SAMB

SYARIKAT AIR MELAKA BERHAD

DOKUMEN TAWARAN

RUJUKAN TAWARAN: SAMB / 11 / 2026

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

KETUA PEGAWAI EKSEKUTIF,
SYARIKAT AIR MELAKA BERHAD,
LOT 897, WISMA AIR,
JALAN HANG TUAH,
75300 MELAKA.

SYARIKAT AIR MELAKA BERHAD

DOKUMEN TAWARAN

RUJUKAN TAWARAN: SAMB / 11 / 2026

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

KANDUNGAN

SENARAI SEMAK PENGHANTARAN DOKUMEN TENDER

Penender diwajibkan menghantar dokumen di bawah untuk tujuan penilaian oleh pihak Syarikat Air Melaka Berhad (SAMB). Kegagalan pihak tuan/puan menghantar dokumen berikut boleh menyebabkan sebutharga tuan/puan tidak akan dipertimbangkan.

Bil	Dokumen	Semakan (Sila Tandakan √ Jika Berkaitan)	Semakan Oleh SAMB
	PENILAIAN TEKNIKAL		
1	Profil Syarikat	( )	( )
2	Pengalaman Kerja (sila sertakan surat tawaran)	( )	( )
3	Senarai Kenderaan dan Peralatan Kerja (Jika Berkaitan)	( )	( )
4	Senarai Nama Pekerja	( )	( )
5	Katalog Produk (Jika Berkaitan)	( )	( )
6	Salinan Sijil Pematuhan Cukai atau Tax Compliance Certificate (TCC)	( )	( )
7	Sijil Suruhanjaya Perkhidmatan Air Negara (SPAN) yang masih sah (Jika Berkaitan)	( )	( )
8	Sijil IKRAM/SIRIM yang masih sah (Jika Berkaitan)	( )	( )
9	Salinan Sijil Kementerian Kewangan Malaysia yang masih sah (Jika Berkaitan)	( )	( )
10	Salinan Sijil Perolehan Kerja Kerajaan (SPKK) yang masih sah (Jika Berkaitan)	( )	( )
11	Salinan Pendaftaran Lembaga Pembangunan Industri Pembinaan Malaysia (LPIPM/CIDB) yang masih sah (Jika Berkaitan)	( )	( )
12	Salinan Pendaftaran Kementerian Kewangan & Sijil Taraf Bumiputera yang masih sah (Jika Berkaitan)	( )	( )
13	Salinan Pendaftaran Kementerian Dalam Negeri (KDN) yang masih sah (Jika Berkaitan)	( )	( )
14	Salinan Permit Suruhanjaya Perkhidmatan Air Negara (SPAN) (Jika Berkaitan)	( )	( )
15	Surat perlantikan wakil sah pengedar daripada pengilang. (Jika Berkaitan)	( )	( )
16	Jadual Perancangan Kerja Dan Tempoh Siap Kerja Yang Munasabah (Jika Berkaitan)	( )	( )

Bil	Dokumen	Semakan (Sila Tandakan √ Jika Berkaitan)	Semakan Oleh SAMB
	PENILAIAN KEWANGAN		
1	Salinan bukti pembayaran pembelian dokumen Tender	( )	( )
2	Keseluruhan Dokumen Asal Tender Dikembalikan	( )	( )
3	Harga dan Tempoh Kerja Dicatatkan Dalam Borang Tender	( )	( )
4	Borang Tender Ditandatangan Oleh Pemilik Syarikat	( )	( )
5	Surat Akuan Pembida Diisi dan Ditandatangani oleh Pemilik Syarikat	( )	( )
6	Penyata Bank 3 Bulan Yang Terkini / Penyata Kewangan Satu (1) Tahun	( )	( )
7	Salinan Pendaftaran Suruhanjaya Syarikat Malaysia (SSM) Lengkap Beserta Maklumat Korporat	( )	( )
8	Salinan Borang 9, Borang 24 dan Borang 49 Bagi Syarikat Sdn Bhd	( )	( )
9	Penyata Akaun (2) Tahun yang telah diaudit.	( )	( )
10	Lain-lain sijil yang berkaitan:-	( )	( )
	……		
	……		
	……		

DISEMAK OLEH:

…… (Tandatangan Petender)

Nama :
No. I/C :
Tarikh :
Materi atau Cop Syarikat :

…… (Tandatangan Pegawai SAMB)

Nama :
Jawatan :
Tarikh :

BAHAGIAN A

ARAHAN KEPADA PETENDER

ARAHAN KEPADA PETENDER

SYARIKAT AIR MELAKA BERHAD
(SAMB)

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

1. PERIHAL TENDER

Tender ini bertujuan untuk mendapatkan perkhidmatan kontraktor-kontraktor yang berdaftar bagi **Membekal Dan Menghantar Paip Dan Kelengkapan Jenis Besi Keluli Ke Stor Syarikat Air Melaka Berhad Bagi Tempoh Dua (2) Tahun.**

2. KELAYAKAN PETENDER

Tender ini adalah dipelawa kepada kontraktor-kontraktor yang berdaftar dengan ***KEMENTERIAN KEWANGAN (KOD BIDANG 090102)*** yang masih sah dan dibenarkan untuk membuat tawaran buat masa ini.

3. DOKUMEN TENDER

Satu Set Dokumen Tender boleh dimuat turun di laman sesawang Syarikat Air Melaka Berhad (www.samb.com.my). Petender hendaklah mengemukakan bayaran melalui Pindahan Wang ke akaun **Bank Islam 04015010075113** (**Syarikat Air Melaka Berhad**) sebanyak **RM 500.00.** Wang ini tidak akan dikembalikan.

4. PENYEDIAAN TENDER

4.1 Petender adalah dikehendaki mengisi segala maklumat-maklumat dengan sepenuhnya pada :-

a) Borang Tender
b) Ringkasan Tawaran
c) Jadual Kadar Harga
d) Latar Belakang Petender

4.2 Tulisan hendaklah terang dan dibuat dengan dakwat. Segala kesilapan hendaklah dipotong dengan cermat dan ditandatangan ringkas.

4.3 Jumlah harga pada Ringkasan Tawaran hendaklah dipindahkan ke dalam Borang Tender dan sekiranya berlaku perbezaan diantara harga didalam Ringkasan Tawaran dan harga didalam Borang Tender, harga dalam Borang Tender akan diambilkira.

5. PENYERAHAN TENDER

5.1 Tender hendaklah dimasukkan kedalam satu sampul surat berlakri dan ditulis di bahagian luarnya dengan tajuk tender tersebut tanpa terdapat apa-apa tanda-tanda yang membolehkan identiti petender dikenali. Sampul surat yang telah berlakri itu hendaklah dihantar kepada:-

Ketua Pegawai Esekutif
Syarikat Air Melaka Berhad
Lot 897, Tingkat 7, Wisma Air,
Jalan Hang Tuah,
75300 Melaka.

sebelum **pukul 12.00 tengah hari** pada **22 April 2026**

5.2 Mana-mana tender yang diterima selepas tarikh tutup yang ditetapkan akan ditolak atau dikembalikan semula kepada petender.

5.3 Petender-petender hendaklah mengambil maklum bahawa Penilaian Tender ini akan mengambil kira dan mementingkan keupayaan petender untuk melaksanakan projek yang ditender, disamping kemunasabahan harga tender. Justeru itu, keupayaan petender-petender akan dinilai semasa penilaian tender. Penilaian tender akan dibuat berasaskan kedudukan kewangan, pengalaman kerja, kakitangan teknikal dan prestasi kerja semasa petender.

Petender-petender dikehendaki mengemukakan maklumat-maklumat dan dokumen seperti yang dikehendaki sepertimana di dalam Latar Belakang Petender.

5.4 Dokumen-dokumen ini sangatlah penting untuk membolehkan penilaian keupayaan yang sewajarnya dibuat keatas petender. Sekiranya petender tidak atau gagal untuk mengemukan dokumen-dokumen tersebut, tender petender berkenaan akan ditolak dan tidak akan dipertimbangkan.

PETENDER DIKEHENDAKI MENYERTAKAN SATU SALINAN SIJIL PENDAFTARAN ASAL YANG BERKAITAN YANG TELAH DISAHKAN BERSAMA-SAMA DENGAN DOKUMEN TENDER SEMASA MENGEMUKAKAN TAWARAN.

6. TINDAKAN TATATERTIB

Earnest Money atau Deposit Tender tidak diperlukan semasa mengemukakan tender. Walau bagaimanapun jika petender menarik balik tawarannya sebelum sesuatu keputusan dibuat atau enggan menandatangan kontrak apabila tendernya diterima dalam tempoh sahlaku tender, iaitu sembilan puluh (90) hari dari tarikh akhir yang ditetapkan bagi penyerahan tender, maka pendaftarannya akan digantung selama dua (2) tahun bagi kesalahan pertama, lima (5) tahun untuk kesalahan kedua dan pendaftarannya akan dibatalkan untuk kesalahan ketiga.

7. MAKLUMAT-MAKLUMAT LANJUT

7.1 Jika terdapat apa-apa keraguan keatas makna sebenar mana-mana bahagian dalam dokumen tender, petender hendaklah menghubungi Pegawai Penguasa untuk mendapatkan penjelasan sebelum menghantar tendernya. Penjelasan tersebut hanya sah jika ia di keluarkan secara rasmi dan bertulis oleh Pegawai Penguasa.

7.2 Dari masa ke semasa sebelum tarikh tutup tender, Pegawai Penguasa mungkin akan mengeluarkan pindaan atau tambahan untuk memberi penjelasan atau memperbaiki Dokumen Tender.

7.3 Satu salinan pindaan tender akan dikeluarkan secara rasmi kepada petender dan ianya akan menjadi sebahagian daripada Dokumen Tender. Penerimaan tambahan tersebut mestilah disahkan kedalam borang yang dikepilkan bersama-sama dengan pindaan tersebut.

8. HAK SAMB UNTUK MENERIMA/MENOLAK TENDER

SAMB tidak terikat untuk menerima tender terendah atau mana-mana tender atau memberi sebarang sebab diatas penolakan sesuatu tender. Keputusan Lembaga Tender SAMB adalah muktamad.

9. BON PERLAKSANAAN

Kontraktor yang dilantik dikehendaki mengemukakan Bon Perlaksanaan sebanyak 5% daripada jumlah harga kontrak dalam bentuk Jaminan Bank atau Jaminan Insuran.

10. KOS MENENDER

Segala perbelanjaan yang dikeluarkan untuk menyedia dan mengemukakan tawaran hendaklah dibuat atas perbelanjaan sendiri dan petender tidak dibenarkan membuat apa-apa tuntutan kepada Syarikat Air Melaka Berhad (SAMB) berkaitan dengan hal tersebut.

11. SAMB tidak akan bertanggungjawab atau membayar perbelanjaan atau kehilangan yang boleh berlaku disebabkan penyediaan dokumen tender dan siasatan di tapak.

12. Segala kerja yang dinyatakan dalam kadar harga atau spefikasi akan dinyatakan di dalam kontrak.

Tarikh: Tandatangan Petender:

LAMPIRAN B

ARAHAN-ARAHAN YANG PERLU DIMASUKKAN KE DALAM ARAHAN KEPADA PETENDER.

A. **Maklumat Latar Belakang, Kewangan Dan Prestasi Petender**.

1. Petender-petender hendaklah mengambil makluman bahawa penilaian Tender ini akan mengambil kira dan mementingkan petender untuk melaksanakan projek yang ditender disamping kemunasabahan harga tender. Justeru itu keupayaan petender-petender akan dinilai semasa penilaian Tender. Penilaian ini akan dibuat berasaskan kedudukan kewangan, pengalaman kerja, kakitangan teknikal dan prestasi kerja semasa petender.

2. Untuk membolehkan Penilaian ini dibuat, petender-petender dikehendaki mengemukakan dokumen-dokumen berikut bersama-sama tendernya:-

   (i) Salinan Akaun Syarikat yang telah disahkan dan diaudit oleh Juru Audit yang bertauliah, bagi dua (2) tahun kewangan terakhir. (Bagi Syarikat Sdn. Bhd. sahaja)

   (ii) Salinan Penyata Bulanan Akaun Bank mengenai wang dalam tangan petender bagi tiga (3) bulan terakhir sebelum tutup tender

   (iii) Laporan Bank/Institusi kewangan mengenai kedudukan petender, atas format seperti Borang CA, dalam satu sampul berlakri.

   (iv) Salinan Perakuan / Pengesahan siap kerja bagi setiap kerja yang telah siap.

   (v) Salinan Borang KWSP `A' bagi bulan caruman terakhir bagi setiap kakitangan teknikal atau salinan perjanjian perkhidmatan professional yang diambil khidmat secara kontrak.

   (vi) Salinan sijil kelulusan / kelayakan setiap kakitangan teknikal kategori A (professional / teknikal utama) dan B (penyelia / teknikal sokongan).

(vii) Laporan Penyelia Projek mengenai prestasi semasa petender, bagi setiap kerja semasa yang bukan projek SAMB yang disenaraikan di, dalam satu sampul berlakri. Dokumen-dokumen ini sangatlah penting untuk membolehkan penilaian keupayaan yang sewajarnya dibuat ke atas petender.

(viii) Petender juga haruslah mengemukakan Jadual Perancangan Kerja jika berkaitan dengan projek yang ditawarkan di dalam dokumen ini.

Sekiranya petender tidak atau gagal untuk mengemukakan dokumen-dokumen ini, terutamanya dokumen-dokumen (i), (ii), dan (vii) diatas, tender petender akan ditolak dan tidak akan dipertimbangkan.

3. Sekiranya petender gagal untuk mengemukakan salah satu bahagian daripada dokumen-dokumen (iii), (iv), (v), dan (vi), maklumat dan data-data yang tidak dapat disemak kerana ketiadaan atau ketidakcukupan dokumen-dokumen tersebut adalah tidak sah dan tidak boleh diambil kira dalam penilaian keupayaan petender yang berkenaan melainkan maklumat atau data-data tersebut membawa kesan negatif terhadap nilai keupayaannya. Ini bermakna kriteria-kriteria yang mana penilaiannya memerlukan maklumat atau data-data ini, akan diambil sebagai kosong.

4. Disamping mengemukakan dokumen-dokumen yang tersebut diatas petender-petender dikehendaki melengkapkan borang-borang berikut yang disertakan bersama Dokumen Tender ini, dengan sempurna dan mengembalikan bersama-sama dengan tender masing-masing.

(a) BORANG A - SURAT PENGAKUAN KEBENARAN MAKLUMAT DAN KEESAHAN DOKUMEN-DOKUMEN YANG DIKEMUKAKAN OLEH PETENDER.

(b) BORANG B - MAKLUMAT AM DAN LATAR BELAKANG PETENDER.

(c) BORANG C - DATA-DATA KEWANGAN.

(d) BORANG D - REKOD PENGALAMAN KERJA.

(e) BORANG E - KAKITANGAN TEKNIKAL.

(f) BORANG F - KEPUNYAAN LOJI DAN PERALATAN PEMBINAAN UTAMA.

(g) BORANG G - SENARAI KERJA KONTRAK SEMASA

(h) BORANG CA- LAPORAN BANK/INSTITUSI KEWANGAN MENGENAI KEDUDUKAN KEWANGAN PETENDER.

(i) BORANG GA- LAPORAN PENYELIA PROJEK ATAS PRESTASI KERJA (BUKAN / PROJEK SAMB) SEMASA PETENDER.

(j) BORANG H - JADUAL PERANCANGAN KERJA.

Borang-borang ini hendaklah diisi dengan maklumat-maklumat yang benar dan data-data yang tepat. Semua butiran perlu diisi dan jawapan yang jelas hendaklah diberikan terhadap semua pertanyaan di dalam borang-borang di atas. Jika perlu helaian tambahan boleh dilampirkan dan setiap helaian tambahan yang dilampirkan kepada borang-borang lain hendaklah ditandatangani oleh petender.

5. Bagi petender usahasama atau gabungan (seperti yang dibenarkan oleh CIDB) antara dua atau lebih kontraktor setiap ahli gabungan hendaklah masing-masing melengkapkan borang-borang yang tersebut di atas yang berasingan.

6. Semua maklumat dan dokumen-dokumen yang tersebut di atas hendaklah dikemukakan oleh petender bersama-sama tendernya sebelum tarikh tutup Tender dan petender tidak akan berpeluang lagi untuk mengemukakannya selepas itu.

7. Sekiranya petender didapati memberikan maklumat palsu atau sengaja menyorok (withold) atau tidak memberikan mana-mana maklumat yang memberikan kesan negatif terhadap keupayaannya, tendernya akan ditolak dan tindakan tatatertib akan diperakukan terhadapnya.

BAHAGIAN B

SYARAT-SYARAT KONTRAK (SAMB 100)

FORM S.A.M.B 200

SYARAT-SYARAT KONTRAK

BAGI

KONTRAK MEMBEKAL DAN MENGHANTAR BEKALAN

SAMB

Ketua Pegawai Eksekutif
SYARIKAT AIR MELAKA BERHAD
Peti Surat 15
75900 Melaka

KONTRAK UNTUK MEMBEKAL DAN MENGHANTAR BEKALAN

NO KONTRAK.....TAHUN 20.....

PERBELANJAAN hendaklah dibayar daripada:.....

.....

PERKARA-PERKARA PERJANJIAN

SUATU KONTRAK diperbuat pada .....haribulan.....,20.....

ANTARA SYARIKAT AIR MELAKA BERHAD kemudian dari ini disebut "Syarikat" sebagai satu pihak dan

.....

beralamat (atau pejabat berdaftarnya yang terletak di).....

.....
Kemudian dari ini disebut "Kontraktor", sebagai pihak yang satu lagi.

BAHAWASANYA Syarikat berhasrat untuk menjual pelbagai bekalan (kemudian daripada ini disebut sebagai 'bekalan') daripada semasa ke semasa untuk kegunaan/perkhidmatan di .....
(kemudian daripada ini disebut sebagai 'daerah') dan telah menyebabkan spefikasi dan/atau jadual bekalan memperihalkan bekalan yang hendak dijual itu disediakan.

DAN BAHAWASANYA Spefikasi-spefikasi tersebut dan/atau jadual bekalan (kemudian daripada ini disebut sebagai 'Jadual'), borang Tender dan Surat Setujuterima Tender telah ditandatangani oleh atau bagi pihak-pihak dalam Kontrak ini.

MAKA DENGAN INI ADALAH DIPERSETUJUI SEPERTI BERIKUT:

1. Bekalan dan penghantaran bekalan dalam Kontrak ini hendaklah berkuatkuasa dalam tempoh..... mulai .....hingga .....20.....

2. Dalam kontrak ini perkataan-perkataan dan ungkapan-ungkapan hendaklah mempunyai erti yang sama sebagaimana diperuntukkan masing-masing kepadanya dalam syarat-syarat kontrak yang disebut kemudian dari ini.

3. Dokumen-dokumen berikut hendaklah disifatkan menjadi dan dibaca dan ditafsirkan sebagai sebahagian daripada Kontrak ini, iaitu:

a) Perkara-Perkara Perjanjian
b) Borang Tender
c) Surat Setuju Tender
d) Syarat-Syarat Kontrak
(a) Jadual (iaitu Spefikasi dan Jadual Bekalan)

4. Sebagai balasan bagi bayaran yang akan dibuat oleh Syarikat kepada Kontraktor sepertimana yang disebut kemudian dari ini, Kontraktor dengan ini berwaad dengan Syarikat untuk membekal dan menghantar bekalan yang menepati semua perkara berhubungan dengan peruntukan-peruntukan Kontrak ini.

5. Sebagai balasan bagi membekal dan menghantar bekalan oleh Kontraktor, Syarikat dengan ini berwaad untuk membayar kepada kontraktor bagi bekalan yang telah dibekalkan mengikut harga-harga setiap unit dalam Jadual dan mengikut masa dan cara yang dinyatakan dalam syarat-syarat Kontrak.

---

(1) Syarikat menanggung liabiliti.
(2) (2) "Semenanjung Malaysia", "keadaan ....." atau "Daerah ....." sebagaimana yang sesuai.

PADA MENYAKSIKAN perkara-perkara yang tersebut di atas pihak-pihak kepada Perjanjian ini telah menurunkan tandatangan mereka masing-masing pad hari dan tahun yang pertama tersebut di atas.

Ditandatangani oleh yang tersebut

.....	.....
Tandatangan Kontraktor	Tandatangan Pegawai
	(Nama penuh .....)
.....	Jawatan:
Atas sifatnya sebagai.....	Untuk dan bagi pihak Syarikat
diberi kuasa untuk menandatangani	
untuk dan bagi pihak	
.....	
Cop Meterai	
Dihadapan	Di hadapan
Nama	Nama.....
Alamat.....	Jawatan.....
.....	
Perihal.....	

(1) Materi atau cop Kontraktor
(2) Nama jawatan rasmi pegawai yang diberi kuasa menandatangani kontrak (dengan huruf besar).

SYARAT-SYARAT KONTRAK

1. TAKRIF DAN TAFSIRAN

Takrif

(a) Dalam Kontrak ini (sebagaimana kemudian dari ini ditakrifkan) perkataan – perkataan dan ungkapan-ungkapan berikut hendaklah mempunyai erti sebagaimana ditetapkan kepadanya kecuali jika konteksnya menghendaki makna yang lain

(b) (i) "Kontrak" atau "Dokumen Kontrak" ertinya dokumen-dokumen yang menjadi tender dan setujuterima tender itu termasuk Artikle-artikle Perjanjian, Borang Tender, Suratsetuju Terima Tender, Syarat-Syarat Kontrak, Spefikasi and Jadual Bekalan.

(ii) "Kontraktor" bermaksud orang atau orang, perkongsian, firma atau syarikat yang tender untuk bekalan dan penghantaran Kedai telah diterima dan yang telah atau telah menandatangani ini Kontrak dan termasuk ahli waris, pelaksana, pentadbir, peribadi, wakil dan pengganti.

(iii) Huruf ringkas "P.P" ertinya "Pegawai Penguasa" yang hendaklah

KETUA PEGAWAI EKSEKUTIF/KETUA PEGAWAI KEWANGAN DAN KORPORAT/KETUA PEGAWAI OPERASI SYARIKAT AIR MELAKA BERHAD.

Dan penggantinya dalam jawatan. Dengan syarat bahawa dalam masa Kontrak ini masih berkuatkuasa mana-mana pengganti dalam jawatan P.P. itu tidak boleh mengetepikan atau menolak apa-apa keputusan, kelulusan atau arahan yang telah diberi kepada Kontraktor secara bertulis oleh pendulunya melainkan jika dia berpuas hati bahawa tindakan itu tidak akan meyebabkan apa-apa kerugian kewangan kepeda Kontraktor. Selanjutnya bahawa P.P boleh memberi kuasa dari semasa ke semasa mana-mana orang atau orang untuk melaksanakan mana-mana atau semua tugas P.P. di bawah Kontrak ini dan P.P akan memaklumkan Kontraktor yang sama.

(iv) "Wakil P.P." ertinya mana-mana orang atau orang-orang yang telah diwakilkan atau dibenarkan dari semasa ke semasa oleh P.P. untuk menjalankan mana - mana atau semua kewajipan P.P. sebagaimana diberitahu secara bertulis kepada Kontraktor dari semasa ke semasa menurut Fasal 2 (c) Syarat-syarat ini.

(v) "Jadual" bermaksud Spesifikasi dan Jadual Bekalan yang diambil bersama

(vi) "Bekalan" bermaksud Bekalan apa jua untuk dibekalkan dan seperti yang dinyatakan dalam jadual.

Diluluskan" atau "diarahkan"

(c) Terma "diluluskan" atau "diarahkan" di mana sahaja digunakan dalam Kontrak ini bermaksud diluluskan dan diarahkan secara bertulis oleh P.P. dan "kelulusan atau arahan" bermaksud kelulusan dan arahan dalam menulis oleh P.P

Istilah bilangan Tunggal dan jamak

(d) Perkataan-perkataan yang memaksudkan bilangan tunggal sahaja adalah juga termasuk jamak dan sebaliknya jika konteksnya menghendaki sedemikian.

Tajuk birai atau nota-nota

(e) Tajuk-tajuk birai atau nota-nota dalam Syarat-syarat Kontrak ini hendaklah tidak disifatkan sebagai sebahagian darinya atau diambil kira dalam tafsiran atau pengertian Kontrak ini.

2. TUGAS P.P. DAN WAKIL P.P

Tugas P.P

(a) P.P. hendaklah bertanggungjawab ke atas penyeliaan dan arahan keseluruhan Kerja. Semua pertanyaan yang berkenaan dengan mana – mana kerja di bawah Kontrak ini hendaklah dibawa oleh Kontraktor kepada P.P.

Tugas Wakil P.P

(b) Wakil P.P. hendaklah bertanggungjawab kepada P.P dan tugasnya ialah menjaga dan menyelia Kerja dan untuk menguji dan memeriksa mana-mana bahan atau Bekalan-Bekalan yang akan digunakan atau mutu hasil kerja yang digunakan berhubungan dengan Kerja.

Perwakilan Kuasa P.P

(c) Walau apa pun peruntukan subfasal (a) di atas, P.P boleh dari semasa ke semasa secara bertulis mewakilkan kepada Wakil P.P. apa-apa kuasa dan kebenaran yang diletakhakkan kepada P.P. dan hendaklah memberi kepada Kontraktor satu salinan bagi semua perwakilan kuasa dan kebenaran secara bertulis tersebut. Apa-apa arahan atau kelulusan yang diberi oleh Wakil P.P. kepada Kontraktor dan Syarikat sebagaimana ia telah diberi oleh P.P. Dengan syarat sentiasanya bahawa:

(i) Kegagalan Wakil P.P. untuk menolak apa-apa kerja atau bahan tidak akan menjejaskuasa P.P. kemudiannya untuk menolak kerja atau bahan tersebut dan untuk memerintahkan perobohan, pengalihan atau pemecahan kerja atau bahan tersebut.

(ii) Jika Kontraktor tidak berpuas hati oleh sesuatau sebab dari apa-apa keputusan Wakil P.P. dan adalah berhak untuk merujukkan perkara ini kepada P.P. yang seterusnya boleh mengesahkan, mengakaskan atau mengubah keputusan tersebut.

3. Skop Kontrak

Skop Kontrak

Kontraktor hendaklah menjalankan dan menyempurnakan pembekalan dan penghantaran Bekalan mengikut dengan Kontrak ini dan kepuasan wajar P.P

4. Notis-Notis

Notis

Kontraktor hendaklah melalui notis bertulis, memaklumkan P.P alamatnya di mana notis atau arahan di bawah Kontrak ini boleh disampaikan kepadanya dan apa-apa perubahan yang dibuat kepadanya. Di dalam peristiwa kontraktor gagal memberitahu P.P. alamat atau sebarang perubahan yang dibuat kepadanya, notis atau arahan hendaklah disifatkan telah disampaikan kepada Kontraktor jika mereka dihantar kepadanya melalui pos berdaftar ke alamat yang dinyatakan dalam Kontrak ini.

5. Dokumen Kontrak

Jagaan Dokumen Kontrak.

(a) Dokumen Kontrak hendaklah kekal dalam jagaan P.P. dan hendaklah dihasilkan sebagai dan apabila dikehendaki oleh Kontraktor. P.P. hendaklah memberikan kepada Kontraktor suatu salinan dari menandatangani Dokumen Kontrak tanpa kos.

Sekatan tentang penggunaan.

(b) Dokumen Kontrak tidak boleh digunakan oleh Kontraktor untuk sebarang tujuan selain daripada Kontrak ini dan tidak boleh dibuat oleh Syarikat atau menggunakan apa-apa harga atau kadar dalam jadual selain daripada untuk maksud-maksud Kontrak ini.

6. Sampel, ujian dan akses ke kilang

Sampel dan ujian

(a) P.P. hendaklah dengan bebas memanggil sampel mana-mana kedai yang dibekalkan di bawah ini Kontrak untuk pemeriksaan dan / atau ujian, dan meminta sampel lanjut seperti yang diperlukan sehingga sampel yang dikemukakan pada pendapatnya mengikut Jadual. Sampel diluluskan selepas pemeriksaan dan / atau ujian sedemikian hendaklah menunjukkan piawaian yang dikekalkan untuk tempoh ini.Kontrak dan sampel sedemikian hendaklah disimpan dalam jagaan P.P. Jika pada pendapa P.P.mana-mana Bekalan yang dibekalkan di bawah Kontrak ini tidak mengikut jadual atau dengan mana-mana sampel yang diluluskan, P.P. berhak untuk mengemukakan mana-mana Bekalan tersebut kepada peperiksaan pakar dan / atau ujian dan semua kos yang berkaitan dengannya hendaklah ditanggung oleh Kontraktor kecuali itu pemeriksaan dan / atau ujian menunjukkan bahawa Bekalan tersebut mengikut jadual atau dengan sampel yang diluluskan.

Akses ke kilang dll

(b) P.P dan / atau wakilnya hendaklah pada semua masa yang munasabah mempunyai akses kepada kerja-kerja, kilang, bengkel atau premis lain di mana Bekalan yang akan dibekalkan di bawah Kontrak ini adalah yang dihasilkan dan / atau disimpan untuk tujuan pemeriksaan dan pemeriksaan apa-apa proses pembuatan, atau menjalankan apa-apa ujian ke atas sampel Bekalan atau bahagiannya untuk pemerbadanan ke dalamBekalan sebagai P.P. difikirkan perlu.

7. Pembungkusan

Pembungkusan

Semua Bekalan hendaklah dibekalkan dan dihantar dalam pembungkus atau bekas atau sebaliknya ditunjukkan dalam Jadual dan pembungkusan atau bekas itu atau sebaliknya hendaklah dalam semua cara mencukupi untuk tujuan mereka. Mana-mana kerugian atau kerosakan akibat pembungkusan yang tidak mencukupi atau cacat hendaklah menjadi tanggungjawab tunggal Kontraktor.

8. Pembuangan dan penggantian Bekalan Cacat

Pembuangan dan penggantian

Kontraktor hendaklah dengan kos sendiri dan apabila dimaklumkan secara bertulis oleh P.P. keluarkan dan menggantikan mana-mana Bekalan yang didapati semasa penghantaran akan rosak, rosak atau dengan apa-apa cara kualiti dengan sampel yang diluluskan atau tidak mengikut Jadual.

Jika Kontraktor gagal mengeluarkan dan menggantikan Bekalan tersebut dalam masa yang ditetapkan oleh P.P. hendaklah mempunyai hak untuk membeli penggantian di tempat lain atau untuk membuat apa-apa kerosakan dengan apa-apa cara yang difikirkannya perlu dan semua kos dan perbelanjaan yang ditanggung itu boleh diperolehi semula daripada Kontraktor oleh potongan daripada apa-apa wang yang kena dibayar atau menjadi disebabkan oleh Kontraktor di bawah Kontrak ini atau sebagai permintaan dilikuidasi.

9. Kuantiti dan harga

(a) Tertakluk kepada subfasal (b), apa-apa pernyataan yang diberikan dalam Jadual mengenai jumlah kuantiti mana-mana Kedai yang mungkin diperlukan dalam tempoh Kontrak ini hendaklah disifatkan sebagai anggaran dan jumlah kuantiti sebenar yang diperlukan hendaklah berdasarkan pesanan yang dibuat oleh P.P. di bawah Fasal 9 ini. — Anggaran Kuantiti

(b) Jumlah kuantiti sebenar mana-mana Bekalan yang dipesan di bawah Kontrak ini tidak boleh meningkat melebihi 20% daripada kuantiti jumlah kedai yang diberikan dalam Jadual tanpa persetujuan Kontraktor. — Kuantiti sebenar

(c) Tertakluk kepada Klausa 12, harga atau harga unit yang ditetapkan oleh Kontraktor dalam Jadual hendaklah dalam Ringgit Malaysia dan hendaklah disifatkan sebagai termasuk kos semua bahan, buruh, tumbuhan, alat, cukai, tugas, tarif, pengawasan, caj overhead, keuntungan dan segala yang lain perlu bagi prestasi dan pengendalian operasi yang diperlukan untuk pembekalan dan penghantaran Kedai kecuali dikecualikan secara khusus di bawah syarat-syarat Jadual. — Harga-harga

10. Pesanan dan kadar bekalan

(a) Semua pesanan untuk Bekalan yang akan dibekalkan di bawah Kontrak ini hendaklah diberikan dari semasa ke semasa, secara bertulis, oleh P.P. pada bentuk standard "Tempatan Tempatan" Syarikat (selepas ini dirujuk sebagai "perintah"). Semua pesanan sedemikian hendaklah menyatakan dengan jelas jumlah, butiran dan sifat Kedai untuk dibekalkan, kadar pembekalan dan penghantaran dan tarikh di mana Bekalan akan menjadi yang disampaikan, dan juga menyatakan jumlah yang dihitung pada harga atau harga unit dalam Jadual, yang akan menjadi akibat kepada Kontraktor mengenai penyempurnaan penyampaian Bekalan-bekalan yang memuaskan — Pesanan-pesanan

(b) P.P berhak untuk meningkatkan kadar bekalan dan penghantaran dengan tidak lebih daripada 20% daripada kadar bekalan dan penghantaran yang dinyatakan dalam Jadual. — Peningkatan Kadar bekalan

(c) Apabila menerima apa - apa perintah, Kontraktor hendaklah memulakan pembekalan dan penghantaran bekalan-bekalan yang disebut dalam perintah itu dan menyiapkannya sama sepenuhnya pada atau sebelum tarikh atau tarikh dinyatakan dalam perintah itu. — Permulaan dan lengkapkan penghantaran

(d) Apa-apa kesilapan, kekaburan atau percanggahan yang ditemui dalam apa-apa perintah hendaklah dirujuk tanpa berlengah-lengah kepada P.P untuk pengubahsuaian dan / atau penjelasan. — Ralat atau pencanggahan

11. Penghantaran

(a) Kontraktor hendaklah menyerahkan Bekalan yang akan dibekalkan di bawah Kontrak ini ke tempat atau tempat yang dinyatakan dalam Jadual. — Penghantaran

(b) Dengan setiap penyerahan bagi Bekalan yang dihantar di bawah Kontrak ini, Kontraktor hendaklah, dengan cara perakuan, mengesahkan kepada P.P bahawa kualiti Bekalan yang dibekalkan berada dalam mengikut sampel yang diluluskan atau mengikut Jadual. Bayaran tidak boleh yang dibuat berkenaan dengan apa-apa penghantaran bekalan-bekalan yang disampaikan yang tidak disertakan dengan perakuan. — Sijil Kualiti

(c) Setelah memuaskan penyerahan Bekalan-Bekalan mengikut Kontrak ini, Kontraktor hendaklah mendapatkan resit daripada P.P. Penyerahan resit-resit sedemikian tidak akan melepaskan Kontraktor daripada tanggungjawabnya untuk menggantikan Bekalan yang rosak atau rosak di bawah Klausa 7

12. Bayaran

(a) Setelah selesai penghantaran barang yang dipesan di bawah Kontrak ini, Kontrak hendaklah mengemukakan secara bertulis suatu tuntutan yang ditandatangani dengan sepatutnya bersama dengan pesanan itu, bil dan resit P.P. berkenaan dengan Kedai yang dihantar, kepada P.P. siapa yang akan, jika dia berpuas hati bahawa perintah itu telah dipatuhi dengan memuaskan, mengeluarkan sijil yang mengesahkannya amaun yang kena dibayar kepada Kontraktor. Syarikat hendaklah, dalam masa 60 hari dari isu itu perakuan, membuat bayaran kepada Kontraktor dengan jumlah penuh yang diperakui dalam perakuan itu

Bayaran

(b) Walau apa pun sub-fasal (a), apa-apa pembayaran yang dibuat tidak boleh dianggap sebagai keterangan Kualiti mana-mana Kedai yang berkaitan dengan pembayaran sedemikian dan tidak akan melepaskan Kontraktor dari tanggungjawabnya di bawah Klausa 7

Bayaran tidak dianggap Bukti kualiti

(c) Syarikat berhak untuk memotong daripada apa - apa wang pembayaran yang mana P.P. yang diperakui adalah disebabkan oleh Syarikat oleh Kontraktor dengan alasan sebarang kemungkiran atau pelanggaran terhadap Kontrak ini oleh Kontraktor.

Potongan daripada wang oleh Syarikat

13. Perubahan dalam duti dan tarif, dll.

(a) Jika pada bila-bila masa selepas tarikh penerimaan tender Kontraktor untuk Kontrak ini di sana adalah apa-apa kenaikan atau pengurangan dalam apa-apa cukai, duti, tarif, atau jika ada apa-apa cukai, duti, tarif, surcaj atau sebagainya, yang dikenakan di bawah kewajipan statutori, maka apabila permohonan bertulis oleh Kontraktor kepada Syarikat atau P.P., atau sebaliknya, apa-apa perubahan yang disebabkan oleh harga mana-mana Bekalan di dalam Jadual akan diselaraskan dengan cara kenaikan atau pengurangan mengikut mana-mana yang berkenaan.

Perubahan dalam duti Dan tarif

(b) Walau apa pun sub-fasal (a), Kontraktor hendaklah, apabila dikehendaki oleh P.P., menghasilkan bukti dokumentari untuk menyokong apa-apa tuntutan yang boleh dibuat berkenaan dengan apa-apa keadaan yang disebut dalam sub-fasal (a)

Bukti Dokumentari

(c) Penambahan atau pemotongan dari kadar atau harga yang ditawarkan oleh Kontraktor yang dibuat menurut kuasa Fasal ini tidak boleh mengubah apa-apa cara jumlah keuntungan Kontraktor termasuk dalam mana-mana itu harga atau harga.

Tiada perubahan Dalam keutntungan

14. Kelewatan dalam menyediakan dan penghantaran

(a) Apabila ia menjadi jelas bahawa bekalan dan / atau penyerahan mana-mana bekalan yang dipesan di bawah Kontrak ini mungkin ditangguhkan atau apabila bekalan dan / atau penghantaran Bekalan-bekalan tersebut tertangguh, Kontraktor hendaklah dengan secepat mungkin memberikan notis bertulis tentang sebab-sebab penangguhan atau kemungkinan kelewatan kepada P.P. dan jika pada pendapat P.P bekalan dan / atau penghantaran apa-apa Bekalan-bekalan mungkin telah atau telah ditangguhkan kerana mana-mana keadaan berikut, iaitu:

Kelewatan dalam menyediakan dan penghantaran

(i) force majeure, atau
(ii) rusuhan, komitmen awam, mogok, kunci keluar, atau gangguan buruh yang lain, yang memberi kesan kepada bekalan dan / atau penyerahan Kedai, yang tidak disebabkan oleh apa-apa perbuatan yang tidak munasabah. Pengabaian atau kegagalan Kontraktor atau
(iii) kebakaran, atau
(iv) peperangan, atau
(v) Bahaya laut, atau
(vi) kelewatan dalam transit, yang tidak disebabkan oleh pengabaian atau kegagalan Kontraktor, atau
(vii) sebab atau bahaya yang lain yang telah menjejaskan bekalan dan penghantaran barangan secara material dan berada di luar kawalan Kontraktor,

maka dalam mana-mana kes itu, P.P boleh membuat pelarasan munasabah kepada kadar pembekalan dan penghantaran yang dinyatakan. Pampasan tidak akan dibayar kepada Kontraktor sekiranya ada hasil penyesuaian dalam pengurangan jumlah nilai Bekalan yang dibekalkan sepanjang tempoh ini

(b) maka dalam mana-mana kes itu, P.P. boleh membuat pelarasan munasabah kepada kadar pembekalan dan penghantaran yang dinyatakan. Pampasan tidak akan dibayar kepada Kontraktor sekiranya ada hasil penyesuaian dalam pengurangan jumlah nilai Bekalan yang dibekalkan sepanjang tempoh ini.

Bekalan Tidak terjejas

15. Kegagalan untuk membekalkan dan menyampaikan

(a) Jika Kontraktor gagal membekalkan dan / atau menyerahkan mana - mana Bekalan di bawah Kontrak ini di kadar pembekalan yang ditentukan atau apa-apa kadar pembekalan sebagaimana yang diselaraskan mengikut Klausa 13 maka P.P. mempunyai hak untuk melakukan salah satu daripada yang berikut

Kegagalan untuk membekalkan dan menyampaikan

(i) membatalkan pesanan mana-mana Bekalan tersebut daripada Kontrak ini tanpa pampasan dan mendapatkan Bekalan tersebut daripada sumber lain dan semua kos atau perbelanjaan tambahan yang ditanggung itu hendaklah ditolak daripada apa-apa wang yang kena dibayar atau menjadi kena dibayar kepada Kontraktor di bawah Kontrak ini atau hendaklah boleh dipulihkan dengan likudasi gantirugi dalam bentuk wang;

(ii) bersetuju untuk menerima penghantaran lewat mana-mana Bekalan yang dipesan tetapi Kontraktor hendaklah bertanggungjawab untuk membayar atau membenarkan Syarikat jumlah yang dikira pada kadar 1% setiap minggu dari nilai Bekalan yang dipesan, sebagai ganti rugi yang telah dicairkan untuk tempoh penyerahan Bekalan tersebut telah ditangguhkan

(b) Jika Kontraktor berterusan gagal membekalkan dan / atau menghantar mana-mana Bekalan yang dipesan di bawah Kontrak ini kemudian P.P. mempunyai hak untuk mengambil tindakan di bawah Fasal 19.

Lengkap kegagalan untuk membekalkan

(c) P.P berhak untuk mengenakan denda sebanyak 5% daripada jumlah kontrak setahun sebagai gantirugi dan seterusnya menggantung kontraktor daripada memasuki tender seterusnya bagi tempoh 12 bulan atau bagi satu tempoh difikirkan sesuai.

16. Bon Pelaksana

(a) Kontraktor hendaklah, sebelum menandatangani deposit Kontrak ini dengan Syarikat Jaminan Bank * bersamaan dengan 2 ½% / 5% * daripada anggaran jumlah / tahunan * Kontrak ini seperti yang ditunjukkan di dalam Jadual dan selepas ini dirujuk sebagai 'Bon Prestasi' untuk pematuhan dan pelaksanaan Kontrak

Bon Pelaksana

(b) Jika Kontraktor gagal melaksanakan Kontrak ini atau melakukan apa-apa pelanggaran terhadap obligasi ini di bawah Kontrak ini, Syarikat berhak untuk menggunakan atau membuat pembayaran atau potongan daripada Bon Prestasi mengikut terma Kontrak

Permohonan

(c) Bon Prestasi atau apa-apa baki yang selebihnya kepada kredit Kontraktor hendaklah akan dikeluarkan pada masa tamat kontrak ini dan akan dikembalikan dengan segera.

Pelepasan Prestasi Bon

17. Menyerahkan

Kontraktor tidak boleh memindahkan atau memberikan Kontrak ini atau mana-mana bahagian atau bahagiannya, atau mana-mana faedah atau kepentingan di dalam atau di bawahnya.

Menyerahkan

18. Hak Paten

Kontraktor hendaklah menanggung rugi Syarikat daripada dan terhadap semua tuntutan dan prosiding untuk atau atas sebab pelanggaran mana-mana hak paten, reka bentuk, cap dagangan atau nama atau lain-lain hak yang dilindungi di mana-mana Bekalan yang dibekalkan oleh Kontraktor di bawah Kontrak ini, dan terhadap semua tuntutan, tuntutan, prosiding, ganti rugi, kos, caj dan perbelanjaan yang berkaitan dengannya atau dalam

Hak Paten

19. Pembelian di tempat lain

Pembelian di Tempat lain.

P.P. berhak, untuk membeli mana-mana Bekalan yang dinamakan dalam Jadual dari mana-mana sumber komersial di dalam atau di luar daerah yang mana Bekalan di bawah Kontrak ini sedang berlaku dibekalkan, atau dari mana-mana Jabatan atau institusi Kerajaan di mana-mana tempat, walau apa pun bahawa mana-mana Bekalan mungkin berada di dalam daerah.

20. Penentuan Kontrak

Keingkaran Oleh Kontraktor

(a) Tanpa menjejaskan hak atau remedi lain yang boleh dimiliki oleh Syarikat, jika Kontraktor ingkar dalam satu atau lebih daripada penghormatan berikut, iaitu:

(i) jika dia berterusan gagal membekalkan dan menyerahkan mana-mana Bekalan yang dipesan di bawah Kontrak ini;

(ii) jika dia enggan atau tidak berterusan mengabaikan untuk mematuhi notis bertulis daripada P.P. dalam mengikut Klausa 7 untuk mengeluarkan dan menggantikan mana-mana Bekalan yang didapati rosak, rosak atau dengan apa-apa cara yang lebih rendah daripada sampel yang diluluskan atau tidak dengan Jadual;

(iii) jika dia tidak mematuhi peruntukan Klausa 16;

P.P. boleh memberi notis kepadanya melalui pos berdaftar yang menyatakan lalai, dan jika Kontraktor terus kelalaian itu selama 14 hari selepas menerima notis tersebut atau telah pada bila-bila masa selepas penerimaan notis itu mengulangi kegagalan tersebut, Syarikat boleh dengan notis yang dihantar oleh pos berdaftar, menentukan pekerjaan Kontraktor di bawah Kontrak ini.

Bankrup /Insolven

(b) Jika Kontraktor-
(i) melakukan tindakan kebankrapan, atau
(ii) menjadi tidak solven, atau menyusun atau membuat perjanjian dengan pemiutangnya, atau
(iii) menjadi syarikat, mempunyai perintah penggulungan yang dibuat terhadapnya, atau
(iv) mempunyai pelikuidasi sementara, penerima atau pengurus perniagaannya atau menjalankan dengan sewajarnya dilantik, atau memiliki yang diambil oleh atau bagi pihak pemiutang atau pemegang debentur yang dijamin dengan caj terapung mana-mana harta yang terkandung dalam atau tertakluk kepada caj terapung tersebut,

Syarikat tidak boleh menjejaskan hak atau remedi lain yang mungkin dimilikinya, melalui notis dihantar melalui pos berdaftar, menentukan pekerjaan Kontraktor di bawah Kontrak ini.

Rasuah

(c) Sekiranya pada bila-bila masa selepas penerimaan tender Kontraktor untuk Kontrak ini, Kontraktor didapati bersalah atas kesalahan di bawah Akta Pencegahan Rasuah 1961 atau kesalahan sejenis di bawah mana-mana undang-undang yang sedang berkuatkuasa, Syarikat boleh tanpa pampasan oleh notis yang dihantar oleh pos berdaftar, menentukan pekerjaan Kontraktor di bawah Kontrak ini.

Kesan-kesan penentuan

(d) sekiranya penentuan pengambilan pekerja Kontraktor di bawah sub-fasal (a), (b) atau (c), Syarikat boleh, tanpa menjejaskan apa-apa hak atau remedi lain yang mungkin ada, mendapatkan Bekalan-Bekalan tersebut yang dinyatakan dalam Jadual termasuk mana-mana Kedai yang dipesan sebelum penentuan pekerjaan Kontraktor tetapi belum lagi dibekalkan, dari sumber-sumber lain dan semua peningkatan kos atau perbelanjaan yang ditanggung itu akan ditolak dari apa-apa wang yang kena dibayar atau menjadi disebabkan oleh Kontraktor di bawah Kontrak ini, atau boleh dipulihkan sebagai permintaan yang dicairkan dalam wang. Peningkatan kos atau perbelanjaan yang Syarikat berhak untuk pulih adalah terhad kepada:
(i) kuantiti yang dibeli daripada sumber lain di bawah klausa ini;
(ii) jumlah kuantiti Bekalan-bekalan sedemikian seperti yang dinyatakan di dalam Jadual mengurangkan apa-apa jumlah yang dibekalkan sebelum penentuan pekerjaan Kontraktor,

yang mana lebih rendah.

21. Kesan peperangan dll.

Kesan peperangan dll

Jika dalam tempoh Kontrak ini keadaan peperangan di mana Syarikat terlibat atau apa-apa acara yang berada di luar kawalan mana-mana pihak, seperti keadaan rusuhan, kekecohan awam, umum mogok, gempa bumi, banjir atau ribut, dan yang telah menyebabkan pemenuhan kontrak mustahil, apa-apa soalan berkenaan dengan berlanjutan, penggantungan atau penamatan Kontrak ini hendaklah diselesaikan dengan persetujuan bersama antara Syarikat dan Kontraktor atau gagal yang mana perjanjian itu akan diselesaikan oleh timbang tara sebagaimana yang diperuntukkan dalam Klausa 23.

22. Pematuhan dengan Ordinan Pekerjaan dan lain-lain

Pematuhan dengan Ordinan Pekerjaan dll.

Kontraktor hendaklah, dalam penggajian pekerja untuk pelaksanaan Kontrak ini, mematuhi semua kehendak Ordinan Pekerjaan 1955, Pekerjaan (Sekatan) Akta 1968, Ordinan Kumpulan Wang Simpanan Pekerja 1951, Akta Perhubungan Perindustrian 1967 dan undang-undang lain yang berhubungan dengan penggajian pekerja, atau apa-apa pengubahsuaian atau reenactment berikutnya.

23. Kontrak Undang-undang.

Kontrak Undang-Undang

Kontrak ini hendaklah semua ditafsirkan dan dikendalikan sebagai Kontrak Malaysia dan hendaklah ditafsirkan mengikut dan tertakluk kepada undang-undang Malaysia termasuk mana-mana undang-undang sedemikian diluluskan atau dibuat atau berkuatkuasa dalam tempoh Kontrak ini. Mahkamah Malaysia hendaklah mempunyai bidang kuasa eksklusif untuk mendengar dan menentukan semua tindakan dan prosiding yang timbul daripada Kontrak ini dan Kontraktor dengan ini mengemukakan kepada bidang kuasa mahkamah Malaysia untuk maksud apa-apa tindakan dan prosiding sedemikian.

24. Penamatan Mengenai Rasuah, Aktiviti Menyalahi Undang-Undang Atau Tidak Sah

(a) Tanpa menjejaskan apa-apa hak lain Lembaga SAMB, jika [syarikat/firma], kakitangan, pengkhidmat atau pekerjanya disabitkan oleh mahkamah undang-undang bagi rasuah atau aktiviti menyalahi undang-undang atau menyalahi undang-undang berhubung dengan [perjanjian/kontrak] ini atau mana-mana perjanjian yang [syarikat/firma] itu mungkin ada dengan SAMB, yang SAMB berhak untuk menamatkan [perjanjian/kontrak] ini pada bila-bila, dengan memberi notis bertulis serta merta bagi maksud itu kepada [syarikat/firma].

(b) Jika penamatan berlaku, SAMB berhak untuk mendapat balik semua kerugian, kos, kerosakan dan perbelanjaan (termasuk apa-apa kos dan perbelanjaan sampingan) yang dilakukan oleh SAMB yang timbul daripada penamatan tersebut.

(c) Bagi mengelakkan sebarang keraguan, pihak-pihak dengan ini bersetuju bahawa [syarikat/firma] tidak layak menuntut apa-apa bentuk kerugian termasuk kehilangan keuntungan, kerosakan, tuntutan atau apa jua selepas penamatan [perjanjian/kontrak]

25. Duti Setem

Duti Setem

Duti setem ke atas Kontrak ini akan ditanggung oleh Kontraktor.

Kontraktor hendaklah semata-mata menanggung duti setem, kos dan yuran guaman dalam penyediaan dan pelaksanaan Kontrak ini dan sebarang perkara yang bersampingan dengannya

BAHAGIAN C

BORANG TENDER (SAMB 100B)

(S.A.M.B. 18)

CONTRACT No. .....of 20..... for the supply of the under-mentioned Stores entered into on the .....day of .....2026 by the undersigned parties, refers to this Form of Tender which is and shall be read and construed as part of the said Contract.

.....	.....
(Contractor)	(Syarikat Air Melaka Berhad)
.....	.....
(Witness)	(Witness)
Date **.....**	Date**.....**

SYARIKAT AIR MELAKA BERHAD

FORM OF TENDER

TENDER FOR SUPPLY OF THE FOLLOWING STORES

.....……..

FOR USE BY THE SYARIKAT AIR MELAKA BERHAD

FOR THE PERIOD.....TO.....…… Both days inclusive.

Copies of the Form of Contract Agreement and the Specification and / or Schedule of Stores may be seen at the place specified in the Tender Notice during office hours on any working day until the final date for the submission of Tenders.

To

KETUA PEGAWAI EKSEKUTIF

.....

SYARIKAT AIR MELAKA BERHAD

.....

LOT 897, WISMA AIR,

.....

JALAN HANG TUAH, 75300 MELAKA.

.....

Tuan,

Under and subject to the Conditions of Tendering annexed hereto , the undersigned does hereby tender and after to supply and deliver all Stores and everything of every kind respectively named, shown, described and alluded to in, or to be inferred from, the Form of Contract Agreement, Conditions of Contract and Specification and / or Schedule of Stores, to be supplied on the part of the Contractor, to the address above mentioned, in conformity with the Specification and /or Schedule of Stores and under and subject to the said Conditions of Contract for the various rates set down by the undersigned in the said schedule which is returned along with this tender.

2. The undersigned agrees to be bound by and submit to the said Conditions of Contract and Specification and / or Schedule of Stores and agrees that the prices therein shall from a basis for the valuation of payments for such stores from time to time ordered by the Superintending Officer.

3. Whereas it is understood that you reserve to yourself the right to accept or to refuse this tender, whether the rates be lower or higher than any other tender, or the same the undersigned agrees that tender shall remain valid and shall not be withdrawn within ninety (90) days from the final date for submission of tenders.

4. And further, the undersigned agrees, in the event of your acceptance of this tender, to execute the formal Contract Agreement and to deposit the Security Deposit (if any) stipulated in the Schedule of Stores within ten days from posting, or delivery if by hand, of notification of acceptance.

5. The undersigned, confirms, after personal scrutiny, that the document used by the undersigned in compiling this tender are true copies of the documents included in the Tender Documents.

6. The Total amount of the Tender is the lump sum of Ringgit……

……..

……..

RM……

Signature of Tenderer .....

Names of Tenderer .....

Company chop.....

Address .....

.....

.....

Date .....

Witness to Signature of Tenderer .....

Name .....

Address .....

.....

.....

Date .....

CONDITION OF TENDERING

1. The whole of the works set forth in the Specification and/or Schedule of stores will be let on Contract, subject to the condition of Contract.

2. Each tenderer must submit, enclosed and sealed in an envelope addressed as stipulated in the Tender Notice, a genuine tender on the Form of Tender provided, together with the copy of Schedule of Stores with rates duly filled in and signed.

3. (a) Tenders and documents in connation therewith as specified above, must be delivered to the place and at or before the time stipulated in the Tender Notice.

(b) In the case of a tender not being delivered by hand, the tenderer must arrange for his tender and other documents to be posted in time to reach the stipulated place not later than the stipulated time.

(c) Any tender delivered after the stipulate time, from whatever cause arising, will not be considered.

(d) In no case will any expense incurred by a tenderer in the preparation of this tender be allowed.

4. In the event of any tenderer being supplied, at his request, with copies of any of the Tender Table Documents, it shall be the sole responsibility of the tenderer to scrutinize such copies and satisfy himself that they are exact copies of those included in the Tender Table Documents. In the event of any discrepancy being found between any such copies supplied to the tenderer and those included in the Tender Table Documents it shall be the sole responsibility of the tenderer to apply to the officer receiving the tenders to have such discrepancy rectified before the final date for submission of tenders stipulated in the Tender Notice.

5. Tenders shall remain valid for ninety (90) days from the final date for submission of tenders stipulated to the Tender Notice and no tendered may withdraw his tender within that period.

6. The Syarikat shall no be bound to accept the lowest or any tenders.

7. The accepted approved tenderer (if any) shall be notified of such acceptance by letter within ninety (90) days during which by paragraph 5 hereof the tender is to remain valid and the said tenderers shall within the time stated in the Form of Tender first execute the formal Contract Agreement and then in the same day shall deposit the Security Deposit (if any) for the due performance of the contract. The period for executing the formal Contract Agreement may, however, be extended of the officer receiving the tenders is satisfied that adequate reasons exist for so doing.

8. Every notice to be given to a tenderer may, of the officer receiving the tenders thinks fit, be posted to the tenderer's address given in the tender and such posting shall be deemed good service of such notice.

9. The words "approved tenderer" shall mean that the tenderer shall be approved by the officer receiving the tenders and shall have complied with these conditions of tendering in every respect.

10. The word "tenderer" in these conditions shall be deemed to include two or more persons. The word "his" may also mean "her" or "their" and the word "he" may also mean "she" or "they".

11. Non-compliance with the above conditions in any respect shall render the tender liable to rejection and the fee paid by the tenderer to become Registered Contractor with the Syarikat Air Melaka Berhad shall be forfeited by him to the Syarikat at the absolute discretion of the Officer receiving the tenders.

12. All relevant forms concerning the background of contractor and his works have to be completely filled and submitted by tenderer in his tender. Failure to do so may render the tender liable to rejection.

BAHAGIAN D

SURAT AKUAN PEMBIDA

SURAT AKUAN PEMBIDA

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

(No. Rujukan Tender : SAMB / 11 / 2026)

Saya, ……..(Nama Wakil Syarikat) No. Kad Pengenalan.....yang mewakili ……..…. (Nama Syarikat) nombor Pendaftaran.....(MOF/PKK/CIDB/ROS/ROC/ROB) dengan ini mengisytiharkan bahawa saya atau mana-mana orang yang mewakili syarikat ini:

i. tidak akan menawarkan, menjanjikan atau memberikan apa-apa suapan kepada mana-mana orang dalam mana-mana Kementerian/Agensi atau mana-mana orang lain, sebagai suapan untuk dipilih dalam mana-mana perolehan; dan
ii. tidak akan melakukan atau terlibat dengan tipuan bida dalam mana-mana perolehan.

Bersama 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 terlibat dalam pakatan tipuan bida dengan syarikat lain berkenaan perolehan di atas atau menawarkan, menjanjikan atau memberikan apa-apa suapan kepada mana-mana orang dalam ..... (Nama Kementerian/Agensi} atau mana-mana orang lain sebagai dorongan untuk dipilih dalam perolehan seperti di atas, maka saya sebagai wakil syarikat bersetuju tindakan-tindakan berikut boleh diambil:

2.1 Hilang kelayakan untuk dinilai dan dilantik bagi perolehan di atas; dan
2.2 Lain-lain tindakan undang-undang/tatatertib mengikut undang-undang/peraturan perolehan Kerajaan yang berkuat-kuasa

3. Saya sesungguhnya faham bahawa--

3.1 saya atau mana-mana orang yang berkaitan dengan syarikat boleh didakwa bagi kesalahan* di bawah Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 [Ata 694] dan Kanun Keseksaan [Akta 574] serta boleh dihukum di bawah undang-undang masing-masing atas kegagalan saya atau mana-mana orang yang mewakili syarikat ini untuk mematuhi perkara (i) dalam surat akuan ini; atau

3.2 tindakan boleh dikenakan ke atas syarikat di bawah Akta Persaingan 2010 [Akta 712] atas kegagalan saya atau mana-mana orang yang mewakili syarikat ini untuk mematuhi perkara ii) dalam surat akuan ini. Sekiranya syarikat didapati melanggar peruntukan seksyen 4(2)(d) Akta 712, syarikat boleh didenda tidak melebihi sepuluh peratus (10%) daripada pusing ganti (turn over) seluruh dunia sepanjang tempoh suatu pelanggaran itu berlaku.

4. Sekiranya terdapat mana-mana orang cuba memperolehi atau meminta apa-apa suapan daripada saya atau mana-mana orang yang berkaitan dengan syarikat ini sebagai dorongan untuk dipilih dalam perolehan seperti di atas, maka saya berjanji akan dengan segera melaporkan perbuatan tersebut kepada pejabat Suruhanjaya Pencegahan Rasuah Malaysia (SPRM) atau balai polis yang berhampiran. Saya sedar bahawa kegagalan saya berbuat demikian adalah merupakan suatu kesalahan di bawah seksyen 25 (1) Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 [Akta 694] dan boleh dihukum di bawah seksyen 25 (2) akta yang sama, apabila disabitkan boleh didenda tidak melebihi RM100,000 atau penjara selama tempoh tidak melebihi sepuluh tahun atau kedua-duanya.

5. Saya sesungguhnya faham bahawa syarikat melakukan kesalahan jika seseorang yang bersekutu dengan syarikat** memberikan, menjanjikan atau menawarkan suapan untuk memperoleh atau mengekalkan perniagaan atau faedah dalam menjalankan perniagaan di bawan Seksyen 17A, Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 [Akta 6941, apabila disabitkan kesalahan boleh didenda tidak kurang daripada sepuluh kali ganda jumlah atau nilai suapan, atau RM1 juta, atau dipenjarakan selama tempoh tidak melebihi dua puluh tahun atau kedua-duanya.

Yang benar,

Tandatangan :……
Nama :……
No.KP :……
Tarikh :……
Cap Syarikat :……

Catatan:

i) *termasuk kesalahan ditetapkan dalam Jadual (Perenggan 3 (a), takrif "kesalahan ditetapkan") Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 [Akta 694] yang boleh dihukum di bawah Kanun Keseksaan [Akta 574].

ii) **seseorang yang bersekutu dengan syarikat merujuk kepada seksyen 17A (6) Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 [Akta 694], iaitu seseorang itu bersekutu dengan organisasi komersial jika dia seorang pengarah, pekongsi atau pekerja organisasi komersial itu atau dia ialah orang yang melaksanakan perkhidmatan untuk atau bagi pihak organisasi komersial itu.

iii) Surat Akuan ini hendaklah dikemukakan bersama surat perwakilan kuasa.

iv) Takrifan perusahaan di bawah Akta 712 merangkumi syarikat yang terlibat dengan perolehan

Pihak Syarikat :Penama pada sijil pendaftaran untuk menandatangani Surat ini.
Pihak Kerajaan :Pegawai yang diberi kuasa oleh Menteri di bawah seksyen 2 Akta Kontrak Kerajaan1949 untuk menandatangani kontrak.

BAHAGIAN E

SURAT SETUJUTERIMA TENDER (SAMB 100D)

SURAT SETUJUTERIMA TENDER (BEKALAN/PERKHIDMATAN)

NO KONTRAK : _____

Untuk kerja-kerja yang disebutkan di bawah ini dibuat pada haribulan _____2026 oleh pihak-pihak yang bertandatangan di bawah ini, merujuk kepada Surat Setuju Terima Tender yang menjadi sebahagian daripada kontrak tersebut dan yang hendaklah dibaca dan diertikan sedemikian

_____
Tandatangan Kontraktor

Nama Penuh:_____
(Huruf Besar)

Yang diberi kuasa dengan sempurnanya untuk menandatangani untuk dan bagi pihak

_____
Tandatangan Pegawai

Nama Penuh:_____
(Huruf Besar)

Untuk dan bagi pihak Syarikat Air Melaka Berhad

Meteri atau Cap Kontraktor

Saksi:_____

Nama Penuh :_____

Pekerjaan : _____

Alamat : _____

_____

_____

Saksi:_____

Nama Penuh :_____

Pekerjaan : _____

Alamat : _____

_____

_____

SYARIKAT AIR MELAKA BERHAD
SURAT SETUJUTERIMA TENDER
(UNTUK BEKALAN / PERKHIDMATAN)

Rujukan: _____

Ketua Pegawai Eksekutif,
Syarikat Air Melaka Berhad,
Wisma Air, Tingkat Bawah, 1, 5-9
Jalan Hang Tuah,
75300 Melaka.

Tarikh: _____

_____

_____

_____

_____

(Kontraktor / Pembekal)

Tuan/Puan,

Tender untuk: **MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN**

Merujuk kepada tender tuan/puan untuk * Pembekalan / ~~Perkhidmatan~~ yang tersebut di atas, Syarikat Air Melaka Berhad dengan ini memberitahu tuan/puan dengan sukacitanya bahawa Syarikat telah bersetuju menerima tender tuan/puan berharga Ringgit Malaysia:

_____ (RM _____)

2. Dengan penerimaan tender tuan oleh Syarikat, tuan/puan adalah dinasihatkan bahawa suatu ikatan Kontrak terwujud diantara Syarikat dengan tuan/puan. Suatu Kontrak Rasmi akan disempurnakan kemudiannya dengan memasukkan semua terma tender sebagaimana yang diubahsuaikan. Tuan/Puan akan diberitahu oleh Syarikat apabila Dokumen Kontrak siap sedia untuk ditandatangani oleh tuan/puan.

3. Tuan/Puan adalah diingatkan bahawa mengikut * Syarat-syarat Tender tuan/puan adalah dikehendaki menyempurnakan perkara berikut;-

*3.1 Mendepositkan suatu Bon Perlaksanaan dalam bentuk Jaminan Bank/ Jaminan Syarikat Kewangan / Jaminan Insurans yang tak boleh batal dari sebuah Bank / Syarikat Kewangan / Syarikat Insurans yang diluluskan dan didaftarkan di Malaysia dengan jumlah sebanyak **RM** _____ yang merupakan lima peratus (5%) ~~atau dua setengah peratus (2 ½ %)~~ dari jumlah harga tender untuk anggaran setahun dalam tempoh **tiga puluh (30)** hari dari tarikh surat ini

*3.2 ~~Mendepositkan dengan Syarikat, Pampasan Pekerja-pekerja dan polisi Insurans dalam tempoh **empat belas (14)** hari dan mengemukakan bagi tujuan pemeriksaan resit-resit bagi premium-premium yang telah dibayar.~~

Apa-apa kegagalan di dalam mematuhi kehendak-kehendak perenggan 3 ini dalam tempoh masa yang dinyatakan, kecuali jika diabaikan dengan nyata oleh Syarikat, akan menyebabkan penerimaan ini akan terbatal dan selepas itu Syarikat tidaklah dengan apa-apa cara juga bertanggungjawab kepada tuan/puan.

4. Tarikh permulaan sebagaimana yang disebutkan dalam syarat-syarat kontrak adalah pada _____ tetapi tiada bekalan atau perkhidmatan di bawah Kontrak ini boleh dimulakan kecuali dan sehingga tuan telah mematuhi peruntukan perenggan 3 di atas.

Surat ini dihantar kepada tuan dalam * ~~dua~~ / tiga salinan. Sila kembalikan Surat Setujuterima asal dan salinan kedua setelah ditandatangani dan disaksikan dengan sempurna, diruang yang berkenaan kepada pejabat ini dan satu salinan untuk simpanan tuan.

Sekian, terima kasih.

"MELAKAKU MAJU JAYA, RAKYAT BAHAGIA, MENGGAMIT DUNIA"
"BIJAK LAKSANA TUAH, BERANI LAKSANA JEBAT"
"MALAYSIA MADANI"
"INTEGRITI, PROFESIONALISME, IBADAH"

Saya yang menjalankan amanah,

_____
(DATUK MOHD SALEH BIN JUSMAN)
Ketua Pegawai Eksekutif
Syarikat Air Melaka Berhad

Dengan ini yang bertandatangan di bawah ini mengakui penerimaan surat tersebut di atas, salinannya yang mana telah pun disimpan dan mengesahkan bahawa *tiada apa-apa terma, syarat atau stipulasi tambahan kepada yang terkandung dalam Jadual Dokumen Tender telah dikenakan dengan keluaran surat tersebut di atas adalah merupakan keseluruhan tender yang bertandatangan di bawah ini.

……..	……
Tandatangan Kontraktor	Tandatangan Saksi
Nama Penuh :……	Nama Penuh :……
Atas Sifat: …….	Pekerjaan : ……..
Alamat : …….	Alamat:……..
…….	……
…….	……

……...

Meteri atau Cop Kontraktor

Tarikh : ……	Tarikh : ……

*** Potong / Ubahsuai / Tambah di mana perlu**

BAHAGIAN F

BORANG JAMINAN BANK DAN LAIN-LAIN

LAMPIRAN B

BORANG JAMINAN BANK/JAMINAN SYARIKAT KEWANGAN/
JAMINAN INSURANS UNTUK BON PERLAKSANAAN
(KONTRAK KERJA)

Sebagai balasan kepada Kontrak No. _____ yang dibuat antara Syarikat Air Melaka Berhad, kemudian daripada ini dirujuk sebagai "Syarikat" dan _____, kemudian daripada ini dirujuk sebagai "Kontraktor", bagi _____
_____
_____
(nama projek), kemudian daripada ini dirujuk sebagai "Kontrak", kami yang bertandatangan di bawah, atas pemohonan Kontraktor, mengaku janji yang tak boleh batal unuk memberi Jaminan kepada Syarikat ke atas perlaksanaan yang sepatutnya Kontrak tersebut mengikut cara sebagaimana yang terdapat kemudian daripada ini.

MAKA Penjamin dengan ini bersetuju dengan Syarikat seperti berikut:

1. Apabila sahaja Syarikat membuat tuntutan bertulis, maka Penjamin hendaklah dengan serta merta membayar kepada Syarikat nilai yang ditentukan di dalam tuntutan tersebut tanpa mengira sama ada terdapat apa-apa bantahan atau tentangan daripada Kontraktor atau Penjamin atau mana-mana pihak Ketiga yang lain dan tanpa bukti atau bersyarat. Dengan syarat sentiasanya bahawa jumlah tuntutan yang dibuat tidak melebihi sebanyak Ringgit _____ _____ (nyatakan nilai Jaminan dalam perkataan) (RM_____) dan bahawa tanggungan Penjamin untuk membayar kepada Syarikat di bawah Perjanjian ini tidak melebihi nilai tersebut di atas.

2. Syarikat berhak untuk membuat apa-apa tuntutan separa jika dikehendakinya dan jumlah kesemua tuntutan separa itu hendaklah tidak melebihi nili Ringgit _____ _____ (nyatakan nilai Jaminan dalam perkataan) (RM _____) dan liabiliti Penjamin untuk membayar kepada Syarikat jumlah yang disebutkan terdahulu hendaklah dikurangkan dengan perkadaran yang bersamaan dengan apa-apa bayaran separa yang telah dibuat oeh Penjamin.

3. Penjamin tidak boleh dilepaskan dari Jaminan ini oleh sebarang perkiraan yang dibuat antara Kontraktor dan Syarikat sama ada dengan atau tanpa persetujuan Penjamin atau oleh sebarang perubahan tentang kewajipan yang diaku janji oleh Kontraktor atau oleh sebarang penangguhan sama ada dari segi perlaksanaan, masa, pembayaran atau sebaliknya.

4. Jaminan ini adalah Jaminan yang berterusan dan tak boleh batal dan berkuat kuasa sehingga _____ (kemudian daripada ini disebut "Tarikh Mati Asal") (*Initial Expiry Date)* iaitu dua belas (12) bulan selepas tarikh tamat tempoh kecacatan atau dalam keadaan di mana Kontrak dibatalkan, satu (1) tahun selepas tarikh Kontrak dibatalkan. Penjamin hendaklah melanjutkan Tarikh Mati Asal *(Initial Expiry Date)* jaminan ini untuk tempoh tambahan selama tidak melebihi satu (1) tahun daripada Tarikh Mati Asal *(Initial Expiry Date)* (kemudian daripada ini disebut "Tarikh Mati Lanjutan") *(Entended Expiry Date)* apabila diminta oleh Syarikat dan Jaminan ini adalah dengan ini dilanjutkan. Jumlah agregat maksimum yang Syarikat berhak di bawah Perjanjian ini mestilah sentiasa dipastikan tidak melebihi jumlah Ringgit _____
(nyatakan nilai Jaminan dalam perkataan) (RM _____).

5. Apa-apa tanggungjawab dan tanggungan Penjamin di bawah Perjanjian ini hendaklah luput apabila Perjanjian ini tamat pada Tarikh Mati Asal *(Initial Expiry Date)* atau Tarikh Mati Lanjutan *(Entended Expiry Date)* melainkan jika sebelumnya Syarikat telah meminta secara bertulis kepada Penjamin untuk membayar sejumlah wang tertentu yang masih belum dijelaskan mengikut peruntukan kontrak.

6. SEMUA TUNTUTAN BERKAITAN DENGAN JAMINAN INI, JIKA ADA, MESTILAH DITERIMA OLEH PIHAK BANK/SYARIKAT KEWANGAN /SYARIKAT INSURANS DALAM TEMPOH SAH LAKU JAMINAN INI ATAUPUN DALAM MASA EMPAT (4) MINGGU DARI TAMATNYA TARIKH JAMINAN INI, MENGIKUT MANA YANG LEBIH KEMUDIAN.

PADA MENYAKSIKAN HAL DI ATAS pihak-pihak kepada Perjanjian ini telah menurunkan tandatangan dan meteri mereka pada hari dan tahun yang mula-mula tertulis di atas.

Ditandatangani untuk)
Dan bagi pihak Penjamin)
di hadapan)
)
)

_____
Nama: _____
Jawatan:_____
Cop Bank/Syarikat
Kewangan/Syarikat Insurans:

_____
Saksi

Nama: _____
Jawatan:_____
Cop Bank/Syarikat Kewangan/Syarikat Insurans.

BAHAGIAN G

SPESIFIKASI PIAWAI

TECHNICAL SPECIFICATION

SPAN TS 21827: Part 1: 2013

SPECIFICATION FOR STEEL PIPES, FITTINGS AND JOINTS FOR WATER AND SEWAGE - Part 1: Technical delivery requirements

SPAN

Suruhanjaya Perkhidmatan Air Negara

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(National Water Services Commission)
Prima Avenue 7, Block 3510
Jalan Teknokrat 6
63000 Cyberjaya Selangor
Malaysia

DEVELOPMENT OF SPAN TECHNICAL SPECIFICATION

National Water Services Commission (SPAN) was established in 2008 to regulate the water services industry in Malaysia. SPAN envisions a sustainable, reliable and affordable water services for all by regulating the water services industry through fair, effective and transparent implementation of the Water Services Act (Act 655). Since inception in 2008, SPAN has been striving to institute improvements in term of standards and performance in the country's water and sewerage services sector.

SPAN aims to enhance efforts towards improving standards, quality and operational efficiency of water and sewerage services industry to ensure sustainability. One of the approaches is to achieve higher standards and quality by developing technical specifications for products and systems used in the industry. Hence, Technical Working Groups have been formed by Research, Development and Innovation Division to formulate technical and performance specifications for adoption in water services industry.

This Technical Specification is a result of joint effort by members from various relevant stakeholders of the industry. This series of Technical Specification consists of the following parts, under the general title *Specification for Steel Pipes, Fittings and Joints for Water and Sewage*:

Part 1 : Technical delivery requirements

Part 2 : Tube requirements

The specification provides requirement for seamless and welded carbon steel pipes, fittings and joints in respect of the pipe end preparation, in sizes 60.3mm to 2743mm outside diameter, for the conveyance of water for human consumption and conveyance of sewage. It includes external and internal protection against the corrosive action of the surrounding medium and conveyed fluid.

The continual development of technical and performance specifications is crucial in moving the industry towards higher standards which will uplift the image of local water industry. With the publication of this Technical Specification, it is hoped that it will contribute towards a better quality and performance of Steel Pipes, Fittings and Joints products to ensure its long lasting performance and durability.

Dato' Teo Yen Hua
Chief Executive Officer
National Water Services Commission (SPAN)

Contents

COMMITTEE REPRESENTATION

The System, Product, Material and Research & Development Committee of National Water Services Commission (SPAN) consists of representatives from the following organizations:

Suruhanjaya Perkhidmatan Air Negara (SPAN)

Public Works Department (PWD/JKR)

Ministry of Science, Technology and Innovation (MOSTI)

Jabatan Bekalan Air, KeTTHA (JBA)

Jabatan Perkhidmatan Pembetungan, KeTTHA (JPP)

Department of Standard Malaysia (DSM)

The Working Group of steel pipes, fittings and joints for water and sewage which developed this SPAN Technical Specification consists of representatives from the following organizations:

Suruhanjaya Perkhidmatan Air Negara (SPAN)

Public Works Department (PWD/JKR)

IKRAM QA Services Sdn. Bhd.

SIRIM QAS International Sdn. Bhd.

The Institution of Engineers, Malaysia (IEM)

Association of Consulting Engineers, Malaysia (ACEM)

Malaysian Iron and Steel Industry Federation (MISIF)

Syarikat Bekalan Air Selangor Sdn. Bhd. (SYABAS)

Perbadanan Bekalan Air Pulau Pinang Sdn. Bhd. (PBAPP)

SAJ Holdings Sdn. Bhd. (SAJH)

Lembaga Air Perak (LAP)

PPI Industries Sdn. Bhd.

Boon & Cheah Steel Pipes Sdn. Bhd.

FOREWORD

This SPAN Technical Specification was developed by the Working Group of Steel Pipes, Fittings and Joints for Water and Sewage under the authority of System, Product, Material and Research & Development Committee of National Water Services Commission (SPAN).

This specification is adapted and improved from the following standards:-

i)	MS 1968 : 2007	-	Non-Alloy Steel Tubes and Fittings for the Conveyance of Aqueous Liquids Including Water for Human Consumption – Technical Delivery Conditions.
ii)	BS 534 : 1990	-	Steel Pipes, Joints and Specials for Water and Sewage.

Compliance with SPAN Technical Specification does not of itself confer immunity from legal obligations.

Specification for steel pipes, fittings and joints for water and sewage

1 Scope

This SPAN Technical Specification specifies requirements for seamless and welded carbon steel pipes, fittings and joints in respects of the pipe end preparation, in sizes 60.3 mm to 2743 mm outside diameter, for the conveyance of water for human consumption and conveyance of sewage. It includes external and internal protection against the corrosive action of the surrounding medium and conveyed fluid.

NOTE 1 This specification does not apply to those steel tubes and tubular with screwed and socketed joints, which are covered by the requirements of BS EN 10255.

NOTE 2 For recommendations on the basis of design and service limitations, reference should be made to CP 2010: Part 2.

2 Normative references

The following normative references are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the normative reference (including any amendments) applies.

EN 10020, *Definition and classification of grades of steel.*

EN 10021, *General technical delivery conditions for steel products.*

EN 10052, *Vocabulary of heat treatment terms for ferrous products.*

EN 10266, *Steel tubes, fittings and structural hollow sections – Symbols and definitions of terms for use in product standards.*

EN 10027-1, *Designation systems for steels – Part 1: Steel names.*

EN 10027-2, *Designation systems for steels – Part 2: Steel numbers.*

BS EN ISO 15607, *Specification and qualification of welding procedures for metallic materials – General rules.*

BS EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials – Welding procedure specification – Part 1: Arc welding.*

BS EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials – Welding procedure test – Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys.*

EN 287-1, *Approval testing of welders – Fusion welding – Part 1: Steels.*

EN 10204, *Metallic products – Types of inspection documents.*

EN ISO 377, *Steel and steel products – Location and preparation of samples and test pieces for mechanical testing.*

EN ISO 14284, *Steel and iron – Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996).*

BS EN ISO 6892-1, *Metallic materials – Tensile testing. Part 1: Method of test at ambient temperature.*

BS EN ISO 5173, *Destructive tests on welds in metallic materials – Bend tests.*

EN 571-1, *Non-destructive testing – Penetrant testing – Part 1 : General principles.*

BS EN ISO 17638, *Non-destructive testing of welds – Magnetic particle testing (ISO 17638:2003).*

BS EN ISO 17640, *Non-destructive testing of welds – Ultrasonic testing – Techniques, testing levels and assessment (ISO 17640:2010).*

BS EN 1435, *Non-destructive testing of welds – Radiographic testing of welded joints.*

MS 1583, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water.*

BS EN 1092-1, *Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated. Steel flanges.*

BS EN 1759-1, *Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, class-designated. Steel flanges, NPS ½ to 24.*

BS EN ISO 8501-1, *Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.*

BS 3396-1, *Woven glass fibre fabrics for plastics reinforcement. Specification for loom-state fabrics.*

BS EN 10300, *Steel tubes and fittings for onshore and offshore pipelines. Bitumen hot applied materials for external coating.*

BS 4164, *Specification for coal-tar-based hot applied coating materials for protecting iron and steel, including a suitable primer.*

MS EN 197-1, *Cement. Part 1: Composition, specifications and conformity criteria for common cements.*

MS EN 12620, *Aggregates for concrete.*

BS 4027 : 1996, *Specification for sulphate-resisting Portland cement.*

3. Terms and definitions

3.1 General

For the purposes of this SPAN Technical Specification the terms and definitions given in EN 10020, EN 10021, EN 10052 and EN 10266 (excluding the term tube and fitting in EN 10266) and the following apply.

The symbols used in this SPAN Technical Specification are defined in EN 10020, EN 10021, EN 10052 and EN 10266.

Other symbols for sampling and testing are given in the appropriate sampling and testing standards referenced in clauses 9 and 10.

3.2 Tube

A straight conduit for conveyance of fluid, of bare circular cross section, with plain or prepared ends.

3.3 Pipe

Tube complete with coating and lining.

3.4 Fitting

A component fitted to a pipe for jointing, connecting or changing the direction or bore of a pipe including special fitting made from manipulated tube or fabricated pipe, i.e. bend, gusseted bend and tee.

3.5 Effective length

The actual length that a pipe contributes when correctly assembled in a run of piping. This dimension excludes the additional length contributed by a slip-on type coupling when this is used.

3.6 Cut length

Pipes cut to a specified length on which only a small tolerance is allowed.

3.7 Allowable operating pressure (PFA)

Maximum hydrostatic pressure that a component is capable of withstanding continuously in service.

3.8 Glass tissue

A uniformly porous mat, of minimum mass 40g/m², made of glass monofilaments in random arrangement bonded with a thermosetting resin.

3.9 Reinforced glass tissue

Glass tissue with the addition of strand of glass yarn to give additional longitudinal tensile strength, the whole being bonded with a thermosetting resin.

3.10 Woven glass cloth

A loom state fabric, of minimum mass 120g/m², made of low alkali glass, complying with BS 3396-1 and uniformly woven from continuous filament yarn to form a porous cloth with selvedges well made, substantially straight and even, or a lock woven square mesh lacquer bonded fabric.

3.11 Composite glass fibre fabric

A reinforcement consisting of glass lock welded fabric and glass fibre combined.

Note. This reinforcement may be impregnated uniformity with a suitable bitumen or coal tar derived material.

3.12 Lining

A durable material applied to the internal surface of tubes and fittings to protect the metal from corrosion, erosion or chemical attack.

3.13 Coating

A durable material applied to the external surface of tubes and fittings to protect the metal.

4. Classification and designation

4.1 Classification

All steel covered by this SPAN Technical Specification are classified as non-alloy steels in accordance with EN 10020.

4.2 Designation

4.2.1 For products covered by this SPAN Technical Specification, the steel designation consists of the number of this Technical Specification (SPAN TS 21827 : Part 1) and either the steel name in accordance with EN 10027-1 or the steel number in accordance with EN 10027-2 (see Table 1 of SPAN TS 21827 : Part 2).

4.2.2 The steel name consist of the following:

- the capital L for line pipe;
- the specified minimum yield strength of the steel for wall thicknesses less than or equal to 16 mm, expressed in MPa^2 (see table 3 of SPAN TS 21827 : Part 2).

5. Information to be supplied by the purchaser

5.1 Mandatory Information

The following information shall be supplied by the purchaser at the time of inquiry and order.

5.1.1 Pipes

a) The quantity (mass or total length or number);

b) The term ‘pipe’;

c) The number of this Technical Specification;

d) The designation (see 4.2);

e) The dimensions (Outside diameter and thickness. See 7.6 of SPAN TS 21827 : Part 2);

f) The type of coating and lining requirements (see Clause 13 and 16);

g) The type of joint required (see 15.1);

h) The type of flange required (see 15.3);

i) The application (water or sewage) (see 12.1);

j) The options required (see 5.3).

5.1.2 Fittings

a) The quantity (number);

b) The type of fitting (see 7.6);

c) The number of this Technical Specification;

d) The designation (see 4.2);

e) The dimensions (see 7.6);

f) The maximum and, where vacuum conditions exist, the minimum, allowable operating pressure (PFA) (see 7.1);

g) The type of coating and lining required (see Clause 13 and 16);

h) The type of joint required (see 15.1);

i) The type of flange required (see 15.3);

j) The application (water or sewage) (see 12.1);

k) The options required (see 5.3).

5.2 Options

A number of options are specified in this Technical Specification and these are listed below. In the event that the purchaser does not indicate his wish to implement any of these options, at the time of enquiry and order the products shall be supplied in accordance with the basic specification.

Option: 1) The type of pipe, seamless (S), butt welded (BW), electric welded (EW) or submerged arc weld (SAW) shall be as specified (see 6.3.4.1 of SPAN TS 21827 : Part 2).

Option: 2) Rectification of the body of SAW fittings by welding shall not be permitted (see 7.4).

Option: 3) The ends of fittings shall be prepared for butt welding (see 7.8).

Option: 4) An alternative bevel end preparation for butt welding shall be provided (see 7.8.4.2).

Option: 5) Products shall be supplied with specific inspection and testing (see 8.1).

Option: 6) An inspection certificate 3.1 or an inspection report 3.2 shall be supplied (see 8.2).

Option: 7) The method of non destructive testing for the welds of fittings shall be as specified (see 10.4).

Option: 8) The individual sleeve joints are required to be pressure tested after welding (see 15.2.5).

Option: 9) The surface finish shall be to first quality in accordance with BS EN ISO 8501-1 (see 16.2.3).

Option: 10) An adhersion test is required (see 16.6.2).

Option: 11) The sulphate-resisting Portland cement lining is required (see 16.7.1.1).

Option: 12) The curing period for more than 7 days is required (see 16.7.1.6).

Option: 13) The number of cube crushing tests required (see 16.7.5).

Option: 14) Material for completing the internal and external protection of joints at site is required (see 16.9.1 and 16.9.2).

5.3 Examples of an order

Example 1

8 km of submerged arc welded pipes in accordance with SPAN TS 21827: Part 1 with outside diameter of 914mm and a thickness of 10.0 mm made from steel L275 with corrosion protection of bitumen coating and cement mortar lining, the preparation of pipe ends for flange joints and subjected to specific inspection and testing.

8000 m – pipe – SPAN TS 21827: Part 1 – L275 – 914 x 10.0 – bitumen coating – cement mortar lining – flange joints - Option 1: SAW, and 5.

Example 2

5 gusseted bends in accordance with SPAN TS 21827: Part 1 with outside diameter of 914mm and thickness of 10.0mm made from steel L275, with a 30˚ angle for operation at 10 bar gauge pressure, with corrosion protection of bitumen coating and concrete lining and supplied with an inspection certificate 3.1.

5 – gusseted bends – SPAN TS 21827: Part 1 – L275 – 914 x 10.0 - 30˚ - 10bar – bitumen coating – concrete lining – Option 6: 3.1.

6. Materials

6.1 Pipes

6.1.1 Pipes shall be manufactured from tubes manufactured in accordance with SPAN TS 21827: Part 2 and shall be protected against corrosion as specified in Clause 13.

6.1.2 The requirements and test method for tubes are specified in SPAN TS 21827: Part 2. All tubes shall be manufactured and supplied with full compliance to SPAN TS 21827: Part 2.

6.1.3 Whenever the tube is purchased from the external supplier, the tube shall be from a certified supplier complying to SPAN TS 21827: Part 2.

6.2 Fittings

6.2.1 The steel from which the fittings are made shall be in accordance with 6.1 and 6.2 of SPAN TS 21827: Part 2.

6.2.2 Fittings shall be manufactured from tubes manufactured in accordance with SPAN TS 21827: Part 2 or from plate or strip made from one of the steel grades specified in Table 1 of SPAN TS 21827: Part 2.

6.2.3 All welds of fittings made from plate or strip and all fabrication welds shall be arc welds and the preparation for welding and the welding shall be carried out to qualified procedures using competent welders. Procedures in accordance with BS EN ISO 15607, BS EN ISO 15609-1 and BS EN ISO 15614-1 carried out by welders qualified in accordance with EN 287-1 meet this requirement.

6.2.4 The NDT activities for fittings shall be in accordance with 6.3.3 of SPAN TS 21827: Part 2.

7. Requirements for fittings

7.1 General

Fittings, when inspected and tested in accordance with clauses 9 and 10, shall comply with the requirements of 7.2 to 7.8. In addition to the requirements of this SPAN Technical Specification the general technical delivery conditions specified in EN 10021 apply.

Fittings shall be designed to withstand a pressure of not less than 1.5 times the allowable operating pressure.

NOTES It is essential that the allowable operating pressure (PFA) is stated in the enquiry and order (see 5.2.2.f).

7.2 Chemical composition

Cast analysis and product analysis requirement shall comply with the requirement of 7.2.1 and 7.2.2 of SPAN TS 21827: Part 2.

7.3 Mechanical properties

7.3.1 Tensile test

The minimum yield strength, tensile strength range and minimum elongation for fittings covered by this SPAN Technical Specification shall be in accordance with Table 3 of SPAN TS 21827: Part 2.

For even curvature bends and fittings made from plate or strip the tensile test properties shall be determined after forming.

7.3.2 Weld bend test

7.3.2.1 The seam weld of fittings and fittings components made from plate or strip shall pass a weld bend test in accordance with 10.2.4 of SPAN TS 21827: Part 2 on the root and face of the weld using a mandrel of diameter specified in Table 3 of SPAN TS 21827: Part 2. No cracks or imperfections shall be permitted in the weld metal, fusion line, heat affected zone or parent metal, except as permitted in 7.3.2.2.

7.3.2.2 The opening out of an imperfection due to incomplete root penetration or lack of fusion shall not be cause for rejection, provided that the imperfection has sound metal at the back and on each side of it. Cracks originating at the edges of the test piece which are less than 6mm long and which do not penetrate through the wall shall not be cause for rejection.

7.4 Appearance

Fittings shall be free from external and internal surface defects which can be established by visual inspection in accordance with this SPAN Technical Specification.

The outside surface condition, and where practicable, the inside surface condition shall be such that surface defects, and/or surface imperfections requiring rectification, can be identified.

It shall be permissible to rectify surface imperfections by grinding or machining provided that after so doing the wall thickness in the rectified area is not less than the specified minimum thickness. All ground or machined areas shall blend smoothly in the contour of the fittings.

Surface imperfections which encroach on the minimum permissible wall thickness shall be considered defects and shall not be permitted. Rectification of such defects in fittings by grinding or machining

followed by welding shall be permitted on the body of fittings unless Option 2 is specified by the purchaser.

Option 2 Rectification of the body of SAW fittings by welding shall not be permitted.

7.5 Soundness

7.5.1 General

Fittings shall meet the requirements for soundness and freedom from internal imperfections specified in 7.5.2 and 7.5.3.

7.5.2 Leak tightness

All fittings shall be leak tight. Leak tightness shall be demonstrated either by a hydrostatic test in accordance with 10.3.2 of SPAN TS 21827: Part 2 or by an electromagnetic test in accordance with 10.3.3 of SPAN TS 21827: Part 2.

7.5.3 Soundness of welds

The welds of all fittings shall be shown to be sound when tested in accordance with the requirements of 10.4.

7.6 Types and dimension of fittings

7.6.1 General

The fittings covered by the requirements of this SPAN Technical Specification are even curvature bends, gusseted bends, and tees, the dimensions shall be in accordance with 7.6.2, 7.6.3 and 7.6.4 respectively.

7.6.2 Even curvature bends

7.6.2.1 For general applications, the dimensions of even curvature bends, formed by manipulation of tubes, for tubes with outside diameters from 60.3mm to 323.9mm shall be as given in Table 1 (see Figures 1 and 2). The purchaser shall specify the outside diameter, wall thickness and angle of the bend at the time of enquiry and order (see 5.2.2.e).

NOTE 1 Tighter radius bends may be agreed between the purchaser and manufacturer.

NOTE 2 Bends are commonly specified with angles of 11˚ 15', 22˚ 30', 45˚ and 90˚ but they may be of any angle as required by the purchaser.

7.6.2.2 The bending radius R (see Figure 1 and 2) for tube with outside diameters greater than 323.9mm up to and including 1016mm shall be specified by the purchaser at the time of enquiry and order (see 5.2.2.e).

NOTE Even curvature manipulated bends in diameters greater than 1016mm may be available by agreement with the supplier.

7.6.2.3 The length of straight S, specified in Table 1 shall be the minima applicable to bends prepared for butt welding. The lengths of straight S may be modified to suit other types of joint but shall be not less than the values specified in Table 1 or 1.5 D for tubes of diameter greater than 323.9mm.

7.6.2.4 When bitumen lining is required on even curvature manipulated bends of diameter greater than 168.3mm, the tube length in the bend shall be limited to 1800mm or a gusseted bend used.

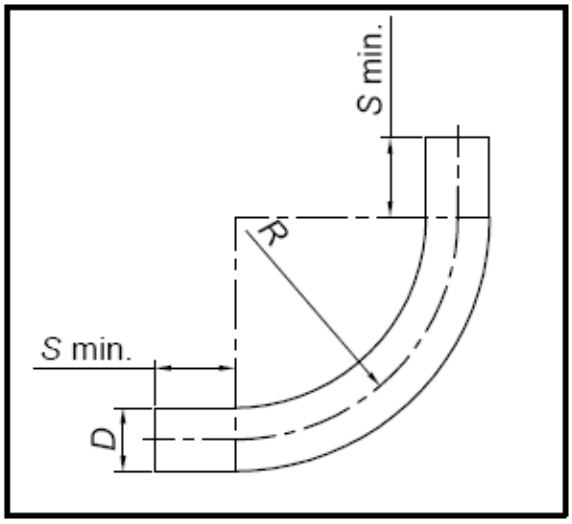


Figure 1. Even curvature bend of 90°

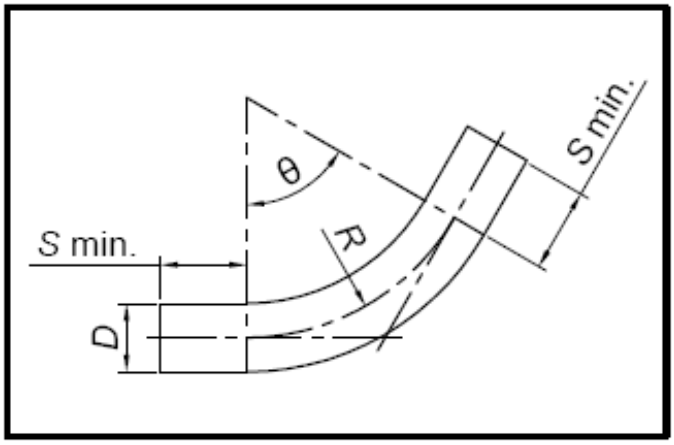


Figure 2. Even curvature bend less than 90°

Table 1. Dimensions of even curvature bends: tube outside diameters from sizes 60.3 mm to 323.9 mm inclusive

Tube		Bend	
Diameter D (mm)	Minimum thickness T (mm)	R (mm)	S min[a] (mm)
60.3	3.6	250	150
76.1	3.6	325	150
88.9	4.0	400	150
114.3	4.5	500	150
139.7	4.5	625	190
168.3	4.5	750	225
219.1	5.0	1000	300
273	6.3	1250	375
323.9	7.1	1500	450

[a] See Figures 1 and 2.

7.6.3 Gusseted bends

Gusseted bends shall be of the general form shown in Figures 3 or 4 or 5 dependent on the angle of the bend. For bends with angle θ greater than 45˚ in tubes of 457mm diameter and above, the bend radius R shall be not less than 1.0 D. For other conditions the bend radius R shall be not less than 1.5 D. The diameter, thickness, the type (1, 2 or 3) and the angle θ shall be specified by the purchaser and the dimensions L and R agreed between purchaser and manufacturer at the time of enquiry and order (see 5.2.2.e).

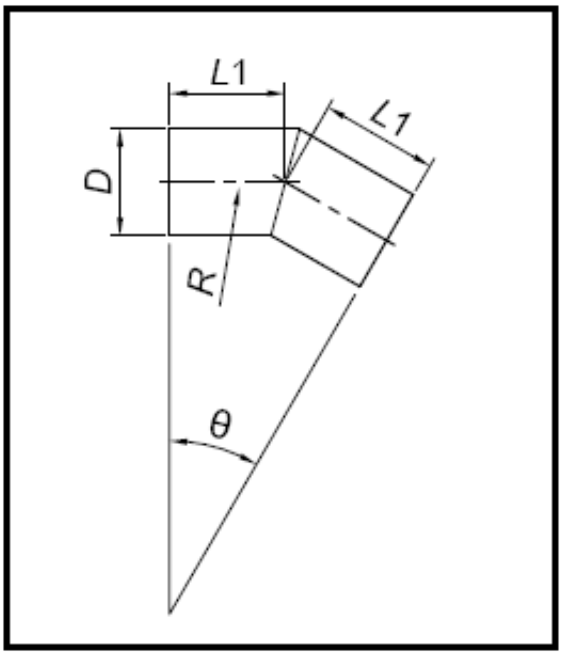


Figure 3. Gusseted bend type 1, θ ≤ 30˚

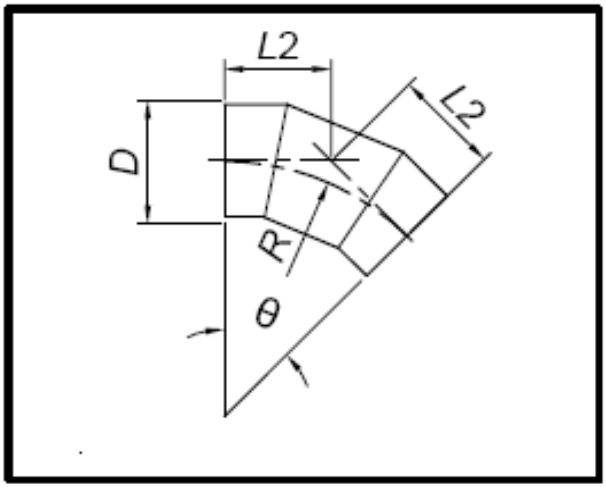


Figure 4. Gusseted bend type 2, 31˚ < θ ≤ 60˚

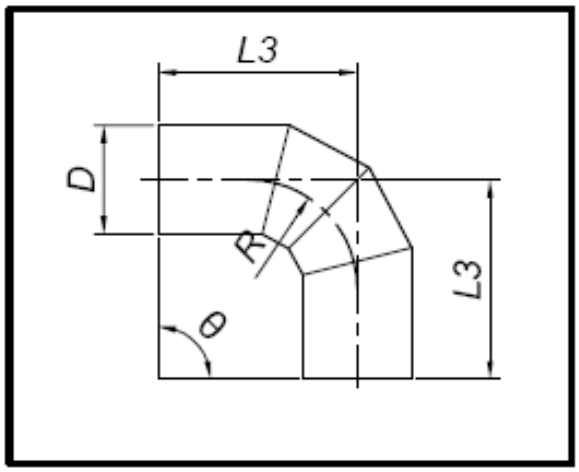


Figure 5. Gusseted bend type 3, 61° < θ ≤ 90°

7.6.4 Tees

Tees shall be supplied with plain ends (see Figure 6) or with ends suitable for sleeve joints (see Figure 7) or with flanges attached to the branch and/or the barrel (see Figure 8). Dimensions of standard tees shall be given in Table 2. The purchaser shall specify the diameter and wall thickness of the barrel and branch at the time of enquiry and order (see 5.2.2.e).

When sleeve joint tees or tees with flanges on the branch and/or on the barrel are required the dimensions C, E and F shall be as shown in Figures 7 and 8 as appropriate.

Note : For information on the dimensions of sleeves see 15.2.

Table 2. Dimensions of tees : tube outside diameters from sizes 60.3mm to 2743mm inclusive.

	Barrel	Branch		
Diameter D or D1 (mm) (see Figure 6)	F (Min) (mm)	G (mm)	E (mm)	H (mm)
		0.5 D plus		
60.3	240	200	100	100
76.1	240	200	100	100
88.9	250	200	100	110
114.3	270	200	100	130
139.7	280	200	110	140
168.3	290	200	110	140
219.1	370	250	110	150
273	410	250	130	160
323.9	450	250	130	180
355.6	530	300	150	200
406.4	600	300	150	230
457 to 711	1.5 D1 but with minimum of 0.5 D	300	230	300
762 to 914		380	300	300
1016 to 2540		380	380	380
2642		400	400	400
2743		420	420	420

Note 1. Dimensions F, G, E and H should be rounded to the nearest 10mm.

Note 2. The effective length of the barrel of tees with sleeve joint for welding equals 2 F.

Note 3. Any barrel may have a branch of equal or smaller diameter attached to it.

Note 4. Reinforcement may be required to prevent overstressing.

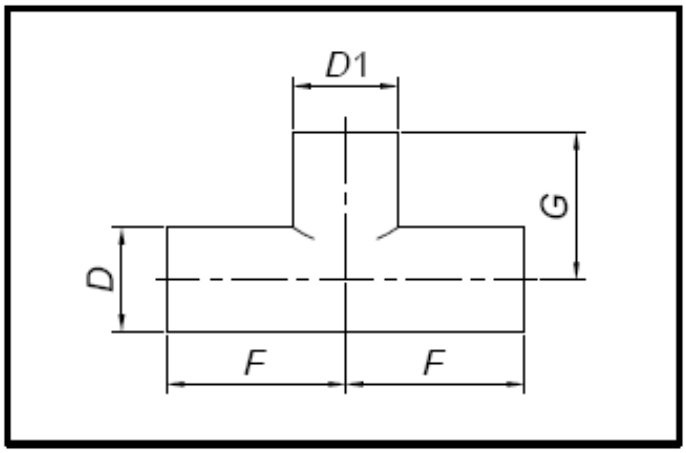


Figure 6. Plain end tee for butt-welded joint

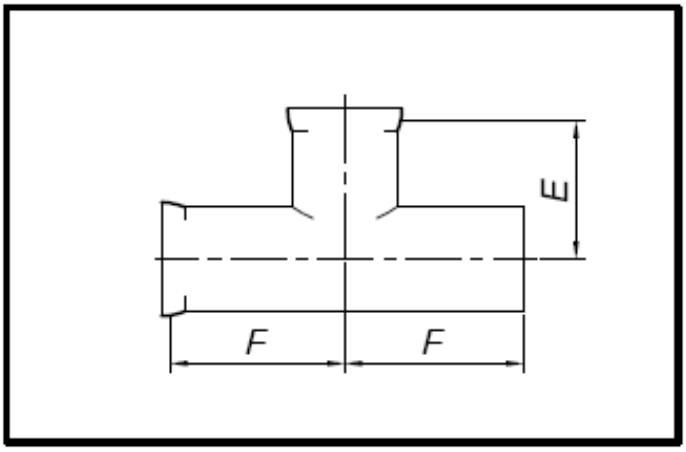


Figure 7. Sleeve joint tee for welding

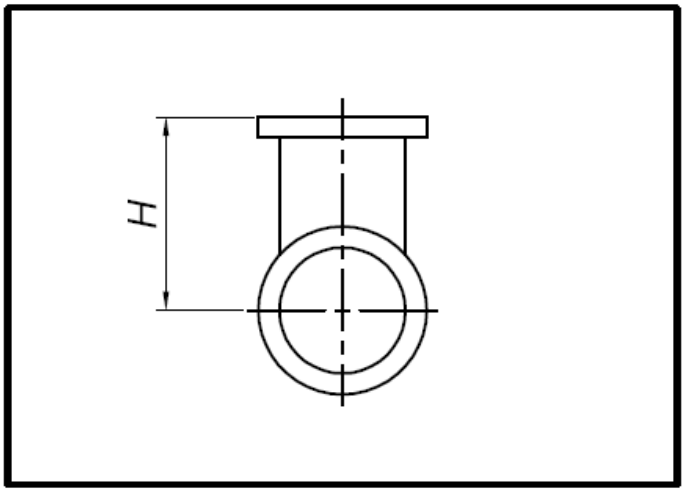


Figure 8. Tee with flanged branch

7.7 Tolerance for Fittings

7.7.1 General

The ends of fittings (except for socketed or flanged tees) shall be prepared to match those of the pipes to which they are to be joined.

7.7.2 Bends

Bends shall be supplied with plain ends cut nominally square to the axis of the bend unless the purchaser specifies end preparation for butt welding in accordance with 7.8 (option 3). The ends shall be free from excessive burrs.

Option 3 The ends of fittings shall be prepared for butt welding.

NOTE Information on end preparation for jointing other than butt welding is given in Clause 15 and may be agreed between the purchaser and the manufacturer.

Tolerance on the angle between the end faces shall be within ±1 % of the specified bend angle θ (see Figure 1 to 5).

The radius R of the bend shall be within ±1 % of the specified radius.

The minimum wall thickness of even curvature bends shall be not less than that permitted in the tube of equivalent material to which it is intended to be connected.

The tolerance on leg length L_1, L_2 and L_3 for gusseted bends (see Figure 3 to 5) shall be ±35mm for outside diameters less than or equal to 219.1mm and ±70mm for outside diameters greater than 219.1mm. When a fixed leg length is specified the tolerance on the leg length shall be ±6mm.

7.7.3 Tees

Plain end tees shall be supplied with the ends cut nominally square to the axis of the barrel and the branch as appropriate unless the purchaser specifies end preparation for butt welding in accordance with 7.8 (option 3). The ends shall be free from excessive burrs.

Option 3 The ends of fittings shall be prepared for butt welding.

NOTE Information on end preparation for jointing other than butt welding is given in Clause 15 and may be agreed between the purchaser and the manufacturer.

The tolerance on the angle of branch relative to the axis of the barrel shall be ±1°.

The tolerance on the dimensions E, F, G and H (see Figures 6 to 8) shall be ±6mm.

7.8 End preparation of fittings for butt welding

7.8.1 General

The purchaser may specify that the ends of fittings shall be prepared for butt welding in accordance with 7.8.2 to 7.8.4.

Option 3 The ends of fittings shall be prepared for butt welding.

7.8.2 Diameter tolerance at fittings ends

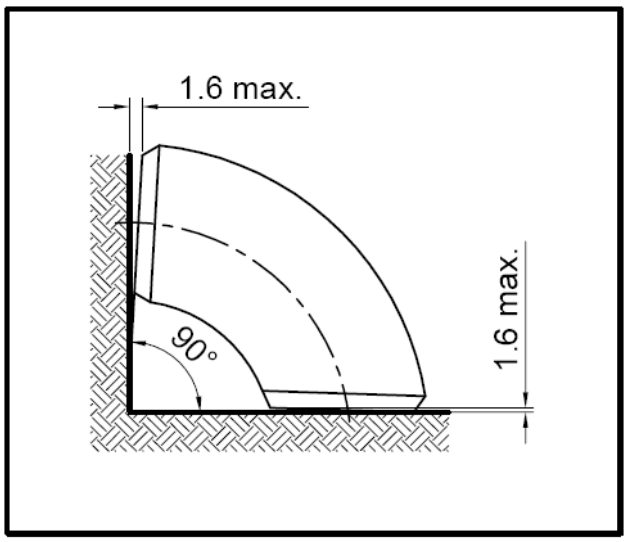
The tolerance on the outside diameter of the fittings for a distance to be agreed at each end shall be in accordance with Table 3. Out of roundness shall be within the limits for the diameter tolerance for fittings with D/T less than or equal to 100. For D/T values above 100 the out of roundness shall be agreed between the purchaser and the manufacturer.

Table 3. End tolerance on diameter (D)

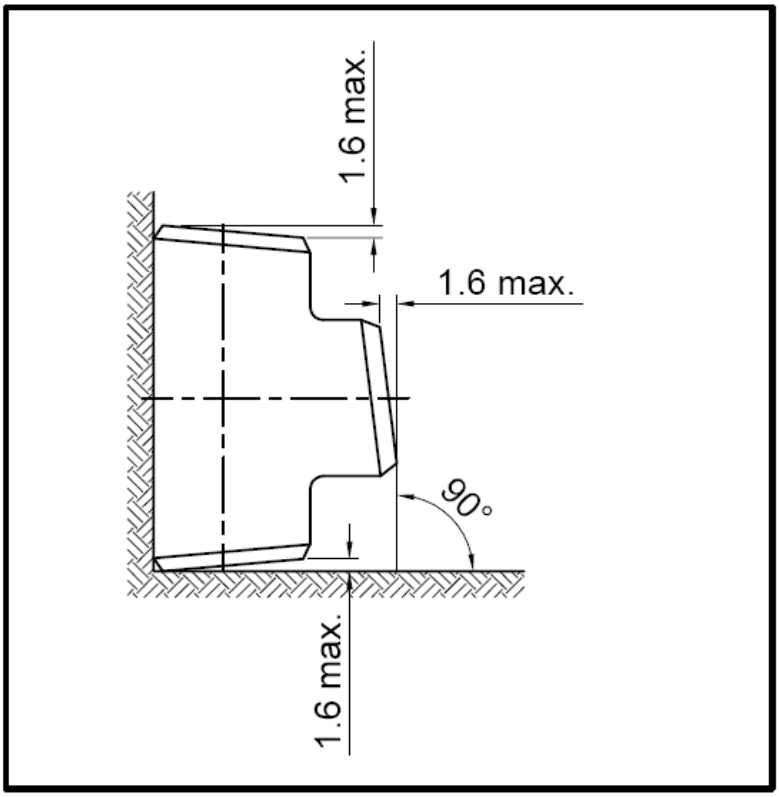
Outside diameter (mm)	End tolerance
≤ 219.1	± 0.5mm or ± 0.5% D whichever is the greater
219.1 < D ≤ 2032	± 1.6mm
>2032	± 3mm

7.8.3 Squareness of ends

The ends of fittings shall be at right angles to the axis of the fittings within 1.6mm measured across the diameter as shown in Figure 9.



a) Bends



b) Tees

Figure 9. Squareness of ends

7.8.4 Bevelled ends

7.8.4.1 The ends of fittings of thickness less than 3.2mm shall be supplied without bevelled ends.

7.8.4.2 Fittings of thickness equal to or greater than 3.2.mm shall be supplied with ends bevelled as shown in Figure 10 unless option 4 is specified by the purchaser.

Option 4 An alternative bevel end preparation for butt welding shall be provided; the purchaser shall specify the type of preparation required.

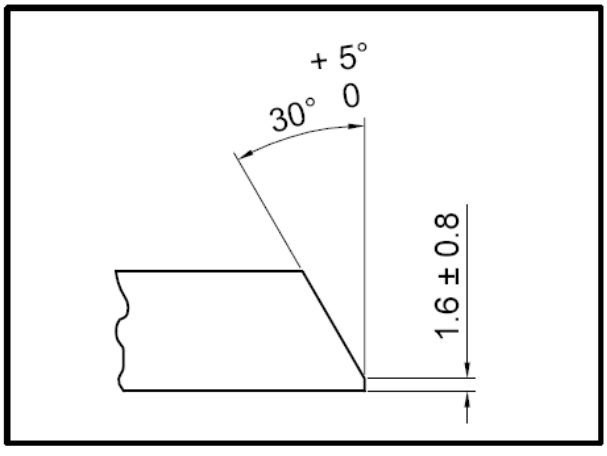


Figure 10. Butt-weld end preparation

8. Inspection

8.1 General

Compliance with the requirements of this SPAN Technical Specification shall be checked by non-specific inspection and testing (see EN 10021) unless option 5 is specified by the purchaser.

Option 5 The products shall be supplied with specific inspection and testing (see EN 10021).

8.2 Inspection documents

When products according to this SPAN Technical Specification are checked by non-specific inspection and testing, a test report type 2.2 in accordance with EN 10204 shall be supplied. When products according to this SPAN Technical Specification are checked by specific inspection and testing (see option 5), an inspection certificate type 3.1 in accordance with EN 10204 shall be supplied unless option 6 is specified by the purchaser.

Option 6 For product checked by specific inspection and testing an inspection certificate type 3.1 or an inspection report type 3.2 in accordance with EN 10204 shall be supplied. The type of document to be supplied shall be specified by the purchaser.

When an inspection document 3.1 or 3.2 is specified the purchaser shall notify the manufacturer of the name and address of the organization or person who is to carry out the inspection and produce the inspection document. In the case of an inspection report 3.2 it shall also be agreed which party is to issue the document.

8.3 Summary of inspection and testing

8.3.1 Fittings

Fittings or components of fittings which are manufactured from tubes or formed into tubes prior to the completion of the fittings shall be tested at the tubular stage in accordance with 8.3.1 of SPAN TS 21827: Part 2 and Table 4. Fittings or components not tested as a tube, or when forming has been undertaken, shall be tested in accordance with 8.3.1 of SPAN TS 21827: Part 2 and Table 4, where applicable.

Even curvature bends previously tested as a tube shall only be subject to a tensile test in accordance with 10.2.1 of SPAN TS 21827: Part 2 after forming.

All welds which have not been tested as part of a tube shall be tested in accordance with 10.4 before the application of any coating or lining material.

Fittings shall be subject to visual examination (see 10.5) and dimensional inspection (see 10.6).

Table 4. Number of fittings in a test unit

Outside diameter mm	Number of fittings
≥ 60.3 ≤ 114.3	100
> 114.3 ≤ 323.9	100
> 323.9	100
NOTE Any residual fraction of a test unit should be considered as a test unit.	

9. Sampling of fittings

9.1 Frequency of testing

For non-specific inspection and testing, the tests shall be carried out by the manufacturer in accordance with their own procedures (see EN 10021).

For specific inspection and testing, the tests shall be carried out on the products to be supplied or on test units of which the product to be supplied is a part (see EN 10021).

9.1.1 Test unit

When specific inspection and testing is carried out, the test unit shall consist of the number of fittings specified in Table 4 of the same type, specified diameter, specified thickness, steel grade and manufactured using the same processing conditions e.g. welding process, heat treatment.

In addition, for fusion welded products, the test unit shall consist of products which have been welded using the same type of flux and filler wire.

9.1.2 Number of sample products

One sample fittings shall be selected for the mechanical test (one per test unit), and where appropriate, the product analysis (one per steel grade).

9.1.3 Type of test and number of tests

See 8.3.

9.2 Location, orientation and preparation of samples and test pieces

9.2.1 General

Samples and test pieces shall be taken from the end of fittings in the final delivery condition in accordance with Figure 11 and EN ISO 377.

9.2.2 Product analysis

Samples for product analysis shall be taken from the test pieces or samples for mechanical testing or from the whole thickness of the tube at the same location as for the mechanical test samples, in accordance with EN ISO 14284.

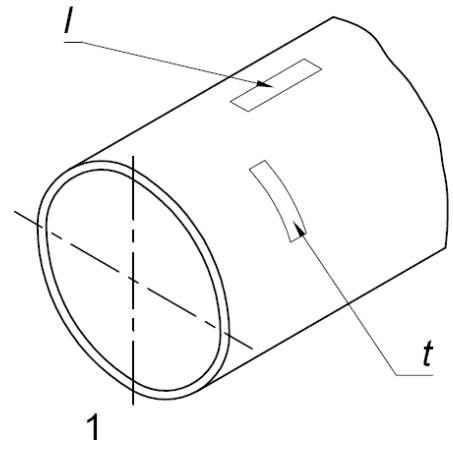
9.2.3 Tensile test

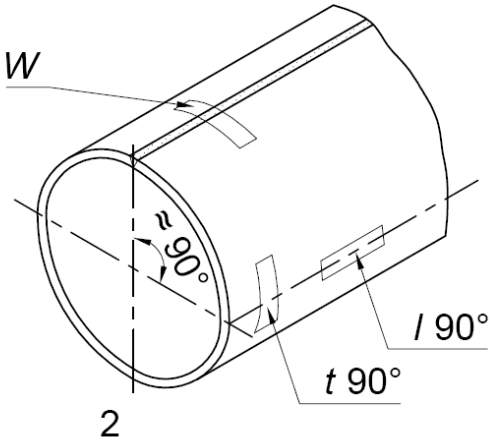
The test piece for the tensile test shall be a test piece taken from the sample fitting in accordance with BS EN ISO 6892-1.

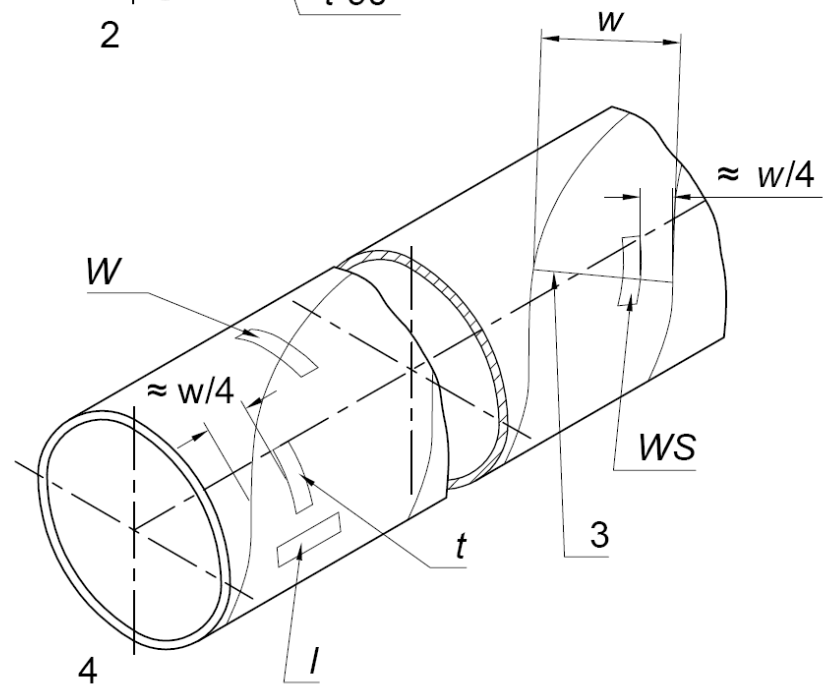
The test piece may be taken either longitudinally or transversely at the discretion of the manufacturer.

9.2.4 Weld bend test

The test piece for the weld bend test shall be in accordance with BS EN ISO 5173.







Key

1	Seamless tube
2	Longitudinally welded tubes
3	Strip end weld
4	Helically welded tubes
W	Sample of the weld
WS	Sample of the strip end weld
w	Width of the strip

Figure 11 – Location and direction of test pieces for the tensile and weld bend test

10. Test methods

10.1 Chemical analysis

Chemical analysis test method for fittings shall be in accordance with 10.1 of SPAN TS 21827: Part 2.

10.2 Mechanical tests

Mechanical tests method for fittings shall be in accordance with 10.2 of SPAN TS 21827: Part 2 with exclusion of 10.2.2 and 10.2.3 of SPAN TS 21827: Part 2.

10.3 Leak tightness test

See 7.5.2.

10.4 Non destructive testing of the welds of fittings

The seam weld of fittings or fittings components which have not previously been tested (i.e. as a tube) shall be tested in accordance with 10.4.3 of SPAN TS 21827: Part 2.

All welds other than seam welds shall be tested by one of the following methods;

a) Penetrant testing in accordance with EN 571-1;

b) Magnetic particle testing in accordance with BS EN ISO 17638;

c) Ultrasonic testing in accordance with BS EN ISO 17640;

d) Radiographic testing in accordance with EN 1435.

The method of non-destructive testing is at the discretion of the manufacturer unless a specific method from those given above is specified by the purchaser.

The acceptance level shall be agreed between the purchaser and manufacturer.

Option 7 The method of non destructive testing is specified by the purchaser from those listed in 10.4.

10.5 Visual examination

The fittings shall be visually examined for compliance with the requirements of 7.4.

10.6 Dimensional inspection

Fittings shall be inspected for compliance with the requirements of 7.6, 7.7 and 7.8. A gauge is normally used for measurement of outside diameter.

However, for fittings with outside diameter equal to or greater than 406.4mm, a circumference tape may be used.

11. Retests, sorting and reprocessing.

For retests, sorting and reprocessing of pipes and fittings the conditions of EN 10021 shall apply.

12. Marking.

12.1 Each pipe and fitting shall be legibly marked by stencilling or other indelible marking with the following information in the sequence indicated:

(a) the manufacturer's name or identification mark;

(b) the number of this SPAN Technical Specification (SPAN TS 21827: Part 1);

(c) the steel name (see 4.2.2);

(d) the dimensions;

(e) the type of coating and lining applied (see 16.1);

(f) the certification mark of certification body;

(g) in the case of specific inspection and testing;

- an identification number (e.g. order or item number) which permits the correlation of the product or delivery unit with the related inspection document;
- the mark of the inspection representative when specific inspection is required;

(h) when the type of pipe, seamless (S), butt welded (BW), electric welded (EW) or submerged arc weld (SAW) is specified (see option 1) the letter representing the type of pipe, as appropriate.

(i) the (SEWAGE) when sewage application is specified by the purchaser (see 5.1.1.i & 5.1.2.j).

Marking on the pipes shall commence not more than 300mm from one end.

12.2 For pipes that are bundled and fittings that are bagged, the information given in 12.1, shall be either stamped on one or more metal or other durable tags, or printed on banding clips or straps, which shall be securely attached to each bundle. Not more than one steel grade shall be included in any one bundle.

13. The corrosion protection requirement

For protection against corrosion, the pipes and fittings shall be protected with a coating and lining. The type of coating and lining shall be agreed between the purchaser and the supplier at the time of enquiry and order (see 5.1.1.f and 5.1.2.g).

The methods of protection against corrosion and the selections of coatings and linings shall be in accordance with Clause 16.

14. Effect of non-metallic products on water quality

When used under the conditions for which they are designated, non-metallic products in contact with or likely to come into contact with potable water shall comply with MS 1583.

15. Types of joints

15.1 General

15.2 to 15.5 specifies the type of joints, except for the preparation for butt welding, requirements for which are given in 7.8 of SPAN TS 21827: Part 1 and Part 2. The types of joints are as follows:-

(a) Sleeve joints for welding;

(b) Flange joints;

(c) Slip-on type couplings;

(d) Push fit and gasket type couplings.

NOTE 1 It is essential that the type of joint is stated in the enquiry and order (see 5.1.1.g and 5.1.2.h).

NOTE 2 Illustrations showing the basic design principle for the more common types of joints appropriate in this Technical Specification are given in Figures 12 – 16. The actual details of the joints may differ from one manufacturer to another.

15.2 Sleeve joints for welding

15.2.1 General

Sleeve joint for welding shall comply with 14.2.2 or 14.2.3 or 14.2.4.

The joints shown in Figure 12 may differ in detail from one manufacturer to another provided the dimensions identified are maintained.

On sizes smaller than 711 mm OD, the joints should be welded in the outside only. On sizes 711 mm OD and larger, welding may be either inside, or outside, or both side and outside.

In general, sleeve welded joints are not suitable for lined tubes (pipes) in sizes 610 mm OD and smaller. When these sizes are required to be lined, consideration should be given to mechanical joints or other forms of joints designed to avoid damage to the lining.

15.2.2 Type 1 joints

For type 1 joints (see Figure 12) the tubes shall be supplied with spigot end parallel and sleeve end either parallel or with the diameter tapered to approximately 0.8mm per 25mm length of sleeve. The minimum length of sleeve shall be 75mm.

The sleeve shall be sized to ensure that the spigot will enter the sleeve freely and be engaged by the socket when fully home.

15.2.3 Type 2 joints

For type 2 joints (see Figure 12) the tubes shall be supplied with spigot end and the sleeve end parallel. The collar forming the sleeve shall be fabricated with not more than one longitudinal weld and shall be welded externally and internally to the sleeve tube. The minimum sleeve length shall be $(150 + 2t)$mm, where t is the thickness of the sleeve, to ensure an adequate space between the spigot end and the internal collar weld to effect the inside joint weld if required.

The sleeve shall be sized to ensure that the spigot will enter the sleeve freely and be engaged by the socket when fully home.

15.2.4 Type 3 joints

For type 3 joints (see Figure 12) the tubes shall be supplied with the contact surfaces of the spigot end and sleeve end formed to the same spherical radius. The spherical radius shall be not less than half of the outside diameter of the tube. When fitted together the mean penetration of each spigot into the sleeve shall be not less than four times the tube thickness. (See note 1).

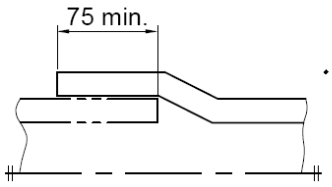
NOTE 1 These types of sleeve joint may be used to accommodate small changes in pipe line direction provided the spigot and the sleeve are engaged around the whole circumference and the mean penetrated is not less than four times the tube thickness.

15.2.5 Individual sleeve joints

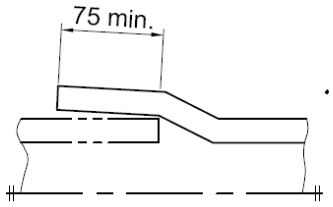
When individual sleeve joints are required to be pressure tested after welding, each sleeve shall be provided with a nominal size ¼ tapped hole complying with BS EN 10226-1 fitted with a matching plug. The tapped holes shall be within the end 30mm of the sleeves and be clear of any possible shop or field welding runs.

The purchaser should state Option 8 in the enquiry and order if the individual sleeve joints are required to be pressure tested after welding.

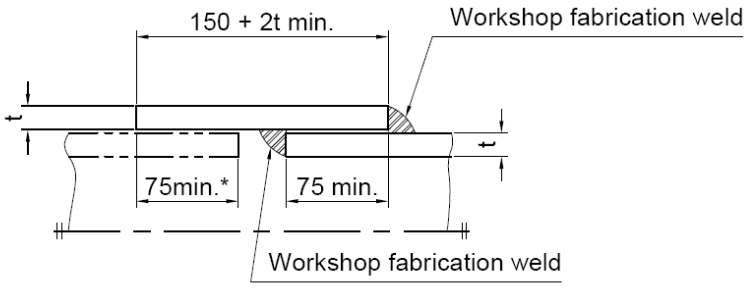
Option 8 The individual sleeve joints are required to be pressure tested after welding.



Type 1 (parallel sleeve)

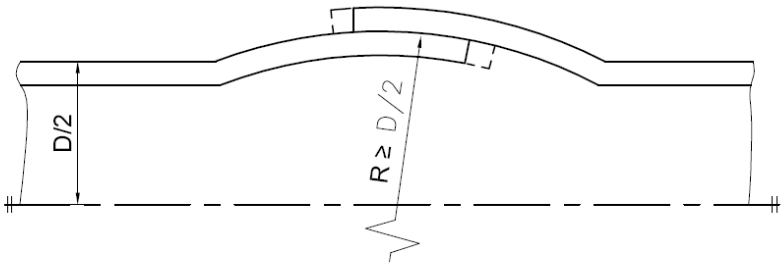


Type 1 (taper sleeve; taper approximately 0.8 mm on diameter for each 25 mm on length of socket)



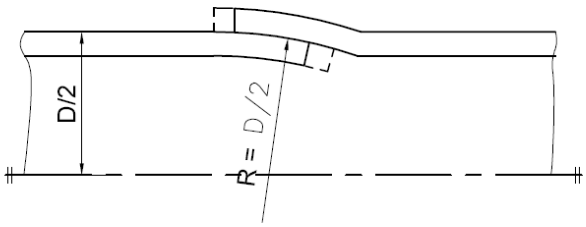
* For guidance

Type 2 (collar sleeve)



Spherical joint

(R > D/2 where D is the outside diameter)



Hemispherical joint

(R > D/2 where D is the outside diameter)

Type 3 (surfaced sleeve)

All dimensions are in millimeters

Figure 12. Sleeve welded joints

15.2.6 Welding collars

Welding collars shall be as shown in Figure 13 and shall be at least equal in thickness to the adjoining components; the length of sleeve shall be not less than 250mm.

When positioned for welding the collar should be a good fit on the outside diameter of the components to be joined. To ensure good welding conditions the gap shall be not greater than 6mm.

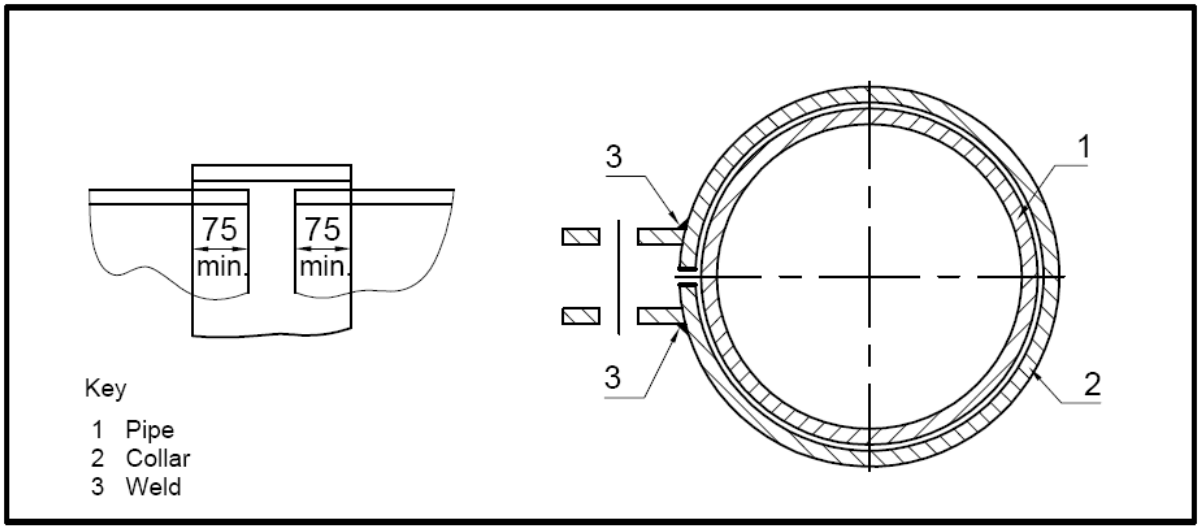


Figure 13. Welding collar

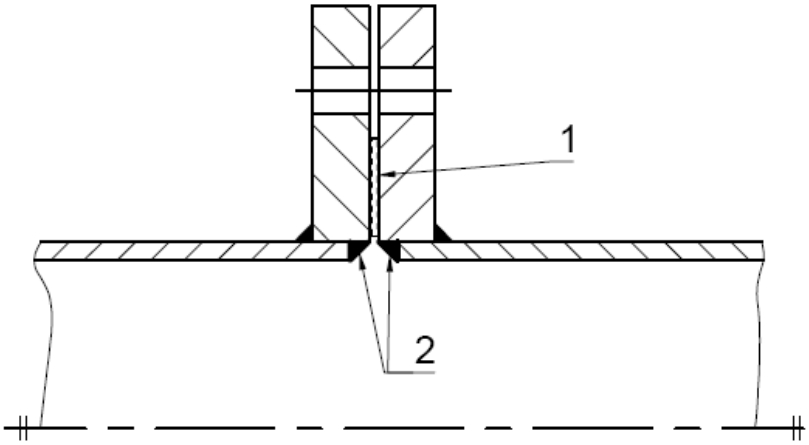
15.3 Flange joints

15.3.1 Flange joints shall have flanges in accordance with BS EN 1092-1 or BS EN 1759-1, as appropriate to the design conditions (see Figure 14).

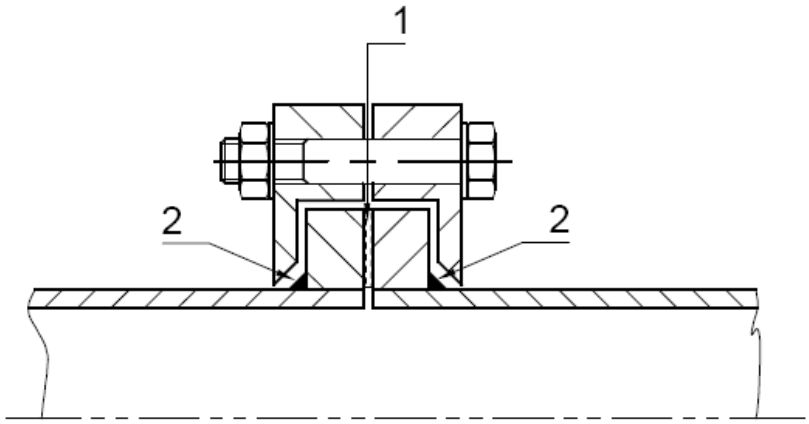
Note It is essential that the type of flange required is stated in the enquiry and order (see 5.1.1.h and 5.1.2.i).

The purchaser shall specify the type of flange required.

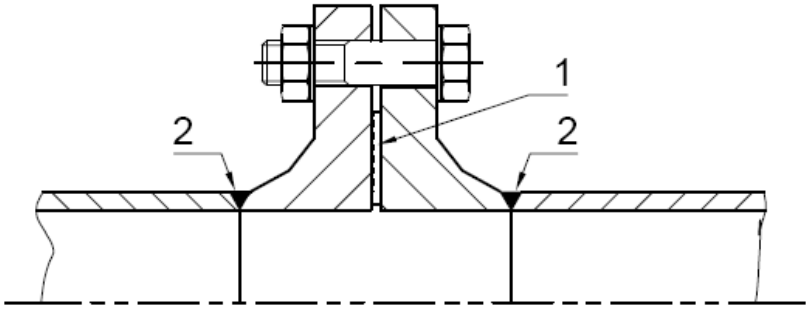
15.3.2 Welding shall be carried out to procedures in accordance with BS EN 15607, BS EN ISO 15609-1 and BS EN ISO 15614 by welders qualified to EN 287-1.



i.



ii.



iii.

Key

1. Gasket
2. Weld

i. Plate flange

ii. Loose flange

iii. Welded neck flange

Figure 14 : Flange joints.

15.4 Slip-on type couplings

15.4.1 Slip on type coupling for use with plain end tube shall be of the general form shown in Figure 15.

15.4.2 The lengths of the coupling sleeves (S) shall be as given in Table 5.

The details of the joints shown in Figure 15 may differ from one manufacturer to another provided the dimensions identified are maintained.

Table 5. Slip-on type couplings – lengths of coupling sleeves.

Tube Size outside diameter D (mm)	Sleeve length (mm) S	Tolerence on sleeve lengths (mm)
≤ 60.3	80	± 3
76.1 to 323.9	100	
355.6 to 914	150	
1016 to 1829	178	
2032 and 2743	254	
NOTE 1 Other sleeve lengths may be used for special service conditions but are not covered by this standard		
NOTE 2 Coupling sleeves with a form of centre register may be specified by the purchaser.		

15.4.3 When slip-on type couplings are used the tube ends for length L shall be within the tolerances on outside diameter as specified in Table 6 when checked by the measuring the circumference and shall permit the passage of a ring gauge, which has a bore 1.6mm larger than the maximum permissible diameter of the tube.

15.4.4 Surface irregularities such as peaks, flats or depressions shall be blend smoothly into the surface of the tube and their height or depth shall not exceed 0.25mm.

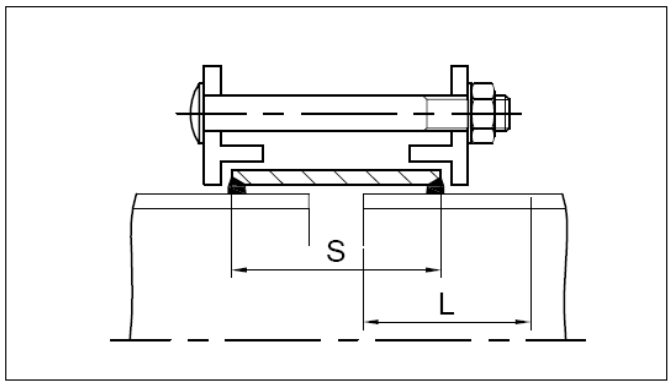


Figure 15. Slip-on type couplings

Table 6. Slip on type couplings – tolerances on outside diameter D over length L

Tube Size outside diameter D (mm)	Tolerance on D (mm)	Length L over which tolerance applies (mm)
≤ 114.3	± 0.8	100
139.7 to 323.9	+ 1.6 / - 0.8	100
355.6 to 1422	± 1.6	150
1524 to 1829	± 3	150
2032 to 2743	± 3	200

15.5 Push fit and gasket type couplings

15.5.1 Push fit and gasket type couplings shall be of the general form shown in Figure 16.

15.5.2 The insertion depth, socket size and wall thickness shall be as given in Table 7. The details of the joint shown in Figure 16 may differ from one manufacturer to another.

The connection is produced by inserting the tube spigot end into the socket end which contains a rubber gasket. By inserting the spigot end into the socket, the rubber ring is deformed in an axial direction and seals the connection by the resilience present in the rubber ring.

The connection in diameters up to and including 323.9mm is suitable for operating pressures up to maximum 40 bar. For larger diameters the maximum operating pressure is related to the diameter and thickness of the tubes. To absorb axial forces in the connection, special rubber rings may be required.

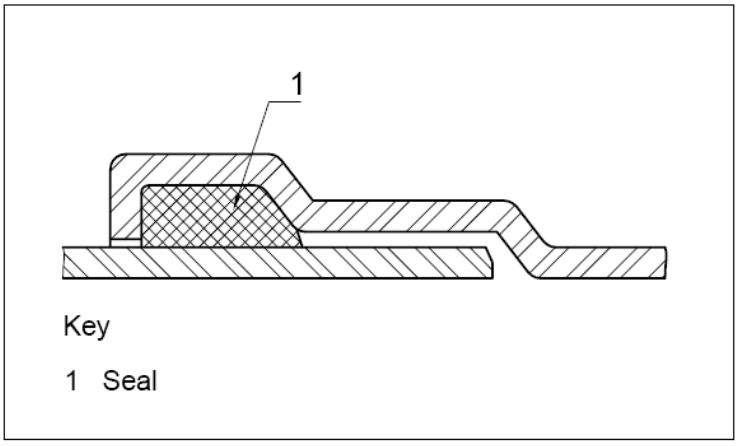


Figure 16. Push fit and gasket type couplings.

Table 7. Insertion depths, socket sizes and wall thicknesses for push fit and gasket type couplings.

Tubes Outside Diameter D (mm)	Nominal wall thickness T (mm)	Insertion depth (mm)	Socket Outside Diameter (mm)
114.3	3.2	110	151
117.5	3.2	110	151
139.7	4.0	110	178
144	4.0	110	178
168.3	4.0	131	203
219.1	4.5	133	258
273	5.0	143	312
323.9	5.6	150	366
355.6	5-7.1[a]	120-150	405
406.4	5-7.1[a]	120-150	405
457	5-7.1[a]	120-150	510
508	5-7.1[a]	120-150	560
610	5-8[a]	120-200	660
610	8	200	690
711	8	200	791
813	8	200	893
914	8	200	994
1016	8	200	1096

[a] Dependent on maximum working pressure.

15.6 Special joints

Other types of joint are available. If such joints are to be used any special requirements for the end preparation of the tube should be specified by the purchaser and agreed with the manufacturer at the time of enquiry and order.

16. Protection against corrosion

16.1 General

This part of SPAN Technical Specification specifies methods of protecting tubes and fittings against corrosion. It covers external protection by bitumen, coal tar based and plastics materials, and internal protection by bitumen, concrete and cement mortar.

Other types of protection system shall be covered by other relevant standards or specifications approved by the Commission.

It is permissible for other surface protection system to be applied in which cases it is necessary for an agreement between the purchaser and the manufacturer to be reached.

The type of external and internal protection specified and the symbol to represent them under this specification are as follows:-

a) Bitumen coating (B)

b) Plastic Cladding (P)

c) Epoxy coating (E)

d) Bitumen Lining (BL)

e) Concrete Lining (C)

f) Cement Mortar Lining (M)

16.2 Surface preparation

16.2.1 General

The surfaces to be protected shall be clean and free from scale, loose rust, oil, grease or other foreign matter. Surface preparations for other than cement mortar or concrete linings shall be effected by one of the following methods:

(a) Acid pickling

(b) Abrasive, mechanical or flame, descaling

16.2.2 Acid pickling

Where surface preparation is by acid pickling, the tubes and fittings shall be immersed in an acid solution until all the scale has been removed, washed in clean water and the surface suitably inhibited.

16.2.3 Abrasive descaling

Where surface preparation is by abrasive descaling, the surface finish shall be at least to second quality in accordance with BS EN ISO 8501-1 unless option 9 is specified by the purchaser.

Option 9 The surface finish shall be to first quality in accordance with BS EN ISO 8501-1.

16.3 Coatings and linings

16.3.1 Bitumen

Coatings are applied hot or cold and, where bitumen coatings are applied by dipping, the tubes and fittings shall be immersed in a bath of molten bitumen until they attain the temperature of the bath. They shall be drained after the removal from the bath, where necessary for the purposes of jointing any excess coating shall be removed from the ends. Where coatings are applied by spray or brush, the application shall be such as to provide a smooth continuous coating.

NOTE 1 These bitumen coatings may be suitable for extended service.

16.4 External protection

16.4.1 Priming

Before the application of bitumen or coal tar external protection, tubes and fittings shall be primed with a compatible priming coat. Materials and methods complying with BS EN 10300 or BS 4164 shall be used as appropriate.

16.4.2 Bitumen sheathing

The materials shall consist of natural or blown petroleum bitumen mixed with an inert filler i.e. type 2 or type 3 in accordance with BS EN 10300.

The tubes and fittings shall be covered with a layer of sheathing material, applied as a hot coating or mastic to provide a seamless, consolidated and smooth layer having a minimum thickness as given in Table 8.

Table 8. Thickness of bitumen shearing material.

Pipe outside diameter (mm)	Minimum thickness (mm)
88.9 – 168.3	3
193.7 – 323.9	4.5
355.6 - 2743	6

16.4.3 Reinforced bitumen sheathing

Reinforced sheathing shall be bitumen complying with 16.4.2 with the addition of an overlapping spiral wrapping of woven glass cloth firmly embedded in to the sheathing

16.4.4 Bitumen enamel wrapping (filled bitumen with glass tissue)

The tubes shall be covered with a layer of bitumen containing mineral filler applied hot, i.e. type 2 in accordance with BS EN 10300, and an inner wrapping of glass tissue and an outer wrapping of bitumen impregnated reinforced glass tissue, the inner wrapping being embedded in the bitumen. For tubes, the glass tissue wrappings shall be wound spirally with an overlap. For fittings, the glass tissue wrapping shall be wound spirally or circumferentially with an overlap. There shall be not less than 1 mm of enamel between the tube surface and the inner wrapping and also between the inner and outer wrapping. The protection shall have a minimum thickness of 3 mm.

16.4.5 Reinforced bitumen enamel wrapping

Reinforced wrapping shall be bitumen enamel wrapping complying with 16.4.4 except that the outer wrapping shall be of composite glass fibre fabric.

16.4.6 Coal tar enamel wrapping (filled coal tar with glass tissue)

The tubes and fittings shall be covered with a layer of type 2 filled coal tar in accordance with BS 4164 and an inner wrapping of glass tissue and an outer wrapping of coal tar impregnated reinforced glass tissue, the inner wrapping being embedded in the coal tar. For tubes, the glass tissue wrapping shall be wound spirally on the tubes with an overlap. For fittings the glass tissue wrapping shall be wound spirally or circumferentially with an overlap. There shall be not less than 1 mm of enamel between the tube surface and the inner wrapping and also between the inner and outer wrapping. The protection shall have a minimum thickness of 3 mm.

16.4.7 Non-stick and reflective finish

For bitumen or coal tar coated pipes a non-stick and reflective coating shall be applied to the finish external protection.

16.4.8 Plastics cladding

Tubes shall be covered with an even layer of hot melt adhesive undercoat with a minimum thickness of 0.1 mm. The undercoat shall consist of a non-setting, pressure sensitive adhesive based on a blend of elastomer resin and fluxing oil.

Immediately after the application of this undercoat, a seamless sheath of medium/high density polyethylene shall be continuously applied and shrunk on to the tube to provide a smooth outer sheath, free from pinholes and cracks. The thickness of the polyethylene shall be in accordance with Table 9.

The minimum thickness of polyethylene shall be the thickness as given in table 9 minus 12.5%.

Table 9. Thickness of polyethylene

Tube outside diameter (mm)	Polyethylene thickness (mm)
≤ 60.3	0.6
88.9 – 114.3	0.9
139.7 - 457	1.3

16.5 Internal protection

16.5.1 Priming

Before internal bitumen protection is applied, tubes and fittings shall be primed with a compatible priming coat. Materials and methods complying with BS EN 10300 shall be used.

16.5.2 Bitumen lining of tubes

16.5.2.1 The materials shall consist of a uniform blend of natural or blown bitumen mixed with an inert filler to produce a homogeneous composition of type 2 in accordance with BS EN 10300.

16.5.2.2 The lining material, in a hot fluid condition, shall be applied centrifugally to straight lengths of tube to give a smooth continuous lining, having a minimum thickness as given in Table 10.

16.5.3 Bitumen lining of fittings

The lining material and the finished lining shall comply with the corresponding requirement of clause 16.5.2 for straight tubes.

NOTE. In view of the variety of methods adopted for the lining of fittings, this specification does not specify the procedure to be followed.

Table 10. Thickness of bitumen lining material

Tube outside diameter (mm)	Minimum thickness (mm)
60.3 – 323.9	1.5
355.6 – 610	3
660 – 914	4.5
1016 - 2743	6

16.6 Tests on applied external and internal protections

16.6.1 'Holiday' test

All coated tubes (pipes) and fittings shall be checked for continuity of the applied protection in accordance with appendix A using a 'Holiday' detection unit. Discontinuities and pinholes indicated by the test shall be made good.

16.6.2 Adhesion test

When an adhesion test is carried out it shall comprise one of the following methods. The manufacturer shall select the first test method.

a) The ring test.

A ring 75mm wide shall be cut cold from one end of finished pipes. The ring shall be flattened at a temperature between 10° C and 20° C to 50 % of the original diameter. The lining and/or coating shall not part from the metal under this test.

b) The strip test

Using a tool with a thin sharp blade, two cuts approximately 50 mm apart shall be made through the protection to the metal pipes. Sudden impact, which would cause untimely separation, shall be avoided. The blade shall be worked under the protection and an attempt made to peel it from the metal. The adhesion shall be considered satisfactory if removal of the protection causes cohesive failure and the protection does not peel cleanly from the primer or the pipe surface.

The test shall be performed when the protection has been allowed to cure at a temperature not less than 10ºC or more than 35 ºC for a minimum of 48 h after application.

When an adhesion test is required, this should be stated by the purchaser in the enquiry and order (Option 10).

Option 10 An adhersion test is required.

16.6.3 Repairs

Any defective coatings and linings shall be made good using compatible materials.

16.7 Concrete lining and cement mortar lining

16.7.1 Concrete lining of tubes

16.7.1.1 The lining shall be concrete made from Portland cement complying with MS EN 197-1 or from sulphate-resisting Portland cement complying with BS 4027:1996 and fine aggregate complying with MS EN 12620, except that the maximum size of aggregate shall not exceed one-third the thickness of the lining.

The manufacturer has the option of supplying pipe lined with either Portland cement or sulphate-resisting Portland cement unless Option 11 is specified by the purchaser in the enquiry and order.

Option 11 The sulphate-resisting Portland cement lining is required.

NOTE The use of additives or any other admixture is not covered by this specification. Such use is not permitted unless specifically agreed in detail with the purchaser.

The minimum cement content shall be 330kg/m³ and the maximum water cement ratio shall not exceed 0.46:1.

16.7.1.2 The water used in the preparation of the concrete shall be neither deleterious to concrete nor deleterious to the water that the pipe is eventually intended to convey. (see clause 14).

16.7.1.3 The concrete lining in contact with potable water shall not discolour the water, impart any objectionable taste or odour or release any toxic substances into the water or support any microbial growth. (see clause 14).

16.7.1.4 The concrete shall give, upon testing, the compressive strength and density specified in 16.7.5.

16.7.1.5 The tube shall be charged in a single operation and spun at a suitable speed to achieve a minimum rate of radial acceleration of 250m/s² ($25g_n$) until the uniform thickness of concrete lining given in Table 11 has been attained over the whole of the inner surface with the exception of stock backs for jointing.

The spinning of the tube shall continue until surplus water has been dispersed and the greatest possible density of lining obtained. Any damage caused to the lining by the removal of the end rings shall immediately be made good by hand before the lining is set. Not more than I h shall elapse between the removal of the lined pipe from lining machine and the commencement of the approved curing procedure.

16.7.1.6 After being lined, the fresh lining shall be marked with the date of lining and the pipe shall be stored undisturbed for the lining to be cured for at least 7 days for maturing. Means shall be employed to prevent the lining from drying too rapidly, particularly during the 48 h. period after the lining operation. The lining shall be kept damp by spraying with water or by other means, e.g. by closing the pipe with end caps until curing is complete.

16.7.1.7 The surface of the lining shall be smooth and free from irregularities.

Fine surface crazing, hair cracks, or cracks up to 0.25mm in width in saturated linings and not over 300mm in length shall not be cause for rejection.
Cracks over 0.25 mm in width in saturated linings, and crack over 300 mm in length or other defective linings shall be made good using compatible materials.

16.7.1.8 The pipes may be dispatched at any time after the seven-day curing period provided the cube strength of the test cube after 7 days of curing has achieved the required strength as specified in 16.7.5 unless option 12 is specified by the purchaser.

Option 12 The curing period for more than 7 days is required.

Table 11. Thickness of concrete lining

Outside diameter of tube or special (mm)	*Minimum thickness of concrete (mm)	Tolerance (mm)
Up to and including 168.3	6	+3, -0
193.7 – 323.9	10	+3, -0
355.6 – 610	13	+3, -0
660 – 1219	19	+6, -0
1422 - 2743	25	+6, -0
* Thicker linings may be specified		

16.7.2 Concrete lining of fittings

16.7.2.1 When it is practicable to do so, fittings shall be made from cut lengths of mature lined straight pipes.

NOTE. See 16.7.2.3 for situations where it is impracticable to do so.

The lining shall be cut back from the end or ends to be beveled and welded, for a sufficient distance to ensure that any of the concrete which is intended to remain as part of the lining shall not suffer damage by the cutting or welding process. The lining shall be made good by rendering by hand.

16.7.2.2 Hand rendering of fittings shall consist of freshly mixed concrete of a mixture equivalent to that of the lining being repaired, and shall be thoroughly compacted and finished to a smooth surface of the correct form.

16.7.2.3 Fittings other than those made from cut length of measured lined straight pipes shall be lined by hand rendering as specified in 16.7.2.2. The rendering of fittings of 323.9 mm outside diameter and above shall be reinforced with expanded metal or equivalent, securely attached to the inner surface.

16.7.2.4 Curing shall comply with 16.7.1.6.

16.7.3 Centrifugally applied cement mortar lining

16.7.3.1 The lining shall be cement mortar made from Portland cement complying with MS EN 197-1 or from sulphate-resisting Portland cement complying with BS 4027:1996 and specially graded washed silica sand complying with grading zone 4 in table 5 of MS EN 12620.

The manufacturer has the option of supplying pipe lined with either Portland cement or sulphate-resisting Portland cement unless Option 11 is specified by the purchaser in the enquiry and order.

Option 11 The sulphate-resisting Portland cement lining is required.

NOTE The use of additives or any other admixture is not covered by this standard. Such use is not permitted unless specifically agreed in detail with the purchaser.

The cement mortar shall have a minimum cement content of 1000 kg/m^3 and a water cement ratio of between 0.30 : 1 and 0.45 : 1 by mass.

16.7.3.2 The water for mixing shall comply with 16.7.1.2. (see clause 14)

16.7.3.3 The lining in contact with potable water shall comply with the requirements of 16.7.1.3. (see clause 14)

16.7.3.4 The cement mortar lining shall be carried out by one of the following methods.

(a) Centrifugally spraying and subsequent rotation to achieve smoothing.

(b) Centrifugally spraying and simultaneously smoothing by trowelling.

The spray operation shall be such that a continuous feed of freshly mixed mortar shall be evenly applied to the whole bore of the tube in a single pass in one continuous operation. Where smoothing by rotating is utilized, the duration and speed of rotation shall be kept to a minimum to prevent separation of the constituents of the mortar.

16.7.3.5 The curing process shall comply with 16.7.1.6.

16.7.3.6 The surface of the lining shall be smooth and free from irregularities.

Fine surface crazing, hair cracks or cracks up to 0.25mm wide in saturated linings and not over 300mm in length shall not be a cause for rejection.

Cracks over 0.25 mm in width in saturated linings, cracks over 300 mm in length or other defective linings shall be made good using compatible materials.

16.7.3.7 Formed ends of linings, when specified by the purchaser in the enquiry and order, shall be made after the spraying and smoothing processes unless formed by the insertion of removable formers or end rings.

16.7.3.8 Lining thickness shall be not less than the minimum thicknesses given in Table 12.

16.7.3.9 Hand finishing of the end of the bore of the pipe, for not more than 100 mm, shall be permitted to rectify the thinning of linings.

16.7.3.10 Fittings shall be centrifugally spray lined to the same requirements as straight pipes or, if this is precluded by their shape, be hand finished and cured so as to achieve comparable results.

Table 12. Thickness of cement mortar lining

Outside diameter of tube or special (mm)	*Minimum thickness of cement mortar (mm)	Tolerance (mm)
Up to and including 323.9	6	+ 2, - 0
355.6 – 610	7	+ 2, - 0
660 – 1219	9	+ 2, - 0
1422 - 2743	12	+ 3, - 0
* Thicker linings may be specified		

16.7.4 Spun cement mortar lining

The lining materials, thicknesses and tests shall comply with the requirements for the centrifugally applied cement mortar lining as specified in 16.7.3. The method of application and the curing of the linings shall comply with the requirements for spun concrete linings as specified in 16.7.1.

16.7.5 Tests on concrete and cement mortar used for lining

Test blocks of the same material as used for the pipe lining shall be made in 100 mm or 150 mm cube moulds and subjected to cube crushing tests. Each block shall be removed from its mould as soon as practicable and cured under conditions of temperature and humidity identical with those in which the lining of the pipe is cured.

The cube strength of the test cube shall be not less than 17N/mm² after 7 days of curing and 31N/mm² after 28 days of curing. The density of the test cube shall be not less than 2300kg/m³ in the case of concrete and 2100 kg/m³ in the case of cement mortar.

Purchaser may specify Option 13 on the number of cube crushing tests required.

Option 13 The number of cube crushing tests required.

16.8 Stop Back of protection at ends

16.8.1 Pipes and fittings supplied with concrete or cement mortar linings which are to be joined together by internal welding shall have the lining stopped back at the ends a distance sufficient to permit welding of the joints without damage to the lining.

16.8.2 Pipes and fittings supplied with bitumen, and linings shall have the external protection stopped back a distance sufficient to permit assembly of the joint. The internal protection shall extend to pipe end.

Pipes and fittings to be joined together by welding shall have the external and internal protection stopped back at the end as follows

(a) *Butt welded joint*. 75mm from the ends of pipes to be welded.

(b) *Sleeve welded joint*. For sleeve and spigot sleeve length plus 75mm

In all cases, priming shall extend to the ends of the pipes.

16.9 Completion of protections at joints

16.9.1 External protection

When material is supplied to make good the joints, or to repair minor damage of sheathed or wrapped pipes and fittings, the material supplied shall be compatible with the factory coating.

The purchaser should state in the enquiry and order his requirements for material to be supplied (Option 14).

Option 14 Material for completing the internal and external protection of joints at site is required.

A sufficient quantity of primer, bitumen based or coal tar based composition, and glass tissue cloth where appropriate, should be supplied with each consignment to cover the joints after laying and to repair minor damage.

16.9.2 Internal protection

When material is supplied to make good the joints, or to repair minor damage of bitumen lined pipes or fittings, the material supplied shall be compatible with the factory coating.

The purchaser should state in the enquiry and order his requirements for material to be supplied (Option 14).

Option 14 Material for completing the internal and external protection of joints at site is required.

A sufficient quantity of lining material should be supplied with each consignment to ensure continuity of the internal protection at joints and to repair minor damage.

16.10 Protection of coated and lined pipes against damage in storage, transport and handling

16.10.1 Coated pipes and fittings shall be protected against damage in storage, transport and handling, e.g. by using straw or wood wool pads.

16.10.2 The ends of all lined pipes and fittings shall be covered to exclude foreign matter during transit and storage.

NOTE. Suitable protection may be in the form of plugs, discs or plastic sheeting.

Appendix A : Electrical test for continuity. (Normative).

A.1 Principle.

Possible faults in the protection are examined for using a high tension scanning electrode.

A.2 Equipment.

A.2.1 Variable voltage detector (Holiday detector).

A.2.2 Scanning electrode, in the form of a metallic brush or a jointed spiral spring or conductive rubber.

A.3 Procedure.

Ensure that the pipe and fittings protection is free from surface moisture. Connect the metal substrate, if possible, to earth.

Check at the time of testing that the spark length from the apparatus is 10mm or twice the minimum specified thickness of the coating, whichever is the greater.

Place the electrode in contact with the surface to be tested. Operate the electrode with a continuous movement at the rate recommended by the manufacturer of the equipment. In the absence of such recommendations, operate the electrode at a rate of approximately 0.2m/s.

When the brush passes over a fault, a spark will be produced between the electrode and the pipe.

Locate the fault.

Acknowledgements

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TECHNICAL SPECIFICATION

SPAN TS 21827: Part 2: 2013

SPECIFICATION FOR STEEL PIPES, FITTINGS AND JOINTS FOR WATER AND SEWAGE

Part 2 : Tube requirements

SPAN

Suruhanjaya Perkhidmatan Air Negara

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DEVELOPMENT OF SPAN TECHNICAL SPECIFICATION

National Water Services Commission (SPAN) was established in 2008 to regulate the water services industry in Malaysia. SPAN envisions a sustainable, reliable and affordable water services for all by regulating the water services industry through fair, effective and transparent implementation of the Water Services Act (Act 655). Since inception in 2008, SPAN has been striving to institute improvements in term of standards and performance in the country's water and sewerage services sector.

SPAN aims to enhance efforts towards improving standards, quality and operational efficiency of water and sewerage services industry to ensure sustainability. One of the approaches is to achieve higher standards and quality by developing technical specifications for products and systems used in the industry. Hence, Technical Working Groups have been formed by Research, Development and Innovation Division to formulate technical and performance specifications for adoption in water services industry.

This Technical Specification is a result of joint effort by members from various relevant stakeholders of the industry. This series of Technical Specification consists of the following parts, under the general title *Specification for Steel Pipes, Fittings and Joints for Water and Sewage*:

Part 1 : Technical delivery requirements

Part 2 : Tube requirements

The specification provides requirement for seamless and welded carbon steel pipes, fittings and joints in respect of the pipe end preparation, in sizes 60.3mm to 2743mm outside diameter, for the conveyance of water for human consumption and conveyance of sewage. It includes external and internal protection against the corrosive action of the surrounding medium and conveyed fluid.

The continual development of technical and performance specifications is crucial in moving the industry towards higher standards which will uplift the image of local water industry. With the publication of this Technical Specification, it is hoped that it will contribute towards a better quality and performance of Steel Pipes, Fittings and Joints products to ensure its long lasting performance and durability.

Dato' Teo Yen Hua
Chief Executive Officer
National Water Services Commission (SPAN)

Contents

COMMITTEE REPRESENTATION

The System, Product, Material and Research & Development Committee of National Water Services Commission (SPAN) consists of representatives from the following organizations:

Suruhanjaya Perkhidmatan Air Negara (SPAN)

Public Works Department (PWD/JKR)

Ministry of Science, Technology and Innovation (MOSTI)

Jabatan Bekalan Air, KeTTHA (JBA)

Jabatan Perkhidmatan Pembetungan, KeTTHA (JPP)

Department of Standard Malaysia (DSM)

The Working Group of steel pipes, fittings and joints for water and sewage which developed this SPAN Technical Specification consists of representatives from the following organizations:

Suruhanjaya Perkhidmatan Air Negara (SPAN)

Public Works Department (PWD/JKR)

IKRAM QA Services Sdn. Bhd.

SIRIM QAS International Sdn. Bhd.

The Institution of Engineers, Malaysia (IEM)

Association of Consulting Engineers, Malaysia (ACEM)

Malaysian Iron and Steel Industry Federation (MISIF)

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FOREWORD

This SPAN Technical Specification was developed by the Working Group of Steel Pipes, Fittings and Joints for Water and Sewage under the authority of System, Product, Material and Research & Development Committee of National Water Services Commission (SPAN).

This specification is adapted and improved from the following standards:-

i)	MS 1968 : 2007	-	Non-Alloy Steel Tubes and Fittings for the Conveyance of Aqueous Liquids Including Water for Human Consumption – Technical Delivery Conditions.
ii)	BS 534 : 1990	-	Steel Pipes, Joints and Specials for Water and Sewage.

Compliance with a SPAN Technical Specification does not of itself confer immunity from legal obligations.

Specification for steel pipes, joints and fittings for water and sewage. Part 2: Tube requirements.

1 Scope

This SPAN Technical Specification specifies requirements for the products listed below used for the conveyance of water for human consumption and sewage:

- seamless and welded non-alloy steel tubes;
- end preparation of tube ends for butt welding.

NOTE This Technical Specification contains informative annex giving guidance on tube sizes relevant to each manufacturing process covered.

This SPAN Technical Specification covers a range of tube outside diameters from 60.3 mm to 2743 mm.

2 Normative references

The following normative references are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the normative reference (including any amendments) applies.

EN 10020, *Definition and classification of grades of steel.*

EN 10021, *General technical delivery requirement for steel and iron products.*

EN 10052, *Vocabulary of heat treatment terms for ferrous products.*

EN 10204, *Metallic products – Types of inspections documents.*

EN 10220, *Seamless and welded steel tubes – Dimensions and masses per unit length,*

BS EN ISO 8492, *Metallic materials – Tubes – Flattening test.*

BS EN ISO 8493, *Metallic materials – Tubes – Drift Expanding Test (ISO 8493:1998).*

EN 10266, *Steel tubes, fittings and structural hollow sections – Definitions and symbols for use in product standards.*

EN 10027-1, *Designation systems for steels – Part 1: Steel names.*

EN 10027-2, *Designation systems for steels – Part 2: Steel numbers.*

EN 10256, *Non-destructive testing of steel tubes – Qualification and competence of level 1 and level 2 non-destructive testing personnel.*

BS EN ISO 9712, *Non-destructive testing. Qualification and certification of NDT personnel.*

EN ISO 377, *Steel and steel products – Location and preparation of samples and test pieces for mechanical testing.*

EN ISO 14284, *Steel and iron – Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996).*

BS EN ISO 6892-1, *Metallic materials – Tensile testing. Part 1: Method of test at ambient temperature.*

BS EN ISO 5173, *Destructive tests on welds in metallic materials – Bend tests.*

CR 10261, *Iron and steel – Review of available methods for chemical analysis.*

EN ISO 2566-1, Steel – *Conversion of elongation values – Part 1: Carbon and low alloy steels (ISO 2566-1:1984)*.

BS EN ISO 10893-1, *Non-destructive testing of steel tubes. Automated electromagnetic testing of seamless and welded (except submerged arc-welded) steel tubes for the verification of hydraulic leaktightness.*

BS EN ISO 10893-2, *Non-destructive testing of steel tubes. Automated eddy current testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of imperfections.*

BS EN ISO 10893-3, *Non-destructive testing of steel tubes. Automated full peripheral flux leakage testing of seamless and welded (except submerged arc-welded) ferromagnetic steel tubes for the detection of longitudinal and/or transverse imperfections.*

BS EN ISO 10893-6, *Non-destructive testing of steel tubes. Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections.*

BS EN ISO 10893-8, *Non-destructive testing of steel tubes. Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections.*

BS EN ISO 10893-10, *Non-destructive testing of steel tubes. Automated full peripheral ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of longitudinal and/or transverse imperfections.*

BS EN ISO 10893-11, *Non-destructive testing of steel tubes. Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections.*

3 Terms, definitions and symbols

3.1 General

For the purposes of this SPAN Technical Specification the terms and definitions given in EN 10020, EN 10021, EN 10052 and EN 10266 (excluding the term tube in EN 10266) and the following apply.

The symbols used in this SPAN Technical Specification are defined in EN 10020, EN 10021, EN 10052 and EN 10266.

Other symbols for sampling and testing are given in the appropriate sampling and testing standards referenced in clauses 9 and 10.

3.2 Tube

A straight conduit for conveyance of fluid, of bare circular cross section, with plain or prepared ends.

3.3 Effective length

Actual length that a tube contributes when correctly assembled in a run of piping.

3.4 Allowable operating pressure (PFA)

Maximum hydrostatic pressure that a component is capable of withstanding continuously in service.

3.5 Employer

Organization for which a person works on a regular basis. The employer may be either the tube manufacturer or a third party organization providing non-destructive testing (NDT) services.

4 Classification and designation

4.1 Classification

All steel covered by this SPAN Technical Specification are classified as non-alloy steels in accordance with EN 10020.

4.2 Designation

4.2.1 For products covered by this SPAN Technical Specification, the steel designation consists of the number of this Technical Specification (SPAN TS 21827 : Part 2) and either the steel name in accordance with EN 10027-1 or the steel number in accordance with EN 10027-2 (see Table 1).

4.2.2 The steel name consist of the following:
- the capital L for line pipe;
- the specified minimum yield strength of the steel for wall thicknesses less than or equal to 16 mm, expressed in MPa [(2)] (see table 3)

5 Information to be supplied by the purchaser

5.1 Mandatory information

The following information shall be supplied by the purchaser at the time of enquiry and order.

(a) the quantity (mass or total length or number);

(b) the term ‘tube’;

(c) the number of this Technical Specification;

(d) the designation (see 4.2);

(e) the dimensions (see 7.6);

(f) the options required (see 5.2)

5.2 Options

A number of options are specified in this SPAN Technical Specification and these are listed below. In the event that the purchaser does not indicate his wish to implement any of these options at the time of enquiry and order, the products shall be supplied in accordance with the basic specification

Option: 1)	The type of tube, seamless (S), butt welded (BW), electric welded (EW) or submerged arc weld (SAW) shall be as specified (see 6.3.4.1).
Option: 2)	The maximum copper content shall be specified (see 7.2.1).
Option: 3)	A product analysis shall be supplied (see 7.2.2).

[(2)] 1 N/mm^2 = 1 MPa

Option: 4) Rectification of the body of submerged arc welded tubes by welding shall not be permitted (see 7.4).

Option: 5) The tubes shall be supplied in approximate lengths (see 7.6.2).

Option: 6) The tubes shall be supplied in exact lengths (see 7.6.2).

Option: 7) The ends of tubes shall be prepared for butt welding. (see 7.8.1).

Option: 8) An alternative bevel end preparation for butt welding shall be provided (see 7.8.4.2).

Option: 9) Product shall be supplied with specific inspection and testing (see 8.1).

Option: 10) An inspection certificate 3.1 or an inspection report 3.2 shall be supplied (see 8.2).

Option: 11) The type of leak tightness test shall be specified (see 10.3.1).

Option: 12) The hydrostatic test shall be carried out at pressure 1.5 x P.F.A (see 10.3.2).

Option: 13) Radiographic test for skelp end welds is required (see 10.4.3.2).

Option: 14) The tubes shall be supplied with a temporary mill protection (see clause 13).

5.3 Examples of an order

Example 1

5 km of submerged arc welded tubes in accordance with SPAN TS 21827 : Part 2 with an outside diameter of 914 mm and a thickness of 10.0 mm made from steel L275 with the preparation of tube ends for butt welding and subjected to specific inspection and testing.

5000 m – tube – SPAN TS 21827: Part 2 – L275 – 914 x 10.0 – Option 1: SAW, 8 and 10.

6 Manufacturing process

6.1 Steel manufacturing process

The steel manufacturing process is at the discretion of the tube manufacturer.

6.2 Deoxidation process

The steel shall be fully killed.

6.3 Product manufacture and delivery conditions

6.3.1 General

The NDT activities shall be in accordance with 6.3.2 for Electric Welded and Butt Welded tube and 6.3.3 for Submerged Arc Welded tube.

6.3.2 Electric Welded and Butt Welded tube.

The NDT activities shall be carried out by competent personnel who have undergone sufficient training. A Certificate or any form of training record of the competent personnel shall be produced by the employer to prove competency.

The operating authorization issued by the employer shall be in accordance with a written procedure.

6.3.3 Submerged arc welded tube (SAW).

The NDT activities shall be carried out by qualified and competent level 1, level 2 and / or level 3 NDT personnel authorized to operate by the employer.

Qualification shall be in accordance with EN 10256 or, at least an equivalent to it.

NOTE 1 It is recommended that level 3 personnel are certified in accordance with BS EN ISO 9712, or, at least, an equivalent to it.

The operating authorization issued by the employer shall be in accordance with a written procedure.

NDT operations shall be authorized by a level 3 individual approved by the employer.

NOTE 2 The definitions of level 1, 2 and 3 can be found in appropriate standards e.g. BS EN ISO 9712 or EN 10256.

6.3.4 Tube

6.3.4.1 Tube shall be manufactured from one of the steel specified in Table 1 by one of the following processes.

(a) Seamless (S);

(b) Butt welded (BW);

(c) Electric welded (EW);

(d) Submerged arc weld (SAW);

The welds of butt welded tube shall be longitudinal; the welds of electric welded and submerged arc welded tubes shall be either longitudinal or helical.

The tube manufacturing process is at the discretion of the manufacturer unless the type of tube, seamless or welded, is specified by purchaser (option 1).

Option 1 The type of tube, seamless (S), butt welded (BW), electric welded (EW) or submerged arc weld (SAW) shall be as specified.

NOTE The manufacturing process is related to the tube diameter and thickness. Information on the typical range of sizes and thicknesses available for each process is given in annex A.

6.3.4.2 The tubes shall be supplied as welded, cold formed or cold finished at the discretion of the manufacturer.

6.3.4.3 The delivered tubes shall not include welds used for joining together lengths of the hot or cold rolled strip prior to forming except as specified in 6.3.4.4.

6.3.4.4 For helically welded submerged arc welded tubes the weld joining lengths of strip may be part of the delivered tube provided that the weld is made by the same method of welding as the helical seam weld.

7 Requirements

7.1 General

Tubes when inspected and tested in accordance with clause 9 and 10, shall comply with the requirements of 7.2 to 7.8 as appropriate. In addition to the requirements of this SPAN Technical Specification the general technical delivery conditions specified in EN 10021 apply.

7.2 Chemical composition

7.2.1 Cast analysis

The cast analysis of the steel shall comply with the requirements of Table 1.

Table 1 – Chemical composition limits of the cast analysis

Steel grade		C%	Si%	Mn%	P%	S%
Steel name	Steel number	max	max	max	max	max
L235	0252	0.16	0.35	1.20	0.030	0.025
L275	0260	0.20	0.40	1.40	0.030	0.025
L355[a]	0419	0.22	0.55	1.60	0.030	0.025

[a] For steel L355 addition of niobium, titanium and vanadium are permitted at the discretion of the manufacturer. In this case the inspection documents shall state the level of these elements.

Elements not included in Table 1 may be present but shall not be intentionally added to the steel without the agreement of the purchaser, except for elements which may be added for finishing the cast. All appropriate measures shall be taken by the steelmaker to prevent the addition of undesirable elements from scrap or other materials used in steelmaking process.

A maximum copper content lower than that permitted by EN 10020 may be specified by the purchaser to facilitate subsequent forming operations.

Option 2 The maximum copper content is specified lower than that permitted by EN 10020 for non alloy steel.

7.2.2 Product analysis

For products supplied with specific inspection and testing, and when specified by purchaser, a product analysis shall be provided for each grade of steel supplied.

Option 3 A Product analysis shall be provided for each grade of steel supplied.

Table 2 specifies the permissible deviations of the product analysis from the specified limits for cast analysis given in Table 1.

Table 2 – Permissible deviation of the product analysis from the specified cast analysis limits given in Table 1

Element	Limiting values %	Permissible deviation %
C	≤ 0.20	+ 0.02
	> 0.20	+ 0.03
Si	≤ 0.55	+ 0.05
Mn	≤ 1.60	+ 0.10
P	≤ 0.030	+ 0.005
S	≤ 0.025	+ 0.005
Cu	≤ 0.35	+ 0.05
	> 0.35	+ 0.07

NOTE When welding tubes produced according to this SPAN Technical Specification account should be taken of the fact that the behaviour of the steel during and after welding is dependent not only on the steel, but also on the conditions of preparing for and carrying out the welding.

7.3 Mechanical properties

7.3.1 Tensile test

The minimum yield strength, tensile strength range and minimum elongation for the tubes covered by this SPAN Technical Specification shall be accordance with Table 3.

NOTE The tensile test properties may be affected by subsequent heating or reheat treatments. Purchasers who intend to heat or reheat treat any of the products are advised to discuss the application and proposed heating or reheat treatment with the manufacturer.

Table 3 – Mechanical properties at room temperatures

Steel name	Tensile strength R_m MPa	Minimum yield strength R_e [a] MPa for thickness in mm		Minimum elongation A% (L_o =5.65 $\sqrt{S_o}$)		Diameter of mandrel for the weld bend test	For the drift expanding test[c] % increase in d/D[d] ratio	
		T ≤ 16	T > 16	l[b]	t[b]		≤ 0.8	> 0.8
L235	360 to 500	235	225	25	23	3T	10	12
L275	410 to 560	275	265	21	19	4T	8	10
L355	500 to 650	355	345	21	19	4T	6	8

[a] Re shall be R_{eH} or if yield phenomenon is not present $R_{p0.2}$ or $R_{t0.5}$ (*See Tensile Test*)

[b] l ~ longitudinal
t ~ transverse

[c] Applicable only to tubes of diameter less than or equal to 150 mm and thickness less than or equal to 10 mm

[d] d = D - 2T

7.3.2 Flattening test

Except as permitted by 7.3.3 BW and EW tubes shall pass a flattening test in accordance with 10.2.2. No cracks or imperfections shall be permitted in the metal or in the weld except that cracks originating at the edges of the test piece which are less than 6 mm long and which do not penetrate through the wall shall not be cause for rejection.

7.3.3 Drift expanding test

The drift expanding test may replace the flattening test for tubes up to and including 150 mm diameter and 10 mm thickness at the discretion of the manufacturer.

BW and EW tubes shall pass a drift expanding test in accordance with 10.2.3. No cracks or imperfections shall be permitted in the metal or in the weld, except that slight incipient cracking at the edges of the test piece shall not be cause for rejection.

7.3.4 Weld bend test

7.3.4.1 The weld of submerged arc welded tubes shall pass a weld bend test in accordance with 10.2.4 on the root and face of the weld using a mandrel of diameter specified in Table 3. No cracks or imperfections shall be permitted in the weld metal, fusion line, heat affected zone or parent metal, except as permitted in 7.3.4.2.

7.3.4.2 The opening out of an imperfection due to incomplete root penetration or lack of fusion shall not be cause for rejection, provided that the imperfection has sound metal at the back and on each side of it. Cracks originating at the edges of the test piece which are less than 6 mm long and which do not penetrate through the wall shall not be cause for rejection.

7.4 Appearance

Tubes shall be free from external and internal surface defects which can be established by visual inspection in accordance with this SPAN Technical Specification.

The outside surface condition, and where practicable, the inside surface condition shall be such that surface defects, and/or surface imperfections requiring rectification, can be identified.

It shall be permissible to rectify surface imperfections by grinding or machining provided that after so doing the wall thickness in the rectified area is not less than the specified minimum thickness. All ground or machined areas shall blend smoothly into the contour of the tube.

Surface imperfections which encroach on the minimum permissible wall thickness shall be considered defects and shall not be permitted. Rectification on such defects in SAW tubes by grinding or machining followed by welding shall be permitted on the body of SAW tubes unless option (4) is specified by the purchaser.

Option 4 Rectification of the body of SAW tubes by welding shall not be permitted

Rectifying on the weld seam of BW and EW tubes is not permitted. Rectification of the seam weld of SAW tubes in accordance with an established procedure shall be permitted. The rectified tube shall be tested in accordance with 10.3 and 10.4 as appropriate.

7.5 Soundness

7.5.1 General

Tubes shall meet the requirements for soundness and freedom from internal imperfections specified in 7.5.2 and 7.5.3.

7.5.2 Leak Tightness

All tubes shall be leak tight. Leak tightness shall be demonstrated either by a hydrostatic test in accordance with 10.3.2 or by an electromagnetic test in accordance with 10.3.3.

NOTE SAW tubes are tested in accordance with 10.3.2.

7.5.3 Soundness of Welds

The welds of all tubes shall be shown to be sound when tested in accordance with the requirement of 10.4.

7.6 Dimensions of tubes

7.6.1 Outside diameter and thickness

The outside diameters and thicknesses of tubes appropriate to this SPAN Technical Specification are given in Table 4. With the exception of tubes of 2642 mm and 2743 mm diameter, they are in accordance with EN 10220.

NOTE 1 The relationship between nominal outside diameter (OD) and nominal size (DN) is shown in Table 4.

NOTE 2 Other diameters and/or thicknesses may be available by agreement with the manufacturer.

Table 4 - Tube outside diameter and thickness

DN	OD mm	Nominal Pipe Thickness mm
50	60.3	2.9
65	76.1	3.2
80	88.9	3.2
100	114.3	3.6
125	139.7	3.6
150	168.3	3.6
200	219.1	4.0
250	273	4.0
300	323.9	4.0
350	355.6	4.5
400	406.4	4.5
450	457	5.0
500	508	5.0
600	610	6.3
650	660	6.3
700	711	6.3
750	762	6.3
800	813	7.1
850	864	7.1
900	914	8.0
1000	1016	8.0
1200	1219	10.0
1400	1422	10.0
1600	1626	11.0
1800	1829	12.5
2000	2032	14.2
2200	2235	16.0
2300	2337	16.0
2400	2438	16.0
2500	2540	17.5
2600	2642	17.5
2700	2743	17.5

NOTE The purchaser may specify nominal thickness thicker than the thickness specified in Table 4 and subjected to the tolerance requirement in accordance with Clause 7.7

7.6.2 Length

Tubes shall be supplied in random lengths in accordance with Table 5 unless otherwise specified by the purchaser.

NOTE 1 The range of lengths depends upon the tube manufacturing process.

The purchaser may specify the delivery length either as an approximate length within the range 6 m to 16 m (see option 5) as an exact length (see option 6).

NOTE 2 Approximate lengths and exact lengths differ in the tolerance on the length (see 7.7.6).

Option 5 The tubes shall be supplied in approximate lengths. The length within the range 6m to 16m shall be specified by purchaser.

Option 6 The tubes shall be supplied in exact lengths. The length shall be specified by the purchaser.

Table 5 – Random lengths – specified length ranges and minimum average length

Specified lengths range m	Minimum average length in 100% of order item m
3 – 8	6
4 – 12	8
5.5 – 14	11
6.5 – 16.5	13
7.5 – 18	14.5

7.7 Tolerances for tubes

7.7.1 General

Except as specified in 7.8, the tolerances on the diameter and out of roundness of tubes shall not exceed the values specified in 7.7.2 and 7.7.3 for the appropriate method of manufacturer.

7.7.2 Outside diameter

Except specified in 7.8.1, the tolerances on outside diameter shall be as given in 7.7.2.1, 7.7.2.2 and 7.7.2.3.

7.7.2.1 Seamless tube

The tolerance on outside diameter shall not exceed ± 1 % of the diameter with a minimum of ± 0.5 mm.

7.7.2.2 Electric welded and butt welded tube

The tolerance on outside diameter shall not exceed the values given in Table 6.

Table 6 – Tolerance on the outside diameter for EW and BW tubes

Outside diameter (mm)	Tolerance
≤ 219.1	± 1% of diameter with a minimum of ± 0.5 mm
> 219.1	± 0.75% of diameter

7.7.2.3 Submerged arc welded tubes

The tolerance on the outside diameter shall not exceed ± 0.75% of diameter with a maximum of ±6 mm for diameters up to and including 2032 mm. For tube of diameter greater than 2032 mm the tolerance shall be agreed between the purchaser and the manufacturer.

7.7.3 Out of roundness

For tubes with a ratio of outside diameter to thickness (D/T) less than or equal to 100, the out of roundness, calculated in accordance with the following equation, shall not exceed 2%.

$$\text{Out of roundness (O)} = 100\frac{(D_{max} - D_{min})}{D}$$

where

D_{max} is the maximum outside diameter (mm) and D_{min} is the minimum outside diameter (mm) measured in the same plane.

For tubes with D/T greater than 100 a maximum for the out of roundness shall be agreed between the purchaser and the manufacturer.

7.7.4 Wall thickness

The tolerance on thickness shall not exceed the values given in 7.7.4.1, 7.7.4.2, or 7.7.4.3 for the corresponding method of manufacture.

7.7.4.1 Seamless tubes

The tolerance on thickness shall not exceed the values give in Table 7.

Table 7 – Tolerance on thickness for seamless tubes

Outside diameter mm	Tolerance on thickness for T/D ratio (%)			
	≤ 2.5	> 2.5 ≤ 5.0	> 5.0 ≤ 10.0	> 10.0
≤ 219.1	± 12.5 % or ± 0.4 mm whichever is the greater			
> 219.1	± 20%	± 15 %	± 12.5 %	± 10 %

7.7.4.2 Electric welded and butt welded tubes

The tolerances on thickness excluding the weld area shall not exceed +10%, -0%.

The minimum thickness in the area of the weld shall be not less than that permitted for the body of the tube.

The external weld bead of electric welded tube shall be removed by trimming and that of butt welded tube shall be rolled flush.

The height of the internal weld bead shall not exceed 1.5mm.

7.7.4.3 Submerged arc welded tubes

The tolerance on thickness excluding the weld bead shall not exceed +7.5%, -0%.

The height of the internal and external weld bead shall not be greater than the values given in Table 8.

Table 8 – Maximum height of weld bead for submerged arc welded tubes

Thickness mm	Maximum bead height mm
≤ 12.5	3.5
> 12.5	4.5

7.7.5 Tube ends

Tubes shall be supplied with plain ends cut nominally square to the axis of the tube unless the purchaser specifies end preparation for butt welding in accordance with 7.8. The ends shall be free of excessive burrs.

NOTE Information on the end preparation for jointing other than butt welding is given in SPAN TS 21827 : Part 1 and may be agreed between the purchaser and the manufacturer.

7.7.6 Length

7.7.6.1 Approximate length

The lengths supplied shall not deviate from the specified length by more than ± 500 mm.

7.7.6.2 Exact length

The lengths supplied shall not deviate from the specified length by more than the value given in Table 9.

Table 9 – Tolerance for exact length

Length L mm	Tolerance of length	
	Tube outside diameter	
	< 406.4 mm	≥ 406.4 mm
2000 < L ≤ 6000	+15, -0 mm	+25, -0 mm
6000 < L ≤ 12000	+30, -0 mm	+50, -0 mm
L > 12000	+ by agreement, -0 mm	

7.7.7 Straightness

The tubes shall not deviate from straightness by more than 0.2% of the total length measured at the centre of the tube length.

7.8 End preparation of tubes

7.8.1 General

The purchaser may specify that the ends of tubes shall be prepared for butt welding in accordance with 7.8.2 to 7.8.4.

Option 7 The ends of tubes shall be prepared for butt welding.

7.8.2 Diameter tolerance at tube ends

The tolerance on the outside diameter of the tubes for a distance of 100 mm from each end shall be in accordance with Table 10. Out of roundness shall be within the limits for the diameter tolerance for tubes with D/T less than or equal to 100. For D/T values above 100 the out of roundness shall be agreed between the purchaser and the manufacturer.

Table 10 – End tolerance on diameter (D)

Outside diameter mm	End tolerance
≤ 219.1	± 0.5 mm or ± 0.5% whichever the greater
219.1 < D ≤ 2032	± 1.6 mm
> 2032	± 3 mm

7.8.3 Squareness of ends

The ends of tubes shall be at right angles to the axis of the tube within 1.6 mm measured across the diameter as shown in Figure 1.

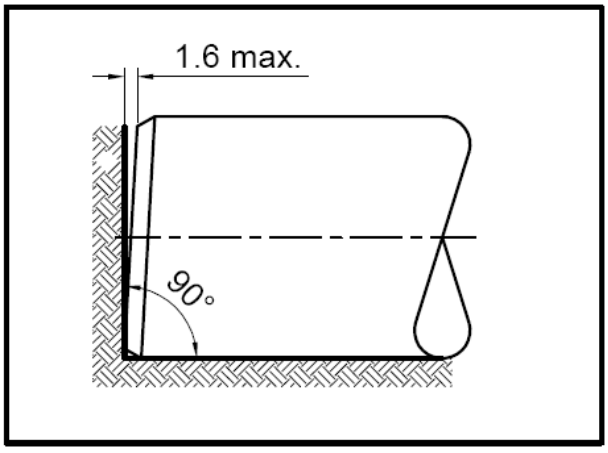


Figure 1 – Squareness of ends for tube

7.8.4 Bevelled ends

7.8.4.1 The ends of tubes of thickness less than 3.2 mm shall be supplied without bevelled ends.

7.8.4.2 Tubes of thickness equal to or greater than 3.2 mm shall be supplied with ends bevelled as shown in Figure 2 unless Option 8 is specified by the purchaser.

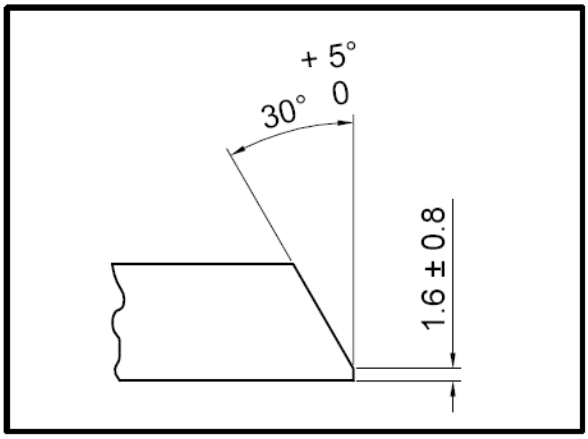


Figure 2 – Butt-weld end preparation

Option 8 An alternative bevel end preparation for butt welding shall be provided; the purchaser shall specify the type of preparation required.

8 Inspection

8.1 General

Compliance with the requirements of this SPAN Technical Specification shall be checked by non-specific inspection and testing (see EN 10021) unless option 9 specified by the purchaser.

Option 9 The products shall be supplied with specific inspection and testing (see EN 10021).

8.2 Inspection documents

When products according to this SPAN Technical Specification are checked by non-specific inspection and testing, a test report type 2.2 in accordance with EN 10204 shall be supplied.

When products according to this SPAN Technical Specification are checked by specific inspection and testing (see option 9), an inspection certificate type 3.1 in accordance with EN 10204 shall be supplied unless option 10 is specified by the purchaser

Option 10 For product checked by specific inspection and testing an inspection certificate type 3.1 or an inspection report type 3.2 in accordance with EN 10204 shall be supplied. The type of document to be supplied shall be specified by the purchaser.

When an inspection document 3.1 or 3.2 is specified the purchaser shall notify the manufacturer of the name and address of the organization or person who is to carry out the inspection and produce the inspection document. In the case of an inspection report 3.2 it shall also be agreed which party is to issue the document.

8.3 Summary of inspection and testing

8.3.1 Tubes

Inspection and testing shall be carried out as summarized in Table 11 for non-specific inspection and testing and in Table 12 for specific inspection and testing.

Table 11– Requirements for non-specific inspection and testing of tubes

Type of test	Seamless tube	Electric welded tube	Submerged arc welded tube	Butt weld tube
Cast analysis	1 representative	1 representative	1 representative	1 representative
Tensile test	Manufacturers procedure	Manufacturers procedure	Manufacturers procedure	Manufacturers procedure
Flattening test [a]	Manufacturers procedure	Manufacturers procedure	-	Manufacturers procedure
Drift expanding test [a]	-	Manufacturers procedure	-	Manufacturers procedure
Weld bend test	-	-	Manufacturers procedure	-
Leak tightness test	All hydrostatic or electro-magnet	All hydrostatic or electro-magnet	All hydrostatic	All hydrostatic or electro-magnet
Visual examination	See 10.5	See 10.5	See 10.5	See 10.5
Dimensional inspection	See 10.6	See 10.6	See 10.6	See 10.6
Non-destructive test of the weld	-	All	See 10.4.3.1 & 10.4.3.2	All

[a] The drift expanding test is an alternative for electric welded and but welded tubes of outside diameter equal to or less than 150 mm and thicknesses less than 10 mm.

Table 12 – Requirements for specific inspection and testing of tubes

Type of test	Seamless tube	Electric welded tube	Submerged arc welded tube	Butt welded tube
Cast analysis	1 per cast	1 per cast	1 per cast	1 per cast
Tensile test	1 per test unit	1 per test unit	1 per test unit	1 per test unit
Flattening test [a]	1 per test unit	1 per test unit	-	1 per test unit
Drift expanding test [a]	-	1 per test unit	-	1 per test unit
Weld bend test	-	-	2 per test unit	-
Leak tightness test	All hydrostatic or electro-magnetic	All hydrostatic or electro-magnetic	All hydrostatic	All hydrostatic or electro-magnetic
Visual examination	10.5	10.5	10.5	10.5
Dimensional inspection	10.6	10.6	10.6	10.6
Non-destructive test of the weld	-	All	See 10.4.3.1 & 10.4.3.2	All
Product analysis (Optional)	One per grade of steel			

[a] The drift expanding test is an alternative for electric welded and but welded tubes of outside diameter equal to or less than 150 mm and thicknesses less than 10 mm.

9 Sampling of tubes

9.1 Frequency of testing

For non-specific inspection and testing, the tests shall be carried out by the manufacturer in accordance with their own procedures (see EN 10021).

For specific inspection and testing, the tests shall be carried out on the products to be supplied or on test units of which the product to be supplied is a part (see EN 10021).

9.1.1 Test unit

When specific inspection and testing is carried out the test unit shall consist of the number of tubes specified in Table 13 of the same type, specified diameter, specified thickness, steel grade and manufactured using the same processing conditions e.g. welding process, heat treatment.

In addition, for fusion welded products, the test unit shall consist of products which have been welded using the same type of flux and filler wire.

Table 13 – Number of tubes in a test unit

Outside diameter mm	Number of tubes
≤ 48.3	1000
> 48.3 ≤ 114.3	400
> 114.3 ≤ 323.9	200
> 323.9	100
NOTE Any residual fraction of a test unit should be considered as a test unit.	

9.1.2 Number of sample products

One sample tube shall be selected for the mechanical test (one per test unit), and where appropriate, the product analysis (one per steel grade).

9.1.3 Type of test and number of tests

See 8.3.

9.2 Location, orientation and preparation of samples and test pieces

9.2.1 General

Samples and test pieces shall be taken from the end of a tube in the final delivery condition in accordance with Figure 3 and EN ISO 377.

9.2.2 Product analysis

Samples for product analysis shall be taken from the test pieces or samples for mechanical testing or from the whole thickness of the tube at the same location as for the mechanical test samples, in accordance with EN ISO 14284.

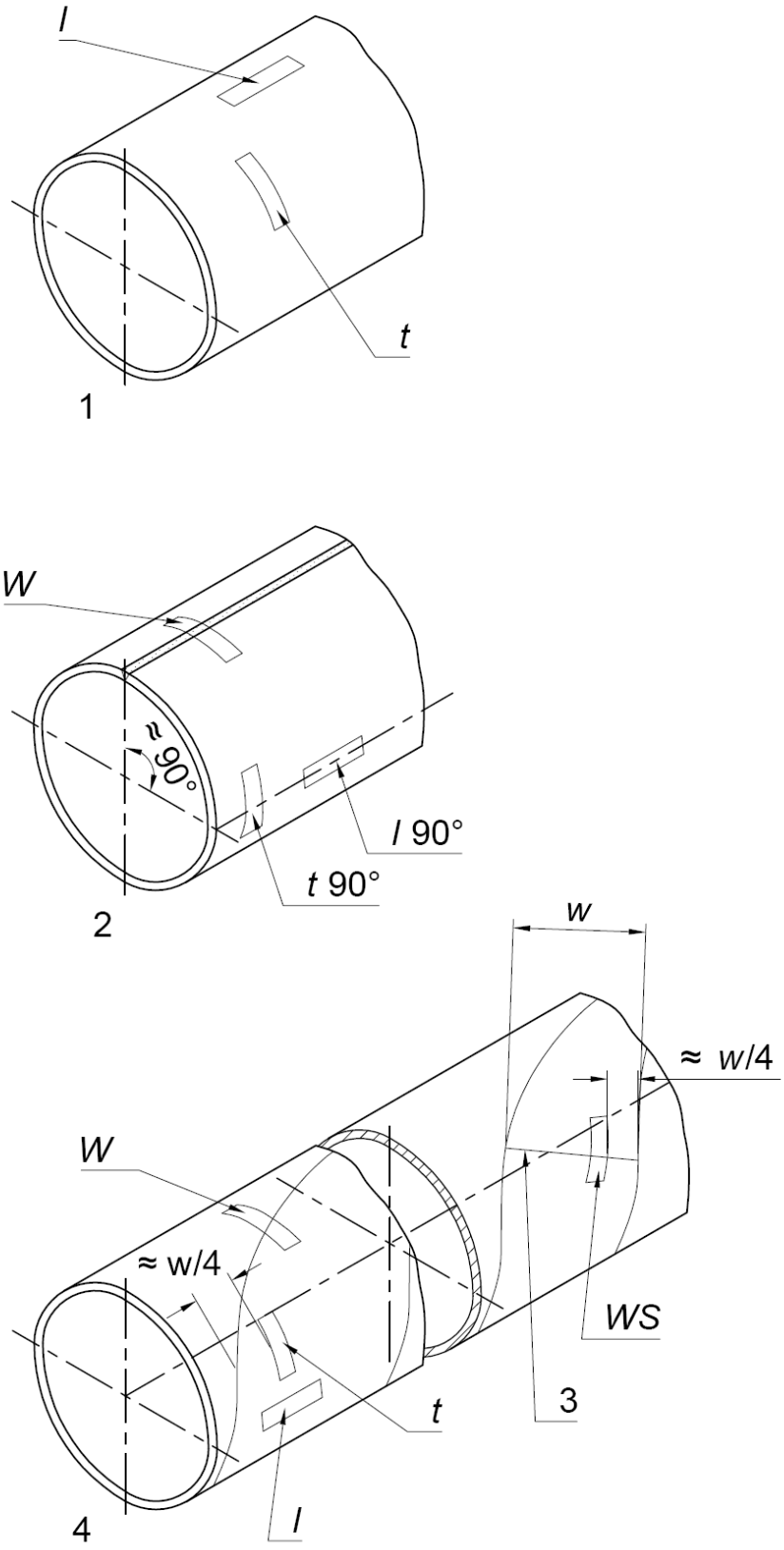
9.2.3 Tensile test

The test piece for the tensile test shall be either a full tube section or a test piece taken from the sample tube in accordance with BS EN ISO 6892-1.

The test piece may be taken either longitudinally or transversely at the discretion of the manufacturer.

9.2.4 Flattening test

The test piece for the flattening test shall consist of a full tube section in accordance with BS EN ISO 8492.



Key

1	Seamless tube
2	Longitudinally welded tubes
3	Strip end weld
4	Helically welded tubes
W	Sample of the weld
WS	Sample of the strip end weld
w	Width of the strip

Figure 3 – Location and direction of test pieces for the tensile and weld bend test

9.2.5 Drift expanding test

The test piece for the drift expanding test shall consist of a full tube section in accordance with BS EN ISO 8493.

9.2.6 Weld bend test

The test piece for the weld bend test shall be in accordance with BS EN ISO 5173.

10 Test method

10.1 Chemical analysis

The elements to be determined shall be those in Table 1. The choice of a suitable physical or chemical analytical method for the analysis shall be at the discretion of the manufacturer. In cases of dispute the method used shall be agreed, taking into account CR 10261.

10.2 Mechanical test

Mechanical test shall be carried out at a temperature between 10˚C and 35˚C.

10.2.1 Tensile test

The tensile test shall be carried out in accordance with BS EN ISO 6892-1 and the following determined:

- tensile strength (R_m);
- upper yield strength (R_{eH});
- if the yield phenomenon is not present, the 0.2% non-proportional extension proof strength ($R_{p0.2}$) or the 0.5% total extension ($R_{t0.5}$) shall be determined. In cases of dispute, the 0.2% proof strength ($R_{p0.2}$) shall apply.
- the percentage elongation after fracture with reference to a gauge length L_o of $5.65\sqrt{S_o}$

If a non-proportional test piece is used, the percentage elongation value shall be converted to the value for a gauge length $L_o = 5.65\sqrt{S_o}$ using the conversion tables given in EN ISO 2566-1.

So is the original cross-sectional are of the gauge length.

10.2.2 Flattening test

The flattening test shall be carried out in accordance with BS EN ISO 8492.

The weld of welded tubes shall be positioned at 90° to the direction of flattening and the test piece shall be flattened until the distance between the platens is not greater than 67% of the original outside diameter.

10.2.3 Drift expanding test

The drift expanding test shall be carried out in accordance with BS EN ISO 8493.

One end of the test piece shall be expanded using a cone with an included angle (β) of 60° until the increase in outside diameter is not less than the appropriate value given in Table 3.

10.2.4 Weld Bend Test

This weld bend test shall be carried out in accordance with BS EN ISO 5173.

The test pieces shall be bent through an angle of 180° around a bar of the diameter specified in Table 3.

10.3 Leak tightness test

10.3.1 General

The tubes shall pass a leak tightness test. The test shall be either a hydrostatic test in accordance with 10.3.2 or an electromagnetic test in accordance with 10.3.3. The choice of test is at the discretion of the manufacturer unless option 11 is specified.

Option 11 The purchaser shall specify the type of leak tightness test, hydrostatic test (see 10.3.2) or electromagnetic test (see 10.3.3).

10.3.2 Hydrostatic test

The tube shall withstand the test without leakage or visible deformation. The hydrostatic test shall be carried out at a test pressure of 70 bar or *P*, calculated from the following equation, whichever is the lower, unless option 12 is specified by the purchaser.

$$P = \frac{20ST}{D}$$

where

P is the test pressure in bar

D is the specified outside diameter (mm)

T is the specified wall thickness (mm)

S is the stress in MPa corresponding to 70% of the specified minimum yield strength (see Table 3) for the type of steel concerned.

NOTE This hydrostatic leak tightness test is not a strength test.

Option 12 The hydrostatic leak tightness test shall be carried out at 1.5 x PFA (allowable operating pressure) provided that this value is not greater than *P* as calculated from the above equation.

10.3.3 Electromagnetic test

When an electromagnetic test for leak tightness is carried out the tubes shall be tested in accordance with BS EN ISO 10893-1.

10.4 Non-destructive test of the seam weld of welded tubes

10.4.1 General

The non-destructive test of the seam weld of welded tube shall be carried out in accordance with 10.4.2 for electric welded or butt welded tube and 10.4.3 for submerged arc welded tube.

10.4.2 Electric Welded tube and Butt Welded tube

The test shall be carried out using ultrasonic or eddy current in accordance with BS EN ISO 10893-2, BS EN ISO 10893-3, BS EN ISO 10893-10 or BS EN ISO 10893-11 to acceptance level 4 for the continuous examination of the weld area.

The test method is at the discretion of the manufacturer.

10.4.3 Submerged arc welded tubes

10.4.3.1 Radiographic test for the weld seam.

The radiographic test in accordance with BS EN ISO 10893-6, image quality R2 or any other type of suitable non-destructive test shall be undertaken on at least 2% of all welds on each tube.

10.4.3.2 Radiographic test for skelp end welds.

If is specified by the purchaser, the skelp end welds for helically welded tube shall be tested using the radiographic test method in accordance with BS EN ISO 10893-6, image quality R2.

Option 13 Radiographic test for skelp end welds is required.

10.5 Visual examination

Tubes shall be visually examined for compliance with the requirement of 7.4.

10.6 Dimensional inspection

Tubes shall be inspected for compliance with the requirements of 7.6, 7.7 and where specified in 7.8. A gauge is normally used for measurement of outside diameter.

However, for tubes with outside diameter equal or greater than 406.4 mm a circumference tape may be used.

11 Retest, sorting and reprocessing

For retest, sorting and reprocessing the condition of EN 10021 shall apply.

12 Marking

12.1 Each tube shall be legibly marked by stencilling or other indelible marking with the following information in the sequence indicated:

(a) the manufacturer's name or identification mark;

(b) the number of this SPAN Technical Specification (SPAN TS 21827: Part 2);

(c) the steel name (see 4.2.2);

(d) the dimensions (see 7.6);

(e) the certification mark of certification body;

(f) in the case of specific inspection and testing;

- an identification number (e.g. order or item number) which permits the correlation of the product or delivery unit with the related inspection document;
- the mark of the inspection representative when specific inspection is required

(g) when the type of tube, seamless (S), butt welded (BW), electric welded (EW) or submerged arc weld (SAW) is specified (see 6.3.4.1, Option 1) the letter representing the type of tube, as appropriate.

Marking on the tube shall commence not more than 300 mm from one end.

12.2 For tubes that are bundled, the information given in 12.1, shall be either stamped on one or more metal or other durable tags, or printed on banding clips or straps, which shall be securely attached to each bundle. Not more than one steel grade shall be included in any one bundle.

13 Protective coating or lining

The tubes shall be supplied bare unless Option 14 is specified at the time of enquiry and order.

Option 14 The tubes shall be supplied with a temporary mill protection.

Annex A : Size range of tube manufacturing processes
(Informative)

Table A.1 gives an indication of the range of sizes and thicknesses of tube generally available from the manufacturing processes covered by this SPAN Technical Specification. Sizes and thicknesses outside the indicated range may also be available.

Table A.1 – Tube sizes generally available from manufacturing processes covered by this SPAN Technical Specification

Dimensions in millimetres

Manufacturing process	Outside diameter range	Thickness Range
Seamless (S)	60.3 – 711	2.0 – 100
Butt Welded (BW)	60.3 – 114.3	2.0 – 6.3
Electric Welded (EW)	60.3 – 610	1.4 – 16
Submerged Arc Welded (SAW)	168.3 – 2743	6.3 – 50

Acknowledgements

Members of the Working Group on Steel Pipes, Fittings and Joints for Water and Sewage

En. Marzuki bin Mohammad / Pn. Nurhayati Azian bt. Noh (Chairman)	Suruhanjaya Perkhidmatan Air Negara
Pn. Siti Aisah Md Lasim / Pn. Yee Li Ping (Secretariat)	Suruhanjaya Perkhidmatan Air Negara
Ir. Hj. Ismail Abd Rahman	JKR – Cawangan Kejuruteraan Awam, Struktur dan Jambatan
Engr. Hj. Yahya bin Hj. Ariffin / En. Azman bin Idris	IKRAM QA Services Sdn. Bhd.
En. Mohd. Hamim Imam Mustain	SIRIM QAS International Sdn. Bhd.
Ir. Ganeshalingam a/l Rasiah	Association of Consulting Engineers Malaysia (ACEM)
Ir. Wing Chuen Hooi	Institution of Engineers, Malaysia (IEM)
Pn. Law Sook Teng / Ir. Loke Kok Yeong / Ir. Chin Shyi Her / En. Eric Leaw / Pn. Chiang Voon Mun / Cik Ng Mor Kiang	Malaysian Iron and Steel Industry Federation (MISIF)
Ir. Yau Ho Hu	Syarikat Bekalan Air Selangor Sdn. Bhd. (SYABAS)
Puan Mariam Abd. Kadir / En. Mak Kok Yun	Perbadanan Bekalan Air Pulau Pinang Sdn Bhd
Tn. Hj. Jaffaran Suhaimi / Tn. Hj. Mohd. Nasir bin Musa	SAJ Holdings Sdn. Bhd.
Ir. Hj. Wan Amil Abas Wan Omar / Ir. Munauwir b. Basri	Lembaga Air Perak (LAP)
Mr. Teo Chuen Kloon	Boon & Cheah Steel Pipes Sdn. Bhd.
Hj. Rosmizam Alias	PPI Industries Sdn. Bhd.

BAHAGIAN H

RINGKASAN TAWARAN DAN SENARAI KUANTITI

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

RINGKASAN JADUAL KADAR HARGA

NOTA : HARGA YANG DITAWARKAN ADALAH TERMASUK SST

SAYA/KAMI YANG BERTANDATANGAN DI BAWAH INI DENGAN INI BERSETUJU BAHAWA JADUAL KADAR HARGA BAGI KONTRAK INI ADALAH SAH DAN BERKUAT KUASA SEPANJANG TEMPOH KONTRAK

…….
(Tandatangan Pemborong)

Nama :

No I/C :

Tarikh :

…….
(Tandatangan Saksi)

Nama :

No I/C :

Tarikh :

Materi atau cop Pemborong :

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	Double Flange Steel pipe		
1	100mm x 300mm D/F STEEL PIPE PN16	Nos	RM191.00
2	100mm x 450mm D/F STEEL PIPE PN16	Nos	RM208.00
3	100mm x 900mm D/F STEEL PIPE PN16	Nos	RM241.00
4	100mm x 1200mm D/F STEEL PIPE PN16	Nos	RM267.00
5	100mm x 1500mm D/F STEEL PIPE PN16	Nos	RM292.00
6	100mm x 1800mm D/F STEEL PIPE PN16	Nos	RM317.00
7	100mm x 3000mm D/F STEEL PIPE PN16	Nos	RM418.00
8	100mm x 6000mm D/F STEEL PIPE PN16	Nos	RM545.00
9	150mm x 900mm D/F STEEL PIPE PN16	Nos	RM424.00
10	150mm x 1200mm D/F STEEL PIPE PN16	Nos	RM461.00
11	150mm x 1500mm D/F STEEL PIPE PN16	Nos	RM499.00
12	150mm x 1800mm D/F STEEL PIPE PN16	Nos	RM537.00
13	150mm x 3000mm D/F STEEL PIPE PN16	Nos	RM689.00
14	150mm x 6000mm D/F STEEL PIPE PN16	Nos	RM826.00
15	200mm x 900mm D/F STEEL PIPE PN16	Nos	RM593.00
16	200mm x 1200mm D/F STEEL PIPE PN16	Nos	RM649.00
17	200mm x 1500mm D/F STEEL PIPE PN16	Nos	RM704.00
18	200mm x 1800mm D/F STEEL PIPE PN16	Nos	RM759.00
19	200mm x 3000mm D/F STEEL PIPE PN16	Nos	RM981.00
20	250mm x 900mm D/F STEEL PIPE PN16	Nos	RM937.00
21	250mm x 1200mm D/F STEEL PIPE PN16	Nos	RM1,008.00
22	250mm x 1500mm D/F STEEL PIPE PN16	Nos	RM1,078.00
23	250mm x 1800mm D/F STEEL PIPE PN16	Nos	RM1,150.00
24	250mm x 3000mm D/F STEEL PIPE PN16	Nos	RM1,432.00
25	300mm x 900mm D/F STEEL PIPE PN16	Nos	RM1,211.00
25	300mm x 1200mm D/F STEEL PIPE PN16	Nos	RM1,294.00

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
26	300mm x 1500mm D/F STEEL PIPE PN16	Nos	RM1,377.00
27	300mm x 1800mm D/F STEEL PIPE PN16	Nos	RM1,461.00
28	300mm x 3000mm D/F STEEL PIPE PN16	Nos	RM1,794.00
	PERHATIAN:		
i)	Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)		
ii)	Pesanan mengikut keperluan dan bukan sekali gus		

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	Steel Pipe (Plain Ended)		
29	100mm x 3000mm P/E STEEL PIPE	Nos	RM300.00
30	100mm x 6000mm P/E STEEL PIPE	Nos	RM377.00
31	150mm x 3000mm P/E STEEL PIPE	Nos	RM450.00
32	150mm x 6000mm P/E STEEL PIPE	Nos	RM508.00
33	200mm x 6000mm P/E STEEL PIPE	Nos	RM758.00
34	250mm x 6000mm P/E STEEL PIPE	Nos	RM916.00
35	300mm x 6000mm P/E STEEL PIPE	Nos	RM1,190.00
	Steel Pipe (Socket Spigot)		
36	100mm x 6000mm SOCKET SPIGOT END STEEL PIPE	Nos	RM377.00
37	150mm x 6000mm SOCKET SPIGOT END STEEL PIPE	Nos	RM508.00
38	200mm x 6000mm SOCKET SPIGOT END STEEL PIPE	Nos	RM758.00
39	250mm x 6000mm SOCKET SPIGOT END STEEL PIPE	Nos	RM916.00
40	300mm x 6000mm SOCKET SPIGOT END STEEL PIPE	Nos	RM1,190.00
41	350mm x 6000mm SOCKET SPIGOT END STEEL PIPE	Nos	RM1,516.00
42	400mm x 6000mm SOCKET SPIGOT END STEEL PIPE	Nos	RM1,705.00
43	450mm x 6000m SOCKET SPIGOT END STEEL PIPE	Nos	RM2,117.00
44	500mm x 6000m SOCKET SPIGOT END STEEL PIPE	Nos	RM2,348.00
45	600mm x 6000m SOCKET SPIGOT END STEEL PIPE	Nos	RM3,537.00
46	700mm x 6000m SOCKET SPIGOT END STEEL PIPE	Nos	RM4,150.00
47	800mm x 6000m SOCKET SPIGOT END STEEL PIPE	Nos	RM5,327.00
48	900mm x 6000m SOCKET SPIGOT END STEEL PIPE	Nos	RM6,753.00
	PERHATIAN:		
	i) Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)		
	ii) Pesanan mengikut keperluan dan bukan sekali gus		

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	Steel Tee		
49	100mm x 100mm P/E STEEL TEE	Nos	RM61.00
50	150mm x 100mm P/E STEEL TEE	Nos	RM84.00
51	150mm x 150mm P/E STEEL TEE	Nos	RM113.00
52	200mm x 100mm P/E STEEL TEE	Nos	RM107.00
53	200mm x 150mm P/E STEEL TEE	Nos	RM142.00
54	200mm x 200mm P/E STEEL TEE	Nos	RM178.00
55	250mm X 200mm P/E STEEL TEE	Nos	RM240.00
56	250mm X 250mm P/E STEEL TEE	Nos	RM287.00
57	300mm x 200mm P/E STEEL TEE	Nos	RM326.00
58	300mm x 250mm P/E STEEL TEE	Nos	RM384.00
59	300mm x 300mm P/E STEEL TEE	Nos	RM455.00
60	100mm x 100mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM119.00
61	150mmx 100mm STEEL FLANGE OF TAKE TEE PN16	Nos	RM140.00
62	150mm x 150mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM195.00
63	200mm x 100mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM167.00
64	200mm x 150mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM225.00
65	200mm x 200mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM298.00
66	250mm x 100mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM211.00
67	250mm x 150mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM288.00
68	250mm x 200mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM367.00
69	250mm x 250mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM472.00
70	300mm x 100mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM277.00
71	300mm x 150mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM367.00
72	300mm x 200mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM464.00
73	300mm x 250mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM583.00
74	300mm x 300mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM690.00
75	350mm x 350mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM1,064.00

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
75	350mm x 350mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM1,064.00
76	400mm x 100mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM430.00
77	400mm x 200mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM625.00
78	400mm x 250mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM742.00
79	400mm x 300mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM909.00
80	400mm x 400mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM1,393.00
81	450mm x 100mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM464.00
82	450mm x 150mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM540.00
83	450mm x 250mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM800.00
84	450mm x 300mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM977.00
85	450mm x 450mm STEEL FLANGE OFF TAKE TEE PN16	Nos	RM1,740.00
	PERHATIAN: i) Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan) ii) Pesanan mengikut keperluan dan bukan sekali gus		

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	Mild Steel Collar		
86	100mm MS COLLAR	Nos	RM12.00
87	150mm MS COLLAR	Nos	RM17.00
88	200mm MS COLLAR	Nos	RM24.00
89	250mm MS COLLAR	Nos	RM35.00
90	300mm MS COLLAR	Nos	RM54.00
91	350mm MS COLLAR	Nos	RM66.00
92	400mm MS COLLAR	Nos	RM72.00
93	450mm MS COLLAR	Nos	RM79.00
94	500mm MS COLLAR	Nos	RM86.00
95	600mm MS COLLAR	Nos	RM131.00
96	700mm MS COLLAR	Nos	RM227.00
97	800mm MS COLLAR	Nos	RM256.00
98	850mm MS COLLAR	Nos	RM272.00
99	900mm MS COLLAR	Nos	RM286.00
100	1000mm MS COLLAR	Nos	RM344.00
101	1100mm MS COLLAR	Nos	RM447.00
102	1200mm MS COLLAR	Nos	RM644.00
	Adaptor		
103	100mm STEEL FLANGE ADAPTOR PN16	Nos	RM129.00
104	150mm STEEL FLANGE ADAPTOR PN16	Nos	RM143.00
105	200mm STEEL FLANGE ADAPTOR PN16	Nos	RM243.00
106	250mm STEEL FLANGE ADAPTOR PN16	Nos	RM358.00
107	300mm STEEL FLANGE ADAPTOR PN16	Nos	RM415.00
108	350mm x 450mm STEEL FLANGE ADAPTOR PN16	Nos	RM929.00
109	400mm x 450mm STEEL FLANGE ADAPTOR PN16	Nos	RM1,072.00
110	450mm x 450mm STEEL FLANGEL ADAPTOR PN16	Nos	RM1,286.00
111	500mm x 600mm STEEL FLANGE ADAPTOR PN16	Nos	RM1,786.00
112	600mm x 600mm STEEL FLANGE ADAPTOR PN16	Nos	RM2,286.00

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	Adaptor Joint		
113	100mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM115.00
114	150mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM136.00
115	200mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM236.00
116	250mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM343.00
117	300mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM379.00
118	400mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM858.00
119	450mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM1,072.00
120	600mm FLANGE ADAPTOR JOINT TO SUIT SPAN BS534 STD/MS 712 JKR	Nos	RM1,358.00
	PERHATIAN:		
i)	Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)		
ii)	Pesanan mengikut keperluan dan bukan sekali gus		

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	Reducer		
121	150mm x 100mm D/F STEEL REDUCER PN16	Nos	RM204.00
122	150mm x 100mm P/E STEEL REDUCER TAPPER	Nos	RM89.00
123	200mm x 100mm P/E STEEL REDUCER TAPPER	Nos	RM131.00
124	200mm x 150mm P/E STEEL REDUCER TAPPER	Nos	RM131.00
125	250mm x 150mm P/E STEEL REDUCER TAPPER	Nos	RM173.00
126	250mm x 200mm P/E STEEL REDUCER TAPPER	Nos	RM173.00
127	300mm x 200mm P/E STEEL REDUCER TAPPER	Nos	RM258.00
128	300mm x 250mm P/E STEEL REDUCER TAPPER	Nos	RM258.00
129	350mm x 300mm P/E STEEL REDUCER TAPPER	Nos	RM335.00
130	400mm x 200mm P/E STEEL REDUCER TAPPER	Nos	RM796.00
131	400mmx 300mm P/E STEEL REDUCER TAPPER	Nos	RM515.00
132	400mm x 350mm P/E STEEL REDUCER TAPPER	Nos	RM381.00
133	450mm x 300mm P/E STEEL REDUCER TAPPER	Nos	RM728.00
134	450mm x 350mm P/E STEEL REDUCER TAPPER	Nos	RM578.00
135	450mm x 400mm P/E STEEL REDUCER TAPPER	Nos	RM429.00
136	600mm x 400mm P/E STEEL REDUCER TAPPER	Nos	RM1,251.00
137	600mm x 500mm P/E STEEL REDUCEER TAPPER	Nos	RM825.00
	PERHATIAN:		
i)	Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)		
ii)	Pesanan mengikut keperluan dan bukan sekali gus		

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	Steel Bend D/F		
138	100mm x 45 DEG D/F STEEL BEND PN16	Nos	RM171.00
139	150mm x 45 DEG D/F STEEL BEND PN16	Nos	RM225.00
140	100mm x 90 DEG D/F STEEL BEND PN16	Nos	RM182.00
141	150mm x 90 DEG D/F STEEL BEND PN16	Nos	RM240.00
142	200mm x 45 DEG D/F STEEL BEND PN16	Nos	RM321.00
143	200mm x 90 DEG D/F STEEL BEND PN16	Nos	RM356.00
144	250mm x 45 DEG D/F STEEL BEND PN16	Nos	RM514.00
145	250mm x 90 DEG D/F STEEL BEND PN16	Nos	RM553.00
146	300mm x 45 DEG D/F STEEL BEND PN16	Nos	RM698.00
147	300mm x 90 DEG D/F STEEL BEND PN16	Nos	RM782.00
	Steel Bend P/E		
148	100mm x 45 DEG P/E STEEL BEND	Nos	RM66.00
149	100mm x 90 DEG P/E STEEL BEND	Nos	RM75.00
150	150mmx 45 DEG P/E STEEL BEND	Nos	RM77.00
151	150mm x 90 DEG P/E STEEL BEND	Nos	RM92.00
152	200mm x 45 DEG P/E STEEL BEND	Nos	RM129.00
153	200mm x 90 DEG P/E STEEL BEND	Nos	RM147.00
154	250mm x 45 DEG P/E STEEL BEND	Nos	RM193.00
155	250mm x 90 DEG P/E STEEL BEND	Nos	RM229.00
156	300mm x 45 DEG P/E STEEL BEND	Nos	RM305.00
157	300mm x 90 DEG P/E STEEL BEND	Nos	RM376.00
158	350mm x 45 DEG P/E STEEL BEND	Nos	RM354.00
159	350mm x 90 DEG P/E STEEL BEND	Nos	RM437.00
160	400mm x 45 DEG P/E STEEL BEND	Nos	RM497.00
161	400mm x 90 DEG P/E STEEL BEND	Nos	RM600.00
162	450mm x 45 DEG P/E STEEL BEND	Nos	RM562.00

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
163	450mm x 90 DEG P/E STEEL BEND	Nos	RM674.00
164	500mm x 45 DEG P/E STEEL BEND	Nos	RM622.00
165	500mm x 90 DEG P/E STEEL BEND	Nos	RM746.00
167	600mm x 45 DEG P/E STEEL BEND	Nos	RM962.00
168	600mm x 90 DEG P/E STEEL BEND	Nos	RM1,288.00

PERHATIAN:

i) Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)

ii) Pesanan mengikut keperluan dan bukan sekali gus

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	STEEL MECHANICAL COUPLING TO SUIT MS712 AC PIPE		
169	100mm (OD PIPE 121.9mm)	Nos	RM129.00
170	150mm (OD PIPE 177.3mm)	Nos	RM43.00
171	200mm (OD PIPE 232.2mm)	Nos	RM243.00
172	250mm (OD PIPE 286mm)	Nos	RM358.00
173	300mm (OD PIPE 345.4mm)	Nos	RM415.00
174	350mm (OD PIPE 399.3mm)	Nos	RM743.00
175	400mm (OD PIPE 453.1mm)	Nos	RM786.00
176	450mm (OD PIPE 507mm)	Nos	RM1,029.00
177	500mm (OD PIPE 560.3mm)	Nos	RM1,186.00
178	600mm (OD PIPE 667mm)	Nos	RM1,329.00
	STEEL STEPDOWN MECHANICAL COUPLING TO SUIT MS712 TO AC PIPE BS468 CL.B		
179	300mm TO 12" CL.B (OD PIPE 345.4mm - 338mm)	Nos	RM453.00
180	350mm TO 15" CL.B (OD PIPE 399.3mm - 413mm)	Nos	RM786.00
181	400mm TO 15" CL.B (OD PIPE 453.1mm - 419mm)	Nos	RM829.00
182	450mm TO 18" CL.B (OD PIPE 507mm - 497mm)	Nos	RM1,086.00
183	500mm TO 21" CL.B (OD PIPE 560.3mm - 572mm)	Nos	RM1,229.00
184	600mm TO 24" CL.B (OD 667mm - 650mm)	Nos	RM1,400.00
	STEEL STEPDOWN COUPLING TO SUIT MS712 AC PIPE TO D.I. PIPE BS4772		
185	300mm MS712 TO BS 4772 (OD PIPE 345.4mm - 333mm)	Nos	RM458.00
186	400mm MS712 TO BS 4772 (OD PIPE 453.1mm - 435mm)	Nos	RM786.00
187	450mm MS712 TO BS4772 (OD PIPE 507mm - 480mm)	Nos	RM1,086.00
188	500mm MS712 to BS 4772 (OD PIPE 560.3mm - 539mm)	Nos	RM1,229.00
189	600mm MS712 to BS 4772 (OD PIPE 667mm - 635mm)	Nos	RM1,400.00
	PERHATIAN:		
i)	Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)		
ii)	Pesanan mengikut keperluan dan bukan sekali gus		

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	STEEL MECHANICAL COUPLING TO SUIT SPANB S534 STANDARD		
190	100mm (OD PIPE 114.3mm)	Nos	RM129.00
191	150mm (OD PIPE 168.3mm)	Nos	RM143.00
192	200mm (OD PIPE 219.1mm)	Nos	RM242.00
193	250mm (OD PIPE 273mm)	Nos	RM358.00
194	300mm (OD PIPE 323.9mm)	Nos	RM413.00
195	350mm (OD PIPE 355.6mm)	Nos	RM743.00
196	400mm (OD PIPE 406.4mm)	Nos	RM786.00
197	450mm (OD PIPE 457mm)	Nos	RM1,029.00
198	500mm (OD PIPE 508mm)	Nos	RM1,186.00
199	600mm (OD PIPE 610mm)	Nos	RM1,329.00
	STEEL STEPDOWN MECHANICAL COUPLING TO SUIT SPAN BS534 STANDARD TO AC PIPE BS486 CL.B		
200	300mm TO 12" CL.B (OD PIPE 323.9mm - 338mm)	Nos	RM458.00
201	350mm TO 15" CL.B (OD PIPE 355.6mm - 413mm)	Nos	RM786.00
202	400mm TO 15" CL.B (OD PIPE 406.4mm - 419mm)	Nos	RM829.00
203	450mm TO 18" CL.B (OD PIPE 457mm - 497mm)	Nos	RM1,086.00
204	500mm TO 21" CL.B (OD PIPE 508mm - 572mm)	Nos	RM1,229.00
205	600mm TO 24" CL.B (OD 610mm - 650mm)	Nos	RM1,400.00
	STEEL STEPDOWN COUPLING TO SUIT SPAN PIPE BS534 STANDARD TO D.I. PIPE BS545		
206	300mm BS534 to BS545 (OD MS 323.9MM - OD DI 326MM)	Nos	RM375.00
207	350mm BS534 TO BS545 (OD MS 355.6MM - OD DI 378MM)	Nos	RM600.00
208	400mm BS534 TO BS545 (OD MS 406.4MM - OD DI 429MM)	Nos	RM688.00
209	450mm BS534 TO BS545 (OD MS 457MM - OD DI 480MM)	Nos	RM875.00
210	500mm BS534 to BS BS545 (OD MS 508MM - OD DI 532MM)	Nos	RM1,025.00
211	600mm BS534 to BS545 (OD MS 610MM - OD DI 635MM)	Nos	RM1,150.00

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	STEEL STEPDOWN COUPLING TO SUIT SPAN PIPE BS534 STANDARD TO MS712		
212	300mm MS712 to SPAN BS534 STD (OD PIPE 323.9mm - 345.4mm)	Nos	RM458.00
213	400mm MS712 TO SPAN BS534 STD (OD PIPE 406.4mm - 453.1mm)	Nos	RM829.00
214	450mm MS712 TO SPAN BS534 STD (OD PIPE 457mm - 507mm)	Nos	RM1,086.00
215	500mm MS712 to SPAN BS534 STD (OD 508mm - 560.3mm)	Nos	RM1,229.00
216	600mm MS712 to SPAN BS534 STD (OD PIPE 610mm - 667mm)	Nos	RM1,400.00
217	400mm SPAN BS534 STD TO 14" MS712 (OD PIPE 406.4mm - 399.3mm)	Nos	RM829.00
	MILD STEEL FABRIACATE STEP COUPLING FOR AC PIPE TO JOINT UPVC PIPE		
218	114.1MM(UPVC PIPE) X 95.6MM (3" AC PIPE)	Nos	RM136.00
219	114.1MM(UPVC PIPE) X 50MM (4" UPVC - 2" AC PIPE)	Nos	RM172.00

PERHATIAN:

i) Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)

ii) Pesanan mengikut keperluan dan bukan sekali gus

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	KADAR HARGA
	MILD STEEL BLANK FLANGES		
220	100mm MS BLANK FLANGES PN16	Nos	RM52.00
221	150mm MS BLANK FLANGES PN16	Nos	RM109.00
222	200mm MS BLANK FLANGES PN16	Nos	RM169.00
223	250mm MS BLANK FLANGES PN16	Nos	RM278.00
224	300mm MS BLANK FLANGES PN16	Nos	RM405.00
225	350mm MS BLANK FLANGES PN16	Nos	RM539.00
226	400mm MS BLANK FLANGES PN16	Nos	RM750.00
227	450mm MS BLANK FLANGES PN16	Nos	RM984.00
228	500mm MS BLANK FLANGES PN16	Nos	RM1,396.00
229	600mm MS BLANK FLANGES PN16	Nos	RM2,464.00
230	700mm MS BLANK FLANGES PN16	Nos	RM3,426.00
231	800mm MS BLANK FLANGES PN16	Nos	RM5,026.00
	MILD STEEL LOOSE FLANGES (JKR STD. / SPAN STD.)		
232	100mm MS LOOSE FLANGES PN16	Nos	RM37.00
233	150mm MS LOOSE FLANGES PN16	Nos	RM70.00
234	200mm MS LOOSE FLANGES PN16	Nos	RM95.00
235	250mm MS LOOSE FLANGES PN16	Nos	RM165.00
236	300mm MS LOOSE FLANGES PN16	Nos	RM217.00
237	350mm MS LOOSE FLANGES PN16	Nos	RM318.00
238	400mm MS LOOSE FLANGES PN16	Nos	RM407.00
239	450mm MS LOOSE FLANGES PN16	Nos	RM527.00
240	500mm MS LOOSE FLANGES PN16	Nos	RM732.00
241	600mm MS LOOSE FLANGES PN16	Nos	RM1,098.00
242	700mm MS LOOSE FLANGES PN16	Nos	RM1,527.00
243	800mm MS LOOSE FLANGES PN16	Nos	RM2,091.00
	PERHATIAN:		
i)	Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)		
ii)	Pesanan mengikut keperluan dan bukan sekali gus		

SYARIKAT AIR MELAKA BERHAD

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

ITEM	KETERANGAN	UNIT	HARGA
	RUBBER RING FOR MECHANICAL COUPLING		
244	500mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM69.00
245	600mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM83.00
246	650mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM90.00
247	700mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM96.00
248	800mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM110.00
249	850mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM117.00
250	900mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM124.00
251	1000mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM137.00
252	1100mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM300.00
253	1200mm RUBBER RING FOR MECHANICAL COUPLING	Nos	RM328.00
	PERHATIAN:		
i)	Semua barangan perlu mendapat kelulusan SPAN / SIRIM (sila lampirkan salinan sijil kelulusan)		
ii)	Pesanan mengikut keperluan dan bukan sekali gus		

BAHAGIAN I

JADUAL DATA TEKNIKAL

MEMBEKAL DAN MENGHANTAR PAIP DAN KELENGKAPAN JENIS BESI KELULI KE STOR SYARIKAT AIR MELAKA BERHAD BAGI TEMPOH DUA (2) TAHUN

Country of Origin :

Manufactured by :

Standard to which manufactured :

Type :

The Tenderer shall provide a schedule of technical data and submit catalogue of all equipment. Please limit offer to only one (1) make.

Tenderer is required to provide details of (Project) track records for the last five (5) years.

…… ……

Signature & Official Stamp of Tenderer Date

STEEL PIPES, SPECIALS AND FITTINGS

The Tenderer shall supply with his Tender full particulars of the steel pipes, specials and fittings, wherever required as detailed hereunder: -

STEEL PLATE	
* Name of manufacturer	
Method of production	
Percentage contents of:	Maximum Minimum
- Carbon	
- Silicon	
- Manganese	
- Phosphorus	
- Sulphur	
- Nitrogen	
Ultimate tensile strength – N/mm²	
Elongation percentage on gauge length of $5.65\sqrt{SO}$	
* Name of the Third-Party Inspection Agency for plate certification.	

* Details of the steel mill and inspection agency including credential and track records shall be submitted as part of the tender bid.

* Tenderer is required to provide details of (project) track records for the last five (5) years

…… ……

Signature & Official Stamp of Tenderer Date

PIPES AND SPECIALS	
Name of manufacturer	
Place of manufacturer	
Process of manufacture:	
- Pipes exceeding ..... mm fid/dia.	
- Pipes less than ..... mm fid/dia.	
Length of standard pipes	a) 450 mm fid/dia. and above - 10metre b) Less than 450 mm fid/dia. - 6 metres
Maximum variation in length of:	
- Standard length pipes	plus ..... mm, minus ..... mm
- Half standard length pipes	plus ..... mm, minus ..... mm
Maximum variation in diameter	plus ..... mm, minus ..... mm
Maximum variation in straightness	a) ..... mm for 10 metres standard pipes b) ..... mm for 6 metres standard pipes
Hydraulic test pressure	..... bars
Duration of hydraulic test	..... minutes
INTERNAL LINING	
Type of cement/name of manufacturer	
Size of aggregate/source of supply	
Type of additive/name of manufacturer	
Method of lining pipes	
Method of lining fittings	
Maximum variation in lining thickness	plus ..... mm, minus ..... mm
Concrete mix proportion	
Concrete cube strength at 28 days	

…… ……

Signature & Official Stamp of Tenderer Date

EXTERNAL COATING	
Method of cleaning pipe shells	
Standard of finish prior to application of primer	
Type of primer	
Name of manufacturer	
Method of application	
Type of coating	
Name of manufacturer	
Method of application	
Thickness	
Grade	
Type of filler	
Inner wrap	
Outer wrap	
Wrapping materials supplied by	
RECOMMENDATION FOR WELDING	
Make and type of electrodes	
Size, shape and number of runs in welded joint	
Gauge of electrodes for:	
- Root runs	
- Filler runs	
Welding current	
Length of run per metre of electrode	

…… ……

Signature & Official Stamp of Tenderer Date

PIPE FLANGES		
Process of manufacturer		
Type/standard		
Materials:		
- Joint gasket		
- Bolts and nuts		
Mechanical Coupling and Flange Adaptor	Mechanical Coupling	Flange Adaptor
Name of manufacturer		
Place of manufacturer		
Type/material	..... mm	..... mm
Maximum axial movement for water tightness	..... degrees	..... degrees
Maximum angular deflection for water tightness	..... bars	..... bars
Works test pressure		

…… ……

Signature & Official Stamp of Tenderer Date

BAHAGIAN J

LATAR BELAKANG PETENDER

LATAR BELAKANG PENTENDER

Borang A -	Surat Pengakuan Kebenaran Maklumat dan Kesahihan Dokumen Yang Dikemukakan oleh Pentender	} } }
Borang B -	Maklumat Am Latar Belakang Pentender	}
Borang C -	Data-Data Kewangan	}BORANG
Borang D -	Rekod Pengalaman Kerja	}BORANG
Borang E -	Kakitangan Teknikal	}MAKLUMAT
Borang F -	Keempunyaan Loji Dan Peralatan Pembinaan Utama	} }
Borang G -	Senarai Kerja Kontrak Semasa	}
Borang CA -	Laporan Bank/Institusi Kewangan Mengenai Kedudukan Kewangan Pentender	} DOKUMEN } DOKUMEN }
Borang GA -	Laporan Penyelia Projek Atas Prestasi Kerja (Bukan Projek SAMB) Semasa Pentender	} SOKONGAN } }
Borang GA 1-	Laporan Jurutera Projek Atas Prestasi Kerja Semasa Pentender	} }
Borang H -	Jadual Perancangan kerja	}

BORANG A

SURAT PENGAKUAN KEBENARAN MAKLUMAT DAN KESAHIHAN DOKUMEN YANG DIKEMUKAKAN OLEH PETENDER.

Nama Kontraktor :……..

Alamat :……..

……...

……...

Kepada,

Ketua Pegawai Eksekutif,
Syarikat Air Melaka Berhad.
(Pihak yang akan menilai tender)

Tuan,

MAKLUMAT LATAR BELAKANG, KEWANGAN DAN TEKNIKAL PENTENDER

1. Kami telah membaca dan teliti semua arahan-arahan yang terkandung dalam Arahan Kepada Pentender termasuk arahan yang menghendakkan kami mengemukakan maklumat-maklumat dan dokumen-dokumen mengenai perkara di atas bersama-sama dokumen tender kami semasa mengemukakan Tender ini untuk membolehkan SAMB menilai keupayaan kami untuk melaksanakan kerja yang ditender, semasa penilaian Tender.

2. Kami faham dan mengambil maklum bahawa penilaian Tender ini akan mengambil kira dan mementingkan keupayaan kami melaksanakan kerja yang ditender. Justeru itu tender kami akan hanya dipertimbang untuk diperakukan kepada Lembaga Tender untuk disetuju terima sekiranya kami didapati berkeupayaan untuk melaksanakan projek yang ditender, mengikut penilaian SAMB berasaskan maklumat-maklumat dan dokumen-dokumen yang kami kemukakan.

3. Kami juga mengambil maklum bahawa kami dikehendaki mengemukakan semua maklumat dan dokumen-dokumen yang diminta bersama-sama tender kami sebelum Tender ditutup dan maklumat-maklumat atau dokumen-dokumen yang dikemukakan kemudian daripada itu tidak akan diterima untuk diambil kira dalam penilaian keupayaan kami.

4. Kami mengaku bahawa maklumat-maklumat dan data-data yang kami berikan bersama-sama ini di Borang B, C, CA, D, E, F,G & GA, H dan dokumen-dokumen yang kami sertakan bersamanya setahu kami adalah semuanya benar dan sah pada semua segi dan kami telah mengambil makluman dan sedar akan tindakan yang boleh diambil oleh SAMB terhadap kami dan/atau tender kami, sekiranya mana-mana maklumat, data-data dan dokumen yang kami berikan itu didapati tidak benar atau palsu.

5. Kami juga mengambil maklum dan sedar bahawa Tender kami akan ditolak (disqualified) dan tidak akan dipertimbangkan sekiranya maklumat-maklumat yang kami berikan tidak mencukupi atau sekiranya kami gagal untuk memberikan bersama-sama ini mana-mana maklumat dan/atau menyertakan mana-mana dokumen penting yang sangat diperlukan untuk membolehkan SAMB menilai keupayaan kami, terutamanya dokumen-dokumen berhubung dengan kedudukan kewangan dan prestasi kerja semasa kami seperti berikut:-

   (1) Salinan Akaun Syarikat yang telah disahkan dan diaudit oleh Juru Audit yang bertauliah, bagi dua (2) tahun kewangan terakhir.
   (2) Salinan Penyata Bulanan Akaun Bank mengenai Wang Dalam tangan pentender bagi (3) bulan terakhir sebelum tarikh tutup Tender;
   (3) Laporan Penyelia Projek atas prestasi kerja semasa yang bukan projek SAMB atas Borang GA dalam satu sampul berlakri bagi setiap kerja semasa yang sedang dilaksanakan.

6. Kami dengan ini memberi kuasa kepada mana-mana pegawai kerajaan, jurutera-jurutera projek, bank dan institusi kewangan lain dan lain-lain atau mana-mana orang atau firma yang berkenaan untuk memberikan maklumat-maklumat yang dianggap perlu dan diminta oleh SAMB untuk menyemak maklumat-maklumat yang kami berikan atau untuk mendapatkan maklumat tambahan. Kami mengambil maklum bahawa pihak SAMB juga boleh merujuk apa-apa maklumat yang kami kemukakan dengan mana-mana pihak termasuk Jabatan Hasil Dalam Negeri. Walau bagaimanapun kami tetap bertanggungjawab di atas maklumat-maklumat dan dokumen-dokumen yang kami berikan bersama-sama ini.

Yang Benar,

……. Tarikh:…….
(Tandatangan Pentender)

Nama Penuh:……
No. Kad Pengenalan:……
Atas Sifat:…….
Yang diberi kuasa dengan sempurnanya untuk mendatangani Tender ini untuk dan bagi pihak:

……
(Meteri atas Cap Pentender)

Saksi:…….. Tarikh:…….

Nama Penuh:…….
No. Kad Pengenalan:……
Pekerjaan:……..
Alamat:……..

BORANG B

MAKLUMAT AM LATAR BELAKANG PENTENDER

1. Nama: _____
2. Alamat: _____

   _____

   _____

   No. Telefon: _____ No.Fax: _____

3. Pendaftaran dengan Lembaga Pembangunan Industri Pembinaan Malaysia (CIDB) / Kementerian Kewangan Malaysia (Sertakan Salinan Pendaftaran)
   (i) No. Pendaftaran: _____
   (ii) Tarikh Daftar: _____ Sah hingga _____
   (iii) Gred, Pengkhususan / Kod Bidang : _____

   _____
   (iv) Taraf (Bumiputera / Bukan Bumiputera): _____
   (v) Jika Bumiputera, tempoh sah taraf: Dari :_____ Hingga _____

4. Pendaftaran dengan pihak Lembaga Hasil Dalam Negeri Melaka (LHDN) bagi Sijil Pematuhan Cukai atau Tax Compliance Certificate (TCC).
   (i) No. Pendaftaran Cukai (TIN) : _____
   (ii) Tarikh Janaan Sijil : _____
   (iii) Tarikh Luput Sijil : _____

5. Bagi Syarikat Sdn. Bhd. Nyatakan:
   (i) Modal dibenarkan : RM _____
   (ii) Modal dibayar : RM _____

6. Perniagaan Utama lain, jika ada:
   (a) _____sejak tahun _____
   (b) _____sejak tahun _____

7. Ahli-ahli Syarikat
   (i) Ahli-ahli Lembaga Pengarah

Nama	Jawatan	Saham Modal Dipegang

(i) Ahli-ahli Lembaga Pengarah (samb)

Nama	Jawatan	Saham Modal Dipegang

(ii) Ahli-ahli Pengurusan

Nama	Jawatan	Kelulusan Akademik/Iktias

BORANG C

DATA-DATA KEWANGAN

A. Ringkasan harta dan liabiliti seperti yang ditunjukkan dalam Lembaran Imbangan (Balance Sheet)* yang diaudit bagi tahun kewangan terakhir:-

Asset* (A)	Liabiliti * (B)	Nilai Kewangan (Werth) (A-B)
Semasa : RM Tetap : RM	Semasa: RM Tetap : RM	Model Pusingan: RM Model Tetap : RM
Jumlah : RM	Jumlah : RM	'Nett Worth' : RM

B. Akaun Wang Di Tangan (Cash in Hand)**

1. Nama dan Alamat Bank di mana akaun di buka:

   _____

   _____

2. Nombor Akaun:_____

C Kemudahan Kredit (jika ada) +

1. Nama dan Alamat Bank/Insitusi Kewangan yang memberi Kemudahan Kredit:

   _____

   _____

2. Bentuk dan baki amaun yang boleh digunakan untuk projek pembinaan

(i)	Overdraf atau Talian Kredit		RM
(ii)	Overdraf bercagar		RM
(iii)	Pinjaman Tetap yang akan/layak Diperolehi untuk Projek		RM
(iv)	_____		RM_____
		Jumlah	RM_____

PERINGKATAN PENTING

* Sila sertakan salinan Akaun Syarikat bagi dua (2) tahun kewangan terakhir, yang disahkan dan diaudit oleh Juru Audit bertauliah (certified Accountant) atau sekiranya tiada, bagi tahun kewangan setahun sebelumnya bagi menyokong data-data yang diberi. Tender yang tidak disertakan dengan Akaun ini akan ditolak.

** Sila sertakan salinan Penyata Bulanan Bank bagi tiga (3) bulan terakhir sebelum tarikh tutup Tender. Tender yang tidak disertakan dengan penyata ini akan ditolak.

\+ Sila dapat dan sertakan Laporan sulit daripa Pihak Bank/Institusi Kewangan atas format seperti Borang CA, dalam satu sampul berlakri.

SULIT BORANG CA

LAPORAN BANK/INSTITUSI KEWANGAN MENGENAI KEDUDUKAN KEWANGAN PETENDER

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

Kepada

(Ketua Pegawai Eksekutif, SAMB)

Nama Pentender:

Projek:

_____

_____

(A) – Kemudahan Kredit – yang boleh digunakan untuk perlaksanaan Projek: Kemudahan Kredit yang telah dilulus dan kemudahan kredit tambahan minimum yang layak diperelohi oleh pentender adalah seperti berikut:-

Bentuk Kemudahan Kredit	Baki drp yang Telah diluluskan	Tambahan Minima Yang akan Diluluskan*	Jumlah
(i) Overdraf	RM	RM	RM
(ii) Overdraf bercagar	RM	RM	RM
(iii) Talian Kredit	RM	RM	RM
(iv) Pinjaman Tetap yang akan/layak Diperolehi untuk projek	RM	RM	RM
(v)	RM	RM	RM
Jumlah:	RM	RM	RM

(B) – Ulasan-ulasan mengenai kedudukan kewangan dan akuan pentender:-

Tandatangan untuk dan bagi pihak bank:

Nama Bank:

Materi Bank:

Nama Pegawai : _____

Jawatan : _____

Tarikh : _____

BORANG D – REKOD PENGALAMAN KERJA

(Senarai semua kerja yang disiapkan dalam 5 tahun lepas)

Bil	Nama Kontrak/Projek dan Skop Kerja +	Nilai Kontrak (RM)	Nilai Petender Bertanggungjawab	Tempoh Kontrak**	Tarikh Milik Tapak	Tarikh Siap		Nama dan Alamat Pegawai Penguasa/ Jurutera Perunding		Nama dan Alamat Majikan
						Kontrak	Sebenar			

\+ Salinan Perakuan/Pengesahan Siap Kerja bagi setiap kerja yang disenaraikan hendaklah disertakan.

* Hanya perlu diisi sekiranya petender melaksanakan kerja sebagai ahli syarikat gabungan.

** Tempoh Kontrak hendaklah termasuk lanjutan masa yang diluluskan

BORANG E - KAKITANGAN TEKNIKAL

(Butir-butir Kakitangan Teknikal Yang Ada Dalam Pengajian Petender 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 F - KEUPAYAAN LOJI DAN PERALATAN PEMBINAAN UTAMA

(Senarai Loji dan Peralatan Pembinaan Utama Keupayaan Petender Yang Sesuai Yang Boleh Digunakan Untuk Projek).

Bil	Butiran (Jenis, Model, Buatan dan Keupayaan/Saiz)	Dimiliki, disewabeli atau disewapajak*	Bilangan Setiap Satu	Nilai Semasa (RM)	Umur (dari tarikh belian asal)	Tempat simpanan/digunakan sekarang	Catatan
A.	Loji dan Peralatan Asas**						
	(a) Treatment Plant Equipments (b) Pumping and Mechanical Plants (c) Electrical Equipments (all as per Specification)						
B	Loji dan Peralatan Lain						

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

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

BORANG G - SENARAI KERJA KONTRAK SEMASA

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

Bil	Nama Kontraktor/Projek+	Nilai Kontrak (RM)	Nilai Petender* Bertanggungjawab	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 sekirnya petender melaksanakan kerja sebagai ahli syarikat gabungan.

** Tempoh Kontrak hendaklah termasuk lanjutan masa yang diluluskan.

\+ Peringatan Penting
Bagi setiap kerja semasa yang bukan projek SAMB, sertakan (wajib) Laporan Peyelia Projek atas format seperti Borang GA, dalam satu sampul berlakri. Tender yang tidak disertakan dengan Laporan ini bagi setiap kerja yang disenaraikan, akan ditolak.

SULIT BORANG GA

LAPORAN PENYELIA PROJEK ATAS PRESTASI KERJA (BUKAN PROJEK SAMB)

SEMASA PENTENDER

(Borang ini hendaklah dilengkapkan oleh Penyelia Projek atau Pembantu Kanannya yang mengawasi projek dan diserahkan kepada Kontraktor dalam satu sampul berlakri untuk disertakan bersama-sama tendernya).

Kepada:

Ketua Pegawai Eksekutif,
Syarikat Air Melaka Berhad.

Nama Kontraktor: ……...

Nama Projek Yang Dilaksanakan: ……..

……..

No.Kontrak: …….

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

Tarikh Milik Tapak :
Tarikh Penyiapan Asal :

Tempoh Kontrak: ……. minggu

Lanjutan Masa Yang Telah Diluluskan: ……. hari

Lanjutan Masa seterusnya:
Yang difikir/dijangka layak diperakukan: ……... hari
Atas sebab-sebab

(i)

(ii)

Kemajuan kerja (berdasaran nilaian 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 Penyelia Projek : ……

Nama : ……

Jawatan : ……

Tarikh : ……

SULIT BORANG GA 1

LAPORAN JURUTERA PROJEK ATAS PRESTASI KERJA SEMASA PETENDER

(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).

Kepada:

Ketua Pegawai Eksekutif,
Syarikat Air Melaka Berhad.

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 nilaian 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/Wakil :……

Nama :…….

Jawatan :…….

Tarikh :…….

BORANG H - JADUAL PERANCANGAN KERJA

KETERANGAN KERJA	TEMPOH KERJA DALAM MINGGU												
	1	2	3	4	5	6	7	8	9	10	11	12	13

Nota:
Petender hendaklah menyenarai skop kerja yang dijalankan dalam tender ini.

.....
Tandatangan & Cop Rasmi Petender