KURSUS PENGENALAN PENGURUSAN DAN PEMBINAAN PROJEK JALAN

PEMAHAMAN REKABENTUK JALAN

- REKABENTUK TERPERINCI -

Ir. MOHD KHAIRUUL KHAIR SHAH B ABDULLAH SANI
BAHAGIAN REKABENTUK JALAN ZON TENGAH
PAKAR KEJURUTERAAN JALAN & JAMBATAN
CAWANGAN JALAN, IBU PEJABAT JKR MALAYSIA

BILIK KULIAH AL-FARABI, CREATE MELAKA | 26 JANUARI 2021

ISU SEMASA – DI MANA SILAPNYA KITA…

ISU SEMASA – DI MANA SILAPNYA KITA…

· 11h

Lepas aku baca tweet ni, aku harap banyak lagi menteri2 lain jatuh tergolek dog di semua jalan2 rosak di sekitar Malaysia, terutama Sabah/Sarawak.

7 97 332

Show replies

· 18h

Replying to @Khairykj

Sementara duk jadi menteri ni tolong la ambil benda ni serius bawa isu ke parliament banyak kali report dekat pbt jkr buat tak endah ja. Takkan nak harap lando brotherhood . Ni gambar saya accidents jalan macam tokang pecah.

8 78 365

ISU SEMASA – DI MANA SILAPNYA KITA…

ISU SEMASA – DI MANA SILAPNYA KITA…

ISU SEMASA – DI MANA SILAPNYA KITA…

Permohonan maaf kepada KJ di Twitter disifatkan pilih kasih

Netizen kecam JKR

LAMAN sosial Twitter dan Facebook rasmi Jabatan Kerja Raya (JKR) Kuala Langat semalam diserang netizen yang rata-rata tidak berpuas hati dengan permohonan maaf kepada Menteri Sains Teknologi dan Inovasi, Khairy Jamaluddin Abu Bakar yang disifatkan sebagai layanan *double standard*.

JKR Kuala Langat meminta maaf kepada Khairy Jamaluddin atau KJ yang cedera pada kening dan hidung selepas terjatuh ketika mengayuh basikal di laluan tidak rata dan berlubang di Jalan Kampung Sri Cheeding, Banting, Selangor kelmarin.

• LAPORAN DI MUKA 2

JALAN berlubang di Kampung Sri Cheeding, Banting terus diturap selepas Khairy terjatuh ketika mengayuh basikal kelmarin.

KEADAAN Khairy yang cedera selepas terjatuh.

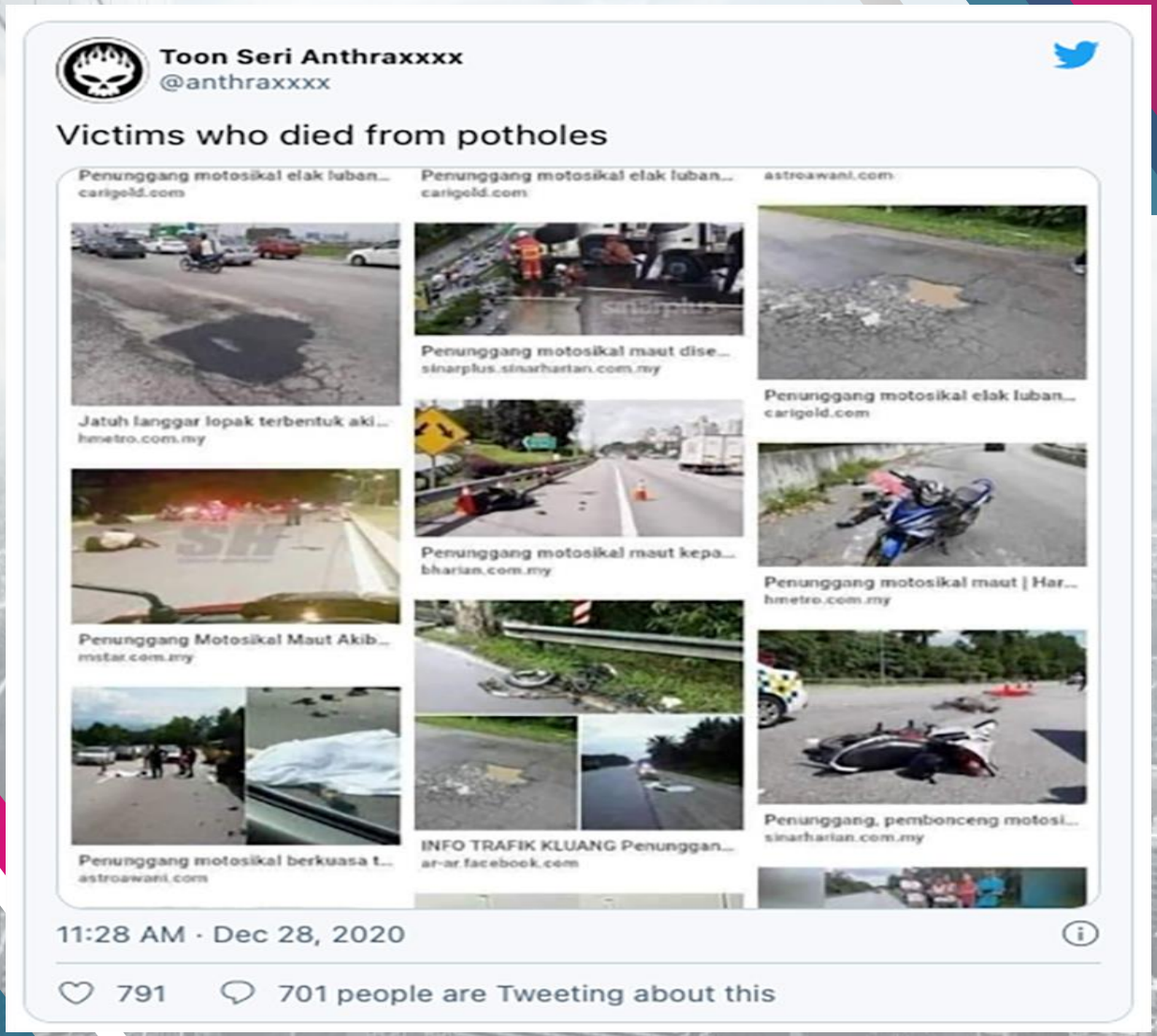
ISU SEMASA – DI MANA SILAPNYA KITA…

Informasi

‘Badan Sakit, Motor Jahanam…’ Lagi Kes Jalan Berlubang

By **admin** - January 16, 2021

ISU SEMASA – DI MANA SILAPNYA KITA…



ISU SEMASA – DI MANA SILAPNYA KITA…

ISU SEMASA – DI MANA SILAPNYA KITA…

Di US,
ia menyebabkan
kerugian kepada 16 juta
pemandu

Di India, akibatkan
kematian 3 ribu orang

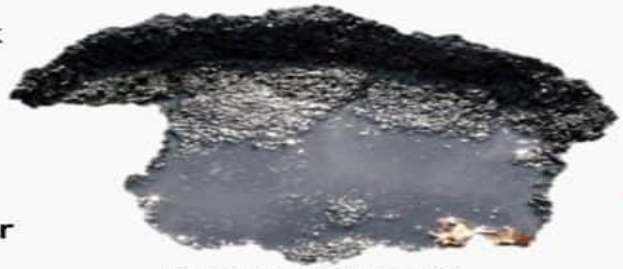
Tanggungjawab
siapa?

JKR

PBT

Akta Jalan, Parit Dan
Bangunan 1974 (Akta 133)

Kesan
- Tayar rosak
  kemek
- Stering
hilang
alignment
- Ekzos bocor
- Kereta
kemek



Public Health Malaysia

Kecederaan
tengkuk &
tulang
belakang

Kecederaan
kepala dan
kematian

POTHOLE

Bukan Sekadar
Lubang Jalan Raya

**Laporkan Lubang Jalan Raya
dan Pastikan ia dibaiki SEGERA!**

ISU SEMASA – DI MANA SILAPNYA KITA…

ISU SEMASA – DI MANA SILAPNYA KITA…

MyHuluselangor

Visit group | Like | Message

Videos

See all

Tolong Jangan menyusahkan orang lain. ...

349

26.3K views · a week ago

Page transparency

See all

Facebook is showing information to help you better understand the purpose of a Page. See actions taken by the people who manage and post content.

Page created – 19 May 2014

Add your business to Facebook

Showcase your work, create ads and connect with customers or supporters.

Create Page

MyHuluselangor
23 January at 09:13 ·

Kemalangan Langgar Tembok Sempadan.

Rim motor Lipat tegak. Mungkin jkr boleh letak lampu Kuning kelip2 dekat tembok Batu (welding terus pun tak pa). Keadaan Mangsa tidak dapat dipastikan, Min sampai Motor je Ada, Jadi maklum Kan pada jiran2, kawan2 cakap tembok Batu belum dialihkan, Jadi berhati-hati. Terutama Yang bawa motor balik kerja lalu tembok ni diwaktu Malam,

MyHuluselangor
Majlis Keselamatan Negara
Jabatan Kerja Raya Daerah Hulu Selangor

953

308 comments 557 shares

ISU SEMASA – DI MANA SILAPNYA KITA…

ISU SEMASA – DI MANA SILAPNYA KITA…

JkrKualaLangat
@JkrKualaLangat

Replying to @Khairykj

JKR Kuala Langat memohon maaf ke atas kejadian yang menimpa YB. Menteri dan akan mengambil tindakan segera ke atas isu berkenaan dan mendoakan YB cepat sembuh.

Translate Tweet

8:42 PM · Dec 27, 2020 · Twitter for Android

153 Retweets **1.1K** Quote Tweets **251** Likes

ISU SEMASA – DI MANA SILAPNYA KITA…

JASA YANG SATU DILUPAKAN – DI MANA SILAPNYA…

KITAR HAYAT PROJEK

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

DEFINASI JKR

JANGKAMASA – TEMPOH PELAKSANAAN / PENYIAPAN SESUATU PROJEK.

KOS – PELAKSANAAN PROJEK MENGIKUT KOS YANG DILULUSKAN.

REKABENTUK – REKABENTUK YANG OPTIMUM BERDASARKAN KUALITI DAN SPESIFIKASI YANG DITETAPKAN.

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

KAEDAH PELAKSANAAN

KONVENSIONAL DALAMAN.

KONVENSIONAL PERUNDING.

REKA DAN BINA.

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

PIAGAM PELANGGAN

JABATAN KERJA RAYA MALAYSIA

IBU PEJABAT JABATAN KERJA RAYA MALAYSIA, JALAN SULTAN SALAHUDDIN, KUALA LUMPUR
P. 03 2610 8888 / 2618 9000 • F. 03 2618 8799 • W. www.jkr.gov.my • E. komunikasi.jkr@1govuc.gov.my

SMS: JKR 'aduan anda' ke 32728 | Emel: aduan.jkr@1govuc.gov.my | Web: https://aduan.jkr.gov.my

1.0 PENGURUSAN PROJEK

FASA PRA-PEMBINAAN

Tertakluk kepada syarat-syarat tiada masalah tapak, peruntukan yang mencukupi, skop projek yang diluluskan oleh Unit Perancang Ekonomi (EPU), JPM dan kelulusan *Value Assesment* (VA) telah diperolehi, tempoh perancangan hingga iklan adalah seperti berikut:

Projek		Jenis Rekabentuk dan Tempoh		
a	Bangunan	Pelan PAP tanpa pindaan	Lain-lain	Reka & Bina
		6 Bulan	10 Bulan	4 Bulan

Projek		Kos dan Tempoh		
b	Jalan dan Infrastruktur	Kurang dari RM 50 juta	Melebihi RM50 juta	Reka & Bina
		10 Bulan	14 Bulan	4 Bulan
c	Projek Kompleks (Jalan, Cerun, Bangunan, Pangkalan Udara, Maritim, Pengangkutan Darat dll.)	Tempoh yang dipersetujui bersama pelanggan		

Tertakluk kepada syarat-syarat tiada masalah tapak, peruntukan yang mencukupi, skop projek yang diluluskan oleh Unit Perancang Ekonomi (EPU), JPM, kelulusan *Value Assesment* (VA) dan Kementerian Kewangan Malaysia telah diperolehi, tempoh perancangan hingga iklan adalah seperti berikut:

Projek		Jenis Rekabentuk dan Tempoh		
d	Hospital	76 Katil	120 dan 200 katil	300 katil (Reka & Bina)
		10 Bulan	15 Bulan	4 Bulan

Nota:
Tempoh maksimum daripada tarikh Iklan sehingga tarikh Surat Setuju Terima Tender adalah 3 bulan

FASA PEMBINAAN

Tertakluk kepada syarat-syarat semua pengambilan balik tanah telah selesai, tiada halangan di atas tapak projek dan peruntukan disediakan mencukupi dalam tempoh kontrak, projek dalam pembinaan akan disiapkan seperti berikut:

Projek		Kos dan Tempoh		
a	Bangunan	RM500 ribu ke bawah	RM500 ribu – RM20 juta	Melebihi RM20 juta
		12 Bulan	24 Bulan	36 Bulan

b	Jalan dan Infrastruktur	RM500 ribu ke bawah	RM500 ribu – RM20 juta	RM20 juta – RM50 juta	Melebihi RM50 juta
		9 Bulan	22 Bulan	36 Bulan	42 Bulan
c	Projek Kompleks (Jalan, Cerun, Bangunan, Pangkalan Udara, Maritim, Pengangkutan Darat dll.)	Disiapkan dalam tempoh dan kos yang dipersetujui bersama pelanggan			

Projek		Jenis Rekabentuk dan Tempoh		
d	Hospital	76 Katil	120 dan 200 katil	300 katil (Reka & bina)
		36 Bulan	42 Bulan	48 Bulan

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

DEFINASI

REKABENTUK KONSEP - MERUPAKAN REKABENTUK YANG DIHASILKAN DARI BRIF PROJEK YANG DITERIMA DARIPADA PELANGGAN DAN MAKLUMAT TAPAK.

REKABENTUK AWALAN - MERUPAKAN PEMBANGUNAN DARIPADA REKABENTUK KONSEP DENGAN MENGAMBILKIRA MAKLUMAT DAN KEPERLUAN TEKNIKAL.

REKABENTUK TERPERINCI - MERUPAKAN PEMBANGUNAN DARIPADA REKABENTUK AWALAN DENGAN MENGAMBILKIRA MAKLUMAT DAN KEPERLUAN TEKNIKAL UNTUK TUJUAN PEMBINAAN.

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

A. PERINGKAT PERANCANGAN

- TERIMA BRIF PROJEK DARI HOPT
- SEMAK BRIF PROJEK
- VERIFIKASI HARTA PELANGGAN
- SEDIA D-PLAN
- LAKSANA ANALISIS SUMBER
- LANTIK PASUKAN REKABENTUK
- LAKSANA LAWATAN TAPAK

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

B. PERINGKAT REKABENTUK

REKABENTUK KONSEP

- TERIMA BRIF PROJEK & SURAT LANTIKAN HODT
- LAWATAN TAPAK
- SEDIA CADANGAN REKABENTUK KONSEP & ANGGARAN AWAL
- AUDIT KESELAMATAN JALAN PERINGKAT I (RSA I)
- MESYUARAT RSA I
- MESYUARAT REKABENTUK KONSEP
- KEPUTUSAN MESYUARAT – JAJARAN MUKTAMAD
- KAJIAN SEMULA REKABENTUK

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

B. PERINGKAT REKABENTUK

REKABENTUK AWALAN

- PERMOHONAN PERLANTIKAN JURUKUR
- SEMAK KESAHIHAN DATA UKUR
- SEDIA LUKISAN REKABENTUK AWALAN
- LAKSANA AUDIT KESELAMATAN JALAN PERINGKAT 2 (RSA 2)
- MESYUARAT RSA 2
- MESYUARAT REKABENTUK AWALAN
- KAJIAN SEMULA REKABENTUK

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

B. PERINGKAT REKABENTUK

REKABENTUK TERPERINCI

- SEDIA LUKISAN REKABENTUK TERPERINCI
- AUDIT KESELAMATAN JALAN PERINGKAT 3 (RSA 3)
- MESYUARAT RSA 3
- MESYUARAT REKABENTUK TERPERINCI
- AUDIT *COMPLIANCE*
- SEDIA SENARAI KUANTITI, ANGGARAN JABATAN (P.D.A) & NASKAH MEJA TAWARAN (TTD)
- VERIFIKASI REKABENTUK MELALUI VALUE ENGINEERING

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

C. PELAN PENGAMBILAN BALIK TANAH (PBT)

- KENALPASTI SEMPADAN HAD KERJA/*RIGHT OF WAY (R.O.W)*
- SEDIA PELAN PENGAMBILAN BALIK TANAH – OPTIMUMKAN PENGAMBILAN TANAH
  - SIJIL CARIAN RASMI
  - DAFTAR E-TAPP (KKR)
  - 40 SALINAN PELAN PBT
    - 10 KKR
    - 26 JKPTG
    - 4 HOPT/HODT

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

D. PENYEDIAAN LUKISAN PEMBINAAN

- SEDIA 5 SALINAN LUKISAN PEMBINAAN (2 A1 & 3 A3)
- HOPT, PEJABAT TAPAK, KONTRAKTOR, PP/WPP
- COP "LUKISAN PEMBINAAN" ATAU "CONSTRUCTION DRAWING" BERWARNA MERAH DI SETIAP SALINAN
- PINDAAN REKABENTUK SEMASA PEMBINAAN PERLU RUJUK SISTEM PENGURUSAN BERSEPADU (SPB) - JKR.PK(O).04-17A / 17B ATAU 17C

PERANCANGAN DAN PROSES KERJA REKABENTUK (KONVENSIONAL)

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

Input

1. Arahan Teknik
2. Piawaian /Spesifikasi
3. Peraturan/Perundangan
4. Arahan Jabatan
5. KPPF

Terima Rekabentuk Awalan Yang Dipersetujui Sedia Rekabentuk Terperinci

1. Brif Projek
2. Q-Plan
3. Rekabentuk Awalan
4. Kos Awalan.

INPUT

HODT

Kenalpasti Sistem/ Ciri Rekabentuk Yang Dipilih

Kenalpasti Bahan Dan Spesifikasi Yang Dipilih

HODT

HOPT/HODT

Pengiraan Rekabentuk Dan Sedia Spesifikasi Jika Perlu

Sedia Lukisan Rekabentuk Terperinci /Dan Spesifikasi Termasuk No. Lukisan

HOPT/ HODT

OUTPUT

1. Lukisan Rekabentuk Terperinci Dan Spesifikasi (Jika Perlu)
2. Pengiraan Rekabentuk Dan Sedia Spesifikasi (Jika Perlu)

PROSES KERJA REKA BENTUK

RUJUK - JKR.PK(O).02

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

1. Kendali Mesyuarat Penyelarasan Antara Disiplin /
2. Penyelarasan Rekabentuk Terperinci

Kajian Semula Reka Bentuk.
Rujuk Borang JKR.PK(O).O2-2A

HODT

HOPT

Pantau, Kawal Dan Sedia: Laporan Status Risiko

Mesyuarat Verifikasi Rekabentuk Rujuk Borang JKR.PK(O).02-2A (Ahli Mesyuarat: HODT/HOPT) Tentukan No. Indeks Lukisan.

HOPT/HODT

HOPT

Laksana VE jika Berkenaan
- Keperluan bagi projek yang bernilai RM50juta dan ke atas.

Pindaan Rekabentuk di mana Perlu.

HODT

PB

1. Luluskan Lukisan, Spesifikasi Jika Perlu
2. Validasi Rekabentuk Di Mana Perlu.

Rujuk Borang JKR.PK(O).O2-2A

PROSES KERJA REKA BENTUK

RUJUK - JKR.PK(O).02

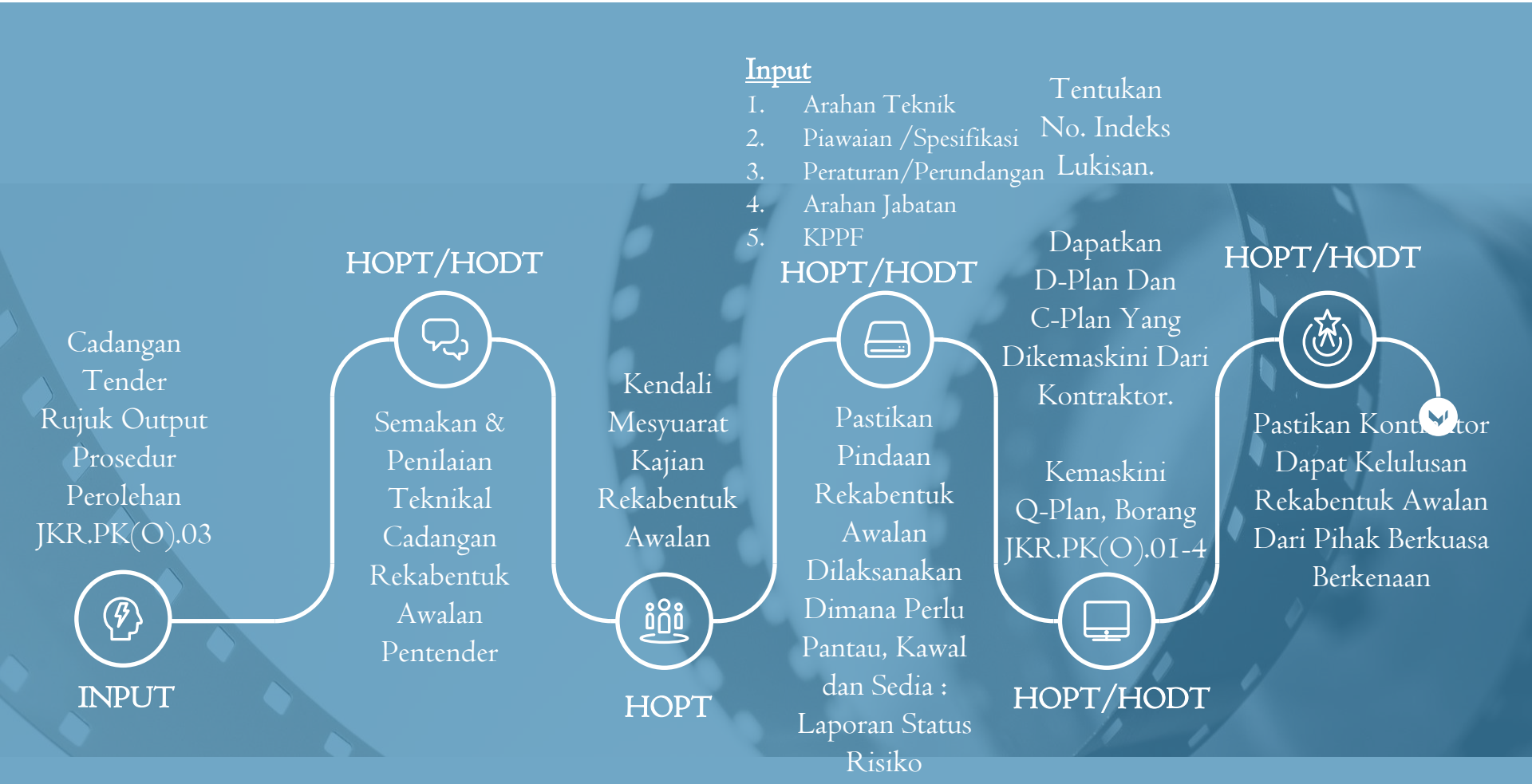
PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

PROSES KERJA REKA BENTUK

RUJUK - JKR.PK(O).02

PERANCANGAN DAN PROSES KERJA REKABENTUK (REKA & BINA)

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -



PROSES KERJA REKA BENTUK

RUJUK - JKR.PK(O).02

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

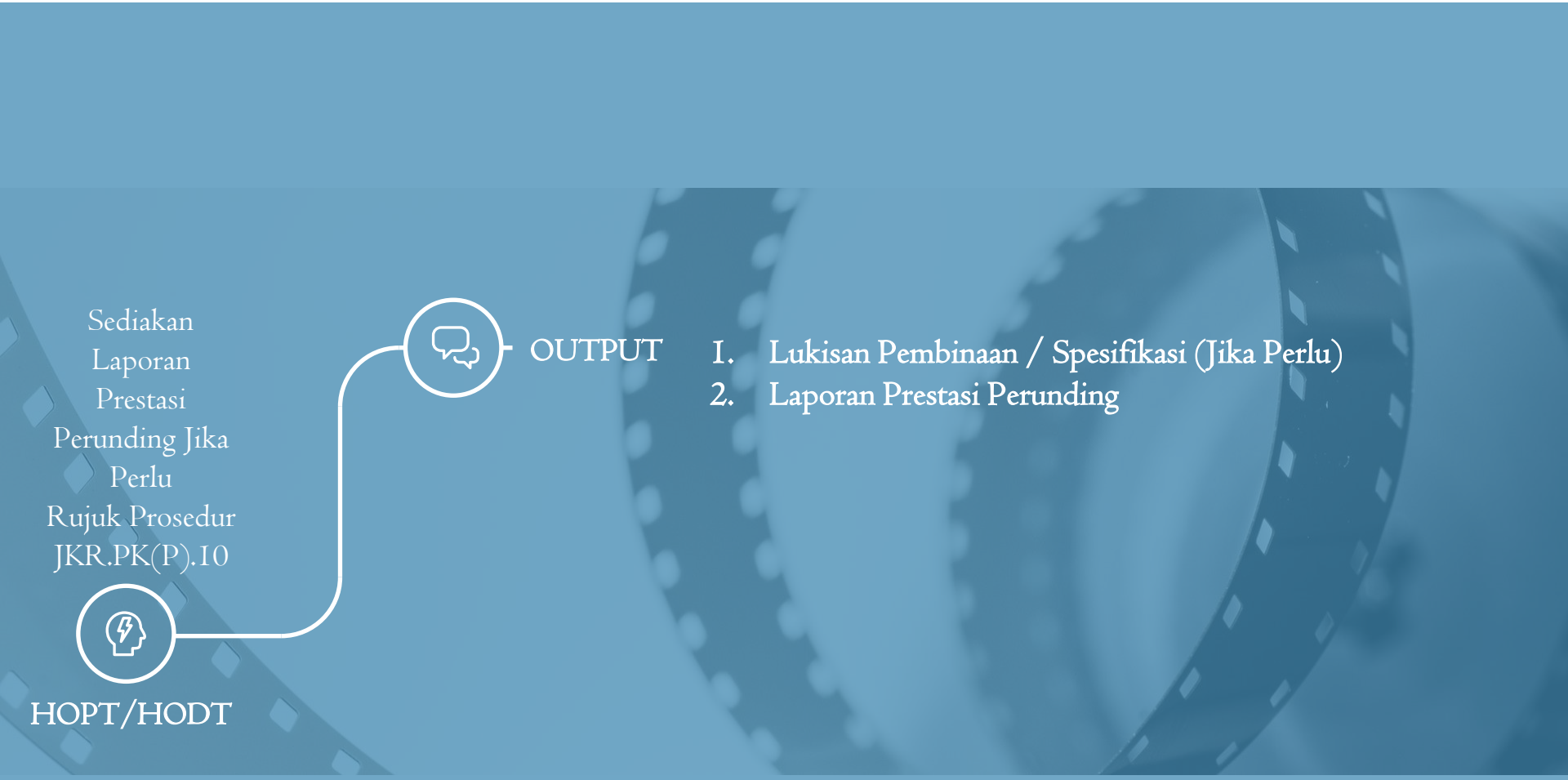
Input

1. Arahan Teknik
2. Piawaian /Spesifikasi
3. Peraturan/Perundangan
4. Arahan Jabatan
5. KPPF

PROSES KERJA REKA BENTUK

RUJUK - JKR.PK(O).02

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -



PROSES KERJA REKA BENTUK

RUJUK - JKR.PK(O).02

CABARAN DALAM PERANCANGAN DAN PROSES KERJA REKABENTUK

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

CABARAN

1. **SKOP PROJEK TIDAK JELAS DAN BERUBAH-UBAH** – BERTUKAR SEMASA LAWATAN TAPAK / REKA BENTUK
2. **KAEDAH PELAKSANAAN PROJEK BERUBAH-UBAH** – KONVENSIONAL KE REKA BINA DAN SEBALIKNYA
3. **KERJA AWALAN LEWAT MULA** – LANTIKAN PERUNDING UNTUK PELAKSANAAN KERJA UKUR MEMAKAN TEMPOH MASA YANG PANJANG
4. **PERUNTUKAN PROJEK TIDAK MENCUKUPI** – SALAH PERKIRAAN SEMASA MOHON PERUNTUKAN ("DESIGN TO COST" ATAU "COST TO DESIGN").
5. **PENGAMBILAN TANAH LEWAT DISELESAIKAN** – BIASANYA MENGAMBIL TEMPOH MASA DARI 6 BULAN SEHINGGA SETAHUN UNTUK SELESAI

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

CABARAN

6. **KOS PENGALIHAN/PELINDUNGAN UTILITI YANG TINGGI** – TIADA KEPAKARAN UNTUK SEMAK KOS YANG DISEDIAKAN OLEH PIHAK UTILITI
7. **KETEPATAN KABEL/PAIP UTILITI YANG TERLIBAT DENGAN JAJARAN PROJEK TIDAK DAPAT DITENTUKAN LEBIH AWAL** – TIADA PELAN TERBINA DAN HANYA DITENTUKAN DI TAPAK. KEMUNGKINAN PIHAK KETIGA MENGAMBIL KESEMPATAN UNTUK NAIKTARAF
8. **DATA UKUR YANG DIGUNAKAN UNTUK REKA BENTUK TIDAK TEPAT** – MEMERLUKAN PINDAAN PADA REKA BENTUK SEMASA PERINGKAT PEMBINAAN. KEMUNGKINAN BERLAKU V.O YANG MENYUMBANG KEPADA EOT DAN KENAIKAN KOS PROJEK.

LUKISAN REKABENTUK TERPERINCI

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

SENARAI LUKISAN

1. STANDARD DRAWING
2. TYPICAL CROSS SECTION
3. ALIGNMENT CONTROL PLAN
4. PLAN & LONGITUDINAL PLAN
5. CROSS SECTION
6. DRAINAGE & HYDROLOGICAL
7. ROAD MARKING & TRAFFIC SIGN
8. TRAFFIC MANAGEMENT PLAN
9. ENVIRONMENTAL MANAGEMENT PLAN
10. GEOTECHNICAL WORKS
11. BRIDGE & STRUCTURAL WORKS
12. LAND ACQUISITION PLAN

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

LOCATION PLAN

THIS DRAWING SHOWS: -

1. SPECIFIC LOCATION OF THE PROJECT WITH RESPECT TO THE SURROUNDING AREAS, LIMIT OF PROJECT AND KILOMETRE POST.
2. THE PROPOSED ALIGNMENT;
3. OTHER PROJECTS IN THE VICINITY IF ANY;
4. LOCAL TOWNS, VILLAGES, RIVERS, RESERVOIRS, ROADS, RAILWAY TRACKS AND OTHER PHYSICAL FEATURES, ETC;
5. ROUTE NUMBER;
6. NORTHING ARROW;
7. SUITABLE SCALES - 1:250,000

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

SUPERELEVATION DETAILS PLAN

THIS DRAWING SHALL CONTAIN THE FOLLOWING:-

1. SUPERELEVATION FOR CURVES WITH OR WITHOUT TRANSITION;
2. SUPERELEVATION FOR THE SINGLE CARRIAGEWAY AND WHERE APPLICABLE, DUAL CARRIAGEWAY TOO;
3. TYPICAL SHOULDER TREATMENT ON SUPERELEVATION.

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

TYPICAL ROAD CROSS SECTION AND PAVEMENT DETAILS PLAN

THIS DRAWING SHALL INDICATE THE FOLLOWING:-

1. TYPICAL ROAD CROSS SECTION IN EMBANKMENT AND CUTTING (FOR BOTH FLAT AND ROLLING TERRAIN WHERE APPLICABLE) SHOWING WIDTH OF CARRIAGEWAY,
2. SHOULDERS, CAMBER, DRAINAGE FEATURES, ETC;
3. SUPERELEVATED TYPICAL CROSS SECTIONS WHERE APPLICABLE;
4. TYPICAL CROSS SECTIONS FOR URBAN, RURAL CARRIAGEWAY WITH DRAINAGE DETAILS
5. AND ACCESS ROAD, IF APPLICABLE;
6. TYPICAL CROSS SECTION FOR GROUND TREATMENT (WHERE APPLICABLE)

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

TYPICAL ROAD CROSS SECTION AND PAVEMENT DETAILS PLAN (CONT'D)

THIS DRAWING SHALL INDICATE THE FOLLOWING:-

7. SECTION DETAILS OF PAVEMENT INCLUDING DETAILS FOR THE CONSTRUCTION OF
8. NEW PAVEMENT OVER THE EXISTING PAVEMENT (WHERE APPLICABLE);
9. PAVEMENT DESIGN DETAILS SUCH AS DESIGN PERIOD, CUMULATIVE TOTAL
10. EQUIVALENT STANDARD AXLES, BASE YEAR, AND DESIGN SUBGRADE CBR;
11. CONCRETE PARAMETER DETAILS SUCH AS CONSTRUCTION JOINTS, CONTRACTION,
12. REINFORCEMENT, ETC

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

ALIGNMENT CONTROL PLAN

THIS DRAWING IS TO INDICATE THE BEARINGS AND DISTANCES OF THE VARIOUS INTERSECTION POINTS (I.P.'S) TOGETHER WITH THE DETAILS OF THE HORIZONTAL CURVES AND I.P. POINTS. THE DETAILS SHALL INCLUDE THE FOLLOWING:-

1. POINTS OF LIMIT OF PROJECT AND HORIZONTAL ALIGNMENT INDICATED BY ALL THE I.P. POINTS;
2. CO-ORDINATES OF ALL THE I.P. POINTS INCLUDING THE STARTING AND FINISHING POINTS, DISTANCES AND BEARING BETWEEN ALL I.P. POINTS IN A TABLE FORM;
3. HORIZONTAL CURVE DATA FOR ALL I.P. POINTS;
4. LOCATION AND CHAINAGES OF ALL ST AND TS POINTS;

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

ALIGNMENT CONTROL PLAN (CONT'D)

5. LOCATION AND CHAINAGES OF ALL SC AND CS POINTS
6. TEMPORARY BENCH MARKS WITH THEIR LEVELS;
7. ALL RELEVANT SURVEY DEPARTMENT'S BENCH MARKS WITH THEIR LEVELS;
8. NORTHING ARROW;
9. SUITABLE SCALES - 1:1,000 TO 1:6,000.

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

PLAN & LONGITUDINAL PROFILE

THE DETAILS PLAN SHALL INCLUDE THE FOLLOWING:-

1. HORIZONTAL ALIGNMENT OF CENTRELINE TOGETHER WITH THE LIMITS OF CARRIAGEWAY AND SHOULDER;
2. EXTENT OF R.O.W. TO BE ACQUIRED;
3. RUNNING CHAINAGES (WITH 25 M INTERVAL OR AS REQUIRED) ALONG THE CENTRELINE;
4. EXTENT OF CUT AND FILL AREAS AND CARRIAGEWAY IN DISTINCT SHADES;
5. LOCATION OF ANY PROPOSED CULVERTS AND ITS DETAILS (INCLUDING CATCHMENTS AREA AND DISCHARGE FIGURES) AND ANY PROPOSED STREAM DEVIATION;

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

PLAN & LONGITUDINAL PROFILE (CONT'D)

THE DETAILS SHALL INCLUDE THE FOLLOWING:-

6. LOCATION OF ALL STRUCTURES SUCH AS BRIDGES AND BOX CULVERTS AND THEIR LEVELS;
7. LOCATIONS OF BOREHOLES, TEMPORARY BENCH MARKS, BENCH MARKS AND THEIR LEVELS;
8. PHYSICAL FEATURES SUCH AS EXISTING ROADS, PATHS, TRACKS, PUBLIC UTILITIES ETC. AND CONTOUR LINES;
9. VEGETATION OF THE AREA PASSED THROUGH, SUCH AS RUBBER ESTATE, PADDY FIELDS, SWAMPS, ETC.;
10. EXISTING BUILDINGS, PROPERTY LINES AND TYPES OF BUILDINGS;
11. MATCH LINES;

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

PLAN & LONGITUDINAL PROFILE (CONT'D)

THE DETAILS SHALL INCLUDE THE FOLLOWING:-

11. EXISTING STREAM, RIVERS (WITH NAMES), CULVERTS, SUMPS, SIDE DRAINS ETC., THEIR FLOW DIRECTIONS AND LEVELS;
12. LOT NUMBERS AND BOUNDARIES THE PROPOSED ALIGNMENT PASSES THROUGH;
13. NORTHING ARROW;
14. SCALE - 1:1,000.

PEMAHAMAN REKABENTUK JALAN
- REKABENTUK TERPERINCI -

PLAN & LONGITUDINAL PROFILE

THE DETAILS PLAN SHALL INCLUDE THE FOLLOWING:-

1. RUNNING CHAINAGES AS PER THE HORIZONTAL ALIGNMENT;
2. EXISTING GROUND AND PROPOSED FINISHED LEVELS;
3. PROFILE OF EXISTING GROUND AND THE PROPOSED VERTICAL ALIGNMENT WITH THE GRADIENTS;
4. DETAILS OF VERTICAL INTERSECTION POINTS, INCLUDING THE CHAINAGE AND DATA ON THE VERTICAL CURVE. LOCATIONS OF THE BVC AND EVC ARE TO BE INDICATED TOO;
5. LOCATIONS OF ALL PROPOSED CULVERTS, SIDE DRAINS AND STRUCTURES;
6. DETAILS OF THE SUPERELEVATION AND THE HORIZONTAL ALIGNMENT ALONG A LINEAR SCALE (SCALE - 1:100 OR 1:200) IS TO BE PROVIDED;

- JALAN SEDIADA
- JALAN SELEPAS PROJEK SIAP

PENGAMBILAN BALIK TANAH (SEKSYEN 8)


JANGAN RAMPAS HAK KAMI
PULANGKAN TANAH KAM
KAMI MOHON GANTI RUGI !!!!!
PT G ZALIM
JERATUT
PULANG
KAN HAK
RAKYAT
WARTA
MAKMUR


KAMI BUKAN PENDATANG
KAMI MAHU PAMPASAN
BUKAN SAGUHATI
HARAP MB AMBIL CAKNA
KAMI BUKAN PENDATANG
KAMI MAHU PAMPASAN
BUKAN SAGUHATI
HARAP MB AMBIL CAKNA
KAMI MAHU PAMPASAN
BUKAN SAGUHATI
HARAP MB AMBIL CAKNA
KAMI BUKAN PENDATANG
KAMI MAHU PAMPASAN
BUKAN SAGUHATI
HARAP MB AMBIL CAKNA


KAMPUNG BARU ALOR MALAI
UNTUK PENGAMBILAN TANAH
MEMBINA JALAN LENCONGAN TIMUR
JALAN TUN RAZAK, ALOR SETAR
JALAN LANGGAR)
KOTA SETAR
SIMPATILAH
NASIB KAMI.
YG MALANG NI


KIM TENG PARK, JOHOR BAHRU
HENTIKAN PENGAMBILAN BALIK TANAH DENGAN CARA MENEPIKAN HAK PENDUDUK
" TANAH KAMI HILANG NYAWA KAMI HILANG "
CURI HARTANAH DARIPADA PENDUDUK YANG TIDAK BERKEMAMPUAN DAN SERAH KEPADA SYARIKAT YANG KAYA - YANG MENDERITA RAKYAT !
" RAKYAT DI UTAMAKAN SEPERTIMANA PERJANJIAN KERAJAAN BARU "
Sinar harian


SAVE AMPANG PARK
KAMI ADA HAK
ALIHKAN LALUAN MRT
WHERE is our RIGHT
PM, TOLONG TURUN DENGAR SUARA KAMI
SAVE AMPANG PARK
We want AMPANG PARK
捍卫我们的工作顾客店铺
SHOPPING


ಎಂ.ಆರ್.ಪಿ.ಎಲ್.ನ ಭೂ ಕಬಳಿಕೆಯನ್ನು ವಿರೋಧಿಸಿ
ಕೆ.ಐ.ಎ.ಡಿ.ಬಿ.ಯ ಅಕ್ರಮದ ತನಿಖೆಗೆ ಆಗ್ರಹಿಸಿ
ಪ್ರತಿಭಟನೆ
ಕರಾವಳಿ ಕರ್ನಾಟಕ ಜನಾಭಿವೃದ್ಧಿ ವೇದಿಕೆ
ಕೃಷಿ ಭೂಮಿ ಸಂರಕ್ಷಣಾ ಸಮಿತಿ(ರಿ)
WE WANT JUSTICE FROM
POLICE


Pay us adequate and timely compensation
Before you take our land
the oil refinery
Kabaale-Buseruka

PEMAHAMAN REKABENTUK JALAN
CABARAN BERKAITAN PENGAMBILAN TANAH

1. MASALAH KELAMBATAN PEMBAYARAN PAMPASAN KEPADA PEMILIK TANAH YANG KEHILANGAN HARTA MEREKA SELEPAS DIAMBIL OLEH PIHAK BERKUASA NEGERI DI BAWAH APT. PROSES PENGAMBILAN TANAH MESTI SELESAI DAN PAMPASAN MESTI DIBAYAR KEPADA PEMILIK TANAH DALAM TEMPOH **TIGA TAHUN** DAN JIKA PENTADBIR TANAH GAGAL BERBUAT DEMIKIAN, PENGAMBILAN TANAH ITU BOLEH DIISYTIHARKAN **TIDAK SAH DAN TERBATAL OLEH MAHKAMAH.**

2. TANAH-TANAH YANG TELAH DIWARTAKAN DIBAWAH SEKSYEN 4 ATAU 8 DAN PENGAMBILANNYA TIDAK DITERUSKAN (PROJEK BATAL) TIDAK DIBUAT PENARIKAN DIBAWAH SEKSYEN 35. INI MENYEBABKAN PROSES PENGAMBILAN TANAH DITERUSKAN SEDANGKAN PERUNTUKAN UNTUK BAYARAN PAMPASAN TELAH DITARIK OLEH PIHAK KEMENTERIAN KEWANGAN (MOF).

PEMAHAMAN REKABENTUK JALAN
CABARAN BERKAITAN PENGAMBILAN TANAH

3. PENYEDIAAN PERMINTAAN UKUR KEPADA JABATAN UKUR DAN PEMETAAN MALAYSIA (JUPEM) TIDAK LENGKAP YANG MERANGKUMI;
   - BORANG PERMINTAAN UKUR TIDAK DISEDIAKAN OLEH PELANGGAN
   - PELAN TIDAK DISERTAKAN
   - SALINAN WARTA SEKSYEN 8 TIDAK DISERTAKAN
   - SALINAN BORANG K TIDAK DISERTAKAN
   - BAYARAN UPAH UKUR TIDAK DIPERUNTUKKAN (PENGECUALIAN BAGI MAKSUD KEPENTINGAN AWAM)
   - BORANG D DAN K TIDAK DICATAT/ENDORS/MEMORIAL KE DALAM DOKUMEN HAKMILIK DAFTAR

PEMAHAMAN REKABENTUK JALAN
CABARAN BERKAITAN PENGAMBILAN TANAH

4. PERMINTAAN UKUR BAGI UKUR HALUS TIDAK DIBUAT SELEPAS PROSES PENGAMBILAN TANAH.

5. PENGAMBILAN YANG MELIBATKAN TANAH-TANAH REZAB MELAYU YANG JARANG ATAU SUKAR DIGANTI. TANAH RIZAB MELAYU SERING DINAMAKAN 'RESERVE' (UNTUK MENJAGA KESEJAHTERAAN ORANG MELAYU) SERING KALI DITADBIR SEBAGAI **TANAH TERBIAR** ATAU **TANAH KURANG NILAI** SEHINGGA MENJATUHKAN NILAI PASARAN HARTANAH TERSEBUT.

PEMAHAMAN REKABENTUK JALAN
PUNCA KUASA PENGAMBILAN TANAH

1. PERMINTAAN UKUR BAGI UKUR HALUS TIDAK DIBUAT SELEPAS PROSES PENGAMBILAN TANAH.

2. PENGAMBILAN YANG MELIBATKAN TANAH-TANAH REZAB MELAYU YANG JARANG ATAU SUKAR DIGANTI. TANAH RIZAB MELAYU SERING DINAMAKAN 'RESERVE' (UNTUK MENJAGA KESEJAHTERAAN ORANG MELAYU) SERING KALI DITADBIR SEBAGAI **TANAH TERBIAR** ATAU **TANAH KURANG NILAI** SEHINGGA MENJATUHKAN NILAI PASARAN HARTANAH TERSEBUT. PERLEMBAGAAN PERSEKUTUAN (PERKARA 76) - KUASA PARLIMEN UNTUK MEMBUAT UNDANG-UNDANG BAGI NEGERI-NEGERI DALAM HAL-HAL TERTENTU)

3. DI BAWAH PERLEMBAGAAN PERSEKUTUAN, TANAH ADALAH DI BAWAH BIDANG KUASA NEGERI
JADUAL 9 SENARAI II - SENARAI NEGERI

PEMAHAMAN REKABENTUK JALAN
PUNCA KUASA PENGAMBILAN TANAH

4. 76 (4) : PARLIMEN BOLEH, HANYA BAGI MAKSUD MEMASTIKAN KESERAGAMAN UNDANG-UNDANG DAN DASAR, MEMBUAT UNDANG-UNDANG MENGENAI PEMEGANGAN TANAH, PERHUBUNGAN ANTARA TUAN TANAH DENGAN PENYEWA, PENDAFTARAN HAKMILIK DAN SURAT IKATAN YANG BERHUBUNGAN DENGAN TANAH, PINDAH HAKMILIK TANAH, GADAI JANJI, PAJAKAN DAN GADAIAN BERKENAAN DENGAN TANAH, ISEMEN DAN HAK DAN KEPENTINGAN LAIN MENGENAI TANAH, PENGAMBILAN TANAH DENGAN PAKSA, PERKADARAN DAN PENILAIAN TANAH, DAN KERAJAAN TEMPATAN

5. • 95D : BERHUBUNG DENGAN NEGERI SABAH DAN SARAWAK, FASAL (4) PERKARA 76 TIDAKLAH TERPAKAI, DAN JUGA PERENGGAN (B) FASAL (1) PERKARA ITU TIDAK MEMBOLEHKAN PARLIMEN MEMBUAT UNDANGUNDANG MENGENAI MANA-MANA PERKARA YANG DISEBUT DALAM FASAL (4) PERKARA ITU.

PEMAHAMAN REKABENTUK JALAN
PUNCA KUASA PENGAMBILAN TANAH

SEMENANJUNG MALAYSIA - AKTA PENGAMBILAN TANAH 1960

SEKSYEN 3, AKTA PENGAMBILAN TANAH 1960 (AKTA 486) (PINDAAN) MEMPERUNTUKKAN BAHAWA PIHAK BERKUASA NEGERI BOLEH MENGAMBIL MANA-MANA TANAH YANG DIPERLUKAN:

BAGI APA-APA MAKSUD AWAM;

OLEH MANA-MANA ORANG/PERBADANAN BAGI APA-APA MAKSUD YANG PADA PENDAPAT PIHAK BERKUASA NEGERI **MEMBERI MANFAAT KEPADA PEMBANGUNAN EKONOMI MALAYSIA** ATAU MANA-MANA BAHAGIAN DARI ITU ATAU **KEPADA ORANG AWAM** PADA AM ATAU MANA-MANA KELAS ORANG RAMAI; ATAU BAGI MAKSUD **MELOMBONG ATAU KEDIAMAN, PERTANIAN, PERDAGANGAN, PERINDUSTRIAN ATAU REKREASI** ATAU MANA-MANA KOMBINASI MAKSUD TERSEBUT.

PEMAHAMAN REKABENTUK JALAN
TUJUAN PENGAMBILAN TANAH

1. MEMBERI KUASA KEPADA PIHAK BERKUASA NEGERI MENGAMBIL BALIK SEMULA SESUATU TANAH YANG TELAH DIKENALPASTI MENGIKUT TUJUAN TERTENTU (PENDIDIKAN/PEMBANGUNAN HOSPITAL/PEMBINAAN JALAN DLL)

2. MEWUJUDKAN SATU PROSEDUR PENGAMBILAN TANAH YANG SERAGAM BAGI SEMUA NEGERI DI SEMENANJUNG MALAYSIA

3. MEWUJUDKAN SATU MEKANISME YANG PANTAS BAGI MENGAMBIL TANAH SECARA PAKSA APABILA TANAH-TANAH TERSEBUT DIKEHENDAKI SEGERA UNTUK TUJUAN PEMBANGUNAN

4. PENTAKSIRAN PAMPASAN AKIBAT PENGAMBILAN

PEMAHAMAN REKABENTUK JALAN
SENARAI BORANG PENGAMBILAN TANAH

Borang	Nama Borang	Seksyen
Borang A	Notis Bahawa Tanah Berkemungkinan Akan Diambil	Seksyen 4
Borang B	Kuasa Masuk Dan Mengukur	Seksyen 5
Borang C	Jadual Tanah Yang Terjejas Oleh Pengambilan	Seksyen 7
Borang D	Perisytiharan Pengambilan Yang Dicadangkan	Seksyen 8
Borang E	Pengambilan Yang Dicadangkan: Notis Siasatan	Seksyen 10
Borang F	Notis Menghendaki Keterangan Secara Bertulis	Seksyen 11
Borang G	Award Pampasan Bertulis	Seksyen 14
Borang H	Notis Award Dan Tawaran Pampasan	Seksyen 16
Borang I	Perakuan Segera	Seksyen 19
Borang J	Notis Mengosongkan Bangunan Dan Pampasan	Seksyen 20
Borang K	Notis Bahawa Milikan Tanah / Peletakhakan Petak Telah Diambil	Seksyen 22
Borang L	Notis Untuk Menyerahkan Dokumen/ Dokumen-dokumen	Seksyen 24
Borang LA	Notis Penarikan Balik Pengambilan	Seksyen 35
Borang LB	Penarikan Balik Pengambilan: Notis Siasatan	Seksyen 35
Borang LC	Notis Award Dan Tawaran Pampasan	Seksyen 35
Borang M	Rujukan Kepada Mahkamah	Seksyen 36
Borang N	Permohonan Supaya Bantahan Dirujukkan Kepada Mahkamah	Seksyen 38
Borang O	Rujukan Kepada Mahkamah	Subseksyen 38(5)
Borang Q	Notis Pendudukan Sementara Atau Penggunaan Sementara Tanah	Seksyen 58
Borang R	*Notis Tawaran Pampasan Dan Pemberitahuan Untuk Mengosongkan Tanah/ Notis Tawaran Pampasan Untuk Pemulihan	Seksyen 58/59

Terima kasih

- Team BRJ Zon Tengah
- 03-40518013
- TeamBRJZT@jkr.gov.my
- JKR Malaysia

PEKELILING
KETUA PENGARAH TANAH DAN GALIAN PERSEKUTUAN
BILANGAN 22/76

Cadangan Perkembalian Tanah Persekutuan Atau Melepaskan Tanah Rizab Persekutuan Untuk Kegunaan Sesuatu Projek Negeri

Surat Pekeliling ini dikeluarkan untuk menasihati Pemungut-pemungut Hasil Tanah mengenai cara yang perlu diikuti jika tanah yang diberi milik di atas nama Pesuruhjaya Tanah Persekutuan atau tanah yang dirizabkan untuk maksud Persekutuan dikehendaki untuk kegunaan sesuatu projek Negeri.

2. Adalah didapati perlu bahawa satu cara diadakan untuk menyatakan aitu sesuatu projek Kerajaan Negeri adalah melibatkan atau memerlukan tanah yang digunakan untuk maksud Persekutuan. Dalam kes seperti ini Pemungut-pemungut akan berupaya menentukan luas tanah yang diperlukan samada kesemua atau sebahagian tanah milik atau tanah rizab Persekutuan dan mereka juga akan dapat membekalkan butir-butir mengenai tanah yang berkenaan. Maklumat yang diperlukan itu mahulah dihantar kepada Pejabat ini dengan menggunakan borang di Lampiran 'A'. Satu salinan borang ini perlulah juga dihantar kepada Kementerian yang menduduki atau mengawal tanah yang terlibat.

3. Pemungut-pemungut adalah dengan ini dinasihatkan bahawa apabila sesuatu tanah milik atau tanah rizab untuk maksud Persekutuan diperlukan kesemua atau sebahagiannya untuk sesuatu projek Kerajaan Negeri, borang seperti di Lampiran 'A' hendaklah digunakan untuk memperolehi keputusan sama ada tanah yang berkenaan boleh dikembalikan atau dilepaskan untuk projek Negeri itu.

DATO' ABDUL MANAF BIN MOHD. NOR
Ketua Pengarah Tanah dan Galian Persekutuan

P.T.TM 76/69
Kuala Lumpur

Lampiran ‘A’

Ketua Pengarah Tanah dan Galian
Persekutuan,
Jalan Gurney,
Kuala Lumpur

Cadangan Mengguna Kesemua/ ……ekar
Lot …….. Bandar/Pekan/Mukim……...
……Untuk Projek Negeri

Adalah dicadangkan untuk memperolehi perkembalian/ perlepasan kesemua/……. ekar tanah yang diberi milik kepada Pesuruhjaya Tanah Persekutuan/dirizabkan untuk …….. bagi digunakan untuk projek Negeri seperti berikut:……..
……

Butir-butir mengenai tanah adalah diturunkan di bawah ini dan satu pelan menunjukkan tanah/ kawasan yang diperlukan adalah dikembarkan bersama-sama ini:

Hakmilik /No. Warta Kerajaan	:
No. Lot	:
Bandar/Pekan/Mukim	:
Luas	:
Kegunaan Sekarang	:

2. Adalah perlu bahawa perkembalian tanah ini menurut peruntukan-peruntukan Perkara 84/pelepasan rizab ini di bawah Perkara 85 Perlembagaan ditimbangkan. Berikut ialah alasan-alasan untuk menyokong cadangan ini:

……
……
……

Tarikh : …… …….

Pemungut Hasil Tanah
Daerah…….

TERM OF REFERENCE

FOR

TOPOGRAPHICAL SURVEY WORKS

ON PROJECT

"PEMBANGUNAN INFRASTRUKTUR JALAN DI KAWASAN UMW HIGH VALUE MANUFACTURING PARK (UMW HVMP), SERENDAH, SELANGOR"

INTRODUCTION

1.0 Background And Objective

The purpose of the detailed ground survey is to provide all the necessary data and information required for undertaking the engineering design for project : **PEMBANGUNAN INFRASTRUKTUR JALAN DI KAWASAN UMW HIGH VALUE MANUFACTURING PARK (UMW HVMP), SERENDAH, SELANGOR** and also for the necessary land acquisition and application.

2.0 Scope Of Works

2.1 Survey Length/Area

The details of the extent of the works to be surveyed are given in the attached plan of **Appendix A.** The total length to be surveyed **is approximately** about **3.0 km.**

2.2 Survey Width

A band **varies from 50 metre to 300 metre width** of the proposed road alignment corridor to be fully located and surveyed. The corridor width is to be appropriately increased where relevant to cover existing road reserves and also major details like rivers, railway line, lot boundaries, interchange site, new alignment routes and or as decided by the Government.

The exact location of the alignment of the corridor is subject to changes on Site by the Government's Representative.

2.3 Bathymetry survey

The purpose of the bathymetry survey is to provide all the necessary data and information required for the detailed hydraulic study on the depth shoreline evolution and to support numerical modeling through comprehensive bathymetry survey and river profiling data. The bathymetry survey shall be conducted during **high tide** conditions to enable the survey boat to navigate and reach areas close to the coastline and river banks as well as all parts of the river data.

The surveyor is required to submit computer-based data as well as a set of survey drawing made of a stable medium suitable for reproduction herein detailed and hitherto known as “the drawing”. All data must be 3D precision survey.

STAGE 1

SERVICES SPECIFICATIONS FOR SURVEY OF ROAD DETAILS

1. Basic Professional Land Surveying Services for survey of road details

The Services to be rendered by the CLS in this paragraph include the provision of all expert technical advice and skills, which are normally required for the Works for which the CLS has been engaged.

1.1 General

The Services to be provided by the CLS as listed herein and as detailed in subsequent sections: -

1.1.1 Prior discussion with relevant authorities such as JKR, PDRM, land office and local authorities before the physical commencement of work on site.

1.1.2 Study all relevant information and maps provided and obtain additional data if necessary, for the proper execution of the works.

1.1.3 Consultation with the GR and setting out.

1.1.4 Setting out of survey alignment.

1.1.5 Field survey and picking up of mapping details for subsequent submission of 3-dimensional digital data in DWG (Autocad) format. (Refer **Appendix B**)

1.1.6 Establishment of Permanent Ground Markers for survey control such as Survey Markers, Bench Marks, and Temporary Bench Marks.

1.1.7 Preparation of land acquisition base plans in accordance to JKR guidelines as contained in *Arahan Teknik Jalan 7/85 (Pindaan 2014) (Garis Panduan Untuk Penyediaan Pelan Pengambilan Balik Tanah bagi Projek Jalan Persekutuan)* and as specified in Sub-paragraph 1.5.7 below.

1.1.8 Preparation of plans in accordance to *Arahan Teknik (Jalan) No. 6/85 (Pindaan 2016) (Guidelines for Presentation of Engineering Drawings)* or as specified in the Terms of Reference.

1.1.9 Compilation, processing and preparation of data in accordance to 3D DWG format (Autocad).

1.1.10 Pegging of centre line for Design Road Alignment and establishment of Permanent Ground Markers for Design Road Alignment Centreline such as IPs, RMs, and TBMs.

1.1.11 Provide aerial photos of the survey corridors.

1.2 Accuracies, Tolerances, Errors and Corrections

Wherever accuracies or tolerances are specified herein, they are defined as Maximum Errors or statistically based root mean square errors (r.m.s.e.) as follows: -

1.2.1 Maximum Errors

Maximum errors are only used for fieldwork misclosures [sub-paragraphs 1.3.1 and 1.3.2] and plotting of map grids and control points [sub-paragraph 1.4.3]. All errors exceeding the maximum allowable tolerance including consequential errors shall be corrected by the CLS at his own expense.

1.2.2 Root Mean Square Errors

The root mean square errors (r.m.s.e.) are related to checks on representative dimensions or levels and the following conditions have to be satisfied: -

(a) At least 67% of all readings must be correct to or better than the r.m.s.e.

(b) At least 90% of all readings must be correct to or better than 1.65 times the r.m.s.e.

(c) All readings must be correct to or better than 3 times the r.m.s.e.

All readings not complying with the above 3 conditions including consequential errors shall be corrected by the CLS at his own expense.

1.2.3 Method and Location of Corrections

The CLS shall agree with the Government the method, location and extent of the work to be corrected.

1.3 Fieldwork

1.3.1 Grid and Planimetric Control Accuracies

(a) Survey control shall be calculated using the state Cassini-Soldner projection based on Geocentric Datum of Malaysia (GDM).

(b) Azimuths shall be checked by solar observations at appropriate intervals and the survey traverses shall be tied up to any nearby trigonometrical points or standard traverse points or permanent GPS points or Boundary Mark. All traverse must be closed or be properly tied to established survey datum. The closing error of the traverse shall be 1:4000 or better.

(c) The CLS shall determine the grid coordinates of all junctions and intersection points so marked, and the bearings of all straight sections of the routes relative to the specified grid system.

(d) Survey work shall begin with appropriate survey datum as specified in paragraph 17 of PKPUP Bilangan 5 Tahun 2009.

1.3.2 Height Datum and Vertical Accuracies

All heights supplied by the CLS shall be related to the latest published values of JUPEM Bench Marks at the time of survey.

All Temporary Bench Marks shall be connected by a closed levelling net which shall be tied to a minimum of two JUPEM Bench Marks unless otherwise agreed by the Government.

Vertical misclosures within the levelling net and between JUPEM bench marks shall not exceed the lesser of the following: -

(a) ± 16 mm

(b) ± (20 $\sqrt{K}$) mm where K is the sum of the distances levelled in kilometers.

JUPEM Bench Marks which exceed these tolerances shall be omitted from the adjustment. The CLS shall inform the GR and JUPEM whenever the JUPEM Bench Marks are found to be damaged or in error.

All levelling shall be done in sections of approximately 1 km. in length.

1.3.3 Permanent Ground Markers

Permanent Ground Markers shall include the following: -

(a) Intersection Points (IPs)
(b) Reference Marks (RMs)
(c) Survey Markers (SMs)
(d) Temporary Bench Marks (TBMs)
(e) Pegging

The CLS shall construct, coordinate and height Permanent Ground Markers to the satisfaction of the Government at the location where points are required to form a reference system for future setting out of the Works at the approximate locations indicated on the Drawings, clear of future construction works and as agreed with the Government.

The types of marker which will be considered acceptable for the appropriate general ground surface conditions are shown in **Appendix C** and **Appendix D**. Alternative forms of marker submitted by the CLS may however be considered.

The Government will indicate on the Drawings the likely types of the Permanent Ground Markers to be installed within the Site. The final locations and types of markers shall be agreed with the Government before emplacement. All Permanent Ground Markers shall be clearly and legibly inscribed to distinguish between IP, RM, SM and TBM.

There shall be a joint inspection and handling over of all Permanent Ground Markers to the GR.

1.3.3.1 Intersection Points

The CLS shall establish Intersection Points along the proposed road alignment and shall be numbered in accordance to the plan given by the Government.

1.3.3.2 Reference Marks

The CLS shall erect at least two (2) RMs for each IP. To ensure accuracy, RMs shall be placed at least 25 m away from the IP. and the base of the triangle which they form with the apex should be at least 15m. apart. Each point of this triangle shall be visible from the two other points.

1.3.3.3 Survey Markers

Whenever required by the Government, the CLS shall erect permanent Survey Markers at locations indicated in the Drawings or as agreed by the Government.

1.3.3.4 Temporary Bench Marks

The CLS shall establish Temporary Bench Marks at approximately 1 km. intervals and reference it to the JUPEM Datum. Reduced levels of these temporary bench marks shall be clearly and legibly inscribed and referenced for identification for the subsequent construction stage.

1.3.3.5 Pegging

The surveyor shall be using suitable type of wood for all pegs. At least 10cm of the peg should be visible above ground level and painted with red colour

1.3.4 Deliverables

The CLS shall supply two copies of the following to the Government on completion of fieldwork and survey adjustment: -

(a) Schedules of all Permanent Ground Markers (IPs, RMs, SMs, TBMs) giving the reference numbers, coordinates and heights above JUPEM's datum.

(b) Descriptions of Permanent Ground Markers and JUPEM Bench Marks giving the types of marker constructed and location sketches.

(c) Copies of the most recently available JUPEM Triangulation Station descriptions for each station used for the Works, giving the reference number, coordinates, height above JUPEM's Datum, and description of position.

(d) Copies of the most recently available JUPEM Bench Mark lists used for the Works, indicating Bench Marks used, Bench Marks found to be damaged or destroyed and the readjusted heights of any JUPEM Bench Marks found to be out of tolerance.

(e) Diagrams of the plan control net showing the connections between Permanent Ground Markers and JUPEM Triangulation Stations, and with loop closures or residuals.

(f) Diagrams of the levelling net indicating the connections between Permanent Ground Markers, Temporary Bench Marks and JUPEM Bench Marks with misclosures.

(g) Where applicable, description of the Local or State grid giving the origin, scale factor, and parameters used for transformation from the Local Grid to the National Grid.

The CLS shall supply to the Government immediately after initial completion, advance copies of the above results in order for the Government to carry out a check survey.

1.3.5 Survey of Watercourses

1.3.5.1 Streams and Rivers

The CLS shall survey all streams, rivers and watercourses crossing the line of the routes. These include all watercourses whether there is water or no water flow at the time of surveying. The survey shall extend to the following minimum distances on either side of the route centre lines (distances measured along the channels), or up to the edge of the Survey corridor, whichever is the greater: -

Major Rivers exceeding 10 m width	**250 m.**
Rivers/Streams between 5 -10 m width	**150 m.**
Watercourse less than 5 m width	**50 m.**

The locations of channel edges and other significant features shall be recorded and levels shall be taken along the bank slopes and channel inverts at intervals of not more than 20m or 10m at anticipated sites for bridges and culverts (cross-section points shall not exceed 5m.).
Details of existing adjacent bridges shall be recorded as described in Sub-paragraph 1.4.7.

1.3.5.2 Urban Drainage

The CLS shall survey all top and bottom edges and invert levels of urban drains at intervals not exceeding 10 m, showing all significant changes of level and direction of flow. The type, width and depth of each section of different drainage system (including sumps) shall be recorded.

1.3.5.3 Culverts

All the relevant details of the culvert as described in Sub-paragraph 1.4.8 shall be recorded.

1.3.5.4 Flood Information

The CLS shall record the maximum flood level at each river crossing. Existing water surface at suitable points shall be taken along the channel. Each reading shall be taken at intervals not exceeding one hour and the mean, maximum and minimum of 12 hour readings shall be recorded.

In areas where tidal effects are significant, the CLS shall gather all the necessary information to the mapping in a form agreed by the Government.

1.3.6 Details of Junctions and Existing Roads

The CLS shall survey all junctions to enable the designer to design the junction properly.

A **corridor width of min 500 m** shall be taken for a distance of not less than **500 metres** up and down the proposed **intersection of the road** as required by Government.

All metalled roads, main roads and footpaths or tracks having the width greater than 2 m shall have a minimum of two (2) points defining both edges of the carriageways. Consecutive points along the road feature shall not exceed 20 m in rural areas and 10 m in urban or built-up areas. More points are generally needed to define curved features such as slip roads, islands, etc.

Levels of the road centre line shall be recorded for metalled / paved roads having widths greater than 6.0 metres. The main destination of the road from the junction shall be recorded by the CLS.

1.3.7 Strip Survey

The CLS shall carry out a strip survey with contours at 1m. intervals together with the detail of the strip. The width / area of the strip is as indicated in the Terms of Reference.

The CLS shall carry out all field work necessary to accurate at the specified intervals and detailed physical features of the terrain. Sufficient control height points and spot heights shall be taken to ensure accuracy of the contour lines.

The CLS shall carry out all fieldwork suitable for the digital data required for Autocad program.

1.3.8 Setting-out of Survey and Road Alignment

1.3.8.1 Consultation with GR before Setting-out of Survey Alignment

Before setting out, proposals for the detailed survey should be submitted to the Government before the work is being carried out. The CLS has to consult and follow the Government's instructions either verbally on site or in plans on the locations of all Permanent Ground Markers and other aspects of setting out of the Survey Alignment. If instructed by the Government, the CLS shall submit field survey plans showing the sufficient details as described in Sub-paragraph 1.5.2 so as to enable the Government to make the decisions in choosing the best alignment of the road. The CLS shall make any minor adjustment on the setting out of the Survey Alignment when requested by the Government provided such request is made before all the plans are submitted.

1.3.8.2 Setting out of Design Road Alignment

The CLS has to set out the centre line of the proposed road alignment essentially in two (2) stages as follows: -

Stage 1 - Setting out of survey alignment and monumenting of SMs and TBMs based initially on drawings supplied as stated in Sub-paragraph 1.3.3 and modified appropriately to suit site conditions and/or as directed by the Government.

Stage 2 - Final setting out and pegging of Design Road Alignment centre line including TPs and horizontal curves and monumentation of

all IPs, RMs and TBMs on the field based on design from the earlier surveyed data.

Stage 3 - Pegging of R.O.W and all points where R.O.W is crossing land boundaries for the purpose of land acquisition.

The CLS shall provide at least one senior survey technician and other supporting staff to pick up the line to set out, giving bearings and distances. The CLS when requested by the Government shall provide all the assistance and necessary information regarding the survey and show the Government's representative on the ground the whole setting out whenever required to do so.

1.3.8.3 Cross-Sections along the Road Alignment

Cross sections shall be taken along the centreline of the proposed road alignment at the interval of 25m and up to the corridor width. Adjacent points along the cross-sections shall not exceed 10m. Levels are to be taken at the road edges (levels to be taken on adjacent shoulders if level difference are significant) and centreline, top and bottom of kerbs, invert levels of drains and at any change in gradient.

-N.A-

1.3.8.4 Longitudinal Profile along the Road Alignment

Carry out longitudinal profiling with levels to be taken at every 25 metres or less to indicate change in terrain.

-N.A-

1.4 Mapping

1.4.1 Unit of Measurement

Metric units shall be used throughout.

1.4.2 Scale

Mapping on final drawings shall be plotted to a scale of 1:1000 or as specified in *Arahan Teknik (Jalan) 6/85* (Pindaan 2016) or as agreed by the Government.

1.4.3 Grid and Detail Accuracy

Mapping shall be based on the Grid System as defined in Sub-paragraph 1.3.1. Grid lines and Permanent Ground Markers shall be drawn to an accuracy of ±0.3 mm maximum tolerance.

Well defined points of detail shall be plotted in their true positions at map scale to ±0.3 mm root mean square error when coordinated scaled off the map from the nearest grid line are compared with coordinates determined by measurement on the ground from the nearest Permanent Ground Marker. (90% of a representative sample of well defined points shall be within ± 0.5 mm).

Master transparencies shall be permitted to have an additional tolerance for shrinkage of their stable based material not exceeding ±0.3 mm per metre.

1.4.4 Features To Be Shown:

1.4.4.1 Buildings/Structures

(a) The plinth line of all permanent buildings.
(b) Construction type of building, whether Wooden (W), Semi-Conc.(SC), Concrete (C), Double-Storey (D), and etc.
(c) Ruins or partially demolished buildings or foundations - by the walls and masonry visible at the time of the survey.
(d) Names and type of usage of all buildings, schools, and etc.
(e) Buildings under construction.

1.4.4.2 Boundary Features

(a) Fences and gates
(b) Boundary stones located/used for fieldwork
(c) Land parcels and their lot numbers
(d) Walls
(e) Burial grounds (Indicate whether Muslim, Chinese, Christian, Hindu, and etc.)
(f) Historical sites

1.4.4.3 Railways

(a) Gauge faces of railway running rails
(b) Level crossings

(c) Platforms
(d) Bridges (over roads, river, etc.)
(e) Station buildings
(f) Telegraph poles (indicate the reference numbers)

1.4.4.4 Roads, Tracks and Footpaths

(a) Kerb line or edge of surfacing to carriageways.
(b) Tracks
(c) Pedestrian bridges and footpaths
(d) Traffic islands (similar to kerb line).
(e) Destination of road from junction level
(f) Bridges (over Railway, rivers, etc.)

1.4.4.5 Road Furniture

(a) Kilometer post (value to be noted)
(b) Bus stop facilities
(c) Traffic signal posts and controllers
(d) Guardrails
(e) Road signs

1.4.4.6 Industrial

(a) Tanks (indicate type of material stored e.g. fuel, gas, water, and etc.)
(b) Sewage disposal works details
(c) Chimneys (substantial)

1.4.4.7 Slopes and Earthworks

(a) Cutting and Embankments
(b) Terraced slopes
(c) Borrow pits / Quarries
(d) Retaining walls
(e) Rock outcrops
(f) Mining tips
(g) Indicate date of survey if on-going earthworks are present and mark the affected area.

1.4.4.8 Services and Utilities

(a) Transformers (boundary fences only)
(b) Electricity Sub-Stations and switch boxes (boundary fences only)
(c) Pylon lines (indicate levels at lowest point at sag and at pylon towers).
(d) Pylon bases
(e) Pylon reference numbers and voltage of transmission.
(f) Radio, TV station masts or towers
(g) Telecom poles
(h) Electricity poles
(i) Fire hydrants
(j) Water Mains pipes and Stop valves (Indicate diameter of pipe)
(k) Manholes (circular and square)

1.4.4.9 Survey Controls

(a) JUPEM's Trigonometrical Stations
(b) Permanent GPS points
(c) Permanent Ground Markers (IPs, RMs, TBMs, etc.)
(d) JUPEM Bench Marks used (Indicate reference number and height level)

1.4.4.10 Woods, Trees & Recreation Areas

(a) Playing fields
(b) Prominent trees
(c) Land-use and vegetation, and etc.

1.4.4.11 Water, Drainage and Coastal Features

(a) Lakes
(b) Ponds or mining pools
(c) Reservoirs
(d) Rivers (Name to be indicated)
(e) Streams
(f) Ditches. (width and depth to be indicated)
(g) Canals
(h) Wells. (Diameter or width to be indicated)
(i) Swamps
(j) Lined drains (width, depth and type to be indicated)
(k) Water towers
(l) Culverts

(m) Waterfalls

(n) Jetties

(o) The top of banks of all water features over 1.0 metre wide shall be detailed and the bottom of banks as indicated by the water level at the time of the survey. The direction of flow of all rivers, streams and watercourses shall be indicated.

(p) Slopes with a height greater than 1.0 metre of too sharp a gradient to be shown by contours, including river and stream banks are to be shown on conventional markings and the top and bottom of slopes are to be shown as dotted lines.

(q) Slope conventions shall be drawn as near as possible to indicate the actual shape of the slope face, i.e. all berms and terraces shall be detailed.

Any other features not listed, which are requested by the Government shall also be shown.

1.4.5 Contours

Where required, contours shall be shown at vertical intervals as described in Sub-paragraph 1.3.7 and shall be correct to within the tolerances given below when a representative sample of points on contour lines is checked by measurement from the nearest JUPEM Bench Mark or height control point.

Contour Interval	r.m.s.e.	90% Tolerance
0.50m	±0.15m	±0.25m
1.0m	±0.30m	±0.50m
2.0m	±0.60m	±1.00m
3.0m	±0.90m	±1.50m

Where steep slopes are encountered and it is not practicable on the plan to represent each contour fully throughout, its length, the CLS may with the Government's approval terminate certain intermediate contours.

Any contour which can be brought within this vertical tolerance by moving its plotted position in any direction by not more than 0.5 mm or one-tenth of the horizontal distance between contours, whichever is the greater, shall be considered acceptable.

Index contours shall be shown using continuous thick lines. Contour and spot heights shall be differentiated from other details. The value of each contour shall be indicated along the contours at intervals not exceeding 200 mm and/or the edges of the Mapping Area.

Where because of undergrowth, on-going earthworks, swampy areas, or other obstructions, the ground surface is obscured, or access is restricted, and provided the Governments prior agreement is obtained, contours can be shown by broken lines to indicate that their accuracy cannot be guaranteed.

1.4.6 Spot Heights

Spot heights shall be shown on the Final Drawings at spacing not exceeding 20 m. at the following locations: -

(a) at salient points such as hilltops, bottoms of depressions and saddles.

(b) along the centre and edges of all roads and public accesses, at road intersections and significant changes of gradient.

(c) at water level at the time of survey along rivers, streams, major watercourses and ditches.

(d) on bed levels of rivers, streams, canals and other watercourses.

In flat areas, where the horizontal distance between contours generally exceeds 40 m. Supplementary spot heights shall be shown at intervals not exceeding 20 m. parallel to the contours.

Spot heights shall be correct to within the tolerances given below when a representative sample is checked by measurement from the nearest JUPEM Bench Mark; or

Map Scale	r.m.s.e.	90% Tolerance
1:500	± 0.06m	± 0.10m
1:1000	± 0.12m	± 0.20m
1:2500	± 0.30m	± 0.50m
1:10000	± 1.00m	± 1.60m

1.4.7 Bridge Details

Where required the bridge details shall be shown on a separate drawing for each bridge (see Sub-paragraph 1.5.4) in a form agreed by the Government. They shall not be shown on the map.

The bridge details shall include: -

(a) The coordinates and levels of the four corners of the bridge (points shall be are on the adjacent road surface), the two edges of the piers, abutment and wing walls.

(b) The coordinates and levels of the bridge deck on the intermediate piers (if any) of the bridge.

(c) Length, width and type of construction of bridge.

(d) The type and location of services adjacent to the bridge.

(e) The co-ordinates and levels of the centre line and the two edges of the road on the bridge at approximate intervals of 5 metres.

(f) The cross-sectional clearance envelope at the two sides of an overpass bridge (with respect to the road centre line passing underneath) showing all the relevant levels, offsets and skew angle.

1.4.8 Culvert Details

Details of each culvert are to be shown on the Survey plans and a separate tabulation of the following information is to be submitted with the plans: -

(a) Type of culvert and diameter;
(b) Chainage of culvert at the road centre line;
(c) Skew angle of the culvert from the centre line;
(d) Length of culvert from each side of the centre line;
(e) Invert levels of the inlet and outlet;
(f) A sketch of the inlet and outlet structures including all visible dimensions to a scale of 1:200.

For major culverts (diameter ≥ 2.0m) the outlet structures are to be properly measured and modelled as 3D strings as described in Sub-paragraph 1.5.5.

1.5 Preparation and Submission of Plans and Data

The CLS shall provide the Government with soft and hard copies for all the drawings prepared. All soft copies shall be submitted in USB Flash Drive or DVD-ROM and must be in **AutoCAD 2014 or .dxf format**. The hard copies submitted shall comprise of **one set of tracings with 2 sets of prints**. The drawings required are as follows:-

1.5.1 Location Plan and Alignment Control Plan

Location plan of the proposed roads (inclusive aerial photos) to a suitable scale such that the area under study can be put into a single standard A1 size sheet. The chainage of the survey alignment shall be indicated for ease of reference to the detail plans.

Alignment control plan shall be prepared as described in *Arahan Teknik (Jalan) 6/85 (Pindaan 2016).*

1.5.2 Preliminary Survey Plans and Data

The plans and data shall contain all the essential details so as to enable the Government to make decisions in choosing the best alignment of the proposed road.

The details may include the following: -

(a) Contours
(b) Grid Lines
(c) Structures, buildings or any obstructions
(d) River crossings
(e) Rock outcrops
(f) Swampy areas
(g) Existing roads, tracks, railways, etc.
(h) Transmission lines

The CLS shall provide other additional details and data wherever instructed by the Government.

1.5.3 Final Survey Plans

The plans shall be shown in a scale of 1:1000. These shall show the Alignment, Permanent Ground Markers, chainage and all other features as described in Paragraph 1.4.

1.5.4 Detail Plans for Bridges and Culvert Sites

The sites shall be produced in a scale of 1:500 showing features and levels as detailed in Sub-paragraphs 1.3.5.1 and 1.3.5.3.

Details of any adjacent existing bridges as described in Sub-paragraph 1.4.7 as well as culverts in Sub-paragraph 1.4.8 shall be shown as a separate figure with all the relevant dimensions in a suitable scale.

1.5.5 Survey Plan and Longitudinal Profile for Bridges

The plan view and the longitudinal profile should be shown in the same plan and shall be as follows (refer **Appendix E**) :-

(i) **Top Section of Plan-View (With Spot Levels)**

These shall show the existing road and structure centre-line, chainages of centre-line markers, locations and levels of Temporary Bench Marks, contours of corridor surveyed, channel profile (100 meters upstream and downstream), direction of water flow, existing structure, existing roads (100 meters of both side of structure), Reference markers and other features that may be required for design considerations.

Scale : Horizontal (1 : 300 preferred)

(ii) **Bottom Section of Plan-Longitudinal Profile**

These shall show the longitudinal profile of the road and structure centre-line, cross-section of the rivers, position of existing structure, highest know flood level (if any), water level during surveying (time and date shall be stated) and other features needed for design considerations for a distance 100 meter on both side of the existing structure.

Scale : Horizontal (1 : 300 preferred)
Vertical (1 : 100)

1.5.6 Cross-Sections for Channels/ Rivers and Bridges

(i) **Cross-sections of channels/ rivers**

Drawings of all the cross-sections across the channel/river shall be plotted in consecutive order to a scale of 1 : 200 for horizontal and 1 : 100 for vertical. The drawings shall show details of ground levels, invert levels and chainage as required. Refer to **Appendix F**.

(ii) **Cross-sections along the centre line of the existing road/ Bridges**

Drawings of all the cross-sections along the centre line of the existing approach road and bridges, shall be plotted in consecutive order, to a scale of 1 : 200 for horizontal and 1 : 100 for vertical. The drawings shall show details of ground levels and distances from the centreline of the existing road. Refer to **Appendix G** and **Appendix H**.

1.5.7 Plans for Junction or Site Details

Wherever shown on the drawings or as instructed by the Government, the CLS shall provide plans that show details of Junctions or Site to a scale of 1:500. These details shall be as described in Paragraph 1.4 and any other additional details as instructed by the Government.

1.5.8 Land Acquisition Plans

The CLS shall compile and prepare base plans for property, land acquisition and applications purposes from the JUPEM's cadastral maps and latest revenue sheets from the Land Office and other relevant Government agencies to the same scale all in accordance with JKR guidelines as described in *Arahan Teknik (Jalan) 7/85 (Pindaan 2014)*.

The drawing shall show the following: -

(a) Lot boundaries
(b) Lot numbers
(c) Existing total lot areas computed based on coordinates (Determination of areas by measurement is not permitted).
(d) Land use indicating type of cultivation, etc.
(e) Types of buildings indicating permanent or semi-permanent and usage
(f) The existence of burial ground if any falls within the survey corridor.
(g) Other relevant details as instructed by the Government

Land lots that are partially within the mapping area shall be presented showing the whole area of that lot.

All coordinates shall be computed and all calculations shall be presented in a neat and clean form as agreed by the Government. Coordinates shall be presented based on the transformation factor as described in Sub-paragraph 1.3.1.

The drawing of this plan does not include the preparation of the final land acquisition plan nor the computation of the area to be acquired.

1.5.9 Format of Drawings to Be Submitted

1.5.9.1 Format for Presentation

Unless otherwise specified in the Terms of Reference, all formats of drawings submitted including the title block shall conform to JKR Guidelines as contained in *Arahan Teknik (Jalan) 6/85* (*Pindaan 2016*) (Guidelines For Presentation of Engineering Drawings). All drawings shall be to A1 size unless otherwise specified.

Unless otherwise specified all text and annotations shall be in English.

All legends any symbols used in the drawings shall be those currently used by JKR for the standard MOSS drawing output and approval must be obtained for any departure from accepted practice.

RSO (Malaya) grid lines shall be shown by symmetrical lines at 100 mm. intervals for Peninsular Malaysia; while RSO (Borneo) Grid lines shall be shown by symmetrical lines at 100 mm. intervals for Sabah, Sarawak and FT of Labuan.

For Peninsular Malaysia, State Cassini-Soldner grid lines (if so required by the Government) shall be shown at 100 mm intervals by symmetrical crosses (10mm. North-South and 10mm East-West). Coordinates shall be shown outside the band of detail, or at the sheet edges at 100m interval.

1.5.7.2 Preliminary Copies

Preliminary copies shall be submitted in the form of stable based paper printed by diazo process. Every sheet of the drawings shall be marked as Preliminary copy.

1.5.7.3 Final Drawings

All Final Drawings shall bear the name, signature and qualification of the CLS as well as the name and address of his company.

Final Drawings shall consist of two (2) set of paper prints and if necessary further copies until approved. One (1) set of readable / editable softcopy plans on USB Flash Drive or Digital Versatile Disc (DVDs) shall also be provided in Autocad 2014 format.

1.5.10 Format of Data to be Submitted

The CLS shall submit the survey data in USB Flash Drive or DVD-ROM in .DWG (Autocad 3-D) format.

1.6 Date of Submission of Drawings and Data

1.6.1 Survey Drawings and Data for Preliminary Design

Drawings and data listed under Sub-paragraph 1.5.2 are to be prepared and submitted to the Government within **2 weeks after completion of the relevant field works** and prior to the preparation of other drawings.

Whenever necessary the plans and data may be delivered in stages as instructed by the Government.

1.6.2 Completed Survey Drawings and Data

All survey drawings and data are to be prepared and submitted to the Government within 4 weeks or as instructed by the GR, whichever is earlier, after completion of the relevant field works. All services to be performed under the Terms of Reference shall be completed within the duration of Services as stipulated in Clause 3.1 of this Agreement.

1.7 Field Books and Final Survey Report

All field books and computer data must be properly kept and shall record truthfully all the survey work carried out. The CLS shall do all workings in proper books, adequately in good style and according to best practice. All field books shall be done in ink. Unsatisfactory works and errors shall be struck off and there shall be no superimposed writing or erasure.

The GR may check the field books now and then to ensure that a high standard of work is maintained. He may request the CLS to carry out some spot checks if he has reasonable doubt on the accuracy of the survey work. The CLS shall comply with such requests unless he can prove to the Government's representative's satisfaction that such checks are unnecessary.

The CLS may propose the use of electronic equipment for the purpose of booking. The type of equipment is subject to the Government's approval.

On completion of survey work, all field books and computer data shall be properly labelled and compiled and submitted to JKR and shall remain the property of the Government.

All field books and survey data, plans and drawings shall be duly certified by the CLS in a format as shown in **Appendix I**.

STAGE 2

SERVICES SPECIFICATIONS FOR TOPOGRAPHICAL SURVEY WORKS

1. Scope of Works

1.1 Survey Area

The details of the extent of the works to be surveyed is given in the attached plan.

2. Basic Professional Land Surveying Services for topographical survey works

The Services to be rendered by the CLS in this paragraph include the provision of all expert technical advice and skills, which are normally required for the Works for which the CLS has been engaged.

2.1 General

The Services to be provided by the CLS as listed herein and as detailed in subsequent sections: -

2.1.1 Prior discussion with relevant authorities such as JKR, PDRM, land office and local authorities before the physical commencement of work on site.

2.1.2 Study all relevant information and maps provided and obtain additional data if necessary for the proper execution of the works.

2.1.3 Field survey and picking up of mapping details for subsequent submission of digital data in DWG (Autocad) format.

2.1.4 Establishment of Permanent Ground Markers for survey control such as Survey Markers and Temporary Bench Marks.

2.1.5 Compilation, processing and preparation of data in accordance to DWG format (Autocad).

2.2 Accuracies, Tolerances, Errors and Corrections

Wherever accuracies or tolerances are specified herein, they are defined as Maximum Errors or statistically based root mean square errors (r.m.s.e.) as follows: -

2.2.1 Maximum Errors

Maximum errors are only used for fieldwork misclosures [sub-paragraphs 2.3.1 and 2.3.2] and plotting of map grids and control points [sub-paragraph 2.4.3].

All errors exceeding the maximum allowable tolerance including consequential errors shall be corrected by the CLS at his own expense.

2.2.2 Method and Location of Corrections

The CLS shall agree with the Government the method, location and extent of the work to be corrected.

2.3 Fieldwork

2.3.1 Planimetric Control

Survey control shall be calculated using the state Cassini-Soldner projection based on Geocentric Datum of Malaysia (GDM).

Azimuths shall be checked by solar observations at appropriate intervals and the survey traverses shall be tied up to any nearby trigonometrical points or standard traverse points or permanent GPS points or Boundary Mark. The maximum closing error of the traverse shall be 1:4000 or better.

Survey should be started from the Local Survey Datum.

Existing boundary marks within and adjacent to the Work site shall be located. Replacement with temporary markers shall be done when the boundary marks are found to be missing.

2.3.2 Height Control and Connection

All heights supplied by the CLS shall be related to the latest published values of JUPEM Bench Marks at the time of survey.

JUPEM Bench Marks which exceed these tolerances shall be omitted from the adjustment. The CLS shall inform the GR and JUPEM whenever the JUPEM Bench Marks are found to be damaged or in error.

At least three (3) Temporary Bench Marks (TBMs) shall be established at the Work site and indicated the same on plan. The TBM shall be of solid construction and shall be of concrete.

All Temporary Bench Marks shall be connected by a closed levelling net which shall be tied to a minimum of two JUPEM Bench Marks unless otherwise agreed by the Government.

All levelling shall be done in sections of approximately 1 km. in length.

Vertical misclosures within the levelling net and between JUPEM bench marks shall not exceed the lesser of the following: -

(a) ± 16 mm

(b) ± (20 $\sqrt{K}$) mm where K is the sum of the distances levelled in kilometres.

Levelling shall be carried out with spot height at 10 m. interval & contour lines should cover the whole of site and 20 meters beyond the boundaries and any other areas indicated in red in the attached Requisition Plan.

2.3.3 Permanent Ground Markers

Permanent Ground Markers shall include the following: -

(a) Survey Markers (SMs)

(b) Temporary Bench Marks (TBMs)

The CLS shall construct, coordinate and height Permanent Ground Markers to the satisfaction of the Government at the location where points are required to form a reference system for future setting out of the Works at the approximate locations indicated on the Drawings, clear of future construction works and as agreed with the Government.

The types of marker which will be considered acceptable for the appropriate general ground surface conditions. Alternative forms of marker submitted by the CLS may however be considered.

The Government will indicate on the Drawings the likely types of the Permanent Ground Markers to be installed within the Site. The final locations and types of markers shall be agreed with the Government before emplacement. All Permanent Ground Markers shall be clearly and legibly inscribed to distinguish between SM and TBM.

There shall be a joint inspection and handling over of all Permanent Ground Markers to the GR.

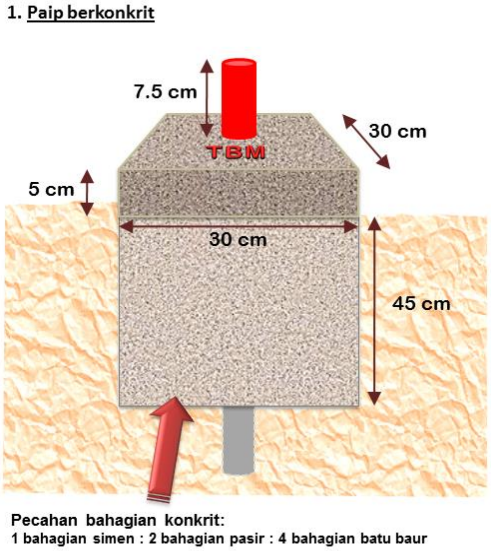
2.3.3.1 Survey Markers

Whenever required by the Government, the CLS shall erect permanent Survey Markers at locations indicated in the Drawings or as agreed by the Government.

2.3.3.2 Temporary Bench Marks

The CLS shall establish Temporary Bench Marks at approximately 1 km intervals or minimum 3 TBM/ Site or 1 TBM/ 10ha and reference it to the JUPEM Datum. Reduced levels of these temporary bench marks shall be clearly and legibly inscribed and referenced for identification for the subsequent construction stage.

The CLS shall supply two copies of diagrams of the levelling net indicating the connections between Permanent Ground Markers, Temporary Bench Marks and JUPEM Bench Marks with misclosures. to the Government on completion of fieldwork and survey adjustment.



2.3.4 Topographic Detail Survey

All details and up the full width of the approach road fronting the land shall be picked up, inclusive of the following: -

(a) North Point;
(b) All boundary marks;
(c) Road names, pavement, side tables, road islands, meridian and intersections;
(d) Visible manhole, inspection cover, sump and their invert levels, if necessary;
(e) Water supply pipes and water mains-water pressure;
(f) Drain, culvert and invert levels – direction of flow;
(g) Electricity and telegraph poles and pylon;
(h) Existing temporary and permanent buildings in and around sites;
(i) Fencing – types and weight;
(j) River, stream, inverts and flood levels;
(k) All others visible obstacles for future construction, e.g. flood levels, and etc;
(l) Prominent trees 0.3 metre in circumference and bigger; and
(m) Railway track, rock, outcrops and etc.

2.3.4.1 Survey of Watercourses

(a) Streams and Rivers

The CLS shall survey all streams, rivers and watercourses crossing or located adjacent to the Work site. These include all watercourses whether there is water or no water flow at the time of surveying.

(b) Urban Drainage

The CLS shall survey all top and bottom edges and invert levels of urban drains at intervals not exceeding 10 m, showing all significant changes of level and direction of flow. The type, width and depth of each section of different drainage system (including sumps) shall be recorded.

(c) Culverts

All the relevant details of the culvert as described in Sub-paragraph 2.4.7 shall be recorded.

(d) Flood Information

The CLS shall record the maximum flood level at each river crossing. Existing water surface at suitable points shall be taken along the channel.

In areas where tidal effects are significant, the CLS shall gather all the necessary information to the mapping in a form agreed by the Government.

2.4 Mapping

2.4.1 Unit of Measurement

Metric units shall be used throughout.

2.4.2 Scale

Mapping on final drawings shall be plotted to a scale of 1:1000.

2.4.3 Control and Detail Accuracy

Mapping shall be based on the Planimetric Control as defined in Sub-paragraph 2.3.1. Permanent Ground Markers shall be drawn to an accuracy of ±0.3 mm maximum tolerance.

Well defined points of detail shall be plotted in their true positions at map scale to ±0.3 mm root mean square error when coordinated scaled off the map are compared with coordinates determined by measurement on the ground from the nearest Permanent Ground Marker. (90% of a representative sample of well-defined points shall be within ± 0.5 mm).

2.4.4 Features To Be Shown:

2.4.4.1 Buildings/ Structures

(a) The plinth line of all permanent buildings.
(b) Construction type of building, whether Wooden (W), Semi-Conc.(SC), Concrete (C), Double-Storey (D), and etc.
(c) Ruins or partially demolished buildings or foundations - by the walls and masonry visible at the time of the survey.
(d) Names and type of usage of all buildings, schools, and etc.
(e) Buildings under construction.

2.4.4.2 Boundary Features

(a) Fences and gates
(b) Boundary marks located/used for fieldwork
(c) Land parcels and their lot numbers
(d) Walls
(e) Burial grounds (Indicate whether Muslim, Chinese, Christian, Hindu, and etc.)
(f) Historical sites

2.4.4.3 Railways

(a) Gauge faces of railway running rails
(b) Level crossings
(c) Platforms
(d) Bridges (over roads, river, etc.)
(e) Station buildings
(f) Telegraph poles (indicate the reference numbers)

2.4.4.4 Roads, Tracks and Footpaths

(a) Kerb line or edge of surfacing to carriageways.
(b) Tracks
(c) Pedestrian bridges and footpaths
(d) Traffic islands (similar to kerb line).
(e) Destination of road from junction level
(f) Bridges (over Railway, rivers, etc.)

2.4.4.5 Road Furniture

(a) Kilometer post (value to be noted)
(b) Bus stop facilities
(c) Traffic signal posts and controllers
(d) Guardrails
(e) Road signs

2.4.4.6 Industrial

(a) Tanks (indicate type of material stored e.g. fuel, gas, water, and etc.)
(b) Sewage disposal works details
(c) Chimneys (substantial)

2.4.4.7 Slopes and Earthworks

(a) Cutting and Embankments
(b) Terraced slopes
(c) Borrow pits / Quarries
(d) Retaining walls
(e) Rock outcrops
(f) Mining tips
(g) Indicate date of survey if on-going earthworks are present and mark the affected area.

2.4.4.8 Services and Utilities

(a) Transformers (boundary fences only)
(b) Electricity Sub-Stations and switch boxes (boundary fences only)
(c) Pylon lines (indicate levels at lowest point at sag and at pylon towers).
(d) Pylon bases
(e) Pylon reference numbers and voltage of transmission.
(f) Radio, TV station masts or towers
(g) Telecom poles
(h) Electricity poles
(i) Fire hydrants
(j) Water Mains pipes and Stop valves (Indicate diameter of pipe)
(k) Manholes (circular and square)

2.4.4.9 Survey Controls

(a) JUPEM's Trigonometrical Stations
(b) Permanent GPS points
(c) Permanent Ground Markers (TBMs, etc.)
(d) JUPEM Bench Marks used (Indicate reference number and height level)

2.4.4.10 Woods, Trees & Recreation Areas

(a) Playing fields
(b) Prominent trees
(c) Land-use and vegetation, and etc.

2.4.4.11 Water, Drainage and Coastal Features

(a) Lakes
(b) Ponds or mining pools
(c) Reservoirs
(d) Rivers (Name to be indicated)
(e) Streams
(f) Ditches. (width and depth to be indicated)
(g) Canals
(h) Wells. (Diameter or width to be indicated)
(i) Swamps
(j) Lined drains (width, depth and type to be indicated)
(k) Water towers
(l) Culverts
(m) Waterfalls
(n) Jetties

The top of banks of all water features over 1.0 metre wide shall be detailed and the bottom of banks as indicated by the water level at the time of the survey. The direction of flow of all rivers, streams and watercourses shall be indicated.

Slopes with a height greater than 1.0 metre of too sharp a gradient to be shown by contours, including river and stream banks are to be shown on conventional markings and the top and bottom of slopes are to be shown as dotted lines.

Slope conventions shall be drawn as near as possible to indicate the actual shape of the slope face, i.e. all berms and terraces shall be detailed.

Any other features not listed, which are requested by the Government shall also be shown.

2.4.5 Contours

Where required, contours shall be shown at vertical intervals as described in Sub-paragraph 1.3.7 and shall be correct to within the tolerances given below when a representative sample of points on contour lines is checked by measurement from the nearest JUPEM Bench Mark or height control point.

Contour Interval	r.m.s.e.	90% Tolerance
1.0m	±0.30m	±0.50m
2.0m	±0.60m	±1.00m
3.0m	±0.90m	±1.50m

Where steep slopes are encountered and it is not practicable on the plan to represent each contour fully throughout, its length, the CLS may with the Government's approval terminate certain intermediate contours.

Any contour which can be brought within this vertical tolerance by moving its plotted position in any direction by not more than 0.5 mm or one-tenth of the horizontal distance between contours, whichever is the greater, shall be considered acceptable.

Index contours shall be shown using continuous thick lines. Contour and spot heights shall be differentiated from other details. The value of each contour shall be indicated along the contours at intervals not exceeding 200 mm and / or the edges of the Mapping Area.

Where because of undergrowth, on-going earthworks, swampy areas, or other obstructions, the ground surface is obscured, or access is restricted, and provided the Governments prior agreement is obtained, contours can be shown by broken lines to indicate that their accuracy cannot be guaranteed.

2.4.6 Spot Heights

Spot heights shall be shown on the Final Drawings at spacing not exceeding 20 m. at the following locations: -

(a) at salient points such as hilltops, bottoms of depressions and saddles.

(b) along the centre and edges of all roads and public accesses, at road intersections and significant changes of gradient.

(c) at water level at the time of survey along rivers, streams, major watercourses and ditches.

(d) on bed levels of rivers, streams, canals and other watercourses.

In flat areas, where the horizontal distance between contours generally exceeds 40 m. Supplementary spot heights shall be shown at intervals not exceeding 20 m. parallel to the contours.

Spot heights shall be correct to within the tolerances given below when a representative sample is checked by measurement from the nearest JUPEM Bench Mark; or

Map Scale	r.m.s.e.	90% Tolerance
1:500	± 0.06m	± 0.10m
1:1000	± 0.12m	± 0.20m
1:2500	± 0.30m	± 0.50m
1:10000	± 1.00m	± 1.60m

2.4.7 Culvert Details

Details of each culvert are to be shown on the Survey plans and a separate tabulation of the following information is to be submitted with the plans: -

(a) Type of culvert and diameter;
(b) Chainage of culvert at the road centre line;
(c) Skew angle of the culvert from the centre line;
(d) Length of culvert from each side of the centre line;
(e) Invert levels of the inlet and outlet;
(f) A sketch of the inlet and outlet structures including all visible dimensions.

2.5 Preparation and Submission of Plans and Data

The CLS shall prepare site plan with boundary dimensions and bearings to scale of 1:000 or as agreed the GR covering the whole site and including the area up to the full width of approach road adjacent to the site and indicate on it all the details as listed in Sub-paragraph 2.4.4.

The CLS shall state whether site is liable to flooding, and if it is, state the highest water levels experienced or likely to experience.

2.5.1 Key Plan and Location Plan

Key Plan and Location Plan of the proposed site shall be shown to a suitable small scale such that the area under study can be included into a single standard A1 size sheet as part of the Final Survey Plan.

2.5.2 Final Survey Plan

The plan shall consists of site plan, Key Plan and Location Plan.

2.5.3 Detail Plans for Culvert Sites

Details of any adjacent existing culverts in Sub-paragraph 2.4.7 shall be shown as a separate figure with all the relevant dimensions in a suitable scale.

2.5.4 Format of Drawings to Be Submitted

2.5.4.1 Format for Presentation

All drawings shall be to A1 size unless otherwise specified.

All legends and symbols used in the drawings shall be those currently used by JKR for the standard MOSS drawing output and approval must be obtained for any departure from accepted practice.

For Peninsular Malaysia, State Cassini-Soldner grid lines (if so required by the Government) shall be shown at 100 mm. intervals by symmetrical crosses (10mm. North-South and 10mm East-West). Coordinates shall be shown outside the band of detail, or at the sheet edges at 100m. interval.

2.5.4.2 Final Drawings

Approved Final Drawing shall be plotted on suitable paper material.

The CLS shall submit one (1) set of hardcopy plans on tracing paper, two (2) sets of paper prints and one (1) set of readable / editable softcopy plans on USB Flash Drive or DVD-ROM in AutoCAD 2014 format.

All Final Drawings shall bear the name, signature and qualification of the CLS as well as the name and address of his company.

2.5.4.2 Computer Input Requirement

The CLS shall supply the digital data ground model data suitable for input to the Government computer as specified below :

Government Computer
Make : DELL
Model Number : OPTIPLEX 990
Operating System : Windows 7
Main Software : AutoCad Civil 3D 2014

The data shall be supplied as spsecied below in order of preference :

a) USB Flash Drive
   Format : Windows 7
   Capacity : 4 Gigabyte and above

b) Digital Versatile/ Video Disc
   Format : Windows 7
   Capacity : 4.7 Gigabyte

The data shall be supplied with an index scheduling the contents and referencing and shall remain the property of the Government.

2.6 Date of Submission of Drawings and Data

All survey drawings and data are to be prepared and submitted to the Government within the duration of Services as stipulated in Clause 3.1 of this Agreement.

STAGE 3

SERVICES SPECIFICATIONS FOR BRIDGE WORKS

3.0 SCOPE OF SERVICES

3.1 General

The scope of survey services to be provided by the Surveyor shall be as listed herein under and as detailed in subsequent paragraphs:-

(a) Prior discussion with relevant authorities such as JKR, JPS, Police and Land Offices before the physical commencement of work on site.

(b) Study of all relevant information and maps provided and obtain additional data if necessary for the proper execution of the proposed works.

(c) Field survey and picking up details.

(d) Consultation with the Engineer and Setting Out.

(e) Levelling and establishment of Temporary Bench Marks (TBM)

(f) Preparation of plans and data suitable for bridge/culvert design.

(g) Pegging of centre line and cross-sectioning.

(h) Pegging of right-of-way (if required)

3.2 Field Survey and Setting Out

3.2.1 General

The surveyor shall perform all field survey work necessary to locate accurately the locations and dimensions of the following features within the corridor of the existing structure at every location for survey of:-

(a) Existing roads, tracks and paths, JPS reserve and ROW line.

(b) Existing structures above and below the ground level indicating whether temporary, semi-permanent or permanent and whether dwelling, industrial of other use, type of construction and any other relevant particulars.

(c) Existing drains including their type of construction.

(d) Natural vegetation and type of plantation.

(e) Existing water main, TNB and Telecom overhead lines and underground cables, Telecom manholes, fire hydrants, pylons etc.

(f) Highest known flood levels.

3.2.2 Consultation with Client before Setting Out

Before setting out, proposals for the detailed survey should be submitted to the Government before the work is being carried out.

3.2.3 Monumenting of Existing Bridge/ Culvert and Road

The Surveyor has to set out and peg the centreline of the existing bridge/culvert and the right-of-way limit where appropriate.

The Surveyor when requested by the Government shall provide all the assistance and necessary information regarding the survey and show the Government's representative on the ground the whole setting out whenever required to do so.

For setting out of the centre-line on existing bridge/culvert and roads, steel rod pins or spikes must be used. These spikes shall be permanent in nature.

There shall be a joint inspection and handing over of all BM's and TBM's to the Government's representative after pegging out or setting out have been completed.

3.3 Levelling

3.3.1 Levelling to Establish Temporary Bench Marks

The Surveyor shall establish temporary bench mark(s) and relate it to Survey Department Datum (Ordinance Datum). Reduced Level of this temporary bench mark(s) shall be clearly and legibly inscribed on the mark(s) and referenced for identification for the subsequent construction stage. The location of bench mark(s) must be clearly described and indicated on the plans to be submitted. This TBM(s) shall be located well away from the construction limits. The maximum error in spot levels shall not both exceed $+\sqrt{0.02K}$ metres where K is the horizontal distance in kilometres from the nearest Permanent Bench Mark.

3.3.2 Surveys at Bridge/Culvert Sites

The Surveyor shall survey to the distances as shown in Fig. 1 on either side of the road and bridge centre-line. The Government may request the Surveyor to extend these distances where it is required.

The locations of channel edges and other significant features shall be recorded and levels shall be taken along the bank slopes and channel inverts at interval of 3m. A minimum of 3 cross-sections showing all significant changes of level are required at both sides of the channel. The cross-sections, one of which shall be taken along the existing structure centre-line shall extend to a distance not less than **30.0m** from one bank tops on either side of the stream.

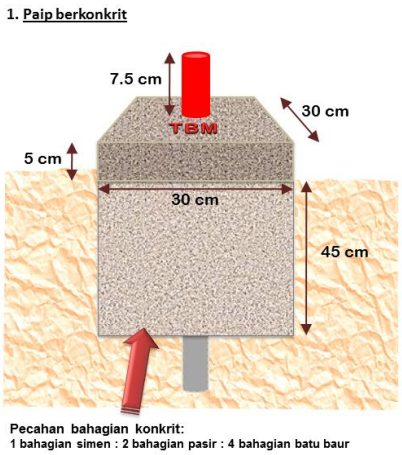
The Surveyor shall record the maximum flood level at each river crossing. Existing water surface at suitable points shall be taken along the channel. Each reading shall be taken at intervals not exceeding one hour. The Surveyor shall indicate on the Plan and Longitudinal Profile the chainage and reduced level of the lowest point of all depressions along the route including direction of flow.

3.4 Booking For Survey

The Surveyor shall do all workings in proper books, adequately in good style and according to best practice. All fields shall be done in ink. Unsatisfactory works and errors shall be struck off and there shall be no superimposed writing or erasure. The field books must be kept properly. On completion of the survey works, all field books shall be properly labelled, certified and submitted to the Government and will remain the property of the Government.

3.5 **Reference Markers (TBM)**

To ensure accuracy, reference markers shall be placed at least 25m away from the mark (i.e. IP's or TBM's). There shall be at least **2 TBMs** and the base of the triangle which they form with the apex should be at least 15m apart.



3.6 **Colour Codes For Pegs.**

All pegs should be colour-coded with paint on site to indicate their purpose. A consistent colour code as specified below must be retained throughout the survey.

PEG COLOUR CODE

PEG FUNCTION	COLOUR
Centre Line pegs for all work	Red
Off-set pegs from centre line	White
Right of Way (ROW)	(Specified Design)

4.0 **PREPARATION AND SUBMISSION OF PLANS AND DATA**

4.1 The Surveyor shall provide the Government with soft and hard copies for all the drawings prepared. All soft copies submitted must be in **AutoCAD 2014 or .dxf format**. The hard copies submitted shall comprise of one set of tracings with 2 sets of prints. The drawings required are as follows:-

(a) **Key Plan**

The key plan shall be indicated with Longitude and Latitude reference to the proposed site.

(b) **Site Plan**

i) The site plan is required in 1/8 inch to a chain scale or a preferred scale used for land acquisition in the district.

ii) Each lot shall be provided with the coverage of land area with C.P. references (if any) and the name of Mukim, District and reference of sheet number has to be given.

(c) **The Survey Plan and Longitudinal Profile**

The plan view and the longitudinal profile should be shown in the same plan and shall be as follows:-

(i) **Top Section of Plan-View (With Spot Levels)**

These shall show the existing road and structure centre-line, chainages of centre-line markers, locations and levels of Temporary Bench Marks, contours of corridor surveyed, channel profile (100 meters upstream and downstream), direction of water flow, existing structure, existing roads (100 meters of both side of structure), Reference markers and other features that may be required for design considerations.

Scale : Horizontal (1 : 300 preferred)

(ii) **Bottom Section of Plan-Longitudinal Profile**

These shall show the longitudinal profile of the road and structure centre-line, cross-section of the rivers, position of existing structure, highest know flood level (if any), water level during surveying (time and date shall be stated) and other features needed for design considerations for a distance 100 meter on both side of the existing structure.

Scale : Horizontal (1 : 300 preferred)
Vertical (1 : 100)

(d) **Cross-Sections**

(i) **Cross-sections of channels/ rivers**

Drawings of all the cross-sections across the channel/river shall be plotted in consecutive order to a scale of 1 : 200 for horizontal and 1 : 100 for vertical. The drawings shall show details of ground levels, invert levels and chainage as required. Refer to Figure (ii).

(ii) **Cross-sections along the centre line of the existing road/ Bridge**

Drawings of all the cross-sections along the centre line of the existing road, shall be plotted in consecutive order, to a scale of 1 : 200 for horizontal and 1 : 100 for vertical. The drawings shall show details of ground levels and distances from the centreline of the existing road. Refer figure iii & iv.

4.2 **Format of the Plans and Drawings**

All formats of plans submitted including the title block shall conform to JKR Guidelines as contained in Arahan Teknik (Jalan) 6/85 (*Pindaan 2016*) (Guidelines For Presentation of Engineering Drawings). All drawings shall be to A1 size unless otherwise specified.

All legends and symbols used in the plans shall be those currently used by the JKR and approval must be obtained for any departure from accepted practice.

For the preparation of drawings, the followings format is preferred: -

Colour	Pen Size	Layers
White	0.18	Public Services; Existing Slope
Cyan	0.18	River & Drain; Contours & Spot Level
Green	0.25	Road
Yellow	0.35	Lettering; Existing Bridge
Magenta	0.50	Lot Boundaries and Road Reserve

4.3 **Date of Submission of Plans and Data**

All survey plans and data are to be prepared and submitted to the Government within 2 weeks after completion of the each site. However, all services to be performed under the Terms of Reference shall be completed within **4 weeks** of the date of appointment. The surveyor is to submit his time schedule showing each item of work and the time required to the Government for approval.

5.0 **FIELD BOOK**

All field books must be properly kept and shall record truthfully all the survey work carried out. The Government's representative may check the field books now and then to ensure that a high standard of work is maintained. He may request the Surveyor to carry out some spot checks if he has reasonable doubt on the accuracy of the survey work. The Surveyor shall comply with such requests unless he can prove to the Government's representative's satisfaction that such checks are unnecessary. On completion of survey work, all field books shall be properly labelled and submitted to JKR and shall remain the property of the Government. All field books and survey data, plans and drawings shall be duly certified by the CLS in a format as shown in **Appendix I**.

6.0 **SURVEY STAFF ETC.**

The Surveyor shall provide such staff, instruments and equipment, tools, materials, tentage, transport, etc, and will ensure the completion of the work to the standards and within the time schedules specified. All technical staff employed by the Surveyor for the execution of the works shall be suitably qualified and experienced in route location work. Party leaders shall possess the minimum qualification of technician surveyor.

A professionally qualified surveyor shall be provided to take charge of the survey parties and provide day-to-day liaison with the Government's representative.

7.0 GOVERNMENT INDEMNITY

The Surveyor shall be responsible for any damage to life and property that may arise out of his work and he shall take out all necessary insurance cover to indemnify the Government from any claims of compensation that may arise out of his work.

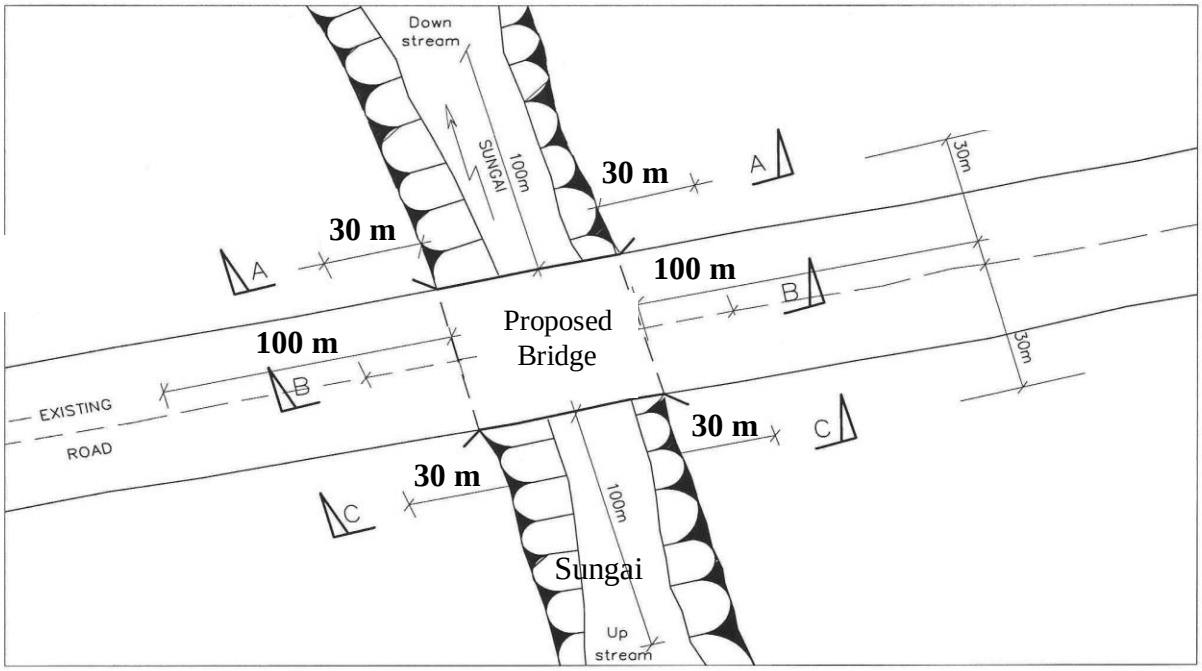
8.0 REMUNERATION

The fees payable to the Surveyor firm shall follow Fixed Fee.

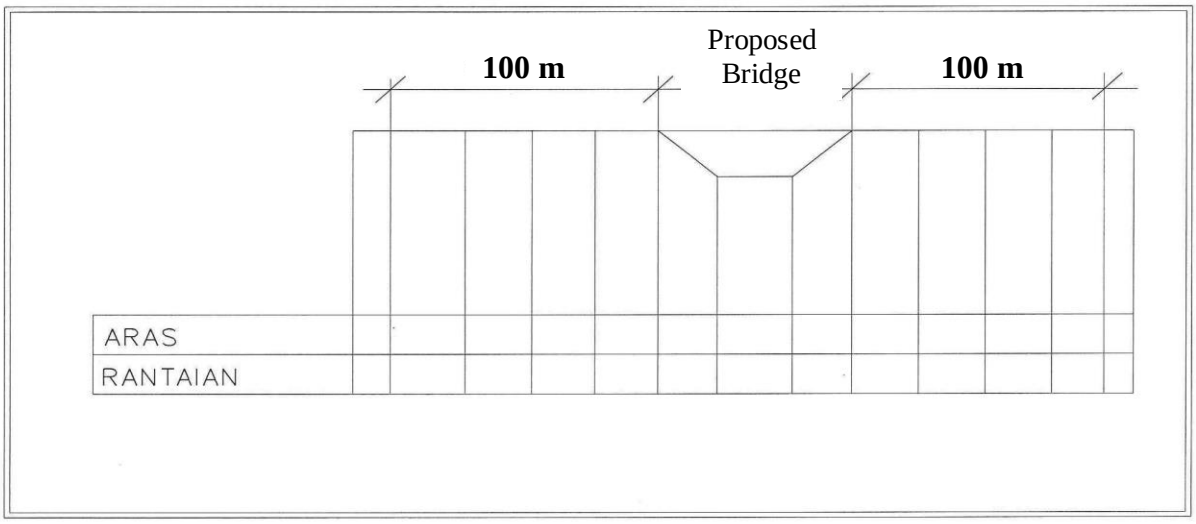
The Surveyor's fees for the rendering of services mentioned under the Scope of Work and elsewhere in the Terms of Reference, shall be deemed to cover all materials, services, wages, allowances, investigations, field surveys, equipment, transport, computations, preparation of plans, overheads, profits and other fees and expenses as stated in the Memorandum of Agreement between Government and consulting Surveyor for Professional Services.

PELAN DAN KERATAN MEMANJANG JAMBATAN

PLAN AND LONGITUDINAL PROFILE FOR BRIDGES



PLAN



KERATAN MEMANJANG JALAN SEDIADA

Figure (i)

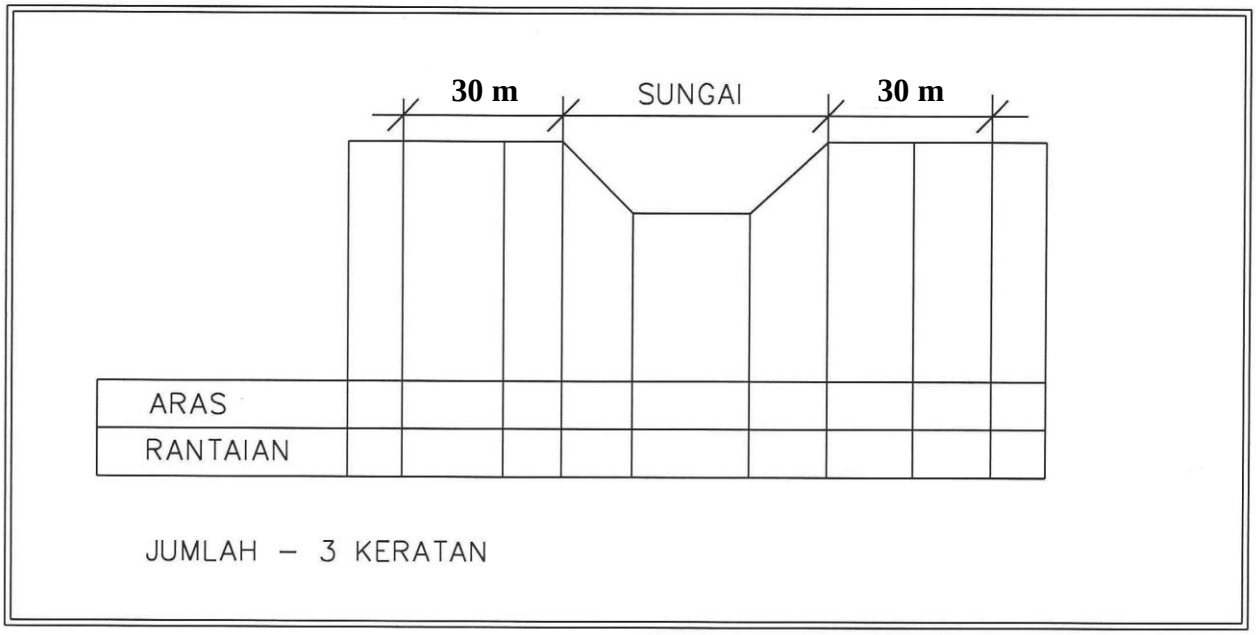
KERATAN LINTANG SUNGAI
CROSS - SECTION OF RIVER

Sejauh **30 m** dari kedua-dua belah tebing sungai.
*A distance of **30m** from the river bank at both sides.*

(i) Dari garis tengah jalan sediada.
At centreline of existing carriageway.

(ii) **100 m** dari garis tengah jalan sediada - di hulu sungai.
*At **100 m** from centreline of existing carriageway - upstream.*

(iii) **100 m** dari garis tengah jalan sediada di hilir sungai.
*At **100 m** from centreline of carriageway - downstream.*



KERATAN LINTANG SUNGAI

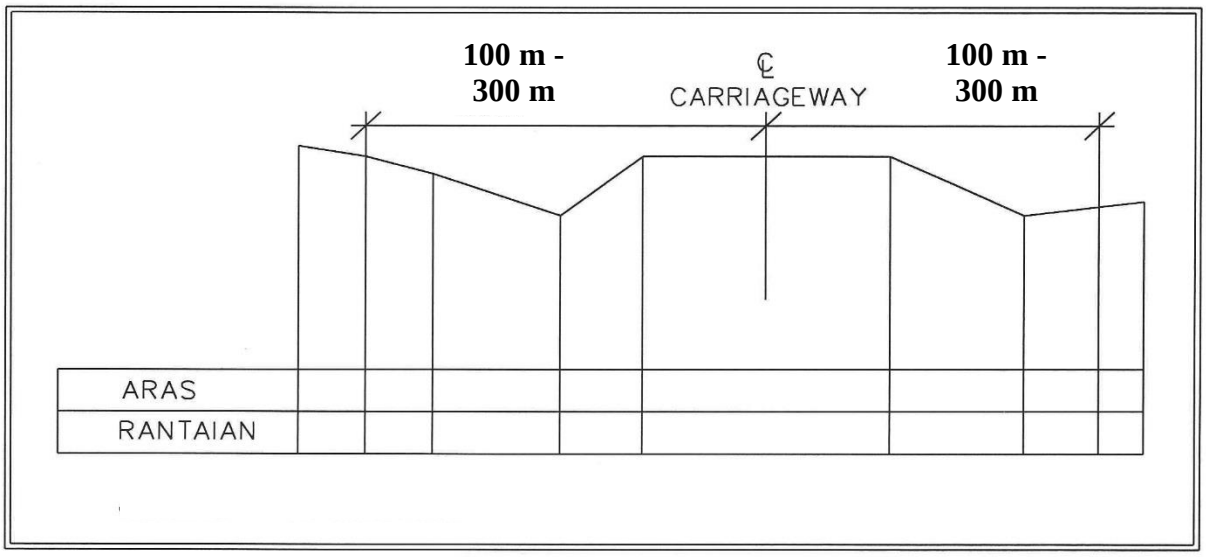
Figure (ii)

KERATAN LINTANG JALAN SEDIADA
CROSS - SECTION OF EXISTING ROAD

(i) **100 m – 300 m** dari garis tengah jalan di kedua-dua belah jalan.
100 m – 300 m *corridor from centreline of carriageway, on both sides of road.*

(ii) Kedudukan tembok-tembok landas jambatan sediada.
Position of existing abutments.

(iii) Keratan lintang pada setiap jarak sepanjang **20 m** dari kedua-dua tembok landas jambatan sediada.
*Cross section of **20 m** intervals from existing abutments at both approaches.*



KERATAN LINTANG JALAN SEDIADA

Figure (iii)

KERATAN LINTANG JAMBATAN SEDIADA

CROSS - SECTION OF EXISTING BRIDGE

Sejauh **30 m dari garis tengah jambatan** sediada dengan mengambil kira semua kedudukan dan jarak kemudahan awam yang ada di kedua-dua sisi jambatan.

Up to a distance of 130m from centerline of existing bridge showing all the location and distance of existing public services on both sides of the bridge.

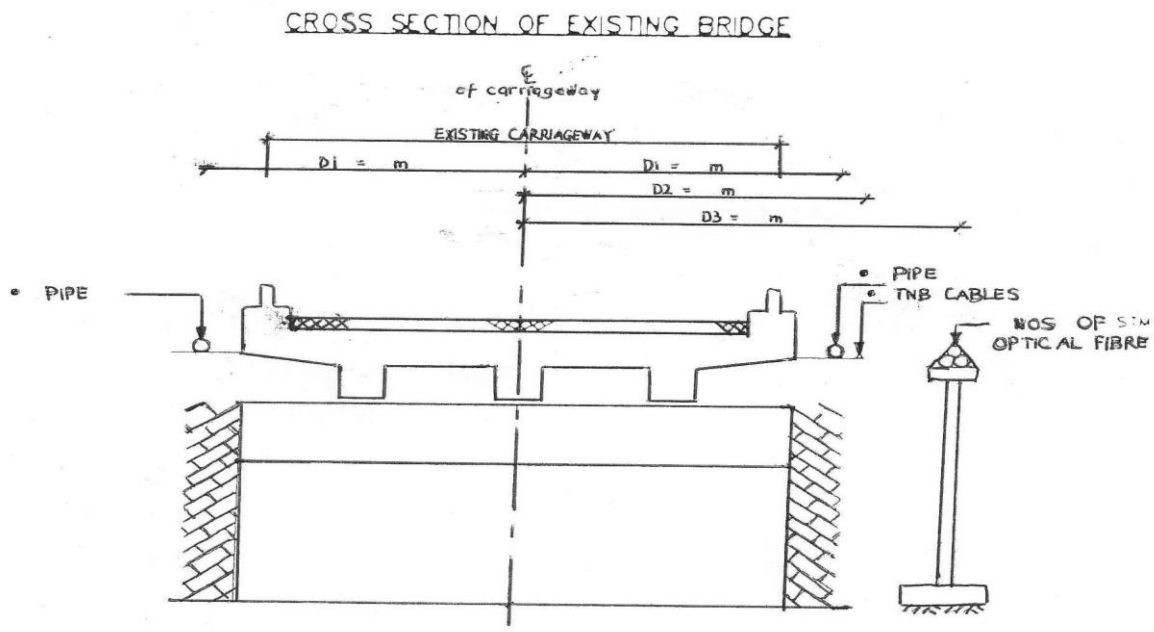


Figure iv

SPECIAL INSTRUCTIONS TO THE CLS

ACAD Drawing

All layer in ACAD drawing shall following as below:

Bil	Definition	Layer's name	Colour
1.	Contour	Contour	Red
2.	Lot	Boundary Lot	Brown
3.	Lot No.	Lotno	Brown
4.	Road	Road	Green
5.	Text	Text	White
6.	Public Services	PUS	Magenta
7.	Building/Fence	Bld	Red
8.	Slope/Cut/Fill	Slope	Cyan
9.	Culvert	Culvert	Blue
10.	Drain/Invert Level	Drain	Blue
11.	Bridge	Bridge	Blue
12.	River	River	Blue
13.	Spot Height Text	Spotht	White
14.	Spot Height Point (3D x,y,z)	Point	Yellow
15.	Traffic Sign	Sign	White
16.	Railway Track	Railway	Red
17.	Detail/TBM/Travers Station	Detail	White
18.	Grid/Utara	Grid	White
19.	Vegetation	Veg	Green
20.	Title Block/Frame	Tblock	White
21.	Others	Others	White

ACAD 3D Format

Surveyor was required to provide ACAD 3D for all 3 dimensional string.

Filing Conventions

The following shall be the conventions used for this project:

a. Restrict the filename length to eight characters
b. The filename extension shall be as follows:

Survey data files	-	.SUR
Digit files	-	.DIG
MOSS Input files	-	.MOS
MOSS Draw files	-	.DRW
MOSS macro input files	-	.MCR
MOSS Genio input data	-	.DAT

Any additional extensions may be used with prior approval from the Government.

Work Directory

Main Directory Pathname for working area is : …….....

Data Tapes

For MOSS Users in Windows 7 operating environment

The CLS shall submit the data in two set of Compact Disc containing:

Tape 1- Only working files (i.e. MODEL.FIL and MACRO.FIL containing the complete and error free digital models plus other relevant MOSS files).

Tape 2 All input data from the Survey work.

For other Users

The CLS shall submit the data in Compact Disc or in USB Flash Drive in GENIO format as defined in the MOSS manual. For Apollo DOS emulation software requirement all filenames have to be with .DAT extensions.

DIGITAL GROUND MODELS (DGM's)

METHODS

The data shall be presented by the CLS in a form suitable for input to the MOSS String Digital Ground Model program, and as defined in the MOSS User Manual which is available from the Government or the local agent for the software.

GRID

The coordinates of the DGM shall be referred to the grid system.

STRING LABELLING

All strings shall be labeled as requested. Any additional labels may be considered and the CLS shall submit the list for approval prior to their usage in the DGM.

MODELS

The DGM shall incorporate two (2) types of digital models as follow:-

a) Ground Model
b) Property Model

Ground Model

The ground surface over the required area shall be simulated by strings of coordinated information along characteristic lines on the terrain. The model shall consist of a combination of three dimensional (3D) and contour (2D) strings.

The existing road surface over the required area shall be simulated by 3D strings of coordinated information along characteristic lines on the existing carriageway. Any other strings that do not affect the accuracy of the ground surface may be assigned a null level. The CLS shall obtain prior approval by the Government for any strings that are to be digitized but that does not absolve the CLS from the subsequent accuracy and definition of the model. The features to be included in the Ground Model shall be as requested.

Property Model

This model shall be stimulated by a series of 3D null level strings and text strings and include the following:-

a) Strings of land lots (null level strings)
b) Lot numbers (Text strings)
c) Reference no. for certified plan no. (Text Strings).

Coordinate of each lot shall be computed and stored as separate strings according to the MOSS GENIO string format. All boundary coordinates shall be calculated based from known information on the Certified Plans.

Any land lot that is partially within the mapping area shall be computed and stored containing the information of the complete lot. No scaling or digitizing work is allowed unless there is no proper lot information and with prior written approval from the Government.

THREE (3) DIMENSIONAL STRINGS

These strings represent man made and angular features or break lines in the terrain. Each 3D string shall be recorded as a series of three dimensional points (easting, northing and level). Features recorded shall include tops and toes of embankments, brows of hills and dips of hollows, highway boundaries, channels, lines of carriageway, footpaths, banks or rivers and streams, railway lines etc.

The general shape in plan of individual traffic islands shall be represented by separate 3D strings with points at sharp changes of direction, levels being given for the adjacent carriageway surface. Supplementary strings sufficient to indicate the approximate vertical profile of paved islands shall be provided. These will also be required on grassed islands where there are insufficient contours (2D strings) to describe their surface shape.

If the highway is kerbed the edges of carriageway are to be defined immediately adjacent to the kerb face except where the kerbs divide a difference in levels (eg. central medians), the top of the kerbs are to be outlined.

Where there are auxiliary traffic lanes, lay-bys, junctions or breaks in the central reservation additional strings will be required along the edge of the carriageway which carries the through traffic.

3D strings shall also be used to define the ground where 2D strings are inadequate. Closer spaced points to define curved 3D strings are required unless special survey options in MOSS to define curves are used.

TWO (2) DIMENSIONAL STRINGS

These are contour strings and shall be recorded as a series of two dimensional points (easting and northing) together with the associated string level.

In models consisting of 2D and 3D strings the 2D strings shall be recorded throughout the area of the model except in the following instances: -

a. **Highways**: Upon carriageway, the features are to be represented by 3D strings only.

b. **Flat Areas**: In flat areas where the horizontal distance between contours exceeds 40m, the contours shall be supplemented by a series of 3D strings so

that the distance between adjacent strings and also between adjacent points on the strings shall not exceed 20 m.

c. **Steep Areas**: Where steep slopes are encountered and it is not practical on the plan to represent each contour fully throughout its length, the CLS may with the Government's approval adopt a 3D string representation. In such instances the slope shall be bounded by a 3D string and any changes of slope or berms within this area shall also be depicted by 3D strings.

d. **Densely vegetated areas or rock outcrop areas**: Where vegetation is so dense that the ground is completely obscured, contour strings may be replaced by 3D point strings the spacing of which shall be agreed with the Government.

e. **Temporary features**: Where features appear to be temporary such as stockpiles and spoil heaps, they should be represented by contour strings as if permanent unless directed otherwise by the Government.

ACCURACY AND DEFINITION

a. 3D Strings

The levels and co-ordinates of recorded point shall be correct to within the r.m.s.e. tolerances stated in Table 1. 90% of these must be within 1.65 times the values stated, when a representative sample of points is checked by measurement from the nearest Survey Department Bench Mark or height control point.

Table 1: Tolerances of levels and co-ordinates of directly recorded points on strings

Carriageways & Hard Surfaces		Other Surfaces		Major Bridge Decks	
Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal
± 0.06m	± 0.15m	± 0.10m	± 0.30m	± 0.01m	± 0.10m

The spacing of points along 3D strings shall be such that the maximum vertical and horizontal errors of interpolated points shall not exceed those given in Table 2.

Table 2: Total error of interpolated points on strings

Carriageways and Hard Surfaces		Other Surfaces		Major Bridge Decks	
Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal
± 0.12m	± 0.30m	± 0.20m	± 0.60m	± 0.02m	± 0.20m

b. 2D Strings

Sufficient points shall be recorded on the contours so that the digital representation of the contour shall conform to the standards specified.

c. Strings formed of Spot Heights

Strings formed of Spot Heights shall be accurate to the Accuracy Level as stated in Table 1 above.

GENERAL STRING DETAILS

A string may start or finish at any point providing it is not more than 10m outside the boundary of the block for which the data is being recorded.

Continuity between blocks shall be provided either by mathematically precise matching at break boundaries or in the form of a short overlap between the end of one string (e.g. in Block 1) and the start of another string (e.g. in Block 2). Where a string stops at another string boundary there must not be any gap between the two strings.

If a string passes outside a block by more than 10m then loops back into the block, another string must be started prior to re-entry into the block, and the loop section recorded with the data for the adjoining block. Short overlaps shall be provided to maintain continuity.

If a string is a closed loop within the block, or within 10m of the block boundary, then it shall be closed with mathematical precision or by means of a short overlap at the start.

Survey Station Strings

These (4D) strings consist of points with Easting, Northing, Levels and the four character station number or name. MOSS default string labeling to store all main stations is PSSA.

Null Level Strings

These strings consist of points with Easting and Northing coordinates and assigned levels of -999.0. They are generally additional information so as to complete the definition of the ground model. MOSS program does not include them when performing the analysis functions (e.g. SECTION).

These null level strings may include the following: -

a. Cartographic features such as tadpole symbol for slopes, vegetation symbols, etc.
b. Land lot strings in the Property Model.
c. Additional structures or buildings (with prior approval from the Government).

Text Strings

These strings form a group of information data (usually digitized or interactively added) in the Ground Model that may include the following:-

a. Cartographic information such as vegetation type, land use, lot numbers, etc.
b. Names and/or usage of prominent buildings and structures.
c. Destination of road leading to and fro the existing main road and where there are discontinuities of the road within the Mapping Area.

Unless otherwise stated all text shall be in ENGLISH and the following text shall the precise real world bearing:-

1. Road destination / type
2. River name / type

All other text may optionally have zero bearing.

Point Strings

These strings (with suffix 'P' for the labeling) could be either with or without levels and may include the following:-

a. Spot level strings
b. Utilities such as telecom or electrical poles
c. Survey Station Strings (MOSS default label PSSA)

MOSS program does not include these strings when doing the analysis SECTION but include them when doing the CONTOUR and TRIANGLE except those with null levels

APPENDICES

APPENDIX A

PROJEK : PEMBANGUNAN INFRASTRUKTUR JALAN DI KAWASAN UMW HIGH VALUE MANUFACTURING PARK (UMW HVMP), SERENDAH, SELANGOR

I. LATAR BELAKANG PROJEK

Cadangan pembinaan jalan menyambungkan Jalan 132 kaki ke Jalan Sg. Choh – Bukit Beruntung (FT 3208) merupakan inisiatif Kerajaan bagi mewujudkan akses terus bagi pembangunan infrastruktur jalan ke Taman Perindustrian UMW High Value Manufacturing Park (UMW HVMP) yang menjadi salah satu tunjang kepada pembangunan Industri Aero Angkasa yang mana menjadi sektor keutamaan dalam pelaksanaan projek di bawah Rancangan Malaysia Ke-12 (RMK-12).

II. OBJEKTIF PROGRAM / PROJEK

i. Menyediakan keperluan rangkaian jalan baru untuk menghubungkan terus kawasan UMW HVMP dari Jalan 132 kaki ke laluan utama Jalan Persekutuan FT 3208
ii. Menaiktaraf Persimpangan Masjid Perodua dan Jalan 132 kaki yang tidak mematuhi piawaian demi keselamatan dan kelancaran trafik.
iii. Berlaku kesesakan lalulintas terutamanya disebabkan oleh aktiviti-aktiviti industri pengilangan yang melibatkan banyak kenderaan berat.

III. SKOP PROJEK

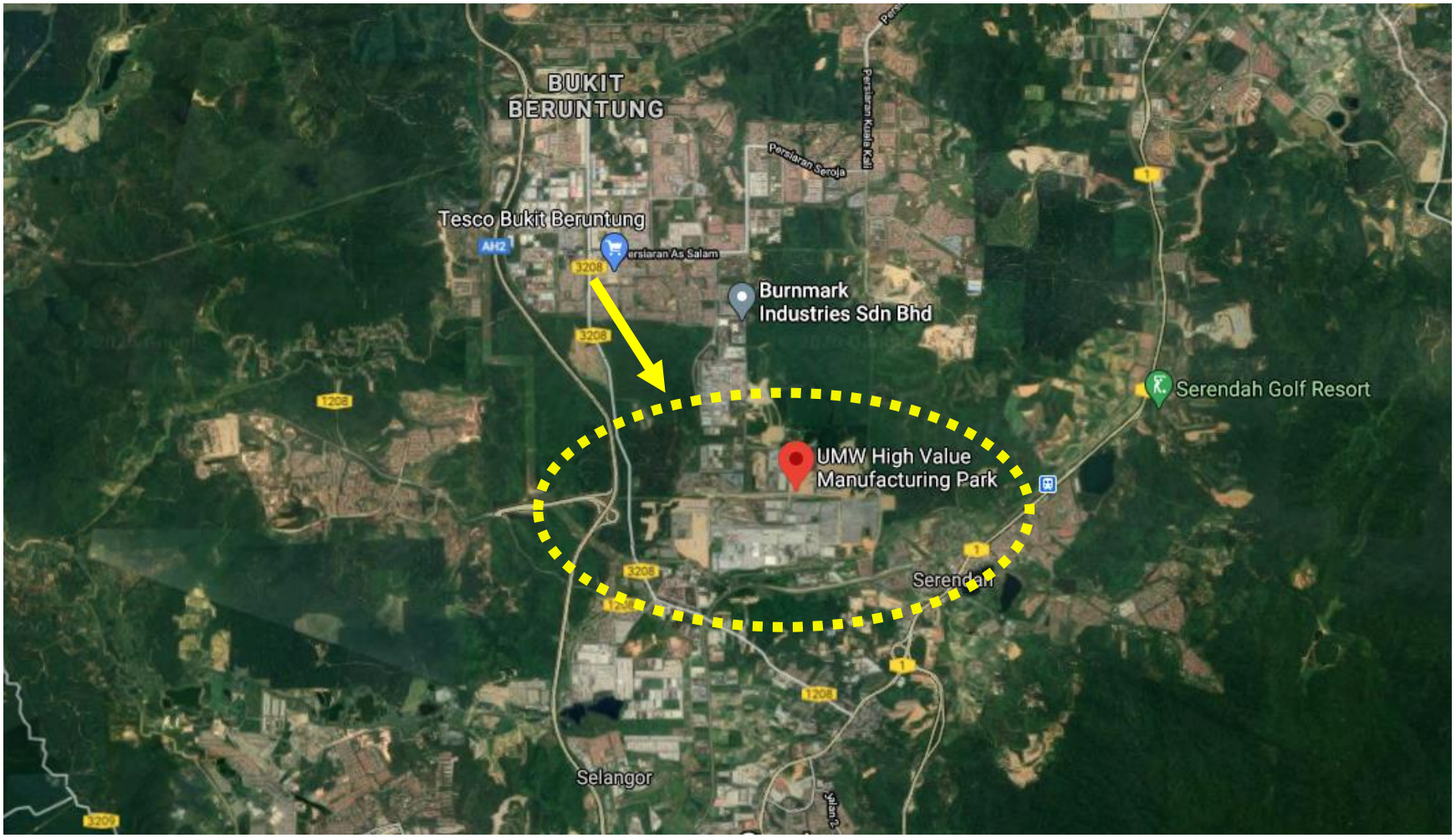
i. Membina jalan baru 4 lorong berkembar sepanjang 1.20km dan menaiktaraf jalan sediada sepanjang 800m dengan piawaian JKR U5
ii. Membina dua (2) bilangan pusingan-u searas
iii. Membina persimpangan baru berlampu isyarat di Jalan Persekutuan FT3208
iv. Menaiktaraf persimpangan Taman Ros (tanpa lampu isyarat) dan Masjid Perodua kepada persimpangan sehala (belok kanan sahaja) berlampu isyarat
v. Membina dan menaiktaraf sistem perparitan dan pembentung sediada
vi. Kerja-kerja geoteknikal (perlindungan cerun)
vii. Kerja-kerja pengalihan/perlindungan utiliti sediada
viii. Kerja-kerja elektrik termasuk pemasangan lampu jalan dan lampu isyarat
ix. Pengambilan Tanah

IV. OUTPUT DAN FAEDAH

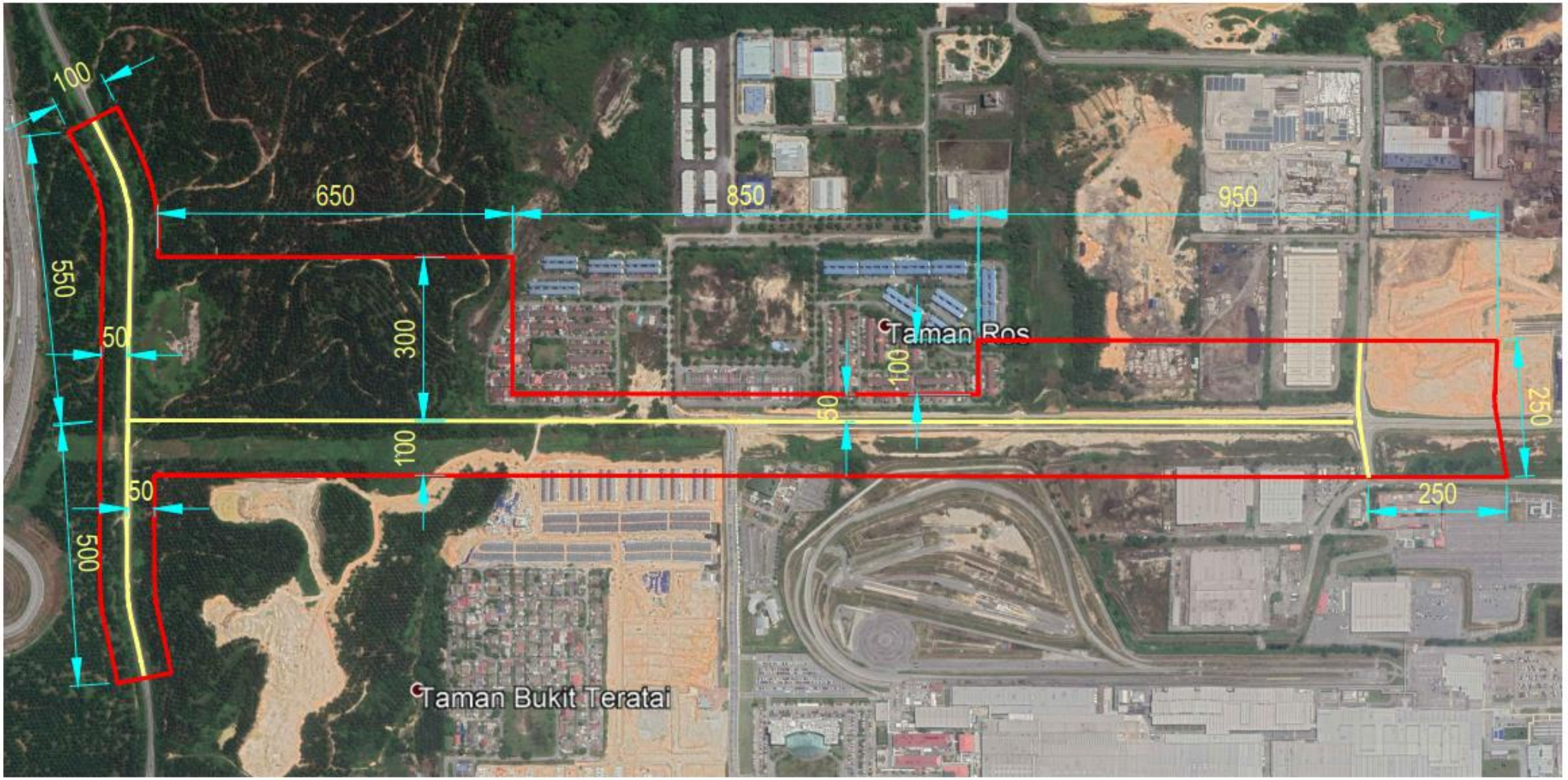
i. Memendekkan masa perjalanan melalui pembinaan laluan jalan alternatif baru secara terus ke kawasan UMW HVMP dari Jalan 132 kaki
ii. Meningkatkan tahap keselamatan dan keselesaan pengguna melalui kerja-kerja menaiktaraf Persimpangan Masjid Perodua dan Jalan 132 kaki.
iii. Mengatasi masalah kesesakan lalulintas yang disebabkan oleh aktiviti-aktiviti industri pengilangan yang melibatkan banyak kenderaan berat.

APPENDIX A1

PELAN LOKASI



APPENDIX A2


100
650
850
950
550
50
300
100
50
100
250
50
250
50
500
Taman Ros
Taman Bukit Teratai

APPENDIX B

SPECIAL INSTRUCTIONS TO THE CLS

ACAD Drawing

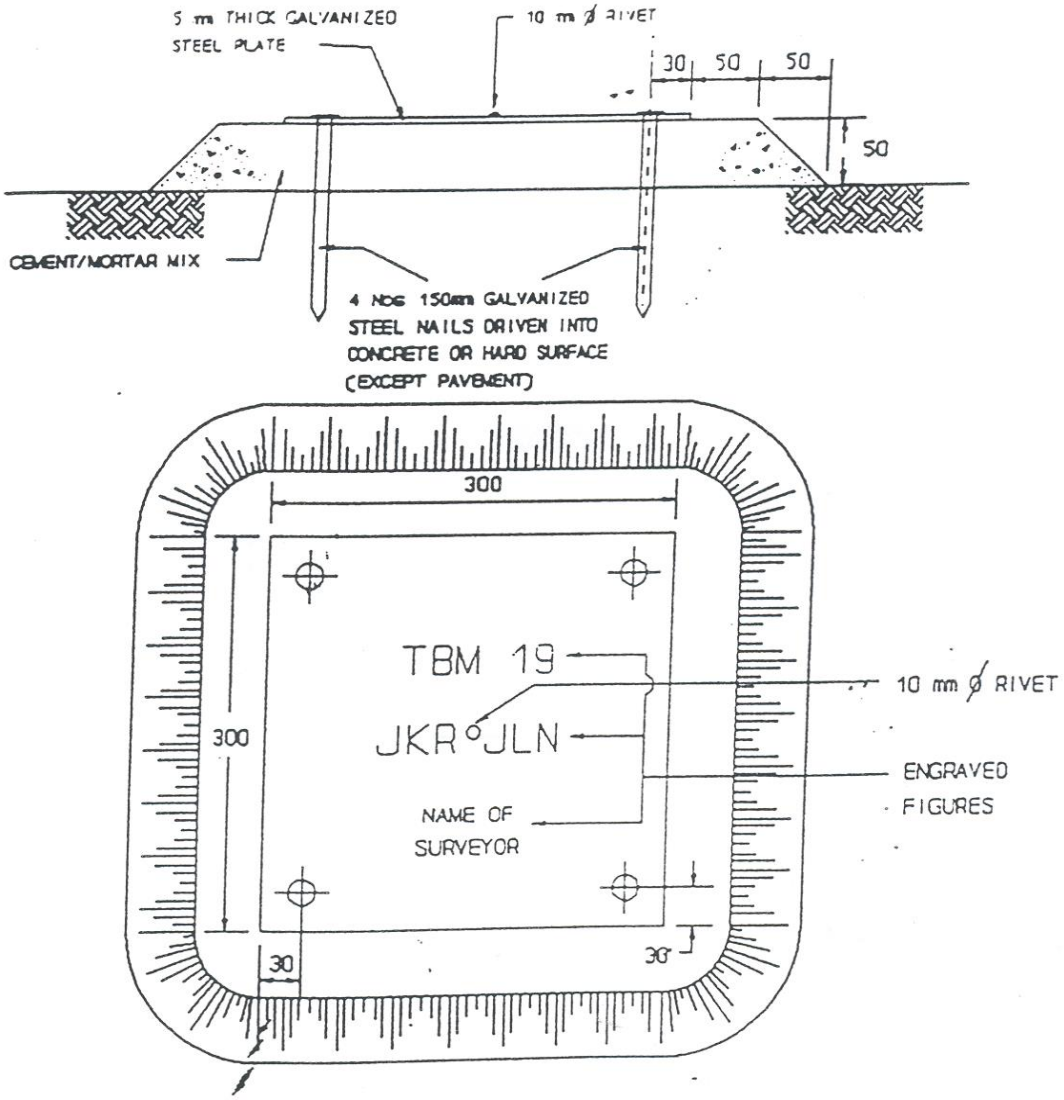
All layer in ACAD drawing shall following as below:

No.	Definition	Layer's name	Colour
1.	Contour	Contour	Red
2	Lot	Boundary Lot	Brown
3.	Lot No.	Lotno	Brown
4.	Road	Road	Green
5.	Text	Text	White
6.	Public Services	PUS	Magenta
7.	Building/Fence	Bld	Red
8.	Slope/Cut/Fill	Slope	Cyan
9.	Culvert	Culvert	Blue
10.	Drain/Invert Level	Drain	Blue
11.	Bridge	Bridge	Blue
12.	River	River	Blue
13.	Spot Height Text	Spotht	White
14.	Spot Height Point (3D x,y,z)	Point	Yellow
15.	Traffic Sign	Sign	White
16.	Railway Track	Railway	Red
17.	Detail/TBM/Travers Station	Detail	White
18.	Grid/Utara	Grid	White
19.	Vegetation	Veg	Green
20.	Title Block/Frame	Tblock	White
21.	Others	Others	White

ACAD 3D Format

Surveyor was required to provide ACAD 3D for all 3 dimensional string.

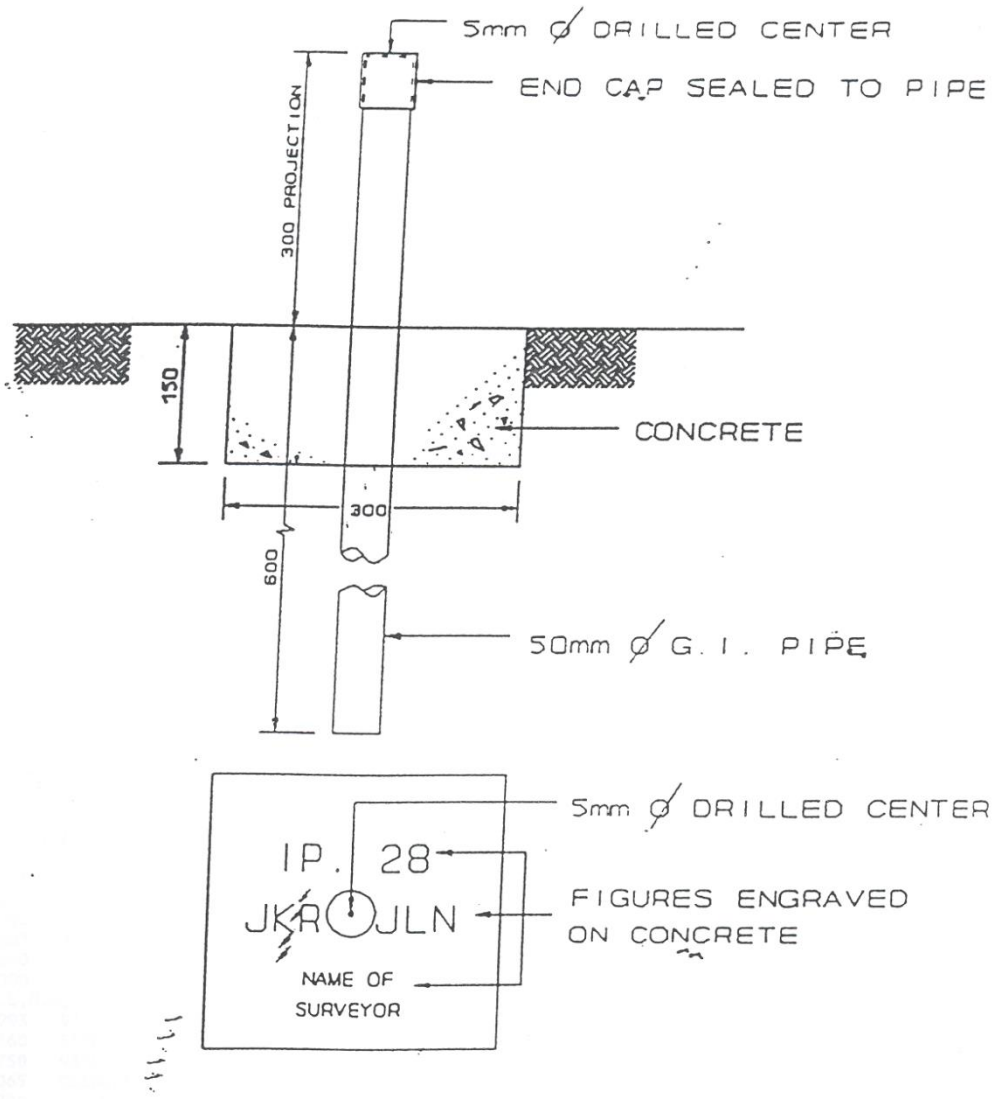
APPENDIX C



GROUND MARKERS ON HARD SURFACE

NOT TO SCALE (ALL DIMENSIONS IN MILIMETER)

APPENDIX D

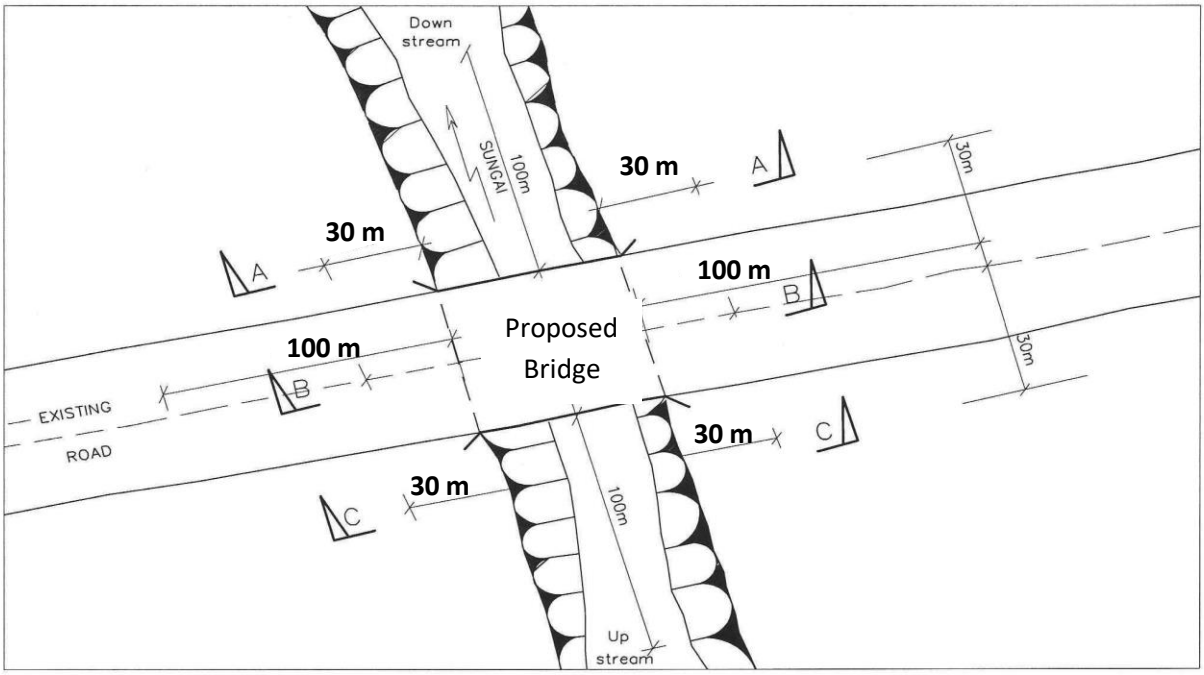


GROUND MARKERS ON NORMAL SURFACE

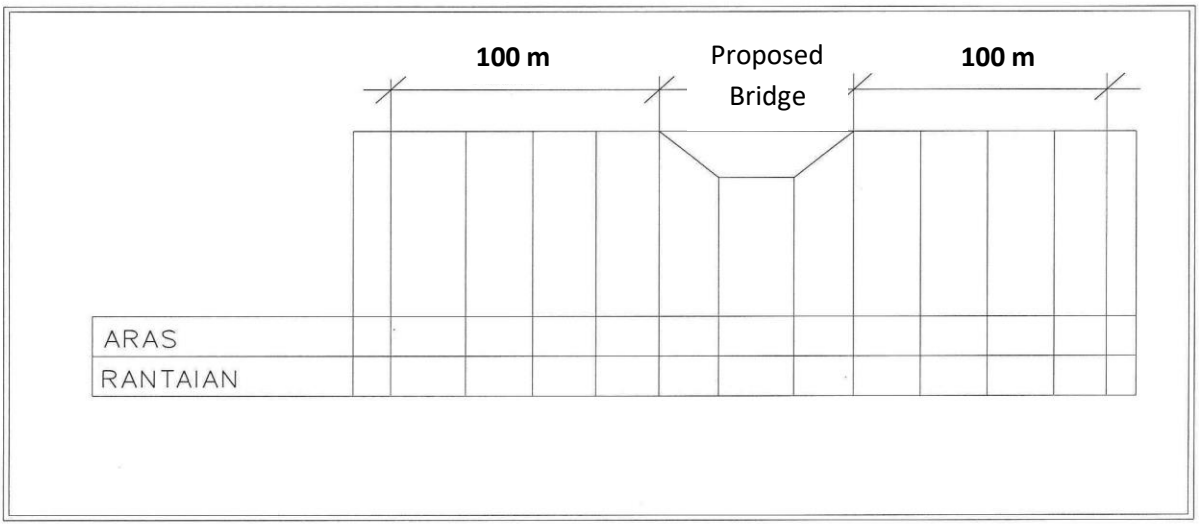
NOT TO SCALE (ALL DIMENSIONS IN MILIMETER)

APPENDIX E

PELAN DAN KERATAN MEMANJANG JAMBATAN
PLAN AND LONGITUDINAL PROFILE FOR BRIDGES



PLAN



KERATAN MEMANJANG JALAN SEDIADA

Figure (i)

APPENDIX F

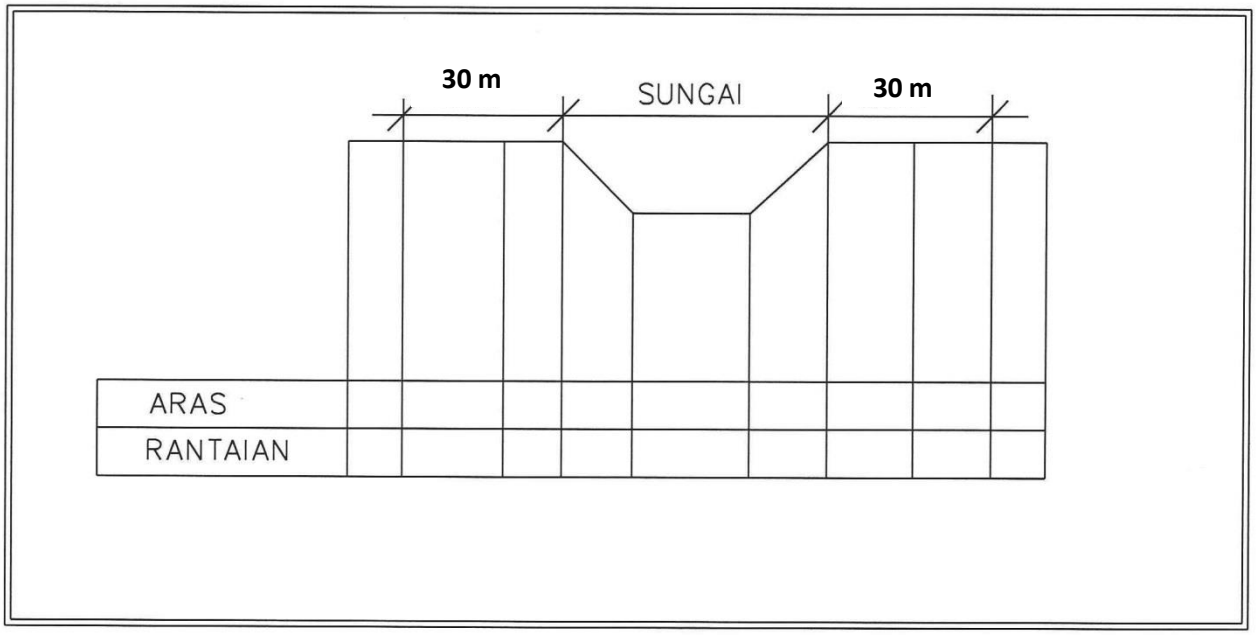
KERATAN LINTANG SUNGAI
CROSS - SECTION OF RIVER

Sejauh **30 m** dari kedua-dua belah tebing sungai.
*A distance of **30m** from the river bank at both sides.*

(i) Dari garis tengah jalan sediada.
At centreline of existing carriageway.

(ii) **100 m** dari garis tengah jalan sediada - di hulu sungai.
*At **100 m** from centreline of existing carriageway - upstream.*

(iii) **100 m** dari garis tengah jalan sediada di hilir sungai.
*At **100 m** from centreline of carriageway - downstream.*



KERATAN LINTANG SUNGAI

Figure (ii)

APPENDIX G

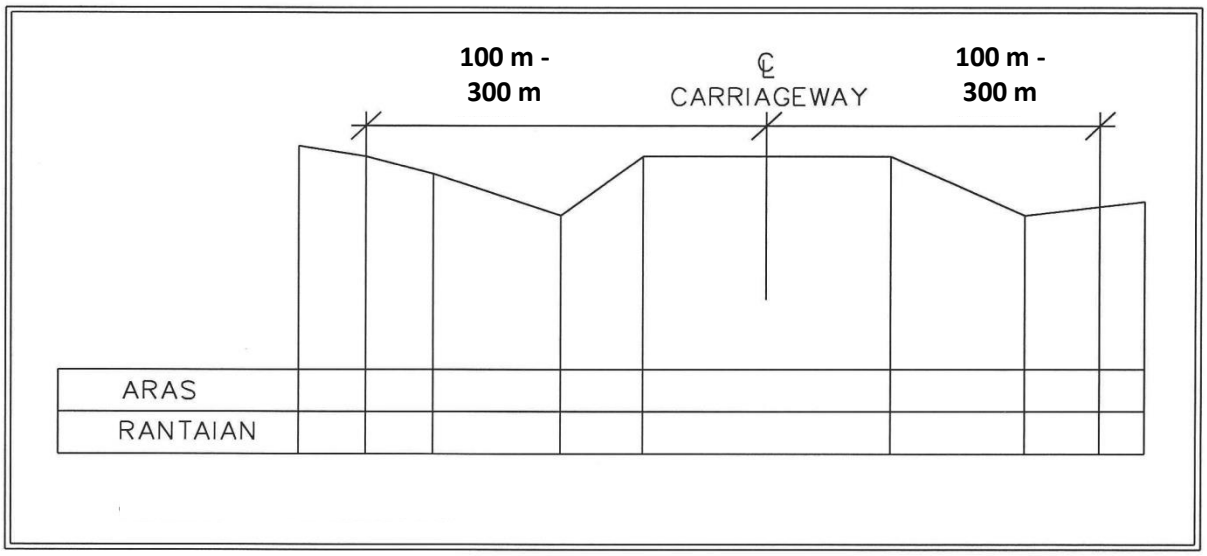
KERATAN LINTANG JALAN SEDIADA

CROSS - SECTION OF EXISTING ROAD

(i) **100 m – 300 m** dari garis tengah jalan di kedua-dua belah jalan.
100 m – 300m *corridor from centreline of carriageway, on both sides of road.*

(ii) Kedudukan tembok-tembok landas jambatan sediada.
Position of existing abutments.

(iii) Keratan lintang pada setiap jarak sepanjang **20 m** dari kedua-dua tembok landas jambatan sediada.
*Cross section of **20 m** intervals from existing abutments at both approaches.*



KERATAN LINTANG JALAN SEDIADA

Figure (iii)

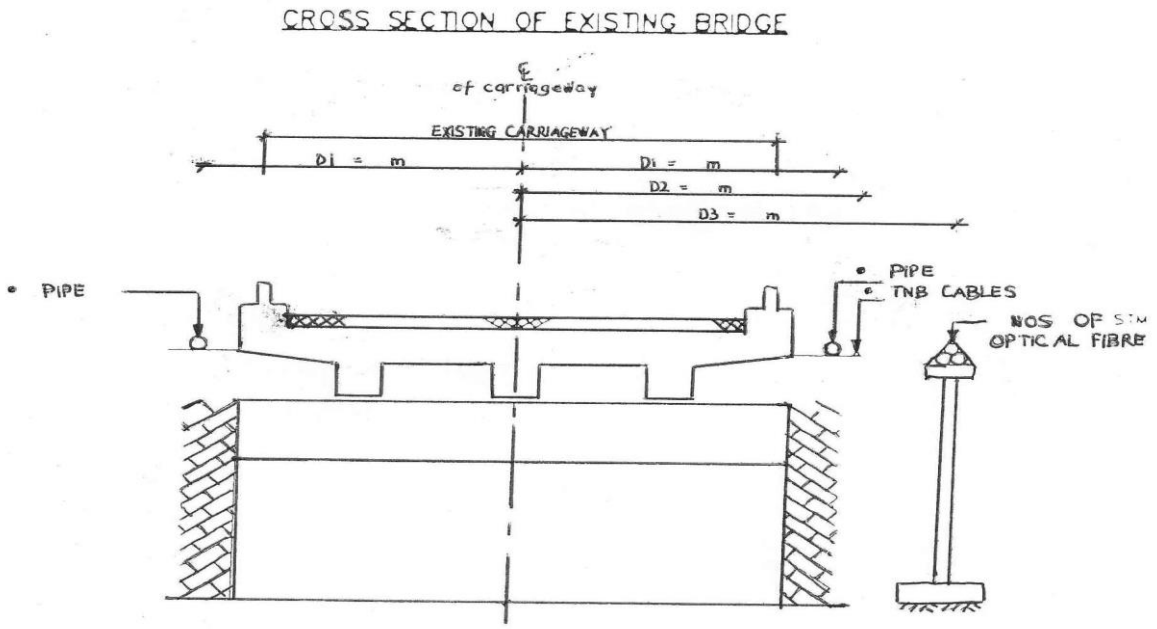
APPENDIX H

KERATAN LINTANG JAMBATAN SEDIADA

CROSS - SECTION OF EXISTING BRIDGE

Sejauh **30 m dari garis tengah jambatan** sediada dengan mengambil kira semua kedudukan dan jarak kemudahan awam yang ada di kedua-dua sisi jambatan.

*Up to a distance of **100m** from centerline of existing bridge showing all the location and distance of existing public services on both sides of the bridge.*



APPENDIX I

CERTIFIED BY LICENSED SURVEYOR

I certify that these field notes consisting of ..... pages are a correct and complete record of the observations and measurements made by or under the immediate personal direction and supervision in the field of ....(1)... that the survey was effected in strict conformity with the Licensed Land Surveyors Regulations, that the standard of accuracy of the survey is ..... class as defined in those Regulations and that the survey was completed on the ..... day of .....

I undertake to accept full responsibility for the correctness of the survey.

.....(2)..... Surveyor, Licensed under Ordinance No. 11 of 1958.

NOTE:-

(1) Name, signature and qualification of the Qualified Surveyor in charge of the survey parties.

(2) Name, signature and qualifications of the Licensed Surveyor.

GOVERNMENT OF MALAYSIA

TERM OF REFERENCE

FOR

UNDERGROUND UTILITY SURVEY WORKS

ON PROJECT

"PEMBANGUNAN INFRASTRUKTUR JALAN DI KAWASAN UMW HIGH VALUE MANUFACTURING PARK (UMW HVMP), SERENDAH, SELANGOR"

Bahagian Rekabentuk Jalan Zon Tengah
Cawangan Jalan
Ibu Pejabat JKR Malaysia
Aras 25, No. 50, Menara PJD
Jalan Tun Razak
50400 Kuala Lumpur

1.0 BACKGROUND AND OBJECTIVE

The Government of Malaysia intends to carry out Underground Utility Mapping in the State of **SELANGOR DARUL EHSAN.**

The purpose of the detailed ground survey is to provide all the necessary data and information required for undertaking the engineering design for **PEMBANGUNAN INFRASTRUKTUR JALAN DI KAWASAN UMW HIGH VALUE MANUFACTURING PARK (UMW HVMP), SERENDAH, SELANGOR – (*Underground Utility Mapping*)**

1.1 SCOPE OF WORKS

1.1.1 Survey Area

The details of the extent of the works to be surveyed is given in the attached plan. The total area for Underground Utility Mapping is about **36,000 m.sq** (estimated only).
(See attachment Appendix J)

DETAILED SUBSURFACE DETECTION, INVESTIGATION AND MAPPING OF UNDERGROUND UTILITY NETWORKS FOR JKR CONTRACTORS.

1. SCOPE OF WORKS

The scope of works call for the supply of all labour and use of machineries, equipment and materials required for the complete sub-surface detection, investigation and mapping of underground utilities for the above project inclusive of the followings:

- construction of survey reference grid with Global Positioning System (GPS).
- surface reference line survey.
- complete underground utilities detection including markings of power and telecommunication cables, sewer, water and gas pipes.

a) The CLS is to use Global Positioning System and electronic survey total station to construct a survey control point network, "grid", in which the position of all survey works and detected services will relate.

b) All survey results will be in State's Cassini co-ordinate system.

c) Basemap survey, "cover layer" is carried out surveying positions of pavement edges, kerb lines and/or road edges, traffic dividers and valve/manhole covers.

d) All existing utilities shall be detected /surveyed under the specified area.

e) The conductive services such as cables & pipes is to be located, pin pointed and traced using electromagnetic cable and pipe detection instruments and these positions are recorded in X, Y and Z co-ordinates on to a field data logger before transferring to the computerized utility information database.

f) Non-metallic services to be detected using Ground Penetrating Radar (GPR) whenever soil conditions allow.

g) Relating attribute data to the service, i.e. materials, diameters, type, ways and voltages to be logged and retained wherever and whenever possible.

h) The CLS is to provide digital maps to the client, containing information on all underground services within the project area. The CLS will also provide site instruction inclusive of initial remarking on site to the client at the commencement of excavation works under the project area.

i) The CLS is to maintain an estimated accuracy level of +/- 10 cm horizontally and +/- 10 % from the actual depth vertically of all buried services located up to 3 meters deep.

j) Wherever possible, the works are to be carried out during the daytime. However, due to traffic conditions, the detection and survey works, where necessary can be conducted at night between 9.00 p.m to 6.00 a.m.

k) The CLS using available electromagnetic techniques and equipment (electromagnetic cable, pipe detectors and GPR) at its disposal is to locate all buried PVC, asbestos, concrete and other non-metallic service. The CLS will undertake to advise the client of any problems it experiences or potential hazards it anticipates.

l) As a general practice, the CLS will be liable to any damages to underground utilities due to the negligence of its staff. In this respect, the CLS is to detect and locate all metallic and accessible non-metallic services.

- Electromagnetic cable and pipe detectors can be used to detect metallic/conductive services such as iron and steel pipes for water, gas, sewer, oil, electric cables, copper telecommunication and control cables.
- Ground Penetrating Radar (GPR) can be used to detect non-metallic services such as sewer, water and drain-pipes, accessible ducts (i.e. empty protection pipes for optic fiber and other cables) and other accessible non-conductive underground objects.

2. SUBMISSION OF SURVEY PLANS, UTILITIES, MAPPING, DIGITAL DATA AND RECORDS

Upon the satisfactory completion of the whole works, the CLS shall submit the survey results as follows:-

i. Hardcopy Requirements

Paper Quality	80 GSM ink-jet media paper.
Printing Quality	Full standard colour coding
	Utilities Individual colour coding. Electric (red), Telecommunication (green), Water and Raw water (blue), Sewer and Force Sewer (brown), Gas (magenta), Drainage (grey) & Others (black).
	Non-Utilities Individual symbol. Traverse point, GPS point, chainage symbol, kilometer post, street name, edge of street, wall line, fence, bush, leaf tree, fountain, statue, palm tree, river bank, shore line, rail road, shelter roof, pillar, traffic signage, boundary stone & others. JUPEM standard coding: Full compliance with MS 1759:2015.
Submittals	Three (3) complete sets of colour coded maps (inclusive of detailed reports on the works implemented).

Scale	Metric scale: 1:100 ~ 1:1000
Paper size	ISO A2 ~ A0 size

ii. Softcopy Requirements

File System	3D (*.xy), AutoCAD (*.dwg)
Media type	DVD-R ; USB – Flash Drive
Submittals	One (1) set of DVD, USB – Flash Drive

iii. Detection and Survey Requirements

System	State Cassini Coordinates System (GPS) i) State Cassini Coordinates System ii) Malaysian Rectified Skew Orthomorphic (RSO)
Equipment / Materials (Underground Utility Technologies / Devices)	i) Electric Field (Electromagnetic) ii) Magnetic Field (Magnetometer) iii) Radar (Ground Penetrating Radar – GPR) iv) Electronic Distance Measuring Device (EDM)/Total Station v) RTK GPS (MyRTKNet)
Electromagnetic Site Investigation Full Detection/Survey (Contractors)	Full detection / survey of the area required.
Attributes Information	▪ Comply with MS 1759:2015 ▪ Historical data of utility laid ▪ When laid ▪ Contractor's name ▪ Physical characteristic (size, material type, PVC, etc.) ▪ Number of ways (Telecommunication / TNB) ▪ Depth of network

Nevertheless, the CLS shall liaise with relevant agencies to verified on the utilities information gathered and issue to Jabatan Kerja Raya (JKR) / contractor part of any of the above items as and when required by JKR. All data and drawing shall be recorded and plotted in a format required and approved by JKR. All the above-mentioned items submitted shall become the properties to JKR.

3. PRECAUTIONS TO BE TAKEN

The CLS shall observe and comply with the following procedures to ensure that the Detection Works carried out are not injurious to other parties: -

i. The CLS shall provide proper traffic management systems and schemes during the course of the Detection Works. Traffic control devices (including temporary signs/roadside furniture) shall be provided in accordance with the relevant JKR Arahan Teknik (Jalan) publications or other relevant local authorities standards and guidelines.

ii. The CLS shall not cause the Detection Works to disrupt the normal functioning of existing services and utilities and shall not disconnect any of the services and utilities without the written approval from the relevant authorities and companies. The Contractor shall make good, at his own expense, any damage whatsoever to existing services and utilities in accordance with the instructions and to the complete satisfaction of the relevant authorities and companies concerned, and shall keep JKR indemnified at all times from all claims, costs and expenses which may be brought against or incurred by JKR for or in account of any damage to the said services and utilities.

iii. The CLS shall be responsible for clearing any site obstructions and obtaining any permit that may be necessary for the carrying out of the Detection Works.

iv. All personnel shall be equipped with reflective clothing either yellow or orange florescent and Team Leader is provided a handphone for field communication.

(Subject to compliance with JKR traffic management requirements)

4. ATTRIBUTES

4.1 Quality Level Attributes

4.1.1 General

The quality level attribute of an underground utility feature is the most important information aside from its alignment or presence in a utility map. As such due care should be given to precisely indicate the quality level of an underground feature especially in hardcopy maps given the fact that in any congested corridor, the horizontal and vertical separation between utility features could be reduced to several decimeters, and at plotting scale such separation may be difficult to discern. Careful usage of the following cartographic elements can help in ensuring a reliable indication of the quality level of underground features.

4.1.2 Labeling

This is also one of the methods of differentiating between the quality levels, utility type, ownership, date of depiction, accuracy of surveyed appurtenances, end points of any utility data, active, abandoned, or out-of-service status, size, condition, number of jointly buried cables and encasement.

4.1.3 Symbol Embedding

Symbol embedding can also be used to indicate the different quality levels of underground utility data.

4.1.4 Colour

Colour is frequently used to indicate type which can be used in conjunction with other methods. *(Please refer Attachment I)*

4.1.5 Line Weight

Line weight can be used at actual scale to depict the size of the utility. However, it has the effect of obscuring other data if the line size is large.

4.1.6 Layer

Occasionally layers are used to portray various attributes. For example, quality level 'A' data could be on one layer, quality level 'B' data on another, and etc. All layers must be turned be on to present the complete utility information particularly in a geographic information system.

4.1.7 Annotation

Annotation should be used with care as to ensure that it does not obscure other utility data.

4.2 Utility Depiction Legend

In most cases, an underground utility map should be provided with a separate utility legend to clearly indicate the methods of quality level differentiation and other utility attributes.

4.3 Parcel Boundaries

Parcel boundaries shown shall be derived from the Digital Cadastral Database (DCDB) currently maintained by JUPEM.

4.4 Lot Numbers

Lot numbers of all parcels as depicted in the DCDB shall be shown whenever possible.

4.5 Names of Building, Street, Road and River

Official names of buildings as well as names of streets, roads and rivers shall be shown.

4.6 North Arrow

An arrow-like symbol indicating the direction of the grid north and the true north shall be shown.

4.7 Scale Representation

Since maps must necessarily be smaller than the areas mapped, their use requires that the ratio or proportion between comparable measurements be expressed on the map. This is called map scale and should be the first thing which the map user becomes aware. Scale should be expressed as a statement of map distance in relation to earth distance or a graphic (or bar) scale or both.

4.8 Map Date

The publication date the map should be prominently displayed.

4.9 Marginal Information

Marginal information may include such items as section, town, city and state names, scale, north arrow, legend, published date, disclaimer and map index, among others.

4.10 Disclaimer

Disclaimers are used to limit and define the map author's responsibility for the content, accuracy and currency of the map. Although some maps may require specialized disclaimers, the following disclaimer represents one suggestion:

"Not to be treated as a map depicting property boundaries"

5. METADATA

Metadata are commonly defined as the data about data or the data about the processes performed on the data. The major uses of the metadata are:

i. To maintain an organization's internal investment in geospatial data;
ii. To provide information about an organization's data holdings to data catalogues, clearing houses and brokerages; and
iii. To provide information needed to process and interpret data to be received through a transfer from an external source.

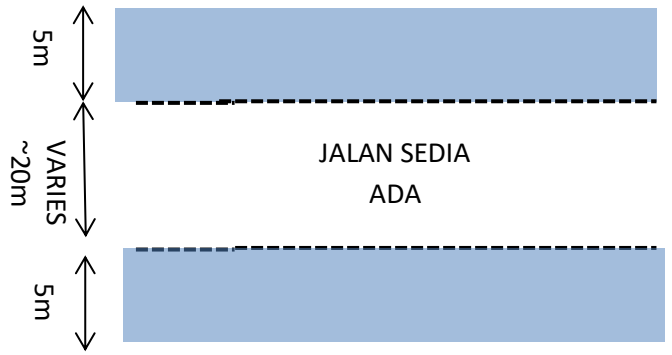
Thus, in order to facilitate their use, underground utility maps produced shall be accompanied with appropriate metadata which complies with Malaysian Standard for Geographic Information – Metadata.

COLOUR CODE

The color code and utilities marking procedure shall follow "PEKELILING KETUA PENGARAH UKUR DAN PEMETAAN BILANGAN 1 TAHUN 2016" for "GARIS PANDUAN KOD WARNA DAN PENANDAAN BAGI PEMETAAN UTILITI BAWAH TANAH" *see attached.* The utility code according to MS1759: 2015 is automatically amended by following JUPEM utility code circular. However, the circular did not provide general color code, the CLS shall follow general colour code according to MS1759: 2015. Refer figure below.

Bil.	Jenis Utiliti	Kod	Warna	
1.	Kabel Elektrik	P	Merah	
2.	Paip Air	W	Biru	
3.	Gas, Minyak atau Petroleum	G	Kuning	
4.	Kabel Telekomunikasi termasuk semua jenis Kabel Fiber	T	Oren	
5.	Saluran Pembetungan	S	Hijau	
6.	Utiliti yang tidak diketahui	U	Putih	

Appendix J

BIL	PROJEK	LUAS KAWASAN UTILITY MAPPING	GAMBARAJAH SKEMA
1.	PEMBANGUNAN INFRASTRUKTUR JALAN DI KAWASAN UMW HIGH VALUE MANUFACTURING PARK (UMW HVMP), SERENDAH, SELANGOR *** Koridor *survey* untuk *utility mapping* pada persimpangan pada **disepanjang jajaran jalan sedia ada**	Keluasan di sepanjang jajaran jalan (*estimated 3km*) = 10 m x 3000m = 30,000 m^2 Anggaran Keluasan keseluruhan (tambah 20% untuk persimpangan dan kawasan tiada akses) = 30,000 m^2 x 1.2 = **<u>36,000 m^2</u>**	

*Koordinat lokasi akan dikemukakan selepas lantikan *surveyor* dibuat

PETUNJUK:

KAWASAN *UNDERGROUND UTILITY MAPPING*

Borang A

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 4)

PEMBERITAHU BAHAWA TANAH MUNGKIN DIAMBIL

Adalah dengan ini diberitahu bahawa tanah-tanah di tempat yang butir-butirnya tersebut dalam Jadual di bawah ini, termasuk tanah-tanah, jika ada, yang ditentukan dengan nombor lot atau nombor-nombor lot tanah yang berjiran dengannya, mungkin dikehendaki bagi maksud yang berikut:

……
……

2. Dan lagi adalah diberitahu bahawa mana-mana orang yang diberi kuasa oleh Pengarah bagi maksud itu boleh masuk ke mana-mana tanah di tempat itu untuk memeriksanya dan menjalankan kerja-kerja ukur. Jika berlaku apa-apa kerosakan dalam masa kerja-kerja ukur itu dijalankan maka pampasan akan dibayar kerananya. Apa-apa jua pertikaian tentang jumlah pampasan itu akan dirujukkan kepada Pentadbir Tanah di……..……..

Bertarikh pada…….haribulan…….., 19……

……
Pengarah Negeri

Daerah……

Mukim……..
Bandar

Buitir-butir mengenai tempat……
……..
……..

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09503-JPN, Pk

*Potong sebagaimana yang sesuai

BORANG B

UNDANG-UNDANG PENGAMBILAN TANAH, 1960

(Seksyen 5)

KUASA MASUK DAN MENGUKUR

Kepada:

…….
…….
…….

Dengan ini tuan, penolong-penolong dan pekerja-pekerja tuan diberi kuasa, tertakluk kepada syarat-syarat dalam perenggan 2, bagi memasuki:

(i) sebarang tanah ditempat yang telah dikeluarkan pemberitahu baginya dibawah seksyen 4 Undang-Undang Pengambilan Tanah, atau

(ii) sebarang tanah ditempat yang sudah dijadualkan dalam *Warta* Kerajaan No……..bertarikh……dan bagi menjalankan sebahagian atau semua kerja yang berikut-

(a) mengukur luas dam mengambil aras tanah itu;

(b) menggali atau mengorek lapisan tanah;

(c) menjalankan segala pemeriksaan yang mustahak supaya dapat mengetahui adakah tanah itu sesuai bagi maksud yang dihajatkan;

(d) menentukan sempadan-sempadan tanah yang hendak diambil dan garisan tapak kerja yang hendak dibuat, jika ada;

(e) menandakan aras, sempadan dan gariasan tapak kerja dengan memasang tanda atau menggali parit;

(f) memotong dan menerangkan tanam-tanaman, pagar atau hutan, jika sekiranya benda-benda itu menghalang kerja mengukur tanah atau aras tanah tidak dapat diambil, atau menyebabkan sempadan atau garisan tapak kerja tidak dapat ditandakan.

2. Tuan, penolong-penolong atau pekerja-pekerja tuan dibenarkan masuk ke dalam sebarang bangunan atau sebarang halaman atau kebun sesebuah rumah kediaman yang berkepong, melainkan setelah mendapat kebenaran daripada orang yang mendiami tempat tersebut, atau pun, jika tiada mendapat kebenaran itu, setelah memberitahu orang itu dengan bertulis tiga hari terlebih dahulu, akan hajat tuan hendak memasuki tempatnya.

Bertarikh……haribulan…….19……

……
Pengarah Negeri

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Undangan No. 12 tahun 1964-PN 2953/1; PT TM 8/67 SJ No. 6(1)]

BORANG C

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 7)

JADUAL TANAH YANG TERKENA OLEH PENGAMBILAN

Daerah……..Mukim/Bandar……..

L-J.C.K., K.L.

No. Lot Ukur	Hakmilik atau Pendudukan	Tuanpunya Berdaftar atau Penduduk yang di Rekodkan	Luas Lot	Lebih kurang Luas yang hendak Diambil

[Borang ini diterjemahkan oleh Peguam Negara, Malaysia menurut Pemberitahu Undangan No. 12 tahun 1964-PN 2953/1; PT TM 8/67 SJ No. 6(1)]

BORANG D

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 8)

PERISYTIHARAN PENGAMBILAN YANG DICADANGKAN

Adalah dengan ini diisytiharkan bahawa tanah-tanah dan kawasan-kawasan yang tertentu yang dinyatakan dalam Jadual di bawah ini adalah dikehendaki bagi maksud yang berikut:

……..
……..

2. Pelan bagi tanah-tanah dan kawasan-kawasan yang tertentu yang dinyatakan itu boleh diperiksa dalam masa waktu-waktu bekerja biasa di Pejabat Tanah bagi Daerah tempat letaknya tanah-tanah dan kawasan-kawasan itu.

Bertarikh pada……..haribulan……20……..

……..
Pengarah Negeri

JADUAL

No. Lot Ukur	Hakmilik atau Pendudukan	Tuanpunya Berdaftar atau Penduduk yang Direkodkan	Luas Lot	Lebih kurang Luas yang hendak Diambil

[Borang ini diterjemahkan oleh Peguam Negara, Malaysia menurut Pemberitahu Undangan No. 12 tahun 1964-PN 2953/1; PT TM 8/67 SJ No. 6(1)]

L-JPN, Pk

(Tanah 255-Pin. 1/82)

BORANG E

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 10)

PENGAMBILAN YANG DICADANGKAN: PEMBERITAHU SIASATAN

Menurut perisytiharan pengambilan yang dicadangkan ke atas tanah yang butir-butirnya ada tersebut dalam Jadual di bawah ini, maka adalah dengan ini diberitahu bahawa suatu siasatan bagi membicarakan segala tuntutan terhadap pampasan bagi segala kepentingan atas tanah itu akan diadakan pada……….……………………………..….……..…haribulan…..…………………………pada pukul…………………….…..….…di…………………….…………….….

2. Semua orang yang ada mempunyai kepentingan atas tanah yang tersebut itu, sama ada sebagai tuanpunya, penduduk, pemajak, pemegang gadai, penyewa atau lain-lain, adalah dengan ini dikehendaki hadir di hadapan yang bertandatangan di bawah ini pada waktu yang tersebut di atas sama ada sendirinya atau melalui wakil dan di sana menyatakan:

(a) jenis kepentingan mereka masing-masing atas tanah itu;
(b) jumlah dan butit-butir tuntutan mereka terhadap pampasan bagi kepentingan-kepentingan itu;
(c) bantahan-bantahan mereka, jika ada, terhadap ukuran luas lebih kurang yang dinyatakan dalam Jadual di bawah ini;
(d) nama mana-mana orang lain yang diketahui oleh pihak yang berkenaan itu atau wakilnya yang ada memiliki apa-apa kepentingan atas tanah itu atau mana-mana bahagiannya, dan mengemukakan segala suratan yang berkaitan dengan tuntutan-tuntutan mereka.

3. Dan lagi adalah diberitahu bahawa pihak bertandatangan di bawah ini boleh mengkehendaki:

(a) supaya dalam sesuatu hal yang tertentu mana-mana kenyataan atau kenyataan-kenyataan itu dituliskan dan ditandatangani oleh pihak yang berkenaan itu atau wakilnya;
(b) supaya mana-mana orang yang ada memiliki suratan hakmilik yang dikeluarkan atau apa-apa suratikatan atau suratikatan-suratikatan yang membuktikan hakmilik bagi mana-mana tanah dijadualkan di bawah ini menyerahkan suratan, suratikatan atau suratikatan-suratikatan itu pada waktu siasatan itu.

Bertarikh pada……………………haribulan……………………., 19……………

……………………………………………
Pentadbir Tanah

Jadual

No. Lot Ukur	Hakmilik atau Pendudukan	Tuanpunya Berdaftar atau Penduduk yang Direkodkan	Luas Lot	Lebih kurang Luas yang hendak Diambil

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BORANG F

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 11)

PEMBERITAHU MENGHENDAKI KETERANGAN BERTULIS

Kepada……..
……...
……...

Bahawasanya yang bertandatangan di bawah ini ada sebab untuk mempercayai bahawa tuan/puan tahu akan satu-satu hal yang bertentu mengenai tanah yang tersebut dalam pemberitahu yang dikembarkan ini *(Salinan Borang E hendaklah dikembarkan):*

Ambil diberitahu bahawa tuan/puan adalah dengan ini dikehendaki menyampaikan dalam tempoh…… hari dari tarikh ini, suatu kenyataan dengan bertulis menyatakan seperti berikut:

(a) nilaian-nilaian yang berasingan bagi tanah itu dan bagi usaha-usaha yang telah dijalankan atasnya, jika ada, dengan menunjukkan atas asas apa nilaian-nilaian itu dibuat:

(b) nama tiap-tiap orang yang ada memiliki apa-apa kepentingan atas tanah itu atau mana-mana bahagianya, sama ada sebagai tuanpunya bersama, pemegang gadai, pemajak, pemajak kecil, penyewa atau lain-lain; dan

(c) jenis sesuatu kepentingan itu dan jumlah sewa-sewa dan keuntungan-keuntungan, jika ada, yang telah diterima atau yang boleh diterima oleh sebab kepentingan itu selama tiga tahun yang akhir sebelum tarikh pemberitahu ini.

Bertarikh pada……..haribulan……., 19…….

……
Pentadbir Tanah

Saya, ……., yang bertandatangan di bawah ini, dengan ini mengaku Pemberitahu yang tersebut di atas.

Bertarikh pada……haribulan……., 19……..

……..

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13094-JPN, Pk

(Tanah 260-Pin. 2/28)

BORANG G

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 14)

PEMBERIAN BERTULIS PAMPASAN

Pembicaraan Pengambilan No……..mengenai Tanah-Tanah yang dijadualkan dalam Pemberitahu *Warta* Kerajaan No…….

Pemberian-pemberian yang dinyatakan dalam Jadual di bawah ini adalah dengan ini dibuat bagi kawasan-kawasan tanah yang dinyatakan di dalamnya itu, kepada orang-orang yang mempunyai kepentingan atasnya, sebagaimana dinyatakan di bawah ini:

JADUAL

L-J.P.N., Pk

No. lot	Luas dikehendaki	Orang-orang yang berkepentingan	Jenis kepentingan	Bahagian Pemberian	Untuk kegunaan Pejabat

Bertarikh pada…….haribulan…….., 19…….

……
Pentadbir Tanah

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BORANG H

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 16)

PEMBERITAHU PEMBERIAN DAN TAWARAN PAMPASAN

Pembicaraan Pengambilan No……Pemberitahu *Warta* Kerajaan No…….

Kepada……
……

Tuan/Puan adalah dengan ini diberitahu bahawa dalam pembicaraan di hadapan yang bertandatangan di bawah ini pada……haribulan…….suatu pemberian seperti dalam Jadual di bawah ini telah dibuat bagi tanah yang dinyatakan di dalamnya itu yang tuan/puan ada mempunyai kepentingan.

2. Pada menurut pemberian ini maka saya dengan ini menawarkan kepada tuan/puan wang sebanyak RM…….. iaitu jumlah wang yang dinyatakan di bawah ini sebagai pampasan penuh bagi kepentingan tuan/puan atas tanah ini.

3. Sila ambil perhatian bahawa seksyen 29A Akta Pengambilan Tanah, 1960 mengkehendaki saya menahan dua puluh lima peratus daripada amaun award itu dalam keadaan-keadaan yang tertentu, tertakluk kepada peruntukan-peruntukan seksyen tersebut.

Bertarikh pada……..haribulan……, 19……

……
Pentadbir Tanah

JADUAL

[Cabutan yang berkaitan daripada Borang G termasuk segala pemberian, jika ada, kepada orang-orang lain yang berkepentingan atas tanah itu]

No. Lot	Luas dikehendaki	Orang-orang yang berkepentingan	Jenis kepentingan	Bahagian Pemberian	Untuk kegunaan Pejabat

Saya, ……. yang bertandatangan di bawah ini dengan ini mengakui menerima tawaran di atas ini.

2. (a) Saya menerima tawaran*; dan

(i) saya bersedia untuk hadir di Pejabat Tanah pada bila-bila masa yang ditetapkan untuk menerima bayaran dengan wang tunai/cek/kiriman wang*; atau

(ii) saya meminta supaya jumlah wang yang dibayar kepada saya itu dihantar kepada saya dengan cek/kiriman wang ke alamat yang di atas.*

(b) Saya menerima tawaran itu dengan bantahan.*

(c) Saya tidak terima tawaran di atas itu.*

Bertarikh pada……haribulan……., 19…….

……..

*Potong sebagaimana yang sesuai

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BORANG I

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 19)

PERAKUAN SEGERA

Pembicaraan Pengambilan No……..……Pemberitahuan *Warta* Kerajaan No……

Kepada:

Pentadbir Tanah,
……
……...

Bahawasanya tanah yang dijadualkan di bawah ini, iaitu tanah desa/tanah kosong*, telah diisytiharkan oleh Pemberitahuan *Warta* Kerajaan di atas sebagai dikehendaki untuk sesuatu maksud awam:

Dan lagi bahawasanya tanah itu sekarang ini adalah dikehendaki dengan segera untuk digunakan bagi sesuatu maksud awam:

Oleh yang demikian pada menjalankan kuasa-kuasa yang diberi oleh seksyen 19 Akta Pengambilan Tanah, 1960 saya dengan ini memperakui bahawa tanah itu adalah dikehendaki dengan segera untuk digunakan bagi sesuatu maksud awam dan MENGARAH tuan supaya mengambil milik tanah itu dengan serta merta.

Bertarikh pada…….haribulan……., 19……

……
Pengarah Negeri

JADUAL

No. Lot Ukur	Hakmilik atau Pendudukan	Tuanpunya Berdaftar atau Penduduk yang Direkodkan	Luas Lot	Lebih kurang Luas yang hendak Diambil

*Potong sebagaimana yang sesuai

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L-JPN, K.L

BORANG J

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 20)

Kepada Penduduk/Tuanpunya bangunan di atas No Lot ……
No Hakmilik ……Mukim/Bandar……

Bahawasanya tanah di atas telah diambil pada hari ini menurut kuasa Perakuan Segera yang ditandatangani oleh Pengarah Negeri:

Oleh yang demikian saya dengan ini menghendaki tuan/puan mengosongkan bangunan yang tersebut di atas itu dan yang letaknya di atas tanah yang tersebut itu dalam tempoh……..hari dari tarikh ini.

2. Dan lagi adalah diberitahu bahawa saya dengan ini menawarkan pampasan kepada tuanpunya bangunan itu sebanyak $……..iaitu terdiri daripada:

(a) nilai bangunan itu*

(b) belanja mengalih dan mendirikan semula bangunan itu ditempat lain.*

Bertarikh pada……haribulan……., 19……

……
Pentadbir Tanah

*Potong mana yang tidak berkenaan

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L-JPN., K.L

(Tanah 263-Pin.1/78)

BORANG K

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 22)

PEMBERITAHU BAHAWA TANAH TELAH DIAMBIL MILIK

Pembicaraan Pengambilan No……Pemberitahuan *Warta* Kerajaan No……

Adalah dengan ini diberitahu bahawa, menurut seksyen 22 Akta Pengambilan Tanah, 1960 pada hari ini saya telah dengan rasminya mengambil milik tanah yang ditunjukkan dalam Jadual di bawah ini setakat yang dinyatakan dalam ruang akhir Jadual itu.

*Satu salinan Perakuan Segera yang dikeluarkan oleh Pengarah Negeri adalah dilampirkan.

Bertarikh pada……haribulan……., 19……

……
Pentadbir Tanah

L-J.P.N., K.L

No. Lot Ukur	Hakmilik atau Pendudukan	Tuanpunya Berdaftar atau Penduduk yang Direkodkan	Luas Lot	Lebih kurang Luas yang hendak Diambil

Potong jika tidak terpakai

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(Tanah 264-Pin. 2/86)

BORANG L

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 24)

PEMBERITAHU UNTUK MENYERAHKAN SURATAN/SURATAN-SURATAN

No. Pembicaraan Pengambilan ……. No Pemberitahu *Warta* Kerajaan ……..

Bahawasanya kesemua/sebahagian daripada tanah yang terkandung dalam Hakmilik……Lot……..Mukim/Bandar……..……telah diambil dengan rasminya oleh Pihak Berkuasa Negeri:

Dan bahawasanya saya ada sebab bagi mempercayai bahawa suratan-suratan hakmilik/ surat-surat ikatan yang disebut kemudian daripada ini ada dalam milik tuan/puan;

Oleh yang demikian pada menjalankan kuasa-kuasa yang diberi oleh seksyen 24 Akta Pengambilan Tanah, 1960, dengan ini saya menghendaki tuan/puan supaya menyerahkan kepada saya suratan/suratan-suratan hakmilik/ surat ikatan/ surat-surat ikatan yang dinyatakan dalam Jadual di sini dalam tempoh……hari dari tarikh Pemberitahu ini disampaikan kepada tuan/puan.

Bertarikh pada……haribulan……, 19……

……
Pentadbir Tanah

JADUAL

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J.P.N., K.L.

BORANG M

UNDANG-UNDANG PENGAMBILAN TANAH, 1960

(Seksyen 36)

PERKARA YANG DIRUJUKKAN KEPADA MAHKAMAH

Kepada……..

MAHKAMAH TINGGI,……..

DALAM PERKARA…….

Saya……., Pentadbir Tanah Daerah…… Negeri…….. bagi menjalankan kuasa yang diberi oleh subseksyen (2) bagi seksyen 36 Undang-Undang Pengambilan Tanah, 1960, dengan ini merujukkan perkara yang tersebut di bawah ini kepada Mahkamah bagi keputusannya:

2. Sepanjang yang saya ketahui atau yang telah dimaklumkan kepada saya, pihak-pihak yang mempunyai hak adalah seperti berikut:

……

……

……

Bertarikh pada……haribulan……., 19……..

……
Pentadbir Tanah

09522-J.P.N., Pk.

(Tanah 268-Pin.2/82)

BORANG N

AKTA PENGAMBILAN TANAH, 1960

(Seksyen 38(1)

PERMOHONAN SUPAYA BANTAHAN DIRUJUKKAN KEPADA MAHKAMAH

Kepada:

PENTADBIR TANAH……..
Pembicaraan Pengambilan No…….

Saya,…… yang beralamat di…… dengan ini membuat suatu bantahan terhadap pemberian Pemungut……..……... bertarikh…….berkenaan dengan tanah Lot No……..…….. Hakmilik No…….……...

2. Kepentingan saya atas tanah tersebut ialah seperti berikut:

……

……

*3. Bantahan saya ialah terhadap:
(a) ukuran luas tanah itu;
(b) jumlah pampasan;
(c) orang-orang yang akan menerima pampasan;
(d) pembahagian pampasan.

*Potong perkara-perkara yang tiada berkenaan

4. Alasan-alasan bantahan saya ialah seperti berikut:

……..

……..

……..

……..

……

Disini nyatakan dengan sepenuhnya alasan-alasan bantahan terhadap pembayaran itu

5. Menurut peruntukan-peruntukan seksyen kecil (1) seksyen 38 dalam Akta Pengambilan Tanah, 1960, saya dengan ini mengkehendaki tuan supaya merujukkan perkara itu kepada Mahkamah untuk keputusannya.

Bertarikh pada……haribulan……19…….

…….
Tandatangan pemohon

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L-JPN, Pk

BORANG O

AKTA PENGAMBILAN TANAH, 1960

[Seksyen 38(5)]

Pembicaraan Pengambilan No…….Pemberitahu *Warta* Kerajaan No……..

RUJUKAN PADA MAHKAMAH

Kepada, Pendaftar Mahkamah Tinggi,

……

BAHAWASANYA saya telah menerima suatu Permohonan di bawah seksyen 38 dalam Akta Pengambilan Tanah, 1960, menghendaki saya supaya merujukkan perkara yang berikut kepada Mahkamah untuk keputusannya:

*DAN LAGI BAHAWASANYA deposit yang dikehendaki sebanyak……. ringgit telah didepositkan kepada saya sebagai cagaran kerana belanja-belanja rujukan dan rayuan itu:

MAKA OLEH YANG DEMIKIAN menurut peruntukan-peruntukan seksyen 38 Akta tersebut itu saya dengan ini merujukkan bantahan yang berikut kepada Mahkamah:

[Ringkaskan bantahan/bantahan-bantahan di bawah ini]

2. Berikut ialah kedudukan dan had tanah itu, dan butir-butir mengenai apa-apa pokok, bangunan atau tanaman-tanaman yang ada atasnya:

[Nyatakan butir-butir di bawah ini]

3. Berikut ialah nama-nama dan alamat-alamat semua orang yang saya mempunyai sebab mempercayai sebagai ada berkepentingan atas tanah itu:

(Nama)	(Alamat)	(Kepentingan)

*Potong mana yang tiada berkenaan

4. Pemberitahu-pemberitahu yang berikut telah disampaikan kepada pihak-pihak yang berkepentingan:

(Pemberitahu) (Nama pihak)

5. Kenyataan-kenyataan bertulis yang berikut telah dibuat atau diserahkan oleh pihak-pihak berkepentingan yang berikut.

(Nama pihak) (Butir-butir Kenyataan)

+6. Jumlah wang yang telah dihukum diberi kerana gantirugi di bawah seksyen 6 Akta yang tersebut ialah…..……ringgit.

7. Jumlah pampasan yang dihukum diberi di bawah seksyen 14 ialah……..ringgit.

+8. Jumlah pampas an itu telah diputuskan atas alasan-alasan yang berikut:

(Di sini nyatakan alasan-alasan)

9. Saya sertakan di sini salinan-salinan suratan yang berikut:

[Di sini senaraikan suratan-suratan]

Bertarikh pada ……..haribulan……,19……..

……
Pentadbir Tanah

[Perenggan-perenggan di atas bolehlah diisi menurut rujukan yang berkenaan kepada dokumen-suratan-suratan yang akan dilampirkan bersama ini]

+Hendaklah diisi hanya jika bantahan itu terhadap jumlah pampasan.

[Borang ini diterjemahkan oleh Peguam Negara, Malaysia menurut Pemberitahu Undangan No. 12 tahun 1964-PN 2953/1; PT TM 8/67 SJ No. 6(1)]

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