A history of the Richmond, Virginia, Fire Department

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A HISTORY OF THE
RICHMOND, VIRGINIA, FIRE DEPARTMENT

a thesis
presented to the
Faculty of the Department of History
and Political Science
University of Richmond

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of the requirements for the degree of
Master of Arts

by

Donald Lee Morecock

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PREFACE

It was the recruit's first fire. Untried, but young and eager, he waited for orders. The chief stepped up to him and said, "Climb up that ladder to the eighth floor, crawl along the cornice to the fourth window and catch that wooden sign you see dangling there. Then swing yourself along to the second window, break the glass, and go in see if there is anyone about." When the rookie hesitated, the chief barked, "Well, what are you waiting for?"

"Pen and ink," he replied. "I want to hand in my resignation."

Whether the above incident actually happened or not is beside the point. What it does serve to illustrate, however, is the fact that the profession of fire fighting, which it certainly is now, is a potentially dangerous one and one which has become more and more scientific as the years have passed. In early days, when more of the human element was involved in those organizations devoted to fire protection, the fire house was a gathering place for town politicians, retired workers, and for those
who, while not firemen themselves, were continually fascinated by the deeds of daring performed by those who manned the hose.

As the years have passed, the idea of an engine house as a social center has diminished if not altogether disappeared. Fire fighting has become more and more a highly scientific matter, with the result that perhaps it does not have the old time lure that it once had to old and young alike. However, the fire department is one of those governmental bureaus which, like the police, is always open to discussion and criticism by the public. Just let a man's house and business be afire, and he immediately begins to consider himself an expert on the why and wherefores of extinguishing the blaze, and if something should not go exactly according to form, he immediately puts forth a loud protest. So it can be seen that the Bureau of Fire in Richmond is a very important arm of the local government, not only from the standpoint of keeping the city as free from the ravages of fire as possible, but from the standpoint of giving to the citizens the best service for their tax dollars.

In this paper the author has attempted to give a picture of fire fighting in Richmond from the very earliest times up to the Fire Bureau as it exists and functions today. Also, some attention has been given to some of the more expensive and thrilling conflagrations in Richmond's past. Thanks are in order to Chief Edgar A. Sherry of the Bureau and to Captain W. E. Samuels of Engine Company No. 17 for their invaluable assistance in offering material concerning the history of Richmond fires and firemen.
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He's worthy to wear the laurel,
Worthy to write his name,
In living letters of fire,
Within the Temple of Fame.
His loving heart does quick respond
To stroke of belfry bell,
By 'instantaneous process,'
His steps respond as well.
Time and space to him are naught
When he hears the quick alarm;
He leaves his cozy nest at home
To save some nest from harm.
Nobly daring danger
Amid the fiery wave,
Risking precious human life
A human life to save.
Climbing dizzy heights
From tottering wall to dome,
Risking precious human life
To save someone a home.
He has nobly won his laurels
On real ladders of fame,
He has done a fireman's duty
In sweet humanity's name.
He's a hero that should be honored,
And his deeds of daring told,
In flaming lines of living fire,
In flaming lines of gold.
We all should render homage
To heroes of every name,
But in the highest niche of the Temple
Place the Hero of the Flame.**

CHAPTER I

The Richmond Fire Department stands at the head of such protective agencies in the cities of the land. No city of 100,000 can boast its superior and few have anything like its equal. Its record through the long years that make up its history, and that of the city, is one that reflects credit upon both management and men of this important branch of the municipal government, and inspires our people with a just feeling of pride. The high reputation that the department has won for itself is well earned. It is the natural and gratifying result of the faithful performance of a duty that involves hardship, exposure, danger and suffering, and that requires the highest type of heroism and courage. Well managed, thoroughly equipped, and composed of officers and men both capable and true, the department always does effective work, and as a result, Richmond is known in the insurance world as a city of comparatively small losses.

Such was the tribute paid to the fire fighting forces of Richmond in the year 1895. So has it been down through the years that the city has always seemed to possess a fire department which could be at least adequate in its functions and more often above average in its attempts to control fires and the resultant damages. In turning back the pages of Richmond's history to find the very beginnings of the Richmond Fire Department, we must speed through this half of a century.

through the period of Reconstruction, back through Civil War Years, past the days of John Marshall, through the Revolutionary Period, through Richmond as a little town (but such a significant little town!), through Richmond as a little village, and, from curiosity, go even further back—stopping just short of the time when old King Powhatan had a village at the Falls of the James. We note with amusement, in the year 1607, on the site that was later Richmond's—a jail.

In 1609, two years after the English had made their first permanent settlement at Jamestown, Captain John Smith, in order to make more room for the newcomers, and to provide protection from the Indians for the mother settlement, stationed a company of men under one Captain West up the James River at the Falls. Later, for health reasons, the group was ordered moved to the Indian Village, "Powhatan," which was on higher ground. Consequently, the village was purchased from the Indians. Long before there was even a beginning of Richmond, the site became a strategic point in the protection of the little section down river for which England held high hopes as a colony, but which was really cradling an infant nation. However, it was more than seventy years before public safety from the Indians was reasonably assured. During these seventy years, Indian massacres put an end to the growing little town of Henrico, which housed the beginnings of a university for English and Indians, alike, and also to America's first iron industry at Falling Creek.


3. Ibid.
Nathaniel Bacon led a band of settlers successfully against the Indians during this time and there was waged the terrible battle of Bloody Run between Indians and settlers just west of the hill that is now Richmond's Chimborazo Park. In 1679 Captain William Byrd (the first William Byrd), who had inherited much land around the Falls, established Fort Charles, in return for certain privileges. Manned by 50 able-bodied and well-armed men, the fort guaranteed the protection of the settlers until the James River was fairly well settled. Colonel William Byrd, son of Captain Byrd, continued in his father's footsteps and built a large business including farming, manufacturing, mining, and trading. This business was located on the old Indian village site and populated with a settlement of Scotch workers which came to be known as "Rocketts." 4

In April, 1737, the second Colonel William Byrd had Major William Mayo lay off for him a town to be known as Richmond. 5 It was located on the hill above "Rocketts" (which hill is now known as "Church Hill") and covered the area which is today 17th Street to 25th Street, from Broad Street to Cary Street, covering some 32 blocks, each of which was divided into four lots. 6 Richmond was incorporated as a town by an act of the Virginia General Assembly of May, 1742. The city grew at a leisurely pace, and it

4. Ibid.
is interesting to note that in September, 1784, there was an enactment by the Assembly "to prevent the building and repairing wooden chimneys in the town of Richmond." Thus it was that the authorities recognized the dangers of fire in those times when fire fighting was so difficult.

Incorporation as a city came in 1782, and by 1789 there were about three hundred houses containing some 2,000 people, although a fire on January 8, 1787, destroyed "between 40 and 50 dwellings and stores, with Byrd's warehouse, containing 70 hogheads of tobacco." The United States census of 1800 put Richmond's population at 5,730. By this time the city was built up along Main Street to 17th Street, which extended northerly, and there were stores and warehouses on banks of, and byways leading to, the James River. Some of the more opulent citizens had residences on Richmond Hill, which later became Church Hill, after St. John's Episcopal Church. "Richmond had become, by the end of the 18th Century, by virtue of her location, political importance and many assets, .... a leading 'convention city' ......."  

The number of fires in Richmond decreased after wooden chimneys were eliminated. The first big fire in the city occurred in 1781 when traitor Benedict Arnold, intent on destroying the supplies of this important revolutionary center, entered and fired most of its structures, which had been left almost defenseless by virtue of the male population

8. Ibid.  
being away in the army. The next big fire in Richmond was in 1787. A Mrs. Harthorne's frame dwelling caught fire, and the blaze spread rapidly through a large portion of the city. This fire, mentioned previously, came very close to destroying the State Capitol and Treasury. Damage amounted to almost half a million dollars. This fire served to point up the inadequacy of the fire fighting system prevalent at the time. The citizens had for their water supply only private wells and springs and the public wells dug here and there at street corners. For equipment there were only the family pails, which were gathered up at the sound of the alarm from the Market House Bell. As the news and location of the fire was passed from family to family, lines were formed until there were enough arm-lengths to pass pails of water from the nearby wells to the flames. Although the "bucket brigade" fought valiantly, the fire was not checked until two houses in its path were pulled down before the flames could reach them.¹⁰

Prior to the development of better defense against fires, fire insurance came to Richmond. One W. P. Ast brought to the area from Prussia, near the end of the eighteenth century, an idea said to have been originated by Frederick the Great, namely that of mutual help in time of fire.¹¹ The pioneer fire insurance company in Virginia was authorized by the General Assembly on December 22, 1794. It was known as the Mutual Assurance Society (on Buildings against Fire of the State of Virginia).¹² This

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10. Ibid.
11. Ibid.
organization was responsible for issuing the first insurance policy in the United States of this type. The building covered was the Masonic Hall which is still standing on East Franklin Street, and the policy is yet in effect. As time passed fire insurance companies sought to lessen the danger of fire by refusing insurance on certain types of structures. 13

In attempting to combat the ravages of fire, a network of wooden pipes was built to convey water all the way from the spring on Libby Hill to the Public Market. Perhaps inspired by this, Mayor Samuel Adams established a public "basin," at least 20 feet square, near the Capitol to bring water from various Shockoe Hill springs. This beginning of public water utilities of Richmond may, in a sense, be called the beginning of Richmond's real defense against fire. However, methods and equipment were still quite inadequate. So inadequate were they that at the start of the 19th Century fire gutted the post office along with a number of other buildings, and soon after reduced the "New Theatre" to ashes. Richmond's citizens, aware of the danger of a fire which might destroy the entire city, were starting to band together in volunteer companies, which shall be described presently. 14

The night of December 24, 1811, is a memorable one in Richmond's fire fighting history. On that evening the "Richmond Theatre" caught fire. Built on the same site as the aforementioned "New Theatre", the building

14. Ibid.
soon became an almost uncontrollable furnace, and the little bucketfuls of water flung on the roaring flames were powerless. Since the edifice was frame with no ceiling under the roof of pine boards covered with shingles and resin, it was a simple matter for the fire to engulf the entire theatre in a few seconds. The raising of a lighted lamp on the stage set fire to 34 hemp painted scenes, and the flames darted everywhere. The panic-stricken audience rushed for the narrow, winding stairs and jammed the doorways, which were only wide enough to allow but one to pass at a time. Many jumped from the windows in desperation. After the smoke had cleared, the dead numbered 72, among them the Governor of Virginia, and many more were injured. So deeply did the people feel about the tragedy that they observed a long period of public mourning, and a new theatre was not erected until 1819, when the Marshall Theatre was built, mainly through the influence of John Marshall. 15

In the very next month, January, 1812, five houses on Main Street, opposite Bell Tavern (where the Chesapeake and Ohio Depot now stands), were destroyed by fire. It took some 40 minutes for a long enough line to be formed to pass pails from the nearest water supply. Alarmed by this fact and the knowledge of even more disastrous fires in other cities, Richmond citizens called a meeting at Washington Tavern in 1815 to discuss ways of instituting a better fire protection service. Soon after this meeting, the Richmond Fire Society was formed, in April, 1816, "for the

15. Ibid.
purpose of rendering mutual assistance in the hour of peril, and to extend the influence of effective friendship."\(^\text{16}\)

Under Society regulations there were to be no more than 36 members governed by a president and a standing committee of four chosen by written votes.\(^\text{17}\) Each member was required to pay dues, to pay 75 cents for a regulation book, and to provide himself with two buckets, two bags, and a bed socket-key. The latter object was for the purpose of unbolting heavy bed frames, in order to remove them from houses afire.\(^\text{18}\) Omission of duty by officers was punishable by a fine of 50 cents for each offence. The only paid officer consisted of a secretary who earned 15 dollars a year. This official was subject to a five dollar fine if he refused to turn over the books to his successor at the close of his term of office. Meetings of the Society were held quarterly on the first Tuesday in January, April, July, and October.\(^\text{19}\)

No officer could serve longer than a year and any member so elected and refusing to serve was liable to be fined two dollars. Membership candidates were balloted for and were required to have five-sixths of the ballots cast in their favor. The penalty for missing a fire was a fine of two dollars. When there was a fire, the owner of the premises directed operations or the president of the Society if the owner was absent. Each

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16. Ibid.
17. Directory—Richmond Fire and Police Department, p. 52.
member was responsible for keeping "corrected" the regulation book, noting all changes of residence among other items. Widows of deceased members were entitled to the continued service of the Society.20

The expenses of all meetings, which were usually of some social significance, were paid for by a per capita assessment. Rolls were called twice, and those absent at the first call were fined 25 cents, those at the second call, 50 cents. Members who were delinquent in dues for a period of six months, or absent from meetings and duty for one year were erased from the Society's rolls. Any change of abode or business required that the secretary be notified within seven days. Membership outfit inspections occurred regularly, and failure to attend meant a fine of one dollar. Political and religious disputes within the Society were strictly forbidden with a fine of five dollars assessed for starting such arguments and refusing to cease. Annual dues were four dollars, payable quarterly.21

The next recorded protective organization was the "Shockoe Fire Company" which was started sometime prior to April 5, 1819, the exact date not being known. On the aforementioned day, two-thirds of the members deplored the existing constitution as being incorrect and therefore established a new and amended one.22 In this constitution reference is made to "Fire Department," thus giving the impression that the "department" as such had its origin at some point in the early 1800's. Indeed, the Richmond Enquirer in 1812 spoke of "the engine and property" of the Shockoe

20. Ibid.
22. Ibid., p. 16.
Fire Company being divided and sold upon the dissolution of that organization. 23 Also it is written elsewhere that in 1815 Richmond had not only an "engine," but a hook-and-ladder horse-drawn truck. 24

The Shockoe Fire Company had equipment composed of a hand-engine, reel, and hose. An important feature of the organization was the observance in April, June, August, and October of competitive events known as "washings." A "washing" was essentially competition between individual members and companies in regard to the speed and efficiency with which they exercised their fire fighting duties. By this time there were two other volunteer fire companies located near Capitol Square and in Rocketts, also possessing side-brake hand-pumped engines, hose and reels. 25

Each member of the Shockoe Company was required to have and wear a blue hat adorned with the device of the organization. This device consisted of the words "Shockoe Fire Company" on the front of the hat in circular form. Within this circle was a half-circle consisting of the slogan, "United We Stand," and in the opening below, two arms with hands joined. The bottom of the half-circle was composed of the words, "Divided We Fall," while on the back of the hat were placed the initials of the member and the number of the engine. Fines for delinquencies in duty were levied according to rank. Captains were fined anywhere from one dollar to ten dollars, lieutenants from 50 cents to five dollars, the

23. Directory--Richmond Fire and Police Department, pp. 52, 53.
secretary two dollars to six dollars, the treasurer one dollar to three dollars, engineers one dollar to six dollars, and members 25 cents to three dollars.\textsuperscript{26}

The exact date of the first successful hand-pumped engines is not known, but the first large fire at which they were used was apparently at the Penitentiary in 1823. There, the fire companies, reinforced by volunteers of the moment, named pumps and hose, while the Public Guard, with other volunteers, released the terrified prisoners through holes in the walls. The improved equipment and methods did not, however, save the property from destruction, but held the flames under control until all lives were saved.\textsuperscript{27} Richmond was a city of only 12,000 then, and the wild ringing of all the firebells summoned not only the volunteer firemen, militia, and army guards, but most of the other inhabitants as well. Governor James Pleasants rushed to the scene and ordered the 245 prisoners released and guarded by the militia. A check revealed that some 44 inmates were in solitary confinement, and that their cells could not be reached from the interior, because of the devouring flames. Therefore, Governor Pleasants ordered the exterior walls cut out and precautions taken so that none of the men could make a dash for liberty. As it was, they filed out in an orderly manner and joined the other convicts in fighting the fire. After order was restored, the prisoners were marched off to spend the night on the portico of the State Capitol, where a roll call showed that

\textsuperscript{26} Ibid., p. 17.
\textsuperscript{27} Cappelmann, op. cit.
all were present. Until the city water works was completed in 1834, all water was obtained from wells, the James River Canal, and natural water-courses permeating the city or in its vicinity.

"An enterprise of great importance to the city," was started in the year 1830. Money was appropriated for a water supply system, a reservoir, water-power pump-house and private hydrants for citizens. One of the main advantages of this new project was the increased water supply for use in time of fire. When the water works began to operate in 1834, the city purchased a powerful hand-engine known as the hydraulic, which was pumped by 40 men and was able to throw a stream of water clear over the State Capitol. The hydraulic was under the control of one James Busker, who was probably chief engineer of the Richmond Fire Department. Since it was too large to be drawn by hand to desired points of accidental emergencies, it was stationed in a small building on the east corner of 10th Street and the Basin, from which water was pumped and forced through hose to the desired places. This engine was undoubtedly used in 1844 when "the most remarkable building in Richmond, on account of its great height, being four stories high," caught fire. This building was located on "H" or Main Street, near 12th Street.

30. Cappelmann, op. cit.
32. Cappelmann, op. cit.
In January, 1837, the Richmond Fire Association was chartered and allowed provisionary control of the Richmond Fire Department. It combined the functions of fire, marine and life insurance, and of a fire department proper. The working body was composed of Association members, each of whom was required to own one or more shares of stock in the organization. 33

Chief Engineers were James Bosher, Thomas A. Rust, William C. Tompkins, James C. Crane, Robert M. Burton, and John H. Claiborne. Membership was composed of Richmond's most respected citizens "including many of those of staid habits and dignified demeanor." Semi-annual "washings" were regularly held, and these days were usually ended with a business-like report made at City Hall concerning the previous six months work of the department, followed by a dinner at one of the local hotels. By 1847, there were six companies equipped with side-brake engines, hose, and reels, and three years later two more were added. 34

During this period the following fire alarm regulations were used:

"(No. 1, or Jefferson Ward, includes all that portion of the city east of 15th Street. No. 2, or Madison Ward, includes all that portion of the city west of 15th and east of 7th Street. No. 3, or Monroe Ward, includes all the whole of the city west of 7th Street.) If the fire is in the 1st Ward, the bell at the Old Market House, in giving the alarm, first strikes ONB, and is then rung very quickly until the bells in Wards Two and Three have commenced ringing and continued ringing for the space of two minutes;

34. Directory--Richmond Fire and Police Department, p. 53.
and after it is noticed by the bells in the other wards, it then tolls until the fire has ceased. The same rules are observed by the bell at the Bell House, except that it strikes two when the fire is in Ward No. 2; and the bell at Engine House No. 4 strikes three when the fire is in Ward No. 3. All the bells continue ringing and striking at intervals the ward in which the fire is (except the bell located in that ward) until the fire has ceased.\textsuperscript{35}

The above regulations continued in effect until the electric fire-alarm system was introduced to Richmond in 1870. Prior to this date there were some costly fires in the city, which undoubtedly caused the bells to ring loud and long. A $400,000 fire occurred at Gallego Mills and Shockoe Warehouse and their neighborhood, with all of Richmond's eight volunteer companies fighting it with their hand-pump engines, hook-and-ladder, and their bucket brigades. The very next year someone set fire to the Richmond, Fredericksburg and Potomac Railroad Station at 8th and Broad Streets, burning 24 freight cars (most of which were loaded), two baggage cars and a passenger car. In 1853, a $180,000 blaze destroyed the Virginia Woolen Mills and damaged the Maxall Mills. These fires caused the City Council to realize that Richmond's fire apparatus was inadequate to protect the fast-growing city and its enlarged plants.\textsuperscript{36}

Therefore, four up-to-date hand-engines were ordered purchased, as well as much new hose, and some hook-and-ladder trucks, the best that

\textsuperscript{35} Cappelmann, op. cit.
\textsuperscript{36} Ibid.
could be obtained. The fact that the Fire Department was made up of volunteer citizens, had caused it to become more of a social organization than it should have been, with the result that it was not as effective as one could hope. In fact, when the first of the new engines arrived, (one worked by 32 men, throwing an inch-and-a-half stream for 90 feet), it was met at the wharf by a band, and escorted with all honor to Phoenix Company No. 3. 37

In 1855, the Penitentiary again caught fire, and citizens and military worked together with the members of the Fire Department in rescuing prisoners and stamping out the flames. However, the City Council was not entirely satisfied with the handling of the fire fighting, and so the Richmond Volunteer Fire Department was reorganized into an independent volunteer department which was required to report to a Council Committee. 38 John J. Pry was chief engineer, and Augustus Arsell, Sr., Lewis L. Barnes, and Dr. Patrick Wilkie Brown were assistant engineers. There were six engine companies and one hook-and-ladder company. These companies were called Liberty, Protection, Phoenix, Aid, Niagara, Citizen, and Vigilant, and were largely composed of young men from 16 to 21 years of age, coming chiefly from the city's most respectable families. 39

They were highly emulous of success in their chosen functions, and were animated by an esprit de corps rivalling that of the Imperial Guard of the first Napoleon, and an élan approaching that of the famed heroes of Balaklava. Rivalry was so intense as sometimes to impede the effective usefulness of the department.

37. Ibid.
38. Ibid.
39. Directory—Richmond Fire and Police Department, p. 53.
For example, Citizen Company No. 6 owned its entire equipment and had a treasury of $5,000. Some other nicknames were Tigers, Rough and Ready, Y'ow-yows, and Yellow-Jackets. In answering a call to a fire, the men usually sang and cheered, and so intense was their rivalry that they were sometimes no doubt unjustly accused of starting blazes in order to be first on the spot.

After three years, in 1858,

One of the most important events in the municipal history of the city, an event involving the peace, security and prosperity took place, when the Council, on October 25, passed an ordinance, doing away with the old volunteer fire department and inaugurating the paid department. John J. Fry was elected chief of the new department. It was at this time that the agitation to replace the old hand fire engines with steamers was begun.

This paid department was known as the Fire Brigade and embraced companies A, B, C, D, E, and F, commanded respectively by John T. Rogers, Vincent Bargamin, Thomas Clemmitt, William A. Charters, William A. Weed, and C. A. Brockmeyer. Lewis L. Barnes was the chief engineer. Each company was authorized to hire not more than ten slaves "of good character" to man the pumps.

This organization was the real beginning of the Richmond Fire Bureau that we know today. A portion of the firemen were regular full-time employees, but most of them were "call men" who served only when there was an actual fire to be fought. These call or runners received $15.00 per month after serving anywhere from three months to three years without pay while awaiting a vacancy. They were also subject to being fined.

40. Brock, op. cit., p. 21.
41. Cappelmann, op. cit.
42. Ibid.
43. Directory--Richmond Fire and Police Department, p. 53.
44. Rogers, op. cit.
for failing to respond to an alarm. Those regular firemen had to furnish all of their equipment and were allowed only 24 hours off, every ten days, provided there were no fires. The companies were very well organized and handled in a business-like fashion the great fire of 1859, on Main Street from 7th to 8th Streets. Since then, Richmond has experienced greater safety year by year. In 1860, the first steam fire engine, built by Ettinger and Edmond of Richmond, was put into service here. It could throw a stream of water over the American Hotel, and all of Richmond marveled and rejoiced that their fears of fire could not be greatly lessened.

When Richmond became the Capitol of the Confederate States of America in 1861, the city resembled a great military camp. During the first year, the city was remarkably peaceful, considering the fact that many soldiers and strangers flocked to the area. However, the second year of the war began three years of turmoil.

much of the offscouring of North and South was in Richmond, and lawlessness was rife. Carroting, thieving, holdups, burglaries, incendiariism and even murder were almost hourly occurrences. Castle Thunder, on the north side of Cary, between 18th and 19th Streets, and Castle Lightning, on the south side, were well-nigh full of disorderly soldiers.

45. Ibid.
46. Cappelmann, op. cit.
47. Ibid.
Among the worst fires of the war period were the burning of the Confederate Coffee Factory on East Cary Street, with a loss of $100,000, and a $150,000 fire of incendiary origin on Main Street from 7th to 8th Streets. One night thieves pulled down and carried away a whole house in Rockets! An ignorant, lawless crowd started a "bread riot" on Cary Street, and had to be fired on for order to be restored. A powder magazine blew up and killed 33 people, while wounding 30 others. 48 During all of this disturbance, the Fire Brigade was attempting to act as provost guard for the city. 49

When the terrible time of Evacuation came for Richmond in 1865, there occurred as a result the worst of all Richmond fires. Ironically, the fire(s) was started by the Confederacy itself to destroy anything useful which the enemy might be able to use. The Shockoe Warehouse, Dibrell's Warehouse, and Mayo's Warehouse were fired to destroy the supplies which they contained. Also Mayo's Bridge was set afire as the Southern forces left the city. A high wind came up and began to spread the flames, while the lawless element of the city surged through the streets, some no doubt setting fire to more buildings, and looting everywhere. 50

The fire was soon in an uncontrollable state, and the great heart of Richmond was reduced to utter ruin before the eyes of those citizens who had remained there. Hotels, newspaper buildings, banks, a church,

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48. Ibid.
49. Brock, op. cit., p. 22.
50. Cappelmann, op. cit.
warehouses, manufacturing plants, stores, the old State Armory, the Confederate Navy Yard, the Mechanics Institute (which housed the offices of the War Department), all were engulfed by the flames and reduced to ashes. From the north side of Main Street to the James River, between 8th and 15th Streets and from 20th to 23rd Streets, only the old Post Office Building and the Bank Building next to 11th and Main Streets were left standing.

To add to the horror of those hours, an explosion blew up the Poor House, killing 12 of the inmates. Thus it was that the Federal troops, whom Richmond had fought to keep out of the city, finally arrived, not to destroy, but to preserve the area's peace and remaining property. Buildings were dynamited at strategic points to check the fire, and many of the maudaners were rounded up and imprisoned, so that the city at last found some calm in her desolation.51

After the Civil War ended, Richmond began the trail back toward "normalcy," but found it to be a long one, to say the least. It was five years before the choking reins of martial law were taken away, and it was only after a legal battle that her attempts to operate her civil courts were successful.52 During the period of military rule, William A. Charters was displaced as chief engineer, but after civil authority was restored, he was returned to his former post.53

In 1870, with one Chief Mullen at the head of the Fire Department, the city was happy in its opportunity to again press forward. However,

51. Ibid.
52. Ibid.
53. Directory--Richmond Fire and Police Department, p. 53.
Richmond received a momentary jolt when its fire apparatus was seized to satisfy the claims of the owners of some whiskey which was destroyed in the evacuation; but the good citizens were fortunately able to secure its release. That same year there occurred the terrible Spotswood Hotel fire, in the dead of winter, when ice-covered firemen fought bravely but without success to save all lives. Still another blow was the worst flood Richmond had known in a hundred years, and another, the terrible Capitol Disaster— in connection with which is found one of the earliest mentions of the turning in of an alarm by a Fire Alarm Box.\footnote{Cappelmann, \emph{op. cit.}}

The installation of the Electric Fire Alarm and Police Telegraph System in 1870 was a vast improvement over the old system of utter dependence on such items as whistles, stick-tapping, bells signaling to each other, and word of mouth. This excellent step forward was indicative of the manner in which Richmond pushed ahead, despite all discouragements, in every phase. The records of the Fire Department showed a steady climb upward from year to year, when every improvement was seized upon and efficiency increased annually. In regard to water supply, the reservoir was soon more than double its size before the Civil War, and in 1881 came another long awaited improvement—a steam pump for the water works. Also, the patented swinging harness introduced in 1881 made it possible to answer alarms much faster than before.\footnote{\textit{Ibid.}}
When a paid Richmond Fire Department was instituted in 1858, it was placed under the control of a special committee of the City Council. This situation lasted until 1888 when one Edward Cohen, in February of that year, led a movement to place the Fire Department under a board other than the present one. Assisted by E. H. Fisher, secretary of the Department, Cohen pressed the matter before the Virginia General Assembly, which in turn passed the bill amending the Richmond City Charter thereby permitting the desired change. It was felt that a special board could give more careful consideration and attention to the affairs of the Department than a Council Committee could, and therefore better results could be obtained in return for the money expended annually. 56

The Board of Fire Commissioners seemed to work very well. By strict business methods and rigid economy it modernized department equipment, remodeled old fire houses, built new ones, and improved discipline as well as the service. The inspectors of the National Board of Underwriters reported that the city had a splendidly organized and equipped department with few recommendations for improvement except that the water-mains were too small and generally inadequate. 57 This fault was further brought to light in 1902 when a citizen named John C. Robertson presented a printed argument in behalf of using Swift Creek in Chesterfield County as a source of Richmond's water supply rather than the James River. One of the reasons offered for such a move was that Swift Creek water would

56. Directory—Richmond Fire and Police Department, p. 54.
57. Ibid.
provide considerable additional pressure in the fire hydrants. Robertson stated that no city the size of Richmond should have had a pressure less than 40 pounds for its hydrants. He further declared that out of 599 fire hydrants, only 120 in the city had such a pressure, while 319 had 25 pounds or less. From 10th to Lombardy Streets on Broad Street there were only four hydrants with more than 20 pounds of pressure; all others had from 14 to 20 pounds. The writer said that any increase in the size of the hydrants would help only slightly, but that the Swift Creek supply would offer pressure 24 pounds greater than the city's new reservoir. The added pressure would in turn raise Broad Street pressure to 43 pounds and do away with the need for more new mains.58

The Richmond Fire Department was, however, considered a good risk by the insurance companies. The Fire Board was required to have, by law, as much money placed to their credit as the Council Committee of Fire, which preceded them, had been allowed, and the Finance Committee in construing that provision of the law, placed to the Board's credit the smallest amount that the Council Committee had ever received for the general maintenance of the Richmond Fire Department, which was $17,180, set aside for fiscal year 1880.59

The Board took over July 1, 1880, with less than $4,000 remaining for support of the Department from July to December. The next year the

59. Directory—Richmond Fire and Police Department, p. 54.
need was felt for another hook-and-ladder truck in the western part of the city, where so many new, beautiful homes had been built. The nearest station then was two miles away, and it was decided to place one that was out of service back on active duty. Some $1,000 was spent in construction of the house, besides completely repairing and painting the piece of apparatus, adding a complete outfit, and supporting the men for one year, after which the City Council provided the expenses. When put into operation this station answered more alarms than any other truck in service.

In order to strengthen service in the commercial district between 9th and 14th Streets, a station was built on Cary Street between 9th and 10th Streets. The total cost was $22,000, including purchasing the site and equipment. Next Engine Company No. 4 was built on 3rd Street between Broad and Race Streets, and the Fulton Engine House and equipment were added to and improved, giving security to citizens in that area. A new headquarters for the Richmond Fire Department was erected on Broad Street between 9th and 10th Streets. This building also housed the Hayes Truck (Company No. 1), Engine Company No. 3, and Chemical Engine Company No. 1. The chief's office was in this structure as well as a board room for the meetings of the fire commissioners. Stables were located in the rear of the building.

60. Ibid.
61. Ibid., p. 56.
In seven years the board expended over $60,000 for buildings, machinery, horses and hose. In 1888 they found six engines, two trucks, and two hose companies. In 1895 there were eight engines, three trucks, and one 60-gallon double tank chemical engine, making 12 companies in all. The chemical engine cost $1,700, carried three permanent men, and saved its cost at any fire where valuable stock was in danger. Right new hose wagons were built, replacing the 'old' two-wheelers. Four new engines were added and the rest rebuilt, while 3,000 feet of hose was added each year. There was at this time a rather heavy loss of hose because heavy equipment kept running over it at fires. Some 40 horses were bought to replace those found on hand seven years earlier, and their cost did not average $150 each.62

Thus it is seen that the Board of Fire Commissioners did an extremely good job of managing the department and of obtaining the best mileage possible from its personnel and financial resources.

In those days the life of a paid fireman was perhaps more rigorous than today. At first he was not allowed a day off unless he paid for a substitute. By 1895 a fireman was granted three days off during the winter, each month, and four days a month during the 'heated term.' Ten-day furloughs were allowed annually, and duties were correspondingly lessened by the addition of double the amount of permanent men.63

A social feature sponsored in 1888 by one of the engine companies was a lawn party held just opposite the fire house. Dancing was the main attraction, with the music furnished by an improvised orchestra composed

62. Ibid.
63. Ibid., p. 58.
of several firemen and their friends. Refreshments of ice cream and lemonade were served, while the dance floor built by the firemen was illuminated with Chinese lanterns with tallow candles. Proceeds from the affair were used to purchase dress overcoats and fire fighting outfits.\footnote{Rogers, op. cit.}

During the Yuletide season in past days there was much gathering at the various fire stations by friends and relatives to exchange greetings. George W. Rogers recalls that "in my boyhood days, open house prevailed and there was much visiting by relatives, friends and neighbors, and many citizens visited the engine house of their community to exchange greetings." We are told that it was the custom of Mr. Henry G. Cannon, one of Richmond's most prominent citizens and member of the bar, to "have sufficient eggnog prepared to be served from two bowls, one at his most hospitable home and the other at the open house maintained by the members of Engine Company No. 4, on 3rd Street just a block away.\footnote{Rogers, op. cit.}

In 1891 the Fireman's Relief Association was formed because regular insurance rates for firemen were so high. At the outset several business houses gave cash donations of from $50 to $350, and the association started with a treasury of $900. Each member paid 25 cents monthly dues and all fines against the men were turned over to the association. In 1894 there was a fund of $3,400 with over $2,000 having been paid out in sick and death benefits.\footnote{Brock, op. cit., pp. 9, 10.}
An organization of this kind was almost essential at this time because often the fireman or his family would be left with no financial provision for themselves in case of accident or death. Out of this situation, so unfair to men who were constantly exposing themselves to danger, arose the association, which lasted until 1912, when another group was formed. This new group will be described later. In addition, we are told that "a first-class physician attends the firemen whenever needed at a nominal cost...." while City Council deeded the firemen a plot in Riverview Cemetery for those unable to afford private sections.

The Richmond Fire Alarm and Police Telegraph, formerly managed by a Council committee was also placed under the control of the Board of Fire Commissioners. In 1895 there were three six-circuit repeaters, and the manual was added to the automatic system. Over 90 fire alarm boxes were added in seven years, making a total of more than 150. It was acknowledged that Richmond had more boxes per capita than any other city in the world. In 1895 there was nearly 200 miles of wire in the system and over 150 fire alarm gongs distributed among the different houses and homes of firemen. By this time the headquarters of this department was located in the tower of City Hall, and the 40 City Hall clocks, all worked electrically from the tower clock, were kept in order by the Fire Alarm Department. This department drew visitors all during the day, and a register was kept of all those who came to visit.

67. Cappelmann, op. cit.
68. Directory—Richmond Fire and Police Department, p. 58.
69. Ibid., pp. 58, 60.
In 1895 the permanent force of the Richmond Fire Department consisted of 68 men. They were distributed as follows: one chief, one assistant chief, one captain, eight engineers, eight helpers, 12 hostlers, three tillermen, 11 extra stationmen, six laddermen, 12 horsemen, and the Fire Alarm Department force of one superintendent, one assistant superintendent, one foreman of construction, and two linemen. The call force numbered 93, and were distributed thusly: one assistant chief, eight captains of engine companies, eight lieutenants of engine companies, three captains of truck companies, three lieutenants of truck companies, 31 horsemen, 17 laddermen, and 22 substitutes. The two forces made for a grand total of 161 men. The equipment was composed of eight active engines, one reserve engine, one chemical engine, eight hose wagons, one reserve four-wheel hose reel, three reserve two-wheel reels, three officers' buggies, three fuel wagons, 42 horses, 21,750 feet of cotton hose, and 250 feet of rubber hose.

There were some rather large, spectacular fires in Richmond during the period between the Civil War and 1910. There was a half-million dollar fire in 1882, a huge "Petersburg Bridge" fire in 1883, the fourth Penitentiary fire in 1888, a quarter-million dollar fire on Cary Street and a fire in the Locomotive Works in 1890. In 1893 the Allen and Ginter and Valentine Meat Juice Plants caught fire at a time when all pipes were frozen and firemen had to pump water through a hole in the ice on the Canal.

70. Ibid., p. 71.
The Jefferson Hotel burned in 1901, as well as the Gas Works where blazing oil burned the clothes from the bodies of firemen. There was a fourth fire at the Gallego Mills in 1903, and a blaze at Richmond College on Christmas morning, 1910.71

During these years the citizens of Richmond came to the happy realization that they need no longer fear the awful spreading fires of the past, and that their progressive Fire Department was voluntarily undertaking building inspection and fire prevention work so as to greatly decrease the proportion of "single" fires. These efforts at last led to the establishment of a City Building Inspector Bureau in 1907, and the Bureau of Fire Prevention in 1920, which operated in close conjunction with the Fire Department proper and the other bureaus of the Department of Public Safety.72 Now the Fire Department is officially known as the Bureau of Fire, and the latter is broken down into divisions of which Fire Prevention is a part. In turn the several bureaus make up the Department of Public Safety.

The next important innovations in fire-fighting equipment, after the steam engine, were the "water towers," ladder-raising devices, and "chemical wagons." However, even more startling and more productive of results, perhaps, was the motorization of the Richmond Fire Department, begun in 1911, with the installation of a motor fire engine at Engine Company No. 4, on 3rd Street. The following year three chief's cars,

71. Cappelmann, op. cit.
72. Ibid.
another motor engine and a motor aerial truck, the hook-and-ladder, were added. The report for that year stated that one of these engines replaced four or five horses, one engine, and one combination chemical wagon, and that upkeep of this first motor equipment was only $267 against $1,536 for the equipment that they replaced, which had not covered half as much territory. 73

Another splendid improvement of 1912 was the elimination of the old system of "call men." From this year on all men were paid full-time firemen and were on duty 24 hours a day, with one day off in six. This was changed to the two-platoon system, the system now being used, in 1921—the Department serving two shifts of 24 hours each. That was after two other important changes had been made in organization—that of 1919, when the Fire Department was placed under the Director of Public Safety, and that of 1920 when the aforementioned Bureau of Fire Prevention was established. By 1923 the Department was completely motorized, and for a while afterwards motorcycles were employed for small blazes, which practice greatly reduced costs by saving the large apparatus. Some of the largest fires in the several years after 1910 were the Virginia Street Warehouse fire of 1915, where three firemen were killed; the Jurgens Furniture Store fire of 1921, which killed four firemen and one citizen; the Academy of Music fire with a loss of $96,000; and the $132,000

73. Ibid.
Corley Company fire in 1926. By 1928 Richmond had the lowest fire rate for 30 years, and in 1931 Richmond's per capita fire loss was the lowest in the United States.74

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74. Ibid.
CHAPTER II

The Richmond, Virginia Bureau of Fire is under the direct control of the Director of Public Safety, William L. Groth. He is appointed by the City Manager and serves for an indefinite term with removal only for cause after trial. He is assisted by Assistant Director, John T. Hanna. The Chief of the Fire Bureau, John P. Finnegan, Sr., is the executive officer of the fire fighting force and is therefore responsible for its efficiency and operation. He may suspend or reprimand a member of the force without the approval of the Director of Public Safety, but he cannot dismiss a member without the consent of the Director and after a trial.1

For fire fighting purposes the city is divided into three battalion districts with a battalion chief and a deputy battalion chief in command of each. The chief administrative assistant of the Bureau of Fire is Edgar A. Sherry, who also serves as chief of the training division.

Today the Bureau has a complement of 404 men and officers and 66 pieces

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1. Interview, Chief Edgar A. Sherry, Richmond Fire Bureau, March 26, 1958.
of fire apparatus. All appointments and promotions are made by the Bureau of Personnel with tenure of office provisions. An applicant for appointment must be selected from a list compiled after suitable written and physical examinations have been given. The applicant must be between 21 and 30 years of age, which may be extended to 34 for a veteran. Certain suitable height and weight limits are prescribed and an appointee must serve a satisfactory probationary period.  

Applicants for promotion to all ranks through battalion chief must have a satisfactory progress grading sheet and take a physical and written mental examination. A private must have been in grade for at least five years before he is eligible to take the examination for lieutenants, while a lieutenant must be in the Bureau for seven years and in grade for two before he can become a captain. A captain must serve at least nine years as a fireman and two years in grade before attempting to rise to deputy battalion chief. The requirements for the position of battalion chief are no less than ten years as a fireman with at least one year as a deputy. The chief must have as many as 12 years in the Bureau and have served at least two as a battalion chief. Promotion to chief is made by the Director of Public Safety with the approval, technically speaking, of the City Manager.  

A city administered pension plan is in force with compulsory retirement at 70 years of age. A fireman may retire on a voluntary basis at age 60, after 35 years of service at one-half of his regular base pay,

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2. Ibid.
3. Ibid.
the amount not to exceed $3,600, or at 60 years of age and no specified years of service, the amount a member would receive under this plan being prorated on his number of years in service. The pension plan is supported by an assessment of a fire fighter's salary with an equal amount paid by the city; the plan also has a widow's clause. In addition to this pension fund, there is the Fireman's Mutual Aid Association, which pays a small sum when a member retires. This plan is supported by annual dues, and income is derived from benefit shows, dances, and gifts from private individuals. There is also a Police and Fireman's Insurance plan available on a voluntary basis. Then too, Richmond firemen have been under the coverage of Social Security for about the last two years. A large percentage of the bureau is unionized in that members belong to a fire fighters' association of the American Federation of Labor. 4

As mentioned in the foregoing chapter, a new organization was charted in 1913 to take the place of the Firemen's Relief Association. The Fireman's Mutual Aid Association was formed with two main purposes in mind: (1) To promote such fraternal and social relations between all members of the Association as would be for the betterment and efficiency of the Fire and Fire Alarm Departments, (2) To accumulate by ways of assessments upon its active members and such other means as may be approved by the Board of Directors, a fund, from the income of which, to provide by way of pension for the maintenance and support of those members of the Fire

4. Ibid.
and Fire Alarm Departments of Richmond who, after honorable service in the departments were retired in accordance with the provisions of the Association's by-laws. Also, to provide a payment of some sort to the family of a fireman in the event of his death.\textsuperscript{5}

It happened that under the old organization a number of friendly citizens without any actual connection with the Fire Department were charter members of the group, and that others joined in later years. Thus it was that in 1912 it was discovered that 70 per cent of the membership were not members of the Fire Department itself! Also, the funds, in spite of generous contributions intended to benefit the firemen, had dwindled to a very low figure. In that year, therefore, the old Association was dissolved, and the present one came into being. In the present organization, "civilians" may be elected to life or contributing membership, and may hold office, but only active members, that is, members of the Bureau of Fire, may receive pecuniary benefits. The dues of the active membership are $10 per month for the first year, $5 per month for the second and third years, and one dollar per month thereafter. All dues, fees, fines, and gifts go into a trust fund, the income of which is used for necessary expenses, and for pensions. After 20 years of honorable service, a member may be pensioned for the rest of his life, or in the event of his death, his dependents receive the pension for one year.\textsuperscript{6} The fund at present permits this pension to be $35 a month. Current president of the Association

\textsuperscript{5} Mary Dudley Cappelmann, \textit{A Brief History of the Fire Department and The Police Department of Richmond, Virginia}, (Richmond: The Fireman's Mutual Aid Association and the Police Benevolent Association, 1931). (no page numbers).

\textsuperscript{6} Ibid.
is Beverly H. Davis with Beecher R. Stallard as vice-president. Both are "civilians" while the chief clerk of the Fire Bureau, Charles E. Willis, is secretary-treasurer of the group.

In the Richmond Bureau of Fire there are 21 engine companies and seven truck companies. The engine companies are located at the following sites:

1. 306 North 25th Street
2. 2016 East Main Street
3. 908 East Broad Street
4. 200 South Laurel Street
5. 200 West Marshall Street
6. 200 South Laurel Street
7. 908 East Broad Street
8. 1014 Williamsburg Avenue
9. 801 North 5th Street
10. 1609 West Broad Street
11. 1235 North 28th Street
12. 2223 West Cary Street
13. 1000 Bainbridge Street
14. 2932 Hawthorne Avenue
15. 3011 Meadowbridge Road
16. 3901 Chamberlayne Avenue
17. 3001 Bainbridge Street
18. 412 North Thompson Street
19. 311 Maple Avenue
20. 4715 Forest Hill Avenue
21. 2505 Petersburg Pike

The seven truck companies are at the following locations:

1. 908 East Broad Street
2. 2016 East Main Street
3. 1609 West Broad Street
4. 1235 North 28th Street
5. 1000 Bainbridge Street
6. 2932 Hawthorne Avenue
7. 412 North Thompson Street

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7. Interview, Chief Sherry, March 26, 1958.
Of the 21 engine companies, 14 are two-piece, and there are seven ladder companies which are in service in a total of 19 stations. Members work alternate 24-hour shifts, with three extra days off every month. Each company has a captain and a lieutenant assigned to each platoon. Fifteen days annual vacation are allowed all members during vacation periods extending from January through December. The number of men off at a time varies from three to 100. Twelve days sick leave is allowed annually and is accruable to 90 days. Any men on military leave are replaced by substitutes, but no substitutes are provided for those on vacation or sick leaves. A continuous house watch is maintained at all stations. 8

Three engine companies and one truck company are located within the congested value district, and four other engine companies and one truck company are within one mile of this district. All of the remaining engine and ladder companies, except three, are within three miles of the approximate center of the district. Distribution elsewhere in the city is good for engine companies, and, except for the extreme western and southern part of the city, is fairly good for truck companies; running distances for a ladder company to these areas are in excess of three and four miles respectively. 9

All the 19 buildings used as fire stations are owned by the city and are from one to three stories in height and of ordinary construction.

8. Ibid.
9. Ibid.
There is no adequate record as to the age of stations, but many are reported to be over 50 years old. Two stations are on one-way streets where traffic conditions are heavy during rush hours. One station was so located that response was limited in one direction because of steep grades; this made it necessary for another company a considerable distance away to respond to the top of this hill. This has since been eliminated by the construction of a new house. Overhead doors have been installed in all stations. 10

The Bureau of Fire has 28 pumpers in service plus two in reserve, eight of which are used as hose wagons accompanying other pumpers. All are equipped with three lengths of hard suction and one length of soft suction. All lengths are ten feet long. Two of the hard suction and the soft suction have diameters ranging from four and one-half to six inches, and the other length of hard suction has a diameter of three inches. The eight pumpers used as hose wagons are equipped with portable turrets and all pumpers have two-way radios. The two reserve pumpers are a 750 gallon Buffalo, purchased in 1938, and a 1942 Mack, also equipped with a 500-gallon pump. Both are equipped with the usual suction appliances, have booster tanks, and a small amount of minor equipment. 11

Five hose wagons are in service to augment the eight 500-gallon pumpers used as hose wagons; three of these pumpers used as wagons were delivered and placed in service during 1951. Five of the hose wagons have portable turrets. All are equipped with two-way radio, and all have booster tanks.

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10. Ibid.
11. Ibid.
In addition, there are seven aerial ladder trucks in service and one in reserve. Seven of the aerial ladders are of metal and are hydraulically raised, while one has a spring-raised wooden aerial ladder. Ladder trucks carry, besides the aerial ladder, eight to 19 other ladders, including 30, 45, 40, and 35-foot extensions. Each truck is equipped with a ladder pipe with tips ranging in size from one and one-half to two inches, and a 500-gallon fog nozzle.12

Four Civilian Defense Rescue Trucks at Engine Companies No. 8, 9, 19 and 21 are in service and are manned by a detail of two men from the companies in which they are quartered. One of these trucks is used at all multiple alarm fires, while all the vehicles can be put into service for heavy rescue work, such as the collapse of a building. A wide variety of emergency equipment is carried by these trucks, including a fixed electric generator, four 500-watt floodlights and an adequate supply of cable, first-aid equipment, one inhalator and an inhalator-resuscitator, two filter type gas masks, two self-contained breathing apparatus, one fresh air mask, one portable and one fixed set oxyacetylene equipment and two-way radio.

Two foam trucks are in service and are manned by a detail of one man from the companies with which they are quartered. Each truck is equipped with one chemical foam generator, 28 cans of foam powder, one foam playpipe with a two-inch tip, a spray nozzle and 12-foot applicator for one and one-half inch hose. Also, each of these trucks carries a 100-gallon tank of

12. Ibid.
gasoline and five gallons of motor oil for refueling apparatus at large fires. The gasoline is dispensed by means of a hand pump into ordinary five-gallon cans for distribution to apparatus.13

There are eight four-door sedans and two ranchwagons for the use of the chief of the Fire Bureau, the three battalion chiefs on duty, the head of the Fire Prevention Division, the fire prevention inspectors and the drillmaster. The chief has a 1957 Ford; the others are Fords and Chevrolets. All of the cars are two-way radio equipped and carry one filter type gas mask and one self-contained breathing apparatus, a first-aid kit, electric hand light, hydrant wrench and a pair of wire cutters. A one-ten Chevrolet supply truck purchased in 1954 is also available. Gasoline is stored in underground tanks of 120 to 550 gallons capacity at all but one station; the apparatus at this station gets gasoline at the nearest station with fueling facilities. Gasoline is dispensed at a few stations by hand pumps and at the remainder by standard electric pumps; most pumps are located inside the stations. Fuel is brought to apparatus at fires of extended duration by one of the foam trucks. Distribution at fires and in stations is in ordinary five-gallon cans.14

All two and one-half and three-inch hose is double jacketed cotton, rubber lines, delivered under the usual trade guarantees. All hose is tested upon receipt to 400 pounds and annually thereafter to 200 pounds; records of these tests and the age of hose are kept. The average amount

13. Ibid.
14. Ibid.
of two and one-half inch hose per engine company, including the spare, is 2,040 feet. Each engine company is allocated 2,000 feet of two and one-half or three-inch hose; five companies carry from 100 to 300 feet of the three-inch. Many companies carry most of what would be their spare hose. As the three-inch hose wears out, it is not replaced. All stations are provided with hose towers for drying hose. Repairs to hose are made at Engine Company No. 19, where tools and spare parts are available. Hose is shifted on apparatus monthly. Hose threads of two and one-half and three-inch hose are of the usual screw type with an outside diameter of the male thread of three and five-sixteenths inches, and eight threads per inch. The outlying engine companies are equipped with two and one-half inch adapters for National Standard threads.15

All repairs of Fire Bureau vehicles are made at the Department of General Services maintenance shop, located at the old fairgrounds on the Boulevard. T. L. Sharp is Superintendent of Automotive Maintenance. Each department in the city is allocated space at the shop. Four mechanics, one of whom is on 24-hour call are "assigned" to the Bureau of Fire. The man designated on call takes a radio-equipped one-half ton pickup truck to his home where he can be called for any emergency repair to fire apparatus. The night man, the superintendent of maintenance and foreman of the fire bureau mechanics respond to all multiple alarm fires.16

15. Ibid.
16. Ibid.
Printed rules and regulations, last revised in August, 1955, govern the operation of the bureau and prescribe duties of members; copies of these regulations have been given to all members. These rules, prior to 1955, were too brief and inadequate, but they were and still are augmented by the issuance from time to time of special and general orders by the Director of Public Safety and the chief. The chief may suspend or reprimand but may not discharge a member without the approval of the Director. On the whole, discipline appears to be quite good in the Richmond Bureau of Fire.17

The Bureau of Fire now has control of the three city ambulances, which formerly were stationed at the Medical College of Virginia Hospital. It was considered a disadvantage for all three vehicles to be located at the same site and yet have to serve the entire city of Richmond. Therefore, the ambulances were placed in different fire houses in order that the area covered by each might be more equal and in order that the scene of an accident might be reached more quickly. Ambulance No. 1 is stationed at Engine Company No. 1, Ambulance No. 2 at Engine Company No. 12, and Ambulance No. 3 at Engine Company No. 17. In addition, all ambulance drivers are now members of the Fire Bureau and are considered firemen. There is one reserve ambulance which is moved to different fire stations periodically.18 There is also a morgue wagon which is used to pick up dead bodies.

17. Ibid.
18. Ibid.
The three districts mentioned earlier are the Eastern, Western, and Southern. The Eastern District has its headquarters at Engine Company No. 11, and the battalion chief is C. C. Valentine, with John F. Finnegan, Jr., as deputy battalion chief. Engine Company No. 18 is headquarters for the Western District, and Walter L. Morecock is battalion chief. Charles E. Starnell is deputy. Headquarters for the Southern District is located at Engine Company No. 5, and Raymond E. Huband is battalion chief, with William H. Ballard as deputy. 19

The Training Division of the Bureau of Fire is under the supervision of Chief Sherry. He is assisted by a captain and a lieutenant who are drill instructors. The drill school is located at the quarters of Engine Company No. 11 and includes a five-story drill tower which is provided with a dry sprinkler system in the first floor smoke room and a classroom which is in an open faced shed at the rear of the fire station. Minor equipment used in the bureau and a good variety of other training aids are displayed. The school is not as complete and modern as it should be since the classroom cannot be used during inclement weather, and the equipment therein is subject to the effects of the weather. Also, apparatus is unable to maneuver on all sides of the tower, while an adjoining lumber yard prevents the use of water, and the smoke room as such except in small amounts. 20

Therefore, a new drill school is now being built by Richmond on property owned by the municipality at Byrd Field. This new school will be sufficiently removed from any other structures as to allow a complete program of training to be presented.

19. Ibid.
20. Ibid.
The training program was reorganized several years ago so that new men attend the school for 30 days, and all officers are given refresher courses at specified periods. Each month the Training Division issues a daily list of subjects to be used in company training, but it was noted during the 1952 survey by the National Board of Fire Underwriters that these company drills were not always properly held. It was found that the many and varied other details given members of the Training Division hindered the successful execution of a training program. However these details have now, for the most part, been deleted.21

Inspections are made by company members of dwellings in their districts monthly. Reports are made of these inspections, one copy of which is forwarded to the Bureau of Fire Prevention, and any serious violations found are followed up by that bureau. Each company also inspects the fire hydrants in its district monthly, greasing and oiling but not operating or flushing them. Defects found are reported to the chief's office who in turn notifies the water department.22

By Virginia state law, the State Fire Marshal, his deputies, and local officials are required to make inspections upon request, upon complaint or of their own initiative in order to assure proper enforcement of state regulations. Municipal ordinances place the control of explosives and flammables under the Division of Fire Prevention, a part of the Fire Bureau. The division is under the general supervision of the Director of

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22. Interview, Chief Sherry, June 18, 1958.
Public Safety and under the immediate charge of the chief of the Fire Prevention Division, Lawrence M. Bowman, who has served in this position since 1950.23

Permits for a fee of $2.00 are issued by the division for the storage, handling, and use of explosives and flammables. There are eight members of the Fire Bureau detailed to the division for full time duty of which all are assigned to general hazard inspections, including the inspection of oil burner installations, the following up of complaints. Special hazards are inspected by the chief of the division. In addition there are three members of the Division of Firefighting who work with the Fire Prevention Division on a regular basis but who because of budget requirements cannot be carried on the roll of Fire Prevention. This then makes a total of 11 inspectors. Occupants are notified of unsatisfactory conditions by the inspectors, time allowed for remedying conditions being determined by the hazard, and if notice is not complied with, legal action is started by the division chief. Theaters, hotels, hospitals, and other public buildings are scheduled to be inspected every two months, industry every six months and elsewhere once a year. Records of each inspection made by the division are kept in a permanent file and recorded in a record book. The 1952 survey found the forms and records fairly complete and well kept.24

23. Ibid.
24. Ibid.
From the beginning of this century, the Richmond Fire Department attempted fire prevention work by including inspection of buildings and premises in its regular routine, and asked the City Council to appoint a Building Inspector, which was finally done in 1907. The next step in this phase of the Fire Department's work was the establishment of a Bureau of Fire Prevention in 1920, with the Assistant Chief of the Fire Department, L. S. Jones, as its head. Much credit was given to Chief Jones for the reduction of fire danger and fire loss in Richmond. Prior to 1920, the fire loss per capita in the city was about $1.98 annually. By 1931, this loss had been reduced to 76 cents, which was far below that of any city of Richmond's class.\(^{25}\)

The effectiveness of this bureau in its first days was handicapped by the lack of proper legislation, but after having secured some help in this respect it was able to function more efficiently.\(^{26}\) The municipal fire prevention code of 1952, with 1957 amendments, is now in effect. Under the old code of 1924, fairly good regulations covered flammable liquids, oil burner installations, dry cleaning, fireworks, disposal of ashes, and the control of bonfires and trash. However, the 1952 survey found that regulations covering hazardous chemicals, explosives, pyroxylin plastics, garages and repair shops, gas lighting and heating and junk storage were inadequate.\(^{27}\) Hence, the revision of 1952 was effected.

\(^{25}\) Cappelmann, \textit{op. cit.}
\(^{26}\) Ibid.
\(^{27}\) Report on the City of Richmond, Virginia, p. 22.
In general, the National Board of Fire Underwriters found that Richmond municipal ordinances are not adequate for the control of hazardous materials, processes and occupancies. The Fire Prevention Division cannot adequately enforce the present or any future laws properly with its inadequate staff of inspectors, this fact being evident from the inability of the present inspection force to keep its inspections on schedule. Various plants visited by an engineer of the underwriters had not been inspected by the city for several years. Local conditions as a whole are only fair and will remain so until sufficient qualified inspectors are provided.

Although the Fire Alarm and Police Telegraph Office until 1958 had been a separate and distinct section since the year after electricity was applied to fire and police signals, in 1870, it always was very closely allied with the Police and Fire Bureaus. Prior to 1930 this office also supervised the electrical equipment of the city in addition to its present work of handling fire alarms, police reports, and the traffic light system. The chief of the Office is James N. Fagan who was appointed to his present position in 1946. The Office contains 12 operators and a senior operator. In addition, there is one foreman of traffic signals, five linemen, and one truck operator. As of July 1, 1958, the office came under the complete control of the Bureau of Fire. Fire alarm headquarters is located in a one-story building of fireproof construction, with a basement and mezzanine floor, in Monroe Park.

28. Ibid., p. 23.
29. Cappelmann, op. cit.
30. Interview, Chief Sherry, June 18, 1958.
The building was built in 1923 in its present location so that it would be distant from other buildings and the danger of fire. However, with the passage of time, and with the heavy increase in motor traffic, the building is now located only 25 feet from Belvidere Street, which is a part of U.S. Highway No. 1, and over which much heavy commercial traffic passes. Most trucks carrying hazardous materials use this route when passing through the city, and it is reported that due to heavy vehicular traffic, constant supervision and frequent maintenance of delicate relays and other fire alarm equipment is necessary. The fire alarm apparatus is of the manual type, built and installed by Gamewell in 1923. The equipment at headquarters consists of three ten-circuit box relay panels, one ten-circuit alarm panel for five primary and five secondary alarm circuits, five ten-circuit battery charging panels which have been modified for rectifiers and current supervisory facilities, a protector board with provisions for testing circuits for grounds and two four-figure dial transmitters.31

Six five-circuit punch registers are provided for the box circuits and a single circuit punch register for each of the alarm circuits, while all of these punch registers are provided with time and date stamps. A private branch switchboard for the city owned telephone system is provided, with a telephone hand set for the direct line from the City Hall switchboard and two hand sets for the lines from the public exchange; the latter

31. Report on the City of Richmond, p. 16.
two hand sets and the extensions from the city owned switchboard to fire
stations are connected to a disc type voice recorder. A manual key is
provided, common to all alarm circuits, for sending out coded signals, a
punch register connected to the A.D.T. central office completes the fire
alarm equipment. In addition, an operating panel, a punch register, and
a switchboard, all of which are part of the police signalling system, are
also in the operating room. 32

At each fire station there is a punch register and tapper on the
primary and one or more gongs on the secondary alarm circuit. Formerly,
tappers were provided also in the chief's home, the residence of one of the
battalion chiefs, the bureau surgeon's office, the maintenance shop, the
police radio room, and the chief's office in the Mosque Building, one of
the water works pumping stations and the power house of the electric
company. Now all of these tappers have been removed, with the exception
of that one in the chief's office. There are 612 fire alarm boxes in
service, a portion of which are private or school boxes, records of which
do not indicate how many are accessible to the public. Two of the private
boxes are master boxes auxiliarized to sprinkler systems. Twenty-two of
the total number of boxes are of poor design and interfering type, all
but one of which are private boxes; in addition, there are a few non-inter-
fering, non-succession boxes. All of the remaining boxes are of the
succession type. 33 The interfering type means that if two boxes were turned
in simultaneously in different parts of the city, only one of the boxes
would register at fire alarm headquarters.

32. Ibid.
33. Ibid., pp. 16, 17.
Door action on boxes is either of quick-action type or key guard. A few boxes are mounted on pedestals, and on or in buildings, while the remainder are on available utility poles. The conspicuousness of boxes was only fair in 1952, since indicating lights were not provided over any of the boxes, and often many boxes and bands on supporting poles in need of paint. Also, it was noted during the 1952 survey that many public boxes were not visible from all directions due to improper locations. Boxes were observed to be set in recesses of exterior building walls, on poles to which vision is obstructed, and in one case inside a fire station. These faults have, for the most part, been remedied. Most boxes are grounded, and all leads down poles to boxes are in conduit. During the survey, fifty boxes were tested and were found to be in fairly good operating condition. However, the succession feature on three boxes did not work properly, the glass covering the inner mechanism was broken on two boxes, and the door on one box was broken. Boxes are timed to transmit signals at one-half second between blows and are tested about twice a year. Distribution of boxes in the congested value district is fair, with about 12 additional boxes needed and the relocation of 20 to insure proper visibility, which has been done. Distribution elsewhere is fairly good, except in the western and extreme southern sections of the city, where approximately 175 boxes were needed, according to the survey.\textsuperscript{34}

\textsuperscript{34} Ibid., p. 17.
However, the Bureau of Fire has found that "still" alarms, that is, those telephoned in, occur at an almost ten to one ratio over box alarms. Therefore, they have deliberately refrained from installing more boxes in those two sections of the city. Instead, they have installed "phantom" boxes, which are boxes on a pole but which do not turn in an alarm but are merely used as a number to designate a particular section of the city when firemen answer a "still" alarm.

Prior to 1958, the Bureau of Fire shared a two-way FM radio system with the Police Bureau. All transmitting, except from apparatus and chiefs' cars, was done by the police radio dispatchers. The volume of police traffic on the radio sometimes delayed transmitting of fire bureau messages. Therefore, in the summer of 1958 a radio tower will be erected in Monroe Park for the Fire Bureau so that it may have its own radio system and will not have to come into conflict with the police calls.

The city has its own dial system for interdepartment calls. A city-owned private branch exchange switchboard is located in fire alarm headquarters, and extensions are provided to all fire stations, fire bureau offices, A.D.T. central office, and the chief's home through this switchboard. The public telephone company provides nine lines from the public exchange to fire alarm headquarters to two handsets mounted on the side of the city owned switchboard. There are new provisions available for

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35. Ibid.
simultaneous communication with all fire stations. As previously stated, a disc type voice recorder is available that can record all conversations incoming on the public telephone company lines and outgoing on each extension of the city owned switchboard in fire alarm headquarters. 36

The superintendent and maintenance crew work five days a week. One of the linemen is on emergency call nights and weekends and would respond from his residence in a fire alarm truck. The fire alarm office is provided with one sedan and four trucks. One of the trucks is provided with a hydraulic lift platform and another with a small aerial ladder. There are three fire alarm operators assigned to each eight-hour shift in fire alarm headquarters; in addition, there is a senior operator on duty days. Circuits are tested periodically through the day for current and grounds, and test blows are sent out three times daily. Batteries are checked quarterly, but individual cells are not. The 1952 survey found that records of trouble are kept, but that the records in general of tests and the system itself are only fair in that many are inadequate or inaccurate. 37

Four rounds of box alarms are received at headquarters, where they are checked and transmitted simultaneously by means of the transmitter over the primary and secondary circuits. Telephone alarms, called "still" alarms, are received at fire alarm headquarters, where they are recorded by the voice recorder. The nearest company or companies are then notified

36. Interview, Chief Sherry, June 18, 1958.
by telephone to respond. Before the 1952 survey, there was a Fire Bureau order which stated that this message could only be given to the senior officer on duty with a company. After the survey, an order was issued allowing the man on watch to receive the message. The battalion chief in whose district a fire occurs is notified of the movements of any companies in his battalion to a fire, and his response is at his discretion. 38

The conclusions of the underwriters' 1952 survey were that the Richmond fire alarm system is of the proper type and under experienced supervision, but is inadequate in extent, and maintenance is only fairly good. The fact that the headquarters is located at a site so close to a street used by heavy commercial traffic results in a great deal of vibration and dust which frequently causes delicate instruments to get out of adjustment. The circuits are generally interlaced, with the result that a high percentage serve excessive areas. There are a few fire alarm boxes of inferior type, most of which are privately owned or installed in schools. 39 The conspicuousness of boxes has been improved by painting them more frequently, increasing the width of painted bands on supporting poles, providing indicating lights over boxes in high value areas, and moving boxes to corners where they will be conspicuous from all directions.

The distribution of the boxes in general is fairly good, except in those two sections of the city where there are practically none at all. At times, due to sick leaves and vacation, there are too few fire alarm

38. Ibid., p. 18.
39. Ibid.
operators on duty. Also, the telephone alarms for fires in buildings are not properly handled, as often the fire alarm operator does not give all of the information that he has received. The tests of the system were found to be fairly good, with the exception of the boxes, while records of the tests and of the system were generally inadequate. 40

Since no fire fighting system can function without a proper flow of water, it is essential to examine in some detail the water supply of the city of Richmond. The water works is owned and operated by the municipality and supplies practically all built up areas within and some areas outside of the city. The works were started in 1830 with the additions added at various intervals. The Water Bureau is a part of the Department of Public Utilities, which is supervised by a director who is appointed for an indefinite term by the City Manager. J. Edward Metzger is Director, and Marsden C. Smith is Chief of the Water Bureau. All appointments and promotions are made by the Bureau of Personnel with tenure of office provisions. 41

Richmond's water supply is obtained from the James River and flows through a canal to a filter plant and is pumped at two stations, one at the plant, the other at the end of a mile-long conduit to a reservoir which supplies the first service by gravity and the suction for two booster pumping stations that supply the Second service. A pumping station taking suction from the Second service supplies the Fourth service. Another pumping station, supplied by the conduit from the filter plant, delivers to the

40. Ibid.
41. Ibid., p. 1.
First and Second services. Two elevated tanks on the Second service and a reservoir on the First service provide distribution storage.\textsuperscript{42}

On June 18, 1958, there were 3,270 fire hydrants in service. All, except about ten, open clockwise. Most of the hydrants have one pumper and one or two two and one-half inch outlets, while a few hydrants have just two pumper outlets, and some others only two two and one-half inch outlets. It is estimated that not over 700 hydrants have four-inch branches with all others having at least a six-inch branch. About 70 per cent of the hydrants have a gated branch. A gated branch means that a third hose can be attached to a hydrant while two others are already attached without shutting off the water. Hydrants have automatic drip and drain into pockets of loose gravel. Drainage is generally good, and there is no trouble from freezing. They are visually inspected monthly by the Fire Bureau and greased and oiled when necessary. Any found in need of repairs are reported to the Water Bureau. Those hydrants inspected during the 1952 survey were found in fair condition.\textsuperscript{43}

In the congested value district there are one to three hydrants at street intersections and others at intermediate points, and the average area served by each hydrant is 58,500 square feet. In representative residential districts, the average area served by each hydrant is 226,000 square feet. Of the 91 hydrants within and the 58 adjacent to the congested value district, 29 have one pumper and one two and one-half inch

\textsuperscript{42} Ibid.
\textsuperscript{43} Ibid., p. 6.
outlets, 24 have two pumper outlets, 91 have one pumper and two two and one half inch outlets, and five have only two and one half inch outlets; nine have four inch branches, and 16 do not have a gate in the branch connection.

Recording gages for measuring the water pressures are maintained on the distribution system at five fire stations. At Engine Company No. 1, with elevation 163, on 25th Street near Broad Street, the pressure on the Second service varies from 40 to 70 pounds. At Engine Company No. 13, elevation 91, at Bainbridge and 10th Streets in South Richmond, pressures on the First service vary from 51 to 67 pounds. At Engine Company No. 15 on Meadowbridge Road at First Avenue, pressures on the Second service vary from 50 to 62 pounds. At Engine Company No. 16 on Chamberlayne Avenue at North Avenue, pressures on the Second service vary between 37 and 60 pounds. At Engine Company No. 17, elevation 172, at Bainbridge Street and 30th Street in South Richmond, the pressure on the Second service varies from 58 to 65 pounds. A gage was maintained in the former station of Engine Company No. 8, elevation 39, at Denny Street opposite Osborne Road until the summer of 1951; the charts show that the pressure on the First service varied between 60 and 67 pounds. During the summer months, a temporary gage is installed at Three Chopt Road and Patterson Avenue, elevation 316, on the upper section of the Fourth service; the charts show that during periods of high consumption, the pressure dropped 20 pounds, frequently with a low of two pounds. With the installation of the University pumping
station near Boatwright Drive and Prospect Street, the minimum pressure was maintained at 20 pounds, while the maximum pressure is about 45 pounds. Pressures taken during the 1952 survey averaged 59 pounds with a maximum of 84 and a minimum of 44 pounds. In the congested value district they ranged from 55 to 84 pounds in the First Service and 59 to 62 pounds in the Second service. Throughout the city, pressures ranged between 54 to 84 in the First service, 44 to 68 in the Second service, and 62 to 76 in the Fourth service.

The general conclusion of the National Board of Fire Underwriters in 1952 was that the Water Bureau is under capable supervision. Records were generally good and the response to alarms of fire was considered satisfactory. It was noted that an ample supply of water is available from the James River, with adequate filtration and pumping facilities provided. Pressures, which are fairly good, have, however, decreased somewhat since 1934. Pressures in the high value districts are generally sufficient for automatic sprinkler protection except in the taller buildings. The fire flow tests indicated that the quantities of water available for fire fighting are inadequate in all sections of the congested value district. The strongest locations are in the western section of the district where the quantities available are only about two-thirds of that required, while the quantities available in the eastern section of the congested value district are seriously inadequate. In other locations, the tests

45. Ibid., p. 4.
showed generally moderately to seriously inadequate quantities available. Nearly all of the test locations had considerably less water available than in 1934.46

The arterial system lacks sufficient capacity in the First and Second services to deliver the required quantities to the congested value district. Although the arterial system has been improved, it has not been made equal in regard to the expansion in the distribution system and increase in consumption. The system is only fairly well equipped with gate valves, and some valves are reported to be in an unsatisfactory condition. Hydrants are mainly satisfactory, but a large proportion have small branch connections, while hydrant inspections cannot be considered adequate without operation of the hydrant. Spacing is fairly good in the congested value district, but in residential districts the spacing is excessive.47

However, proof positive of Richmond's good fire protection can be seen from the fact that the city is rated a first class municipality by the Virginia Insurance Rating Bureau. The first class rating is the highest given by the bureau and is granted after a survey and inspection of all of the fire fighting facilities available, such as equipment, location of stations, personnel, and water supply. Through the years fire insurance rates have consistently dropped on both dwellings and business structures. For instance, in 1933, the rate on a frame dwelling was 24 cents per $100 value and 36 cents per $100 value on the contents of the

dwelling. Today the rate has shrunk to 13 cents on the structure and 15 cents on its contents. The reason for the higher figure on the contents is because people are more prone to set fire to the inside of a house with the use of cigarettes. In 1933 the fire insurance rate for a brick dwelling was 20 cents per $100 value on the house and 32 cents on the contents.

The rate in 1958 is eight cents on the dwelling and 11 cents on the contents. 

A look at the rates for business structures in Richmond shows that these rates have dropped in nearly all cases at regular intervals. As an example, with 1933 being used as the base year by the bureau, the fire insurance rate had dropped 30 per cent as of January 1, 1946, for brick bank and office buildings. This was increased to 40 per cent by 1953, 50 per cent by 1954, and 60 per cent as of May 15, 1957. Similarly, the rate on brick and frame tobacco factories was 30 per cent under the 1933 rate as of January 1, 1944, and 40 per cent below the base year by 1954. Thus, it can be seen that Richmond has been given good fire protection by the Bureau of Fire in return for the tax dollars spent for this purpose. 

Also, another factor to be considered in the lowering of fire insurance rates is the fact that more people own their homes today as compared with some years ago; therefore, they are more inclined to take better care of their dwellings and try harder to prevent fires in them. Then too, the large volume of fire insurance sold compared with actual fire losses results in a lower loss ratio, which in turn causes a reduction in the rates.

50. Interview, C. B. Dietrich.
The congested value district covers the following territory. It is bounded by 5th, Franklin, 3rd, Grace, Foushee, Temple Place, Jefferson, Broad, Adams, Ramcat Alley, 1st, Marshall, 2nd, alley between Broad and Marshall, 4th, a line parallel to and 175 feet north of Broad, 5th, alley between Broad and Marshall, 7th, Marshall, 9th, Bank, 12th, Franklin, Governor, alley between Broad and Grace, 14th, Mill, Virginia, Byrd, 13th, Shockoe Lane, 12th, Basin Bank, 8th, Canal, and the Chesapeake and Ohio Railroad. 51

The district is in the central part of the city near the James River and varies from 201 to 2,894 feet in width and is 5,657 feet in length. It is, therefore, very irregular in shape and covers 161.2 acres, 34 per cent of which is in streets and open spaces, and contains 69 blocks, of which 76 per cent is built upon. The surface slopes to the south and east, grades being fairly steep in several sections. Moderate exposures are formed on the east, north, and west by minor mercantiles and residences, and on the south by manufacturing and warehouses. Capitol Square and several buildings of fireproof and of sprinklered ordinary construction form a good fire break or fire barrier along 9th and 10th Streets. 52

Broad Street is 118 feet wide, and Main Street ranges from 65 to 80 feet; other streets in the district are mainly 65 feet in width, with some streets in the southeastern section ranging from 24 to 60 feet. Blocks are mainly moderate in size; in the eastern section they are of irregular

52. Ibid., pp. 24, 25.
shape with a few being large in size. Access to block interiors is through narrow alleys or by open spaces; automobile parking spaces exist in several parts of the district, all of which results in all blocks being accessible. Along and adjacent to the central Main Street section, occupancies are mainly office buildings and banks of generally high value; retail stores are all along Main Street. There are wholesale establishments, warehouses and a few manufacturing plants of moderate high value in the eastern and southwestern sections; commission houses of generally low value are located along the eastern part of Cary Street. The principal retail and shopping district lies along Broad Street for its length in the district and along Grace Street for several blocks. High values in this section include several large department stores, theatres, hotels, and office buildings.

Fireproof construction covers 26 per cent of the area built upon and is found in 41 of the 69 blocks in the congested value district. Many buildings of this type of construction have unpierced fire walls and well protected windows, a few also being protected by automatic sprinklers, and are so located as to form valuable fire barriers in the central portion of the district. Frame construction consists mainly of scattered sheds or small additions and is not an important factor in the general hazard. The remaining 74 per cent of the area built upon is of ordinary construction and, because of the general lack of fire protective features, forms the most pronounced hazard. Heights are mainly two to four stories. Fire

53. Ibid., p. 25.
and party walls are mainly four inches deficient in thickness in whole or in part and in several of the older buildings, particularly in the south-eastern part of the district, walls are cracked or otherwise defective. Vertical openings are unprotected in many buildings. Parapets are generally low, and protection to exposed windows is small in amount. Individual buildings or communicating groups form many large or excessive areas, through partially protected or unprotected openings. The erection of fireproof buildings has improved conditions considerably, but the generally fire-resistively weak construction, the many narrow streets and congestion in many parts of the district result in a high potential hazard, particularly in the eastern Main Street section, where streets are very narrow and blocks are large and congested.  

Although fireproof construction covers 26 per cent of the area built upon, and 22 per cent of the area built upon is provided with automatic sprinklers, there remain many buildings of large or excessive area not so protected. Deficiencies in fire-resistive features of buildings of the predominating ordinary construction, including lack of protection to exposed windows, and numerous hazardous occupancies make serious fires probable in all parts of the district. Quantities of water available for fires in the district are fair to poor, being seriously inadequate in the eastern Main Street section where structural conditions are below average for the district. 

54. Ibid.
55. Ibid.
Although the Bureau of Fire is well manned and equipped and fairly well trained, the practice of sending one piece of apparatus to telephone alarms for fires in buildings increases the probability of incipient fires rapidly developing into very serious ones. Serious fires in large individual buildings or in groups of buildings and threatening adjoining blocks are probable in some of the district, especially those blocks in the eastern Main Street section. The probability of fires getting beyond control is only moderate for the remainder of the district. In an earlier report, the block bounded by Main, Governor, Franklin, and 12th was considered as having a high conflagration hazard. Many buildings have been torn down, removing much of the congestion, so that this block is no longer considered above average in hazard for the district. 

As for that territory outside of the congested value district, we look first at the tobacco factory districts. Extending east from the former district to 27th Street and mainly between Main and Cary Streets, but partially on the north side of Main, is a district containing tobacco factories and warehouses of mainly high value, together with a few wood and iron works. Most of the buildings are of large or excessive area and three to six stories high; a number are of heavy timber construction, nearly all the important ones are sprinkled and many have blank walls, protected communicating openings in same and protected windows. The water supply in this section is inadequate. Serious fires are probable in the

56. Ibid.
large unsprinklered buildings, but because of the blank walls and window protection, good accessibility and many open spaces, such fires should not spread beyond the building or group of origin.57

In the vicinity of 12th and Gordon, 14th and Ingrun, 21st and Semmes, Jefferson Davis Highway and Dinwiddie, Maury and Clopton, and Jefferson Davis Highway and Gordon are groups of one-story tobacco warehouses of metal or wood frame construction, part of which are sprinklered. Most of the buildings are of large or excessive area. The water supply is inadequate in some of these locations, especially where the warehouses are of wood frame construction. Serious fires are probable at any of the above mentioned locations, but the good accessibility and good separations between buildings should prevent a fire from spreading beyond the building of origin.58

There is an industrial district covering a large area in the vicinity of the Boulevard and Richmond, Fredericksburg, and Potomac Railroad. Occupancies consist of structural steel fabricating, machine works, railroad shops, lumber yards, tobacco warehouses, stock yards and numerous large warehouses. Buildings are of low height with numerous excessive areas, many being protected by automatic sprinklers. The water supply is seriously inadequate in most of this area, except in the vicinity of the Boulevard. Serious fires are probable but should be confined to the building of origin because of the wide separation of buildings.59

57. Ibid.
58. Ibid., pp. 25, 26.
In the vicinity of Mill and 4th Streets is an extensive industrial district consisting of numerous bulk oil plants, railroad shops, an aluminum fabricating plant, paper processing plants, lumber yards, machine works, and numerous warehouses. Buildings are mainly of low height with some large areas; some sprinkler protection is provided. The water supply is only fair for most of this area. Serious fires are probable and under adverse conditions, such as the occasional flooding of this area, could spread beyond the building or group of origin and involve an extensive area. Between the congested value district and the James River are numerous tobacco, paper and aluminum fabricating plants and warehouses. Serious fires are probable because of the combustible contents, but since the buildings are isolated, or in small groups, many being sprinklered, only local fires are probable. There are several other smaller groupings of factories and/or warehouses at isolated locations throughout the city. The water supply is inadequate at most of these locations, but because of the wide separations, only local fires are probable.

There are extensive mercantile districts extending along Mill Street from 4th to 21st Streets, along Cary Street from Thompson Street to the Boulevard, along Broad Street from the congested value district to Sauer Avenue, along Brookland Park Boulevard from Edgewood to Lamb Avenues, and in the vicinity of the intersection of Chamberlayne Avenue and Lombardy
Street. Buildings are mainly of low height and of ordinary construction; areas are mainly small. Water supply is mainly adequate for most of these areas. Serious fires are probable in most locations, but because of the good water supply and the mainly low heights and small areas, should be confined to the building or group of origin. There are numerous other small mercantile areas, but the hazard is only local. 61

Richmond's residential districts outside of the congested value district consist of both wood frame and ordinary constructed dwellings, with a few apartment houses in certain areas. Some sections are compactly built and present a severe group hazard. However, most areas have good separation between buildings and present only a moderate hazard even though the water supply is mainly inadequate. The conclusions reached from an examination of the conflagration hazards in Richmond indicate that in the congested value district, deficiencies in fire-resistive features of buildings of the predominating ordinary construction, mutual exposures and hazardous occupancies combine to create a high potential hazard, which is mitigated for the district as a whole by the substantial amount of fireproof construction and automatic sprinkler protection. 62

Many of the fireproof and sprinklered buildings are so located along streets of fair to good widths as to form partial to effective fire breaks, thus increasing the value of the several wide streets and Capitol Square as vantage points for the fairly strong Fire Bureau. High winds

61. Ibid.
62. Ibid.
are infrequent, but the water supply is inadequate. Although serious
fires are probable at numerous points, such fires should be at least con-
finned to the group or block of origin except in the eastern Main Street
area where the hazard is above average for the district. Industrial and
minor mercantile districts are mainly of fire-resistively weak construction
and subject to severe fires, especially in the extensive industrial dis-
trict at the east end of Hull Street. The hazard in residential areas
is only moderate because of the mainly good separation of buildings.

63. Ibid.
CHAPTER III

For a little over 30 years, from June, 1888, to September, 1918, the Richmond Fire Department was under the direct control of a Board of Fire Commissioners, who met once each month and handled all matters pertaining to the management of the department. The following excerpts were taken from the minutes of the meetings, which were held during those 30 years. These are not by any means the complete minutes, but only the ones which might prove most interesting.*

June 18, 1888--The Board of Fire Commissioners was created. The first meeting was held July 2, 1888 at 1016 East Broad Street (Washington Hall). Members were William A. Boswell, J. H. Frischkorn, John S. Harwood, John B. King, Joseph Levy, and N. V. Randolph of Marshall Ward, Jefferson Ward, Madison Ward, Clay Ward, Monroe Ward, and Jackson Ward respectively.

July 2, 1888--J. H. Frischkorn was elected president of the Board of Fire Commissioners. G. W. Taylor was elected Chief of the Fire Department, but he refused to accept the job. W. G. Puller was then elected

*Compiled by Captain W. B. Samuels, Engine Company No. 17, Richmond Bureau of Fire.
chief. J. R. Shepherd was elected First Assistant Chief, and B. T. Snead was elected Second Assistant Chief.

August 6, 1888--All gongs in the homes of privates in the department were ordered removed, also all private gongs wherever they might be.

October 3, 1888--The Fire Department was inspected and paraded during the Virginia Agricultural and Mineral Exposition.

January 1, 1889--The Board of Fire Commissioners Office was moved from 1016 East Broad Street to No. 3 Engine Company, 910 East Broad Street.

March 7, 1889--Telephones were ordered put in engine houses and homes of officers in the Fire Department. Rental was $15 a year.

March 7, 1889--The first steam engine bought by city on October 22, 1860, was ordered sold. This engine was made by Sttinger and Edmonds, a Richmond concern and was capable of throwing a stream over the American Hotel at 12th and Main Streets, a height of about 50 feet.

April 15, 1889--No. 3 Truck Company was put in service at No. 6 Engine Company house at Laurel and Cumberland Streets.

September 9, 1889--Mr. Taylor of the Board of Fire Commissioners, recommended that uniforms of the men consist of red shirts, white hats, and white belts. This uniform was rejected by the board. No mention was made of the kind of pants to be worn.

October 3, 1889--All firemen were ordered to wear their badges on the front of their hats. We assume they had been wearing them on their coats.
November 7, 1889--The State Legislature was requested to allow the city to erect an engine house in Capitol Square. The request was rejected.

February 6, 1890--A hose wagon was ordered put in service at No. 4 Engine Company in place of a hose reel. A hose reel was a large reel with wheels on it which was pulled by a horse, or men.

February 6, 1890--Life nets were ordered for all trucks in the department. Prior to this time, there were no life nets in the department.

March 6, 1890--The engineer at No. 3 Engine Company was made to pay for burning the wheels on the engine at the Cameron Tobacco Company fire. This order was later rescinded.

October 6, 1890--The Board voted to pay for refreshments for No. 1 Engine Company at Cameron Tobacco Company fire, but declined any further bills. According to rumor, the refreshments consisted of several bottles of whiskey.

March 13, 1891--Eight station men were added to department.

January 1, 1891--The Chief Engineer's salary raised to $150 per month.

May 29, 1890--The entire Fire Department was ordered to parade at the unveiling of Lee Monument.

February 8, 1891--Four members of No. 5 Engine Company were fined for visiting a barroom while on duty.
September 29, 1891—Mr. O. R. Brown asked $53.40 damages from the city for damage to his wife and vehicle from a falling wire on Pine Street between Main and Cary Streets. The Board paid him $37.50. The wires which fell were the overhead wires of the fire alarm department.

April 29, 1890—A contract was awarded to build No. 7 Engine Company for the price of $2,276.67. S. H. Herndon was contractor. No. 7 was formerly Hose Company No. 1 and was located around the corner on 10th Street between Main and Cary Streets.

November 27, 1890—Two firemen at No. 2 Truck Company were reprimanded for not speaking to each other. They were threatened with dismissal if they did not mend their ways.

March 27, 1891—All engine houses were ordered placarded with signs forbidding loafing, loud talking, profanity, or political discussion.

April 27, 1891—A fireman at Engine Company No. 6 was ordered to pay his bills or else.

April 27, 1891—Hose Company No. 2 was changed to Engine Company No. 8 at the same location.

May 22, 1891—Fireman John Powell lost his leg in an accident with a street car at 3rd and Main Streets. Several other persons were injured also.

June 11, 1891—Fire plugs were ordered changed from 17/8 inches to two and one-half inches. Evidently there had been some improvement in the water supply.
September 28, 1891--Foreman (Captain) Trexler of No. 6 Engine Company was asked to resign because he had sued the city for injuries received in the accident in which Fireman Powell had lost his leg.

July 11, 1892--Captain James R. Shepherd resigned as First Assistant Chief. He was later elected to the Board of Fire Commissioners.

August 22, 1892--Edward Fischer, first Secretary of the Board of Fire Commissioners died. The Fire Department marched in his funeral and bells on engine houses were tolled.

November 28, 1892--W. H. Joyner was elected foreman of Engine Company No. 5.

January 1, 1893--Salaries in Fire Department: Call Captain ($300 per year), Call Man ($240), Engineer ($1,080), Fireman ($912.50), Hostlers ($912.50), Truck Drivers ($912.50), Tillerman ($912.50).

January 18, 1893--The Board of Fire Commissioners requested that citizens refrain from giving the firemen whiskey at fires. This request was made shortly after the Allen and Ginter Tobacco Company fire, where quite a lot of ardent spirits were consumed by the fire laddies. The Good Templers Lodge was elated at this request.

February 27, 1893--The petition of Engineer T. H. Weimer of No. 8 Engine Company that he be permitted to play the flute at church on Sundays was refused by the Board.

March 28, 1893--Board voted to send two men to the Armory during the Ladies Memorial Bazaar. They were instructed to wear citizens clothes to avoid frightening the ladies, who "are very timid." (How times have changed.)
June 12, 1893--Firemen were forbidden to enter barrooms in uniform or else.

January 8, 1894--Chief Pulier, First Assistant Chief, George C. Shaw, and Second Assistant Chief, E. T. Snead, were presented with gold medals by members of the department. Captain C. F. Taylor, of the Board, made the presentations.

June 11, 1894--Dr. Edward McCarthy was elected as first physician to the Fire Department.

October 28, 1895--An ordinance was passed by the Board requiring all hotels to be equipped with rope fire escapes. These rope fire escapes consisted of a rope ladder which was to be placed in each room of the hotel.

October 28, 1895--A new building which was built for No. 3 Engine Company was opened. This is the same building now occupied by No. 3 Engine and No. 1 Truck Companies.

April 6, 1896--Captain Carlton McCarthy was authorized to investigate the Board. Captain McCarthy had accused the Board of exceeding its charter limitations. He stated that it was a very pernicious system. Evidently the Board was given a clean slate, as it functioned for 22 more years.

May 5, 1896--A fireman at No. 7 Engine Company was fined $10 for threatening another fireman with a pitchfork. (One of the hazards of the horse and wagon days).
May 5, 1896--The Secretary of the Board was instructed to notify the Committee on Grounds and Buildings that the cuspidors in the Board's room were worn out.

May 20, 1896--Mr. D. Gatto, saloonkeeper, at 1324 East Cary Street, accused firemen of consuming his entire stock of 20 barrels of whiskey during the fire at his saloon on the above date. The firemen were exonerated of this charge, but there was no doubt that quite a few of them had imbibed freely of the gentleman's whiskey, although not to the extent of 20 barrels.

September 28, 1896--The Richmond Traction Company allowed the firemen the privilege of riding free on the street cars.

March 7, 1897--G. E. Painter, Secretary of the Board of Fire Commissioners, and Assistant Superintendent of the Fire Alarm Bureau, died. All the bells on the engine houses were tolled for his funeral.

December 6, 1897--George F. Snead of Truck Company No. 1, was presented with a medal by the Virginia State Insurance Company for heroic work at the Broad Street Church fire. This award was presented each year to the fireman who had done the most outstanding work during the year.

December 27, 1897--The mayor was asked to offer a $25 reward to anyone catching the person pulling false alarms at Box 25. The superintendent was also instructed to remove all key boxes except those on Broad and Main Streets.
February 1, 1898 -- A Weishack gaslight was put in Engine Company No. 1 on trial.

February 28, 1898 -- L. S. Jones was appointed Second Assistant Chief and clerk to the chief at a salary of $10 per month.

November 9, 1898 -- The Virginia State Insurance Medal was awarded to Captain O. F. Wise of Engine Company No. 4 for heroic work at the St. Peters Cathedral fire on January 24, 1898.

February 1, 1901 -- Firemen began receiving their pay semi-monthly instead of once a month.

June 3, 1901 -- C. C. Frommer of Engine Company No. 5 and L. B. Bullock of Engine Company No. 7 were awarded the Virginia State Insurance Medal for heroic work at a fire at 15th and Cary Streets on January 5, 1900.

December 2, 1901 -- The Richmond Ice Company offered the Fire Department the use of their horses during the winter months. The offer was accepted.

April 14, 1902 -- Chief W. G. Puller went before the Board to protest the testing of life nets with 165 pound bags of salt. He stated that the bags might fall on the heads of the men, and the Board agreed with him. Evidently they thought the temptation might be too great on the part of some of the men to get back at someone they didn't like by dropping a bag of salt on his head.
1902—All engine houses were wired for electricity.

October 6, 1902—The Virginia State Insurance Medal was awarded to J. P. Schloesser of Engine Company No. 6 for heroic service in rescuing women and children during a fire at the Argus Manufacturing Company, 9 North 7th Street, on February 25, 1901.

October 6, 1902—The Board of Fire Commissioners ruled that hereafter all applicants for substitute firemen must appear before the Board so they could see them.

January 28, 1903—A horse of Engine Company No. 4 was killed by a street car at 3rd and Main Streets while answering an alarm.

February 18, 1903—A wagon horse of Engine Company No. 4 was crippled by a street car at 3rd and Broad Streets.

April 3, 1903—A fireman of Engine Company No. 2 appeared before the Board to answer charges of having delirium tremens because of the fact that he had stopped drinking. The doctor testified that he had really stopped drinking, and the sudden breaking off had brought on the D. T.'s. He was given a few weeks to get himself together.

February 17, 1904—A horse of Engine Company No. 5 was killed in a collision at Main and Short Streets with a street car.

July 10, 1905—Five men from Engine Company No. 9 went before the Board charged with fighting and creating a disturbance in the engine house. The trouble started when one of the men ate a balsam pear which belonged to one of the other men. The owner of the pear accused another man of eating it and a fight ensued. Before the argument was over, nearly every
man in the engine house was battling it out. As a result three of the men were fined, and nearly every man in the house was transferred.

September 26, 1905—The entire Fire Department was inspected by city officials and the public in a parade. This parade was criticized by quite a few people, as the entire department was assembled in one part of the city, and if a fire had broken out in the far west end, there may have been a bad fire before they could get to it.

October 2, 1905—Fireman H. P. Grady of Truck Company No. 1 was ordered dismissed from the department due to the fact that he had been absent for 15 days.

August 6, 1906—A citizen, Valentine T. Goodman, went before the Board requesting $200 damages because of being kicked by a horse of Engine Company No. 7.

December 19, 1907—Miss Ann O'Keefe was ordered paid for damages to her house at Elm and Lester Streets which was burned by sparks from an engine of Company No. 8 which was working at a nearby fire.

July 6, 1908—Mrs. P. T. Parker and Mrs. P. T. Davis were awarded damages of $2 each for injury to their clothes when a stream of water got away from Engine Company No. 5 and went into a street car.

January 11, 1909—The street car company was asked to stop using rotary gongs as they were the same as fire apparatus gongs.

January 18, 1909—The city attorney ruled that the city was not responsible for any damage by apparatus while responding to an alarm of fire.
June 28, 1909—The Board of Fire Commissioners, by recommendation of Dr. Hinchman, ordered all firemen to wear suspensory bags and all men with hernias to wear trusses.

November 6, 1909—All apparatus horses were ordered to be photographed and a record kept on the back of each picture.

January 20, 1910—the car in which the Board of Fire Commissioners was riding while inspecting engine houses was fined $50 for speeding. The fine was paid by members of the Board.

May 9, 1910—New canopies or umbrellas were ordered for the chiefs’ buggies.

May 23, 1910—Two Eveready oxygen helmets were ordered for the department.

August, 1911—A new Knox engine, the first piece of motorized fire equipment, was put in service at Engine Company No. 4. Its speed was limited to ten miles per hour.

January 11, 1912—Captain Meadors of Engine Company No. 9 was charged with negligence in that he broke down the door of the Howitzers Armory thinking there was a fire when it was only steam.

June 1, 1912—Quite a lot of hard feelings developed when a fire department horse which had been sold dropped dead immediately after the money had changed hands.

June 29, 1912—A new Knox motor engine was put in service at Engine Company No. 1. Three new Knox motor cars were put into service for the chiefs.
October 7, 1912—The car of Chief Raffo skidded into a buggy belonging to Julius Straus. Mr. Straus claimed damages of $53.90, which were paid.

October 27, 1912—The car of Chief Wise hit a negro boy named David Young at Monroe and Broad Streets. The Board ordered that louder horns be put on the chiefs' cars.

March 13, 1913—The car of Chief Wise ran into and killed John B. Pittz on Broad Street between 8th and 9th Streets.

June 1, 1913—Watch duties of four hours for each man were started in each engine house. There were no watch duties prior to this time.

October 6, 1913—B. J. Steiss, a former fireman, was rejected as a member of the fire department because of his small size. He was finally rehired in 1914.

January 26, 1914—A fireman at Engine Company No. 11 was charged with being under the influence of whiskey at a fire and also in the house. It was recommended that he be reduced from driver as he only had one eye and was a dangerous driver. (It is not known how he got in the department with only one eye.)

February 23, 1914—An insurance company demanded payment from the Board for barrels and boxes burned by the firemen at a fire on 13th Street. It was proven that the firemen were told to burn the boxes and barrels in order to keep warm.

July 13, 1914—Dr. J. D. Hutson of 228 S. Laurel Street protested against the ringing of the bell of Engine Company No. 6.
February 27, 1915--H. S. Atkins of Engine Company No. 11 was found dead in bed.

February 17, 1915--The Virginia Electric and Power Company notified the Board that they would charge the Fire Department $7.50 per quarter for the use of the 1st and 5th Street viaduct in going to fires.

April 12, 1915--Citizens of Forest Hill and Woodland Heights appealed for more adequate fire protection, as the nearest company was nearly two miles away.

July 15, 1915--Fire Commissioner Mann and Fireman Pegram were killed in a wreck at Adams and Broad Streets when Chief Joynes car ran into a trolley pole while answering an alarm. Chief Joynes was injured.

July 27, 1915--Truck Company No. 3 ran out of gas while returning from a fire. They were reprimanded.

July 1, 1915--The appeals of Forest Hill and Woodland Heights citizens for better fire protection were answered by the opening of Engine Company No. 17 at 32nd and Bainbridge Streets.

May 17, 1917--The Board passed a resolution stating that all firemen who went into the service of their country would keep their standing in the department.

May 18, 1917--L. D. Connell of Engine Company No. 3 broke a leg sliding down a pole.

July 9, 1917--Companies were ordered not to use the telephone during thunderstorms except in an absolute emergency.

September, 1918--The Board of Fire Commissioners was abolished.
CHAPTER IV

Richmond had some interesting fires in the 19th century, and the late 1800's, in particular, produced a few memorable conflagrations. The first large hotel fire in the city after it began to rise from the evacuation fire ashes occurred on December 25, 1870, when the Spotswood Hotel at 8th and Main Streets caught fire at 1:15 A.M. Not long after the bell at the Old Market had sounded the "All is well" signal, the piercing cry of "Fire!" was heard. Many of the city's 50,000 slumbering inhabitants suddenly awakened and rushed to their doors to find out the location of the blaze. The towering flames of the Spotswood were visible from all over the city, and it was soon obvious that the historic old hostelry, where Jefferson Davis had lived for a time as President of the Confederacy, was done for. The early arrivals on the scene saw frantic guests jump from their beds and rush out into the almost zero weather with little or no clothes; many leaped from the windows and were injured.

One reason for the utter destruction of the hotel was a very high wind which fanned the flames. In all eight persons were killed.2

On the night in question, the hotel was filled with guests, including a number who had been out for the evening attending social functions, and who had returned around midnight, since it was the custom in those days to end such affairs before the midnight hour. Patrick Byrd, the watchman, was making his usual rounds in the early morning, and it is recorded that he smelled smoke and at once made an investigation. Upon finding a blaze, Byrd, along with one Dr. Gray Latham of Lynchburg, rushed from door to door, knocking loudly, in order to arouse the sleeping guests. Apparently the fire started in a room directly over the office, and it spread with great rapidity. In a few minutes the halls were filled with half-clad men, women, and children seeking to escape the holocaust. Since the interior was almost entirely of wood, the flames had no difficulty in spreading, and with the opening of windows and doors the hotel became almost like a flue.3

The firemen of that day made a brave fight to arrest the fire, but to no avail, as soon the floors began to give way and the structure collapsed. Naturally a huge crowd had collected, and on every side business places were opened to give shelter to those who had escaped and to provide quarters to those injured when jumping out of windows. Business


concerns to the east of the Spotswood—Grover and Baker's sewing machine agency; B. Cironti, house furnishings; and Henry Hungerford's banking house—were also swept away by the flames, as were T. Wolfedawke's cigar store and W. J. Anderson's tinware and stove establishment. 4

Miraculous was the escape of C. A. Sahffler, public printer for Virginia. Being on the 8th floor, his escape was cut off by the fire-filled halls, and he was forced to swing from the ledge of the window in his room and catch the ledge of the window below where he held on until firemen could reach him with a ladder. Those who had lost all their possessions in the disaster were given clothing without cost, and residents throughout the city opened their homes to those who had been injured and were in need of medical attention and care. All such services were given without any fees, and the physicians of the city did all that was possible to bring relief to the sufferers. 5

Although it is generally said that eight persons died in the fire, Horace A. Hawkins, writing in the Richmond Times-Dispatch in 1934, said that "it is believed that a greater number perished, for many of those registered in the hotel were never again heard from, and it is believed they lost no time, once they were out of reach of the flames, in boarding trains or steamers and getting away from the city." After the fire, the bones that were removed from the burned building were buried in Oakwood Cemetery. 6

4. Ibid.
5. Ibid.
6. Ibid.
Perhaps the tragedy of the Spotwood Hotel could have been foretold by anyone well versed in such matters since the year 1870 had been a rather grim one for the city. On March 14, 1870, all of the city's fire apparatus had been seized and advertised for sale at a public auction to satisfy a bill for the destruction of some barrels of whiskey by order of City Council during the evacuation fire of April 2, 1865. Thanks to the quick response of six public-minded citizens, who gave bond for $20,000, the equipment was released. April 27 saw the floor of the Supreme Court collapse at the State Capitol which resulted in 62 deaths and 231 injuries, while in the summer of 1870 a devastating drought occurred which caused heavy damage to crops, livestock, and game. Early October produced severe floods that caused $1,000,000 damages and left roads in an impassable state. Then on October 12 came the death of General Robert E. Lee, and for days public buildings and private homes were draped in mourning while the church bells tolled. On Sunday morning, November 21, 1891, the warehouse, stables, and the residence of the Yard Superintendent of the Richmond Cedar Works, all housed in the former James River Brewing Company, were consumed by fire. George W. Rogers says that the alarm was sounded "about Sunday School time, and I chose chasing to the fire instead of Sunday School. Father was Captain of Engine Company No. 8, one of which answered the call, and he was also Superintendent of .... Sunday School. I not only missed being in attendance at the Sunday School, but I missed the evening meal, a double decker for preferring the fire." 

The coldest day for a major fire was January 19, 1893, when the Allen and Ginter cigarette factory on the southwest corner of 7th and Cary Streets was gutted and the Valentine Meat Juice Company plant adjoining was badly damaged. The official temperature was recorded at 12 degrees below zero, and the ground was covered with snow, while the water mains were frozen. Nine engines pumped to capacity after holes were cut in the ice covering the nearby canal. Following the fire, some 1200 employees of Allen and Ginter were transferred to branches of the American Tobacco Company without the loss of a single day's pay.

One of the saddest fires in the memory of Rogers was that one caused by a bolt of lightning, July 19, 1892. On that day, the Dale Emmet Family consisting of the father, age 32; the mother, Alice, age 34; Libby, six; Norman, three; and the baby, seven months, were all burned to death in the same bedroom of their house in the 800 block of Nicholson Street. In spite of a drenching rain and the work of firemen, the building could not be saved or the family within. "A lasting impression was gained from witnessing the funeral procession of the five white hearses drawn by white horses."

On occasion, the firemen were used for purposes other than the mere fighting of fires. Such an occasion was the evening of August 31, 1886, when the tail end of an earthquake that had struck Charleston, South Carolina, sent a tremor through Richmond. "Houses rocked and swayed,

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9. Ibid.
windows fell out, a few chimneys toppled, and residents rushed into the streets when fire bells sounded the most dreaded alarm—15 strokes, repeated four times—to summon militia to their armories." This incident might have passed with little note, however, if the tremor had not passed directly under the State Penitentiary. "The frightened inmates, some of them screaming that Judgement Day had come, broke out of their cells and began attempting to batter their way from the prison."11

Governor Fitzhugh Lee, a former cavalry officer, sized up the situation and ordered the firemen on the scene to turn the hoses on the frantic convicts. A few well-aimed streams of water cooled down the panic, and the wet prisoners were returned to their cells.12

Seventeen years later, during a Richmond streetcar strike, Mayor Dick Taylor tried the same device when confronted by a riotous crowd of sympathetic citizens at the car barns at 29th and P Streets. Since neither police nor militia were able to disperse the mob, Taylor summoned the firemen and personally directed them to shower the crowd with water. The plan worked, but it also worked to defeat the Mayor in the next election, for the following spring Taylor lost the mayoralty in a close vote, and his opponent was aided by substantial support from Marshall and Jefferson Wards where the sprinkled citizens resided.13

12. Ibid.
13. Ibid.
Since the turn of the century, Richmond has known its share of "big fires," and although some of these fires have resulted in high property losses, the city's record is an enviable one. "To write about the big fires, and to check the records of deaths and damage, is to be impressed by Richmond's excellent standing among cities of this size. For several years, Richmond's per capita fire loss has been equalled by few cities in the nation, and there is every reason for the city to take pride in the devotion and skill of its Fire Department." 14

With the arrival of the year 1900, Richmond was to be found in high spirits. The Civil War was 35 years removed, the population had climbed to 85,000, and the number of manufacturing plants had passed 1,200. In the traditional observance of New Year's Day on Monday, January 1, 1900, the feeling was prevalent that happy days had come again. Early on the cold morning of January 2, a disastrous fire brought the festivities to a sudden halt. The first of two blazes consumed the general offices of the Chesapeake and Ohio Railway, together with the establishments of Muscoe H. Garnett and the Commercial Building and Loan Association at 8th and Main Streets. Firemen and hoses were covered with ice before the fire was finally brought under control. However, they hardly had time to thaw out before a three alarm fire called them to the Planters' Warehouse at 15th and Cary Streets. There, 4,000 hogsheads of tobacco, along with the Kingan's meat plant, the Cardwell Machine Company, and the Davenport

Warehouse were rapidly disappearing in the roaring flames. When the smoke had cleared, damages were counted at more than half a million dollars.\(^{15}\)

This rather bad beginning of the year did not unfortunately provide the proverbial happy ending. A number of serious fires marred the 12-month period, among them a blaze that destroyed the ten-year-old Grove Avenue Baptist Church on October 20. All that remained after the firemen had left were the charred walls of the once beautiful structure, the faith and courage of its members, and a net debt of $12,000. However, as it turned out, 1901 was to be an even worse year for fires than the previous one. It started with a blaze that destroyed the carriage shop of R. H. Bosher Sons at 9th and Cary Streets.\(^{16}\)

Then on Friday night, March 29, came the "unforgettable and unnecessary fire in the Jefferson Hotel." The blaze began in a fourth floor linen closet and was toyed with by minor employees until it got beyond their control.\(^{17}\) As soon as the hotel management was informed of the trouble, an alarm was turned in over the building's private box No. 723. When the gong began ringing, George W. Rogers was on duty on the fifth floor of the Times Building at 10th and Bank Streets, where the news rooms of both the Richmond Times and Evening Leader were located. After determining the location of the alarm, Rogers and several other reporters dashed out and caught a Main Street street car which proved to be one of the last for several days to pass the hotel.\(^{18}\)

\(^{15}\) Ibid.
\(^{16}\) Ibid.
\(^{17}\) Ibid.
\(^{18}\) Rogers, op. cit., The Richmond News Leader, March 31, 1951.
We are told that Chief W. G. Puller quickly realized the seriousness of the situation and ordered the signal of three sixes—6-6-6—to be sounded, which brought every piece of apparatus and every available man to the scene. Naturally excitement was at a high level in the hotel and in the streets, "where the guests were arriving by the score, some properly dressed, others a bit shy of wearing apparel for street appearance. Baggage of every description was being rushed out of the Main Street entrances and piled in the street." Nearly everyone was willing to help in any way possible, but with all the lights out and the presence of heavy black smoke, it was difficult to accomplish a great deal. This fire was one of the most difficult to combat in the history of the city because of the unusual construction between floors. It raged until nearly noon Saturday before being brought under control, while streams of water were maintained on the crumbled walls and debris until Monday. The loss was set at $521,403.19

Although there were no deaths, a number of the guests had narrow escapes, as did three firemen. Fireman Adolph Franck, Lieutenant William Boscell, and Captain Otto P. Wise found themselves cut off from all exits after entering the hotel and were forced to make their way to another part of the building by grasping the window cornices until they reached the stream of some hose, at which time, straddling the hose, they rapidly descended to the pavement with hands that were rather tender for a few days.

19. Ibid.
afterward. Several of those anxious to help conceived the idea of removing the life-size statue of Thomas Jefferson from the Palm Garden near the Franklin Street entrance in order to protect it from possible fire damage. By employing several neighbors' clothes lines, the rescuers proceeded to move the statue by lassoing it around the neck. The result was that "Jeff" was removed to a safer place, but in two pieces. When the Jefferson was rebuilt in 1907, the statue was fitted with a double collar to cover the damage done six years earlier.

Less than two weeks after the hotel fire, and only a few blocks away, an early morning fire razed the new department store of Julius Myers Sons at Foushee and Broad Streets. One employee died in the blaze. The year 1901 came to an end as far as losses through fire were concerned with an explosion of naphtha at the City Gas Works on December 23. Robert Wakefield, a Gas Works employee, was killed, and the clothes of several firemen were scorched.

The highlight of the 1903 fires was a spectacular blaze at the Gallego Mills, a blaze which could be seen for miles around the city. It was the fourth destruction of the largest building at that time in Richmond, and also one of the largest flour mills in the country. On December 27, fire was discovered bursting out of the windows on the top floor, and before nearby firemen could reach the scene, large fire embers were being blown in every direction. This created a very pretty picture, but gave

20. Ibid.
21. Ibid.
Chief W. G. Puller and the entire Fire Department much work and uneasiness. These embers started more than 20 other fires, several four blocks away, and in all, this $250,000 blaze threw some 50 men out of work. 22

The only passenger boat to burn since the gunboats and other crafts were set afire at the Confederate Navy Yard on evacuation day was the fast moving steamer, Pocahontas, which was destroyed at her wharf opposite the site of the former Navy yard, April 30, 1904. The "Poco" had been making tri-weekly trips to Norfolk and intermediate points for many years. Also in 1904, there occurred the best display of horse sense by any of the hundred or more horses used to propel apparatus in years past. This honor is credited to the trio that pulled the big engine of Company No. 3 located on Broad Street between 9th and 10th Streets on a downhill run to a three-alarm fire at the meat packing plant of W. S. Forbes and Company at 10th and Byrd Streets, August 16. As soon as the big machine hit the top of the 9th Street downgrade, the driver, Thomas Tyree, applied the brakes and pulled back tight on the reins. On reaching the scene of the fire, and the horses were unhitched, it was discovered that in their haste to leave the firehouse, the firemen had neglected to snap the bits in the horses' mouths; the guiding pieces of steel were resting on the collars. Through sheer instinct, the three animals had followed a common route of the engine. 23

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What probably is a record for multiple fires was set on January 23, 1907, in a blaze which first started at 1:44 A. M. and consumed the Williams building at 9th and Cary Streets, which housed the Adams Express Company on the ground floor and the Blues Armory in the remainder of the large structure. Thousands of dollars worth of merchandise, together with all of the possessions of the Richmond Light Infantry Blues, including their cherished relics, trophies and full dress uniforms, went up in smoke. Then several fire companies were transferred to assist the reserve forces in combatting a fast-spreading blaze at the woodworking plant of Whitehurst and Owens at 10th and Arch Streets. At 7:30 A. M. it was necessary to remove most of the equipment from the smouldering ruins of these two buildings and rush them to the H. H. Johnson Publishing Company where a fire was rapidly destroying several thousand school and text books, along with the building. 24

Chief George C. Shaw died from smoke suffocation suffered at the fire at the Boyd Baking Powder Company on the night of November 21, 1908. In addition, a score of firemen were overcome by the fumes from the roaring flames. The first call to extinguish an automobile fire came on February 22, 1909. The car was owned by B. A. Blenner, Richmond's pioneer automobile dealer, and the car's license number was 676. 25 A spontaneous combustion in the laboratory on the fourth floor of the University College of Medicine at 12th and Clay Streets at 1:50 A. M. on January 6, 1910.

24. Ibid.
25. Ibid.
created much excitement. The Medical School was connected by a bridge with the Virginia Hospital on the east, where 33 patients were located. The fire was discovered when one of the patients detected an odor of smoke and called a night nurse. The streets this morning were covered with ice, but all patients were removed from the burning building without injury. 

On Christmas Day, 1910, the students residing in Kyland Hall of Richmond College at Lombardy and Broad Streets were rudely awakened and forced to make a hasty exit, leaving clothes, books, and trinkets behind them because of a fire in the building. The present site of the University of Richmond had recently been purchased, and the merger of Richmond College and the Women’s College took place shortly afterwards. It was said that some boys in the neighborhood of the old college started the blaze by discharging some firecrackers on the campus.

A difficult fire to conquer, but a most interesting one to watch, according to those who did, was a blaze which consumed the half-block four-story building of the A. Hoen Company Lithographers, occupying the site of the Parcel Post Building. As Richmond theater audiences were making their exits on April 20, 1911, flames burst through the roof of the plant filled with paper and oils. In a short while, while firemen battled the roaring furnace, the steps of the Capitol were filled with eager onlookers.

27. Ibid.
John B. Finnegan, Sr., the present chief, who, a few weeks earlier had laid down his plumber's tools to become a fireman, was one of the first "to enter the inferno. He received his initial baptism of fire and water there." 28

An important innovation in fire fighting equipment began in 1911 when a motorized combination hose and chemical wagon was installed on August 26 at Engine Company No. 4, at that time on 3rd Street near Broad. This initial piece of motor driven apparatus, a Knox, proved to be a major headache in several respects. It was frequently breaking down or colliding with another vehicle, street car, or building. The driver's seat became so hot on a run of any distance that ten pounds of asbestos was added to this seat which adjoined the motor. 29

The Christmas plans of the Home for Needy Confederate Women were upset suddenly on December 23, 1916, while most of the ladies were at the breakfast table. Fortunately no one was injured in the fire, which did help to expose the building as unsuitable as a residence for aged ladies. Another near tragedy was narrowly averted on January 4, 1926, when Mrs. E. L. Trinkle, wife of Virginia's governor, jumped from the third floor of the Governor's Mansion into the arms of Captain George D. Rust of Engine Company No. 3 after the house had become enveloped in flames from a Christmas tree. Mrs. Trinkle was hospitalized for several days with second degree burns. Her son, H. Lee, Jr., also jumped from the burning building, but without injury. 30

29. Ibid.
There have been two large hotel fires in Richmond since the Jefferson Hotel of 1901. On February 22, 1922, the Lexington Hotel at 12th and Main Streets was the victim of a fire which produced the largest fire casualty list in Richmond since the horrible evacuation fire in 1865. Twelve persons were killed and 28 injured, many permanently, by jumping in panic from the third and fourth floors. A second blaze at the Jefferson occurred on March 10, 1944, 43 years after the first one, and its origin was very similar. The fire was discovered in a linen closet on the second floor at 11:59 P. M., and the same fire alarm box, No. 722, was pulled. This fire spread very rapidly with the result that some 200 guests were trapped on the upper floors. Most of them were brought down by firemen, and the blaze was checked with only $57,000, in property damage, but not before six lives were lost and 20 injured.31

One of the most spectacular fires ever to occur in Richmond was the 75,000-gallon oil fire at the plant of the Standard Oil Company on December 23, 1943, a bitter cold day. George W. Rogers calls the work of the fire fighters "the best job of firefighting I ever saw." Twenty-two streams of water pumped from a nearby canal formed a water screen to protect a score of nearby tanks from those already ablaze, while 51,000 pounds of foamite finally erased the fire itself.32 The firemen suffered from the intense heat, which caused blistered faces and singed eyebrows

but were spared any severe explosion, which fortunately did not materialize. The majority of the companies which had fought the $50,000 oil fire were awakened at 9:47 P. M. to battle a raging fire at Powell Brothers Clothing Store on Main Street under the Chesapeake and Ohio viaduct. The store was gutted along with a stock worth $35,000, and the wooden flooring of the viaduct was ignited several times. One of the heaviest fire losses in Richmond, financially speaking, occurred on April 28, 1951, when the Miller and Rhoades warehouses on Hermitage Road were burned with a loss of $1,300,000.

The Jurgens and Hopkins furniture stores fire of March 13, 1921, will always be remembered in Richmond's firefighting history as the blaze which took the lives of four city firemen and one civilian volunteer. A "back draft" was credited as the cause of the explosion which wrecked the walls of the Jurgens building, demolishing the building of the Hopkins furniture store at Adams and Broad Streets. According to newspaper accounts, firemen had just carried a line of hose to the top of the Jurgens building and had been compelled to descend because of a lack of pressure when the explosion took place. Had they remained on top several minutes longer, they too would have been dropped into the raging inferno beneath. As it was, some 15 men were carried down when the Hopkins roof caved in.

35. Richmond Times-Dispatch, March 14, 1921.
Volunteer civilians were working with crow-bars to pick holes in the walls separating the two buildings so that hose could be played on the flames, and firemen were preparing to separate these streams of water when the explosion occurred. These were the men who were caught and carried down. The Hopkins building was a four-story brick structure, standing next to the Jurgens building, which was six stories, and when the wall of the taller edifice fell, its weight broke through the roof of its neighbor and the weight of the roof carried down floor after floor and sank through the main floor into the cellar. Some of those caught on the roof were carried only to the third floor, where they lodged on a shelf which did not break away near the front of the building.

"The fire, viewed from the inside, proved to be full of thrills. The work of the firemen would be spoken of on the battlefront as conspicuous bravery in the face of a galling fire. The men worked right on rescuing the dead and fighting the fire, while dangers threatened on all sides." The elevator of the Hopkins Company had been left suspended in the air, and, after the fire, it rested shakily on three timbers directly above the heads of the men. Had it broken free, it would have added to the list of those already dead. Despite this danger, firemen continued to search the debris for their mates, and when the blaze broke out anew late in the evening, they again endangered their lives by climbing back over the wreckage to get at the heart of the fire. When the big explosion took place,
a number of firemen on Adams Street narrowly missed death, since the wall blew out on this side also. However, they saw the mass of brick falling and barely made it out of the way before it hit the street.37

In an editorial the day after the tragedy, the Richmond Times-Dispatch observed that "the five...who perished yesterday in their losing conflict with the flames...are beyond any human aid. Richmond can do nothing for them. It can only pay solemn and fitting tribute to their courageous devotion to duty."38 Such a statement can be applied not only to those who gave their lives in this particular fire but also to all those who have served the city of Richmond down through the years and who have done their part to keep the citizens free from the hazards of fire.

37. Ibid.
38. Ibid.
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APPENDIX

FIRE PREVENTION CODE OF RICHMOND, VIRGINIA
The
FIRE PREVENTION CODE

of the

CITY OF RICHMOND, VIRGINIA

Adopted
NOVEMBER 24, 1952
The
FIRE PREVENTION CODE

of the

CITY OF RICHMOND, VIRGINIA

Adopted
NOVEMBER 24, 1952
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AN ORDINANCE—No. 52-130

To amend the Richmond City Code of 1937 by inserting therein a new chapter, between chapter 34 and chapter 36, which new chapter is designated chapter 35, concerning fire prevention.

Patron: Mayor (By request of City Attorney).

The City of Richmond Hereby Ordains:

1. That the Richmond City Code of 1937 be and the same is hereby amended by the insertion therein of a new chapter, between chapter 34 and chapter 36, which new chapter is designated chapter 35, concerning fire prevention, and is as follows:

CHAPTER 35
Fire Prevention

ARTICLE I
Definitions—General Provisions

35-1. DEFINITIONS.—Definitions.—The following words and phrases when used in this chapter shall, for the purpose of this chapter have the meanings respectively ascribed to them in this section, except in those instances where the context clearly indicates a different meaning.

(1) “Approval”—“Approved”—The words “approved” or “approval” as used in this chapter applying to articles, materials, type of construction, appliances, processes, quantity or quantities, signs and installation, shall mean approval by the Chief as a result of investigations conducted by him to determine that proper safeguards against loss of life, personal injury or damage to property by fire or explosion have been reasonably provided; or, in lieu of such investigation appropriate standards or tests established by recognized qualified authorities may be accepted by him as a determination that proper safeguards against loss of life, personal injury or damage to property by fire or explosions have been reasonably provided.

(2) “Chief”—The Chief of the Fire Prevention Division of the Bureau of Fire.
"Congested area"—An area or areas within the city of Richmond found after investigation by the Chief to be especially susceptible to hazards of fire and explosion because of density of population, traffic conditions, availability of fire fighting equipment and the condition of the structures within the area.

"Division"—The Fire Prevention Division of the Bureau of Fire.

"Garage"—An automobile garage for the purpose of this chapter shall be defined as any building or part of any building where one or more automobiles or other self-propelling vehicles, not including motorcycles, are kept for storage, manufacture, repair, exhibition, demonstration, sale, rental, hire, painting, adjustment or equipment. No establishment coming under this definition, in which four or more automobiles or other self-propelling vehicles other than motorcycles are kept for any of the purposes above mentioned, shall be operated without a permit from the Division of Fire Prevention.

"Person"—Every natural person, firm, co-partnership, association or corporation.

"Place of Assembly"—"Places of Public Assembly"—A room, enclosure or space where provision is made for one hundred or more people to congregate or assemble for religious, recreational, educational, political, social or amusement purposes or for the consumption of food or drink. Such room, enclosure or space shall include any occupied, appurtenant room, enclosure or space.

"Structural Alterations"—"Structural Changes"—The words "structural alterations" or "structural changes" as used in this chapter shall mean any change in the supporting members of a building, such as bearing walls or partitions, columns, beams, or girders, or any substantial change in the roof.

35-2. ESTABLISHMENT OF FIRE PREVENTION DIVISION.
—That there is hereby created the Fire Prevention Division of the Bureau of Fire. The Director of Public Safety shall have general management and control of the administration and enforcement of the provisions of this chapter and in connection therewith shall appoint a Chief of the Fire Prevention of the Bureau of Fire, and such other officers, assistants, clerks and employees as he may deem necessary in administering and enforcing the provisions of this chapter.

35-3. DUTIES OF THE DIVISION.—It shall be the duty of the Division to enforce all laws and ordinances unless otherwise specifically provided to the contrary covering the following:

(1) The prevention of fires and explosions.

(2) The investigation of the cause, origin and circumstances of fires and explosions.
(3) The installation and maintenance of fire extinguishing equipment.

(4) The storage and use of explosives and flammables.

(5) The maintenance of, protection of and the elimination of hazards in buildings and structures, obstructions of fire escapes and exits.

The Division shall have such other powers and perform such other duties as are set out in other sections of this chapter and other ordinances and as may be conferred and imposed from time to time by law. It shall be the duty of the Division to cooperate with and report to all other appropriate departments of the city having jurisdiction such instances as may come to its attention of violations of any fire prevention or fire safety rules, laws or regulations normally administered by such departments.

35-4. INTENT; STANDARDS OF RECOGNIZED AUTHORITIES; TESTS.—(1) The intent of this chapter is to make reasonable provisions to safeguard life and property from the hazards of fire, explosion and similar causes by regulating the storage, handling and use of potentially dangerous and hazardous articles and materials to a reasonable and proper degree appropriate to the occasion.

(2) Compliance with the pertinent and appropriate standards of such recognized authorities as the National Board of Fire Underwriters, Underwriters Laboratories, Inc., National Bureau of Standards, National Electrical Code or other similar recognized authorities shall be deemed to be prima facie evidence that the installation of articles or materials warrant approval by the Chief.

(3) Tests conducted by any of the above authorities or by other qualified independent testing laboratories may be accepted by the Chief in lieu of independent tests conducted by him. Permanent records shall be kept by the Chief of all tests made by or found acceptable to him.

(4) The Chief shall maintain in his office a public file of such standards, tests and procedures herein referred to which shall be deemed advisory requirements to this chapter insofar as pertinent to each particular installation, process, article or material.

35-5. AUTHORITY TO PERMIT MINOR VARIATIONS OF PROVISIONS OF THIS CHAPTER.—Upon application in writing by any person the Chief shall have the power to permit minor variations of any of the provisions of this chapter when there are substantial practical difficulties in the way of carrying out the strict letter of this chapter provided that the spirit of this chapter shall be observed,
public safety secured and substantial justice done. The particulars of such variations when granted or allowed and the decision of the Chief thereon shall be entered upon the records of the division and a signed copy shall be furnished the applicant.

35-6. DUTY OF THE CHIEF; SERVICING OF ORDERS; APPEALS.—(1) It shall be the duty of the Chief to inspect or cause to be inspected as often as he may deem necessary all buildings and premises, except the interiors of private dwellings, to ascertain and cause to be corrected any conditions liable to cause fire or explosion, or any violation of the provisions or intent of this chapter. When such conditions are found, written orders for immediate correction or removal shall be given.

(2) The service of such orders may be made upon the owner or occupant of the premises or other person responsible for the conditions either by delivering a copy of same personally or by delivering the same to and leaving it with any person in charge of the premises, or in case no such person is found upon the premises, by affixing a copy thereof in a conspicuous place on the door to the entrance of said premises.

(3) If buildings or other premises are owned by one person and occupied by another, the occupant shall be responsible for compliance with the order for correction or removal of such conditions; where the orders require the making of additions to or structural changes in the premises, such orders shall be directed to the owner and not the occupant unless it is otherwise agreed between the owner and the occupant.

(4) Any such order shall forthwith be complied with by the person to whom it is directed. Any person to whom such order is directed may within five days after the service thereof, file an appeal to the Board of Fire Appeals.

35-7. REPORTING OF FIRES; INVESTIGATION OF CAUSES.—(1) Every fire or explosion shall be reported to the Division within two days after the occurrence of the same by the city officer or employee in whose jurisdiction such fire or explosion occurred. Such report shall be in such form as shall be prescribed by the Chief and shall contain a statement of all facts relating to the cause, origin and circumstances of such fire or explosion, injury to persons and extent of the damage thereof and such other information as may be required.

(2) The Division shall investigate the cause, origin and circumstances of every fire or explosion occurring in the city involving loss of life, serious injury to person or material damage to property. If it appears from the investigation that such fire or explosion is of sus-
picious origin, the Chief shall be immediately notified of the facts and the Chief is hereby authorized to take immediate possession of the physical evidence and retain it until his investigation is completed. Notice shall also be given to the proper authorities designated by law to pursue the investigation of such matters and cooperation extended to the authorities in the collection of evidence and in the prosecution of the case.

35-8. ASSISTANCE OF CITY ATTORNEY AND BUREAU OF POLICE.—The City Attorney and the Bureau of Police, upon request of the Division, shall assist in the investigation of any fire or explosion.

35-9. FIRE DRILLS IN SCHOOLS.—Public, private and parochial schools shall have at least one fire drill each month during the school term and reports of each drill shall be furnished promptly to the Division.

35-10. CONDITIONS UNDER WHICH A PERMIT IS GRANTED.—A permit shall constitute permission to use, store or handle articles and materials or to install equipment and conduct processes in accordance with the provisions of this chapter. Such permit does not take the place of any license required by law. It shall specify the conditions under which it is granted; it shall be for an indefinite period, unless otherwise stated; it is not transferable; and any change in the conditions under which it is granted shall require application for a new permit. Failure to comply with the provisions under which such permit was issued or disregard of orders issued pursuant to the provisions of this chapter shall constitute sufficient basis for the revocation of such permit.

35-11. INSPECTION BEFORE ISSUING A PERMIT.—Before issuing a permit the Division shall make such inspections or investigations as the Chief may deem necessary to determine if the provisions of this chapter have been complied with.

35-12. APPLICATION FORMS FOR PERMIT.—All applications for a permit required by this chapter shall be made to the Division in such form and detail as it may prescribe.

35-13. PERMITS SUBJECT TO INSPECTION.—Permits must at all times be kept on the premises designated therein and shall at all times be subject to inspection by any member of the Division or Bureau of Police.

35-14. ONE PERMIT ONLY REQUIRED.—Only one permit need be issued to retail establishments or manufacturing plants dealing in or using two or more flammable, combustible or explosive materials. However, each of the materials shall be listed in the permit.
35-15. COMMITTEE FOR NEW MATERIALS PROCESSES AND OCCUPANCIES.—The Director of Public Safety, the Chief of the Bureau of Fire and the Chief of the Fire Prevention Division of the Bureau of Fire shall act as a committee on determination and specify any new materials, processes or occupancies and trades which shall require permits, in addition to those enumerated in this chapter. The committee shall also specify the conditions under which such permits shall be issued. The Chief shall post such list in a conspicuous place in his office.

35-16. BOARD OF FIRE APPEALS.—

(1) Whenever the Chief shall refuse to grant a permit to any person or when it is claimed by any person that provisions of this chapter do not apply, or when it is claimed by any person that the true intent and meaning of this chapter or any regulations have been misconstrued or wrongly interpreted, then the person so aggrieved may appeal from the decision of the Chief to the Board of Fire Appeals within ten days from such decision by filing with the City Clerk a notice of appeal in triplicate, specifying the grounds thereof. The City Clerk shall forthwith notify the Chief and the chairman of the Board of Fire Appeals of the filing of such appeal. The Board shall fix a reasonable time for the hearing of the appeal and give due notice to the parties in interest and decide the issue in a reasonable time.

(2) That in order to provide for the hearing of appeals taken from the decisions of the Chief, there shall be appointed a Board to be known as the “Board of Fire Appeals” to be composed of seven members appointed by the Council of the City of Richmond. Said members shall be qualified voters of the City of Richmond who hold no office of profit under the City government and who shall serve without compensation. Two of the original appointments shall be for a term of one year; two of the original appointments shall be for terms of two years and three of the original appointments shall be for terms of three years. Succeeding appointments shall be for terms of three years each. Vacancies shall be filled by the council of the City of Richmond for the unexpired portion of the appointment of any appointee. The Board shall elect one of its members as chairman. The chairman shall preside at all meetings of the Board and in his absence a member designated by the Board shall act as chairman and shall preside. The Board shall keep minutes of its proceedings showing the vote of each member or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall be filed in the office of the Board and shall be a public record. The meetings of the Board shall be held at the call of the chairman and at such other times as the Board may determine. An appeal shall be heard by the Board within fifteen days of
the filing of such appeal unless stated meetings at least once a month have been established by the Board or unless the Board and the party appealing agree to a longer period of time.

(3) The Board shall have the power and it shall be its duty to hear and decide appeals where it is alleged there is error in any order, requirement, decision or determination by the administrative officer in the administration and enforcement of the provisions of this chapter. In exercising the powers conferred upon it, the Board may reverse or affirm, wholly or partly, or may modify the order, requirement, decision or determination appealed from, and may make such order, requirement, decision or determination as should be made and to that end shall have all the powers of the administrative officer charged by this chapter with enforcement. The concurring affirmative vote of a majority of the members of the Board hearing the appeal shall be necessary to reverse or modify any order, requirement, decision or determination of the administrative officers. If for any reason there are not at least five members of the Board present to hear a specific appeal, a postponement of the hearing shall be granted upon the request of the party filing the appeal or the Chief.

(4) The Board shall have the power to summons such employees and officers of the City as may be deemed necessary in the discharge of its duties and responsibilities. All hearings of appeals shall be open to the public.

(5) For a period of twelve months immediately following the effective date of this chapter, the Board shall have the power to declare by a vote of at least four of its members that any provision of this chapter shall be inoperative and of no effect for a period of six months from such declaration when in the opinion of the Board a strict compliance of any such provision would result in a clearly demonstrable hardship to any person provided, however, that no such declaration shall be made if such would cause an actual and immediate danger of a fire or explosion occurring in any building or premise so as to endanger life or property.

35-17. PLACARDING OF BUILDINGS.—In the event there shall be, in the opinion of the Chief after inspection, actual and immediate danger of a fire or explosion occurring in any building or premise so as to endanger life or property, the Chief shall have the right and he is hereby authorized to place upon such structure or premise a placard not less than 12 inches by 12 inches, warning all persons to vacate and keep away from such building or premise. Such placard when so placed by the Chief shall not be removed except by his authority. Any person tampering with or removing such placard or ignoring the warning, therein contained, shall be guilty of a violation of this chapter.
In the event any person desires to appeal from any such action of the Chief the warning contained in the placard shall first be complied with.

35-18. TRANSPORTATION CONFORMING TO I. C. C. AND MILITARY OR NAVAL FORCES OF U. S. A. REGULATIONS.—Nothing contained in this chapter shall be construed as applying to the transportation of any article or thing shipped in conformity with the regulations prescribed by the Inter-State Commerce Commission or as applying to the military or naval forces of the United States.

35-19. LIABILITY.—This chapter shall not be construed to affect the responsibility of any person owning, operating or installing any equipment for damages to persons or property caused by any defect therein.

ARTICLE II
Explosives

35-20. DEFINITIONS.—The term “explosive” or “explosives” whenever used in in this chapter shall be held to mean and include any chemical compound or mechanical mixtures, except gasoline or other flammable liquids that contain any oxidizing and combustible units, or other ingredients, in such proportion, quantities or packing that ignition by fire, by friction, or concussion, by percussion, or by detonator of any part of the compound or mixture may cause such a sudden generation of highly heated gases that the resultant gaseous pressures are capable of producing destructive effects on contiguous objects or of destroying life or limb, and shall also include devices, articles or materials that may be inserted into cigars or cigarettes that by ignition may cause an explosion or noise.

35-21. EXCEPTIONS EXPLOSIVES.—Nothing in this Article shall be held to mean and include any small arms ammunition or signal rockets, or devices or compositions used to obtain visible or audible pyrotechnic effects, which are covered in Article 3, nor to include explosives in the forms prescribed in the official United States Pharmacopeia.

35-22. MANUFACTURE OF EXPLOSIVES.—No person shall manufacture any explosives, except that they may be produced in experimental quantities in the laboratories in schools, colleges and similar institutions for the purpose of investigation and instruction.

35-23. PUBLIC CONVEYANCE.—No person shall transport or carry any explosive in or upon any public conveyance which is carrying passengers for hire.
35-24. PERMIT REQUIRED.—No person shall have, keep, store, sell, offer for sale, give away, use, or transport any explosives, except under permit therefor.

35-25. TRANSPORTATION OF EXPLOSIVES.—No person shall have, keep, store, sell, offer for sale, give away, use, transport, or manufacture any of the following explosives in any quantity: Liquid nitroglycerine; high explosives containing over 60 per cent of nitroglycerine (except gelatin dynamite); high explosives having an unsatisfactory absorbent or one that permits leakage of nitroglycerine under any conditions liable to exist during transportation or storage; nitrocellulose in a dry and uncompressed condition, in quantity greater than ten (10) pounds in one exterior package; fulminate of mercury in bulk in a dry condition, and fulminate of all other metals in any condition, except as a component of manufactured articles not hereinafter forbidden; or explosives containing an ammonium salt and a chlorate.

(1) Every vehicle while carrying explosives shall have painted on its front, sides and back, in easily legible letters at least four inches high, in contrasting colors, the word “EXPLOSIVES”, or in lieu thereof shall display, in such manner that it will be visible from all directions a red flag with the word “DANGER” printed, stamped or sewn thereon in white letters. Such flag shall be at least twenty-four inches square, and the letters thereof shall be at least six inches high.

(2) No person in charge of a vehicle containing explosives shall smoke in or upon such vehicle, drive the vehicle while intoxicated, drive the vehicle or conduct himself in a careless or reckless manner, or load or unload such vehicle in a careless manner or while smoking or intoxicated.

(3) No person shall place or carry in the bed or body, or cause to be placed or carried in the bed or body of any vehicle containing such explosives, any metal tool or other piece of metal, or any matches.

(4) No person shall place or carry or cause to be placed or carried, in any vehicle containing explosives, any exploders, detonators, blasting caps or other similar explosive material.

(5) The permit for transporting explosives may designate the time when, and the route whereon the same may be transported.

35-26. STORAGE OF EXPLOSIVES.—All explosives must be stored in a magazine complying with the requirements of this chapter unless such explosives are being transported or used as prescribed and authorized by this chapter; and an accurate record showing the disposition of each container or package of explosives stored, transported or used shall be kept, such record to be subject to inspection by the Division at all times.
35-27. MAGAZINES.—(1) All magazines in which explosives are had, kept or stored, must be located at distances from neighboring buildings, highways and railroads in conformity with the American Quantity and Distance table. Provided that only one portable magazine containing not more than fifty pounds of explosive may be allowed if placed on wheels and located not more than ten feet from, on the same floor with and directly opposite to the entrance on the floor nearest the street level, and only one portable magazine containing not more than five thousand blasting caps, may be allowed if placed on wheels located on the floor nearest the street level. Portable magazines may be allowed only in such buildings as may be approved and found acceptable by the Chief.

(2) Blasting caps or detonators of any kind shall not be kept in the same magazine with other explosives.

(3) All magazines must be kept locked except when being inspected or when explosives are being placed therein or being removed therefrom.

(4) All magazines and places where magazines containing explosives are stored must be kept clean and free from grit, rubbish and empty packages.

(5) Magazines shall be made of fireproof material or wood covered with sheet iron and shall be conspicuously marked “Magazine — Explosives”.

35-28. BLASTING.—No person shall blast or carry on any blasting operations within the City of Richmond without first having obtained a permit from the Chief. The applicant for such permit shall file in the office of the Director of Finance a corporate bond or evidence of public liability insurance deemed adequate by the Chief; provided, however, that when any person is required to carry on any blasting operations in connection with any work under the supervision of either the Department of Public Works or the Department of Public Utilities, then the Chief and the Director of the Department of Public Works or the Director of the Department of Public Utilities, as the case may be, shall jointly determine the amount of such bond or insurance. The bond or evidence of insurance shall be approved by the City Attorney and shall be conditioned for the payment of any damages to person or property as a result of such blasting operations.

ARTICLE III

Pyrotechnics and Small Arms Ammunition

35-29. DEFINITIONS—Pyrotechnics whenever used in this chapter shall be held to mean any sparkler, squib, rocket, firecracker, roman candle, signal lights, railroad track torpedo, flashlight com-
position, fireworks or other devices or composition used to obtain visible or audible pyrotechnic display, and shall include fire balloons of a type which have burning material of any kind attached thereto.

35-30. STORAGE, SALE, USE, MAINTENANCE, TRANSPORTATION OF PYROTECHNICS.—No person shall have, keep, store, use, manufacture, sell, handle or transport any pyrotechnics; provided, however,

(1) That upon obtaining a permit it shall be lawful for wholesale dealers to have, keep, store, or handle pyrotechnics in original or unbroken packages if such pyrotechnics are intended for sale, shipment and delivery in said original or unbroken packages outside of the corporate limits of the city, and in no case shall it be lawful for said wholesale dealers to sell or deliver such pyrotechnics within the city; and provided, further, that the building or place where such pyrotechnics are kept, stored or handled shall be approved for such use by the chief and a permit is issued for such use. Where original or unbroken packages are stored in buildings, such buildings shall not be located within a congested area nor exposing other property. Nothing in this chapter shall be held to apply to the possession or use of signalling devices for current daily consumption by railroads, vessels and others requiring them.

(2) The Chief may, upon due application issue a permit to a properly qualified person for giving a pyrotechnic display of fireworks in the public parks or other open places within the city. Such permits shall impose such restrictions as in the opinion of the Chief may be necessary to properly safeguard life and property in each case.

(3) Nothing in this chapter shall be held to apply to the possession, sale or use of normal stock of flashlight compositions by photographers or dealers in photographic supplies.

35-31. SMALL ARMS AMMUNITION.—Small arms ammunition whenever used in this chapter shall be held to mean any shotgun, rifle, pistol or revolver cartridges.

35-32. MANUFACTURE OF SMALL ARMS AMMUNITION.—No person shall manufacture within the limits of the city any small arms ammunition. This shall not be construed as prohibiting the hand-loading of small arms ammunition for private use and not for resale.

ARTICLE IV

Nitro-Cellulose Motion Picture Film

35-33. SALES RESTRICTION.—No person shall sell any toy or miniature motion picture machine containing nitro-cellulose motion picture film, or sell, lease or otherwise dispose of any nitro-cellulose
motion picture films to any person not having a permit to handle, use or display such film.

35-34. STORAGE; HANDLING; PERMIT.—A permit shall be required for the storage or handling of nitro-cellulose motion picture film. No permit shall be issued for the storage of any such film in rooms not protected by automatic sprinklers; provided that this does not include projection booths constructed, operated and maintained in the manner prescribed by law.

35-35. STORAGE.—Nitro-cellulose motion picture film in other than the original shipping containers conforming to Interstate Commerce Commission regulations, in amounts in excess of 25 pounds but not in excess of 1,000 pounds shall be kept in approved cabinets if not in vaults; amounts in excess of 1,000 pounds shall be kept in vaults.

Note: The standard roll of film 1 3/8 inches (35mm.) wide and 1,000 feet long weighs about 5 pounds.

35-36. FILM CABINETS; VAULTS.—(1) Cabinets shall be of approved construction and shall not have a capacity in excess of 375 pounds of film.

(2) Cabinets having a capacity of over 50 pounds of film shall be provided with a vent from each compartment to the outside of the building. The vent shall have a minimum effective sectional area of 14 square inches per 100 pounds of film capacity.

(3) Cabinets holding over 75 pounds of film shall be provided with at least one approved automatic sprinkler; provided that a cabinet constructed so that each roll is in a separate compartment and will burn out without communicating fire to film in any other compartment, need not be provided with an automatic sprinkler.

(4) Film vaults shall be constructed, vented and sprinkled in accordance with the requirements for standard film vaults and in a manner approved by the Chief.

ARTICLE V

Pyroxylin Plastic

35-37. DEFINITION.—The term “pyroxylin plastic” as used in this chapter shall be held to mean and include any plastic substance, material or compound, other than nitro-cellulose film as provided for in Article IV of this chapter, having soluble cotton or similar nitro-cellulose as a base, including celluloid, fiberloid, pyralin, viscoloid, zylonite and similar products, materials, and compounds by whatever name known, when in the form of blocks, slabs, sheets, tubes, or fabricated shapes.
35-38. PERMITS REQUIRED: LOCATION LIMITATION.—All persons storing or handling at any one time more than 100 pounds of pyroxylin plastic shall obtain a permit; a permit shall also be required for the manufacture of articles of pyroxylin plastic, which shall include the use of pyroxylin plastic in the manufacture or assembling of other articles. The storing or handling of pyroxylin plastic shall be outside of a congested area and not exposing other property.

35-39. DISPLAY OF PYROXYLIN PLASTIC PRODUCTS.—Except as hereinafter provided, all display of pyroxylin plastic articles in stores shall be in show cases or show windows.

(1) Articles may be placed on tables or counters but no table or counter shall be over 3 feet wide and 10 feet long, and tables shall be spaced at least 3 feet apart.

(2) Spaces underneath tables or counters shall be kept free of storage of any kind and of accumulations of paper, refuse and other combustible material.

(3) Tables or counters shall be so located that in the event of a fire at a table or counter, the table or counter will not interfere with free exit from the room.

(4) Electric or gas-mantle light shall not be directly above any pyroxylin plastic materials unless provided with an approved guard to prevent heated particles from falling.

35-40. SPRINKLER REQUIREMENTS.—All new and existing buildings shall have all parts of the building used for the manufacture or storage in connection with the manufacture of articles of pyroxylin plastic equipped with an approved system of automatic sprinklers.

35-41. STORAGE OF RAW PYROXYLIN PLASTIC MATERIAL.—All raw pyroxylin plastic material in factory buildings shall be kept as follows:

(1) Where such material in excess of 25 pounds is received in any building, an approved vented cabinet or vented and sprinklered vault shall be provided for the storage of the material.

(2) Not more than 1,000 pounds of such material may be stored in cabinets in any one workroom, but not more than 500 pounds in any one cabinet, nor more than 250 pounds in one compartment.

(3) All such material in excess of 100 pounds must be kept in vented vaults not exceeding 1,500 cubic feet capacity and with one approved automatic sprinkler head to each 125 cubic feet of total vault space and with construction and venting in conformity with standard practice for such use and approved by the Chief.

35-42. VAULTS AND CABINETS.—In factories manufacturing articles of pyroxylin plastic such sprinkled and vented cabinets, vaults
or storage rooms shall be provided as may be necessary to prevent the accumulations in workrooms of raw stock, stock in process or finished articles. Such cabinets, vaults or rooms shall be approved and of such size, number, arrangement and location as specified by the Chief.

35-43. QUANTITY PERMITTED IN WORK ROOM.—In the workrooms of pyroxylin plastic factories, operators shall not be stationed closer together than 3 feet, and the amount of material per operator shall not exceed one half day's supply and shall be limited to the capacity of three tote-boxes including material awaiting removal or use.

35-44. WASTE MATERIAL.—All shavings, chips, turnings, sawdust, edgings, trimmings and other waste materials of pyroxylin plastic shall be kept under water in a metal receptacle until removed from the premises.

35-45. STORAGE: NO SMOKING; FIRE PROTECTION.—No pyroxylin plastic shall be stored within 2 feet of steam pipes, radiators, chimneys, or other apparatus emanating heat. No person shall smoke in any establishment storing or handling pyroxylin plastic and approved "No Smoking" signs shall be posted. Fire extinguishers, fire pails and other fire protection equipment approved by the Chief shall be provided.

ARTICLE VI
Photographic and X-Ray Nitro-Cellulose Film

35-46. STORAGE; HOSPITALS AND SIMILAR INSTITUTIONS, DOCTOR'S OFFICES AND X-RAY LABORATORIES.—In hospitals and similar institutions, doctors' offices and x-ray laboratories, all unexposed nitro-cellulose photographic and x-ray film, unless in unopened Interstate Commerce Commission shipping containers, shall be stored in cabinets constructed as hereinafter provided, within the building; all exposed nitro-cellulose photographic and x-ray film shall be kept in outside storage houses, except that not more than 500 pounds may be kept in cabinets within the building.

35-47. STORAGE; PORTRAIT AND COMMERCIAL STUDIOS.—In portrait and commercial studios, all exposed nitro-cellulose photographic and x-ray film shall be stored in cabinets, vaults or outside storage houses, constructed as hereinafter provided; storage of unexposed film in excess of 50 cubic feet, unless in unopened shipping containers conforming to Interstate Commerce Commission regulations, shall be in a room equipped with approved automatic sprinklers.

35-48. CABINETS—(1) Cabinets shall be of insulated construction and shall not exceed 10 cubic feet capacity.
(2) Cabinets shall be equipped with at least one approved automatic sprinkler in each compartment unless specific approval for use without automatic sprinklers is granted by the Chief.

(3) Each cabinet shall be provided with a vent to the outside of the building. The vent shall be so constructed or protected by a substantial metal grid as to prevent stoppage of vent in case of combustion or decomposition of film contents. For a cabinet having 10 cubic feet inside volume the vent area shall be not less than 56 square inches. For smaller cabinets the vent area shall be proportional except that no cabinets shall have a vent area of less than 14 square inches.

(4) Vent flues inside the building shall be of a construction equivalent to No. 18 U. S. gauge metal covered with 1 inch of heat insulating material.

35-49. VAULTS AND OUTSIDE STORAGE HOUSE.—Vaults and outside storage houses shall be sprinklered and vented and in strict accordance with the standard requirements for vaults or for outside storage houses, and be satisfactory to the Division; provided, however, that outside storage houses which are not within 100 feet of any other building are not required to have automatic sprinkler protection.

35-50. LIGHTS IN ROOMS AND VAULTS.—In rooms or vaults where such film is stored only incandescent or fluorescent electric lights shall be permitted and in vaults these shall be protected by wire guards, vapor-proof globes or both. Portable or extension cords shall not be used in any storage vault.

35-51. SMOKING PROHIBITED.—No person shall smoke in rooms where film is stored or in developing or similar workrooms. Conspicuous “No Smoking” signs shall be posted in prominent places.

35-52. STORAGE RESTRICTIONS.—No film shall be stored within 2 feet of steam pipes, radiators, chimneys or other apparatus emanating heat.

35-53. FIRE EXTINGUISHERS REQUIRED.—Fire pails or extinguishers shall be provided as approved by the Chief.

ARTICLE VII

Welding, Including Storage and Operation of Calcium Carbide and Acetylene

35-54. PERMIT.—No person shall store or keep calcium carbide in excess of one hundred pounds, nor operate an acetylene generator having a carbide capacity exceeding 5 pounds, without a permit. Acetylene generators shall be of approved type.
35-55. STORAGE; 600 TO 5,000 POUNDS.—Calcium carbide in excess of 600 pounds but not in excess of 5,000 pounds, may be stored in a separate room or compartment inside a one-story building containing other occupancy, provided such room or compartment is separated by a fire resistive partition from other parts of the building, and without cellar or basement underneath such carbide storage section. Such room or compartment may also be used for storage of fuel gas cylinders. Adequate ventilation shall be provided and the room or compartment shall be waterproofed.

35-56. STORAGE IN GENERATOR ROOM.—Not more than 5,000 pounds of calcium carbide may also be stored within an inside generator room or compartment of construction as above mentioned when such generator room or compartment is located in a one-story building without cellar or basement underneath the generator section. Such generator room or compartment may also be used for the storage of fuel gas cylinders.

35-57. STORAGE IN EXCESS OF 5,000 POUNDS.—No person shall store calcium carbide in excess of 5,000 pounds except above ground in dry, waterproof, adequately ventilated one-story buildings without cellar or basement, used for no other purpose, except the storage of fuel gas cylinders, or in an outside generator house.

If such storage building is of incombustible construction, it may adjoin other one-story buildings if separated therefrom by unpierced fire walls. If detached less than 10 feet from such building or buildings there shall be no opening in any of the mutual exposing sides of such building within said distance.

If such storage building is of combustible construction it shall not be located within twenty (20) feet of any other one or two-story building, nor within thirty (30) feet of any building in excess of two stories.

35-58. INSTALLATION OF STATIONARY GENERATOR.—No person shall hereafter install a stationary generator unless such generator be either in an outdoor, underground pit, or in a well ventilated fire-resistive outbuilding, the size of which shall not exceed that required to allow free operation of the apparatus and the storage of the necessary carbide; provided that such generators may be installed inside buildings if within a well ventilated, fire-resistive enclosure either in a one-story building or on the top floor or roof of a multi-storied building. No person shall use or maintain any stationary generator installed in violation of this section.

35-59. PORTABLE GENERATORS.—No person shall use portable generators inside buildings except in rooms of total volume at least 35-times the nominal aggregate gas-generating capacity of the unit or units used therein.
35-60. MOVING GENERATORS.—No acetylene generator while charged shall be moved by derrick, crane or hoist.

35-61. CYLINDER CARRIERS.—Acetylene or other gas cylinders and the attendant oxygen cylinders used for welding or cutting shall be fastened in place or shall be attached to a suitable carrier provided with wheels and handles for easy transportation.

35-62. PROTECTION WHERE WELDING OR CUTTING IS DONE.—During the construction, repair or demolition of any building or structure, or of any appurtenance in any building or structure, welding or cutting shall not be conducted in the presence of combustible material unless such material is adequately shielded from sparks or molten material and portable extinguishing equipment provided nearby.

35-63. WELDING, ETC., OF EMPTY FLAMMABLE LIQUID CONTAINERS.—No welding, brazing, soldering or cutting of any tank, drum or other container, which has contained any flammable liquid, shall be carried out unless such container has been freed of vapor by steaming and scouring, and its freeness of combustible air-vapor mixtures determined by means of a flammable vapor indicator.

ARTICLE VIII
Liquefied Petroleum Gases

35-64. DEFINITIONS.—The term "liquefied petroleum gas" as used in this Article, shall mean and include any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them: propane, propylene, butanes (normal butane or iso-butane), and butylenes.

35-65. EQUIPMENT DEFINED.—(1) The term "liquefied petroleum gas equipment" as herein referred to shall be construed to embrace all devices, piping and equipment pertinent to the use of liquefied petroleum gas, except gas-burning appliances.

(2) The term "appliances" as herein referred to shall be construed to embrace all gas-burning appliances intended for use with liquefied petroleum gas.

35-66. GENERAL PROVISIONS FOR THE INSTALLATION OF LIQUEFIED PETROLEUM GAS EQUIPMENT.—All installations of liquefied petroleum gas equipment and including such equipment installed at utility gas plants, shall be in conformity with the provisions of this Article, with the statutes of the State of Virginia, and with any orders, rules or regulations issued by authority thereof and with generally recognized standards for safety to persons and property. Where no specific standards are prescribed by this Article
or by the statutes of Virginia, or by any order, rules or regulations issued by authority thereof, conformity with the standards of the National Board of Fire Underwriters for the design, installation and construction of containers and pertinent equipment for the storage and handling of liquefied petroleum gases as recommended by the National Fire Protection Association (Pamphlet 58, edition of June, 1952), and in the case of liquefied petroleum gases at utility gas plants, conformity with the standards of the National Board of Fire Underwriters for the design, installation and construction of containers and pertinent equipment for the storage and handling of liquefied petroleum gases at utility gas plants as recommended by the National Fire Protection Association (Pamphlet 59, edition of March, 1949) shall be prima facie evidence of conformity with generally recognized standards for safety to persons and property.

35-67. KEEPING OF RECORDS.—Every person, firm or corporation installing liquefied petroleum gas equipment, other than gas-burning appliances and replacing of portable cylinders, in Richmond, Virginia, shall keep a record of each installation, showing the name and address of the customer at whose place the liquefied petroleum gas equipment has been installed and the date of the installation, and shall disclose such record to the Chief at any time, upon his request, during regular business hours.

35-68. INSPECTIONS.—The Division shall inspect a reasonable number of installations of liquefied petroleum gas equipment.

35-69. GENERAL PROVISIONS FOR PLANTS.—In addition to the foregoing provision, plants devoted to filling liquefied petroleum gas containers shall comply with the following requirements, except office buildings and other buildings or structures on the same property which are not used for filling containers or other similar operations:

1) In no case shall any plant storage tank be located closer than 50 feet from any building not physically connected with the plant, or to any line of adjoining property which may be built upon.

2) Artificial lighting shall be restricted to electricity. In buildings or portions of buildings containing liquefied petroleum gas storage containers, and in buildings or portions of buildings where cylinders or tank trucks are filled, all electrical equipment for light and power shall be in compliance with the requirements of the National Electrical Code for Class I, Group D, hazardous locations; heating shall be by steam, hot water, or hot air with heating units located in a separate building provided for this purpose, or in a separate room cut off from all other portions of the building by vapor-tight fire resistant walls and with entrance from the outside.
35-70. TANK TRUCKS.—Tank trucks used in the distribution of liquefied petroleum gas shall conform to provisions set out in Section 35-66 of this Article.

ARTICLE IX
Flammable Liquids

35-71. CLASSIFICATION OF FLAMMABLE LIQUIDS.—For the purpose of this article, flammable liquids are divided into three classes, according to the flash point, as follows:

Class 1. Liquids with a flash point below 25 degrees Fahrenheit (-4 degrees Centigrade) closed cup tester.

Class 2. Liquids with flash point above that for Class 1 and below 70 degrees Fahrenheit (21 degrees Centigrade) closed cup tester.

Class 3. Liquids with flash point above that for Class 2 and below 200 degrees Fahrenheit (93.3 degrees Centigrade) closed cup tester.

In determining the flash point of flammable liquids, the Tag Closed Cup Tester (standardized by the National Bureau of Standards) shall be authoritative in case of dispute. In case of dispute tests shall be made in accordance with the methods adopted by the American Society for Testing Materials.

Representative examples of the classes of flammable liquids are:

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<tr>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
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<tr>
<td>Ether</td>
<td>Alcohol</td>
<td>Kerosene</td>
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<tr>
<td>Gasoline</td>
<td>Amyl Acetate</td>
<td>Amyl Alcohol</td>
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<tr>
<td>Naptha</td>
<td>Toluol</td>
<td>Turpentine</td>
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<td>Benzol</td>
<td>Ethyl Acetate</td>
<td>Fuel Oil</td>
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<td>Collodion</td>
<td>Methyl Acetate</td>
<td>Cleaning Solvents</td>
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<td>Acetone</td>
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35-72. MANUFACTURED LIQUID COMMODITIES INCLUDED.—Any manufactured liquid or fluid commodity, such as paint, varnish, dryers, cleaning solution and polishing liquid which contains flammable liquids shall be considered a flammable liquid and shall be classified by Section 35-71 according to the flash point of the mixture.

35-73. PERMIT REQUIRED.—Except as specified in Section 35-74, a permit shall be required:

(1) For the storage or handling of a total quantity of Class 1 liquids in excess of one pint in any dwelling, apartment house or tenement, and in excess of five gallons in any other building, and in excess of ten gallons outside of any building.
(2) For the storage or handling of a total quantity of Class 2 liquids in excess of five gallons in any dwelling, apartment house or tenement, and in excess of ten gallons in any other building, and in excess of twenty-five gallons outside of any building.

(3) For the storage or handling of a total quantity of Class 3 liquids in excess of twenty-five gallons inside any building, and in excess of fifty-five gallons outside of any building.

35-74. OWNER OR AGENT MAY USE CERTAIN FLAMMABLE LIQUIDS WITHOUT PERMIT.—Nothing in this chapter shall require an owner or occupant of a building, or his agent, to obtain a permit for the use of, nor does it prohibit the use by him, of paints, oils, varnishes, cleaning solutions, polishing liquids, and other similar flammable mixtures when storage in excess of those given in Section 35-73 is to be maintained for no more than thirty days.

35-75. PERMITS FOR DIFFERENT OCCUPATIONS.—All permits shall state the nature of the business of the applicant, the maximum quantity of each class of liquid to be kept, and the location of the storage. Permits shall be listed as follows, and one or more of the following may be listed in the same permit.

- Garage Permit (with or without storage)
- Storage Permit
- Retail Dealer's Permit
- Painter's Permit, including Spray Painting
- Paint and Oil Dealer's Permit
- Jobber's Permit
- Manufacturer's Permit
- Dry Cleaner's Permit
- Oil Burner Permit.

35-76. USE OF CLASS 1 LIQUIDS FOR CLEANING PROHIBITED.—It shall be unlawful for any person to use Class 1 liquids for cleaning purposes, except as specified in Section 35-150, applying to dry cleaning establishments.

35-77. HEATING AND LIGHTING APPLIANCES MAY BE PROHIBITED.—The sale or use of any type, kind or make of heating or lighting appliance using flammable liquids which has not been tested by some qualified, independent testing laboratory and found to be properly safeguarded shall be prohibited. All such appliances shall also be installed so as to provide reasonable protection to life or property.

35-78. CLASS 1 AND 2 LIQUIDS PROHIBITED IN PLACES OF PUBLIC ASSEMBLY.—No Class 1 or Class 2 liquids shall be kept or stored in any school-house, religious, amusement or other building used for public assembly, except in laboratories for experimental purposes.
35-79. STORAGE OF CLASS 1 AND 2 LIQUIDS NEAR EXITS PROHIBITED.—No Class 1 or Class 2 liquids may be stored within 10 feet of any stairway, elevator or exit unless such liquids are in sealed containers, or in a space separated from the stairway, elevator or exit by a fire resistive partition.

35-80. CLASS 1 OR 2 LIQUIDS NOT TO BE STORED BELOW GROUND LEVEL.—Class 1 or 2 liquids shall not be stored, used, mixed or dispensed in any portion of a building that is below ground level.

35-81. TWO EXITS REQUIRED IN MANUFACTURING AND JOBBER'S PLANTS.—In all jobbers' and manufacturing plants in which flammable liquids are stored, at least two exits shall be provided, one of which shall be remote from the point of storage. This provision does not apply to fuel oil or kerosene used for heating purposes in such plants.

35-82. HANDLING LIQUIDS IN BUILDINGS OCCUPIED AS DWELLINGS.—The mixing, storing or handling of flammable liquids of Class 1 and 2 in open containers is prohibited in any building used as a dwelling in whole or in part, provided that this shall not apply to drug stores where flammable liquids are used in making and compounding medicines and prescriptions.

35-83. STORAGE LIMITED IN BUILDINGS NOT SO USED ON DATE OF ENACTMENT OF THIS CHAPTER.—The storage of flammable liquids inside buildings except in buildings so used on date of enactment of this chapter shall be as required under the following sub-sections.

Provided that in a special storage room conforming to requirements given in Section 35-85, the storage of Class 1 liquids shall be in accordance with Section 35-86 and the quantity of Class 2 and 3 liquids shall be unlimited as to total quantity, except as otherwise provided in this chapter.

(1) Within the limits of those areas of the City of Richmond known as the "Fireproof District" and the area known as the "Solid Wall District", which areas are designated as District No. 1 and District No. 2, respectively, and described and set forth in the Building Code of the City of Richmond:

In Frame Buildings:
Classes 1 and 2 prohibited.
Class 3. Maximum limit of any tank or container 60 gallons, except as permitted in Section 35-106.

In Other Than Frame Buildings:
Class 1. In sealed containers or safety cans of not more than one gallon capacity, and not exceeding a total of five gallons.

35-84. HANDLING LIQUIDS IN BUILDINGS OCCUPIED AS DWELLINGS.—The mixing, storing or handling of flammable liquids of Class 1 and 2 in open containers is prohibited in any building used as a dwelling in whole or in part, provided that this shall not apply to drug stores where flammable liquids are used in making and compounding medicines and prescriptions.

35-85. STORAGE LIMITED IN BUILDINGS NOT SO USED ON DATE OF ENACTMENT OF THIS CHAPTER.—The storage of flammable liquids inside buildings except in buildings so used on date of enactment of this chapter shall be as required under the following sub-sections.

Provided that in a special storage room conforming to requirements given in Section 35-85, the storage of Class 1 liquids shall be in accordance with Section 35-86 and the quantity of Class 2 and 3 liquids shall be unlimited as to total quantity, except as otherwise provided in this chapter.

(1) Within the limits of those areas of the City of Richmond known as the "Fireproof District" and the area known as the "Solid Wall District", which areas are designated as District No. 1 and District No. 2, respectively, and described and set forth in the Building Code of the City of Richmond:

In Frame Buildings:
Classes 1 and 2 prohibited.
Class 3. Maximum limit of any tank or container 60 gallons, except as permitted in Section 35-106.

In Other Than Frame Buildings:
Class 1. In sealed containers or safety cans of not more than one gallon capacity, and not exceeding a total of five gallons.
Class 2. In sealed containers or safety cans of not more than 5 gallons capacity and in barrels, drums or tanks of not more than 60 gallons capacity. The total quantity stored in this manner is subject to the approval of the Chief.

Class 3. In sealed containers or safety cans of not more than 5 gallons capacity and in barrels, drums and tanks not exceeding 120 gallons capacity; except as permitted in Section 35-106. The total quantity stored in this manner is subject to the approval of the Chief.

(2) Outside the limits of those areas of the City of Richmond described in sub-section (1) above:

In Frame Buildings:
Class 1. In sealed containers or safety cans of not more than 1 gallon capacity, and not exceeding a total of 5 gallons.
Class 2. In sealed containers of not more than 5 gallons capacity and in barrels, drums or tanks not exceeding 60 gallons capacity. The total quantity stored in this manner is subject to approval of the Chief.
Class 3. In sealed containers not exceeding 5 gallons capacity and in barrels, drums and tanks not exceeding 120 gallons capacity, except as permitted in Section 35-106. The total quantity stored in this manner is subject to the approval of the Chief.

In other than frame buildings:
Class 1. Not exceeding 10 gallons in sealed containers or safety cans of not more than 1 gallon capacity.
Class 2. In sealed containers or safety cans of not more than 5 gallons capacity and in drums, barrels and tanks not exceeding 120 gallons capacity. The total quantity stored in this manner is subject to approval of the Chief.
Class 3. In sealed containers, drums, barrels and tanks not exceeding 275 gallons capacity, except as permitted in Section 35-106, the total quantity stored in this manner subject to the approval of the Chief.

35-84. STORAGE RESTRICTIONS FOR BUILDINGS USED FOR STORAGE ON DATE OF ENACTMENT OF THIS CHAPTER.
In buildings used for the storage of flammable liquids on the date of the approval of this chapter, the same person then occupying any such building shall be allowed to continue the use of such flammable liquids as heretofore, and a permit in conformity therewith shall be issued to such person, but when any structural alterations or changes are made in any such building, or alterations or changes in occupancies or processes, the provisions of this chapter must be fully complied with.
SPECIAL STORAGE ROOMS OR BUILDINGS.—Special rooms or buildings for storage of flammable liquids and the handling and use of flammable liquids shall, where called for by other sections of this chapter, be constructed as outlined in this section; provided however that when in the opinion of the Chief based upon a consideration of the quantity and nature of flammable liquids involved and the extent of mixing operations together with the character of construction of the building in which the proposed storage and mixing operations are to be located, and of exposed buildings, the extent of the hazard formed is unusually great, construction to meet the additional hazard shall be required.

Walls shall have a fire resistance rating of not less than one hour; they shall be continuous from floor to ceiling and shall be securely anchored.

Ceiling shall be of construction equivalent to not less than ¾-inch gypsum plaster on metal lath.

Floors if combustible shall be protected with not less than 2 inches of concrete.

Door openings to other rooms or buildings shall be provided with non-combustible sills raised 6 inches. Such openings shall be protected by fire doors of approved automatic or self-closing type.

Where other portions of the building or other properties are exposed, windows shall be protected in an approved manner.

Shelving shall be non-combustible.

STORAGE AND USE OF CLASS 1 LIQUIDS.—Except where kept in sealed containers, Class 1 liquids shall be kept in storage tanks underground or outside the building and no discharge system shall have outlet inside building unless in a special room constructed in accordance with Section 35-85. Safety cans of not exceeding ten gallons total capacity may be used in any part of a building except that if over one gallon capacity they shall be kept and used in special rooms constructed in accordance with Section 35-85.

In manufacturing plants the Chief may approve the storage of Class 1 liquids in approved portable wheeled tanks, where the nature of the business requires mobile tanks and the discharge therefrom.

STORAGE OF CLASS 2 LIQUIDS.—No container containing Class 2 Liquids, of over five gallons capacity, may be used to fill other containers and appliances unless so used outside a building or in a special room constructed in accordance with Section 35-85, and all drawing, except from safety cans shall, where the nature of the liquid permits, be as provided for in Sections 35-117 and 35-119.
At automobile service stations the dispensing of alcohol and other flammable anti-freeze solutions from drums shall be done outside the building, using pump or gravity discharge or in a room in which there is no flame producing device, using pump discharge. Air pressure discharge shall not be used.

35-88. NEW MANUFACTURING PLANTS.—No manufacturing plant which locates after the effective date of this chapter in a building wherein persons are normally employed above the second floor shall mix or store Class 1 or 2 liquids in receptacles which permit the escape of vapors unless the rooms wherein such mixing or storage takes place are constructed in accordance with Section 35-85.

35-89. EXISTING MANUFACTURING PLANTS.—Any manufacturing plant located on the effective date of this chapter in a building wherein persons are normally employed above the second floor, shall have all elevator, stair and other wells or vertical openings communicating with rooms in which Class 1 or 2 liquids are mixed or stored in receptacles permitting escape of vapor, enclosed and provided with self-closing fire doors or trap doors with heat releasing devices arranged to close doors automatically in case of fire.

35-90. KETTLES, VATS, ETC.—Kettles, vats, saturators and other vessels used in manufacturing processes, having a capacity of more than five gallons of flammable liquids, shall not be located within five feet of combustible material or within five feet of any exit, unless two or more exits are provided, and all combustible floor thereunder within a radius of ten feet shall be protected with non-combustible coverings. All kettles and other open vessels shall be provided with substantial covers arranged to close automatically in case of fire, or shall be provided with an automatic extinguishing device.

35-91. VENTILATION.—Rooms in which Class 1 or Class 2 liquids are used in open vats, pans or other vessels, or in which Class 1, 2 and 3 liquids are heated or otherwise treated in such manner as to produce flammable vapor, shall be well ventilated. Where natural ventilation is not sufficient the Chief may require forced ventilation with a vent opening of at least 20 square inches in the wall at the floor level near each open receptacle containing such liquids, or each heating device from which vapors may escape and opposite to any door or other air inlet. Such openings shall be covered with 2 x 2 mesh No. 16 galvanized wire web and shall be kept clear of all obstructions. From each vent opening a flue, of at least 20 square inches area and of non-combustible materials, built into the wall or floor or securely fastened thereto and so arranged as not to be subject to mechanical injury, shall conduct to and through a sparkless exhaust fan, to be run continuously, and which shall be of sufficient size to change the air in
the room completely every five minutes. All discharge outlets of vent pipes shall be provided with 12 x 12 mesh or equivalent non-corrodible wire screen and shall be so located that they will not expose surrounding property and shall be approved by the Chief. Any other equivalent system of ventilation may be used when approved by the Chief.

35-92. EXTINGUISHERS REQUIRED. — Where flammable liquids are kept, used or handled, approved extinguishing devices or materials shall be provided in such approved quantities and type as may be directed by the Chief.

Every marketing station, wholesale storage, port terminal, and other property where flammable liquids are stored in quantities in above ground tanks shall, as a minimum requirement, be provided with approved portable fire extinguishing equipment.

35-93. STORAGE OF BARRELS AND DRUMS LIMITED. — Within the limits of those areas of the City of Richmond known as the "Fireproof District" and the area known as the "Solid Wall District", which areas are designated as District No. 1 and District No. 2, respectively, and described and set forth in the Building Code of the City of Richmond, barrels or drums containing Class 1, 2 or 3 liquids stored outside any building shall not be piled upon each other or beneath any window. The following restriction shall not apply in those locations in which wholesale oil, bulk plants or terminals are permitted, and the height of piles of drums shall be consistent with the stability and strength of containers. Barrels or drums containing Class 1, 2 or 3 liquids shall not be stored in any passageway. No open lights or flame shall be permitted where any such barrels or drums are stored.

35-94. DRUMS AND BARRELS SHALL BE KEPT CLOSED. — Drums or barrels for flammable liquids shall be kept closed and have caps, plugs and bungs replaced immediately after drawing or emptying.

35-95. SMOKING PROHIBITED. — In all rooms or parts of buildings which contain flammable liquids in open containers or in which the vapors from flammable liquids are present, or in which flammable liquids are used in any manufacturing process, the carrying of matches is prohibited and smoking shall be unlawful. Approved "No Smoking" signs shall be displayed.

35-96. LIGHTING SHALL BE BY ELECTRICITY. — Flammable liquids shall not be drawn nor handled in the presence of open flame or fire, but may be drawn and handled when lighting is by electricity and installed in compliance with the "City Electrical Code", City of Richmond.
STORAGE TANKS

35-97. STORAGE SHALL BE OUTSIDE BUILDINGS.—Except as otherwise permitted in this chapter, the storage of flammable liquids shall be outside buildings, in underground tanks or above ground tanks; except that the storage in tanks above ground and outside buildings shall be located only in those areas as permitted in the City of Richmond's Zoning Ordinance. Before any installation is covered from sight, written notification shall be given the Division, which shall, within 48 hours after the receipt of such notification, inspect the installation and give its approval or disapproval.

35-98 UNDERGROUND STORAGE LIMITED ON CLASS 1 & 2 LIQUIDS.—Depth and Cover: Underground tanks shall be set on firm foundation and surrounded with soft earth or sand well-tamped in place. Tanks shall be covered with a minimum of 2 feet of earth, or shall be covered with not less than one foot of earth on top of which shall be placed a slab of reinforced concrete not less than four (4) inches thick. When subjected to traffic, tanks shall be protected against damage from vehicles passing over them by at least 3 feet of earth cover, or 18 inches of well-tamped earth, plus either 8 inches of asphaltic concrete or 6 inches of reinforced concrete. When asphaltic or reinforced concrete paving is used as part of the protection it must extend at least 1 foot horizontally beyond the outline of the tank in all directions. Where necessary to prevent floating, tanks shall be securely anchored or weighted.

Where a tank cannot be entirely buried, it shall be covered over with earth to a depth of at least 2 feet with a slope on all sides not steeper than 1½ feet horizontal to 1 foot vertical.

MINIMUM DISTANCE FROM UNDERGROUND TANKS FOR CLASS I OR II FLAMMABLE LIQUIDS TO BASEMENTS OR TO LINE OF ADJOINING PROPERTY THAT MAY BE BUILT UPON.

Location.

<table>
<thead>
<tr>
<th>Individual Tank Capacity</th>
<th>If top of tank is above the lowest floor, basement, or part of any building which is not less than:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I and II</td>
<td></td>
</tr>
<tr>
<td>550 gallons</td>
<td>5 feet away</td>
</tr>
<tr>
<td>5000 gallons</td>
<td>10 &quot;</td>
</tr>
<tr>
<td>10000 gallons</td>
<td>15 &quot;</td>
</tr>
<tr>
<td>15000 gallons</td>
<td>20 &quot;</td>
</tr>
<tr>
<td>Unlimited</td>
<td>25 &quot;</td>
</tr>
</tbody>
</table>

Tanks located beneath a building shall be below all portions of that building and is limited in capacity only in respect to other buildings as given in the above table.
CAPACITY AND LOCATION OF ABOVEGROUND TANKS (Outside of BUILDINGS).—Location with Respect to Property Lines.

(1) Location of an above ground tank for storage of flammable liquids with respect to distance from the nearest line of adjoining property which may be built upon, shall be such that the distance between any part of the tank and the line shall be not less than that set forth in the following table:

(A) Minimum Distance of Outside Aboveground Tanks for Flammable Liquids Other Than Crude Petroleum To Line of Adjoining Property Which May Be Built Upon.

<table>
<thead>
<tr>
<th>Capacity of Tank</th>
<th>Class of Flammable Liquid</th>
<th>Minimum Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 275 gallons</td>
<td>III</td>
<td>0 feet</td>
</tr>
<tr>
<td>276 to 750 gallons</td>
<td>III</td>
<td>5 ft</td>
</tr>
<tr>
<td>0 to 750 gallons</td>
<td>I and II</td>
<td>10 ft</td>
</tr>
<tr>
<td>751 to 12,000 gallons</td>
<td>III</td>
<td>10 ft</td>
</tr>
<tr>
<td>751 to 12,000 gallons</td>
<td>I and II</td>
<td>15 ft</td>
</tr>
<tr>
<td>12,001 to 24,000 gallons</td>
<td>I, II, and III</td>
<td>15 ft</td>
</tr>
<tr>
<td>24,001 to 50,000 gallons</td>
<td>I, II, and III</td>
<td>20 ft</td>
</tr>
<tr>
<td>30,001 to 50,000 gallons</td>
<td>I, II, and III</td>
<td>25 ft</td>
</tr>
</tbody>
</table>

Tanks with capacities in excess of 50,000 gallons and all tanks for storage of crude petroleum shall be located in accordance with the following provisions:

GROUP A TANKS.—Any all-steel, gas-tight tank constructed in compliance with these or equivalent standards and equipped either with (1) an approved permanently attached extinguishing system or (2) an approved floating roof, which is to be used only for the storage of refined petroleum products or other flammable liquids not subject to boil-over, shall be so located that the distance from the line of adjoining property which may be built upon shall be not less than the greatest dimension of diameter or height of the tank, except that such distance need not exceed 120 feet.

GROUP B TANKS.—Any all-steel, gas-tight tank constructed in compliance with these or equivalent standards but not equipped either with (1) an approved permanently attached extinguishing system or (2) an approved floating roof, which is to be used only for the storage of refined petroleum products or other flammable liquids not subject to boil-over, shall be so located that the distance from the line of adjoining property which may be built upon shall be not less than 1½ times the greatest dimension of diameter or height of the tank, except...
that such distance need not exceed 175 feet. This provision shall not apply to tanks located and in place as of the effective date of this chapter.

GROUP C TANKS.—Any all-steel, gas-tight tank constructed in compliance with these or equivalent standards and equipped with (1) an approved permanently attached extinguishing system or (2) an approved floating roof, which is to be used for the storage of crude petroleum,* shall be so located that the distance from the line of adjoining property which may be built upon shall be not less than twice the greatest dimension of diameter or height of the tank except that such distance shall be not less than 20 feet and need not exceed 175 feet.

GROUP D TANKS.—Any all-steel, gas-tight tank constructed in compliance with these or equivalent standards and not equipped either with (1) an approved permanently attached extinguishing system or (2) an approved floating roof, which is to be used for the storage of crude petroleum*, shall be so located that the distance from the line of adjoining property which may be built upon shall be not less than three times the greatest dimension of diameter or height of the tank except that such distance shall not be less than 20 feet and need not exceed 350 feet.

(B) Where the adjoining property is occupied by other flammable liquid storage, the above spacing rules from tanks to property lines shall not apply to such property, but distances between the tanks on the two properties shall be governed by the provisions of Paragraph (2) below.

(C) Above-ground gasoline storage tanks for service stations are prohibited.

(D) In particular installations these provisions may be altered at the discretion of the Chief having jurisdiction after consideration of the special features such as topographical conditions; nature of occupancy and proximity to buildings on adjoining property and height and character of construction of such buildings; capacity and construction of proposed tanks and character of liquids to be stored; degree of private fire protection to be provided, and facilities of the fire department to cope with flammable liquid fires.

*Certain products, not petroleum products, handled in special process and chemical plants may have boil-over characteristics somewhat like those of crude petroleum.
SPACING BETWEEN TANKS.

(a) The location of a tank for the storage of any flammable liquid with respect to any such other tank shall be such that the distance between them shall be not less than 3 feet.

(b) For tanks above 50,000 gallons individual capacity storing any flammable liquid, except crude petroleum in producing areas, the distance shall be not less than one-half the diameter of the smaller tank.

(c) For tanks storing crude petroleum above 126,000 gallons (3,000 bbls.) individual capacity, the distance shall be not less than the diameter of the smaller tank.

35-100. OPENINGS IN ABOVE GROUND TANKS.—Each above ground tank, inside or outside buildings, over 1,000 gallons in capacity shall have vent openings, excepting emergency relief openings, provided with 40 x 40 screens or some other form of approved back flash arrester, such as conservation vents. When vents exceed 4" in diameter the 40 x 40 mesh screen arrester is not effective and some approved type shall be used. The covers for manholes, handholes and gauge holes shall be made tight fitting.

(1) No form of emergency relief construction shall be required on vertical tanks with cone roofs having a slope of less than 2½ inches in 12 inches where the strength of the joint between the roof and the shell is no greater than that of the weakest vertical joint in the shell.

(2) Every other above ground tank used for the storage of Class 1, 2, or 3 liquids shall have some form of relief device for preventing the development of excessive internal pressure in case of explosion fire surrounding the tank. This may take the form of either a weak seam in the top or at the joint between the top and the shell of the tank, or manhole covers kept closed by weight only, or some other form of emergency relief construction.

(3) In tanks where entire dependence for relief is placed upon some form of emergency relief construction other than a weak seam it shall have a capacity as approved by the Chief who shall give consideration to the design and construction of the tank as it affects the pressure which the tank may safely withstand, as indicated in the table below. Except for tanks specially constructed to withstand higher pressures, the emergency relief area for vertical tanks shall be as given for an allowable pressure of 3 inches of water and for horizontal tanks shall be as given for an allowable pressure of 1 pound per square inch.
EMERGENCY RELIEF OF EXCESSIVE INTERNAL PRESSURES IN ABOVE GROUND TANKS

Minimum Approximate diameter of free circular Emergency opening (unobstructed by valve discs, Capacity Relief etc.) required to discharge petroleum of Tank Capacity vapors at the given rates for the following allowable internal pressures. Gallons Required Cubic Feet of water 3 inches 1 lb. per 5 lbs. per 25 lbs. per Per Hour sq. in. sq. in. sq. in.

<table>
<thead>
<tr>
<th>Gallons</th>
<th>1,000</th>
<th>4,000</th>
<th>18,000</th>
<th>25,000</th>
<th>56,000</th>
<th>100,000</th>
<th>155,000</th>
<th>222,000</th>
<th>475,000</th>
<th>735,000</th>
<th>Unlimited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Hour</td>
<td>16,000</td>
<td>44,000</td>
<td>88,000</td>
<td>105,000</td>
<td>160,000</td>
<td>230,000</td>
<td>290,000</td>
<td>330,000</td>
<td>395,000</td>
<td>410,000</td>
<td>410,000</td>
</tr>
<tr>
<td>sq. in.</td>
<td>4 &quot;</td>
<td>6% &quot;</td>
<td>9½ &quot;</td>
<td>10½ &quot;</td>
<td>12½ &quot;</td>
<td>15¼ &quot;</td>
<td>17½ &quot;</td>
<td>18½ &quot;</td>
<td>20 &quot;</td>
<td>20½ &quot;</td>
<td>20½ &quot;</td>
</tr>
<tr>
<td>sq. in.</td>
<td>2½ &quot;</td>
<td>3% &quot;</td>
<td>5½ &quot;</td>
<td>6 &quot;</td>
<td>7½ &quot;</td>
<td>8½ &quot;</td>
<td>9½ &quot;</td>
<td>10½ &quot;</td>
<td>11¼ &quot;</td>
<td>11½ &quot;</td>
<td>11½ &quot;</td>
</tr>
<tr>
<td>sq. in.</td>
<td>1½ &quot;</td>
<td>2½ &quot;</td>
<td>3% &quot;</td>
<td>4 &quot;</td>
<td>5 &quot;</td>
<td>6 &quot;</td>
<td>6½ &quot;</td>
<td>7 &quot;</td>
<td>7% &quot;</td>
<td>7¾ &quot;</td>
<td>7¾ &quot;</td>
</tr>
<tr>
<td>sq. in.</td>
<td>1 &quot;</td>
<td>1¾ &quot;</td>
<td>2½ &quot;</td>
<td>2¾ &quot;</td>
<td>3% &quot;</td>
<td>4 &quot;</td>
<td>4½ &quot;</td>
<td>4¾ &quot;</td>
<td>5 &quot;</td>
<td>5¼ &quot;</td>
<td>5¼ &quot;</td>
</tr>
</tbody>
</table>

*(Based upon an orifice coefficient of 0.7 and vapor specific gravity of 2.5).

35-101. ABOVE GROUND TANKS SHALL BE LABELLED.—Above ground tanks for Class 1 and 2 liquids shall have painted conspicuously upon their sides in letters at least 2 inches high, the wording, "FLAMMABLE — KEEP FIRE AWAY".

35-102. DESIGN AND CONSTRUCTION OF ABOVE GROUND TANKS OPERATING AT SUBSTANTIALLY ATMOSPHERIC PRESSURE.—Tanks shall be built of steel or concrete unless character of liquid stored requires other materials. Steel commonly known as "Mill Seconds" shall not be used. Tanks built of materials other than steel or concrete shall be designed to specifications embodying safety factors equivalent to those herein specified for steel tanks. Concrete tanks shall be built in accordance with Section 10 of NBFU Pamphlet No. 30, April, 1952; Concrete Fuel Oil Storage Tanks. Such (unlined) concrete tanks shall only be used for storage of liquids having a gravity of 40° A. P. I. or heavier. Concrete tanks with special linings may be used for other services provided the design is approved by the authority having jurisdiction. Steel tanks shall be built in accordance with the requirements of the following paragraphs. All shop-built tanks shall be shop tested at a pressure of not less than five and not more than ten pounds per square inch (measured at the top of the tank) for a
period of at least ten minutes without leakage or permanent deformation. All tanks installed in the City of Richmond shall bear the Underwriters’ Laboratory label or in lieu of this label, the Chief may accept tanks bearing a permanent type label with the name and address of the manufacturer, the gauge of the metal and the date of manufacture, or job number.

(a) Small Shop Built Vertical Tanks: Vertical tanks not over 1,100 gallons capacity shall meet the following standards:

<table>
<thead>
<tr>
<th>Capacity (Gallons)</th>
<th>Minimum Thickness of Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>61</td>
<td>350</td>
</tr>
<tr>
<td>351</td>
<td>560</td>
</tr>
<tr>
<td>561</td>
<td>1,100</td>
</tr>
</tbody>
</table>

(b) Large Shop Built Vertical Tanks: Vertical tanks over 1,100 gallons capacity shall meet the following standards:

- For tanks up to 25 feet in height the shell shall be not less than 3/16 in. thick. For tanks from 25 to 30 feet high the bottom ring shall be not less than ¼ inch thick and the remainder of the shell not less than 3/16 inch thick. For tanks between 30 and 35 feet high, the first two rings shall be not less than ¼ inch thick and the remainder of the shell not less than 3/16 inch thick. All ¼ inch thick rings shall be not less than 5 feet wide.

The tops of tanks shall be either dished or cone-shaped and of not less than No. 10 U. S. Standard gauge steel.

Tanks shall be welded, or riveted and caulked, or otherwise made tight in a workmanlike manner. The roof of the tank shall be securely fastened to the top ring of the shell with a joint having the same tightness as the joints between rings. The joint between roof and shell shall be weaker than any other joints in the shell of the tank. Joints in the roof shall be welded or riveted or made tight by other process satisfactory to the authority having jurisdiction. Roofs of tanks shall have no unprotected openings.

(c) Shop Built Horizontal Tanks: Horizontal tanks shall be constructed in accordance with accepted engineering practice and shall meet the following minimum requirements: Joints shall be riveted and caulked, riveted and welded, or welded. Tank heads over 6 feet in diameter shall be dished, stayed, braced, or reinforced.
(1) Small Shop Built Horizontal Tanks: Horizontal tanks not over 1,100 gallons capacity shall meet the following standards:

<table>
<thead>
<tr>
<th>Capacity (Gallons)</th>
<th>Minimum Thickness of Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>61</td>
<td>275</td>
</tr>
<tr>
<td>276</td>
<td>550</td>
</tr>
<tr>
<td>551</td>
<td>1,100</td>
</tr>
<tr>
<td></td>
<td>18 gauge U. S. Standard</td>
</tr>
<tr>
<td></td>
<td>14 gauge</td>
</tr>
<tr>
<td></td>
<td>12 gauge</td>
</tr>
<tr>
<td></td>
<td>10 gauge</td>
</tr>
</tbody>
</table>

(2) Large Shop Built Horizontal Tanks: Horizontal tanks over 1,100 gallons capacity having a diameter of not over 6 feet made of steel shall be 3/16 in. or greater nominal thickness. Tanks having a diameter of over 6 feet and not more than 12 feet, made of steel, shall be ¼ in. or greater nominal thickness.


35-104. DESIGN AND CONSTRUCTION OF UNDERGROUND TANKS.—

(a) Underground Tanks or Enclosed Tanks Inside of Buildings:

Tanks shall be designed and constructed to withstand safely the service to which subjected. Material other than steel, if used, shall be of suitable durability and of thickness providing equivalent strength to that provided by steel. Steel commonly known as “Mill Seconds” shall not be used. Steel tanks shall be of a minimum gauge (U. S. Standard) in accordance with the following table.

<table>
<thead>
<tr>
<th>Capacity Gallons</th>
<th>Not Galvanized</th>
<th>Galvanized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U. S. Standard Pounds Per Sq. Ft.</td>
<td>U. S. Standard Gauge Per Sq. Foot*</td>
</tr>
<tr>
<td>1 to 285</td>
<td>12</td>
<td>3.125</td>
</tr>
<tr>
<td>286 to 560</td>
<td>10</td>
<td>4.375</td>
</tr>
<tr>
<td>561 to 1100</td>
<td>7</td>
<td>5.625</td>
</tr>
<tr>
<td>1101 to 4000</td>
<td>¼ in.</td>
<td>7.50</td>
</tr>
<tr>
<td>4001 to 12000</td>
<td>5/16 in.</td>
<td>10.00</td>
</tr>
<tr>
<td>12001 to 20000</td>
<td>½ in.</td>
<td>12.50</td>
</tr>
<tr>
<td>20001 to 30000</td>
<td>¾ in.</td>
<td>15.00</td>
</tr>
</tbody>
</table>

*Before Galvanizing
If adequate internal bracing is provided, tanks of 12,001 to 30,000 gallons capacity may be built of \( \frac{3}{8} \) inch plate.

All tanks installed in the City of Richmond shall bear the Underwriters' Laboratory label or in lieu of this label, the Chief may accept tanks bearing a permanent type label with the name and address of the manufacturer, the gauge of the metal and the date of manufacture or job number.

All shop-built tanks shall be shop-tested at a pressure of not less than 5 nor more than 10 lbs. per sq. in. (measured at the top of the tank) for a period of at least 10 minutes without leakage or permanent deformation.

35-105. FOUNDATIONS; DIKES. — Foundations; Dikes.—
(a) The bearing capacity of the ground shall determine the type of foundation to be employed in the erection of all tanks. The Chief may require borings in order to ascertain the subsurface formation as a means of determining whether the proposed foundation is suited to the condition of the ground at the site. Tanks more than one foot above the ground shall have foundations and supports of masonry or protected steel, except that wooden cushions may be used. No combustible material shall be permitted under or within ten feet of any above ground outside storage tank.

(b) All tanks containing crude oil or other liquids which have a tendency to boil over shall be adequately and properly diked to provide a storage capacity of not less than the volume of the tank or tanks surrounded. The minimum height of earth dikes shall be 3 feet and of masonry dikes 30 inches. In addition to a dike, there shall be a suitable caping or deflector, projecting inward, properly constructed to minimize the effect of a "boil-over" wave. Dikes surrounding crude oil tanks shall be not less than 50 feet from the shell of the tank or tanks surrounded.

(c) Where individual tanks exceed 50,000 gallons in capacity, and for smaller tanks, when deemed necessary by the Chief, on account of proximity to streams, character of topography, or nearness to structures, above ground storage tanks containing flammable liquids shall be diked or the entire yard provided with a curb or retaining wall or other suitable means taken to prevent the discharge of liquid onto other property in case of rupture of the tank or piping. The impounding basin shall have a capacity equal to that of the largest tank plus 10 per centum of the aggregate capacity of all other tanks so protected.

(d) Dikes or walls required by sub-sections (b) and (c) of this section shall be of earth reinforced concrete or masonry so constructed as to afford approved protection.
(e) The height of the dike and the distance from the inner surface of the dike to the shell of the tank or tanks surrounded shall be such as to assure the scouring action of the winds required to prevent the accumulation of combustible vapors within the dike, but in no case shall the height of the dike exceed 6 feet when containing Class 1 or Class 2 liquids. Masonry dikes with angular walls shall be provided with expansion joints constructed of single sheet non-corrosion metal. Where reinforced concrete is used, the steel reinforcing member shall be interconnected.

(f) The capacity of dikes required by this section shall be properly maintained. Earthen dikes shall have a flat section at the top and shall have a slope consistent with the angle of repose of the materials of which they are constructed.

35-106. STATIONARY TANKS IN BUILDINGS: INSULATION OF TANKS: PERMISSIBLE QUANTITIES.

(a) Tanks for Class 2 and 3 liquids shall be constructed in accordance with the requirements of Section 35-102. Original barrels or drums may be used until contents are drawn, if substantially placed to prevent tipping or rolling with pump inserted through a close fitting connection in side or head.

(b) Tanks shall be located below the level of any piping to which they may be connected or installed in accordance with the requirements of Sections 35-120 and 35-121. Tanks larger than 275 gallons individual capacity or 550 gals. aggregate capacity located above the level of piping to which they may be connected shall be equipped with controlling apparatus approved by the Chief to prevent siphoning or gravity flow in case of accident to equipment or piping. Tanks containing heavy oil may be exempt from this regulation.

(c) Tanks shall be set on a firm foundation and those exceeding 2,500 gallons capacity shall be supported independently of the floor construction.

(d) Tanks for Class 3 liquids used in connection with oil burning equipment shall not exceed 275 gallons individual capacity or 650 gallons aggregate capacity (in one building), unless installed in an enclosure constructed as follows:

The enclosure shall be at least 6 inches larger on all sides than the tank. The walls of the enclosure shall be constructed of reinforced concrete at least 6 inches thick or of masonry at least 8 inches thick, and shall be bonded to the floor and carried to a height of not less than 1 foot above the tank. The space between the tank and the enclosure shall be completely filled with sand or well tamped earth up to the top of the enclosure. The top of the enclosure shall be of reinforced concrete at least 5 inches thick or of approved equivalent construction,
except where the floor or other construction immediately above the tank is of fire resistive construction and capable of safely withstanding a load of 150 pounds per square foot.

Instead of an enclosure as above prescribed, the tank may be encased in reinforced concrete not less than 6 inches in thickness, applied directly to the tank so as to completely eliminate any air space.

(e) All tanks installed in the City of Richmond shall bear the Underwriters' Laboratory label or in lieu of this label, the Chief may accept tanks bearing a permanent type label with the name and address of the manufacturer, the gauge of the metal and the date of manufacture or job number.

(f) All shop-built tanks shall be shop-tested at a pressure of not less than 5 nor more than 10 pounds per square inch (measured at the top of the tank) for a period of at least 10 minutes without leakage or permanent deformation.

PIPING AND OTHER APPURTENANCES

35-107. NO CONNECTIONS TO DRAINS.—Connections from tanks to any house or sub-surface drainage system shall be so arranged as to prevent the flow of flammable liquid to any such system or the leakage of any flammable gases from such liquids, or approved flammable liquid collectors shall be provided in such connection.

35-108. VENTING OF TANKS.—An open galvanized iron vent pipe arranged for proper draining, or an automatically operated vent, shall be provided for every tank which may contain flammable vapor. The lower end of the vent pipe shall not extend through the top into the tank for a distance of more than one inch. Each tank shall be vented through piping adequate in size to prevent blow-back of vapor or liquid at the fill opening while tank is being filled. Vent pipes shall be not less than 1¼ inch nominal inside diameter. The vent opening shall be not less than one-half the inside diameter of the fill pipe.

Vent openings, for tanks exceeding 1,000 gallons capacity, excepting those on underground tanks containing Class 3 liquids, shall be provided with approved flame arresters, as set out in Section 35-100. Vent openings and vent pipes shall be of sufficient size to prevent abnormal pressure in the tank during filling and, except automatically operated vents, shall be not smaller than 1¼ inch pipe size. Arrestors shall be accessible for examination and repair. Vent pipes shall be provided with weather-proof hoods and terminate outside of building not less than two feet, measured horizontally and vertically, from any window or other building opening and sufficiently above ground to prevent obstruction from snow or ice; for Class 1 and 2 liquids the vent terminal shall be so elevated and located as not to endanger adjoining buildings.
The vent pipe from two or more tanks may be connected to one upright with the connection not less than one foot above the level of the top of the highest fill cap from which the tanks may be filled and the diameter of such vent pipe shall be in accordance with the above table.

35-109. VALVES IN DRAWING-OFF PIPES.—All drawing off pipes terminating inside of any building shall have valves at the discharge end. When delivery is by gravity, there shall be a second valve located at a suitable point in the line for use in an emergency.

35-110. VALVE NEAR TANK IF ABOVE GROUND.—Where tanks are above ground there shall be a valve located near the tank in each pipe. In case two or more tanks are cross-connected there shall be a valve near each tank in each cross-connection.

35-111. PUMPS.—Pumps delivering to or taking supply from above ground storage tanks, or other tanks located above the pump, shall be provided with valves on both suction and discharge of pump, and in delivering to tanks a check valve to prevent flow of liquid from tank to pump. Electric motors, unless of approved explosion-proof type, and internal combustion engines shall not be placed beneath tanks or elsewhere within the line of vapor travel.

35-112. PIPING.—Piping used for flammable liquids shall be standard weight wrought iron, steel or brass pipe or approved brass or copper tubing; for working pressures in excess of 100 pounds per square inch extra heavy fittings shall be used. No pipe or tubing less than one-quarter inch internal diameter shall be used. Outside piping shall be protected against mechanical injury when within 5 feet of ground level. Inside piping shall be rigidly supported. Sweated connections shall not be used for Class 1 liquids.

35-113. LEAKY PIPING.—Defective and leaking piping shall be made tight immediately or replaced.

35-114. PIPES FOR CLASS 1 AND 2 LIQUIDS IN ROOMS CONTAINING OPEN FLAMES.—Piping carrying Class 1 and 2 liquids, unless without joints or connections, shall not extend through any room which contains any open light or fire.

35-115. FILLING PIPE.—The end of the filling pipe for other than outside above ground storage tanks shall be carried to an approved location outside of any building. For Class 1 and 2 liquids the fill pipe shall not terminate within 5 feet of any entrance door, or cellar opening. Filling pipe shall be closed by a screw cap.

35-116. DELIVERIES TO STORAGE TANKS.—Deliveries of flammable liquids of Class 1 and 2, where practical, shall be made directly to the storage tank through the filling pipe by means of a hose or pipe between the filling pipe and barrel, tank wagon or tank
car from which such liquid is being drawn. Bottom delivery of Class 1 or Class 2 liquids from tank cars is prohibited, except at locations approved by the Chief.

35-117. PUMP REQUIRED.—Except as permitted in sub-sections 35-120 and 35-121, flammable liquids shall be drawn from tanks by pumps so constructed as to prevent leaking or splashing, or by some other system approved by the Chief, with controlling apparatus and piping so arranged as to allow control of the amount of discharge and prevent leakage or discharge by any derangement of the system. When inside a building, the pump or other drawing off device for Class 1 and 2 liquids shall be located on or above the ground floor, preferably near an entrance or other well-ventilated place, and shall be properly protected against mechanical injury. Pumps not an integral part of the draw off device shall be in fire proof rooms with fire doors and with complete ventilation.

35-118. SELF-SERVICE FILLING STATIONS.—No self-service type of gasoline service station shall be operated without a permit therefor obtained from the Director of Public Safety. Every person, firm, and corporation desiring to operate a self-service type of gasoline service station shall make written application to the Director of Public Safety for a permit. If the Director of Public Safety be satisfied that the applicant will effectively supervise the dispensation and sale of gasoline in accordance with the law, he shall issue a permit. The form of the application for the permit and the form of the permit itself shall be prepared and furnished by the Director of Public Safety.

The operator of the business shall not permit inebriated or incompetent persons to pump gasoline; and the operator of the business shall unlock, with detachable reset keys, the pump prior to each starting of a gasoline delivery and shall not unlock a pump or permit the delivery of gasoline while anyone is smoking in the vicinity, or while the auto engine is running. No pump shall remain unlocked while not actually in use. Nozzles for delivery of gasoline may be of the type designed to close automatically when the gasoline tank becomes full.

35-119. NO GRAVITY FEED PERMITTED.—Except as permitted in Sections 35-120 and 35-121, no tanks, drums, or other containers inside a building, or discharging inside a building, shall be provided with a faucet or other bottom-drawing device which will permit the gravity flow of liquids inside the building. Pipes shall not terminate at any point lower than the level of source of supply.

35-120. EXCEPTIONS TO SECTIONS 35-117 AND 35-119.—
The Chief may permit the storage and gravity flow of flammable liquids in connection with oil burning equipments, refineries, and manufacturing and jobbing plants where the nature of the manufacturing
process requires such storage and flow, and also the storage and gravity flow of commodities of Class 1 and 2 in stores, plants and establishments, where the nature of the liquid will not permit pumping; provided that the contents of tanks holding Class 1 liquid shall be sufficient only for one day's operation and such storage shall be in a room constructed in accordance with Section 35-85. Oil burners which are not attended by a competent attendant in the room where the burners are located while the burners are in operation shall be arranged to prevent abnormal discharge of oil at the burner by automatic means, specifically approved for the burner with which it is used.

35-121. FUEL OIL EQUIPMENT.—An approved domestic type oil burner may be supplied by gravity from two connected inside or outside storage tanks, provided neither tank exceeds 275 gallons capacity and they are connected to the fuel line by approved control valves.

Tanks, unless enclosed in an approved manner, when installed in a room in which the burner is located, shall not be placed within 5 feet of any open flame or fire.

Requirements for the installation of equipment for the use of flammable liquids as a fuel for domestic oil burners, boilers, furnaces, kilns, ovens, oil burning stoves designed for use with separate tanks, and other apparatus shall be as covered in this chapter under the following sections:

Sections 35-74 to 35-83 inclusive, covering permits and approvals.


Sections 35-108, 35-109, 35-110, 35-112, 35-113, apply to valves, piping and pumps. Preheating of oil, oil burner controls and the installation of burners if in compliance with the standards of the National Board of Fire Underwriters for the installation of oil burning equipment, shall be considered a compliance with this chapter.

Notwithstanding the provisions of Section 35-99, tanks not exceeding 275 gallons capacity containing Class 3 liquids used in connection with oil burning equipment may be installed with no requirement as to minimum distance from tank to property line.

35-122. RELIEF VALVES FOR PUMPS FOR ENGINES AND FUEL OIL EQUIPMENT.—In systems using pumps to supply auxiliary tanks or headers, which feed internal combustion engines or fuel oil burners, provision shall be made to return surplus oil to the supply tank; any valve installed in the line shall be of pressure relief type.
35-123. REQUIREMENTS AND REGULATIONS AS TO DELIVERY OF GASOLINE.—Every person delivering at wholesale or retail gasoline in this State shall deliver the same to the purchaser only in tanks, barrels, casks, cans or other containers having the word ‘gasoline’, plainly stenciled or labeled thereon, to meet the requirements and regulations adopted by the Commissioner of Agriculture and Immigration of the State of Virginia, except that where gasoline is delivered in bulk from tank wagons the cans used in such deliveries may be painted red and the word ‘gasoline’ need not be stenciled thereon, and except, further, that where deliveries of gasoline are made in tank wagons having more than one compartment it shall only be necessary that the spigot on the pipe leading from the gasoline compartments shall have attached thereto a tag with the word ‘gas’ plainly stenciled thereon. Such dealer shall not deliver gasoline in any barrels, casks, cans, tank wagons, or other containers, which has not been stenciled, painted or labeled as hereinbefore provided.

Every person purchasing gasoline for sale shall procure and keep the same only in tanks, barrels, casks, cans or other containers stenciled or labeled as hereinbefore provided.

Nothing in this section shall prohibit the delivery of gasoline by hose or pipe from a tank directly into the tank of any automobile or any other motor vehicle.

When gasoline is sold in cans or packages of not more than one gallon capacity for cleaning and other similar purposes, the label shall also bear the words “Unsafe when exposed to heat or fire”.

35-124. PROTECTION OF UNUSED UNDERGROUND GASOLINE TANKS.—When underground gasoline tanks are discontinued but not removed, they shall be protected against formation of a flammable or explosive mixture therein by one of the following methods:

(a) Filling the tank completely with sand, earth or concrete;

(b) Filling and flushing the tank with water so as to remove all the gasoline, and leaving the tank filled with water and all openings except the vent opening, tightly capped.

35-125. REFINERIES.—No permit shall be granted for the establishment of a new plant or an addition to a plant for refining, distilling or condensing petroleum and natural gas within the limits of the city until after a survey has been made by the Division and an investigation made of all hazardous conditions connected therewith. If there are no schools, churches, hospitals or public halls within 300 feet, and no other buildings than those of the plant within 150 feet of the proposed refinery, distilling or condensing plant, or addition thereto, and other conditions are consistent with the spirit and intent of this chapter, the Chief may grant a permit for the location
desired; provided, also, that a guarantee to maintain an open space 150 feet on all sides shall be given by the applicant.

35-126. TANK MOTOR VEHICLES FOR FLAMMABLE LIQUIDS.—1. Tank vehicles and their appurtenances and tank vehicle chassis, whether new or used, hereafter acquired by any person for use in the transportation of flammable liquids shall be designed, constructed and operated in conformity with the minimum requirements of this Article.

2. DEFINITIONS.—The following words and phrases when used in this Article shall, for the purpose of this Article, have the meaning respectively ascribed to them in this section, excepting in those instances where the context clearly indicates a different meaning.

(a) Tank Truck: Any single self-propelled motor vehicle equipped with a cargo tank mounted thereon, and used for the transportation of flammable liquids.

(b) Tank Full Trailer: Any vehicle, without motive power, equipped with a cargo tank mounted thereon or built as an integral part thereof and used for the transportation of flammable liquids, and so constructed that, when drawn by a truck or tractor-truck, no part of its weight rests upon the towing vehicle.

(c) Tank Semi-Trailer: Any vehicle, without motive power, equipped with a cargo tank mounted thereon or built as an integral part thereof, and used for the transportation of flammable liquids, and so constructed that, when drawn by a tractor-truck by means of a fifth wheel connection, some part of its load and weight rests upon the towing vehicle.

(d) Tank Vehicle: Any tank truck, tank full trailer, or tractor and tank semi-trailer combination.

(e) Cargo Tank: Any container having a liquid capacity in excess of 100 gallons, used for the carrying of flammable liquids, and mounted permanently or otherwise upon a tank vehicle. The term "cargo tank" does not apply to any container used solely for the purpose of supplying fuel for the propulsion of the tank vehicle upon which it is mounted.

(f) Baffle: A perforated transverse partition of a cargo tank.

(g) Head and Bulkhead: A liquid-tight transverse closure at the end of a cargo tank or between compartments of a cargo tank.

(h) Compartment: A liquid-tight division of a cargo tank.

(i) Flammable Liquids: Liquids having a flash point below 200 degrees F. (Pencky-Martin D-98 closed cup, ASTM, API 509) which,
for the purpose of this specification shall be divided into two classes, viz.:

Class "A", embracing those flammable liquids having a flash point below 70 degrees F. and a vapor pressure not exceeding 40 pounds (Reid) ASTM 323-43.

Class "B", embracing those flammable liquids having a flash point from 70 to 200 degrees F., inclusive.

35-127. VEHICLE TANKS, PIPING AND CONNECTIONS.—
1. CARGO TANKS CONSTRUCTED OF HOT ROLLED TANK STEEL.—(a) Material: All sheets for such cargo tanks shall be of hot rolled tank steel to meet the following requirements:

Yield Point ........................................................ 25,000 lb. per sq. in.
Ultimate Strength .............................................. 45,000 lb. per sq. in.
Elongation, 2" sample ........................................... 20%

(b) Thickness of Sheets: The minimum thickness of tank sheets shall be limited by the volume capacity of the tank expressed in terms of gasoline per inch of length; and by the distance between bulkheads, baffles, or other shell stiffeners, as well as by the radius of shell curvature in the case of shell sheets, as follows:

Minimum Thickness of Head, Bulkhead, and Baffle Sheets*
(Dished, Corrugated, Reinforced or Rolled)

<table>
<thead>
<tr>
<th>Heads, Bulkheads, or Baffles</th>
<th>Volume Capacity of Tank in Gallons per Inch of Length</th>
<th>U. S. Standard Gage No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 or Over 10 Over 14 Over 18 Over 18</td>
<td>14 13 12 11</td>
</tr>
</tbody>
</table>

Minimum Thickness of Shell Sheets Expressed in U. S. Standard Gage

<table>
<thead>
<tr>
<th>Distance between attachments of bulkheads, baffles, or other shell stiffeners</th>
<th>Volume Capacity of Tank in Gallons Per Inch of Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>36&quot; or Less........................................................................</td>
<td>14 gage 14 gage 14 gage 13 gage</td>
</tr>
<tr>
<td>Over 36&quot; to 54&quot;..................................................................</td>
<td>14 &quot; 14 &quot; 13 &quot; 12 &quot;</td>
</tr>
<tr>
<td>Over 54&quot; to 60&quot;..................................................................</td>
<td>14 &quot; 13 &quot; 12 &quot; 11 &quot;</td>
</tr>
</tbody>
</table>
2. CARGO TANKS CONSTRUCTED OF ALUMINUM (GRADE 3S OR OTHER ALLOY OF EQUAL OR GREATER PROPERTIES).

(a) Material: All sheets for such cargo tanks shall be of aluminum alloy, known as 3S or other alloy of equal or greater properties, as defined in ASTM Specification B209-46-T, meeting the following minimum requirements:

- **Ultimate Strength** .............................................. 19,500 lb. per sq. in.
- **Elongation, 2" sample** .............................................. 6%

(b) Thickness of Sheets: The minimum thickness of tank sheets shall be limited by the volume capacity of the tank, expressed in terms of gasoline per inch of length; and by the distance between bulkheads, baffles, or other shell stiffeners, as well as by the radius of shell curvature in the case of shell sheets, as follows:

### Minimum Thickness of Head, Bulkhead, and Baffle Sheets*

<table>
<thead>
<tr>
<th>Heads, Bulkheads and Baffles (Dished, Corrugated, Reinforced or Rolled)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volume Capacity in Gallons per Inch of Length</strong></td>
</tr>
<tr>
<td>10 or Over 10 or Over 14 or Over 18</td>
</tr>
<tr>
<td><strong>Brown &amp; Sharpe's Standard Gage</strong></td>
</tr>
<tr>
<td>7 or 6 or 5 or 4</td>
</tr>
</tbody>
</table>

*Thickness of exterior head sheets shall never be less than the maximum requirement for shell sheets.
### Minimum Thickness of Shell Sheets

*Expressed in Brown & Sharpe's Standard Gage*

<table>
<thead>
<tr>
<th>Distance between attachments of bulkheads, baffles, or other shell stiffeners</th>
<th>Volume Capacity of Tank in Gallons Per Inch of Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 or Less</td>
</tr>
<tr>
<td>Shell Radius of Less than 70 Inches</td>
<td></td>
</tr>
<tr>
<td>36&quot; or Less</td>
<td>7</td>
</tr>
<tr>
<td>Over 36&quot; to 54&quot;</td>
<td>7</td>
</tr>
<tr>
<td>Over 54&quot; to 60&quot;</td>
<td>7</td>
</tr>
<tr>
<td>Shell Radius of 70 Inches or More, But Less than 90 Inches</td>
<td></td>
</tr>
<tr>
<td>36&quot; or Less</td>
<td>7</td>
</tr>
<tr>
<td>Over 36&quot; to 54&quot;</td>
<td>7</td>
</tr>
<tr>
<td>Over 54&quot; to 60&quot;</td>
<td>6</td>
</tr>
<tr>
<td>Shell Radius of 90 Inches or More, But Not Over 125 Inch Maximum</td>
<td></td>
</tr>
<tr>
<td>36&quot; or Less</td>
<td>7</td>
</tr>
<tr>
<td>Over 36&quot; to 54&quot;</td>
<td>6</td>
</tr>
<tr>
<td>Over 54&quot; to 60&quot;</td>
<td>6</td>
</tr>
</tbody>
</table>

### 3. CARGO TANKS CONSTRUCTED OF LOW ALLOY CARBON (HIGH TENSILE) STEEL

*(a) Material: All sheets for such cargo tanks shall be of low alloy, low carbon steel, commonly known as high tensile, meeting the following requirements:*

- **Yield Point**: 50,000 lb. per sq. in.
- **Ultimate Strength**: 65,000 lb. per sq. in.
- **Elongation, 2" sample**: 20%

*(b) Thickness of Sheets: The minimum thickness of tank sheets shall be limited by the volume capacity of the tank, expressed in terms of gallons per inch of length; and by the distance between bulkheads, baffles, or other shell stiffeners, as well as by the radius of shell curvature in the case of shell sheets; as follows:

Minimum Thickness of Head, Bulkhead, and Baffle Sheets* (Dished, Corrugated, Reinforced or Rolled)

<table>
<thead>
<tr>
<th>Volume Capacity in Tank in Gallons per Inch of Length</th>
<th>10 or Less</th>
<th>Over 10 to 14</th>
<th>Over 14 to 18</th>
<th>Over 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>U. S. Standard Gage No.</td>
<td>16</td>
<td>14</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>

*Thickness of exterior head sheets shall never be less than the maximum requirements for shell sheets, in any specific unit.*
Minimum Thickness of Shell Sheets Expressed in U. S. Standard Gage

| Distance between attachments of bulkheads, baffles, or other shell stiffeners | Volume Capacity of Tank in Gallons Per Inch of Length |
|---|---|---|---|
| 36" or Less | Over 10 | Over 14 | Over 18 |
| Shell Radius of Less than 70 Inches | 16 gage | 16 gage | 15 gage | 14 gage |
| Over 36" to 54" | 16 " | 15 " | 14 " | 13 " |
| Over 54" to 60" | 15 " | 14 " | 13 " | 12 " |
| Shell Radius of 70 Inches or More, But Less than 90 Inches | 16 gage | 15 gage | 14 gage | 13 gage |
| Over 36" to 54" | 15 " | 14 " | 13 " | 12 " |
| Over 54" to 60" | 14 " | 13 " | 12 " | 11 " |
| Shell Radius of 90 Inches or More, But Not Over 125 Inch Maximum | 15 gage | 14 gage | 13 gage | 12 gage |
| Over 36" to 54" | 14 " | 13 " | 12 " | 11 " |
| Over 54" to 60" | 13 " | 12 " | 11 " | 10 " |

4. Joints.—(a) Joints shall be made in accordance with recognized good practice and the efficiency of any joint shall be not less than 85% of that of the adjacent metal in the tank. Low Alloy, Low Carbon (High Tensile) Steel Sheets, however, shall be joined by fusion welding.

(b) Hot Rolled Tank Steel and Low Alloy Low Carbon Steel may be used in the construction of a single tank, provided each material, where used, shall comply with the minimum requirements of its respective specifications for that section of the tank.

5. TEST.—Every cargo tank shall be tested by a minimum air or hydrostatic pressure of 3 pounds per square inch applied to each compartment, or to the whole tank if it be not divided into compartments. Such pressure shall be maintained for a period of at least 5 minutes, during which, if the test is by air pressure, the entire exterior surface of all the joints shall be coated with a solution of soap and water, heavy oil, or other material suitable for the purpose, foaming or bubbling of which will indicate the presence of leaks. Hydrostatic pressure, if used, shall be gauged at the top of the tank; and the tank shall be inspected at the joints for the issuance of liquid to indicate leaks.
Any leakage discovered by either of the methods above described, or by any other method shall be deemed as evidence of failure to meet the requirements of this section.

6. TANK OUTLETS.—Outlets shall be substantially made and so attached to the tank.

7. BULKHEADS AND BAFFLES.—(a) Every cargo tank having a total capacity in excess of 1,500 gallons and used for the distribution of Class “A” flammable liquids to service stations or other premises to which the public is invited shall be divided into compartments, no one of which shall exceed 1,200 gallons. A tolerance of 10% shall be allowed for capacities of individual compartments or tanks.

(b) Bulkheads or compartments shall not be required in any cargo tank used for transportation service, regardless of total capacity, which, when loaded and transporting its cargo over streets and highways will contain not less than 80% of the total tank capacity and will discharge its entire contents at one unloading point, provided such cargo tank is not used for the delivery of flammable liquids to service stations or other premises to which the public is invited.

(c) Every cargo tank, and every compartment of a cargo tank over 90 inches in length, shall be provided with baffles, the number of which shall be such that the linear distance between any two adjacent baffles, or between any tank head or bulkhead and the baffles nearest it, shall in no case exceed 60 inches.

(d) The cross sectional area of each baffle shall be not less than 80% of the cross sectional area of the tank and the thickness of such baffle shall be not less than that required for heads and bulkheads of the cargo tank in which installed.

(e) Tanks with compartments carrying flammable liquids of different classes shall be provided with an air space between compartments and this air space shall be equipped and maintained with drainage facilities operative at all times.

8. VENTS.—Each tank or tank compartment shall be provided with a vacuum and pressure operated vent with a minimum effective opening of 0.44 square inch, and each tank or compartment used for the transportation of Class “A” liquids shall also be provided with an emergency venting facility so constructed as to provide a minimum free-venting opening having a net area in square inches equal to 1.25 plus 0.0025 times the capacity of the tank or compartment in gallons. If the emergency venting facility operates in response to elevated temperatures, the critical temperature for such operation shall not exceed 200° F.
9. VALVE AND FAUCET CONNECTIONS.—Draw-off valves and faucets shall have discharge ends threaded, or they shall be so designed as to permit being tightly connected to hose extending to fill pipe.

10. EMERGENCY-DISCHARGE CONTROL.—Each compartment of a tank used for transportation of Class "A" flammable liquids shall be equipped with a reliable and efficient shut-off valve located inside the shell of the tank in the compartment outlet; or the sump when it is an integral part of the shell; and so designed that these valves must be kept closed except during loading and unloading operations.

The operating mechanism for these valves shall be provided with a secondary control, remote from the tank-filling openings and discharge faucets, for use in the event of accidents or fire during delivery operations.

The control mechanism shall be provided with a fusible section which will cause valves to close automatically in case of fire.

In every case there shall be provided, between the shut-off valve seat and discharge faucet, a shear section which will break under strain unless the discharge piping is so arranged as to afford the same protection and leave the shut-off valve seat intact.

35-128. TANK-VEHICLE CHASSIS, ASSEMBLY, AND APPURTENANCES.—1. TIRES.—All tank vehicles shall be equipped with pneumatic rubber tires on all wheels.

2. ASSEMBLY.—Every cargo tank shall be adequately supported upon and securely attached to or be a part of the tank vehicle upon which it is carried.

3. BONDING AND GROUNDING.—(a) Cargo tanks, and vehicle chassis, shall be electrically bonded.

(b) Provision shall be made prior to each filling of tank vehicle for the bonding of vehicle to the fill pipe. Drag chains or other devices of electrically conductive material shall not be construed as meeting this requirement.

4. PROTECTION AGAINST COLLISION.—Draw-off valves or faucets projecting beyond the frame at the rear of vehicle shall be adequately protected against collision by bumpers or similar means.

5. LIGHTING.—No lighting device other than electric lights shall be used on tank vehicles. Lighting circuits shall have suitable overcurrent protection (fuses or automatic circuit breakers.) The wiring shall have sufficient carrying capacity and mechanical strength and shall be secured, insulated and adequately protected against physical damage.
6. FUEL SYSTEM.—(a) Fuel Tanks: Fuel tanks shall be so designed, constructed and installed as to present no unusual hazard, and shall be so arranged as to vent during filling operations and as to permit drainage without removal from their mountings.

(b) Fuel-Feed System: All portions of the fuel-feed system, including carburetor, pumps, and all auxiliary mechanisms and connections shall be constructed and installed in a workmanlike manner, and so constructed and located as to minimize the fire hazard, with no readily combustible materials used therein, and shall, except for diesel fuel connections, be well separated from the engine exhaust system. A pressure-release device shall be provided where necessary. The fuel-feed lines shall be made of materials not adversely affected by the fuel to be used or by other materials likely to be encountered, of adequate strength for their purpose, well secured to avoid chafing or undue vibration, having a readily accessible and reliable shut-off valve or stopcock. Joints depending upon solder for mechanical strength and liquid tightness shall not be used in the fuel system or at or near the engine, or its accessories, unless the solder has a melting point of not less than $340^\circ F.$, or unless a self-closing, thermally controlled valve set to operate at not exceeding $300^\circ F.$, or other equivalent automatic device, shall be installed in the fuel line on the fuel-tank side of such joint.

7. EXHAUST SYSTEM.—(a) The exhaust system, including muffler (or silencer) and exhaust line shall have ample clearance from the fuel system and combustible materials, and shall not be exposed to accumulations of grease, oil or gasoline.

(b) The exhaust system, including all units, shall be constructed and installed in a workmanlike manner. A muffler (or silencer) cut-out shall not be used.

8. FULL TRAILERS AND SEMI-TRAILERS.—(a) Trailers shall be firmly and securely attached to the vehicle drawing them, in a manner conforming with recognized good practice.

(b) Each full trailer, and semi-trailer, shall be equipped with reliable brakes on all wheels, and adequate provision shall be made for their efficient operation from the driver's seat of the vehicle drawing the trailer, or semi-trailer.

(c) Full trailers shall be of the fifth-wheel, or of an approved equivalent type of construction, which will prevent the towed vehicle from whipping or swerving from side to side dangerously or unreasonably and which will cause it to follow substantially in the path of the towing vehicle.

9. FIRE EXTINGUISHERS.—Each tank vehicle, or combination of tank vehicles, shall be equipped and maintained with at least one
approved hand fire extinguisher of a type suitable for extinguishing flammable-liquid fires. Fire extinguishers shall be kept in good operating condition at all times, and they shall be located in an accessible place on each tank vehicle.

10. AUXILIARY INTERNAL COMBUSTION ENGINES.—Internal combustion engines, other than those providing propulsive power for a tank vehicle, installed or carried upon such a vehicle transporting Class "A" flammable liquids for the purpose of providing power for the operation of pumps or other devices, shall meet the following requirements:

(a) The engine air intake shall be equipped with an effective flame arrestor, or an air cleaner having effective flame arrestor characteristics, substantially installed and capable of preventing emission of flame from the intake side of the engine in event of backfiring.

(b) The fuel system shall be so located or constructed as to minimize the fire hazard. If the fuel tank is located above or immediately adjacent to the engine, suitable shielding shall be provided to prevent spillage during the filling operation, or leakage from the tank or fuel system, from coming in contact with the engine or any parts of the ignition and exhaust systems. All parts of the fuel system shall be constructed and installed in a workmanlike manner.

(c) Pumps and other appurtenances carrying or containing flammable liquids shall be so located in relation to the engine that spillage or leakage from such parts shall be prevented from coming in contact with the engine or any parts of the ignition or exhaust system, or adequate shielding shall be provided to attain the same purpose. The engine cooling fan shall be so positioned, rotated or shielded as to minimize the possibility of drawing flammable vapors toward the engine.

(d) When the engine is located in a position where spillage from the cargo tank or its appurtenances or from side racks might constitute a hazard, suitable shielding shall be provided to prevent such spillage from contacting the engine or engine exhaust system and for draining such spillage away from the vicinity of the engine.

(e) Where the engine is carried within an enclosed space adequate provision shall be made for air circulation at all times, to prevent accumulation of explosive vapors and to avoid overheating, and the exhaust gases shall be discharged outside of each such closed space.

(f) The exhaust system shall be substantially constructed and installed and free from leaks. The exhaust line and muffler shall have adequate clearance from combustible materials and the exhaust gases shall be discharged at a location which will not constitute a hazard.
(g) The ignition wiring shall be substantially installed with firm connections, and spark plugs and all other terminals shall be suitably insulated, to prevent sparking in event of contact with conductive materials. The ignition switch shall be of the enclosed contact type.

11. AUXILIARY ELECTRIC GENERATORS AND MOTORS.—
Electrical equipment installed or carried upon a tank vehicle transporting Class “A” flammable liquids for the operation of pumps or other devices shall meet the following requirements:

(a) Electric generators driven from a power-take-off connected to the vehicle transmission or to an auxiliary transmission, or by an auxiliary internal combustion engine, shall be of the explosion proof type.

(b) Electric motors shall be of the explosion proof type.

(c) Wiring shall be adequate and substantially installed with all terminals firmly connected and insulated to prevent sparking from vibration or in event of contact with conductive materials. Wires shall have oil proof insulation. If overload protection is provided it shall be the explosion proof type. All switches or other sparking devices shall be of the explosion proof type and all conduit entrances shall be sealed.

(d) Where the generator or motor is located within an enclosed space adequate provision shall be made for air circulation to prevent overheating and possible accumulation of explosive vapors.

(e) Electrical equipment and wiring shall be so located as to prevent contact with spillage from cargo tank or side racks or suitable shielding shall be provided to maintain equivalent protection.

35-129. OPERATION OF TANK VEHICLES.
1. PROPER REPAIR.—Tank vehicles shall not be operated unless they are in proper repair, devoid of accumulation of grease, oil, or other flammables, and free of leaks.

2. FILLING AND DISCHARGING TANK VEHICLES.—(a) The driver, operator or attendant of any tank vehicle shall not leave the vehicle while it is being filled or discharged. Delivery hose, when attached to a tank vehicle, shall be considered to be a part of the tank vehicle.

(b) Motors of tank trucks or tractor-trucks shall be shut down during making and breaking hose connections. If loading or unloading is done without the use of a power pump, the tank-truck or tractor-truck motor shall be shut down throughout such operations.

(c) During the filling operation electric conducting contact shall be maintained between the fill pipe and the tank vehicle.

(d) In every tank compartment sufficient space shall be left vacant to prevent leakage from, or distortion of, such tank compart-
ment by expansion of the contents due to rise in temperature in transit. No tank compartment shall be loaded to a volume in excess of 99.4% of its capacity.

3. NO SMOKING.—Smoking by tank vehicle drivers or their helpers is prohibited while they are driving their vehicles on the road, while they are making deliveries, filling tank vehicles, or making any repairs to tank vehicles.

4. PROTECTION AGAINST INTERMIXING.—(a) In the event that a tank vehicle is used alternately for the transporting of Class “A” and Class “B” flammable liquids, no compartment of the tank on such vehicle which has, on the prior loading, contained Class “A” flammable liquid shall be loaded with “Class “B” flammable liquid until such compartment and the piping and any accessory delivery equipment connected thereto has been flushed or otherwise cleared of Class “A” flammable liquid.

(b) In the event compartments of a vehicle tank are connected to a common outlet, no compartment so connected shall contain Class “A” flammable liquid while any other compartment of the group is transporting Class “B” flammable liquid, unless adequate provision is made to avoid intermixture.

(c) In the event that a tank vehicle is equipped with a meter, or meters, for the purpose of measuring the quantity of fluid withdrawn from a tank vehicle, no such meter shall be alternately used for the measurement of Class “A” and Class “B” flammable liquids unless the meter and its accessory equipment has been flushed or otherwise cleared of Class “A” flammable liquid prior to being used for delivery of Class “B” flammable liquid.

(d) In the event that a tank vehicle is equipped with a pump for the purpose of discharging from or loading into, the tank of such vehicle, no such pump and its accessory equipment, including hose, shall be alternately used for the handling of Class A and Class B liquids unless such pump and its accessory equipment has been flushed or otherwise cleared of Class A flammable liquid prior to being used for delivery of Class B flammable liquid.

ARTICLE X
THE APPLICATION OF FLAMMABLE FINISHES
General Requirements

35-130. DEFINITION. FINISHING SHOP.—The term “finishing shop” as used in this Article, shall mean a building or part thereof used for the application of flammable finishes by means of spraying or dipping.
35-131. PERMIT.—No person shall operate any finishing shop using more than 1 gallon of material on any working day, or storing in connection with the use thereof, more than 5 gallons of flammable finish, without first obtaining a permit.

35-132. LOCATION.—Finishing shops in buildings of wooden construction or in buildings used in whole or in part for human habitation or in connection with stores or located in basements, shall be suitably cut off by fire partitions or fire walls from other portions of the building, and shall be equipped with an approved automatic sprinkler system.

35-133. STORAGE OF FLAMMABLE FINISHES IN FINISHING SHOPS.—The storage of flammable finishes inside of finishing shops shall be restricted as follows:

(a) Not to exceed 20 gallons, with no container exceeding 1 gallon in capacity, may be stored on a substantial shelf at least 4 feet above the floor and with suitable guard strips to prevent containers from falling.

(b) Not over 50 gallons, with no container exceeding 5 gallons capacity may be stored in a cabinet, entirely enclosed and made of suitably stiffened sheet iron of at least 18 U. S. gauge in thickness, and double walled with 1 1/2 inch air space or approved equivalent construction. Doors shall be of construction equivalent to the walls of the cabinets, be provided with 3-point lock, fit closely, and be kept closed when not in use. Door sills shall be raised at least 2 inches above the bottom of the cabinet.

(c) Quantities in excess of those given under (a) and (b) of this section shall be kept in suitable storage and mixing rooms constructed as specified in Section 35-85.

35-134. MIXING.—(a) Mixing operations shall be carried on only in storage rooms constructed as specified in Section 35-85, or in special mixing rooms of approved equivalent construction; provided that containers of a total capacity not exceeding 2 gallons may be opened and their contents mixed in the finishing room, during such times as the ventilating system as required by Section 35-136 is in operation.

(b) Receptacles containing flammable finishes shall be kept tightly covered.

35-135. CONTAINERS.—(a) All containers of flammable finishes shall be of metal suitably constructed to prevent leakage; Interstate Commerce Commission containers shall be acceptable for storage.

(b) Containers used as part of the spraying outfit shall be of metal, except that glass containers not exceeding 1 pint capacity, and
containers with glass inner linings of not more than 1 gallon capacity, if protected with a metal holder or guard permanently fixed around the container, may be used.

35-136. VENTILATION.—(a) Unless ventilated spray booths are used for all finishing operations, finishing rooms shall be continuously ventilated during operation. Ventilation of spray booths or finishing shop rooms shall be such as to effect at least one complete change of air every three minutes.

(b) Exhaust outlets in finishing shop rooms or spray booths shall be located not over 5 feet above the floor and shall discharge directly outside of building. Stacks and ducts shall be of substantial construction with joints riveted and soldered or otherwise made tight. They shall extend as directly as possible to the outside air and preferably not through other rooms, and be so arranged that the discharge of vapor and residue therefrom shall not constitute a fire hazard. They shall not be connected to other ventilating or collecting systems.

35-137. LIGHTING AND ELECTRICAL EQUIPMENT.—Artificial lighting shall be by electricity only. All electrical wiring and equipment in finishing shops shall be in accordance with the Richmond City Electrical Code.

35-138. HOUSEKEEPING.—(a) Finishing shops shall be kept free from all unnecessary combustible materials and refuse.

(b) Floors of finishing shops, drain boards and the interior of spray booths shall be thoroughly cleaned at least once a day and all fans, ducts, side walls and ceilings kept as clean as may be practicable at all times. In cleaning, implements which will not create sparks shall be used. Wherever practicable surfaces to be cleaned shall be sprayed or otherwise wet down with water before cleaning. Sweepings or deposits from spray booths or rooms, ducts or stacks shall be immediately removed from the building and disposed of so as not to constitute a fire hazard.

(c) Metal waste cans with self-closing covers shall be provided for all waste and rags which have come in contact with paints, varnishes, and other finishing compounds.

35-139. OPEN FLAMES AND HEATING.—No open flame shall be permitted in storage or mixing rooms, storage cabinets, finishing shop rooms, or spray booths. For heating purposes only indirect systems shall be used, such as steam, hot air or hot water.

35-140. GROUNDING.—All metal spray booths, dip tanks, bake ovens, mixers, filters, pumps, motors and shafting shall be electrically grounded in an effective manner.

35-141. FIRE EXTINGUISHING EQUIPMENT.—The Chief shall require the installation of portable fire extinguishers or other
fire extinguishing appliances as he shall deem necessary in finishing shop rooms, or near storage cabinets and spray booths.

35-142. SMOKING PROHIBITED.—Smoking shall be prohibited in any room used for the storage of flammable finishes and in any finishing shop room. Suitable “NO SMOKING” signs shall be prominently displayed.

35-143. SPRAYING.—(a) All spraying inside of buildings shall be performed in a separate room or separate booth as specified below except spraying with a portable spray gun of not more than 1 quart capacity may be performed in well ventilated areas of the building.

(b) If spraying is performed in a room not provided with spray booths as herein provided, such spray room shall be separated from the remainder of the building by partitions of fire-resistant construction equivalent to incombustible wallboard on wooden studding; or cement or gypsum plaster on metal lath on wooden studding; or wooden studding covered on both sides with sheet iron, and ceiling of such room shall be smooth and of construction equivalent to that required for partitions surrounding the room. Doors in openings in spray room partitions shall be equal in fire resistance to the partitions and shall be of the self-closing type or so installed as to close automatically in case of fire.

(c) Spray booths shall be of metal or other non-combustible material and of ample size to accommodate the object to be sprayed.

(d) Spray booths shall be provided with exhaust systems of sufficient capacity to adequately remove vapors or residues. Supply of air entering the room where the spray booths are located shall be substantially equivalent to the exhaust capacity provided. Each spray booth shall have an independent stack or vent to outside of building, except that not more than 3 booths each with less than 6 square feet frontal area may connect to one stack. Stacks or vents shall be properly supported and shall have at least a 6-inch clearance where passing through wooden floors, roofs, partitions or in close proximity to them or other combustible material.

(e) Ventilating systems in spray rooms and booths shall be kept in continuous operation while spraying is being carried on and shall not be stopped until all flammable vapors have been removed.

(f) Pails or receptacles shall not exceed 10 gallons capacity for gravity feed to spray guns and shall be kept covered with tight fitting non-combustible covers. Only wire cables or those containing stranded wire cores shall be used to suspend gravity-feed pails.

Pails or receptacles containing flammable finishes shall be returned to the storage cabinet or storage room at the close of each day.
(g) No portable lamps shall be used inside spray rooms or booths. Lamps shall be prohibited inside spray booths and ducts and in any location where there is possibility of the spray coming into direct contact with the lamp or fixture.

Electric motors shall not be placed inside booths or ducts.

(h) Motor vehicles shall not be moved by their own power while in the finishing room. Electric storage batteries shall be removed.

35-144. DIP TANKS.—Dip tanks having an area in excess of 10 square feet shall be provided with approved covers arranged to close automatically in case of fire and also arranged so that they can be closed manually. Smaller dip tanks shall be provided with approved covers or with asbestos blankets which can be placed over the tanks. If dip tanks are protected by an approved automatic fire extinguishing system employing a fire retardant chemical or gas or water spray the covers specified above may be omitted.

35-145. JAPANNING AND ENAMELING.—Japanning and enameling drying ovens shall not be placed in contact with wood floors or other combustible material. Heating of ovens shall be done by steam coils or indirect hot air circulation through oven to outside, or indirect hot oil circulating pipes, or indirect gas burners or electricity. Open flames or fires shall not be in communication with the compartments where goods are being treated.

ARTICLE XI

SALE AND USE OF DRY CLEANING LIQUIDS

35-146. DEFINITIONS.—(a) Dry cleaning liquids are defined as any liquids, other than water, used for the removal of dirt, grease, paint or other stains from wearing apparel, textiles, fabrics, furs, rugs and similar articles.

(b) Dry cleaning liquids shall be divided into three classes:

1. High hazard dry cleaning liquids: Flammable liquids having a flash point below 100 degrees Fahrenheit. Typical of this class are gasoline, benzene and naptha.

2. Low hazard dry cleaning liquids: Flammable liquids having a flash point of 100 degrees Fahrenheit or higher. Typical of this class are stoddart solvent and various petroleum products classed as to fire hazard with kerosene, paraffin oil, or between paraffin oil and kerosene.

3. Nonflammable dry cleaning liquids: Liquids which are strictly nonflammable or are classed as nonflammable at ordinary temperatures. Typical of this class are carbon tetrachloride and trichlorethylene.
(c) Dry cleaning shall include immersion or agitation in dry cleaning liquids, also brushing or scouring with such liquids and the process of dyeing in a solution of dye colors in such liquids.

(d) Spotting is the local application of dry cleaning liquid, to spots of dirt, grease, paints or stains, on wearing apparel, textiles, fabrics, furs, rugs and similar articles.

35-147. DRY CLEANING WITH NONFLAMMABLE DRY CLEANING LIQUIDS.—Dry cleaning operations employing only nonflammable dry cleaning liquids shall be subject to the requirement for permits in Section 35-149, but shall be exempt from all other provisions of this Article.

35-148. SALE OF HIGH HAZARD DRY CLEANING LIQUIDS RESTRICTED.—(a) No person shall sell any high hazard dry cleaning liquid in other than sealed containers of not more than 16 fluid ounces capacity without a permit therefor.

(b) The sale for dry cleaning purposes of high hazard dry cleaning liquids in quantities exceeding 16 fluid ounces to other than those holding a permit for dry cleaning or holding a permit to sell and distribute such liquid, is prohibited.

35-149. DRY CLEANING PERMIT.—No person shall engage in the business of dry cleaning within the City of Richmond except under permit of the Division.

35-150. SPOTTING.—(a) The use of high hazard liquids for dry cleaning, other than "spotting", shall be prohibited.

(b) High hazard dry cleaning liquids shall not be used for spotting unless kept in and applied from approved safety cans not exceeding 1-quart capacity.

35-151. BUILDINGS IN WHICH DRY CLEANING IS DONE WITH LOW HAZARD DRY CLEANING LIQUIDS ONLY.—(a) Dry cleaning operations shall not be carried on in buildings of frame construction or of residential occupancy. Dry cleaning operations shall not be carried on in a building with other occupancy unless separated therefrom by partitions without openings having a fire resistance rating of not less than one hour and by ceilings of not less than ¾-inch gypsum plaster on metal laths, provided that where all drying is done in approved drying tumblers or where washing and drying are accomplished in an approved closed-system, the partitions separating such dry cleaning operations from other occupants may have door openings therein if protected by approved self-closing fire doors or an approved automatic sprinkler system.

(b) Rooms in which dry cleaning operations are carried on shall not have floors below grade or with pits, wells, pockets or base-
ments; the floors shall be of non-combustible construction or covered with non-combustible material.

35-152. DRYING ROOMS.—Rooms in which articles are hung up to dry after cleaning shall be separated from dry cleaning rooms by partitions having a fire resistance rating of not less than one hour where low hazard cleaning liquids are used. Entrances to drying rooms shall be provided with approved, self-closing fire doors. If the drying room is in a separate building, it shall conform in construction and equipment to all requirements for dry cleaning buildings.

35-153. MECHANICAL VENTILATION.—(a) In drying rooms a mechanical system of ventilation of sufficient capacity to ensure complete and continuous change of air ten times every minute shall be installed and shall be provided with means for remote control.

(b) A mechanical system of ventilation of sufficient capacity to insure complete and continuous change of air in dry cleaning rooms once every three minutes shall be installed and shall be provided with means for remote control. Where the tumbler and drying cabinets located in a cleaning room have sufficient capacity to change the air once each minute, no additional ventilation shall be required.

(c) The blades and spiders of all exhaust fans shall be of non-ferrous material or the casing shall consist of or be lined with such material.

(d) All mechanical systems of ventilation shall be vented safely to the outside air.

35-154. ELECTRICAL EQUIPMENT.—In rooms where dry cleaning is done with low hazard dry cleaning liquids all electrical equipment within six feet of the floor shall be installed in accordance with the City Electrical Code requirements for hazardous locations, unless drying is done in approved drying tumbler or washing and drying are accomplished in an approved closed system.

35-155. HEATING EQUIPMENT.—(a) Heating in dry cleaning establishments shall be by steam or hot water only. Steam and hot water pipes and radiators for heating and drying purposes shall be at least one inch from all woodwork and shall be protected by substantial metal screens arranged so as to prevent combustible goods or materials from coming in contact with such pipes and radiators.

(b) Boilers in dry cleaning establishments shall be located in a detached building or in a boiler room cut off from the dry cleaning room by a partition having a fire resistance rating of not less than two hours with openings protected by approved self-closing fire doors and having sills raised at least six inches above the dry cleaning room floor.

35-156. STORAGE TANKS.—All storage tanks for dry cleaning liquids shall be underground, installed and equipped in accordance with
the requirements of Article 9 of this chapter, except that inside (above ground) storage tanks may be used for low hazard dry cleaning liquids provided the aggregate capacity of such storage tanks does not exceed 275 gallons.

35-157. HANDLING OF DRY CLEANING LIQUIDS.—(a) The handling of dry cleaning liquids from and to the various machines shall be through closed circuits of piping. Pumps of positive displacement type shall have a by-pass and relief valve.

(b) Gauge glasses and look boxes or windows, the breakage of which would permit the escape of liquids, shall be of a type not readily damaged by heat and shall be adequately protected against mechanical injury.

(c) All piping shall be tested to a pressure of at least fifty pounds and proven tight and adequately protected against mechanical injury.

35-158. WASHING MACHINES.—(a) Each washing machine shall be provided with an overflow pipe one size larger than the size of the supply line to the machine. Such overflow pipe shall be connected to the shell of the washer so that the top of the overflow is below the bottom of the bearings and shall be without shutoff valves and shall be arranged to discharge to suitable tank.

(b) Washing machines shall be provided with doors of the outside case hinge type, arranged to be self-closing or to close automatically in case of fire.

(c) Button and lint traps shall be provided.

35-159. CLARIFYING EQUIPMENT.—Clarifiers, stills, condensers and treating tanks shall be of a type which will not expose the liquid during all parts of the process of reclamation. Steam or hot water only shall be used for heating. Stills and condensers shall be liquid and gas tight and, if of other than vacuum type, provided with safety valves discharging to the outside air.

35-160. DRYING TUMBLERS AND CABINETS.—(a) Drying tumblers and cabinets shall be vapor-tight and, unless of an approved type shall be provided with self-closing explosion hatches having an area equal to at least 10 per cent of the total area of the cylinders, excluding the ends. Hatches shall be arranged to open away from the operator.

(b) Drying tumblers shall be provided with a steam jet, for steaming during the drying process.

(c) Drying tumblers and cabinets shall be ventilated to the air outside the building by means of properly constructed pipes and ducts connected to an exhaust fan of sufficient capacity to remove all dust,
vapors or fibres generated by the process. Such discharge pipes or ducts shall be carried to a height of not less than six feet above the roof. Discharge pipes or ducts shall not terminate within ten feet measured horizontally from any door, window, or frame wall or any adjoining or adjacent building. The fan shall be properly housed and kept in operation while the drying tumbler is in use.

35-161. EXTRACTORS.—(a) Extractor baskets shall have a rim of non-ferrous metal and shall be well balanced.

(b) Extractors shall be provided with a drain pipe not less than 1½ inches in diameter connected directly to storage tanks or to the washer through an approved extractor pump with connections fitted with proper gate valves.

(c) Brakes, if used, shall be so designed as to prevent the striking of sparks or developing excessive heat.

35-162. SCOURING, BRUSHING AND SCRUBBING.—(a) All scouring and brushing and scrubbing operations shall be carried on in the dry cleaning room or in a separate room conforming to all the requirements for dry cleaning rooms.

(b) Scouring and brushing tables shall have a liquid-tight top with a curb on all sides not less than one inch high, or provision shall be made to have the table drain to a container of not greater than five gallon capacity located under the table and not subject to upset. The top of the table shall be so pitched as to insure thorough drainage to such container. Metal tops where used shall be permanently and effectively grounded.

(c) Scouring and brushing tables shall be so located as to insure thorough and effective disposal of vapors through the ventilating system.

35-163. FIRE EXTINGUISHING EQUIPMENT.—Approved extinguishing devices of a type suitable for use on oil fires shall be provided. These may be hand extinguishers, and, if necessary, wheeled extinguishers, depending upon the size of the plant.

35-164. EQUIPMENT TO BE SECURELY FASTENED AND ELECTRICALLY GROUNDED.—All machinery and containers in dry cleaning establishments shall be rigidly fastened to a substantial foundation or to the floor, and shall be electrically grounded. The shell of every container shall be electrically grounded and the revolving parts of machinery shall be electrically grounded through the end of the shaft.

35-165. REMOVAL OF WASTE OR SLUDGE.—Waste and/or sludge removed from dry cleaning equipment shall be placed only in incombustible containers with tightly fitting lids. Such containers shall
be immediately removed from the building and stored in the open in such a manner that buildings or other property may not be exposed thereby. Such accumulation of waste material shall not remain on the premises for a period in excess of 24 hours after removal from the dry cleaning equipment, and disposed of in a manner approved by the Division.

ARTICLE XII

35-166. PREVENTION OF DUST EXPLOSIONS.—No person shall engage without a permit in the business of operating any grain elevator, flour, starch or feed mill or plant or a plant to pulverize cocoa, sugar, spices, coal or other materials producing flammable dusts.

No such permit shall be issued unless:
(a) Elevator legs, spouts, hoppers and other conveyors in such elevator, mill or plant are dust tight, and
(b) An approved dust removal system is maintained, and
(c) Any portion of such elevator, mill or plant containing dusty atmospheres is free of open flame or spark producing equipment, and
(d) Grinding or pulverizing machines, if any, are maintained ahead of pneumatic or magnetic separators, and
(e) Adequate grounding is provided for machinery and grinding, drying, pulverizing and conveying systems.

ARTICLE XIII

HAZARDOUS CHEMICALS

35-167. DEFINITION.—Hazardous chemicals are defined to be chemicals or chemical compounds of a corrosive or poisonous nature or which materially increases the fire hazard of the buildings in which they are stored, handled or sold.

35-168. PERMIT REQUIRED.—A permit shall be required for the storage, handling and sale of chemicals and chemical compounds in excess of one standard Interstate Commerce Commission container where such chemicals or compounds are of a corrosive or poisonous nature, or which materially increases the fire hazard. Where kept in containers or packages usual to the retail trade, no general restrictions shall apply other than shelving shall be substantial and storage shall be neat and orderly.

35-169. STORAGE SHALL BE IN DRY PLACES.—Storage of hazardous chemicals of an oxidizing nature, such as nitrates, nitrites and chlorates, in warehouses, factories and wholesale stores shall be in dry places and the Chief may require a separate room or building when the quantity constitutes a material hazard.
35-170. BULK STORAGE OUTSIDE OF BUILDING.—Bulk storage or storage of two or more carboys of acid shall be outside in a yard or an enclosure, or properly protected on the roof of the building, or in a special room provided with an approved container for the character of acid in case of breakage or leak.

35-171. SEPARATION OF CHEMICALS.—The Chief may require the separation or isolation of any chemical of a nature which in combination with other chemicals or with organic matter, may bring about a fire or explosion or may liberate a hazardous or poisonous gas.

35-172. CONTAINERS.—No container for hazardous chemicals which permits spillage or leakage shall be used and no hazardous chemicals outside of containers shall be allowed to accumulate on floors or shelves.

ARTICLE XIV

COMBUSTIBLE FIBRES

35-173. DEFINITION.—The term "combustible fibres" shall include, but is not limited to; cotton, sisal, henequin, ixtle, jute, (but not jute bagging or burlap bagging), hemp, tow, cocoa fibre, oakum, waste paper, kapok, hay, straw, Spanish moss and excelsior.

35-174. STORAGE.—No person shall store or keep in any building or premises without a permit any combustible fibres in excess of one ton. No permit shall be issued for such storage in any building or premises:

(a) Located within fifty feet of the nearest wall of a building occupied as a school, hospital, theatre, or place of public amusement or assembly;
(b) Occupied as a dwelling;
(c) Where flammable liquids are stored, used or kept for sale;
(d) Where dry goods or other flammable materials are manufactured, stored or kept for sale, except where combustible fibres so kept enter into the manufacture of such articles or materials;
(e) Where any explosives are stored or kept;
(f) In no case shall a permit be issued for such storage unless the portion of said building or premises where such combustible fibres are kept is equipped with an approved automatic fire extinguishing system.

35-175. IN MANUFACTURING PLANTS.—Quantities exceeding 100 cubic feet of loose combustible fibres, but not exceeding 500 cubic feet, used in the process of manufacturing articles or materials, may be stored in rooms or compartments having floors, walls and ceiling constructed of material possessing sufficient fire resistance to
withstand a standard one-hour fire test. Openings into such rooms or compartments shall be cut off in an approved manner from other parts of the building. Where the storage exceeds this specification, the provisions of Section 35-174 shall apply.

Workrooms in which ten or more persons are engaged in processes employing the use of combustible fibres in upholstering or similar operations, or where such materials enter into the manufacture of mattresses or similar articles, shall be protected by an automatic fire extinguishing system approved by the Division.

35-176. STORAGE WHEN WET.—Fibres liable to swell when wet shall be piled with care to insure stability under fire conditions, and shall be so stored as to allow for expansion in any direction without endangering walls, ceilings or columns, and so as to provide reasonable access for Fire Department use.

ARTICLE XV
GARAGES

35-177. DEFINITION.—An automobile garage for the purpose of this article is defined as any building or part thereof where one or more automobiles or other self-propelling vehicles, not including motorcycles, are kept for storage, manufacture, repair, exhibition, demonstration, sale, rental, hire, painting, adjustment or equipment.

35-178. PERMIT REQUIRED.—No person shall use any building, shed or enclosure for the purpose of servicing or repairing any motor vehicle therein, nor use any room or space having a floor area exceeding 1,200 square feet in any building, shed or enclosure for storing, housing or keeping any motor vehicles containing flammable liquid in the fuel tanks thereof, without a permit from the Division. A garage exceeding 50 cars storage capacity on any one floor and with unprotected steel or wooden roof supports or wooden floor supports, shall be protected by an approved automatic sprinkler system.

35-179. REPAIR WORK.—Welding and other processes involving direct application of flame shall not be conducted in any garage in the presence of combustible material unless such material is adequately shielded from sparks, molten metal, or exposure to excessive heat, and portable extinguishing equipment is provided nearby. No repairs of any kind to motor vehicles shall be made in any basement or sub-basement garage.

35-180. CLEANING WITH FLAMMABLE LIQUIDS.—No flammable liquid with a flash point below 100 degrees F. shall be used in any garage for washing parts or removing grease or dirt, unless in a machine approved for the purpose, or in a separate room enclosed by walls having a fire resistance rating of not less than two
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hours, with openings therein protected by approved fire doors or fire windows, and with no opening from such room to any upper or lower story.

35-181. HANDLING OF GASOLINE AND OILS.—The reservoirs of motor vehicles shall be filled directly through hose from pumps attached to approved portable tanks or containers or drawing from underground storage tanks. No transfer of gasoline in any garage shall be made in any open container.

There shall be no facilities for gasoline handling in any basement or sub-basement garage and no such filling or handling operations shall be carried on therein.

No person shall discharge any oil or other inflammable liquids into any sewer in the City of Richmond, nor shall any person pour any oil or other flammable liquids upon any street or alley drained by the sewage system of the City of Richmond.

It shall be the duty of every person having any waste oil or other flammable liquids to provide adequate approved metal containers in some convenient and safe location outside of the building upon the premises and to keep therein all waste oil. Such containers and the location in which they are kept shall be approved by the Chief.

It shall be the duty of every person having waste oil to remove or cause to be removed from his premises at reasonable intervals and to make safe and proper disposition of the same. Such waste oil shall be considered as having been properly disposed of when delivered to some refinery or other place properly equipped to handle it safely or when disposed of in such other manner as may be approved by the Division.

It shall be unlawful for any person owning or operating a garage, automobile repair shop or automobile service station to maintain or permit to be maintained upon such property any oil drain pit connected to a City sewer, except through an approved oil interceptor.

ARTICLE XVII
FIRE EXITS

35-182. FIRE EXITS.—(1) No person shall at any time place an encumbrance of any kind whatsoever before or upon any stairway, fire escape, balcony or ladder intended as a means of escape from fire. It shall be the duty of every member of the police and fire Bureaus who shall discover any fire escapes encumbered in any manner to forthwith report the same to the Division and the said Division shall immediately notify the owner or owners, their agent or agents, tenant or tenants, to remove such encumbrance and such encumbrance shall thereupon be immediately removed.
(2) It shall be unlawful for any person to place, store or keep, or permit to be placed, stored or kept under or at the bottom of any stairway, inside or outside, elevator or other shaft in any building, any combustible or flammable material, fluids or compounds, nor shall any such combustible or flammable material be placed or stored or kept in any place where ignition or burning would obstruct or render hazardous egress from a building.

(3) No obstructions shall be permitted in hallways affording access to means of egress.

(4) In places where provision is made for 50 or more people to congregate or assemble for religious, recreational, educational, political, social or amusement purposes or for the consumption of food or drink, all doors, aisles and passageways within and leading into or out of such places shall be kept free from easels, signs, standards, camp stools, chairs, sofas, benches and any other article and persons standing or sitting that might obstruct or delay exit from the premises. Clear passage from all exits and on adjacent sidewalks must at all times be maintained. No aisle, passageway or stairway in any store shall be obstructed with tables, show cases, or other obstructions during hours said store is open to the public.

ARTICLE XVIII

FIRE EXTINGUISHING EQUIPMENT

35-183. BASEMENTS, CELLARS AND SUB-CELLARS TO HAVE WATER PIPE SYSTEM OF AUTOMATIC SPRINKLERS.—Unless otherwise provided in this chapter, all basements, cellars and sub-cellars exceeding 2,000 square feet in area used for the storage, sale, manufacture or handling of rags, paper or junk; furniture, dry goods, toys and other articles containing quantities of excelsior, moss, paper and like materials; articles, the manufacture of which involves the use of highly combustible materials; chemicals, acids or flammable liquids shall be equipped with an approved water pipe system or automatic sprinklers adequately supplied from city water mains or other suitable source of supply located outside the building and readily accessible to the Bureau of Fire connections. Such a system may be omitted if in the opinion of the Chief the fire hazard is not severe, provided that such places shall be equipped with an approved dry sprinkler system with a readily accessible Bureau of Fire connection located outside the building, or with suitable cellar flooding holes properly distributed in the first floor of the building and provided further, that all such places shall be equipped with an approved automatic heat-actuated alarm system connected to an outside gong or to the central station of a supervising company.
35-184. MERCANTILE, MANUFACTURING ESTABLISHMENTS, SCHOOLS, HOSPITALS, HOTELS, ETC.—The Division shall survey each mercantile and manufacturing establishment, each school, each place of assembly, each hospital or place of detention, and each hotel, apartment house or tenement building and shall designate suitable fire extinguishing appliances in or near boiler rooms, kitchens of restaurants, clubs and like establishments, rooms where considerable combustible materials is stored or in which manufacturing processes involving fire hazard are employed, garage sections, and other places where hazard of fire is present. Such appliances may consist of automatic alarm systems, automatic sprinklers, standpipe and hose, fixed, wheeled or portable chemical extinguishers of a type suitable for the probable class of fire, or suitable asbestos blankets, manual or automatic covers or the introduction of an inert gas. Where fire hazard is unusually great, appliances of more than one type or special fire extinguishing systems may be required.

35-185. EXTINGUISHING SYSTEMS MUST BE OPERATED AT ALL TIMES.—All sprinkler systems, standpipe systems, alarm systems and any other protective or extinguishing systems shall be maintained in operative condition at all times, and it shall be unlawful for any owner or occupant to reduce the effectiveness of the protection furnished; provided the owner or occupant may temporarily reduce or discontinue the protection where necessary to make repairs, alterations or additions. The Chief shall be notified before such repairs, alterations or additions are started.

35-186. SPRINKLER APPLIANCES.—(a) The main valve to sprinkler systems shall be opened and sealed, and the Division shall be notified in writing by the owner, agent or occupant if for any reason it becomes necessary to close the main valve.

(b) A clearance of not less than 18 inches below the level of any sprinkler head shall be maintained for the storage, packing or placing of merchandise or other materials; provided, however, where a fire hazard is unusually great, the Chief may require the clearance to be increased but in no case to more than 3 feet.

(c) Sprinkler heads shall be maintained in good order, be kept clean and free from corrosion, not painted or whitewashed, and not bent or damaged. All hangars shall be kept in good repair. Broken hangers shall be replaced promptly.

35-187. FIRE DOORS.—(a) All fire doors shall be equipped with approved self-closing devices and shall be maintained in good working condition at all times.

(b) No obstruction shall be permitted in fire doorways, nor shall their free operation be impaired in any manner.
35-188. FAILURE TO INSTALL—VIOLATION OF CHAPTER.—Failure to install or provide the equipment ordered by the Division and to maintain it in operative condition at all times, shall be considered a violation punishable as indicated hereinafter in this chapter. Repeated disregard of such orders shall constitute sufficient basis for the revoking of any permit issued pursuant to this chapter.

ARTICLE XIX
AUTOMOBILE TIRE, RETREADING OR REBUILDING SHOPS

35-189. (a) No person shall operate any tire retreading or rebuilding shop without first obtaining a permit from the Division.

(b) Tire retreading or rebuilding shops shall have floor openings, such as stair and elevator shafts, enclosed in an approved manner.

(c) Buffing machines used in tire retreading or rebuilding shops shall be located in a separate room used for no other purpose. Each such machine shall be connected to an approved dust collecting system discharging to an approved container which shall be cleaned at frequent intervals to prevent spontaneous ignition.

(d) Each room in tire retreading or rebuilding shops where rubber cement is used or mixed, or flammable solvents are applied, shall be provided with an approved system of mechanical or natural ventilation.

(e) Tire retreading or rebuilding shops in buildings used in part for human habitation shall be equipped with an approved automatic sprinkler system. Where such shops are located in buildings otherwise occupied, the tire retreading or rebuilding shops shall be cut off by fire partitions.

ARTICLE XX
JUNK AND MOTOR VEHICLE WRECKING YARDS

§ 35-190. (a) No person shall operate or maintain without a permit an automobile wrecking yard or junk yard and no such yard shall be so located as to constitute a serious fire hazard to the adjoining or adjacent properties.

(b) No person, except a junk dealer and an operator of a motor vehicle wrecking yard, shall burn a motor vehicle or any part thereof for wrecking or for salvaging purposes. A junk dealer and an operator of a motor vehicle wrecking yard may burn motor vehicles upon the following conditions:

1. That no more than one motor vehicle shall be burned at one time;

2. That all rubber tires shall be removed from each motor vehicle before burning is undertaken;
3. That no motor vehicle shall be burned at any place within thirty feet of any inflammable material; and

4. That the burning of each motor vehicle shall be under constant supervision and shall be conducted in such manner as not to pollute the air in violation of any law or ordinance.

(c) A junk dealer and an operator of a motor vehicle wrecking yard may burn insulation from wire only for salvage purposes upon the condition that the burning of the insulation shall be under constant supervision and shall be conducted in such manner as not to pollute the air in violation of any law or ordinance.

(d) At junk yards where large quantities of waste, paper, rags, and other combustible materials are handled or stored, such handling and storing shall not be carried on in a building of frame construction and the building shall be located outside of congested areas unless the entire building is equipped with an approved automatic sprinkler system. In no case shall the height of the building be over one story unless the building is of fireproof construction with vertical openings properly enclosed and window openings shall be protected by metal frames and sash glazed with wire glass, or screened to prevent the entrance of sparks. Buildings shall be provided with skylights if required by the Chief to provide adequate ventilation in case of fire. Picking rooms shall be separated from storage rooms by a fire partition and each communicating opening to such rooms shall be provided with an approved self-closing fire door. All reasonable safeguards shall be taken to prevent the accumulation of dust or trash.

ARTICLE XXI

WOODWORKING PLANTS AND LUMBER YARDS

35-191.—(a) Every person operating a sawmill, planing mill or other woodworking plant shall first obtain a permit from the Chief. Sawmills, planing mills and other woodworking plants shall be equipped with refuse removal systems which will satisfactorily collect and remove sawdust and shavings as produced; or suitable metal or metal-lined bins, provided with normally closed covers or automatically closing covers, shall be installed at or near such machines, and shavings and sawdust shall be swept up and deposited in such bins at sufficiently frequent intervals as to keep the premises clean, or other means provided to reasonably insure that the premises will be kept clean of such refuse.

(b) The burning of shavings, sawdust and other refuse material shall be permitted only under boilers, in furnaces or in approved incinerators or refuse burners; provided that such refuse materials may be burned in the open if properly safeguarded and a permit therefor has been obtained from the Division. All stacks in connection with
such refuse burning equipment shall be equipped with approved spark arrestors. A masonry or concrete storage bin with raised sill shall be provided at boilers or other points where shavings, sawdust and other refuse materials are used as fuel.

(c) In sawmills, planning mills and other woodworking plants, whether or not equipped with an approved system of automatic sprinklers, fire extinguishing equipment of either chemical extinguishers or small fire hose supplied from an adequate water system shall be provided near machines producing shavings or sawdust.

(d) That a permit shall be obtained from the division for any storage of lumber in the open if such storage is in excess of 100 thousand board feet.

(e) No pile of lumber other than lumber the minimum dimensions of which are at least six inches, shall be higher than 17 feet above foundation, wider than 20 feet or longer than 20 feet. Exception will be made, however, to provide for pieces of lumber the whole length of which exceeds 20 feet. These pieces may be piled together in separate piles as the sizes and lengths require. Such storage shall be so arranged as to permit reasonable access between rows of piles for Fire Bureau use.

(f) Lumber storage yards shall be kept free of dry grass and weeds and other refuse.

ARTICLE XXII

SAFETY TO LIFE IN TENTS WHEN USED FOR ASSEMBLY AND OTHER PURPOSES, INCLUDING CARNIVALS AND CIRCUSES

35-192. APPLICATION.—No tent exceeding 120 square feet in area shall be erected, maintained, operated or used except under a permit from the Chief. Such permit shall not be issued for a period exceeding 30 days and shall be revocable for cause. Application shall be made in form prescribed by the Chief, who may require plans drawn to scale, showing exits, aisles and seating arrangements and details of structural support of tent, seats and platforms.

35-193. LOCATION, CONSTRUCTION AND MATERIAL.—Tents exceeding 120 square feet in area shall not be erected within the fire limits of the City of Richmond as defined in Article 3, Section 25 of the Building Code of the City of Richmond or within 20 feet of any other structure or building. Such tents shall be constructed and erected to withstand a wind pressure of at least 10 pounds per square foot.
Canvas, curtains, cloth, rope, netting and decorative materials in such tents shall be rendered flameproof, provided that flameproofing will not be required where tents are open on one side and have standing capacity only for not more than 20 people. A test for flameproofing shall be made of the tent by the Chief prior to each erection and on the decorative and other materials before they are attached to or placed therein. In lieu of such tests, the Chief may accept a certificate from the manufacturer that the material has been tested by a recognized laboratory, and found to be permanently flameproofed, and provided the material has proper identification markings, is not more than three years old, and has not been waterproofed subsequently by a process which increases its flammability. Where tents are used as places of assembly with a capacity of 200 or more persons, the seats, chairs, jacks and other appurtenances, if of wood, must be adequately treated to reduce the fire hazard by application of a surface treatment or by impregnation.

No tier of seats in such tents shall rise to a height exceeding 12 feet, and tents in which persons sleep, and mess tents, shall not be used for any exhibition purpose.

35-194. EXITS, AISLES AND SEATS.—A minimum of two exits shall be provided where a tent is used as a place of assembly with a capacity of 100 or more persons, in any tent where 10 or more persons sleep and in any tent involving conditions hazardous to life.

When tents are used as a place of assembly with a capacity in excess of 500 people, each exit shall be not less than 9 feet wide, and the number of exits in addition to the minimum requirement prescribed above shall be based upon the ratio of one exit to each 500 persons or major fraction thereof which the tent is designed to seat or hold. Such exits shall be placed not over 75 feet apart and exitways serving such exits shall be not less than 9 feet in clear width.

Aisles not less than 44 inches in width shall be provided so that there are not more than 10 seats between any seat and an aisle. Where individual seats are not provided, a distance of 18 inches along any bench or platform shall constitute one seat in computing required aisles and exits. Every aisle shall lead directly to an exitway, or to a cross aisle running parallel with the seat rows and leading to an exitway. Such cross aisles shall not be less in width than the combined width of aisles that they connect. In tents having a capacity of 1,000 or more persons, facilities shall be provided for admitting persons into the tent on opposite sides or ends thereof convenient to their seating locations.

Aisles and exitways shall be used only for passage to and from seats and for vendors carrying their wares. No poles or ropes shall be permitted in aisles and exitways. All aisles, exitways and exits shall be kept unobstructed at all times and so maintained as not to
The area for a distance of 20 feet beyond any exit shall be free and clear and readily passable.

Where two or more tents adjoin, with an opening between, at least one exit to the outside shall be provided at the point of juncture.

35-195. MARKING AND LIGHTING OF EXITS.—All required exits shall be plainly marked so as to be readily distinguished. Required exitways and the immediate areas outside the exits shall also be kept adequately lighted.

35-196. NO SMOKING.—Signs prohibiting smoking shall be prominently displayed at all entrances and at other locations within any tent used as a place of assembly, so that they may be clearly visible to all occupants. Frequent announcement regarding such prohibition shall be made over a public address system if available. Suitable non-combustion containers shall be provided at all entrances for the disposition of cigar or cigarette butts and pipe dottle, and a uniformed attendant shall be stationed at such locations to advise patrons of the no-smoking regulations.

35-197. MOTION PICTURES.—No motion picture film of the nitro-cellulose type shall be used, stored, or exhibited within a tent. Motion picture film when used within a tent, shall be restricted to non-flammable film.

35-198. AUTOMOBILES, TRUCKS, TRACTORS, LIGHTING EQUIPMENT AND OTHER EQUIPMENT USING GASOLINE.—Automobiles, trucks, tractors, lighting equipment and other equipment using gasoline used in connection with or inside any tent shall be filled from approved safety cans or by a hose from approved fixed pumps or from approved wheeled tanks with pumps or by pumps from a standard fuel tank wagon located not closer than 25 feet to any tent.

35-199. INSPECTION AND FIRE APPLIANCES.—The Chief of the Division shall inspect or cause to be inspected each tent for which a permit has been granted after it is erected, and if it is to be used as a place of assembly, before it is used as such. He shall require the installation of such fire extinguishing appliances as he may deem necessary and designate their location, taking into consideration the nature of the fire hazard in each tent. Such fire extinguishing appliances may consist of water tanks, pumps, hose, water buckets, extinguishers and fireproof blankets.

All fire extinguishing appliances shall be kept in good working condition and may be inspected and tested prior to the occupancy of the tent.

The person to whom a permit has been granted shall train sufficient responsible employees in the use of fire extinguishing equipment so that such equipment can be quickly put to use. The Chief may require such employees to demonstrate their competence.
35-200. INSPECTION AND SUPERVISION BY BUREAU OF FIRE.—Uniformed firemen and policemen whether in uniform or not who may have been detailed to inspect circuses, carnivals, or other exhibitions where large crowds assemble shall be admitted to such premises without charge.

ARTICLE XXIII

SMOKING PROHIBITED

35-201. DEFINITION OF "SMOKE".—For the purpose of this Article the term "smoke" shall mean to smoke or carry a lighted cigar, cigarette, pipe or use any match, spark, flame or fire producing device to light a cigar, cigarette or pipe.

35-202. UNLAWFUL TO SMOKE IN ESTABLISHMENT EMPLOYING LESS THAN 25 PERSONS.—It shall be unlawful for any person to smoke in any establishment in which less than 25 persons are employed and goods, wares and merchandise largely of a combustible or flammable nature are displayed on counters for sale at retail; provided, any person may smoke in parts of such establishments set apart for the purpose of smoking and used as rest rooms, beauty shops, barber shops, management or executive offices or where food or beverages are served for consumption on the premises.

35-203. UNLAWFUL TO SMOKE IN ESTABLISHMENT EMPLOYING MORE THAN 25 PERSONS.—It shall be unlawful for any person to smoke in any other establishment in which 25 or more persons are employed and goods, wares and merchandise are displayed for sale; provided, any person may smoke in such establishments when the goods, wares and merchandise are largely of an incombustible or non-flammable nature, or when the same are kept in display or show cases and any person may smoke in parts of such establishments set apart for the purpose of smoking or used as rest rooms, beauty shops, barber shops, management or executive offices or where food or beverages are served for consumption on the premises.

35-204. SMOKING PROHIBITED IN UNUSUALLY DANGEROUS PLACES.—The Chief is hereby empowered and authorized to inspect all piers, wharves, warehouses, industrial establishments or other buildings, structures or places of public assembly or open spaces in which combustible or flammable materials are handled, stored, manufactured, sold or used as decorations and where such inspection discloses that an unusually dangerous fire hazard exists unless smoking in such places is prohibited, he shall notify the owner or occupant in writing that thereafter smoking shall be prohibited.

35-205. NO SMOKING SIGNS.—Whenever smoking is made unlawful by the provisions of this Article the owner or occupant of the
establishment shall cause to be placed such signs and placards throughout such establishment or the places therein where smoking is made unlawful as shall be approved by the Chief containing the words "Smoking Prohibited by Law" which shall be so placed as to be clearly visible to persons in such establishments or places.

35-206. UNLAWFUL TO SMOKE AFTER POSTING OF SIGNS.—It shall be unlawful for any person to smoke in any establishment or place after the posting of signs or placards as required by Section 35-205.

ARTICLE XXIV
BOWLING ALLEYS

35-207.—BOWLING ALLEYS.—(a) The chief shall be notified when bowling alleys are to be resurfaced. All sanding of such alleys shall be done by approved machines discharging into water. During that portion of resurfacing operations involving the application of flammable finishes, and for one hour thereafter:

(b) All motorized or other equipment in the area which might be a source of ignition shall be disconnected and all smoking and open flames prohibited:

(c) Proper ventilation shall be provided, but heating ventilating or cooling systems employing recirculation of air shall not be operated; and

(d) In the event that sanding is not done by approved machines discharging into water, resurfacing operations shall not be carried on while the establishment is open for business, and the safeguards shall be maintained as referred to in (a) and (b) above.

(e) A special room meeting the requirements of Section 35-85 shall be provided for pin refinishing in bowling alley establishments and the room shall not be located in bowling alley establishments and the room shall not be located below grade. Storage of flammable liquids in such rooms shall not exceed 60 gallons in original unopened metal containers or in approved safety containers not exceeding 5 gallons individual capacity. A metal waste can with self-closing cover shall be provided for all waste materials and rags, and such contents shall be removed daily. Smoking shall be prohibited at all times in refinishing rooms.

ARTICLE XXV
MISCELLANEOUS

§ 35-208. Kindling or Maintaining Fires.—No person shall kindle or maintain any fire or authorize any such fire to be kindled or maintained on or in any street, alley, road, land or public grounds of upon any private lot, unless a written permit so to do shall first have
been secured from the Chief except as otherwise provided in article XX of this chapter. This shall not prohibit the burning of trash and rubbish on private lots [or] of residences, provided such trash or rubbish is burned within a safely constructed enclosure made of wire mesh or similar safety device, and not within 15' of any flammable article or material.

2. This ordinance shall be in force and effect November 10, 1953.

35-209. DEPOSIT OF ASHES, ETC.—No person shall deposit ashes, smouldering coal or embers, greasy or oily substances or any articles or materials liable to create spontaneous ignition within ten feet of any wooden or plastered wall, partition, fence, floor, sidewalk, lumber, hay, shavings, rubbish or other combustible materials, except in metallic or other non-combustible receptacles. Such receptacles, unless resting on a non-combustible floor or on the ground outside the building, must be placed on noncombustible stands, and in every case must be kept at least two feet away from any combustible article or material.

35-210. ACCUMULATION OF WASTE PAPER, HAY, GRASS, RUBBISH, ETC.—No person shall permit to remain upon any roof or in any court, yard, vacant lot or open space, any accumulation of waste paper, hay, grass, straw, weeds, litter or combustible or flammable waste or rubbish of any kind, unless in proper receptacles. All weeds, grass, vines, or other growth, when same endangers property, and is liable to be fired, shall be cut down and removed by the owner or occupant of the property whereon the endangering condition exists.

35-211. REMOVAL OF COMBUSTIBLE MATERIALS FROM BUILDINGS.—No person making, using, storing or having charge or control of any shavings, excelsior, rubbish, sacks, bags, litter, hay, straw, or combustible trash, waste or fragments shall fail, neglect or refuse at the close of each day to cause all such material which is not compactly baled and stacked in an orderly manner to be removed from the building or stored in approved vaults or in metal or metal lined covered receptacles or bins. The Chief shall require suitable baling presses to be installed in stores, office buildings, apartment buildings, factories and similar places where accumulations of paper and waste materials are not removed at least every second day. This section shall not apply to buildings wherein such materials are used in manufacturing processes nor to buildings used solely for the accumulation or storage of such materials.

35-212. STORAGE OF PACKING CASES, BOXES, BARRELS, ETC.—Empty packing cases, boxes, barrels or other similar combustible containers shall not be stored in any building or structure without a permit, provided, however, that no permit shall be required
for the storage within a manufacturing or other establishment of sufficient packing cases, boxes, barrels, or other similar containers to properly carry on its operations, but such storage shall be orderly and not so located as to impede or obstruct exit from the building. Storage of packing cases, boxes, barrels, or other similar combustible containers outside of building or structures shall not be more than twenty feet in height, and shall be so located, with respect to buildings, as not to constitute a fire hazard. All such storage shall be in a compact and orderly manner.

35-213. FLAMMABLE MATERIALS NOT TO BE USED FOR DECORATION PURPOSES.—Cotton batting, straw, dry vines, leaves, trees, celluloid or other highly flammable materials shall not be used for decoration purposes in show windows or stores without a permit, provided, however, that nothing in this section shall be held to prohibit the display of saleable goods permitted and offered for sale in the store. Electric light bulbs in stores or public halls, or elsewhere, shall not be decorated with paper or other combustible materials unless such materials shall first have been rendered flameproof.

35-214. FLAMEPROOFING MATERIALS IN PLACES OF PUBLIC ASSEMBLY.—In places of public assembly all combustible decorative materials including curtains, acoustical materials, streamers, cloth, cotton batting, straw, vines, leaves and moss, but not including floor coverings, shall be rendered flameproof and samples of such flameproofed material shall be furnished to the Chief for such tests as he may deem necessary; provided flameproofing shall not be required of materials not exceeding one sixteenth inch in thickness applied directly to and adhering to noncombustible base. Such flame proofing shall be certified by a laboratory of recognized standing as being of a permanent nature, or shall be renewed as frequently as may be necessary to maintain its flameproofing qualities. In the event the owner and the Chief do not agree as to the necessity of renewing the flameproofing treatment, the owner shall furnish a certificate from a recognized testing laboratory as to the flame-proofing qualities as of the current date and if required, furnish samples of the material to the Division for testing. In places of public assembly trees used for decorative purposes such as Christmas trees, shall be so installed and maintained as not to create a hazard to life or property and such trees shall not be installed without a permit from the Chief.

35-215. NO OPEN FLAME WHERE COMBUSTIBLE MATERIAL IS KEPT, ETC.—No person shall take into or use an open flame in any building, barn, vessel, boat or any other place where highly flammable, combustible or explosive material is kept.
35-216. CHIMNEYS, SMOKESTACKS, FIRE BOXES.—
All chimneys, smokestacks or similar devices for conveying smoke or hot gases to the outer air and the stoves, furnaces, fire boxes or boilers to which they are connected shall be constructed, located and maintained in such a manner as not to endanger life and property, and in accordance with the Building Code.

35-217. LIGHTING SYSTEM WHERE COMBUSTIBLE MATERIALS ARE STORED.—No artificial lighting system other than electricity shall be used in any warehouse where rags, excelsior, hair or other flammable or combustible materials are stored; nor in any shop or factory used for the manufacture, repair or renovating of mattresses or bedding; nor in any establishment for the upholstery of furniture.

35-218. TRAPDOORS AND SHAFTWAYS.—All trapdoors, except those which are automatic in their operation, in factory buildings or buildings used for storage shall be closed at the completion of the business of each day. Every outside window in a building used for manufacturing purposes or for storage which opens directly on any hoistway or other vertical means of communication between two or more floors in such building, shall be plainly marked with the word “Shaftway” in red letters at least six inches high on a white background, such warning sign to be so placed as to be easily discernible from the outside of the building. Every door or window opening on such shaftway from the interior of the building, unless the construction of the partition surrounding the shaftway is of such distinctive nature as to make its purpose evident at a glance, shall be similarly marked with the warning word “Shaftway” so placed as to be easily visible to any one approaching the shaftway from the interior of the building.

35-219. FUMIGATION.—No person shall conduct the business of fumigation without a permit. The Chief shall be notified in writing when any building or structure is to be closed in connection with the use of any toxic or flammable fumigant, and the person obtaining such permit or his representative shall be on duty throughout the period that entrance to such building or structure would be hazardous. All persons obtaining such permit shall maintain and have available approved self-contained or forced air breathing apparatus. No fumigation room, vault or chamber using a toxic or flammable fumigant shall be maintained without a permit from the Chief, issued only after an inspection and approval of the apparatus, materials and method of operation.

35-220. COMPRESSED GASES.—The Chief may require the separation or isolation of any non-flammable compressed gases which in combination with other chemical or organic matter may cause a fire, explosion or liberate a hazardous or poisonous gas; or may re-
quire a permit for the storage, use, sale or transportation of non-flammable gases. All such gases shall be transported only in containers, not exceeding 30 gallons water capacity, which have been approved by the Interstate Commerce Commission.

35-221. TOY BALLOONS NOT TO BE INFLATED WITH HYDROGEN.—No person shall inflate toy balloons with hydrogen or sell or use toy balloons so inflated.

35-222. PERMIT REQUIRED TO HANDLE FLAMMABLE MATERIAL.—The keeping, storage, use, manufacture, sale, handling, transportation or other disposition of highly flammable, combustible or explosive materials without a permit in writing from the Chief is hereby prohibited, unless otherwise specifically provided for in this chapter.

ARTICLE XXVI

PENALTIES FOR VIOLATION

35-223. PENALTIES FOR VIOLATION.—Any person who violates any of the provisions of this chapter or who shall violate or fail to comply with any order or regulation made pursuant thereto or who shall build except in accordance with plans or specifications submitted and approved pursuant to this chapter or who fails to abide by the terms and conditions of any permit issued under this chapter shall upon conviction thereof be subject to a fine of not more than $1,000.00 or imprisonment in jail not exceeding twelve months, either or both, each violation and each day's continuance thereof shall constitute a separate offense.

35-224. CONFLICTING ORDINANCES REPEALED.—All ordinances and parts of ordinances in conflict with the provisions of this chapter be and the same are hereby repealed.

ARTICLE XXVII

SEVERABILITY PROVISIONS

35-225. CONSTITUTIONALITY.—If any part or parts, section, sub-section, sentence, clause or phrase of this chapter is for any reason declared unconstitutional or otherwise invalid, such decision shall not affect the validity of the remaining portions of this chapter, which shall remain standing as if this chapter had been passed with the unconstitutional or invalid part or parts, section, sub-section, sentence, clause or phrase thereof eliminated; and the Council of the City of Richmond hereby declares that it would have passed this chapter if such unconstitutional or invalid part or parts, section, sub-section, sentence, clause or phrase had not been included therein.
VITA

Donald Lee Morecock was born in Richmond, Virginia, on August 14, 1933. He attended public schools in Richmond and was graduated from Thomas Jefferson High School in 1951. In 1955 he received the Bachelor of Arts degree in Spanish from Richmond College of the University of Richmond. The author served in the United States Army from June to December of 1957.