"How to Apply MSMA2 for Drainage Design in East and West Malaysia"

If you deal with drainage design works in Peninsula and Sarawak, then you must come to find out about changes in the Second Edition of MSMA that affect drainage design in East and West Malaysia!
You will receive special tips and powerful tools from the expert, plus up to 30 CPD hours!

Ir. Dr. Quek Keng Hong

Dates:
10-14 July, 2017 IEM Kuching
25-29 September, 2017 IEM PJ

MSMA Seminar at IEM, PJ

Up to 30 Hr CPD

18th March, 2017

Dear Fellow Engineers,

It is nearly five years since the release of the Second Edition of *MSMA* (*Manual Saliran Mesra Alam Malaysia* or *Urban Stormwater Management Manual,* or *MSMA2*) by the Department of Irrigation and Drainage (DID) in July 2012. It is required by law for all engineers in Malaysia to design drainage works to comply with the requirements of *MSMA*.

In the last five years, the industry is faced with a number of issues in complying with the requirements of *MSMA2.* These include changes in design parameters like storm, temporal patterns, peak discharge, hydrograph and changes in the storage volumes of On-Site Detention (OSD), detention basins and sediment basins.

Based on our research work, the following changes were found for Kuala Lumpur:

1. The design storm has increased by up to 126% for 10 out of the 14 stations in Kuala Lumpur.
2. The design discharge using the Rational Method has gone up by up to 131% for commercial and city area.
3. The peak discharge using the Time-Area Method has increased by 127%.
4. The Site Storage Requirement for OSD for a factory site has increased by 235%.
5. The volume of detention basin for a site has increased by up to 130%.
6. The volume of wet sediment basin has increased by 165%.

The benefits of attending the Seminar are as follows:
1. You will find out about important changes and new requirements in *MSMA2* that affect drainage design in peninsula and Sarawak.
2. We will show you a different approach of computing OSD using *MSMA2* that will reduce the storage significantly compared to the *Approximate Swinburne's Method* in *MSMA2*.
3. You will get special tips from the expert and receive powerful tools that will make your design more cost effective.
4. You will get *MSMA2* spreadsheets worth a total of RM2,380 for free.
5. You will gain 30 CPD hours by attending both Seminars A and B while learning about *MSMA2*.
6. You will get special discount for MSMAware software.

Signup now for the Seminar by completing and faxing the attached registration form! The brochure and registration form can also be downloaded from http://seminar.msmam.com. Call or SMS/Whatsapp me now at 012-2812590 if you have any question!

Problems of Compliance with *MSMA2* and Solutions:

Design Parameters:	Storage Volumes
Design Storm increased by 126% in *MSMA2*	Detention basin storage up by 130% in *MSMA2*
Design Discharge by Rational Method up by 131%	Sediment basin volume up by 165% in *MSMA2*
Design Discharge by Time-Area Method up by 127%	Combined Rainwater Harvesting and OSD *MSMA2*
Changes in the temporal patterns	Site Storage Requirement for OSD increased by 235%

Yours Sincerely,

Ir. Dr. Quek Keng Hong

Limited to the first 100 visitors: Free *MSMA2* spreadsheet at http://free1.msmam.com.

Attention: All Civil Engineers

"How to Apply MSMA2 for Drainage Design in East and West Malaysia"

Find out how to apply the Second Edition of MSMA to drainage design in East and West Malaysia in the series of seminars to be held in PJ and Kuching!

Date: 10-14 July, 2017, Time: 8:30 am- 5 pm. Venue: IEM, Kuching
Date: 25-29 Sep, 2017, Time: 8:30 am- 5 pm. Venue: Wisma IEM, PJ

Participants will receive special discount for the MSMAware East & West Malaysia Edition!

Also: Each participant will receive copies of powerful spreadsheets on MSMA2 design used in the Seminar. Worth RM2,380!

Do you know the Department of Irrigation and Drainage (D.I.D) has completely revised the first edition of *MSMA* (D.I.D, 2000) and has officially released the second edition (D.I.D, 2011, or *MSMA2*)?

In case you don't know, *MSMA* (*Manual Saliran Mesra Alam Malaysia* or *Urban Stormwater Management Manual*) is the drainage design procedure first published by D.I.D. in 2000. It is required by law for all engineers in Malaysia to design drainage works to comply with the requirements of *MSMA*.

Published eleven years after the first edition, the new *MSMA2* publication is not just a simple update, but a complete overhaul of the original document with major changes in many topics. Because of this, many engineers are still not familiar with *MSMA2*.

We have carried out research comparing the changes between the first and second edition of *MSMA* and have quantified these changes in terms of the increase in the values of key design parameters including: storm intensities, design peak discharges and hydrographs. We also compare the storage volumes of OSD, detention basins and sediment basins.

We found the changes varies between different parts of Malaysia. This Seminar is designed specifically for engineers who do drainage design works in Peninsula and Sarawak.

The findings from our research work will help engineers to comply with the requirements of *MSMA2* quickly and easily.

Signup now by completing and faxing/emailing the attached registration form. The brochure and registration form can also be downloaded from http://seminar.msmam.com. Details at http://msmam.com.

Call or SMS/Whatsapp me now at 012-2812590 if you have any question!

Limited to the first 100 visitors: Free *MSMA2* spreadsheet at http://free1.msmam.com.

References:
- Drainage and Irrigation Department (2000). Urban Stormwater Management Manual for Malaysia (Manual Saliran Mesra Alam Malaysia).
- Drainage and Irrigation Department (2010). Urban Stormwater Management Manual for Malaysia (Manual Saliran Mesra Alam Malaysia), Second Edition

Content of Seminar A & B

- **Seminar A Day 1 & 2**- Major Changes in Key Design Parameters in *MSMA2*
- **Seminar A Day 3**- On-Site Detention- Worked Example using spreadsheet
- **Seminar B Day 1**- Detention Basin- Design Storm and Time-Area Method
- **Seminar B Day 2**- Detention Basin- Reservoir Routing and Interpretation of Results

Seminar A- Day 1 & 2	Seminar A- Day 3	Seminar B- Day 1	Seminar B- Day 2
Introduction to MSMA2 The seminar covers an introduction to *MSMA2* emphasizing on key topics like design criteria and requirements, design storm, design discharge using Rational Method and the Time Area Method, temporal patterns and On-Site Detention (OSD). The values of key design parameters in *MSMA2* including: **storm intensities, temporal patterns, design peak discharges, SSR volumes of OSD, volumes of detention basins and sediment basins** will be compared to the first edition of *MSMA*. Following are some results from our case studies: 1. The design storm has increased by up to 126% for 10 out of the 14 stations in Kuala Lumpur. 2. The design discharge using the Rational Method has gone up by up to 131% for commercial and city area. 3. The peak discharge using the Time-Area Method has increased by 127%. 4. The Site Storage Requirement for OSD for a factory site has increased by 235%. 5. The volume of detention basin for a site has increased by up to 130% 6. The volume of a wet sediment basin has increased by 165%. The Seminar will be conducted through various case studies with plenty of worked examples. The participants will learn how to do the worked examples using Excel spreadsheets on their own notebook PC.	**On-Site Detention- Worked Example using Spreadsheet** This session covers OSD computation in details. Using actual worked examples, we show you a different approach of computing OSD using *MSMA2* that will reduce the storage significantly compared to the *Approximate Swinburne's Method* in *MSMA2*. The participants will do the worked examples on Excel spreadsheets on their PC. The worked example involves a case study involving a typical development in KL. First, the SSR (Site Storage Requirement) is calculated based on the *Swinburne's Method* in the first edition. Next, the SSR is calculated based on the *Approximate Swinburne's Method* in *MSMA2*. The SSR is found to be about 190% that from the first edition, due to the approximation involved in the method. Finally, we will show you a different approach of computing OSD using *MSMA2* that will reduce the storage to only 103% of that from the first edition. The advantage of this approach is the rainfall and discharge are based on *MSMA2*, so it is more accurate than using the first edition alone.	**Detention Basin- Design Storm and Time-Area Method** It is recommended that participants attend Seminar A before attending Seminar B. The worked example is based on a case study of a typical project site. Day 1 will cover two topics namely design storm and the Time-Area method for computing the discharge hydrograph. First, the participants will compute the design storm using a spreadsheet for the location in the case study. This will be brief as the basic theory has already been covered in Seminar A. The focus is on teaching the participants how to change the parameters in the spreadsheet for different locations. The computed design storm is used as input to compute the discharge hydrograph using a Time-Area Method spreadsheet. Again, the coverage on the basic theory of the Time-Area Method is brief as the subject matter has already been covered in Seminar A. The focus is on showing the participants how to modify the spreadsheet for different project sites. The computation will be done using the first and second editions of *MSMA*. The results will be saved and used in Day 2.	**Detention Basin- Reservoir Routing and Interpretation of Results** Day 2 is a continuation of Day 1. It covers the reservoir routing part of the detention basin design. The theory on reservoir routing is covered in detail. The participants will learn how to program a spreadsheet for solving the reservoir routing procedure. Key concepts like storage curve and rating curves are explained. The discharge hydrograph output from the Time-Area Method in Day 1 is routed through the level-pool routing spreadsheet to compute the outflow hydrograph from the detention basin. The participants will learn how to interpret the results of the spreadsheets. For examples: how to interpret from the result a scenario where a detention basin is overtopped due to insufficient volume or too small discharge outlet, or when a detention basin size is considered adequate to provide the temporary storage required. The computation will be repeated using the first and second editions of *MSMA*. The results will be compared in terms of the storage volume required for both editions of *MSMA*

About the Seminar Speaker

Ir. Dr. Quek Keng Hong, a consulting engineer by practice, is the principal of *Dr. Quek & Associates*. He is a corporate member of *IEM* and a professional engineer registered with the *Board of Engineers Malaysia* (*BEM*). Dr. Quek was the Chairman of the *Water Resources Technical Division* of *IEM* for two terms since 2003.

Throughout the more than 20 years he spent in consultancy, Dr. Quek has gained a lot of experience in the field of drainage design through his direct involvement in several major infrastructure projects in the country.

Dr. Quek was the reviewer representing *IEM* in the initial review of *MSMA* organised by *D.I.D .* in 2000. Since 2003 he has conducted numerous training workshops and seminars on *MSMA*.

Dr. Quek has over 30 publications in various journals,

Who Should Attend?

The Seminar focuses on changes to the Second Edition of the urban drainage design procedure *MSMA*. The Seminar is suitable for all engineers who are involved in drainage design, including those who work in consultants, contractors or government.

You will benefit greatly from this Seminar by understanding important changes to the Second Edition of *MSMA*.

Seminar Time Table

- Registration: 8:30 am
- 1st Session: 9:00 am- 10:30 am
- Morning Tea Break: 10:30 am to 11 am
- 2nd Session: 11:00 am-12:30 pm
- Lunch: 12:30 pm to 1:30 pm
- 3rd Session: 1:30 pm- 3:00 pm
- Afternoon Tea Break: 3:00 pm to 3:30 pm
- 4th Session: 3:30 pm- 5:00 pm
- Seminar Finish: 5:00 pm

Details about Seminar

- Date: 10-14 July, 2017 -IEM Kuching
- Date: 25-29 Sep, 2017- IEM Petaling Jaya
- Time: 8:30 am- 5 pm
- Two tea breaks and lunch provided.
- Free spreadsheets worth RM2,380 will be given to all participants. Plus special discount for MSMAware.
- Please bring your own notebook computer as hands-on training is provided during the seminar.

Testimonials from Participants

Here are some testimonials we received from participants of our previous seminar/workshops:

Testimonial 1:

Dear Dr. Quek,

I attended your recent lecture. Far from being "dry", I found your presentation very enlightening and lively. It was worth it! On the sideline, your motivational pep talk was inspiring - a "shot in the arm" that each one of us needs every now and then. Right now I can't wait to try out your free spreadsheet programmes.

Ramlee Hassan

Testimonial 2:

Dr Quek,

I attended your recent IEM talk and I must say that it was the most beneficial IEM talk I have ever attended so far. I hope that all the other talks could have been like yours. Thank you again.

A. Halim Abdullah

Testimonial 3:

Dear Dr Quek,

Thanks for the login ID and password. Thanks also for a well organised 4-days workshop. I have found it very interesting and gained an overview of the methods available at the disposal of the drainage engineer as well as basic hydrological concepts. I wish you all the best in your future workshops and undertakings.
Best Regards,

Paul Chia
Bandar Seri Begawan, Brunei Darussalam

Testimonial 4:

Hi Dr. Quek.

I would like to thank you for the *MSMA* course which I attended in August. It really help me a lot. I have done a layout proposal on OSD based on *MSMA* to JPS Batang Padang and Kinta. The proposal is now approved. Thanks and best regards.

Ir. Chan Kean Chai

Testimonial 5:

Dear Dr. Quek,

I was having a really great time during the workshops. Now i have confidence in my design!

Fadzillah

Testimonial 6:

Dear Dr. Quek,

Greetings from IEM Sabah!!! We would like to conduct a course/workshop on MSMA. We are seeking your expertise to be the speaker for this course/workshop. Appreciate if you would confirm us soon on the above. Thank you.

Wendy Wong (Administrator for IEM Sabah).

20 Chapters in *MSMA2:*

There are 20 chapters in the Second Edition of the *Urban Stormwater Management Manual* (DID, 2011). Each chapter covers a major topic or type of drainage structure as listed below. The organisation of material is more "focus" and less "scattered" compared to the earlier version (DID, 2000).

Chapter 1- Design Acceptance Criteria
Chapter 2- Quantity Design Fundamental
Chapter 3- Quality Design Fundamentals
Chapter 4- Roof and Property Drainage
Chapter 5- On-Site Detention
Chapter 6- Rainwater Harvesting
Chapter 7- Detention Pond
Chapter 8- Infiltration Facilities
Chapter 9- Bioretention System
Chapter 10- Gross Pollutant Traps
Chapter 11- Water Quality Ponds and Wetlands
Chapter 12- Erosion and Sediment Control
Chapter 13- Pavement Drainage
Chapter 14- Drains and Swales
Chapter 15- Pipe Drain
Chapter 16- Engineered Channel
Chapter 17- Bioengineered Channel
Chapter 18- Culvert
Chapter 19- Pump and Tidal Gate
Chapter 20- Hydraulic Structures

Design Storm Increased by up to 126%

Based on our analysis, the design storm has increased by up to 126% for 10 out of the 14 stations in Kuala Lumpur in *MSMA2*.

Peak Discharge Using the Rational Method Increased by up to 131%

The Rational Method from the first and second edition of *MSMA* was applied to compute the peak discharges from a site in a commercial and city area. It was found that the design discharge using the Rational Method has gone up by up to 131% using *MSMA2.*

Temporal Pattern for Kuala Lumpur

In the first edition, the temporal pattern for Kuala Lumpur is based on the west coast of Peninsula. But in *MSMA2,* a different temporal pattern is provided specially for the urban area of Kuala Lumpur. This temporal pattern is quite different from that in the first edition, and this will affect discharge estimation using hydrograph based method such as Time-Area Method or runoff routing models which requires temporal pattern input.

Peak Discharge Using the Time-Area Method Increased By 127%

The peak discharge using the Time-Area Method has increased by 127% using *MSMA2*. The increase is due to a combination of higher storm intensity and more "peaky" temporal pattern introduced in *MSMA2*.

Storage for On-Site Detention Increased by up to 235%

From our study, it was found that the Site Storage Requirement for OSD for a factory site in Kuala Lumpur has increased by up to 235%. The increase is due to the Approximation used in the *Approximate Swinburne's Method* in *MSMA2.*

Storage Volume of Detention Basin Increased By up to 130%

Based on our case study, the storage volume of a detention basin for a site in Kuala Lumpur has increased by up to 130% using *MSMA2* due to a higher storm intensity and a higher inflow hydrograph to the basin.

Storage Volume for Wet Sediment Basin Increased by 165%

From our case study, it was found that the storage volume of a wet sediment basin has increased by up to 165% using *MSMA2* due to changes in design criteria.

New Requirements on Rainwater Harvesting and Proposed Combined System with OSD

MSMA2 includes new guidelines on rainwater harvesting for different towns in Malaysia. Since it is required for some states now to provide storage for both rainwater harvesting and OSD purposes, we have developed a proposed system which combined both rainwater harvesting and OSD for typical houses which will optimise the total size of storage required.

Optimisation of OSD Storage using *MSMA2*

We will show you a different approach of computing the OSD using *MSMA2* which will reduce the storage requirement significantly compared to the *Approximate Swinburne's Method* in *MSMA2*. The steps involved are explained in a case study. We will provide technical papers on this approach of design.

REGISTRATION FORM (*MSMA* SEMINAR)

Dr. Quek & Associates An Accredited Training Provider for BEM CPD Program.
No. 11-1A, Jalan Bandar 10, Pusat Bandar Puchong, 47160 Puchong, Selangor D.E., Malaysia
Tel: 03-8080 1400 (H/P: 012-2812590), Fax: 03-8080 2582, Email: webmaster@msmam.com, Website: http://msmam.com

1. VENUES AND DATES:
- The Seminar will be held at IEM, Petaling Jaya and Kuching on the dates shown. Seminar notes, lunch and two teas provided.
- *Final Seminar Details* containing Seminar timetable and map will be emailed and faxed to all participants 14 days before Seminar.
- Please check our website http://msmam.com for important announcements about the Seminar.

Please Tick	Seminar A	Seminar B	Venue	Time:
	10,11,12 July, 2017	13,14 July, 2017	IEM Kuching	8:30 am - 5 pm
	25,26,27 Sep, 2017	28,29 Sep, 2017	IEM Petaling Jaya	8:30 am - 5 pm

2. DETAILS OF PARTICIPANTS: Please fill up the participant details. (*Please tick the seminar attending) Please write clearly!

Participant Name:	A*	B*	Email Address:	H/P No:
(1):				
(2):				
(3):				

Company Name: _____

Company Address:_____

Telephone: _____ Fax: _____ Contact Person Email:_____ H/P:_____

Contact Person: _____Signature:_____ Date: _____

3. SEMINAR FEES (Seminar A or B):
The fees (RM) are as shown below for Seminar A and B. Discount to companies for sending in more than one participant.
Example: if 1 person attending Seminar A and B, the fee is RM1845+RM1230= RM3075.

No. of Participants:	Seminar A			Seminar B		
	1	2	3	1	2	3
Seminar Fee[1]:	1845	3321	4428	1230	2214	2952
Seminar Fee[2]:	1937.25	3487.05	4649.4	1291.5	2324.7	3099.6

[1]If the fee is paid for **2 weeks** before seminar dates. [2]If the fee is paid for less than **2 weeks** before seminar date.

4. ENROLMENT:
To signup please follow the two simple steps below (Please fill this page and photocopy. Keep the original for your own record):
Step 1- Payment: Select one of the following three payment methods:
- **Method A- Sending Cheque:** ☐ Yes. Enclosed herewith Cheque No……………….………....…for RM………..…………payable to *Dr. Quek & Associates*. Please mail/courier a photocopy of this form with payment to us within 7 days.
- **Method B- Direct Bank-In:** ☐ Yes. Bank in cash/cheque directly to: **Maybank Account No: 512343-542887** payable to: **Dr. Quek & Associates**. Please fill up this section: We have bank in cash/Cheque No …………………………… for RM……….…………… on ……….……… Please fax this form back with the bank-in slip after making payment.
- **Method C- Other Payment Method:** ☐ Yes. If you wish to pay by government LO please send us an official letter stating so.

Step 2- Reserve Your Place: Complete this Form and fax it to 03-5882 1602 to reserve your place.

---**OFFICE USE**--

☐ We have received your fax booking on _____. Your place is reserved, **but will be confirmed only upon payment**.

☐ We have received the payment from you on _____. Your place is confirmed. Receipt will be issued at the Seminar.

☐ Please find attached the *Final Seminar Details*. Please fill up and fax us the **reply slip** below to confirm your attendance.

☐ Comment 1:_____

☐ Comment 2:_____

--------------**REPLY SLIP (IMPORTANT: Participants must confirm their attendance by faxing this back to us)** ------------------

☐ Yes, we hereby confirmed we have received the *Final Seminar Details* and our participants will be attending the Seminar. We undertake to make any outstanding payment if we have not already done so.

Comment (if any): _____

Signed:_____ Stamp: _____ Date: _____

Payment and Refund Policy: Full payment must be received within 7 days after booking via fax. Money paid is not refundable, but substitution may be made at any time. Full refund if the Seminar is cancelled for whatever reasons. We will SMS, email and fax the *Final Seminar Details* two week before the Seminar date. Please make your flight and hotel booking only after you have received the *Final Seminar Details* from us. Visit our website http://msmam.com for update and details of the Seminar.