

All England Lawn Tennis Club, Number 1 Court, Wimbledon

Client: All England Lawn Tennis Club

Country: UK

Length of Pipe: 600 m

No. of Valves: 54

Volume of Flow: 120 litres/sec

Specialist Feature: Roof rainwater drainage. Large invert lifts from gutter to vacuum ring main.



As part of an on-going development of the excellent facilities at Wimbledon, the All England Lawn Tennis Club commissioned the design and construction of a new Number 1 Court. The chosen design included a symmetrical cantilevered roof with no supporting columns within the seating area, thus ensuring that all spectators will be able to enjoy unobstructed views of the tennis. However, this aesthetically pleasing design led to the problem of draining the storm water since it was not desirable to have down pipes from the high level gutter to ground level.

Following on from the success of the Centre Court drainage system the designers looked to Iseki to construct a new Roof Drainage system for the new Number 1 court. The Vacuum Way proved an ideal choice, with the interface valves located high in the roof space, draining both the inner and outer gutters via dual ring mains back to a single collection station, together with the system's ability to cope with a full range of rainfall conditions.

The Interface Valves open and close automatically as the flow dictates and are switched off during play on the court, thus ensuring complete silence for the players. The complete system is constantly scrutinised via an Iseki valve monitoring system to check that valves and equipment are working fully and efficiently during the championships and automatically for the rest of the year.



Number 1 Court under construction



Vacuum ring mains

Wimbledon No.1 Court

Vacuum Pipework

Vacuum sewers in polyethylene, sized from 90mm to 200mm diameter, with electro-fusion joints.

Vacuum Station Equipment

3 liquid ring vacuum pumps each rated at 925 m³/hr duty/assist/assist (Nash)

3 No dry well discharge pumps each rated at 60 l/sec duty/assist/assist (Sihi)

25m³ Vacuum collection vessel fully protected and tested to Lloyds certification

Motor control cabinet - fully automatic with programmable PLC. All pumps start in rotation and all conditions are remotely monitored via building management system to a central control office, which minimises personnel attendance.

Bespoke valve monitoring system which monitors the open / closed mode of each interface valve located around the roof, such that each valve within the roof area can be individually observed from the collection station. This data is also passed through to the control office.

Exhaust gases from this system are exhausted to atmosphere under the stands, whilst the water is discharged via a pressure main to the storm water drain in the road outside.

Summary

This project demonstrates the versatility of The Vacuum Way in its use for collecting effluents other than sewage. This roof had the difficult geometry of the gutter being some metres below the crown of the roof, which was where the main drainage pipes had to run for aesthetic reasons. This meant that a powered system of some kind had to be used and Iseki were able to offer the most cost effective and efficient solution.

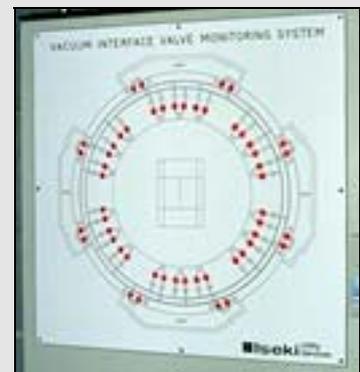
Possible Applications of the Vacuum Way

- Rural community sewerage schemes
- Industrial developments
- Supply bases
- Housing developments / compounds
- Hazardous waste collection
- Airports & military installations
- Beach developments
- Remote villages

Cost effective solutions to many difficult drainage problems.



Iseki Vacuum Interface valve suspended in roof



Valve monitoring panel located in pump station



Black PE vacuum pipes visible in roof prior to cladding



Vacuum ring main suspended from roof structure.