

MOVVA[®]

STORM WATER ON-SITE DETENTION SYSTEM



- Fast and Easy Installation
- Increase Land Usage Area
- Withstand High Vertical Loading
- High Porosity
- High Durability

**Manufacture in
Kuching, Sarawak**

**10 Years Products
Warranty**



**WENHONG
PLASTIC
INDUSTRIES
SDH BHD**
(337061-T)

Blue & Green Infrastructure

Manufactured by:

WENHONG PLASTIC INDUSTRIES SDN BHD

Lot 73, Block 45, 8th Mile, Batu Kitang Road, 93670 Kuching, Sarawak Malaysia

Tel : 016-232 0831 Email: edenspheresdnbhd@gmail.com

Product's Specification



MOVA Tank Body



Side Cover



Top Cover

Product Name	MOVA Storm Water On-Site Detention System
Dimension	0.5m (L) * 0.5m (W) * 0.5m (D)
Weight	9kgs
Material	Virgin PP (Polypropylene Plastic)
Manning's Roughness, n	± 0.05
Vertical Loading	30 tons/m ² (Ultimate load ≈ 87kN)
Lateral Loading	10 tons/m ²
Void Ratio	95%

STANDARDS

- **SIRIM** Product Certification License.
- Fully Compliance with **MASMA 2nd Edition, 2012** Design Standard.
- Fully Compliance with **SUStoM Design Standard** (DID Sarawak).

FLEXIBLE DESIGN

- Assembly numerous modular units into a storm water tank, **cater for large volume requirement.**
- Can work for both as **on-site storage** and **subsurface drainage module.**

High Durability

- Corrosion Resistance.
- UV & Chemical Resistance.

Aesthetic Value

- Fully covered, not exposed.
- Can have landscaping on top of the system.

Easy Replaceable & Cost Effective

- If a specific module damage (cracked or badly blocked), only required to replace the specific module.
- Super cost effective compared to other system that need to replace or clear the entire system when it is cracked or blocked.

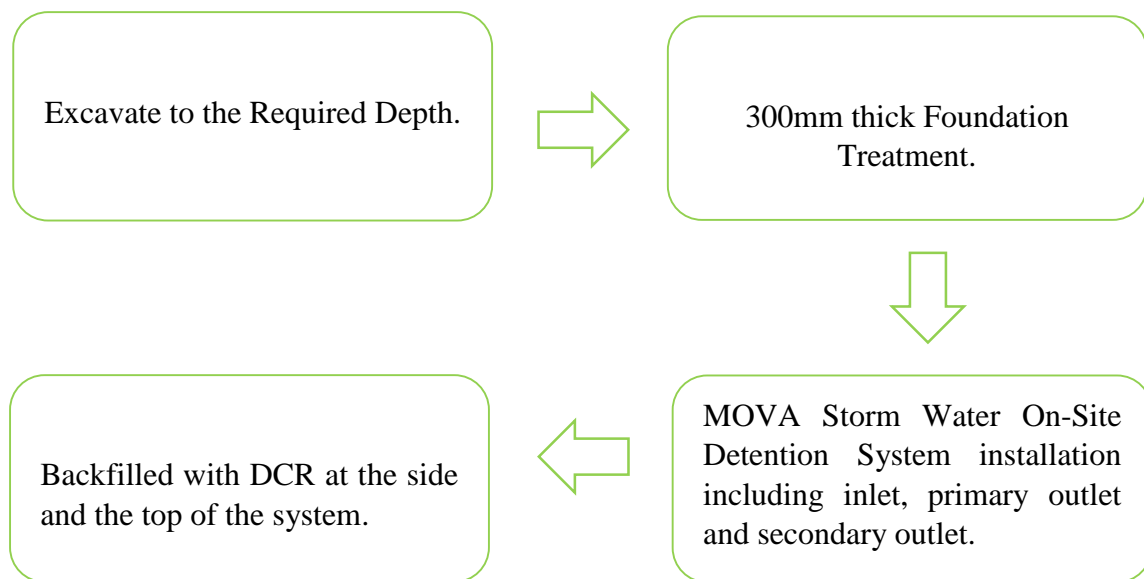
One Stop Services & Maintenance

- In house professional engineer for technical support in planning, design, supply and install services for MOVA On-Site Detention System.

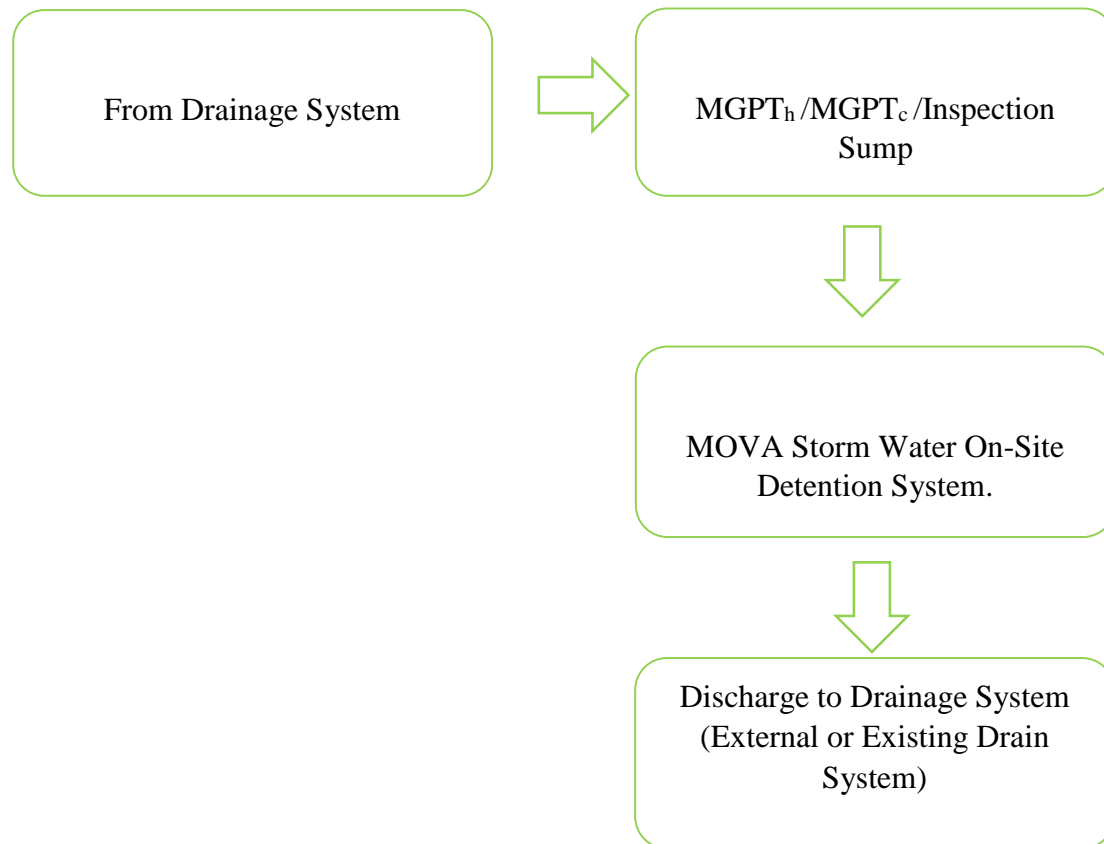
Application

- Under **green area.**
- Under **premix car park.**
- Suitable to be used as **subsoil drainage system.**

Installation Guideline



Connection Details



Maintenance

1. MOVA Gross Pollution Trap (Housing) [MGPT_h]



Filtration Basket

- i. Remove access cover
- ii. Take out the filtration basket and remove the sediments **once a month** to ensure the efficiency.

2. MOVA Gross Pollution Trap (Commercial) [MGPT_c]



Filtration Basket

- i. It is recommended to clear the large floatable pollutant at the filtration basket **once a month**
- ii. Remove of large volume of accumulated sediments, oil and grease using pump truck (if required) at **every 6 months** (recommended)

Sedimentation Control

Sedimentation unlikely to occur in the system as the **design of the system meets the requirement of self-cleansing velocity**. Additionally, MGPT act as filter to block the floatable pollutant and sediments. Moreover, the **geotextile used for wrapping the tank can filter off soil particles that smaller than 0.21mm**. Regular inspection or maintenance of the MGPT should be carried out to avoid blockage at the inlet of the system.

Project Reference

Location : Taman Fajar, Kota Kinabalu

Project Scope : The existing open pond been upgraded to MOVA Storm Water OSD System

Benefits :

- | | |
|-------------------------------|-----------------------------|
| i. Odorless | iv. Fully utilise Land Area |
| ii. Prevented Pest Breeding | v. Easy Maintenance |
| iii. Increase Aesthetic Value | vi. Environmental Friendly |

The Existing size of RC Pond : 22m x 14m x 1m (308m³)

The Proposed size of MOVA OSD System : 22m x 13m x 1m (286m³)

Project Duration : 30 days

Before Installation



During Installation



After Installation



After 1 year



Project Reference (Con't)



Location : Kampung Bunga Rampai
Project Scope : Drainage & Detention System
Scope of work : 75m MOVA Drain
Size : 75m x 0.5m x 1m (37.50m³)
Project Duration : 40 days



Location : Kampung Haji Baki (Block A)
Project Scope : Drainage & Detention System
Scope of work : 270m MOVA Drain
Size : 270m x 0.5m x 1m (135m³)
Project Duration : 45 days



Location : IOT Senari
Project Scope : Drainage & Increase Land Usage (Modular System being used as carriageway)
Scope of work : 38m MOVA Drain
Size : 38m x 0.5m x 1m (19m³)
Project Duration : 10 days



Location : IBRACO Construction Sdn. Bhd, 49 Units Shoplot
Project Scope : Detention System
Scope of work : 1,114m³ Detention System (4 units)
Duration : On Going

Technical Findings

1. ANALYSIS OF FLOW VELOCITY IN STORM WATER MODULE USING SOLID WORKS

Published by : Swinburne University of Technology Sarawak

Prepared by : Associate Professor Ts. Ir. Dr. Kelvin Kuok King Kuok

Major Findings:

Flow rate (m ³ /s)	1	2	3	4	5
Average Velocity (m/s)	0.18	0.21	0.36	0.41	0.51

The average velocity of water will be reduced to 10 to 20% of its initial velocity when it flow into MOVA On-Site Detention System. As the water need a longer duration to travel towards the discharge point, which enhanced the water retention/storage system. This is only possible with MOVA On-Site Detention System as it is the only system with reinforced columns in between to increase the friction coefficient thus restrict and reduce the velocity of water travelling in it, making it more effective in comparison with other detention system.

2. PERFORMANCE TEST FOR WEN HONG STORM WATER MODULE

Published by : University of Malaysia, UNIMAS

Prepared by : Dr. Charles Bong Hin Joo

Major Findings:

The MOVA storm water module has been found to have a **porosity of 95%** and **Manning's n value as ±0.05**

The MOVA storm water module has been found to be able to detain 35.2% to 95.6% of the total runoff generated by total rainfall which is equivalent to **5-min 10 year ARI** to **20-min 10 year ARI**.

3. Load Test Report

Published by : Curtin University Malaysia

Prepared by : Dr. Lee Yeong Huei

Major Findings:

Averagely, the module fail at **ultimate load of 87 kN** with deflection of 12.36 mm.

For lateral load test, the specimen failed at 19kN with deformation of 15mm.

Certificate



SIRIM QAS International Sdn. Bhd.
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TEST REPORT

REPORT NO : 2020CB0731

PAGE : 1 OF 12

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THIS TEST REPORT IS ISSUED IN SECURED PDF SOFTCOPY

Applicant : WENHONG PLASTIC INDUSTRIES SDN. BHD
Lot 73, Block 45,
Jalan Batu Kitang,
P.O Box 1603,
93732 Kuching,
Sarawak.

Manufacturer : WENHONG PLASTIC INDUSTRIES SDN. BHD

Product : MOVA Stormwater Modular Tank

Reference Standard / Method of Test : i) Adopted to ASTM D2412 – 11 (2018)
Standard Test Method for Determination of External Loading
Characteristic of Plastic Pipe by Parallel Plate Loading.
ii) Adopted to ASTM F2418 – 19
Standard Specification for Polypropylene (PP) Corrugated Wall
Stormwater Collection Chambers

Description of sample : Four (4) specimens were tested in vertical load and One (1) specimen of
was tested in lateral load. All the testing was conducted at Curtin
Laboratory Malaysia.
Model : WT 500, Brand : MOVA
Nominal Size : 500 mm x 500 mm x 500 mm

Date Received of Complete Application : 29 September 2020

Job No. : J20201430581

Description of Test Results : The test results of the submitted test samples are described in Page 2 to
12 of this test report.

Issued Date : 20 November 2020

Approved Signatory;

(MOHD HAFIZ BIN MOHD NASSIR)
Testing Executive



DR SIHA BINTI RAJA ABDUL HANAN
Head
Civil & Construction Section
Testing Services Department