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16 September 1994

FSD Circular Letter No. 2/94
Rules for Automatic Sprinkler Installations

Since the first issue of the Code of Practice for Minimum Fire Service Installations and Equipment made by this Departments under provisions in Section 16(1)(b)(ii) of the Buildings Ordinance in 1964, the Rules published by the Fire Offices' Committee in London for Automatic Sprinkler Installation had been adopted as the specified standard for general compliance by the building industry in Hong Kong.

With a view to establishing a national standard, the British Standards Institution first published a Code of Practice for sprinkler systems by making reference to the FOC Rules in 1952, which was subsequently enlarged and superseded by BS 5306 : Part 2 : 1979 and further revised by BS 5306 : Part 2 : 1990. However, the responsibility for these Rules was passed to the Loss Prevention Council on its formation in 1985. Thereafter, additional insurers' requirements, updates and amendments not included in the British Standard, have been produced as Technical Bulletins under the supervision of the LPC Technical Management Committee. In 1990, the LPC published the new British Standard and its Technical Bulletins to form the new LPC rules for Automatic Sprinkler Installations to replace the 29th Edition of the FOC Rules.

With acknowledgement of the transfer of responsibility from FOC to LPC on Rules for Automatic Sprinkler Installations, the existing Working Group formed under the Chairmanship of this Department to review all current Fire Service Installations Inspection Procedures was given the task in 1991 to look into the feasibility and practicability of adopting the new LPC Rules for local application.

After discussion and consultation with the building industry and respective interested parties, the Working Group has now completed its study and recommended, subject to modifications specified in Lists One to Four annexed to this Letter being effected, to adopt the new LPC Rules for local application.

With the general agreement and support of the respective interested parties, I now announce the acceptance of the Working Group's recommendation to replace the 29th Edition of the FOC Rules with the new LPC Rules (as modified) as the specified standard for Automatic Sprinkler Installations within meaning of Section 16(1)(b)(ii) of the Buildings Ordinance with effect from 1 April 1995. The reference of FOC Rules in the current Code of Practice for Minimum Fire Service Installations and Equipment will be amended to LPC Rules in due course. There will, however, be no objection to project owners adopting the new LPC Rules before the aforesaid effective date.

Signed
(CHOW Wing-cheong)
for Director of Fire Services

Encls.

Recommendations of Working Group
on FIS Inspection Procedures

Except those named in the following lists, all clauses stipulated in BS 5306 : Part 2 : 1990 (including Commentary and Recommendations) and Technical Bulletins contained in the LPC Rules for Automatic Sprinkler Installations are to be followed for the purpose of satisfying provisions in Section 16(1)(b)(ii) of the Buildings Ordinance :-

List One : Clauses not to be applied

List Two : Clauses to be replaced by modified conditions

List Three : Clauses to be provided with acceptable alternatives

List Four : Clauses to be taken as reference only

List One : Clauses not to be applied

(A) BS 5306 : Part 2 : 1990

Section One . General

Item	Clause/Paragraph/Table/Page	Context	Reason
1.1	Introduction Para. 6 (Page 7)	"the Health and Safety Executive or other enforcing authority under the Health and Safety at Work etc. Act 1974."	Foreign Legislations shall not be applied.

Section Two. Planning

Item	Clause/Paragraph/Table/Page	Context	Reason
2.1	Clause 3.1 Para. 2, 3 & 4 of C & R (Page 11)	"Local water authorities and local water undertakers in England and Wales operate …. slightly between undertakings." "Although there is a duty to supply water for domestic purposes …. from town mains." "Connections to a town mains within the highway remain the property of ….may not be allowed in certain circumstances."	Foreign Legislation shall not be applied.

Item	Clause/Paragraph/Table/Page	Context	Reason
2.2	Clause 4.1 Para. 1 & 3 of C & R (Page 12)	"Sprinkler protection should also be provided in any neighbouring building which is of more than 150 m^3 capacity, and which is within 10m of, and may present an exposure hazard to, any building protected by the system. Where there are unprotected buildings the exposure hazard can be reduced by using cut-off sprinklers over unsealed openings and drenchers over combustible walls in the protected building." "BS 5655 : part 1 specifies that lift wells shall not be provided with sprinklers and to comply with both that standard and this specification lift wells complying with 4.2.2.1(a) are essential."	The standards as specified in relevant local requirements. Codes of Practice For Minimum FSI & Equipment and legislations shall be followed.

Item	Clause/Paragraph/Table/Page	Context	Reason
2.3	Clause 4.2.2.1 (a)(b) & (c) (Page 12)	"stairs, spaces below stair headings (but not rooms) above a stair) and lift wells. Any part not provided with sprinkler protection shall be enclosed by walls, ceilings and floors with a fire resistance of not less than 2 h, in which all doors are not less than 1 h fire resistance, and in which all glazed areas either are of not less than 1 h fire resistance or in the case of stairs are protected by cut off sprinklers. The area of glazing in any part not provided with sprinkler protection shall not exceed 1.5m^2 in each storey;" "washrooms, toilets and WCs (but not cloakrooms). Any part not provided with sprinkler protection shall be enclosed by walls, ceilings and floors with a fire resistance of not less than 2 h, in which all doors are of not less than 1 h fire resistance, and in which all glazed areas are of not less than 1 h fire resistance or are protected by cut-off sprinklers;" "rooms or compartments containing electrical power distribution apparatus, such as switchgear and transformer, and used for no other purposes. Any part not provided with sprinkler protection shall be enclosed by walls, ceilings and floors of not less than 2 h fire resistance in which all doors are of not less than 1 h fire resistance;"	
2.4	Clause 4.2.2.3 (a), (b) and C & R (Page 13)	"In general, rooms adjacent to areas where a life safety sprinkler system is required by an authority solely to maintain safe conditions for the evacuation of persons from the sprinklered protected areas. Any part not provided with sprinkler protection shall be enclosed by walls, ceilings and floors with a fire resistance of not less than 1 h in which any opening are fitted with cut-off sprinklers on the non-sprinklered side and either with a fire door or fire shutter with a fire resistance of not less than 30min." "Auditoria in theatres with separated stages (i.e. where there is a safety curtain between the stage and auditorium) where a life safety sprinkler system is required as a licensing condition	The standards as specified in relevant local requirements. Codes of Practice For Minimum Fire Service Installations and Equipment and legislations shall be followed.

Item	Clause/Paragraph/Table/Page	Context	Reason
		by an authority solely to maintain safe conditions for the evacuation of persons from the theatre. Where sprinkler protection is not provided in the auditorium the safety curtain shall be provided with a line of drenchers controlled by a quick opening valve (e.g. a plug valve) fitted in an accessible position. The water supply for the drenchers shall not be taken downstream of any sprinkler installation valve set." "In theatres with a separated stages it may be necessary , in order to satisfy the requirements of some licensing authorities, to provide sprinklers throughout the stage and associated areas including workshops, dressing rooms, scenery and other storerooms but not in the auditorium, etc. The licensing authorities will normally require drenchers to be fitted as specified here." "Subject to the requirements of the authorities it is recommended that life safety sprinkler systems be extended to all areas except those specified in 4.2.1, 4.2.2.1 & 4.2.2.2."	
2.5	Table 3 Typical examples of ordinary-hazard occupancies Bottom Note (Page 17)	"Warehouses generally, multi-storey and high-rise buildings to ensure flexibility."	To avoid confusion as hazard groups for respective occupancies have been specified in Tables 1 to 4 on Pages 14, 15, 17 and 18.
2.6	Clause 5.3 Para. 4 of C & R (Page 18)	"To allow flexibility in change of use, warehouses and high-rise buildings should be classified as group III."	To avoid confusion as hazard groups for respective occupancies have been specified in Tables 1 to 4 on Pages 14, 15, 17 and 18.
2.7	Clause 6.3.3.2 (a) (Page 20)	"no unzoned installation or zone shall : (a) cover an area under more than one ownership;"	To avoid complexity in system design.

Section Four.Water Supplies

Item	Clause/Paragraph/Table/Page	Context	Reason
4.1	Clause 12.3 and C & R	"Connections supplying water for other services	Connections from sprinkler system to

Item	Clause/Paragraph/Table/Page	Context	Reason
	(Page 12)	Water for other services shall be taken from a sprinkler system only in accordance with the ..... service during maintenance."	supply water for other services are not permitted by F.S.D..
4.2	Table 5 (Page 33)	Table 5.	Connections from sprinkler system to supply water for other services are not permitted.
4.3	Clause 13.1.1.1 (a) and C&R (page 34)	"a single supply complying with 13.1.2; or"	Single supply is considered by F.S.D. as unreliable water source.
		"Wherever practical a superior supply or duplicate supplies should be provided."	A superior water supply or duplicate water supplies are required in Hong Kong.
4.4	Clause 13.1.2 (Page 34)	"Single supplies. A single supply shall be one of the following :- (a) a town main complying with 17.1.1; or (b) a single automatic suction pump, drawing water from a source complying with 17.4.3.1; or (c) a single automatic booster pump, drawing water from a town main complying with 17.1.1."	Single supply is considered by F.S.D. as unreliable water source.
4.5	Clause 13.1.3 (c) (Page 34)	"two automatic booster pumps; or"	The arrangement is not permitted by W.S.D.
4.6	Table 6 (Page 40)	The provisions in relation to "town main with or without booster pump."	This arrangement is not permitted under para 5.28 of the current Code of Practice for Minimum FSI & Equipment and para. 1.3.2, Part II of FSD Circular Letter No. 1/87.
4.7	Figure 13 (page 42)	Figure 13	

Item	Clause/Paragraph/Table/Page	Context	Reason
4.8	Clause 16.3.5 C&R (Page 57)	"Where the capacity exceeds the specified minimum a separate outlet pipe above the level corresponding to the specified minimum capacity may be used to supply water for other uses."	Sprinkler tank is not permitted to use for other purpose.
4.9	Clause 17.4.3.1 (Page 63)	"Single supply. A suction pump providing a single supply shall draw water from either :- (a) a suction tank type A not dependent on inflow suitable for sprinkler service, any complying with 17.4.11; or (b) a suction tank type B not dependent on inflow, and complying with 17.4.11; or (c) a suction tank type C dependent upon inflow, and complying with 17.4.11; the inflow shall be from a town main complying with 17.1.1.2, 17.1.1.3 and 17.1.4; or (d) a virtually inexhaustible source such as a river, canal, lake, etc".	Single supply is considered by F.S.D. as unreliable water source.
4.10	Clause 17.4.4 C&R (Page 63)	"The agreement of water authority will normally be needed before a booster pump can be connected to a town main. The water authority or water undertaker will normally require that the pump cannot draw vacuum under any water demand condition."	The arrangement of booster pump drawing water from a town main is not permitted under para. 5.28 of the current Code of Practice for Minimum FSI & Equipment and para. 1.3.2, Part II of FSD Circular Letter No. 1/87.

Section Six. Signs, Notices, Information and Colour Coding

Item	Clause/Paragraph/Table/Page	Context	Reason
6.1	Clause 31.3 and C & R (Page 143)	"Water supply connections to other services Stop valves controlling water supplies from sprinkler system supply pipes or trunk mains to other services (see 12.3) shall be appropriately labelled, e.g. 'Firefighting hose reels', 'Domestic water supply' etc." "The labels should preferably have raised or embossed lettering and may be wired to the stop valves, or otherwise fixed to inhibit unauthorized removal."	Connection from sprinkler system to supply water for other services are not permitted by F.S.D. (Item 4.1 of List One refers.)

(B) LPC Technical Bulletins

Item	Technical Bulletin	Context	Reason
T.1	T.B. 5 : 1990 : 1	Construction of sprinklered buildings	All building construction should comply with relevant rules and regulations from local Building Authority.
T.2	T.B. 11.2 Para. 5 of C&R	"It is strongly recommended that ceiling voids are not used as plenums for air-conditioning systems in sprinkler protected buildings. However, in the event that ceiling voids are used as intake plenums it is recommended that all the following conditions are applied :- ..... the void should be cleaned (Clause T.B. 6.9)."	The local standard for using the ceiling voids as plenums for air-conditioning systems shall be adopted.
T.3	T.B. 12.5.1 (a)	"Encompass more than one ownership or tenancy."	Impracticable to local situation.

List Two : Clauses to be replaced by modified condition

(A) BS 5306 : Part 2 : 1990

Section Two. Planning

Item	Clause/Paragraph /Table/Page	Context	Replaced by	Reason
2.1	Clause 2.14 (Page 7)	"Booster pump. An automatic pump supplying water to a sprinkler system from an elevated private reservoir or a town main"	"Booster pump. An automatic pump supplying water to a sprinkler system from an elevated private reservoir or an elevated tank."	The arrangement of booster pump drawing water from a town main was not permitted under Para. 5.28 of the current Code of Practice for Minimum FSI & Equipment and Para. 1.3.2., Part II of FSD Circular Letter No. 1/87
2.2	Clause 4.2.2.2 (Page 12 and 13)	"Sprinkler protection shall be considered for, but need not be ..... (g) staircases, washrooms, toilets and WCs ..... by fire doors of not less than 1 h fire resistance."	"Sprinkler protection need not be provided for all external canopies where goods are not stored or handled."	To follow local practice and to provide clarification on the sprinkler protection under canopy.
2.3	Table 3 Ordinary hazard group 1 for shops and offices (Page 17)	"Offices (Not high-rise) not meeting the requirements of 5.2 for light hazard."	"Offices not meeting the requirements of 5.2 for light hazard."	Locally 'high-rise' is not to be used as a criterion to determine the hazard group.

Section Four : Water Supplies

Item	Clause/Paragraph /Table/Page	Context	Replaced by	Reason
4.1	Clause 13.1.1.3 and C & R (Page 34)	"Systems supplied only from a pressure tank and/or a gravity tank and/or a pump suction tank shall, if possible, be fitted with a fire brigade inlet." "It is strongly recommended that a fire brigade inlet be fitted to all systems to allow the brigade to pump water into the system using their own equipment. The water authority will not normally allow a fire brigade inlet on systems with town main supplies, because water from the inlet could enter the town main."	"Systems shall be fitted with a sprinkler inlet(s)."(花灑入水掣)	Sprinkler inlet is a mandatory provision for sprinkler system in Hong Kong
4.2	Clause 13.1.4 C&R (Page 34)	"In general water authorities will not permit a town main to form a duplicate supply with another source except another town main or pressure tank. In the latter case special conditions may be applied by the water authority."	"In general water authorities will not permit a town main to form a duplicate supply with another source except another town main."	The arrangement of town main with pressure tank is not permitted under para. 5.28 of the current Code of Practice for Minimum FSI & Equipment and para. 1.3.2 Part II of FSD Circular Letter No. 1/87.

Item	Clause/Paragraph /Table/Page	Context	Replaced by	Reason
4.3	Figures 7, 9, 10, 12, and 14 to 18 (Pages 35, 37, 38, 41, 43, 44, 45, 46 and 47)	Figure 7. Superior supply using an unrestricted town main Figure 9. Superior supply using gravity tank Figure 10 Superior supply using suction pumps Figure 12 Duplicate supplies using two town mains Figure 14 Duplicate supplies using selection from suction pump/pressure tank/gravity tank Figure 15 Duplicate supply using two gravity tanks Figure 16 Duplicate supplies using a private reservoir and a pressure tank Figure 17 Duplicate supplies using two suction pumps from river or canal (suction lift condition) Figure 18 Duplicate supplies using two suction pumps from a limited capacity tank and full capacity tank	To include the local requirements into these figures and as shown in Appendix 1 to 9.	To avoid confusion particularly in water connections.
4.4	Clause 17.3.2 (Page 61)	"The tank shall be refilled by an automatic pump controlled by duplicated on/off float switches in the tank."	"When the tank is refilled by an automatic pump, duplicated on/off float switches should be provided to control the pump."	To clarify the refilling system for gravity tank in high rise building.
4.5	Clause 17.4.4 (Page 63)	"Booster pumps shall draw water from either a town main or an elevated private reservoir."	"Booster pumps shall draw water from an elevated tank or an elevated private reservoir."	The arrangement of booster pump drawing water from a town main is not permitted under para. 5.28 of the current Code of Practice for Minimum FSI & Equipment and para. 1.3.2, Part II of FSD Circular Letter No. 1/87.

Item	Clause/Paragraph /Table/Page	Context	Replaced by	Reason
4.6	Clause 17.4.5.1 (b) & (c) (Page 63)	"(b) in a building adjacent to, but separated by a wall of fire resistance not less than 2h from, a protected building and with direct outside access."	" in a building, adjacent to, but separated by a wall of fire resistance."	The FRP of pump room has already been governed by the relevant Building Regulations. Also, direct outside access for sprinkler pump room is not a local requirement.
		(c) in a room or enclosure, which shall be as small as is practical, enclosed by elements of construction of fire resistance of not less than 2 h and with direct outside access."	"in a room or enclosure, which shall be as small as practical, and enclosed by elements of construction of fire resistance."	
4.7	Clause 17.4.11.6 C & R (Page 70)	"BS 5337"	"BS 8007 : 1987".	The BS 5337 was renumbered as BS 8007 : Code of Practice for Design of Concrete Structure for Retaining Aqueous Liquids.
4.8	Clause 17.4.12.3 of C & R (Page 73)	"The alarms should be located at a continuously manned location such as a gatehouse (see 27.4)."	"The alarms should be located at the Fire Control Centre or at the main entrance of the building."	To comply with the requirements in Code of Practice for Minimum Fire Service Installations and Equipment.
4.9	Clause 17.4.12.5 C & R (Page 73)	"Regulations for Electrical Installations (Wiring) Regulations (15^{th} Edition, 1981, IEE)."	"Code of Practice for the Electricity (Wiring) Regulations".	Local regulations shall be followed.
4.10	Clause 17.4.13.5 Para. 1 (Page 74)	"Each diesel engine shall have a separate fuel pump from a separate welded steel fuel tank complying with BS 814."	"Each diesel engine shall have a separate fuel pump from a separate welded steel fuel tank complying with relevant regulations of local authority."	Local regulations shall be followed.

Section Five. Components and Installation Design

Item	Clause/Paragraph /Table/Page	Context	Replaced by	Reason
5.1	Clause 26.7.5 (Page 135)	"Hoists, lift wells and enclosed chutes through floors. Hoists, lift wells and enclosed chutes inside or in communication with sprinklered buildings, not covered by 4.2.2.1(a), shall be fitted with sprinklers. Sprinklers at the head of lift wells shall be fitted with metal guards (see 25.8)."	"Enclosed chutes through floors inside or in communication with sprinklered buildings shall be fitted with sprinklers."	The standard as specified in relevant local requirements, Codes of Practice For Minimum FSI & Equipment and legislations shall be followed.
	C & R (page 135)	"Lifts complying with BS 5655 : Part 1 are covered by 4.2.2.1 (a) and are therefore not required to be fitted with sprinklers, and that standard specified that they shall not be fitted."	"Lifts complying with BS 5655 : Part 1 are not required to be fitted with sprinklers, and that standard specified that they shall not be fitted.	

Section Six. Sings, Notices, Information and Colour Coding

Item	Clause/Paragraph /Table/Page	Context	Replaced by	Reason
6.1	Clause 30.1 Para. 1 (Page 141)	"A location plate suitable for sprinkler service, of weather resistant material and lettering shall be fixed on the outside of the external wall as close as practical to the entrance nearest the installation main control valve sets)."	"A location plate suitable for sprinkler service, of weather resistant material and lettering including Chinese characters shall be fixed on the outside of the external wall as close as practical to the entrance nearest the installation main control valve sets)."	To suit local situation and to follow similar requirements in Fire Hydrant/Hosereel Installation as stated in Code of Practice For Minimum FSI & Equipment.

Item	Clause/Paragraph /Table/Page	Context	Replaced by	Reason
	Para. 2 (Page 141)	"The plate shall bear the wording 'Sprinkler Stop Valve' in letters not less than 35mm high and 'Inside' in letters not less than 25mm high. The wording shall be in white letters and the background shall be red."	"The plate shall bear the wording "Sprinkler Stop Valve' (**花灑總掣**) in letters not less than 50mm high."	
6.2	Clause 30.2 (Page 141)	"Sprinkler control valve"	"Sprinkler control valve (**花灑控制閥**)"	To suit local situation and to follow similar requirements in Fire Hydrant/Hosereel Installation as stated in Code of Practice For Minimum FSI & Equipment.
	Clause 30.2 C & R (Page 141)	"The sign should be a fire equipment sign complying with BS 5499 : Part 1 and should be rectangular with white letters not less than 20mm high, on a red background. Where the stop valve is enclosed by a door the sign should be on the outside of the door, and a second sign, bearing the words 'Keep locked shut' should be on the inside of the door. The sign should be a mandatory sign complying with BS 5499 : Part 1, circular with white wording not less than 5mm high, on a blue background."	"The sign should be rectangular with letters not less than 15mm high. Where the stop valve is enclosed, a second sign shall be provided on the outside of the enclosure."	

(B) LPC Technical Bulletins

Item	T.B.	Context	Replaced by	Reason

Item	T.B.	Context	Replaced by	Reason
T.1	T.B. 11.2 Para. 1, 2 & 3 of C & R	"Voids exceeding 0.8m and containing only electrical wiring, carrying a low load for normal office lighting, may be acceptable without sprinklers. Wiring for other purposes will only be acceptable in unsprinklered voids providing they are enclosed in steel conduit or take the form of mineral-insulated cable. Voids 0.8m or less in depth do not require sprinkler protection where they are formed of combustible construction or contain combustibles materials. Where un-sprinklered voids 0.8m or less in depth are constructed from or contain combustibles materials, it is essential that suitable vertical cavity barriers are installed at horizontal intervals of 15m."	"Voids 0.8m or less in depth do not require sprinkler protection."	To suit local situation.
T.2	T.B. 13 F1 & F2 Legend 10	"Water flow alarm switch test valve and zone drain valve."	"Water flow alarm switch test valve and zone drain valve arranged in parallel."	To clarify the arrangement of the valves installation.

List Three : Clauses to be provided with acceptable alternative

A) BS 5306 : part 2 : 1990

Section Two : Planning

Item	Clause/Paragraph /Table/Fig./Page	Context	Alternative	Reason
2.1	Clause 6.3.3.2 (b) (Page 20)	"(b) cover more than one floor level, but this level may include additionally a mezzanine floor not exceeding 100m^2 in area."	"(b) cover more than one floor level, but this level may include additionally a mezzanine floor not exceeding 100m^2 in area and a staircase enclosure."	Staircase enclosure can be treated as a zone.

2.2	Clause 6.3.4 (Page 20)	"The distribution pipes shall be independently connected to the main rise pipe at the floor they serve. No section shall extend to more than one floor and each section shall be served by a separate main rise pipe."	May not be applied	Due to space constraint in high-rise building, distribution pipe may be extended to cover more than one floor locally.

Section Four : Water Supplies

Item	Clause/Paragraph /Table/Fig./Page	Context	Alternative	Reason
4.1	Clause 12.4 (Page 32)	"Where sprinkler systems are fed by a ring main supply pipe arrangement on the premises, any isolating valves on the ring main shall be of the interlocking key type."	"Where sprinkler systems are fed by a ring main supply pipe arrangement on the premises, any isolating valves on the ring main shall be of the interlocking key/electrically monitored type."	The electrically monitored type isolating valve is commonly used in Hong Kong.
4.2	Clause 12.5 (Page 32)	"Equipment such as pumps, pressure tanks and gravity tanks shall not be housed in buildings or sections of premises in which there are hazardous processes or explosion hazards."	"Equipment, such as pumps, pressure tanks, gravity tanks shall not be housed in sections of premises in which there are hazardous processes or explosion hazards."	More practicable to local situation.
4.3	Clause 13.1.4 Para. 2 (Page 34)	"The common trunk main shall neither : traverse ground not under the control of the user; nor be under a public roadway."	"The common trunk main may traverse ground not under the control of user."	More practicable to local situation as position of trunk main will depend on site condition.
4.4	Clause 13.2 (b) (Page 34)	"an automatic suction pump arrangement in which each installation is served by either a separate pump or a separate stage of a multistage pump."	"an automatic suction pump arrangement in which installation within the same 45m zoning is served by either a separate pump or a separate stage of a multistage pump."	More practicable to local situation.
4.5	Clause 15.2.2.2 (Page 52)	"High-rise installations. Each installation rise pipe shall be provided with a jockey pump to maintain the static pressure at any check or alarm valve at not less than 1.25 times the static head difference between the valve and the highest sprinkler in the installation."	"High-rise installations. Each installation trunk mains shall be provided with a jockey pump to maintain the static pressure at any check or alarm valve at not less than 1.25 times the static head difference between the valve and the highest sprinkler in the installation."	Depending on the system pressure design, each trunk main provided with a jockey pump can also be accepted as an alternative.

Item	Clause/Paragraph /Table/Fig./Page	Context	Alternative	Reason
4.6	Table 20 Table 21 Table 22 Table 23 (Page 58 & 59)	"Water source and design capacity" "Design capacity, where tank is not dependent on inflow, for light-hazard pre-calculated installations." "Design capacity, where tank is not dependent on inflow, for ordinary-hazard pre-calculated installations." "Design capacity, where tank is not dependent on inflow, for high-hazard storage pre-calculated installations."	To append a Note at the bottom of each Table :- "Note – A single ended feed from town main supplying suction tank will be accepted provided the tank has a capacity not less than two-third of the full holding capacity required for the particular hazard class and the sprinkler alarm is directly connected to the Chubb Fire Alarm Transmission System."	To include the local requirement as stated in the FSD circular letter Part II para. 1.2.2.2.
4.7	Table 25 (Page 59)	"Design capacity, where tank is dependent on inflow."	To append a Note at the bottom of Table :- "Note – where a town mains connection fed from both ends is chosen and such mains are not on 24 hours supply, there must be provision for at least a 30 mins. supply of stored water. However as the Water Supplies Department will not permit mains and stored water to share the same pipework, the main supply must feed the storage tank. In all such cases a fire service inlet must be provided and there must also be provision for the sprinkler alarm system to be directly connected to the Chubb Fire Alarm Transmission System."	To include the local requirement as stated in the FSD circular letter Part II para. 1.2.2.1(a).

Item	Clause/Paragraph /Table/Fig./Page	Context	Alternative	Reason
4.8	Clause 17.1.4 Para. 1 (Page 60)	"where town mains forms the supply to a tank (type C) dependent upon inflow the connection shall be reserved solely for the tank inflow and shall be provided with a bypass line with a dedicated direct reading flow meter suitable for sprinkler service."	"Where town main forms the supply to a tank (type C) dependent upon inflow the connection shall be reserved for the tank inflow and shall be provided with a bypass line with a dedicated direct reading flow meter suitable for sprinkler service."	Locally, town mains may be connected to other services.
4.9	Clause 17.3.1.5 (Page 60)	"The tank shall be fitted with a water depth indicator."	May not be applied	To suit local practice and to follow similar arrangement for FS tank of fire hydrant/hosereel installation where water depth indicator is not required.
4.10	Clause 17.4.1.3 Para. 2 (Page 61)	"The coupling between the driver and the pump shall be such that either unit can be removed without disturbing the other."	May not be applied.	To allow more flexibility in view of the space constraint in local high rise building.
4.11	Clause 17.4.2.5 Para. 2 (Page 62)	"Where the installation main control valves are remote from the pumps an additional test facility shall be provided upstream of each group of control valve sets."	Such remote additional test facility may be omitted.	To suit local practice.
4.12	Clause 17.4.2.8 C&R (page 63)	"Location of pumps. Water supply pumps shall be sited at or near ground level." "Pumps at ground level are more accessible to the fire brigade."	The pumps may be installed at any location to suit the building design provided that the pump performance will not be affected by such location.	No restriction on the location of pump installation locally.
4.13	Clause 17.4.5.2 (Page 63)	"Houses for diesel pump shall be sprinkler protected. Where it is impractical.... a practical test of the alarm system."	Sprinkler protection for diesel pump house may be omitted.	Sprinkler protection for diesel pump house is not required under Para. 4.36 of the current Code of Practice for Minimum FSI & Equipment.

Section Five : Components and Installation Design

Item	Clause/Paragraph /Table/Fig./Page	Context	Alternative	Reason
5.1	Clause 20.1.3.2 (Page 84)	"The distance between the stop valve flange face and the pump flange face shall be not less than four pipe diameters and the pipe taper shall not exceed 15°."	"When the suction pipe and pump suction flange are not of the same size, they shall be connected with an eccentric taper reducer in such a way as to avoid air pockets.	To provide a clear technical requirement in this respect and to suit local space constraint situation.
5.2	Clause 20.1.4 Para. 2, 3 and 4 of C & R (Page 86)	"Subsidiary stop valves should be enclosed by a door fitted with a lock with a square ended key socket 8mm x 8mm and 25mm deep."	May not be applied.	Impracticable to local situation.
		"Subsidiary stop valves should be accessible at the floor level they control and should be sited in a protected stairway enclosure or the lobby of a firefighting stair. When the valve is secured open a strap and padlock should be used.	May not be applied.	Subsidiary stop valve can be installed at other floor level to suit local practice.
		"It is recommended that an installation be divided into zones where this is appropriate, for example in a shopping complex where the installation covers more than one shop unit.	May not be applied.	Provision of subsidiary stop valve to each individual shop unit can be omitted to suit local practice and complexity in building design.
5.3	Clause 21.2.2.2 (Page 90)	"Water supply pipework in an unsprinklered building shall be installed at ground level and shall be enclosed by dwarf brick walls covered by concrete slabs.	"Water supply pipework in an unsprinklered building installed at ground level shall be enclosed by dwarf brick walls covered by concrete slabs."	More practicable to local situation.
5.4	Clause 23.1.2 (Page 96)	"Pipe joints shall be compression or preferably flange jointed."	"Pipe joints for 65mm and above shall be compression, flange or mechanical joints."	More practicable to local situation.
5.5	Clause 26.6.2 (b) and (c) (Page 133)	"(b) not wholly of non-combustible construction; or (c) containing combustible materials."	May not be applied	Provision of sprinkler in concealed space may not be required if void depth is less than 800mm.

Item	Clause/Paragraph /Table/Fig./Page	Context	Alternative	Reason
5.6	Clause 26.7.4 (d) and (e) (Page 134)	"(d) in the escalator boot; and (e) in the motor space."	Sprinkler protection for such areas may be omitted.	Locally, sprinkler provision in escalator boot and motor space is not required.

Section Six : Signs, Notices, Information and Colour Coding

Item	Clause/Paragraph /Table/Fig./Page	Context	Alternative	Reason
6.1	Clause 29.1 Para. 1 (Page141)	"A block plan of the premises shall be placed close to an entrance where it can be readily seen, for example by the fire brigade or others responding to an alarm."	"A block plan of the premises shall be placed in the Fire Control Centre or where it can be readily seen, for example by the fire brigade or others responding to an alarm."	To suit local situation.

(B) LPC Technical Bulletins

Item	T.B.	Context	Alternative	Reason
T.1	T.B. 11.3	"Where a ceiling void changes depth incurring the requirement for sprinkler protection in the deeper sections, the ceiling void shall be : (a) sprinkler protected throughout the communicating ceiling void; or (b) sprinkler protected within the deep sections requiring protection, and compartmented with cavity barriers having at least half an hour fire resistance (BS Clause 4.2), at the boundary of the protected area."	"Where a ceiling void changes depth, sprinkler protection shall be provided in the deeper sections that exceed 800mm deep; other sections with depth less than or equal to 800mm need not be provided with sprinkler protection."	More practicable to local situation.

Item	T.B.	Context	Alternative	Reason
T2	T.B. 12.5.1(b)	"cover more than one floor level, which may include a mezzanine floor not exceeding $100m^2$ in area."	"(b) cover more than one floor level, which may include a mezzanine floor not exceeding $100m^2$ in area and a staircase enclosure."	Sprinkler in a staircase enclosure can be treated as a zone to suit local practice.
T3	T.B. 12.5.8 1^{st} para.	"Each subsidiary stop valve shall be installed in a readily accessible position at the floor level of the zone they control. Subsidiary stop valves shall be secured open and suitably labelled to identify the area of protection they control (BS Clause 20.1.4)"	"Each subsidiary stop valve shall be installed in a readily accessible position. Subsidiary stop valves shall be secured open and suitably labelled to identify the area of protection they control. (BS Clause 20.1.4)"	Subsidiary stop valve may be installed at location other than floor level.
T4	T.B. 12.5.8 Para. 2 of C & R	"Subsidiary stop valves should be enclosed, with access through a door fitted with a square-ended key socket (8mm x 8mm x 15mm) lock (BS Clause 20.1.4)."	May not be applied	Due to the space constraint in high rise building, access door with lock may not be necessary.
T5	T.B. 12.5.9 (c)	"Water flow through each main installation control valves or bypass (BS Clauses 20.1.2 and 27.3)."	May not be applied.	Water flow monitoring device is already provided downstream of each zone subsidiary valve.
T6	T.B. 12.6.5 Para. 1	"Pumps shall be sited in a position suitable for access by the fire authorities during a fire (BS Clause 17.4.2.8)."	"Pumps shall be sited in a position suitable for access by the fire authorities during a fire."	Clause 17.4.2.8 in relation to the restriction on the location of pump is relaxed. (Item 4.13 of List Three refers.)
T7	T.B. 12.6.5 C & R	"The fire authorities should be consulted about the siting of suction and booster pumps. They may have a preference for the pumps to be located at or near the ground floor."	The pumps may not be located at or near the ground floor provided that the pumps are accessible by the fire authorities during a fire.	Locally, no restriction on the location of pump. (Item 4.13 of List Three refers)

Item	T.B.	Context	Alternative	Reason
T8	T.B. 13.5.1 Para. 1	"High-rise sprinkler systems shall comply with at least the requirements for Ordinary Hazard Group II protection, at the design and commissioning stage of the building (BS Clause 5.3 and 15.2.2)."	"High-rise sprinkler systems shall comply with the requirements at the design and commissioning stage of the building (BS Clause 5 and 15)."	Proposal is made to include the Light Hazard and Ordinary Hazard Group 1 for High-rise Building to suit the intended usage of the building. (Item T.8 in List Four and Appendix 10 refer.)
T9	T.B. 13.5.1 C & R	"For all high-rise systems, it is strongly recommended that consideration is given to the installation of water supplies complying with a least Ordinary Hazard Group III, in order to achieve flexibility and allow for future changes in occupancy. Additionally high-rise sprinkler systems protecting multi-storey buildings may include stationery storage rooms requiring protection in accordance with Ordinary Hazard Group III storage."	Other hazards classes may also be adopted.	Locally, hazard group is depending on the designed use of the building.

List Four : Clauses to be taken as reference only

(A) BS 5306 : Part 2 : 1990

Section Three : Contract Arrangement

Item	Clause.	Context	Reason
3.1	All clauses within this Section (Page 24-31)	-	Local contractors have their own contract arrangements. All clauses will taken as reference only.

Section Six : Signs, Notices, Information and Colour Coding

Item	Clause.	Context	Reason
6.1	Clause 29.1(d) & (e) (Page 141)	"(d) which installations are fully hydraulically calculated; "(e) for each pre-calculated installation : (1) the height in metres above the 'C' gauge of each design point used in size calculation of the distribution pipework; and (2) the minimum pressure required at the 'C' gauge when carrying out a water supply proving test."	The signs, notices, information and colour coding as stipulated in these clauses are not required locally. However, they can be taken as reference for good practice.
6.2	Clause 30.1 and C & R (page 141)	"The plate should be a fire equipment sign complying with BS 5499 : Part I."	
6.3	Clause 31.1.2 and C & R (Page 141)	"Fully hydraulically calculated pipework installations. In fully hydraulically calculated installations a durable notice shall be fixed to the rise pipe..... A typical notice is shown in figure 49."	
6.4	Figure 49 (Page 142)	Typical installation notice for fully hydraulically designed pipework.	
6.5	Clause 31.4.2 (Page 143)	"Fully hydraulically calculated pipework installations. The following installer's data sheet information shall be displayed .... remote installation 'C' gauge."	
6.6	Clause 31.8 and C & R (page 143)	"Colour Coding. Any colour coding used for pipework and fittings shall comply with BS 1710. "Colour coding of sprinklers is specified in 25.6."	

Section Seven : Upkeep the System

Item	Clause.	Context	Reason
7.1	Clause 32.1 to 35.6 (Page144-148) (excluding Clause 32.2)	Upkeep of the system	The maintenance for FSIs and equipment have already been specified in Fire Service (Installations and Equipment) Regulations. All clauses are taken as reference for good practice.

(B) LPC Technical Bulletins

Item	Clause.	Context	Reason
T.1	T.B. 1 : 1990 : 1	Suitable sprinkler components	All components should be approved by F.S.D. before putting into use locally. These Technical Bulletins are to be taken as reference only.
T.2	T.B. 2 : 1990 : 1	Installers of automatic sprinkler systems	
T.3	T.B. 3 : 1990 : 1	LPCB approved products and services	
T.4	T.B. 4 : 1990 : 1	Sprinkler system grading	
T.5	T.B. 6 : 1990 : 1	Care and maintenance of automatic sprinkler systems	The maintenance for FSIs and equipment have already been specified in Fire Service (Installations and Equipment) Regulations.
T.6	T.B. 7 : 1990 : 1	Staff action upon system operation	Locally each building management can devise its own action plans in case of emergency. The procedures as laid down in this Technical Bulletin can be taken as reference.
T.7	T.B. 8 : 1990 : 1	Upkeep and testing of multiple controls	The maintenance for FSIs and equipment have already been specified in Fire Service (Installations and Equipment) Regulations.

Item	Clause.	Context	Reason
T.8	Proposal of pump performance for pre-calculated pipe size installations in Light Hazard and Ordinary Hazard Group I high-rise sprinkler installations. (N.B. This shall be read in conjunction with Clause T.B. 13.6.4)	See Appendix 10	As the classification of hazard group for building will depend on its type of occupancy, Light Hazard and Ordinary Hazard Group I sprinkler installations may exist in high-rise building under local situation. Therefore, additional system design guide is provided in Appendix 10, i.e. Pressure/flow requirements for pre-calculated pipe size high-rise sprinkler installations – Light Hazard and Ordinary Hazard Group I, which shall be read together with Table. T.B. 13.T2.

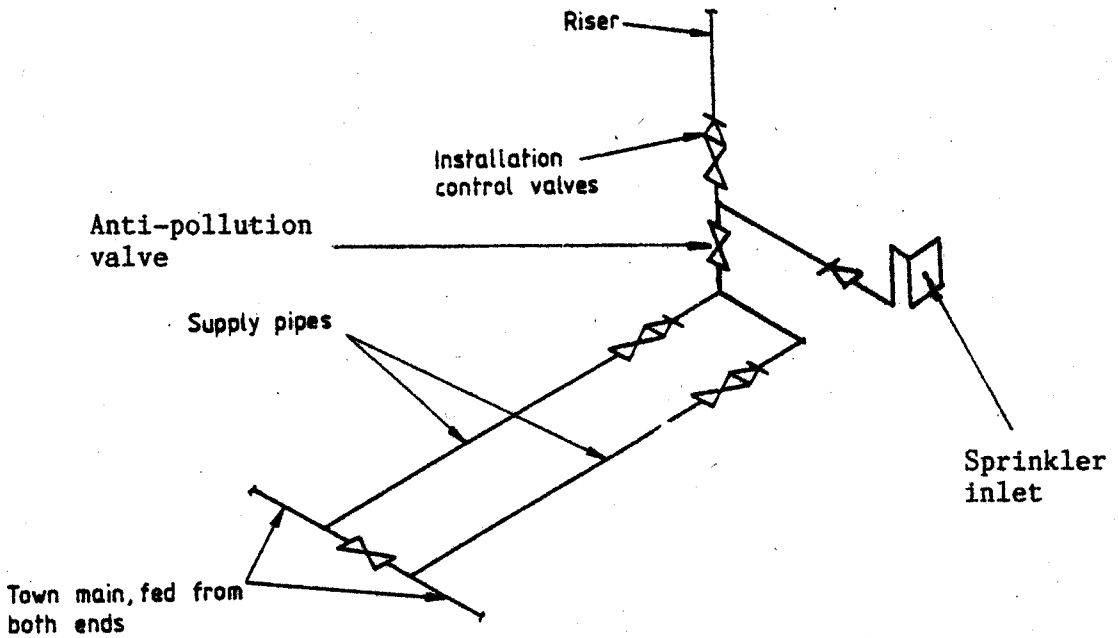

Figure 7. Superior supply using town main

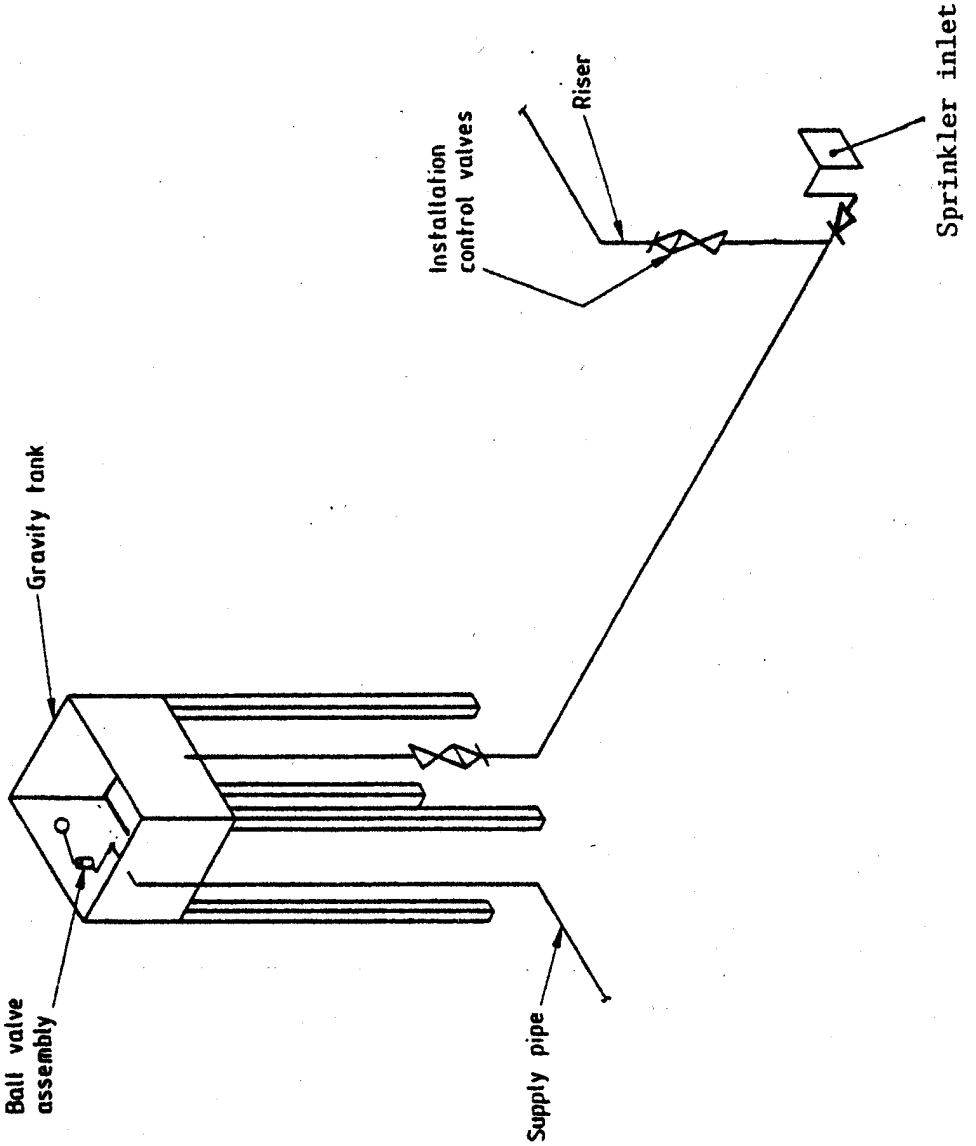

Figure 9. Superior supply using gravity tank

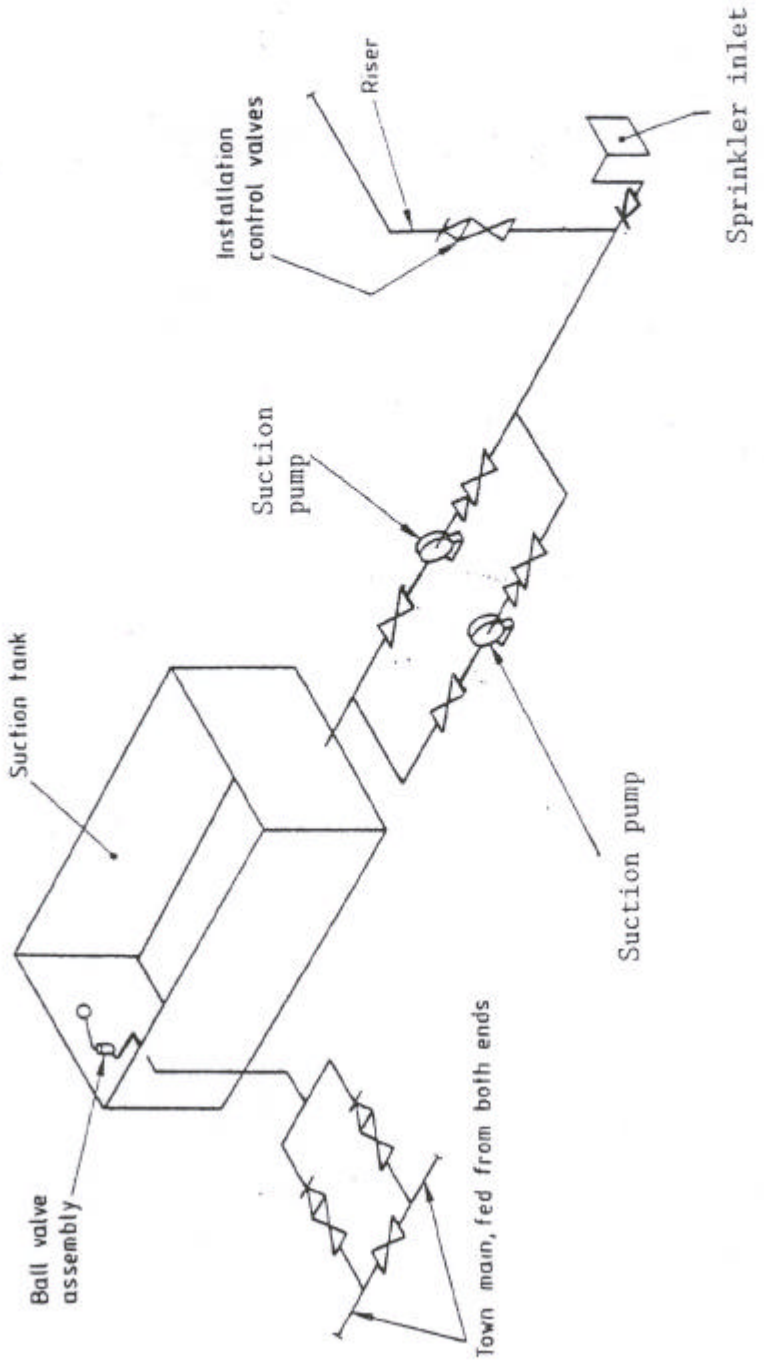

Figure 10. Superior supply using suction pumps

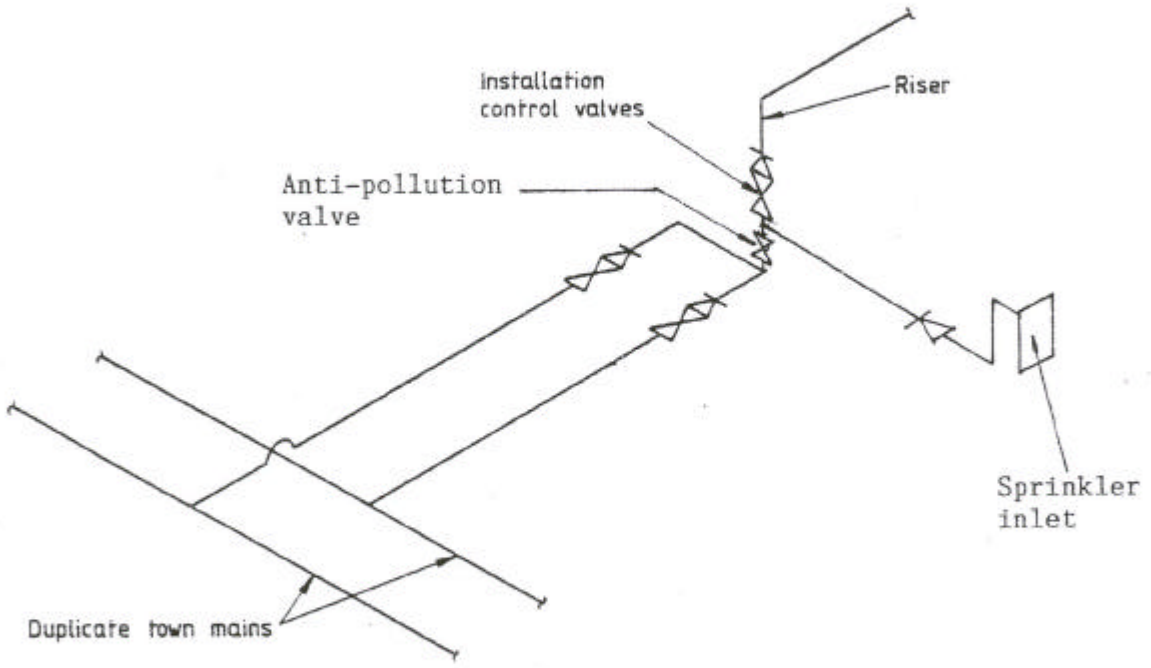

Figure 12. Duplicate supplies using two town mains

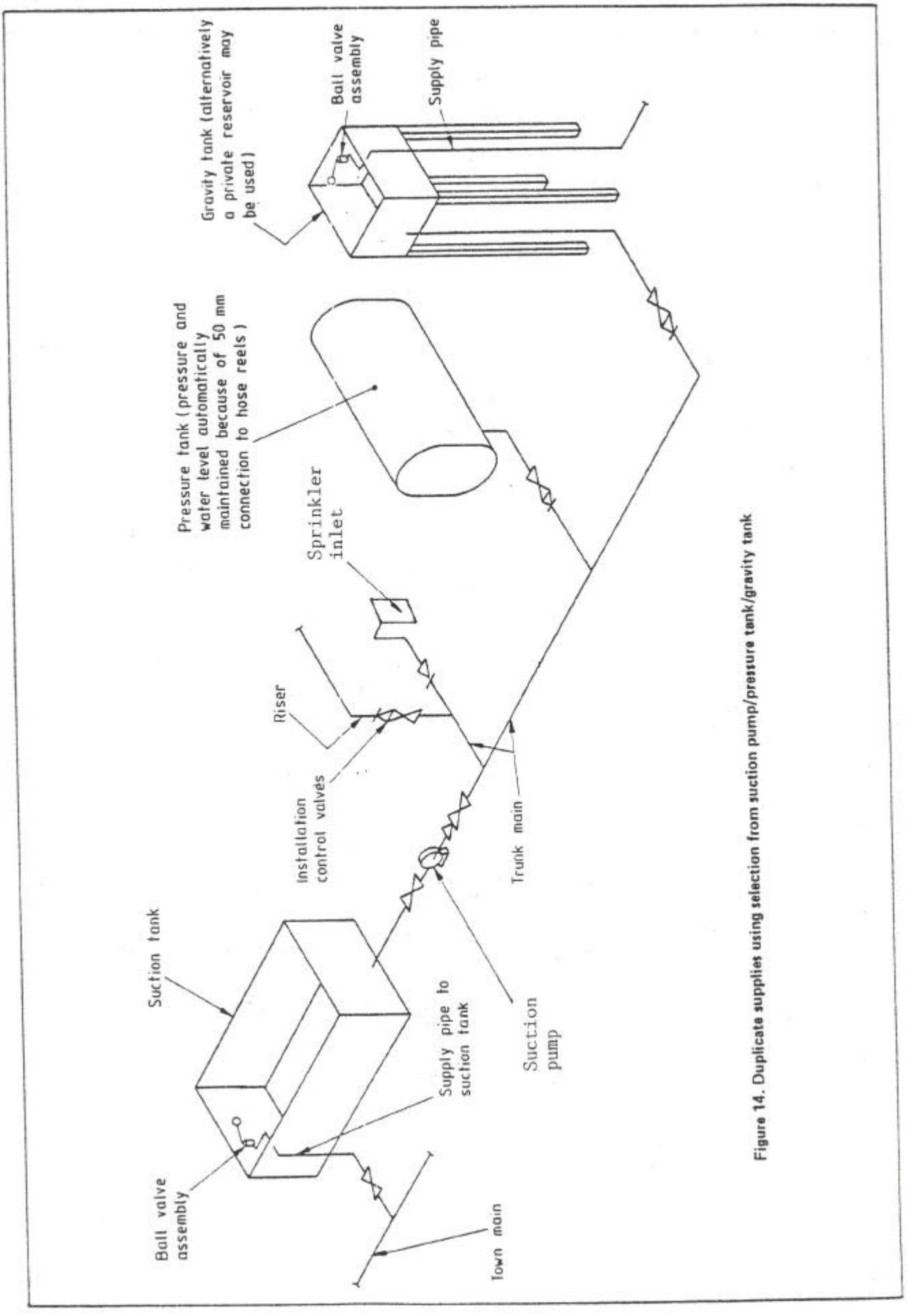

Figure 14. Duplicate supplies using selection from suction pump/pressure tank/gravity tank

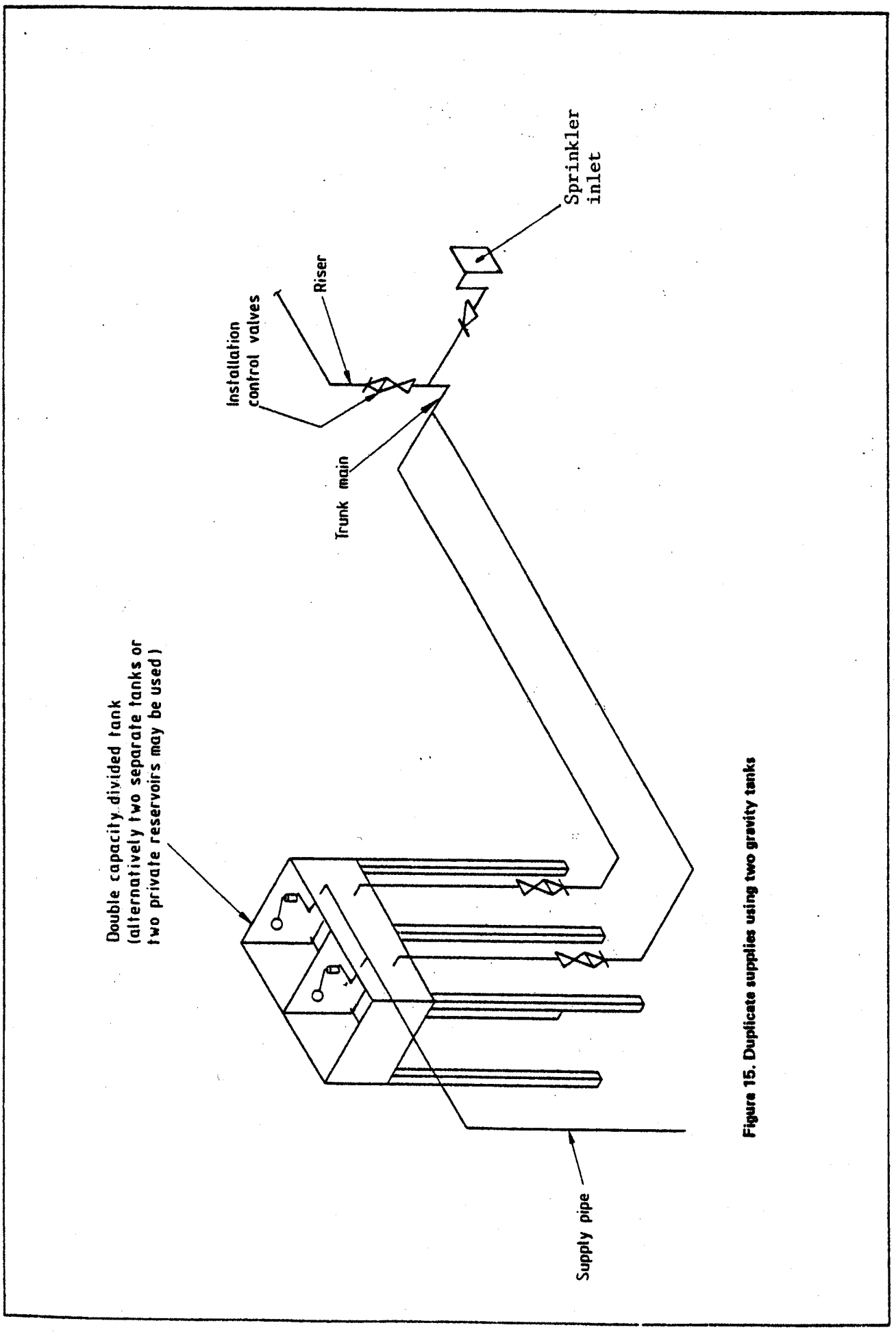

Figure 15. Duplicate supplies using two gravity tanks

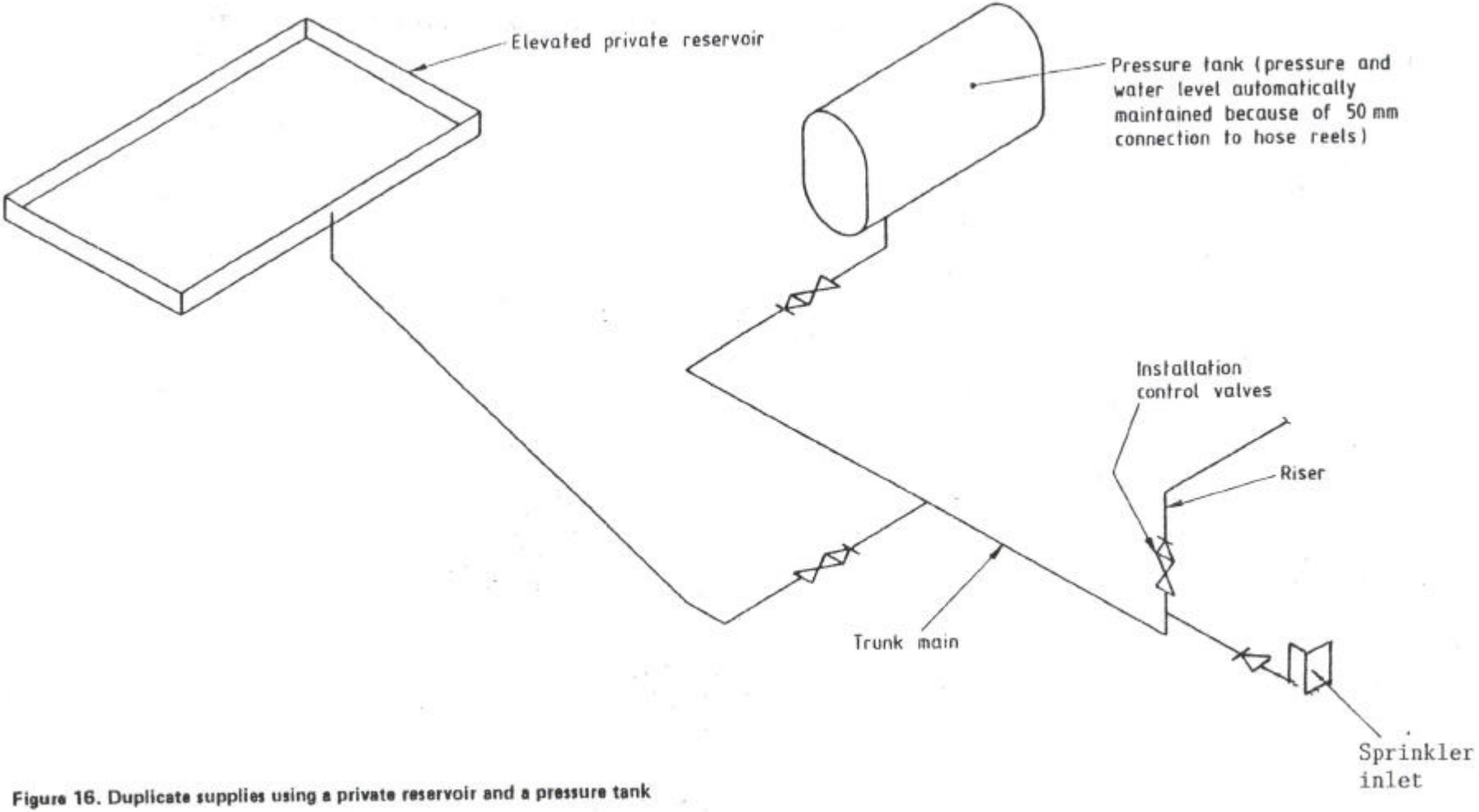

Figure 16. Duplicate supplies using a private reservoir and a pressure tank

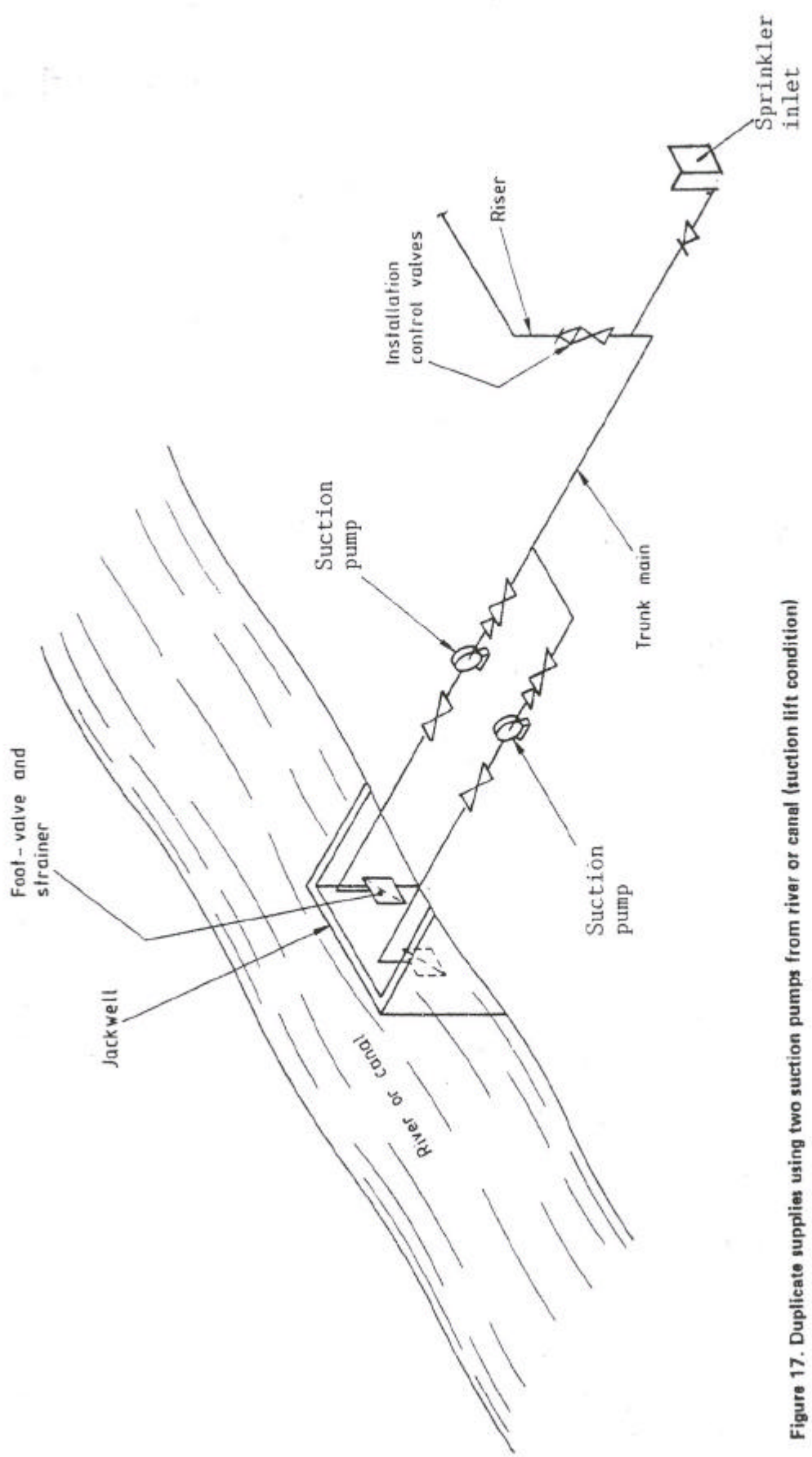

Figure 17. Duplicate supplies using two suction pumps from river or canal (suction lift condition)

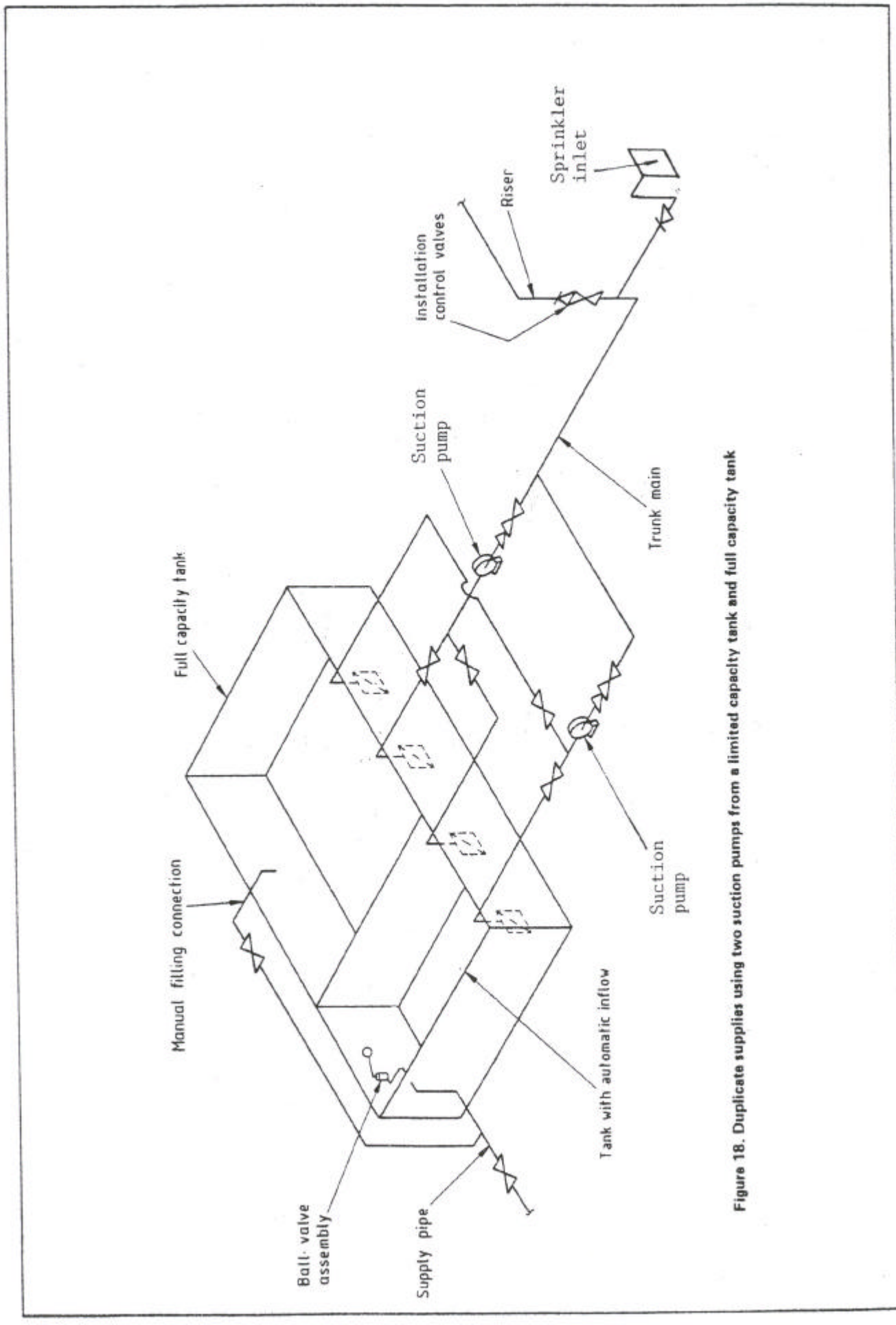

Figure 18. Duplicate supplies using two suction pumps from a limited capacity tank and full capacity tank

Pressure/flow requirements for pre-calculated pipe size high-rise sprinkler installations – Light Hazard and Ordinary Hazard Group I

The pressure/flow requirements for pre-calculated pipe size high-rise sprinkler installations for Light Hazard and Ordinary Hazard Group I shall be based on figure TB13.F1and TB13.F2 of Technical Bulletin TB13:1990:1 with the following modifications :-

1. An additional sprinkler alarm valve shall be installed in the vertical riser immediately upstream of the high-rise sprinkler zone in which the highest sprinkler shall be installed not more than 45m in elevation from this valve.

2. All the requirements in the LPC Rules and subsequent amendments shall be applicable to this additional valve and the downstream pipework, except that water motor alarm gong is not required for this valve.

3. The flow testing arrangement shown immediately downstream of the zone subsidiary stop valve in Figure TB13.F1 and TB13.F2 may be omitted.

4. Designed pressure and flow for the pump shall be calculated by taking the data from Table 28 of this LPC Rules as the running pressure and flow rate requirement at the point immediately upstream of this additional valve, plus the frictional loss of the pipework and the elevation difference between this valve and the lowest water level in the tank.

5. The components used for the installation shall be of LPC approved type and of appropriate pressure rating, where applicable.