

Q-Time Bil.3/2012

Jadual Fee Ukur Kejuruteraan 2001

04 Mei 2012

Perkhidmatan Kerja Ukur

- KERJA AWALAN (General Engineering Survey)
- KERJA TAPAK
 - Cross-sectioning with sounding
 - Site survey
 - Waterway survey
 - Etc
- PEMROSESAN DATA DAN PELAN
- LAIN-LAIN
 - Tidal observation
 - reimbursable

Komponen Kerja

- 1 Preparatory work** – 1 p/day
- 2 Mobilization and Demobilization**
- as per item 1.3
- 3 Planimetric Control and Connection** - as per item 1.5
- 4 Height Control and Connection** -
as per item 1.6
- 5 Monumenting** - as per item 1.7 and
together 8.1 to 8.4
- 6 Survey in Security Areas** - as per
item 1.8
- 7 Survey in Inaccessible Areas** - as
per item 1.9
- 8 Professional Consultancy Fees
and Reimbursable** – as per item
1.10
- 9 Engineering Survey**



KADAR KOS PERUNDING UKUR

Kelulusan Kadar bagi pengiraan kos Perkhidmatan Perunding Bidang Ukur Tanah bagi projek-projek Kerajaan.

- Jadual Fee Ukur Kejuruteraan 2001 (pindaan kepada Jadual Fee Ukur Kejuruteraan 1980), dan
- Peraturan-peraturan Jurukur Tanah Berlesen (Pindaan) 1997 (kadar bayaran upah ukur untuk Ukuran Hakmilik)

SCALES OF FEES FOR TITLE SURVEYS

**PERATURAN-PERATURAN
JURUKUR BERLESEN (PINDAAN)
1997**

**(KADAR BAYARAN UPAH UKUR
UNTUK UKURAN HAKMILIK)**

SCALE OF FEES FOR ENGINEERING SURVEY 2001

**JADUAL KADAR BAYARAN PERKHIDMATAN UKUR TANAH
BAGI TUJUAN UKURAN KEJURUTERAAN**

JADUAL FEE UKUR KEJURUTERAAN 2001 (PINDAAN KEPADA JADUAL FEE UKUR KEJURUTERAAN 1980)

■ NO ISSUE

- IMPLEMENTED AND WIDELY UTILIZED
- ONLY SOME MIS-INTERPRETATION AND MIS-UNDERSTANDING

***JADUAL KADAR BAYARAN
PERKHIDMATAN UKUR TANAH BAGI
TUJUAN UKUR KEJURUTERAAN 2001
(Pindaan Kepada Jadual Fee Ukur Kejuruteraan 1980)***

COST PER PARTY DAY

Semenanjung Malaysia : **RM 743.00**

Sabah, Sarawak dan
Wilayah Persekutuan Labuan : **RM 966.00** (Kadar
Semenanjung Malaysia + 30%)

KADAR KOS PERUNDING UKUR

Cost per party day	-	RM743.00 for Peninsular Malaysia (RM450.00)
	-	RM966.00 for Sabah, Sarawak and Federal Territory of Labuan (RM585.00)

The following costs are taken into account:

- Salaries and allowance.
- Cost of survey equipment and maintenance.
- Cost of material used for the survey.
- Accommodation away from office and subsistence.
- EPF, SOCSO, Medical expenses, insurance and bank interest.
- Office rental, power, water, telephone, postage and other such charges.
- Stationery, furniture, computing and drawing equipment and materials.
- Professional charges.

The cost for Sabah, Sarawak and Federal Territory of Labuan remains 30% higher than in Peninsular Malaysia.

PART I

GENERAL ENGINEERING SURVEY

1.1 *Classification of Terrain and Ground Condition*

Classification of Terrain and Ground Condition	Description
Flat and undulating area	up to 10 degrees slope or differences in heights of not more than 20 metres.
Hilly area	exceeding 10 degrees slope or differences in heights of more than 20 metres.
Swampy area	generally wetted at the time of survey whether temporary or permanent in nature.
Built up area	area with man made structure such as building, road, fence, drain, hedge, cutting, embankment and etc.

1.2 Preparatory Work

Work rate for preparatory work is 1 party- day. (RM 743.00)

1.3 Mobilization and Demobilization

Work rates for mobilization and demobilization per party (Survey Team) are as follow.

Distance between Worksite and Headquarters	Mobilization and Demobilization Cost /per survey team
50 kilometres or less	Nil
More than 50 kilometres but not exceeding 150 kilometres	1 party-days
More than 150 kilometres but not exceeding 300 kilometres	2 party-days
Exceeding 300 kilometres	3 party-days

1.3.1	Mobilization of the survey party by the following modes of transportation where necessary shall be reimbursable at cost.
1.3.1.1	Hire of helicopter or aircraft and crew
1.3.1.2	Hire of boat and crew
1.3.1.3	Hire of additional motor vehicles and drivers under exceptional circumstances.
1.3.1.4	Air fares.

1.4 Point Positioning by Satellite

This item provides the fee for Point Positioning with the use of Satellite.

The survey rates chargeable under this item for each job shall consist of the following charges:-

Distance to Worksite From Headquarters	Charge for 3 Field Parties
More than 50 kilometres but not exceeding 150 kilometres	RM 2,700
More than 150 kilometres but not exceeding 300 kilometres	RM 5,400
Exceeding 300 kilometres	RM8,100

1.4.2 Basic charge – RM 4,660.00.

1.4.3 Charge for positioning of each point is RM1,970.00.

1.4.4 Charge for the construction of a monument similar to type 'C' Mark of Survey Department is RM 300.00.

1.4.5 Charge for site clearance for observation shall be on reimbursable basis.

1.4.6 Charge for Survey in Security Areas shall be as per item 1.8.

1.5 *Planimetric Control and Connection*

The planimetric control and connection includes:

- i) Connection to Survey Department datum, and
- ii) Along the proposed or existing routes or alignment

Classification of Terrain and Ground Condition	Peninsular	Sabah/Sarawak
Flat and undulating area	\$2.50 / metre	\$2.60 / metre
Hilly area	\$2.50 / metre	\$3.25 / metre
Swampy area	\$2.50 / metre	\$3.25 / metre
Built up area	\$2.50 / metre	\$3.25 / metre

1.6 Height Control and Connection

The height control and connection includes:

- i) Connection to Bench Marks, **and**
- ii) Along the proposed or existing routes or alignments.

1.6.1 *Height control shall be established on the following conditions:*

1.6.1.4 The datum for height control shall be established by at least two existing Bench Marks.

1.6.1.5 The surveyor shall take the shortest practical route.

		Work rate in kilometre per party-day	
<u>Class for Heighting</u>	<u>Accuracy (in metres)</u>	<u>Flat and Undulating</u>	<u>Hilly & Swampy & Built up area</u>
a. Ordinary	$+ 0.02 \sqrt{k}$	1.6 km/party-day	1.0 km/party-day
b. Precise	$+ 0.003 \sqrt{k}$ Where k is the distance in kilometre	0.5 km/party-day	0.3 km/party-day

1.7 Monumenting

(Construction of Intersection Points, Temporary Bench Marks and Reference Marks)

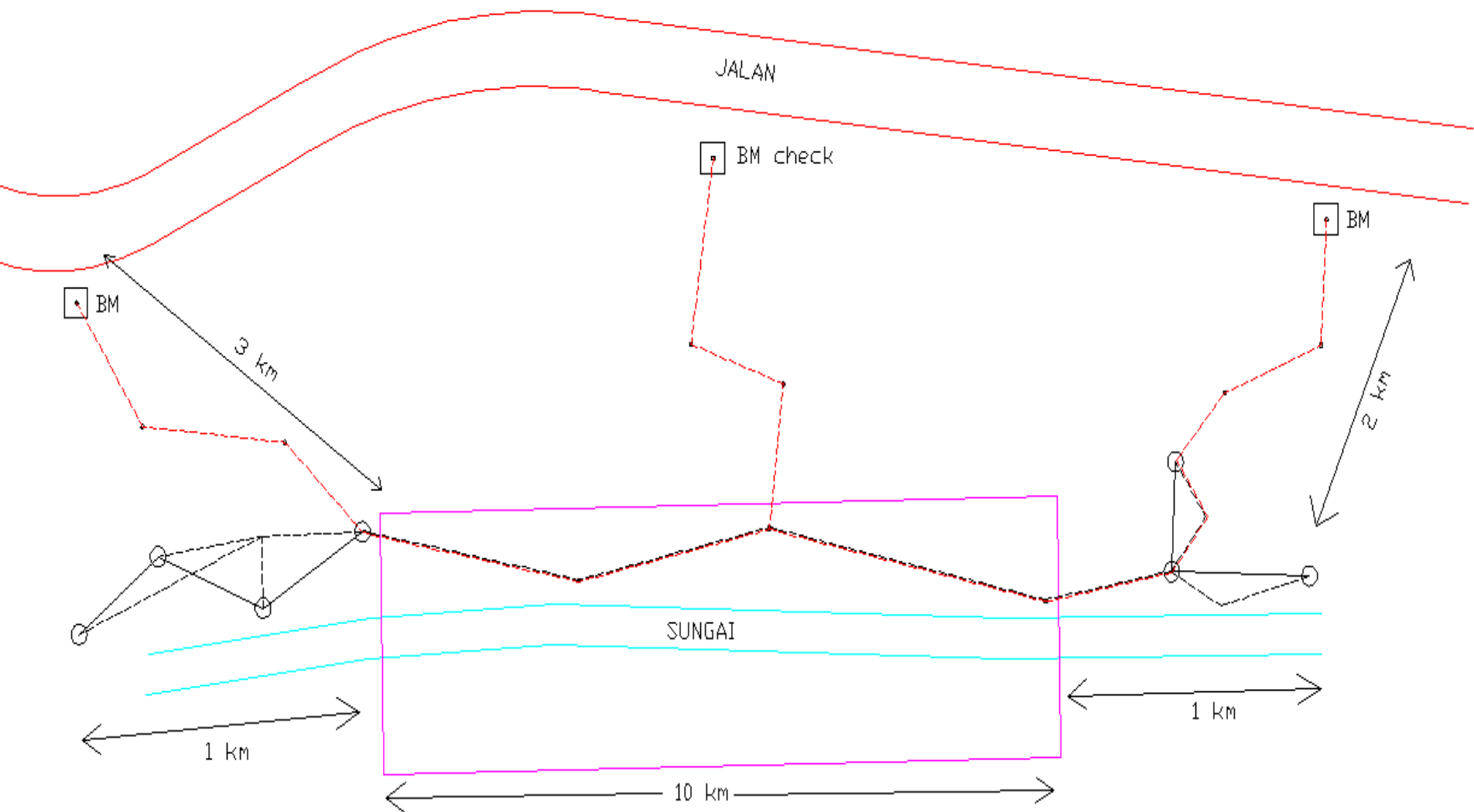
Monument Type	Marks Per Party-days	
	Accessible	Inaccessible
a. With concreting	4	2
b. Without concreting	5	3

1.7.2 Specification for Standard Monument

The temporary bench marks (TBM) standard monument shall be constructed out of a 1 metre length of 40 mm diameter galvanized iron pipe set in concrete of dimension 30cm x 30cm x 30cm. The TBM standard monument number and the value of the TBM must be written on the concrete.

1.7.3 Specification for Standard Monument without Concreting

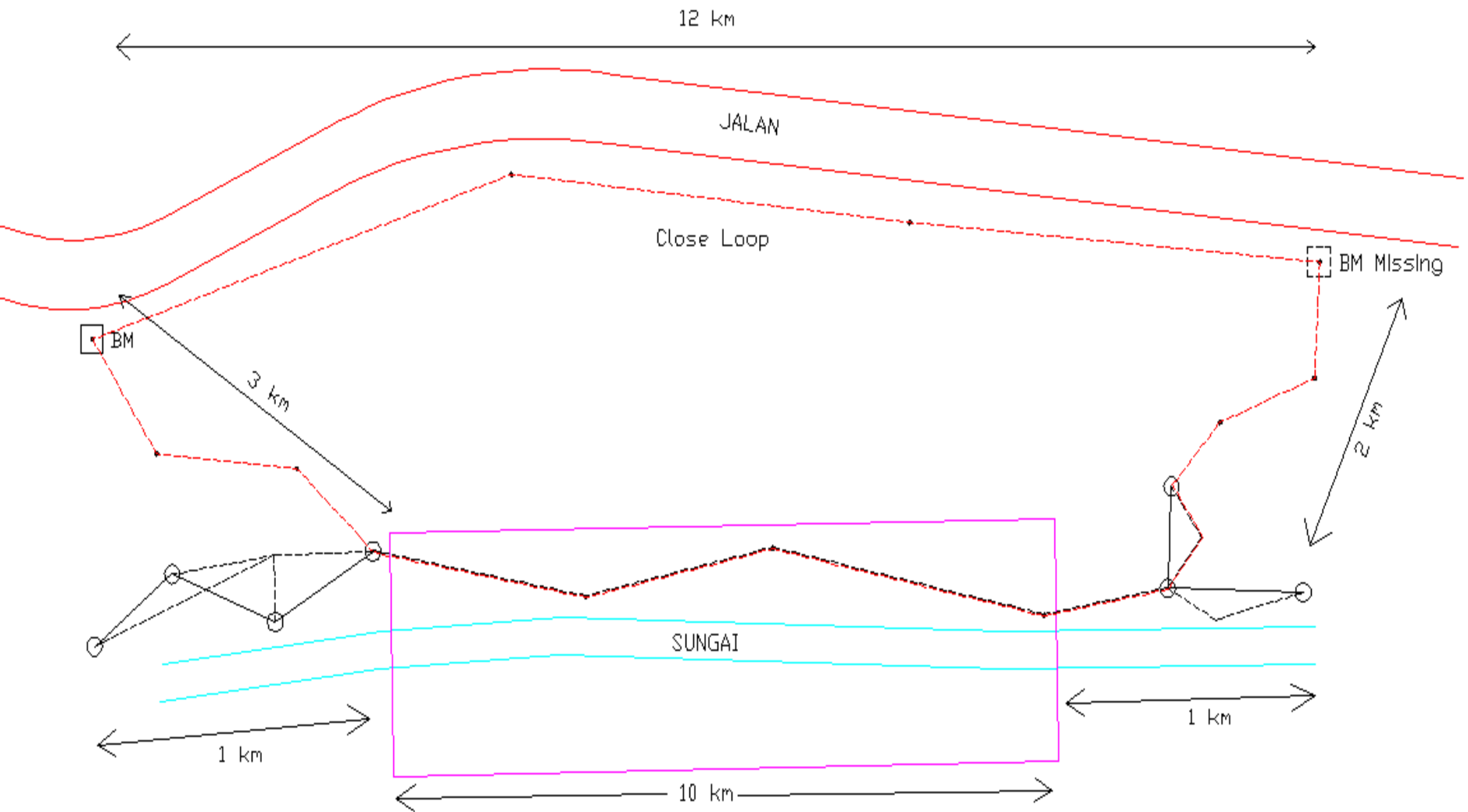
The temporary bench mark (TBM) standard monument shall be constructed out of a 1 metre length of 40 mm diameter galvanized iron pipe to be firmly embedded.



PLANIMETRIC & HEIGHT CONTROL

Planimetric = 1km + 10km + 1km = 12km

Height Control = 3km + 10km + 2km = 15km



PLANIMETRIC & HEIGHT CONTROL

$$\text{Height Control} = 3\text{km} + 10\text{km} + 2\text{km} + 12\text{km} = 27\text{km}$$

1.7.4 Non Standard Monument

In the event where the Surveyor is required to construct monuments according to non-standard specifications the charge shall be at actual cost.

1.8 *Survey in Security Areas*

- 1.8.1 Where security pass or permit has to be obtained from the authority, an additional charge of 25% of the total fees is applicable; or
- 1.8.2 Where armed escort is required and working hours are dictated by relevant authority, and additional fee of 50% of the total fees applicable; and
- 1.8.3 When there is a waiting time after mobilization an additional charge at RM900.00 per party-day shall be applicable.

1.9 Survey in Inaccessible Areas

Where the survey worksite is away from motorable road, the following charges are applicable:

Distance to Worksite from Motorable Road	Additional Charges
a. 0 kilometre to 2 kilometres b. More than 2 kilometres	No additional charge 20% of the total fees

1.10 Reimbursable

1.10.1 Reimbursable for out of pocket expenditure incurred are as follows:

- 1.10.1.1 Actual expenses incurred in purchase of relevant documents, plans, maps, record and etc.
- 1.10.1.2 Actual expenses incurred for telegrams, fax, telex, telephone calls and etc.
- 1.10.1.3 Hiring charge of special equipments and software packages as agreed with the client.

1.10.1.4 Expenses incurred in travelling, accommodation and subsistence allowance shall be as follows: -

i)	Travelling	Actual
	Air Fare	
	Mileage	50 cents per km
ii)	Hotel	Maximum RM 180.00 ++ per day
iii)	Subsistence Allowance	RM85.00 per day

1.11 *Preparation of Land Acquisition Plans*

1.11.1 Preparatory work as per 1.2

1.11.2 All certified plans and cadastral sheets purchased for the compilation / preparation of the land acquisition plans shall be charged as per item 1.10.3.1

1.11.3 The time involved for search at the Land Office and other Government Department will be charged at RM10.00 per hour plus traveling expenses chargeable as per item 1.10.3.4

1.11.4 Charge for computation and plan drawing shall be RM20.00 per lot subject to a minimum charge of RM400.00 per A1 size sheet

Conditions:

Land acquisition plans shall be compiled from the Survey Department cadastral sheet, and on the same scale. This drawing shall show:

- i) lot boundaries with bearings and distances within the surveyed corridor
- ii) lot numbers
- iii) lot areas
- iv) any other information normally shown on Survey Department cadastral survey sheets.

1.12 Processing, Conversion and Translation of Digital Data together with Quality Assurance

Where the survey result is required to be submitted in designated format, charge of 20% of the total survey fees is applicable.

DEFINITION

Part I

GENERAL ENGINEERING SURVEY

GENERAL ITEMS

Para 1.12

1.12 Processing, Conversion and Translation of Digital Data together with Quality Assurance

Where the survey result is required to be submitted in a designated format, a charge of 20% of the total survey fees is applicable.

Any survey result which involve processing, editing and restructuring the data into Three Dimensional (3D) Polyline data structure (lines, nodes and polygons - in 3D model e.g.. formally like JKR - want the MOSS GENIO format for their design and modeling), converted or transformed into any/other designated digital format (DXF,ASCII, DWG, SHP, TAB, TIFF, etc.), a charge of 20% of the total survey fees is applicable (excluding cost for Mobilization, Demobilization, and Preparatory work) .

JADUAL FEE UKUR KEJURUTERAAN 2001

■ EXPLANATION & CLARIFICATION

- 20% COST DIGITAL DATA
- COST FOR PROCESSING, CONVERSION AND TRANSLATION OF DIGITAL DATA TOGETHER WITH QUALITY ASSURANCE
 - INCLUDE RESTRUCTURING AND EDITING OF SURVEY DATA INTO TRUE 3D POLYLINE LIKE MOSS GENIO DATA STRUCTURE AND TRANSFORMED INTO ANY DATA FORMAT ESPECIALLY SUCH AS .DXF, ASCII, DWG, .SHP, .TAB, etc. FORMAT. A LIVE DATA.
 - TRANSFORMATION INTO ANY DATA FORMAT AND STRUCTURE
 - IF CUSTOMER ONLY REQUIRED DATA IN .DWG FORMAT DIRECT FROM SURVEY DRAWING DATA i.e. 2D, THEN THEY DO NOT HAVE TO PAY 20% COST FOR DIGITAL DATA

Similarly for Cadastral / Title Survey work

Vide federal Government Gazette PU(A) 169 dated 1 May 1997 Thirteenth Schedule (Regulation 99) Scale of Fees For Title Surveys

Table I
Survey of land for buildings

Para 3 (e)

- (e). Where the survey data is required to be submitted in digital format, an additional charge of 20% of the charges under paragraphs (b), (c) and (d) above is applicable.

For cadastral or title survey work is a straight forward case, that is any submission of survey data in digital format, the additional 20% charge is applicable. Which is now becomes standard submission to Jabatan Ukur dan Pemetaan Malaysia (JUPEM) starting with pre-computational plan and the application for Lot number until the final submission of Certified Plan (CP) for approval. Now the new eKadastral system embark by JUPEM is fully digital from field to finish (F2F).

1.13 *Transformation of Co-ordinates*

The charge shall be RM20.00 per point subject to a minimum charge of RM400.00 per job.

1.14 *Supply of Plans and Documents*

1.14.1 Plans and documents to be supplied to the client without charge shall be as follows:-

1.14.1.1 One (1) set of plan on tracing paper of weight 105/110 gms/sq m

1.14.1.2 Two (2) sets of paper prints

1.14.1.3 Digital data in DWG format

1.14.1.4 All relevant data, field book, drawing, calculation sheet, etc prepared in the execution of the contract.

Condition

Except 1.14.1.1 all other document shall bear the signature of the Licensed Land Surveyor

1.14.2 The cost for replotting any drawing on a different scale of A1 size is RM280 per sheet

1.14.3 Additional sets of transparencies or paper prints shall be supplied at the following

Type of Size of Plan	Charge per copy
Film transparency of A1 size	RM50.00
Tracing paper transparency of A1 size	RM30.00
Tracing paper transparency of A2 size or smaller	RM25.00
Paper print of A1 size or smaller	RM10.00



OTHER ISSUES

– *Reimbursable items*

- Professional Consultation, Meeting Attendance or Site Visit, Court Appearance etc. shall be chargeable at RM670.00 per day or RM100.00 per hour whichever is less.
- Expert witness in court – RM670.00 per attendance
- Reimbursements as follows:
 - Actual expenses incurred in purchase of relevant documents, plans, maps, record and etc.
 - Actual expenses incurred for telegrams, fax, telex, telephone calls and etc.
 - Hiring charge of special equipments and software packages as agreed with the client
 - Expenses incurred in travelling, accommodation and subsistence allowance shall be as follows: -

i)	Travelling	
	Air Fare	Actual
	Mileage	50 cents per km
ii)	Hotel	Maximum RM 180.00 ++ per day
iii)	Subsistence Allowance	RM85.00 per day
 - Expenses incurred in the use of special transportation e.g. helicopter, boat etc as agreed with the client.

14.10

Tidal Observation.

14.10.1

Automatic Water Level Recording

The lump sum cost per location per instrument.

Period	Installation	Measurement and Data Processing
14 days or less	RM 3,600	RM 5,000
30 days	RM 3,600	RM 12,200

Where the duration is less than 30 days but more than 14 days, the fees shall be computed proportionately. Where the duration is more than 30 days, then the fees shall be increased proportionately

Specification

- (i) Water level measurement with self-recording (automatic) water level recorder with the measurement recorded at not more than 15 minutes interval continuously for measurement period.
- (ii) The recorded data shall be down loaded at the end of the measurement period and process to produce tabulation of recorded water level in ASCII or MS EXCEL format.
- (iii) For the purposes of harmonic analysis of tidal data, a minimum of 30 days recorded data is recommended

14.10.2 Direct Reading

The cost in party day and lump sum.

Installation of Tide Pole RM 900.00

Tidal Observation RM 20.00 / hour subject to a minimum of 1 party day per job

Specification

- (i) Water level measurement by method of direct observation of a tide pole establish in the vicinity of the survey area with the tidal observations carried out at no more than 15 minutes interval.
- (ii) The observed data should be processed to produce tabulation of observed tidal levels in ASCII or MS EXCEL format.

14.11 Current Measurement

14.11.1 Self Recording Current Measurement

The Cost in Lump Sum per location per instrument.

Period	Installation	Measurement and Data Processing
14 days or less	RM 7,000	RM 19,600
30 days	RM 7,000	RM 39,500

Where the duration is less than 30 days but more than 14 days, the fees shall be computed proportionately. Where the duration is more than 30 days, then the fees shall be increased proportionately

Specification

- (i) A self-recording current meter shall be deployed at a designated location with a suitable mooring and recovery system (e.g. U-shape mooring)
- (ii) Measurement of current speed and direction using the self recording current meter deployed at designated depth within the water column at the designated location, with the measurement of current speed and direction at not more than 30 minutes interval continuously for the measurement period.
- (iii) The self-recording current meter must not be subject to befouling during the measurement period.
- (iv) The recorded data shall be down loaded at the end of the measurement period and process to produce tabulation of recorded current speed and direction in ASCII or MS EXCEL format.

14.11.2 Direct Reading

The cost per location.

Preparation and set up

RM 1,800

Direct observation of

RM 300/hour

Current Speed and Direction

subject to a minimum of
RM3,900 per job.

Specification

- (i) In-situ observation of the current speed and direction using a direct reading current meter at three depths within the water column (one meter below surface, mid depth, and one meter above the seabed) at one designated location. The current speed and direction will be observed at no more than 30 minutes interval.
- (ii) The measurement is normally carried out during spring and neap tidal condition and the measurement period shall not be less than 13 hours to sufficiently cover the basic tidal cycle.
- (iii) The observed data should be processed to produce tabulation of observed current speed and direction in ASCII or MSEXCEL format.

14.12 Seawater Temperature and Salinity Measurement

The cost per location.

Installation

RM 1,800

In-situ (direct) observation of Seawater Temperature and Salinity

RM 300 / hour subject

to a minimum of RM 3,900 per job.

Specification

- (i) In-situ observation of sea water temperature and salinity using direct reading temperature and salinity bridge at three depths within the water column (one metre below surface, mid depth, and one metre above the seabed.) at one designated location. The temperature and salinity will be observed at no more than 30 minutes interval.
- (ii) The measurement is normally carried out during spring and neap tidal condition and the measurement period shall not be less than 13 hours to sufficiently cover the basic tidal cycle.
- (iii) The observed data shall be processed to produce tabulation in ASCII or MS EXCEL format.

14.13 Seabed (Grab) Soil Sampling

Cost in Lump Sum per sample

RM 250 per sample subject to a minimum charge of RM 1,250

Specification

- (i) Seabed (Grab) soil sampling shall be carried out at designated location using appropriate grab sampler e.g. Van Der Veen type
- (ii) The seabed soil samples shall be sent to approved laboratory for particle size distribution (sieve analysis)

14.14 Seawater Sampling

Cost in Lump Sum per sample

RM 250 per sample subject to a minimum charge of RM 1,250

Specification

- (i) Seawater sample shall be collected using an appropriate water sampler at different depths within the water location at each designated location.
- (ii) Water sample shall be sent to an approval laboratory for total suspended solids analysis.

14.15 Processing, Conversion and Transformation to Designated Format with Quality Assurance

14.16 Preparation of Report and Submission

Cost in Percentage of Total Survey Fees chargeable.

5% of the total Survey Fees chargeable

A minimum fee is RM 2,500 per job.

14.16.1 Survey Report should include, as a minimum, the following

- (i) Scope of Work
- (ii) Personnel and Equipment
- (iii) Methodology
- (iv) Significant Events
- (v) Data Collected
- (vi) Results of laboratory analysis (if applicable)

14.16.2 Supply of Plans and Documents

Supply of Plans and Documents as per item 1.14 of Part I.

2. SITE SURVEY

2.1 Classification of Sites

Survey sites may include:-

- 2.1.1 Building sites
- 2.1.2 Dam sites
- 2.1.3 Sites for traffic interchanges and road junctions
- 2.1.4 Any site for development and construction

Fees for Sites Survey are as follows:-

2.2 Preparatory Work – 1 party day

2.3 Mobilization and Demobilization – as per item 1.3

2.4 Demarcation of Boundaries, Planimetric Control and Connection – as per item 1.5

2.5 Height Control and Connection – as per item 1.6

2.6 Monumenting – as per item 1.7 : applicable if work together with item 2.2, 2.3, 2.4 & 2.5

2.7 Survey in Security Areas – as per item 1.8

2.8 Survey in Inaccessible Areas – as per item 1.9

2.9 Reimbursable – as per item 1.10

2.10 Topographical Survey

2.10.1 Contour and Detail – work rates per party day as follows:

Classification of Terrain And Ground Condition	Contour Intervals		
	1 metre	2 metres	3 metres
Flat and Undulating area	1.25	1.50	1.75
Hilly area	-	0.75	1.00
Swampy area	1.00	1.25	1.50
Built up area	1.00	1.25	1.50

2.10.2 Grid Heighting – work rates per kilometer in party-days as follows:

Classification of Terrain And Ground Condition	Grid Interval (With detail)		Grid Interval (Without detail)	
	10 m	20 m	10 m	20 m
Developed area	5.00	2.50	2.50	1.25
Built up area	6.00	3.00	3.00	1.50
Undeveloped area	4.00	2.00	2.00	1.00
Swampy area	5.50	2.75	2.75	1.40

2.11 Minimum Fee – 2 p/days inclusive 1 p/day for preparatory work

2.12 Preparation of Land Acquisition Plans – as per item 1.11

2.13 Processing, Conversion and Translation of Digital Data together with Quality Assurance – as per item 1.12

2.14 Transformation of Co-ordinates – as per item 1.13

2.15 Supply of Plans and Documents – as per item 1.14

3. CROSS-SECTIONING WITH SOUNDING FOR BRIDGE SITES

- 3.1 Preparatory Work** – 1 p/day
- 3.2 Mobilization and Demobilization** – as per item 1.3
- 3.3 Planimetric Control and Connection** – as per item 1.5
- 3.4 Height Control and Connection** – as per item 1.6
- 3.5 Monumenting** – as per item 1.7 : applicable if together with 3.1 to 3.4
- 3.6 Survey in Security Areas** – as per item 1.8
- 3.7 Survey in Inaccessible Area** – as per item 1.9
- 3.8 Reimbursable** – as per item 1.10
- 3.9 Survey of Bridge Sites** – work rate 5.50 p/day/ per hectare, excluding generally wetted area : applicable if together with 3.1 to 3.5
- 3.10 Cross-Sectioning with Sounding** – rate applicable if cross sectioning with sounding is done together with 3.1 to 3.5

3.10.1 Depth of water less than 1 metre

Where the depth of water is less than 1 metre, the work rate shall be 8 party days per kilometer of cross-sectioning with spot level taken at 10 metres intervals. If the interval is less than 10 metres the fees shall be increased proportionately.

3.10.2 Depth of Water greater than 1 metre

3.10.2.1 Mobilization and demobilization of boat is RM600.00 per boat

3.10.2.2 Boat rental RM300.00 per boat per day.

3.10.2.3 Work rate for cross-sectioning shall be 8 party-day per kilometer of cross-sectioning with spot level taken at 10 metres intervals. If the interval is less than 10 metres the fees shall be increased proportionately.

3.11 *Preparation of Land Acquisition Plans* – as per item 1.11 together with 3.1

3.12 *Processing, Conversion and Translation of Digital Data together with Quality Assurance* – as per item 1.12

3.13 *Transformation of Co-ordinates* – as per item 1.13

3.14 *Supply of Plans and Documents* – as per item 1.14

4. ROAD AND RAILWAY SURVEY

4.1 Preparatory Work – 1 p/day

4.2 Mobilization and Demobilization – as per item 1.3

4.3 Planimetric Control and Connection – as per item 1.5

4.4 Height Control and Connection – as per item 1.6

4.5 Monumenting - – as per item 1.7 & together 4.1 to 4.4

4.6 Survey in Security Areas – as per item 1.8

4.7 Survey in Inaccessible Areas – as per item 1.9

4.8 Reimbursable – as per item 1.10

4.9 Survey of Strip with Spot Level and Detail – rates applicable with spot level at 20m interval done together with 4.1 to 4.5 and 4.11. Rates p/day in hectare as follows:

Classification of Terrain And Ground Condition	Rate
Developed area/flat & undulating area	2.0 ha / party-day
Built up area	1.5 ha / party-day
Undeveloped area / hilly area	1.5 ha / party-day
Swampy area	1.0 ha / party-day

4.10 Setting Out of Centre Line of Road and Railway – applicable if done together with 4.1 to 4.3

4.10.1 Setting out of center line of road and railway from IP to IP with chainage pegs at 20 metres intervals. : Rates in p/day per kilometer

Classification of Terrain And Ground Condition	Rate
Flat & Undulating area	2.75 party-days / km
Hilly area	4.25 party-days / km
Swampy area	4.25 party-days / km
Built up area	4.25 party-days / km

4.10.2 Setting out of center line of road and railway from IP to IP with 20 metres intervals chainage pegs and curve setting : Condition : chainage < 20m increase proportionately

Classification of Terrain And Ground Condition	Rate
Flat & Undulating area	3.75 party-days / km
Hilly area	5.50 party-days / km
Swampy area	5.50 party-days / km
Built up area	5.50 party-days / km

4.11 Connection to Reference Markers : rates applicable if together with 4.1 to 4.4

Rates for connection to reference markers shall be as follow:

4.11.1 Planimetric Connection - as per item 1.5

4.11.2 Height Connection - as per item 1.6

4.12 Longitudinal Profiling Along Established Chainage Pegs

Longitudinal Profiling is the determination of levels at the pegs established and is done together with item 4.10. The work rates in party-days per kilometer are as follows:-

Classification of Terrain And Ground Condition	Rate
Flat & Undulating area	1.75 party-days / km
Hilly area	3.00 party-days / km
Swampy area	3.00 party-days / km
Built up area	3.00 party-days / km

Condition

- (i) Levels to be taken at every 20 metres interval and at any points to indicate significant change in slope.
- (ii) Where the chainage interval is less than 20 metres then the fees shall be increased proportionately

4.13 Cross-sectioning – shall be carried out at the chainage pegs established and done together with 4.10 & 4.12

Classification of Terrain And Ground Condition	Rate
Flat & Undulating area	7 sections / party-day
Hilly area	4 sections / party-day
Swampy area	4 sections / party-day
Built up area	4 sections / party-day

Condition

- (i) Where the total width is more than 70 metres then the fees shall be increased proportionately

4.14 Setting Out of Reserve Boundaries

These rates are applicable if work item setting out of reserve boundaries is done together with items 4.10.

Classification of Terrain And Ground Condition	Rate
Flat & Undulating area	2.5 party-days / km
Hilly area	3.0 party-days / km
Swampy area	3.0 party-days / km
Built up area	3.0 party-days / km

Conditions

- (i) The above rates are only applicable when the setting out of the reserve boundary is carried out together with the setting out of the center line. Otherwise the normal rates for planimetric control and connection as per item 1.5 shall apply.
- (ii) Hard wood pegs to be planted at turning points and jungle roller pegs at intermediate points on the reserve at about 100 meters 7 intervals.
- (iii) For reserve width of 60 meters or less, fees shall be charged according to the distance measured along the center-line of the reserve.
- (iv) For reserve width of more than 60 meters, or where the setting out has to be carried out along both sides of the reserve, fees shall be charged according to planimetric control and connection rates as per item 1.5 measured along both sides of the reserve.

4.15 Preparation of Land Acquisition Plans – as per item 1.11 together with 4.1

4.16 Processing, Conversion and Translation of Digital Data together with Quality Assurance – as per item 1.12

4.17 Transformation of Co-ordinates – as per item 1.13

4.18 Supply of Plans and Documents – as per item 1.14

4.18.1 Types of Plans to be Supplied

4.18.1.1 Location plan of the survey area at a suitable scale such that the area under study can be shown in a single standard size sheet. The chainages of the alignment shall be indicated for ease of cross referencing with the detail plans.

4.18.1.2 Longitudinal profile and plan shall show details of ground levels, chainages and all features as required, the survey stations along the center-line of the road, IPs, locations of the cross-sections taken, reference points and bench marks. All items shall be clearly indicated and referenced. The longitudinal profile shall be at a scale of:

1 : 1000 (horizontal)

1 : 100 (vertical)

The drawing on plan view shall be to scale of 1 : 1000

4.18.1.3 Drawing of all the cross-sections taken along the centre line of the proposed road, plotted in consecutive order, to a scale of 1 : 100 both horizontal and vertical. The drawings shall show details of ground levels and distances from the centre line of pavement, shoulders, etc

4.18.1.4 All formats of plans submitted shall conform to accepted practice. All drawings shall be on A1 size unless otherwise agreed.

5. PIPELINE SURVEY

Fees for Pipeline Survey are as follows:-

5.1 Preparatory Work

Work rate for preparatory work is 1 party-day.

5.2 Mobilization and Demobilization

Work rates for mobilization and demobilization shall be as per item 1.3

5.3 Planimetric Control and Connection

Rates for planimetric control and connection shall be as per item 1.5

5.4 Height Control and Connection

Work rates for height control and connection shall be as per item 1.6

5.5 Monumenting

Work rates for monumenting shall be as per item 1.7. These rates are applicable if work item monumenting is done together with items 5.1, 5.2, 5.3 and 5.4.

5.6 Survey in Security Areas

Work rates for survey in security areas shall be as per item 1.8

5.7 Survey in Inaccessible Areas

Work rates for survey in inaccessible area shall be as per item 1.9

5.8 Reimbursable

The charge for reimbursable shall be as per item 1.10

5.9 Setting Out of Pipeline

Setting out of Pipeline from IP to IP with chainage pegs at 20 metres intervals. These rate are applicable if work item setting out of pipeline is done together with items 5.1, 5.2, 5.3, 5.4 and 5.5.

Work rates in p/day per kilometer as follows:

Classification of Terrain And Ground Condition	Along Existing Road	Other areas
Flat & Undulating area	3.00 party-days / km	3.75 party-days / km
Hilly area	3.75 party-days / km	5.00 party-days / km
Swampy area	3.75 party-days / km	5.00 party-days / km
Built up area	3.75 party-days / km	5.00 party-days / km

5.10 Longitudinal Profiling

Longitudinal Profiling is the determination of levels at the pegs established and is done together with 5.9. The work rates in party-days per kilometer are as follows:-

Classification of Terrain And Ground Condition	Along Existing Road	Other areas
Flat & Undulating area	1.25 party-days / km	1.5 party-days / km
Hilly area	2.00 party-days / km	2.5 party-days/ km
Swampy area	2.00 party-days/ km	2.5 party-days/ km
Built up area	2.00 party-days/ km	2.5 party-days/ km

Conditions

- (i) Levels along center-line of the pipeline route to be taken at 20 metre intervals and at points necessary to show any significant changes in slope.
- (ii) Longitudinal sections along the pipeline route shall be drawn to a scale of:
 - 1 in 100 (vertical)
 - 1 in 1000 (horizontal)
- (iii) At all streams, bridge and culvert crossings the following information shall be obtained:
 - (a) Section of streams along the pipeline center-line giving levels at intervals sufficiently close to show the bed levels.
 - (b) The soffit level of the longitudinal beam of the bridges, together with their spans and the locations of the columns.
 - (c) The invert levels and the crown levels of all culverts.

5.11 Survey of Site with 0.5 metre Contour and Detail

These rates are applicable if work item survey of site with spot level at 20m interval and detail is done together with items 5.1, 5.2, 5.3, 5.4 and 5.5.

5.11.1 0.5 meter contour and detail survey 0.75 ha/party-days

5.11.2 The charge for minimum fees shall be as per item 2.11.

5.12 Cross-Sectioning

The charges for cross-sectioning shall be as per item 4.13.

5.13 Survey of Strip with Spot Level and Detail

The charges for survey of strip with 2 meter contour interval and detail shall be as per item 4.9.

5.14 Setting out of Reserve Boundaries

The fees for setting out of reserve boundaries shall be as per item 4.14.

5.15 Preparation of Land Acquisition Plans

The charges for preparation of land acquisition plans shall be as per item 1.11.

These rates are applicable if work item preparation of land acquisition plans is done together with items 5.1.

5.16 Processing, Conversion and Translation of Digital Data together with Quality Assurance

Where the survey result is required to be submitted in a designated format, the charge shall be as per item 1.12.

5.17 Transformation of Co-ordinates

The charges for conversion and transformation of co-ordinates shall be as per item 1.13.

5.18 Supply of Plans and Documents

The charge for supply of plans and documents shall be as per item 1.14.

PART II

ENGINEERING SURVEY FOR DRAINAGE AND IRRIGATION

6. CLASSIFICATION OF TERRAIN AND GROUND CONDITION

The following classification of terrain shall be applied:

- 6.1 Developed area refers to an area currently planted with padi.*
- 6.2 Built-up area refers to an area with man-made structures such as building, road, fence, drain, hedge, cutting, embankment etc.*
- 6.3 Undeveloped area refers to any area other than that referred to in 6.1 and 6.2 above.*
- 6.4 Swampy area refers to generally wetted area at the time of survey whether temporary or permanent in nature.*
- 6.5 Tidal area refers to an area subjected to inundation by tides.*

7. SITE SURVEY

Fees for Site Survey are as follow:-

7.1 Preparatory work for Site Survey.

Work rate for preparatory work is 1 party-day.

7.2 Mobilization and Demobilization

Work rates for mobilization and demobilization shall be as per item 1.3.

7.3 Planimetric Control and Connection

Rates for planimetric control and connection shall be as per item 1.5.

7.4 Height Control and Connection

Work rates for height control and connection shall be as per item 1.6.

7.5 Monumenting

Work rates for monumenting shall be as per item 1.7. These rates are applicable if work item monumenting is done together with items 7.1, 7.2, 7.3 and 7.4.

7.6 Survey in Security Areas

Work rates for survey in Security areas shall be as per item 1.8

7.7 Survey in Inaccessible Areas

Work rates for survey in inaccessible areas shall be as per item 1.9

7.8 Reimbursable

The charge for reimbursable shall be as per item 1.10

7.9 Topographical Survey

These rates are applicable if work item topographical survey is done together with items 7.2, 7.3, 7.4, 7.5 and 7.6

7.9.1 Contour and Detail – rate per p/days in hectares as follows:

Classification of Terrain and Ground Condition	Contour Interval		
	1 metre	2 metres	3 metres
Flat and Undulating area / develop	1.25	1.50	1.75
Hilly area / undeveloped	-	0.75	1.00
Swampy area	1.00	1.25	1.50
Built up area	1.00	1.25	1.50

7.9.2

Grid Survey

Cost in party-day per kilometre

Classification of Terrain and Ground Condition	Base Line and Height Control	Grid line with Spot Levels at intervals of		
		25 meters	50 meters	100 meters and above
Developed area	2.50	2.00	1.75	1.50
Built up area	3.00	3.00	2.75	2.50
Undeveloped area	3.25	2.50	2.25	2.00
Swampy area	4.00	3.50	3.25	3.00
Tidal area	4.50	4.00	3.75	3.50

7.10 *Minimum Fee for Site Survey*

The minimum fees shall be 2 party-days which is inclusive of 1 party-day for preparatory work. The method of survey shall be left to the professional discretion of the Licensed Land Surveyor.

7.11 *Preparation of Land Acquisition Plans*

The charge for preparation of land acquisition plans shall be as per item 1.11.

7.12 *Processing, Conversion, and Translation of Digital Data together with Quality Assurance*

Where the survey result is required to be submitted in designated format, the charge shall be as per item 1.12 .

7.13 *Transformation of Co-ordinates*

The charges for conversion and transformation of co-ordinates shall be as per item 1.13

7.14 *Supply of Plans and Documents*

The charge for supply of plans and documents shall be as per item 1.14.

WATERWAYS SURVEY

8.1 Preparatory work – 1 p/day

8.2 Mobilization and Demobilization - as per item 1.3

8.3 Planimetric Control and Connection - as per item 1.5

8.4 Height Control and Connection - as per item 1.6

8.5 Monumenting - as per item 1.7 and together 8.1 to 8.4

8.6 Survey in Security Areas - as per item 1.8

8.7 Survey in Inaccessible Areas - as per item 1.9

8.8 Professional Consultancy Fees and Reimbursibles - as per item 1.10

8.9 Survey of Strip with Detail – applicable if together 8.1 to 8.5
Work rates per p/day in hectare

Classification of Terrain and Ground Condition	Rate
Developed area / flat & undulating area	2.00 ha / party-days
Built up area	1.50 ha / party-days
Undeveloped area / hilly area	1.50 ha / party-days
Swampy area	1.00 ha / party-days
Tidal area	0.75 ha / party-days

8.10 *Setting Out of Centre Line of Proposed Route, Waterways, Canals and Drains* – cost p/day per km applicable together with 8.1 to 8.5 & 8.9

Classification of Terrain and Ground Condition	Setting Out	Longitudinal Section with Spot Levels at interval of		Cross section at 50m intervals for surveyed width of		
		50 m	100 m	50m	75 m	100 m
Developed area	2.75	1.25	1.00	1.75	2.00	2.25
Undeveloped area	4.25	1.75	1.00	2.00	2.50	3.00
Built up	4.25	2.00	1.75	2.00	2.50	3.00
Swampy area	4.25	2.25	2.00	2.75	3.25	3.75
Tidal area	4.75	2.50	2.25	3.00	3.50	4.00

8.11 *Survey of Existing Route, Waterways, Canals and Drains* - 8.1 to 8.5 & 8.9

Classification of Terrain and Ground Condition	Alignment Survey	Longitudinal Section with Spot Levels at interval of		Cross section at 50 m intervals for surveyed width of		
		50 m	100 m	50m	75 m	100 m
Developed area	3.00	1.75	1.50	2.25	2.50	2.75
Undeveloped area	3.50	2.25	2.00	2.50	3.00	3.50
Built up	3.50	2.50	2.25	2.50	3.00	3.50
Swampy area	3.50	2.75	2.50	3.25	3.75	4.25
Tidal area	4.25	3.00	2.75	3.50	4.00	4.50

Specifications:

- (i) Setting out of center line from IP to IP of proposed or existing where applicable of route, waterways, canals and drains shall be carried out at 50 metres interval.
- (ii) Where the interval of setting out is less or more than 50 metres then the fees shall be increased or decreased proportionately.
- (iii) Only x and y coordinates of the setting out markers are to be supplied.
- (iv) Longitudinal section survey of existing route, waterways, canals and drains include taking of levels of the right and left banks.
- (v) Levels shall be taken along alignment at every 50 metres interval and at points necessary to show significant change in slope.
- (vi) Cross section survey shall be carried out at intervals of 50 metres and across corridor width of 50 metre.
- (vii) Where the width of corridor and intervals is more or less than 50 metres then the fees shall be increased or decreased proportionately.
- (viii) If the depth of the route, waterways, drains and canals at the time of survey is more than 1 metre the charge shall be as per item 3.10.2 of Part 1.

8.12 Site Survey

Cost in p/day per site

Classification of Terrain and Ground Condition	Rate for Site of 150m x 150m
Developed area	2.5 party-day / site
Undeveloped area	3.5 party-day / site
Built up area	3.5 party-day / site
Swampy area	3.5 party-day / site
Tidal area	3.5 party-day / site

Conditions:

- (i) Cross-section survey shall be carried out at intervals of 50 metre and across corridor width of 50 metre.
- (ii) Where the width of corridor and intervals is more than 50 metres then the fees shall be increased proportionately.
- (iii) If the depth of the waterways at the time of survey is more than 1 metre the charge shall be as per item 3.10.2 .

8.13 *Setting-out of Waterways Reserve* – cost in p/days per kilometer - applicable together with 8.1 to 8.3 and 8.10

Classification of Terrain and Ground Condition	Rate
Developed area	2.5 party-days / km
Built up area	3.0 party-days / km
Undeveloped area	3.0 party-days / km
Swampy area	3.0 party-days / km
Tidal area	3.5 party-days / km

Conditions:

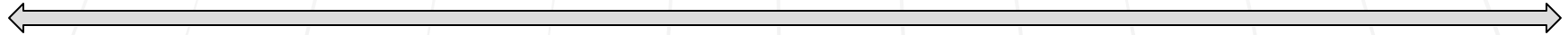
- (i) The above rates are only applicable when the setting out of the reserve boundary is carried out together with the setting out of the centre line. Otherwise the normal rates for planimetric control and connection as per item 1.5 shall apply.
- (ii) Hard wood pegs to be planted at turning points and jungle roller pegs at intermediate points on the reserve at about 100 metre intervals and where the intervals is less than 100 metres the fees shall be increased proportionately.
- (iii) For reserve width of 60 metres or less, fees shall be charged according to the distance measured along the centre-line of the reserve.
- (iv) For reserve width of more than 60 metres, or where the setting out has to be carried out along both sides of the reserve, fees shall be charged according to planimetric control and connection rates as per item 1.5 measured along both sides of the reserve.

8.14 Preparation of Land Acquisition Plans - as per item 1.11

8.15 Processing, Conversion and Translation of Digital Data together with Quality Assurance - as per item 1.12

8.16 Transformation of Co-ordinates - as per item m1.13

8.17 Supply of Plans and Documents - as per item 1.14



PART III

ENGINEERING SURVEY FOR TRANSMISSION LINE

9. CLASSIFICATION OF TERRAIN AND GROUND CONDITION

The following classification of terrain shall be applied:

9.1 Flat and undulating area refers to an area with terrain of up to 10 slopes.

9.2 Hilly area refers to an area with terrain exceeding 10 slopes.

9.3 Swampy area refers to generally wetted area at the time of survey whether temporary or permanent in nature.

9.4 Built-up area refers to an area with man-made structures such as buildings, road, fence, drain, hedge, cutting, embankment etc.

TERIMA KASIH