

SWaM 2019 "National Conference on Stormwater Management
- Managing Stormwater Run Off"

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MSO

Quantification of Erosion & Sediment Control Plan (ESCP) in Malaysian Civil Engineering Standard Method of Measurement (MyCESMM)

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Objective of Presentation

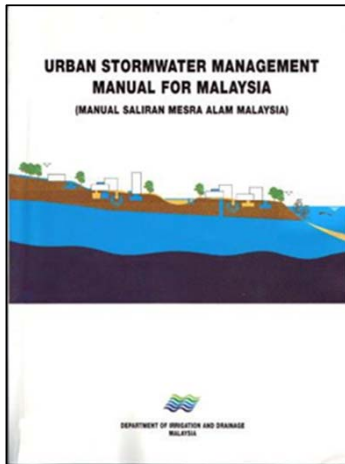
- To encourage/promote preparation of Bill of Quantities (BQ) for ESCP using MyCESMM 2

Overview of Presentation

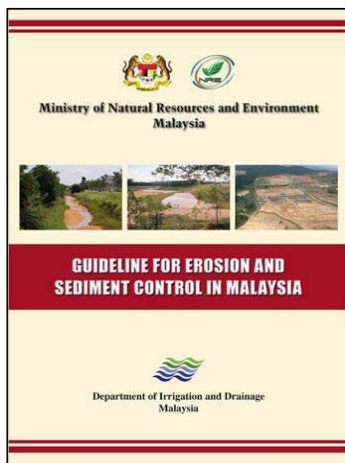
- Evolution of ESCP
- Evolution of MyCESMM
- ESCP in MyCESMM 2



Evolution of ESCP

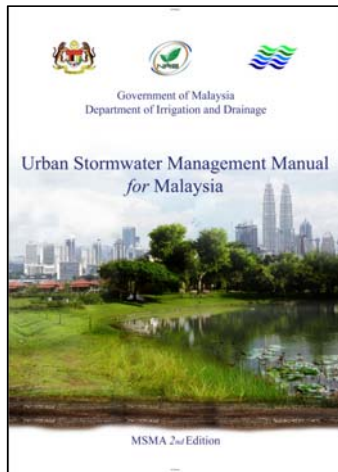


- MSMA 1st edition (2000)
- Chapter 39: Erosion and Sediment Control Measures
- Chapter 41: Erosion and Sediment Control Plans



- Guidelines for Erosion and Sediment Control In Malaysia (2010)

Evolution of ESCP

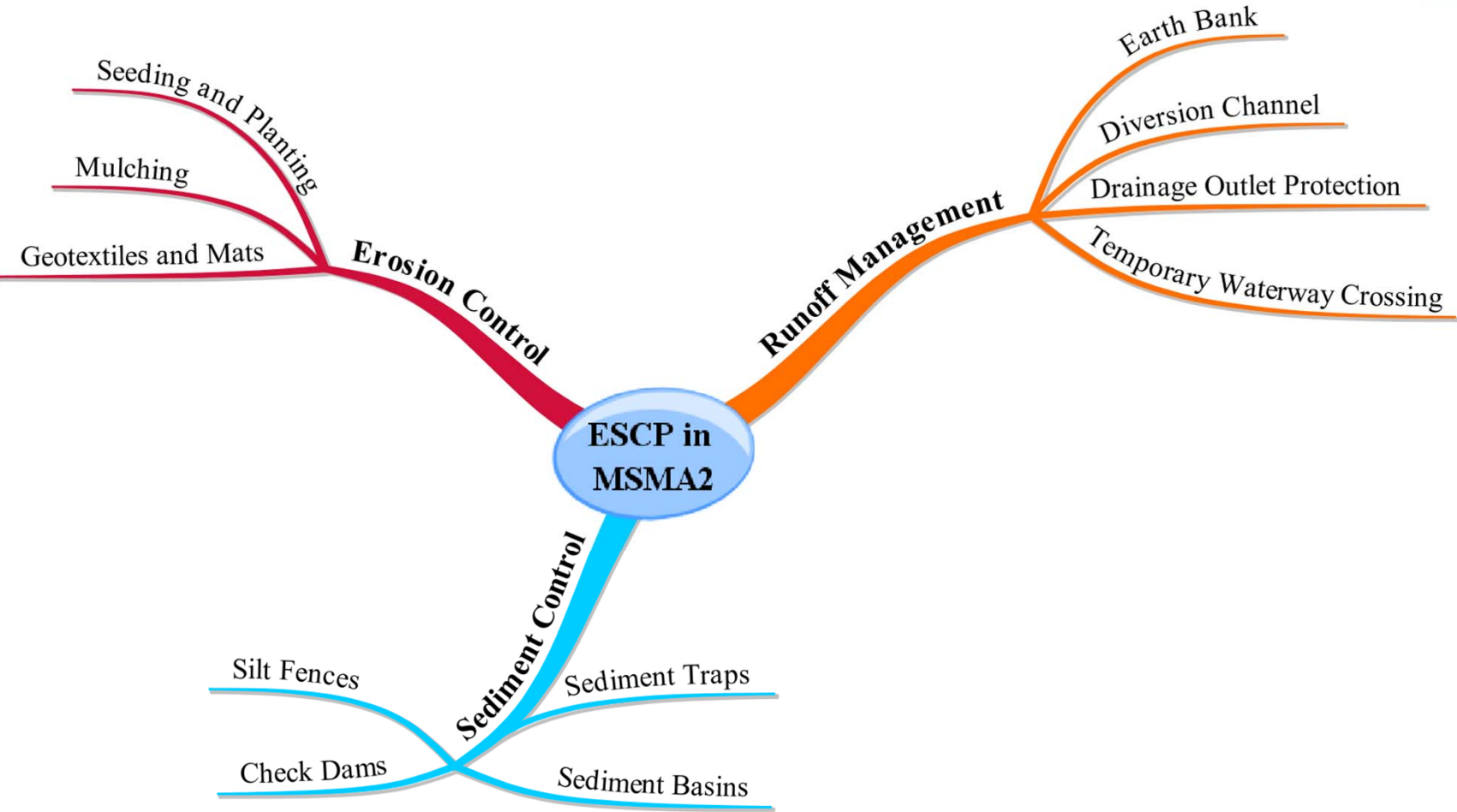


- MSMA 2nd edition (2012)
- Chapter 12: Erosion and Sediment Control



- MS 2526-12 (2014) Urban stormwater management - Part 12: Erosion and sediment control

ESCP in MSMA 2nd edition



Why Standardized BQ is Needed?

1. Efficiency in the project implementation
2. Uniformity of documents produced
3. Things are easier to expect when they are consistent
4. Helps contractors produce more accurate tenders
5. Reduce tender preparation time for Contractors - keep the tender prices low
6. Reducing disputes arising from measurement discrepancies
7. Ease of computerization – work classification
8. Reduce the ambiguities in the BQ

Without SMM?

1. Increased V.O. and claims
2. Difficult to justify the best offer
3. Difficult to manage the contract finance
4. Risk is higher to both parties

All these will lead to unnecessary disputes, loss of productivity and resources as well as delays.



Evolution of MyCESMM

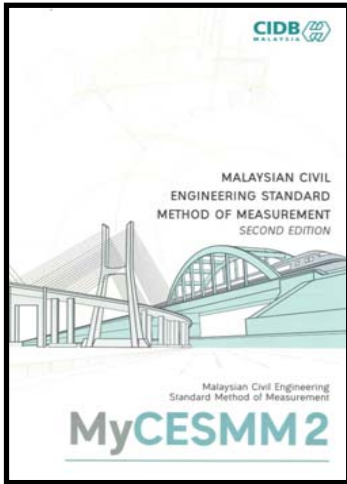


- Malaysian Standard Method of Measurement for Civil Engineering Works (2003)
- Class P: Environmental Protection and Enhancement

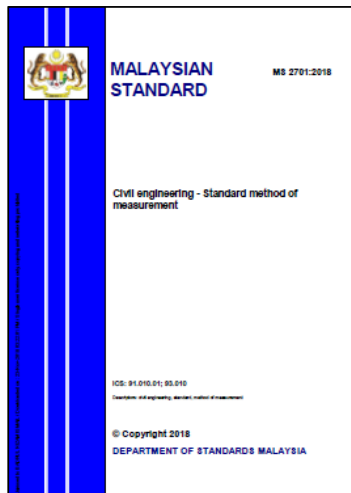


- Malaysian Civil Engineering Standard Method of Measurement - MyCESMM (2011)
- Class B: Environmental Protection and Enhancement

Overview of MyCESMM

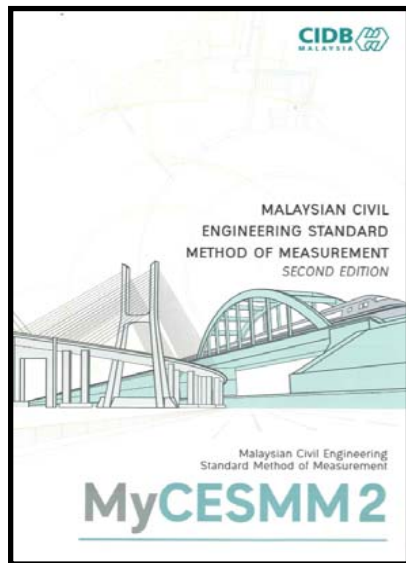


- Malaysian Civil Engineering Standard Method of Measurement 2nd revision - MyCESMM2 (2018)
- Class B: Environmental Protection and Enhancement

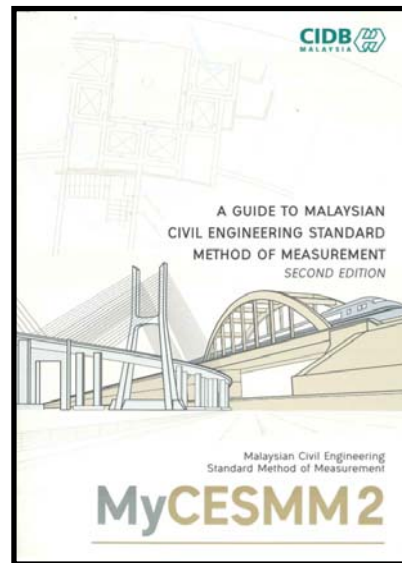


- MS 2701 (2018) Civil engineering - Standard method of measurement

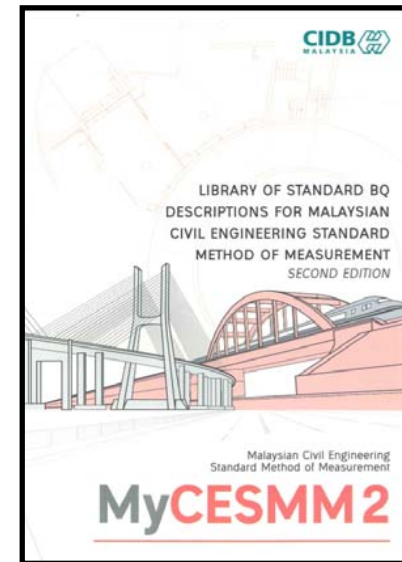
Overview of MyCESMM2



Green Book:
MyCESMM2



Brown Book:
A Guide to
MyCESMM2



Red Book:
Library of
Standard BQ
Descriptions for
MyCESMM2

Overview of MS 2701 (2018)

Section 1. Scope and General

Section 2. **Application Of the Work Classification**

Section 3. **Coding and Numbering of Items**

Section 4. Preparation of the Bill of Quantities

Section 5. Completion, pricing and use of the Bill of Quantities

Section 6. Method-Related Charges

Section 7. Work Classification: Class A - Class W



Overview of MS 2701 (2018)

Section 2. Application Of the Work Classification

- Each work class contains:
 - I. Measurement rules – for person preparing BQ
 - II. Definition rules – for person preparing BQ. It defines division and measurement rules
 - III. Coverage rules – for contractor
 - IV. Additional description rules – for person preparing drawing, specifications or BQ



Overview of MS 2701 (2018)

Section 3. Coding and Numbering of Items

- The code and numbering system :

- One **alphabet** and **not more than three digits**.

- E.g. Code B261 identifies an item as:

Class B Environmental Protection and Enhancement

1st Division 2 Erosion and Sediment Control Plan

2nd Division 6 Sediment Basin

3rd Division 1 Excavation

- Description: **B261** – Excavation [earth; maximum depth]

- Meaning of:

1. * - to indicate all numbers
2. 9 - a feature not listed in work classification
3. 0 – a division not apply or fewer than 3 divisions
4. Decimal point – a suffix number to distinguish items with same code but additional description



ESCP in MyCESMM2 (Erosion Control)

Seeding and Planting

- Covered in Class F: Earthworks (F410 & F420)
- F410 (Landscaping; Turfing)
- F420 (Landscaping; Hydroseeding)
- Coverage Rules:
 - C14: Items for **landscaping** shall be deemed to include digging, planting media, bedding, staking, protection, watering, weeding, required fertilising, and replacement of dead items until the vegetation is established.
 - C15: Items for **turfing** on slopes steeper than 1 (vertical) and 3 (horizontal) shall be deemed to include pegging down with stakes.



ESCP in MyCESMM2 (Erosion Control)

Mulching

- Not directly covered in MyCESMM2, but the best match is Class F: Earthworks (F430)
- F430 (Landscaping; Bio-degradable erosion control blanket)
- Coverage Rules:
 - C16: Items for **biodegradable erosion control blanket** shall be deemed to include fastening hooks and netting required.
- Alternative: F490 (Landscaping; Mulching)



ESCP in MyCESMM2 (Erosion Control)

Geotextiles and Mats

- Best match is Class F: Earthworks (F430)
- F430 (Landscaping, Bio-degradable erosion control blanket)
- Coverage Rules:
 - C16: Items for biodegradable erosion control blanket shall be deemed to include fastening hooks and netting required.
- Alternative: F490 (Landscaping; Geotextiles)



ESCP in MyCESMM2 (Runoff Management)

Earth Bank

- Covered in Class F: Earthworks (F121 & F321/322)
- F121 (Excavation; Cut to Fill; Earth)
- F321/322 (Filling; Embankments; Excavated material/Imported material)
- Coverage Rules:
 - C4: Items classified as **excavation in cut** shall be deemed to include transportation from source to place of fill or disposal.
 - C5: Items classified as **excavation in cut** shall be deemed to include the trimming and preparation of excavated surface.
 - C11: Items for **filling** shall be deemed to include filling in layers and compaction.
 - C12: Items for **filling** shall be deemed to include additional filling necessitated by settlement or penetration into underlying material.
 - C13: Items for **filling** to embankments or on sloping ground shall be deemed to include benches.



ESCP in MyCESMM2 (Runoff Management)

Diversion Channel

- Best match is Class Q: Drainage Works (Q11*)
- Q11* (Excavation; Drain; Depth)
- Coverage rules:
 - C1: Items for excavation shall be deemed to include preparation of surfaces, multiple handling, disposal of surplus excavated material (including unsuitable material), upholding sides of excavation, allowance for joints, backfilling, and removal of dead services.
- For lined channel, it is suggested to use (Q299)
 - Q299 (Surface drains; Lined drain; Ripraplined/Erosion Control Blanket



ESCP in MyCESMM2 (Runoff Management)

Drainage Outlet Protection

- Not directly covered in MyCESMM2, best match is Class Q: Drainage Works (Q990)
- Q990 (Outlet protection, Gabion/Riprap)
- Might need to provide own Coverage Rules



ESCP in MyCESMM2 (Runoff Management)

Temporary Waterway Crossing

- Covered in Class Q: Drainage Works (Q6**)
- Q6** (Culvert)
- Coverage rules:
- C9: Items for culverts shall be deemed to include all joints, water stop, concrete base or bedding, unless otherwise stated. (Might need to provide own Coverage Rules)
- For filling above culvert, Class F: Earthworks (F3**)
- F3** (Filling)



ESCP in MyCESMM2 (Sediment Control)

Class P : Environmental Protection and Enhancement

FIRST DIVISION	SECOND DIVISION	THIRD DIVISION	UNIT
3 Pollution control measures	1 Water quality control	1 Silt fence	m
		2 Gabion wall	m ³
		3 Sediment basin	nr
		4 Silt trap	nr

- In Malaysian Standard Method of Measurement for Civil Engineering Works (2003), Sediment Basin and Silt Trap is quantified by number (Lump Sum)

ESCP in MyCESMM2 (Sediment Control)

Silt Fences

- Covered in Class B: Environmental Protection and Enhancement (B210)
- B210 (Erosion and sediment control plan; Silt fence)
- Coverage Rules:
 - C3: Items for silt fence, silt curtain, sand bag, gabion wall and rock check dam shall be deemed to include provisions as expressly required and removal of the items upon completion, unless otherwise stated.



ESCP in MyCESMM2 (Sediment Control)

Check Dams

- Covered in Class B: Environmental Protection and Enhancement (B250)
- B250 (Erosion and sediment control plan; Rock check dam)
- Coverage Rules:
 - C4: Items for **gabion wall** and **rock check dam** shall be deemed to include excavation and other requirements as expressly stated.



ESCP in MyCESMM2 (Sediment Control)

Sediment Traps

- Covered in Class B: Environmental Protection and Enhancement (B27*)
- B27* (Erosion and sediment control plan; Silt trap)
- Coverage Rules:
 - C5: Items for **granular filling** shall be deemed to include imported fill as expressly required.
 - C6: Items for **concrete** shall be deemed to include formwork and reinforcement.



ESCP in MyCESMM2 (Sediment Control)

Sediment Basins

- Covered in Class B: Environmental Protection and Enhancement (B26*)
- B26* (Erosion and sediment control plan; Sediment Basin)
- Coverage Rules:
 - C5: Items for **granular filling** shall be deemed to include imported fill as expressly required.
 - C6: Items for **concrete** shall be deemed to include formwork and reinforcement.



ESCP in MyCESMM2 (Sediment Control)

Maintenance

- Covered in Class B: Environmental Protection and Enhancement (B28*)
- B28* (Erosion and sediment control plan; Maintenance)
- Coverage Rules:
 - C7: Items for maintenance of silt fence, silt curtain, sand bag, gabion wall, rock check dam, sediment basin, and silt trap shall be deemed to include disposal of accumulated debris, sediment and silt to approved site, and all associated works as expressly required



ESCP in MyCESMM

Others

- H35* (Piles; Interlocking steel sheet pile)
- D511 (Miscellaneous test; Sampling; Small disturbed sample)
- D614/5 (Laboratory test; Classification; Particle size distribution for fine/coarse grained soils)
- D631 (Laboratory test; Soil compaction related; Standard compaction (2.5 kg hammer))
- D480 (Miscellaneous test; Field density)
- B342/352 (Water quality control and monitoring; Water quality sampling and in situ/laboratory testing; Total suspended solid)



Some issues ...

- 1) What will happen if quantification is not prepared using MyCESMM ?
- 2) MyCESMM is for civil engineering works. How about mixed development (for example, housing project)

The background features abstract geometric shapes in various shades of blue, including light sky blue, medium cerulean, and dark navy blue. These shapes are layered and overlap, creating a modern, dynamic feel. The shapes are primarily located on the left and right sides of the frame, leaving a large white central area.

Thank you...