



KENYATAAN SEBUTHARGA

Sebutharga adalah dipelawa daripada Kontraktor-kontraktor yang berdaftar dengan **Lembaga Pembangunan Industri Pembinaan & Pusat Khidmat Kontraktor** dalam kelas dan jenis pendaftaran yang berkaitan dan yang masih dibenarkan membuat tawaran buat masa ini bagi kerja – kerja berikut:-

NO SEBUTHARGA	PPD/400(S)/5/7/12-2024
TAJUK SEBUTHARGA	KERJA-KERJA PENYELENGGARAAN DAN PENGGANTIAN PINTU TERMASUK LAIN-LAIN KERJA BERKAITAN DI SEKITAR KAMPUS, POLITEKNIK PORT DICKSON NEGERI SEMBILAN DARUL KHUSUS
TARIKH BUKA/ IKLAN	22 MAC 2024 (JUMAAT)
TARIKH TUTUP	5 APRIL2024 (JUMAAT) pada atau sebelum jam 12.00 tengahari
SYARAT – SYARAT SEBUTHARGA	<ul style="list-style-type: none">- i. Sesalinan terkini Sijil SSM- ii. Sesalinan terkini Sijil PKK / BPKU<ul style="list-style-type: none">a. Sijil Kontraktor Kerja Taraf Bumiputera - Gred Pendaftaran G1 (Bumiputera) (Awam)- iii. Sesalinan terkini Sijil CIDB (berdaftar di Port Dickson shj) :<ul style="list-style-type: none">a. Sijil Perolehan Kerja Kerajaan Gred : G1; Kategori : B (Bangunan)b. Perakuan Pendaftaran G1; B04 (Kerja Am Bangunan), B24 (Kerja Penyelenggaraan Bangunan)- iv. Penyata Bank 3 bulan terkini

LAWATAN TAPAK DAN TAKLIMAT

TARIKH : **29 MAC 2024 (JUMAAT)**
MASA : **9.30 PAGI**
TEMPAT : **PEJABAT UPPEF, POLITEKNIK PORT DICKSON**

Kontraktor **WAJIB** menyertai Lawatan Tapak pada tarikh dan tempat yang telah ditetapkan (**kelewatan tidak dilayan selepas waktu yang telah ditetapkan**) dan hanya kontraktor yang hadir dalam lawatan tapak ini sahaja yang layak untuk mendapat dokumen sebutharga ini (Sila bawa cop syarikat semasa lawatan tersebut). **PENAMA SYARIKAT HADIR SENDIRI** semasa lawatan dibuat. Wakil kontraktor sama sekali tidak dibenarkan. Dokumen sebutharga yang dihantar secara manual perlulah lengkap diisi dan ditandatangani hendaklah dikembalikan dengan sampul berlakri kepada:

Pengarah
Politeknik Port Dickson
KM 14, Jalan Pantai
71050 Si Rusa, Port Dickson
Negeri Sembilan

Peringatan :

Pihak kerajaan tidak akan bertanggungjawab ke atas **sebarang kelewatan** atau kehilangan mana-mana sebutharga yang dikemukakan melalui pos. Penjelasan lanjut hubungi pegawai berikut :

- 1) Puan Siti Zubaidah binti Mukhtar : 06-6622029 (Unit Pembangunan dan Pengurusan Fasiliti)
- 2) Encik Syamsuri bin Saari : 06-6622049 (Unit Perolehan)



PPD/400(S)/5/7/12-2024

TARIKH IKLAN : 22.03.2024

SEBUTHARGA :

**KERJA-KERJA PENYELENGGARAAN DAN
PENGANTIAN PINTU TERMASUK LAIN-LAIN KERJA
BERKAITAN DI SEKITAR KAMPUS, POLITEKNIK PORT
DICKSON NEGERI SEMBILAN DARUL KHUSUS**

G1

TARIKH TAKLIMAT & LAWATAN TAPAK	: 29.03.2024 (JUMAAT)
MASA	: 9.30 PAGI
TARIKH TUTUP	: 05.04.2024 (JUMAAT)
MASA	: 12.00 TENGAHARI

**PEN. JURUTERA YANG MENGAWASI KERJA :
SITI ZUBAIDAH BINTI MUKHTAR**

HARGA NASKAH : PERCUMA

** NOTA : Salinan dokumen-dokumen yang dinyatakan dalam senarai semak hendaklah disertakan bersama semasa penyerahan Borang Sebutharga.*

COP SYARIKAT :

ARAHAN KEPADA PENYEBUTHARGA

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 dikehendaki mengisi dengan dakwat hitam segala maklumat berikut dengan sepenuhnya:-

- 2.1.1 Harga dan tandatangan Kontraktor di Ringkasan Sebut Harga,
- 2.1.2 Harga, tempoh dan tandatangan dalam Borang Sebut Harga,
- 2.1.3 Senarai Kerja Dalam Tangan,
- 2.1.4 Senarai Pengalaman Kerja
- 2.1.5 Jadual Kadar Harga (jika ada),
- 2.1.6 Butir-butir Spesifikasi (jika ada),
- 2.1.7 Surat Akuan Pembida
- 2.1.8 Maklumat kemampuan kewangan dalam bentuk Penyata Akaun Bank yang disahkan oleh Pengurus Cawangan Bank berkenaan untuk 3 bulan yang terakhir, Deposit Tetap, baki nilai Kemudahan Kredit dan nilai Kemudahan Kredit yang layak / akan diperolehi oleh Penyebut Harga daripada Institusi Kewangan.
- 2.1.9 Jika berlaku kesilapan dalam mengisi maklumat-maklumat di atas Penyebut Harga hendaklah menandatangani ringkas semua pembetulan.
- 2.1.10 Kegagalan mengisi / menandatangani Borang Sebut Harga akan mengakibatkan Sebut Harga ditolak.
- 2.1.11 Sekiranya terdapat percanggahan di antara maklumat yang dinyatakan dalam Ringkasan Sebut Harga dan Borang Sebut Harga, maklumat di dalam Borang Sebut Harga diberi keutamaan.
- 2.1.12 Sekiranya dokumen Sebut Harga disediakan dalam bentuk *softcopy* (berbentuk CD), Penyebut Harga hendaklah mengemukakan Dokumen Sebut Harga dalam bentuk *softcopy* dan *hardcopy*. Sekiranya terdapat percanggahan maklumat antara *softcopy* dan *hardcopy*, Dokumen dalam *hardcopy* hendaklah digunapakai.
- 2.1.13 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 *Integrity Pact*

- 2.2.1 Penyebut Harga wajib mengemukakan Surat Akuan Pembida seperti di **Lampiran 9A** dimana ia berwaad untuk tidak menawar atau memberi rasuah kepada mana-mana individu lain sebagai sogokan untuk dipilih dalam tawaran ini. Wakil Syarikat yang menandatangani Surat Akuan Pembida ini hendaklah juga melampirkan Surat Perwakilan Kuasa menandatangani bagi pihak Syarikat.
- 2.2.2 Surat Akuan Pembida tersebut adalah menjadi salah satu dokumen wajib dalam penilaian Sebut Harga. Sekiranya Penyebut Harga gagal mengemukakan Surat Akuan tersebut, Penyebut Harga akan dinilai sebagai gagal dalam penilaian Sebut Harga.
- 2.2.3 Penyebut Harga yang berjaya wajib mengemukakan Surat Akuan Pembida Berjaya seperti di **Lampiran 9B** beserta dengan Borang Perjanjian Inden Kerja yang telah ditandatangani di mana ia berwaad tidak akan memberi rasuah sebagai ganjaran kerana mendapatkan kontrak. Wakil Syarikat yang menandatangani Surat Akuan Pembida ini hendaklah juga melampirkan Surat Perwakilan Kuasa menandatangani bagi pihak Syarikat. Surat Akuan ini akan menjadi sebahagian daripada Dokumen Kontrak.

2.3 **Penyerahan Dokumen Sebut Harga**

- 2.3.1 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.
- 2.3.2 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:
- **ALAMAT : PEJABAT PENGARAH,
Politeknik Port Dickson,
KM 14 Jalan Pantai,
71050 Si Rusa, Port Dickson,
Negeri Sembilan Darul Khusus**
 - **TARIKH TUTUP : 05.04.2024 (JUMAAT)**
 - **MASA : Sehingga 12.00 Tengahari Sahaja**
- 2.3.3 Sebut Harga yang diserahkan selepas masa yang ditetapkan, 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 Dokumen Sebut Harga untuk penjelasan lanjut.

3. TEMPOH SIAP KERJA

Kerja ini hendaklah disiapkan dalam tempoh **Maksimum 10 minggu - Minimum 8 minggu**. Mana-mana Penyebut Harga yang menawarkan tempoh siap kerja melebihi tempoh siap kerja maksimum yang ditetapkan tidak akan dipertimbangkan.

4. PERBELANJAAN PENYEDIAAN SEBUT HARGA

Semua perbelanjaan bagi penyediaan Sebut Harga ini hendaklah ditanggung oleh Penyebutharga sendiri.

5. TEMPOH SAH SEBUT HARGA

Sebut harga ini sah selama 90 hari dari tarikh tutup Sebut Harga. Penyebut harga tidak boleh menarik balik Sebut Harganya sebelum tamat tempoh sah laku Sebut Harga. Laporan mengenai penarikan balik Sebut Harga oleh Penyebut Harga akan dikemukakan kepada CIDB/BPKU untuk tindakan.

6. 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:

- 6.1 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).
- 6.2 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).
- 6.3 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).

6.4 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).

KEHENDAK AM

Sebutharga : **KERJA-KERJA PENYELENGGARAAN DAN PENGGANTIAN PINTU TERMASUK LAIN-LAIN KERJA BERKAITAN DI SEKITAR KAMPUS, POLITEKNIK PORT DICKSON NEGERI SEMBILAN DARUL KHUSUS**

1.0 SPESIFIKASI DAN SYARAT-SYARAT SEBUT HARGA UNTUK KERJA

Spesifikasi yang terkandung di dalam Borang Sebutharga Kerja hendaklah dibaca bersama Kehendak Am ini bagi memperjelaskan perincian kepada butiran-butiran kerja yang telah diperhargakan.

Setiap kontraktor yang mengambil bahagian di dalam Sebutharga ini diingatkan supaya mengambilkira kos pelaksanaan kerja yang telah dinyatakan di dalam Kehendak Am ini.

1.1 PEMERIKSAAN TAPAK BINA

1.1.1 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.

1.2 INSURANS

1.2.1 Kontraktor hendaklah atas nama bersama Kerajaan dan kontraktor mengambil Insurans Liabiliti Awam dan Insurans Kerja * (sekiranya dinyatakan di dalam Butir-butir Ringkasan Sebutharga) bagi tempoh pelaksanaan Kerja).

1.2.2 Kontraktor hendaklah mengemukakan kepada Pegawai Inden semua polisi Insurans yang tersebut di atas sebelum memulakan Kerja. Bagaimana pun untuk tujuan memulakan Kerja sahaja Nota-nota Perlindungan dan resit-resit bayaran premium adalah mencukupi.

1.3 PERATURAN PERLAKSANAAN KERJA

- 1.3.1 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 arahan Pegawai Inden atau Wakilnya.
- 1.3.2 Kerja-kerja yang dilaksanakan di perenggan 1.3.1 di atas, hendaklah juga mematuhi semua peraturan dan pekeliling, undang-undang dan undang-undang kecil yang diluluskan oleh :
- i) Jabatan Keselamatan Pekerjaan dan Kesihatan
 - ii) Jabatan Bomba dan Penyelamat
 - iii) Pihak Berkuasa Tempatan
 - iv) SPAN
 - v) Syarikat Air Negeri Sembilan (SAINS)
 - vi) Suruhanjaya Tenaga

1.4 SUB-SEWA DAN MENYERAH HAK KERJA

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

1.5 PENOLAKAN BAHAN, BARANG DAN MUTU HASIL KERJA OLEH PEGAWAI INDEN

- 1.5.1 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 hendak diganti dan sebarang kos tambahan yang terlibat hendaklah ditanggung oleh Kontraktor sendiri.
- 1.5.2 Kontraktor hendaklah dengan sepenuhnya atas perbelanjaan sendiri menyediakan sampel bahan dan barang-barang untuk ujian.
- 1.5.3 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.
- 1.5.4 Semua alatganti yang digunakan hendaklah 'genuine' dan perlu disahkan oleh pengilang.

1.6 RINGKASAN SEBUT HARGA

- 1.6.1 Ringkasan Sebut Harga hendaklah menjadi sebahagian daripada Borang Sebut Harga ini dan hendaklah menjadi asas Jumlah Sebut Harga.
- 1.6.2 Harga-harga dalam Ringkasan Sebut Harga hendaklah mengambil kira semua kos termasuk kos pengangkutan, cukai, duti, bayaran dan caj-caj lain yang perlu dan berkaitan bagi menyiapkan kerja dengan sepenuhnya.
- 1.6.3 Tiada sebarang tuntutan akan dilayan bagi pelarasan harga akibat daripada perubahan kos buruh, bahan-bahan dan semua duti dan cukai Kerajaan, sama dan dalam tempoh sah sebut harga atau dalam tempoh Kerja.
- 1.6.4 Harga-harga dalam Ringkasan Sebut Harga yang dikemukakan oleh Kontraktor hendaklah tertakluk kepada persetujuan sebelumnya daripada Pegawai Inden tentang kemunasabahnya. Persetujuan hendaklah dibuat ke atas apa-apa pelarasan kemudiannya kepada harga-harga Ringkasan Sebut Harga.
- 1.6.5 Apa-apa pelarasan harga dalam Ringkasan Sebutharga menurut Perenggan tersebut di atas dan apa-apa kesilapan pengiraan Ringkasan Sebutharga hendaklah dilaras dan diperbetulkan sebelum Inden Kerja dikeluarkan. Jumlah amaun yang dilaraskan hendaklah sama dengan amaun jumlah harga Pukul dalam borang Sebutharga. Amaun jumlah harga pukul dalam Borang Sebutharga hendaklah tetap tidak berubah.

1.7 KEGAGALAN KONTRAKTOR MENYIAPKAN

- 1.7.1 Pegawai Inden berhak membatalkan Inden Kerja sekiranya Kontraktor berada dalam keadaan berikut dan setelah menerima surat amaran daripada Pegawai Inden:
 - i) Sekiranya Kontraktor masih gagal menyiapkan Kerja dalam tempoh masa yang telah ditetapkan.
 - ii) Kemajuan Kerja terlalu lembab tanpa apa-apa sebab yang munasabah.
 - iii) Penggantungan pelaksanaan seluruh atau sebahagian Kerja, tanpa apa-apa sebab yang munasabah.
 - iv) Tidak mematuhi arahan Pegawai Inden tanpa apa-apa alasan yang munasabah dan,
 - v) Apabila Kontraktor diisytiharkan bankrap oleh pihak yang sah.

1.8 PERUBAHAN KERJA

- 1.8.1 Pegawai Inden boleh menurut budi bicaranya mengeluarkan arahan-arahan yang berkehendakkan sesuatu perubahan dengan secara bertulis. Tiada apa-apa perubahan yang dikeluarkan oleh Pegawai Inden atau yang disahkan kemudian oleh Pegawai Inden boleh membatalkan Sebutharga ini.
- 1.8.2 Semua kerja Perubahan dan tambahan yang diluluskan oleh Pegawai Inden akan diukur atau dinilai dengan menggunakan kadar harga yang ada dalam senarai kuantiti/Ringkasan Sebutharga. Jika tidak terdapat sebarang kadar harga yang berasingan kadar harga yang dipersetujui oleh Pegawai Inden dan kontraktor hendaklah digunakan.

1.9 PENGUKURAN KUANTITI SEMENTARA

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

1.10 LAPORAN BERGAMBAR

Kontraktor dikehendaki menyediakan dan mengemukakan kepada Pengarah Politeknik Port Dickson Laporan Kemajuan Bergambar sebelum, semasa dan selepas siap kerja dalam bentuk '*Hardcopy* (2 salinan *gloss paper*) dan '*Softcopy*' (*Pendrive*)

1.11 TEMPOH TANGGUNGAN KECACATAN (DLP)

- 1.11.1 Tempoh Tanggungan Kecacatan bagi sebut harga hendaklah selama **Dua Belas (12) Bulan** dari tarikh kerja diperlakukan siap. Bagi kerja-kerja mekanikal dan elektrikal dimana tempoh waranti ke atas alat-alat dan loji-loji adalah **Dua Belas (12) Bulan** dan dalam kes-kes tertentu oleh kerana jenis dan kerumitan kerja, tempoh tanggungan kecacatan yang lebih lama daripada dua belas (12) bulan boleh dikenakan.
- 1.11.2 Kontraktor dipertanggungjawabkan untuk membaiki kecacatan, ketidaksempurnaan, kekecutan atau apa-apa kerosakan lain 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 membaiki kecacatan, ketidaksempurnaan, kekecutan atau apa-apa jua kerosakan lain atas kos Kontraktor sendiri.
- 1.11.3 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 atau tidak mencukupi, mengeluarkan surat pensyoran kepada Lembaga Pembangunan Industri Pembinaan untuk menggantungkan pendaftaran Kontraktor, dan menghantar salinan-salinan surat tersebut kepada Bahagian Pembangunan Bumiputra.

1.12 PERATURAN MEMBAYAR SELEPAS SIAP

Bayaran sepenuhnya hanya akan dibayar setelah kontraktor menyiapkan kerja dengan sempurnanya dan Perakuan Siap Kerja dikeluarkan. Kontraktor hendaklah mengembalikan Borang-borang Inden Kerja Asal, laporan bergambar, sijil-sijil berkaitan dan lain-lain dokumen seperti mana diperlukan kepada Pegawai Inden.

1.13 PERAKUAN SIAP KERJA

Pegawai Inden dan wakilnya hendaklah memperakui Perakuan Siap Kerja sebaik sahaja kerja disiapkan dengan sempurna dan memuaskan. Tarikh siap kerja ini bermulanya Tempoh Tanggungan Kecacatan.

1.14 PERAKUAN SIAP MEMPERBAIKI KECACATAN.

Pegawai Inden dan wakilnya hendaklah memperakui Perakuan Siap Membaiki Kecacatan sebaik sahaja Kontraktor telah membaiki kecacatan, ketidaksempurnaan, kekecutan atau apa-apa jua kerosakan lain.

1.15 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 permatuhamnya dengan syarat-syarat ini

- a. Pihak kontraktor hendaklah memastikan pekerja-kerja mahir bagi mana-mana kerja terlibat;
- b. Pihak kontraktor hendaklah memastikan mana-mana kekotoran serta sisa-sisa berpunca dari kerja-kerja terlibat dibersihkan dan dikeluarkan dari kawasan Politeknik;
- c. Kontraktor hendaklah membaiki segala kerosakan yang berlaku disebabkan oleh kecuaiian pihak kontraktor.

1.16 PENAMATAN BERSABIT RASUAH, AKTIVITI MENYALAH UNDANG-UNDANG ATAU AKTIVITI HARAM

1.16.1 Tanpa menjelaskan apa-apa hak Kerajaan yang lain, jika kontraktor, personel, kakitangan atau pekerjanya disabitkan bersalah oleh mahkamah kerana rasuah atau aktiviti menyalahi undang-undang atau aktiviti haram yang berkait 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.

1.16.2 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.

1.16.3 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.

2.0 KAWALAN KESELAMATAN

Kontraktor diwajibkan memastikan arahan-arahan keselamatan di tapak dan kaedah kerja selamat ditepati bagi mengelak sebarang kecelakaan (seperti mana yang dijelaskan oleh Jabatan Keselamatan & Kesihatan Pekerja, CIDB).

PERAKUAN :

Adalah saya pihak kontraktor yang mengambil bahagian di dalam Sebutharga ini bersetuju dengan Kehendak Am ini.

Saya juga bersetuju atas segala kos yang terbit dari kerja-kerja yang dinyatakan di dalam Kehendak Am tidak akan menuntut apa-apa bayaran tambahan kepada Politeknik Port Dickson.

Tarikh :

Tandatangan :

Cop Nama Syarikat :

Nota

Kehendak Am ini hendaklah dikembalikan bersama-sama Borang Sebutharga yang telah diperhargakan.

No Siri :

BORANG SEBUTHARGA KERJA
Sebut Harga Bil : _____

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

Tuan,

Sebutharga untuk : KERJA-KERJA PENYELENGGARAAN DAN PENGGANTIAN PINTU TERMASUK LAIN-LAIN KERJA BERKAITAN DI SEKITAR KAMPUS, POLITEKNIK PORT DICKSON NEGERI SEMBILAN DARUL KHUSUS

Di bawah dan tertakluk kepada arahan kepada Petender , Syarat-syarat Am, sebut harga spesifikasi kerja dan pelan-pelan, saya yang bertandatangan di bawah ini adalah dengan ini menawarkan untuk melaksanakan dan menyiapkan kerja-kerja tersebut bagi jumlah harga pukal sebanyak ;

Ringgit Malaysia:.....

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

2. Saya bersetuju menyiapkan kerja-kerja ini dalam masa minggu dan tarikh akhir tempoh mula kerja seperti yang diarahkan oleh Pegawai Inden.

Bertarikh pada.....haribulan.....20.....

.....
(Tandatangan Kontraktor)

.....
(Tandatangan Saksi)

Nama Penuh :.....

Nama Penuh :.....

No. K/P :.....

No. K/P :.....

Alamat :.....

Alamat :.....

.....

.....

.....

.....

No. Tel :.....

No. Tel :.....

Atas Sifat :.....

Meterai atau Cap Kontrak

**KLAUSA PENCEGAHAN RASUAH DALAM DOKUMEN PEROLEHAN
KERAJAAN**

- a) Without prejudice to any other rights of the Government, if the (Company/Firm), its personnel, servants or employees is convicted by the court of law for corruption or unlawful or illegal activities in relation to this [Agreement/Contract] or any other agreement that the [Company/Firm] may have with the Government, the Government shall be entitled to terminate this [Agreement/Contract] at any time, by giving immediate written notice to that effect to the [Company/Firm].
- b) Upon such termination, the Government shall be entitled to all losses, costs, damages and expenses (including any incidental costs and expenses) incurred by the Government arising from such termination
- c) For any avoidance of doubt, the Parties hereby agree that the [Company/Firm] shall not be entitled to any form of losses including loss of profit, damages, claims or whatever upon termination of this [Agreement/Contract]*

SYARAT-SYARAT SEBUTHARGA

1. Kontraktor yang berjaya dalam tawaran hendaklah membeli polisi-polisi Insurans (Pampasan Pekerja) (Pampasan Awam) sebelum memulakan kerja. Ini ialah untuk memberi perlindungan kepada Kerajaan terhadap sebarang tuntutan atau tindakan Mahkamah berpunca dari sebarang kemalangan atau kerosakan berkaitan dengan kerja-kerja tersebut. Segala perbelanjaan yang difikirkan perlu bolehla dimasukkan ke dalam harga tawaran penentuan (preliminaries).
2. Kontraktor dinasihatkan supaya membuat lawatan ke tapak-tapak bina dan menyaksikan sendiri keadaan kerja yang perlu dijalankan kerana sebarang tuntutan tambahan tidak akan dilayani selepas tawaran diterima disebabkan kesilapan membuat taksiran.
3. Kontraktor yang berjaya dalam tawaran hendaklah memberitahu pejabat ini sebelum menjalankan kerja-kerjanya. Kerja-kerja hendaklah dimulakan dalam masa satu (1) minggu dari tarikh Inden dikeluarkan.
4. Bayaran denda sebanyak 0.0185% X harga kontrak/sebutharga bagi sehari akan dikenakan sekiranya kontraktor gagal menyiapkan kerja-kerja berikut dalam tempoh waktu yang telah ditetapkan ataupun dalam tempoh waktu yang dilanjutkan.
5. Kontraktor hendaklah mengambil perhatian iaitu kerja-kerja dan bahan-bahan yang digunakan mestilah mengikut peraturan spesifikasi JKR yang disertakan (jika tidak disertakan adalah mengikut 'Spesifikasi Piawai untuk kerja-kerja binaan bangunan' yang dikeluarkan oleh JKR) dan menunjukkan contoh kepada Pegawai Penguasa sebelum ianya dipasang.
6. Segala bahan-bahan yang digunakan hendaklah mengikut syarat-syarat yang ditetapkan dan diluluskan serta mendapat kelulusan Pegawai Penguasa terlebih dahulu.
7. Kontraktor hendaklah membersihkan segala sampah sarap dan bahan-bahan yang tidak diperlukan dari tapakbina seperti yang diarah oleh Pegawai Penguasa sebelum bayaran dijelaskan. Kontraktor juga harus membaiki segala kerosakan yang disebabkan oleh Kontraktor sendiri.
8. Kerja-kerja yang telah siap akan diukur semula dan bayaran akan dijelaskan setelah semua kerja-kerja dalam sebutharga disiapkan dengan sempurna dan memuaskan.
9. Kerajaan adalah tidak terikat untuk menerima sebutharga yang terendah atau mana-mana sebutharga atau memberi apa-apa sebab atas penolakan sesuatu sebutharga. Keputusan Jawatankuasa Sebutharga adalah muktamad.
10. Pegawai Penguasa dan Wakilnya berhak menolak bahan, barang-barang dan kerja oleh Kontraktor yang tidak mematuhi Spesifikasi dan bahan-bahan binaan dan kerja yang

ditolak hendaklah diganti atau dibuat semula dan sebarang kos yang terlibat hendaklah ditanggung oleh kontraktor sendiri.

11. Kontraktor dikehendaki membaiki segala kecacatan, ketidaksempurnaan atau segala kerosakan yang disebabkan oleh bahan atau barang atau mutu hasil kerja yang berlaku dalam Tempoh Tanggungan Kecacatan. Tempoh Tanggungan Kecacatan adalah selama 12 bulan selepas tarikh siap kerja.
12. Saya yang bertandatangan di bawah ini telah memahami dan akan mematuhi segala syarat-syarat yang tersebut seperti di atas.

Tarikh :

.....
Tandatangan Kontraktor &
Cop Syarikat

SYARAT-SYARAT ELEMEN KESIHATAN DAN KESELAMATAN PEKERJAAN

“AKU JANJI KONTRAKTOR”

1. Mengenalpasti hazard yang sedia ada di tempat kerja atau semasa menjalankan kerja.
2. Memaklumkan kehadiran semua pekerja kepada Pengarah PPD sebelum mula bekerja.
3. Memastikan alat-alat perlindungan pekerja yang sesuai berada di dalam keadaan yang baik dan cukup untuk semua pekerja.
4. Memastikan semua pekerja menggunakan alat-alat perlindungan pekerja yang disediakan.
5. Laluan atau tempat kerja yang boleh mendatangkan risiko KKP mestilah ditutup sepenuhnya atau dikawal.
6. Jika terdapat kecederaan atau reaksi alahan yang serius, sila dapatkan rawatan segera dan laporkan kepada Pegawai PPD secepat mungkin.
7. Jika anda berada dalam keadaan kecemasan yang akan membahayakan anda, sila laporkan segera kepada Pegawai PPD untuk mendapatkan bantuan daripada agensi lain jika perlu.
8. Mematuhi semua peraturan, prosedur atau arahan oleh Pengarah PPD.

Kami telah baca dan faham peraturan-peraturan yang tercatat dalam dokumen ini. Kami memahami dengan sepenuhnya dan terimanya sebagai tanggungjawab syarikat kami sebagai kontraktor Politeknik Port Dickson dan akan memastikan semua pekerja kami dan sub-kontraktor memahami and mematuhi semua peraturan dan panduan yang termaktub dalam organisasi anda.

Tarikh :

.....

Tandatangan Kontraktor &
Cop Syarikat

SENARAI SEMAK
TAWARAN TEKNIKAL / KEWANGAN
(Pengesahan Penghantaran Dokumen)

SULIT

Nombor Sebutharga: PPD/400(S)5/7/12-2024

Semak dan tandakan (√) di tempat yang berkenaan dan masukkan lampiran tersebut dalam sampul tawaran yang betul mengikut turutan senarai semak.

BIL	PERKARA	STATUS	SERAHAN OLEH SYARIKAT (√)	SEMAKAN OLEH JK PEMBUKA SEBUTHARGA (√)
1.	Dokumen Spesifikasi / BQ	Mandatori		
2.	Borang Sebutharga Kerja	Mandatori		
3.	Salinan Sijil Pendaftaran Suruhanjaya Syarikat Malaysia (SSM) terkini	Mandatori		
4.	Sijil Kontraktor Kerja Taraf Bumiputera - Gred Pendaftaran G1(Bumiputera) (Awam)	Mandatori		
5.	Sijil Kontraktor Kerja Taraf Bumiputera - Gred Pendaftaran G1 (Bumiputera) (Awam)	TB		
6.	Sesaliran terkini Sijil CIDB (berdaftar di Port Dickson shj)	Mandatori		
7.	Sijil Perolehan Kerja Kerajaan Gred : G1; Kategori : B (Bangunan)	Mandatori		
8.	Perakuan Pendaftaran G1; B04 (Kerja Am Bangunan), B24 (Kerja Penyelenggaraan Bangunan)	Mandatori		
9.	Sijil Perolehan Kerja Kerajaan Gred: G1; B04 (Kerja Am Bangunan), B24 (Kerja Penyelenggaraan Bangunan)	TB		
10.	Perakuan Pendaftaran G1; B04 (Kerja Am Bangunan), B24 (Kerja Penyelenggaraan Bangunan)	TB		
11.	Salinan Sijil Pendaftaran dari Suruhanjaya Tenaga (ST)	TB		
12.	Penyata Bank 3 bulan terkini	Mandatori		

Arahan:

1. Dokumen perlu diisi dengan lengkap.
2. Setiap dokumen hendaklah ditandatangani dan dicop oleh penyebutharga.
3. Sila kepilkan senarai semak ini bersama dokumen sebutharga.

PERAKUAN:

PENYEBUTHARGA: <i>(Diisi oleh Penyebutharga)</i>	JAWATANKUASA PEMBUKA SEBUTHARGA <i>(Diisi oleh Jawatankuasa Pembuka Sebutharga)</i>
<p>Dengan ini saya mengesahkan bahawa saya telah membaca dan memahami semua syarta-syarat dan terma yang dinyatakan dalam dokumen sebutharga PPD/400(S)/5/7/12-2024. Semua maklumat yang dikemukakan di didalam cadangan tawaran ini adalah benar.</p> <p>..... Nama: No. Kad Pengenalan:</p> <p>Cop Syarikat:</p>	<p>Jawatankuasa Pembuka Sebutharga mengesahkan penerimaan dokumen seperti yang ditandakan.</p> <p>Nama : Jawatan : Tarikh : Tandatangan :</p> <p>Nama : Jawatan : Tarikh : Tandatangan :</p> <p>Nama : Jawatan : Tarikh : Tandatangan :</p>

SENARAI SEMAK
TAWARAN TEKNIKAL / KEWANGAN
(Pengesahan Penghantaran Dokumen)

SULIT

Nombor Sebutharga: PPD/400(S)5/7/12-2024

Semak dan tandakan (√) di tempat yang berkenaan dan masukkan lampiran tersebut dalam sampul tawaran yang betul mengikut turutan senarai semak.

BIL	PERKARA	STATUS	SERAHAN OLEH SYARIKAT (√)	SEMAKAN OLEH JK PEMBUKA SEBUTHARGA (√)
1.	Dokumen Spesifikasi / BQ	Mandatori		
2.	Borang Sebutharga Kerja	Mandatori		
3.	Salinan Sijil Pendaftaran Suruhanjaya Syarikat Malaysia (SSM) terkini	Mandatori		
4.	Sijil Kontraktor Kerja Taraf Bumiputera - Gred Pendaftaran G1(Bumiputera) (Awam)	Mandatori		
5.	Sijil Kontraktor Kerja Taraf Bumiputera - Gred Pendaftaran G1 (Bumiputera) (Awam)	TB		
6.	Sesaliran terkini Sijil CIDB (berdaftar di Port Dickson shj)	Mandatori		
7.	Sijil Perolehan Kerja Kerajaan Gred : G1; Kategori : B (Bangunan)	Mandatori		
8.	Perakuan Pendaftaran G1; B04 (Kerja Am Bangunan), B24 (Kerja Penyelenggaraan Bangunan)	Mandatori		
9.	Sijil Perolehan Kerja Kerajaan Gred: G1; B04 (Kerja Am Bangunan), B24 (Kerja Penyelenggaraan Bangunan)	TB		
10.	Perakuan Pendaftaran G1; B04 (Kerja Am Bangunan), B24 (Kerja Penyelenggaraan Bangunan)	TB		
11.	Salinan Sijil Pendaftaran dari Suruhanjaya Tenaga (ST)	TB		
12.	Penyata Bank 3 bulan terkini	Mandatori		

Arahan:

1. Dokumen perlu diisi dengan lengkap.
2. Setiap dokumen hendaklah ditandatangani dan dicop oleh penyebutharga.
3. Sila kepilkan senarai semak ini bersama dokumen sebutharga.

PERAKUAN:

PENYEBUTHARGA: <i>(Diisi oleh Penyebutharga)</i>	JAWATANKUASA PEMBUKA SEBUTHARGA <i>(Diisi oleh Jawatankuasa Pembuka Sebutharga)</i>
<p>Dengan ini saya mengesahkan bahawa saya telah membaca dan memahami semua syarta-syarat dan terma yang dinyatakan dalam dokumen sebutharga PPD/400(S)/5/7/12-2024. Semua maklumat yang dikemukakan di didalam cadangan tawaran ini adalah benar.</p> <p>.....</p> <p>Nama: No. Kad Pengenalan:</p> <p>Cop Syarikat:</p>	<p>Jawatankuasa Pembuka Sebutharga mengesahkan penerimaan dokumen seperti yang ditandakan.</p> <p>Nama : Jawatan : Tarikh : Tandatangan :</p> <p>Nama : Jawatan : Tarikh : Tandatangan :</p> <p>Nama : Jawatan : Tarikh : Tandatangan :</p>



**POLITEKNIK PORT DICKSON
KEMENTERIAN PENDIDIKAN TINGGI**

**KERJA-KERJA PENYELENGGARAAN DAN PENGGANTIAN PINTU
TERMASUK LAIN-LAIN KERJA BERKAITAN DI SEKITAR KAMPUS,
POLITEKNIK PORT DICKSON NEGERI SEMBILAN DARUL KHUSUS**

HARGA INDIKATIF JABATAN: RM98,000.00

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.

Pihak Kerajaan tidak menjamin bahawa syarikat akan dipilih atau boleh menyiapkan kerja dengan bersandarkan Harga Indikatif Jabatan.

Pengarah,
Politeknik Port Dickson
Kementerian Pendidikan Tinggi

SYARAT-SYARAT ELEMEN KESIHATAN DAN KESELAMATAN PEKERJAAN

“AKU JANJI KONTRAKTOR”

1. Mengenalpasti hazard yang sedia ada di tempat kerja atau semasa menjalankan kerja.
2. Memaklumkan kehadiran semua pekerja kepada Pengarah PPD sebelum mula bekerja.
3. Memastikan alat-alat perlindungan pekerja yang sesuai berada di dalam keadaan yang baik dan cukup untuk semua pekerja.
4. Memastikan semua pekerja menggunakan alat-alat perlindungan pekerja yang disediakan.
5. Laluan atau tempat kerja yang boleh mendatangkan risiko KKP mestilah ditutup sepenuhnya atau dikawal.
6. Jika terdapat kecederaan atau reaksi alahan yang serius, sila dapatkan rawatan segera dan laporkan kepada Pegawai PPD secepat mungkin.
7. Jika anda berada dalam keadaan kecemasan yang akan membahayakan anda, sila laporkan segera kepada Pegawai PPD untuk mendapatkan bantuan daripada agensi lain jika perlu.
8. Mematuhi semua peraturan, prosedur atau arahan oleh Pengarah PPD.

Kami telah baca dan faham peraturan-peraturan yang tercatat dalam dokumen ini. Kami memahami dengan sepenuhnya dan terimanya sebagai tanggungjawab syarikat kami sebagai kontraktor Politeknik Port Dickson dan akan memastikan semua pekerja kami dan sub-kontraktor memahami and mematuhi semua peraturan dan panduan yang termaktub dalam organisasi anda.

Tarikh :

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Tandatangan Kontraktor &
Cop Syarikat

STANDARD SPECIFICATIONS FOR BUILDING WORKS

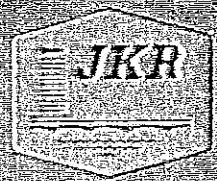
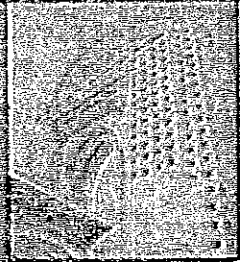
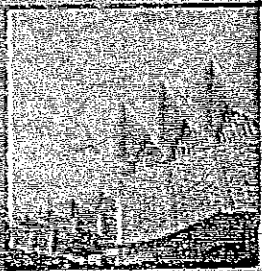
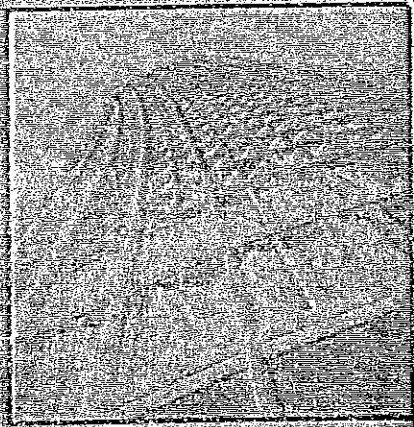



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DOKUMEN MEJA TERKAWAL

 <p>JKR MALAYSIA</p>	<p>SECTION G : ROOFING WORKS</p>	No. Dokumen : JKR 20800-0183-14
		No. Keluaran : 01
		No. Pindaan : 00
		Tarikh : 29 Januari 2014
		Muka Surat : G/2

6. Pre-painted Steel Roofing Sheet

6.1 Unless otherwise stated, the metal roof decks shall comply with the following:


6.1.1 Materials

- 6.1.1.1 The roofing sheets shall be produced from aluminium/zinc alloy coated steel conforming to MS 1196: "Continuous Hot-Dip Aluminium/Zinc Coated Steel Sheet of Commercial, Drawing and Structural Qualities" and AS 1397 "Steel Sheet and Strip - Hot-Dip Zinc Coated or Aluminium/Zinc Coated".
- 6.1.1.2 The pre-painted finish over the aluminium/zinc alloy coated base steel shall conform to MS 2383: "Prefinished/Pre-painted Sheet Metal Products for Interior/Exterior Building Applications - Performance Requirements" and S/NZS 2728: "Prefinished/Pre-painted Sheet Metal Products for Interior/Exterior Building Applications - Performance Requirements".
- 6.1.1.3 The exterior finish coat shall have a nominal film thickness of 20 μm over 5 μm thick corrosion inhibitive primer on top side or weather side. The backing coat shall be with nominal film thickness of 5 μm over 5 μm corrosion inhibitive primer.
- 6.1.1.4 Minimum steel yield strength shall be 550 MPa.
- 6.1.1.5 Minimum aluminium/zinc alloy coating mass shall be 150 g/m² (Coating Class AZ 150) on both surfaces conforming to ISO 9223 Category 3 (C3) environment.
- 6.1.1.6 The Contractor shall submit material warranty from the manufacturer in accordance with ISO 9223: "Corrosion of Metals and Alloys - Corrosivity of Atmosphere - Classification" of the project site and the format approved by the S.O. Material warranty shall be up to 25 years against perforation by corrosion, 15 years against flake and peel, 10 years against colour fading and 5 years against dirt staining.
- 6.1.1.7 The Contractor shall submit shop drawings for the S.O.'s approval prior to commencement of installation works.

6.1.2 Metal sheet profiles

6.1.2.1 Unless otherwise specified or shown in the Drawings, the metal sheet profile shall be of a concealed fixing system as approved by the S.O. The roofing sheets shall have the following minimum requirements:

- (i) Base Metal Thickness (BMT) = 0.42 mm.
- (ii) Cover width = 680 mm.
- (iii) Rib height = 40 mm.
- (iv) Coating = Pre-painted aluminium and zinc coated steel with AZ150 (150 g/m²) on both surfaces.

 JKR MALAYSIA	SECTION G : ROOFING WORKS	No. Dokumen : JKR.20800-0183-14 No. Keluaran : 01 No. Pindaan : 00 Tarikh : 29 Januari 2014 Muka Surat : G/4
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6.1.7 Lightning conductors

Aluminium lightning conductor is recommended for use on steel roof system.

- 6.2 All fixing accessories shall be rust-resistant and of suitable design and construction as recommended by the manufacturer for the roofing system and as approved by the S.O. All fasteners and screws shall be of the self-drilling type either concealed or screwed fixing, complete with preassembled EPDM rubber washers.
- 6.3 Identification, storage and packaging of alum/zinc steel roof decking shall be strictly in accordance with the manufacturer's recommendation and comply with the S.O.'s requirements.
- 6.4 All roof decking sheets, capping, flashing et cetera or wall cladding shall be new, clean, regular, straight and true to shape with sharp defined profiles, free from cracks, chips, bends and defects detrimental to practical use or from other surface imperfections.
- 6.5 At Site, the sheets shall be lifted from the transport carrier by a crane and properly stacked clear of the ground, ready to be lifted up to the roof structure for laying. Where sheets are to be manually lifted, care should be taken not drag the sheets to avoid scraping away the surface coating.
- 6.6 Where storage is necessary, stack heights shall be kept to a minimum and the sheets shall be stacked in a sloping position. Sheets shall be stacked off a dry firm ground, under cover by tarpaulin or polythene sheets but ventilated and away from building operations. Should the stack sheets become wet, they shall be immediately dried to prevent staining and degradation of the surface coatings.
- 6.7 The Contractor shall be responsible for the absolute water-tightness of the roof and must ensure that the method of installation, fixing and fastening decking sheets, caps, flashings et cetera including acoustical, insulation and expansion joints, whenever required shall conform strictly to the manufacturer's recommendation.
- 6.8 The completed portions of the roof shall be clear of all metallic particles such as blind rivet shanks, screws, nuts, nails et cetera and dirty foot prints should be wiped off to avoid early deterioration/corrosion and discolouration. Damages to the coating shall be repaired with touch-up paint as recommended by the manufacturer and approved by the S.O.

7. Roofing Sheet For Marine Environment (Coastal Areas)

- 7.1 The Contractor shall select the correct type of metal sheet profile to be installed for coastal areas as recommended by the roof manufacturer and approved by the S.O.
- 7.2 Unless otherwise specified or shown in the Drawings, the roofing sheet for marine environment shall be metallic coated steel with minimum aluminium/zinc alloy coating mass of 200 g/m² (Coating Class AZ 200) on both surfaces conforming to ISO 9223 Category 4 (C4) and Category 5 (C5) environment.
- 7.3 Metallic coated steel shall be manufactured and certified by SIRIM according to MS 1196 'Continuous Hot-Dip Aluminium/Zinc Coated Steel Sheet of Commercial, Drawing and Structural Qualities' or AS 1397 'Steel Sheet and Strip: Hot-Dip Zinc Coated or Aluminium/Zinc Coated'.
- 7.4 The pre-painted finish (super polyester paint) type shall be used over the aluminium/zinc alloy coated base steel shall conform to MS 2383: "Prefinished/Pre-

 JKR MALAYSIA	SECTION G : ROOFING WORKS	No. Dokumen : JKR 20800-0183-14
		No. Keluaran : 01 No. Pindaan : 00 Tarikh : 29 Januari 2014 Muka Surat : G/6

corrugation. The cement shall comply with MS 522: Part 1. Asbestos processed or unprocessed shall not be added to fibre-cement sheets.

- 10.2 The surface intended to be exposed to the weather shall have a generally smooth finish. Variations of the surface appearance which do not impair the characteristics of the sheets as defined in MS 1224 are permitted.

11. Heat Insulation

11.1 General

Heat insulation system shall comply with MS 1020. Samples of the insulation material shall be submitted to the S.O for approval before they are used and subsequent delivery shall be up to the standard of samples approved.

11.2 Reflective Foil

11.2.1 Reflective foil shall be fire retardant double sided aluminium reflective foil bonded to reinforced high density polyethylene woven fabric.

11.2.2 The reflective foil materials used shall conform to fire safety requirements and BS 476: Fire Test on Building Materials and Structures on the following test:

- (i) Non-combustibility test for materials.
- (ii) Method of test for fire propagation for products.
- (iii) Method of test to determine the classification of the surface spread of flame.

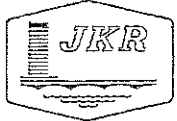
11.2.3 Reflective foil properties shall conform to the following:

- (i) Thickness : 137 ± 20 micron thick.
- (ii) Grammage: $163 \pm 10g / m^2$.
- (iii) Tensile strength : 500 N / 50 mm (MD), 500 N / 50 mm (Cross Direction).
- (iv) Emissivity ASTM E408 $\leq 0.05(97 \pm 2\%)$ / Reflectivity = 95%
- (v) Initial Tear resistance: ASTM D1004 $> 30N$
- (vi) Tear Propagation: DIN53363 $> 600 N/mm$ (CD) / 800 N/mm (MD)

11.2.4 Reflective foil material may be used on its own with all types of roofs except with metal decking roof. Where roof is of metal decking, the reflective insulation material shall be laid below stone wool or glass wool for effective thermal and acoustic performance.

11.2.5 The reflective foil material shall be installed strictly in accordance with the manufacturer's recommendation. A uniform air space of 20 mm between the tile roof covering and the insulation material shall be provided to ensure the effectiveness of the reflective surface. All punctures shall be effectively sealed with similar reflective material to prevent air leakage and moisture transfer.

11.2.6 The reflective foil surface shall be free from any thin film of oil, plastic or lacquer coatings. All dust and/or moisture, if any, shall be thoroughly cleaned prior to installation. All dust and/or trademarks shall be limited to a maximum of 5% of the total reflective area. The insulation material shall be fitted closely around electrical outlet boxes, plumbing and et cetera, and taped securely to eliminate gaps or voids through which air or water vapour might pass into the cooler space.

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than or equal to 0.5 kg/m² (short-term immersion) according to EN 1609.


- 11.4.3 The stone wool insulation material used shall be of no added urea formaldehyde and as approved by the S.O. Stone wool insulation shall be fixed in accordance with the manufacturer's recommendation and to the approval of the S.O.
- 11.4.4 The insulation material must be protected from the exposure of rain, water immersion and chemical contamination during the storage and installation. If the insulation are in contact with water, adequate drying time must be allowed to ensure that the insulation are completely dried prior to covering of the roof covers.
- 11.4.5 The stone wool insulation shall be installed to the thickness specified and place butt jointed. Wherever possible the Contractor shall avoid the compression of the insulation material.
- 11.4.6 Where single skin metal roof is applied, galvanized wire mesh BRC 3316 or equivalent shall be used to support the reflective foil and the stone wool insulation.

DOKUMEN MEJA TERKAWAL

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works shall be impregnated by means of vacuum pressure processes in accordance with MS 360 using copper/chrome/arsenic (CCA) wood preservatives conforming to MS 733 in the treatment plant registered with the MTIB.

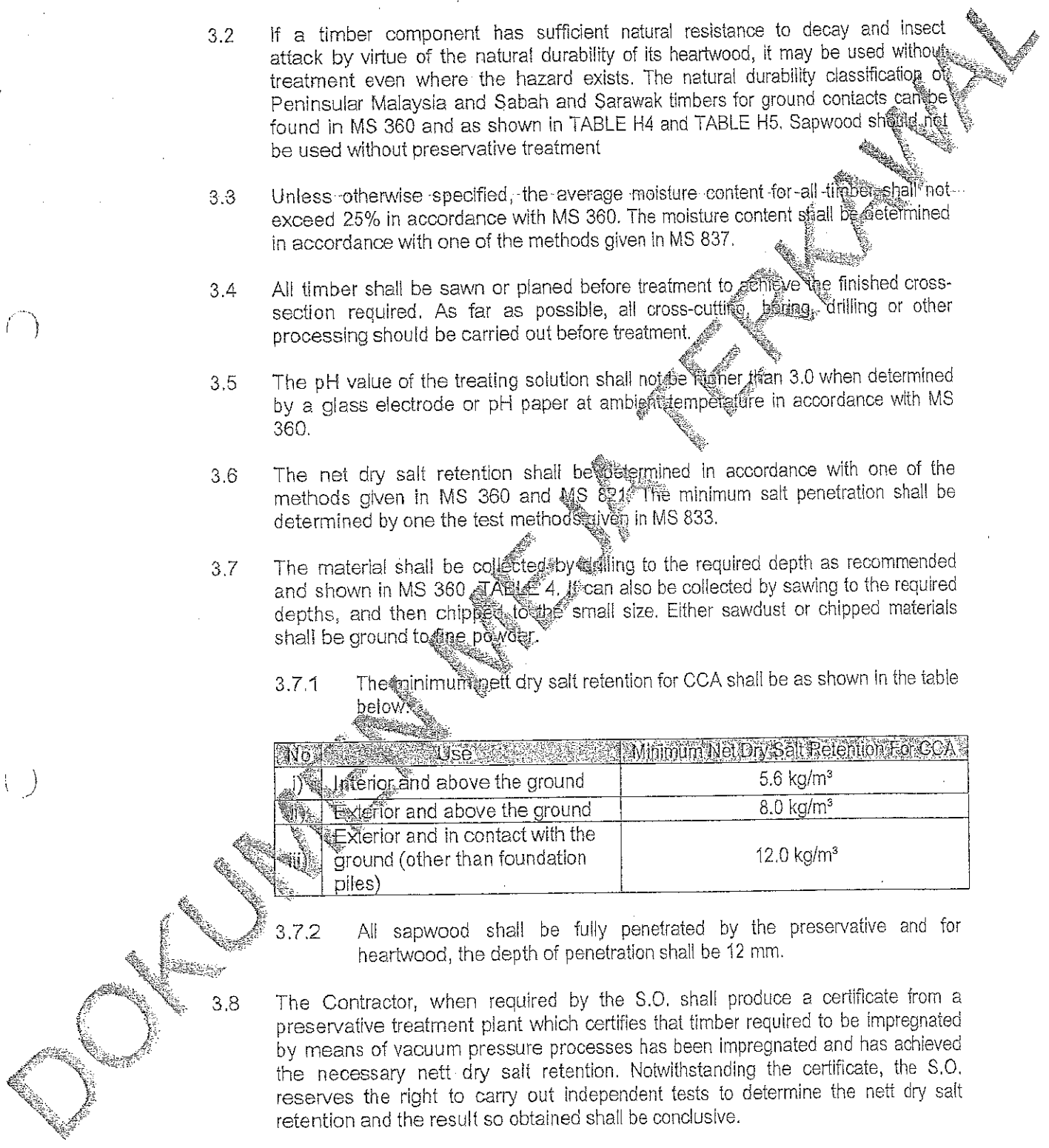
- 3.2 If a timber component has sufficient natural resistance to decay and insect attack by virtue of the natural durability of its heartwood, it may be used without treatment even where the hazard exists. The natural durability classification of Peninsular Malaysia and Sabah and Sarawak timbers for ground contacts can be found in MS 360 and as shown in TABLE H4 and TABLE H5. Sapwood should not be used without preservative treatment
- 3.3 Unless otherwise specified, the average moisture content for all timber shall not exceed 25% in accordance with MS 360. The moisture content shall be determined in accordance with one of the methods given in MS 837.
- 3.4 All timber shall be sawn or planed before treatment to achieve the finished cross-section required. As far as possible, all cross-cutting, boring, drilling or other processing should be carried out before treatment.
- 3.5 The pH value of the treating solution shall not be higher than 3.0 when determined by a glass electrode or pH paper at ambient temperature in accordance with MS 360.
- 3.6 The net dry salt retention shall be determined in accordance with one of the methods given in MS 360 and MS 821. The minimum salt penetration shall be determined by one the test methods given in MS 833.
- 3.7 The material shall be collected by drilling to the required depth as recommended and shown in MS 360 TABLE 4. It can also be collected by sawing to the required depths, and then chipped to the small size. Either sawdust or chipped materials shall be ground to fine powder.


3.7.1 The minimum nett dry salt retention for CCA shall be as shown in the table below.

No	Use	Minimum Net Dry Salt Retention For CCA
i)	Interior and above the ground	5.6 kg/m ³
ii)	Exterior and above the ground	8.0 kg/m ³
iii)	Exterior and in contact with the ground (other than foundation piles)	12.0 kg/m ³

3.7.2 All sapwood shall be fully penetrated by the preservative and for heartwood, the depth of penetration shall be 12 mm.

3.8 The Contractor, when required by the S.O. shall produce a certificate from a preservative treatment plant which certifies that timber required to be impregnated by means of vacuum pressure processes has been impregnated and has achieved the necessary nett dry salt retention. Notwithstanding the certificate, the S.O. reserves the right to carry out independent tests to determine the nett dry salt retention and the result so obtained shall be conclusive.



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- 5.3 Where splitting is likely to have a deleterious effect, end sealing is recommended. For timbers known to split and check especially after installation, the ends of the boards and scantlings shall be protected with a coating designed to minimise end checking and checking and splitting. In severe cases where the ends and sides of heavy joists of timbers are liable to excessive split and check due to exposure to windward slanting sunlight, appropriate skirting or cover with a thin timber board shall be necessary.

6. Timber Joints

- 6.1 When solid timber members are to be jointed together using mechanical fasteners, the workmanship and method of assembly shall be in accordance with MS 544 Part 5. The mechanical fasteners are as listed below:

6.1.1 Nailed joint

Where necessary to avoid splitting, nails shall be driven into pre-drilled holes or diameter not greater than four-fifths of the diameter of the nails. Care shall be taken to avoid placing nails in any end split.

6.1.2 Screwed joint

Lead holes shall be used to ensure good workmanship in making screwed joints. The diameter of the hole for the shank shall be equal to the diameter of the shank, and for the threaded portion, the diameter of the hole shall not be greater than seven-eighth of the diameter of the root diameter of the screw thread adjacent to the shank. Care shall be taken to avoid placing screws in any end split.


6.1.3 Bolted joint

6.1.3.1 Bolt holes shall be drilled to diameters as close as possible to the nominal diameter of the bolt and in no case more than 2 mm larger than the bolt diameter. Care shall be taken to avoid placing a bolt in any end split. A minimum of one complete thread shall protrude from the nut.

6.1.3.2 A washer shall be fitted under the head of each bolt and under each nut. The minimum sizes of washers are as given in Part 6 of MS 544. Where joints using split-rings are to be used, as shown in the Drawings, the members of the joints shall be fitted together in their appropriate positions and clamped or spiked together before drilling. Alternatively, drilling jigs or multiple head boring machines may be used, or individual members may be marked out from the setting-out or by use of prepared templates.

6.1.3.3 If either of the latter methods is employed, sample members (usually the first ones produced) shall be carefully checked against the setting-out.

6.1.3.4 In all instances holes for bolt positions shall be accurately determined by reference to the point intersection of the centre lines of the member. Great care is necessary if the first set members marked out is to be used subsequently as drilling templates. Greater accuracy can usually be obtained by the use of special marking or drilling templates located by a pin at the intersection of the center lines.

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erection criteria and manufacture of truss components for the structural roof truss system.

7.3 Duties Of Professional Engineer

7.3.1 The S.P. shall appoint a Professional Engineer (P.E.) whose duties shall include the following:

- (i) Preparation of roof truss analysis and design;
- (ii) Preparation of drawings;
- (iii) Design changes in every stage of work;
- (iv) Certification for completion of roof truss installation;
- (v) Final certification for roof truss installation prior to issuance of Certificate of Practical Completion for the whole Works to the Contractor.

7.4 Fabricator

All trusses shall only be assembled by licensed fabricators approved by the S.P. and registered with CIDB. A copy of the CIDB registration certificate shall be submitted to the S.O. for verification.

7.5 Installer

All installation works shall be executed and supervised by qualified personnel with valid certificates issued by CIDB. The S.O. shall verify the identification and qualification of the installer prior to the installation.

7.6 General Truss Limitation


7.6.1 Prior to any pre-fabricated timber roof trusses works, the following general limitation shall be applied:

- (i) Maximum unsupported truss span 12 m with permitted deviation of ± 0.05 m.
- (ii) Maximum truss spacing of 1.2 m with permitted deviation of ± 0.025 m.
- (iii) The minimum basic wind speed shall be 35 m/s. However, the minimum basic wind speed shall be increased to 41 m/s for lightweight roof covering.
- (iv) Maximum roof pitch shall be of 45°.

7.7 Analysis, Design Report And Drawings Submission


7.7.1 The S.P. through the Contractor shall propose to the S.O. or his approval a roof truss system which is safe, functional and conforming to design standard. Submission of proposal shall include truss analysis, design report, and construction drawings. The truss analysis shall indicate all loads, load combinations, connections criteria, bracings and tie-down of the truss. Design output of the truss members, battens, connections, tie-down and wall plates, anchors, bracings, truss accessories, splicing and stiffeners where related to the analysis shall be included in the design report. (Refer to Appendix 3 of JKR 20601-0190-12)

7.7.2 All details in the construction drawings shall be sufficient to enable checking against the analysis and design report, by specifying and providing not limited to: the truss layout and configuration, timber grades, section properties of members, length of members in each truss configuration, properties of truss accessories, specification of fastener and

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requirements for strength classes D40 to D70 when graded to Hardwood Structural Grade (HSG) in accordance with BS 5756. A list of timber species that satisfies the requirements is shown in TABLE H8 of this specification.

- 8.2.1.2 The timber species should attain sufficient natural durability and resistance to decay and insect attack as stipulated in MS 544 Part 10.
- 8.2.1.3 Timber of single species or a mixture of species can be used in a glued laminated timber structural frame, provided that it is proven to be suitable for the manufacturing of glued laminated timber by the qualification test given in MS 758. Lamination of a glued laminated timber member shall not be of a mixture of different timber species.
- 8.2.1.4 The visual strength grading for all timber used for structural works should be visually graded based on the grading requirements of MS 1714: Specification for Visual Strength Grading of Tropical Hardwood Timber. The visual grading shall be carried out by timber graders registered with MTIB.
- 8.2.1.5 The Contractor is to supply all timber used in the manufacturing of glued laminated timber component to be of Hardwood Structural Grade as defined under MS 1714.
- 8.2.2 Moisture content for non treated timber
- 8.2.2.1 At assembly, the moisture content in every lamination shall be in the range of 8% to 15%. The range of moisture content of the laminations in a glued laminated timber member shall be not greater than 4%.
- 8.2.2.2 Method for the determination of the moisture content of timber is as stipulated in MS 837.
- 8.2.3 Moisture content for treated timber
- 8.2.3.1 At assembly, the moisture content in every lamination shall be in the range of 11% to 18%. The range of moisture content of the laminations in a glued laminated timber member shall be not greater than 4%.
- 8.2.3.2 Method for the determination of the moisture content of timber is as stipulated in MS 837.
- 8.2.4 Adhesive
- 8.2.4.1 The adhesive shall be capable of producing strong and durable joints, ensuring that the integrity of the bond is maintained throughout the intended lifetime of the structure. The adhesive shall meet the requirement for adhesive Type I and minimum Service Class 2 as stipulated in MS 758.
- 8.3 Laminations And Bonding
- 8.3.1 The individual laminations shall be end jointed to the final length before planing.

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8.5 Preservative Treatment

8.5.1 Where the timber used is not naturally durable (as specified in TABLE H2), it shall be preservative treated. The treatment of timbers shall be as specified in sub-section 3: Treatment of Timber of this specification.

8.5.2 If any other preservative chemical is used, contractor shall provide necessary documents as may be required by the S.O to prove the efficiency of the chemical treatment.

8.6 Coating Specification

8.6.1 All glued laminated timber members shall be coated with a minimum of two coats of clear construction sealer. The sealer shall be applied in accordance with the manufacturer's specification and to the S.O.'s approval. The Contractor shall rectify any damage to the coating after the erection has been carried out. The Contractor shall also provide details of the sealer used to the S.O. for record.

8.6.2 All glued laminated timber shall receive an additional coat of protective sealer before shipping/transport and shall be properly wrapped for protection during shipping/transport and erection. The wrapping should be left in place as long as possible until permanent protection from the weather is in place.

8.7 Submission Of Documentation

8.7.1 Prior to the manufacture and fabrication of the glued laminated timber, the Contractor shall provide two (2) copies of the following documents for the S.O.'s approval:


- (i) Particulars of the manufacturer
- (ii) Quality assurance programme of the manufacturing process
- (iii) Method statement for assembly, installation, handling and transportation
- (iv) Manufacturer's fabrication drawings
- (v) Manufacturer's assembly drawings
- (vi) Grading summary of timber to be used in the manufacturing of glued laminated timber, issued by timber grader certified by MTIB
- (vii) Results of qualification tests

8.8 Production Quality Control

8.8.1 The Contractor shall establish and maintain documented factory production control to ensure that the produced glued laminated timber members conform to the design requirement as demonstrated in the qualification tests.

8.8.2 From each work shift and each production line, a representative sample of end joint shall be drawn and tested in flatwise bending as described in BS EN 385. For each production line and shift the bending strength is acceptable is if one of the condition stated in sub-section 7.1.2 of MS 758:2001 is met.

8.8.3 Also, from each shift which gluing is carried out, one full cross-sectional specimen shall be taken for every press load or every 10 m³ of production. The specimen shall be cut from a cured glued laminated timber member produced during each work shift. If all tests for a three-month period satisfy

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8.10.4 Proper transit, storage and construction methods are required to avoid rapid changes in the moisture content of glued laminated timber members at site. If the storage at site takes longer period prior to installation than the Contractor shall ensure that, the wrapping of glued laminated timber members shall be cut on the underside to prevent the accumulation of water condensation.

8.10.5 During handling, correct lifting equipment shall be used. All glued laminated timber members must be protected from damages due to straps, chains and wire ropes.

8.10.6 During erection, glued laminated timber frame shall be properly braced that is permanent and temporary bracing to provide stability in accordance with the method statement prepared by the Contractor and approved by the S.O.

8.10.7 The Contractor shall ensure the accuracy of the prepared foundation, position of glued laminated timber structure, base plate and holding down bolts. Any discrepancies and deviations shall be remedied by the Contractor to S.O.'s approval before erection commences.

8.10.8 All end grains shall be protected from moisture or water accumulation by provision of permanent steel end capping.

8.11 Defects And Alteration

8.11.1 Glued laminated timber structures shall not have any debonding. Glued laminated timber structures affected by debonding shall be marked as 'Rejected' and removed from site.

8.11.2 No element of the glued laminated timber structures shall be cut, notched, detached from their connections or altered from its original condition after delivery to site without the prior written approval of the S.O.


8.11.3 Where defects exceeding the limits or permitted tolerances are detected, rectification works shall not be carried out unless with written approval of the S.O.

8.12 Warranty

8.12.1 The Contractor shall submit to the S.O. a performance warranty by the manufacturer to the Government on the performance of the glued laminated timber member against debonding which may occur during a period of ten (10) years from the date of practical completion. The terms of the performance warranty shall be as stipulated in APPENDIX H/1 and as approved by the S.O.

9. Carpentry Works

9.1 All carpentry shall be accurately set out in strict accordance with the Drawings and shall be framed together and securely fixed to the approval of the S.O. Timber framing shall be properly braced and checked, halve, screwed or bolted together as required. Longitudinal joints in plates, ridge, fascias, et cetera shall be formed over supports. Those timber members with lapped joints shall lap at least 150mm or twice the depth of the timber whichever is the greater. The brads, nails, screws, spikes, plugs, bolts, framing anchors and timber connectors shall be provided wherever necessary and as detailed. Other than those detailed, no joints are permitted in structural work unless prior permission is obtained from the S.O. No structural member shall be notched unless instructed by the S.O.

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beading. Ceiling panels shall be set out symmetrically from the centre line of the ceiling. Suspended ceiling systems shall be as specified in SECTION I: CEILING WORKS.

13. Timber Partitions

Non-structural timber partitions shall be as specified under SECTION E: NON-STRUCTURAL WALL SYSTEM.

14. Fascia And Barge Boards


Unless otherwise shown on the Drawings, fascia and barge boards shall be 25 mm thick wrot timber and supplied in long lengths. The boards shall be fixed in whole lengths and where joints are necessary, they shall be scarfed jointed and the joints shall occur only over the ends of roof framing members and mitred corners. Board, 750 mm wide and less shall be in one width and those deeper shall be formed by multiple of boards jointed together by tongue and groove and 'V' joint.

15. External Boarding

- 15.1 Unless otherwise shown on the Drawings, all external boarding shall be formed with 150 mm x 19 mm horizontal, vertical or diagonal boarding in wrot pressure-treated timber in long lengths and to the sectional profile as detailed in the Drawings.
- 15.2 Unless otherwise shown, lapping for plain weather boarding shall be 38 mm. Boarding shall be secured to the frames using 75 mm galvanized steel nails and in the case of plain weather boarding, nails shall not be driven through the lapped portions. The exposed bottom ends of all external vertical boarding shall be splayed inward at an angle of 30 degrees and treated with preservatives.
- 15.3 The timber boarding shall be cleaned off and unless otherwise specified, it shall be finished with approved polyurethane base paint with UV protection applied strictly in accordance with the manufacturer's recommendations. The strength grouping for external timber flooring shall be in accordance with the Properties of Malaysian Timber as shown hereinafter in TABLE H6.
- 15.4 For coastal environments and exposed weather applications subjected to airborne salts deposition, metal connectors and fasteners used shall comply with AS 3566 Class 4 and be certified as such by the supplier of fasteners and to the approval of the S.O.
- 15.5 All fixings and associated components shall be manufactured from compatible metals and coated conforming to ISO 9223 Category 4 (C4) and Category 5 (C5) environment. Flashings shall be made from the same material as the roofing sheets.

16. Staircase And Balustrades

- 16.1 Unless otherwise shown in the Drawings, the Contractor shall prepare Shop Drawings as required for the Works. Prior to the fabrication and installation works, the Contractor shall submit the Shop Drawings to the S.O. for approval.
- 16.2 The preferred sizes for modular staircase and stair openings shall comply with MS 1064: Part 3.

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19.2 Blockboard

19.2.1 Blockboard shall comply with MS 1123. Fixing of blockboards shall generally be in accordance with the manufacturer's instructions.

19.2.2 Boards which are to be painted or varnished shall be properly sanded down and holes and crevices filled with approved wood putty or filler to the approval of the S.O.

19.3 Chipboards

19.3.1 Chipboards shall be of the type manufactured from wood chips or shavings combined with a thermosetting synthetic resin glue binder bonded and hot-pressed together and complying with MS 1036 for medium density chipboard. The type and quality of boards shall be approved by the S.O. The boards shall be fixed as detailed in the Drawings with a minimum edge distance of 12 mm for nailing.

19.3.2 Boards which are to be painted or varnished shall be properly sanded down and holes and crevices filled with approved wood putty or filler to the approval of the S.O.

19.4 Fibre Building Boards

19.4.1 All fibre building boards namely Hard Board, Medium Board and Medium Density Fibre Board (MDF) shall comply with MS 1429 and MS 1912. The type and quality of fibre building boards shall be as approved by the S.O. Perforated hardboards shall be not less than 3.2mm thick with maximum of 4.8mm perforation at 16mm centers unless otherwise stated in the Drawings.

19.4.2 All fibre building boards shall be fixed strictly in accordance with the manufacturer's instruction. Unless otherwise detailed in the drawings, the ceiling boards shall be butt and 'V' jointed.

19.5 Composite Boards

19.5.1 The type and quality of composite boards shall be as approved by the S.O. and shall be fixed strictly in accordance with the manufacturer's instruction.


19.5.2 Fixing of timber base composite boards shall comply with the manufacturer's instructions. Panels which are to be painted or varnished shall be properly sanded down and holes and crevices filled with approved wood putty or filler to the satisfaction of the S.O. Panels which are for wet prone area, shall comply with MS 1787.

19.6 Woodwool Slabs

19.6.1 Woodwool slab shall comply with MS 1036 and shall be of the type and quality as approved by the S.O. Unless otherwise specified in the Drawings, the slab shall be laid with its length at right angles to support, fixed strictly in accordance with the manufacturer's instruction.

19.7 Wood Cement Boards

19.7.1 Wood cement boards shall comply with the requirements of MS 934 or MS 544:Part 4. In fixing, the board must be supported on all four edges and at immediate positions at centres not exceeding 610 mm. Joints between

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21.1.3 All built-in furniture materials shall be protected wrapped in strong waterproof paper or polythene/polyethylene (PE) sheeting to protect against damp and scratching during transportation from the factory. The wrapping shall not be removed until installation starts.

21.1.4 Built-in furniture materials shall be unloaded and handled in a manner which will not result in damage, deformation or contamination to the built-in furniture materials.

21.1.5 Built-in furniture materials and loose furniture delivered to the site shall be properly stored by arranging them in stacks, keeping them properly wrapped and stored under cover if they are not used or assembled immediately.

21.2 Materials

21.2.1 All composite wood products, such as Medium Density Fibreboard (MDF) shall comply with MS 1429 and the use of Particleboards shall comply with MS 1912.

21.2.2 The formaldehyde emission for all composite wood products and wood based panels shall comply with MS 1767.

21.2.3 Laminates used in composite wood products shall comply with MS ISO 4586.

21.2.4 Unless otherwise specified in the Drawings or Specification the resin used in composite wood products shall be phenol-formaldehyde (PF), melamine-urea-formaldehyde (MUF), melamine-urea-phenol-formaldehyde (MUPF), polymeric diphenyl methane diisocyanate (PMDI) or polyurethane (PU).

21.2.5 Adhesive for wood and composite wood products shall be phenol-formaldehyde resin adhesive classified as weather-proof and boil-proof, in accordance with MS 908.

21.2.6 Thermoplastic fittings, such as handles and accessories, where applicable, shall be polyamide (PA) or polypropylene (PP). Thermoplastics shall comply with MS 2324.

21.2.7 Solid surface shall be non-porous, homogenous, stain and chemical resistant, fire resistant and with a composition of acrylic polymer, aluminium trihydrate filler and pigment.

21.2.8 Where timber species are used it shall be constructed and properly framed in wrot timber as detailed in the Drawings.

21.3 Component Assemblies

21.3.1 Unless otherwise stated in the Drawings, steel frames, where applicable, shall be square and flat with mitred, welded corners.

21.3.2 Screws shall have countersunk heads which shall comply with MS ISO 1482.

21.3.3 Hinges shall have a spring mechanism to lock the door in a close or open position, remain completely hidden behind the door and enable the door to open to 120 degrees.


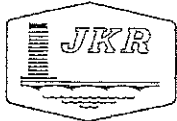
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TABLE H1: SCHEDULE OF TIMBER GROUPING AND USAGE

No	Typical Usage	Species
1	Structural frames 1.1 All columns, stilts and beams	SG4
2	Bearer to water tank	SG5
3	Staircase and component elements 3.1 Stinger & treads/Riser 3.2 Trimmer beams 3.3 Balustrades, nosing and handrails	SG5 SG5 SG5
4	Flooring 4.1 Floor bearers, joists and strutting for joists 4.2 Floor boardings 4.3 Gymnasium floor boarding 4.4 Parquet flooring 4.5 Skirtings	SG5 SG5 SG4 SG5 SG5
5	Walling 5.1 Wall and partition framings 5.2 External wall boardings 5.3 Internal wall boardings	SG5 SG5 SG7
6	Roof structures 6.1 Roof trusses, rafters, purlins, wall plates and other roof members 6.2 Fascia boards	SG4 SG5
7	Ceiling frames 7.1 Ceiling joists and spacers 7.2 Cover battens to joints of ceiling sheets 7.3 Ceiling strips and soffit battens	SG5 SG7 SG7
8	Door and window frames 8.1 All doors, windows, vent frames, grounds, stops and architraves 8.1.1 External usage 8.1.2 Internal usage	SG5 SG7
9	Furniture fitting 9.1 Built-in fittings and furniture in general 9.1.1 Carcassing 9.1.2 Lining/Panelling 9.1.3 Top 9.2 Workshop furniture top	SG5 SG7 SG5 SG5
10	Beading fillets and edgings in general	SG5

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**TABLE H3: SCHEDULE OF MOISTURE CONTENTS (M.C) OF TIMBER
FOR VARIOUS POSITIONS IN BUILDING**

Application	Maximum M.C. At Time Of Installation For Non Air-Conditioned Application	Maximum M.C. At Time Of Installation For Airconditioned Application (Kiln-Dried Timber)
Structural Components • Columns, beams, bearer, studs, joists, ties and struts	30% (Thickness >100mm) 25% (Thickness <100mm)	Not applicable Not applicable
Roofing • Rafters, ties, struts, purlins and bracing • battens	25% 25%	Not applicable Not applicable
Staircase • stringers, treads, trimmer beam and handrail • balustrades	19% 19%	12% 12%
Flooring • floor boarding and parquetry • skirtings	19% 19%	12% 12%
Walling • wall, partition framing • external wall boardings • internal wall boardings • fascia boards	19% 19% 19% 19%	12% Not applicable 12% Not applicable
Ceiling Frames • cover battens to joints of ceiling sheets • ceiling strips and soffit battens	25% 19%	Not applicable 12%
Door & Window Frames • door, window and vent frames including their stops and grounds • door leaves, window and vent sashes	19% 19%	12% 12%
Furniture • built in fittings furniture generally • workshop furniture • science laboratory tops Beading fillets and edgings generally	19% 19% 19% 19%	12% 12% 12% 12%



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TABLE H5: NATURAL DURABILITY¹ CLASSIFICATION OF SARAWAK TIMBERS FOR GROUND CONTACT

Class 1	Class 2	Class 3		Class 4	
Very durable (More than 10 years)	Durable (5 to 10 years)	Moderately durable (2 to 5 years)		Not durable (Less than 2 years)	
Belian	Kapur bukit	Baru	Kapur paji	Acacia	Bindang
Penyau	Kapur kelansau	Bedaru	Kapur paya	Alan	Geronggang
Selangan batu ²	Kawi	Kandis	Luis/Chengal pasir	Asam	Jadap
	Luis	Kasai	Medang luis kasar	Bajan	Jelawai
	Lun runcing	Lebah	Mongkulang	Bayur	Jelutong
	Mertama	Nyireh	Mersawa kunyit	Bengang	Kayu cina
	Nyatoh ³	Pelajau	Petal belalang	Benuah	Kayu malam
	Rhu	Resak membangun	Sempilar	Biruang	Kelampayan
	Selangan batu ^{4a}	Seladah ^{4b, c}		Bintangor	Kembang semangkok
		Selumar		Bintawak	Kepayang babi
		Selunsur		Dungun	Keranji
		Tapang		Durian	Keruing
		Urat mata		Empenit	Ketiau
				Entuyut	Kumpang
				Litoh	Legal
				Medang	Meranti, light red
				Menggris	Yellow flame
				Mersawa paya	Meranti, yellow
				Minggi	Mergasing
				Ngilas	Peran/bilat
				Nyatoh ^{5a, b}	Segera
				Pelai	Seladah ^{6a, b}
				Perah	Sentang
				Perupok	Simpoh Tampoi
				Petal	Tekalong
				Pitoh	Teruntum Ubah
				Ramin	Upi
				Resak paya	
				Sawih	

¹ The results were obtained from the graveyard test from Oya Road, Sibul test site. All samples taken from heartwood area except for the timber which their sapwood and heartwood cannot be differentiated. Timber of the same species but from different regions in Malaysia may have different durability classifications.

² *Shorea pulricostata*

³ *Palaquium rivulare*

^{4a, b, c} *Shorea flava, S. laecis, S. spp*

^{5a, b} *Dacryodes incurvata, Santira laevigata*

^{6a, b} *Palaquium pseudorostratum, Ganea motleyana*


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TABLE H7: SCHEDULE OF IRONMONGERY

Type of Doors, Windows, etc.	Ironmongery for each type of doors, windows, etc.
1. Single Leaf Door	
1.1. Plywood Flush Door	a) 3 Nos. of 102 mm x 76 mm x 2 mm galvanised steel hinges with nylon rings. b) 1 No. upright 3 lever mortice lockset with satin chrome lever handle furniture of approved manufacture with 2 Nos. chrome plated keys of different serial number for each building. c) 1 No. stainless steel door stopper.
1.2. Timber Panelled Door	a) 3 Nos. of 102 mm x 76 mm x 2 mm stainless steel hinges with nylon rings. b) 1 No. medium duty cylindrical lockset, 5 pin tumbler with knob and rose of stainless steel with hairline finish complete with 3 Nos. nickel-plated brass keys of different serial number for each building. c) 1 No. stainless steel door stopper.
2. Double Leaf Door	
2.1. Plywood Flush Door	a) 6 Nos. 102 mm x 76 mm x 2 mm stainless steel hinges with nylon rings. b) 1 Set Hollow Lever Handle Stainless Steel Mortice Lock Body with single key thumb turn cylinder. c) 1 No. solid brass mortice lock rebated part. d) 1 Set of 150 mm and 300 mm Flush Bolt Lever Type Stainless Steel. e) 1 No. dust socket medium. f) 2 Nos. stainless steel door stopper.
2.1. Timber Panelled Door	a) 6 Nos. 102mmx76mmx2mm stainless steel hinges with nylon rings. b) 1 No. cylindrical lock stainless steel, 5 pin tumbler with knob and rose of stainless steel with 3 nos nickel-plated brass keys c) 1 No. solid brass mortice lock rebated part. d) 1 Set of 150mm and 300mm Flush Bolt Lever Type Stainless Steel. e) 1 No. dust socket medium. f) 2 Nos. stainless steel door stopper.
3. PVC Door To Toilet /Bathroom Cubicles	a) 3 Nos. 102 mm x 76 mm x 2 mm stainless steel hinges with nylon rings. b) i) Residential Quarters - 1 No. stainless steel cylindrical lock with privacy locking device operated by turn from inside and knob handle. ii) Non residential buildings - 1 No. stainless steel indicator bolt toilet. c) 1 No. ball & cone hook stainless steel.
4. Single Leaf Fire Rated Door	
4.1. Standard size of 800 mm x 2100 mm ½ hr & 1 hr fire rated door (Metal Frame & Timber Door)	a) 3 Nos. 127 mm x 89 mm x 2.5 mm heavy duty stainless steel hinges. b) 1 Set Hollow Lever Handle Stainless Steel Mortice Lock Body with single key thumb turn cylinder approved by DGFR. c) 1 No. stainless steel door stopper. d) 1 No. door closer. e) 1 No. floor spring for double swing door.
4.2. Standard size of 900 mm x 2100 mm ½ hr & 1 hr fire rated door (Metal Frame & Timber Door)	a) 3 Nos. 127 mm x 89 mm x 2.5 mm heavy duty stainless steel hinges. b) 1 Set Hollow Lever Handle Stainless Steel Mortice Lock Body with single key thumb turn cylinder approved by DGFR. c) 1 No. stainless steel door stopper. d) 1 No. door closer. e) 1 No. floor spring for double swing door.
4.3. Standard size of 900 mm x 2100 mm 2 hr fire rated door (Metal Frame & Timber Door)	a) 4 Nos. 127 mm x 89 mm x 2.5 mm heavy duty stainless steel hinges. b) 1 Set Hollow Lever Handle Stainless Steel Mortice Lock Body with single key thumb turn cylinder approved by DGFR. c) 1 No. stainless steel door stopper. d) 1 No. door closer. e) 1 No. floor spring for double swing door. f) 2 Nos. of ball bearings. g) 1 No. of heavy duty stainless steel latch with 75 mm long backset.
5. Double Leaf Fire Rated Door	
5.1. Standard size of 1200 mm x 2100 mm	a) 4 Nos. 127 mm x 89 mm x 2.5 mm heavy duty stainless steel hinges. b) 1 Set Hollow Lever Handle Stainless Steel Mortice Lock Body with single key thumb turn cylinder approved by DGFR. c) 1 No. solid brass mortice lock rebated part. d) 1 Set of 150 mm and 300 mm Flush Bolt Lever Type Stainless Steel. e) 1 No. dust socket medium. f) 2 Nos. stainless steel door stopper. g) 2 Nos. automatic door closer of hydraulically spring operated type (for swing doors) or of wire rope and weight type (for sliding doors). h) 2 Nos. floor spring for double swing door.



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**TABLE H8: TIMBER SPECIES FOR THE MANUFACTURING OF
GLUED LAMINATED TIMBER COMPONENTS**

Standard names	Strength class
Mengkulang	D40
Merbau Kering	D50
Kapur Kempas	D60
Balau	D70

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approved devices. Setting out lines should be in both directions and squared accurately at the outset.

4. Acoustic Requirements

- 4.1 Acoustic requirements specified or shown on the Drawings, such as sound absorption, sound insulation and impact sound insulation shall be tested in accordance with BS EN 13964, BS EN ISO 140 or other acceptable standards.
- 4.2 A full test report shall be submitted to the S.O as proof of compliance. It shall relate to the entire specified system. Any variations shall be endorsed by the test laboratory or field testing. Test reports, comments and the testing authority shall be stated in the manufacturer's trade literature or be made available upon request or both.

5. Materials And Ceiling Components

5.1 Zinc-Coated And Aluminium/Zinc Coated Steel

Zinc-coated and aluminum/zinc-coated steel used for the construction of suspended ceiling components shall comply with MS 1196 or other equivalent Standards. The Contractor shall provide proof of compliance to the approval of the S.O. Where sections have been cut from zinc-coated or aluminium/zinc-coated sheets, the cut edges shall be treated with protective anti-rust paint to prevent corrosion. All pre-painted finish for ceilings shall be as specified under SECTION G: ROOFING WORKS.

5.2 Linear Strip Ceiling

Unless otherwise specified or shown on the Drawings, linear strip ceiling shall be aluminium pre-painted, anodized comprising of 150mm width x 12.5mm deep x 0.6mm thick panel fixed in accordance to manufacturer's recommendation and to S.O's approval.

5.3 Plasterboard

5.3.1 All plasterboards dimensions, its tolerances and flexural breaking load shall comply with BS EN 520. The board shall carry class 'O' approval from DGFR.


5.3.2 Unless otherwise specified in the Drawings the size for plasterboard ceiling shall be 600 mm x 1200 mm x 9 mm thick minimum and shall be suspended from the soffit with adjustable hanger rods in accordance to manufacturer's recommendation and S.O's approval.

5.4 Plasterboard With Improved Core Adhesion At High Temperature (Type F)

The type of board and test requirements shall be in accordance with BS EN 520, and to the approval of the S.O. The board shall carry Class 'O' approval from DGFR.

5.5 Plasterboard With Reduced Water Absorption (Type H)

The types of moisture resistance board to receive paint finish shall be in accordance with BS EN 520 and to the approval of the S.O. The board shall carry Class 'O' approval from DGFR.

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5.10.6 Cornice with shorter length shall be installed first followed by the longer lengths by bowing out to spring mitres fit into place.

5.11 Reinforcing/Joining Tape

The tape shall not be less than 50 mm wide perforated paper tape in accordance with ASTM C475 from an approved manufacturer, and to the approval of the S.O.

5.12 Jointing Compound

Jointing compound shall be pre-mixed multi-purpose gypsum based air drying type compound, in accordance with BS EN-13963 and to the approval of the S.O.

5.13 Sealants

Fire sealant for plasterboard with improved core adhesion at high temperature (Type F) and wet area sealant for plasterboard with reduced water absorption (Type H) shall be in accordance with BS 8212 and to the approval of the S.O. The appropriate type of sealant shall be used for the required type of plasterboard. Elastomeric sealants can be used at the perimeter of the dry lining or partitioning to provide an airtight construction and to the approval of the S.O.

5.14 Control Joint

Unless otherwise specified, control joints shall be provided in a long continuous runs of ceiling, spaced at not more than 5m centers maximum and recommended by the manufacturer and to the approval of the S.O.

5.15 Anchors And Fasteners

5.15.1 Anchors to be used throughout the work shall be of Grade 4.6 black hexagon bolt and nut as specified in BS 4190: ISO Metric Black Hexagon Bolts, Screws and Nuts.


5.15.2 Where proprietary anchor is allowed to be proposed as alternative, the Contractor shall submit the details of the proposed anchor to the S.O for approval.

5.15.3 Notwithstanding the above, the alternative anchor proposed shall be made of carbon steel galvanized to minimum thickness of 5 µm or stainless steel in accordance to European Technical Approval Guideline ETAG 001 Metal Anchors for Use in Concrete.

5.15.4 The size of the alternative anchor shall not be less than 6 mm diameter (M6) with effective anchorage depth of not less than 26 mm measured from the soffit of the floor slab. The hole for the anchor shall be drilled using drill bit of nominal diameter 6 mm. The design resistance in all load directions shall not be more than 1.10 kN.

5.15.5 Shot-fired alternative anchors shall not be allowed. Shot-fired hybrid-pin alternative anchors shall not be used to install the suspended ceiling hangers to the concrete soffit.

5.15.6 Fasteners shall have a corrosion-resistant finish and be appropriate for intended use, in accordance with BS EN 14586. The heads of fasteners shall be shaped so that they can be driven slightly below the surface of the plasterboard without punching through the paper liner.

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6.4 Concealed Ceiling Suspension System (Soffit-ceiling Distance < 1800 mm)


Where shown on the Drawings or when the distance between the concrete soffit and the suspended ceiling board is less than 1800 mm in vertical height, the concealed ceiling suspension system shall be as follows:

6.4.1 Vertical suspension members

- 6.4.1.1 Ceiling hangers shall be galvanized mild steel 25 mm x 25 mm angle section with 0.5 mm base metal thickness or galvanized mild steel suspension rods of minimum 4 mm diameter.
- 6.4.1.2 One end of the hanger shall be attached to a pre-drilled galvanized mild steel z-shaped soffit cleat 25 mm x 50 mm x 25 mm with minimum base metal thickness of 2 mm. The mild steel soffit cleat shall be fixed to the black hexagon anchor. The other end of the hanger shall be secured using proprietary locking clips or suspension brackets to the primary channel.
- 6.4.1.3 Where black hexagon anchors cast in the soffit of the floor slab are not provided, pre-drilled galvanized mild steel z-shaped soffit cleat 25 mm x 50 mm x 25 mm with minimum base metal thickness of 2 mm shall be provided. The mild steel soffit cleat shall be fixed by drilling and inserting M6 x 30 mm zinc plated proprietary alternative anchor to the structural soffit at a distance 100 mm away from the wall and then spaced equal to or not more than 1000 mm c/c to form the grid of the ceiling hanger.
- 6.4.1.4 One end of the ceiling hanger shall be connected by bolt and nut to the pre-drilled soffit cleat and the other end of the hanger shall be secured using proprietary locking clips or suspension brackets to the primary channel.

6.4.2 Horizontal suspension members

- 6.4.2.1 Primary rigidized channel shall be 34 mm x 12 mm x 0.4 BMT at a distance of 100 mm away from the wall and spaced equal to or not more than 1000 mm c/c, and secured to the rigidized galvanized steel ceiling hangers using wafer head drywall screw M4.2 x 13 mm length as recommended by the manufacturer and to the approval of the S.O.
- 6.4.2.2 Secondary rigidized galvanized steel channel 34 mm x 12 mm x 0.4 BMT shall be secured using proprietary locking clips or suspension brackets to the primary channel.
- 6.4.2.3 The primary and secondary channels shall be connected using galvanized proprietary locking clips or suspension brackets with minimum thickness of 0.8 mm and screwed as recommended by the manufacturer.
- 6.4.2.4 Unless otherwise specified, a single layer 9 mm thick plasterboard ceiling shall be screwed fixed at maximum distance of 200 mm c/c to the secondary channel as recommended by the manufacturer.

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6.6.2 Suspended ceilings shall be designed to ensure that detrimental levels of water and condensation are not formed within or on the surfaces of the ceiling and related components and the ceilings shall be designed according to Class C conditions of BS EN 13964.

6.6.3 Other steel components of the substructure such as supporting member, perimeter trim, et cetera shall have a characteristic strength of at least 250 N/mm² and their tolerances shall comply with BS EN 13964. No bends or notches or drilling or other alterations from its original state are allowed on steel components unless allowed by the manufacturer.

6.6.4 Where not specified, tolerances for the ceiling shall comply with BS EN 13964. The maximum deflection between two suspension points shall not exceed L/500 where L is the suspension distance between the two points.

6.6.5 The top fixing of all suspension components shall be made to the primary structural framing element, unless specifically designed otherwise. The contractor shall ensure the fixings are of a corrosion-resistant material suitable for the intended application, and fixings shall be compatible with the material of the structure to which they are to be fitted.

6.7 Structural Steel Fixing

6.7.1 Self-drilling screws are not allowed for structural steel, unless specifically designed otherwise. These screws shall not be placed in tension unless specifically designed for that purpose.

6.7.2 Penetrations made into the structural steel by drilling shall be duly approved by the S.O.

6.7.3 Clips shall be installed strictly in accordance with the manufacturer's recommendations.

6.8 Cold Formed Truss/Timber Truss Fixing

6.8.1 Fixings to cold formed trusses shall be made of steel plate straps. Self-drilling screws are not allowed unless specifically designed otherwise. For the case of proprietary truss systems, the Contractor shall obtain written approval from the S.P. and the S.O.

6.8.2 Fixings to timber joists shall be made into the side of the timber, with five times the diameter of the fastener clear edge distances.


6.9 Glued Laminated Timber Fixing

Top fixing to glued laminated timber members shall only be allowed with the approval of a P.E. The glued laminated timber shall be fabricated as specified under SECTION H: TIMBER, JOINERY AND IRONMONGERY WORKS.

6.10 Concrete Fixing

6.10.1 No fasteners, either shot-fired or drilled into are allowed to be installed directly to a flat roof slab. Separate structural framing element shall be specifically designed, and approved by the S.O.

6.10.2 Fixing to aerated/lightweight concrete shall only be made in accordance with the manufacturer's recommendations.

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