



MATANG AGRICULTURE AND PLANTATION (SEGAMAT) SDN BHD

Reg No.: 198201010122 (89846-T) www.matangbhd.com

Head Office: Unit 39.02, Level 39, Menara Multi-Purpose, Capital Square, No. 8, Jalan Munshi Abdullah, 50100 Kuala Lumpur, Malaysia

Tel: +6(03) 2698 0189 / 2693 0189

Estate : K.B. 101, 85200 Jementah Segamat, Johor.

Tel : +6 (012) 6671 761

APPENDIX 1: SPECIFICATION FOR THE SCOPE OF WORKS OR WORK

OIL PALM REPLANTING WORKS IN MATANG ESTATE

NO. SCOPE OF WORKS AND DETAILED SPECIFICATIONS

WORK FELLING AND CLEARING

1

1.1 Felling and Shredding

- Palm to be census before felling including fallen palm before the tender invitation.
- Mechanical felling and chipping are to be carried out using an excavator with a chipping bucket.
- Entire palm bole is to be excavated mechanically and stumps must be uprooted. All fronds, trunks, boles, and root mass should be shredded and spread out thinly in 1 single layer to expose directly to the sunlight.
- To ensure the palm fronds are separated from the trunk to improve decomposing. The palm trunk needs to be chipped less than 0.10 meter thick and less than 0.90 meter length. Cut the fronds into 2 meter lengths maximum.
- All felled palms and chipped to be counted, recorded & verified by both parties. Each excavator must supervise by one checker. Payment for work done per point basis (i.e., felling, Ganoderma pit, platform) must be jointly checked by both the Estate & the Contractor.
- New planting should be avoided from the old planting points.
- Felled palm shall be chipped 45° to 60° across the grain to the following sizes:
 - i. Length - less than 0.90 meter.
 - ii. Width - less than 0.45 meter.
 - iii. Thickness - less than 0.10 meter.
- In contour planting, the shredded materials should be spread out thinly in the inter-terrace slopes, this is done during felling and shredding operations proceed. During the construction of the new terrace, the shredded materials can be pushed to the new inter-terrace areas.
- In undulating area, the shredded materials should be stacked along the windrows at every two palm rows interval.



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1.2 Deboling and Ganoderma Sanitation Pits

- Deboling and Ganoderma sanitation pits to be carried out 100% of the replanting area.
- The size of Ganoderma sanitation pit at coastal and inland straight planting areas is similar. The pit size as per below :-
 - i. Length : 2.00 meter
 - ii. Width : 2.00 meter
 - iii. Depth : 1.20 meter
- To ensure that remains of bole tissue and the major part of root system are fully removed.
- The debris (root mass/bole) should be shredded and exposed to sunlight at the inter- rows.
- The excavated Ganoderma sanitation pits are to be closed after 14 days with fresh soil.

1.3 Ploughing and Harrowing

- 2 rounds of ploughing and 1 round of harrowing shall be carried out.
- Ploughing depth shall be between 30.5 cm to 40.5 cm into the ground using disc ploughs of diameter between 60 cm – 70 cm.
- Cross ploughing at right angle to the 1st ploughing is to be adopted for the 2nd round of ploughing.
- Serinted Rome discs are to be used for the harrowing operation and cross harrowing shall be carried out at right angle to the 2nd ploughing.
- The interval between each operation shall be as follows:
 - i. 1st round ploughing - To be carried out 2 weeks after stacking operation unless specified otherwise in writing by the Estate Manager.
 - ii. 2nd round ploughing - To be carried out 15 days after the 1st round plough.
 - iii. Harrowing - To be carried out 5 days after the 2nd round plough unless specified otherwise in writing by the Estate Manager.

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WORK ROAD ESTABLISHMENT 2

2.1 Construction of Road

- Marking of the road system shall be carried out by the contractor and fully monitored by estate personnel as indicated by the marking pegs. In marking the road, the gradient should not be exceeding 6°.
- The contractor shall not at his own discretion deviate from the above markers. In the event that the road is wrongly constructed, the contractors shall at his own expense rectify the error.
- All roads shall be constructed to a uniform camber, rounded at the crown prior to the construction of terraces unless otherwise directed by the manager of the estate. Road should be constructed earlier than terrace construction. The contractor shall re-camber the new roads affected by the construction of terraces.
- The width of the road to be constructed shall be determined by the manager of the estate. The standard widths of the roads both for flat/undulating and hilly area to be constructed are:

<u>Type</u>	<u>Width</u>	<u>Gradient</u>
Main Road	4.50 m (14.85 ft)	< 6°
Field Road	3.60 m (11.88 ft)	< 6°

- All roads in terrace area should be constructed across the contour line and distance between collection road as per determined by estate manager.
- For flat/undulating area, the Main Road to be constructed at East/West direction unless otherwise directed by the estate manager and the interval between roads as per determined by estate manager. All roads should be parallel to each other.
- The collection road to be constructed at north/south direction unless otherwise directed by the estate manager and the interval between roads as per determined by estate manager. All roads should parallel to each other. Any diversion of the road due to presence of boulders, huge rock, steep area and etc, the contractor must discuss with estate management.
- Prior to the construction of road in flat/undulating, lining for road should be done after the planting point lining completed and the road lining pegs should be the center of the roads.
- All roads shall be constructed before the commencement of terracing. To ensure all terraces and roads are connected and to avoid any 'hanging terraces' to allow surface water flow into the terraces. All roads in the non-terraced area shall be constructed straight wherever possible.



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- All obstacles such as stumps along the road shall be excavated. Road surface must be smooth (no depression).
- Marking of the road system shall be carried out by the contractor and fully monitored by estate personnel as indicated by the marking pegs. In marking the road, the gradient should not be exceeding 6°.

2.2 Harvesting Path

- Applicable for the flat to undulating area where the slope is between 1° - 6° (Straight planting - Platform construction).
- Type size of harvesting path:
 - i. Width: 3.03 meters (3 times running or more to form the camber and the final run is to compact the path)
 - ii. Height: 0.2 meters (From the centre after compaction)
 - iii. Machine: Bulldozer/Excavator (Depend on estate management)
- The exit/entry points of the harvesting paths to the main / collection roads must be connected and properly levelled.

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WORK TERRACING AND PLATFORMING 3

3.1 Platforms Construction

- Construction of platforms in the flat/undulating area where the slope is between 2° - 6° .
- The works commence after the road & harvesting path construction is completed.
- All shredded material should be removed from the platform.
- Dimension of platforms:
 - i. Length : 8 fts
 - ii. Width : 8 fts
 - iii. Depth : 1.5 fts
 - iv. Slope : 8°
- The outer section of earth spoils of the platforms shall be compacted to consolidate the finished platforms and to eliminate washout during heavy rainfall. This will result in the planting platform would be in horizontal along the slope.
- Planting point should be marked at 4 fts from platform backdrop.

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WORK PLANTING OIL PALM 4

4.1 Lining of Planting Points

- The whole plantable area shall be lined under the direction and supervision of the Estate Manager at distances and bearings as directed.
- Lining stakes shall be supplied by the Contractor. Stakes shall not be less than 1.00 meter in height and coloured as directed by the Estate Manager.
- Estate Manager from time to time will test the measurements in respect of such lining and should any errors be discovered, the Contractors shall at his own cost and expense reline the entire affected area as directed by and to the complete satisfaction of the Estate Manager.
- Lining for planting points on straight planting and terrace areas as follow:
 - i. The planting density shall be 148 palms per hectare and the planting distance shall be 8.84 meters x 8.84 meters x 8.84 meters.
- To maximise the stand in the flat and undulating area with the replanting design of the grid system, the lining of planting points at the collection road and drain must be adjusted as per guidelines as below (if necessary):
 - i. To realign the planting point 2.00 meters from the original planting point to give access for road and drain construction and to avoid planting point loss.

4.2 Holing

- Mechanical holing should be advocated wherever possible.
- The area where platform construction is adhered, the bucket will be inserted into the soils from the back to the front towards the deep end of the platform to create a bund to prevent water from entering the planting holes.
- The dimension of planting holes is at 0.60 meter x 0.60 meter x 0.60 meter to suit main nursery polybags. It should be dug just prior to or at time of planting to avoid soil collapsed and drying out.

4.3 Planting of Oil Palms

- The oil palm seedlings in polythene bags (hereinafter called "the seedlings") shall be thoroughly watered in the manner and time to be indicated by the Estate Manager before they are lifted for transportation to the field proper for planting.
- The seedlings shall be lifted carefully from the ground to prevent breakage of the polythene bags and carried to and loaded onto the transport for conveyance to the field.



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- The seedlings shall be transported to the field for planting and unloaded at various points therein as indicated by the Estate Manager.
 - Any seedling found to be in damages / torn polythene bags shall be wrapped and tied with a fertilizer bag to prevent the earth bole from disintegrating.
 - Fertilizer application during palm planting:
 - i. Rock Phosphate: 500 gram per palm (evenly broadcasted in the planting holes).
 - The seedlings shall be planted on the same day they are delivered to the field.
 - The polybags should be torn by hand before placing seedlings in planting hole. USING BLADES / KNIVES TO REMOVE POLYBAGS IS NOT ALLOWED. Deep and shallow planting must be avoided.
 - Planters should not disturb the spear, root mass or soil core during planting operation. Rough handling of seedlings must be avoided, and seedlings should be lifted by the polybag and not by the fronds.
 - The planting hole is then filled in with soil (half the hole) and firmly consolidated by using ramming stick / foot. Soil is then filled in the remaining half of the planting hole and firmly consolidated again until the surface level. This would ensure that there are no air pockets between the seedling and the surrounding soil.
 - At completion of planting, the seedlings should be in an upright position and not easily moved shaken or pulled.
 - The used polybag must be placed in between the lowest fronds and used plastic bags for fertilizer to be tied up at any fronds for supervision purposes.
 - The whole planting shall be completed within the period stipulated in the Contract, provided the weather is favorable. The Estate Manager reserves the right to stop the planting at any time if in his opinion the weather is not favorable. In such a case extension of date of completion shall be given for the number of days during which the planting work was stopped by the Estate Manager due to unfavorable weather.

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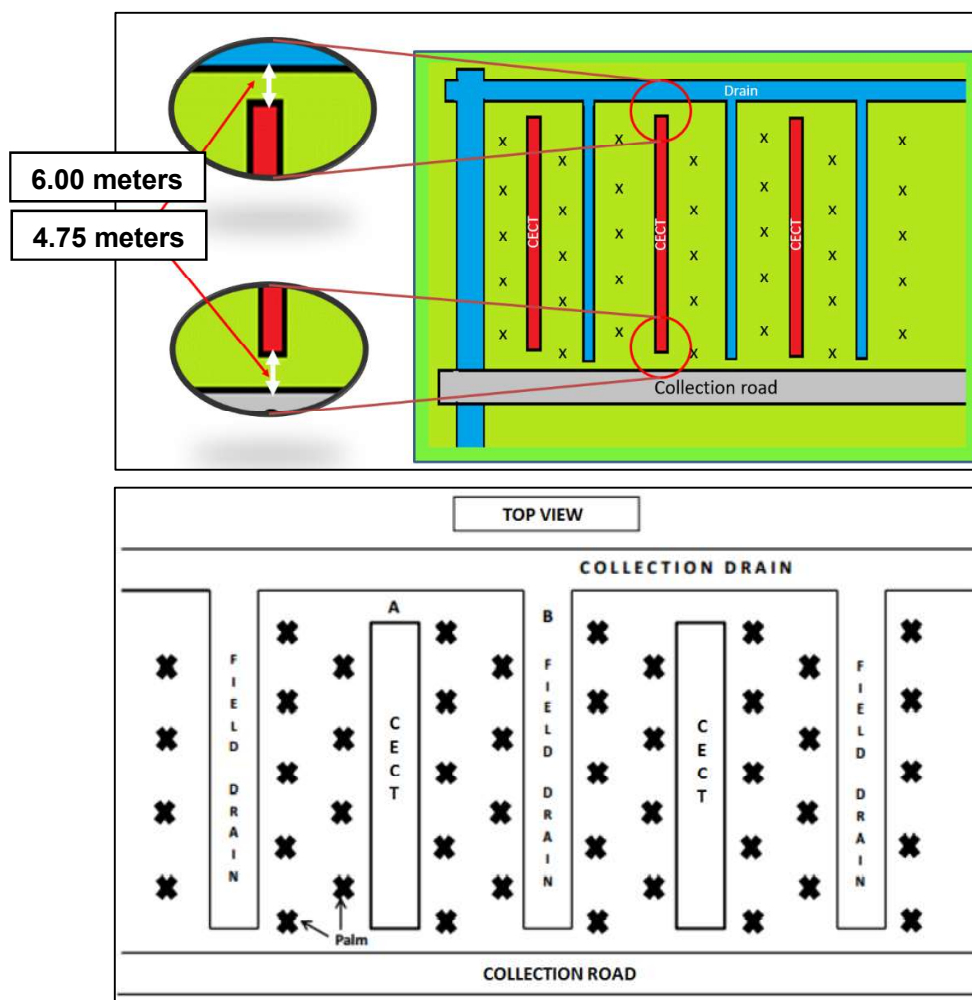
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NO. SCOPE OF WORKS AND DETAILED SPECIFICATIONS

WORK DRAINS ESTABLISHMENT 5

5.1 CLOSE ENDED CONSERVATION TRENCHES (CECT)

- To ensure accurate lining for the CECT, drains and planting rows. Pre-lining must be carried out prior to the construction of CECT and the distances are determined correctly as required by the management.
- Pre-lined rows to be marked with pegs of at least 1.80 meters high at designated CECT by using either bamboo/used PVC pipe and to paint with colours or tie with colour plastic bags (i.e., YELLOW for CECT).
- The CECT are to be constructed with an excavator beginning 4.75 meters (can be adjusted as per decided by Estate Manager) from the collection road in the front and ending 6.00 meters before the collection drain. This will allow for mechanical access. The spoil from the CECT must be placed at the harvesting path and in between the oil palm tree for future use to raise the harvesting path and planting point.





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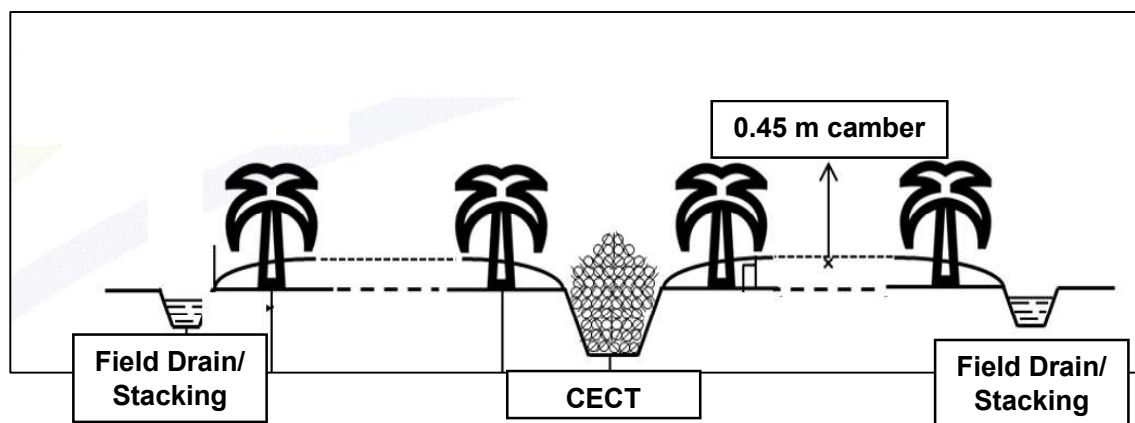
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- CECT Density: +/- 330 meters per hectare (depending on carry distance and SPH).
- The size of the Close-Ended Conservation Trenches (CECT) should be 6 fts width at the top, 5 fts depth and 4 fts width at the bottom. The interval is at every 4th palm row.

5.2 LAND FORMING (CAMBERING)

- Applicable for the flat area (coastal) where the slope is between 0° - 2° (Straight planting for CECT and low-lying areas).
- The land forming works required to level and camber to 7.65 meters wide between planting rows for SPH 148 and with 0.45 meters height from the centre after compaction.
- Four (4) runs of compaction at the middle of the mechanical/harvesting path only (3.5 meters width), must comply accordingly.
- All spoils excavated must be levelled to the surrounding ground at least 1.00 meter away from the field / collection drain and CECT edges.
- The exit / entry points of the paths to the collection roads must be levelled.



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5.3 CONSTRUCTION OF DRAIN

- The work should involve the construction of new drains or the widening and deepening of existing drains or streams as determined by the estate management.
- Construction of new drains shall be done after the lining is completed. The drain must be constructed using a "V" shape bucket mounted on the excavator's arms.
- All spoils excavated must be levelled to the surrounding ground at least 1m away from the drain edges.
- Desilting of the current main or collection drain based on the estate instructions.
- The field drain is to be constructed with an excavator beginning 3.25 meters from the collection road in the front and connected to the collection drain. The spoil from the field drain must be placed at the harvesting path and in between the oil palm tree for future use to close deboling pits, and to raise the harvesting path and planting point.
- The drainage system shall be marked out by the contractor and verify by estate management before contractor start to construct the drain following the markers.
- Drain shall be constructed in a straight line unless obstructed by permanent and unremovable structure or object, or limitation of the terrain as determined by the Estate Manager.

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