranean computing facility that will be used to perfect the aerodynamics of the 2009 season cars.

FACTFILE

Structure Matière CM4 25/225 sectional precast buried concrete arch
Span 16.32m (internal)
Height 6.49m (internal)
Length 62.5m (25 no. Units @ 2.5m wide)

REQUIREMENTS

- Construction on a restricted site, in sympathy with the SSSI status of the parts of the existing Renault site.
- House the new CFD facility with one of Europe's largest super computers
- Provide an entrance area and exhibition space
- Incorporate a 60 seat auditorium
- Office space for 30 engineers



Project Fact Sheet

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SOLUTION

- **Unique Fast-track Solution:** Formula One is a competitive business where success depends as much on engineering excellence and innovation as it does on the skill of the drivers on the track. Technical development is relentless and success often hinges on the speed with which innovations are introduced. New facilities demand fast-track construction to a deadline determined by the racing season.
- The requirement for this critical facility to be fully operational by mid-2008 compressed the total construction time available, needing a fast-track solution.
- The complex nature of the building required significant time at the end of the programme for the installation and commissioning of the computer and other advanced technology systems installed. This meant that the time window for construction was compressed still further.
- Ridge and consulting engineers Scott Wilson determined that ABM's Matière system CM4 arch solution met the requirements and the high speed construction programme. The 'tunnel', closed at one end, and fitted with panoramic glass curtain walling at the other, would not only meet the area and volumetric requirement but also provide a dramatic working environment in which to showcase the world-class research technology it contained.

MATIÈRE



The Matière system was originally developed in France for hydraulic structures in the 1980's, since then the system has been developed into a modular range of arch, box and portal frames for a wide range of transport and infrastructure applications. Indeed, some 10,000 structures already exist worldwide exploiting soil structure interaction to minimise section sizes and allow rapid, cost effective on-site installation with precast units.

ABM hold the licence for the Matière system in the UK and Ireland.



ABM Bridge Systems, Official Supplier to the ING Renault F1 Team CFD Centre



Project Fact Sheet

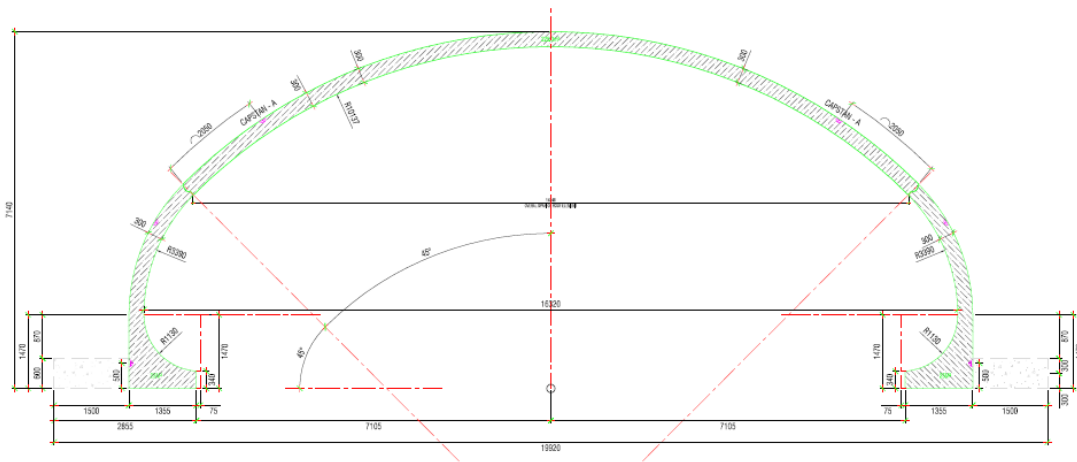
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DETAILED SPECIFICATION

Upper Elements		Lower Elements	
Mould	Matière CM4 225m ²	Mould	Matière CM4 25m ²
Span (internal point to point)	14.348m	Height (top of toe to ball/socket joint)	3763mm
Height (internal soffit to joint)	3.255m	Length of toe (from inside of wall)	1055mm
Roof thickness	300mm	Wall thickness	300mm
Number of units	21 no. 'Standard' 4 no. modified to form 4 no. circular skylight cut-outs	Toe depth	340mm
Volume of units	12.139m ³	Number of units	50 no. 'Standard' 2 no. with entrance portal
Weight of units	29.74 tonnes	Volume of units	4.749m ³
Additional information	4 no. roof units modified to form 4 no. circular light wells	Weight of units	11.64 tonnes
		Additional information	2no. wall units modified to form 1 no. pedestrian entrance
		Heel construction	In-situ concrete

Additional Information

Concrete Grade	C50
Cement type	CEM1
Reinforcement cover	50mm
Couplers	N/A
Finish	As struck from steel formwork



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