

KERAJAAN MALAYSIA

MAJLIS SUKAN NEGARA

DOKUMEN SEBUT HARGA

**KERJA-KERJA MENAIKTARAF RUANG DAPUR
KAFETERIA ATLET SERTA YANG BERKAITAN
DENGANNYA DI KOMPLEKS SUKAN MSN NILAI, NEGERI
SEMBILAN UNTUK MAJLIS SUKAN NEGARA MALAYSIA**

NO. SEBUT HARGA :



**KETUA PENGARAH
MAJLIS SUKAN NEGARA MALAYSIA
KOMPLEKS SUKAN NEGARA
BUKIT JALIL, SRI PETALING
57000 KUALA LUMPUR**



No. Tawaran Sebutharga :
Nama Tawaran Sebutharga :
.....
Tarikh Tutup :
Cadangan Tempoh Siap/Penyerahan : - :

BAHAWASANYA, saya mengaku bahawa butir-butir dan keterangan yang diberikan di bawah ini mengenai perniagaan/syarikat saya adalah betul dan benar, maka Kerajaan boleh mengambil apa-apa tindakan terhadap saya di bawah apa-apa undang-undang yang berkuatkuasa

1. **Maklumat Penyebutharga**

a) Nama Penyebutharga :
b) Nama Syarikat :
c) Alamat Syarikat / Penyebutharga :
.....
d) Email (Wajib diisi) :
e) No. H/P :

2. **No. Pendaftaran Syarikat dengan Suruhanjaya Syarikat Malaysia (SSM) dan Kementerian Kewangan Malaysia (MOF)**

.....
(Sila lampirkan Sijil)

3. **Taraf Syarikat** : Bumiputra / Bukan Bumiputra / Sendirian Berhad /Berhad/ Perkongsian/
Milikan Tunggal

4. **Jenis Perniagaan** :

5. **Bilangan Pekerja** :

a) Pengurusan
b) Profesional
c) Teknikal
d) Sokongan

6. **Maklumat Pemilik dan Pengurusan Syarikat**

a) Ahli-ahli Lembaga Pengarah

Nama	Jawatan	Peratus Pegangan Saham (%)

b) Ahli-ahli Pengurusan dan Profesional

Kategori Jawatan	Bilangan Pekerja
JUMLAH	

7. **Kedudukan Modal**

(a) Modal Dibenarkan :

(b) Modal Dibayar :

(sila lampirkan satu (1) salinan BAKI penyata akaun bank syarikat yang terkini)

(c) Kedudukan Saham Dalam Peratus

(i) Bumiputra : %
(ii) Bukan Bumiputra : %
(iii) Modal Asing (Foreign Investment) : %
(iv) Dalam Negeri : %

8. **Pengalaman Dalam Bekalan/Perkhidmatan/Kerja Yang Berkaitan**

Sila Senaraikan jenis bekalan/perkhidmatan/kerja dalam tempoh **tiga (3) tahun** terkini. (Jika ruang tidak mencukupi, sila sertakan lampiran).

Jenis Bekalan/ Perkhidmatan/Kerja	Nama Kerajaan/ Swasta	Nilai	Tempat	Tempoh/One Off

Saya akui bahawa butir-butir di atas adalah betul dan benar:

Tandatangan
Nama Penyebutharga
Jawatan
Tarikh

Borang Tawaran Harga dan Borang Maklumat Penyebutharga perlu cop syarikat dan ditandatangani oleh pihak syarikat.

Borang ini WAJIB diisi dengan LENGKAP dan sebarang kegagalan pengisian maklumat boleh menyebabkan tawaran sebutharga terbatal

NOTA: Dokumen yang telah lengkap hendaklah di klip atau tebuk lubang 2 sahaja (JANGAN GUNA BINDING/PELEKAT)



MAJLIS SUKAN NEGARA MALAYSIA

Ke Arah Kecemerlangan Sukan

SURAT AKUAN PEMBIDA

Saya, No. Kad Pengenalan yang mewakili
(Nama Syarikat: nombor Pendaftaran
dengan ini mengisytiharkan bahawa saya atau mana-mana individu yang mewakili syarikat ini
tidak akan menawar atau memberi **rasuah** kepada mana-mana individu dalam
..... atau mana-mana individu lain, sebagai sogokan untuk dipilih dalam
tender/sebutharga* seperti di atas. Bersama ini dilampirkan Surat Perwakilan Kuasa bagi saya
mewakili syarikat seperti tercatat untuk membuat pengisytiharan ini.

2. Sekiranya saya, atau mana-mana individu yang mewakili syarikat ini didapati cuba
menawar atau memberi **rasuah** kepada mana-mana individu dalam
atau mana-mana individu lain sebagai sogokan untuk dipilih dalam tender/sebutharga*
seperti di atas, maka saya sebagai wakil syarikat bersetuju tindakan-tindakan berikut diambil:

Penarikan balik tawaran kontrak bagi tender/sebutharga* di atas; atau
Penamatan kontrak bagi tender/sebutharga* di atas; dan
Lain-lain tindakan tatatertib mengikut peraturan perolehan kerajaan yang berkuatkuasa.

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

Yang Benar

.....
Nama :
No. K/p:
Cop syarikat:

Catatan: i) *Potong mana yang tidak berkenaan.
ii) Surat akuan ini hendaklah dikemukakan bersama Surat Perwakilan Kuasa

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN
DENGANNYA DI KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

ISI KANDUNGAN

<u>NO</u>	<u>PERKARA</u>		<u>MUKA SURAT</u>
1	SENARAI SEMAKAN		SM/1-2
2	ARAHAN KEPADA PENYEBUTHARGA		Page 1 – Page 7
3	SURAT AKUAN PEMBIDA (SAP bertarikh 1 April 2010) LAMPIRAN A1		SAP/1
4	SYARAT-SYARAT SEBUT HARGA		Page 8 – Page 14
5	BORANG SEBUT HARGA		BSH/1
6	SENARAI KUANTITI		
7	SPESIFIKASI		A/1 – B/17
8	REKOD PENGALAMAN KERJA DALAM 5 TAHUN LEPAS – BORANG D		BRG-D/1
9	SENARAI KAKITANGAN TEKNIKAL – BORANG E		BRG-E/1
10	KEEMPUNYAAN LOJI DAN PERALATAN UTAMA – BORANG F		BRG-F/1
11	PRESTASI KERJA SEMASA a) BORANG G b) BORANG GA c) BORANG GA1		BRG-G/1 BRG-GA/1 BRG-GA1/1
12	SENARAI SUB-KONTRAKTOR PAKAR – BORANG H		BRG-E/1-2
13	LUKISAN TAPAK BINA		

SENARAI SEMAKAN

SENARAI SEMAK

Sila Tandakan ☒ bagi Dokumen-dokumen yang disertakan.

Bil	Perkara/ Dokumen	Untuk di tanda oleh Syarikat	Untuk di tanda oleh Jawatankuasa Pembuka Sebut Harga
1	Salinan Sijil Perolehan Kerja Kerajaan (SPKK)		
2	Salinan Perakuan Pendaftaran Kontraktor (PPK)		
3	Salinan Sijil Taraf Bumiputera (STB) - PKK		
4	Salinan Penyata Akaun Bank (3 Bulan) Terkini Yang Disahkan Oleh Pihak Bank		
5	Salinan Sijil Pematuhan Cukai (TCC)		
6	Borang Sebut Harga telah diisi dengan lengkap (termasuk nilai tawaran dan tempoh siap) dan ditandatangani oleh Penama seperti tertera dalam Sijil Pendaftaran dari CIDB/PKK (BSH/1)		
7	Ringkasan Sebut Harga telah diisi dengan lengkap (RSH/1)		
8	Senarai Kerja 5 tahun yang telah disiapkan (BRG-D/1)		
9	Senarai Kakitangan Teknikal (BRG-E/1)		
10	Senarai Keempunyaan Loji dan Peralatan Utama (BRG-F/1)		
11	Prestasi Kerja Semasa (BRG-G/GA/GA1)		
12	Senarai Sub-Kontraktor Pakar (BRG-H/1-2)		
13	Profil Syarikat (Lengkap dan Sempurna)		
14	Surat Akuan Pembida (Lampiran A1)		
15	Addenda Sebutharga (jika berkaitan)		
16	Lain-lain sekiranya ada:		

PENGESAHAN OLEH SYARIKAT 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. Tandatangan: Nama: Jawatan: Tarikh:	UNTUK KEGUNAAN MAJLIS SUKAN NEGARA Jawatankuasa Pembuka Sebut Harga mengesahkan penerimaan dokumen bertanda kecuali bagi perkara bil.....(jika ada). Tandatangan: Nama: Jawatan: Tarikh: Tandatangan: Nama: Jawatan: Tarikh:
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ARAHAN KEPADA PENYEBUTHARGA

ARAHAN KEPADA PENYEBUT HARGA

1. HAK KERAJAAN UNTUK MENERIMA / MENOLAK SEBUT HARGA

Kerajaan adalah tidak terikat untuk menerima sebut harga yang terendah atau mana-mana sebut harga atau memberi apa-apa sebab di atas penolakan sesuatu sebut harga. Keputusan Jawatankuasa Sebut Harga adalah muktamad.

2. CARA-CARA MELENGKAPKAN DOKUMEN SEBUT HARGA

2.1. Penyediaan Sebut Harga

Kontraktor adalah dikehendaki mengisi dengan dakwat segala maklumat berikut dengan sepenuhnya:-

- (a) Harga dan tandatangan Kontraktor di Ringkasan Sebut Harga,
- (b) Harga, tempoh dan tandatangan dalam Borang Sebut Harga,
- (c) Senarai Kerja Dalam Tangan,
- (d) Senarai Kerja Pengalaman 5 Tahun,
- (e) Senarai Kakitangan Teknikal,
- (f) Senarai Loji dan Peralatan Utama,
- (g) Jadual Kadar Harga (jika ada),
- (h) Butir-butir Spesifikasi (jika ada),
- (i) Surat Akuan Pembida.
- (j) Jika berlaku kesilapan dalam mengisi maklumat-maklumat di atas Penyebut Harga hendaklah menandatangani ringkas semua pembetulan.
- (k) Kegagalan mengisi/menandatangani Borang Sebut Harga akan mengakibatkan Sebut Harga ditolak.
- (l) Sekiranya terdapat percanggahan di antara maklumat yang dinyatakan dalam Ringkasan Sebut Harga dan Borang Sebut Harga, maklumat di dalam Borang Sebut Harga diberi keutamaan.
- (m) Sekiranya Penyebut Harga didapati memberikan maklumat palsu atau sengaja menyorok atau tidak memberikan mana-mana maklumat yang memberikan kesan negatif terhadap keupayaannya, Sebut Harganya akan ditolak dan tindakan tatatertib akan diperakukan terhadapnya.

2.2. Dokumen-dokumen lain yang mesti dikemukakan **(Dokumen Wajib/Sokongan)**

- (a) Salinan Sijil Perolehan Kerja Kerajaan (SPKK)
- (b) Salinan Sijil Perakuan Pendaftaran Kontraktor (PPK)
- (c) Salinan Sijil Taraf Bumiputera (PKK)
- (d) Senarai sub-kontraktor pakar (jika berkaitan)

2.3. Penyerahan Dokumen Sebut Harga

- (a) Dokumen Sebut Harga yang telah diisi dengan lengkap hendaklah dimasukkan ke dalam sampul surat berlakri yang dicatatkan dengan bilangan Sebut Harga serta tajuk sebut harga dan hendaklah dimasukkan ke dalam peti sebut harga pada masa dan tempat yang ditetapkan dalam Notis Sebut Harga.
- (b) Jika Dokumen Sebut Harga tidak diserahkan dengan tangan, Penyebut Harga hendaklah menghantar Dokumen tersebut secara pos berdaftar supaya tiba pada atau sebelum masa dan di tempat yang ditetapkan seperti berikut :

**Lobi (Aras Bawah),
Majlis Sukan Negara Malaysia,
Kompleks Sukan Bukit Jalil,
Seri Petaling,
57000 Kuala Lumpur**

sebelum jam 12.00 tengahari

- (c) Sebut Harga yang diserahkan selepas masa yang ditetapkan, berbangkit atas sebarang sebab, tidak akan dipertimbangkan.

2.4. Penjelasan Lanjut

Sekiranya terdapat maklumat dalam Dokumen Sebut Harga yang tidak jelas atau bercanggah, Penyebut Harga boleh menghubungi pejabat yang menjual/mengeluarkan Dokumen Sebut Harga untuk penjelasan lanjut.

2.5. Tandatangan Oleh Penyebutharga

Sebutharga hendaklah ditandatangani oleh pegawai yang ditauliahkan oleh syarikat seperti penama yang dinyatakan dalam Sijil Perolehan Kerja Kerajaan (SPKK) yang dikeluarkan oleh CIDB, Pusat Khidmat Kontraktor (PKK) atau PUKONSA/ UPKJ yang mana berkenaan.

3. TEMPOH SIAP KERJA

Kerja ini hendaklah disiapkan dalam tempoh tidak melebihi **12 Minggu**. Mana penyebut harga yang menawarkan tempoh siap kerja melebihi tempoh siap kerja maksimum yang ditetapkan tidak akan dipertimbangkan.

4. BAYARAN DOKUMEN SEBUT HARGA

* Dokumen Sebut Harga ini adalah **PERCUMA** atau;

* Dokumen Sebut Harga ini dijual dengan harga RM..... (Ringgit Malaysia :
..... sahaja)

Note

* Potong tidak berkenaan

5. PERBELANJAAN PENYEDIAAN SEBUT HARGA

Semua Perbelanjaan bagi penyediaan sebut harga ini hendaklah ditanggung oleh Penyebut Harga sendiri.

6. TEMPOH SAH SEBUT HARGA

Sebut Harga ini sah selama sembilan puluh (90) hari dari tarikh tutup sebut harga. Penyebut harga tidak boleh menarik balik sebut harganya sebelum tamat tempoh sah sebut harga. Tindakan tatatertib akan diambil sekiranya penyebut harga menarik balik sebut harganya sebelum tamat sah sebut harga. Laporan mengenai penarikan balik Sebut Harga oleh penyebut harga akan dikemukakan kepada CIDB/BPKU untuk tindakan.

7. PELAKSANAAN INTEGRITY PACT DALAM PEROLEHAN KERAJAAN

Penyebut harga wajib mengemukakan **Surat Akuan Pembida** bersama-sama dengan Dokumen Sebut harga di mana penyebut harga berwaad untuk tidak akan menawarkan atau memberi rasuah kepada mana-mana individu lain sebagai sogokan untuk dipilih dalam sebut harga tersebut. Surat Akuan Pembida ini hendaklah dilengkapkan dan ditandatangani oleh Pegawai Syarikat yang ditauliahkan.

Surat Akuan Pembida tersebut adalah menjadi salah satu dokumen mandatori dalam penilaian sebut harga peringkat pertama. Sekiranya penyebut harga gagal mengemukakan **Surat Akuan Pembida** yang telah dilengkapkan dan ditandatangani, penyebut harga tersebut akan dinilai sebagai gagal dalam penilaian peringkat pertama (gagal kriteria mandatori sebut harga) dan penilaian seterusnya tidak akan dilaksanakan.

Penyebut harga yang berjaya wajib mengemukakan **Surat Akuan Pembida Berjaya** beserta dengan Borang Perjanjian Inden Kerja/Surat Setuju Terima yang telah ditandatangani di mana ia berwaad tidak akan memberi rasuah sebagai ganjaran kerana mendapatkan kontrak. Surat Akuan ini akan menjadi sebahagian daripada Kontrak.

Pemalsuan maklumat dokumen dan rekod untuk mengaburi penilaian perolehan adalah kesalahan jenayah dan boleh disabitkan di bawah Kanun Keseksaan (Akta 574).

8. DASAR CUKAI JUALAN DAN CUKAI PERKHIDMATAN (CJCP)

Kerajaan memutuskan untuk melaksanakan Cukai Jualan dan Cukai Perkhidmatan (CJCP) bagi menggantikan Cukai Barang dan Perkhidmatan (GST) mulai 1 September 2018 berdasarkan Akta Cukai Jualan 2018 [Akta 806] dan Akta Cukai Perkhidmatan 2018 [Akta 807].

Akta Cukai Jualan 2018 [Akta 806] dan Akta Cukai Perkhidmatan 2018 [Akta 807] telah berkuat kuasa mulai 1 September 2018. Selaras dengan peruntukan dalam Akta tersebut, perolehan kerja pembinaan tidak dikenakan Cukai Perkhidmatan. Bagi perolehan kerja lain antaranya pengurusan fasiliti dan lain-lain, Agensi Kerajaan hendaklah merujuk kepada Jadual Pertama di bawah Peraturan Cukai Perkhidmatan 2018 dan peraturan semasa yang berkuat kuasa.

Agensi Kerajaan hendaklah menggunakan anggaran jabatan tanpa kenaan CJCP untuk menentukan kaedah perolehan.

Bagi pengeluaran Surat Setuju Terima (SST), Agensi hendaklah merujuk kepada 1PP/PK4.2 atau pekeliling berkaitan SST yang berkuat kuasa.

Bagi memastikan urusan perolehan dan pembayaran dapat dilaksanakan dengan lancar selaras dengan perkembangan dan peraturan terkini, satu panduan perlu disediakan.

9. PERINGATAN MENGENAI KESALAHAN RASUAH

Semua Penyebut Harga adalah diingatkan supaya tidak terlibat dalam aktiviti jenayah rasuah berkaitan dengan perolehan ini. Sehubungan dengan itu, para Penyebut Harga diberi peringatan berikut:

- 9.1 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 satu kesalahan jenayah di bawah Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 (Akta 694).
- 9.2 Sekiranya mana-mana pihak ada menawar atau memberi apa-apa suapan kepada mana-mana anggota perkhidmatan awam, maka pihak yang ditawarkan atau diberi suapan dikehendaki membuat aduan dengan segera ke pejabat Suruhanjaya Pencegahan Rasuah atau balai polis yang berhampiran. Kegagalan berbuat demikian adalah merupakan suatu kesalahan di bawah Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 (Akta 694).
- 9.3 Tanpa prejudis kepada tindakan-tindakan lain, tindakan tatatertib terhadap anggota perkhidmatan awam dan menyenaraihitamkan Kontraktor boleh diambil sekiranya pihak-pihak terlibat dengan kesalahan rasuah di bawah Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 (Akta 694).
- 9.4 Mana-mana Kontraktor yang membuat tuntutan bayaran berkaitan perolehan ini walaupun tiada kerja dibuat mengikut spesifikasi yang ditetapkan dan mana-mana anggota perkhidmatan awam yang mengesahkan tuntutan berkenaan adalah melakukan kesalahan di bawah Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 (Akta 694).

10. PEMATUHAN AKTA 342 DAN NORMA BAHARU DALAM SEKTOR PEMBINAAN DAN DALAM MENANGANI EPIDEMIK DAN PANDEMIK COVID 19

- 10.1 Penyebutharga yang berjaya dikehendaki mematuhi Akta Pencegahan dan Pengawalan Penyakit Berjangkit 1988 (Akta 342) dan semua Garis Panduan dan Prosedur Operasi Piawai yang berkaitan dalam menangani Epidemik dan Pandemik seperti wabak Covid 19 yang dikeluarkan oleh Kementerian Kesihatan Malaysia, CIDB dan Jabatan Kerja Raya Malaysia.
- 10.2 Penyebutharga dikehendaki mengambilkira dalam harga tawaran untuk pematuhan perkara 60.1.
- 10.3 Kegagalan mematuhi Akta, Garis Panduan dan Prosedur Operasi Piawai yang telah ditetapkan menyebabkan tindakan boleh di ambil oleh agensi agensi yang berkenaan dan sebarang tuntutan akibat tindakan ini tidak akan dipertimbangkan

11. ADDENDA SEBUTHARGA

- 11.1 Sebelum tarikh akhir bagi penyerahan sebutharga, Jabatan/Agensi boleh mengeluarkan Addenda Sebutharga untuk menerangkan, membetulkan, mengurangkan atau membuat tambahan mana-mana bahagian Kandungan dokumen sebutharga. Semua Addenda Sebutharga akan dikeluarkan secara rasmi kepada semua penyebutharga melalui Jabatan/Agensi yang memanggil sebutharga.
- 11.2 Setiap Addenda Sebutharga yang dikeluarkan akan diedarkan kepada semua penyebutharga dan akan menjadi sebahagian daripada dokumen sebutharga. Penerimaan setiap Addenda Sebutharga hendaklah diakui melalui Borang Bukti Penerimaan yang disertakan bersama-sama Addenda Sebutharga. Borang Bukti Penerimaan bagi Addenda Sebutharga yang terlibat hendaklah dikembalikan bersama-sama dengan dokumen sebutharga bagi tujuan penilaian dan tindakan selanjutnya. Ianya menjadi sebahagian daripada syarat wajib dalam proses penilaian sebutharga yang dilakukan. Kegagalan berbuat demikian boleh menyebabkan sebutharga berkenaan ditolak.
- 11.3 Penyebutharga hendaklah juga mengesahkan penerimaan semua Addenda Sebutharga yang dikeluarkan dalam Senarai Semakan Mengemukakan Sebutharga. Kegagalan berbuat demikian boleh menyebabkan sebutharga berkenaan ditolak. Semua Addenda Sebutharga yang dikeluarkan adalah menjadi sebahagian dari Kontrak.
- 11.4 Penyebutharga hendaklah mengambil tindakan sewajarnya terhadap apa-apa maklumat atau arahan yang dinyatakan dalam Addenda Sebutharga.

12. HARGA INDIKATIF JABATAN

- 12.1 Harga Indikatif Jabatan bagi sebutharga ini adalah Ringgit Malaysia : **(DUA RATUS RIBU SAHAJA (RM200,000.00))**
- 12.2 Harga Indikatif Jabatan ini merupakan suatu anggaran sahaja dan amaun tersebut tidak mengikat Kerajaan atau mana-mana pihak lain juga bagi maksud mengelakkan kekeliruan yang mungkin berbangkit.
- 12.3 Pihak Kerajaan tidak menjamin bahawa syarikat akan dipilih atau boleh menyiapkan kerja dengan bersandarkan Harga Indikatif Jabatan.

SURAT AKUAN PEMBIDA

SURAT AKUAN PEMBIDA

Bagi

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA
YANG BERKAITAN DENGANNYA DI KOMPLEKS SUKAN MSN NILAI, NEGERI
SEMBILAN UNTUK MAJLIS SUKAN NEGARA MALAYSIA**

NO SEBUTHARGA :

Saya, nombor K.P.....yang mewakili
.....nombor
Pendaftaran.....atau mana-mana individu yang mewakili syarikat ini
tidak akan menawar atau memberi rasuah kepada mana-mana individu dalam
MAJLIS SUKAN NEGARA atau mana-mana individu lain, sebagai sokongan untuk
dipilih dalam Sebut Harga seperti di atas. Bersama-sama ini dilampirkan Surat
Perwakilan Kuasa bagi saya mewakili syarikat seperti tercatat di atas untuk membuat
pengisytiharan ini.

2. Sekiranya saya atau mana-mana individu yang mewakili syarikat ini didapati
bersalah menawar atau memberi rasuah kepada mana-mana individu dalam **MAJLIS
SUKAN NEGARA** atau mana-mana individu lain sebagai sogokan untuk dipilih
dalam Sebut Harga seperti di atas, maka saya sebagai wakil syarikat bersetuju
tindakan-tindakan berikut diambil:

- 2.1 Penarikan balik tawaran kontrak bagi Sebut Harga di atas ; atau
- 2.2 Penamatan kontrak bagi Sebut Harga di atas;
- 2.3 Disabitkan dibawah Kanun Keseksaan (Akta 574); dan
- 2.4 Tindakan tatatertib lain 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 sogokan untuk
dipilih dalam Sebut Harga seperti di atas, maka saya berjanji akan dengan segera
melaporkan perbuatan tersebut kepada pejabat Suruhanjaya Pencegahan Rasuah
Malaysia (SPRM) atau balai polis yang berhampiran.

Yang Benar,

.....

Nama :

No.K.P :

Cop Syarikat :

SYARAT² SEBUT HARGA

SYARAT-SYARAT SEBUT HARGA

1. PEMERIKSAAN TAPAK BINA

Kontraktor disifatkan telah memeriksa dan meneliti tapak bina dan sekitarnya, bentuk dan jenis tapak bina, takat dan jenis kerja, bahan dan barang yang perlu bagi menyiapkan kerja, cara-cara perhubungan dan laluan masuk ke tapak bina dan hendaklah mendapatkan sendiri segala maklumat yang perlu tentang risiko, luar jangkaan dan segala hal-keadaan yang mempengaruhi dan menjejaskan sebut harganya. Sebarang tuntutan yang timbul akibat daripada kegagalan Kontraktor mematuhi kehendak ini tidak akan dipertimbangkan.

2. INSURANS

- 2.1. Kontraktor hendaklah atas nama bersama Kerajaan dan Kontraktor mengambil Insurans Liabiliti Awam dan Insurans Kerja (sekiranya dinyatakan di dalam Butir-butir Ringkasan Sebut Harga) bagi tempoh pelaksanaan Kerja termasuk tempoh kecacatan dan ditambah tiga (3) bulan dan empat belas (14) hari. Kontraktor hendaklah juga mengemukakan Nombor Kod Pendaftaran dengan PERKESO.
- 2.2. Kontraktor hendaklah mengemukakan kepada Pegawai Inden semua polisi insurans dan Nombor Kod Pendaftaran dengan PERKESO yang tersebut di atas sebelum memulakan Kerja. Bagaimanapun untuk tujuan memulakan Kerja sahaja Nota-nota Perlindungan dan resit-resit bayaran premium adalah mencukupi. Sekiranya Kontraktor gagal mengemukakan semua polisi insurans selepas tempoh sah nota-nota perlindungan, tanpa sebarang sebab yang munasabah, Pegawai Inden berhak mengambil tindakan.

3. BON PELAKSANAAN

Bon Pelaksanaan dikecualikan bagi perolehan yang bernilai sehingga **RM200,000.00.**

4. PERATURAN PERLAKSANAAN KERJA

- 4.1. Kerja-kerja yang dilaksanakan hendaklah mematuhi Spesifikasi, pelan-pelan, butir-butir kerja dalam Ringkasan Sebut Harga dan Syarat-syarat yang dinyatakan dalam Dokumen Sebut Harga ini dan Pegawai Inden atau Wakilnya.

-
- 4.2. Kerja-kerja elektrik yang dilaksanakan di samping mematuhi kehendak di perenggan 4.1 di atas, hendaklah juga mematuhi semua peraturan dan pekeliling, undang-undang dan undang-undang kecil yang diluluskan oleh:

- 4.2.1. Suruhanjaya Tenaga
- 4.2.2. Jabatan Keselamatan Pekerjaan dan Kesihatan (JKKP)
- 4.2.3. Pemegang Lesen dan Pihak Berkuasa Bekalan Elektrik
- 4.2.4. Jabatan Bomba dan Penyelamat
- 4.2.5. Pihak Berkuasa Tempatan
- 4.2.6. Suruhanjaya Pengurusan Air Negara (SPAN)

5. KEGAGALAN KONTRAKTOR MEMULAKAN KERJA

Sekiranya Kontraktor gagal memulakan kerja selepas tujuh (7) hari dari tarikh akhir tempoh mula kerja yang dinyatakan dalam Inden, tanpa sebab-sebab yang munasabah, Inden akan dibatalkan oleh Pegawai Inden dan tindakan tatatertib akan diambil terhadap kontraktor.

6. SUB-SEWA DAN MENYERAH HAK KERJA

Kontraktor tidak dibenarkan mengsub-sewakan Kerja kepada Kontraktor-kontraktor lain. Kontraktor tidak boleh menyerahkan hak apa-apa faedah di bawah Inden ini tanpa terlebih dahulu mendapatkan persetujuan bertulis daripada Pegawai Inden.

7. PENOLAKAN BAHAN, BARANG DAN MUTU HASIL KERJA OLEH PEGAWAI INDEN

- 7.1. Pegawai Inden atau Wakilnya berhak menolak bahan, barang dan mutu hasil kerja dari jenis piawaian yang tidak menepati seperti diperihalkan dalam spesifikasi. Kontraktor hendaklah, apabila diminta oleh Pegawai Inden, memberi kepadanya baucar-baucar dan/ atau perakuan ujian pengilang untuk membuktikan bahawa bahan-bahan dan barang-barang itu mematuhi spesifikasi. Bahan, barang dan kerja-kerja yang ditolak hendaklah diganti dan sebarang kos tambahan yang terlibat hendaklah ditanggung oleh Kontraktor sendiri.
- 7.2. Kontraktor hendaklah dengan sepenuhnya atas perbelanjaan sendiri menyediakan sampel bahan dan barang-barang untuk ujian.
- 7.3. Tiada penggantian untuk peralatan, bahan dan cara kerja yang telah ditentukan di dalam spesifikasi atau ditawarkan dan telah diterima, dibenarkan kecuali mendapat persetujuan daripada Pegawai Inden secara bertulis.

8. RINGKASAN SEBUT HARGA

- 8.1. Ringkasan Sebut Harga hendaklah menjadi sebahagian daripada Borang Sebut Harga ini dan hendaklah menjadi asas Jumlah Harga Sebut Harga.
- 8.2. Harga-harga dalam Ringkasan Sebut Harga hendaklah mengambil kira semua kos termasuk kos pengangkutan, cukai, duti, levi, bayaran dan caj-caj lain yang perlu dan berkaitan bagi penyiapan Kerja dengan sempurnanya.
- 8.3. Tiada sebarang tuntutan akan dilayan bagi pelarasan harga akibat daripada perubahan kos buruh, bahan-bahan dan semua duti dan cukai kerajaan, sama ada dalam tempoh sah sebut harga atau dalam tempoh Kerja.
- 8.4. Harga-harga dalam ringkasan Sebut Harga yang dikemukakan oleh Kontraktor hendaklah tertakluk kepada persetujuan sebelumnya Itu daripada Pegawai Inden tentang kemunasabahannya. Persetujuan sebelumnya itu dan apa-apa pelarasan kemudiannya kepada harga-harga dalam Ringkasan Sebut Harga hendaklah dibuat sebelum Inden Kerajaan dikeluarkan.
- 8.5. Apa-apa pelarasan harga dalam Ringkasan Sebut Harga menurut perenggan 8.4 tersebut di atas dan apa-apa kesilapan hisab dalam Ringkasan Sebut Harga hendaklah dilaraskan dan diperbetulkan sebelum Inden Kerajaan dikeluarkan. Jumlah amaun yang dilaraskan hendaklah sama dengan amaun jumlah harga pukal dalam Borang Sebut Harga. Amaun jumlah harga pukal dalam Borang Sebut Harga hendaklah tidak berubah.
- 8.6. **Sekiranya sebut harga berasaskan senarai kuantiti sementara, pengukuran semula hendaklah dibuat dan harga sebut harga diselaraskan.**

9. PERCANGGAHAN DAN KECUKUPAN DOKUMEN SEBUT HARGA

- 9.1. Borang Perjanjian Inden Kerja, Surat Akuan Pembida Berjaya yang ditandatangani oleh Kontraktor dan Dokumen Sebut Harga hendaklah disifatkan menjadi dan dibaca serta ditafsirkan sebagai sebahagian daripada Kontrak ini.
- 9.2. Dokumen Sebut Harga adalah dikira sebagai saling jelas-menjelas antara satu sama lain. Kontraktor hendaklah mengadakan segala yang perlu untuk melaksanakan kerja dengan sewajarnya sehinggalah siap mengikut tujuan dan maksud sebenar. Dokumen Sebut Harga pada keseluruhannya sama ada atau tidak tujuan dan maksud itu hendaklah difahamkan dengan munasabahnyanya dari Dokumen Sebut Harga itu.

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- 9.3. Jika Kontraktor mendapati apa-apa percanggahan dalam Dokumen Sebut Harga dia hendaklah merujuk kepada Pegawai Inden untuk mendapatkan keputusan.

10. KEGAGALAN KONTRAKTOR MENYIAPKAN KERJA DAN PENAMATAN PERLANTIKAN KONTRAKTOR

Pegawai inden berhak membatalkan Inden sekiranya Kontraktor berada dalam keadaan berikut dan setelah menerima surat amaran daripada Pegawai Inden:

- (a) Kontraktor masih gagal menyiapkan Kerja dalam tempoh masa yang telah ditetapkan;
- (b) Kemajuan Kerja terlalu lembap di mana Kontraktor didapati gagal menjalankan kerja dengan tekun dan teratur tanpa apa-apa sebab yang munasabah
- (c) Penggantungan pelaksanaan seluruh atau sebahagian Kerja, tanpa apa-apa sebab yang munasabah;
- (d) Tidak mematuhi arahan Pegawai Inden tanpa apa-apa alasan yang munasabah;
- (e) Pegawai Inden berhak membatalkan Inden sekiranya Kontraktor diisytiharkan bankrap oleh pihak yang sah.

11. ~~BAYARAN PENDAHULUAN~~

~~Bayaran pendahuluan dibenarkan bagi kontrak yang bernilai melebihi RM 200,000.00 hingga RM 500,000.00~~

12. BAYARAN INTERIM/ KEMAJUAN

Pegawai Inden dibenarkan membuat bayaran interim sehingga kerja-kerja siap dilaksanakan.

13. KERJA PERUBAHAN

- 13.1. Pegawai Inden boleh menurut budi bicaranya mengeluarkan arahan-arahan yang berkehendakkan sesuatu perubahan kerja dengan secara bertulis. Tiada apa-apa perubahan yang dikeluarkan oleh Pegawai Inden atau yang disahkan kemudian oleh Pegawai Inden boleh membatalkan Sebut Harga ini.
- 13.2. Semua kerja perubahan dan/ atau tambahan yang diluluskan oleh Pegawai Inden akan diukur atau dinilai dengan menggunakan kadar harga yang ada dalam Senarai Kuantiti/ Ringkasan Sebut Harga. Jika tidak terdapat sebarang kadar harga yang bersesuaian, kadar harga yang dipersetujui oleh Pegawai Inden dan Kontraktor hendaklah digunakan.

14. PENGUKURAN KUANTITI SEMENTARA

Setelah kerja-kerja yang melibatkan Kuantiti Sementara disiapkan di tapak, pengukuran semula kuantiti hendaklah dibuat secara bersama.

15. LANJUTAN MASA

Pelanjutan masa adalah tertakluk kepada Jawatankuasa Sebut Harga terlebih dahulu.

16. TEMPOH TANGGUNGAN KECACATAN (DLP)

- 16.1. Tempoh Tanggungan Kecacatan bagi sebut harga hendaklah sekurang-kurangnya enam (6) bulan dari tarikh kerja diperakukan siap. Bagi kerja-kerja mekanikal dan elektrik di mana tempoh waranti ke atas alat-alat dan loji-loji adalah dua belas (12) bulan dan dalam kes-kes tertentu oleh sebab jenis dan kerumitan kerja, tempoh tanggungan kecacatan yang lebih lama daripada enam bulan (6) boleh dikenakan.
- 16.2. Kontraktor dipertanggungjawabkan untuk memperbaiki kecacatan, ketidaksempurnaan, kekecutan atau apa-apa jua kerosakan lain seperti yang mungkin kelihatan dan yang disebabkan oleh bahan atau barang atau mutu hasil kerja yang tidak menepati sebut harga ini apabila diarahkan oleh Pegawai Inden dan dalam masa yang berpatutan. Kontraktor hendaklah memperbaiki kecacatan, ketidaksempurnaan, kekecutan atau apa-apa jua kerosakan lain atas Kos Kontraktor sendiri.

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- 16.3. Sekiranya Kontraktor gagal membaiki kecacatan, ketidaksempurnaan, kekecutan atau apa-apa jua kerosakan lain seperti yang diarahkan, Pegawai Inden berhak memotong kos membaiki dari baki wang yang akan dibayar kepada kontraktor atau, jika baki itu tiada mencukupi, mengeluarkan surat pengesyoran kepada Lembaga Pembangunan Industri Pembinaan Malaysia (CIDB) dan Pusat Khidmat Kontraktor (PKK) untuk menggantungkan pendaftaran Kontraktor, dan menghantar salinan-salinan tersebut kepada Pengarah Kerja Raya Negeri/ Ketua Jabatan, Bahagian Pembangunan Bumiputera, Kementerian Kerja Raya dan Lembaga Pembangunan Industri Pembinaan. Bagi Kerja-kerja elektrik/ mekanikal, salinan surat hendaklah dihantar kepada Pengarah Cawangan Kerja Elektrikal/ Pengarah Cawangan Kerja Mekanikal.
- 16.4. Tempoh tanggungan liabiliti kecacatan (DLP) sepertimana yang dinyatakan pada Surat Irian Kepada Inden Kerajaan/Surat Setuju Terima iaitu bermula dari tarikh diambil milik dan penyerahan projek.

17. PERATURAN MEMBAYAR SELEPAS SIAP

Bayaran sepenuhnya hanya akan dibayar setelah kontraktor menyiapkan kerja dengan sempurna dan Perakuan Siap Kerja dikeluarkan. Walaubagaimanapun Pegawai Inden hendaklah membuat potongan atau menahan sejumlah amaun dari wang yang akan dibayar kepada Kontraktor sebagai kos untuk membaiki apa-apa kecacatan yang tidak dapat dibaiki oleh Kontraktor di dalam tempoh tanggungan kecacatan. Kontraktor hendaklah mengembalikan Inden Kerajaan (Pelaksanaan Kerja) dan Inden Kerajaan (Penyiapan Kerja) sepertimana yang telah ditetapkan dalam Pekeliling Perbendaharaan Malaysia (PK 4.2) kepada Pegawai Inden.

18. PERAKUAN SIAP KERJA

Pegawai Inden hendaklah mengeluarkan Perakuan Siap Kerja sebaik sahaja kerja disiapkan dengan sempurna dan memuaskan sejajar dengan syarat-syarat Dalam Dokumen Sebut Harga. Tempoh Tanggungan Kecacatan bermula daripada tarikh siap kerja.

19. PERAKUAN SIAP MEMPERBAIKI KECACATAN

Pegawai Inden hendaklah mengeluarkan Perakuan Siap Membaiki Kecacatan sebaik sahaja kontraktor telah membaiki kecacatan, ketidaksempurnaan, kekecutan atau apa-apa jua kerosakan lain.

20. PEMATUHAN KEPADA UNDANG-UNDANG OLEH KONTRAKTOR

Kontraktor hendaklah mematuhi segala kehendak Undang-undang Kecil dan Undang-undang Berkanun dalam Malaysia semasa pelaksanaan Kerja. Kontraktor tidak berhak menuntut sebarang kos dan bayaran tambahan kerana pematuhannya dengan syarat-syarat ini.

21. PENAMATAN BERSABIT RASUAH, AKTIVITI MENYALAH UNDANG-UNDANG ATAU AKTIVITI HARAM

Tanpa menjejaskan apa-apa hak Kerajaan yang lain, jika kontraktor, personel, kakitangan atau pekerja disabitkan bersalah oleh mahkamah kerana rasuah atau aktiviti menyalahi undang-undang atau aktiviti haram yang berkaitan dengan Perjanjian/ Kontrak ini atau mana-mana perjanjian lain yang Kontraktor mungkin ada dengan Kerajaan, Kerajaan berhak untuk menamatkan Perjanjian / Kontrak ini pada bila-bila masa, dengan memberi notis bertulis dengan segera yang membawa maksud sedemikian kepada Kontraktor.

Setelah penamatan tersebut, Kerajaan berhak terhadap semua kerugian, kos, ganti rugi dan perbelanjaan (termasuk apa-apa kos dan perbelanjaan sampingan) yang ditanggung oleh Kerajaan yang timbul daripada penamatan tersebut.

Bagi mengelakkan keraguan, kedua-dua pihak Kerajaan dan Kontraktor bersetuju bahawa Kontraktor tidak layak terhadap sebarang bentuk kerugian termasuk kehilangan keuntungan, ganti rugi, tuntutan atau apa sekalipun setelah penamatan Kontrak ini.

22. PERAKUAN KERJA TIDAK SIAP

Pegawai Inden hendaklah mengeluarkan Perakuan Kerja Tidak Siap apabila penyediaan Kerja didapati telah terlambat dan sebab kelambatan tidak melayakkan Kontraktor mendapat lanjutan masa, maka kerugian atau ganti rugi yang dialami oleh Kerajaan akibat daripada kelambatan tersebut adalah ditanggung oleh Kontraktor. Kerugian atau ganti rugi yang dialami oleh Kerajaan akan diperolehi semula daripada Kontraktor melalui Ganti Rugi Tertentu dan Ditetapkan.

23. KENAAN DENDA/TOLAKAN/ *LIQUIDATED AND ASCERTAINED DAMAGE* (LAD) BAGI SEBUT HARGA KERJA

Kelewatan dalam menyiapkan projek boleh menyebabkan peningkatan kos projek. Jika syarikat gagal memenuhi obligasi kontrak, denda/ganti rugi hendaklah dituntut daripada syarikat. Jika syarikat gagal membayarnya, denda/ganti rugi hendaklah dituntut daripada bayaran kemajuan atau daripada sebarang baki bayaran yang syarikat berhak menerima.

*** Pengenalan LAD boleh ditetapkan berdasarkan formula seperti berikut :**

$$\text{LAD} = \frac{\text{Base Landing Rate (BLR)}}{100} \times \frac{\text{Harga Kontrak}}{365 \text{ (hari)}}$$

* '*Prime Rate*' yang dikeluarkan oleh mana-mana bank perdagangan

BORANG SEBUT HARGA

BORANG SEBUTHARGA

Sebutharga Bil :

BAHAGIAN KEWANGAN

MAJLIS SUKAN NEGARA

KOMPLEKS SUKAN BUKIT JALIL

SERI PETALING

57000 KUALA LUMPUR

MALAYSIA

Tuan,

Sebut Harga untuk :-

KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK MAJLIS SUKAN NEGARA MALAYSIA

Di bawah dan tertakluk kepada Arahan Kepada Penyebut Harga, Syarat-syarat Sebutharga untuk kerja, Spesifikasi Kerja dan Lukisan, saya yang bertandatangan di bawah ini adalah dengan ini menawarkan untuk melaksanakan dan menyiapkan kerja-kerja tersebut bagi jumlah harga pukat sebanyak Ringgit Malaysia:

.....
.....(RM)

2. Saya bersetuju menyiapkan kerja-kerja ini dalam masa
minggu dari tarikh mula kerja seperti yang ditetapkan di bawah Perenggan 2 Borang Perjanjian Inden Kerajaan.

Bertarikh pada haribulan 20.....

.....
(Tandatangan Kontraktor)

Nama Penuh :

No. K/P :

Alamat :

.....

.....

Atas sifat :

.....
(Tandatangan Saksi)

Nama Penuh :

No. K/P :

Alamat :

.....

.....

.....
Meteri atau Cap Kontraktor

SENARAI KUANTITI

RINGKASAN SEBUTHARGA

BIL	SPESIFIKASI KERJA	JUMLAH	
		RM	SEN
1.	KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK MAJLIS SUKAN NEGARA MALAYSIA		
	1.KERJA-KERJA AWALAN		
	2. KERJA-KERJA UBAHSUAI DAPUR MEMASAK DAN RUANG BASUHAN		
	3. KERJA-KERJA UBAHSUAI BILIK PEJABAT DAN PERSALINAN KAFETERIA		
	4. KERJA-KERJA UBAHSUAI RUANG MAKAN KAFETERIA ATLET		
	JUMLAH KESELURUHAN		
Ringgit Malaysia :			

Tandatangan Penyebutharga

Nama Penyebutharga

No. K/P Penyebutharga

Jawatan

Cop Syarikat

Alamat:

Telephone :
Facsimile :
E-Mail :
Tarikh :

Tandatangan Saksi

Nama Saksi

No. K/P Saksi

Jawatan

Alamat:

Telephone :
Facsimile :
E-Mail :
Tarikh :

PERHATIAN :

Sebarang pertanyaan boleh dimajukan kepada ;

MUHAMAD FAEZAL MD NOH

(Bahagian Fasiliti Sukan)

Tel : 03-89929600/89929837

Fax : 03-90583380

Nota :

1. Kontraktor dinasihatkan melihat sendiri tapak cadangan untuk mengetahui selok-belok kerja.
2. Harga tawaran sah selama 3 bulan dari tarikh tutup panggilan sebutharga dibuat.
3. Bersama-sama ini juga sila lampirkan profile syarikat untuk rujukan.
4. Majlis tidak terikat dengan mana-mana sebutharga yang terendah.

.....
(Tandatangan Kontraktor)

Nama : _____
Cop/Alamat : _____

No. Tel. : _____
No. Fax. : _____

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI KOMPLEKS
SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 1 - KERJA-KERJA AWALAN

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Nota : Skop kerja-kerja yang terlibat adalah menyediakan tenaga pekerja, peralatan, pengangkutan, fabrikasi yang berkaitan bagi menyiapkan kerja-kerja berikut :- <u>KERJA-KERJA AWALAN</u>				
A	Mematuhi kehendak kehendak asas kontrak seperti Sijil (CIDB), permit kerja, permit pekerja dan lain lain.	Pukal			
B	Menyediakan Insuran Pampasan Pekerja, Insuran Liabiliti Awam dan Insuran Kerja atau nombor pendaftaran PERKESO bagi semua pekerja yang terlibat.	Pukal			
C	Bekalan sementara untuk bekalan tenaga dan air	Pukal			
D	Menyediakan laporan foto kemajuan kerja (sebelum, semasa dan selepas) sebanyak dua (2) set berwarna pada setiap tuntutan bayaran (Hard copy & soft copy – dalam thumb drive).	Pukal			
E	Keselamatan dan kawalan di tapak termasuk memasang pagar keselamatan (Hoarding)	Pukal			
F	Kerja kerja pengukuran dan seting out.	Pukal			
G	Penyediaan lukisan terbina (As Built drawing) dan lukisan kedai (shop drawing).	Pukal			
H	Pembersihan tapak dari segala kotoran, sisa bahan binaan ke dalam tong sampah yang diluluskan dan ke kawasan pembuangan yang dibenarkan termasuk sewaktu menjalankan aktiviti pembinaan dan selepas keseluruhan kerja disiapkan dan proses menyerahkan tapak termasuk mendapatkan permit kerja dari pihak Majlis Tempatan.	Pukal			
J	Pihak kontraktor mestilah memindahkan segala peralatan sedia ada ke kawasan yang sesuai dan memindahkan semula termasuk kemasan ke tempat yang diarahkan oleh pihak MSNM	Pukal			
K	Melantik Perunding (Interior Design) bertauliah bagi penyediaan rekabentuk struktur, lukisan-lukisan pembinaan dan 'shop drawing bagi cadangan rekabentuk kontraktor (Contractor Design Portion)	Pukal	Pukal	16,200.00	16,200.00
JUMLAH DIBAWA KE RINGKASAN HARGA					

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 2 - KERJA KERJA UBAHSUAI DAPUR MEMASAK DAN RUANG BASUHAN

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional) Nota Umum:				
1	Pihak Kontraktor dikehendaki untuk melawat tapak, memeriksa premis sedia ada dan memastikan kerja-kerja yang akan dilaksanakan mengikut spesifikasi dan aturan yang telah diarahkan. Tiada tuntutan untuk bayaran tambahan dalam hubungan ini yang akan dilayan. Harga kontraktor akan dianggap termasuk semua perkara yang diperlukan untuk melaksanakan sehingga siap kerja-kerja terbabit.				
2	Kerja-kerja di tapak secara umumnya perlu dijalankan dengan meminimumkan mengganggu kawasan bersempadanan atau berjiranan dan orang awam. Keselamatan berhampiran kawasan kerja atau kawasan berjiranan dan orang awam adalah sangat penting sepanjang melaksanaan kerja dan semua langkah-langkah keselamatan kerja perlu diambil. Pihak kontraktor akan dipertanggungjawabkan atas kegagalan berbuat demikian dan sebarang tuntutan atau siri tuntutan-tuntutan kepada kerajaan yang mungkin timbul ketika melaksanakan kerja adalah dibawah tanggungjawab pihak kontraktor				
3	Semua bahan-bahan terpakai dan bahan-bahan kasar akibat daripada kerja-kerja yang dilakukan dan perubahan yang dijalankan adalah akan menjadi tanggungjawab Pihak Kontraktor yang perlu membuang sama ada di dalam kawasan tapak atau keluar daripada kawasan tapak.				
4	Pihak kontraktor adalah dipertanggungjawabkan dengan kos sendiri untuk membaiki atau menggantikan sebarang barangan lengkap yang dalam pada pendapat Arkitek / Pegawai Penguasa telah rosak akibat kecuaihan pihak kontraktor dalam penjagaan kerja-kerja seperti membuang, mengendalikan dan melindungi barangan atau kawasan terbabit.				
5	Pihak Kontraktor perlu mengambil kira langkah-langkah keselamatan dan kerja-kerja sokongan sementara yang perlu dilakukan mengikut garis panduan dan akta JKKP dan JAS sebelum menjalankan kerja-kerja binaan.				
Jumlah Kerja - Kerja dibawa kehadapan.					

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 2 - KERJA KERJA UBAHSUAI DAPUR MEMASAK DAN RUANG BASUHAN

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional) Jumlah Kerja Kerja dari mukasurat 1 Nota Umum: (Sambungan) 1 Kerja-kerja seperti membekal bahan , membekal buruh, peralatan untuk membina selaras seperti yang terdapat didalam lukisan dan senarai jadual kerja ini hendaklah termasuk kerja-kerja penyingkiran segala bahan buangan di luar tapak dan membaikpulih semua kerja-kerja atau kawasan yang terganggu dan menyiapkan kerja terbabit sehingga Arkitek / Pengawai Penguasa berpuas hati. 2 Sebarang butiran yang tidak dihangakan adalah dianggap termasuk di dalam harga butiran-butiran lain. Kontraktor adalah dianggap telah melawat tapak bina dan membaca Syarat-Syarat Kontrak, Spesifikasi Addenda, Spesifikasi Piawai dan lukisan-lukisan kontrak untuk memastikan sendiri kerja yang terlibat sebelum menghargakan sebutharganya kerana sebarang bayaran tambahan berhubung dengan perkara di atas tidak akan dipertimbangkan. A <u>Kerja -kerja membuka dan memecah.</u> 3 Membekal jentera, pekerja dan bahan bagi kerja kerja membuka sinki basuhan sedia ada untuk dipindahkan ke bahagian luar dapur termasuk kerja-kerja pemasangan paip bekalan air dengan menggunakan paip dari jenis pvc termasuk aksesori paip yang berkaitan. 4 Membekal jentera, pekerja dan bahan bagi kerja kerja memecah lonkang sedia ada dan ditutup dengan konkrit untuk penyediaan kerja kerja asas rakit dan membuang sisa sisa keluar dari tapakbina. B <u>Kerja kerja di bawah aras kemas lantai (WBGFL)</u> 5 Membekal jentera, pekerja dan bahan bagi Kerja membina rasuk bawah berukuran 120mm x 150mm dengan menggunakan konkrit tuang disitu sekurang-kurangnya gred 20 diperkuat dengan besi tetulang Y10 termasuk papan acuan				
	Jumlah Kerja - Kerja dibawa kehadiran.				

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 2 - KERJA KERJA UBAHSUAI DAPUR MEMASAK DAN RUANG BASUHAN

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional) Jumlah Kerja Kerja dari mukasurat 2				
C	<u>Kerja kerja di bawah aras kemas lantai (WBGFL) Sambungan</u>				
1	Kerja-kerja membina dan menyiapkan 'Ramp' jenis konkrit dengan ketinggian maksimum 50mm pada jatuhan lantai (Drop) dengan menggunakan bancuhan konkrit gred 25 lengkap dengan lapisan BRC A8 termasuk pemasangan papak acuan dan lain-lain kerja berkaitan mengikut kecerunan yang bersesuaian dan kemas akhir jenis 'Broom finishes'.	m2	3.20		
2	Kerja-kerja membina dan menyiapkan 175mm tebal lantai simen konkrit gred 25 di atas hamparan dua lapisan BRC A10	m2	18.00		
3	Kerja-kerja membina dan menyiapkan longkang konkrit pra tuang sebagai penambahan kepada longkang perimeter sediaada.	m	2.60		
D	<u>Kerja kerja kerangka konkrit (Frame)</u>				
4	Membekal jentera, pekerja dan bahan bagi Kerja-kerja membina tiang konkrit berukuran 150mm x 150mm x 2100mm konkrit tuang di situ dicurah ke dalam acuan konkrit termasuk besi tetulang Y12 dan disambung di asas	bil	1.00		
E	<u>Kerja - Kerja Dinding</u>				
5	Membekal dan memasang dinding bata campuran simen dan pasir 115mm tebal termasuk ikatan simen mortar (1:3) memasang DPM, "Fish tail" dan Exmet pada setiap 4 lapisan serta kerja kerja yang berkaitan.	m2	16.00		
F	<u>Kerja - Kerja Membekal dan Memasang Pintu</u>				
6	Membekal dan memasang baru 1800mm x 2100mm x 1mm (tebal) bingkai pintu keluli (Metal door frame) termasuk kemas semula penyambungan pada dinding bata sediaada serta mengecat satu (1) lapisan asas dan dua (2) lapisan cat kemas kilat (High gloss finish -D1	bil	1		
7	Membekal dan memasang baru 1800mm x 2100mm panel pintu jenis kayu keras berketam (Solid timber door) termasuk mengecat satu (1) lapisan asas dan dua (2) lapisan cat kemas kilat (High gloss finish) - D1	bil	1		
	Jumlah Kerja - Kerja dibawa ke hadapan.				

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 2 - KERJA KERJA UBAHSUAI DAPUR MEMASAK DAN RUANG BASUHAN

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional) Jumlah Kerja Kerja dari mukasurat 3				
G	<u>Kerja - Kerja Kemas Lantai</u>				
1	Membekal dan melepai lantai simen konkrit	m2	18		
2	Membekal dan memasang jubin lantai anti licin berukuran 300mm x 300mm pada lantai dapur baru termasuk simen skrid yang berkaitan.	m2	18		
H	<u>Kerja - Kerja Kemas Dinding</u>				
3	Membekal dan memasang jubin dinding berukuran 300mm x 300mm pada dinding sinki basuhan termasuk kerja-kerja kemas yang berkaitan.	m2	8		
4	Membekal dan memasang jubin dinding berukuran 300mm x 300mm pada dinding dapur memasak termasuk kerja-kerja kemas yang berkaitan.	m2	10		
5	Membekal bahan dan melepai dinding batu bata luaran dan dalaman.	m2	32		
J	<u>Kerja - Kerja Membekal dan Memasang Alatan Kumbahan</u>				
6	Kerja membekal dan memasang 1 unit alat perangkap minyak (Grease trap) dengan kapasiti saiz 35 GSM termasuk termasuk kerja-kerja memecah lantai dan perangkap minyak sediaada dan menggali tanah bagi membina saluran paip air buangan dan meletakkan tong perangkap minyak yang baharu termasuk kerja-kerja kemas dengan membekal penutup besi dari jenis 'Chequered plate' bagi menutup lubang servis perangkap minyakdi tempat yang baru.	Set	1		
7	Kerja-kerja membekal dan memasang 2 unit alat perangkap minyak (Grease trap) dengan kapasiti saiz 25 GSM termasuk paip saluran air buang dan lain-lain kerja yang berkaitan.	Set	2		
K	<u>Kerja - Kerja Membekal dan Memasang Alatan Paip Air</u>				
8	Membuka satu unit 'Garden tap' untuk diletakkan semula pada dinding yang baharu dibina dengan menggunakan paip G.I menggunakan saiz paip seperti sedia ada.	bil	1		
	Jumlah Kerja - Kerja dibawa kehadiran.				

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 2 - KERJA KERJA UBAHSUAI DAPUR MEMASAK DAN RUANG BASUHAN

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional) Jumlah Kerja Kerja dari mukasurat 4				
L	<u>Kerja - Kerja Membekal dan Memasang Lurang Kumbahan Baru</u>				
1	Kerja membekal dan memasang 1 unit Lurang Kumbahan termasuk termasuk kerja-kerja memecah lurang, lantai , siar kaki sediada termasuk membuang sisa sisa buangan keluar dari tapak dan menggali tanah bagi membina saluran paip air buangan baru, 'gully trap' dan meletakkan lurang pra tuang konkrit yang baharu termasuk kerja-kerja kemas dengan membekal penutup besi dari jenis 'D.I' yang di iktiraf oleh I.W.K bagi lurang pra tuang dan penutup lurang di tempat yang baru.	Set	1		
JUMLAH DIBAWA KE RINGKASAN HARGA					

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 3 - KERJA-KERJA UBAHSUAI BILIK PEJABAT DAN PERSALINAN KAFETERIA

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
A	Semua kuantiti adalah sementara.(All Provisional)				
	<u>Kerja -kerja membuka dan memecah.</u>				
1	Membekal jentera, pekerja dan bahan bagi kerja kerja memecah 900mm x 2100mm dinding sediaada bagi menerima pintu baharu termasuk kerja kerja yang berkaitan	Pukal	Pukal		
B	<u>Kerja kerja di bawah aras kemas lantai (WBGFL)</u>				
2	Membekal jentera, pekerja dan bahan bagi Kerja membina rasuk bawah berukuran 120mm x 150mm dengan menggunakan konkrit tuang disitu sekurang-kurangnya gred 20 diperkuat dengan besi tetulang Y10 termasuk papan acuan	m	10.00		
3	Kerja-kerja membina dan menyiapkan 175mm tebal lantai simen konkrit gred 25 di atas hamparan dua lapisan BRC A10	m2	11.00		
C	<u>Kerja kerja kerangka konkrit (Frame)</u>				
4	Membekal jentera, pekerja dan bahan bagi Kerja-kerja membina tiang konkrit berukuran 150mm x 150mm x 2100mm konkrit tuang di situ dicurah ke dalam acuan konkrit termasuk besi tetulang Y12 dan disambung di asas	bil	3.00		
5	Kerja membina rasuk bagi menyokong lantai konkrit berukuran 120mm x 150mm dengan menggunakan konkrit tuang disitu sekurang-kurangnya gred 25 diperkuat dengan besi tetulang Y10 termasuk papan acuan	m	13.00		
6	Kerja-kerja membina 100mm tebal lantai konkrit bumbung dengan menggunakan konkrit gred 25 di atas hamparan dua lapisan BRC A10 termasuk papan acuan dan dilapis dengan lapisan kalis air.	m2	12.00		
D	<u>Kerja kerja bumbung</u>				
7	Membekal dan memasang 1200mm x 1200mm awning dari jenis 'Metal deck' yang berketebalan 0.40mm termasuk kerangka dan kemas yang berkaitan	m2	2.40		
E	<u>Kerja - Kerja Dinding</u>				
8	Membekal dan memasang dinding bata campuran simen dan pasir 115mm tebal termasuk ikatan simen mortar (1:3) memasang DPM, "Fish tail" dan Exmet pada setiap 4 lapisan serta kerja kerja yang berkaitan.	m2	25.00		
Jumlah Kerja - Kerja dibawa kehadiran.					

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 3 - KERJA-KERJA UBAHSUAI BILIK PEJABAT DAN PERSALINAN KAFETERIA

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional) Jumlah Kerja Kerja dari mukasurat 1				
F	<u>Kerja - Kerja Membekal dan Memasang Pintu</u>				
1	Membekal dan memasang baru 900mm x 2100mm x 1mm (tebal) bingkai pintu keluli (metal door frame) termasuk kemasan semula penyambungan pada dinding bata sediaada serta mengecat satu (1) lapisan asas dan dua (2) lapisan cat kemasan kilat (High gloss finish) yang diluluskan. -D2	bil	1		
2	Membekal dan memasang baru 900mm x 2100mm panel pintu gelongsor jenis kayu keras berketam (solid timber door) termasuk mengecat satu (1) lapisan asas dan dua (2) lapisan cat kemasan kilat (High gloss finish) yang diluluskan. - D2	bil	1		
G	<u>Kerja - Kerja Membekal dan Memasang Tingkap</u>				
3	Membekal dan memasang tingkap aluminium jenis 'Casement' dua daun bersaiz 1200mm x 1200mm termasuk cermin kaca 6mm tebal termasuk aksesori yang berkaitan	bil	1		
H	<u>Kerja - Kerja Kemasan Lantai</u>				
4	Membekal dan melepai lantai simen konkrit	m2	11		
5	Membekal dan memasang jubin lantai anti licin berukuran 300mm x 300mm pada lantai dapur baru termasuk simen skrid yang berkaitan.	m2	11		
J	<u>Kerja - Kerja Kemasan Dinding</u>				
6	Membekal bahan dan melepai dinding batu bata luaran dan dalaman.	m2	50		
7	Membekal bahan dan melepai dinding batu bata dalaman sediaada dengan 'skim coat'.	m2	30		
K	<u>Kerja - Kerja Perabut</u>				
8	Membekal meja tulis termasuk kerusi serta kelengkapan mengikut spesifikasi yang ditetapkan	bil	2		
9	Membekal rak penyimpanan baju dari jenis tahan karat mengikut spesifikasi yang ditetapkan oleh pihak majlis	bil	1		
	Jumlah Kerja - Kerja dibawa kehadiran.				

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI
KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 3 - KERJA-KERJA UBAHSUAI BILIK PEJABAT DAN PERSALINAN KAFETERIA

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional) Jumlah Kerja Kerja dari mukasurat 2				
L	<u>Kerja - Kerja Elektrikal</u>				
1	Membekal dan memasang Penghawa dingin jenis 'split unit' 1.5hp mengikut spesifikasi dan lengkap dengan sistem pendawaian serta berkaitan dengannya seperti yang ditetapkan	bil	1		
2	Membekal dan memasang 'Ekzos fan' mengikut spesifikasi dan lengkap dengan sistem pendawaian serta berkaitan dengannya seperti yang ditetapkan	bil	1		
3	Membekal dan memasang lampu mengikut spesifikasi dan lengkap dengan sistem pendawaian serta berkaitan dengannya seperti yang ditetapkan	bil	2		
4	Membekal dan memasang 'Plug point' mengikut spesifikasi dan lengkap dengan sistem pendawaian serta berkaitan dengannya seperti yang ditetapkan	bil	4		
JUMLAH DIBAWA KE RINGKASAN HARGA					

**KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI KOMPLEKS
SUKAN MSN NILAI, NEGERI SEMBILAN UNTUK
MAJLIS SUKAN NEGARA MALAYSIA**

BILL NO: 4 - KERJA-KERJA UBAHSUAI RUANG MAKAN KAFETERIA ATLET

Bil.	Butiran Kerja	unit	Kuantiti	Kadar	Amaun(RM)
	Semua kuantiti adalah sementara.(All Provisional)				
A	<u>Kerja - Kerja Membekal dan Memasang Pintu</u>				
1	Kerja-kerja membekal dan memasang Pintu Gelangsar (Sliding) Automatik (Tempered glass) termasuk komponen utama motor/pemacu elektrik berkuasa sesuai saiz dan berat pintu. Pemasangan rail dan trek untuk pintu gelangsar. Perataan dan penjajaran pintu untuk operasi lancar termasuk sistem pendawaian ujian dan penyesuaian selepas pemasangan. Spesifikasi:- i. Jenis: Pintu gelangsar automatik (Automatic sliding door) ii. Bilangan daun pintu: 2 daun ikut rekabentuk iii. Saiz bukaan bersih: min. 1200mm – 1800mm (boleh ubah ikut keperluan) iv. Bahan daun pintu: kaca tempered minimum 12 mm atau kaca laminated keselamatan v. Sistem pemacu dan kawalan vi. Motor pemacu: DC motor berkapasiti sesuai, dengan 'Gear reducer' vii. Rail & trek: 'Aluminium anodised', lengkap dengan penggulung anti-geseran viii. Sensor gerakan: Inframerah/'Microwave Motion Sensor' ix. Sensor keselamatan: 'Photocell' / 'Safety beam' untuk elak perlanggaran Ciri-ciri Operasi:- i. Kelajuan buka/tutup: Boleh laras, antara 150 mm/s – 500 mm/s ii. Kitaran operasi: ≥ 1 juta kitaran iii. Fungsi buka manual semasa kecemasan (Manual override) iv. UPS: Sistem bekalan kuasa kecemasan (jika elektrik terputus) v. Kotak kawalan: Dilengkapi dengan papan kawalan dan suis utama	bil	1		
B	<u>Kerja - Kerja Kemas Dinding</u>				
2	Membekal dan memasang jubin dinding berukuran 300mm x 300mm pada dinding kafeteria termasuk kerja-kerja kemas yang berkaitan.	m2	6		
C	<u>Kerja - Kerja Perabut</u>				
3	Membekal dan memasang kabinet dari jenis 'Formica laminate' berpintu lengkap dengan aksesori serta yang berkaitan dengan seperti yang ditetapkan untuk menutup 'switch board' (keluasan 8m2)	bil	1		
4	Membekal dan memasang cermin dinding pada dinding kafeteria.	bil	3		
JUMLAH DIBAWA KE RINGKASAN HARGA					

SPESIFIKASI



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1. General

The work to be done under this section unless otherwise shown or described in the B.Q.. shall consist of the supply, delivery, construction and testing of all sewerage works and ancillary works, and all necessary works up to the point of final discharge of the effluent. In the case of discharge into the public sewer or the package sewage treatment plant, the work shall terminate up to and including the last manhole or intercepting trap of the system. This section of the work shall be carried out strictly in accordance with the appropriate by-laws and to the approval of the S.O..

2. Material

2.1. Cement, Sand, Aggregates and Bricks

- 2.1.1. Cement, sand and aggregates shall be as specified in SECTION D: CONCRETING. All bricks used unless otherwise shown in the Drawings or described in the B.Q. shall be clay bricks as specified in SECTION E: WALL SYSTEM.

2.2. Sewerage Pipe

- 2.2.1. The Contractor shall only use sewer pipes from suppliers approved by SPAN and all materials shall be inspected and approved by the S.O. before being installed.
- 2.2.2. The Contractor shall submit the certificate and test report of sewer pipe to the S.O. for approval.
- 2.2.3. The Contractor shall make sure the sewer pipe is stored and/or stacked in such manner to prevent breakage.

3. Layout

The whole sewerage work shall be carried out according to the layout as shown on the Drawings.

4. Excavation

- 4.1. Generally, all excavation works in this section unless otherwise specified hereunder shall be as specified in SECTION B: EXCAVATION AND EARTHWORKS.
- 4.2. The Contractor shall carry out survey work to determine the sewer pipe alignment. Clearance from the building/road shall be 1m. The pipe alignment shall be approved by the S.O. before the contractor starts the excavation works.
- 4.3. The trench shall be excavated to the depths intended or as shown on the Drawings and shall be finished and trimmed to the correct level and grade. Unless indicated otherwise, the bottom of the trench shall be graded so that the pipe invert slopes evenly between the appropriate outlet invert of the preceding manhole and the inlet invert of the next manhole.



SECTION F: SEWERAGE

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- 4.4. The trench shall be excavated to such width so as to ensure that a minimum working space of 300mm will be available on each side of the pipe when properly aligned. At all joints, the trench shall be excavated to give a minimum working space of not less than 300mm all-round the joint.
- 4.5. The sides of all excavation unless otherwise approved by the S.O. shall be cut vertical and where necessary shall be protected against caving in by timbering to the approval of the S.O.. If the trench is more than 1.5m, the contractor shall provide support for the trench to avoid collapse, settlement or movement of the banks.
- 4.6. The trench excavation shall not advance more than 100m ahead of the completed backfilled pipeline. Pipe shall be laid in all trenches that have been excavated at the end of each day's work, unless the Contractor get approval from the S.O. to do otherwise.
- 4.7. It shall be the responsibility of the Contractor to protect and support all existing water pipes, gas and other conduits crossed by the excavation or work to be performed and to arrange for their temporary removal and subsequent replacement.
- 4.8. The trench should be excavated precisely to ensure the sewer pipe will be in the centre of the trench. The bottoms of the trenches for all sewers shall be carefully and truly graded, formed and lined according to the grades and dimensions as shown on the Drawings.
- 4.9. Should the ground be so wet or soft and does not form a firm base for the pipe, if it is necessary in the opinion of the S.O. then the trench shall be excavated 225mm below the level intended or shown on the Drawings and then brought to the correct level with good selected earth, quarry dust or sand well rammed into place. Such deepening of pipe trench and filling back shall be treated as a variation under the terms of the Contract. Should the bottom of the trench be inadvertently excavated below the specified level, it shall be brought back at the Contractor's expense to the correct level with good selected earth, quarry dust or sand carefully rammed into place.
- 4.10. The Contractor shall remove any water which collects in the trenches while sewer pipes are being laid. Water encountered shall be disposed of by the Contractor in a manner satisfactory to the S.O..
- 4.11. Excess material from the trench excavation shall be located 600mm (minimum) away from the trench.
- 4.12. When excavating pipe trenches in roadway or other paved surfaces, the Contractor shall first remove all metal, slabs or bricks forming the existing pavement to the width of the trenches and reinstate to the approval of the S.O. after the trenches have been backfilled. The Contractor must make sure that not more than half of the width of a roadway shall be disrupted at any one time during the sewerage work.
- 4.13. Generally, where rock is encountered in the trench excavation, it shall be removed to the approval of the S.O.. Where layer of rock is encountered along the bottom of the excavation, it shall be cut and trimmed to the required level of the trench. All voids formed at the bottom of the trench by the removal of rocks shall be back filled to the required level with Grade 20P concrete or other suitable materials well rammed and compacted all to the approval of the S.O.. Uneven surfaces of rocks at the bottom of the excavation due to the trimming shall be levelled and smoothen with sand blinding to the approval of the S.O..

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- 4.14. If the works required pipe jacking, the Contractor shall provide method statement for S.O.'s review and approval.
- 4.15. The Contractor shall ensure that the work performed is safe and in compliance with Occupational Safety and Health Act (OSHA).

5. Pipes and Fittings

- 5.1. Generally, all sewer pipes unless otherwise shown on the Drawings, shall be vitrified clay pipes (VCP) and fittings complying with *MS 1061* and *SPAN guidelines*.
- 5.2. Sewer pipes used for gravity types of sewer shall be a minimum size of 150mm for service connection and 225mm for public sewer complying with *Malaysian Sewerage Industry Guideline (MSIG)*.
- 5.3. Sewer pipes for force mains (which require pump) shall comply with *Malaysian Sewerage Industry Guideline (MSIG)*. The type and the diameter of pipe shall be of ductile iron (DI) as shown on the Drawings.

6. Joint for Sewer Pipes

- 6.1. Unless otherwise approved by the S.O., joints of flexible and watertight type shall be used on all sewer pipes. The spigot and socket of each pipe shall be cleaned and lubricated before the running of each joint.
- 6.2. Couplings shall be made either of the same materials as the pipe or other material to the approval of the S.O.. The pipes and coupling shall have accurately machined or moulded tapered ends, the internal taper of the couplings matching the external taper of the pipes.

7. Pipe Laying

- 7.1. All pipes shall be laid in compliance with *MS 1228* and in accordance with the sizes, locations, dimensions, grades and other particulars as shown in the Drawings. Each pipe shall be carefully inspected upon arrival at site. Sewer pipes shall be carefully stored. Defective pipes shall be marked and removed from the site forthwith.
- 7.2. Prior to fixing or laying all pipes and fittings shall again be carefully inspecting for damage and only those found to be sound in every aspect shall be fixed or laid. Any pipes, specials, et cetera found to be damaged in any way shall be clearly marked, set aside and removed from the site.
- 7.3. No pipe shall be laid until the trench has been inspected and approved by the S.O..
- 7.4. The pipes shall be gently lowered into the trench by means approved by the S.O.. No pipes shall be rolled or dropped into the trench. The pipe shall be laid true to alignment as shown in the Drawings or as instructed by the S.O.. Interior and exterior of each pipe at the joint shall be thoroughly cleaned before the joint is made. Pipes shall be laid from the downstream end towards the upstream end.

- 7.5. To prevent the entry of earth and other materials into the pipes, the Contractor shall provide and fix suitable stops for efficiently closing all open ends of pipes in the trench while work is not actually being carried out at such open ends.
- 7.6. Socketed pipes shall be laid with the sockets laid against the direction of flow. At every position of pipe joint's, the bedding shall be recessed sufficiently.
- 7.7. Where sewer pipes are to be laid on concrete bed, hunched or encased in concrete surrounds, these shall be as shown on the Drawings and as specified hereinafter.
- 7.8. The gravity sewer pipes shall be laid to the gradients as shown on the Drawings. Where the gradients are not shown in the drawings, the pipe shall be laid to the following gradients as shown in the **Table F1**.

Table F1. Gradient of Sewer Pipes

Size diameter (mm)	Gradient
100	1 : 60
150	1 : 80
225	1 : 110
250	1 : 120
300	1 : 140
375	1 : 170
450	1 : 200

NOTE: Not applicable for force mains.

- 7.9. The invert level of each pipe laid shall be checked during laying and immediately after laying as shown on the Drawings.
- 7.10. Where sewer pipes are laid above ground, they shall be supported at intervals to the details as shown on the Drawings or to the approval of the S.O..
- 7.11. All external underground sewer pipes shall have a minimum cover of 450mm unless otherwise shown on the Drawings.
- 7.12. Sewers pipes shall not be laid above the water pipes. A minimum vertical clearance of 1.0m shall be provided between the crown of a sewer pipe and the bottom of a water pipe. The horizontal clearance between sewer and water pipelines shall be 3.0m where applicable unless otherwise shown on the Drawings.
- 7.13. Other requirements
 - 7.13.1. For easy identification of underground forced sewer mains, the layout shall be planted with marker posts at every 200m length and at every change of pipe direction. Valve chambers provided shall have adequate access for operations and maintenance.

8. Bedding, Haunching and Surround

- 8.1. Concrete bed, haunching and surround shall be of concrete Grade 20P.
- 8.2. Typical bedding is to be used for all pipes under normal site condition unless directed by the S.O..

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- 8.3. Only approved materials are allowed to be used for pipe embedment.
- 8.4. The bedding material shall be placed as soon as possible after the base of the trench is prepared and excess water has been removed.
- 8.5. Whenever the bedding is disturbed, the pipe shall be raised to allow for repair works to be done.
- 8.6. Any pegs or other temporary aids for levelling works shall be removed before any pipe being laid.

9. Connections

- 9.1. The Contractor is to allow and provide for all bends, junctions, traps, gullies as shown on the Drawings or where necessary. If a gully is used, it shall be of the inlet type, and shall be set level on a concrete base, with a riser to finish 50mm above the surrounding surface level, complete with concrete surrounds rendered on all sides and galvanized iron grating. Bends turned up to receive various stacks shall be set on concrete bases to the approval of the S.O.. The bends at the foot of vertical stacks shall be of gentle radius type.
- 9.2. All underground fittings shall be completely surrounded in concrete and the Contractor shall allow for any additional excavation and jointing of pipes.

10. Manholes, Inspection Chambers and Valve Chambers

- 10.1. Manholes, inspection chambers and valve chambers shall be constructed with the sizes shown on the Drawings and *MSIG guidelines*. Unless otherwise shown or specified, all dimensions on the plan shall be the inside measurement.
- 10.2. Manholes and inspection chambers shall be protected by lining/coating to prevent corrosion of the concrete due to sulphide attack. Internal walls shall be either rendered with sulphate resistant cement mortar at least 20mm thick or lined with PVC, HDPE or epoxy coating.
- 10.3. Manholes
 - 10.3.1. Manhole Covers and Frames
 - 10.3.1.1. No manhole shall be constructed on the road and hard standing unless otherwise shown on the Drawings.
 - 10.3.1.2. Manhole covers, and frames shall comply with Drawings and *MSIG guidelines*.
 - 10.3.1.3. All surfaces of manhole's covers and frames supplied shall be coated as stated in *MSIG guidelines* with either:
 - (i) Hot applied bituminous material complying with BS EN 10300 (Steel tubes and fittings for onshore and offshore pipelines. Bitumen hot applied materials for external coating).
 - (ii) Cold applied bituminous material complying with BS 3416 (Specification for bitumen-based coatings for cold application, suitable for use in contact with potable water)



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10.3.2. Manhole Testing (Before Backfilling)

10.3.2.1. Water-tightness test shall be conducted where no visible leakage shall occur between the manhole cover and its seating in the frame when tested in accordance with *MSIG guidelines*.

10.3.2.2. A visual inspection shall be conducted on all the external and internal section of each manhole in accordance with *MSIG guidelines*. Particular attention shall be given to:

- (i) The slope of benching.
- (ii) Joints to pipes.
- (iii) Transitions at entry and exits.
- (iv) Joints in the structure.
- (v) Quality of concrete finish.
- (vi) Water-tightness of manhole covers and surround.

10.4. Inspection Chambers

Unless otherwise as shown on the Drawings, inspection chambers shall be constructed in brickwork in cement mortar (1:2) and the brickwork shall be of clay bricks and constructed on Grade 20P concrete foundation. The thicknesses and sizes shall be as shown on the Drawings. Each inspection chamber shall have channels and open channel junctions of sizes as shown on the Drawings. Concrete benching shall be to a gradient of 1:6 and shall be of Grade 20P concrete finished with 19mm steel troweled water proofed cement and sand (1:3) rendering. The internal sides of the inspection chambers shall be lined with 20mm thick PVC, HDPE or epoxy coating. Externally, the exposed concrete or brick surfaces shall be rendered with 12mm cement and sand mortar (1:3) and terminated 150mm below the finished ground level. All internal angles shall be rounded off. Inspection chambers shall be provided with covers and unless specified or as shown on the Drawings, covers shall be medium duty 450mm x 600mm cast iron covers with air tight frames.

11. Septic Tank and Sewage Treatment System

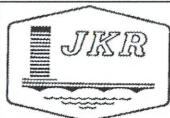
11.1. Septic tank and sewage treatment system shall be constructed as shown on the Drawings and to the approval of the S.O..

11.2. All septic tank and sewage treatment system shall be approved only by SPAN. Prefabricated system by the S.P. shall be from the updated Treasury Contract Circular.

11.3. The quality limit for sewage effluent at the discharge point shall comply with *Environmental Quality Act (EQA) 1974* or latest. The limit for sewage effluent at the discharge point shall comply with Standard A of *EQA* as in **Appendix F/1**.

11.4. Sewage Treatment System

11.4.1. Prior to the installation of the sewage treatment system, the Contractor shall submit to the S.O. the approved drawings duly endorsed by the authority, system design, method of statement including structural, foundation, external work and M & E work duly certified by a

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Professional Engineer with Practicing Certificate (P.E.P.C.) registered with the Board of Engineers Malaysia.

- 11.4.2. Sewage treatment system shall be approved by the Local Authority/Certified Agency before installation at site. The submission approval to the Local Authority/ Certified Agency is as per **Appendix F/1**.
- 11.4.3. The S.P. shall provide specification on construction and installation of the system and during these periods, the Local Authority/Certified Agency will carry out inspection to ensure the compliance of their requirements.
- 11.4.4. Upon the completion of the installation of the sewage treatment system and prior to the issuance of the Certificate of Practical Completion, the Contractor shall submit the following documents to the S.O. for information and record:
 - 11.4.4.1. S.P.'s Guarantee against any defects or damages during a period of five (5) years from the date of Certificate of Practical Completion due to any defect, fault or insufficiency in design, material or workmanship or against any other failure which an experienced Contractor may reasonably contemplate but shall not include normal replacement and maintenance. The terms of the Guarantee shall be such as approved by the S.O..
 - 11.4.4.2. As-built drawings and *Operation Manual and Maintenance (OMM)* of the sewage treatment system certified by a Professional Engineer with Practicing Certificate (P.E.P.C.) registered with the Board of Engineers Malaysia.

12. Connections to the Public Sewerage Line

Connections to the public sewerage line, if any, shall be strictly carried out in accordance with requirements of the *SPAN guidelines* and to the approval of the S.O..

13. Testing for Sewer Pipes Installation

- 13.1. The Contractor shall carry out tests to the sewer pipes installation in accordance with the method of statement and requirements as described hereinafter. The Contractor shall give reasonable notice in writing to the S.O. before such tests to be carried out.
- 13.2. Testing of pipework shall be carried out and wherever possible, such testing shall be carried out from manhole to manhole. Short branch pipes connected to a main sewer between manholes shall be tested as one system with the main sewer. Long branches and manholes shall be separately tested.
- 13.3. Subject to type of pipe and size, pipes shall be subjected to either low water pressure tests, CCTV test or any other test required by the *MSIG guidelines* and to the approval of the S.O..
- 13.4. Low water pressure test
 - 13.4.1. The low water pressure test is commonly used for checking the water tightness of the joints and the integrity of the sewer pipes.
 - 13.4.2. For the water test, the pipe shall be subjected to an internal test pressure of 2m head of water above the crown of the pipe at the higher end but



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not more than 7m at the lower end. Steeply graded pipe shall be tested in such a manner that the above maximum heads are not exceeded.

13.4.3. The test shall be carried out by filling the sewer with water slowly to the required head and bleed air from behind the upstream plugs. Maintain the water head for two (2) hours. Top up the water as required.

13.4.4. Check the leakage at the plugs and the test apparatus during the pressurizing period and the constant pressure holding period. Release the water pressure if leakage occurs. Make the necessary repairs and adjustments before pressurizing again.

13.4.5. Commence the test immediately after the last adjustment of water head in the preceding two (2) hours period.

13.4.6. Add water to maintain the starting water head every five (5) minutes during the test period of 30 minutes. Record the total amount of water required for readjustment.

13.4.7. The test is considered pass when:

13.4.7.1. The loss of water does not exceed 1 litre per hour linear meter per meter internal diameter for VCP and reinforced concrete pipes.

13.4.7.2. There shall be no loss of water for pipe other than VCP and reinforced concrete pipes.

13.4.7.3. There is no visible leakage at the joints for all pipe types.

13.5. Closed-circuit Television (CCTV) Testing (if required)

13.5.1. General

CCTV inspection where required shall be carried out to enable detection of sewer defects such as cracks, deformations, collapse, dislocation et cetera which are not detected by normal means.

13.5.2. Inspection Requirements

13.5.2.1. A CCTV Inspection Contractor registered with SPAN shall be appointed to carry out the inspection works.

13.5.2.2. General Inspection Coverage

Initial CCTV testing and inspection shall be conducted for a minimum 10% random selection of sewer pipes including all manholes and connections in accordance with *SPAN guidelines*.

13.5.2.3. High Risk Areas

(i) 100% CCTV inspection shall be conducted for sewer pipes including manholes laid in the ground with high risk of failure and having the following characteristics:

a) Crossing under buildings, roads, railway, rivers and lakes including their reserve.

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- b) Crossing using pipe jacking method and horizontal drilling method.

13.5.3. Witness

Witness from the SPAN, S.O., consultant and contractor responsible for the construction of sewer shall be present during CCTV inspection.

13.5.4. Documentation

13.5.4.1. Within 7 days after completion of the inspection, the Contractor shall submit to the S.O. the following:

- (i) Two (2) copies of digital records; and
- (ii) One (1) copy of hardcopy report and recommendation

13.5.4.2. The format of the report and documentation shall be in accordance with *MSIG guidelines*. All documents shall be certified and duly signed by the qualified person responsible for the CCTV inspection declaring the authenticity of the recording submitted and done in accordance with the procedure stated in *MSIG guidelines*.

13.5.4.3. Documents shall be submitted to S.O. for the acceptance of completion of works.

- (i) Photographs showing sewer pipe laying during and after construction.
- (ii) Testing certificates.
- (iii) Supervision report.
- (iv) As-built drawings.

13.5.5. During Defects Liability Period

If any blockages, damages, seepages occur to the sewer networks during the Defects Liability Period, the S.O. may require the Contractor to carry out further CCTV inspection to determine the cause within 24 hours.

14. Backfilling

14.1. After the pipes have been tested and approved, the trench shall be backfilled with approved fill material, free from rock and other hard material, well compacted around the pipes up to a level of at least 300mm above the top of the pipes. After this has been approved, the remaining excavation shall be backfilled in 300mm layers, each layer being well compacted. The bedding details and the types of fill material shall in accordance to Drawings and *MSIG guidelines*.

14.2. Trench support shall be progressively removed during the backfill work.

14.3. There shall be at least 300mm of cover over the sewer pipe before light mechanical compaction can commence.



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- 14.4. There shall be at least 1000mm of cover (depth of backfill) over the sewer before heavy mechanical compaction can commence.

APPENDIX F/1

Table F2. Parameter Limits for Sewage and Industrial Effluents

Parameter	Effluent discharge to rivers/stream				Effluent discharge to stagnant water bodies*			
	Standard A		Standard B		Standard A		Standard B	
	Absolute	Design	Absolute	Design	Absolute	Design	Absolute	Design
BOD5	20	10	50	20	20	10	50	20
SS	50	20	100	40	50	20	100	40
COD	120	60	200	100	120	60	200	100
AMN	10	5	20	10	5	2	5	2
Nitrate Nitrogen	20	10	50	20	10	5	10	5
Total Phosphorus	N/A	N/A	N/A	N/A	5	5	10	5
O&G	5	2	10	5	5	2	10	5

- NOTES 1) N/A = not applicable.
 2) All values in mg/l unless otherwise stated.
 3) *Stagnant water bodies refer to enclosed water bodies such as lakes, ponds and slow-moving watercourses where dead zone occurs.
 4) A: Discharge upstream of water supply sources.
 5) B: Discharge downstream of water supply sources.

Table F3. Sewerage Work Submission

No.	Type of System	Allowable Population Equivalent (PE)	Document Requirement
1.	Individual Septic Tank (IST)	6 - 30	<u>Pre-Tender</u> Sewerage Works Application (SWA) <u>Post-Tender</u> Sewerage Works Completion (SWC)
	Network Connection (Single Manhole directly connected to Existing Manhole)		
2.	Small Sewerage Treatment Plant (SSTS)	31 - 149	SWA (Pre-Tender) SWC (Post-Tender)
3.	Sewerage Treatment Plant (STP)	150 – 5,000	Refer Table F4

NOTE : The submission procedure might change due to authority requirement.

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Table F4. Sewerage Work Submission for STP

No.	Item	Description	Submitting Person / Person in Charge
1.	PDC 1	Planning Approval	HODT
2.	PDC 2	(i) Sewer pipe reticulation (ii) SSTS/STP Detail Design	(i) HODT (ii) S.O./Contractor
3.	PDC 3	Detail for Structural Plans and Design Calculations	S.O./Contractor
4.	PDC 4	Detail for Electrical Design and Drawing	S.O./Contractor
5.	PDC 5	Details for Equipment and Material Data Sheets (EMDS)	S.O./Contractor
6.	PDC 6	Notice of Commencement Sewerage Works/Septic Tank Works	S.O./Contractor
7.	PDC 7	Notice of Intermediate Inspection of Sewerage Works	S.O./Contractor
8.	PDC 8	Notice of Final Inspection	S.O./Contractor
9.	PDC 9	Declaration by Competent Person Who Supervised the Septic Tank Works.	S.O./Contractor

NOTES 1) PDC – Planning, Design and Construction

2) The submission procedure might change due to authority requirement.

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1. General

1.1. Cement

1.1.1. The cement, unless otherwise described shall be Ordinary Portland Cement, complying with MS EN 197-1 as specified in SECTION D: CONCRETING or Masonry Cement complying with MS EN 413-1.

1.1.2. White and coloured cement shall be of approved manufacture.

1.2. Plasticiser

The plasticizer shall be of approved manufacture and used strictly in accordance with the manufacturer's recommendation.

1.3. Plasterlime

The plasterlime shall be of approved manufacture and shall comply with BS 890 and shall be applied strictly in accordance with the manufacturer's recommendation.

1.4. Sand

The sand for external rendering, internal plastering and floor screeding shall comply with MS 30 for fine aggregates. Sand for plastering using gypsum shall comply with MS 701.

1.5. Water

Water for mixing shall be clear and free from harmful matter as specified in SECTION D: CONCRETING.

1.6. Mixing

1.6.1. All mixing of mortar for plaster and screed shall be done by machine. Hand mixing shall only be allowed for small quantities and with the approval of the S.O.. Hand mixing shall be done on a clean platform. The water content of the mix shall be only the minimum required to give a workable mix.

1.6.2. Mortar for plaster and screed shall be used up within forty five (45) minutes after mixing.

1.6.3. For gypsum plaster, mixes shall be used up within one (1) hour after mixing.

1.6.4. No remaking of the mix shall be permitted thereafter.

1.7. Surface Preparation

1.7.1. Where possible cement paving, screeding and rendering on concrete surface shall be laid while the concrete is still green that is after the final set but not later than twenty-four (24) hours of laying concrete. The concrete surfaces shall be brushed with a stiff broom before it has hardened to remove laitance and give a roughened surface. Hardened concrete surfaces shall be thoroughly hacked to form a key to the approval of the S.O..



**SECTION K: PLASTERING,
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1.7.2. Before any paving, screeding or rendering is applied, all surfaces shall be thoroughly cleaned and wetted and be in damp state at the time the paving, screeding or rendering is applied.

1.7.3. Where plastering and rendering are to be applied in several coats, the surface of each preceding coat shall be scratched while still green to form key for the subsequent coat.

1.8. Bay

Paving and screeding shall be laid in alternate bays. On hardened concrete bases, each bay shall not exceed 15m². On the surface where the concrete is still green, each bay shall not exceed 30m². Where bays are not square, the ratio of the length between adjacent sides of each bay shall be approximately 1:1.5. The joints in paving screed shall coincide as nearly as possible with joints in the base.

1.9. Curing and Protection

Unless otherwise specified hereinafter, the screeds shall be cured for three (3) to seven (7) days after laying, and protected from rapid drying by covering with polyethylene sheets or tarpaulins and shall also be protected from any damage.

1.10. Making Good

1.10.1. Defective screeds shall be cut out and made good with fresh screed and sufficient time shall be allowed for the screed to dry prior to the laying of the floor finish.

1.10.2. Defective plastering and rendering shall be made good by cutting out the defective part to a rectangular shape, and the edges shall be undercut to form dovetail-key and finished flush with the surrounding work.

1.11. Samples

The Contractor shall supply the S.O. with samples of materials and/or sample of finished work for approval. Approved samples shall be kept at site for reference.

1.12. Tools

Proper tools shall be used for all scribing, scoring, splicing, smoothing edges, making angles et cetera of tiles, bricks and others so as to produce neat and fit joints.

1.13. Types of Finishes

The appropriate type of finishes to be used in the various locations of the works shall be as shown on the Drawings or as tabulated in the schedule of finishes. Unless otherwise shown on the Drawings or described in the B.Q., the finishes and their dimensions shall be as specified hereinafter.

1.14. Cornices and Angles

1.14.1. The cornices and moulded work shall be clean and accurately formed to the section shown on the Drawings. All mitres, stops and enrichments and moulding shall follow the details as shown on the Drawings, all to the approval of the S.O..

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- 1.14.2. All rounded and moulded angles shall be of the same material mix as the adjacent finish. For narrow reveal, splays and returns under 30mm wide, Class D plaster to BS 1991 shall be used.

2. Plaster Work

2.1. Plain Plaster

- 2.1.1. Plain plaster shall consist of one (1) part masonry cement to six (6) parts sand by volume. Where CEM 1 is used, plasticizer or plasterlime shall be added to the mix in accordance with the manufacturer's instruction.
- 2.1.2. The plaster shall be applied in two coats generally to a total thickness of 20mm to brickwall and 12mm to soffits, beams, columns, brick-walls and other smooth surfaces.
- 2.1.3. The first coat shall consist of rough plastering to a thickness of 10mm for 20mm plainface, and 6mm for 12mm plainface. The second coat shall be finished with a steel trowel for internal surfaces and with a straight-edged wood float for external surfaces.
- 2.1.4. All external walls, unless otherwise specified shall be finished with rough surface cement plastering.
- 2.1.5. All internal walls, unless otherwise specified shall be finished with smooth skimmed surface cement plastering.

2.2. Granolithic Plaster

- 2.2.1. Granolithic plaster shall consist of by volume, two (2) parts cement, one (1) part sand, five (5) parts granite chipping passing 6mm mesh and retaining upon 3mm mesh, applied in two (2) coats to a total thickness of 10mm to a backing coat, finished smooth with wood float.
- 2.2.2. The backing coat shall consist of 12mm thick plain plaster as described herein before. The finished surface shall be brushed lightly to achieve the required texture after it has reach initial set.
- 2.2.3. Shanghai plaster shall consist of two (2) parts approved coloured cement, one (1) part sand and five (5) parts of selected lime-stone chipping passing 6mm mesh and retaining upon 3mm mesh by volume applied in two (2) coats to a total thickness of 10mm to the backing coat, finished smooth with wood float.
- 2.2.4. The backing coat shall consist of 12mm thick plain plaster as described hereinbefore. The finished surface shall be brushed lightly to achieve the required texture after it has reached initial set.

2.3. Shanghai Plaster

- 2.3.1. Shanghai plaster shall consist of two (2) parts approved coloured cement, one (1) part sand and five (5) parts of selected lime-stone chipping passing 6mm mesh and retaining upon 3mm mesh by volume applied in two (2) coats to a total thickness of 10mm to the backing coat, finished smooth with wood float.

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- 2.3.2. The backing coat shall consist of 12mm thick plain plaster as described hereinbefore. The finished surface shall be brushed lightly to achieve the required texture after it has reached initial set.

2.4. Textured Finish Plaster

- 2.4.1. Textured finish plaster shall consist of a 20mm thick backing coat of plain plaster as described hereinbefore ruled into a plain and even surface and a finishing coat as on the Drawings and described hereinafter.
- 2.4.2. For rough cast finish, the mix shall consist of selected cement, sand and aggregate in the proportion to give the required finish to the approval of the S.O..
- 2.4.3. For Tyrolean finish, the mix shall consist of one (1) part selected coloured cement, and two (2) parts sand by volume applied to the backing coat by means of a Tyrolean machine in accordance with the manufacturer's recommendation. The finish shall be built up in three (3) layers to a total thickness of not exceeding 6mm. Each coat shall be allowed to dry before the application of a subsequent coat.
- 2.4.4. For pebble-dash finish, the dry pebble for the finish shall be thrown onto the backing coat while the latter is still wet. The pebbles to be used shall be clean and of size and quality approved by the S.O..
- 2.4.5. For pebble-wash finish, the selection of pebbles shall be clean and of size, colour and quality approved by the S.O.. The selected pebbles shall be mixed with plain plaster and applied while it is still wet in a single coat generally to a total thickness of 12mm to a backing coat. The applied surface is tapped to set the pebbles in position. The pebbles shall be brushed and washed lightly to achieve the required texture after it has reached the initial set. Loose pebbles shall be placed back in position and by tapping the surface to set.

2.5. Gypsum Plaster

- 2.5.1. Gypsum plaster, or plaster of Paris, is produced as a proprietary dry plaster powder and when it is mixed with water, it re-forms into gypsum. The ratio of the gypsum powder mix to the amount of water shall be as recommended by the manufacturer.
- 2.5.2. The setting of unmodified plaster starts about ten (10) minutes after mixing and is complete in about forty-five (45) minutes; but not fully set for seventy two (72) hours. The total gypsum plaster thickness for vertical and horizontal masonry and concrete surfaces shall be 16mm.
- 2.5.3. The resulting paste hardens as it cools, forming a relatively soft, pliable finished product. Unlike mortar or cement, which dries much harder, gypsum plaster can be sanded or otherwise manipulated once cured, making it a good option for aesthetic, non-load bearing purposes.
- 2.5.4. Gypsum plaster is renowned for its use as an art medium and is often use in conservation works especially for decorative embellishment. It is also used to simulate the appearance of surfaces of wood, stone or metal.

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2.6. Lime Plaster

- 2.6.1. Typical lime plaster mix shall consist of one (1) part lime putty to three (3) parts of washed, well graded sand. The lime putty is mixed at one (1) to three (3) ratios, creates a compact plaster.
- 2.6.2. Water is added to produce slaked lime (calcium hydroxide), which is sold as a wet putty or white powder. Water is added to the white powder mix as per the manufacturer's recommendation.
- 2.6.3. Water is added to the proprietary lime plaster mix as per the manufacturer's recommendation to form a workable paste prior to use. Lime plaster is used as an alternative to or in combination with ordinary Portland cement. It is commonly used for decorative works such as mural paintings on walls, ceilings or any type of flat surface.
- 2.6.4. Once the water is mixed it shall be stored in an air-tight container. Once exposed to the atmosphere, the calcium hydroxide turns back into calcium carbonate, causing the plaster to set.

2.7. Barium Plaster

The plastering of internal surfaces of X-Ray room walls shall be of barium plaster consisting of one (1) part cement, one (1) part barytes (barium sulphate) fines and three (3) parts barytes sand by volume.

2.8. Plaster to Sides of Manholes, Inspection Chambers and Septic Tanks

Plastering to sides of manholes, inspection chambers and septic tanks shall be as specified under SECTION F: SEWERAGE.

3. Paving Work

3.1. Cement Paving

- 3.1.1. Unless otherwise shown on the Drawings or described in the B.Q., cement paving shall be 20mm thick consisting of one part cement to three parts sand by volume. The paving shall be thoroughly rammed within 30 minutes of laying and trowelled smooth after it has stiffened sufficiently to prevent laitance being brought to the surface. Paving to apron shall finish to a slight fall towards surface drains.
- 3.1.2. Unless otherwise shown on the Drawings or described in the B.Q., skirtings shall be formed to a height of 150mm and thickness of 20mm, coved at bottom and rounded at top.

3.2. Granolithic Paving

- 3.2.1. Granolithic paving shall be 20mm thick, consisting of two (2) parts cement and five (5) parts granite chipping passing 6mm mesh and retained upon 3mm mesh by volume.
- 3.2.2. The chipping shall be washed and free from dust. The paving shall be trowelled smooth to proper level or fall where appropriate. After initial set the surface shall be brushed lightly to achieve the required textured finish.



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3.2.3. Unless otherwise shown on the Drawings, granolithic skirting shall be 100mm high and 20mm thick, coved at bottom and slightly rounded at top.

3.2.4. Unless otherwise shown on the Drawings or described in the B.Q., the edge of threshold and treads of concrete stairs shall be finished with 150mm x 75mm x 12mm thick vitreous non-slip nosing tiles laid lengthwise bedded and pointed in 1:3 cement and sand mortar. The sides of open stringers shall be finished with granolithic plaster worked to profile of treads and risers to the approval of the S.O..

3.3. In-situ Terrazzo

3.3.1. In-situ terrazzo shall consist of one (1) part approved coloured cement and three (3) parts selected limestone chipping passing through 12mm mesh and retained upon 3mm mesh by volume.

3.3.2. The terrazzo topping shall be 20mm thick laid on 20mm thick cement and sand (1:3) screed. The concrete base to receive the screed shall be thoroughly cleaned and wetted.

3.3.3. While laying the screed, aluminium or brass strips of size 32mm wide x 3mm thick shall be set in vertically on edge into the screed to form panels. Each panel shall not exceed 4m² with top edges of the strips standing sufficiently high to finish flush with the finished terrazzo floor level. The terrazzo shall be trowelled to a dense even finish.

3.3.4. When sufficiently hard but not less than two (2) days after being laid it shall be rubbed down to a smooth surface by means of carborundum stone.

3.3.5. Tile impregnator then shall be applied strictly in accordance to the manufacturer's recommendation onto the terrazzo surface to prevent future staining.

3.3.6. Unless otherwise shown on the Drawings or described in the B.Q., the edge of the threshold and treads of concrete stairs shall be finished with 150mm x 76mm x 12mm vitreous non-slip nosing tiles of approved colour laid lengthwise bedded and pointed. The sides of open stringers shall be finished with in-situ terrazzo working to profile of treads and risers to the approval of the S.O..

3.4. Waterproof Paving to Roof Slabs

Waterproof paving to roof slabs shall be as specified under SECTION D: CONCRETING.

3.5. Precast Concrete Paving

3.5.1. Unless otherwise shown on the Drawings or described in the B.Q., precast concrete paving slabs shall be of size 600mm x 600mm x 50mm thick each and made of 1:2:4-20mm concrete reinforced with 'A6' fabric reinforcement to MS 145. The top surfaces of slab shall be brushed with stiff broom or wire brush after the initial set to give a rough finish.

3.5.2. Paving slabs shall be laid to the pattern as shown on the Drawings or approved by the S.O.. The slabs shall be bedded on 25mm thick semi-dry cement and sand (1:3) screed laid on 100mm thick properly compacted and blinded hardcore.

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3.5.3. The joints between the paving slabs shall be 20mm wide filled with cement mortar (1:3) and raked to a depth of 6mm.

3.6. Interlocking Concrete Paving

3.6.1. Taking the existing sub-grade/soil conditions and the anticipated traffic loading into consideration, an adequate thickness of well compacted base course must be provided to ensure good pavement performance. Unless otherwise specified, existing bitumen or concrete surfaces need not be removed and can act as good sub-grade.

3.6.2. Interlocking concrete paving blocks shall comprise of segmental interlocking concrete paving units laid on minimum 30mm thick sand bedding course.

3.6.3. A layer of sand should be loosely spread and screed to a uniform thickness such that its compacted thickness would be approximately 30mm thick. It is important that the sand layer remains undisturbed prior to the laying of blocks.

3.6.4. The grade of the concrete and thickness of the paving blocks shall be as detailed in the Drawings.

3.6.5. Concrete edge restraints shall be provided at the perimeter of the pavement to ensure the paving blocks are tightly abutted and to separate areas of different laying pattern.

3.6.6. The paving blocks are placed side by side on the sand bed with gaps of approximately 2mm between adjoining blocks. The gap between the paving blocks shall be filled with fine sand of different grading to that required for the bedding sand.

3.6.7. The paving blocks can be cut to fit edges and awkward corners. The pavement which has been laid shall be compacted with a hand-guided plate vibrator until it is firmly embedded in the sand layer.

3.6.8. The general specification of the precast concrete paving blocks shall comply with MS 1380.

3.7. In-situ Concrete Paving Footpath

3.7.1. In-situ concrete paving shall consist of 75mm thick concrete of 1:3:6-20mm mix by volume as specified in Section D: CONCRETING, laid on 100mm thick properly compacted and blinded hardcore to panels as shown on the Drawings or as approved by the S.O..

3.7.2. The concrete shall be well compacted and floated with a wooden float to smooth and even finish. After the concrete has achieved the initial set, the surface shall be brushed with stiff broom or wire brush to give a rough finish.

3.7.3. The joints between the panels shall be filled with approved cold-poured polyurethane joint filler.

3.8. Brick Paving

3.8.1. Bricks for paving shall be of semi-vitreous bricks 225mm x 75mm x 50mm thick of approved quality and colour.

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- 3.8.2. The bricks shall be soaked as specified in SECTION E: WALL SYSTEM before laying and shall be laid flat on 25mm semi-dry cement and sand (1:3) screed with 6mm spacing to the pattern as shown on the Drawings or as approved by the S.O..
- 3.8.3. The screed shall be laid on 75mm thick concrete (1:3:6-19mm) base founded on properly compacted and blinded 100mm thick hardcore. The joints shall be filled with cement mortar (1:2) and finish flush.

4. Tiling Work

4.1. Ceramic Tile

- 4.1.1. In general, all ceramic tiles manufactured locally are using the 'dry-pressed' manufacturing process and the ceramic tiles are categorized based on their water absorption rate as defined in the MS 1294, MS ISO 13006 or the International Standard Organization (ISO) Standards (ISO 13006).
- 4.1.2. The methods and materials used in the installation of ceramic tiles under normal internal conditions shall comply with MS 1294-1 and the installation of ceramic tiles under normal external conditions shall comply with MS 1294-2.
- 4.1.3. The installation of tiling works requires skilled operatives working safely using protective clothing and equipment where appropriate; workmanship shall comply with BS 8000-11 for ceramic tiles.
- 4.1.4. Unless otherwise shown on the Drawings, ceramic tiles to internal and external floor for heavy duty areas shall be vitrified with water absorption less than 0.5% [Classification Group BIa] also referred to as heavy duty tiles shall comply with MS ISO 13006 and the size shall be tiles 300mm x 300mm.
- 4.1.5. Unless otherwise shown on the Drawings, ceramic tiles to internal floor areas under normal condition shall be vitrified with water absorption less than 3% [Classification Group BIa or, BIb] shall be vitreous hard wearing non-slip glazed complying with MS ISO 13006 and the tile size shall be 300mm x 300mm.
- 4.1.6. Unless otherwise specified in the Drawings or described in the B.Q., ceramic tile skirting shall match the flooring tiles and shall be 300mm x 100mm laid lengthwise on cement and sand (1:3) screed as described. All angles to skirting shall be neatly cut to fit all abutments.
- 4.1.7. Unless otherwise specified in the Drawings, accessories such as skirting (bull nose or cove base), step tiles, step nosing, edging strips, angle tiles (internal and external), etc. shall be of an approved type standard manufacture from the same material to match flooring. Unless otherwise shown on the Drawings, skirting shall be 100mm high, stair nosing shall be minimum 20mm wide laid full length of the treads and of bull nose profile, and edging strips 25mm wide.



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- 4.1.8. Unless otherwise shown on the Drawings, ceramic tiles for internal walls shall be scuff-resistant glazed vitrified tiles with water absorption less than 6% [Classification Group BIb or BIIa] shall comply with MS ISO 13006. Unless otherwise specified, the minimum tile size shall be of 300mm x 300mm.
- 4.1.9. Unless otherwise shown on the Drawings, ceramic tiles for external walls up to first floor height shall be scuff-resistant glazed vitrified tiles with water absorption less than 3% [Classification Group BIa or BIb] and shall comply with MS ISO 13006. The tiles maximum size shall be of 300mm x 300mm.
- 4.1.10. Unless otherwise shown on the Drawings, ceramic tiles for external walls used above first floor height shall be scuff-resistant glazed vitrified tiles with water absorption less than 0.5% [Classification Group BIa] shall comply with MS ISO 13006. The tiles maximum size shall be of 300mm x 300mm.
- 4.1.11. Unless otherwise specified in the Drawings, all ceramic tiles for walls and floors shall be of 1st Grade or Grade A with approved surface finish & texture, colour and manufacture.
- 4.1.12. Ceramic tiles used for walls which have high water absorption characteristics shall be bedded with approved tile adhesive to the manufacturer's specification on 20mm thick cement and sand (1:3) render which has sufficiently cured. The tiles shall be laid with 2mm to 3mm gap and all joints shall be filled with approved tile proprietary grout to match. Exposed edges of tiling shall be finished with rounded on edge tiles. Ceramic tiles of Classification Group BIII with water absorption >10% shall not be used under any conditions.
- 4.1.13. Porous tiles shall be soaked before fixing to prevent rapid suction and subsequent failure in bonding with the mortar bed. Tiles should be removed from their cartons and completely immersed in clean water for at least thirty (30) minutes. After soaking, they should be stacked tightly together, with the end tiles face outwards, on a clean surface and allowed to drain. Tiles classified in MS ISO 13006 in Groups BIIb and BIII require this saturation treatment; soaking of tiles of Group BIa, BIb and BIIa is unnecessary, refer to MS 1294-1.
- 4.1.14. Unless otherwise instructed by the manufacturer, the tiles should be fixed dry. All tile installation shall use approved type cementitious adhesives. The selection and application of ceramic tile adhesives for internal and external tile installations on walls and floors shall comply with MS ISO 13007-1 and MS 1294.
- 4.1.15. Grouts used shall be of proprietary grout with good working characteristics, low shrinkage and good adhesion to edges of the tiles complying with MS ISO 13007-3. The selection of the type of grout shall be to the manufacturer's recommendation. Sanded grout shall be used for tile joint width of 4mm or more. Non-sanded grouts shall be used for installation in joints of 4mm width or less. The application of ceramic tile grouts for internal and external tile installations on walls and floors shall comply with MS 1294.
- 4.1.16. Tiles shall be laid with joints not exceeding 3mm wide to be filled with coloured grout. Admixtures shall be used in accordance with the manufacturer's recommendation and they shall not be added to the proprietary grout unless approved by the grout manufacturer. Admixtures



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are added for improving the resilience and reducing the water permeability of the hardened grout mortar.

4.1.17. Unless otherwise shown on the Drawings, movement joints should be located in the tiles installation to coincide and be continuous with all existing structural movement joints, although they are actually formed as separate joints isolated by suitable thickness of back-up material.

4.1.18. Unless otherwise shown on the Drawings, the movement joints with consultation with the designers shall be positioned at the following locations:

4.1.18.1. Over existing and/or structural movement joints;

4.1.18.2. Where tiling abuts other materials;

4.1.18.3. Where tiling is continuous across junctions of different background materials;

4.1.18.4. In large tile areas, at internal vertical corners and at 3m to 4.5m centers horizontally and vertically; and

4.1.18.5. Where stresses are likely to be concentrated, for example at changes of alignment.

4.1.19. Unless otherwise specified in the Drawings, joint sealant materials for movement joints shall be selected and applied in accordance with the guidance given BS 6213.

4.1.20. Where large format ceramic tiles are required for walls and to be fixed above first floor height, they shall be secured by mechanical means. When the thickness of tile exceeds 12.5mm and the weight of tile is more than 32kg/m², mechanical fixing is recommended. All mechanical fixing methods shall be certified by a competent Professional Engineer and to the approval of the S.O..

4.1.21. Pull-out test shall be carried out after twenty-eight (28) days installation for every maximum area 500m² or on the tiles that are suspected of hollowness, at the instruction of the S.O..

4.1.22. Adhesion strength of the pull-out test shall exceed 0.5 N/mm² for walls with cement: sand mortar bedding or 1.0N/mm² with adhesive bedding. Pull-out test shall be carried out in accordance to MS ISO 13007-2 and as recommended by the tile adhesive manufacturer. Location and number of test point for the pull-out test shall be as requested by the S.O..

4.2. Precast Terrazzo Tiles

4.2.1. Unless otherwise shown on the Drawings, precast terrazzo tiles of an approved manufacture shall be 100mm x 300mm x 20mm thick machine-pressed tiles comprising of 6mm limestone aggregate and coloured cement.

4.2.2. The tiles shall be soaked prior to laying and shall be laid butt jointed on 20mm thick semi-dry cement and sand screed. The laying shall be done while the screed is still green. All joints between the tiles shall be grouted with coloured cement to match.

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- 4.2.3. The tiles shall be rubbed down to a smooth surface after a minimum of two days or laying by means of Carborundum stone. Tile impregnator shall then be applied strictly in accordance with the manufacturer's recommendation on to the terrazzo surface to prevent future staining.
- 4.2.4. Unless otherwise stated in the Drawings, nosing and edging tiles to edges of flooring and treads of concrete stairs shall be of an approved type and to match with the flooring accessories such as skirting (bull nose or cove base), step tiles, step nosing, edging strips, angle tiles (internal and external), etc. shall be of an approved type from the same material to match flooring.
- 4.2.5. Unless otherwise shown on the Drawings, skirting shall be 100mm high, stair nosing shall be minimum 20mm wide laid full length of the treads and of bull nose profile, and edging strips 25mm wide.
- 4.3. Mosaic
- 4.3.1. Unless otherwise shown on the Drawings, mosaic tiling to floors shall be semi-glazed tiles and shall be of an approved colour and manufacture.
- 4.3.2. Unless otherwise shown on the Drawings, mosaic tiling to walls shall be fully glazed tile and shall be of approved colour and manufacture.
- 4.3.3. Unless otherwise shown on the Drawings or described in the B.Q., all skirting shall be 100mm high to match floor tiling. The tiles at the bottom of the skirting shall be set at 45° to the horizontal and the top finished with cove tiles or edging strips to manufacturer's recommendation. The tiles required to form angles to skirting shall be neatly cut and fit to all abutments.
- 4.3.4. Mosaic tiling to floors shall be bedded on 20mm thick semi-dry cement and sand (1:3) screed, laid on the concrete base which has been thoroughly cleaned and wetted.
- 4.3.5. Mosaic tiling to walls shall be evenly buttered with cement:sand mortar before bedding on 20mm thick cement and sand (1:3) screed which has sufficiently cured. Alternatively the tiling shall be bedded with approved proprietary adhesive to manufacturer's recommendation onto the cement screed.
- 4.3.6. During bedding, the surface of the mosaic shall be checked and any unevenness shall be made good. Any misaligned or defective tiles shall be adjusted or replaced. All joints shall be grouted with approved proprietary grout or coloured cement and sand grout to match. The tiling shall be allowed to mature under damp condition for at least four (4) days before cleaning down.
- 4.3.7. The selection and application of tile adhesives for internal and external mosaic installations on walls and floors shall comply with MS ISO 13007-1. The selection and application of tile grouts for mosaic installations on walls and floors shall comply with MS ISO 13007-3.
- 4.4. Quarry Tiles
- 4.4.1. Quarry tiles shall be of non-slip type 150mm x 150mm x 12mm thick complying with MS 1091. The tiles shall be bedded on 20mm thick semi-dry cement and sand (1:3) screed with joints about 2mm wide, laid on the



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concrete base which has been thoroughly cleaned and wetted. All tiles shall be soaked overnight before laying.

- 4.4.2. All skirting shall be 100mm high with rounded top edge to match the tiles flooring. The tiles required to form angles to skirting shall be neatly cut and fit to all abutments.

4.5. PVC Tiles/Sheets

- 4.5.1. PVC tiles or sheets shall be of approved type, pattern and colour. PVC tiles or sheets are to be of non-slip type and shall comply with MS 602. Tiles shall be 250mm x 250mm x 2mm thick minimum. Sheets shall be 2 m roll width x 2mm thick minimum.
- 4.5.2. Accessories such as skirting, stair nosing, edging strips etc. shall be of the same manufacture from similar material to match flooring. Unless otherwise described skirting shall be 100mm high; stair nosing shall be 60mm wide laid full length of the treads and of bullnose profiles; and edging strips shall be 25mm wide.
- 4.5.3. The final appearance and performance of the floor covering will be determined and affected, in part, by the condition of the subfloor. It is essential that all subfloors are solid, smooth, flat, even, permanently dry, clean and free from all foreign materials such as dust, paint, grease, oils, solvents, curing and hardening compounds, sealers, asphalt and old adhesive residue. The dryness of the subfloor is of the utmost importance and it must be determined by testing the moisture level in the subfloor. Enough drying time must be allowed in the building program to achieve a relative humidity (RH) reading of below 75% or in compliance to the manufacturer's RH recommendation.
- 4.5.4. Installation area for the flooring must be clean, fully enclosed, weathertight and maintained at uniform temperature at least forty-eight (48) hours prior to, during and after the installation is completed.
- 4.5.5. The tiles or sheet shall be laid and jointed on 20mm thick cement and sand (1:3) screed subfloor with an approved proprietary waterproof adhesive strictly in accordance with manufacturer's recommendation. The screed shall be finished smooth with a steel trowel to an even surface and shall be dry, clean and free from dust and sand before laying the tiles and sheets. A self-leveling sub-floor smoothing compound shall be applied on uneven surfaces to provide a quality finish to receive the floor coverings or as recommended by the manufacturer.
- 4.5.6. For ground floor or basement areas, an approved damp proof membrane shall be installed prior to the application of sand/cement screeds.
- 4.5.7. Adhesive; when not specified otherwise, type to be as recommended and approved by the PVC tile/sheet covering manufacturer. Use acrylic adhesive/solvent based adhesive on dry, dustless sub floors in areas not subjected to spillages. Use two parts polyurethane adhesive on the sub-floors in areas subject to excessive spillage of water. Floors must be kept free of traffic until the PU adhesive is fully set, recommended minimum eight (8) hours.
- 4.5.8. The floor coverings should be adhered in acrylic adhesive or approved equivalent. All joints on the floor must be cut in, grooved and hot welded. Cove up skirting shall be 100mm height, to enable the self-coving of the floor covering. In areas that are not subjected to spillages of water onto



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the wall surfaces, the top of the covering is to be finished with PVC capping seal. This should be adhered to the wall surface approximately 100mm-150mm high prior to self-coving floor covering. The material is then cut and fitted into the capping seal, capping seal should be adhered with contact adhesive.

- 4.5.9. In areas that are subjected to spillages of water onto the wall surfaces, the top of the covering is finished with aluminium trimming, a specially designed section for forming water-tight joint in conjunction with the surface of the wall finishes. It is recommended that the aluminium trim to be screwed on the wall surface.
- 4.5.10. Where area of excessive spillages of water, it is important that a watertight joint be achieved at junction of drains, gratings, access covers etc.
- 4.5.11. On completion, the flooring shall be well-cleaned and treated or polished in accordance with the manufacturer's recommendation.

4.6. Timber Strip Flooring

- 4.6.1. Unless otherwise shown on the Drawings, timber strip flooring shall be ready-made, laminated three (3) ply timber strips or floorboards of approved manufacture. The timber species for use in timber strip flooring shall be as specified in SECTION H: TIMBER, JOINERY AND IRONMONGERY.
- 4.6.2. The flooring shall be laid to the pattern as approved by the S.O., on 20mm thick cement and sand (1:3) screed with an approved waterproof adhesive applied in accordance with manufacturer's recommendation. The screed shall be finished smooth with a steel trowel to an even surface and it shall be dry, clean and dust free before laying the timber strip flooring. After the adhesive has set, the timber strip flooring shall be sanded to a true smooth and even surface using suitable sanding machine. Any misaligned or defective timber strip shall be adjusted or replaced.
- 4.6.3. Unless otherwise shown on the Drawings or described in the B.Q., skirting to timber strip flooring shall consist of 100mm x 12mm thick wrot timber skirting rounded at the top, and fixed to the wall or column using 38mm masonry nails spaced approximately at 600mm centres in two (2) rows 26mm away from the top and bottom edges. The nails shall be punched below the surface and the holes filled with approved putty. Any jointing of the skirting shall use splayed butt joints.
- 4.6.4. The face edges of the flooring shall be lined with wrot timber edging to match. The edging strips shall be 38mm wide approximately x 12mm thick fixed to the base using adhesive as specified hereinbefore, projecting 12mm from the finished sides of floor slabs. Edging strips shall be jointed using glued splayed butt joints.
- 4.6.5. After sanding the flooring shall be cleaned, any gap sealed with approved sealer, stained and finished with three (3) coats of approved polyurethane paint. Each coat shall be applied strictly in accordance with the manufacturer's recommendation.

4.7. Parquet Tile Flooring

- 4.7.1. Unless otherwise shown on the Drawings, parquet tiles shall be ready-made 120mm x 120mm x 10mm thick consisting of 120mm x 25mm x 10mm pressure treated kempas, keruing or other approved medium hardwood timber battens. The timber species for use in parquet flooring shall be as specified in SECTION H: TIMBER, JOINERY AND IRONMONGERY WORKS.
- 4.7.2. The flooring shall be laid to the pattern as approved by the S.O., on 20mm thick cement and sand (1:3) screed with an approved waterproof adhesive applied in accordance with manufacturer's recommendation. The screed shall be finished smooth with a steel trowel to an even surface and it shall be dry, clean and dust free before laying the parquet flooring. After the adhesive has set, the parquet flooring shall be sanded to a true smooth and even surface using suitable sanding machine. Any misaligned or defective parquet shall be adjusted or replaced.
- 4.7.3. Unless otherwise shown on the Drawings or described in the B.Q., skirting to parquet flooring shall consist of 100mm x 12mm thick wrot timber skirting rounded at the top, and fixed to the wall or column using 38mm masonry nails spaced approximately at 600mm centres in two (2) rows 26mm away from the top and bottom edges. The nails shall be punched below the surface and the holes filled with approved putty. Any jointing of the skirting shall use splayed butt joints.
- 4.7.4. The face edges of the flooring shall be lined with wrot timber edging to match. The edging strips shall be 38mm wide approximately x 12mm thick fixed to the base using adhesive as specified hereinbefore, projecting 12mm from the finished sides of floor slabs. Any edging strips shall be jointed using glued splayed butt joints.
- 4.7.5. After sanding the flooring shall be cleaned, any gap sealed with approved sealer, stained and finished with three (3) coats of approved polyurethane paint and sanding between coats. Each coat shall be applied strictly in accordance with the manufacturer's recommendation. The required type of flooring finish shall be to S.O.'s approval.

4.8. Granite Slabs

- 4.8.1. Unless otherwise shown on the Drawings, granite slabs for flooring shall be 600mm x 600mm x 25mm thick shall be bedded with cement: sand mortar or alternatively with 9mm thick approved proprietary tile adhesive onto 25mm thick cement and sand (1:3) screed as described hereinbefore. The slabs shall be laid butt-joint. Any gap shall be filled with approved mixture of adhesive and grout powder. After grouting, the surface then shall be polished, buffered and finished with a layer of impregnator.
- 4.8.2. If used in wet or exposed areas, or on ground floor, waterproofing system shall be installed prior to the laying of granite slabs. The floors or the exposed wet areas shall be applied with two coats of approved waterproof coating.
- 4.8.3. The reverse side of granite slabs in contact with the ground floor or exposed wet wall surface shall be applied with approved waterproof coating.

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4.9. Marble Slab

- 4.9.1. Unless otherwise shown on the Drawings, marble slabs for flooring shall be 600mm x 600mm x 25mm thick shall be bedded with cement: sand mortar or alternatively with 9mm thick approved tile adhesive onto 25mm thick cement and sand (1:3) screed. The slabs shall be laid butt-joint. Any gap shall be filled with approved mixture of the adhesive and grout powder. After grouting, the surface then shall be polished, buffered and finished with a layer of impregnator.
- 4.9.2. If used in wet or exposed areas, or ground floor, waterproofing system shall be installed prior to the laying of marble slabs. The floors or the exposed wet areas shall be applied with two coats of approved waterproofing coating.
- 4.9.3. The reverse side of marble slabs in contact with the ground floor or exposed wet wall surface areas shall be applied with approved waterproof coating.

4.10. Vinyl

- 4.10.1. Vinyl sheet or vinyl tile flooring shall be high performance homogenous-heterogeneous type and specified in accordance to the following type and performances:
 - 4.10.1.1. Vinyl Type 1: Heavy duty to withstand heavy traffic of trolleys.
 - 4.10.1.2. Vinyl Type 2: Anti-static to cater for aseptic and dust free environment.
 - 4.10.1.3. Vinyl Type 3: Anti-slip to cater for wet areas as well as slippery areas.
 - 4.10.1.4. Vinyl Type 4: Heavy duty, fully flexible and resilient for sports flooring and children play areas (Designed specially that combines tough wear layer with a resilient backing for comforts and under floor sound deadening properties and attractive good looks).
 - 4.10.1.5. Vinyl Type 5: High Resistant to Chemical.
- 4.10.2. All joints to be hot welded and matching coloured. The skirting to the vinyl floor must be of the same vinyl to 150mm high with approved cove former and finished with matching coloured UPVC capping strips with approved recommended acrylic adhesive strictly to manufacturer's method of installation.
- 4.10.3. Vinyl sheet shall have Polyurethane Reinforced (PUR) surface treatment for easy maintenance.
- 4.10.4. Colours and patterns of vinyl flooring shall be to the PD's concurrence. Approved metal dividing clips shall be installed when vinyl flooring meets with other floor finishes.
- 4.10.5. Prior to the application of vinyl floor covering, the contractor shall ensure that the floor substrate has a perfectly even surface, dry and free from. Vinyl sheets shall be installed onto floor flatness tolerance of not more than $\pm 3\text{mm}$ for every 3 m length floor area ready to receive vinyl flooring. Self-levelling compound of approved quality to be installed before



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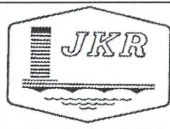
finishing with vinyl flooring. The flatness tolerance shall strictly adhere to manufacturer's method of installation.

- 4.10.6. Types of adhesive with low VOC shall be used strictly in accordance with the recommendation of the manufacturer of the proposed type of vinyl flooring.
- 4.10.7. Laying of all type's vinyl flooring shall only be carried out by specialists from the approved supplier of the material.
- 4.10.8. The contractor shall incorporate damp proof treatment before laying the vinyl flooring to ensure that the floor slab/ or base screed is free from rising damp.
- 4.10.9. For waiting areas, corridors and other specific areas, the vinyl floors shall be completed with designed motifs, graphics and interplay of colours to the P.D.'s concurrence.
- 4.10.10. Stainless steel floor trap and gratings provided in vinyl flooring area shall be of special approved type that is suitable for vinyl flooring and shall be installed to manufacturer's specification and instructions.
- 4.10.11. Approved anti-slip nosing strips shall be used wherever vinyl is being laid on steps or staircases. Special approved type of metal grating suitable for vinyl flooring shall be used.

4.11. Indoor Sport Floors - Cushion PVC Sport Flooring

- 4.11.1. Unless otherwise specified on the Drawings, multi purposed game court surfaces shall be finished with Cushion PVC Sport Flooring sheets endorsed and recommended surfacing systems with excellent shock absorption, elasticity, flexibility, strong protective membrane, waterproof, resilience and slip resistance to ensure great sports performance.
- 4.11.2. Cushion PVC Sport Flooring sheets shall be minimum overall thickness of 7.5mm comprising of surface layer with protecsol treated, calendered and grained 100% PVC sheet.
- 4.11.3. Its reinforced by double layer of non-woven fiberglass grid and double density closed cell foam. Shall undergone Sanosol treatment for fungistatic and bacteriostatic, surface treated with Protecsol cross-linked dirt protection treatment.

Weight: 4.7kg/m²,
Shock Absorption (EN 14808): P1
Impact Protection Index (IPI) (AC-P90-205) =76%,
Vertical Deformation (EN 14809): < 2mm,
Energy Return (pr EN WI 217): 0.4 m/s,
Abrasion Resistance (EN ISO 5470-1): <350mg,
Sliding Coefficient (EN 13036-4): 80-100,
Indentation Resistance (EN1516) : < 0.5mm,
Abrasion resistance EN ISO 5470-1) < 350mg.
Ball bounce (EN12235) >90%
Fire (EN13501-1): Cfl-S1
Complied to GREEN Label/ Certificate
Low VOC

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- 4.11.4. Cushion PVC flooring sheets shall comply with approved or accredited by major sport federations, namely BWF, FIBA, ITTF, AFC, FIVB, IFF.
- 4.11.5. The final appearance and performance of the floor covering will be determined and affected, in part, by the condition of the subfloor. The general requirement for the subfloor must be absolutely hard, smooth finished level, dry, structurally sound, free from cracks and other irregularities, free from contaminated with paint, plaster, oil, grease or any substances that could affect the adhesion. A damp proof membrane must be laid under the concrete to act as a barrier against underling hydrostatic pressure and moisture (for ground floor only). Cracks or hollowness must be repaired and filled with an appropriate material. The subfloor must be level with a tolerance of 3mm over 2 meter straight edge.
- 4.11.6. The floor covering should be underlayment 5mm self levelling compound (eg. CL 11 or NC146) with Primer and applied in accordance with manufacturer's instruction. The tensile Bending strength after 28 days is 6N/mm² and Compressive Strenght after 28 days is 30N/mm². Self levelling compound shall complied with green label certification.
- 4.11.7. The top of the covering is finished with Damp Proof Membrane (For Ground floor only) (eg. HydroEpoxy 300 or PE146), a 2 component water based epoxy polyamide membrane/barrier coating. The cured membrane shall withstand 250kPa hydrostatic pressure which is equivalent to a 25m head of water. Application is in accordance with manufacturer's instruction.
- 4.11.8. Cushion PVC Sport Flooring sheets installation shall only use low VOC adhesives.

5. Carpet

5.1. Carpet Tiles

- 5.1.1. Unless otherwise specified on the Drawings, all carpets shall be of high quality, durable, loop pile type of 100% Nylon type 6 fibre (ASTM D 629-72/ANSI), 1/12 gauge, minimum 7mm overall thickness of pile height and cushion backing, 16 oz per sq yard pile weight (normal traffic area), 24 oz per sq yard pile weight (heavy traffic area).
- 5.1.2. Carpets shall be coated with protective coating (eg. 3M Scotchgard™) for stain resistant and easier cleaning.
- 5.1.3. All ground floor areas, which are specified using carpet tiles, shall have approved damp-proof membrane on the ground floor slabs.
- 5.1.4. Unless otherwise specified on the Drawings, wall edges shall be with approved minimum 100mm height timber skirting.
- 5.1.5. The contractor shall be required to submit samples of the various colours/patterns and SIRIM Eco-Label certification.
- 5.1.6. Aluminium dividing strips or other suitable rust proof metal gripper strips shall be laid at junctions of different floor finishes and finishing flushed with flooring.

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- 5.1.7. Carpet tiles can be laid over any smooth, hard floor like parquet, laminated flooring and stone. Ensure the surface is clean, level and dry before installation.
- 5.1.8. All floor areas, which are specified using carpets, must be dry, level, and free from dirt, grease, oil, paint, sealer, old adhesives, and other residues.
- 5.1.9. Carpet tiles installation shall only use low formaldehyde water-based adhesive.
- 5.1.10. Carpet tiles used shall be laid with close butt joints, stretched and balanced so that all seams are parallel with minimum bows with suitable rustproof metal gripper strips securely installed. The carpets shall be installed in largest practical pieces and salvage shall be trimmed as required to assure color uniformity and pattern match at seams. All carpet shall have its edges trimmed and neatly fitted around all perimeters, openings and obstructions.
- 5.1.11. The carpets shall be installed in largest practical pieces and salvage shall be trimmed as required to assure color uniformity and pattern match at seams. All carpet shall have its edges trimmed and neatly fitted around all perimeters, openings and obstructions.
- 5.1.12. Warranty minimum 2 years on manufacturing defect. Supply and install by approved installer by manufacturer.
- 5.2. Broadloom Carpet (Roll Carpet / wall to wall carpet)
 - 5.2.1. Machine Tufted Carpet
 - 5.2.1.1. Unless otherwise specified on the Drawings, the machine tufted carpet shall be of high quality, durable, loop pile type or cut pile type or combination of both of 100% Nylon type 6 fibre (ASTM D 629-72/ANSI), 1/12 gauges, minimum 7mm overall thickness of pile height and PVC backing underlay, minimum 18 oz per sq yard pile weight (normal traffic area), minimum 24 oz per sq yard pile weight (heavy traffic area).
 - 5.2.1.2. Broadloom carpets shall be coated with protective coating (eg. 3M Scotchgard™) for stain resistant and easier cleaning.
 - 5.2.1.3. All ground floor areas, which are specified using carpets, shall have approved damp-proof membrane applied on the floor slabs. Unless otherwise specified on the Drawings, all carpets shall be laid with 6mm thick rubber-crumbs underlay.
 - 5.2.1.4. Unless otherwise specified on the Drawings, wall edges shall be with approved minimum 100mm height timber skirting.
 - 5.2.1.5. All floor areas, which are specified using carpets, must be dry, level, and free from dirt, grease, oil, paint, sealer, old adhesives, and other residues.
 - 5.2.1.6. The contractor shall be required to submit samples of the various colours/patterns and SIRIM Eco-Label certification.
 - 5.2.1.7. Aluminium dividing strips or other suitable rust proof metal gripper strips shall be laid at junctions of different floor finishes and finishing flushed with flooring.



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- 5.2.1.8. Broadloom carpets used shall be laid with close butt joints with underlay, stretched and balanced so that all seams are parallel with minimum bows with suitable rustproof metal/ wood gripper gripper strips securely installed. The carpets shall be installed in largest practical pieces and salvage shall be trimmed as required to assure color uniformity and pattern match at seams. All carpet shall have its edges trimmed and neatly fitted around all perimeters, openings and obstructions.
- 5.2.1.9. The carpets shall be installed in largest practical pieces and salvage shall be trimmed as required to assure colour uniformity and pattern match at seams. All carpet shall have its edges trimmed and neatly fitted around all perimeters, openings and obstructions.
- 5.2.1.10. Warranty minimum 2 years on manufacturing defect. Supply and install by approved installer by manufacturer.
- 5.2.2. Axminster Carpet
- 5.2.2.1. Unless otherwise specified on the Drawings, the axminster carpet shall be of high quality, durable, cut pile type of 80% Wool 20% Nylon type 6 fibre (ASTM D 629-72/ANSI), 1/12 gauges 7/7 rows and pitch, minimum 7mm overall thickness of pile height and jute backing, minimum 32 oz per sq yard pile weight (normal traffic area), minimum 42 oz per sq yard pile weight (heavy traffic area).
- 5.2.2.2. Broadloom carpets shall be coated with protective coating (eg. 3M Scotchgard™) for stain resistant and easier cleaning.
- 5.2.2.3. All ground floor areas, which are specified using carpets, shall have approved damp-proof membrane applied on the floor slabs. Unless otherwise specified on the Drawings, all carpets shall be laid with 6mm thick rubber-crumb underlay.
- 5.2.2.4. Unless otherwise specified on the Drawings, wall edges shall be with approved minimum 100mm height timber skirting.
- 5.2.2.5. All floor areas, which are specified using carpets, must be dry, level, and free from dirt, grease, oil, paint, sealer, old adhesives, and other residues.
- 5.2.2.6. The contractor shall be required to submit samples of the various colours/patterns and SIRIM Eco-Label certification.
- 5.2.2.7. Aluminium dividing strips or other suitable rust proof metal gripper strips shall be laid at junctions of different floor finishes and finishing flushed with flooring.
- 5.2.2.8. Broadloom carpets used shall be laid with close butt joints with underlay, stretched and balanced so that all seams are parallel with minimum bows with suitable rustproof metal/ wood gripper gripper strips securely installed. The carpets shall be installed in largest practical pieces and salvage shall be trimmed as required to assure color uniformity and pattern match at seams. All carpet shall have its edges trimmed and neatly fitted around all perimeters, openings and obstructions.



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- 5.2.2.9. The carpets shall be installed in largest practical pieces and salvage shall be trimmed as required to assure colour uniformity and pattern match at seams. All carpet shall have its edges trimmed and neatly fitted around all perimeters, openings and obstructions.
- 5.2.2.10. Warranty minimum 5 years on manufacturing defect. Supply and install by approved installer by manufacturer.

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1. General

- 1.1. All paints to be used shall be those supplied by approved manufacturers. The quality of paints shall comply with MS 125 in respect of oil/enamel paints and MS 134 in respect of emulsion paints/acrylic paint.
- 1.2. Prior to commencing painting work, the Contractor shall submit the following to the S.O.:
 - 1.2.1. Name of the paint manufacturer and the manufacturer's certification that the paint conform to the relevant standard as specified in sub-section 1.1 hereof together with the proof that such certification have been verified by tests carried out by SIRIM or ISO in the last three (3) years.
 - 1.2.2. The performance warranty by the manufacturer to the Government on the performance of the paint against any peeling, cracking, fungus/ algae growth and discoloration which may arise during a period of five (5) years or more from the date of practical completion due to insufficiency in material or workmanship. The terms of the performance warranty shall be as stipulated in APPENDIX O/1 and as approved by the S.O..
 - 1.2.3. Name of the painting applicator as approved by the paint manufacturer including written evidence of the current approval.
 - 1.2.4. A copy of the method statement including procedure for the painting works in accordance with these specification and manufacturer's instructions.
- 1.3. All paints shall be delivered to the Site in the manufacturer's original sealed containers unopened and shall be used strictly in accordance with the manufacturer's instructions.
- 1.4. Paints shall not be adulterated and any paint that has deteriorated shall not be used and shall be removed from the Site forthwith.
- 1.5. Unless otherwise specified in the Drawings, the types of paints to be used for the work on exposed surfaces shall be as stated in the 'Schedule of Paint Finish' attached hereinafter.
- 1.6. The colours and tints of paints shall be selected by the S.O. and the priming, undercoats and finishing coats shall be of approved differing tints and shall be obtained from the same manufacturer.
- 1.7. No painting shall be done under conditions which may jeopardize the quality of finish paintwork.
- 1.8. During painting, care shall be taken to prevent stain or damage to other works.
- 1.9. Surfaces to be painted shall be dry, free from dirt, oil, grease, old loose paint and other deleterious matter. All cracks shall be raked out and stopped and all holes and dents shall be filled.
- 1.10. Unless otherwise specified in the manufacturer's instructions, each coat of paint applied on timber or metal surfaces shall be allowed to dry and subsequently rubbed down lightly with sandpaper before the next coat is applied. Any dirt or dust shall be removed from preceding coats immediately before proceeding with application of the next coat.

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- 1.11. All priming to shop fabricated components shall be done at shop.
- 1.12. All prime surfaces shall be inspected and approved by the S.O. before commencement of painting works.
- 1.13. Finish surfaces shall be uniform in finish and colour and be free from brush marks or other defects.
- 1.14. Sample areas showing all tints of paints to be used shall be prepared by the Contractor as and when required by the S.O..

2. Painting to Timber Work

2.1. Painting to New Timber Work

- 2.1.1. Unless otherwise as shown on the Drawings, all exposed wrot surfaces of timber shall be painted as specified hereinafter.
- 2.1.2. Before painting to new timber work, all knots shall be covered with knotting and all nail holes, cracks, et cetera shall be stopped with white lead and putty (1:3) and shall be primed with aluminium wood primer well brushed in.
- 2.1.3. Unless otherwise specified, the prepared surface shall be painted with one undercoat (alkyd undercoat) and shall be finished with two coats of premium semi-gloss fungus resisting alkyd paint or three (3) coats UV protection, low odour alkyd wood finish.
- 2.1.4. Timber decks shall be applied with three coats of scratch resistant, UV protection, fast drying urethane alkyd wood finish. Each preceding coat shall be allowed to dry thoroughly and rubbed down lightly with fine sand paper and thoroughly cleaned before applying the next coat.
- 2.1.5. All timber surfaces abutting concrete or brickwork shall be primed before fixing or assembling.
- 2.1.6. All ironmongeries except hinges shall be removed before painting begins and shall be carefully re-fixed.

2.2. Repainting Existing Timber Work

Where repainting to existing timber work is specified, the following procedure shall be adhered to. If the surface is intact, it shall be rubbed down with fine sand paper to the approval of the S.O.. Then one coat of undercoat shall be applied followed by two (2) coats of gloss enamel paint unless otherwise specified. Where cracking and flaking have occurred, the entire existing paint shall be removed by burning off or by use of paint remover as approved by the S.O.. The surfaces shall then be thoroughly cleaned and shall be applied with minimum one coat aluminum wood primer followed by one (1) undercoat and unless otherwise specified in the Drawings, shall be finished with two (2) coats of gloss enamel paint.

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3. Painting to Metal Work

3.1. Painting New Steel and Ironwork

The areas to be painted shall be cleaned down and be free from rust, scale, oil, grease, dirt and dust. One (1) coat of approved metallic primer shall be applied followed by one (1) coat of premium alkyd undercoat unless specified and shall be finished with two (2) finishing coats of gloss/semi-gloss fungus resisting alkyd paint.

Soil and vent pipes shall be primed as above and given two (2) coats of approved bituminous paint.

3.2. Repainting Existing Steel and Ironwork

3.2.1. Where repainting to existing steel or ironwork is stated in the Drawings, the following procedure shall be adhered to. Where a firm surface exists, it shall be scuffed with fine sand paper to the approval of the S.O. and spot primed if necessary, before the application of by one (1) coat of premium alkyd undercoat unless specified and shall be finished with two (2) finishing coats of gloss/semi-gloss fungus resisting alkyd or gloss enamel paint.

3.2.2. If the old paint is in a bad, deteriorated condition the whole paint shall be removed by the use of approved paint remover or by scraping as approved by the S.O.. The surface shall be thoroughly cleaned and shall be applied with one coat approved metallic primer, by one (1) coat of premium alkyd undercoat unless specified and shall be finished with two (2) finishing coats of gloss/semi-gloss fungus resisting alkyd or gloss enamel paint.

3.3. Painting New Galvanized Ironwork

Where painting to new galvanized ironwork is specified, the surfaces shall be applied with one coat of approved self-etching quick drying metallic primer unless otherwise specified and shall be finished with two finishing coats of gloss/semi-gloss fungus resisting alkyd paint or gloss enamel paint.

3.4. Repainting Existing Galvanized Ironwork

3.4.1. Where repainting to existing galvanized ironwork is specified, the following procedure shall be adhered to. If the surface is not corroded, it shall be slightly sanded and all dirt's, oil, and grease removed by washing with an approved solvent and applied with one (1) coat of approved metallic primer unless otherwise specified, shall be finished with two (2) finishing coats of gloss/semi-gloss fungus resisting alkyd paint or gloss enamel paint. If the surface has corroded, the whole paint shall be removed by the use of approved paint remover or by scraping as approved by S.O..

3.4.2. When the surface is completely clean, it shall be applied with one coat approved metallic primer, unless otherwise specified, shall be finished with two finishing coats of gloss/semi-gloss fungus resisting alkyd paint or gloss enamel paint.

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4. Painting to Masonry Work

4.1. Painting New Plastered/Masonry Surfaces

- 4.1.1. The new plastered or masonry surfaces shall be allowed to dry completely and shall be cleaned down to remove dust, dirt, plaster splashes, and the like. In case of old unpainted walls, all fungus, mosses, lichens and vegetative growth shall also be removed.
- 4.1.2. The cleaned surfaces of the external walls shall be applied with one coat of approved alkaline resisting primer and unless otherwise specified in the Drawings, followed with two (2) coats of ultra-violet (UV) weather resistant emulsion paint.
- 4.1.3. The external wall surfaces shall be applied with one (1) coat of approved alkaline resisting primer, unless otherwise stated in the Drawings, followed with two (2) coats of 100% acrylic with heat reflective and UV protected, and temperature reduction weather resistant acrylic emulsion paint for Green Ratings Certification as approved by the S.O..
- 4.1.4. The internal wall surfaces shall be applied with one (1) coat of approved modified acrylic sealer, and unless otherwise as shown on the Drawings, followed with two (2) coats of low VOC acrylic paint.

4.2. Repainting Existing Plastered or Masonry Surfaces

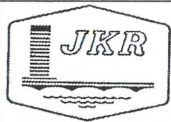
- 4.2.1. Where repainting to existing plastered or the masonry surface is specified, the following procedure shall be adhered to. All existing paint shall be removed by scraping and the surface shall be washed with high pressure water jet (for Non-Conservation Projects). All cracks and other imperfections shall be made good and the surface should be allowed to dry completely.
- 4.2.2. The surface shall then be applied with two (2) coats of any other type of water base emulsion paint as described hereinbefore for Painting New Plastered/Masonry Surfaces and as approved by the S.O..
- 4.2.3. However, for buildings which fall under heritage status, repainting works shall refer to *Garis panduan Pemuliharaan Bangunan Warisan 2016* (or latest version).

4.3. Textured Wall

- 4.3.1. Natural Spray Granite textured wall shall be applied with one (1) coat of approved alkaline resisting acrylic primer, unless otherwise stated in the Drawings, followed with two (2) layers natural fine stone and ceramic chips texture with high build acrylic resin and two (2) clear finish coats.
- 4.3.2. Spray Tile textured wall shall be applied with one (1) coat of approved alkaline resisting acrylic primer, unless otherwise specified in the Drawings, followed with one (1) coat of spray tiles texture and two (2) coats of pure acrylic based premium weather paint.

5. Treatment to Fair Face Surfaces

Surfaces that are to be left bare such as fair-face brickwork, fair-face concrete or stones and the like shall be thoroughly clean, dry and free from grease, dust and loose or flaking

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materials. The surfaces shall then be treated with an approved colourless silicon-based water repellent liquid applied in accordance with the manufacturer's instructions. The solution shall be applied in two (2) coats over the entire area and crevices by brushing.

6. Epoxy Coatings

Epoxy coatings shall be applied with one (1) coat of approved penetrative epoxy sealer, followed with two (2) coats epoxy topcoat.

7. Silicone Paint

Silicone paint for external walls and ceiling shall be applied with one (1) coat of Pigmented Water Base Penetration Water Repellent and two (2) finishing coats of Breathable Silicone Paint of approved colour applied strictly in accordance with manufacturer's instruction.

8. Painting on Floor Surfaces

- 8.1. Painting on concrete drive way shall be applied with one (1) coat of floor primer at 100 µm DFT, followed by one (1) coat of floor glass flake at 300 µm DFT or floor non-slip aggregate (fine/medium) and followed with two (2) coats of floor polyurethane (PU) topcoat at 50 µm DFT per coat.
- 8.2. Painting on car park parking bay floors shall be applied with one (1) coat of floor primer at 100 µm DFT, then followed with two (2) coats of floor polyurethane (PU) topcoat at 50 µm DFT per coat.
- 8.3. Painting on TNB sub-station internal floors shall be applied with one (1) coat of approved two-pack epoxy sealer, followed with two (2) coats of two pack epoxy floor coating at 50 µm DFT per coat, unless otherwise stated in the drawings.

9. Painting to Timber-based Products

9.1. Chipboard Surfaces

- 9.1.1. Before painting, all nail holes, crevices and the like shall be stopped with white lead and putty (1:3). The surface shall then be smoothened by rubbing down with fine sand paper and finally cleaned to remove dust. Where the board is to be finished with enamel paint, one (1) undercoat and two (2) finishing coats of gloss enamel paint shall be applied. If the board is to be finished with emulsion paint, one (1) undercoat and two (2) coats of emulsion paint shall be applied.
- 9.1.2. Where repainting to existing enamel paint finished chipboard is required, the following procedure shall be adhered to. If the paintwork is still intact, it shall be rubbed down with fine sand paper to the approval of the S.O.. Then one (1) coat of undercoat shall be applied followed by one (1) coat of gloss enamel paint.
- 9.1.3. Where cracking and flaking has occurred, the entire existing paint shall be removed by burning off, as approved by the S.O.. The surfaces shall then thoroughly clean and shall be applied with one (1) undercoat and finished with two (2) coats of gloss enamel paint.

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9.1.4. Where repainting to existing emulsion paint finished chipboard is required, the surface shall then be thoroughly cleaned and applied with two (2) coats of emulsion paint.

9.2. Hardboard Surfaces

Before painting to hardboard, all nail holes, crevices and the like shall be filled with approved putty. The surface shall then be applied with one (1) undercoat and two (2) coats of emulsion paint unless otherwise specified.

9.3. Wood Cement Board Surfaces

Before painting to wood cement board, all nail holes, crevices and the like shall be filled with approved filling compound of alkali resistant type. The surface shall then be lightly sanded, and any dust should be removed from the surface with a piece of clean, coarse cloth. The surface shall then be applied with one (1) undercoat and two (2) coats of emulsion paint unless otherwise specified.

10. Painting to Gypsum Board and The Like

10.1. Before painting the surfaces shall be clean and free from dirt. The surfaces shall then be applied with one (1) undercoat and two (2) coats of emulsion paint. Similar procedure shall be followed where repainting to existing painted surfaces is required.

11. Painting to Laboratory Bench Tops

11.1. Timber tops of benches in laboratories that are required to be painted shall be prepared as described hereinbefore for timber work. The surfaces shall then be applied with one (1) coat aluminum wood primer followed by one (1) coat approved chemical resistant primer and finished with two (2) coats of approved chemical resistant gloss enamel paint in accordance with manufacturer's instructions.

11.2. Where repainting to existing timber tops laboratory benches is required, the surfaces shall be rubbed down lightly with fine sand paper. The surfaces shall then be thoroughly cleaned and shall be applied with one (1) coat of approved chemical resistant primer followed by one (1) coat of approved chemical resistant gloss enamel paint.

12. Varnishing

12.1. Varnishing to New Timberwork

12.1.1. The surfaces to be varnished shall be smoothened with fine sand paper and all crevices, holes and the like, if any, shall be filled with approved whiting. It shall be clean, dry, free from dust, dirt and wax before the application of varnish. Unless otherwise approved by the S.O., the surfaces shall be applied with three (3) coats of approved UV protection, low odour alkyd wood finish or varnishing mixture used strictly in accordance with the manufacturer's instructions.

12.1.2. Where non patented products are allowed to be used, the varnishing mixture shall consist of methylated spirit, shellac and approved stain

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forming the first coat followed by one (1) coat of an approved mixture consisting of thinner and lacquer. The mixtures shall be of uniform consistency throughout. Unless otherwise specified in the Drawings, the finish shall be gloss and as approved by the S.O..

- 12.1.3. Timber deck surfaces shall be applied with three (3) coats of approved scratch resistant, UV protection, fast drying low odour urethane alkyd wood finish.

12.2. Re-varnishing To Existing Timberwork

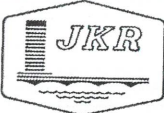
Where re-varnishing to timberwork is specified in the Drawings or described in the B.Q., the surface shall first be thoroughly scuffed to remove the existing varnish. The surface shall then be smoothed with fine sand paper, cleaned, dried and free from dust, dirt and wax. It shall then be varnished as described hereinbefore for new timberwork.

13. Painting Works for Buildings in Coastal Areas.

- 13.1. External walls shall be applied with one (1) coat of approved pliolite based alkaline resisting primer sealer, unless otherwise specified in the Drawings, followed with two (2) coats of elastomeric weather resistant paint of approved colour applied strictly in accordance to manufacturer's instruction.
- 13.2. Unless otherwise specified in the Drawings, the internal walls shall be applied with one (1) coat of approved water based alkaline resisting acrylic wall sealer, followed with two (2) coats of low volatile organic compounds (VOCs), alkylphenolethoxylate (APEO) free, formaldehyde free acrylic premium emulsion paint of approved colour applied strictly in accordance to manufacturer's instruction.
- 13.3. Mild steel shall be applied with one (1) coat of zinc rich epoxy, one (1) coat of surface tolerance epoxy mastic and followed with two (2) coats of polyurethane topcoat.
- 13.4. Galvanized steel shall be applied with one (1) coat of surface tolerance epoxy mastic and followed with two (2) coats of polyurethane topcoat.
- 13.5. Roofing sheet coatings for marine environment shall refer to SECTION G: ROOFING.
- 13.6. Coatings of fasteners used shall comply with AS 3566 Class 4 and be certified as such by the supplier of fasteners and as approved by the S.O..

14. Painting Works to Clinical Areas (Hygienic Areas)

- 14.1. All external walls shall be applied with one (1) coat of approved siloxane primer sealer, unless otherwise stated in the Drawings, followed with two (2) coats of silicone emulsion water repellent paint applied strictly in accordance to manufacturer's instruction.
- 14.2. Internal walls shall be applied with one (1) coat of approved ultra-low VOCs alkaline resisting primer sealer, followed with two (2) coats of anti-bacteria, anti-fungus, low VOCs, 100% APEO free, formaldehyde free acrylic premium emulsion paint.

 JKR MALAYSIA	SECTION O: PAINTING	No. Dokumen : JKR 20800-0226-20 No. Keluaran : 01 No. Pindaan : 00 Tarikh : 02 Januari 2020 Muka Surat : O/8
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- 14.3. Internal walls (clinical areas) shall be applied with one (1) coat of approved ultra-low VOCs epoxy primer sealer, followed with two (2) coats of anti-bacteria, anti-fungus, low VOCs, 100% APEO free, formaldehyde free epoxy paint.
- 14.4. Internal walls (clinical areas with 24 Hours Air-Conditioning) shall be applied with one (1) coat of approved ultra-low VOCs acrylic water-based primer sealer, followed with two (2) coats of anti-bacteria, anti-fungus, low VOCs, 100% APEO free, formaldehyde free Polyurethane paint.
- 14.5. Painting to Health Facility (Ministry of Health) Buildings shall also adhere to *Garis Panduan Skema Warna Luaran Bangunan Fasiliti Kesihatan KKM*.

15. Completion of Painting Works

On completion of paintwork, all paint marks inadvertently left on glass, floors, tiles and other surfaces shall be removed. Any stain or marking on finished paintwork shall be removed and touched up to the approval of the S.O..

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APPENDIX O/1

PAINT PERFORMANCE WARRANTY (SPECIMEN)

1. Coverage of Performance Warranty

We the paint Manufacturer hereby warrants that for a period of **five (5) years** from the date of Practical Completion, the paint system shall not be affected by the following defects:

- (i) **Peeling**
This condition is manifested when the paint film peels away or detaches from the substrate.
- (ii) **Cracking**
This condition is manifested by any visible cracking on the paint film other than that caused by plastering cracks and structural defects.
- (iii) **Fungus/Algae Growth**
This condition is established when there is a growth of micro-organisms on the surface of the paint films which would result in the marring of the appearance of the paint film through discoloration.
- (iv) **Discoloration**
This condition occurs when the coating loses its original colour in patches and excessive discoloration appears.

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2. Procedure for Claims

- (i) Any defect claims shall be made in writing and delivered by post or by hand to the Manufacturer.
- (ii) A technical team from the Manufacturer will be dispatched to evaluate the nature of the claim. Should our findings conclude the defects as within the scope of warranty, then the Manufacturer shall make good such defects.
- (iii) Should the Manufacturer's technical team conclude that the defects falls outside the scope of the warranty, the Manufacturer shall not be held responsible for the claim.
- (iv) Should the Government disagree with the conclusion of the technical team pertaining to the defects in particular, then an independent third party competent in such technical evaluation shall be appointed to investigate the disputed defects.
- (v) The appointment of independent third party competent in such technical evaluation shall only be appointed upon the mutual agreement between the Government and the Manufacturer.
- (vi) The findings of the third party shall be conclusive and mutually accepted by the Government and the Manufacturer.
- (vii) If the findings of the independent third party are within the coverage of this performance warranty, all cost shall be borne by the Manufacturer or otherwise such cost shall be borne by the Contractor.
- (viii) All claims for the defects must be received by the Manufacturer not later than fourteen (14) days from the expiry of the warranty period.

MANUFACTURER

.....

Company Stamp

Signature

Name:
Date:

WITNESS

.....

Company Stamp

Signature

Name:
Date:

**REKOD PENGALAMAN KERJA
DALAM 5 TAHUN LEPAS –
BORANG D**

BORANG D – REKOD PENGALAMAN KERJA PENYEBUTHARGA
(Senarai semua kerja yang disiapkan dalam 5 tahun lepas +)

Bil.	Nama	Nilai Kontrak (RM)	Nilai Penyebuttharga* Bertanggungjawab	Tempoh Kontrak **	Tarikh Milik Tapak	Tarikh Siap		Nama dan Alamat Penguasa/Jurutera Perunding	Nama Alamat Majikan
						Kontrak	Sebenar		

- + Salinan Perakuan/Pengesahan Siap Kerja bagi setiap kerja yang disenaraikan hendaklah disertakan.
 * Hanya perlu diisi sekiranya penyebuttharga melaksanakan kerja sebagai ahli syarikat gabungan.
 ** Tempoh kontrak hendaklah termasuk lanjutan masa yang diluluskan.

SENARAI KAKITANGAN TEKNIKAL - BORANG E

BORANG E – KAKITANGAN TEKNIKAL

(Butir-butir Kakitangan Teknikal Yang Ada Dalam Penggajian Penyebutharga Masa Kini)

*Nama dan No. K/P	Umur	Kelulusan Professional/ Pendidikan**	Tahun Kelulusan	Tarikh Diambil Bekerja	Jawatan yang Disandang/ Tugas- Tugas semasa	Pengalaman Lepas (Jawatan disandang, Nama projek dan majikan dan tempoh Bekerja dan sebagainya)
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

* Salinan Borang KWSP 'A' setiap pekerja bagi bulan caruman terakhir dan salinan perjanjian perkhidmatan ahli professional yang diambil khidmat secara kontrak hendaklah disertakan.

** Sila sertakan salinan Sijil Kelulusan atau Sijil Keahlian Badan-badan Professional

BORANG E – KAKITANGAN TEKNIKAL

(Butir-butir Kakitangan Teknikal Yang Ada Dalam Penggajian Penyebuttharga Masa Kini)

*Nama dan No. K/P	Umur	Kelulusan Professional/ Pendidikan**	Tahun Kelulusan	Tarikh Diambil Bekerja	Jawatan yang Disandang/ Tugas semasa	Pengalaman Lepas (Jawatan disandang, Nama projek dan majikan dan tempoh Bekerja dan sebagainya)
1.						
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* Salinan Borang KWSP 'A' setiap pekerja bagi bulan caruman terakhir dan salinan perjanjian perkhidmatan ahli professional yang diambil khidmat secara kontrak hendaklah disertakan.

** Sila sertakan salinan Sijil Kelulusan atau Sijil Keahlian Badan-badan Professional

BORANG E – KAKITANGAN TEKNIKAL

(Butir-butir Kakitangan Teknikal Yang Ada Dalam Penggajian Penyebutarga Masa Kini)

*Nama dan No. K/P	Umur	Kelulusan Professional/ Pendidikan**	Tahun Kelulusan	Tarikh Diambil Bekerja	Jawatan yang Disandang/ Tugas semasa	Pengalaman Lepas (Jawatan disandang, Nama projek dan majikan dan tempoh Bekerja dan sebagainya)
1.						
2.						
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10.						

* Salinan Borang KWSP 'A' setiap pekerja bagi bulan caruman terakhir dan salinan perjanjian perkhidmatan ahli professional yang diambil khidmat secara kontrak hendaklah disertakan.

** Sila sertakan salinan Sijil Kelulusan atau Sijil Keahlian Badan-badan Professional

**SENARAI KEEMPUNYAAN LOJI
DAN PERALATAN UTAMA -
BORANG F**

BORANG F – KEEMPUNYAAN LOJI DAN PERALATAN PEMBINAAN UTAMA

(Senarai Loji dan Peralatan Pembinaan Utama kepunyaan penyebutharga yang sesuai yang boleh digunakan untuk projek)

Bil.	Butiran (Jenis, model, buatan dan keupayaan/ saiz)	Dimiliki, Disewa-beli Atau Disewapajak*	Bilangan Setiap satu	Nilai Semasa (RM)	Umur (dari tarikh belian asal)	Tempat simpanan/ digunakan sekarang	Catatan
A.	Loji dan Peralatan Asas **: i) Lorry / Tipper / Dumper / 4x4 ii) Sky lift						
B.	Loji dan Peralatan lain : i) Drill and Cutter ii) Welding Machine iii) Pneumatic Jackhammers						

* Salinan kad pendaftaran dan/ atau dokumen-dokumen lain bukti keempunyaan hakmilik penyebutharga atau perjanjian sewabeli/ sewapajak atas setiap Loji dan Peralatan yang disenaraikan hendaklah disertakan.

** Pegawai yang menyediakan Dokumen Sebutharga hendaklah menyenaraikan butiran-butiran Loji dan Peralatan Asas bagi projek berkenaan (tanpa bilangan AKM).

PRESTASI KERJA SEMASA
BORANG G

BORANG G - SENARAI KERJA/ KONTRAK SEMASA PENYEBUTHARGA

(Senarai semua kerja di dalam tangan/sedang berjalan dan belum siap termasuk kontrak yang baru diawadkan)

Bil	Nama Kontrak/Projek+	Nilai Kontrak (RM)	Nilai Penyebutharga* Bertanggung jawab	Tempoh Kontrak **	Tarikh Milik Tapak	Tarikh Siap Kontrak	Kemajuan Kerja+		Nama dan Alamat Jurutera Projek	Nama dan Alamat Majikan
							Ikut Jadual (%)	Sebenar Dicapai (%)		

* Hanya perlu diisi sekiranya penyebutharga melaksanakan kerja sebagai ahli syarikat gabungan
 ** Tempoh Kontrak hendaklah termasuk lanjutan masa yang diluluskan.

+ Peringatan Penting
 Bagi setiap kerja semasa dalam tangan yang disenaraikan, penyebutharga wajib mengemukakan Laporan Penyelia Projek seperti format di Borang GA/GA1.

SULIT

BORANG GA1 – LAPORAN JURUTERA PROJEK ATAS PRESTASI KERJA SEMASA PENYEBUTHARGA

(Borang ini hendaklah dilengkapkan oleh Jurutera Projek atau Pembantu Kanannya yang mengawasi projek apabila diminta berbuat demikian oleh Pegawai Penilaian dan hendaklah dihantar segera dengan menggunakan mesin Fax/Email)

Kepada: Pengarah.....
.....
.....
(u/p:.....)

Nama Kontraktor:
Nama Projek Yang Dilaksanakan
.....

No. Kontrak :

Harga Kontrak (termasuk anggaran nilai kerja perubahan) : RM
Wang Kos Prima dan Peruntukan Sementara : RM
Nilai Kerja Pembina : RM

Tarikh Milik Tapak : Tempoh Kontrak: minggu
Tarikh Penyiapan Asal :

Lanjutan Masa Yang Telah Diluluskan : hari

Lanjutan Masa Seterusnya:

Yang difikir/ dijangka layak diperakukan : hari
Atas Sebab-sebab : (i)
(ii)

Kemajuan Kerja (berdasarkan penilaian kerja yang telah dilaksanakan):

Pencapaian sebenar: % Mengikut Jadual: %

Tarikh Kerja dijangka akan dapat disiapkan:

Nilai Bahagian Kerja Yang Telah Siap : RM

Nilai Baki Kerja Yang Belum Siap : RM

Ulasan-ulasan mengenai Prestasi Kontraktor:

(Nyatakan apa-apa kepujian dan/ atau kelemahan kontraktor dan juga apa-apa tindakan/ perakuan yang diambil/ dipertimbang berhubung dengan prestasi Kontraktor melaksanakan Kontrak)

Tandatangan Pegawai Penguasa/
Jurutera Projek/ Wakilnya :

Nama :
Jawatan :

Tarikh:

SULIT

BORANG GA1 – LAPORAN JURUTERA PROJEK ATAS PRESTASI KERJA SEMASA PENYEBUTHARGA

(Borang ini hendaklah dilengkapkan oleh Jurutera Projek atau Pembantu Kanannya yang mengawasi projek apabila diminta berbuat demikian oleh Pegawai Penilaian dan hendaklah dihantar segera dengan menggunakan mesin Fax/Email)

Kepada: Pengarah.....
.....
.....
(u/p:.....)

Nama Kontraktor:
Nama Projek Yang Dilaksanakan
.....

No. Kontrak :

Harga Kontrak (termasuk anggaran nilai kerja perubahan) : RM
Wang Kos Prima dan Peruntukan Sementara : RM
Nilai Kerja Pembina : RM

Tarikh Milik Tapak : Tempoh Kontrak: minggu
Tarikh Penyiapan Asal :

Lanjutan Masa Yang Telah Diluluskan : hari

Lanjutan Masa Seterusnya:
Yang difikir/ dijangka layak diperakukan : hari
Atas Sebab-sebab : (i)
(ii)

Kemajuan Kerja (berdasarkan penilaian kerja yang telah dilaksanakan):
Pencapaian sebenar: % Mengikut Jadual: %
Tarikh Kerja dijangka akan dapat disiapkan:

Nilai Bahagian Kerja Yang Telah Siap : RM
Nilai Baki Kerja Yang Belum Siap : RM

Ulasan-ulasan mengenai Prestasi Kontraktor:
(Nyatakan apa-apa kepujian dan/ atau kelemahan kontraktor dan juga apa-apa tindakan/ perakuan yang diambil/ dipertimbang berhubung dengan prestasi Kontraktor melaksanakan Kontrak)

Tandatangan Pegawai Penguasa/
Jurutera Projek/ Wakilnya :

Nama :
Jawatan :

Tarikh:

SENARAI SUB-KONTRAKTOR PAKAR - BORANG H

BORANG H

**SENARAI SUB KONTRAKTOR UNTUK KERJA PAKAR
(PEMBUAT / PEMBEKAL)**

SUB KONTRAKTOR DAN PEMBEKAL YANG DINIATKAN UNTUK KONTAK INI			
Penyebutharga hendaklah menyenaraikan nama-nama sub-kontraktor yang dicadangkan.			
No.	Bidang Kerja dan Maklumat Am Kontraktor Pakar	Pendaftaran Dengan CIDB (Gred / Kategori / Pengkhususan)	Pendaftaran Dengan Lain-Lain Jabatan Berkaitan / MOF
1	Skop Pembekalan a) Jenis Skop : b) Nama Pembekal : c) Alamat Pembekal :		
2	Pembuat Pakar a) Jenis Skop Kerja : b) Nama Pembuat : c) Alamat Pembuat :		
3	d) Profit Produk : e) Profit Projek Dilaksanakan : f) Sample : (wajib dikemukakan bersama dengan dokumen sebutbarga)		
3	Pengesahan daripada sub-kontraktor pakar. Kami dengan ini mengesahkan bahawa penyebutharga telah mendapat maklumat kos dan kaedah pembinaan produk kami dan kami bersetuju untuk melaksanakan kerja ini untuk pihak Kerajaan. (Tandatangan) Nama : No. KP : Jawatan : Tarikh : Cop Syarikat :		

Nota :

- 1 Sekiranya kontraktor gagal mengemukakan pengesahan daripada pembekal / pembuat pakar. Sebutbarga kontraktor boleh tidak dipertimbangkan oleh Jawatankuasa berkaitan
- 2 Sekiranya sub-kontraktor pakar gagal untuk meyakinkan pihak Kerajaan tentang kualiti daya tahan dan pemuatan kepada syarat yang ditetapkan, kontraktor hendaklah bersetuju untuk menggunakan produk dan perkhidmatan sub-kontraktor pakar yang lain dengan tiada tambahan kos kepada kontrak

LIST OF SPECIALIST SUB-CONTRACTORS TO BE ENGAGED IN THIS PROJECT

NAME AND ADDRESS OF SUB- CONTRACTORS	REGISTRATION WITH CIDB / MOF (Submit copies of relevant registration)	TYPE OF WORK UNDERTAKEN	YEARS OF EXPERIENCE

LUKISAN

NOTES:

	ALL NEW WORKS ARE SHOWN IN RED
	ALL DEMOLISHED WORKS ARE SHOWN IN DOTTED BLUE

TAJUK PROJEK:

KERJA-KERJA MENAIKTARAF RUANG DAPUR KAFETERIA ATLET SERTA YANG BERKAITAN DENGANNYA DI KOMPLEKS SUKAN MSN NILAI, NEGERI SEMBILAN

UNTUK
MAJLIS SUKAN NEGARA MALAYSIA

TANDAYANGAN DEMI IN :



YUSRI MOHD YUSOFF
ARCHITECT

1000



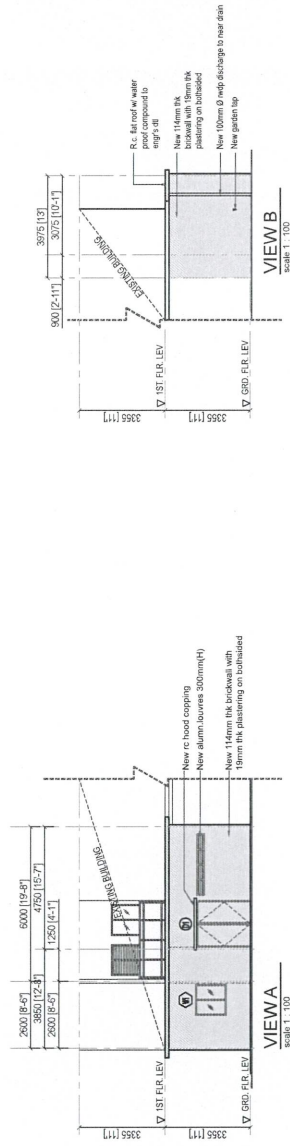
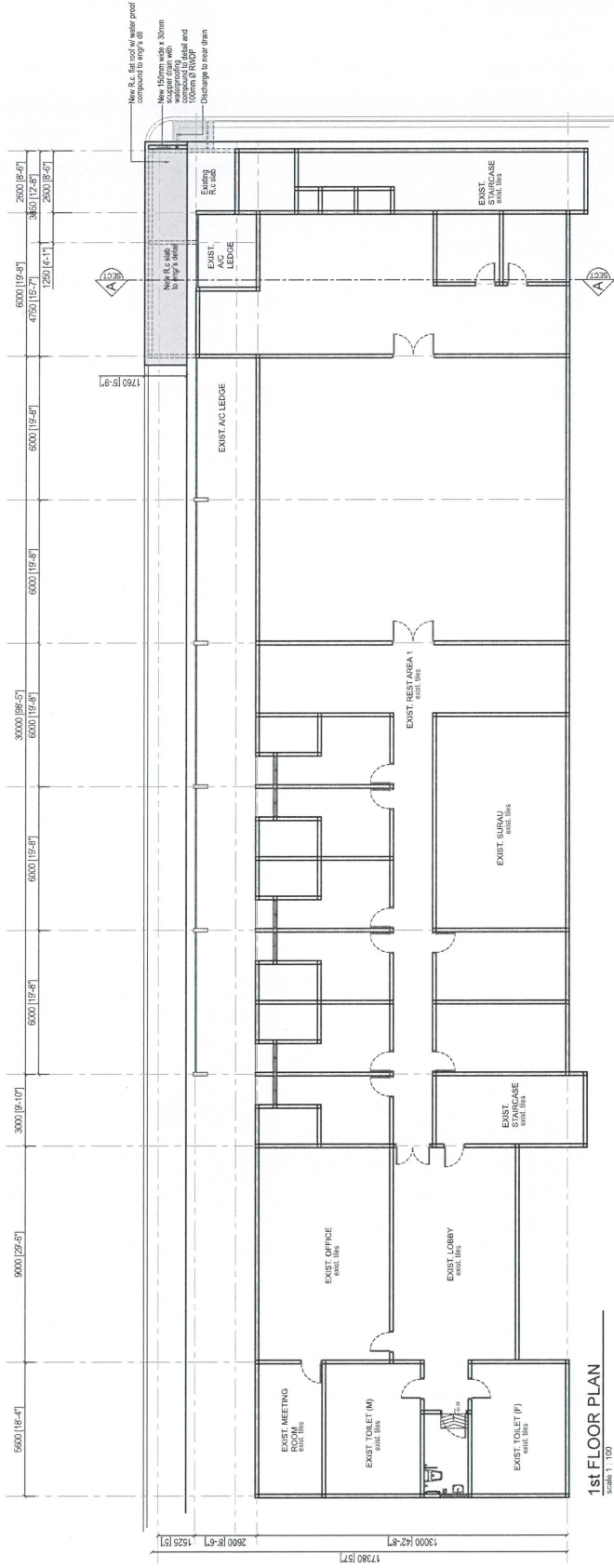
Ar, Mohamad Yusri Mohd Yusoff
ARKITEK
No Pendaftaran LAM : A/IM 165

^a Significant at the 0.05 level; * significant at the 0.01 level; ** significant at the 0.001 level.[illegible]

ROOF PL
VIEW A
VIEW B

DILUWIS OLEH	AGILLA	TARIKH	JULAI 2025
DISEMAK OLEH	AR. MOHAMAD YUSRI MOHD YUSOFF		
DIBAWKAN OLEH	AR. MOHAMAD YUSRI MOHD YUSOFF		
SKALA	1 : 100	PINDAH	
NO PROJEK		NO LUKISAN	
FAIL CAD			WD-02

THIS DRAWING IS COPYRIGHT & PROPERTY OF THE YUSRI WORLD YUSOFF ARCHITECT. CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE. ONLY FIGURED DIMENSIONS ARE TO BE WORKED FROM. DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT BEFORE PROCEEDING.



F O R T E N D E R			
1. <u>Item:</u> <u>Chloroform</u> <u>1</u>			
2. <u>Quantity:</u> <u>1000</u>			
3. <u>Unit:</u> <u>kg</u>			
4. <u>Estimated Price:</u> <u>1000000</u>			
5. <u>Remarks:</u> <u>For use in the laboratory</u>			
6. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
7. <u>Date:</u> <u>10/10/2010</u>			
8. <u>Place:</u> <u>Chennai</u>			
9. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
10. <u>Date:</u> <u>10/10/2010</u>			
11. <u>Place:</u> <u>Chennai</u>			
12. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
13. <u>Date:</u> <u>10/10/2010</u>			
14. <u>Place:</u> <u>Chennai</u>			
15. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
16. <u>Date:</u> <u>10/10/2010</u>			
17. <u>Place:</u> <u>Chennai</u>			
18. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
19. <u>Date:</u> <u>10/10/2010</u>			
20. <u>Place:</u> <u>Chennai</u>			
21. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
22. <u>Date:</u> <u>10/10/2010</u>			
23. <u>Place:</u> <u>Chennai</u>			
24. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
25. <u>Date:</u> <u>10/10/2010</u>			
26. <u>Place:</u> <u>Chennai</u>			
27. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
28. <u>Date:</u> <u>10/10/2010</u>			
29. <u>Place:</u> <u>Chennai</u>			
30. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
31. <u>Date:</u> <u>10/10/2010</u>			
32. <u>Place:</u> <u>Chennai</u>			
33. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
34. <u>Date:</u> <u>10/10/2010</u>			
35. <u>Place:</u> <u>Chennai</u>			
36. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
37. <u>Date:</u> <u>10/10/2010</u>			
38. <u>Place:</u> <u>Chennai</u>			
39. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
40. <u>Date:</u> <u>10/10/2010</u>			
41. <u>Place:</u> <u>Chennai</u>			
42. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
43. <u>Date:</u> <u>10/10/2010</u>			
44. <u>Place:</u> <u>Chennai</u>			
45. <u>Signature:</u> <u>Dr. J. S. S. S.</u>			
46. <u>Date:</u> <u>10/10/2010</u>			
47. <u>Place:</u> <u>Chennai</u>			
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NOTES:
1. All work shall be in accordance with the latest edition of the relevant standards and specifications.
2. The Contractor shall be responsible for obtaining all necessary permits and approvals from the relevant authorities.
3. The Contractor shall ensure that all work is completed within the specified time frame.

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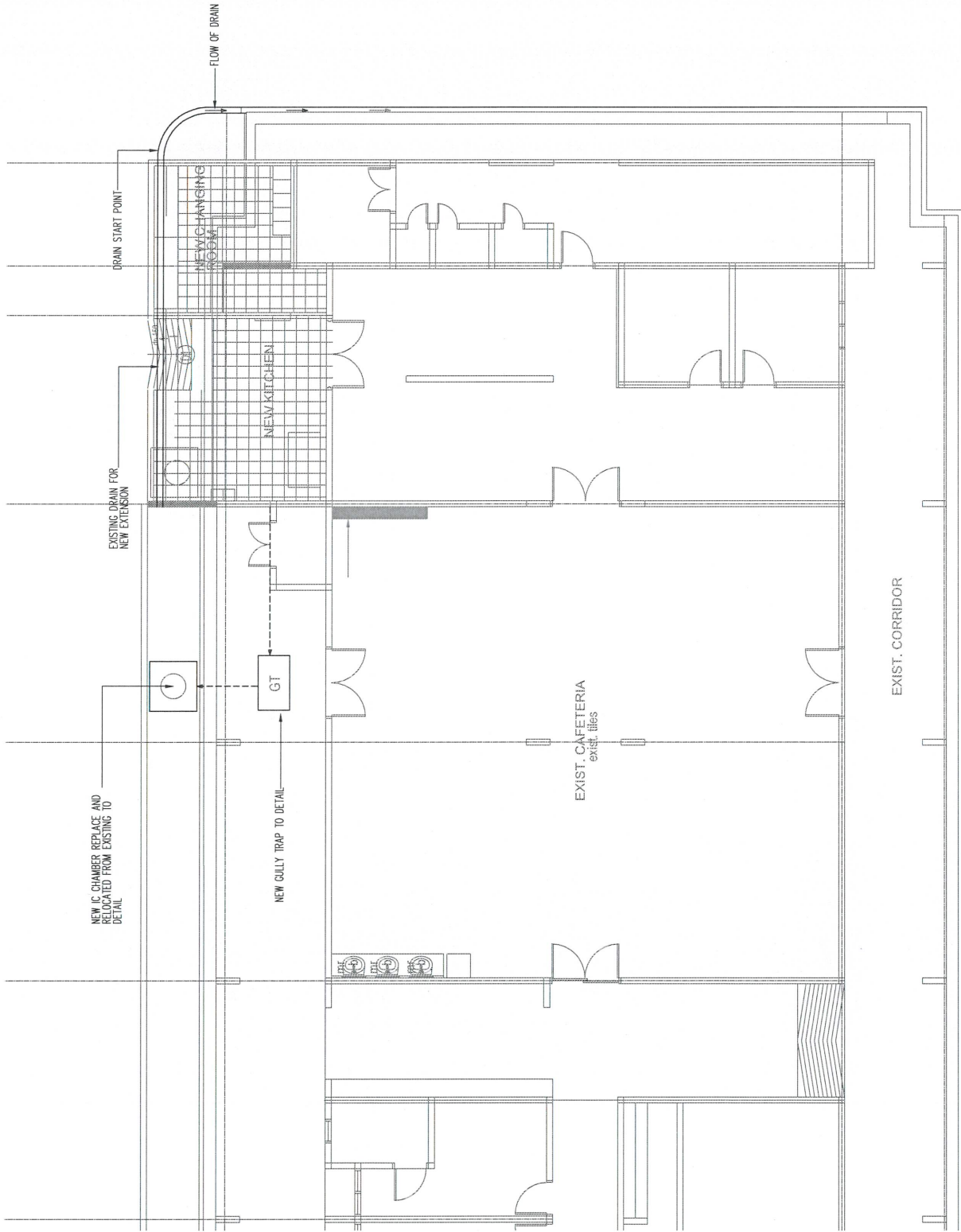
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LAYOUT OF INEWORKS

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SCALE: 1:10

- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. CONCRETE SURROUND SHALL BE A MINIMUM OF GRADE 20 WITH MAXIMUM AGGREGATE SIZE 20.
3. DIAMETER OF PIPE INSIDE MANHOLE BASE TO BE OF EQUAL SIZE OR LARGER THAN THE INCOMING PIPE DIAMETER.
4. PIPE CONNECTIONS TO ANY ONE UNIT MANHOLE SHALL BE A MAXIMUM OF FOUR (4) CONNECTIONS. ADDITIONAL MANHOLE SHALL BE PROVIDED TO RECEIVE EXTRA PIPE CONNECTIONS.
5. FOR MANHOLE COVER WITH HINGE, OPENING OF COVER SHALL BE PERPENDICULAR TO THE DIRECTION OF FLOW AND IN ANYWAY SHOULD NOT OBSTRUCT THE ACCESS OF MANHOLE FOR MAINTENANCE WORKS.
6. MAXIMUM ALLOWABLE INFILTRATION RATE SHALL BE 50 LITRE/(MM DIAMETER KM OF SEWER LENGTH.DAY).
7. PIPE MUST BE LAID BY TRAINED WORKERS.