fast flow
CONNECTION

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WHERE IDEAS FLOW

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VOLUME 1

Fast Flow enters 10th year in Singapore & S.E.Asia markets

Colin Thoms

Siphonic rainwater system had existed since 1968, but Asia was slow to develop it. However, in 1994 the first project in Singapore was implemented. Based on the success of this project, the potential was established and by 1996, Fast Flow in Singapore was firmly entrenched. The founding members of Fast Flow, Colin Thoms and Yap Kern Ling brought together strong Architectural and Engineering qualities that have helped develop the business into a regional enterprise providing high quality solutions for rainwater management.

Fast Flow embraced the UV-System which has its origins in Scandinavia and is still based there under the control and management of co-developer Per Sommerhein.

During the last 9 years, Fast Flow and UV-System have become strong partners in taking the technical development of siphonic to its highest levels. Research and Development is an ongoing operation and Fast Flow-UV system leads the way worldwide.

To date Fast Flow has completed over 500 projects in Asia. It has over 130 workers, from managers to designers and installers who are skilled in the siphonic management of rainwater.

"I think we could do some business here." said Colin at Shiwan 543 years old dragon kiln at Foshan outside Guangzhou.

CONTENTS

We would love to hear from you. If you have a viewpoint, which you would like to share or a story idea, please drop us a note either by fax, e-mail or snail mail.

email:info@fastflow-uv.com

Will siphonic roof drainage system be more expensive than conventional system?

H B Ong

This is the most common questions that had been put to us during our regular visits to new clients. First, they want to know what is the system about and what type of buildings can the system be used. They are also keen to know how it works and solutions to reduce the constraint within the building development.

By the time they appreciate the benefits of the System, we are always faced with the question: "Will it be more expensive than the Conventional RWDP system?"

Since we first introduced Siphonic Roof Drainage System to the Singapore Construction Industry in 1994, it has always been the "Value-Added Engineering Solution" principle behind every design proposal that we had done for our Clients. The awareness and appreciation of the Siphonic Roof Drainage System has been improved increasingly over the last 10 years but we still face the challenge to furnish a better Drainage Solution for Consultants and Contractors to manage construction risk, time and cost in the most effective manner.

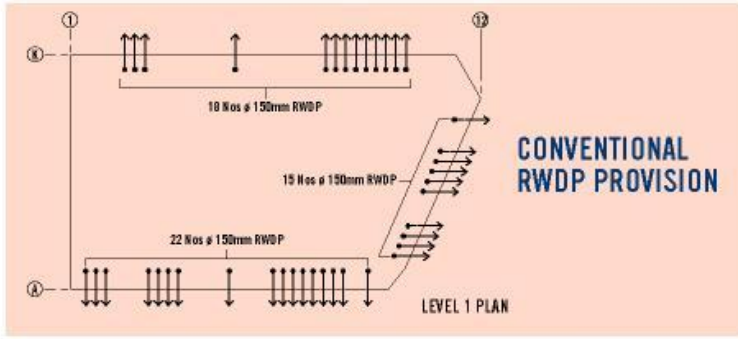
The most recent prominent project in which we had to convert the Conventional Roof Drainage proposal to Siphonic Roof Drainage System, is the New Supreme Court in Singapore. The Architectural drawings had a provision of over 50 nos. of Dia.200mm conventional RWDP for the drainage of the open-to-sky roof. Based on the quantities of pipe works that are required for the building, the basement wall had to make provision for these 50+ openings for pipe penetration. In addition, there were also a provision of perimeter drain wrapped around the building to collect the discharge of the rainwater.

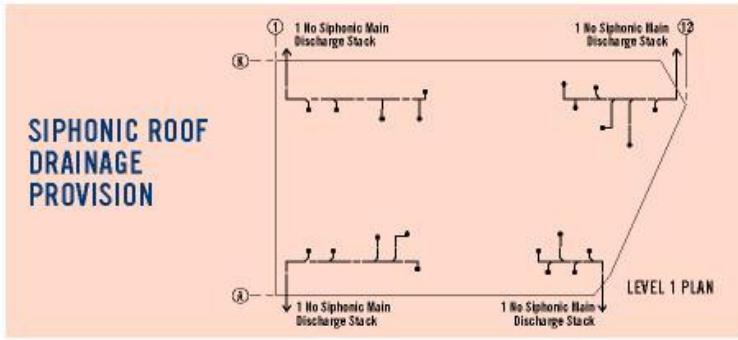
The Siphonic Roof Drainage solution for the project was to firstly, reduce the quantities of RWDP for the entire building and yet not compromise the requirement of the roof drainage system. We had re-designed the entire Roof Drainage provision for the building to have only 16 nos. of Siphonic stacks. During the consultation with the Consultant and Contractor, we were also informed that if we can design and group the discharge to 4 main collection points, the pipe system could be discharged directly to the external public drain. These will result in eliminating the construction of the entire perimeter drain next to the building and will result in indirect time and cost saving for the entire project.

The "Value-Added Engineering Solution" approach for the project is a testimony to our continuous effort to customize our design and solution for every project we undertake.

The main objective in promoting Siphonic Roof Drainage System in Asia is to achieve:

- Provide total freedom & flexibility in Roof Drainage design.
- Change and revolutionize the perception of Roof Drainage design from merely a need to solve problem, to a total roof drainage management solution.
- Integrate the hydraulics, structural & architectural aesthetic requirements into a complete design solution.





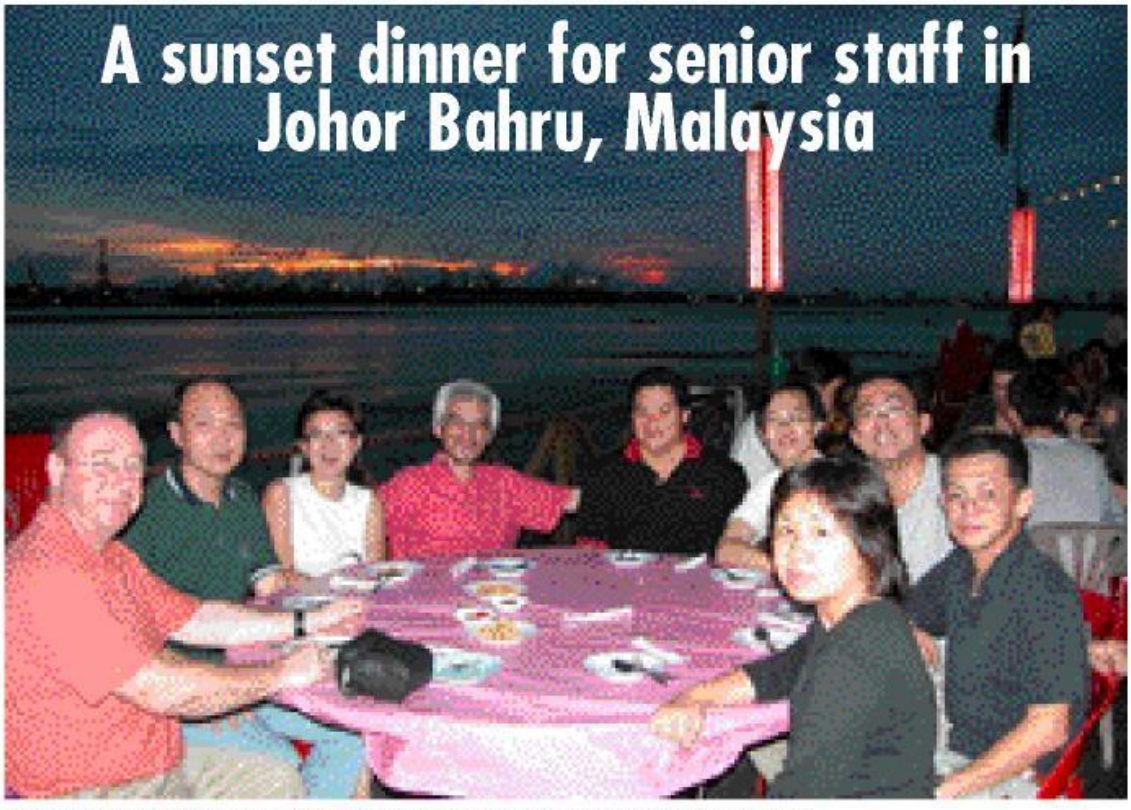
Cheers to our new projects ...

Singapore Expo Hall 7 to 10 (Singapore)

Redevelopment of Cathay Building (Singapore)

Heritage Condominium in Mines (Kuala Lumpur, Malaysia)

A sunset dinner for senior staff in Johor Bahru, Malaysia



Post-seminar sunset dinner reward for senior staff of Fast Flow Singapore and Fast Flow Malaysia.

Just for Laughs

From One Foreign Bangladeshi Construction worker to another.

Ibrahim: "Why so many people interested in this water sucker? deh."

Aktar: "I heard this is a very powerful system. Most say it is the best in Singapore and JB, and some say all over the world, deh."

Ibrahim: "Just a hole for the rain?"

Aktar: "You can see that the speed is vely, vely fast."

At this very moment, Ibrahim was seen in some form of distress,

Ibrahim: "Ouch…..Ouch, my hand!"

Apparently, Ibrahim's arm was sucked into the outlet as he was testing the speed of water flow into the outlet.

Aktar: "What you think you are doing? I already told you it's vely, vely powerful, deh."

Ibrahim: "Mmmmmm,…..I know now…….It REALLY SUCKS!!!!"

Case study on the Esplanade

Bobby Ng & William Choo

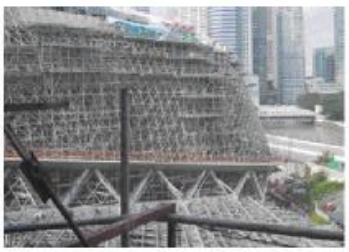
Siphonic Roof Drainage System at The Esplanade – Theatres on the Bay

Architect:	DP Architects Pte Ltd / Michael Wilford & Partners
Main Contractor:	Penta Ocean Construction Co Ltd
Roof Drainage Specialist:	Fast Flow Siphonic Pte Ltd

The two main dominant shapes – the elongated shells or "The Durians" as nicknamed – in which the 2000-seat Theatre and 1600-seat Concert Hall are housed. The commercial block, recital studio and the Public Concourse area, integrating the spaces, link these two main features.

The project posed numerous challenges for the various parties:

- For the Client, building a Performing Arts Centre that will inspire the people.
- For the Architects, creating Architectural spaces that will engage the senses of the people.



- For the Builder, overcoming the numerous engineering feats associated with the project.
- For the Siphonic roof drainage specialist, providing an effective roof drainage system solution that would have minimum interference with the architectural elements.

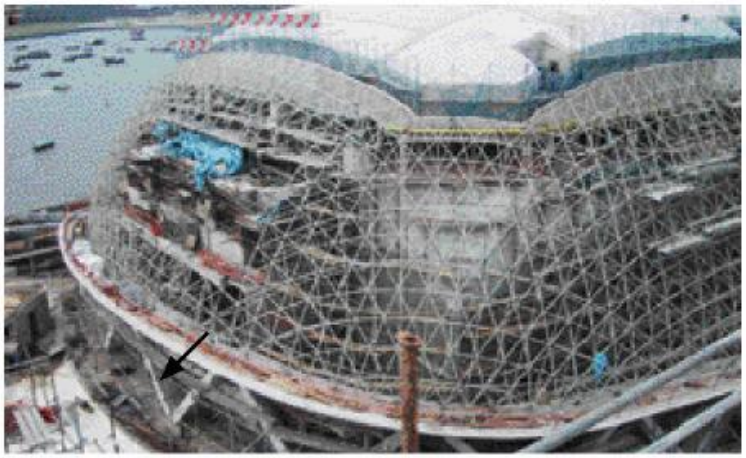
Fast Flow Siphonic roof drainage system

Fast Flow's involvement with the project dates back to before the commencement of the construction works. There were numerous engineering issues to be considered and resolved, taking into account of the slope, curving and tilting nature of the gutter design.

Simulation tests were conducted @ Salford University on Feb 1998 to ensure that the correct and effective solution is to be adopted for both the two sloping and tilting gutter, serving the glazing cover over the 2000-seat Theatre and 1600-seat Concert hall.

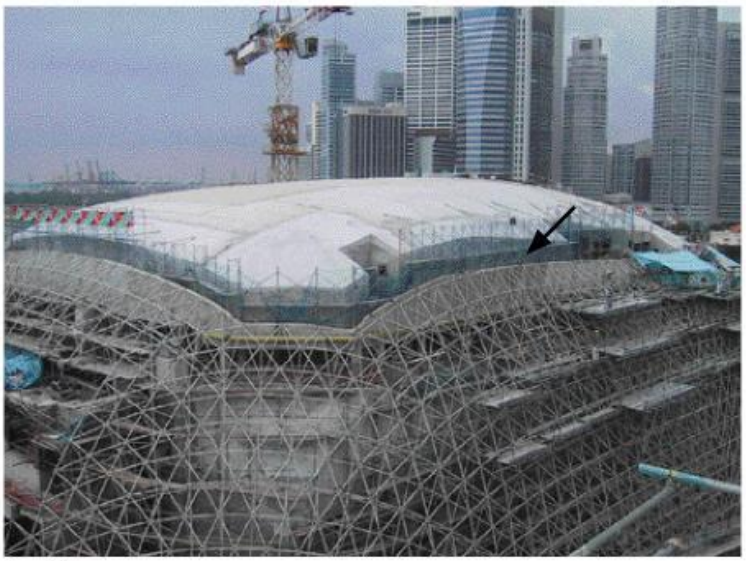
There were other considerations, including the effects of hydraulic jump, turbulence created surrounding the outlets locations, wave motion, etc. These considerations were effectively addressed.

The overall construction works were completed in early 2002.



Siphonic Pipes casted within Y-column.

Siphonic outlets installation at the lowest section of the sloping gutter.



Upper Gutter.

Horizontally laid pipes casted within concrete structure of the sloping gutter system. Specific installation procedure is carried out to ensure that during concrete casting, it does not affect the integrity of the pipe walls.

The Siphonic Rainwater System

Gilbert Ang

Siphonic roof drainage system, also known as the siphonic rainwater system, is sometimes described as a gravity induced suction system. That is, it is a full-bore drainage system, which is very different from the conventional roof drainage system that we have used since Roman times.

Siphonic rainwater system is not a newly discovered phenomenon. Invented by Mr. Olavi Ebeling of Finland in 1968, he was joined in the early years by Mr. Per Sommerhein who as co developer assisted in promoting the system throughout Scandinavia. Since then, the system has won favour in most developed countries, due to its benefits of superiority over conventional roof drainage systems.

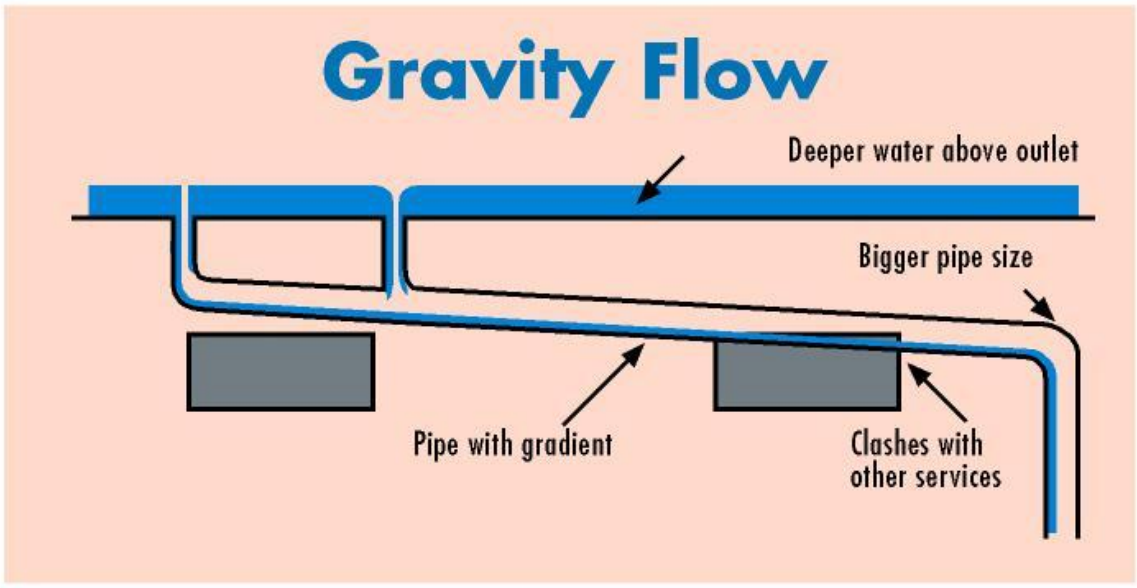
Conventional Systems

The conventional system usually consists of a network of open outlets connected to a vertical down pipe. The principle underlying such a network is the effect of atmospheric pressure. Due to the nature of the flow pattern of water, the conventional system always operates with a continuous air core. The capacity of any conventional system is always controlled by the physical dimensions of the rainwater outlet and water depth around it. In fact the driving force of the system is limited to the depth (also called the "head") of the water around the outlet. As there is a limit to the water head, the rain water pipes have to be installed with a certain gradient to aid in the flow of the water.

This results in a very inefficient system with very low flow velocity. The nature of the conventional system also means that it is inflexible, as its feasibility is heavily dependent on the physical constraints of any project.

Siphonic System

The siphonic drainage system on the other hand works in a full-bore environment. It is designed to bring about full bore flow, that is to say, it allows for the pipes to be completely filled. When this occurs, we say that the pipes have a flow factor of 1. It requires a specially designed outlet that prevents air from entering the system as well as a carefully designed piping system to ensure the system performs below atmospheric pressure. This results in the effective removal of rainwater. The system greatly differs from the conventional system as it utilises the total head between the outlets and the discharge as the driving head. This is usually the height of the building. It therefore follows that this



will result in the system having a significantly higher capacity when compared to an equivalent conventional system. As it is a full-bore system, the horizontal pipes do not need a gradient and can be installed completely level, thereby saving headroom space.

How it works

At low rainfall, the siphonic system behaves exactly like a conventional system. Due to the low volume of rainwater, the pipes will not be completely filled. The air and water remains overwhelmingly separated. Hence we will expect the system to flow with an air core. The head of the water around the outlet controls the capacity of the system.

However if the rain is sustained or increased, the pipes will start to get filled up. As the siphonic outlet is specifically designed to restrict the entry of air and allow for the smooth flow of water into the pipe, the momentum of the water will remove the existing air present in the pipe and cause the pipes to be completely filled. When this occurs, the flow rate will be equivalent to the maximum capacity of the system as the entire available head between the outlet and discharge point is fully utilised by the flow to overcome the hydraulic resistance of the pipe systems.

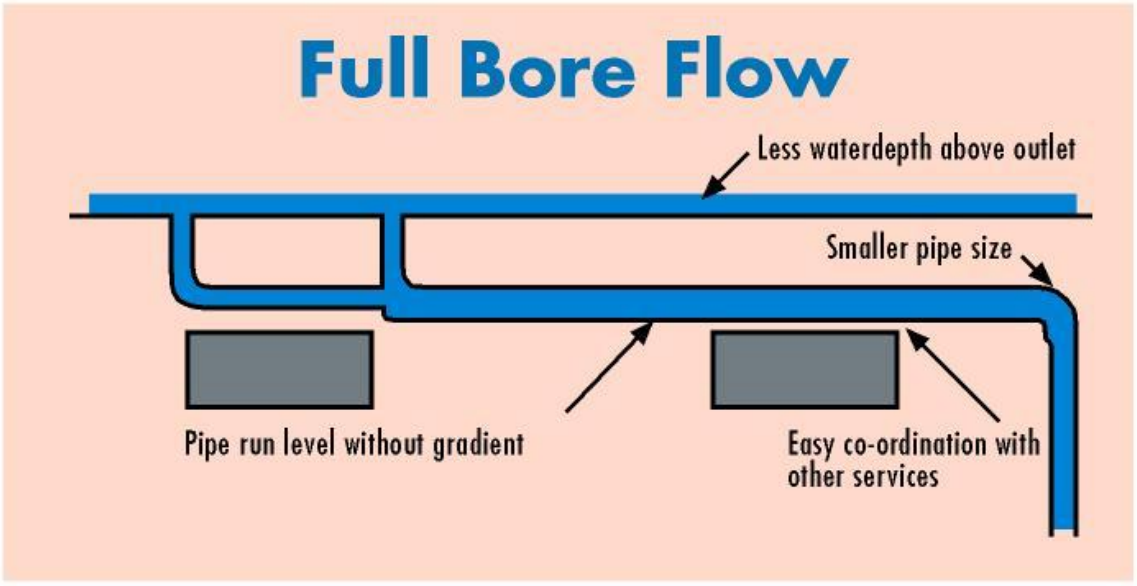
Benefits – Direct Savings

Due to the increased efficiency of the siphonic system, fewer outlets are required. This in turn reduces the number of penetrations through the roof. It has also lower water depth around the outlet when compared to the conventional system and is therefore ideal for metal gutters, as water is less likely to overflow and damage the building. Being designed for full bore flow also means that smaller pipes are required. The siphonic system, being a pressurised system, does not require a gradient. Hence it has more flexibility in routing and design. As the water in the pipes travels at a higher velocity than in the conventional system, self-cleansing of pipes will occur more frequently.

Benefits – Indirect Savings

Using a siphonic system also results in indirect savings. Having a smaller system reduces installation time and the potential of installation error. It has the ability to minimise the need for internal drains as the system can be designed to discharge at a fixed location. Usable space within the building is also increased to the tune of 0.5m2 per conventional pipe, as the siphonic system requires fewer outlets and does not need a gradient in order to function.

The reasons explain why the siphonic roof drainage system is used all over the world, and is now gaining popularity in Southeast Asian as designers and engineers become aware of the benefits the system can offer.



QUESTIONAIRE For NEWSLETTER

1. Siphonic pipe systems are much smaller in pipe diameter compared to Conventional RWDP system, are they more prone to chokage with debris and concrete?

The water velocity within the Siphonic Roof Drainage System pipe works is much faster compared to Conventional gravity flow pipe, as such, it actually cleansed the pipe system and also will flush out any debris that could possibly get through the leaf guard of the roof outlet. Siphonic pipe system is actually self-cleansing which do not required cleaning eye for maintenance purpose.

Conventional RWDP system due to slow velocity of the water flow will tends to gather debris in bends and eventually reduced the cross sectional of the pipe system and result in possible overflowing suitation in roof.

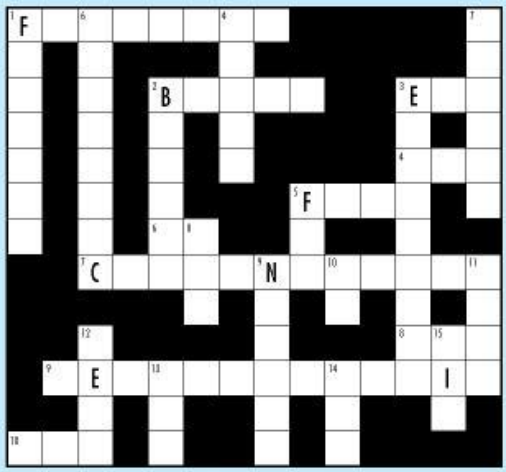
2. Will the Siphonic System generate any more noise compared to a Conventional RWDP system?

Siphonic System will generate as much noise as the Conventional RWDP system during a light rainfall as the system will be functioning as a gravity flow system. However, when the Siphonic action kick in during a heavy down pour, there should be minimum noise generated within the pipe system compared to the gravity system as the pipe is fully filled with water.

3. Is there any restriction to the type of pipe material for the application of Siphonic Roof Drainage System?

There are no restriction to the type of pipe material to be used for the system, UPVC, HDPE, cast iron, stainless steel pipes are all possible type of material to be used for the system. In the event that there is a design requirement, we could even use different pipe material in the same system.

CROSSWORD PUZZLE



CROSSWORD PUZZLE

Across

1 The regional enterprise that provides the highest quality rainwater system solution (4,4)
2 The source of intellectual power (5)
3 Iris of the _____(3)
4 A fast snack that we love (3)
5 Another term for Siphonic pipe is _____-bore pipe (4)
6 Towards a higher position (2)
7 The rainwater system that requires a gradient flow? (12)
8 What is the abbreviation for deoxyribonucleic acid? (3)
9 Who is the technical development pioneer of the UV-system? (3,10)
10 Organ of hearing (3)

Down

1 Which country was siphonic rainwater system first discovered? (7)
2 The largest airport in Guangzhou (6)
3 Which building in Singapore bears the nickname of "Durians", King of fruits (9)
4 Who is the inventor of siphonic system? (5)
5 In good health (3)
6 What is the most ideal rainwater drainage system? (8)
7 The country of origin for UV-system (6)
8 The abbreviation of polyvinyl chloride (3)
9 An word with the same meaning as regular (6)
10 Opposition of Out (2)
11 Concrete without support (4)
12 Of the same rank (4)
13 Same meaning as look (3)
14 Flee (3)
15 Petty fault finding, _____-picking (3)

Please feel free to contact us without any obligation, as we will be most willing to know of your design issue/constraint for your project, so that we can offer our "Value-Added Engineering Solution", for your information and consideration.

You may also contact us for a free seminar on the following topics:

- Introduction of Siphonic Roof Drainage System
- Application of Siphonic Roof Drainage System in different type of Building/Areas

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