



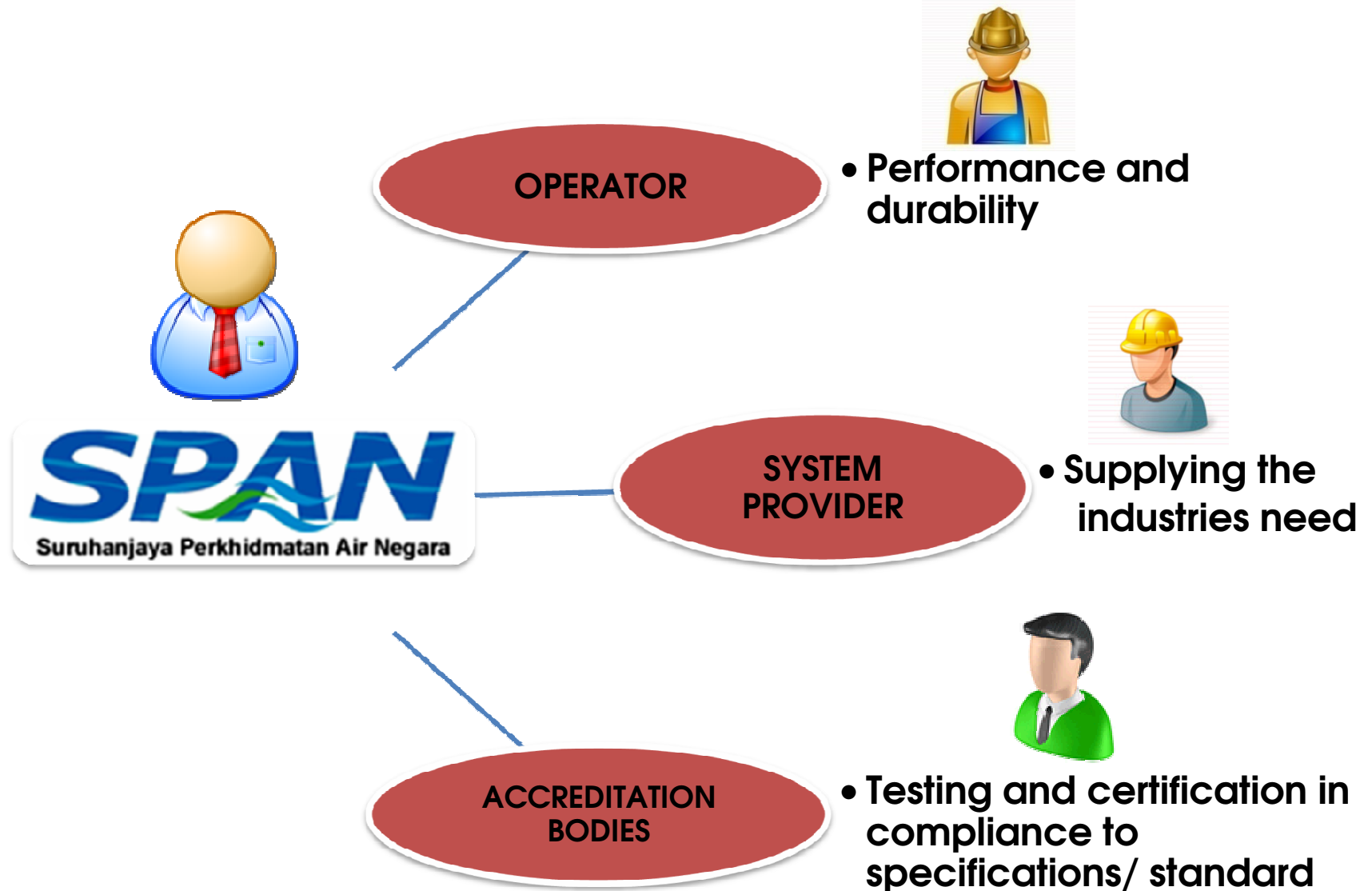
STANDARDIZATION OF ON-SITE TREATMENT IN MALAYSIA



**NATIONAL WATER SERVICES COMMISSION
MALAYSIA**



WHY DO WE NEED STANDARDIZATION



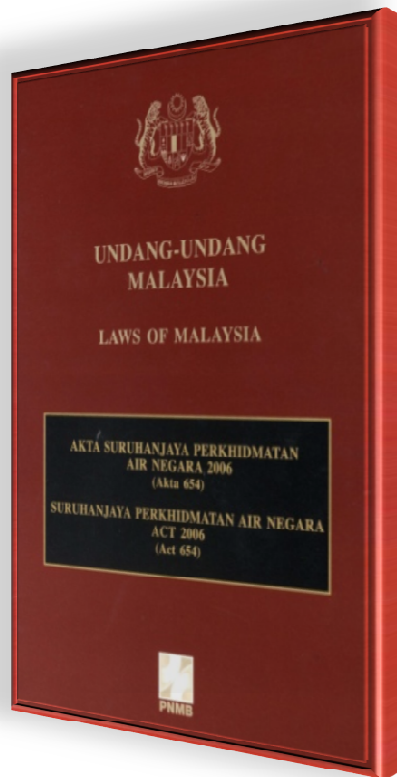
AIMS OF STANDARDIZATION



- **Quality** of goods and services
- Quality of **life**
- Efficient use of **resources**
- Conditions for **trade**

PROVISION OF LAW

WATER SERVICES INDUSTRY ACT 2006



SECTION 45

- Plans and specifications for the construction of sewerage systems and septic tanks require the approval of the Commission

SECTION 129

- Responsible of manufacturers, suppliers and person whom installs the sewerage products/systems to uses or supplies a standard product/ systems

SECTION 180(a)(i)

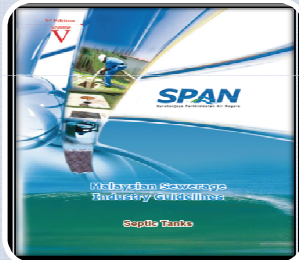
- Minimum standards and specifications which shall be used in the design, construction, installation, protection, operation and maintenance of any water supply system or sewerage system

PRODUCT SPECIFICATION

SEPTIC TANKS

✓Application
✓Design

✓Certification
✓Performance



**MALAYSIAN
SEWERAGE
INDUSTRY
GUIDELINES VOL. 5
– SEPTIC TANKS**
3rd Edition January
2009
Published by SPAN



**MALAYSIAN
STANDARD ON SITE
TREATMENT UNITS
PART 1 :
PREFABRICATED
SEPTIC TANKS
SPECIFICATIONS**

Publish on June
2012

SMALL SEWAGE TREATMENT SYSTEM

✓Certification

✓Guideline
✓Construction
& Installation

✓Certification
✓Performance



**TECHNICAL
SPECIFICATION
SEWAGE TREATMENT
SYSTEM**

**Part 1: Prefabricated
Tanks - Packaged
Plants**

First Edition October
2010, Revision March
2013

Publish by SPAN



**TECHNICAL
SPECIFICATION
SEWAGE TREATMENT
SYSTEM**

**Part 2: Construction
and Installation -
Packaged Plants**

First Edition October
2010, Revision March
2013

Publish by SPAN



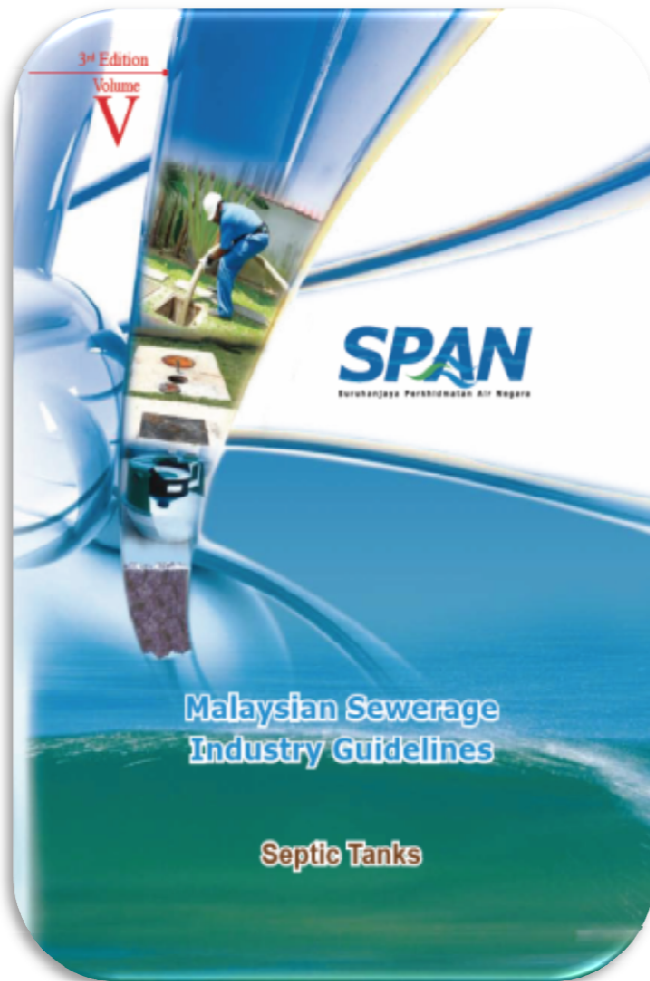
**MALAYSIAN
STANDARD ON SITE
TREATMENT UNITS
PART 2 : PACKAGED
PREFABRICATED
SMALL SEWAGE
TREATMENT SYSTEM
SPECIFICATIONS**

Final draft

MALAYSIAN SEWERAGE INDUSTRY GUIDELINES

VOL. V

SEPTIC TANKS



PURPOSE

- To set up the requirements of SPAN for design and construction of Individual Septic Tank

APPLICATION

- Development with population equivalent size up to 150 PE
- For single development shall not more than 30 PE

MALAYSIAN SEWERAGE INDUSTRY GUIDELINES

VOL. V

SEPTIC TANKS

SEPTIC TANKS – GENERAL USAGE REQUIREMENTS

- Only for total development < 150PE
- Individual septic tank (IST) can only serve one premises
- Size capacity – smallest (5PE) & largest (30PE)
- Multiple IST within single lot not allowed



TYPES OF SEPTIC TANKS

- Prefabricated
- Cast In-Situ

EFFLUENT DISCHARGE

- BOD5 : 50 mg/L
- Suspended Solids : 100mg/L



CONTENTS

GENERAL GUIDELINES



Condition of Installation

- Development to small for off site
- No public sewer to connect
- Homestead Developments

DESIGN GUIDE



- Design

- Non-proprietary systems (cast in situ)
- Proprietary systems (prefabricated)

SEPTIC TANK LOCATED IN SENSITIVE RECEIVING WATERCOURSE



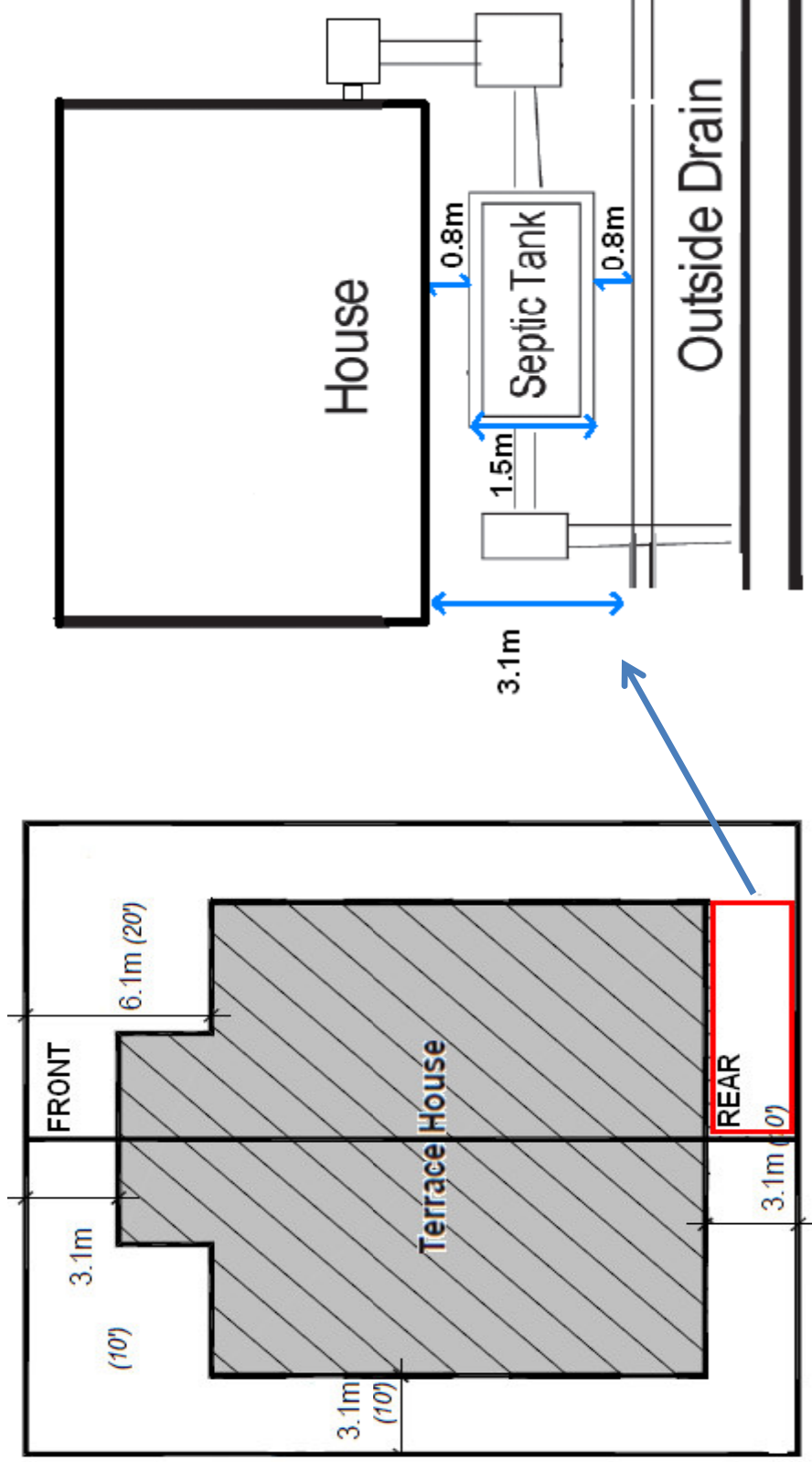
- Further treatment methods for achieving higher effluent quality

- Disinfection

*however it was not enforced

TYPICAL LAYOUT

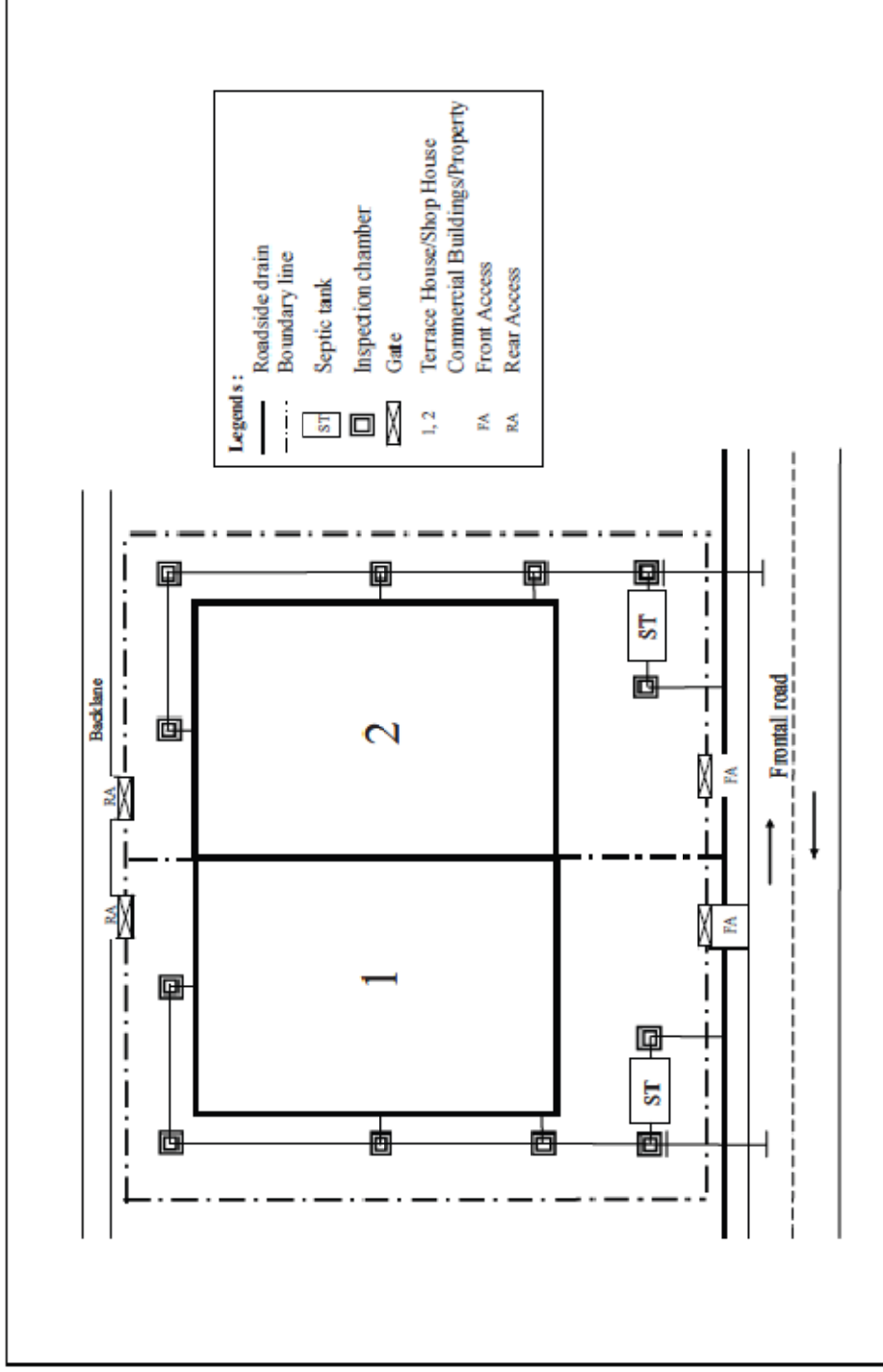
Backlane



TYPICAL LAYOUT

Front Lane

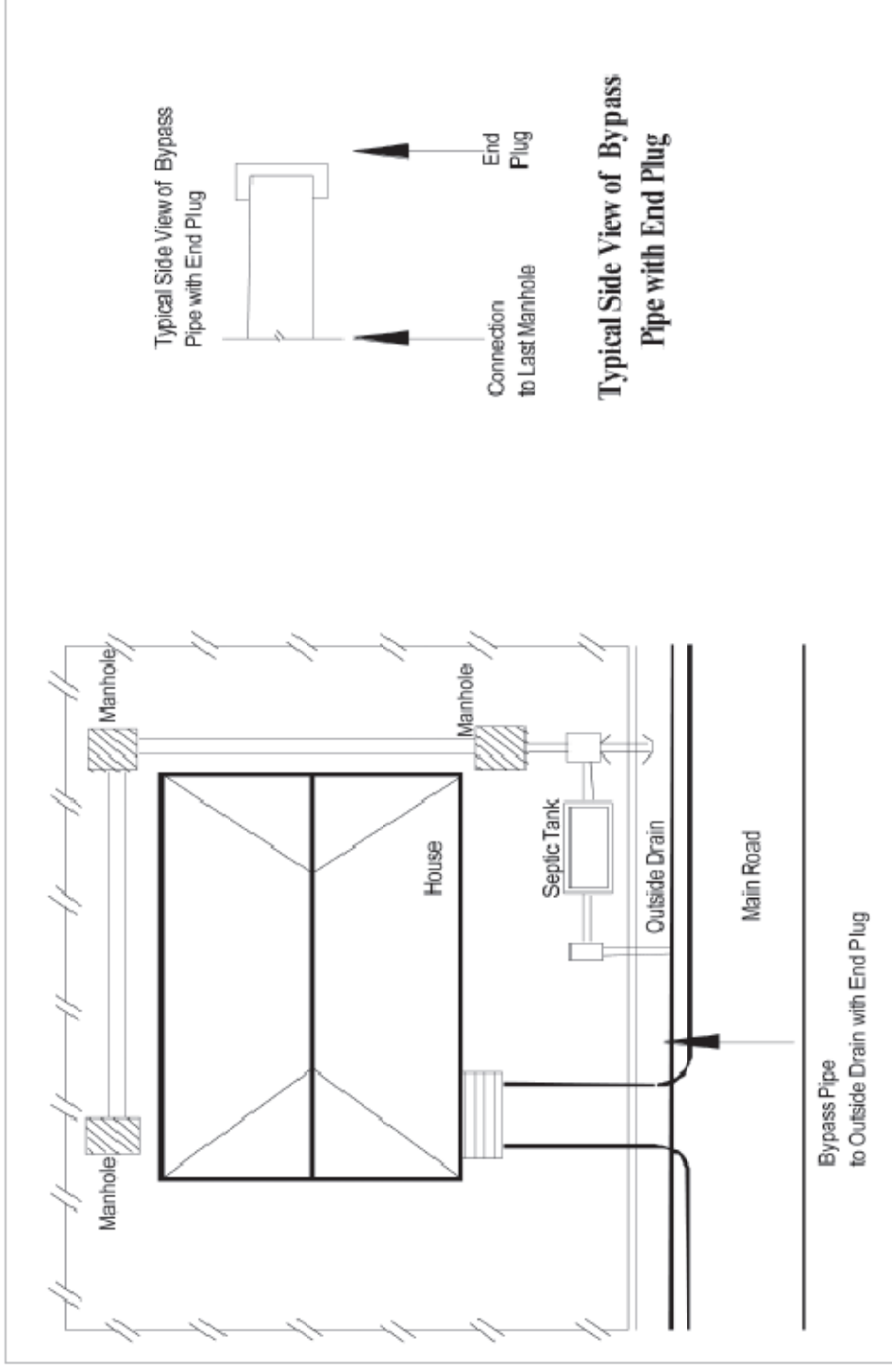
Typical Layout Using Front Access (Bungalow, Terrace House, Shop House and Commercial Building)



TYPICAL LAYOUT

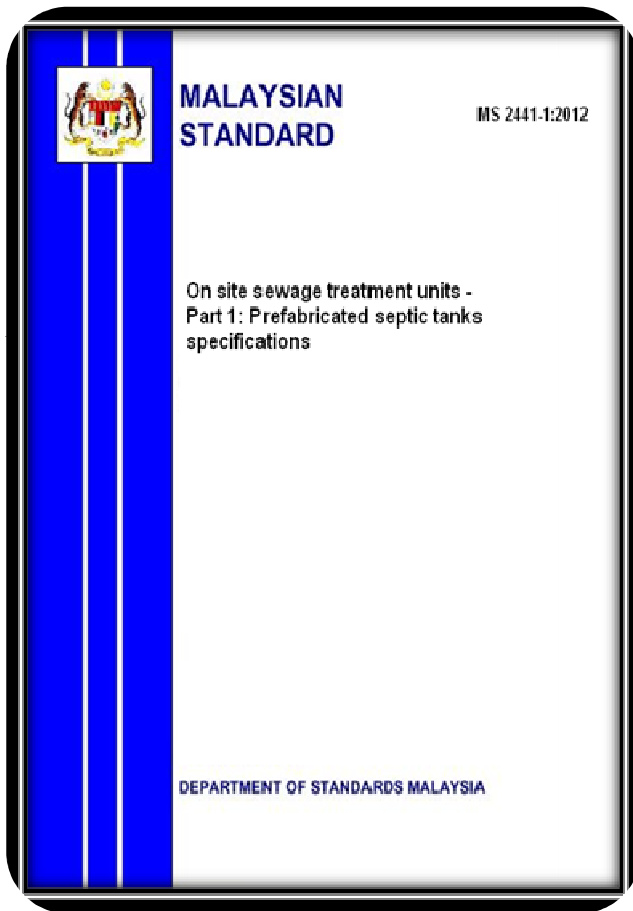
Bypass

Layout showing Bypass to Public Sewer (for all applicable developments including Terrace Houses)



MS 2441-1:2012

ON SITE SEWAGE TREATMENT UNITS – PART 1 : PREFABRICATED SEPTIC TANKS SPECIFICATION



SCOPE

- Requirement for prefabricated septic tanks and their associated fittings
- Treatment of sewage for up to 30 PE
- Installed below ground level
- Serve one premise only
- Covering two materials FRP & PE
- Intended for use by consultants, designers, manufacturers, certifying bodies, installers, regulators and other interested parties

MAJOR SPECIFICATION REQUIREMENTS

Capacity

**Inlet & Outlet
fittings**

Flow path

Openings

Anchorage

Filter media

Partitions

Marking

Thickness

STANDARDS REFERENCE

- ✚ AS/NZS 1546 : 2008 - On-site domestic wastewater treatment units
Part 1: Septic Tanks
- ✚ EN 12566: 2007 - Small wastewater treatment systems for up to 50 PE
Part 1: Prefabricated Tank
- ✚ CAN/ CSA B66 : 2005 - Design, material and manufacturing
requirements for prefabricated septic tanks and sewage holding
tanks

OTHER REFERENCES

- ✚ Malaysian Sewerage Industry Guidelines, Volume 5 - Septic Tanks
- ✚ Water Services Industry Act 2006
- ✚ Water Services Industry (Desludging and Septage Discharge) Regulations
2008 [Approved but not gazette]

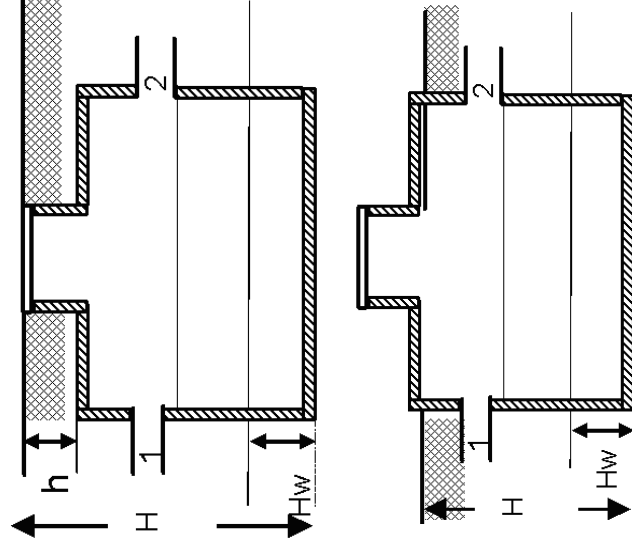
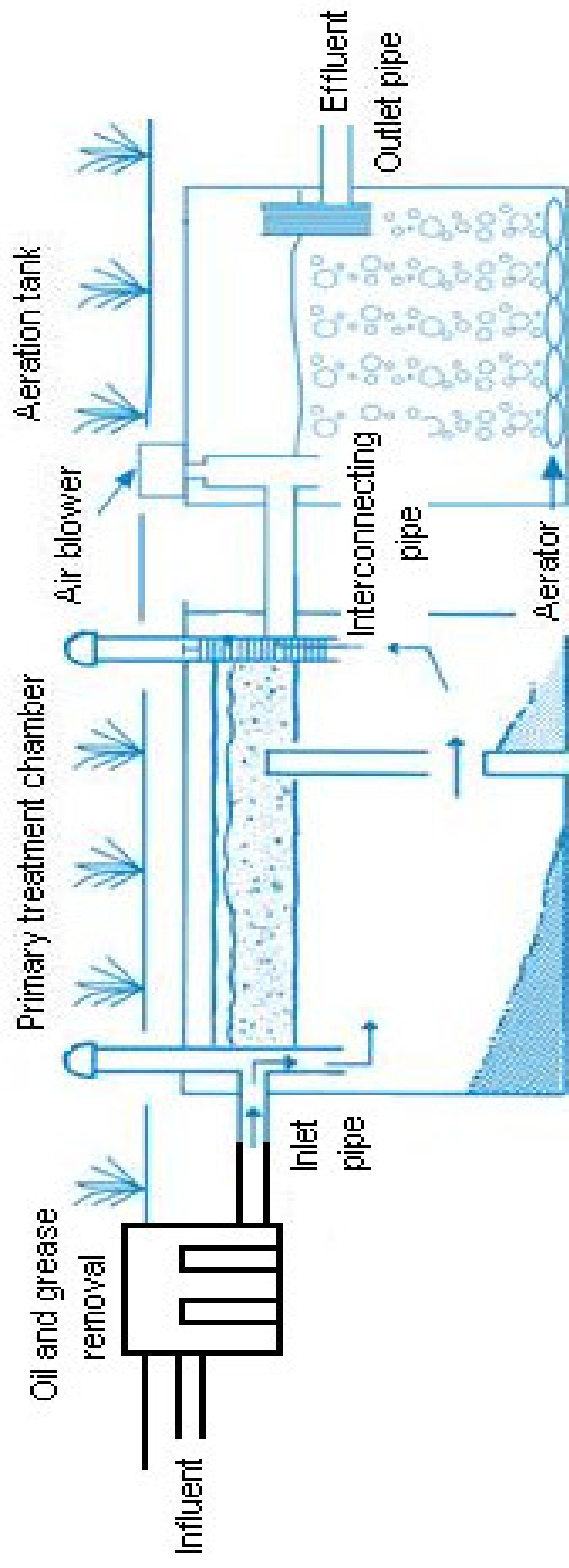
ON SITE SEWAGE TREATMENT UNITS – PART 2 : PACKAGED PREFABRICATED SMALL SEWAGE TREATMENT PLANT SPECIFICATIONS



SCOPE

- Requirement for packaged prefabricated small sewage treatment system (SSTS) and their associated fittings
- Designed for sewage flow of 31 up to 149 PE
- Installed below ground level
- No vehicle load and not installed in high water table area
- Two materials covered, FRP & PE
- Assembled in factory
- Intended for use by consultants, designers, manufacturers, certifying bodies, installers, regulators and other interested parties

SCHEMATIC DIAGRAM OF SSTs



Key

H total depth of the plant

H_{W} height of exterior water level (groundwater)

K coefficient of horizontal soil pressure

h depth of the backfill from the top of the tank to ground level

1 inlet

2 outlet

MAJOR SPECIFICATION REQUIREMENTS

Capacity

**Inlet & Outlet
fittings**

Openings

Anchorage

Filter media

Partitions

Marking

Thickness

**Treatment
efficiency**

STANDARDS REFERENCE

- ✚ **MS 1225-2:2006, Polyethylene (PE) tanks for cold water storage - Part 1: Capacity more up to 600 gal (first revision)**
- ✚ **AS/NZS 1546.1: 2008, On-site domestic wastewater treatment units - Part 1: Septic tanks**
- ✚ **AS/NZS 1546.3: 2008, On-site domestic wastewater treatment units - Part 3: Aerated wastewater treatment systems**
- ✚ **BS EN 12566-3+A1: 2009, Small wastewater treatment systems for up to 50 PE - Part 3: Packaged and/or site assembled domestic wastewater treatment plants**
- ✚ **CAN/ CSA B66: 2005, Design, material and manufacturing requirements for prefabricated septic tanks and sewage holding tanks**

OTHER REFERENCES

- ✚ **Malaysian Sewerage Industry Guidelines, Volume 5 - Septic Tanks**
- ✚ **Water Services Industry Act 2006**
- ✚ **Water Services Industry (Desludging and Septage Discharge) Regulations 2008 [Approved but not gazette]**

TECHNICAL SPECIFICATION SEWAGE TREATMENT SYSTEM

Part 1: Prefabricated Tanks - Packaged Plants & Part 2: Construction and Installation - Packaged Plants



SCOPE

- Requirements for packaged sewage treatment plant consisting prefabricated tanks made of FRP or PE
- Serve between 150 and 5000 population equivalents

TECHNICAL SPECIFICATION SEWAGE TREATMENT SYSTEM

Part 1: Prefabricated Tanks - Packaged Plants



SPECIFICATION

- Performance requirements and associated test methods for the prefabricated tanks and their accessories that are installed buried in the ground with no vehicles loads are applied above it
- Marking requirements and evaluation of conformity for the prefabricated tanks

TECHNICAL SPECIFICATION SEWAGE TREATMENT SYSTEM

Part 2: Construction and Installation - Packaged Plants



TECHNICAL SPECIFICATION

SPAN TS 1402:2010 (A1:2013)

SEWAGE TREATMENT SYSTEM

Part 2: Construction and Installation -
Packaged Plants



Technical Standards and Compliance Division
Sewerage Regulatory Department

SPECIFICATION

- Operational requirements and performance criteria that deal with features such as functional design and material as means of compliance with overall requirements of the packaged plant
- Focus is on operational systems of the plant comprising piping, aeration, pumping, control and other ancillaries
- Specification also includes treatment efficiency testing to ascertain if the plant achieve the effective and reliable operational performance under normal operating conditions throughout its serviceable life span

JUSTIFICATION



End users will have the opportunity in having good quality and certified products

To standardize treatment process of the system

To elevate and control the quality of prefabricated components of the system produced by manufacturers



To ensure the system would be able to provide treatment efficiency as intended



To specify level of operation and maintenance required as defined for the system

To ensure construction and installation is at desirable level to perform as required

To ensure necessary certification is obtained thus manufacturers are more responsible and accountable



IMPORTANCE OF MSIG, MALAYSIAN STANDARD AND TECHNICAL SPECIFICATION DOCUMENTS



To elevate and maintain the quality of Septic Tanks & SSTs produced by manufacturers at desirable level to perform as required

To ensure necessary certification is obtained thus manufacturers are more responsible and accountable.



BENEFITS OF STANDARDIZATION



Well Planned
Sewerage
Services



Good Quality
Assets





THANK YOU



**SEWERAGE REGULATORY DEPARTMENT
NATIONAL WATER SERVICES COMMISSION
MALAYSIA**