



MAJLIS BANDARAYA SEBERANG PERAI

DOKUMEN SEBUTHARGA

NO SEBUTHARGA: S2221001

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

**SETIAUSAHA BANDARAYA
MAJLIS BANDARAYA SEBERANG PERAI
MENARA BANDARAYA, JALAN PERDA UTAMA
BANDAR PERDA
14000 BUKIT MERTA JAM
PULAU PINANG
TEL: 04-5497555**

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(S2221001)

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**JABATAN PELANCONGAN, SENI DAN WARISAN
MAJLIS BANDARAYA SEBERANG PERAI**

Ruj. Kami : MBSP/55/1-41/1 ()
Tarikh : 11 MAY 2021

KENYATAAN SEBUTHARGA

Sebutharga ini adalah dipelawa daripada kontraktor-kontraktor tempatan yang berdaftar dengan Lembaga Pembangunan Industri Pembinaan Malaysia (LPIPM/CIDB) di daerah SPT yang masih dibenarkan menyertai sebutharga pada masa ini seperti berikut:-

No. Sebutharga	Butir-Butir Sebutharga	Harga Dokumen Sebutharga	Kod Bidang Pendaftaran	Tarikh Dijual	Tarikh Sebutharga Ditutup
S2221001	KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.	Percuma	Lembaga Pembangunan Industri Pembinaan Malaysia (LPIPM/CIDB) - Gred G1, Kategori CE – Pengkhususan CE 14 ¹ CE21	Tarikh Iklan : 11 Mei 2021 Tarikh Lawatan Tapak : (Kehadiran tidak diwajibkan) 18 Mei 2021 Tempat : Taman Kimsar, Seberang Perai Tengah Masa : 10.00 pagi	24 Mei 2021 Nota : Sebutharga yang lewat tidak akan diterima

1. Dokumen dan lukisan sebutharga boleh dimuatun di laman web MBSP. (Projek ini menggunakan peruntukan Kerajaan Persekutuan)
2. Sebutharga akan ditutup pada tarikh seperti di atas. Dokumen Sebutharga yang telah lengkap diisi hendaklah dimasukkan ke dalam sampul surat bermeteri dan ditulis di sebelah atas kiri sampul No. Sebutharga dan jenis kerja yang berkaitan serta dimasukkan ke dalam **Peti Tawaran di Bilik Anggerik, Majlis Bandaraya Seberang Perai, Menara Bandaraya, Jalan Perda Utama, Bandar Perda 14000 Bukit Mertajam** sebelum jam 12.00 tengah hari.
3. Kontraktor di galakan untuk melawat sendiri tapak cadangan projek dan pihak MBSP tidak terikat untuk menerima tawaran Sebutharga yang terendah atau sebarang Sebutharga.


(TPr. MOHD RIDZAL BIN ABDUL)
Pegawai Pelancongan, Seni dan Warisan
Majlis Bandaraya Seberang Perai

**“SEBERANG PERAI ASPIRASI BANDAR MASA HADAPAN”
(SEBERANG PERAI ASPIRING CITY OF TOMORROW)**

**SENARAI SEMAKAN DOKUMEN SEBUT HARGA
(KERJA)**

NO. SEBUT HARGA : S2221001

Sila tandakan (√) bagi dokumen-dokumen yang disertakan.

Bil.	A. Perkara / Dokumen Yang WAJIB Disertakan (Kegagalan syarikat mengemukakan dokumen ini boleh menyebabkan tawaran tidak dipertimbangkan)	Untuk Ditanda Oleh Syarikat	Untuk Ditanda Oleh Jawatankuasa Pembuka Sebut Harga
1.	Resit Pembelian	<input type="checkbox"/>	<input type="checkbox"/>
2.	Surat Akuan Pembida yang lengkap diisi	<input type="checkbox"/>	<input type="checkbox"/>
3.	Dokumen Sebut Harga telah diisi dengan lengkap (termasuk nilai tawaran / kadar harga dan tempoh siap) dan ditandatangani.	<input type="checkbox"/>	<input type="checkbox"/>
4.	Pendaftaran MySST dengan Jabatan Kastam Diraja Malaysia (JKDM) (jika perlu)	<input type="checkbox"/>	<input type="checkbox"/>
5.	Salinan Sijil Perakuan Pendaftaran dari CIDB	<input type="checkbox"/>	<input type="checkbox"/>
6.	Salinan Sijil Perolehan Kerja Kerajaan (SPKK)	<input type="checkbox"/>	<input type="checkbox"/>
7.	Salinan Sijil Kontraktor Kerja Taraf Bumiputera (STB)	<input type="checkbox"/>	<input type="checkbox"/>
8.	Lain-lain sijil berkaitan yang disyaratkan : i. ii. iii.	<input type="checkbox"/>	<input type="checkbox"/>
9.	a. Salinan penyata bulanan Akaun Bank bagi tiga (3) bulan terakhir i. Februari 2021 ii. Mac 2021 iii. April 2021	<input type="checkbox"/>	<input type="checkbox"/>
	b. Borang CA (jika ada)	<input type="checkbox"/>	<input type="checkbox"/>

Bil.	B. Perkara / Dokumen Tambahan Sebagai Sokongan	Untuk Ditanda Oleh Syarikat	Untuk Ditanda Oleh Jawatankuasa Sebut Harga
1.	Maklumat Daftar Perniagaan (SSM)	<input type="checkbox"/>	<input type="checkbox"/>
2.	Profil Syarikat i. Bukti pengalaman kerja berkaitan bersama lima (5) tahun pengalaman yang lepas ii. Peralatan iii. Loji iv. Kenderaan v. Lain-Lain	<input type="checkbox"/>	<input type="checkbox"/>
3.	Lain-lain maklumat sekiranya ada (jika perlu) i. ii. iii.	<input type="checkbox"/>	<input type="checkbox"/>

PENGESAHAN OLEH SYARIKAT	UNTUK KEGUNAAN MBSP
<p>Dengan ini saya mengesahkan bahawa saya telah membaca dan memahami semua syarat-syarat dan terma yang dinyatakan di dalam Dokumen Sebut Harga. Semua maklumat yang dikemukakan adalah benar.</p> <p>Tandatangan :</p> <p>Nama :</p> <p>Jawatan :</p> <p>Tarikh :</p> <p>Nama syarikat :</p> <p>Cap / meteri syarikat :</p>	<p>Jawatankuasa Pembuka Sebut Harga mengesahkan penerimaan dokumen bertanda kecuali bagi perkara bil. (jika ada).</p> <p>Tandatangan :</p> <p>Nama:</p> <p>Jawatan :</p> <p>Tarikh :</p> <p>Tandatangan :</p> <p>Nama:</p> <p>Jawatan :</p> <p>Tarikh :</p>

**MAKLUMAN KEPADA SEMUA
PETENDER / KONTRAKTOR / PEMBEKAL BERKAITAN
PELAKSANAAN SISTEM PENGURUSAN KUALITI
MAJLIS BANDARAYA SEBERANG PERAI**

Majlis Bandaraya Seberang Perai (MBSP) sedang melaksanakan Sistem Pengurusan Kualiti Majlis Bandaraya Seberang Perai terdiri daripada **ISO 9001:2015 (QMS)** (Sistem Pengurusan Kualiti), **ISO 14001:2015 (EMS)** (Sistem Pengurusan Alam Sekitar), **ISO 45001:2018 (OSHMS)** (Sistem Pengurusan Keselamatan dan Kesihatan Pekerjaan), **ISO 50001:2018 (EnMS)** (Sistem Pengurusan Tenaga), **ISO 27001:2013 (ISMS)** (Sistem Pengurusan Keselamatan Maklumat) dan **ISO 37001:2016 (ABMS)** (Sistem Pengurusan Anti Suapan / Sogokan).

Selaras dengan pelaksanaan sistem tersebut pretender / kontraktor / pembekal yang berjaya mendapat tawaran sebutharga / tender di MBSP perlu kompetan dalam semua bidang tersebut dan **DISYARATKAN** menghadiri Kursus Pelaksanaan Sistem Pengurusan Kualiti Majlis Bandaraya Seberang Perai. Salinan Sijil Kursus Dengan Jayanya perlu dikemukakan kepada jabatan berkaitan.

Kursus di atas akan dianjurkan oleh MBSP dan dikenakan bayaran sebanyak RM100.00. Sijil yang dikeluarkan adalah sah untuk tempoh tiga (3) tahun sahaja. Tarikh, tempat dan masa kursus akan ditentukan. Untuk maklumat lanjut sila hubungi Bahagian Latihan dan Kompetensi di talian 04-5497453.

MAJLIS BANDARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

SURAT AKUAN PEMBIDA

SURAT AKUAN PEMBIDA

Bagi

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(S2221001)

Saya.....(Pemilik Syarikat) nombor
K.P..... yang memiliki
.....(Nama Syarikat)
nombor pendaftaran..... (MOF/PKK/CIDB/ROS/ROC/ROB)
dengan ini mengisytiharkan bahawa saya mewakili syarikat ini tidak akan menawar atau
memberi rasuah kepada mana-mana individu dalam **Majlis Bandaraya Seberang
Perai** Nama Kementerian/Agensi) atau mana-mana individu lain, sebagai ganjaran
mendapatkan tender/ sebutharga * seperti di atas.

2. Sekiranya saya atau mana-mana individu yang mewakili syarikat ini didapati
bersalah menawar atau memberi rasuah kepada mana-mana individu dalam **Majlis
Bandaraya Seberang Perai** (Nama Kementerian /Agensi) atau mana-mana individu
lain, sebagai ganjaran mendapatkan tender/ sebutharga * seperti di atas, maka saya
sebagai pemilik syarikat bersetuju bahawa Kerajaan Negeri berhak mengambil
tindakan-tindakan berikut :-

- 2.1 penarikan balik tawaran kontrak bagi tender/ sebutharga * di atas;
atau
- 2.2 penamatan kontrak bagi tender/ sebutharga * yang ditandatangani tanpa
bayaran gantirugi sekiranya pembida yang berjaya didapati melaku,
memberi atau menawarkan rasuah ; dan
- 2.3 lain-lain tindakan tatatertib mengikut peraturan perolehan Kerajaan.

3. Sekiranya terdapat mana-mana individu cuba meminta rasuah daripada saya
atau mana-mana individu yang berkaitan dengan syarikat ini sebagai ganjaran
mendapatkan tender/ sebutharga * seperti di atas, maka saya berjanji akan dengan
segera melaporkan perbuatan tersebut kepada pejabat Suruhanjaya Perkhidmatan
Rasuah Malaysia (SPRM) atau balai polis yang berhampiran.

Yang Benar

.....
(Tandatangan)

Nama :

No. K.P :

Cap Syarikat :

Catatan : * Potong mana yang tidak berkaitan.

MAJLIS BANDARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

BORANG SEBUTHARGA

**JABATAN PELANCONGAN, SENI DAN WARISAN
MAJLIS BANDARAYA SEBERANG PERAI**

Ruj. Kami :
No Sebutarga: S2221001

Setiausaha Bandaraya
Majlis Bandaraya Seberang Perai

Tuan,

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

Di bawah ini dan tertakluk kepada arahan kepada kontraktor, syarat-syarat sebutarga, spesifikasi kerja dan pelan-pelan (jika berkaitan), saya yang bertandatangan di bawah adalah dengan ini menawarkan untuk melaksanakan dan menyiapkan kerja-kerja tersebut bagi jumlah pukal sebanyak :

RM

Ringgit Malaysia:
.....(sahaja)

Saya bersetuju menyiapkan kerja-kerja ini dalam masaMinggu.
(Tempoh inginan siap kerja tidak melebihi 16 minggu)

Bertarikh padaharibulan.....tahun

..... Tandatangan kontraktor Tandatangan saksi
Nama penuh.....	Nama penuh.....
No.K/P	No.K/P
Atas sifat.....	Atas sifat.....
Alamat.....	Alamat.....
.....
No Telefon	No Telefon

.....
Meteri atau cap kontraktor

MAJLIS BADARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

RINGKASAN SEBUTHARGA

RINGKASAN SEBUT HARGA

KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.

Bil	PERIHAL	HARGA TAWARAN (RM)
1.	KERJA-KERJA PERMULAAN	_____
2.	NAIK TARAF SANGKAR BURUNG MERAK	_____
3.	KOLAM TERATAI	_____
4.	LALUAN KELILING KOLAM	_____
5.	WAKAF	_____
6.	PAPAN TANDA	_____
7.	KERJA-KERJA PENGINDAHAN	_____
8.	KONTIGENSI	RM 10,000.00
	JUMLAH HARGA DIBAWA KE MUKA SURAT 9	
	HARGA INGINAN MBSP	RM 200,000.00

.....
(Tandatangan Penyebut harga)

.....
.....
.....

(Alamat)

.....
(Cop Rasmi)

.....
(Tarikh)

.....
(Tandatangan Saksi)

.....
.....
.....

(Alamat)

.....
(Tarikh)

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

RINGKASAN SEBUTHARGA

BIL	BUTIR-BUTIR KERJA	UNIT	KUANTITI	KADAR HARGA (RM)	HARGA (RM)
1.0	KERJA-KERJA PERMULAAN				
1.1	Kontraktor dikehendaki menyediakan papan tanda projek, tenaga kerja, peralatan, alat jentera, pasukan kawalan lalu lintas semasa kerja-kerja dijalankan seperti kon, traffic barrier, pengawal bendera, papan tanda, lampu amaran, tali keselamatan dan lain-lain keperluan bagi menjalankan kerja ditapak.	Pukal			
1.2	Laporan bergambar (sebelum, sedang dan selepas) kerja dijalankan.	Pukal			
1.3	Kerja-kerja Pembersihan termasuk membawa keluar sampah binaan dari tapak bina Nota Penting: i. Ukuran yang dicatit dalam dokumen sebutharga adalah anggaran semata-mata untuk panduan kontraktor. Pihak kontraktor bertanggungjawab untuk membuat ukuran semula bagi memastikan keluasan sebenar sebelum mengemukakan sebutharga. Tuntutan tambahan tidak akan dipertimbangkan kerana kesilapan pengiraan oleh pihak kontraktor. ii. Kontraktor diminta membuat pembaikan semula bagi harta-harta MBSP yang telah rosak semasa kerja-kerja tersebut dilaksanakan.	Pukal			
Jumlah Dibawa Ke MS 11					

BIL	BUTIR-BUTIR KERJA	UNIT	KUANTITI	KADAR HARGA (RM)	HARGA (RM)
2.0	NAIK TARAF SANGKAR BURUNG MERAK				
2.1	Membuang jaring BRC 2' x 2" (mild steel) sediaada	Pukal			
2.2	Membekal dan memasang jaring dari jenis mild steel berbentuk diamond 7503 termasuk kerja-kerja mengecat dan kerja-kerja yang berkaitan.	M2	720		
Jumlah Dibawa Ke MS 11					

BIL	BUTIR-BUTIR KERJA	UNIT	KUANTITI	KADAR HARGA (RM)	HARGA (RM)
3.0	KOLAM TERATAI				
3.1	Menggali tanah ke paras 1200mm dalam.	M3	212		
3.2	150mm tebal hadkor di bawah lantai konkrit.	M2	176		
3.3	Konkrit Siap Bancuh Grade 25.	M3	37		
3.4	Kepingan jejaring No A10 atau tetulang keluli dikimpal berbentuk jejaring 100mm x 400mm beratnya 6.16kg setiap meter persegi.	M2	484		
3.5	Acuan konkrit pada muka yang tegak.	M2	484		
3.6	Lapisan kalis air pada dinding kolam.	M2	242		
3.7	Melepa bahagian dinding dan lantai kolam.	M2	15		
3.8	Dinding bata 225mm tebal.	M2	15		
3.9	Mengecat dinding luar kolam.	M2	41		
3.10	Membekal dan memasang 150mm diameter PVC paip untuk discharge water system dan overflow discharge water system termasuk system yang berkaitan dilengkapi dengan flow valve mengikut spesifikasi dan kelulusan	Pukal	-		

	MBSP termasuk kerja-kerja yang berkaitan.				
Jumlah Dibawa Ke MS 11					
BIL	BUTIR-BUTIR KERJA	UNIT	KUANTITI	KADAR HARGA (RM)	HARGA (RM)
4.0	LALUAN KELILING KOLAM				
4.1	Menggali tanah asal hingga 150mm tebal.	M2	188		
4.2	Hadkor (50mm tebal).	M3	10		
4.3	Konkrit Siap Bancuh Grade 20 (100mm tebal lantai).	M2	188		
4.4	Kepingan jejaring No.A6 atau tetulang keluli dikimpal berbentuk jejaring 100mm x 400mm, beratnya 2.22kg setiap meter persegi.	M2	188		
4.5	Acuan konkrit pada tepi konkrit melebihi 75mm dan tidak melebihi 150mm tinggi.	m	150		
4.6	Turapan simen dan pasir (1:3) atau skrid dilepa licin (12mm tebal)	M2	188		
Jumlah Dibawa Ke MS 11					

BIL	BUTIR-BUTIR KERJA	UNIT	KUANTITI	KADAR HARGA (RM)	HARGA (RM)
5.0	WAKAF				
5.1	Membekal dan membina wakaf bersaiz 10 kaki x 10 kaki termasuk kerja-kerja yang berkaitan mengikut kehendak dan kelulusan dari MBSP. (Rujuk Pelan Lukisan yang disediakan)	No	1		
Jumlah Dibawa Ke MS 11					

BIL	BUTIR-BUTIR KERJA	UNIT	KUANTITI	KADAR HARGA (RM)	HARGA (RM)
6.0	PAPAN TANDA				
6.1	Membekal dan memasang papan tanda "Peacock Eco Park" yang menggunakan stainless steel bersaiz 1 kaki tinggi diletakkan di atas dinding bata bersaiz 8 kaki panjang x 2 kaki tinggi yang dikemaskan dengan kemas dari jenis pebble wash yang diletakkan di atas konkrit asas jenis strip termasuk kerja-kerja yang bersangkutan mengikut kelulusan pihak MBSP.	Pukal			
Jumlah Dibawa Ke MS 11					
BIL	BUTIR-BUTIR KERJA	UNIT	KUANTITI	KADAR HARGA (RM)	HARGA (RM)
7.0	KERJA-KERJA PENGINDAHAN				
7.1	Menanam pokok-pokok jenis duranta gold di sekeliling laluan penjalan kaki di sekeliling kolam. Pokok Renek Saiz lubang tanaman 300mm x 300 mm x 300mm kecuali dinyatakan di tanam di dalam pasu				
	i. Mengorek lubang dengan kedalaman 500mm dan membuang bahan-bahan asing yang tidak sesuai untuk penanaman renek.	No	600		
	ii. Membekal, menghantar dan menambun top soil dengan campuran tanah 3:2:1 untuk di masukkan kedalam lubang tanaman pokok bersaiz 0.3m x 0.3 m.	No	600		
	iii. jenis duranta gold O.H : 400-600mm. (ketinggian pokok tidak	No	600		

	termasuk ketinggian polibag				
7.2	<p>Menanam pokok-pokok jenis Ruellia simplex – Mexican petunia di sekeliling laluan penjalan kaki di sekeliling Sangkar Burung</p> <p>Pokok Renek</p> <p>Saiz lubang tanaman 300mm x 300 mm x 300mm kecuali dinyatakan di tanam di dalam pasu</p> <p>i. Mengorek lubang dengan kedalaman 500mm dan membuang bahan-bahan asing yang tidak sesuai untuk penanaman renek.</p> <p>ii. Membekal, menghantar dan menambun top soil dengan campuran tanah 3:2:1 untuk di masukkan kedalam lubang tanaman pokok bersaiz 0.3m x 0.3 m.</p> <p>iii. Jenis Ruellia simplex – Mexican petunia O.H : 300-500mm. (ketinggian pokok tidak termasuk ketinggian polibag.(Jarak Tanaman 200mm)</p>	No	3,840		
		No	3,840		
		No	3,840		
Jumlah Dibawa Ke MS 11					
8.0	KONTIGENSI				Rm 10,000.00
Jumlah Dibawa Ke MS 11					

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(NO. SEBUTHARGA : S2221001)

BORANG CA

SULIT

**LAPORAN BANK / INSTITUSI KEWANGAN MENGENAI
KEDUDUKAN KEWANGAN (BAGI HAD NILAI RM200,000.00 KE ATAS)**

(Borang ini hendaklah dilengkapkan oleh pihak bank atau institusi kewangan lain dan diserahkan kepada Kontraktor dalam satu sampul berlakri untuk disertakan bersama-sama tendernya sekiranya Kontraktor mempunyai kemudahan kredit dengan Bank / Institusi Kewangan yang berkenaan)

Kepada : **Majlis Bandaraya Seberang Perai
Menara Bandaraya, Jalan Perda Utama,
Bandar Perda, 14000 Bukit Mertajam.
(Datuk Bandar, MBSP)**

Nama Petender / Penyebutharga :

Tender / Sebut harga Untuk :

(A) Kemudahan Kredit yang boleh digunakan untuk pelaksanaan Projek:
Kemudahan kredit yang telah diluluskan dan kemudahan kredit tambahan minimum yang layak diperolehi oleh petender / penyebutharga adalah seperti berikut:

Bentuk Kemudahan Kredit	Baki drp. Yang Telah Diluluskan	Tambahan Minimum Yang Akan Diluluskan*	Jumlah
(i) Overdraf	RM	RM	RM
(ii) Overdraf Bercagar	RM	RM	RM
(iii) Talian Kredit	RM	RM	RM
(iv) Pinjaman Tetap yang akan / layak diperolehi untuk projek			
(v)	RM.....	RM.....	RM.....
Jumlah:	RM.....	RM.....	RM.....

(* Jika Projek ditawarkan kepada petender / penyebutharga)

(B) Ulasan-ulasan mengenai kedudukan kewangan dan akaun petender / penyebutharga:

.....

Tandatangan untuk dan bagi pihak bank:

Nama Bank : Nama Pegawai :

Nama Menteri : Jawatan :

Tarikh :

MAJLIS BANDARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

ARAHAN KEPADA KONTRAKTOR

ARAHAN KEPADA KONTRAKTOR

1. Semua kontraktor adalah dianggap telah melawat tapak bina sewaktu menyediakan sebutharga untuk memastikan sendiri liputan kerja yang terlibat dan corak mengenai keadaan bekerja dan mengenal serta membiasakan dirinya sepenuhnya dengan sebarang hindaran, halangan-halangan dan lain-lain keadaan di tapak bina, kerana tuntutan untuk seberapa kontigensi yang mungkin mempengaruhi harga sebutharga tidak akan dipertimbangkan dan kos untuk lawatan tapak bina itu tidak boleh dituntut daripada MBSP.
2. Semua kontraktor adalah dianggap telah membaca semua dokumen / maklumat di dalam sebutharga dan telah jelas berhubung semua skop dan syarat yang telah ditetapkan. Segala yang disyaratkan yang **melibatkan kos, kontraktor hendaklah memasukkan kos tersebut di dalam sebutharga yang mungkin mempengaruhi harga sebutharga. Sebarang kos tuntutan dikemudian hari tidak akan dipertimbangkan.**
3. Borang sebutharga ini mesti dipenuhi dengan teliti, kalau tidak ianya tidak akan dipertimbangkan.
4. MBSP tidak terikat untuk menerima sebutharga yang paling rendah, mana-mana bahagian sebutharga ataupun sebarang sebutharga.
5. Seseorang yang menandatangani dokumen-dokumen kontrak bagi pihak syarikatnya mestilah mengemukakan sepucuk surat yang mana memberi kuasa kepada seseorang itu berbuat demikian.
6. Sebarang benda tidak diberi harga dalam 'Borang Sebutharga' akan dimasukkan di dalam harga jumlah sekaligus.
7. Tempoh lakunya sebutharga ini ialah **90 hari** dari tarikh tutup sebutharga. Jika lanjutan tempoh diperlukan oleh MBSP, kontraktor yang berjaya akan diberitahu secara bertulis dan beliau akan berhak untuk menerima / menolak dengan jawapan bertulis.
8. Sekiranya kontraktor gagal dan tanpa memberi sebab yang munasabah menghentikan kerja sebelum selesai atau gagal untuk bekerja menurut kehendak Majlis, Majlis adalah berhak untuk menghentikan kontrak ini dengan memberi notis berdaftar kepada kontraktor.
9. Mana-mana bilangan di dalam borang sebutharga, kecuali bilangan no. 1, adalah tertakluk kepada pembatalan oleh pihak MBSP.
10. Semua kuantiti yang di beri di atas adalah anggaran (approximation) sahaja dengan tujuan menolong kontraktor-kontraktor dalam sebutharga. Jikalau kuantiti sebenar tidak sama dengan yang di beri di atas, kontraktor yang berjaya tidak boleh menuntut wang tambahan.
11. **Polisi-Polisi Insurans**
Kontraktor dikehendaki mengambil polisi-polisi insurans, tanggungan awam dan pampasan pekerja untuk sepanjang masa kerja-kerja kontrak ini dijalankan. Polisi-polisi insurans ini mesti disampaikan kepada Jabatan Kejuruteraan sebelum kerja-kerja dimulakan. Kontraktor dikehendaki membeli "**Insurans Pampasan Pekerja**" sebanyak 25% dari jumlah sebutharga dan "**Insuran Tanggungan Awam**" sebanyak jumlah sebutharga. "**Sekiranya ada tuntutan yang melebihi Polisi Insuran Tanggungan Awam, pihak kontraktor perlu membayar baki wang yang dituntut.**"

12. Indemniti Berhubung Dengan Kecederaan Diri Dan Kerosakan Harta

12.1 Kontraktor bersetuju dengan Majlis bahawa :-

- a) Ia hendaklah melaksanakan semua obligasi di bawah kontrak ini atas risiko sendiri dan setakat yang dibenarkan oleh Undang – Undang.
- b) Majlis tidak akan bertanggungjawab atau liabiliti berhubung dengan kemalangan, kerosakan, kecederaan dan kematian;
- c) Kontraktor hendaklah melindungi dan terus melindungi Majlis daripada semua tindakan, guaman, tuntutan, prosiding, kerugian, kerosakan, pampasan, kos (termasuk kos undang – undang), caj dan perbelanjaan yang mana Majlis akan atau mungkin terjadi seperti:-
 - i) cuai, salah guna atau penyalahgunaan oleh kontraktor atau kakitangan, pengkhidmat ejen atau pekerja yang dilantik oleh kontraktor
 - ii) apa-apa kerugian atau kerosakan kepada harta benda atau kecederaan atau apa jua jenis atau di mana perbuatan sengaja Majlis; atau
 - iii) apa-apa kerugian, kerosakan atau kecederaan daripada apa jua sebab kepada harta atau orang disebabkan atau disumbangkan oleh perbuatan, peninggalan, pengabaian, pelanggaran atau keingkaran kontraktor atau kakitangan, pekerja, ejen atau pekerja; dan
- d) Kewajipan di bawah fasal ini hendaklah berterusan selepas penamatan tamat atau lebih awal berkenaan dengan apa-apa perbuatan, perkara atau benda yang berlaku sebelum tamat tempoh atau penamatan perjanjian ini.

- 12.2 kontraktor hendaklah dengan kos dan perbelanjaannya sendiri menanggung rugi, melindungi dan mempertahankan Majlis terhadap segala tindakan, tuntutan dan liabiliti yang berbangkit daripada tindakan dilakukan oleh kontraktor dalam pelaksanaan perjanjian ini.

13. Gambar Kemajuan

Kontraktor perlu kemukakan gambar kemajuan kerja (sebelum, sedang dan selepas) '*soft copy*', '*hard copy*'. ***Kontraktor hendaklah mengambil kira kos berkaitan semasa sebutharga.***

14. Keselamatan Di Tapak

Kontraktor diwajibkan memastikan keselamatan di tapak iaitu meletakkan kon atau papan tanda amaran di kawasan tapak kerja/binaan sepanjang kerja-kerja dijalankan bagi menjamin keselamatan awam. ***Kontraktor hendaklah mengambil kira kos berkaitan semasa sebutharga. Pemotongan/ denda akan dikenakan kepada kontraktor sebanyak RM100.00/hari sekiranya gagal patuhi syarat yang ditetapkan.***

15. Kebersihan

Kontraktor diwajibkan menyediakan tong sampah ditapak dan semua sisa-sisa binaan perlu dibersihkan setiap hari . ***Kontraktor hendaklah mengambil kira kos berkaitan semasa sebutharga. Pemotongan/ denda akan dikenakan kepada kontraktor sebanyak RM50.00/hari sekiranya gagal patuhi syarat yang ditetapkan.***

16. **Tarikh Tutup**

Sebutharga ini ditutup pada jam 12:00 tengah hari pada 24 Mei 2021 di Bilik Anggerik Majlis Bandaraya Seberang Perai, Menara Bandaraya, Jalan Perda Utama, Bandar Perda, 14000 Bukit Mertajam, Seberang Perai Tengah. Sebarang pertanyaan sila hubungi di talian 04-5497597 atau email jpsw@mbasp.gov.my

Dokumen sebutharga hendaklah dikemukakan di dalam sampul surat yang telah dimeterikan dan bertulis di atas sebelah kiri dengan perkataan "**Sebutharga No. S2221001**" dan dikembalikan di di Bilik Anggerik Majlis Bandaraya Seberang Perai, Menara Bandaraya, Jalan Perda Utama, Bandar Perda, 14000 Bukit Mertajam, Seberang Perai Tengah.

17. **Tempoh Menyiapkan**

Saya/Kami bertandatangan di bawah ini bersetuju menyiapkan kerja-kerja dalam tempoh _____ minggu dari tarikh rasmi menerima suruhan.

18. **Liquidated And Ascertained Damages(LAD)**

Saya/Kami yang bertandatangan di bawah juga bersetuju dengan denda lewat di bawah 'Liquidated & Ascertained Damages' dengan kadar 22.5% / 365hari x harga kontrak sehari untuk kerja-kerja yang tidak disiapkan dalam tempoh yang ditentukan.

19. **Defects Liability Period**

"Defects Liability Period" untuk kerja-kerja sebutharga ini adalah enam (6) bulan dari tarikh menyiapkan kerja. Sebarang kerosakan yang timbul dalam masa ini dikehendaki diperbaiki semula oleh kontraktor dengan bayaran sendiri.

20. Jumlah peruntukan untuk kontigensi jika ada adalah jumlah wang yang diketepikan untuk perbelanjaan mengikut budi bicara Pengarah Pelancongan, Seni dan Warisan. Jika tidak ada dipotong daripada jumlah harga kontrak bersih.

21. Untuk tujuan kontrak ini harga kontrak adalah jumlah sebutharga bagi semua perkara yang dicatitkan dalam borang sebutharga dan termasuk juga jumlah diperuntukan untuk kontigensi.

22. Kuantiti yang ditunjukkan di dalam borang sebutharga adalah tujuan menender sahaja. Kontraktor yang berjaya akan dibayar mengikut kuantiti yang sepatutnya telah dijalankan dengan mengikut kadar sebutharga.

23. Kontraktor dikehendaki mengisikan segala butir-butir yang dinyatakan dalam borang-borang yang disertakan dan dikembalikan semua sekali dengan borang sebutharga.

24. Kontraktor dikehendaki mengemukakan laporan bergambar sebelum, sedang dan selepas kerja dilaksanakan, baki kerja yang disahkan sebagai maklumat sokongan dalam proses bayaran.

25. **Perbuatan Rasuah**

Sebarang tawaran yang membentuk rasuah atau lain-lain dorongan yang boleh mempengaruhi petender/penyebut harga akan menyebabkan tender/sebutharga tersebut ditolak dengan serta merta.

26. Integrity Pact

Petender/Kontraktor dikehendaki mengisi Surat Akuan Pembida (dikepilkkan). Kegagalan membuat demikian boleh menyebabkan tender/sebutharga ditolak. Tujuan utama 'integrity pact' dilaksanakan oleh kerajaan adalah untuk:

- i. Mengelakkan petender/penyebut harga daripada menawar atau memberi rasuah.
- ii. Mengkehendaki petender/penyebut harga melaporkan sebarang kesalahan rasuah kepada pihak berkenaan
- iii. Memastikan MBSP tidak menanggung 'unnecessary cost' dalam pelaksanaan urusan perolehan.

27 Kos Penyediaan Perjanjian Dan Duti Setem

27.1 Kos penyediaan perjanjian dan duti setem (kadar ditentukan oleh Lembaga Hasil Dalam Negeri) akan ditanggung oleh pihak Kontraktor.

27.2 Jadual kadar caj kos penyediaan dokumen perjanjian adalah seperti berikut:-

27.2.1 Deraf perjanjian yang disediakan dan dijilidkan oleh Jabatan Undang-undang MBSP.

Balasan atau Nilai yang ditawarkan (yang mana lebih tinggi)	Fi Nominal	Perkhidmatan fotostat / pelbagai
Bagi RM200,000.00 dan ke bawah	RM300.00	RM100.00
Melebihi RM200,000.00 hingga RM500,000.00	RM500.00	RM100.00
Melebihi RM500,000.00	RM1,000.00	RM100.00

27.2.2 Deraf perjanjian yang disediakan dan dijilidkan oleh Kontraktor.

Balasan atau Nilai yang ditawarkan (yang mana lebih tinggi)	Fi Nominal	Perkhidmatan fotostat / pelbagai
Bagi RM200,000.00 dan ke bawah	RM300.00	RM50.00
Melebihi RM200,000.00 hingga RM500,000.00	RM500.00	RM50.00
Melebihi RM500,000.00	RM1,000.00	RM50.00

28 Penamatan

Kontrak ini boleh ditamatkan oleh mana-mana pihak dengan memberi SATU (1) BULAN NOTIS SECARA BERTULIS kepada pihak yang lagi satu lagi.

MBSP berhak menamatkan kontrak ini dengan memberi SATU(1) BULAN NOTIS SECARA BERTULIS kepada kontraktor jika gagal mematuhi mana-mana peraturan berikut:-

- a) Denda / potongan mencapai 20% daripada harga kontrak.
- b) Tidak mematuhi arahan Pegawai Penguasa atau wakilnya tanpa alasan Yang munasabah.
- c) Kontraktor telah diberi amaran keras oleh Pegawai Penguasa sebanyak tiga (3) kali berturut-turut.
- d) Kontraktor yang diistiharkan muflis oleh pihak yang sah.

Perkara-perkara di atas dianggap dengan sendirinya telah menamatkan perkhidmatan kontrak.

.....
Tandatangan Kontraktor

Nama:

No. K/P:

Tarikh:

.....
Meteri atau Cap Syarikat Kontraktor

.....
Tandatangan Saksi

Nama:

No. K/P:

Alamat:

.....
Tarikh:

MAJLIS BANDARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

SYARAT-SYARAT KONTRAK

SYARAT-SYARAT KONTRAK

1. TAKRIF

Dalam Arahan Kepada Kontraktor, Syarat-syarat Kontrak, Borang Sebut Harga, Jadual Kadar Harga, Skop Kerja dan Spesifikasi, Syarat Tambahan, dan lampiran, dilampirkan bersama, melainkan jika kandungan ayatnya menghendaki makna yang lain:

- 1.1 “Majlis” ertinya Majlis Bandaraya Seberang Perai dan mana-mana pegawai yang diberikan kuasa olehnya secara bertulis untuk mentadbir pelaksanaan kontrak ini;
- 1.2 “Kontraktor” ertinya orang atau pemilik tunggal, perkongsian, firma atau syarikat yang sebut harga untuk kerja tersebut dan telah bersetuju menerima kontrak ini termasuklah wasi-wasi, pentadbir-pentadbir, pengganti-pengganti dan penerima pindah milik orang atau syarikat tersebut;
- 1.3 “Pegawai Penguasa atau P.P” ertinya Pengarah Pelancongan, Seni dan Warisan;
- 1.4 “Wakil Pegawai Penguasa” ertinya pegawai yang diwakili atau dibenarkan secara bertulis oleh P.P untuk melaksanakan apa-apa tugas yang diarahkan oleh P.P dan Kontraktor hendaklah mematuhi arahan P.P dan/atau wakilnya dari semasa ke semasa.

2. KERJA

- 2.1 Majlis bersetuju untuk menawarkan kepada Kontraktor untuk melaksanakan kerja tersebut seperti yang dinyatakan dalam Surat Setuju Terima Sebut Harga.
- 2.2 Majlis bersetuju untuk melantik Kontraktor dan Kontraktor juga bersetuju menerima perlantikan itu bagi maksud melaksanakan kerja tersebut tertakluk kepada syarat-syarat kontrak, jadual kadar harga, spesifikasi, lukisan, dan dalam Dokumen Sebut Harga dan Surat Setuju Terima Sebut Harga.

3. TANGGUNGJAWAB KONTRAKTOR DAN STANDARD PRESTASI

- 3.1 Kontraktor berjanji dan bersetuju kepada Majlis mengikut syarat-syarat kontrak, yang menjadi sebahagian daripada Kontrak ini atau secara lain berkaitan bagi maksud-maksud kontrak.
- 3.2 Kontraktor hendaklah menyediakan dan melaksanakan semua Kerja Tersebut dengan cara yang wajar selaras dengan pengurusan yang baik dan amalan terbaik untuk Majlis dan Kontraktor hendaklah mematuhi semua undang-undang, status, peraturan dan sebarang garis panduan atau arahan yang dikeluarkan oleh Majlis kepada Kontraktor dari semasa ke semasa.
- 3.1 Kontraktor hendaklah menyediakan dan melaksanakan obligasinya di bawah Kontrak ini dan mengambil segala langkah yang sewajarnya yang diharapkan sebagai sebuah syarikat yang berwibawa dengan menggunakan ketelitian dan kemahiran sebagai profesional untuk menyediakan perkhidmatan yang berkesan dan mematuhi terma-terma dan syarat-syarat Kontrak ini.
- 3.4 Kontraktor juga hendaklah pada setiap masa melaksanakan Kerja Tersebut mengikut apa-apa cara yang dibenarkan, akan menjaga dan melindungi kepentingan Majlis serta mengambil segala langkah-langkah yang perlu dan wajar bagi mencegah penyalahgunaan selaras dengan syarat-syarat kontrak ini.
- 3.5 Bagi maksud kesempurnaan dan kelicinan perjalanan kontrak ini, Kontraktor hendaklah melantik seorang wakil yang bertanggungjawab dan apa-apa arahan yang diberi kepada wakil itu oleh Majlis hendaklah dianggap sebagai telah diberi kepada Kontraktor.

4. TEMPOH PERJANJIAN

Kontrak ini adalah bagi tempoh seperti yang dinyatakan dalam dalam Surat Setuju Terima Sebut Harga dan hendaklah mula berkuatkuasa dari tarikh yang dinyatakan dan tamat pada tarikh yang dinyatakan atau penamatan yang lebih awal seperti yang

dinyatakan kemudian daripada ini dan/atau apa-apa tempoh lanjutan yang diluluskan oleh Majlis.

5. BAYARAN

Majlis sebagai balasan terhadap pelaksanaan Kerja Tersebut hendaklah pada setiap kerja dalam Tempoh Kontrak ini berkuatkuasa membayar kepada Kontraktor bayaran yang telah ditetapkan.

6. BON PELAKSANAAN

- 6.1 Kontraktor hendaklah dalam tempoh 14 hari dari tarikh penerimaan tawaran daripada Majlis dan sebelum menjalankan Kerja Tersebut, menyediakan Bon Pelaksanaan kepada Majlis sebanyak 5.0% daripada nilai kontrak.
- 6.2 Bon Pelaksanaan hendaklah dalam bentuk Jaminan Bank ataupun Jaminan Bank Islam atau Jaminan Syarikat Kewangan atau Jaminan Insurans atau Jaminan Takaful dalam Ringgit Malaysia (RM) dari bank-bank, institusi-institusi kewangan, syarikat-syarikat insurans yang diluluskan dan berdaftar di Malaysia sebagai jaminan pelaksanaan yang sempurna.
- 6.3 Bon akan dikembalikan kepada Kontraktor tanpa apa-apa faedah dalam tempoh masa enam (6) bulan selepas tamatnya Kontrak ini atau penamatan yang lebih awal dan selepas ditolak apa-apa hutang dan/atau apa-apa bayaran lain yang terakru atau tertunggak kepada Majlis mengikut peruntukan dalam Kontrak ini berhubung dengan apa-apa kegagalan melaksanakan Kontrak ini atau apa-apa pelanggaran syarat-syarat Kontrak ini oleh Kontraktor.
- 6.4 Walau apa pun yang terkandung dalam Kontrak ini, Majlis berhak pada bila-bila masa mengembalikan semula Bon Pelaksanaan, keseluruhan dan/atau sebahagiannya sekiranya Kontraktor gagal untuk melaksanakan dan/atau memenuhi obligasinya di bawah syarat-syarat kontrak ini dan kegagalan itu tidak diperbetulkan mengikut Kontrak ini.

7. INSURANS

- 7.1 Kontraktor hendaklah sebelum Perjanjian ini dimeterai, mengambil Polisi Insurans Tanggungan Awam (Public Liability) dengan nilai harga kontrak.
- 7.2 Kontraktor hendaklah mengambil Polisi Insurans Pampasan Pekerja iaitu 25% dari harga kontrak dan merupakan anggaran jumlah pendapatan daripada pekerja Kontraktor yang tidak termasuk di bawah skim PERKESO dan/atau menyumbang kepada PERKESO semasa berkuatkuasanya Perjanjian Ini.
- 7.3 Kontraktor hendaklah mengemukakan untuk diperiksa dan disahkan polisi dan jika dikehendaki meninggalkan polisi dan resit bayaran dengan Majlis untuk dipegang oleh Majlis. Majlis pada bila-bila masa boleh meminta untuk menyemak apa-apa dokumen tambahan berkaitan insurans-insurans tersebut.
- 7.4 Tempoh lindungan insurans tanggungan awam hendaklah dari Tarikh Mula sehingga Tarikh Tamat termasuk enam (6) bulan tempoh tanggungan kecacatan dan tiga (3) bulan 14 hari. Manakala tempoh lindungan insuran pampasan pekerja hendaklah dari Tarikh Mula sehingga Tarikh Tamat.
- 7.5 Sekiranya atas apa-apa sebab sekalipun insurans-insurans tersebut terbatal atau tidak berkuatkuasa, Kontraktor bertanggungjawab untuk menanggunggrugi dan menggantirugi Majlis atas apa-apa kemalangan dan kecelakaan yang berlaku ke atas dan/atau melibatkan tempat tersebut dan Perkhidmatan Tersebut termasuklah tenaga kerja dan harta benda di dalamnya yang mana sepatutnya dilindungi oleh insurans.

8. SKOP KERJA

Kontraktor hendaklah bertanggungjawab untuk melaksanakan Kerja Tersebut mengikut spesifikasi, syarat-syarat kontrak dan lampiran-lampiran dalam Kontrak ini.

9. PENALTI / DENDA

- 9.1 Kontraktor hendaklah membayar denda lewat di bawah 'Liquidated & Ascertained Damages'dengan kadar $(0.225/365 \times \text{harga kontrak})$ sahaja sehari sekiranya kontraktor gagal melaksanakan kerja dalam tempoh perjanjian.

- 9.2 Jika Kontraktor gagal melaksanakan Kerja Tersebut secara berterusan, Majlis berhak melantik pihak ketiga bagi menjalankan Kerja Tersebut. Kontraktor perlu membayar kos sebenar yang ditanggung oleh Majlis atas Kerja Tersebut dengan bayaran tambahan denda sebanyak lima belas peratus (15%) daripada harga sebenar.
- 9.3 Majlis berhak mengenakan apa-apa syarat tambahan selain daripada yang disebut di dalam Kontrak ini ataupun semasa Majlis membuat penyeliaan dan pengawasan ke atas Kerja Tersebut, yang akan dimaklumkan secara lisan atau bertulis kepada Kontraktor oleh PP atau wakilnya.

10. AKSES UNTUK P.P ATAU WAKILNYA

- 10.1 P.P atau wakilnya hendaklah pada setiap masa yang munasabah mempunyai akses kepada Kerja Tersebut.
- 10.2 Kontraktor hendaklah selaras dengan keperluan P.P dan / atau wakilnya memberikan segala akses yang munasabah dan kemudahan kepada mana-mana orang lain yang terlibat oleh Majlis dan pekerja-pekerja mereka dan mana-mana pihak berkuasa lain yang ditubuhkan bagi maksud menjalankan apa-apa kerja di atas atau berhampiran Tapak.

11. PEMERIKSAAN TAPAK

- 11.1 Kontraktor hendaklah disifatkan telah memeriksa dan meneliti Tapak dan kawasan sekitarnya dan telah berpuas hati sendiri sebelum menyerahkan sebut harganya tentang perkara-perkara berikut:
- (a) jenis tanah dan tanah bawah;
 - (b) bentuk dan jenis tapak;
 - (c) ukuran keluasan dan panjang kawasan tapak;
 - (d) takat dan jenis kerja, bahan dan barang yang perlu bagi mejalankan Kerja Tersebut;
 - (e) pada amnya telah mendapatkan sendiri segala maklumat yang perlu tentang risiko, luar jangkaan dan segala hal keadaan yang boleh mempengaruhi dan menjejaskan Kerja Tersebut.

- 11.2 Apa-apa maklumat atau dokumen yang dikemukakan oleh Majlis kepada Kontraktor tidak boleh melepaskan Kontraktor daripada obligasinya di bawah peruntukan fasal ini.

12. SYARAT-SYARAT AM

- 12.1 Kontraktor hendaklah mematuhi dan melaksanakan semua Peraturan, Kaedah, Undang-Undang Kecil, Arahan, Syarat atau Sekatan yang dikenakan oleh Majlis secara bertulis atau lisan dari masa ke semasa.
- 12.2 Kontraktor hendaklah bertanggungjawab ke atas apa-apa kerugian yang dialami oleh Majlis akibat dari sebarang kehilangan, kerosakan, kecurian, kebakaran, tuntutan atau apa jua sebab yang mana kerugian tersebut adalah disebabkan oleh kecuaiannya Kontraktor atau pekerja-pekerjanya semasa melaksanakan Kerja Tersebut. Sebarang kerugian, kehilangan atau kerosakan kepada harta-harta Majlis hendaklah diganti oleh Kontraktor dengan perbelanjaan sendiri. Sekiranya Kontraktor gagal menggantikannya dalam masa yang ditetapkan. Majlis boleh menggantikan harta-harta tersebut dan menuntut kos yang terlibat daripada Kontraktor.
- 12.3 Kontraktor tidak boleh memindahkan atau menyerahkan secara langsung atau tidak langsung Kerja Tersebut atau apa-apa faedah atau kepentingan Kontrak ini kepada mana-mana pihak tanpa kebenaran secara bertulis daripada Majlis.
- 12.4 Kontraktor bertanggungjawab melaporkan dengan segera kepada Majlis secara bertulis segala aktiviti dan keadaan di tapak yang boleh menjejaskan Kerja Tersebut.
- 12.5 Apa-apa kecederaan, kerosakan dan kerugian (termasuk yuran guaman) yang ditanggung oleh Majlis akibat dari sebarang tindakan undang-undang di dalam Kontrak ini hendaklah digantirugi sepenuhnya oleh Kontraktor.

13. JADUAL KADAR HARGA

- 13.1 Jadual Kadar Harga, lukisan, spesifikasi dan lampiran hendaklah menjadi sebahagian dari Kontrak ini dan akan menjadi asas harga kontrak.
- 13.2 Majlis berhak untuk melaraskan Jadual Kadar Harga dan kadar harga sebelum penerimaan sebut harga dan segala keputusan Majlis adalah muktamad. Harga di dalam Jadual Kadar Harga dan apa-apa kesilapan arithmetik dalam Jadual Kadar Harga sebelum menandatangani Kontrak ini akan diselaraskan dan diperbetulkan tertakluk kepada jumlah harga yang ditunjukkan dalam Borang Sebut Harga hendaklah tetap dan tidak berubah.

14. ARAHAN PERUBAHAN

- 14.1 P.P atau wakilnya dari masa ke masa boleh mengeluarkan arahan-arahan secara bertulis yang memerlukan suatu arahan perubahan dalam bentuk Perintah Perubahan. Apabila Arahan Perubahan itu dikeluarkan, Kontraktor hendaklah dengan serta-merta mematuhi arahan Perubahan tersebut yang dikeluarkan oleh P.P atau wakilnya.
- 14.2 Perubahan adalah :-
- (a) Sesuatu perubahan daripada kontrak perkhidmatan yang bermaksud sebarang penyimpanan daripada Kontrak ini yang berkaitan dengan Jadual Kadar Harga, pelan dan/atau spesifikasi sama ada dipinda, ditambah atau dikurangkan.
 - (b) Setiap perubahan daripada Kontrak ini hendaklah memenuhi kriteria berikut:
 - (i) Tempoh kontrak masih berjalan semasa Arahan Perubahan Kerja dikeluarkan, kecuali dibenarkan di bawah syarat-syarat kontrak;
 - (ii) Perubahan perkhidmatan tidak menukar sebahagian besar skop perkhidmatan asal;
 - (iii) Bagi perkhidmatan tambahan, pelaksanaannya hendaklah ditapak; dan
 - (iv) Bagi perkhidmatan gantian, perubahan adalah di dalam skop kontrak dan perkhidmatan asal yang ditentukan dalam skop

kontrak asal hendaklah dapat dikenal pasti dalam perkhidmatan gantian tersebut.

- (c) Perkhidmatan tambahan hendaklah seboleh-bolehnya dilaksanakan secara sebut harga atau sebut harga berasingan mengikut kehendak-kehendak peraturan yang berkenaan dengannya. Perubahan kerja hanyalah dibenarkan sekiranya pelaksanaannya secara sebut harga atau sebut harga berasingan akan mengganggu atau menjejaskan kontrak yang sedang berjalan.
- (d) Amalan mengeluarkan perkhidmatan yang terkandung dalam sesuatu kontrak untuk dilaksanakan oleh pihak lain adalah tidak dibenarkan.

14.3 Sebelum mengeluarkan arahan perubahan kerja, P.P dan/atau wakilnya hendaklah memastikan yang perkhidmatan tersebut benar-benar perlu dan ada peruntukan yang mencukupi bagi menampung perbelanjaan tambahan dan kelulusan bertulis hendaklah diperolehi terlebih dahulu daripada P.P atau wakilnya.

15. PENILAIAN PERUBAHAN

15.1 Semua variasi yang telah diarahkan secara bertulis oleh P.P atau wakilnya hendaklah diukur dan dinilai oleh P.P atau wakilnya melainkan jika sebelum ini atau sebaliknya bersetuju, dan hendaklah dibuat berdasarkan kadar harga yang ditetapkan di dalam Kadar Jadual Harga dan selepas pelarasan hendaklah menentukan penilaian perkhidmatan yang bersifat sama dan dilaksanakan di bawah keadaan yang sama sebagai Perkhidmatan yang berharga.

15.2 Jumlah variasi hendaklah disahkan oleh P.P atau wakilnya dan ditambah atau ditolak daripada jumlah harga kontrak mengikut mana-mana dan jumlah itu hendaklah diselaraskan sewajarnya.

16. PENGUKURAN KERJA

P.P atau wakilnya hendaklah apabila menghendaki mana-mana bahagian Kerja Tersebut diukur atau dinilai semula bagi maksud kalimah variasi dengan memberi notis yang munasabah kepada Kontraktor untuk membantu P.P atau wakilnya dalam membuat pengukuran itu dan hendaklah memberi semua butir-butir yang dikehendaki oleh P.P atau wakilnya. Sekiranya Kontraktor gagal untuk menghadiri, maka ukuran yang dibuat oleh P.P atau wakilnya akan diluluskan dan Kontraktor hendaklah mengambalnya menjadi ukuran yang betul bagi Kerja Tersebut.

17. TUNTUTAN UNTUK RUGI DAN PERBELANJAAN

- 17.1 Jika pada bila-bila masa semasa kesemua Kerja Tersebut atau mana-mana bahagian daripadanya telah terjejas oleh sebab kelewatan dan Kontraktor telah menanggung segala kerugian langsung dan/atau perbelanjaan luar yang dijangka munasabah dan Kontraktor tidak akan dibayar balik dengan bayaran yang dibuat di bawah mana-mana peruntukan lain dalam Kontrak ini, maka Kontraktor hendaklah dalam tempoh 30 hari dari berlakunya kejadian tersebut atau keadaan atau arahan memberi notis secara bertulis kepada P.P dan/atau wakilnya niat untuk menuntut kerugian secara langsung atau perbelanjaan bersama-sama dengan anggaran jumlah kerugian dan/atau perbelanjaan, dan sentiasa tertakluk kepada klausa 17.2 dibawah ini.
- 17.2 Dengan seberapa segera tetapi tidak lewat daripada 90 hari selepas penyiapan Kerja Tersebut, Kontraktor hendaklah mengemukakan butir-butir penuh bagi semua tuntutan untuk kerugian secara langsung atau perbelanjaan di bawah klausa 18.1 di atas bersama dengan semua dokumen sokongan, baucer, penjelasan dan pengiraan yang mungkin perlu untuk membolehkan kerugian langsung atau perbelanjaan ditentukan oleh P.P dan/atau wakilnya. Jumlah kerugian langsung atau perbelanjaan ditentukan hendaklah dicampurkan kepada Jumlah Harga Kontrak.
- 17.3 Jika Kontraktor gagal mematuhi klausa 17.1 dan 17.2 di atas, Kontraktor tidak akan berhak kepada tuntutan itu dan Majlis akan dilepaskan daripada semua liabiliti berhubung dengan tuntutan itu.

18. SUB-KONTRAK ATAU PENYERAHHAKAN

Kontraktor tidak dibenarkan pada bila-bila masa memajak (sub-kontrak) keseluruhan atau mana-mana bahagian Kerja Tersebut kepada mana-mana pihak tanpa kebenaran bertulis daripada P.P atau wakilnya.

19. KEADAAN DAN KESAN AKIBAT KEINGKARAN OLEH KONTRAKTOR

19.1 Sekiranya Kontraktor lalai daripada kewajipan dan keingkaran seperti: -

- (a) gagal untuk memulakan kerja di Tapak dalam tempoh yang ditetapkan dalam Surat Setuju Terima Sebut Harga;
- (b) menggantung dan/atau meninggalkan Kerja Tersebut atau mana-mana bahagiannya sebelum Tarikh Siap;
- (c) gagal untuk meneruskan perkhidmatan secara berterusan mengikut Kontrak;
- (d) gagal melaksanakan Kerja Tersebut mengikut Kontrak;
- (e) berterusan abai untuk menjalankan tanggungjawabnya di bawah Kontrak;
- (f) enggan, abai dan/atau cuai untuk mematuhi notis bertulis daripada P.P atau wakilnya berhubung dengan apa-apa perkhidmatan yang cacat atau peralatan, bahan atau barang-barang yang rosak atau tidak memenuhi syarat-syarat Kontrak; dan/atau
- (g) tidak mematuhi apa-apa terma dan syarat-syarat Kontrak ini, maka PP atau wakilnya akan memberi notis secara bertulis kepada Kontraktor untuk menyatakan kesalahan yang dilakukan dan memerlukan Kontraktor untuk membetulkan kemungkiran itu dalam tempoh tujuh (7) hari atau apa-apa tempoh yang ditetapkan oleh P.P atau wakilnya di dalam notis yang dikeluarkan.

19.2 Sekiranya Kontraktor gagal untuk membetulkan pelanggaran dalam tempoh yang ditetapkan mengikut jadual kekerapan yang dinyatakan, P.P atau wakilnya berhak untuk menamatkan kontrak ini dengan serta-merta dengan memberi notis bertulis bagi maksud itu.

19.3 Jika Kontrak ini ditamatkan, di bawah klausa 19.2 di atas, Kontraktor itu hendaklah :-

- (a) dengan serta-merta menghentikan semua Kerja Tersebut;
- (b) menjalankan apa-apa kerja perlindungan untuk menjamin Tapak dan kawasan sekitarnya tidak mengalami apa-apa kemerosotan, kerugian atau kerosakan dan memastikan tapak dan kawasan sekitarnya dalam bersih dan kemas.
- (c) membenarkan Majlis melaksanakan Kerja Tersebut atau melantik pihak ketiga bagi menyiapkan Kerja Tersebut sekiranya Kontraktor gagal menyiapkan Kerja Tersebut;
- (d) membayar kepada Majlis untuk sebarang kerugian dan kerosakan akibat penamatan Kontrak ini; dan
- (e) tidak boleh dikeluarkan daripada mana-mana obligasinya di bawah kontrak.

19.4 Majlis hendaklah selepas berlaku penamatan tersebut:-

- (a) mengembalikan Bon Pelaksanaan atau menolak apa-apa hutang yang terakru;
- (b) berhak untuk menjalankan dan menyiapkan Kerja Tersebut dengan sendiri atau menggunakan mana-mana orang lain untuk menjalankan dan menyiapkan Kerja; dan
- (c) berhak untuk membuat tuntutan terhadap Kontraktor bagi apa-apa kerugian, kos, perbelanjaan dan kerosakan yang dialami sebagai akibat penamatan Kontrak ini.

19.5 Sekiranya Kontraktor diisytiharkan mufliis atau disabitkan dengan sebarang kes jenayah, maka Perjanjian ini ditamatkan dengan serta merta dengan tidak melucutkan apa-apa hak Majlis untuk membawa apa-apa tuntutan yang Majlis berhak menuntut menurut Kontrak ini.

20. PEMBAYARAN SEBAIK SAHAJA KONTRAK DITAMATKAN

20.1 Jika Kontrak ini ditamatkan, amaun yang hendak dibayar adalah seperti berikut:

- (a) nilai bagi semua Kerja Tersebut yang dijalankan sehingga tarikh penamatan;
 - (b) sejumlah wang sebagai apa-apa amaun perbelanjaan munasabah yang ditanggung oleh Kontraktor dalam jangkaan menyiapkan keseluruhan Kerja Tersebut;
- 20.2 Apa-apa amaun yang perlu dibayar oleh Majlis hendaklah tertumpu hanya sebagaimana yang dinyatakan dengan jelas dan nyata dalam klausa 20.1 (a) dan (b) di atas.
- 20.3 Selepas penamatan Kontrak, akaun akhir Kontrak ini hendaklah disediakan dan dikeluarkan oleh P.P atau wakilnya.

21. PENAMATAN ATAS KEPENTINGAN NASIONAL

- 21.1 Walauapapun peruntukan Kontrak ini, Majlis boleh menamatkan Kontrak ini dengan memberi tidak kurang daripada 30 hari notis bertulis bagi maksud itu kepada Kontraktor (tanpa apa kewajipan untuk memberikan apa-apa sebab itu) jika Majlis berpendapat bahawa apa-apa penamatan adalah perlu bagi kepentingan negara, dasar kebangsaan atau keselamatan negara.
- 21.2 Bagi maksud fasal ini, apa yang dimaksudkan dengan "kepentingan negara", "dasar kebangsaan" dan "keselamatan negara", hendaklah semata-mata dibuat dan ditentukan oleh Majlis dan penentuan sedemikian untuk semuaniat dan tujuan adalah muktamad dan tidak boleh dipertikaikan dan tidak akan terbuka kepada apa jua cabaran sekalipun.'
- 21.3 Selepas penamatan Kontrak ini di bawah klausa 21.1 di atas-
- (a) kewajipan pembayaran termasuk semua kos dan perbelanjaan yang ditanggung oleh Majlis dan Kontraktor hendaklah ditentukan mengikut klausa 9;
 - (b) klausa 15 hendaklah terpakai.

22. PENAMATAN DISEBABKAN OLEH FORCE MAJEURE

- 22.1 Mana-mana pihak dianggap tidak melanggar obligasi Kontrak ini sekiranya tidak dapat melaksanakan obligasinya di bawah Kontrak ini atau mana-mana bahagian daripadanya akibat daripada berlakunya kejadian Force Majeure. Kejadian Force Majeure bermaksud kejadian bukan dalam kawalan pihak yang terlibat di mana pihak tersebut tidak dapat menghalang, mengelak atau membatalkan dan hendaklah termasuk :-
- (a) peperangan, pertempuran (sama ada diisytiharkan atau tidak), serangan, tindakan oleh musuh-musuh asing, pemberontakan, penaklukan, revolusi, rampasan kuasa, perang saudara atau tindakan pengganas;
 - (b) bencana alam seperti gempa bumi, banjir dan kebakaran bawah tanah yang spontan, kilat, tsunami dan keadaan cuaca yang luarbiasa; dan
 - (c) rusuhan dan kekacauan awam, kerosakan jenayah, sabotaj, mogok, sekat masuk, pertikaian buruh atau lain-lain gangguan perindustrian (yang mengganggu pelaksanaan Kontrak ini) yang menyebabkan atau dengan munasabah boleh dijangka akan menyebabkan mana-mana pihak gagal mematuhi obligasinya.
- 22.2 Jika berlaku sesuatu kejadian Force Majeure yang menyebabkan mana-mana pihak tidak dapat melaksanakan obligasinya di bawah Kontrak ini (atau mana-mana bahagian daripadanya) yang terjejas akibat kejadian Force Majeure, pihak tersebut hendaklah dengan serta-merta memaklumkan kepada pihak yang satu lagi dan diikuti dengan mengemukakan laporan terperinci mengenai kejadian Force Majeure tersebut dan kesannya kepada pelaksanaan Kontrak ini.
- 22.3 Mana-mana pihak tidak berhak untuk bersandarkan kepada peruntukan-peruntukan dalam fasal ini melainkan sekiranya kedua-dua pihak secara munasabah telah menentukan bahawa suatu kejadian Force Majeure benar-benar berlaku.
- 22.4 Jika mana-mana pihak merasakan bahawa kejadian Force Majeure yang berlaku itu pada tahap yang sebegitu teruk atau telah berterusan untuk suatu tempoh yang mana-mana pihak tidak dapat melaksanakan apa-apa obligasi di bawah Kontrak ini, Kontrak ini bolehlah ditamatkan atas persetujuan bersama.

22.5 Jika Kontrak ini ditamatkan akibat kejadian Force Majeure di bawah fasal di atas, semua hak dan obligasi pihak-pihak hendaklah terhenti dan mana-mana pihak tidak boleh membuat apa-apa tuntutan terhadap pihak yang satu lagi dan masing-masing tidak bertanggungjawab terhadap satu sama lain berkaitan apa-apa hak dan liabiliti yang terakru akibat kejadian Force Majeure tersebut.

22.6 Bagi mengelakkan keraguan, mana-mana pihak kepada Kontrak ini hendaklah terus melaksanakan obligasi masing-masing di bawah Kontrak ini yang tidak terjejas, tertangguh atau terganggu oleh kejadian Force Majeure dan obligasi-obligasi berkenaan hendaklah, sementara menunggu pelaksanaan fasal ini, terus berkuatkuasa.

23. PENAMATAN APABILA TAMAT TEMPOH KONTRAK ATAU MENCAPAI HARGA SILING KONTRAK

23.1 Pihak Majlis boleh menamatkan kontrak ini sekiranya kontrak ini telah tamat tempoh kontrak atau tuntutan bayaran kontraktor telah mencapai harga siling kontrak pada bila-bila masa dalam tempoh kontrak, dengan memberikan sekurang-kurangnya tujuh (7) hari notis secara bertulis kepada kontraktor.

23.2 Pihak Majlis juga boleh menamatkan kontrak ini sebaik tempoh perjanjian tamat walaupun tuntutan kontraktor masih belum mencapai harga siling kontrak.

24. AKAUN AKHIR DAN SIJIL PEMBAYARAN

24.1 Dengan seberapa segera dan tidak lewat daripada satu (1) bulan, Kontraktor hendaklah mengemukakan butir-butir penuh lengkap dengan resit, baucar, dan rekod yang akan menyokong tuntutan Kontraktor bersama-sama dengan apa-apa dokumen, baucar dan apa-apa penjelasan dan pengiraan termasuk dokumen yang berkaitan untuk membolehkan Akaun Muktamad disediakan oleh P.P dan/atau wakilnya dengan syarat Kontraktor telah memberi notis tuntutan secara bertulis dalam tempoh masa yang ditetapkan.

24.2 Jika Kontraktor gagal mengemukakan butir-butir penuh semua tuntutan dalam tempoh yang ditetapkan, P.P atau wakilnya hendaklah dengan segera

membuat taksiran berdasarkan dokumen-dokumen yang dikemukakan oleh Kontraktor bagi maksud Akaun Akhir. Majlis akan dilepaskan daripada semua liabiliti berkaitan dengan tuntutan.

- 24.3 Para Perakuan Muktamad hendaklah disokong oleh dokumen-dokumen, dan butiran penuh lengkap dengan resit, baucar dan rekod yang menunjukkan penilaian muktamad kepada P.P atau wakilnya dan mana-mana amaun yang ditentukan selaras dengan terma-terma Kontrak ini.
- 24.4 Perakuan Muktamad hendaklah menyatakan apa-apa baki muktamad yang terhutang daripada Majlis kepada Kontraktor atau daripada Kontraktor kepada Majlis mengikut mana yang berkenaan, dan hendaklah menjadi hutang yang kena dibayar. Perakuan itu hendaklah juga mengambil kira apa-apa potongan yang dibenarkan terkumpul tidak lagi dibuat oleh Majlis dibawah terma-terma Kontrak ini sama ada dengan cara gantirugi jumlah tertentu atau sebaliknya.

25. AKTA PEKERJA KESELAMATAN SOSIAL, 1969

- 25.1 Kontraktor hendaklah mendaftarkan atau menyebabkan untuk mendaftarkan semua pekerja tempatan yang bekerja dalam melaksanakan Kerja Tersebut dan yang tertakluk kepada pendaftaran di bawah Skim Keselamatan Sosial Pekerja (PERKESO) selaras dengan Akta Keselamatan Sosial Pekerja 1969 dan/atau mana-mana seterusnya pengubahsuaian atau enakmen semula Akta tersebut.
- 25.2 Bagi maksud fasal kecil ini, istilah "pekerja tempatan" hendaklah termasuk pekerja yang warganegara Malaysia dan mereka yang mempunyai status penduduk tetap.
- 25.3 Kontraktor hendaklah mengemukakan Nombor Kod dan Nombor-nombor Keselamatan Sosial semua pekerja-pekerja yang didaftarkan di bawah skim PERKESO kepada PP atau wakilnya untuk pengesahan. Kontraktor hendaklah membuat bayaran sumbangan semua dari semasa ke semasa pada hari sumbangan pertama yang fikirkan sama yang perlu dibayar dan sehingga selesai perjanjian ini dan ia adalah menjadi kewajipan Kontraktor untuk mengemukakan kepada PP atau wakilnya penyata caruman atau

baucar bayaran sebagai bukti pembayaran sumbangan itu, sama ada dituntut atau tidak.

25.4 Jika Kontraktor gagal mematuhi terma-terma Fasal ini, Kerajaan Malaysia, PP dan/atau wakilnya boleh tanpa menjejaskan apa-apa remedi lain yang terdapat kepada Kerajaan dan Majlis bagi pelanggaran mana-mana syarat-syarat kontrak ini, menahan amaun dari apa-apa wang yang selainnya boleh kena dibayar kepada Kontraktor di bawah Kontrak ini pendapat PP atau wakilnya akan memenuhi apa-apa tuntutan bagi pampasan oleh pekerja yang telah ditanggung oleh PERKESO jika Kontraktor lalai dalam mengekalkan sumbangan.

26. INDEMNITI

Majlis tidak akan menanggung sebarang liabiliti untuk apa-apa gantirugi atau pampasan kepada sesiapa yang berada dalam penggajian Kontraktor atau sesiapa yang lain mengakibatkan kerosakan kepada harta benda seseorang atau kecederaan, maut atau tidak atau kerugian yang dihadapi oleh orang sedemikian melainkan kerosakan, kecederaan atau kerugian itu berakibat dari mana-mana tindakan atau keingkaran Majlis, ejen, pengkhidmat atau pengawainya yang mana Majlis akan ditafsirkan bertanggung dari segi undang-undang. Kontraktor hendaklah mengindemniti Majlis berkaitan dengan tuntutan-tuntutan terhadap Majlis bagi kecederaan atau kerugian yang dihadapi oleh orang tersebut dan kerosakan kepada harta benda termasuk harta benda Majlis, yang mungkin timbul akibat dari kecuaiian, peninggalan atau keingkaran Kontraktor, ejen, atau pegawainya atau pihak lain yang diberi kuasa atau sebarang keadaan yang dibawah kawalannya.

27. TIMBANGTARA

Apa-apa pertikaian yang terbit di antara Majlis dengan Kontraktor mengenai pentafsiran, pengertian atau kuatkuasa Kontrak atau hak dan tanggungan pihak-pihak di dalamnya atau apa-apa perkara yang terbit darinya atau yang berhubung dengannya hendaklah kecuali jika selainnya dipersetujui dengan bertulis di antara Majlis dengan Kontraktor, dirujuk kepada penimbangtara dua orang, seorang dilantik oleh Majlis dan seorang oleh Kontraktor, dan aturcara timbangtara itu adalah seperti yang diperuntukkan di

dalam Akta Timbangtara 2005.

28. KESALAHAN RASUAH

28.1 Sebarang perbuatan atau percubaan rasuah untuk menawar atau memberi, meminta atau menerima apa-apa suapan secara rasuah kepada dan daripada mana-mana orang berkaitan perolehan ini merupakan suatu kesalahan jenayah di bawah Akta Pencegahan Rasuah 1997.

28.2 Sekiranya mana-mana pihak ada menawar atau memberi apa-apa suapan kepada mana-mana anggota pentadbiran awam, maka pihak yang ditawarkan atau diberi suapan dikehendaki membuat aduan dengan segera ke pejabat

Suruhanjaya Pencegah Rasuah Malaysia atau balai polis yang berhampiran. Kegagalan berbuat demikian adalah merupakan suatu kesalahan di bawah Akta Pencegahan Rasuah 1997.

28.3 Tanpa prejudis kepada tindakan-tindakan lain, tindakan tatatertib terhadap anggota perkhidmatan awam dan menyenaraihitamkan Kontraktor boleh diambil sekiranya dengan kesalahan rasuah di bawah Akta Pencegahan Rasuah 1997.

28.4 Mana-mana Kontraktor yang membuat tuntutan bayaran berkaitan perolehan ini walaupun tiada kerja yang dibuat mengikut spesifikasi yang ditetapkan atau tiada perkhidmatan diberi dan mana-mana anggota perkhidmatan awam yang mengesahkan tuntutan berkenaan adalah melakukan kesalahan di bawah Akta Pencegahan Rasuah 1997.

29. PENETAPAN GAJI MINIMA

Kontraktor hendaklah mematuhi penetapan gaji minima pekerja yang ditetapkan oleh Kerajaan dari masa ke semasa.

30. KEBOLEHASINGAN

Jika mana-mana klausa daripada Kontrak ini adalah menyalahi undang-undang, tidak sah atau tidak boleh dikuatkuasakan di bawah mana-mana undang-undang sekarang atau undang-undang masa hadapan atau peraturan-peraturan, klausa tersebut

hendaklah dibatalkan sepenuhnya dan Kontrak ini boleh ditafsirkan seolah-olah klausa yang menyalahi undang-undang, tidak sah atau tidak boleh dikuatkuasakan itu tidak pernah terkandung sebagai sebahagian daripada Kontrak ini dan klausa-klausa lain di dalam Kontrak ini hendaklah terus berkuatkuasa dan berkesan sepenuhnya dan tidak akan terjejasoleh klausa yang menyalahi undang-undang, tidak sah, tidak boleh dikuatkuasakan atau melalui pemotongan daripada Kontrak ini.

31. PENGGANTI TERIKAT

Kontrak ini hendaklah mengikat pengganti masing-masing dalam tajuk Pihak-pihak.

32. KERAHSIAAN

32.1 Kontrak ini dan segala apa-apa spesifikasi, pelan, lukisan, rekod, data, buku, laporan dan semua perkara yang berkaitan bersama hendaklah dianggap sebagai perkara sulit dan tidak boleh didedahkan kepada mana-mana pihak ketiga tanpa persetujuan bertulis terlebih dahulu dari Majlis, kecuali dan melainkan jika:-

- (a) pendedahan apa-apa maklumat tersebut adalah perlu bagi maksud meningkatkan kewangan untuk melaksanakan obligasi Kontraktor di bawah Kontrak ini;
- (b) pendedahan maklumat tersebut dibuat kepada perunding Kontraktor, juruaudit atau penasihat;
- (c) pendedahan maklumat tersebut diperlukan oleh undang-undang atau oleh mana-mana agensi yang berkaitan dengan Majlis atau bagi pelaksanaan apa-apa obligasi di bawah Kontrak ini; atau
- (d) maklumat yang telah memasuki domain awam.

32.2 Jika maklumat telah didedahkan kepada pihak ketiga, Kontraktor perlu bertanggungjawab untuk memastikan bahawa mana-mana pihak ketiga tidak boleh mendedahkan maklumat kepada mana-mana pihak ketiga yang lain.

32.3 Sekatan yang terkandung dalam fasal ini akan kekal walaupun penamatan

berlaku. Kontrak ini dan hendaklah terus mengikat kedua-dua Pihak tanpa had dan masa.

33. PENAFIAN

Kegagalan oleh mana-mana Pihak untuk menguatkuasakan pada bila-bila masa, mana-mana peruntukan Kontrak ini tidak boleh ditafsirkan sebagai penafian hak untuk menguatkuasakan pelanggaran peruntukan sedemikian atau mana-mana peruntukan lain dalam Kontrak ini atau sebagai penepian apa-apa yang berterusan, berjaya atau selepas pelanggaran mana-mana peruntukan atau peruntukan lain dalam Kontrak ini.

34. UNDANG-UNDANG

Kontrak ini hendaklah ditadbir dan ditafsirkan selaras dengan undang-undang Malaysia dan Pihak-Pihak yang tidak boleh dibatalkan menyerahkan kepada bidang kuasa eksklusif Mahkamah Malaysia.

35. LAMPIRAN

Semua pelan-pelan lukisan dan spesifikasi kepada dokumen sebut harga ini hendaklah menjadi sebahagian daripada Kontrak dan hendaklah dibaca, dikira dan diertikan sebagai satu bahagian yang perlu dalam Kontrak ini.

36. NOTIS

Apa-apa notis yang dikehendaki disampaikan oleh mana-mana pihak kepada pihak yang satu lagi di bawah Kontrak ini hendaklah dibuat secara bertulis dan hendaklah disifatkan sebagai penyampaian yang mencukupi sekiranya dihantar kepada Majlis yang beralamat di :-

Majlis Bandaraya Seberang Perai
Menara Bandaraya
Jalan Perda Utama, Bandar Perda,
14000 Bukit Mertajam
Pulau Pinang

37. KOS PENYEDIAAN PERJANJIAN DAN DUTI SETEM

37.1 Kos penyediaan perjanjian dan duti setem (kadar ditentukan oleh Lembaga Hasil Dalam Negeri) akan ditanggung oleh pihak penyebut harga.

37.2 Jadual kadar caj kos penyediaan dokumen perjanjian adalah seperti berikut:-

37.2.1 Deraf perjanjian yang disediakan dan dijilidkan oleh Jabatan Undang-undang MBSP.

Balasan atau Nilai yang ditawarkan (yang mana lebih tinggi)	Fi Nominal	Perkhidmatan fotostat / pelbagai
Bagi RM200,000.00 dan ke bawah	RM300.00	RM100.00
Melebihi RM200,000.00 hingga RM500,000.00	RM500.00	RM100.00
Melebihi RM500,000.00	RM1,000.00	RM100.00

37.2.2 Deraf perjanjian yang disediakan dan dijilidkan oleh penyebut harga.

Balasan atau Nilai yang ditawarkan (yang mana lebih tinggi)	Fi Nominal	Perkhidmatan fotostat / pelbagai
Bagi RM200,000.00 dan ke bawah	RM300.00	RM50.00
Melebihi RM200,000.00 hingga RM500,000.00	RM500.00	RM50.00
Melebihi RM500,000.00	RM1,000.00	RM50.00

38. PEMALSUAN DOKUMEN

Majlis berhak membatalkan Kontrak ini jika didapati terdapat apa-apa pemalsuan dokumen atau pernyataan yang tidak benar yang diberikan oleh Kontraktor kepada Majlis sebelum menandatangani Kontrak ini.

39. MASA

Masa yang disebutkan dimana-mana dalam Kontrak ini adalah merupakan intipati Kontrak ini.

40. PINDAAN SECARA BERTULIS

Apa-apa perubahan atau pindaan kepada Kontrak ini adalah tidak sah melainkan jika dipersetujui dan dilakukan secara bertulis oleh kedua-dua pihak kepada Kontrak ini.

MAJLIS BANDARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

SKOP KERJA DAN SPESIFIKASI

SKOP KERJA DAN SPESIFIKASI

SKOP KERJA

Skop kerja-kerja Kontraktor

1. Menjalankan kerja-kerja seperti yang dinyatakan di dalam tender dokumen.
2. Menjalankan kerja-kerja penyelenggaraan selama enam (6) bulan selepas tarikh siap kerja.
3. Majlis tidak tertakluk untuk memberi arahan melaksanakan kerja bagi semua skop yang disenaraikan di para 1 dan 2.
4. Kontraktor adalah bertanggungjawab menyediakan/memasang papan tanda, kun-kun yang bersesuaian bagi keselamatan pengunjung. Semua ini hendaklah mengikut Arahan Teknik Kerja Raya.
5. Kontraktor hendaklah menyimpan stok bahan-bahan yang mencukupi, penyediaan segala kemudahan pengangkutan, peralatan, pekerja-pekerja dan lain-lain kemudahan yang difikirkan perlu dalam melaksanakan kerja-kerja tersebut.
6. Kontraktor hendaklah bertanggungjawab ke atas keselamatan terutama sekali keselamatan pengguna jalan raya semasa menjalankan kerja.
7. Kontraktor dikehendaki mengemukakan laporan bergambar sebelum, sedang dan selepas kerja dilaksanakan, baki kerja yang disahkan sebagai maklumat sokongan dalam memproses bayaran.
8. Majlis bersetuju untuk melantik Kontraktor dan Kontraktor juga bersetuju menerima perantukan itu bagi maksud melaksanakan kerja tersebut tertakluk kepada syarat-syarat kontrak, jadual kadar harga, spesifikasi, lukisan, dan dalam Dokumen Tender dan Surat Setuju Terima Tender.
9. Sebarang kerja pembaikan mesti terlebih dahulu mendapat Kelulusan Pegawai Penguasa atau wakilnya sebelum dilaksanakan. Jika tidak pihak Majlis tidak akan melakukan pembayaran ke atas kerja-kerja tersebut.
10. Kuantiti yang dinyatakan dalam ringkasan tender adalah anggaran sahaja. Kuantiti tersebut boleh diubah atau ditambah atau dikurangkan mengikut keperluan kerja dengan kelulusan daripada Pegawai Penguasa atau wakil Pegawai Penguasa atau Pengarah Jabatan Pelancongan, Seni dan Warisan selagi tidak melebihi harga kontrak.
11. Pegawai Penguasa atau wakilnya dari semasa ke semasa boleh mengeluarkan arahan-arahan secara bertulis yang memerlukan suatu arahan pengubahan dalam bentuk Perintah Perubahan. Apabila Arahan Perubahan itu dikeluarkan, Kontraktor hendaklah dengan serta-merta mematuhi arahan Perubahan tersebut yang dikeluarkan oleh Pegawai Penguasa atau wakilnya.

12. Perubahan adalah :

(i) Sesuatu perubahan daripada kontrak kerja yang bermaksud sebarang penyimpanan daripada Kontrak ini yang berkaitan dengan Ringkasan Sebutharga, pelan dan/atau spesifikasi sama ada dipinda, ditambah atau dikurangkan.

(ii) Amalan mengeluarkan perkhidmatan yang terkandung dalam sesuatu kontrak untuk dilaksanakan oleh pihak lain adalah tidak dibenarkan.

13. Sebelum mengeluarkan arahan perubahan kerja, Pegawai Penguasa dan/atau wakilnya hendaklah memastikan yang kerja tersebut benar-benar perlu dan ada peruntukan yang mencukupi bagi menampung perbelanjaan tambahan dan kelulusan bertulis hendaklah diperolehi terlebih dahulu daripada Pegawai Penguasa atau wakilnya.

14. Kontraktor hendaklah menyediakan dan melaksanakan semua perkhidmatan tersebut dengan cara yang wajar selaras dengan pengurusan yang baik dan amalan terbaik untuk Majlis dan Kontraktor hendaklah mematuhi semua undang-undang, statut, peraturan dan sebarang garis panduan atau arahan yang dikeluarkan oleh Majlis kepada Kontraktor dari semasa ke semasa.

15. Kontraktor juga hendaklah pada setiap masa melaksanakan kerja tersebut mengikut apa-apa cara yang dibenarkan, akan menjaga dan melindungi kepentingan Majlis serta mengambil segala langkah-langkah yang perlu dan wajar bagi mencegah penyalahgunaan selaras dengan syarat-syarat kontrak ini.

16. Bagi maksud kesempurnaan dan kelicinan perjalanan kontrak ini, Kontraktor hendaklah melantik seorang wakil yang bertanggungjawab dan apa-apa arahan yang diberi kepada wakil itu oleh Majlis hendaklah dianggap sebagai telah diberi kepada Kontraktor.

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SECTION 4 – FLEXIBLE PAVEMENT

4.1 UNBOUND PAVEMENT COURSES

4.1.1 Lower Subbase4.1.1.1 Description

This work shall consist of furnishing, placing, compacting and shaping lower subbase material on a prepared and accepted subgrade in accordance with this Specification and the lines, levels, grades, dimensions and cross-sections shown on the Drawings and/or as required by the S.O

4.1.1.2 Materials

Lower subbase material shall be inorganic soil, sand, gravel, weathered or fragmented rock, or a mixture of any of these materials, essentially free from vegetative and other organic matter and expansive clay minerals. It shall have a maximum particle size of 75 mm or less, and shall have a CBR value not less than that shown on the Drawings when compacted to 95% of the maximum dry density determined in the B.S 1377 Compaction Test (4.5 kg rammer method) and soaked for 4 days under a surcharge of 4.5 kg.

4.1.1.3 Construction Methods

Prior to placing any lower subbase material, the underlying subgrade (particularly the top 300 mm of the subgrade) shall have been shaped and compacted in accordance with the provisions of Sub-Section 2.2.7. Notwithstanding any earlier approval of finished subgrade, any damage to or deterioration of the subgrade shall be made good to the satisfaction of the S.O. before lower subbase is constructed.

Lower subbase shall be placed over the full width of the formation to the required thickness as shown on the Drawings or directed by the S.O. in one layer or more, each layer not exceeding 200 mm compacted thickness. Where two or more layers are required they shall be of approximately equal thickness and none shall be less than 100 mm compacted thickness.

Each layer of lower subbase shall be processed as necessary to bring its moisture content to uniform level throughout the material suitable for compaction, and shall then be compacted using suitable compaction equipment approved by the S.O. to not less than 95% of the maximum dry density determined in the B.S. 1377 Compaction Test (4.5 kg rammer method). Compaction shall be carried out in a longitudinal direction along the roadbed, and shall generally begin at the outer edge and progress uniformly towards the crown on each side in such a manner that each section receives equal compactive effort, all to the satisfaction of the S.O.

The lower subbase shall be finished in a neat and workmanlike manner, and shall have in average thickness over any 100 metre length not less than the required thickness. The top surface of the lower subbase shall have the required shape, superelevation, levels and grades, and shall be everywhere within the tolerances specified in Sub-Section 4.4.

4.1.2 Subbase4.1.2.1 Description

This work shall consist of furnishing, placing, compacting and shaping subbase material on a prepared and accepted subgrade or lower subbase in accordance with this Specification and the lines, levels, grades, dimensions and cross-sections shown on the Drawings and/or as required by the S.O.

4.1.2.2 Materials

Subbase material shall be a natural or prepared aggregate comprising crushed rock, weathered or fragmented rock, gravel or crushed gravel, sand, or a mixture of any of these materials. It shall have a small proportion of plastic or non-plastic fines, and shall be essentially free from vegetative and other organic matter, expansive clay minerals and lumps clay. The material shall conform to the following physical and mechanical quality requirements :-

- i) the liquid limit shall be not more than 25%;
- ii) the plasticity index shall be not more than 6;
- iii) the aggregate crushing value when tested in accordance with M.S.30 shall be not more than 35;
- iv) unless otherwise specified on the Drawings or directed by the S.O., the material shall have a CBR value of 30 or more when compacted to 90% of the maximum dry density determined in the B.S 1377 Compaction test (4.5 kg) rammer method) and soaked for 4 days under a surcharge of 4.5 kg;
- v) the gradation shall conform to one of the envelopes shown in Table 4.1 with fraction passing the B.S. 75 um sieve not greater than 2/3 of the fraction the B.S. 425 um sieve.

TABLE 4.1 GRADATION LIMITS FOR SUBBASE MATERIAL

B.S.Sieve Size	% Passing By Weight					
	A	B	C	D	E	F
50.0 mm	100	100	-	-	-	-
25.0 mm	30-65	79-95	100	100	100	100
9.5 mm	25-55	40-75	50-85	60-100	-	-
4.75 mm	15-40	30-60	35-65	50-85	55-100	70-100
2.00 mm	8-20	20-45	25-50	40-70	40-100	55-100
425 um	2-8	15-30	15-30	25-45	25-50	30-70
75 um		5-20	5-20	5-20	6-20	8-25

4.1.2.3 Construction Methods

Prior to placing any subbase material, the underlying subgrade (particularly the top 300 mm of the subgrade) or lower subbase shall have been shaped and compacted in accordance with the provisions of Sub-Section 2.2.7 or Sub-Section 4.1.1.3 as appropriate. Notwithstanding any earlier approval of finished subgrade or lower subbase, any damage to or deterioration of the subgrade or lower subbase shall be made good to the satisfaction of the S.O. before subbase is constructed.

Subbase shall be placed with equipment approved by the S.O. over the full width of the formation to the required thickness as shown on the Drawings or directed by the S.O. in one layer or more, each layer not exceeding 200 mm compacted thickness. Where two or more layers are required they shall be of approximately equal thickness and none shall be less than 100 mm compacted thickness.

Each layer of subbase shall be processed as necessary to bring its moisture content to uniform level throughout the material suitable for compaction, and shall then be compacted using suitable compaction equipment approved by the S.O. to not less than 95% of the maximum dry density determined in the B.S. 1377 Compaction Test (4.5 kg rammer method). Compaction shall be carried out in a longitudinal direction along the carriageway, and shall generally begin at the outer edge and progress uniformly towards the centre on each side, except on superelevated curves where rolling shall begin at the lower edge and progress uniformly towards the higher edge. In all cases compaction shall be carried out in such a manner that each section receives equal compactive effort, all to the satisfaction of the S.O.

Throughout the placing, adjustment of moisture content and compaction of subbase material, care shall be taken to maintain a uniform gradation of the material and prevent its separation into coarse and fine parts all to the satisfaction of the S.O.

The subbase shall be finished in a neat and workmanlike manner, its width shall be everywhere at least that specified or shown on the Drawings on both sides of the centre-line; and its average thickness over any 100 metre length shall be not less than the required thickness. The top surface of the subbase shall have the required shape, superelevation, levels and grades, and shall be everywhere within the tolerances specified in Sub-Section 4.4.

4.1.3 Gravel Surfacing

4.1.3.1 Description

This work shall consist of furnishing, placing, compacting and shaping gravel surfacing material on a prepared and accepted subgrade or lower subbase in accordance with this Specification and the lines, levels, grades, dimensions and cross-sections shown on the Drawings and/or as required by the S.O.

4.2.3.2 Materials

Gravel surfacing material shall be a natural or prepared soil-aggregate mixture comprising gravel and sand size particles together with a small proportion of plastic fines, and shall be essentially free from vegetative and other organic matter, expansive clay minerals and lumps of clay. The material shall conform to the following physical and mechanical quality requirements :-

- i) the liquid limit shall be not more than 35%;
- ii) the plasticity index shall be in the range 4 to 10;
- iii) the aggregate crushing value when tested in accordance with M.S.30 shall be not more than 35;
- iv) the gradation shall conform to one of the envelopes shown in Table 4.2 with the fraction passing the B.S. 75 um sieve not greater than 2/3 of the fraction the B.S. 425 um sieve.

The gravel surfacing shall be finished in a neat and workmanlike manner, its width shall be everywhere at least that specified or shown on the drawings on both sides of the centre-line, and its average thickness over any 100 metre length shall be not less than the required thickness and its minimum thickness at any point shall be not less than the required shape, superelevation, levels and grades, and shall be everywhere within 10 mm of the required plane or such higher approximately parallel plane, as the S.O. shall approve.

4.1.4 Crushed Aggregate Roadbase

4.1.4.1 Description

This work shall consist of furnishing, placing, compacting and shaping crushed aggregate roadbase material on a prepared and accepted subgrade or lower subbase or subbase in accordance with this Specification and the lines, levels, grades, dimensions and cross-sections shown on the Drawings and/or as required by the S.O.

4.1.4.2 Materials

Crushed aggregate roadbase materials shall be crushed rock, or crushed gravel or a mixture of crushed and natural aggregates, which is hard, durable, clean and essentially free from clay and other deleterious materials.

The material shall conform to the following physical and mechanical quality requirements:-

- i) the plasticity index shall be not more than 6;
- ii) the aggregate crushing value when tested in accordance with M.S.30 shall be not more than 30;
- iii) the flakiness index when tested in accordance with M.S.30 shall be not more than 30;
- iv) not less than 80% of particles retained on the B.S.4.75 mm sieve shall have at least one fractured face;
- v) the weighted average loss of weight in the sodium sulphate soundness test (5 cycles) when tested in accordance with AASHTO Test Method T 104 shall be not more than 12%.
- vi) the material shall have a CBR value of not less than 80 when compacted to 95% of the maximum dry density determined in the B.S 1377 Compaction test (4.5 kg) rammer method) and soaked for 4 days under a surcharge of 4.5 kg;
- vii) the gradation shall comply with the envelope shown in Table 4.3 for the type specified.

TABLE 4.3 GRADATION LIMITS FOR CRUSHED
AGGREGATE ROADBASE

B.S. Sieve Size	% Passing By Weight	
	Type I	Type II
50.0 mm	100	100
37.5 mm	95-100	85-100
28.0 mm	-	70-100
20.0 mm	60-80	60-90
10.0 mm	40-60	40-65
5.0 mm	25-40	30-55
2.36 mm	15-30	-
2.00 mm	-	20-40
600 mm	8-22	-
425 mm	-	10-25
75 mm	0.8	2-10

4.1.4.3 Construction Method

Prior to placing any crushed aggregate roadbase material, the underlying subgrade or lower subbase or subbase shall have been shaped and compacted in accordance with the provisions of the appropriate Section of this Specification. Notwithstanding any earlier approval of finished subgrade or lower subbase or subbase, any damage to or deterioration of the subgrade or lower subbase or subbase shall be made good to the satisfaction of the S.O. before crushed aggregate roadbase is constructed.

Crushed aggregate roadbase shall be placed to the required width and thickness as shown on the Drawings or directed by the S.O. in one layer or more, each layer not exceeding 200 mm compacted thickness. Where two or more layers are required they shall be of approximately equal thickness and none shall be less than 100 mm compacted thickness. Spreading shall be done by a mechanical spreader approved by the S.O. or, is approved by the S.O., by motor grater.

Prior to spreading, crushed aggregate roadbase shall be processed as necessary to bring its moisture content to a uniform level throughout the material suitable for compaction. Spread material shall be maintained at the correct moisture content for proper compaction by sprinkling with water or drying as may be necessary, and shall be compacted using suitable compaction equipment approved by the S.O. to not less than 95% of the maximum dry density determined in the B.S 1377 Compaction test (4.5 kg) rammer method).

Compaction shall be carried out in a longitudinal direction along the carriageway, and shall generally begin at the outer edge and progress uniformly towards the centre on each side, except on superelevated curves where rolling shall begin at the lower edge and progress uniformly towards the higher edge. In all cases compaction shall be carried out in such a manner that each section receives equal compactive effort, all to the satisfaction of the S.O.

Throughout the placing, adjustment of moisture content and compaction of crushed aggregate roadbase material, care shall be taken to maintain a uniform gradation of the material and prevent its separation into coarse and parts, all to the satisfaction of the S.O.

The crushed aggregate roadbase shall be finished in a neat and workmanlike manner, its width shall be everywhere at least that specified or shown on the drawings on both sides of the centreline, and its average thickness over any 100 metre length shall be not less than the required thickness. The top surface of the crushed aggregate roadbase shall have the required shape, superelevation, levels and grades, and shall be everywhere within the tolerances specified in Sub-Section 4.4.2.

4.2 BITUMINOUS PAVEMENT COURSES

4.2.1 Bitumen Prime Coat4.2.1.1 Description

This work shall consist of the careful and thorough cleaning of the surface of a prepared and accepted crushed, aggregate, roadbase, and the furnishing and application to the cleaned roadbase surface of a bituminous priming material all in accordance with this Specification and the line, dimension and cross-sections shown on the Drawing and / or as required by the S.O.

4.2.1.2 Materials

The bituminous priming material shall be either cut-back bitumen or bitumen emulsion as stated in the Bill of Quantities.

Cut-back bitumen shall be grade RC-70 or MC-70 confirming to the requirements of M.S.159.

Bitumen emulsion shall be slow setting, grade SS-1 or SS-1K, conforming to the requirements of M.S 161, as appropriate to the type of roadbase material to be primed and approved by the S.O.

4.2.1.3 Equipment

The equipment used by the Contractor shall include a power broom, a compressed air blower, a self-propelled pressure distributor for bituminous material, and as necessary, equipment for storing and heating bituminous material.

(a) *Power Broom*

The power broom shall be a rotary type specifically designed for sweeping road surfaces, and shall be approved by the S.O.

(b) *Compressed Air Blower*

The compressed air blower shall comprise a portable air compressor of 3 cu.m/min. in capacity at 0.7 N/sq.mm delivery pressure with a suitable hose and nozzle for blowing clean a road surface after power brooming, and shall be approved by the S.O.

(c) *Pressure Distributor for Bituminous Material*

The distributor shall be a purpose built model recognized manufacture and shall be approved by the S.O. It shall conform to the requirement described hereunder.

The distributor shall have a suitable capacity and shall be equipped with a gas or oil fired heating system capable of heating a full charge of bituminous material to 180°C. The heating system shall be such that overheating of the bituminous material will not occur and shall be of a type in which flames from the burner do not come into direct contact with the casing of the tank containing the bituminous material. The tank shall be insulated in such a manner that when filled with bituminous material at 180° and not heated, the drop in temperature shall be less than 3°C per hour.

A thermometer shall be provided to measure continuously the temperature of the material in the tank and shall be so arranged that the highest temperature in the tank is bituminous measured. The tank shall be fitted with an accurately calibrated dipstick or contents gauge, and the pipe for filling the tank shall be fitted with an easily replaceable filter.

The distributor shall run on pneumatic tyred wheels of such width and number, that the load produced on the road surface when the vehicle is fully charged shall not exceed 12kg/mm of tyre width. The vehicle shall be equipped with a 'fifth wheel' tachometer system to accurately measure its forward speed during spraying operations.

The distributor shall be equipped with a full circulation type spray bar with nozzles from which the bituminous material is sprayed on to the road surface uniformly over the full spraying width. The spraying width shall be variable in increments of not more than 100mm up to maximum of 5.0 metres. The spraying pump shall be driven by a separate power unit and shall be equipped with an accurate pressure gauge and an accurate flow rate gauge or meter. On the suction side the pump shall be so designed that bituminous material at even temperature and uniform pressure may be sprayed uniformly over the spraying width at controlled rates in the range 0.25 to 8.0 liters/sq.m at normal distributor operating speed, such that deviation from the prescribed rate of application shall not exceed 10%.

The distributor shall be equipped with a hand spraying system.

The meters for the 'fifth wheel' tachometer system and the bituminous material pumping flow rate, pumping and temperature shall be located in such a manner that the vehicle driver can easily read them while operating the distributor. The spray bar shall be controlled by a second operator riding at the rear of the vehicle in such a position that all the discharge sprays are in his good view.

All measuring equipment on the distributor shall have been recently calibrated, and accurate and satisfactory records of the calibrations shall be submitted to the S.O. If in the course of the work the rate of application of bituminous material are found to be inaccurate, the distributor shall be withdrawn from the Work and recalibrate to the satisfaction of the S.O before being returned to service.

The S.O. may require such performance test as he considers necessary to check that the distributor is operating satisfactorily. As directed by the S.O., the Contractor shall make the distributor and its equipment available for such test and shall supply all necessary assistance, material, tools, testing apparatus, etc, all at the Contractor's own expense.

(d) Storage and Heating Facilities for Bituminous Material

Tanks for storage of bituminous material shall have a capacity suited to the proposed rate of utilisation of the material and the method and frequency of its delivery to the Works, all to the satisfaction of the S.O. The Tanks and, where necessary, barrel decanters shall be equipped with heating systems which provide for effective and positive control of the temperature of the bituminous material at all times up to the temperature required for utilisation. The method of heating shall be such that flames nor the products of combustion shall come into direct contact with the bituminous material or to casing of its immediate container, and such that no portion of bituminous material shall be subject to overheating.

4.2.1.4

Construction Methods*(a) General Conditions*

Bitumen prime coat work shall only be carried out in dry, warm, weather when the surface to be treated is essentially dry.

(b) Surface Preparation and Cleaning

Prior to applying the prime coat, the crushed aggregate roadbase shall have been shaped and compacted in accordance with the provisions of Sub-Section 4.1.4.3. Notwithstanding any earlier approval of finished crushed aggregate roadbase, any damage to or deterioration of the roadbase shall be made good to the satisfaction of the S.O. before prime coat is applied.

Immediately prior to applying the bituminous material, the full width of the surface to be treated shall be swept using a power broom followed by a compressed air blower and if necessary, scraped using hand tools to remove all dirt, dust and other objectionable material, all to the satisfaction of the S.O.

(c) Application of Bituminous Material

The bituminous priming material shall be sprayed on to the cleaned roadbase surface by means of a pressure distributor. Any areas inaccessible to the distributor spray bar shall be treated using the distributor's hand spraying system. The rate or rates of application shall be as directed by the S.O. based on the results of test applications, but shall usually be in the range 0.5 to 1.0 litre/sq.m. The temperature of cut-back bitumen shall be maintained in the range 50°C to 70°C during spraying operations. For bitumen emulsion, the spraying temperature shall be in the range 25°C to 45°C.

If necessary, in order to prevent the bituminous material from flowing on the sprayed surface, the prescribed prime coat shall be applied in two separate spraying operations. Where the condition of the treated surface indicates that it is necessary, bituminous material additional to that prescribed shall be applied, as the S.O shall direct.

Prime coat shall be distributed uniformly over the surface to be treated without streaking, the quantities applied shall not deviate by more than 10% from those prescribed. Areas with insufficient bituminous material shall be resprayed as necessary to make-up the deficiency, all to the satisfaction of the S.O.

The surfaces of structures, road furniture and trees adjacent to the areas being sprayed shall be protected in such a manner as to prevent their being spattered or marred by bituminous material. Bituminous material shall not discharged into road drain, gutters, etc.

(e) Curing and Opening to Traffic

Prime coat shall normally be left undisturbed for at least 24 hours after application and shall not be opened to traffic until, in the opinion of the S.O., it has penetrated the roadbase and cured sufficiently so that it will not be picked up by the wheels of vehicle.

The Contractor shall maintain the prime coat, all to the satisfaction of the S.O, until the overlying pavement course is constructed, which shall not be within 24 hours after the application of the bituminous priming material nor within such longer period as is required, in the opinion of the S.O, for the prime coat to achieve maximum penetration of the roadbase and become fully cured.

4.2.2

Bituminous Tack Coat

4.2.2.1

Description

This work shall consist of the careful and thorough cleaning of the surface of a prepared and accepted bituminous or bitumen primed pavement course, and the furnishing and application to the cleaned surface of a bituminous pavement course, all in accordance with this Specification and the lines, dimensions and cross-sections shown on the Drawings and/or as required by the S.O.

4.2.2.2

Materials

Bituminous tack coat material shall be rapid setting bitumen emulsion of grade RS-1 or RS1K conforming to the requirements of M.S.161.

4.2.2.3

Equipment

The equipment shall be as specified in Sub-Section 4.2.1.3.

4.2.2.4

Construction Methods*(a) General Conditions*

Bituminous tack coat shall only be applied to a clean, dry, bituminous or bitumen primed surface. Bituminous tack coat shall only be applied as far in advance of the construction of the overlying bituminous pavement course as is necessary to achieve a satisfactory degree of tackiness before the overlying material is placed, all to the satisfaction of the S.O.

(b) Surface Preparation and Cleaning

Prior to applying bituminous tack coat, the surface to be treated shall have been prepared in accordance with appropriate Sections of this Specification. Not with standing any earlier approval of this surface, any damage to it or deterioration of it shall be made good before tack coat is applied.

Immediately prior to applying bituminous tack coat, the full width of the surface to be treated shall be swept using a power broom followed by a compressed air blower, and if necessary, scraped using hand tools, to remove all dirt, dust and other objectionable material, all to the satisfaction of the S.O.

(c) Application of Bituminous Material

The bituminous tack coat shall be sprayed on to the cleaned bituminous or bitumen primed surface by means of a pressure distributor. Any areas inaccessible to the distributor spray bar shall be treated using the distributor's hand spraying system. The rate or rates of application shall be as directed by the S.O. Based on the result of the test application, but shall usually be in the range 0.25 to 0.55 liters/sq.m. The temperature of the bituminous material shall be maintained in the range 250C to 450C during spraying operations.

Tack coat shall be distributed uniformly over the surface to be treated without streaking the quantities applied shall not deviate by more than 10% from those prescribed. Areas with bituminous material in excess of these limits shall have the removed at the Contractor's expense, and areas with insufficient bituminous material shall be resprayed as necessary to make up the deficiency, all to the satisfaction of the S.O.

The surface of structures, road furniture and trees adjacent to the areas being sprayed shall be protected in such a manner as to prevent their being spattered or marred by bituminous material. Bituminous material shall not discharged into road drains, gutters, etc.

Traffic shall be kept off the tack coat at all time, and the Contractor shall maintain the tack coat, all to the satisfaction of the S.O, until the overlying pavement course is constructed.

4.2.3

Bituminous Surface Dressing

4.2.3.1

Description

This work shall consist of the careful and thorough cleaning of the surface of a prepared and accepted bituminous or bitumen primed pavement course, and the furnishing and placing on the cleaned surface of one or two applications of bituminous material and cover aggregate, all in accordance with this Specification and the lines, dimensions and cross-sections shown on the Drawings / or as required by the S.O.

When one application of bituminous material and cover aggregate is placed the term 'single bituminous surface dressing' (SBSD) shall apply, and when two application of bituminous material and cover aggregate are placed the term 'double bituminous surface dressing' (DBSD) shall apply.

4.2.3.2

Materials

(a) Bituminous Material

Bituminous binder for bituminous surface dressing shall be penetration graded bitumen, or cut-back bitumen, or bitumen emulsion as shown on the Drawings or otherwise specified.

Penetration graded bitumen shall be 80-100 grade conforming to M.S.124.

Cut-back bitumen shall be grade RC-70 or MC-70 conforming to M.S.159.

Bitumen emulsion shall be rapid setting of grade RS-1, RS-1K, RS-2, RS-2k or RS-3K conforming to M.S.161. The grade of emulsion selected shall be anionic or cationic appropriate to the type of rock from which the cover aggregate is derived and shall be approved by the S.O.

(b) Additives For Bituminous Material

An adhesion an anti-stripping agent shall be added to the bituminous material if the S.O shall so direct or approve. The additive shall be of a type approved by the S.O and the required quantity of additive shall be thoroughly mixed with the bituminous material in accordance with the manufacturer's instructions or as directed by the S.O for such time as necessary to produce a homogenous mixture.

(c) Aggregates for Bituminous Surface Dressing

For single bituminous surface dressing the cover aggregates shall be nominal 20 mm, 14 mm, 10 mm or 6 mm size chippings as shown on the Drawings and / or directed by the S.O. For double bituminous surface dressing the cover aggregate for the first application of bituminous material and cover aggregate shall be normal 20 mm size chipping and the cover aggregate for the second application of bituminous material and cover aggregate shall be normal 10 mm size chippings.

Cover aggregates shall be screened, crushed stone and shall comprise clean dry, hard, tough, sound, angular and cubical chipping free from vegetative and other organic matter, clay and other deleterious substance, and containing few, if any flaky or elongated particles. Dusty chippings shall be washed clean, all to the satisfaction of the S.O. Cover aggregates shall conform to the following physical and mechanical requirements:-

- i) using the type of bituminous material to be used in the Works, treated with additive if so required. The coated area in the coating and stripping test for bitumen aggregate mixtures, AASHTO Test Method T 182, shall not be less than 95%.
- ii) the aggregate crushing value when tested in accordance with M.S.30 shall not more than 30;
- iii) the weighted average loss of weight in the sodium sulphate soundness test (5 cycles) when tested in accordance with ASSHTO Test Method T 104 shall not be more than 12%;
- iv) the flakiness index when tested in accordance with M.S.30 shall be not more than 25;
- v) the polished stone value when tested in accordance with M.S.30 shall be not less than 40;
- vi) the gradation shall conform to the appropriate envelope shown in Table 4.4.

4.2.3.3

Equipment

The Contractor shall provide all the plant and equipment necessary for executing the work in accordance with this Specification, and shall furnish the S.O with such details of particular items of equipment e.g manufacturer, model type, capacity, weight, etc, as the S.O shall require.

The equipment shall include a power broom, a compressed air blower, a self propelled pressure distributor for bituminous material, all necessary spreading equipment, a suitable number of tip-trucks and a self-propelled pneumatic tyred roller.

TABLE 4.4- GRADATION LIMITS FOR
BITUMINOUS SURFACE DRESSING

% Passing By Weight				
B.S. Sieve Size	Nominal 20mm Chippings	Nominal 14mm Chippings	Nominal 10mm Chippings	Nominal 6mm Chippings
25.0mm	100	-	-	-
20.0mm	85-100	100	100	-
14.0mm	0-20	85-100	85-100	-
10.0mm	-	0-20	0-20	100
6.3mm	-	-	-	85-100
4.75mm	0-5	0-5	0-10	0-25
2.36mm	0-2	0-2	0-2	0-10

(a) *Power Broom*

The power broom shall be as specified in Sub-Section 4.2.1.3(a)

(b) *Compressed Air Blower*

The compressed air blower shall be as specified in Sub-Section 4.2.1.3(b)

(c) *Pressure Distributor For Bituminous Material*

The distributor shall be as specified in Sub-Section 4.2.1.3(c)

(d) *Storage and Heating Facilities For Bituminous Material*

Storage and heating facilities for bituminous material shall be as specified in Sub-Section 4.2.1.3(d)

(e) *Aggregate Spreading Equipment*

Aggregates shall be placed using mechanical spreaders of a type approved by the S.O. The spreaders shall be capable of applying aggregate uniformly over the full width of the area being treated and shall have controls to regulate the rate of spread as required by this specification all to the satisfaction of the S.O.

(f) *Tip-Trucks*

The Contractor shall provide a suitable number tip-trucks of a type approved by the S.O., Capable of spreading aggregate in accordance with this specification.

(g) *Pneumatic tyred Roller*

The pneumatic tyred roller shall be of recognised manufacture and shall be approved by the S.O. It shall conform to the requirements described hereunder.

The pneumatic tyred roller shall be self-propelled and capable of being reversed backlash; it shall equipped with power steering and dual controls allowing operation from either the left or right side.

The roller shall have nine wheels equipped with smooth treaded tyres all of the same size and construction, and capable of operating at inflation pressure of up to 0.9N/sq.mm. Five wheels shall be on the driven axle and four on the steering axle all equally spaced on both axles and arranged so that the tyres on the steering axle track midway between those on the driven axle with small overlap. The roller shall be equipped with water tanks, sprinkler systems and pads of coconut matting to keep all tyres evenly wetted during operation. The roller shall be equipped with means of adjusting its total weight by ballasting so that the load per wheel can be varied in the range 1.0 to 2.0 tonnes. In operation, the ballasted weight and tyre inflation pressure shall be adjusted to meet the requirements of each particular operation. Each tyre shall be kept inflated at the specified pressure such that difference between any two tyres shall not exceed 0.04N/sq.mm. Means shall be provided for checking and adjusting tyre pressure at all times at the place of the works.

The contractor shall provide the S.O. With a calibration chart for the roller showing the relationship between the quantity or depth of ballast and total weight, and also a chart showing the relationship between wheel load, tyre inflation pressure and contact pressure.

4.2.3.4 Constuction Methods

(a) *General Conditions*

Bituminous surface dressing shall only be carried out in dry, warm weather when the surface to be treated is dry. Work shall be discontinued when rain appears imminent and during periods to strong wind.

The S.O. May order the discontinuation of work on account of adverse weather unsatisfactory condition of materials, equipment or surface to be treated, or such other conditions as he shall consider detrimental to the work.

(b) *Surface Preparation and Clearing*

Prior to constructing a bituminous surface dressing, the surface to be treated shall have been prepared in accordance with the appropriate. Section of this Specification. Notwithstanding any earlier approval of this surface, any damage to or deterioration of it shall be made good before surface dressing is commenced.

Immediately prior to commencing surface dressing, the full width of the surface to be treated, together with an additional 300mm width on each side, shall be swept using a power broom followed by compressed air blower and, if necessary, scraped using hand tools to remove all loose particles, dirt, dust and other objectionable material, all to the satisfaction of the S.O.

In double bituminous surface dressing construction, the surface of the first application of bituminous material and cover aggregate shall be similarly made good and cleaned, immediately prior to commencing the second application.

(c) *Application of Bituminous Material*

The bituminous material for single bituminous surface dressing or for each application of bituminous material and cover aggregate of a double bituminous surface dressing, shall be sprayed on the cleaned surface to be treated by means of pressure distribution. Any areas inaccessible to the distributor spray bar shall be treated using the distributor's hand spraying system.

The rate or rates of application shall be as directed by the S.O. Based on the results of laboratory tests and/or test applications but for penetration graded bitumen shall usually be in the appropriate range given in table 4.5

TABLE 4.5- RATES OF APPLICATION OF
PENETRATION GRADED BITUMEN

Nominal Size of Aggregate	Rate of Application of Penetration Graded Bitumen
20 mm	2.0-3.0 litre/sq.m
14 mm	1.5-2.2 litre/sq.m
10 mm	1.0-1.5 litre/sq.m
0 mm	0.7-1.0 litre/sq.m

The rates of application for cut-back bitumens and bitumen emulsions shall be commensurately higher depending on their residual bitumen contents.

The temperature of the bituminous material shall be maintained during spraying operations within the appropriate range given in Table 4.6

The bituminous material shall be distributed uniformly over the surface to be treated without streaking the quantities applied shall not deviate by more than 10% from those prescribed. The rate of application shall be checked for each spraying run by measuring the volume of bituminous material in the distributor before and after spraying and the area treated. Adjustments shall be made as necessary to ensure that the prescribed rate of application is maintained in subsequent runs, spraying shall be discontinued immediately if any defect develops in the distributor, and it shall not be resumed until the fault has been rectified to satisfaction of the S.O.

The Spraying of bituminous material over any portion of the surface to be treated shall not be carried out more than two minutes in advance of placing the cover aggregate on that portion at the specified rate; and the progress of spraying the bituminous material shall be restricted as necessary to comply with this requirements.

TABLE 4.6 – SPRAYING TEMPERATURE FOR
BITUMINOUS MATERIAL

Bituminous Material	Spraying Temperature
80-100 penetration grade bitumen	150°C to 165°C
Cut-back bitumen grade RC-70 or MC-70	50°C to 65°C
Bitumen emulsions	25°C to 45°C

Bituminous materials shall not be heated to spraying temperatures too soon in advance of requirements. Any bituminous material which has been heated to spraying temperature for more than ten hours or which has been overheated shall be rejected.

In case where the bituminous material is applied in lanes there shall be a small overlap of bituminous material at the joints between lane equal in width to the edge strip of sprayed area which does not receive the full rate of application of bituminous material. For double bituminous surface dressing, joints in the second application of bituminous material shall be offset from those in the first application by 150-300mm for longitudinal joints and by least 1.0metre, where possible, for transverse joints.

Each spraying run shall commence and terminate on lengths of building paper placed across the full spraying width immediately before and after the section to be sprayed. Sufficient building paper shall be placed so that the distributor may be started and stopped with spray bat over paper and so that the correct distributor road speed to be sprayed, all to the satisfaction of the S.O. Immediately after used and before application of cover aggregate, the building paper shall be removed and disposed of in a manner approved by the S.O.

Provision shall be made for volume of bituminous material of least 10% of the capacity of the distributor, or such other quantity as the S.O. Shall direct, to remain in the distributor tank at the completion of each spraying run, in order to avoid air entrapment within the bitumen spraying system.

The surface of structures, road furniture and trees adjacent to the areas being sprayed shall be protected in such a manner as to prevent their being spattered or marred by bituminous material, bituminous material shall not be discharged into road drains, gutter, etc.

(d) *Application of Cover Aggregates*

Before each spraying bituminous material commences, sufficient aggregate to provide full cover at the prescribed rate of application over the entire area to be sprayed shall have been loaded in trucks at the site of the works in readiness for spreading.

Immediately following the application of bituminous material, the clean dry cover aggregates shall be uniformly spread over the bituminous material using mechanical spreaders approved by the S.O. The aggregate shall be placed as quickly as practicable after the application of bituminous material on all parts of the area to be covered, and for no portion of surface to be treated shall there be a delay of more than two minutes between the application of the bituminous material and the spreading of the aggregate.

The trucks feeding the aggregate to the mechanical spreaders shall operate backward during aggregate spreading in order that the wheels of the spreaders and truck shall not run on uncovered bituminous material.

The rate of application of cover aggregate shall be as directed by the S.O. Based on the results of laboratory test and/or test applications, but shall usually be in the appropriate range given in Table 4.7

TABLE 4.7 – RATES OF APPLICATION OF COVER AGGREGATE

Nominal Size of Aggregate	Rate of Application
20mm	17 - 27 kg/sq.m
14mm	12 - 18 kg/sq.m
10mm	8 - 12 kg/sq.m
6mm	5 - 8 kg/sq.m

The rate of application shall be checked for each spraying run from measurements of the quantities aggregate in the truck and the area-treated or by sampling and measuring the aggregate spread on the road. Any bare or insufficiently covered areas shall be made good by hand spreading as quickly as possible. Aggregate in excess of the rate prescribed shall be evenly distributed over the surface or removed as quickly as possible, all to the satisfaction of the S.O.

In case where the surface dressing is constructed in lanes, the edge of the aggregate spread adjacent to an untreated lane shall coincide with the edge of the sprayed area, which receives the full rate of application of the bituminous material. This will leave a narrow strip of bituminous material of partial thickness, which shall be overlapped by the bituminous material spray and aggregate spread of the adjacent lane.

Immediately following the spreading of the aggregate to the satisfaction of the S.O., the aggregate shall be rolled with pneumatic tyred roller approved by the S.O. To embed the aggregate in the bituminous material. Rolling shall commence as quickly as practicable after the application of bituminous material and aggregate on all parts of the area to be covered, and for no portion of surface to be treated shall there be a delay of more than 3 minutes between the application of bituminous material and commencement of rolling.

The pneumatic tyred roller shall be ballasted to an operating weight of 9-10 tonnes and is tyre inflation pressure shall be 0.53 N/sq.mm for surface dressing work. Rolling shall be continued for as long as is necessary to thoroughly embed the aggregate in the bituminous material, all to the satisfaction of the S.O.

Rolling shall generally begin at the outer edge of surface dressing and progress uniformly towards the centre on each side, except on superelevated curves where rolling shall begin at the lower edge and progress uniformly towards the higher edge. Consecutive roller passes shall generally overlap by about one half of the roller's width.

When, in the opinion of the S.O., the bituminous material has hardened sufficiently to prevent the dislodgment of embedded aggregate by the action of the power broom, all loose aggregate shall be swept from the treated surface using the power broom and compressed air blower and disposed of to the satisfaction of the S.O. Where the dressing so prepared is the first application of a double bituminous surface dressing, construction of the second application of bituminous material and cover aggregate shall proceed as soon as is practicable.

(e) *Opening to Traffic*

Bituminous surface dressing shall normally not be opened to traffic until such time as, in the opinion of the S.O., the surfacing shall have development sufficient strength to withstand normal traffic forces without dislodgment of the aggregate. This will usually be not less than 24 hours after the completion of rolling. Where it is necessary to allow earlier use of the finished surface to facilitate the movement of traffic, vehicles may be allowed to run on the work after rolling has been completed, provided that speeds are restricted to 30 km per hour or less and sharp turning movements are prohibited. The finished surface shall subsequently have to be closed temporarily to enable the loose aggregate to be swept off and disposed of as described in Sub-Section 4.2.3.4 (d).

Ideally, the first application of bituminous material and cover aggregate of a double bituminous surface dressing should not be opened to traffic before construction of the second application. However, where it is necessary to facilitate the movement of traffic, the first application. Nevertheless, traffic movement on the completed first application shall be kept to a practicable minimum and the second application shall be constructed as soon as is practicable after the completion of the first.

4.2.4 Asphaltic Concrete

4.2.4.1 Description

This work shall consist of furnishing, placing, shaping and compacting asphaltic concrete, binder course and/or wearing course on a prepared and accepted bituminous or bitumen primed pavement course, and shall include the careful and thorough cleaning of surface which are to be covered without receiving a bituminous tack coat. The work shall be carried out all in accordance with this Specification and the lines, levels, grades, dimensions and cross-section shown on the Drawings and/or as required by the S.O.

4.2.4.2 Materials

(a) *Aggregates*

Aggregate for asphaltic concrete shall be a mixture of coarse and fine aggregates and, if necessary, mineral filler. The individual aggregates shall be of sizes suitable for blending to produce the required gradation of the combined aggregate, all to the satisfaction of the S.O.

Coarse aggregates shall be screened crushed hard rock, angular in shape and free from dust, clay, vegetative and other organic matter, and other deleterious substances. They shall conform to the following physical and mechanical quality requirements :-

- i) the aggregate crushing value when tested in accordance with M.S.30 shall be not more than 30;
- ii) the weighted average loss of weight in the sodium sulphate soundness test (5 cycles) when tested in accordance with AASHTO test Method T 104 shall be not more than 12%;
- iii) the flakiness index when tested in accordance with M.S.30 shall be not more than 30%;
- iv) the water absorption when tested in accordance with S.S.30 shall be not more than 2%;
- v) the polished stone value when tested in accordance with M.S.30 shall be not less than 40 (only applicable to aggregate for wearing course)

Fine aggregate shall be clean natural sands, screened quarry fines, or mining sand. Mining sand shall be thoroughly washed before use. Other types of fine aggregate may be used subject to the approval of the S.O. Fine aggregate shall be non-plastic and free from clay, loam, aggregate of material, vegetative and other organic matter, and other deleterious substances. They shall conform to the following physical and mechanical quality requirements:-

- i) the weight average loss of weight in the sodium sulphate soundness test (5 cycles) when tested in accordance with AASHTO Test method T 104 shall be not more than 12%
- ii) the water absorption when tested in accordance with S.S.30 shall be not more than 2%.

Notwithstanding compliance with the requirements of this Specification, limestone aggregate shall not be permitted for use in wearing course.

The gradation of the combines and fine aggregate, together with ordinary Portland cement added as an adhesion and anti-stripping agent and, if necessary, any other mineral filler, shall conform to the appropriate envelope shown in Table 4.8

TABLE 4.8-GRADATION LIMITS FOR ASPHALTIC CONCRETE

Mix Type	Wearing Course	Binder Course	Binder Course
Mix Designation	ACE W14	ACB14	ACB28
BS Sieve Size	% Passing By Weight		
37.5mm	-	-	100
28.0mm	-	-	80-100
20.0mm	100	100	72-93
14.0mm	80-95	56.81	58-82
10.0mm	68-90	70-95	50-75
5.0mm	52-72	40-65	36-58
3.35mm	45-62	32-58	30-52
1.18mm	30-45	20-42	18-38
425 µm	17-30	12-28	11-25
150 µm	7-16	6-16	5-14
75 µm	4-10	4-8	3-8

The gradation envelopes in the above table are purposely wider than the tolerance for good works control of asphaltic concrete mixes. For each types of mix required in the works, the contractor shall establish a job mix formula gradation which shall consist of single definite percentage passing for each sieve size in the above table and shall produce a smooth curve within and essentially parallel to appropriate gradation envelope. This job mix formula gradation with the allowable tolerance for a single tests as specified in subsection 4.2.4.3(c), then becomes the job control envelopes and this job control envelope must be totally within the limits of the appropriate gradation envelope in the above table.

(b) Mineral Filler

Mineral filler shall be finely divided mineral matter such as rock dust, limestone dust, hydrated lime, hydraulic cement, or such other suitable material as the SO Shall approve. At the time of mixing with bitumen it shall be sufficiently dry to flow freely and shall be essentially free from agglomerations. Not less than 70% by weight shall pass BS 75µm sieve.

(c) Bituminous Mineral

Bituminous binder for asphaltic concrete shall be penetration graded bitumen of 80-100 grade conforming to MS 124.

(d) Anti-Stripping Agent

Ordinary Portland cement shall be added to the combined aggregate for asphaltic concrete to serve as an adhesion and anti-stripping agent. The amount of cement added for this purpose shall be 2% by weight of the combined aggregate (Additional cement may also be added, if necessary, to serve as filler).

Ordinary Portland cement for this purpose shall conform to the requirements of M.S 522 and shall be dry, free flowing and free from agglomerations at the time of use.

Notwithstanding the use of ordinary Portland cement as an anti-stripping agent as specified above, the Contractor shall be responsible for ensuring that the bitumen binder adheres satisfactorily to aggregate and does not strip from it during the service life of the asphaltic concrete.

Accordingly, the Contractor shall carry out bitumen stripping tests with the proposed aggregates to demonstrate to the complete satisfaction of the S.O that the aggregates will perform satisfactorily in service with the specified bitumen binder. Such tests shall be carried out in accordance with AASHTO Test Method T 182, or such other test methods as the S.O shall direct or approve. When AASHTO Test Method is used, the coated area at the end of the mixture's period of immersion in water shall be not less than 95%.

Where, in the opinion of the S.O, ordinary Portland cement does not perform satisfactorily as an anti-stripping agent, the Contractor may propose to use another adhesion and anti-stripping agent in addition to, or wholly or partially instead of, the ordinary Portland cement specified above. Such agent shall be of a type approved by the S.O and shall be thoroughly mixed with the bituminous binder, all in accordance with manufacturer's instructions. In such a case, the agent shall be added to the bitumen binder used in the bitumen stripping tests in the appropriate amount and manner.

Aggregate which does not perform satisfactorily in the bitumen stripping tests, using the approved adhesion and anti-stripping agent when appropriate, shall not be used in asphaltic concrete.

4.2.4.3 Asphaltic Concrete Mix design

(a) *Job Mix Formulae*

After obtaining supplies or production (as applicable) of all aggregates consistent as to gradation and other qualities, the Contractor shall propose a job mix formula for each class mix required in the Works. In order to attain optimum quality of the mixtures, the job formula for each class shall be prepared on the basis of testing several trial gradations within the limits set in Table 4.8 at an appropriate range of bitumen contents. As a guide to the testing range of bitumen contents, the design bitumen content will usually be in the appropriate range given in Table 4.9.

TABLE 4.9 – DESIGN BITUMEN CONTENTS

ACW14 - Wearing Course	5.0 – 7.0 %
ACB 14 - Binder Course	4.5 – 6.5 %
ACB28 - Bincer Course	4.0 – 6.0%

A sample of each trial mix (i.e. each combination of trial gradation and bitumen content) shall be subject to a comprehensive Marshall method test and analysis as follows:-

- i) preparation of specimens for the standards stability and flow test in accordance with AASHTO Test Method T 245 using the 75 blows/face compaction standard;
- ii) determination of the bulk specific gravity of the specimens in accordance with AASHTO Test Method T 166;
- iii) determination of the stability and flow values in accordance with AASHTO Test Method T 245;
- iv) analysis of the density and voids in the compacted aggregate, the percentage of voids in the compacted aggregate filled with bitumen, and hence the percentage of air voids in the compacted mix.

For each trial mix conforming to a proposed job mix formula, the parameters of the above tests and analysis shall conform to the requirements of the appropriate type of mix as given in Table 4.10.

TABLE 4.10 – TEST AND ANALYSIS PARAMETERS FOR ASPHALTIC CONCRETE

Parameter	Wearing Course	Binder Course
Stability S	>500 kg	>450 kg
Flow F	>2.0 mm	>2.0 mm
Stiffness F/S	> 250 kg/mm	>255 kg/mm
Air voids in mix	3.0% - 5.0%	3.0% - 7.0%
Voids in aggregate filled with bitumen	75% - 85%	65% - 80%

Air voids shall be defined as the small pockets of air between the coated aggregate particles in a compacted asphaltic concrete mix. The portion of the bitumen absorbed in to the aggregate particles must therefore be allowed for when calculating the air voids. For combined aggregate with a water absorption or not more than 2.0%, the absorbed bitumen may be estimated on the basis that the absorption of bitumen may be estimated on the basis that the absorption of bitumen will be approximately 20% of the water absorption.

Voids in the aggregates of a mix shall be calculate on the base of the weighted average bulk specific gravity on an oven dried basis of the coarse and fine aggregate fractions (separated by the ASTM # 10 sieve or B.S. 2.0 mm sieve) as determined in accordance with AASHTO Test Method T 84 and T 85 as applicable.

The Marshall density of an asphaltic concrete mix is defined as the average density of a set of three (3) test specimens moulded for the standard stability and flow test in accordance with AASHTO Test Method T 245 using the 75 blows per face compaction standard.

discharge gate so constructed as to allow rapid and complete emptying of the hopper, and prevent leakage of the mix when closed. The mixer shall be equipped with a permanent gauge for measuring the depth of mixture in the pugmill and a manufacture's calibration plate showing the volume of mixture in the pugmill at each increment of depth.

The mixing time shall be determined using the formula :-

$$\text{Mixing time (second)} = \frac{\text{Dead weight of mix in pugmill (kg)}}{\text{Pugmill output (kg per second)}}$$

and for a given output it may be varied slightly by adjusting the depth (and hence weight) of the mixture held in the pugmill by varying the dam height, the configuration of the paddle blades, or both. However for substantial adjustments of the mixing time, in order to maintain the depth at a level compatible with efficient mixing i.e. so that the paddle tips just break out of the mixture at the height of their action, the rate of feed of materials to the mixer, (and hence output) should be changed).

(c) *Tip-Trucks*

The Contractor shall provide a suitable number of tip-trucks of a type approved by the S.O. for transporting asphaltic concrete from the mixing plant to the paving works. The trucks shall have trays with smooth, flat beds and sides, and shall have load capacities of not less than 5 tonnes. Prior to loading, the inside of each truck tray shall be lightly and evenly coated with a soap or detergent solution, or such other liquid as the S.O. shall approve, to prevent adhesion of the asphaltic concrete. The trucks shall be equipped with covers of canvas or other suitable material to protect the asphaltic concrete.

(d) *Asphalt Paver*

The asphalt paver shall be of recognized manufacture and shall be approved by the S.O. It shall conform to the requirement described hereunder.

The paver shall be self-propelled and capable of reverse as well as forward travel. It shall be equipped with a hopper at the front designed to receive the paving mixture from tip-trucks, and shall have a mechanical distribution system for spreading the mixture evenly and without segregation over the surface to be paved in front of a screeding and compaction unit which shall be equipped with a suitable heating device. The screeding and compacting unit which shall be capable of confining the edges of the material being laid without the use of stationary side forms, shall adjustable to strike off the mixture to the thickness and cross-section shape required, and shall be controlled by an automatic leveling device to produce an even carpet of bituminous mixture in paving widths in range 2.5 to 3.75m and of finishing the pavement layer true to the required line, grade, levels, dimensions and cross-sections, subject to compaction by rolling, all to the satisfaction of the S.O.

(e) *Rollers*

A pneumatic tyred roller and two steel wheeled tandem roller shall be provided. However, a three wheeled steel roller may be substituted for one of the tandem roller if the S.O shall so approve. All rollers shall be of recognized manufacture.

The pneumatic tyred roller shall be as specified in Sub-Section 4.2.3.3 (g). Steel wheeled rollers shall conform to the requirements described hereunder.

Steel wheeled roller shall be self-propelled and capable of reversed without backlash; they shall be equipped with power steering and dual controls allowing operation from either the left or right side. They shall be equipped with water tanks, sprinkler systems and scraper blades to keep all wheels evenly wetted and clean during operation.

Each steel wheeled roller shall be ballasted so that its total operation weight is in the range 8 to 10 tonnes and its driven roll (or rolls) shall exert a rolling force of not less than 3.5 tonnes, metre of roll width. The Contractor shall provided the S.O. with a calibration chart for each roller showing the relationships between the quantity or depth of ballast and total weight and rolling force.

4.2.4.5

Construction Methods

(a) General Condition

Asphaltic concrete paving work shall only be carried out in dry weather when the surface to be covered is dry, or if so specified, has received a bituminous tack coat which shall have achieved a satisfactory degree of tackiness, all to the satisfaction of the S.O. All laying, rolling and finishing work shall be carried out during daylight hours, unless the Contractor shall have provided suitable flood-lighting for the job site, the satisfaction of the S.O.

The S.O may order the discontinuation of work on account of adverse weather, unsatisfactory condition of materials, equipment or surface to be paved, or such other condition, as he shall consider detrimental to the work.

(b) Surface Preparation and Cleaning

Prior or construction and asphaltic concrete pavement layer, the surface to be covered shall have been prepared in accordance with appropriate Sections of this Specification Notwithstanding any earlier approval of this surface, any damage to or deterioration of it shall be made good before asphaltic concrete paving work is commenced.

If the surface to be covered is not to be provided with a bituminous tack coat, than immediately prior to commencing asphaltic concrete paving, it shall be swept using a power broom followed by a compressed air blower and, if necessary, scraped using hand tools to remove all loose particles, dirt, dust and other objectionable material all to the satisfaction of the S.O.

If the surface to be covered is to be provided with bituminous tack coat, then this shall be applied all in accordance with the provisions of Sub-Section 4.2.2.

(c) Aggregate Handling and Heating

Each aggregate to be used in the asphaltic concrete mixes be store in a separate stockpile near the mixing plant. Stockpiles of sand and other aggregate shall be kept dry using waterproof covers and other means are necessary. In placing the aggregate in the stockpiles and loading them into the mixing plant's cold aggregate feed bins, care shall be taken to prevent segregation or uncontrolled combination of material of different gradation. Segregation or contaminated material shall be rescreened or rejected for use in the Work and removed from the mixing plant site.

The aggregate shall be fed into the dryer at a uniform rate proportioned in accordance with the appropriate job mix formula. The rate of feed for each aggregate shall be maintained within 10% of the rate of feed for each aggregate shall be such that the plant's screens shall never be overloaded.

The aggregate shall be dried and heated so that when delivered to the mixer they shall be at a temperature in the range 150°C to 170°C.

Immediately after heating the aggregates shall be screened into four (or more) fractions, which shall be separately stored in the aggregate storage bins in readiness for mixing.

Ordinary Portland cement and/or other mineral filler to be used in the mix shall be stored separately and kept completely dry. Its rate of feed into the plant shall be accurately controlled by weight or volumetric measurement, all to the satisfaction of the S.O.

(d) Heating of Bitumen

The binder shall be heated so that when delivered to the mixer it shall be at a temperature in the range 140°C to 160°C.

(e) Mixing Asphaltic Concrete

The mixing plant shall be so coordinated and as to consistently produce asphaltic concrete mixes within the tolerance prescribed in the Specification, all to the satisfaction of the S.O.

Mixing in Batch Plants

For each batch the screened hot aggregate shall be weighed out into the aggregate weigh hopper in accordance with proportions prescribed in the appropriate job mix formula, the sequence of weighing out shall commence with the largest sized aggregate and progress down to the fines, unless the S.O. shall otherwise approve. Mineral filler shall be weighed out into the filler weigh hopper, where this is provided, or added last to the aggregate weigh hopper, in accordance with the job mix formula proportions.

The hot binder shall be weighed out into the binder weigh bucket in accordance with the proportion prescribed in the job mix formula.

The hot aggregates and filler shall be discharged into the pugmill and mixed dry for the dry mixing time prescribed in the job mix formula, which shall usually be in the range 5 to 10 second. The hot binder shall then be added and wet mixing performed for the wet mixing time prescribed in the job mix formula; this shall be sufficient so that all particles or aggregate are uniformly coated with bitumen, and shall usually be 45 second or more for dense graded mixtures.

The volume of each batch shall be such that the tips of the pugmill paddle blades just break out of the mixture at the height of their action.

After the completion of wet mixing, each batch of asphaltic concrete shall be discharged from the pugmill either into a storage hopper or directly into a truck for hauling to the paving site. Care shall be taken that no segregation of the mix occurs.

Mixing in Continuous Mix Plants

The screened hot aggregate and filler shall be fed from their storage bins in accordance with the proportions prescribed in the appropriate job mix formula, combined in the plant, and fed continuously into the mixer. The hot binder shall be sprayed on to the combined aggregate as it enters the pugmill at the rate required to achieve the bitumen content prescribed in the job mix formula. The material shall then be carried through the pugmill and in the process be thoroughly mixed by the action of the paddles and discharge over the dam into the storage hopper. The mixing time (as defined in Sub-Section 4.2.4.4(b) shall be as prescribed in the job mix formula; this shall be sufficient so that all particles of aggregate are uniformly coated with bitumen, and shall usually be 45 seconds or more for dense graded mixtures.

The plant shall be so adjusted as to maintain the level of mixture in the pugmill such that the tips of the paddle blades just break out of the mixture at the height of their action.

(f) Transportation Of Asphaltic Concrete

Asphaltic concrete shall be transported from the mixing plant to the site of the paving works in loads of not less than 5 tonnes using tip-trucks as specified in Sub-Section 4.2.4.4(c). Except where asphaltic concrete is to be hand laid, it shall be discharged directly into the paver hopper, as required, from the tip trucks. Care shall be taken in the truck loading, hauling and unloading operations to prevent segregation of the mix. During transportation, the asphaltic concrete shall be protected from contamination by water, dust, dirt and other deleterious materials.

The temperature of asphaltic concrete immediately before unloading from the truck either into the paver hopper or on to the road for hand spreading shall be not less than 125°C. Any load which has cooled below the specified temperature in the truck shall be rejected for use in the Works and removed from the Site of the Works.

(g) Laying Asphaltic Concrete

The sequence of laying operations shall be planned in advance by the Contractor and approved by the S.O. Generally each paving layer shall have a compacted thickness of not less than twice the nominal maximum aggregate size of the mixture, and not more than 100mm. Where applicable, e.g. on superelevated sections and on carriageway with cross-slope in one direction only. Laying shall commence along the lower side of the carriageway and progress to the higher side. Laying shall not be carried out in a downhill direction along any section of road.

As far as is practicable, laying shall be carried out using a paver approved by the S.O. Hand-casting of bituminous mix on the machine finished surface shall be kept to the practicable minimum necessary for concreting blemishes and irregularities. In any areas in accessible to the paver, laying shall be carried out by hand methods using rakes, lutes and other hand tools, all to the satisfaction of the S.O. All laying of bituminous mix shall be such that after compaction by rolling the specified course or layer thickness and surface profile shall be achieved. Care shall be taken to achieve uniform surface texture free from indentations, ridges, tear marks or other irregularities and to prevent segregation of the mix.

At the commencement of initial rolling the temperature of asphaltic concrete shall be not less than 110°C. Material which has cooled below the specified temperature before laying shall not be used and shall be removed from the Site of the Works. The Contractor shall provide accurate thermometers at the paving site at all time, and shall check the temperature of asphaltic concrete in the paver hopper at regular intervals and before laying restarts each interruption of the paving operation.

As far as is practicable, the paver shall be operated continuously and the supply of bituminous mix shall be regulated so as to enable continuous paving. Transverse joints in a paving lane shall be kept to a practicable minimum and intermittent stopping restarting of the paver shall be avoided as far as is practicable.

Care shall be taken that no bituminous mix is placed on expansion joints at bridges, inspection covers for utilities ducts, drainage and sewerage manholes and the like, and that catchpits, drainage openings through kerbs, etc, remain properly open and serviceable. During laying operation, such areas and openings shall be protected by suitably shaped and secured boards or other materials approved by the S.O, and compaction of mix in the immediately surrounding or adjacent areas shall be completed by hand methods, all to the satisfaction of the S.O. Alternatively, bituminous mix shall be laid and compacted by hand methods as necessary around surfacing discontinuities of these types, all to the satisfaction of the S.O.

(h) *Construction Joints*

Existing bituminous surfacing which new bituminous mix is to adjoin shall be cut back to present a straight, vertical edge not less than 25mm deep and a smooth transition section not less than 05 metre long against which to lay the new material. The specified thickness of the new surfacing shall be built up gradually from the vertical joint to avoid bumps or ridges across the carriageway.

Where longitudinal or transverse joint are required in a layer of bituminous mix under construction, the material first laid and compacted shall be cut back to a vertical face for the full thickness of the new surfacing shall be built up gradually from the vertical joint to avoid any bumps or ridge across the carriageway.

At all construction joints, a thin uniform coating of bitumen emulsion of grade RS-1 or RS-1K shall be brushed on to the vertically cut joint faces some 10 to 15 minutes before laying the next section of bituminous mix commences to ensure good bonding. Also all contact surfaces of kerbs, gutters, manholes, catchpits, etc., shall be similarly treated with a coating of bitumen emulsion before bituminous mix is placed against them.

Construction joints in a layer of bituminous mix shall be offset from those in any immediately underlying bituminous layer by at least 100mm for longitudinal joints and at least 0.5 metre, where possible, for transverse joints.

(i) *Compaction of Asphaltic Concrete*

For each layer of asphaltic concrete, compaction by rolling shall commence, as soon after laying as the material will support the rollers without undue displacement; nevertheless the temperature of asphaltic concrete at the commencement of rolling shall be not less than 110°C.

In any areas inaccessible to the rollers, proper compaction shall be carried out using vibrating plate compactors, hand tampers or other suitable means, all to the satisfaction of the S.O.

Initial (or breakdown) rolling shall be carried out with an approved steel wheeled tandem roller or three wheeled steel roller. The principal heavy rolling shall be carried out with an approved pneumatic tyred roller immediately following the initial rolling; the pneumatic tyred roller shall be ballasted to an operating weight of not less than 15 tonnes and its tyre inflation pressure shall be not less than 0.7 N/sq.mm. The final rolling shall be carried out with an approved steel wheeled tandem roller and shall serve to eliminate minor surface irregularities left by the pneumatic tyred roller.

All rollers shall operate in a longitudinal direction along the carriageway with their driven wheels towards the paver. Rolling shall generally commence at the lower edge of the paved width and progress uniformly to the higher edge, except that where there is a longitudinal construction joint at the higher edge, this shall be rolled first ahead of the normal pattern of rolling. Generally, successive roller passes shall overlap by half the width of the roller, and the point at which the roller is reversed shall be staggered. However, when operating on gradients in excess of 4%, the breakdown roller shall not pass over any previously unrolled mix when operating in the downhill direction.

In all cases, compaction shall be carried out in such a manner that each section receives equal compactive effort, all to the satisfaction of the S. O.

The steel wheeled rollers shall operate at speeds of not more than 5km/hr and the pneumatic tyred rollers shall operate at speeds of not more than 8 km/hr. No roller or heavy vehicle shall be allowed to stand on newly laid bituminous mix before compaction has been completed and the material has thoroughly cooled and set. Rolling shall continue as long as is necessary to achieve the appropriate requirement as follows:-

<u>Type of Pavement Layer</u>	<u>Required Compacted Density</u>
Wearing course	98 - 100% Marshall density
Binder course	95 - 100% Marshall density

Care shall be taken to prevent over – compaction of asphaltic concrete.

Within 24 hours of laying and compaction the bituminous mix, Contractor shall cut or samples of not less than 100mm nominal diameter at location elected by the S.O. The rate of sampling shall be 1 sample per 500 sq.m of mix laid, but not less than 2 samples for the work completed in each paving session. These core samples shall be used by the S.O. to determine the thickness of the compacted layer of mix and the compacted density of material in accordance with either ASTM Test method D1188 or ASTM Test Method D2726, whichever is applicable.

(j) *Finished Asphaltic Concrete*

Asphaltic concrete binder and wearing course shall be finished in a neat and workmanlike manner; their widths shall everywhere at least those specified or shown on the drawing on both sides of the centre- line; the average thickness over any 100 metre length shall be not less than the required thickness, and the minimum thickness at any point shall be not less than the required thickness minus 5mm.

The top surface of a wearing or binder course shall have required shape, superelevation, levels and grades and shall be everywhere within tolerances specified in Sub-Section 4.4.

(k) *Opening to Traffic*

Asphaltic concrete shall not be opened to traffic until compaction has been completed and the material has thoroughly cooled and set in the opinion of the S.O. This will usually be not less than 4 hours after the commencement of rolling. Where it is necessary to allow earlier use of the finished surface to facilitate the movement of traffic, vehicle may be allowed, run on the work after rolling has been completed, provided that speeds are restricted to 30 km/hr or less and sharp turning movement are prohibited.

4.2.5

4.2.5.1

Bituminous Macadam

Description

This work shall consist of furnishing, placing, shaping and compacting bituminous macadam roadbase and / or levelling course and / binder course and / of wearing course on a prepared and accepted bituminous or bitumen primed pavement course, and shall include the careful and through cleaning of surface which are to be covered without receiving a bituminous tack coat. The work shall be carried out all in accordance with this Specification and the lines, levels, grades, dimensions and cross-sections shown on the Drawing and/ or as required by the S.O.

4.2.5.2 Materials

The materials for bituminous macadam (aggregates, mineral filler, bituminous binder and anti-stripping agents) shall comply with all the requirements of Sub-Section 4.2.4.2, except for the combined gradation requirements.

For each bituminous macadam mix, the gradation of the combined coarse and fine aggregates, together with ordinary Portland cement added as an adhesion and anti-stripping agents and, if necessary, any other mineral filler, shall conform to the appropriate envelope given in Table 4.12. The binder content shall also be in accordance with table 4.12.

Where the characteristics of the aggregates require a binder content other than that given in the above Table, the revised target binder content shall be agreed between the Contractor and the S.O and the same tolerances shall apply.

4.2.5.3 Equipment

The equipment shall be all as specified in Sub-Section 4.2.4.4

4.2.5.4 Construction Methods

All the provisions of Sub Section 4.2.4.5 for the construction of asphaltic concrete pavement courses shall apply as appropriate to the construction of bituminous macadam courses with the following variations and additions.

(a) Aggregate Heating

The aggregate shall be dried and heated so that when delivered to the mixer they shall be at a temperature in the range 140°C to 160°C.

(b) Rolling Temperature

The temperature of bituminous macadam at the commencement of rolling shall be not less than 100°C.

(c) Compacted Density

The compacted density of bituminous macadam shall be as follows:-

<u>Type of Pavement Layer</u>	<u>Required Compacted Density</u>
Bound roadbase	90-100% Marshall Density
Levelling course	90-100% Marshall Density
Binder course	90-100% Marshall Density
Wearing course	90-100% Marshall Density

The Marshall density of a bituminous macadam mix is defined as the average density of a set of three test specimens moulded in the same way as asphaltic concrete specimens are prepared for the stability and flow test in accordance with AASHTO Test Method T 245 using the 75 blows per face compaction

standard. The bulk specific gravity of the specimens shall be determined in accordance with AASHTO Test Method T 166.

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The Marshall density of each mix shall be determined using a sample (or samples) taken from the mixing plant soon after the commencement of preparing each mix for the Works.

(Note: Stability and flow tests are not normally required for bituminous macadam mixers)

(d) Finished Bituminous Macadam

Bituminous macadam roadbase shall be finished in a neat and workmanlike manner, its width shall be everywhere at least that specified or shown on the Drawings on both sides of the centre – line, and its average thickness over any 100 metre length shall be not less than the required thickness. The top surface of bituminous macadam roadbase shall have the required shape, superelevation, levels and grades, and shall be everywhere within the tolerances specified in Sub – Section 4.4.2

Bituminous macadam levelling course shall be finished in a neat and workmanlike manner, its dimensions shall be as specified or shown on the Drawings or as directed by the S.O, all to the satisfaction of the S.O. The top surface of bituminous macadam levelling course shall have the required shape, superelevation, levels and grades, and shall be everywhere within the tolerances for binder course specified in Sub- Section 4.4.

TABLE 4.12 – GRADATION LIMITS AND BINDER CONTENTS FOR BITUMINOUS MACADAM

Mix Type	Bound Roadbase	Bound Roadbase	Levelling Course	Binder Course	Binder Course	Wearing Course	Wearing Course
Mix Designation	BMR 40	BMR28	BML10	BMB28	BMB20	BMW14	BMW20
B.S. Test Sieve	% Passing By Weight						
50.0mm	100	-	-	-	-	-	-
37.5mm	95-100	100	-	100	-	-	-
28.0mm	70-94	90-100	-	95-100	100	-	100
20.0mm	-	71-95	-	65-85	95-100	100	95-100
14.0mm	56-76	56-80	100	58-82	65-85	95-100	65-85
10.0mm	-	-	85-100	-	52-72	70-90	52-72
6.3mm	44-60	44-60	30-60	44-60	39-55	45-65	39-55
3.35mm	32-46	31-45	15-25	32-46	32-46	30-45	32-46
1.18mm	-	-	-	-	-	15-30	-
300um	7-21	7-21	-	7-21	7-21	-	7-21
75um	2-8	2-8	2-8	2-8	2-8	3-7	2-8
Binder Course	3.5 ± 0.5%	4.0 ± 0.5%	5.1 ± 0.5%	4.7 ± 0.5%	4.0 ± 0.5%	5.0 ± 0.5%	4.9 ± 0.5%

4.3. SHUOLDERS

4.3.1 Description

This work shall consist of furnishing , compacting and shaping earth or gravel shoulder material on prepared and accepted subbase or lower subbase or subgrade, all in accordance with this Specification and the lines, levels, grades, dimension and cross-sections shown on the Drawings and/ or as required by the S.O.

For paved shoulders, the bituminous surfacing, and underlying pavement courses shall be constructed as described in the appropriate Section of this Specification.

4.3.2 Material

4.3.2.1 Earth Shoulders

Earth shoulder material shall conform to the requirements for gravel surfacing material set forth in Sub-Section 4.1.3.2.

4.3.2.2 Gravel Shoulders

Gravel shoulder material shall conform to the requirement for gravel surfacing material set forth in Sub-Section 4.1.3.2.

4.3.3 Construction Method

Shoulders shall be constructed in stages or in one operation as directed or approved by the S.O. ,but the S.O. but in no instance shall a shoulders be built up to a level higher than that part of the abutting carriageway structure which has been completed and accepted.

Prior to placing any shoulder material, the underlying subbase or lower subbase or subgrade shall have been shaped and compacted in accordance with the provisions of Sub-Section 4.1.2.3, and the abutting carriageway structure course or course shall likewise have been shaped and compacted in accordance with the provisions of the appropriate Sub-Section or Sub –Sections of this Specification. Notwithstanding any earlier approval of the underlying and abutting pavement courses, any damage to or the satisfaction of the S.O. before shoulder construction proceed.

Shoulders shall be placed to the placed to the required width, and thickness as shown on the Drawing or directed by the S.O. in one layer or more, each layer not exceeding 200mm compacted thickness at the point of maximum thickness. Where two or more layers are required they shall be of approximately equal shape and thickness, and none shall be less than 100 mm compacted thickness at the point of maximum thickness.

Each layer of shoulder material shall be processed as necessary to bring its moisture content to a uniform level throughout the material suitable for compaction, and shall then be compacted using suitable compaction equipment approved by the S.O. to not less than 95% of the maximum dry density determined in the B.S. 1377 Compaction Test (4.5 kg rammer method). Compaction shall be carried out in a longitudinal direction along the shoulder and shall generally begin at the outer edge and progress uniformly towards the carriageway. Except on superelevated curves where

rolling shall begin at lower edge. And progress uniformly towards the higher edge. In all cases, compaction shall be carried out in such a manner that each section receives effort appropriate to its thickness, all to the satisfaction of the S.O.

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Throughout the placing, adjustment of moisture content and compaction of shoulder material, care shall be taken to maintain a uniform gradation of the material and prevent its separation into coarse and separate parts, all to the satisfaction of the S.O.

Where shown on the Drawings or directed by the S.O, earth shoulders shall be turfed in accordance with Sub – Section 2.2.8.2

Shoulders shall be finished in neat and workmanlike manner. The total width of carriageway and shoulder shall be everywhere at least that specified or shown on the Drawings on both sides of the centre – line. The top surface of each shoulder shall have the required shape, superelevation, levels and grades, shall be everywhere within 10 mm of the required plane, and shall provide a flush joint with the carriageway surface and shall be uniformly free draining away from the carriageway, all to satisfaction of the S.O.

4.4 HORIZONTAL ALIEMENT, SURFACE LEVELS AND SURFCE REGULARLY OF PAVEMENT COURSES

4.4.1 Horizontal Alignment

The horizontal alignment shall be determined form the centre – line Of the pavement surface shown on the Drawings. The edges of the pavement as crushed and all other parallel construction lines shall be correct within a tolerance of + 50 mm and minus 0 mm from the centre - line, except for kerbs, channel blocks and edge lines which shall be laid with a smooth alignment within a tolerance of + 25 mm and minus 0 mm from the centre – line.

4.4.2 Surface Levels of Pavement Courses

The design levels of pavement courses shall be calculated from the vertical profile, crossfall and pavement course thickness shown on the drawings. The level of any point on the constructed surface of a pavement course shall be the design level subject to the appropriate tolerances given in Table 4.13.

TABLE 4.13 – TOLERANCES IN SURFACE LEVELS OF PAVEMENT COURSES

Pavement Course	Tolerance
Wearing Course	± 5mm
Binder Course	± 5mm
Roadbase	+ 0 mm - 20 mm
Subbase and Lower Subbase	+ 10 mm - 20 mm

The combination of permitted tolerances in the levels of different pavement courses shall not result in a pavement thickness less than that shown on the Drawings. Each pavement course shall have an average thickness not less than that shown on the Drawings.

4.4.3 Surface Regularity

The regularity of surfaces shall be within the relevant limits given in Table 4.14

A longitudinal irregularity is a variation in profile of the road surface as measured by the rolling straight-edge or wedge and straight-edge device. The permissible number of such longitudinal irregularities is indicated in Table 4.14

The traverse length of 300 m and its associated maximum permissible number of irregularities shall apply wherever the continuous length of the completed carriageway is 300 m or more, whether or not it is constructed in shorter lengths.

Where the total length of pavement is less than 300 m the measurement shall be taken on 75 m length.

The transverse regularity of a newly laid surface shall be measured with a 3 m straightedge and shall have not greater depression under the straight-edge than that shown in Table 4.14

TABLE 4.14 -- TOLERANCES FOR SURFACE IRREGULARITIES

Class of Surface Regularity	Longitudinal Direction				Transverse Direction
	Maximum Permissible Number of Surface Irregularities				
	Depth Exceeding 4 mm		Depth Exceeding 7 mm		Maximum Permissible Depth of Transverse Irregularities
	Over traverse length of 300m	Over traverse length of 75m	Over traverse length of 300m	Over traverse length of 75m	
Class SR 1	20	9	2	1	4 mm
Class SR 2	40	18	4	2	8 mm
Class SR 3	60	27	6	3	12 mm
No longitudinal irregularity exceeding 10mm shall be permitted for class SR 1 Surface Regularity and no longitudinal exceeding 15 mm shall be permitted for class SR 2 and Class 3 Surface Regularities					
The class of Surface Regularity for each portion of the Works shall be as stated on the Drawings or in the Bills of Quantities.					

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SECTION 6 - ROAD FURNITURE

6.1 CORRUGATED SHEET STEEL BEAM HIGHWAY GUARDRAIL

6.1.1 Description

This work shall comprise the supply and installation of corrugated sheet steel beam highway guardrails inclusive of bolts, nuts, posts and ancillary works, all in accordance with this specification and the Drawings and as directed by the ENGINEER.

6.1.2 Materials6.1.2.1 Beam Element

Unless otherwise specified on the Drawings, corrugated sheet steel beam highway guardrails shall conform to the requirements of AASHTO Specification M180 for Class 'A' Type II (galvanised) with effective length of beam 3810mm (12 feet 6 inches). Guardrails shall be fabricated and furnished complete with terminal or buffer sections, connecting and splicing bolts, nuts and washers, etc, all conforming to the requirements of AASHTO Specification M180 and as necessary for erecting the guardrails as shown on the Drawings or as required by the ENGINEER.

6.1.2.2 Posts*(a) Steel Posts*

Steel posts shall be channel sections of dimensions as shown on the Drawings and the material shall conform to B.S.449 Part 1 Grade 43. The block-out pieces, if used, shall be channel sections of dimensions as shown on the Drawings and shall be of the same material as that used for the posts. Both the posts and block-out pieces shall be hot-dip galvanised in accordance with Sub-Section 6.1.2.1.

(b) Timber Posts

Timber posts and block-out pieces shall be of medium hardwood (except the species Merpauh and Rengas) as classified by the Malaysian Timber Industry Board in its publication 'Malaysian Hardwood'. And shall be treated according to M.S.733. The preservative retention in the outermost 25 mm shall not be less than 16 kg per cubic metre. Heavy hardwood can also be used as an alternative with the approval of the ENGINEER.

Guardrail timber posts and block-out pieces shall be of the dimensions as shown on the Drawings. The fibres of the block should run in the same direction as those of the post. The post shall be sound and free from loose knots or decay with no cracks at the top. All cut faces shall be smooth and square as shown on the Drawings.

All timber components shall be cut and drilled before treatment with preservative.

6.1.3 Installation of Guardrails

6.1.3.1 Setting posts (Timber or Steel)

Before posts are erected, the alignment and finished levels of the guardrails shall be set accurately on site for approval by the ENGINEER.

Posts holes at the correct positions shall be dug either manually or mechanically to the required level. The posts shall then be plumb in the holes with the front face forming a smooth line to the approval of the ENGINEER. After the posts are in place, the holes shall be backfilled with grade 20/20 concrete compacted in such a manner as not to displace the posts from correct alignment as shown on the Drawings. Posts may be installed by means of driving with suitable equipment if the ENGINEER is satisfied that the Contractor is capable of installing the post to the designed depth, line and level, accurately.

Posts shall be spaced as indicated on the Drawings.

6.1.3.2 Placing Beam

The guardrail beams shall be fixed bolted together with the block-out pieces on to the post to the lines and grades as shown on the drawings and as directed by the ENGINEER.

6.1.3.3 Anchorage

Anchorage shall be constructed as shown on the Drawings and as directed by the ENGINEER.

6.1.4 Marking and Storages

6.1.4.1 Marking

In addition to the marking specified in AASHTO Specification M 180, the JKR logo shall also be marked on each beam element.

6.1.4.2 Storage

All galvanized beam, terminal sections, bolts, nuts and washers and posts shall be stored under a cover that will protect them from rain until they are erected or used. While in storage, the material shall not be in direct contact with the soil and there shall be a minimum space of 300 mm between the lowest most elements and the ground surface.

6.1.5 Basis of Acceptance

6.1.5.1 Beam Elements

All material shall be subjected to inspection and sampling in accordance with AASHTO Specification M180 at a sampling rate of 1 in every 200 or as directed by the ENGINEER.

The contractor shall provide and arrange the testing facilities and the test pieces as and when requested by the ENGINEER. The cost of all sampling and testing shall be borne by the Contractor. If in the subsequent installation, there is detection of non-compliance with the

requirements of this Specification through random sampling carried out by the ENGINEER, then the material of the lot will be rejected and the Contractor shall remove the same from the Site at his own cost.

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6.1.5.2 Ports and Block-Outs

(a) Steel

For each lot of 200 pieces or less of either steel posts or steel block-outs supplied to the Site, the Contractor shall submit certificates from an approved testing laboratory certifying compliance with the properties required and mill certificate. However, the SO reserves the right to conduct further tests on the materials supplied.

The contractor shall provide and arrange the testing facilities and test samples at his own expense as and when instructed by the SO. The steel which has been rejected by the SO shall be removed from the Site.

(b) Timber

For each lot of 200 pieces or less of either timber post or timber block-outs supplied to the Site, the Contractor shall submit a test report from an approved testing laboratory certifying compliance with specified timber species and other qualities. However, the SO reserves the right to conduct further tests on the materials supplied.

6.2 TRAFFIC SIGNS

6.2.1 Description

This works shall consist of the supply, assembly, erection and installation of sign faces, sign plates, posts and backing frames, all in accordance with the details shown on the Drawings and as specified herein. It shall include all excavation and backfilling, all electrical installation where required, application of paints and finishes, etc., to complete the work all to the satisfaction on the SO.

6.2.3 Sign Definition

For the purpose of this Specification, traffic sign are define as follows:-

- i) Non-illuminated signs are those signs which are not lit either internally or externally and shall be retro-reflective;
- ii) Externally illuminated signs are those signs which comprise either retro-reflective or non-retro reflective facing with external lighting luminaire.

6.2.3 Sign Classifications

For the purpose of this specification, the following classifications shall apply:-

a) Permanent traffic signs

Any of the traffic signs defined in sub-section 6.2.2 above or any part thereof as designated on the Drawings or as directed by the SO to remain in position upon completion of works.

b) Temporary traffic Signs

Any of the traffic defined in sub-section 6.2.2 above or any part thereof designed by the Contractor with the approval of the SO which will not remain in position at the completion of works.

6.2.4 Standards

All traffic signs shall, except where specified otherwise, comply with the requirements of ARAHAN TEKNIK (JALAN) Series 2, published by Cawangan Jalan, Ibu Pejabat JKR, Kuala Lumpur.

6.2.5 Permanent Traffic Signs

6.2.5.1 General Requirements

Permanent traffic sign shall be constructed, assembled, located and erected as shown on drawings or as directed by the SO.

Each complete traffic signs or part of thereof shall be capable of passing the tests specified in BS 873

All externally illuminated traffic signs shall comply with Category 1 luminance of BS 873 unless otherwise shown in the Drawings.

Before the commencement of fabrication of any traffic sign, unless otherwise shown on Drawings, the Contractor shall submit for the SO approval the details of fabrication drawings for all signs.

All traffic sign housings shall be provided with vandal and weather resistant locks. Keys in quantities determined by the SO, shall be provided to the SO. Types of lock shall be kept to a minimum.

Traffic signs shall be carefully handled to prevent damage (methods shall include the use of proper slings), and shall be transported and stored in accordance with the manufacturer's instructions.

6.2.5.2 Foundations

The type and size of foundations for permanent traffic signs shall be as shown on the Drawings and, unless otherwise stated therein, shall comply with this Specification.

All excavations, erection of formworks, placing of reinforcement, etc., for foundations shall be carried out in compliance with this Specification and shall be approved by the SO before placing of concrete backfilling.

Unless otherwise shown on the Drawings, signs supported by a single post placed in the ground shall have the post installed centrally in 300mm diameter holes filled with grade 20/20 concrete complying with Section 9 of this Specification to within 450mm of the ground surface. The hole shall be excavated either mechanically or manually.

Post shall be supported for a minimum three (3) days placing the concrete backfilling shall not take place until at least 48 hours after placing the concrete, or other period agreed by the SO.

Where signs are illuminated, provision shall be made for cable entry through the foundation by means of ducting as shown on the Drawings.

Where pockets are formed in concrete foundations their plan dimensions shall be 100mm larger than those of the posts.

All backfilling of foundation pits and reinstatement of existing surface above the foundations shall comply with the relevant requirements of this specification.

6.2.5.3 Posts

Posts for permanent traffic signs shall be as shown on the Drawings and shall comply with B.S.873.

Posts shall be of tubular hollow section steel of not less than 50mm outside diameter complying with BS 1387.

Unless otherwise shown on the Drawings, posts shall not protrude above the top of the sign unless supporting an external luminaire where the protrusion shall be kept to a minimum.

Signs erected on a single posts shall be positioned so that the posts is in the centre of the sign, unless otherwise shown on the drawings.

Compartments for electrical equipment shall be as shown on the Drawings. In the case of signs supported by more than one posts, such compartments shall be on the posts furthest from the carriageway unless otherwise directed by the SO.

Flange plates shall have holes or slots as shown on the Drawings to accommodate any holding down bolts.

6.2.5.4 Sign Plates

All permanent sign plates shall be as shown on the Drawings and shall be as shown in the drawings and shall comply with BS 873. Sign plates shall be made of 10 SWG sheets of aluminium alloy HS 30-WP conforming to BS 1470 with a minimum thickness of 3mm.

A sign plates not exceeding 1.2m in height and 2.4m in width shall be made from a single sheet.

Where more than one sheet is used to make up a sign plate, the sheets shall be rectangular, of approximately the size and shape, and the position of the joints shall be to the approval of the SO.

Sign plates shall be drilled at all locations where rivets or bolts are required for attaching the plate to the backing frame or fixings before application of the sign face. However, riveting shall be carried out only after the application of the sign face.

Subjects to the ENGINEER's approval, doubled sided "Very High Bond" (VHB) tapes may be used as an alternative to rivets. Nevertheless, the tape shall comply with the following requirements:-

- i) Peel Adhesion – 440N per 100mm
- ii) Tensile Adhesion – 910kPa
- iii) Dynamic Shear – 550kPa

Where top and bottom light spill screens are required as shown on the Drawings these shall extend for the whole width of the sign, be fabricated out of the same materials as the sign plate and shall have corners cut to the same material as the sign plate and shall have corners cut to the same radius as the other corners of the sign plate.

Top and bottom light spill screens shall be considered part of the sign plate and any stiffness and mounting fittings shall be designed to accommodate the combined size.

6.2.5.5 Sign Faces

Sign faces for permanent traffics signs shall be as shown on the Drawings and shall comply with the 'Draft Malaysian Standard Specification for reflective Sign Face Materials; (SIRIM Reference D111 (ISCF)), and on replacement of this draft, the respective Malaysian Standard Specification.

All retro-reflective plastic sheeting shall be fixed in accordance with the manufacturer's instructions.

Unless otherwise agreed by the SO, sign faces shall be formed from a single piece of plastic sheeting.

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Sign plates shall be connected to posts by a method approved by the ENGINEER.

Banding systems shall be of stainless steel.

Where ferrous components are permitted, any frilling of such components shall be completed before the application of any finish.

Any hole drilled to accommodate rivets or bolts in plates with plastic sheeting shall immediately prior in the insertion of the rivet or bolt, have a clear lacquer, as recommended by the manufacturer of the plastic sheeting, applied to its edge to prevent the ingress of moisture. The surface of rivets or bolts exposed on the sign face shall be coloured by material approved by the ENGINEER to match that part of the face.

Traffic signs to be erected on road lighting columns shall have fixings compatible with the column cross-section and finish. Unless otherwise permitted by the ENGINEER, columns shall not be drilled and wiring shall be contained in approved external conduits.

In addition to the requirements of this Specification, variable message traffic signs shall be of a type approved by the relevant authorities.

6.2.5.8 Location and Erection

The approximate location of each permanent traffic sign shall be as shown on the Drawings. All traffic shall have their exact location determined by the ENGINEER and recorded on the as-built Drawings.

All posts shall be erected plumb and where two or more posts are provided for any one sign, the face of posts be lined up.

Signs erected on two posts shall have each posts positioned so that the distance from the centre of the post to the edge of the sign plate is 300mm unless otherwise directed by the ENGINEER.

Any pockets formed in concrete foundations to receive the posts shall immediately prior to erection be out. The posts shall be placed centrally in the pockets and be bedded on the filled up finished foundation level with grade 20/20 concrete.

Traffic signs mounted on post, except those on gentries, shall be erected to have their faces plumb and oriented in relation to the carriageway in accordance with ARAHAN TEKNIK (JALAN) 2B/85.

Traffic signs mounted on gantries shall be erected as shown on the Drawings.

No traffic sign shall be dismantled, resited or removed without prior approval from the ENGINEER.

6.2.5.9 Covering of Permanent Traffic Signs

Where it is required in the Contract that permanent traffic sign are to be blanked-out or are to have alternative message, the covering to be adopted shall comply with the following requirements.

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The coverage shall be 1.5mm (16 SWG) thick made from a material compatible with that of the sign plate, or a material approved by the SO.

Cover plates shall be fixed by means of 5mm diameter stainless steel bolts, washer and nuts or non-ferrous rivets not more than 600mm apart, the bolts passing through 12mm diameter, 5mm thick plastic distance pieces between the sign face and cover plate. Any hole remaining in the finished sign face shall be filled with blocked rivets coloured on the face by methods approved by the SO.

Where shelf-adhesive plastic film is used, it shall be compatible

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6.2.8 Preparation and Finish of Metal and Other Surface

Traffic signs shall be prepared ,protected against corrosion and finished in compliance with B,S,873.

Faces of sign plates be prepared to receive sign face materials in compliance with B,S,873 and in accordance with the manufacture's recommendations.

Steel backing frames, fillings and purlins shall be prepared and protected in compliance with B,S,873.

Steel posts and post holdings shall be prepared and protected in compliance with B,S,873.

Backs steel shall be finished both inside and out by galvanizing , electro-plating or application of zinc or aluminium spray or other equivalent finish approved by the ENGINEER. Aluminium and other metal shall be left untreated unless otherwise shown on the Drawings.

Unless otherwise shown on the Drawings, stainless steel shall be left untreated except where the component is visible against the sign when it shall be coloured on the face by methods approved by the ENGINEER.

External surfaces shall be prepared and protected as described in the Contract. Cabinets and feeder pillars shall have final coats of paint applied on Site after final installation, including the fitting of any internal apparatus required as part of the permanent Works. Internal surfaces shall, unless otherwise shown on the Drawings, receive the same treatments for external surfaces except that final paint coats shall be applied before internal components are installed.

A thermometer of sufficient accuracy shall be used during laying to ensure that overheating of the material does not occur.

Once molten hydrocarbon resins shall be used within 6 hours and wood and gum resins shall be used within 4 hours. The material shall not be heated beyond the manufacturer's specified temperature during application. Excess material shall be discarded on completion of application.

6.. *Road Marking Paint*

All paint shall be thoroughly stirred before application to keep the pigments in uniform suspension. The use of thinners or other additives shall not be permitted unless otherwise approved by the ENGINEER.

6.3.5 Laying

Centre lines, lane lines and edge lines shall be marked by approved mechanical means or as directed by the ENGINEER. Other markings shall be applied by brush, spray, screed, hand-propelled or self-propelled machine according to the marking configuration and the type of marking material approved for use. The rate application of the marking material for each coat shall be that recommended by the manufacturer unless otherwise specified. When more than one coat is used, the succeeding coat shall not be applied until the previous coat has fully set.

Road markings of a repetitive nature other than centre lines, lane lines, etc, shall, unless otherwise decided by the ENGINEER, be set out with stencils which comply with the size and spacing requirements as shown on the Drawings.

6.3.6 Protection of Markings

All markings shall be protected from traffic until they have dried sufficiently so that no pick-up by vehicle tyre will occur.

6.3.7 Reflectorisation

Solid glass beads to be incorporated in marking materials prior to application to road surfaces shall be Class 'A' glass beads complying with the requirements of Table 1 of B.S.6088 (see Table 6.1).

Solid glass beads for additional surface reflectorisation shall be Class 'B' glass beads complying with the requirements of Table 2 of B.S.6088 (see Table 6.2).

6.3.8 Thickness

The determination of thickness shall be in accordance with B,S 3262 part 3, Appendices B and C.

6.4 CONCRETE KERB

6.4.1 Description

This work shall consist of the supply and installation of cast in situ or precast concrete kerbs constructed at the locations and in accordance with the lines, levels, grades, dimensions and types as shown on the Drawings all in accordance with this Specification.

6.4.2 Materials

Concrete for kerb sections shall be grade 25/20 concrete unless otherwise indicated on the Drawing and shall conform to the requirements of section 9 of this Specification.

Unless otherwise shown on the Drawings, bedding shall be grade 10/25 concrete.

6.4.3 Installation of Kerbs.6.4.3.1 Excavation.

Excavation shall be made to the required depth and the base shall be trimmed and compacted to a firm and even surface. All soft and unsuitable material shall be removed and replaced with suitable material as defined in Section 2 of this Specification. The bedding material shall then be placed and compacted to form a bed of required as shown on the Drawings.

6.4.3.2 Cast In Situ Kerb.

When a cast in situ kerb is placed next to a concrete pavement, expansion joints in the kerb shall be located in line with expansion joints in the pavement. Expansion joints shall be formed at the intervals shown on the Drawings using preformed filler 10mm in thickness as shown on the Drawings.

Concreting shall generally be in accordance with the requirements of Section 9 of this Specification. Forms shall not to be removed within 24 hours of the concrete being placed. Minor defected shall be repaired with mortar containing 1 part Portland cement to 2 parts sand.

After placing and compaction , the concrete shall be covered with suitable material and kept moist for a period of 7 days.

6.4.3.3 Precast Concrete Kerb.

Precast concrete kerbs shall be cast using steel moulds and shall be of the types as shown on the Drawings.

Each kerb shall be set so that its front top arris conforms to the line and grade required. All spaces under the kerb shall be filled with bedding material which shall be thoroughly tamped. Kerb shall be laid with joints as narrow as possible and filled with mortar containing 1 part Portland cement to 2 parts sand. Where a Portland cement concrete pavement is to be constructed contiguous to a kerb, expansion joints shall be constructed in the kerb directly in line with pavement expansion joints. The expansion joint in the kerb shall be 20mm in width and shall be filled with an expansion joint filler of the same nominal thickness as the pavement joint. Any voids between filler and the concrete kerb shall be filled with mortar.

6.4.3.4

Slipforming for Concrete Kerb

In situ concrete kerbs shall be laid by an approved automatic kerbing machine or, if practicable in the case of concrete pavements, by the concrete paver itself. The kerbs shall be dense with regular sides, edges, arrises and chamfers, finished to a fine surface free from blow holes and dragging and shall be impervious.

6.4.3.5

Backfilling

The spaces in the front and back of each kerb shall be refilled to the required elevation with suitable material approved by the ENGINEER which shall be tamped in layers of not more than 150mm until properly compacted.

The finished work shall be true to line, grade and level to within + 10mm and shall present a smooth appearance free from kinks and distortion visible to the eye.

MAJLIS BANDARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

SURAT PEMULANGAN / PELUPUSAN DOKUMEN

(Nama dan Alamat Kontraktor)

Tuan

NO.SEBUTHARGA : S2221001

**TAJUK KERJA: KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA
PENGINDAHAN DI PEACOCK PARK, TAMAN KIMSAR,
SEBERANG PERAI TENGAH.**

- Pemulangan / Pelupusan Dokumen Tender Yang Tidak Berjaya

Adalah dimaklumkan bahawa pihak kami bersetuju untuk melupuskan dokumen tender berkaitan sekiranya dokumen tersebut tidak dituntut dalam tempoh 30 hari selepas keputusan perlantikan diluluskan.

Tandatangan dan Cap Syarikat :

(_____)

Tarikh :

MAJLIS BANDARAYA SEBERANG PERAI

**KERJA-KERJA MEMBINA KOLAM TERATAI DAN KERJA PENGINDAHAN DI
PEACOCK PARK, TAMAN KIMSAR, SEBERANG PERAI TENGAH.**

(NO. SEBUTHARGA : S2221001)

LUKISAN

