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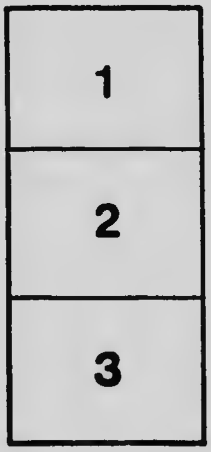
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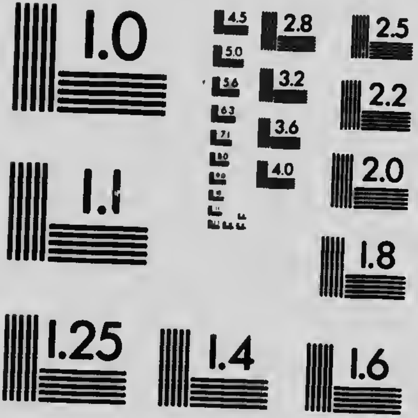

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Canadian Fire Underwriters' Association

Standard for Municipal Fire Preventive Appliances in Cities, Towns, and Villages having Waterworks Protection.

Revised August 1st, 1912.

FOR STEAMER PROTECTED PLACES SEE PAGE 29.

WATERWORKS.

1. If not owned by the Municipality, must be absolutely under Municipal control immediately following every alarm of fire and until return of firemen to fire halls, and also during all tests that may be required by the Inspectors of the Association.

SOURCE OF SUPPLY.

2. Must be abundant in all seasons, and fully equal to Standard requirements as per sections 4, 28, and 30.

3. If from artesian wells or springs to pumps, notwithstanding that the yield therefrom may be apparently sufficient, there shall always be, owing to the uncertainty of such sources, a further visible and immediately available suction supply either from a sufficient stream or other source, or in a reservoir of not less capacity in regard to population than per section 7.

RESERVOIRS.

4. Every reservoir should be supplied direct from natural source, or by duplicate pumps as per section 28, in such unfailing volume as will secure its complete refilling in not exceeding 14 hours after having been continuously drawn from during 10 hours for the required number of Standard fire streams as per sections 28 and 30 and all other maximum draughts; be constantly kept full, except as to withdrawals during fire, cleaning, or repairs, and so divided that never less than one half shall continue in service during temporary incapacity.

5. **Storage reservoirs for gravity systems as per sections 13 and 14,** should be at sufficient elevation to comply with section 10, be supplied in compliance with section 4, and have minimum capacities as follows:—

[illegible]ion [illegible] [illegible]ng	Imperial Gallons capacity.
1,000	700,000
1,500	750,000
1,800	900,000
2,500	1,250,000
4,000	2,000,000
6,000	3,000,000
7,500	3,750,000
10,000	5,000,000
15,000	7,500,000
20,000	10,000,000
30,000	15,000,000
40,000	20,000,000
50,000	25,000,000
60,000	30,000,000
75,000	37,500,000
100,000	50,000,000
150,000	75,000,000
200,000	100,000,000
250,000	125,000,000
300,000	150,000,000

6. **Intermediate reservoirs,** where usually in connection with distribution systems as per section 15; also where provided but shut off from the system except when connected therewith during fire, always kept full for emergency purposes and only drawn from in the event of fire; should be at sufficient elevation to comply with section 10, be supplied in compliance with section 4, and have minimum capacities as follows:—

Population not exceeding	Imperial Gallons capacity.	
	Where usually in service.	Where only in service during fires.
	Fire streams and normal supplies for 24 hours.	Fire streams and normal supplies for 10 hours.
1,000	700,000	292,000
1,500	750,000	313,000
1,800	1,080,000	450,000
2,500	1,150,000	480,000
4,000	1,600,000	667,000
6,000	2,100,000	875,000
7,500	2,550,000	1,063,000
10,000	3,400,000	1,417,000
15,000	4,500,000	1,875,000
20,000	5,600,000	2,334,000
30,000	7,200,000	3,000,000
40,000	8,800,000	3,667,000
50,000	10,400,000	4,333,000
60,000	12,000,000	5,000,000
75,000	14,100,000	5,875,000
100,000	17,500,000	7,292,000
150,000	24,300,000	10,125,000
200,000	30,500,000	12,709,000
250,000	36,700,000	15,292,000
300,000	42,900,000	17,875,000

7. **Reservoirs for visible supplies to pumps from artesian wells and springs;** whether by direct gravity flow from natural source, or with assistance of pumps, compressed air, or other power, should be in compliance with sections 4 and 28, and have minimum capacities as follows:—

Population not exceeding	Imperial Gallons capacity.	
	Where filled by pumps, etc.	Where supplied from natural source without aid of power.
	Fire streams for 10 hours, and normal supplies for 24 hours.	Fire streams alone for 10 hours.
1,000	350,000	250,000
1,500	400,000	250,000
1,800	555,000	375,000
2,500	625,000	375,000
4,000	900,000	500,000
6,000	1,225,000	625,000
7,500	1,500,000	750,000
10,000	2,000,000	1,000,000
15,000	2,750,000	1,250,000
20,000	3,500,000	1,500,000
30,000	4,750,000	1,750,000
40,000	6,000,000	2,000,000
50,000	7,250,000	2,250,000
60,000	8,500,000	2,500,000
75,000	10,250,000	2,750,000
100,000	13,125,000	3,125,000
150,000	18,875,000	3,875,000
200,000	24,375,000	4,375,000
250,000	29,875,000	4,875,000
300,000	35,375,000	5,375,000

STANDPIPES AND ELEVATED TANKS.

8. **If of smaller capacity, or having less supplies than Intermediate Reservoirs in compliance with section 6, or if prior to exhaustion giving less than Standard pressure as per section 10,** are each required to be provided with an automatic valve to be operated from the pump house or some other approved place, for shutting them off from the system and thereby securing the best available water pressure immediately following every alarm of fire; **and in addition thereto other stop-valves should be placed where conveniently accessible to the firemen for con-**

trolling all such supplies during possible temporary derangement of the automatic valves; **such valves are necessary because standpipes and elevated tanks are, generally, not only very much smaller than Intermediate Reservoirs, but owing to inadequate pumping capacity or intermittent pumping are frequently found with low water, under which latter conditions Standard pressure cannot be given until after they are filled, which necessarily means dangerous delay at critical moments, and they never can be filled during withdrawal of draughts for serious fire unless the pumps are larger than Standard capacity.**

RAILWAY AND OTHER LARGE SUPPLIES.

9. **For locomotives, and other purposes necessitating large draughts,** are required to be drawn from a tank supplied by a small pipe which will close automatically when the tank is full of water; such supplies to be further controlled by a stop valve conveniently accessible to the firemen for shutting off the tank supplies.

STANDARD PRESSURE AND STANDARD FIRE STREAMS.

10. **Standard pressure means** that when the number of Standard fire streams required per section 28, and also all other maximum draughts, are in full flow, the running pressure at hydrants shall not be less than 80 pounds per square inch. **A Standard fire stream is that discharged** through a 1⅛ inch plain nozzle at end of a single line of 250 feet of 2½ inch rubber or rubber-lined hose **with running pressure of 50 pounds at nozzle,** which means 80 pounds running pressure at hydrants, under which conditions each stream will be discharging at rate of 300,000 Imperial gallons per 24 hours.

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11. **In the event of the running pressure being less than in accordance with section 10, steam fire engines will be required as per section 41.**

SYSTEMS.

12. **Gravity and Pumping Systems, in order of preference, are as follows:—**

13. Gravity System; with Standard pressure from Storage Reservoir as per sections 4 and 5 **without aid of pumps or other power.**

14. **Gravity System;** with Standard pressure from Storage Reservoir as per sections 4 and 5 supplied by **duplicate pumps of Standard capacity.**

15. **Direct Standard pressure from duplicate pumps of Standard capacity, in connection with an Intermediate Reservoir** as per sections 4 and 6 which shall also give Standard pressure.

16. **Direct Standard pressure from duplicate pumps of Standard capacity, without either a Storage or an Intermediate Reservoir.**

PUMP AND BOILER HOUSES.

19 **Are required to be unexposed, with walls, floors, and roof of fireproof construction; the lighting to be by gas** or **electricity,** to **the exclusion of oil; must not be used for other than pumping purposes, nor be in communication with Electric Lighting** or Power Plant rooms, and if adjoining such rooms must be cut off therefrom by means of a fire wall projecting two feet above the roof; **no oil of any kind shall be stored in the rooms except in a Standard oil cabinet.**

20. **Means of communication between pump house and fire hall** must be by telephone constantly available by day and night, **and in places having a Fire Alarm Telegraph system** a 15 inch engine room gong in connection therewith shall be installed in the pump house.

PUMP ENGINEERS.

21. **Are required to be on active duty in Pump Rooms during all hours by day and night,** without other duties necessitating any absence therefrom, **and in places having a Fire Alarm Telegraph System** to be provided with alarm gongs in dwelling, **or if without such Alarm** should have continuous service telephone therein.

ENGINES AND PUMPS.

22. **Shall be of such design and with such power as will at all times secure adequate flow throughout the system and enable the number of Standard fire streams required in section 28 to be** immediately and simultaneously discharged at Standard pressure and so continued as long as necessary. **Every fire pump shall be provided with** an adequate and adjustable water relief or safety valve, as per **"N. F. P. A." Specifications. Engines for operating fire pumps** must not be used for any other purpose.

23. **Shall be entirely free from trouble at starting, and not liable to slow down or stop,** owing to ice, back or low water, or from any cause in connection with whatever kind of power may be employed.

AUTOMATIC PRESSURE GAUGES.

24. **An automatic water pressure recording gauge** should be attached to an independent pipe from the street mains in the business section of every waterworks system; **and also, where required,** there should be an automatic steam pressure recording gauge; **the daily diagrams** from such gauge or gauges to be conveniently filed for immediate future reference.

POWER.

25. **Windmill power is distinctly objectionable and will not be accepted for operating fire pumps;** and when employed in connection with water supplies must always be as an auxiliary in conjunction with Standard steam pumps having sufficient steam at all times, or with some other adequate and approved power which shall be constantly and immediately available.

25A. **Belt power for Fire Pumps is objectionable;** partly owing to the fact that belts which were claimed to be of very best quality and ample strength have failed during Inspection Tests, **and also to danger of possible accident from slipping of** belts.

25B. **Steam is the most generally approved power for operating Fire Pumps in this Country,** where climatic conditions frequently render water power liable to serious interference owing to ice troubles; **and in regard to electric power,** where not in compliance with section 26, it is subject to disturbance as therein referred to.

26. **Where Fire Pumps are operated by electricity,** each pump should be direct connected with a motor on the same shaft, or direct geared thereto without using a belt, **and where clutches are used for coupling pumps and motors they should preferably be of the triple "square jaw," or other similar and approved kind, rather than of the "friction" type. Electric power is required to be amply sufficient and immediately available during all hours without any intermission,** and regardless of the peak

load; the generators, transmission lines, poles, and other essential appurtenances should be strictly in duplicate; **transmission lines passing through any part of a Town should enter from different points and pass along separate routes**, so that the several lines may not be affected by one fire or any other accident; **and where transformers are installed for imparting current to Fire Pump Motors, they should be cut off from Motor and Pump rooms** by a fire wall with fireproof door to every opening; **each transformer to be in a separate fireproof compartment** so that the burning out of one would not affect any other; **and the general** conditions should be such as will, in the event of disability of any transformer, immediately ensure the continuance of sufficient current, from the remaining available transformers, for operating the pumps at Standard capacity. **If otherwise there should be at least 40 pounds steam pressure constantly maintained, and suitably increased immediately following every alarm of fire,** in sufficient boilers for operating the pumps at Standard capacity, **or there should be sufficient of some other adequate** and approved power always immediately available, but **where possible it would be more satisfactory if necessary supplies were obtainable from an Intermediate Reservoir of Standard capacity and pressure,** as per Section 6, for ensuring the required water supply during possible interruption of electric current. **Frequent delays in transmission of electric power** have been experienced, extending over long and short periods, chiefly resulting from lightning or wind storms, and partly from other causes, and for reasonably guarding against possible danger therefrom during fire **it is necessary that satisfactory duplicate power** should be available for immediate service. See section 22 for pump relief valves.

26A. **Where Fire Pumps, in small places, are operated by producer gas there should always be a spare producer with other requisite appurtenances;** and where the population exceeds 5,000 there should, **in addition to such spare producer,** be a Storage Gasometer of sufficient capacity for **six** hours supply, and always kept full of gas for operating the pumps in conformity with sections 28 and 30, **or a second supply of other suitable gas** should always be immediately available in a similar gasometer amply supplied from an approved source. Where depending **upon Natural Gas,** whether the installation of such gas is Standard

or otherwise, there should, **owing to possible fluctuation in pressure, or stoppage of flow,** be such well supplied Storage Gasometer as already referred to in this section for securing constant and adequate supplies **at uniform pressure.**

27. **Gasoline and similar dangerous substances** are not approved for generating power for fire protection purposes, **the chief objection** arising from the storage and handling of such dangerous fluids.

PUMPING CAPACITY.

28. **For System 14, which is in connection with a Storage Reservoir,** capacities are upon the assumption that the full number of Standard fire streams may be required for 10 hours in the event of two or more fires **at same time,** or a conflagration, during which the Storage Reservoir would be lowered but would replenish within the next 14 hours where normal requirements are not exceeding 100 Imperial gallons per head per day; see also section 30. **System 15 has an Intermediate Reservoir;** System 16 is **without a Reservoir;** and as the Intermediate Reservoir for System 15 is expected to be kept full of water at all times as a special reserve in the event of accident, subject to withdrawals for fire purposes, and to be refilled within 14 hours immediately following such draughts, the capacity for that System must necessarily be the same as for 16. **Pumps and power to be in duplicate to such extent as will ensure in the event of the disability of any one pump, or of anything in connection with whatever kind of power may be employed, that the immediately available capacity will not be reduced to less than the quantities named in the following table:** and also in compliance with Section 30.

Population not exceeding	Number of Standard fire streams required for a test.	System 14, with Storage Reservoir; see also sections 4, 5, 10 and 30.			Systems 15 and 16, with or without an Intermediate Reservoir, see also sections 4, 6, 10 and 30.		
		Fire stream supplies for 10 hours in Imperial gallons.	Normal supplies for 24 hours in Imperial gallons.	Pumping capacity per 24 hours in Imperial gallons.*	Fire stream supplies for 24 hours in Imperial gallons.	Normal supplies for 24 hours in Imperial gallons.	Pumping capacity per 24 hours in Imperial gallons.*
1,000	2	250,000	100,000	350,000	600,000	100,000	700,000
1,500	2	250,000	150,000	400,000	600,000	150,000	750,000
1,800	3	375,000	180,000	555,000	900,000	180,000	1,080,000
2,500	3	375,000	250,000	625,000	900,000	250,000	1,150,000
4,000	4	500,000	400,000	900,000	1,200,000	400,000	1,600,000
6,000	5	625,000	600,000	1,225,000	1,500,000	600,000	2,100,000
7,500	6	750,000	750,000	1,500,000	1,800,000	750,000	2,550,000
10,000	8	1,000,000	1,000,000	2,000,000	2,400,000	1,000,000	3,400,000
15,000	10	1,250,000	1,500,000	2,750,000	3,000,000	1,500,000	4,500,000
20,000	12	1,500,000	2,000,000	3,500,000	3,600,000	2,000,000	5,600,000
30,000	14	1,750,000	3,000,000	4,750,000	4,200,000	3,000,000	7,200,000
40,000	16	2,000,000	4,000,000	6,000,000	4,800,000	4,000,000	8,800,000
50,000	18	2,250,000	5,000,000	7,250,000	5,400,000	5,000,000	10,400,000
60,000	20	2,500,000	6,000,000	8,500,000	6,000,000	6,000,000	12,000,000
75,000	22	2,750,000	7,500,000	10,250,000	6,600,000	7,500,000	14,100,000
100,000	25	3,125,000	10,000,000	13,125,000	7,500,000	10,000,000	17,500,000
150,000	31	3,875,000	15,000,000	18,875,000	9,300,000	15,000,000	24,300,000
200,000	35	4,375,000	20,000,000	24,375,000	10,500,000	20,000,000	30,500,000
250,000	39	[illegible]875,000	25,000,000	29,875,000	11,700,000	25,000,000	36,700,000
300,000	43	[illegible]75,000	30,000,000	35,375,000	12,900,000	30,000,000	42,900,000

*** The pumping capacities herein stated are for single style systems, and to be Standard duplicate should be in conformity with latter portion of section 28 and also with section 30.**

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29. Each of the fire streams in table 28 is required to be as explained in section 10.

30. Normal supplies in table 28 are calculated at rate of 100 Imperial gallons per head of population per day during periods of maximum draughts; and if from any cause such draughts are found to be larger than stated, proportionately increased pumping capacity will then be required.

31. In connection with every pump there shall be a counter for recording the speed, or a meter for recording the quantity pumped; the records from which shall be registered in a book to be provided for that purpose and kept in the pump house, so that the actual performance of every pump may be immediately ascertainable therefrom by the Association's Inspectors.

SUCTION PIPES.

32. Shall be entirely separate and independent from each pump into the suction well or to other source of supply.

SUPPLY MAIN AND CONDUITS.

33. From Source of Supply to suction well or pumps; from pumps and reservoirs, and also from standpipes and elevated tanks, to commencement of general distribution; are required to be in duplicate.

MAINS.

34. Shall be of iron or steel, composition coated inside and outside, tested to at least 300 pounds per square inch for ordinary Systems and to 700 pounds or upwards for modern High Pressure Systems as per section 39A, laid in properly filled trenches with their upper surfaces at least 12 inches below the extreme frost limit, connected at all intersections of streets on what is known as the "gridiron" system, in good circuit and without unnecessary dead ends; they shall also be of such capacity, and in such condition, as will ensure adequate supplies not only for general purposes but also for the required number of Standard fire streams, and so arranged as to secure Standard pressure without such local concentration of supplies as might result, or appear likely to result, in emptying any of the mains.

NOTE.—Where conditions are such as enable a 4 inch pipe to carry 150 gallons per minute, the quantities carried by larger

pipes, under the same conditions as for the 4 inch, will be approximately 413 gallons for a 6 inch, 848 gallons for an 8 inch, 1,481 gallons for a 10 inch, 2,338 gallons for a 12 inch, 4,800 for a 16 inch, 8,385 for a 20 inch, and so on in like proportion, from which will be seen the greatly increased carrying capacities due to comparatively small increase in the diameter of mains.

35. **Shall be provided with sufficient gate valves** for conveniently shutting off the various sections during repairs; have adequate and approved safety attachments, air and water relief, and blow off valves, and also such pressure regulating valves and other convenient adjuncts as may be required.

36. **Shall be laid in duplicate where taken under water or through ground liable to be submerged,** and have gate valves on each pipe line on both sides of said water or ground so that in the event of accident to one line the other will be immediately available, **and each of said lines shall be of ample carrying capacity** for maximum Standard requirements. Mains laid in single line under water **have been found in such leaky condition** as to cause serious reduction in pressure, and in some cases had apparently been so for a long time prior to discovery, which points to necessity for more frequent testing by Municipal Authorities.

37. **In business and congested sections,** where the population does not exceed 5,000, the mains should not be less than 8 to 10 inches internal diameter nor less than 6 inches in other parts; **and in the larger places the business mains** should never be smaller than 12 inches diameter and always well supplied by others of larger size.

SERVICE PIPES FOR ALL PURPOSES.

37A. **Every water service pipe should be provided** with a conveniently located external valve for shutting off the same in the event of fire.

HYDRANTS.

38. **In business sections and in the neighborhood of important buildings** shall be placed at all intersections of streets, but in no case shall their distance apart at such points be more than 250 feet or their location otherwise than convenient for concentrating the required number of fire streams as per section

39. **In the residential portion** hydrants shall be placed at all intersections of streets, and not more than 500 feet apart. **All hydrant barrels** should be at least 6 inches diameter in business sections and 5 inches in other parts; be frost jacketed, or otherwise safe-guarded, to avoid danger from rising of ground during winter, **as some have been** found **damaged owing, apparently, to lack of such protection**; have not less than two 2½ inch branches, **and where steam fire engines are used a large steamer branch in addition**, all branches to be screwed to Standard thread. **Every hydrant should be controlled** by an independent gate-valve in its supply branch from the mains so that in the event of accident to any hydrant it can be changed without interfering with service from other hydrants. **Hydrants shall be effectively drained**, regularly tested, not liable to freeze, **and an immediately accessible record shall be kept** of those found frozen during each winter; and also, **where required**, a portable steam boiler or other approved apparatus should be provided for thawing any that may be found frozen.

39. **Where the population does not exceed 10,000,** hydrants shall be so placed on mains of such capacity as during the withdrawal of maximum supplies for fires, and for all other purposes, will enable all the required fire streams to be effectively discharged on a destructive fire in a business block or an important building; **and in the larger places** three-fourths of said streams shall under same conditions be likewise available.

HIGH PRESSURE FIRE SYSTEMS.

39A. **Must be operated by duplicate fire pumps, always ready for immediate service, in connection with independent street mains, which shall be tested to at least 700 pounds per square inch, upon which hydrants should be placed at not exceeding 200 feet apart** and covering the principal business sections; **each hydrant to be provided with an independent gate-valve in its supply branch** from street mains so that any hydrant can be taken out without interfering with service from others. **Pressure at pumps should be easily maintainable at 300 pounds per square inch, and the mains should be such as, with that pressure, will ensure at least 200 pounds at any hydrants** when all the required fire streams are in full flow. **These Systems should not be in immediate connection with** any sprinklered risk, nor should they

be drawn from for any other purpose than High Pressure Fire fighting. **The minimum pumping capacities** should not be less than in conformity with the following Table, with such additional as will ensure in the event of the disability of any one pump, or of any thing in connection with whatever kind of power may be employed, that the immediately available capacity will not be reduced to less than the quantities stated.

For population not exceeding	Imperial Gallons for fire service only.		Number of 1⅛ inch nozzle streams at 100 pounds nozzle pressure.
	Per 24 hours.	Per minute.	
50,000	5,904,000	4,100	5
100,000	7,084,800	4,920	6
150,000	8,265,600	5,740	7
200,000	9,446,400	6,560	8
250,000	10,627,200	7,380	9
300,000	11,808,000	8,200	10
350,000	12,988,800	9,020	11
400,000	14,169,600	9,840	12
450,000	15,350,400	10,660	13
500,000	16,531,200	11,480	14

STEAM FIRE ENGINES.

40. **Must be duplex pattern,** the smallest capacity for small places to be 600 Imperial gallons per minute and capable of throwing two 1½ inch streams at 65 pounds nozzle pressure, or at lease 150 feet horizontally, each stream to be through 500 feet of 2½ inch hose. **Where the population exceeds 10,000, or where mercantile buildings ar[illegible]her than four storeys,** larger sizes of 800 to 1,000 Imperial [illegible] per minute will be required. **Each steamer must carry** [illegible] **sual equipment, including** suitable hydrant attachments, sufficient spare suction hose, playpipes, nozzles, siamese connections for coupling two or three hose streams into one nozzle, all necessary tools, and ample supply of fuel, and when responding to alarms shall be accompanied by not less than 1,000 feet of hose. **In the more important places where protection depends largely upon steam fire engines** they must be in sufficient number to provide reasonably for any that

might fail during fire, and for such as may be undergoing repairs, and in such places **a first class Mechanical Superintendent should be responsible** for general condition of steamers and be by day and night in fire hall without other duties.

41. **Steam fire engines will be required** in proportion to population and pressure as follows:

Population not exceeding	Number of Standard fire streams to be provided for	**Running pressure in pounds per square inch at hydrants** when the number of Standard fire streams required by section 28, and also all maximum draughts, are in full flow.				
		30	40	50	60	70
		Number of Standard Steam Fire Engines required, of 600 Imperial Gallons per minute each, where the running pressures at hydrants are as above, **but if steamers of larger sizes are provided** they should be of equivalent total capacity.				
1,500	2	1	1	1	1	1
2,500	3	1	1	1	1	1
6,000	5	2	2	1	1	1
10,000	8	3	3	2	1	1
20,000	12	4	3	3	2	1
30,000	14	5	4	3	2	1 See Section 41A.
40,000	16	6	5	4	3	1
50,000	18	7	6	4	3	2
60,000	20	8	7	5	3	2
75,000	22	9	7	6	4	2
100,000	25	10	8	6	4	2
150,000	31	15	12	9	6	3
200,000	35	20	16	12	8	4
250,000	39	25	20	15	10	5
300,000	43	30	24	18	12	6

41A. **In places of 20,000 population and over,** notwithstanding that the hydrant pressure may be Standard as per section 10, one steam fire engine will be required for each one-quarter square mile of congested section.

STEAMER ENGINEERS.

42. **In places where the running pressure,** as per table 41, is less than 45 pounds, or where mercantile buildings exceed four storeys, **and elsewhere when required,** engineers shall be fully paid men without other duties, in fire hall by day and sleeping there by night.

HEATERS FOR STEAMER BOILERS.

43. **In small places where the running pressure** is as referred to in section 42, **and elsewhere when required,** steamers shall always be attached, when standing in fire halls, to such heaters as will keep water in boiler in a boiling condition; **and in the more important places,** where the protection depends largely upon steamers, they must always be attached, when standing in fire halls, to such approved heaters as will maintain **constant steam pressure in boilers** at not less than 20 pounds per square inch.

SUCTION HOSE FOR STEAMERS.

44. **Each steamer shall carry not less than 20 feet of suction** hose of 4½ inches diameter or larger size, **and where in two pieces** shall have a spare length of at least 10 feet, **or if the suction hose carried be in one piece** a spare part of equal length will be necessary, the whole to be in good condition and ready for immediate service in the event of accident. **A strainer will** be required for pumping from still water, **and also a suitable attachment** for pumping from hydrants, all of which shall be in first class condition.

APPLIANCES.

45. HOSE **required to be entirely first class and exclusive of second class or inferior quality, must be rubber or cotton rubber lined,** no unlined cotton hose will be accepted, not less than 2½ inches internal diameter, and to rank as first class must be capable of resisting a hydraulic pressure of at least 300 pounds per square inch; the minimum quantities of such hose required, and also the number of playpipes (**which as representing the number of fire streams that can be made available, should always be sufficient to provide against accident**), are as in the following table, subject to additional, if required, after inspection:—

Population not exceeding	Number of Standard Fire Streams.	Minimum quantity of first class hose required in feet.	Number of Playpipes required with 1 inch to 1¼ inch nozzles.
1,000	2	1,000	3
1,800	2	1,200	3
2,500	3	1,500	5
3,000	3	1,800	5
4,000	4	2,000	7
6,000	5	2,500	8
7,500	6	3,000	9
10,000	8	3,500	12
15,000	10	4,300	14
20,000	12	5,000	16
30,000	14	6,500	18
40,000	16	8,000	20
50,000	18	10,000	22
60,000	20	12,000	25
75,000	22	15,000	27
100,000	25	18,000	30
150,000	31	27,000	36
200,000	35	36,000	40
250,000	39	45,000	45
300,000	43	54,000	50

46. HOSE CARRIAGES **responding to first alarms of fire** shall carry not less than 1,000 feet of hose, and the total carrying capacity shall not be less than two-thirds of the total quantity of hose that may be required, and each hose carriage shall be equipped with sufficient playpipes, 1⅛ inch plain and shut-off nozzles. hydrant cut-offs, siamese connections for coupling two or more hose streams into one nozzle, hose and hydrant wrenches, axes, crowbars, and all useful tools including a light extension ladder for indoor use.

47. HOOK AND LADDER, OR AERIAL TRUCKS.—**At least one, and not less than one for each 25,000 or part of 25,000 population,** must respond to every alarm from districts usually covered by such trucks and otherwise as required, carrying all modern equipment including approved extension ladders of sufficient length to enable the firemen to get immediately and

easily on top of roofs of the highest mercantile and other important buildings. **Aerial trucks shall be provided** with approved rapid raising device.

48. CHEMICAL FIRE ENGINES.—**At least one should be provided, and not less than one for each 30,000 or part of 30,000 population,** which must be self-acting, with a copper cylinder of not less than 80 gallons capacity or two such cylinders of 40 gallons each, carrying a reel with not less than 150 feet of chemical hose at least 1 inch internal diameter, two suitable nozzles, three complete spare charges, a suitable light extension ladder for use inside of buildings, and all other modern equipment; **each engine shall be accompanied** by a competent engineer and at least two other men in addition to the driver, all fully paid without other duties and by day and night in fire halls where engines are located, and shall respond with engines to every alarm from district covered.

CHEMICAL FIRE EXTINGUISHERS.

49. **At least two of 5 gallons each, or four of 3 gallons,** shall be carried fully charged, and with sufficient spare charges, from all fire stations on first appliances responding to every alarm.

SALVAGE EQUIPMENT.

50. **Each Standard Salvage Wagon** that may be required shall be drawn by two swift horses, or **operated by a Motor,** in response to every alarm of fire from business parts, accompanied by a driver, foreman, and four other men well experienced in spreading of covers, all to be fully paid and by day and night in fire halls, **and shall carry a sufficient supply** of scoops, sponges, brooms, rakes, forks, axes, all usual small tools, two 3 gallon chemical fire extinguishers, a light extension ladder for indoor use, **and 75 waterproof covers** not more than 12 x 9 feet as larger sizes have been found inconvenient. **There should also be 75 spare covers of same size in reserve, for each wagon,** as a change when others are being dried. **In the smaller places,** where a **Standard salvage equipment** is not provided, a supply of waterproof covers, not larger than 12 x 9 feet, should be carried on fire appliances **in the proportion of at least two covers for each 1,000 of population. See Section 53 for gasoline storage for Motor hauled appliances.**

WATER TOWERS.

51. **At least one of approved design, capacity, and height, and more where required,** having a "Turret" or "Glazier" or other equally effective deluge nozzle on floor of truck for service in lower parts of burning buildings, and carrying all modern equipment, **shall be provided in all places where mercantile buildings exceed five storeys,** and shall respond in company with suitable steam fire engines and sufficient hose to every alarm from business sections and from important buildings.

52. WINTER SLEIGHS **required** for all wheeled appliances except steam fire engines.

FIRE STATIONS.

53. **Where fire appliances are operated by Motors, the Fire Hall shall be unexposed, with walls, floors, and roof of fireproof construction,** lighted by gas or electricity to the exclusion of oil, **and when the motive power is gasoline or similar fluid** it must be stored in an outside underground tank, in connection with which there shall be a self-measuring pump for filling the Motor tanks which must be done outside of building. **Where the appliances are drawn by horses, the Fire Hall shall be a solid brick, stone, or cement building, with first class roof** without wooden shingles whether laid in mortar or otherwise. **The Fire Hall shall be** conveniently and centrally situated, free from special exposure, **and kept constantly heated to a temperature of not less than 40 degrees from 1st November to 1st May in each year. Every Fire Hall shall be** provided with proper means for washing the hose, **and have a hose drying tower** not less than 55 feet in height below the suspenders in which to dry the hose in lengths of 50 feet so that when hanging from one end the other shall be well above the floor. **Each Station shall be of ample size** to conveniently receive the whole of the appliances, have sufficient and convenient stabling, with swinging harness for horses where such are provided, and shall contain suitable accommodation for firemen. **In places where all parts are not easily and readily accessible from one fire hall,** additional stations will be required, as to which **no general rule can apply,** as the location and ordinary conditions, such as unusual congestion, conflagration hazard, level railway crossings, swing bridges, heavy roads, and other

impediments liable to interfere with rapid transit of appliances have to be considered; but generally, in the smaller places, where there is easy access, and where the built up portions are covered by a radius of half a mile from one Fire Station, auxiliary stations may not be absolutely necessary.

FIRE BRIGADE.

54. In addition to the number of fully paid men required for steam fire engines, chemical engines, and salvage purposes, as per sections 42, 48, and 50, at least one other fully paid man, including the Chief, will be required for each 1,000 or part thereof of population, all of whom shall be without other duties and be by day and [illegible] in fire halls. There shall be in the smaller places, in addition to the fully paid men, a sufficient number of call men to make a total brigade of at least 20 men exclusive of those required for steam fire engines, chemical engines, and salvage purposes, which call men shall be paid a fixed sum per annum rather than per fire; all firemen shall have fire alarm gongs in their dwellings whether usually sleeping in fire halls or not, and shall respond to every alarm. Where there are auxiliary stations the number of men for Central Station should not be less than twenty, and there should be sufficient additional call men in connection with auxiliary stations for operating appliances located therein; the Central Brigade to respond to every alarm, the auxiliaries to all alarms from their respective districts and to second alarms from other parts. Where a paid brigade is maintained they shall make at least two inspections a year of every public or mercantile building, not only that the men may become acquainted with interior parts, but for the purpose of seeing that furnaces, stoves, stove pipes, and other heating appliances are in safe condition, and also as to accumulation of refuse, care and removal of ashes, the storage of oils, inflammable fluids and substances, and the storage of blasting materials, gunpowder, and other explosives.

HORSES.

55. Should be owned by the Municipality in sufficient number to haul all but Motor drawn appliances to fires on every alarm, be constantly in fire hall by day and night, well trained for their

duties, always immediately available, with swinging harness, and for fire purposes only. **Where not owned by the Municipality, nor stabled in fire halls,** suitable arrangements will be required for securing such as are necessary, which arrangements may be **by telephone communication** with constant service between fire stations and livery stables where men and horses in sufficient number are always immediately available by day and night, **and in places having a Fire Alarm Telegraph system** an 8-inch or larger gong in connection therewith shall be installed in convenient location for attendants in each of such livery stables.

ALARM SYSTEM.

56. **A Fire Alarm Telegraph System should be installed with sufficient well placed non-interfering boxes for satisfactory location of fires; and as a necessary precaution for reducing to a minimum the possibility of sending in mixed alarms, such as would otherwise result in the event of more than one box being pulled about the same time, the system should be connected with a non-interfering automatic repeater, by means of which an alarm on any circuit would be repeated over every other circuit, because the armatures of the relays from other circuits than that on which the box was pulled would be locked out by the action of the non-interfering mechanism until a sufficient lapse of time after the box pulled had run down.** The boxes in business and congested sections to be keyless, others to be keyless or have keys under glass alongside; **the whole to be in automatic connection with 15 or 18-inch gongs in each fire hall and pump house,** with suitable gongs in dwellings of pump engineers and of all firemen whether usually sleeping in fire halls or at home, and also with suitable general alarm bell or bells, **and where horses are obtained from livery stables** an 8-inch or larger fire alarm gong should be conveniently located for securing the attention of drivers in each of such stables, **upon all of which gongs and general alarm bells** the number of any box pulled shall be automatically repeated three times. **The batteries and instruments** to be remote from danger, and where storage batteries are used they must be at least in duplicate. **The alarm wires** to be preferably underground, but where otherwise should be everywhere above all other wires and suitably

protected against accidental contact therewith. The system to be in charge of a competent person and regularly tested.

POLICE FORCE.

57. Shall be sufficient for effective day and night patrol and for giving alarms of fire, and shall include an approved number of mounted men where such are required. The police on duty shall respond to all alarms from business and congested parts, and shall immediately and effectively rope back the public at commencement and during continuance of fires.

NIGHT PATROL.

58. In the smaller places there shall be at least one man, and more where required, on night patrol duty in business and adjacent parts, at least from sunset to sunrise, each of whom shall be checked by means of a watchman's clock and sufficient call stations satisfactorily covering the district, the time cards from which shall be conveniently filed for immediate future reference. It should be the duty of those on night patrol not only to visit the front parts of business premises, but also to make regular inspections around the rear portions, with view of detecting any accumulation of loose packing materials or other inflammable rubbish, and to report to the proper authority for enforcing the immediate removal thereof.

ADDITIONAL APPLIANCES.

59. Such as Fire Boats for exposed water fronts, and other special apparatus that may be found necessary owing to local conditions, must be provided and suitably equipped where required.

ELECTRICAL WIRING AND INSTALLATIONS.

60. Overhead wires should be placed underground, except trolley wires, which latter should be effectively protected against accidental contact with other wires. Municipal By-laws should provide that all transformers, and exterior and interior installations shall be in accord with the "National Electrical Code," as per section 64.

STANDARD MUNICIPAL BY-LAW.

61. Must have a strictly enforced By-law relating to Fire Limits, general precautions against fire, electrical wiring and installations, fixing of stoves, stove pipes and chimneys, storage of coal oil, benzine and similiar substances, sale and storage of fireworks, gunpowder and other explosives, regulations for wood and lumber yards, public and private garages, steam engines, etc., and the construction of buildings, "as follows:"

62. The Fire Limits shall be as fixed by the Municipality.

63. GENERAL PRECAUTIONS AGAINST FIRE.

(*a*) No person shall enter any stable, barn, shed, outhouse, carpenter's or cabinet maker's shop, nor any building in the town where straw, hay, shavings, gasoline, or any combustible or explosive materials are or may be kept, with a lighted cigar or pipe in his possession; and no person being in any such place, shall there light any candle or lamp, match, cigar or pipe, nor shall such buildings be provided with any artificial light other than an electric incandescent lamp.

(*b*) No person shall place or keep any wood ashes in any wooden box or receptacle or near any wooden partition or other woodwork in any house, or in any outhouse, or shed in the town.

(*c*) No person shall use or keep for use, in any house in the town, any wooden box or vessel, nor any vessel in which saw-dust is placed, for the purpose of a spittoon.

(*d*) No person shall keep or store in any house, barn, shed or outbuilding in the said town, any quick or unslacked lime, unless the same is securely confined and covered, and remote at least fifteen feet from any wood or woodwork.

(*e*) No person shall keep or permit to be kept in any dwelling house or yard in said town, which he or she may occupy, any loose hay, straw, shavings, old packing boxes or cases, packing material, or other combustible matter.

(*f*) No person shall within the hours of 5 p.m. and 6 a.m. set fire to or burn any shavings, chips, straw, rubbish, or any other combustible material in any street, square, lane or other public place in the said town, nor within any enclosure, yard or garden, within one hundred feet of any building, nor at any other time without permission; provided, however, that blacksmiths, who for the purpose of their business, shall make fires outside of their buildings, in beating tires and in work of that description shall be excepted from the provisions of this section, if the fire so made by them is placed on the soil and at a distance of not less than fifteen feet from any wooden building, and also if the fire is enclosed in a stone, brick or metal cylinder, not less than eighteen inches in height from the ground.

64. ELECTRICAL WIRING AND INSTALLATIONS.

All electrical wiring for exterior and interior installations, and also all motors, transformers, and other electrical appliances, shall be in accord with the "National Electrical Code."

65. STOVES, PIPES AND CHIMNEYS.

(*a*) No person shall place, or continue in use if now placed, in any building owned or occupied by him, any stove or furnace, without having a space of at least fifteen inches between such stove or furnace and any woodwork, unless the woodwork is properly protected by a screen of good bright tin-plate, with an air space of at least one inch between the tin-plate and the woodwork; and in no case shall any person place or continue in use any stove or furnace pipe, unless there shall be a space of at least nine inches between such stove or furnace pipe and any woodwork.

(*b*) No person shall place any stove on a wooden floor, unless the floor under such stove is wholly covered with metal plates or pans projecting at least twelve inches in front of the door of such stove, and at least eight inches beyond the sides and back thereof.

(*c*) No person shall pass any stove or furnace pipe nor allow any stove or furnace pipe to pass through any floor in any building in the town, occupied by him, unless the opening through which it passes is furnished with a properly ventilated thimble of metal or stone or other non-combustible material from the upper surface of the floor to and over the ceiling below, and unless there is a clear space of at least six inches between such stove or furnace pipe and any woodwork at all points.

(*d*) No person shall pass any stove or furnace pipe nor allow any stove or furnace pipe to pass or be carried through the roof or sides of any building in the town, owned or occupied by him, nor through any door or window of any such building. But all stove and furnace pipes must be properly secured and fitted and carried into brick or stone chimneys.

(*e*) No person shall pass any stove or furnace pipe nor allow such pipe to pass through any wooden partition in any building in the town owned or occupied by him, unless there shall be left a clear space of four inches between said pipe and any woodwork, and unless the woodwork is also properly secured and protected by metal.

(*f*) No person shall pass any stove or furnace pipe, or allow such pipe to pass through any lath and plaster partition in any buildings owned or occupied by him in the town, unless the opening through which it passes is provided with an asbestos or tile thimble, or built in with at least four inches of brick and mortar.

(*g*) No occupant or occupants of any building in the town shall allow any pipe hole in any chimney in such building, to remain open, but the same must, when not in use, be closed with a proper metal stopper, and such stopper must not be covered with paper or any combustible material.

(*h*) No person shall hereafter build or cause to be built in the town, any chimney except of stone or brick laid in mortar, and eight inches, at least, in thickness on all sides, unless lined with tile piping, in which case the stone or brick work shall not be less than four inches thick on all sides.

(*i*) No floor joists shall be placed within one inch of the outer surface of any chimney hereafter constructed in the town.

(*j*) Every owner or occupant of any tenement, dwelling house or other building in the said town, in which fire is used, shall cause every chimney and flue thereof in use to be swept once in the course of each and every year, to wit, before the first day of June in each and every year.

66. STORAGE OF COAL OIL, ETC.

(*a*) No person shall keep or suffer to be kept any larger quantity than five barrels of coal oil, petroleum, kerosene oil, or other similar oils, nor a larger quantity than five gallons of any crude oil, naphtha, benzoline, gasoline, benzine, or other similar combustible and dangerous fluids, at any one time in any place in the town, except in an outside underground tank, or unless it, or the building in which it is placed, is at least one hundred feet from any other building; and any of the fluids secondly above enumerated, must be kept in metal vessels; this clause shall not apply to buildings which have been heretofore specially erected for the storage of coal oil.

(*b*) No person shall keep or suffer to be kept in or around any building in the town, at one time more than ten empty coal oil barrels, or other barrels which have contained illuminating oil.

67. SALE AND USE OF FIREWORKS, FIRE ARMS, GUNPOWDER AND OTHER EXPLOSIVES.

(*a*) No person shall store or keep for sale any fireworks within the limits of the town, without having first complied with the regulations of the Town Council, with regard to such keeping or without having first obtained from the Town Clerk a certificate that such person has complied with such regulations; and every such certificate shall be and remain in force until the first day of May next ensuing after the date thereof, unless sooner cancelled, but no longer.

(*b*) A fee of one dollar shall be paid for every such certificate and renewal of such certificate.

(*c*) No person shall discharge any gun, fowling piece or other firearm, or set fire to any cracker, squib, serpent, rocket or other fireworks in, or throw

any cracker, squib, rocket or other fireworks into any of the streets, squares, lanes or other public places in the town and no demonstration with fireworks shall take place in the limits of the town without permission from the Mayor in writing, and such permission in writing shall set forth [illegible] names of the streets, squares, lanes and other public places in the town in which such demonstration shall take place, as well as the day and hours fixed at which such demonstration shall be held.

(*d*) No person shall have or keep any quantity of gunpowder, blasting powder, or other explosive material, exceeding twenty [illegible] pounds in weight in any one place or building in said town, for a longer period than five hours, and in the event of any such case occurring the Police Department must at once be notified, so as to take charge of the same, except in such powder magazine as may be approved of by the said Council, and all such powder and explosive material, not exceeding twenty-five pounds as aforesaid shall be kept in boxes of copper, tin or lead, well secured; nor shall any person sell or deliver or permit to be sold or delivered any gunpowder, blasting powder or other explosives after dark, or by artificial light, and all such gunpowder and blasting powder shall be kept near the entrance of any place or building where it is kept for sale or delivery, so as to be quickly removed to a safe distance in case of fire; and the Chief of the Fire Department shall be notified in writing of the location of such powder or other explosives, and any such powder or other explosives found in contravention of this section, shall be dealt with summarily by the Chief of the Fire Department, in the public interest, as the necessity of the case may demand.

68. WOOD AND LUMBER YARDS, PUBLIC AND PRIVATE GARAGES, STEAM ENGINES, ETC.

(*a*) All persons who desire to store lumber, timber, firewood, clapboards, laths or shingles in the town, or to work, run or use any saw or planing mill, carpenter's or joiner's shop, or other building or establishment wherein wood or other combustible materials are kept, shall first obtain the sanction of the Council so to do, as well as their sanction as to the place where such wood-yards, mills, shops or other buildings may be located and used.

(*b*) No person or persons shall hereafter erect, use or operate any steam engine, steam boiler, soap or candle factory, gas or varnish factory, nor any factory for the manufacture of fireworks, friction matches, oil refinery or chemical works, or other establishment which from the nature of the materials used may be dangerous in causing or promoting fires, without having first applied for and obtained permission from the Town Council so to do.

(*c*) No person shall erect a public garage without first having asked for and obtained permission from the Town Council so to do; such garage building must have walls, floors, and roof of fireproof construction. Private garages containing not more than three Automobiles shall be of Standard first class construction unless detached at least forty feet from any other building. See section 66 (*a*) for gasoline, etc.

(*d*) Any person or persons desiring to erect, use or employ in the town, any steam engine, steam boiler or any of the works referred to in the preceding section, shall give at least two weeks' public notice of the intention to apply to the Council for leave so to do in the newspapers published in the town, and which notice shall also indicate the locality where it is proposed to erect, use or employ such engine or works; and before granting such permission the Council shall procure a report from the Inspector of Buildings, or other person appointed for the purpose, on the merits of the application.

(*e*) Any person or persons keeping or operating any workshop or other establishment in the town, wherein shavings, saw-dust or other combustible refuse is made, shall cause all such shavings, saw-dust or other combustible refuse to be removed out of such shop or building at least twice each week.

(*f*) Every infraction of any of the preceding sections of this by-law shall be punishable by a fine of not less than two dollars nor more than twenty-five dollars, with costs; and in default of payment of the said penalty and costs forthwith the said penalty and costs, or costs only, may be levied by distress and sale of the goods and chattels of the offender; and in case of there being no

distress found out of which said penalty can be levied, the offender may be punished by imprisonment either in the common gaol, house of correction or a lock-up house of the county or town, with or without hard labor, for any period not exceeding twenty-one days, unless the fine inflicted and costs (if any) including the costs of the distress and the committal and conveyance of the offender to the gaol, house of correction or lock-up house are sooner paid.

69. CONSTRUCTION OF BUILDINGS.

(*a*) No person or persons shall hereafter construct, build, erect or place any wooden building or any part of a wooden building of any kind or description whatsoever, within that portion of the town hereinbefore described as Fire Limits.

(*b*) Nor shall any person or persons cover wholly or in part or recover wholly or in part, the roof of any building now erected or placed or which may be hereafter erected or placed within the said Limit with wooden shingles, whether laid in mortar or otherwise, or wooden or other combustible material of any kind whatsoever, but the same shall be covered wholly with slate, tin, zinc, sheet iron or other non-combustible material, and no person shall attach to any building within the aforesaid limit, any jet, gutter, conductor or spout that is not effectively secured against fire.

(*c*) Privies, not exceeding ten feet square, when covered with iron or other non-combustible material are excepted from and out of this section.

(*d*) No building or any addition to any existing building shall be erected or placed on old or new foundations, or on foundations partly new and partly old, unless the same shall be built with main walls of brick, iron or stone, and roofing of incombustible material, (*except such buildings as may have been partly destroyed by fire*, when, if the value of the part destroyed exclusive of the value of the foundation is less than one-half of the value before the fire, the buildings may be restored to their original condition, *but must not be added to in ground area or height*), and no wall of any building two storeys in height or upwards built of brick, and no external or party walls, shall be less than one and a half bricks in thickness for the first storey, one brick in thickness for the other storeys thereof, or less than nine inches in actual measurement; and all brick walls shall be carried up on the construction aforesaid to the under side of the roof boards, whether front, rear or gable walls; and all gable or parapet walls surmounting roofs of buildings shall be at least one brick or nine inches in thickness, and shall be carried to the full height of one foot six inches above the roof on a square therewith; and such walls if built of stone shall not be less than eighteen inches in thickness, carried up at their full thickness to the under side of the roof boards, whether front, rear or gable walls; and all gable or parapet walls surmounting roofs of buildings, if built of stone shall not be less than sixteen inches in thickness and shall be carried up to the full height of one foot six inches above the roof on a square therewith. All buildings erected in terraces or rows must have one brick division wall to at least every thirty feet in length of frontage, and said division walls must be equal in thickness to that required for outer walls; these division walls shall be carried eighteen inches above the roof as before mentioned.

(*e*) The division walls in all semi-detached houses must be carried up close and flush to roof boards to divide each separate tenement and go through the roof every second tenement with parapet walls.

(*f*) All party walls shall be between house and house, except in parts where each house has independent walls. Party walls not being of sufficient thickness shall be taken down when one or more of the adjoining houses require to be rebuilt. Ends of timber lying through old party walls shall be cut off when new buildings are erected against them. External walls shall not become party walls unless the same have been previously erected in accordance with the provisions of this by-law. The brick work in all party walls and external walls shall be properly bonded in every case.

(*g*) No timber shall hereafter be laid into any party arch, except for bond to the same, nor into any party wall other than such templets, chains and bond timbers as shall be necessary for the same, and other than the ends of girders, beams, purlins, binding or trimming joists, or other principal timbers, all of which timbers shall have at least eight inches and a half of solid brick work between the ends and sides thereof and the timber of any building adjoining thereto; and the ends of every girder, beam, purlin, binding or trimming

joists, and every other piece of principal timber, may be laid beyond the centre of any party wall, providing that there be left eight inches and a half of solid brick or stone work at the end of every such piece of timber, except in places where any part of the ends of any such timber shall lie opposite to and level with any part of the ends of any timber of any adjoining building, in which case no part of such timber shall approach nearer than two inches and a half to the centre of the said party wall.

(*h*) Any building or erection which may be constructed, repaired or placed in contravention of any of the provisions of this by-law may be pulled down or removed at the expense of the owner thereof by the Inspector of Buildings or other person appointed for the purpose.

(*i*) Every proprietor of any house, store or other building within the said town, more than one storey high shall provide and maintain an aperture, not less than fourteen inches by twenty inches, in the upper ceiling or shall provide a stair or ladder leading to the roof, and every owner who shall refuse to construct such aperture or to provide such stair or ladder within two weeks after being notified so to do by the Inspector of Buildings, or other person appointed for the purpose, shall incur and pay the penalty hereinafter provided.

(*j*) All buildings in the town over three storeys in height, inclusive of the mansard roof, if covered with such roof, except private dwellings, shall be provided with a suitable and sufficient ladder of iron, from the ridge of the roof down to within twenty-five feet from the surface of the ground or sidewalk; and all hotels, shops and public buildings over the height above mentioned, shall be provided with two such ladders permanently placed at such points and in such manner as will be satisfactory to the Inspector, and every proprietor of every such building, failing to construct and provide such ladder or ladders within thirty days after being notified so to do by the said Inspector shall incur and pay the penalty hereinafter provided.

(*k*) All ash holes and ash houses for the keeping and storing of wood ashes in the said town, shall be properly built of stone, brick or iron, without the use of wood in any part.

(*l*) All openings for stove pipes or other purposes in chimneys hereafter constructed in any portion of the town, shall be placed below the upper ceiling, and shall be furnished with an opening at least eight inches above the bottom of the said chimney to be used for cleaning purposes only, said opening to be not less than seven inches in diameter.

(*m*) All chimneys hereafter constructed in the said town, must be built perpendicular from the foundation or starting point, to and through the roof and for three feet above the roof, without any projections on the outer surface of the said chimney.

(*n*) In all buildings hereafter erected in any part of the town, wherein the inside of the walls are constructed either of boards or plaster on studding, all the floors must be so arranged and provided with fire stops as to effectually cut off the open space between the inside and outside of such walls at each storey. The material of which stops are to be made shall be subject to the approval of the Building Inspector, or other person appointed for the purpose.

(*o*) All public buildings, or buildings used for public meetings, and all places of amusement, or buildings used as places of amusement or public resort, shall hereafter be supplied with such number of doors as shall furnish means for free and rapid egress in case of fire, and no camp-stool, chair, bench or seat of any description, or any other obstruction, shall be placed or used in any of the halls, aisles or passage ways of any such building, during the occupancy of any such building for any public assemblance.

(*p*) In all other cases not hereinbefore specified wherever the said Inspector shall detect any imperfection, improper construction or defect in any house or building in the said town, from which imperfection, improper construction or defect there may apparently be danger from fire or to public safety, the proprietor of such house or building shall repair and remedy the same within a reasonable time after being notified so to do by the said Inspector.

Provided always that in case of the absence of such proprietor, the occupant or other person having the care of such house or building, shall be held responsible for each offence under the provisions of this section.

(*q*) Every owner, proprietor, builder or other person who shall own, build or aid in the erection of any building or part of any building within this town, contrary to, or in any other manner than as authorized by the provisions of this by-law, from section twenty-eight to section thirty-five, or who shall in any manner violate or contravene any of the said provisions, shall incur a fine of not less than five dollars nor more than fifty dollars with costs; and in default of payment of such penalty and costs forthwith, said penalty and costs, or costs only, may be levied by distress and sale of the goods and chattels of the offender; and in case of there being found no distress out of which said penalty can be levied, the offender may be punished by imprisonment in the common gaol, house of correction or a lock-up house of the county or town, with or without hard labor, for any period not exceeding twenty-one days, unless the fine inflicted and costs (if any) including the costs of the distress and the committal and conveyance of the offender to the gaol, house of correction or lock-up house are sooner paid.

(*r*) The Inspector of Buildings, or other person appointed for the purpose, shall have the right to enter all buildings and premises on all lawful days, and during reasonable hours, for the purpose of prosecuting the duties appertaining to him, and to ascertain whether the provisions of this by-law are complied with or not.

(*s*) It shall be the duty of the Chief of the Fire Department, and he is hereby authorized and required within as brief delay as possible, after each fire in the town, to submit a report in writing to the Fire Committee of the facts in connection therewith, and, so far as can be obtained, the cause of the fire.

Thereupon the Fire Committee of the Council can, and are hereby authorized to make or cause to be made, an inquiry into the origin of such fire, if deemed necessary.

(*t*) Upon conviction for a breach of any of the provisions of this by-law, the convicting Justice or Magistrate, besides imposing a penalty under section twenty-seven or under section thirty-seven may order the offender to carry out the requirements of this by-law within a time to be limited by the order, and in default of the offender carrying out such order, the Inspector of Buildings or other person appointed for the purpose, shall forthwith at the expense of the offender take such means to carry out the requirements of this by-law as shall be necessary, and the expense thereof with costs may be recovered by action or distress; and in case of non-payment thereof the same shall be recovered in like manner as Municipal Taxes.

(*u*) All by-laws of the Council, in so far as they may be inconsistent with the provisions of this by-law, and in so far as the subject matter thereof is covered by the provisions of this by-law, are hereby repealed.

STANDARD FOR MUNICIPAL FIRE PREVENTIVE APPLIANCES IN TOWNS AND VILLAGES DEPENDING UPON STEAM FIRE ENGINE PROTECTION.

70. **Steam Fire Engines should be in compliance with paragraph 40,** and in number and capacity as follows:—

Population not exceeding	Number of Standard Fire Streams.	Number of Steam Fire Engines required, with capacity in Imperial Gallons per minute.
1,500	2	One of 600.
2,000	3	One of 800.
4,000	4	Two of 600.
6,000	6	Three of 600.
8,000	8	Four of 600, or three of 800.
10,000	10	Five of 600, or four of 800.

71. **Each Steam Fire Engine** should be attached to such suitable heater, when standing in Fire Hall, **as will keep water in boiler in a boiling condition** where the population does not exceed 3,500, **and for larger places the heaters should be such as will maintain constant steam pressure at not less than 20 pounds per square inch in boilers.**

72. **Each Steam Fire Engine** should, in addition to the 20 feet of suction hose usually carried, be provided with a spare length in first-class condition, at all times immediately available, **and in conformity with section 44.**

73. **Each Steam Fire Engine** should have a fully paid Engineer, **without other duties,** in Fire Hall by day and sleeping there by night.

WATER SUPPLY FOR STEAM FIRE ENGINES.

74. **Whether from underground tanks or other source, should be sufficient for at least two hours pumping by one Steamer at full capacity from any one position.**

75. **Pumping stands or platforms** should not exceed 600 feet apart in business sections or near important buildings, or 1,000 feet in other built up parts, **such stands or platforms** to be constantly maintained in good condition and be at all times immediately and easily accessible.

76. **At every pumping station the water shall always be immediately available** either by keeping ice cut in winter or by other approved methods.

APPLIANCES.

77. **First-class 2½ inch rubber, or rubber lined hose, of quality as in section 45,** will be required, as follows:—

Population not exceeding	Minimum quantity of First-class hose in feet.
1,000	1,000
1,500	1,200
1,800	1,500
2,300	2,000
3,000	2,500
4,000	2,750
6,000	4,000
8,000	5,000
10,000	6,000

78. **Hose Carriages to be sufficient for carrying** not less than 1,000 feet of hose for each Steam Fire Engine required as per paragraph 61.

79. **Hook and Ladder Truck to carry all usual modern equipment** including an approved extension ladder of sufficient length to enable the firemen to get immediately and easily on top of roofs of highest mercantile buildings.

80. **Chemical Engine** to comply with section 48.

81. **Chemical Fire Extinguishers** in compliance with section 49.

82. **Salvage Equipment** to be in conformity with Section 50.

83. **Winter Sleighs** for all wheeled appliances except Steam Fire Engines.

FIRE STATIONS.

84. **To comply with paragraph 53.**

FIRE BRIGADE.

85. **To comply with paragraph 54.**

HORSES.

86. **To comply with paragraph 55.**

ALARM SYSTEM.

87. **In places having a Fire Alarm Telegraph** the System should comply with paragraph 56; and where **without a Fire Alarm Telegraph** there should be a General Alarm Bell always immediately accessible and operated automatically, or some other approved System of General Alarm.

POLICE FORCE AND NIGHT PATROL.

88. **To comply with sections 57 and 58.**

ELECTRICAL WIRING AND INSTALLATIONS.

89. **Should comply with paragraph 60.**

90. **Must have a strictly enforced By-law** relating to Fire Limits, general precautions against fire, the storage of dangerous substances, and for other purposes, in **conformity with Sections 61 to 69 (*u*) inclusive.**