

SOIL EROSION AND SEDIMENT CONTROL PLAN (ESCP)

DECLARATION BY OWNER/AUTHORIZED PERSON

I certify that I shall undertake the responsibility to ensure the Erosion and Sediment Control Plan (ESCP) will be implemented and the Best Management Practices (BMPs) stated in the ESCP will be installed, inspected and maintained according to the best engineering practices in soil erosion and sediment control.

PROJECT TITLE

Cadangan Pembangunan Perniagaan, Hotel & Pangsapuri Servis (42 Tingkat) Di Atas Hakmilik Tanah HSD 70516 Lot PT1816, Kawasan Bandar VI (6), Daerah Melaka Tengah, Melaka.

PROJECT ADDRESS/LOCATION

HSD 70516 Lot PT1816, Kawasan Bandar VI (6), Daerah Melaka Tengah, Melaka.

NAME OF PROJECT PROPONENT:

Signature

:



Name of authorized person

: Mr. Teo Chai Hock

Designation

: Director

Date

: 19th August 2013

Jaya Mapan Sdn Bhd
(1018394-M)
No 3, Jalan KL 3/15,
Taman Kota Laksamana Sekyen 3,
75200 Melaka.
Tel: 06-2813666 Fax: 06-2921666

1 Introduction

Prepare Erosion Sediment Control Plan as part of EIA report. At the time of preparation of this ESCP, no work has started. The proposed development is a hotel, service apartment and commercial mixed development.

2 Best Management Practices (BMPs)

The critical BMPs are: sediment basins, temporary earth drains with check dams, and silt fence. The following notes may help in understanding the common failures in implementing these BMPs.

2.1 Sediment Basins

Sediment basin must provide the area (length and width) so that soil particles in suspension can settle to the bottom by gravity. The basin should provide sufficient time to capture suspended particles. Under-sized basin cause muddy water to flow out before enough sedimentation occurred.

2.2 Turfing and Cover

Bare soil should be minimized during construction period. Turfing is cheap to stabilize and protect soil surface from rainfall and runoff of the disturbed area. Turfing should be done within 14 days after the earthwork is completed. Crushed runs can be used as temporary cover in place of turfing to minimize erosion where heavy vehicles move. The area around the Wash Through shall be covered with crushed runs.

The wash through must be monitored to make sure the mud are not carried on to the crushed runs before exit from the site. The turf should be done if construction was completed or if construction were to stop for longer than 30 days.

2.3 Temporary Earth Drain

Temporary diversion channels should be used to divert off-site runoff around the construction site or to divert runoff from stabilized areas around disturbed areas and to direct runoff into sediments basins. Diversion channels should be dug according to phase drawings and maintained in good working condition until permanent BMPs or drainage-system is installed and/or slopes are stabilized. Temporary diversion channel should be sized using Manning's formula and local drainage design criteria.

2.4 Check dams

Check dam can reduce the speed of water flowing in the temporary earth drains to prevent scouring. Scouring is a phenomenon that causes big gullies in the temporary earth drains. The temporary earth drains are not protected, i.e. bare earth. Water flowing in the drain can overcome the adhesion of soil particles and carry the soil into the sediment basin.

Excessive scouring can increase cost of maintenance of the sediment basins to remove and dispose the mud. Badly scoured temporary earth drains also may cause the sediment basin capacity to be impaired due to build-up of silt.

2.5 Silt Fence

Silt fences are useful for retaining sediment from small bare areas or sites with low slope angles. They are not designed for large concentrated runoff flows and are not suitable for large areas. Silt fence fail due to undercutting or topple over by too much water due to lack of maintenance. Poorly installed silt fence will be flattened or overtopped easily.

3 Design and Calculations

3.1 Catchment Area

The catchment area is 1.7746 hectare. Construction will be done within 2 years.

3.2 Determination of Rainfall Erosivity, R Factor

R Factor = 11,000 MJ.mm/ha.hr.yr is obtained from Rainfall Erosivity Map of Melaka. See Figure 1 Rainfall Erosivity Map

3.3 Determination of Soil Erodibility, K Factor

Soil erodibility k factor is given by equation:

$$K = \left[1.0 \times 10^{-4} (12 - OM) M^{1.14} + 4.5(s - 3) + 8.0(p - 2) \right] / 100 \quad (3.8)$$

Where,

- K – Soil Erodability Factor, (ton/ac.)*(100ft.ton.in/ac.hr)
For SI unit (ton/ha)(ha.hr/MJ.mm), the conversion factor is 1/7.59.
- M - (% silt + % very fine sand) x (100 - % clay)
- OM - % of organic matter
- S - soil structure code
- P - permeability class

Using this equation on the boreholes analysis; the k values at each location phase and layers are determined and tabulated; see Table 1 Soil Erodibility, K Factor.

3.4 Determination of LS Factor

The slope length is determined from the steepness factor provided in the DID Guideline in Table 2 Slope Length and Steepness Factor. The site slope length is 51meter. The LS Factor is 0.57.

Figure 1 Rainfall Erosivity Map

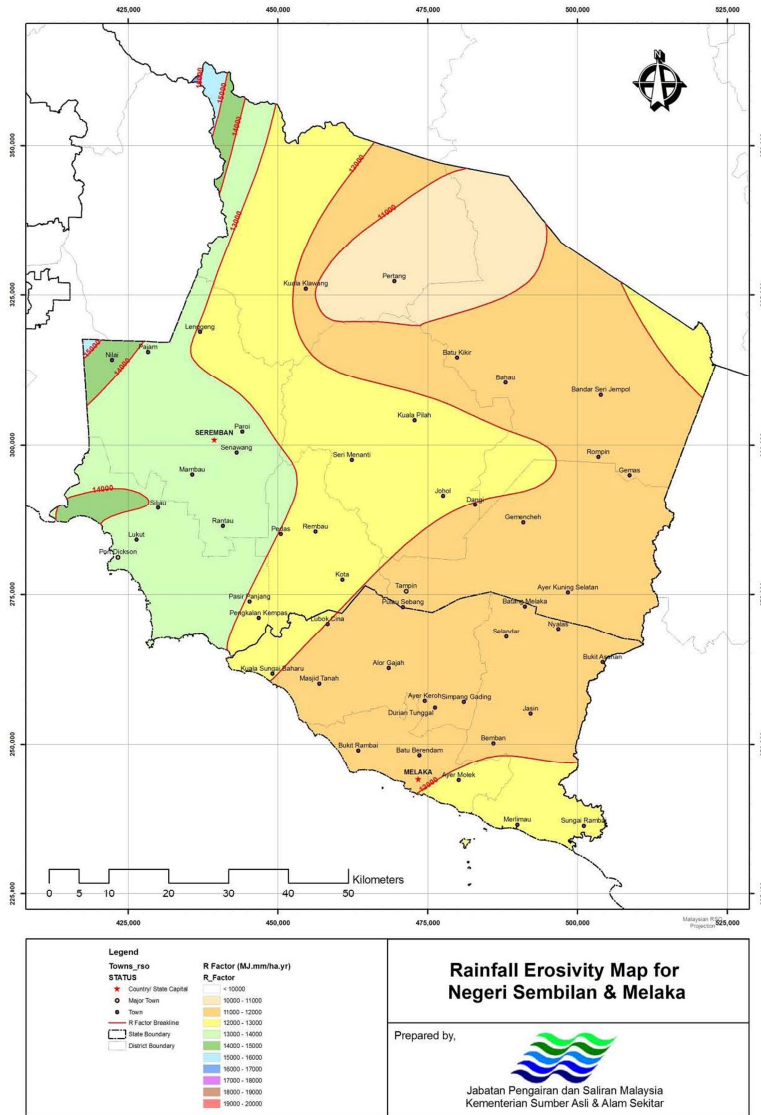


Figure 3.5 Rainfall Erosivity Map for Negeri Sembilan & Melaka States

Source: Figure 3.5 Rainfall Erosivity Map of Melaka, Guideline for Erosion and Sediment Control in Malaysia, DID, Oct 2010

Table 1 Soil Erodibility, K Factor

BH	Soil	Depth		Particle Size Distribution				Adjusted			% Organic Matter	Soil Structure Classification	Permeability Classification	M	K Factor
				% Gravel	% Sand	% Silt	% Clay	% Sand	% Silt	% Clay					
1	Sand	1.50	1.95	15	83	2	0	97.6%	2.4%	0.0%	0.0	1	1	1.00	-0.0224
	Silty Clay Loam	6.50	7.20	0	3	73	24	2.9%	71.5%	23.5%	2.1	4	5	0.57	0.0376
2	Sand	1.50	1.95	24	74	2	0	97.4%	2.6%	0.0%	0.0	1	1	1.00	-0.0224
	Silty Clay Loam	6.50	7.20	0	4	68	28	4.0%	68.0%	28.0%	0.0	4	5	0.52	0.0376
3	Sand	3.00	3.45	8	88	4	0	93.6%	4.3%	0.0%	2.1	1	1	0.98	-0.0224
	Silty Clay Loam	6.50	7.20	0	3	70	27	3.0%	70.0%	27.0%	0.0	4	5	0.53	0.0376
	Silty Clay Loam	9.50	10.20	0	3	70	27	3.0%	70.0%	27.0%	0.0	4	5	0.53	0.0376
4	Sand	3.00	3.45	16	81	3	0	96.4%	3.6%	0.0%	0.0	1	1	1.00	-0.0224
	Silty Clay Loam	6.50	7.20	0	2	69	29	1.9%	66.5%	27.9%	3.8	4	5	0.49	0.0375
5	Sand	3.00	3.45	5	92	3	0	96.8%	3.2%	0.0%	0.0	1	1	1.00	-0.0224
	Silty Clay Loam	6.00	9.45	0	7	65	28	7.0%	65.0%	28.0%	0.0	4	4	0.52	0.0270
6	Sand	1.50	1.95	21	72	7	0	91.1%	8.9%	0.0%	0.0	1	1	1.00	-0.0224
	Silty Clay Loam	6.50	7.20	0	4	67	29	4.0%	67.0%	29.0%	0.0	4	5	0.50	0.0376
7	Sand	3.00	3.45	7	89	4	0	95.7%	4.3%	0.0%	0.0	1	1	1.00	-0.0224
	Silty Clay Loam	6.50	7.20	0	8	67	25	7.8%	65.2%	24.3%	2.8	4	5	0.55	0.0376
	Silty Clay Loam	9.50	10.20	0	6	64	30	6.0%	64.0%	30.0%	0.0	4	5	0.49	0.0376
	Silt Loam	18.00	18.45	0	75	8	17	75.0%	8.0%	17.0%	0.0	3	3	0.69	0.0105

Table 2 Slope Length and Steepness Factor

Slope Steepness, S (%)	Slope Length, λ (m)											
	2	5	10	15	25	50	75	100	150	200	250	300
0.1	0.043	0.052	0.059	0.064	0.071	0.082	0.089	0.094	0.102	0.108	0.113	0.117
0.5	0.055	0.067	0.076	0.083	0.092	0.106	0.114	0.121	0.131	0.139	0.146	0.151
1	0.057	0.075	0.093	0.405	0.122	0.150	0.170	0.185	0.209	0.228	0.243	0.257
2	0.089	0.117	0.144	0.163	0.190	0.234	0.264	0.288	0.325	0.354	0.379	0.400
3	0.100	0.144	0.190	0.224	0.275	0.362	0.426	0.478	0.563	0.631	0.690	0.742
4	0.135	0.195	0.257	0.302	0.371	0.489	0.575	0.646	0.759	0.852	0.932	1.002
5	0.138	0.218	0.308	0.377	0.487	0.688	0.843	0.973	1.192	1.376	1.539	1.686
6	0.173	0.273	0.387	0.474	0.612	0.865	1.059	1.223	1.498	1.730	1.934	2.119
8	0.255	0.404	0.571	0.699	0.903	1.277	1.564	1.806	2.212	2.554	2.855	3.128
10	0.353	0.559	0.790	0.968	1.250	1.767	2.165	2.499	3.061	3.535	3.952	4.329
15	0.525	0.909	1.378	1.757	2.388	3.619	4.616	5.486	6.997	8.315	9.506	10.605
20	0.848	1.470	2.228	2.841	3.860	5.851	7.463	8.869	11.311	13.442	15.368	17.145
25	1.249	2.164	3.279	4.183	5.683	8.613	10.986	13.055	16.651	19.788	22.623	25.239
30	1.726	2.991	4.533	5.782	7.855	11.906	15.185	18.046	23.017	27.353	31.272	34.887
40	2.911	5.045	7.646	9.752	13.250	20.083	25.614	30.440	38.824	46.139	52.749	58.846
50	4.404	7.631	11.567	14.753	20.044	30.382	38.749	46.050	58.733	69.798	79.798	89.023
60	6.204	10.751	16.296	20.784	28.239	42.802	54.590	64.875	82.744	98.333	112.420	125.416
70	8.312	14.404	21.833	27.846	37.833	57.344	73.138	86.917	110.856	131.741	150.615	168.026
80	10.728	18.590	28.177	35.938	48.827	74.008	94.391	112.174	143.070	170.025	194.383	216.854
90	13.451	23.309	35.329	45.060	61.221	92.793	118.350	140.648	179.386	213.182	243.723	271.898
100	16.482	28.560	43.289	55.212	75.014	113.700	146.016	172.337	219.803	261.214	298.637	333.159

Source: Table 3.5 Slope Length and Steepness Factor LS, Guideline for Erosion and Sediment Control in Malaysia, DID, October 2010

3.5 Cover Management Factor, C

The C Factors for the development are tabulated in Table 3 C Factor for Development

Table 3 C Factor for Development

<i>Stage of Development</i>	<i>C</i>
Pre-construction	0.02
Earthwork	0.85
Building	0.05
Operation	0.02

During earthwork stage, the soils will filled on top of sand. During construction, the soils will be filled and in various stages of roughness due to tracking. See details in Table 4 Cover Management Factor, C

Table 4 Cover Management Factor, C

Erosion control treatment	C Factor
Bare soil / Newly cleared land	1.00
Cut and fill at construction site	
Fill	
Packed, smooth	1.00
Freshly disked	0.95
Rough (offset disk)	0.85
Cut	
Below root zone	0.80
Mulch	
plant fibers, stockpiled native materials/chipped	
50% cover	0.25
75% cover	0.13
100% cover	0.02
Grass-seeding and sod	
40% cover	0.10
60% cover	0.05
90% cover	0.02
Turfing	
40% cover	0.10
60% cover	0.05
90% cover	0.02
Compacted gravel layer	0.05
Geo-cell	0.05
Rolled Erosion Control Product:	
Erosion control blankets / Turf reinforcement mats	0.02
Plastic sheeting	0.02
Turf reinforcement mats	0.02

Source: Table 3.8: Cover Management, C factor for BMPs at construction sites Guideline for Erosion and Sediment Control in Malaysia, Department of Irrigation and Drainage, October 2010

3.5.1.1 Soil Conservation Practice Factor, P

The P factor is shown in Table 5 P Factor for Development

Table 5 P Factor for Development

<i>Stage of Development</i>	<i>P</i>
Pre-construction	0.60
Earthwork	0.50
Building	0.50
Operation	0.60

The soil Conservation Practice Factor, P or Support Practice Factor is the ratio of soil loss with a specific support practice corresponding to the soil loss with upslope and downslope disturbance. During the earthworks, there will be sediment basins to catch sediment. During construction, the sediment basins will still be in place. During operation, all the BMPs would have been removed and the landscape areas will be turfed leaving grass buffer strips. See Table 6 Erosion Control Practice Factor, P

Table 6 Erosion Control Practice Factor, P

Support/ Sediment Control Practice	P Factor
Bare soil	1.00
Disked bare soil (rough or irregular surface)	0.90
Wired log / Sand bag barriers	0.85
Check Dam	0.80
Grass buffer strips (to filter sediment laden sheet flow)	
Basin slope (%)	
0 to 10	0.60
11 to 24	0.80
Contour furrowed surface (maximum length refers to downslope length) Slope (%)	
Max. length	
1 to 2 120	0.60
3 to 5 90	0.50
6 to 8 60	0.50
9 to 12 40	0.60
13 to 16 25	0.70
17 to 20 20	0.80
> 20 15	0.80
Silt fence	0.55
Sediment containment systems (Sediment basin/Trap)	0.50
Berm drain and Cascade	0.50
Terracing Slope (%)	
1 to 2	0.12
3 to 8	0.10
9 to 12	0.12
13 to 16	0.14
17 to 20	0.16
> 20	0.18

Source: Table 3.9: Support Practice, P factor for BMPs at construction/ developing sites, Guideline for Erosion and Sediment Control in Malaysia, Department of Irrigation and Drainage, October 2010

3.5.1.2 Design Storm Event Peak Flow

In estimating the sediment yield for the study area, the peak discharge, Q_p , was determined based on Rational Method (DID, 2000), as recommended in the Urban Storm water Management Manual, MSMA (DID, 2000) using Equation 14.7 (Chapter MSMA),

$$Q_{10} = \frac{C \cdot I_{10} \cdot A}{360}$$

The peak discharge cumecs calculated is 0.38 m³/s.

3.5.1.3 Determination of Soil Loss

The soil loss is estimated using Universal Soil Loss Equation, USLE (Wischmeier and Smith, 1978).

$$A = RKLSCP$$

Where, A = Average annual Soil Erosion Loss (t/ha/yr)

R = Rainfall Erosivity Factor (MJ.mm/(ha.hr.yr))

K = Soil Erodibility Factor (t.ha.hr/(ha.MJ.mm))

L = Slope Length Factor

S = Slope Steepness Factor

C = Cover Management Factor

P = Conservation Practice Factor

The soil loss rate is presented in Table 7 Soil Loss Summary.

Table 7 Soil Loss Summary

Catchment Area (ha)	Stage of Development	R	K	LS	C	P	Soil Loss, A	
							Tonne/ha/yr	Tonne/yr
1.775	Pre-construction	11,000	0.0376	0.570	0.02	0.60	2.8	5.0
	Earthwork	11,000	0.0376	0.570	0.85	0.50	100.1	177.6
	Building	11,000	0.0376	0.570	0.05	0.50	5.9	10.4
	Operation	11,000	0.0376	0.570	0.02	0.60	2.8	5.0

3.5.1.4 Determination of Sediment Yield

The sediment yield of the study area can be estimated using MUSLE equation:

$$Y = 89.6(VQ)^{0.56}(K.LS.C.P)$$

where, Y = Sediment yield per storm event (tonnes)

V = Runoff volume in cubic meter

Q_p = peak discharge in m³/s

Sediment yield are calculated and summarized in Table 8 Sediment Yield Summary.

Maximum soil loss will occurred during earthwork stage is 12.5 metric tonnes.

Table 8 Sediment Yield Summary

<i>Stage</i>	<i>Catchment (m²)</i>	<i>Volume (m³)</i>	<i>Peak Flow (m³/s)</i>	<i>K Factor</i>	<i>LS Factor</i>	<i>C Factor</i>	<i>P Factor</i>	<i>Sediment Yield (tonne)</i>
Pre-construction	1.7746	343	0.381	0.0376	0.570	0.020	0.60	0.4
Earthwork	1.7746	343	0.381	0.0376	0.570	0.850	0.50	12.5
Building	1.7746	343	0.381	0.0376	0.570	0.050	0.50	0.7
Operation	1.7746	343	0.381	0.0376	0.570	0.020	0.60	0.4

4 Mitigation Measures

4.1 Overall Conceptual Erosion and Sediment Control Plan (ESCP)

A conceptual Erosion and Sediment Control Plan (ESCP) was prepared for the construction phase of the proposed development. The temporary earth drains will be on existing ground level and gradient flow base on existing ground survey spot heights. The filling earthworks locations are also shown. During the platform earthworks, the ground level will be increased.

4.2 Best Management Practices

- Erosion and sediment loss from the site shall be effectively controlled by applying appropriate Best Management Practices (BMPs).
- Temporary earth drain system connected to sediment basins will be constructed to capture sediment runoff from the Project site before site clearing. The drains will be dug to allow water to be captured and flow by gravity to the sediment basin.
- Control storm water flows onto and from the site in permanent drains. Install perimeter controls with hoardings to prevent silt fence and other Best Management Practices from been damaged. Silt fence should be constructed with stakes appropriately spaced. Details are in the ESCP.
- Provide access and general construction controls. Install wash through at entrance to construction site from the service road. Where needed, the path that crosses the temporary earth drains require proper temporary crossing. Details are included in the ESCP.

4.3 Turfing and Hydroseeding

- After the earth platform site formation is completed basic infrastructure such as roads and drainage. The project proponent will need to monitor the activities so that the scheduling of the turfing is planned timely. Planting of shrubs and landscaping will be implemented as soon as possible at non built-up areas to minimize erosion risk to the exposed land. The turfing plan is included in the ESCP.

5 Sediment Basins Maintenance Program

- Employ experienced and competent personnel to inspect and maintain the BMPS
- The sediment basins can only perform if the required depths are maintained. After each storm, the sediment carried into the basins will reduce the depth available.
- The density of sediment varies between 1.2 and 1.36 metric tonne per cubic meter. See Table 9 Soil Density.

Table 9 Soil Density

#	Soil Type	Density, MT/m ³
1	Sand	1.52
2	Sandy Loam	1.44
3	Loam	1.36
4	Silt Loam	1.28
5	Clay Loam	1.28
6	Clay	1.20

The site is mostly clay, silt loam. The settled materials are mostly the coarser portions. Assume the silt loam density of 1.28 metric tonnes per cubic meter. The frequency of maintenance is tabulated in Table 10 Frequency of Maintenance Desilting.

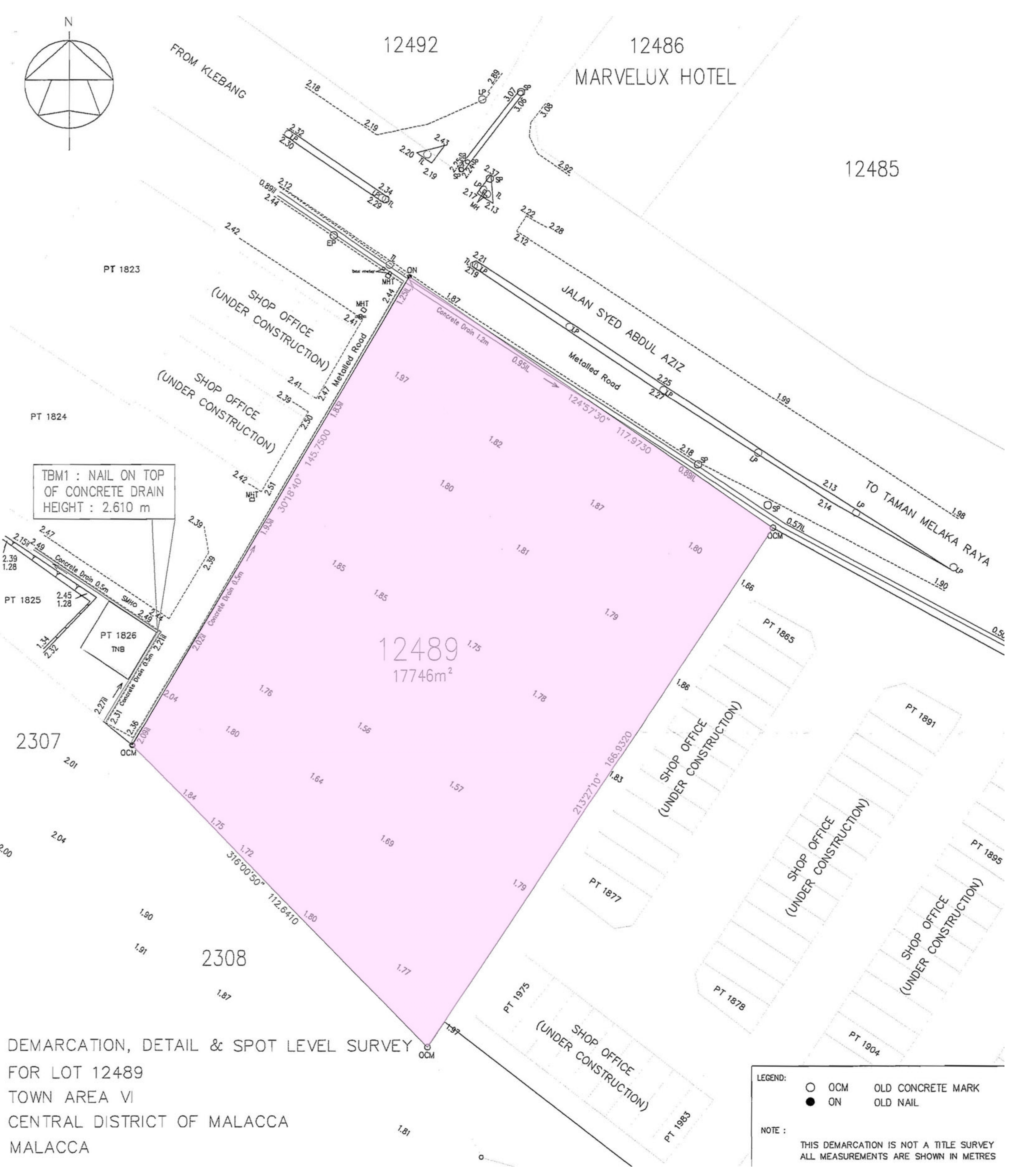
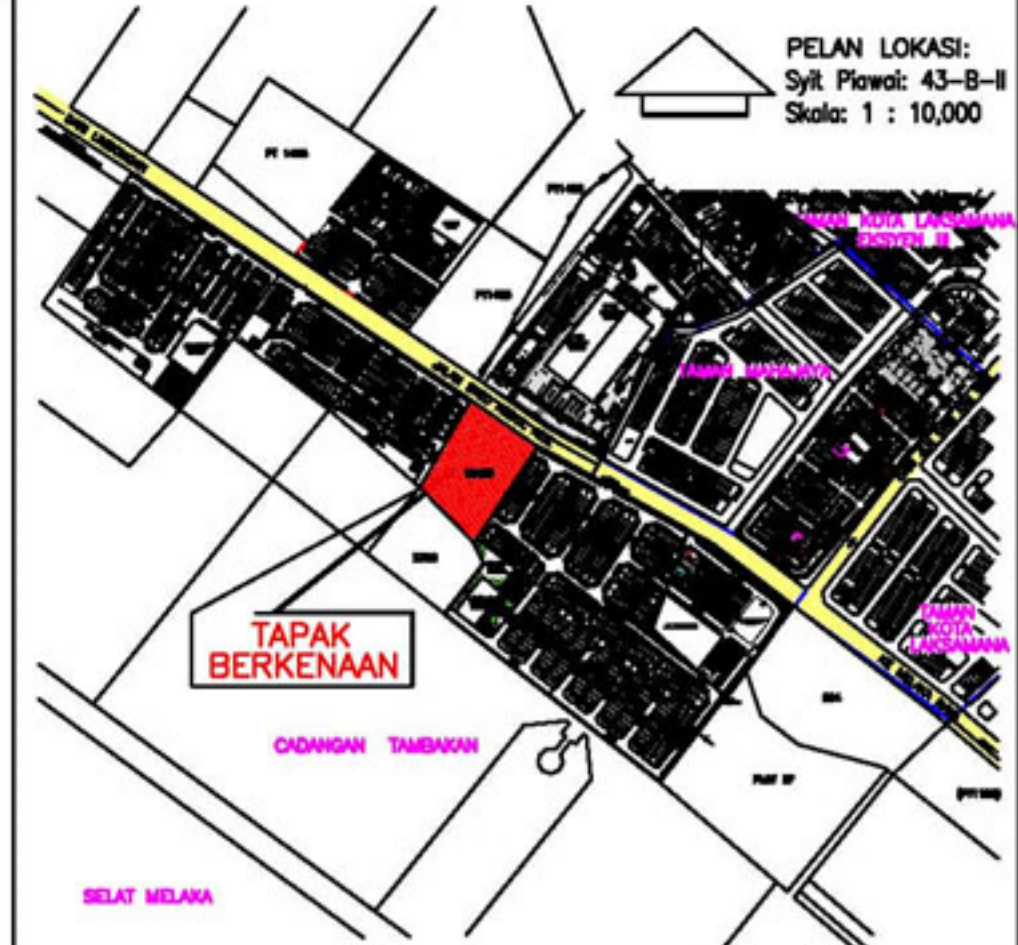
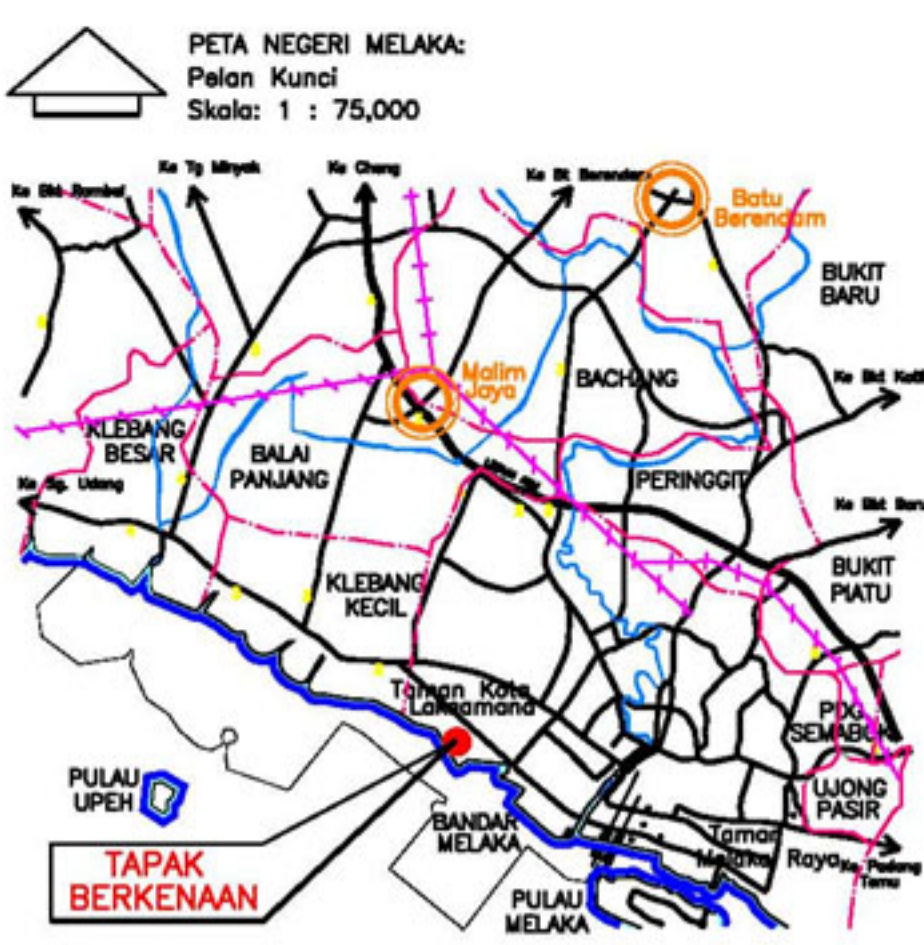
Table 10 Frequency of Maintenance Desilting

Maintenance	Unit	SB
Sediment storage	m ³	269
Density	MT/m ³	1.28
Sediment Storage	MT/m ³	210
Maximum Sediment Yield	MT	1.5
Storms to fill		143
Rain days per year	Max	224
Frequency of Desilt	week	33

The pond should be designed with earth bunds for easy access. Weekly inspection will be done. The frequency of inspection is shorter than the frequency of desilting hence proposed frequency is adequate. In addition to the weekly inspection, the All the sediment basins are less than 3 meters but for safety reason, the ponds in any kind should be barricaded to prevent accidental drowning incident.

6 Design calculation of Sediment Basins

- The detail engineering design of the sediment basins are attached. The sizing of the sediment basins comply with MSMA 2011.
- The design storm caters for the first 50 mm of rain and the assumption was moderate flow.
- All sediment basins design are based on wet sediment basin type as the soil fill will be imported to the site and assumed to be dispersible fines.
- All sediment basins will be designed to empty out within 36 hours; the outlet will be of Gabion Construction type
- Detail sizing of sediment basins are attached.



- LEGEND**
- EARTHWORK FILL (ENTIRE SITE)
 - CHECK DAM
 - SILT FENCE
 - TEMPORARY EARTH DRAIN
 - SEDIMENT BASIN, SB
 - TURFING OR HYDROSEEDING
 - WASH THROUGH
 - TEMPORARY CROSSING
 - STREAM
 - GABION

DEMARCATION, DETAIL & SPOT LEVEL SURVEY FOR LOT 12489 TOWN AREA VI CENTRAL DISTRICT OF MALACCA MALACCA

- LEGEND:**
- OCM OLD CONCRETE MARK
 - ON OLD NAIL
- NOTE:**
- THIS DEMARCATION IS NOT A TITLE SURVEY ALL MEASUREMENTS ARE SHOWN IN METRES

NO. PELAN _____

RUANGAN UNTUK KELULUSAN DARI PIHAK MAJLIS

McCallum Engineering Consultant
 Civil, Structural, Transportation
 (MAM061873-W)
 No. 25-1, Jalan Abadi 21,
 Taman Mallim Jaya, 75250 Melaka.
 Tel : 06-3358708 Fax : 06-3363913
 E-mail : mccallum@treameyx.com

Lukisan dan maklumat yang tertera adalah hakcipta McCallum Engineering Consultant di mana sebahagian atau keseluruhannya tidak boleh ditiru, dicetak atau diukis semula dalam sebarang bentuk atau isi kandungannya diberitahu kepada pihak ketiga tanpa kebenaran bertulis daripada McCallum Engineering Consultant

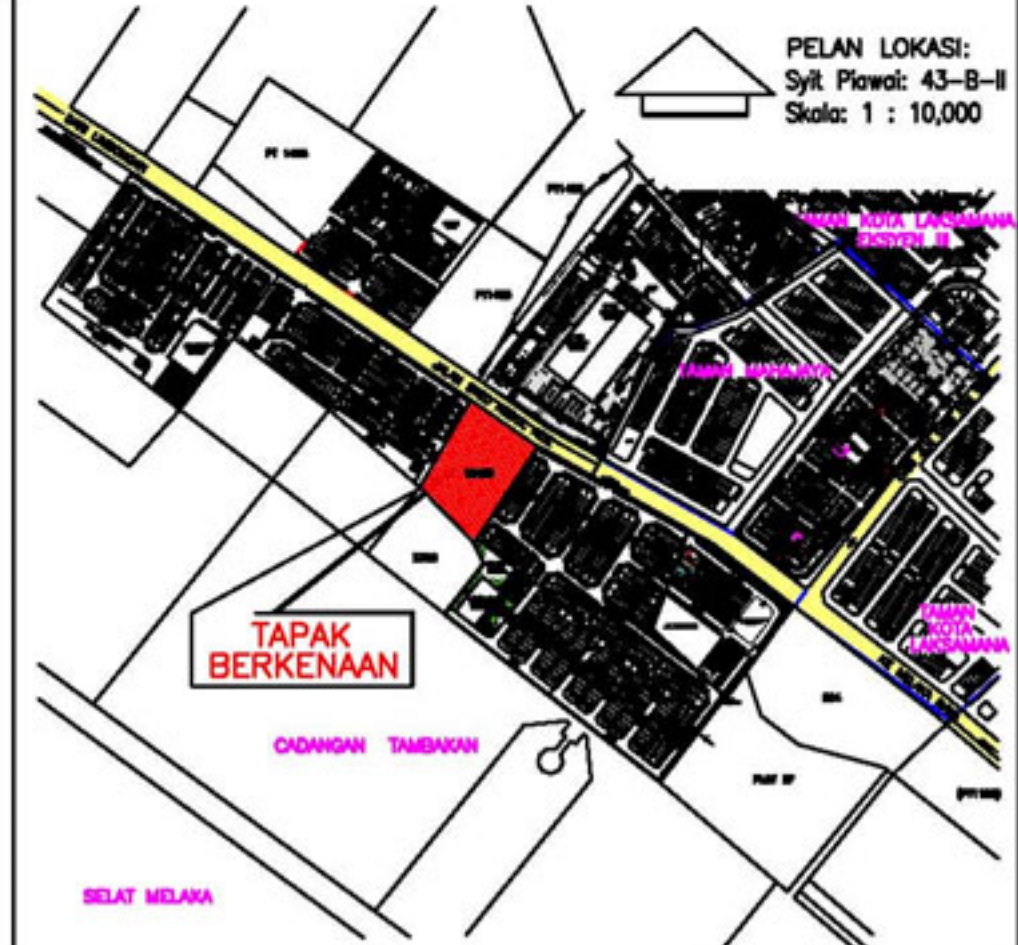
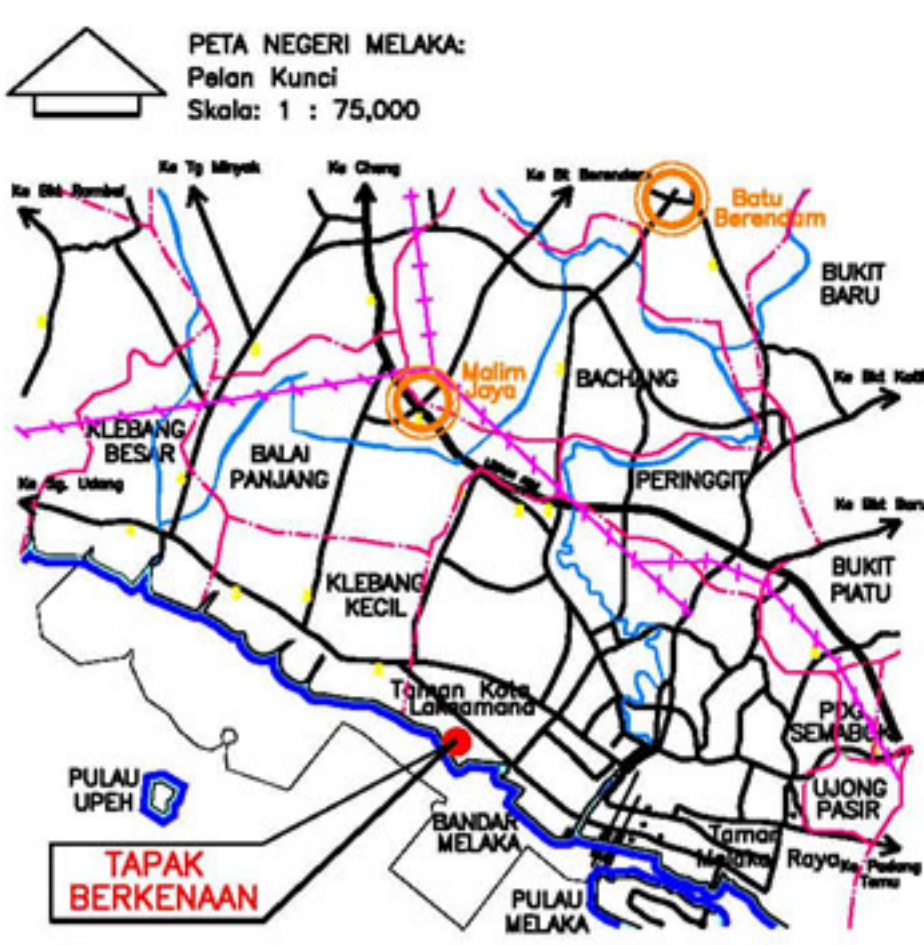
Rujukan	Tarikh	Pindaan	Dilukis

Akitek/Perancang Bandar/Jurukur	KONSEP KARISMA SDN. BHD.
Projek	CADANGAN KERJA-KERJA TANAH UNTUK PEMBANGUNAN PERNIAGAAN, HOTEL & PANGSAPURI SERVIS (42 TINGKAT)
Lokasi	LOT PT 1816, KAWASAN BANDAR VI, DAERAH MELAKA TENGAH, MELAKA.
Pemaju	TETUAN JAYA MAPAN SDN. BHD.
Tajuk Lukisan	BARERWORK/REKONSTRUKSI FILL PLAN
Skala	1 : 850
Pereka	SAM TSEN KING FOH (CPESC NO B5910) CERTIFIED PROFESSIONAL IN EROSION SEDIMENT CONTROL Email: sam.tsen@pecmy.com Mobile: +6012 788 0603 Fax: +65 6899 9529
Tarikh	30 JULY 2013
Dilukiskan Oleh:	

Pengesahan Jurutera :

DISEMAK OLEH : NEO WEB SIANG

NO. LUKISAN : PEC/HSSB/GKL/130730/01



- LEGEND
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DEMARCATION, DETAIL & SPOT LEVEL SURVEY
 FOR LOT 12489
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 CENTRAL DISTRICT OF MALACCA
 MALACCA

- LEGEND:
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RUANGAN UNTUK KELULUSAN DARI PIHAK MAJLIS

McCallum
 McCallum Engineering Consultant
 Civil, Structural, Transportation
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 □ Tel : 06-3358708 Fax : 06-3363913
 □ E-mail : mccallum@tearmyx.com

Lukisan dan maklumat yang tertera adalah hakcipta McCallum Engineering Consultant di mana sebahagian atau keseluruhannya tidak boleh ditiru, dicetak atau diilakis semula dalam sebarang bentuk atau isi kandungannya diberitahu kepada pihak ketiga tanpa kebenaran bertulis daripada McCallum Engineering Consultant

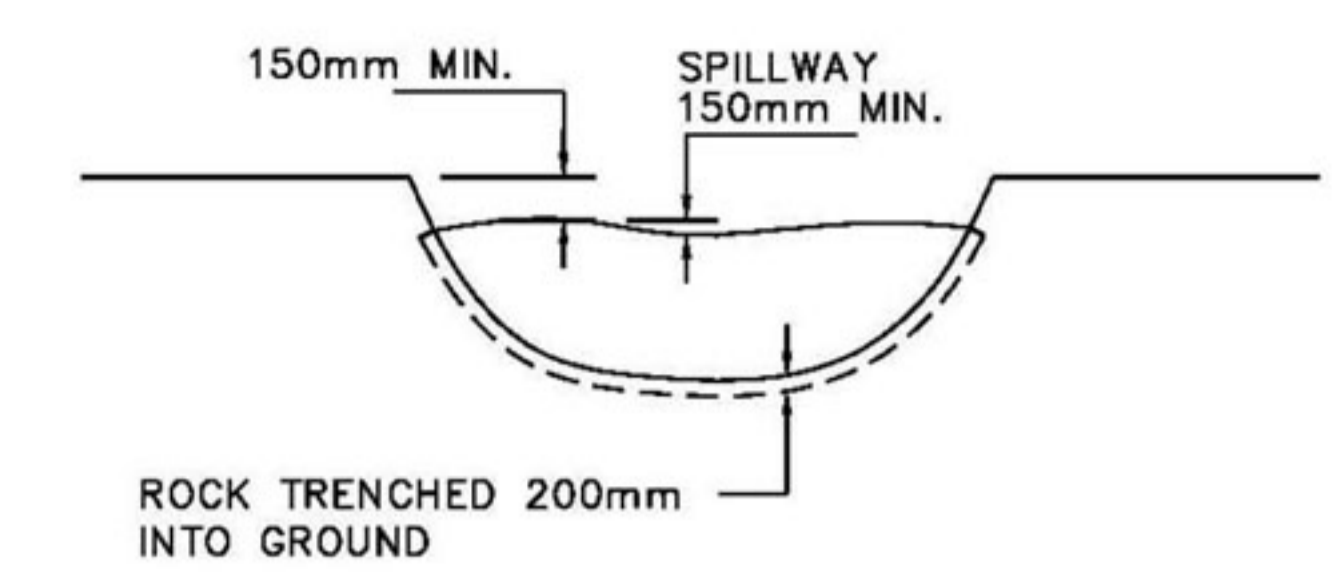
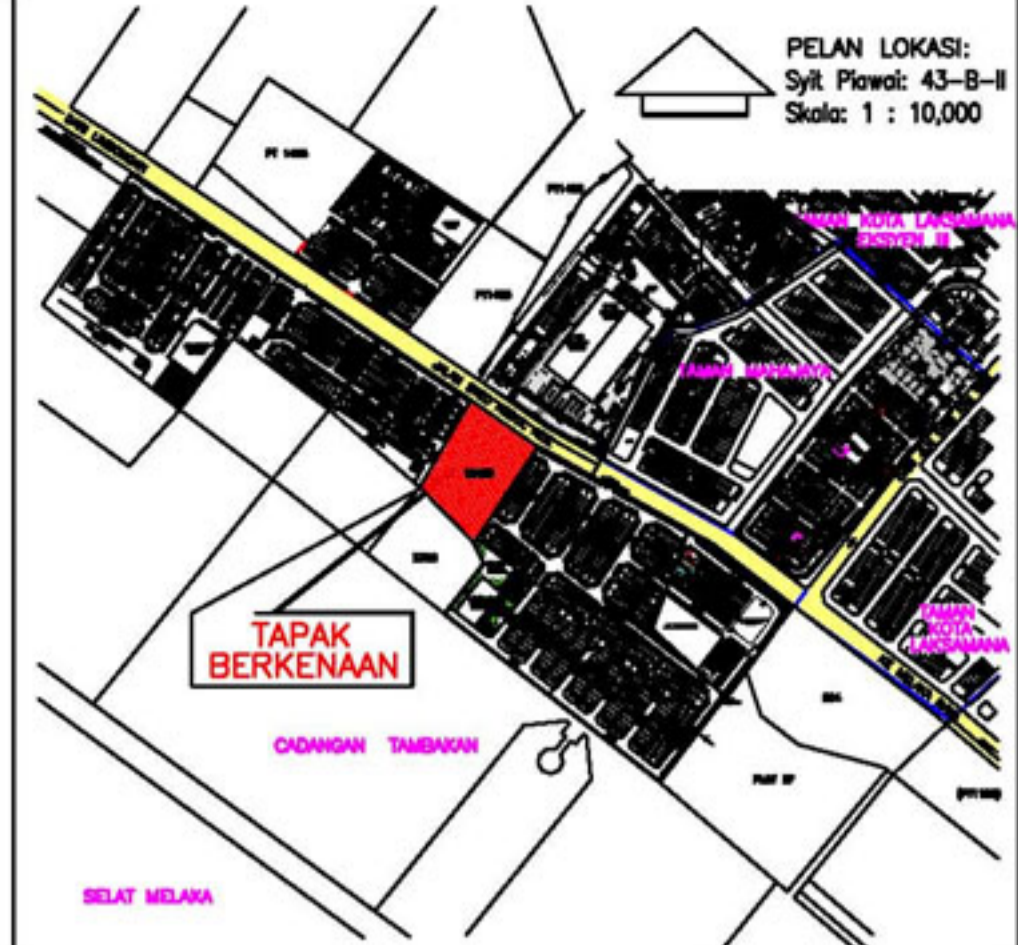
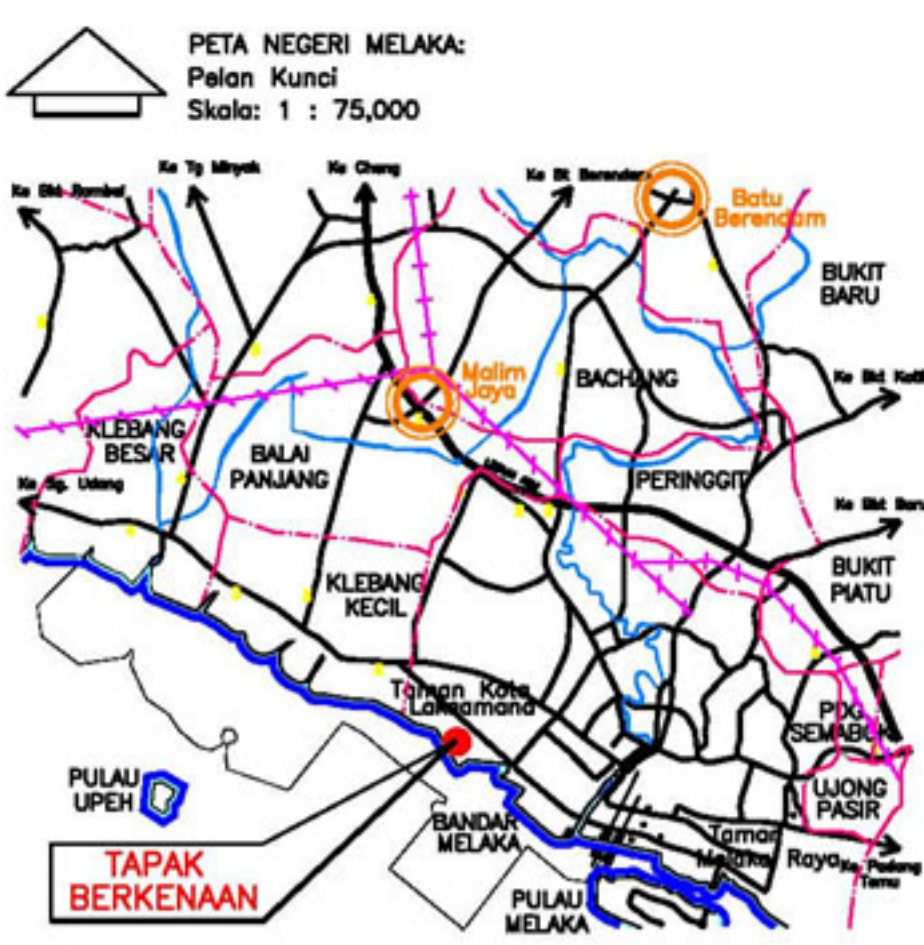
Rujukan	Tarikh	Pindaan	Dilukis

Akitek/Perancang Bandar/Jurukur	KONSEP KARISMA SDN. BHD.
Projek	CADANGAN KERJA-KERJA TANAH UNTUK PEMBANGUNAN PERNIAGAAN, HOTEL & PANGSAPURI SERVIS (42 TINGKAT)
Lokasi	LOT PT 1816, KAWASAN BANDAR VI, DAERAH MELAKA TENGAH, MELAKA.
Pemaju	TETUAN JAYA MAPAN SDN. BHD.
Tajuk Lukisan	REBANGSISSEDIMENTATION CONTROL PLAN - DURING EARTHWORK AND CONSTRUCTION STAGE
Skala	1 : 850
Pereka	SAM TSEN KING FOH (CPESC NO B5910) CERTIFIED PROFESSIONAL IN EROSION SEDIMENT CONTROL Email: sam.tsen@pecmy.com Mobile: +6012 788 0603 Fax: +65 6899 9529
Tarikh	30 JULY 2013
Dilukiskan Oleh:	

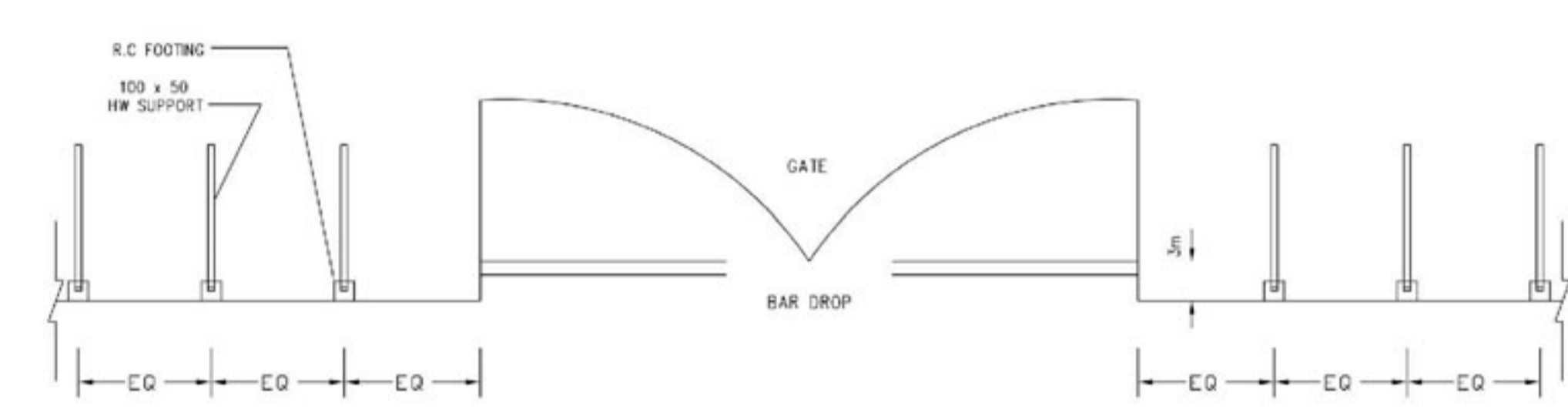
Pengesahan Jurutera :

DISEMAK OLEH : NEO WEB SIANG

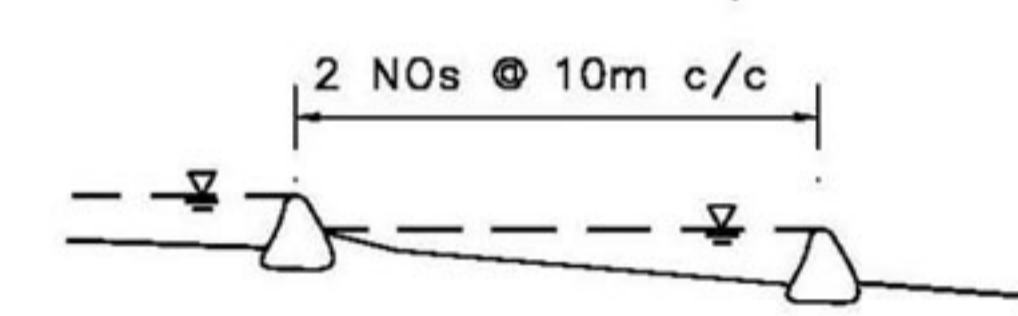
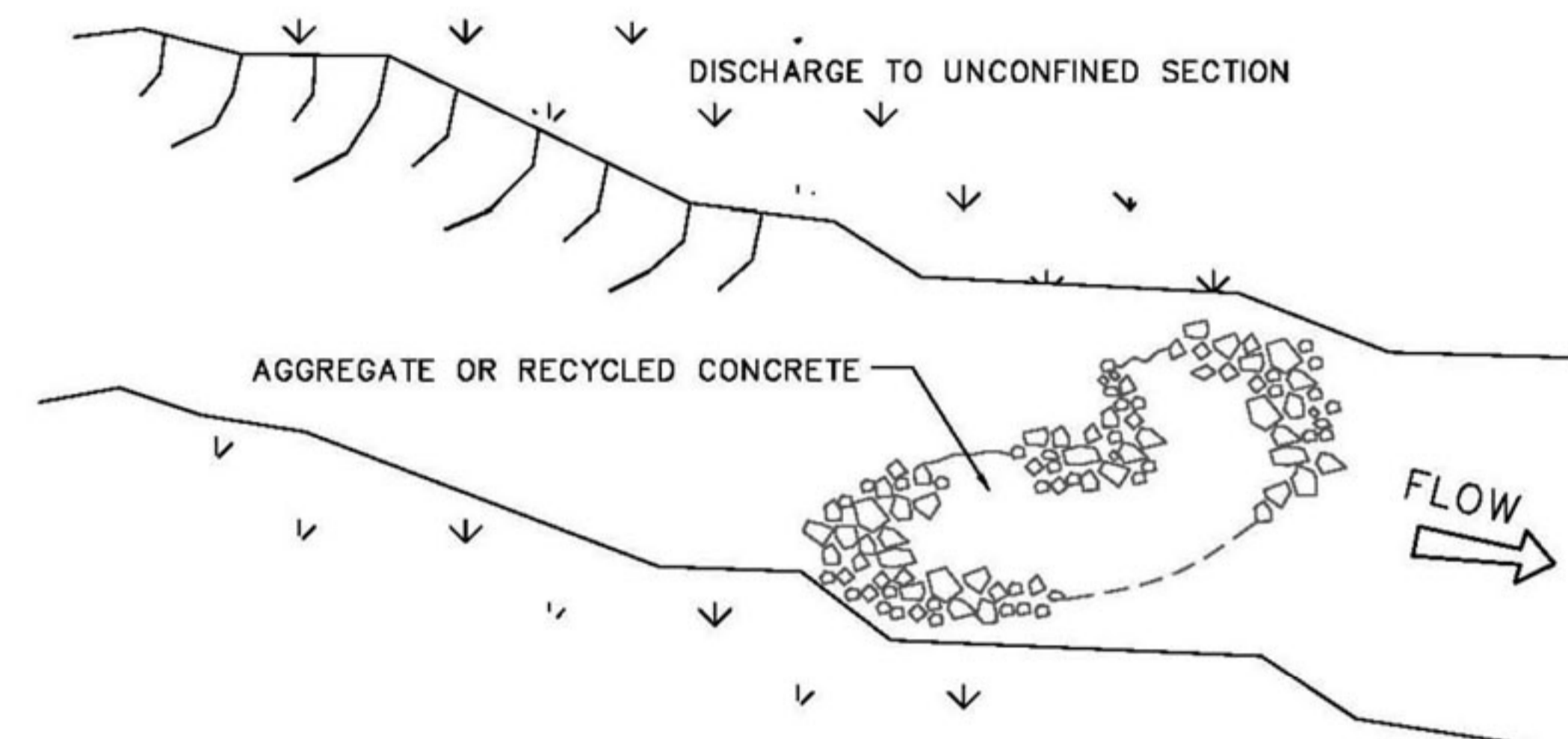
NO. LUKISAN : PEC/HSSB/GKL/130730/02



SECTION



PLAN OF HOARDING BOARD

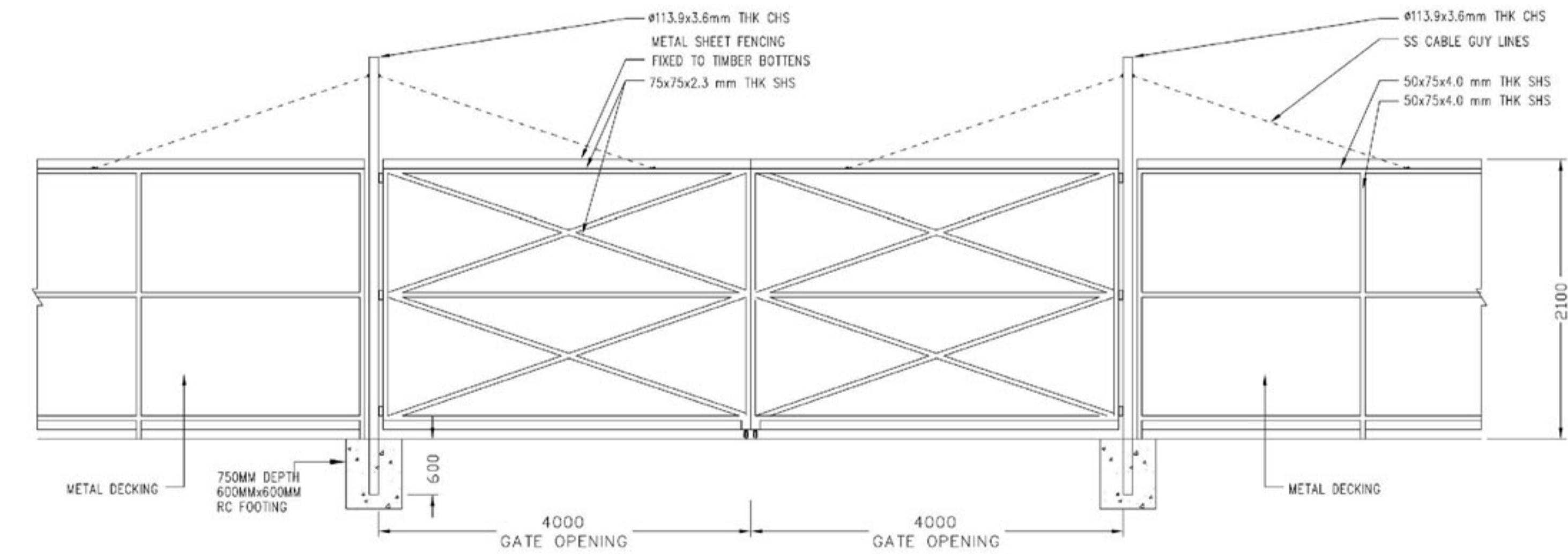


SPACING OF CHECK DAMS ALONG CENTRELINE AND SCOUR PROTECTION BELOW EACH CHECK DAM TO BE SPECIFIED ON ESCP

CHECK DAM

CONSTRUCTION NOTES :

1. TRENCH STRUCTURE 200mm INTO GROUND SURFACE WHEREVER THE STRUCTURE CONTACTS THE GULLY BASE. FILL TRENCHES TO 100mm ABOVE GROUND SURFACE TO REDUCE RISK OF UNDERCUTTING.
2. ENSURE HEIGHT OF SPILLWAY IS LESS THAN 1 METRE ABOVE THE GULLY FLOOR.
3. SPACE CHECKS SO THE TOE OF THE UPSTREAM DAM IS LEVEL WITH THE SPILLWAY OF THE NEXT DOWNSTREAM DAM.



NO. PELAN _____

RUANGAN UNTUK KELULUSAN DARI PIHAK MAJLIS

Blank space for approval from the relevant authority.

Blank space for approval from the relevant authority.

McCallum
 McCallum Engineering Consultant
 Civil, Structural, Transportation
 (M0061873-W)
 No. 25-1, Jalan Abadi 21,
 Taman Malim Jaya, 75250 Melaka.
 Tel : 06-3358708 Fax : 06-3363913
 E-mail : mccallum@treamyx.com

Lukisan dan maklumat yang tertera adalah hakcipta McCallum Engineering Consultant di mana sebahagian atau keseluruhannya tidak boleh ditiru, dicetak atau dilukis semula dalam sebarang bentuk atau isi kandungannya diberitahu kepada pihak ketiga tanpa kebenaran bertulis daripada McCallum Engineering Consultant

Rujukan	Tarikh	Pindaan	Dilukis

Akitek/Perancang Bandar/Jurukur
 KONSEP KARISMA SDN. BHD.

Projek
 CADANGAN KERJA-KERJA TANAH UNTUK PEMBANGUNAN PERNIAGAN, HOTEL & PANGSAPURI SERVIS (42 TINGKAT)

Lokasi
 LOT PT 1816, KAWASAN BANDAR VI, DAERAH MELAKA TENGAH, MELAKA.

Pemaju
 TETUAN JAYA MAPAN SDN. BHD.

Tajuk Lukisan
 REBIBIDING/SEDIMENTATION CONTROL PLAN - HOARDING, CHECKDAM

Skala
 1 : 850

Pereka
 SAM TSEN KING FOH (CPESC NO B5910)
 CERTIFIED PROFESSIONAL IN EROSION SEDIMENT CONTROL
 Email: sam.tsen@pecmy.com Mobile: +6012 788 0603 Fax: +65 6889 9529

Tarikh
 30 JULY 2013

Dilukiskan Oleh:

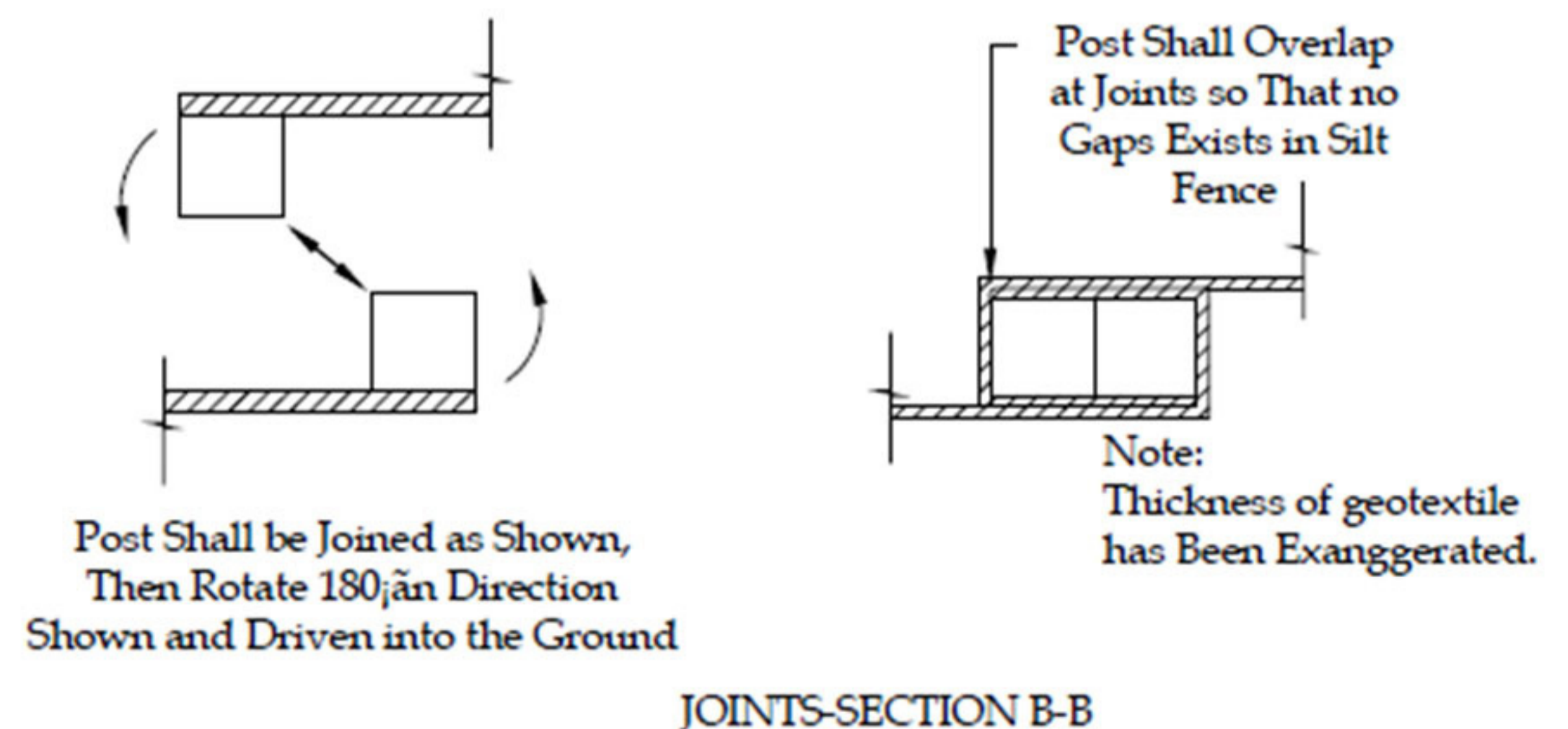
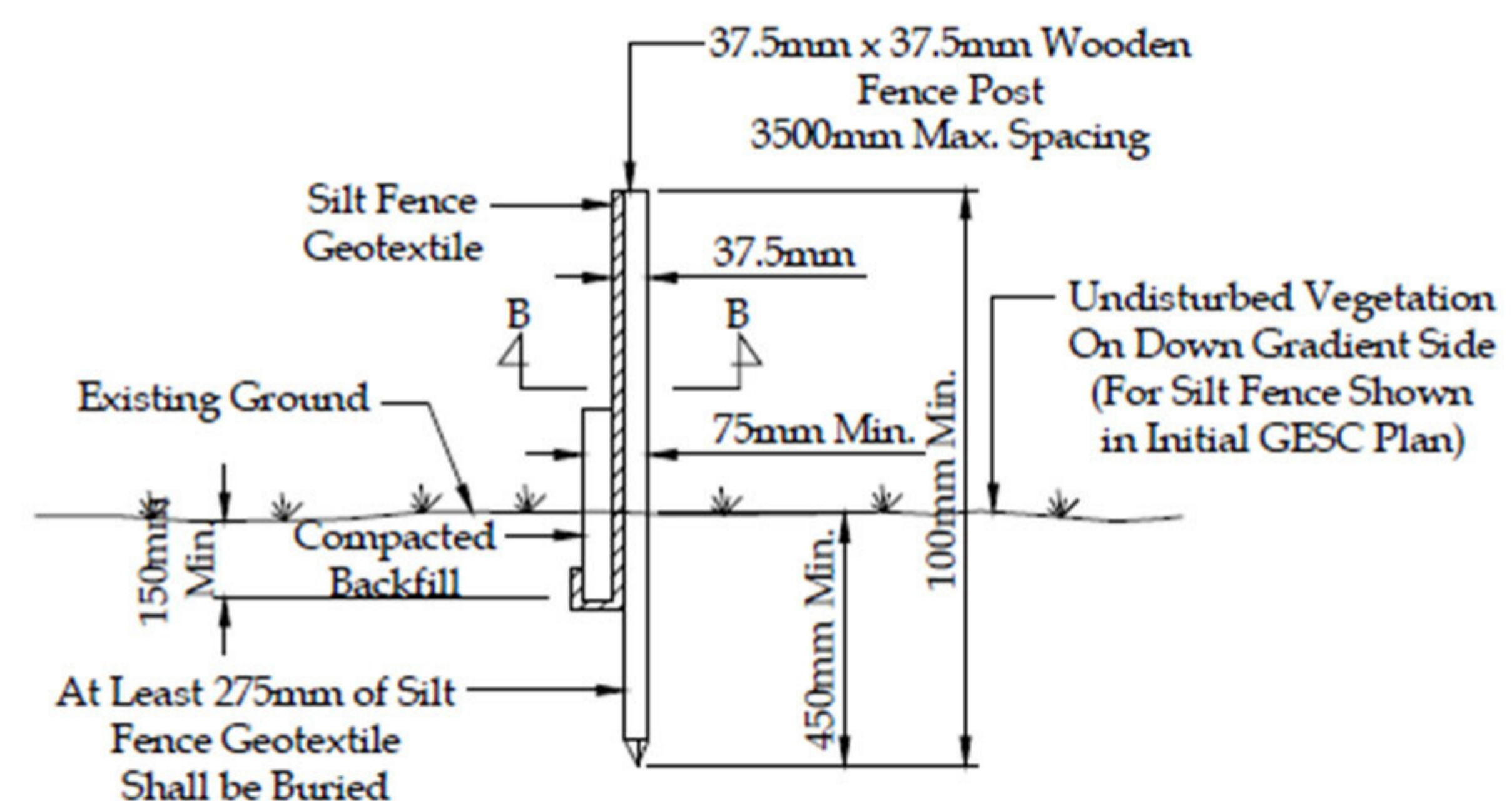
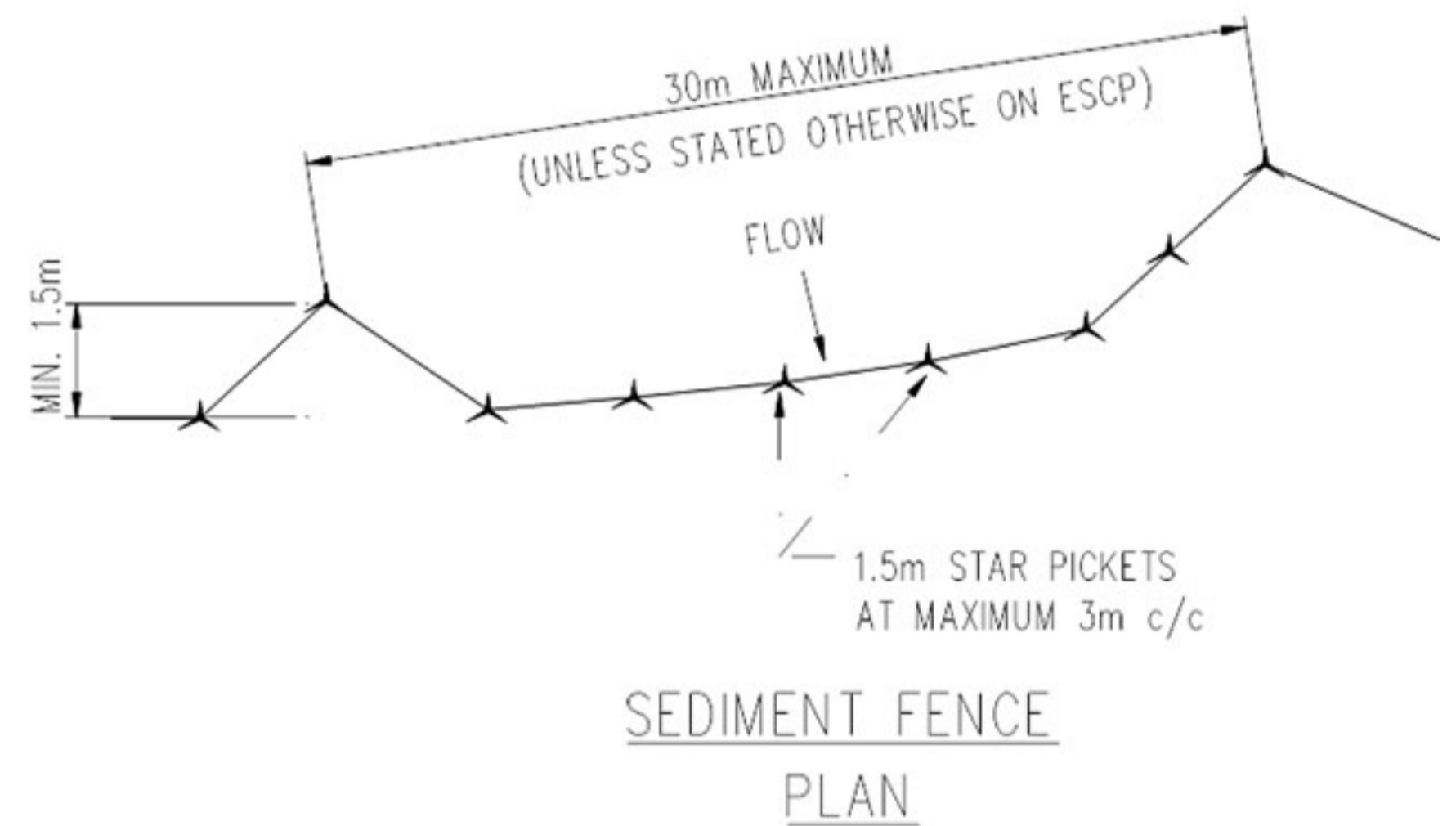
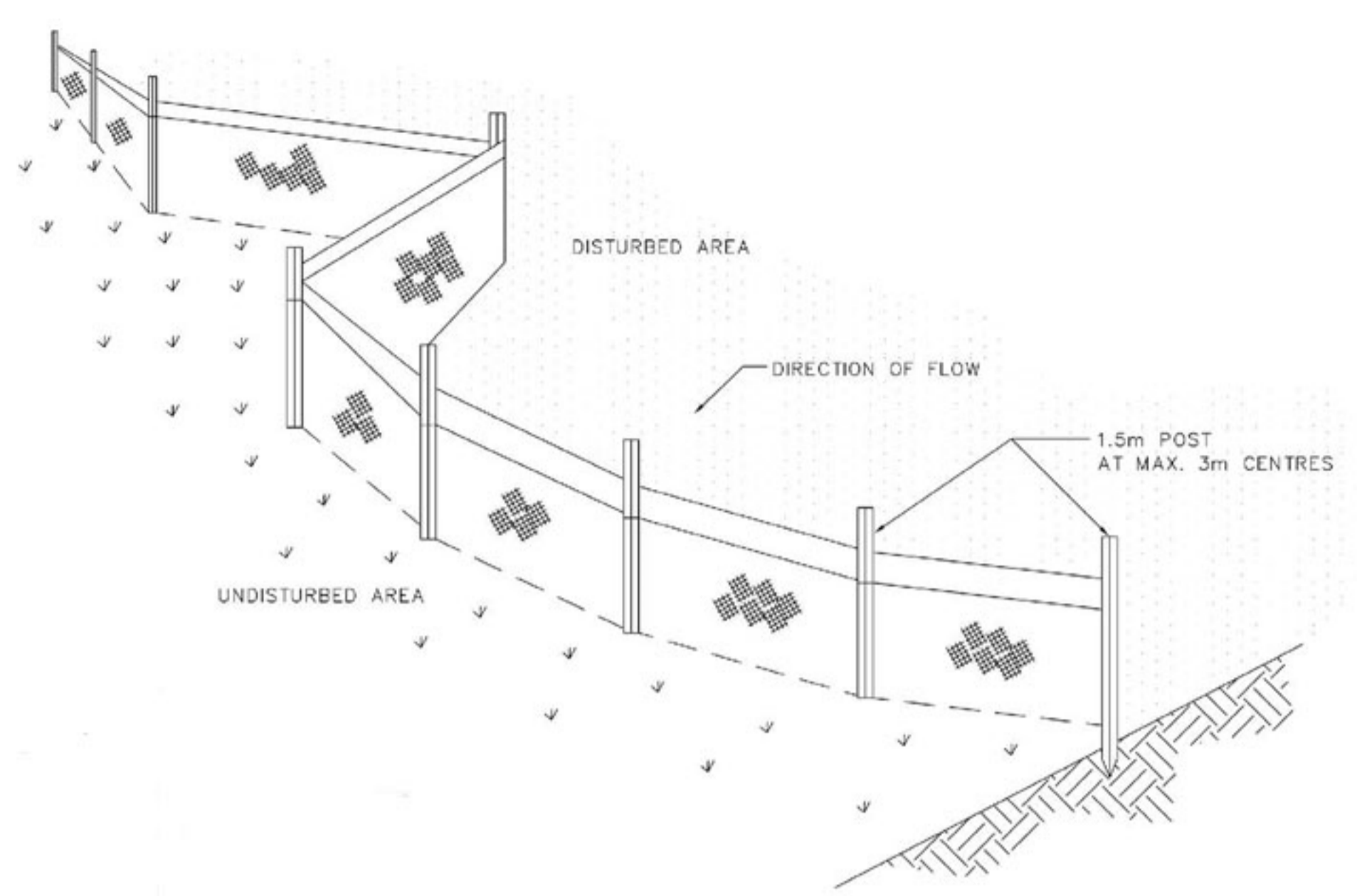
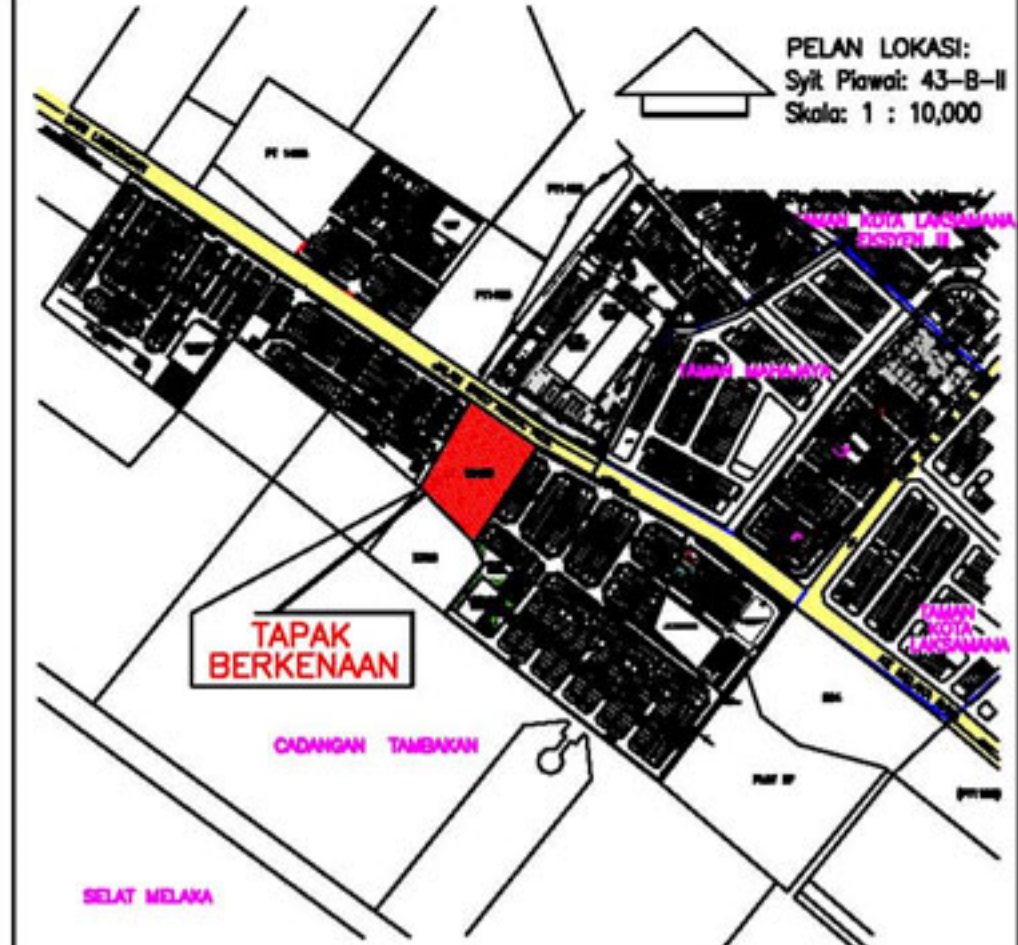
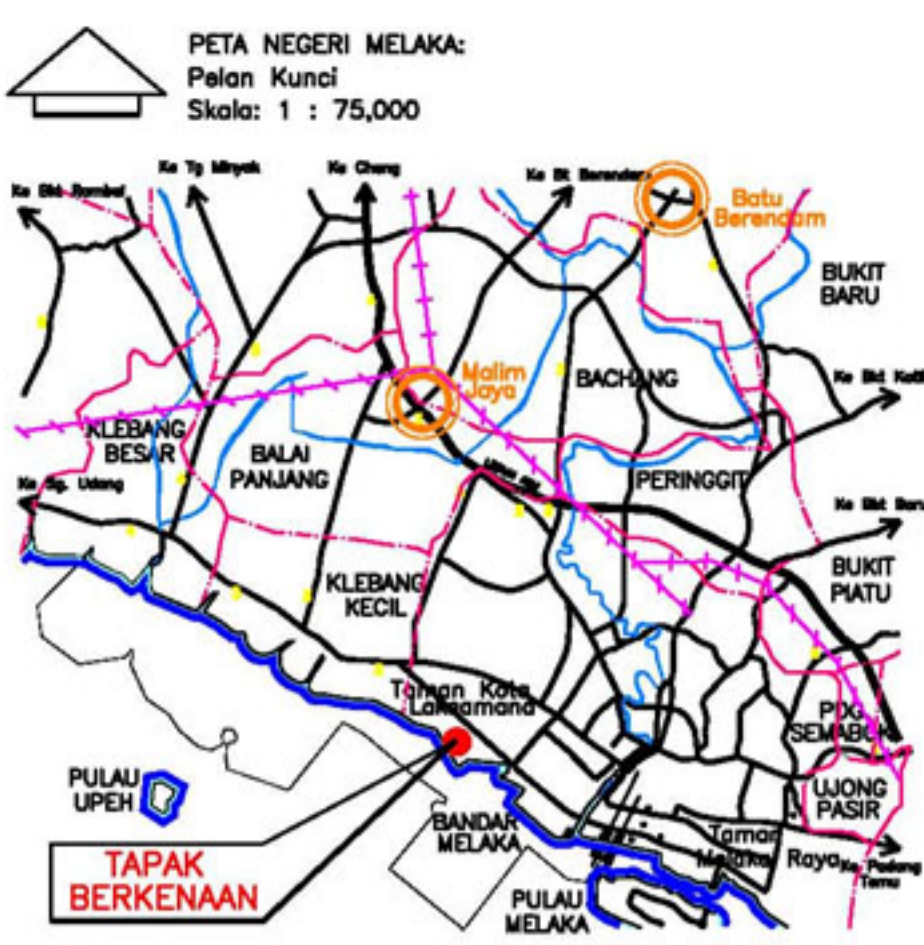
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Pengesahan Jurutera :

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DISEMAK OLEH : NEO WEB SIANG

NO. LUKISAN : PEC/HSSB/GKL/130730/03



CONSTRUCTION NOTES :-

1. CONSTRUCT OF SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE
2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND, 3m APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE POSTS WITH WIRE TIES OR RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOINT SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

NO. PELAN _____

RUANGAN UNTUK KELULUSAN DARI PIHAK MAJLIS

McCallum
McCallum Engineering Consultant
 Civil, Structural, Transportation
 (MAM061873-W)
 No. 25-1, Jalan Abadi 21,
 Taman Malim Jaya, 75250 Melaka.
 Tel : 06-3358708 Fax : 06-3363913
 E-mail : mccolm@tearmy.com

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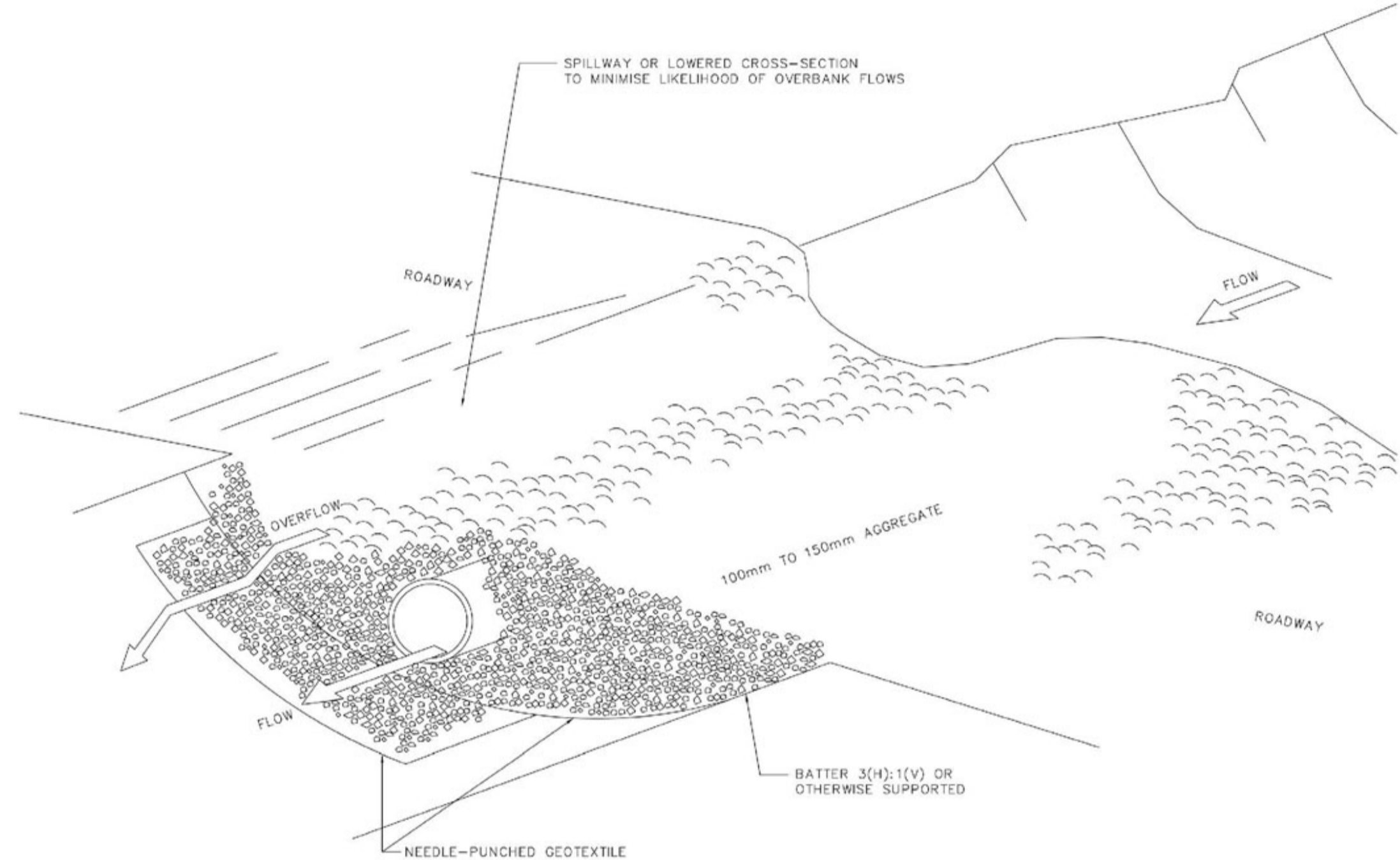
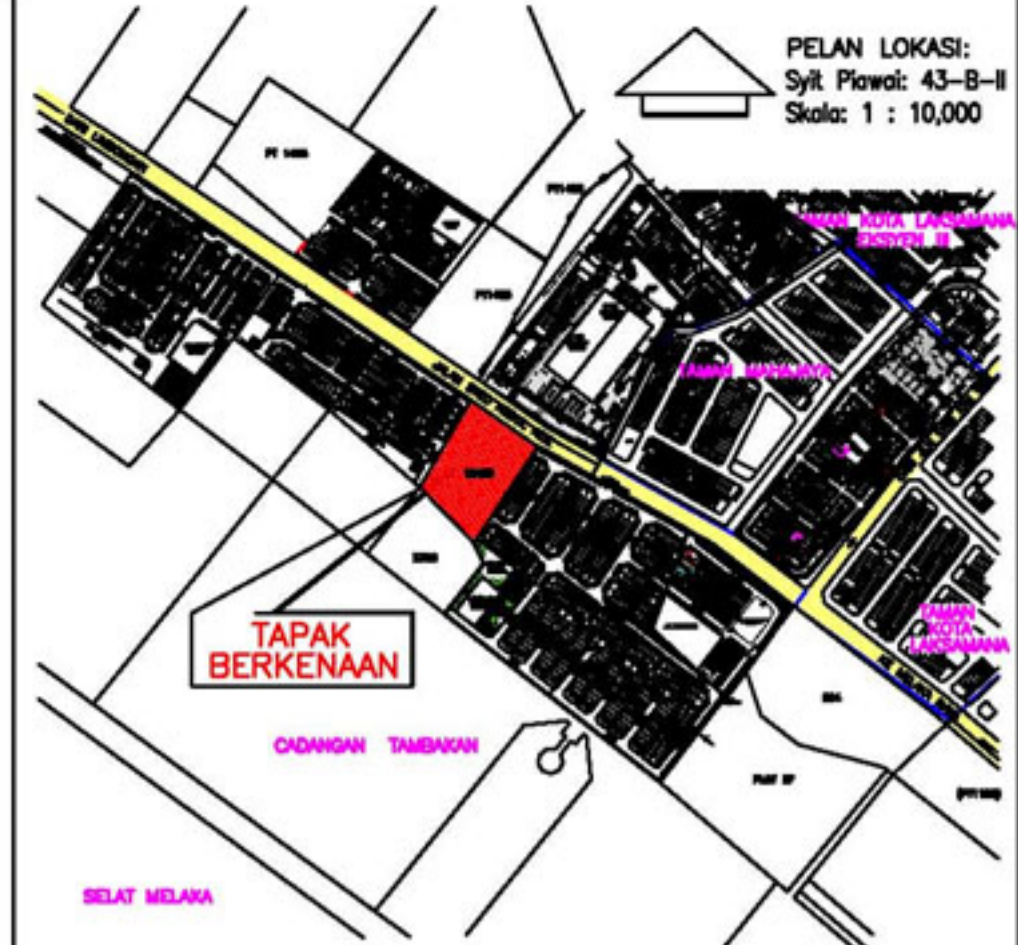
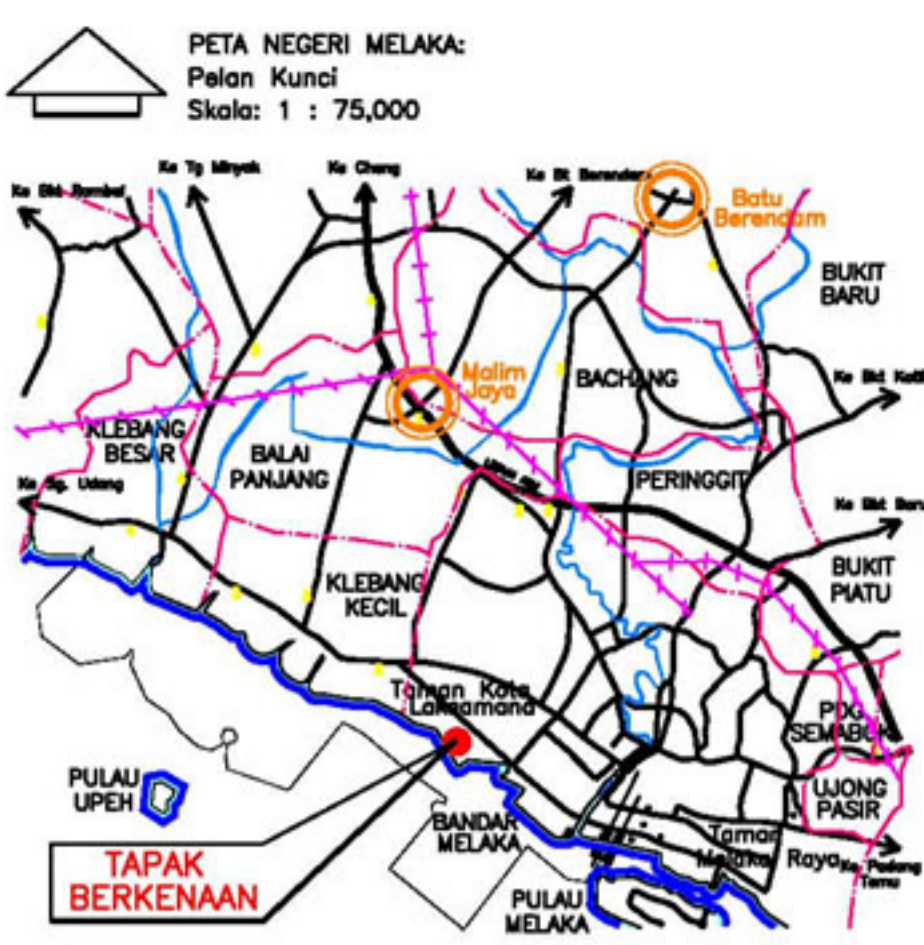
Rujukan	Tarikh	Pindaan	Dilukis

Akitek/Perancang Bandar/Jurukur	KONSEP KARISMA SDN. BHD.
Projek	CADANGAN KERJA-KERJA TANAH UNTUK PEMBANGUNAN PERNIAGAAN, HOTEL & PANGSAPURI SERVIS (42 TINGKAT)
Lokasi	LOT PT 1816, KAWASAN BANDAR VI, DAERAH MELAKA TENGAH, MELAKA.
Pemaju	TETUAN JAYA MAPAN SDN. BHD.
Tajuk Lukisan	REBENTING SEDIMENT CONTROL PLAN - SILT FENCE
Skala	1:150
Pereka	SAM TSEN KING FOH (CPESC NO B5910) CERTIFIED PROFESSIONAL IN EROSION SEDIMENT CONTROL Email: sam.tsen@pecmy.com Mobile: +6012 788 0603 Fax: +65 6899 9529
Tarikh	30 JULY 2013
Dilukiskan Oleh:	

Pengesahan Jurutera :

DISEMAK OLEH : NEO WEB SIANG

NO. LUKISAN : PEC/HSSB/GKL/130730/04



CONSTRUCTION NOTES :

1. ALL BANKS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
2. ALL BANKS SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILISE A STABILISED SAFE OUTLET.
5. OUTLETS SHALL FUNCTION WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT TRAP OR BASIN WHERE EITHER THE BANK CHANNEL OR THE DRAINAGE AREA ABOVE THE BANK ARE NOT ADEQUATELY STABILISED.
6. STABILISATION SHALL BE AS FOLLOWS:-

FLOW CHANNEL STABILISATION

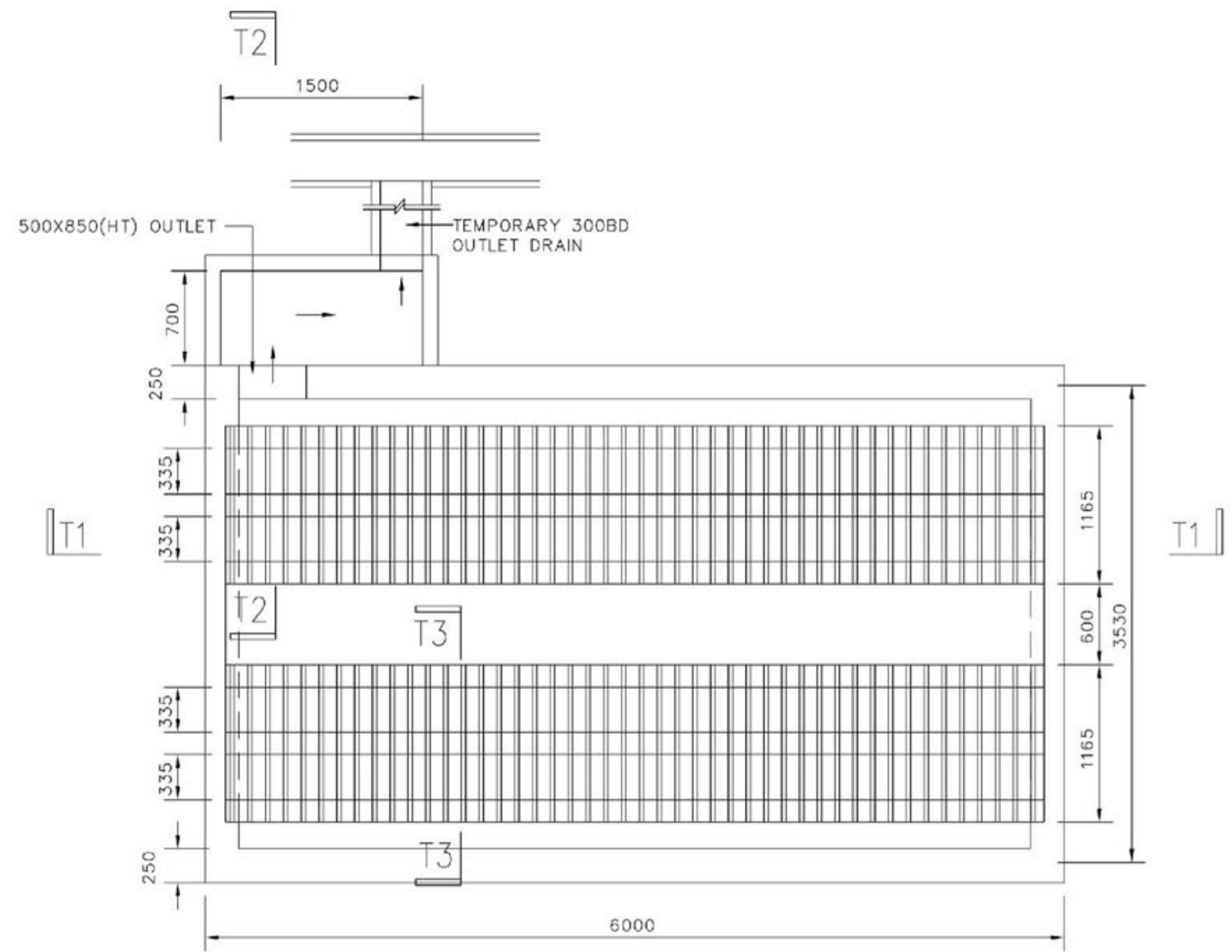
TYPE OF TREATMENT	CHANNEL GRADE	EARTHBANK A	EARTHBANK B
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE OR EQUIVALENT: BITUMEN, SOD OR 50mm AGGREGATE.
3	5.1-8.0%	SEED WITH JUTE OR SOD; 50mm AGGREGATE	LINED RIP RAP 100-200mm
4	8.1-15.0%	LINED RIP RAP 100-200mm	ENGINEERING DESIGN

A. STONE TO BE 50mm AGGREGATE OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 100mm THICK AND BE PRESSED INTO THE SOIL WITH CONSTRUCTION EQUIPMENT.

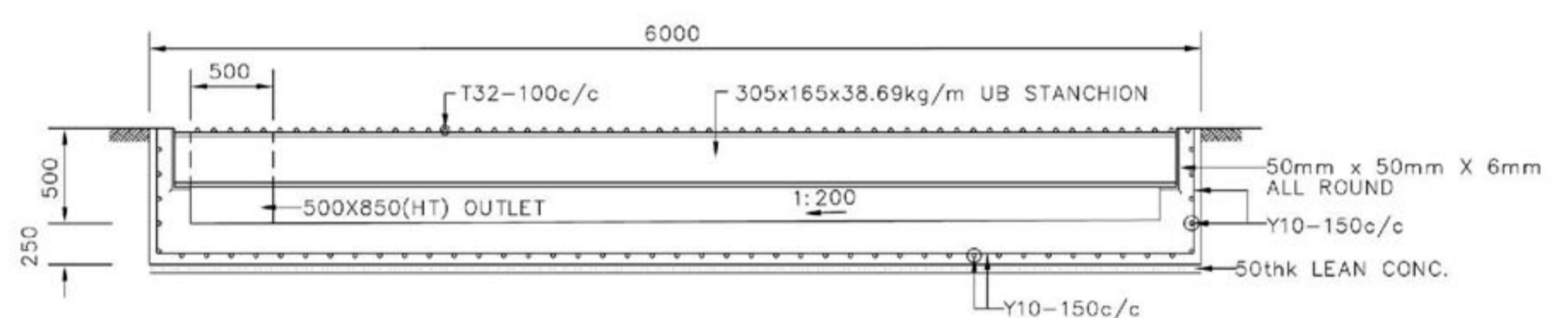
B. RIP RAP TO BE 100-200mm IN A LAYER AT LEAST 250mm THICK AND PRESSED INTO THE SOIL.

C. APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS.

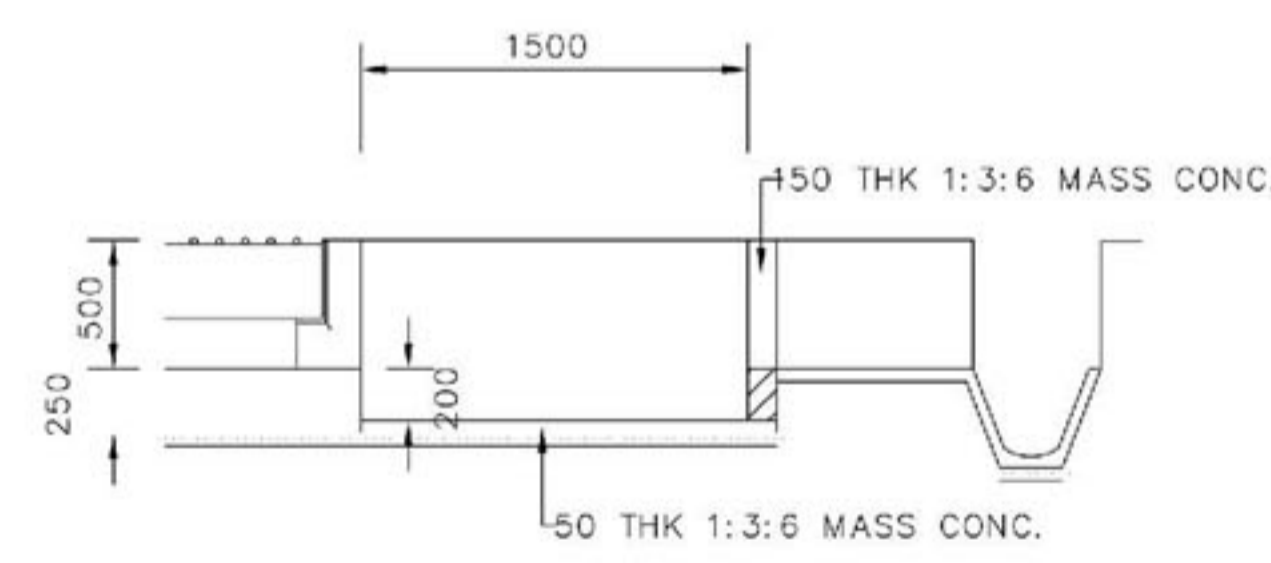
7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.



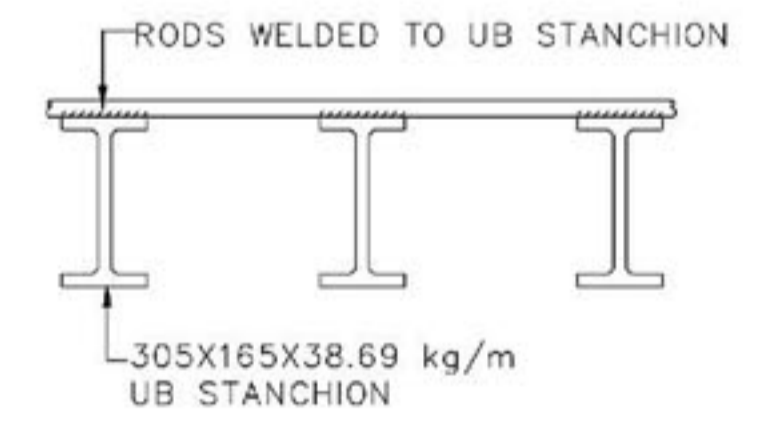
PLAN OF VEHICLE WASH TROUGH



SECTION T1-T1



SECTION T2-T2



SECTION T3-T3
SCALE : 1 : 25

NO. PELAN _____

RUANGAN UNTUK KELULUSAN DARI PIHAK MAJLIS

McCallum Engineering Consultant
Civil, Structural, Transportation
(MAM061873-W)
No. 25-1, Jalan Abadi 21,
Taman Malim Jaya, 75250 Melaka.
Tel : 06-3358708 Fax : 06-3363913
E-mail : mccalum@tearmy.com

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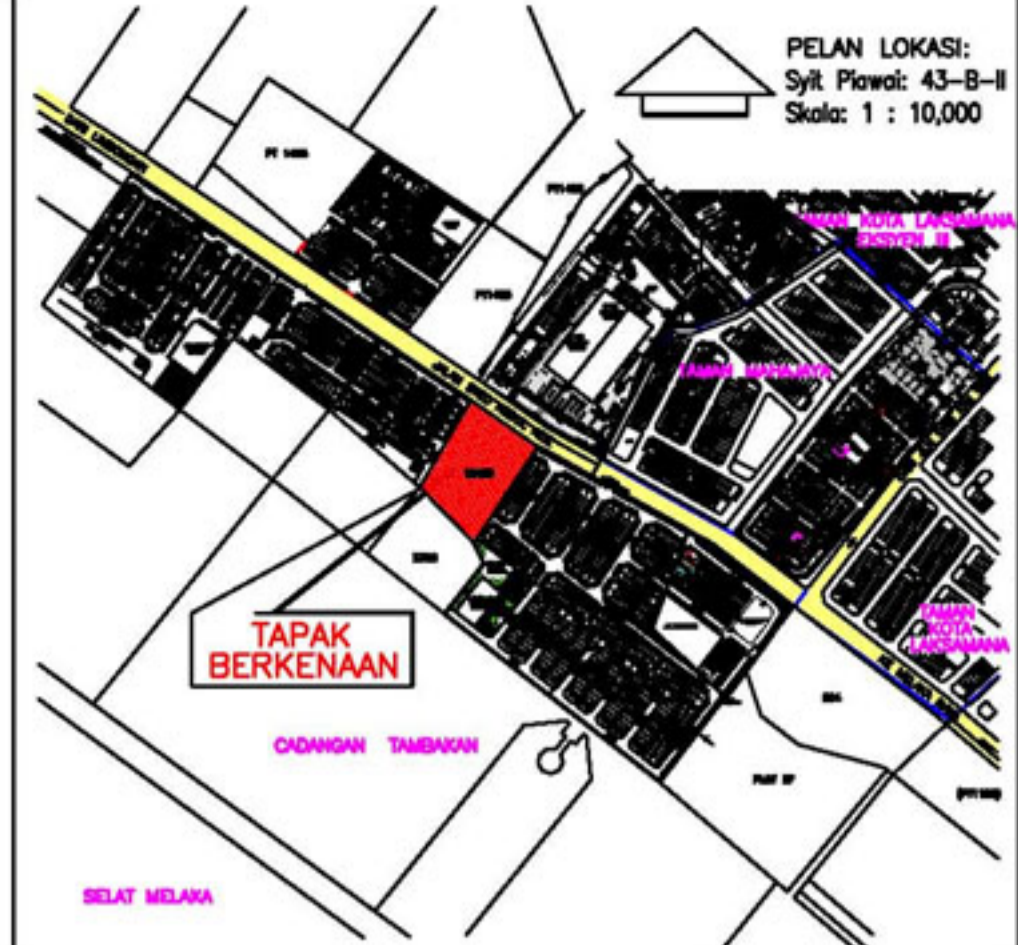
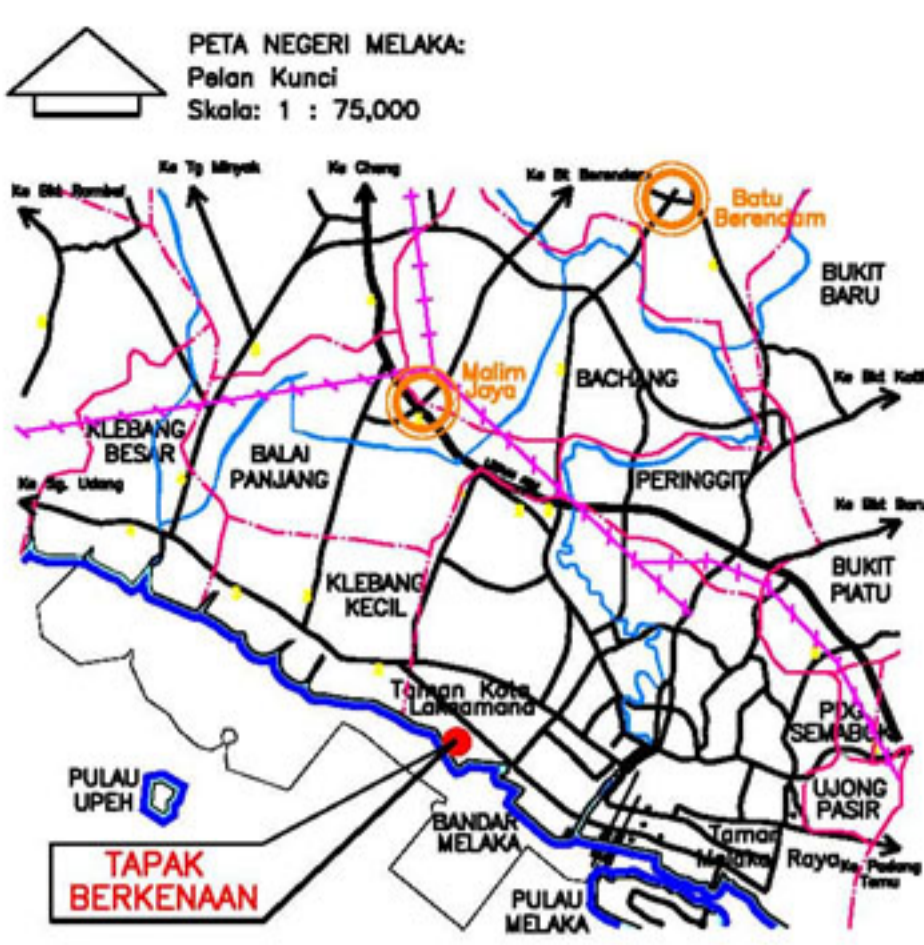
Rujukan	Tarikh	Pindaan	Dilukis

Akitek/Perancang Bandar/Jurukur	KONSEP KARISMA SDN. BHD.
Projek	CADANGAN KERJA-KERJA TANAH UNTUK PEMBANGUNAN PERNIAGAAN, HOTEL & PANGSAPURI SERVIS (42 TINGKAT)
Lokasi	LOT PT 1816, KAWASAN BANDAR Y, DAERAH MELAKA TENGAH, MELAKA.
Pemaju	TETUAN JAYA MAPAN SDN. BHD.
Tajuk Lukisan	EROSION SEDIMENT CONTROL PLAN - WASH THROUGH TEMPORARY CROSSING
Skala	1 : 500
Pereka	SAM TSEN KING FOH (CPESC NO B590) CERTIFIED PROFESSIONAL IN EROSION SEDIMENT CONTROL Email: sam.tsen@pecmy.com Mobile: +6012 788 0603 Fax: +65 6899 9529
Tarikh	30 JULY 2013
Dilukiskan Oleh:	

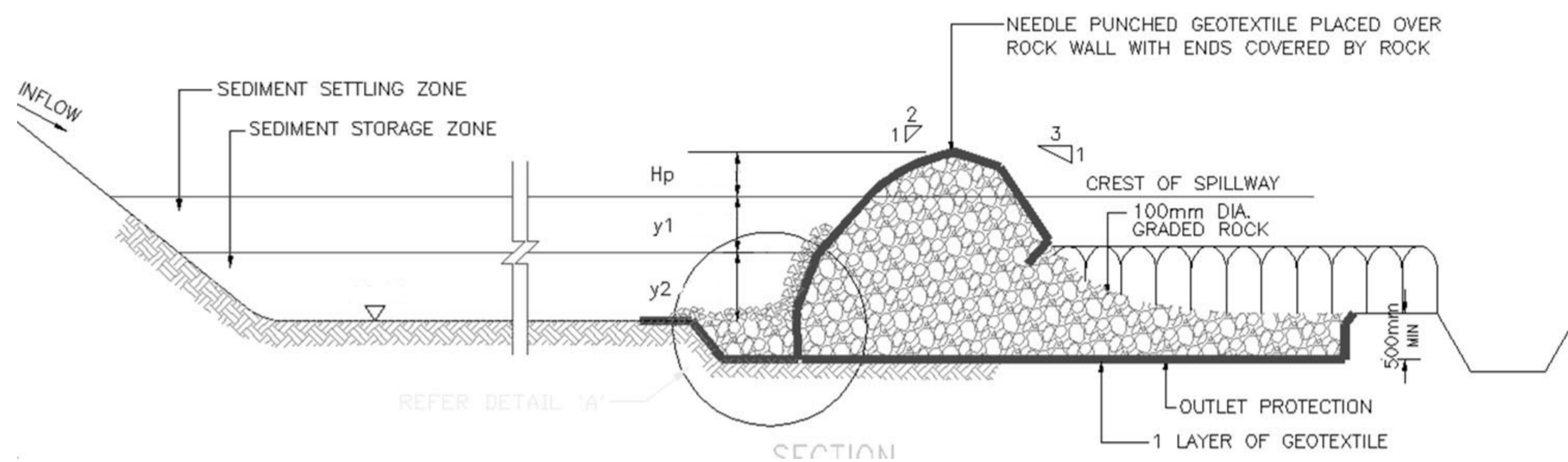
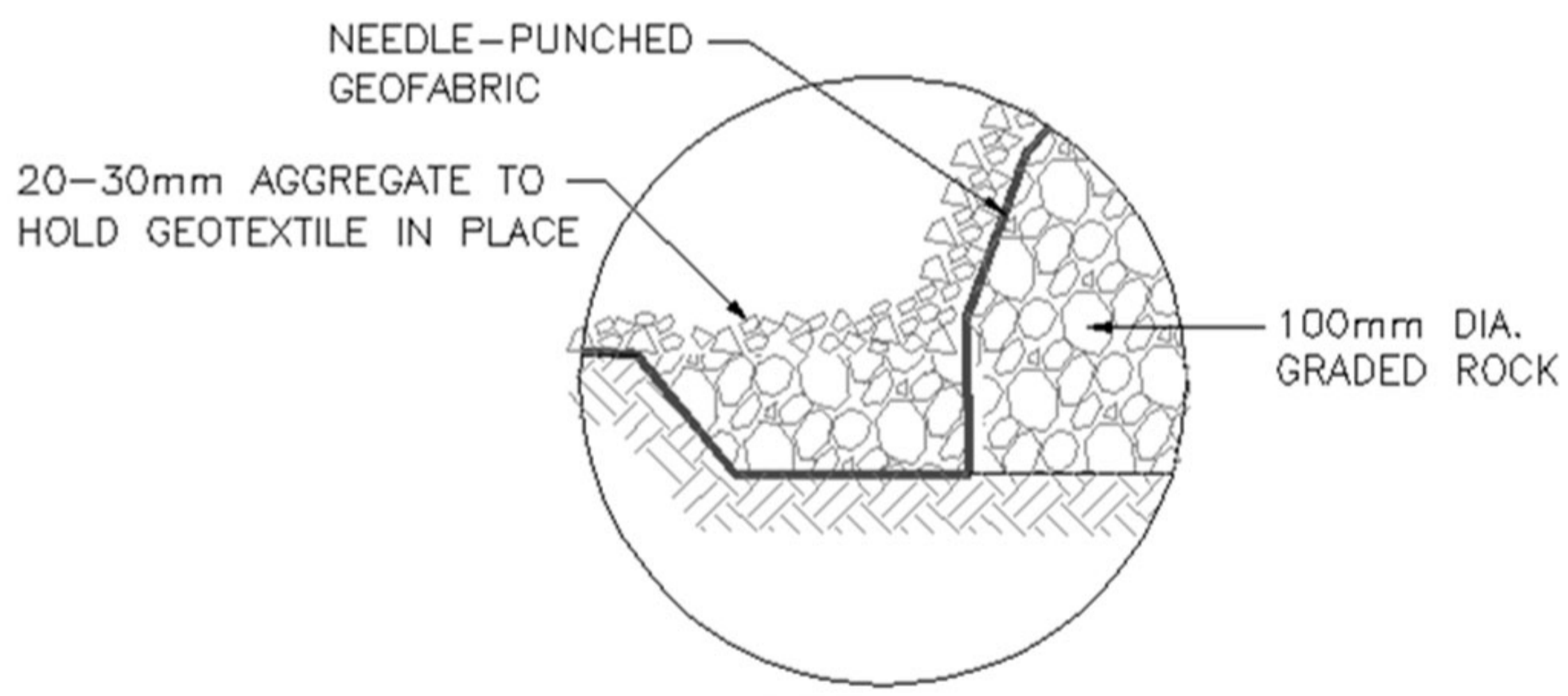
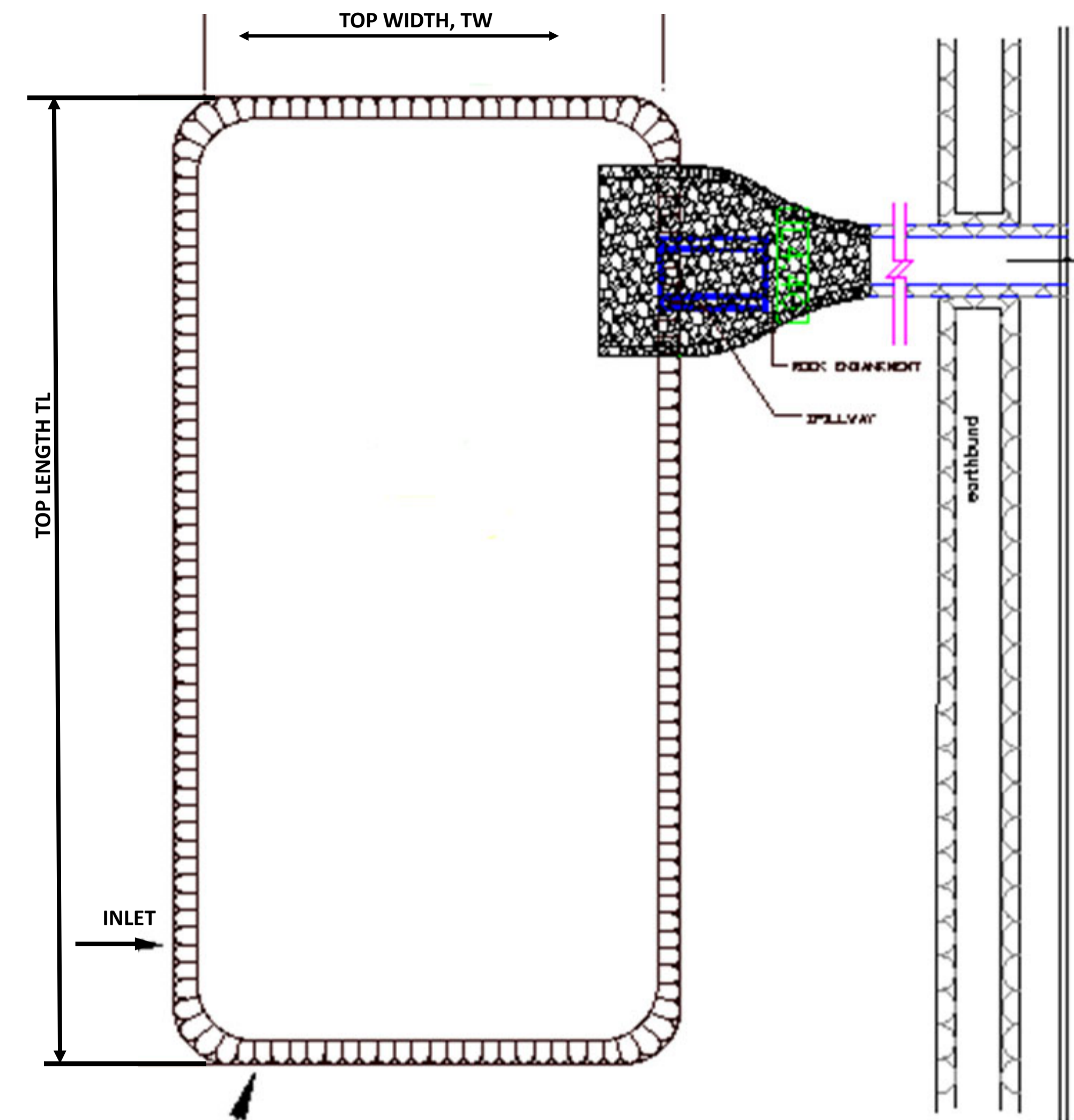
Pengesahan Jurutera :

DISEMAK OLEH : NEO WEB SIANG

NO. LUKISAN : PEC/HSSB/GKL/130730/05



Overall Basin Dimensions	meter	SB
Water level top, WTWL	m	18
Water level top, LTWL	m	34
Base WB	m	11
Base, LB	m	27
Depth Settling Zone, Y1	m	1.00
Depth Sediment Storage Zone Y2	m	0.75
Depth overall	m	1.75



NO. PELAN _____

RUANGAN UNTUK KELULUSAN DARI PIHAK MAJLIS

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 McCallum Engineering Consultant
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 Taman Malim Jaya, 75250 Melaka.
 □ Tel : 06-3358708 Fax : 06-3363913
 □ E-mail : mccallum@teamyx.com

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Rujukan	Tarikh	Pindaan	Dilukis

Akitek/Perancang Bandar/Jurukur
 KONSEP KARISMA SDN. BHD.

Projek
 CADANGAN KERJA-KERJA TANAH UNTUK PEMBANGUNAN PERNIAGAAN, HOTEL & PANGSAPURI SERVIS (42 TINGKAT)

Lokasi
 LOT PT 1816, KAWASAN BANDAR YI, DAERAH MELAKA TENGAH, MELAKA.

Pemaju
 TETUAN JAYA MAPAN SDN. BHD.

Tajuk Lukisan
 EROSI/SEDIMENT/CONTROL PLAN - SEDIMENT BASIN

Skala
 1 : 500

Pereka
 SAM TSEN KING FOH (CPESC NO B5910)
 CERTIFIED PROFESSIONAL IN EROSION SEDIMENT CONTROL
 Email: sam.tsen@pecmy.com Mobile: +6012 788 0603 Fax: +65 6899 9529

Tarikh
 30 JULY 2013

Dilukiskan Oleh:

Pengesahan Jurutera :

DISEMAK OLEH : NEO WEB SIANG

NO. LUKISAN : PEC/HSSB/GKL/130730/06