General Specification for Fire Service Installation 2007 Edition

The 2007 edition of the General Specification for Fire Service Installation comprises considerable updating and revisions to the 2001 edition.

In line with the global consciousness for our environment, the new specification has been re-written with sustainability as the key objective.

The updating of specification is a continuous process. With the benefit of information technology, electronic version of this new 2007 edition can be kept up-to-date and may be viewed on the ArchSD Homepage.

In view of the revisions and new additions, there will be an introductory period of 3 months whereby the General Specification for Fire Service Installation 2001 Edition will still be the Contractual Document, whilst the new General Specification for Fire Service Installation 2007 Edition may be viewed in parallel in preparation for full implementation by 17 December 2007.

- **Hence, for tenders to be invited on or after 17 December 2007, General Specification for Fire Service Installation 2007 Edition shall be used.**
- **Existing contracts (including contracts using previous editions tendered before 17 December 2007) would not be affected.**

Fire Service Installation General Specification - Major Changes from 2001 Edition to 2007 Edition

Old Ref. No.	New Ref. No.	Major Changes
GENERAL		
References to BS and BS EN Standards updated and year of editions of Standards added		

Section A1:- SCOPE OF SPECIFICATION		
A1	A1	Restructure content structure (Scope of Specification)

Section A2:- STATUTORY OBLIGATIONS AND OTHER REGULATIONS		
A2	A2	Restructure content structure (Statutory obligations and other Regulations) Requirements to follow the three `Code of Practice' issued by the Buildings Departments related to the means of escape and fire resistant materials etc. added.

Section A3:- EXECUTION OF WORKS		
A3	A3	Restructure content structure

Section A4:- DRAWINGS AND MANUALS		
A4		Section Deleted
A5	A4	Restructure and extract contents related to "installation /as-built drawing" and "O&M manual"

Section A5:- GENERAL REQUIREMENTS OF THE WORKS		
A6.1.4		Clause deleted and content specified in other Clauses
A6.1.5	A5.1.4	Requirement on "and to take the responsibility of maintaining the validity of the submission by observing all the conditions and requirements in the approval by the FSD" added
A6.1.6		Clause deleted and content specified in other Clauses
A6.1.7		Clause deleted and content specified in other Clauses
A6.1.17		Clause deleted and content specified in other Clauses

A6.1.18		Clause deleted and content specified in other Clauses
A6.1.19	A5.1.14	The requirements for submission in the “Equipment Schedule” changed to “equipment submission”
A6.3	A5.3	The requirements revised with particular emphasis on consideration of the maintenance and related provisions

Section B1:- PIPEWORKS, VALVES AND FITTINGS		
B1.1	B1.1	Specification of steel pipes at different pressure revised with reference to updated standard
B1.5	B1.5	Requirements for couplings and flange adaptors added; Specification for joints revised. Requirements for radiography inspection added
B1.6	B1.6	Requirements for radiography inspection added
B1.7	B1.7	Specification for unions and disconnecting flange added
B1.9	B1.9	Requirements for pipe support base rested on intermediate floor slab added; Clarification on 'the pipe support shall be designed to support the pipe when filled with water'
B1.10	B1.10	Specification for expansion joints to cater for `axial movement’ and `angular or lateral movement’ added
B1.14	B1.14	Specification of valves revised with reference to updated standard
B1.15	B1.15	Locations where pressure gauges are required added and specification for pressure gauges installation method added

Section B2:- HYDRANT AND HOSE REEL SYSTEM		
B2.5	B2.5	Requirements for additional length of hose longer than 30m added; Clarification on the provision of fire alarm signals to fire control center; Requirement for visual indication and audible alarm added
B2.7	B2.7	Clarification on the Contractor’s responsibility of checking the flow and pressure of the street hydrant system
B2.8	B2.8	Requirement for visual and audible indication in case of pump failure added
B2.10	B2.10	Requirement for temporary water relaying facilities during construction period added. Clarification on the requirements for temporary water supply obtained from WSD made.

Section B3:- AUTOMATIC SPRINKLER SYSTEM		
B3.1	B3.1	Requirements to follow BS EN 12845: 2004 and FSD Circular Letter No. 3/2006 added
B3.13	B3.13	Clarification on the responsibility of the Contractor for temporary suspension of fire service installation outside the

		Site or works area made
B3.15	B3.15	Requirements for Cabinets to follow on BS 5041 -4: 1975 added
B3.19	B3.19	Requirements for padlocking facilities added
B3.21	B3.21	Clarification on the air supply system be compressed air system
B.3.22	B3.22	Wording revised without major change in requirements
B3.23	B3.23	Specification for fire resistant cable revised to withstand 950^{o}C temperature for at least 3 hours
B3.25	B3.25	Specification for sprinklers for drencher actuation to be quick response type with a short Response Time Index (RTI) value; Clarification on the use of sprinkler, heat and smoke detection system for the actuation.

Section B4:- TANKS AND PUMPS		
B4.2	B4.2	Requirements for 'provision of water check meter(s) and obtain approval of the WSD regarding the captioned for fire service installation in case an independent water consumption meter is not provided by the Building Contractor' added;
B4.5	B4.5	Specification for pump construction and pump type selection added
B4.6	B4.6	Clarification on the provision of automatic air vents and other associated facilities
B4.10	B4.10	Clarification on the `Utilization category' and `Type of co-ordination'
B4.11	B4.11	Specification for `the bases of the pump set' added
B4.13	B4.13	Clarification on ` On-site test will not be accepted as a substitute for the factory test or the test by the independent testing organization ' made.

Section B5:- GASEOUS EXTINGUISHING SYSTEM		
B5.1	B5.1	Requirements to follow `UL 2166: 1999, UL 2127: 1999 and/or ISO 14520 ' added
B5.8	B5.8	Requirements for submission of ` copy of approval document from the FSD for the gas cylinders ' added

Section B6:- MANUAL AND AUTOMATIC FIRE ALARM SYSTEM		
	B6.1	Emphasis on reliability of equipment in addition to performance; Reliability requirements added; Requirements for submission of 'record of 'no false alarm' and 'no malfunctioning' in the past five years'' added; Specification on acceptable rate of false alarm added.
B6.1	B6.2	Requirements for IP67 call points for outdoors application and adverse conditions added;

		Requirements for manual call points to be addressable type when analogue addressable manual and automatic fire alarm system is specified.
B6.2	B6.3	Specification of heat detectors changed from `Grade 1 sensitivity' to `Class A2'; Requirements for `Heat detector be analogue addressable type' added
B6.3	B6.4	Requirements for `Smoke detector where specified and without the type stated be multi-sensors type detector except in area having high risk of fast growing fire' added; Requirements for `Smoke detector be analogue addressable type' added; Clarification on the requirements of `Transmission delay unit'
B6.3	B6.5	Clarification on the requirements for ionization smoke detectors
B6.4	B6.6	Wording revised without major change in requirements
B6.5	B6.7	Clarification on the specification and requirements of multi-sensors detectors; Function of multi-sensors detectors defined including ` Multi-sensors detector shall process inputs from more than one sensor using software algorithm that equate signals into pre-determined responses to react to defined environmental conditions' and `Multi-sensors detector shall have no more than four sensors and no less than two sensors'.
B6.6	B6.8	Requirements for `cross-zoned smoke detector in air ducts in area vulnerable to false alarm' added
B6.7	B6.9	Requirements to comply with ` BS EN 60079-14 or BS EN 50281-1-2' added;

6.8	B6.10	Specification for siting of the alarm bells added; Requirements for `Alarm bell shall be addressable type when used with analogue addressable manual and automatic fire alarm system' added; Requirements for `alarm bell shall be capable of generating two different alarm tones, one intermittent tone for alert and one continuous tone for evacuation, that can be programmed, either on a zoned basis or common system basis' added
B6.9	B6.11	Requirements for `minimum rating of visual alarm unit shall be 15 cd minimum' added; Requirements for `the distance between two visual alarm units shall not be more than 60m' and `mounted at a height not less than 2.1m above the floor but not closer than 150mm to the ceiling' added
B6.10	B6.12	Clause re-numbered
B6.11	B6.13	Requirements for `remote monitoring system for detachable detector to detect the removal of the head from the mounting base' added; Specification for `mounting base shall be able to accommodate different types of detectors of the same series from the same manufacturer and products from compatible suppliers' added
B6.12	B6.14	Clause re-numbered
B6.13	B6.15	Clarification on `addressable system shall be analogue addressable type'; Requirements for `Alarm condition simulation for testing purpose' added
B6.14	B6.16	Clause re-numbered
B6.15	B6.17	Clarification on the types of special detection systems; Scope and content of submission for special detection systems added.

Section B7:- AUDIO/VISUAL ADVISORY SYSTEM		
B7.2	B7.2	Requirements for complying with ` BS 5839-8: 1998.' added
B7.3	B7.3	Requirements for complying with ` BS EN 60598-1: 2004, BS EN 60598-2-22: 1999, BS 5266-1: 2005, BS EN 50172: 2004 and BS EN 1838: 1999' added; Requirements for ' not create any harmful effect and not generate any additional risk and liability to the building occupants, workers and public visitors during the whole period of use'; Requirements for 'average luminance of visual system shall not decrease by more than 30% of its initial design value throughout its rated life in continuous operation when operated at ambient temperature between 5^{o}C and 40^{o}C' added; Specification for battery charging system referred to section B11.1

Section B8:- FIRE ALARM CONTROL SYSTEM		
B8.1	B8.1	Requirements for `at least one fire alarm control and indicating panel in the system with additional repeater panels installed at appropriate locations' added; Clarification on ` Time related system shall be provided to automatic fire alarm system unless otherwise specified'; Requirements for `analogue addressable fire control system' added and performance specification added
B8.3	B8.3	Requirements to `transmit fire alarm signals to the FSD Computerized Fire Alarm Transmission System without any external connection module' added
B8.5	B8.5	Requirements for `manufacturer to provide programming information, software code, etc.' relaxed; Requirements and specification for `drift compensation provision', `fire detection algorithms and signal integration capability', `self diagnostic function' and `delaying output of alarm' added
B8.7	B8.7	Requirements to submit information during tender stage deleted
B8.8	B8.8	Submission of alarm transmission cost to FSD control center in the Form of Tender deleted
B8.10	B8.10	The battery recharge time change from `24 hours' to `12 hours'
B8.12		Clause deleted
B8.13	B8.12	Requirement for `certificate/acceptance letter' after training deleted
B8.14	B8.13	Specification and requirements simplified with emphasis on web based monitoring equipment and combined both B8.14 and B8.15 of the old version
B8.15		Clause deleted

Section B9:- ELECTRICAL INSTALALTION		
B9.1	B9.1	Title revised to `General'
B9.2	B9.2	Requirements to comply with `General Requirement for Electronic Contracts issued by the EMSD' not mentioned
B9.8	B9.8	Requirements to follow ` New Cable Colour Code for Fixed Electrical Installations' added

B9.9	B9.9	Combined with B9.10 of old version. All fire resistant cable shall be low smoke zero halogen type; Requirements for complying with `BS EN50200 (class PH30)', `BS EN 61034-1: 2005',`BS EN 50267-2: 1999 (with 0.5% maximum acid gas emission and 4.3 minimum pH level for the gases evolved)',`BS 7629-1: 1997 (or BS 7846: 2000 for armoured cable)' added
B9.10		Clause content absorbed in B9.9
B9.11	B9.10	Clarification on `starters forming part of motor control cubicle or cubicle switchboard'
B9.12	B9.11	Requirements for all cables used in Table 3shall be `fire resistant cables' added; Clarification on the depth of cable embedded in soil to be at a `depth of at least 300 mm' Specification for cables in the alternative acceptable methods regrouped
B9.13	B9.12	Requirements for `equipment in hazardous area shall bear marking "Ex ia", "Ex d" etc.' added
	B9.13	Specification and requirements for `surge protection devices' added.

Section B10:- PORTABLE HAND-OPERATED APPROVED APPLIANCES		
B10.1	B10.1	Requirements to comply with `Fire Protection Notice No. 11' added
B10.2	B10.2	Requirements to comply with `BS EN 1869: 1997 ' added
B10.3	B10.3	Requirements to have `indication of date of last inspection' added
B10.4	B10.4	Requirements to have `indication of date of last inspection' added

Section B11:- EMERGENCY LIGHTING, EXIT SIGN AND EMERGENCY GENERATOR		
B11.1.1	B11.1.1	Specification, power supply requirements and performance requirements of emergency lighting system added;
B11.1.2	B11.1.2	Clarification on the performance requirements of emergency luminaire for 5s and 60s after activation; Requirements for `labels on luminaires for easy identification during visual inspection' added
B11.1.3	B11.1.3	Requirements for 'TEST switch' added; Specification for battery over 30Ah and below 30Ah added; Specification for battery charger moved to other section

B11.1.4	B11.1.4	Specification for using `Uninterrupted power supply system' for central battery power supply added; Clarification on the type of battery system over 30Ah and below 30Ah
	B11.1.6	Specification for battery and battery charging system grouped under this new clause
B11.1.6	B11.1.7	Specification and performance requirements of the CMTL system updated; Requirements for provision of `Central monitoring, testing and logging (CTML) system to all self-contained emergency luminaires' when the number of luminaires in the fire exit staircase over 50 or the number of self contained emergency luminaires excluding the fire exit staircase over 50' added; Clarification on the provision of automatic CMTL; Requirements on the `certificate/ acceptance letter shall be issued by the manufacturer of the CMTL system' added
B11.2	B11.2	Incorporate the Corrigendum already issued
B11.3	B11.3	Clarification on the responsibility of checking emergency generator installation; Requirements of separate emergency generator for fire service installation and located in separate room added

Section B12:- MECHANICAL, SPECIAL AND RELATED FIRE SERVICE INSTALLATIONS		
B12.4	B12.4	Content revised.
B12.5	B12.5	Specification for `combined fire and smoke dampers' and `fire dampers' added; Requirements for provision of `inspection door for each damper for regular inspection and maintenance of the automatic actuating devices including the fusible links' added
B12.6	B12.6	Requirements for `equipment model and equipment that has not been accepted by the FSD before' added; Requirements for provision of `emergency telecommunication system within building' added
B12.7	B12.7	Content revised.

Section B13:- MISCELLANEOUS		
B13.1	B13.1	Requirement for bar code revised
B13.3	B13.3	Specification for `volatile organic compound (VOC) content' for paint added;
B13.4	B13.4	Clarification on the provision of `spare parts and special tools'; Requirement on provision of cabinet for holding spare and special tools

Section C1:- PERFORMANCE BASED FIRE ENGINEERING		
B14.1	C1.1	Requirement for ` Performance based fire engineering (PBFE) approach' revised
B14.2	C1.2	Design approach and specification of the PBFE revised
B14.3	C1.3	Clause re-numbered
B14.4	C1.4	Submission requirements for fire/smoke tests revised
B14.6	C1.6	Requirement on the inclusion of ` Recommendation and conclusion' section in the report
B14.7	C1.7	Requirements for design consideration on `adequate safety margin, redundancy and allowance in the performance based fire engineering studies and applications to maintain equivalent or better fire safety standards'
	C1.9	Requirements for life safety protection; Requirement on holistic approach

Section D1:- INSPECTION, COMMISSIONING AND ACCEPTANCE TEST		
	D1.1.1	Clarification on the `Standard and Requirements'
	D1.1.2	Specification for the experience, qualification and duty of the CEIC revised
	D1.1.3	Requirements for submission and preparation of master program for inspection and commissioning added
	D1.1.4	Specification for methods and procedure for inspection and commissioning added
C1.2	D1.1.6	Clause renumbered
	D1.1.7	Clarification on provision of testing equipment
	D1.1.8	Clarification on readiness for inspection
	D1.1.9	Requirement for submission of `Type test certificate' added
	D1.1.10	Clarification on the notice for commissioning and inspection
	D1.1.11	Clarification on the document and deliverables for commissioning and inspection
C1.15		Clause deleted
C1.1.3	D1.2.3	Responsibility for carrying tests involved other fire service installations already in operation in other parts of the building outside the Site or works area clarified

Section E1:- INSPECTION, ATTENDANCE, OPERATION, MAINTENANCE AND FINAL TESTING		
C2.1	E1.1	Clarification on `Additional spares and spare parts when ordered by the Architect are for the use after the Maintenance Period only'; Clarification on ` The Contractor shall be responsible for all payment, costs and charges for connecting and maintaining the fire alarm direct link for the fire service installation in the Maintenance Period' Responsibility of the Contractor on temporarily suspension of fire services installation clarified.
C2.2	E1.2	Requirements on ` repair work cannot be completed within 2 hours, the Contractor shall replace the defective parts by utilising manufacturer's original replacement spare unit(s) at the Contractor's expenses' added; Requirements on the responsibility of the contractors in case replacement spare is not available for immediate replacement added;
C2.3	E1.3	Requirement for fault investigation report added
C2.6	E1.6	Requirement for replacement of equipment ` reaching expiry date of service life or going to reach such expiry date within 3 months after the Maintenance Period' added
C2.7	E1.7	Requirement for the Contractor to ensure ` All water tanks shall be checked for filling with water' added
C2.9	E1.9	Requirement for the Contractor to ` visit the installation at least once every week and carry out weekly voltage and hydrometer test' for central battery system added