Advancing Rainwater Drainage Systems by Fast Flow Design

The Widyachandra Residence

Since 2010 Fast Flow and its Licensed Distributor; Siphonic Flow Mandiri (SFM) have been helping home owners in Indonesia articulate and align their needs with dynamic use of space. As of today, Fast Flow Siphonic rainwater drainage systems are installed in eight high-end private residences in Indonesia.

Fast Flow Siphonic System vs Conventional System

Traditionally, the rainwater is collected from the roof at regular points by conventional system. The larger the roof area is, the more numerous the points are. With Fast Flow Siphonic System, the rainwater is drained in pipeworks operating at full bore. As the speed and the water flow still increases, the air entering the system decreases; it creates suction of the water into the roof outlets. When no air is entering the pipework, the drainage capacity of the siphonic system is at its optimum level.

A Fast Flow Siphonic System consists of rainwater outlets and one or several horizontal pipes connected to a downpipe. Compared to a conventional system, Fast Flow's siphonic drainage system utilises less rainwater outlets and allows long sections of horizontal small diameter pipes to travel with no slope. The siphonic system has a greater compactness and saves useable space. To harness the potential energy of the water drained in the pipework, the siphonic system has to be accurately dimensioned. It must be designed by precise rules so that the flow velocity is always under control and the pressures within the pipework are always balanced.

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Fast Flow Siphonic System's Unique Selling Points

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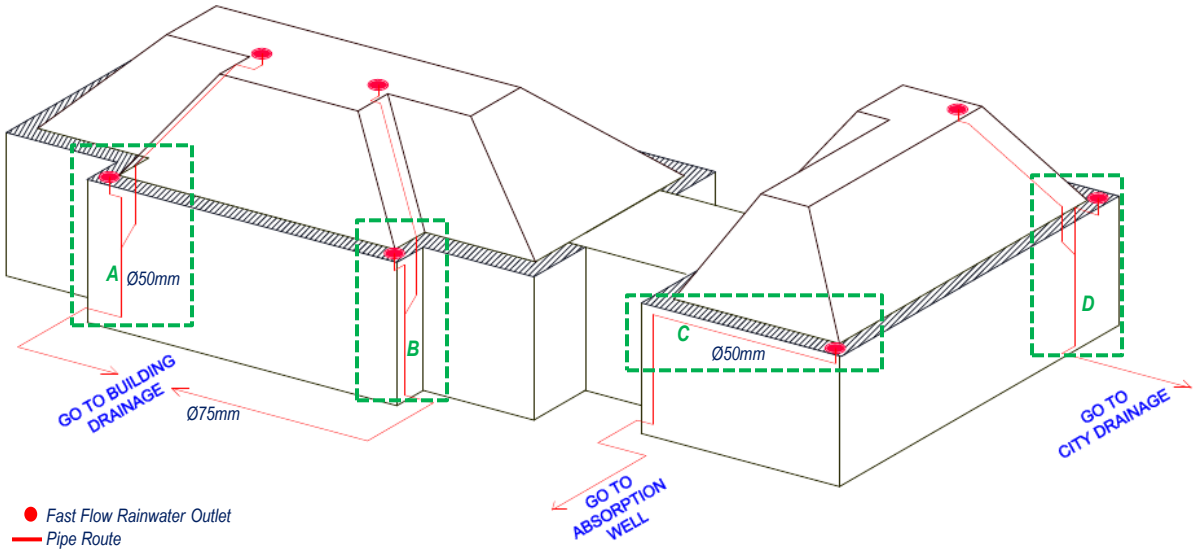

Elegance and precision define the Fast Flow design. From condominiums to landed houses, Fast Flow's team of top notch system consultants and designers will equip your home with excellent space planning and functionality. Fast Flow's rainwater pipes can be designed to integrate seamlessly to the house design. The small diameter siphonic rainwater pipe (Ø50mm) can be flexibly located and concealed (*A, B and D*).

For house space-saving, the Fast Flow Siphonic System is recommended. Siphonic systems are smaller and ensure optimal use of the available internal space. Fast Flow's small diameter pipe (Ø50mm) also works without gradients, enabling easier coordination with other services (*C*).

A Remarkable Development in the Heart of Bangkok

Fast Flow is in the midst of completing another green building development in Thailand. Magnolias Ratchadamri Boulevard residences will be part of a 60-storey mixed-use skyscraper (233metres high) along Ratchadamri road. Designed by Thai architecture companies; DI Designs and The Beaumont Partners, the tower has the curved, petal-like structure of a magnolia flower springing from the ground.

The Fast Flow team has worked with the design consultants since the first design concept in November 2012. Fast Flow Thailand secured the project because the conventional design could not meet the space (curvy facade) and height requirements of the building. Only Fast Flow Siphonic System could achieve the clients requirements due to the higher capacity full bore flow and smaller pipes.

Fast Flow utilises two of its technologies; Siphonic and Pressurised to drain a total catchment area of 3,465sqm. The building is well equipped with Fast Flow's patented anti backflow junction; psVent 75™ to drain the balcony areas from the 4th to 59th floor. Together with EEC Engineering, Fast Flow started this project in December 2014 and has also worked previously on a number of projects including Royal Cliff Pattaya, DTAC Call Center and Kerry Logistics in the past years.

Magnolias Ratchadamri Boulevard is one of the first buildings in Bangkok to be designed from the outset to meet the latest in green considerations and fully comply with both the Thai 2009 Green Building Code and the Leadership in Energy and Environmental Design (LEED) certification of the US Green Building Council. This new landmark is due for completion in 2016.

Fast Flow Group Q4/2015 Project Highlights

Indonesia

Newly Secured Project

Project title: Grand Kamala Lagoon (Emerald Tower)
Catchment area: 2,164 sqm

Recently Completed Project

Project title: South Quarter
Catchment area: 6,815 sqm

Singapore

Newly Secured Projects

Project title: Bedok Integrated Complex
Catchment area : 7,200 sqm

Project title: Oasis Terraces
Catchment area: 9,500 sqm

Rainfall Intensity

Rainwater drainage systems for buildings are normally designed to achieve a balance between the cost of drainage system and the frequency and consequences of flooding. The capacity of a roof drainage system should be adequate to dispose of the intense rains which usually occur in association with thunderstorms.

The design rainfall intensity is normally described in relation to a chosen return period of the storm. The return period (T years) of an event can be defined approximately by the chance 1/T that the event will be exceeded in any given year. It should be noted that 1/T does not exactly represent the chance of exceeding the chosen rate of rainfall in a given year, but is a good approximation if T is more than five years. Since it may be the contents of the buildings that are at risk, this chance per year can be related to the contents.

The following categories of design risk are proposed based on rainfall records in Singapore*:

Category 1
Three rates of intense rainfall are recommended, giving three different degrees of risk of overloading the drainage system. These are:

a) 165 mm/hr for the design of flat surfaces on which ponding can be tolerated during an intense storm and for a few minutes after the storm has ceased. Rainfall at this intensity may be expected to last:
5 minutes once in 1 year
15 minutes once in 10 years

b) 200 mm/hr for the design of sloping surfaces where ponding normally cannot be tolerated. A design based on this rate when free board is not provided will occasionally overflow or pond. Rainfall at this intensity may be expected to last:
5 minutes once in 4 years
15 minutes once in 50 years

c) 330 mm/hr for the design of surfaces where any overflowing or ponding is to be avoided (except during those rare storms for which design is impracticable). Rainfall at this intensity may be expected to last:
3 minutes once in 50 years
4 minutes once in 100 years

** extracted from SS 525:2006*

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